



*FEDEX AIRBILL 8075 8657 1447
RETURN RECEIPT REQUESTED*

July 13, 2016

Mr. Terry O'Clair,
North Dakota Department of Health
Division of Air Quality
918 East Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947



**LIGNITE GAS PLANT
PERMIT NO. T5-O80001
TITLE V OPERATING PERMIT RENEWAL APPLICATION**

Dear Mr. O'Clair:

ONEOK Rockies Midstream, L.L.C. (ORM) operates the Lignite Gas Plant (Facility) in Burke County, North Dakota. The Facility currently operates under Permit No. T5-O80001, which was issued on April 4, 2012 by the North Dakota Department of Health (NDDH) and will expire on January 14, 2017. In accordance with North Dakota Administrative Code Chapter 33-15-14-06.4.a(1)(c), ORM submits this permit application to renew the Title V operating permit.

Included with this letter are form SFN52824, the current Title V operating permit with requested edits, and updated emission calculations that document the potential to emit for all emission sources at the facility. Please note that no new equipment is being added or proposed with this permit renewal action.

If you need additional information or have any questions, please email me at Kale.Hanner@oneok.com or call me at 918-732-1477.

Sincerely,

Kale Hanner
Environmental Engineer

Enclosure

cc: U.S. EPA Region 8 – Denver, CO – *FEDEX AIRBILL 8075 8657 1458*
K. Rudningen/J. Handeland/L. Reed/K. Reedy/G. Lafitte/C. Fonck/C. Forsander/R. Brown (.pdf)
Tulsa Environmental Files – Lignite Gas Plant – Permit Actions
EIMS

Title V Operating Permit Renewal Application

Lignite Gas Plant

ONEOK Rockies Midstream, L.L.C.

**Submitted to North Dakota Department of Health
July 2016**

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Introduction

ONEOK Rockies Midstream, L.L.C. (ORM) owns and operates the Lignite Gas Plant in Burke County. The facility currently operates pursuant to Permit to Operate T5-O80001, which will expire on January 14, 2017. In accordance with North Dakota Administrative Code (NDAC) Chapter 33-15-14-06.4.a(1)(c), ORM submits this permit application to the North Dakota Department of Health (NDDH) to renew the Title V operating permit.

This permit application package includes form SFN52824, the current Title V operating permit with requested edits, and updated emission calculations that document the potential to emit for all emission sources at the facility. Please note that no new equipment is being added or proposed with this permitting action.

ONEOK Rockies Midstream, L.L.C.
Lignite Gas Plant
July 2016

Application Form

Form SFN52824 – Title V Permit to Operate – Renewal Application



**NORTH DAKOTA DEPARTMENT OF HEALTH
TITLE V PERMIT TO OPERATE - RENEWAL APPLICATION**

Division of Air Quality
SFN52824 (5-11)

In accordance with 33-15-14-04.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 33-15-14-06.4.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	<u>ONEOK Rockies Midstream, L.L.C.</u>		
Facility Name	<u>Lignite Gas Plant</u>		
Name of Person Completing Application	<u>Kale Hanner</u>	Phone	<u>918-732-1477</u>
Title	<u>Environmental Engineer</u>	Email	<u>kale.hanner@oneok.com</u>
Current Operating Permit Number	<u>T5-O80001</u>		
Expiration Date of Current Operating Permit	<u>1 / 14 / 2017</u>		

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) February 14, 2017
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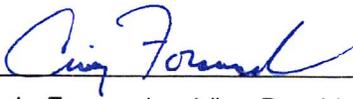
B. Statement of Compliance with Compliance Assurance Monitoring (CAM) and Compliance Certification Requirements

The facility identified in this application is in compliance with applicable monitoring and compliance certification requirements.	
<input checked="" type="checkbox"/>	Yes
<input type="checkbox"/>	No - Describe below which requirements are not being met:
<input type="checkbox"/>	CAM not applicable

C. Certification of Compliance with all Applicable Requirements

This certification must be signed by a "responsible official" as defined in NDAC 33-15-14-06.1. 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 7-14-16
Typed Name Craig Forsander, Vice President – ORM Operations	

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

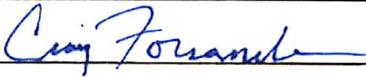
If yes, complete and submit appropriate sections of Title V Permit to Operate application forms.

PART 4. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS

Note: This certification must be signed by a "responsible official" as defined in NDAC 33-15-14-06.1. 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) Craig Forsander

(Signed)  Date 07 / 14 / 2016

Telephone Number 406-433-8749

Send original renewal application to:

ND Department of Health
Division of Air Quality
918 E. Divide, 2nd Floor
Bismarck, ND 58501-1947

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

Appendix A - Title V Permit to Operate T5-O80001 with Requested Edits

AIR POLLUTION CONTROL TITLE V PERMIT TO OPERATE

Permittee: Name: ONEOK Rockies Midstream, L.L.C. Address: 100 W Fifth Street Tulsa, OK 74103-4298	Permit Number: T5-O80001 Source Name: Lignite Gas Plant
Source Location: SW¼, NW¼, Sec. 7, T192N T162N , R91W N46.3405, W96.6433 Burke County, North Dakota	Source Type: Natural Gas Processing
Expiration Date: January 14, 2017	

Pursuant to Chapter 23-25 of the North Dakota Century Code, and the Air Pollution Control Rules of the State of North Dakota, Article 33-15 of the North Dakota Administrative Code (NDAC), and in reliance on statements and representations heretofore made by the permittee designated above, a Title V Permit to Operate is hereby issued authorizing such permittee to operate the emissions unit(s) at the location designated above. This Title V Permit to Operate is subject to all applicable rules and orders now or hereafter in effect of the North Dakota Department of Health and to any conditions specified on the following pages. All conditions are enforceable by EPA and citizens under the Clean Air Act unless otherwise noted.

Renewal No. 3 (Minor Mod.): 4/4/12
 Revision No. 0: _____

 Terry L. O'Clair, P.E.
 Director
 Division of Air Quality

Lignite Natural Gas Processing Plant
Title V Permit to Operate
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1. **Emission Unit(s) Identification:**

The emission units regulated by this permit are as follows:

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
White Superior 8GTL-825 pipeline compressor engine (1,100 bhp) and fired on natural gas (built pre-2007)	WHITE3	WHITE3	None
White Superior 8GTL-825 pipeline compressor engine (1,100 bhp) and fired on natural gas (built pre-2007)	WHITE2	WHITE2	None
Amine gas sweetening unit	ST-1	0	None*
Yuba hot oil heater (26 x 10 ⁶ Btu/hr) and fired on natural gas	RH-900	H1	None
Acid gas/process/emergency flare (100 ft)	Flare	Flare	None
Heater Treater (0.5 x 10⁶ Btu/hr) and fired on natural gas			
Emergency generator engine (350 bhp) fired on distillate oil	G-100	G1	None
TEG dehydration unit still vent	D-1	BFlare	BTEX Flare
BTEX Flare	BTEX Flare	BFlare	None
Fugitive emissions not subject to NSPS KKK or OOOO	FUG1	FUG1	None
Fugitive emissions subject to NSPS KKK	FUG2	FUG2	LDAR and some PRVs** are routed to EU Flare
Fugitive emissions subject to NSPS KKK, but exempt from control	FUG3	FUG3	None
Fugitive emissions subject to NSPS OOOO	FUG5	FUG5	LDAR
Condensate tanks (working, breathing and flashing losses)	CTK	CTK	None
VOC combustor for condensate tanks	COMBUST	COMBUST	None
Condensate truck loading	TL-1	TL-1	None
Methanol Tanks (working and breathing losses)	MTK	MTK	None
Blowdowns	BD	BD	None

*Acid gas from the amine gas sweetening unit (EU ST-1) is directed to the injection well. In the event of maintenance or malfunction, the acid gas will be directed to the ~~main plant acid gas/process/emergency~~ flare (EU Flare).

**Pressure relief valve.

2. **Restrictions:**

A. Fuel Restriction:

All emission units except EU Flare, EU BTEX flare, **EU COMBUST**, and EU G-100 are restricted to combusting only gaseous fuel containing no more than 2.0 grains of sulfur per 100 standard cubic feet. Emission Unit G-100 shall combust only distillate oil with no more than 0.0015% sulfur by weight.

Applicable Requirements: Permit to Construct and NDAC 33-15-14-03.6

B. Flaring Restrictions:

- 1) ~~1)~~ Flaring from EU Flare may not be used to burn waste gas for the purpose of increasing or maintaining well production without prior approval from this Department. EU Flare may combust potential equipment leaks from relief valves in the closed position that are tied into the flare. **EU Flare may combust inlet gas, residue gas that is added to acid gas during acid gas flaring, residue gas when the residue pipeline is shut in, and gas from normal process flaring.** EU Flare may also combust periodic hydrocarbon blowdowns of railcars or trucks. When it is necessary to operate EU Flare in an emergency, malfunction or for maintenance, all precautions shall be taken to minimize emissions and maintain compliance with the applicable ambient air quality standards as outlined in NDAC 33-15-02 and the opacity standard of 20% not to exceed 60% for more than one six-minute period per hour. The stack height for the EU Flare shall be at least 100 feet above ground level.
- 2) **Maintenance of the acid gas injection well is required approximately every two to three years. During such maintenance, the permittee will reduce the flow of high H₂S gas to the plant if necessary to remain within the SO₂ lb/hr emission limit for the flare. To the extent practicable, this maintenance will be planned to occur during planned plant shutdowns, if any, to minimize emissions.**

Applicable Requirement: NDAC 33-15-14-06.5.b(1)

- 3) Processing equipment at the facility (other than the glycol dehydration unit) shall be operated in such a manner as to minimize flaring as much as possible. Operations at the facility must be in accordance with the application for permit revision dated May 6, 2003 and the Permit to Construct, dated November 20, 2008, which specify the following:
 - a) Acid gas injection replaces the sulfur recovery unit.
 - b) Operation of the CEM has ceased.
 - c) Off gases from the TEG dehydration unit are routed to the BTEX flare system for destruction. **Off gases from the TEG dehydration unit still vent are routed to the acid gas/process/emergency flare when the BTEX flare is not operational.**
 - d) A new flare of smokeless design during normal operations for the main plant flare

(EU Flare).

The ~~glycol~~-TEG dehydration unit shall be operated such that regenerator overhead vapors from the still vent are routed to the BTEX Flare **or the acid gas/process/emergency flare** for destruction prior to being emitted to the atmosphere.

Applicable Requirement: NDAC 33-15-14-03.6

- 43)** The flares must each be equipped and operated with an automatic ignitor or a continuous burning pilot which must be maintained in good working order as outlined in NDAC 33-15-07-02.

Applicable Requirement: NDAC 33-15-07-02

3. **Standards:** In addition to Subpart A (General Provisions) of NDAC 33-15-12-02 (40 CFR Part 60), the permittee shall comply with all applicable requirements of the following subparts. NDAC 33-15-12-02, Subpart A (Section 60.18, General Control Device Requirements) is also applicable to the acid gas/process/emergency flare (EU Flare).

- A. NDAC 33-15-12-02, Subpart KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants, to include but not be limited to Section 60.632 Standards, Section 60.633 Exceptions, Section 60.634 Alternative Means of Emission Limitations, Section 60.635 Recordkeeping Requirements, and Section 60.636 Reporting Requirements (applicable to EU FUG2).

Applicable Requirement: NDAC 33-15-12-02, Subpart KKK

- B. 40 CFR 60, Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution (applicable to EU FUG5). For this subpart, EPA Region 8, not the ND Department of Health, is the implementing and enforcement authority. Submit all documentation required by this subpart to EPA Region 8 at the following address:**

**U.S. EPA, Region 8
1595 Wynkoop Street
Mail Code 8ENF – AT
Denver, CO 80202-1129**

Applicable Requirement: 40 CFR 60, Subpart OOOO

- B.C.** NDAC 33-15-22-3, Subpart HH – National Emissions Standards for Hazardous Air Pollutants from oil and Natural Gas Production Facilities (applicable to EU D-1, TEG dehydration unit).

Applicable Requirement: NDAC 33-15-22, Subpart HH

- C.D.** 40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for

Stationary Reciprocating Internal Combustion Engines (applicable to EU G-100, emergency generator engine). For this subpart, EPA Region 8, not the ND Department of Health, is the implementing and enforcement authority for area sources of HAP. Submit all documentation required by this subpart to EPA Region 8 at the following address:

U.S. EPA, Region 8
1595 Wynkoop Street
Mail Code 8ENF – AT
Denver, CO 80202-1129

Applicable Requirement: 40 CFR 63, Subpart ZZZZ

4. **Emission Unit(s) Limits:**

Emission Unit Description	EU	EP	Pollutant/ Parameter	Emission Limit	NDAC Applicable Requirement
White Superior 8GTL-825- engine-	WHITE3	WHITE3	NO_x	4.85 lb/hr	Permit to Construct
			CO	7.27 lb/hr	Permit to Construct
			Opacity	20% (40%*)	33-15-03-02
White Superior 8GTL-825 engine	WHITE2	WHITE2	NO _x	4.85 lb/hr	Permit to Construct
			CO	7.27 lb/hr	Permit to Construct
			Opacity	20% (40%*)	33-15-03-02
			Work Practices	Various	40 CFR Part 63, Subpart ZZZZ
Yuba hot oil heater	RH-900	H1	Opacity	20% (40%*)	33-15-03-01.1
Acid gas/process/emergency flare	Flare	Flare	SO ₂	1,416 lb/hr**	Permit to Construct
			Opacity	20% (60%*)	33-15-03-03.1
Heater treater	HT-100	HT-100	Opacity	20% (40%*)	33-15-03-01.1
Emergency generator engine***	G-100	G1	Opacity	20% (40%*)	33-15-03-01.1
			Hours of Operation/ Work Practices	Various	40 CFR 63, Subpart ZZZZ
TEG dehydration unit still vent (controlled by BTEX Flare)	D-1	BTEX	Benzene	<0.99 tpy	33-15-14-06.5 and 33-15-22-03, Subpart HH
		Flare	Opacity	20% (60%*)	33-15-03-03.1
Fugitive emissions subject to NSPS KKK	FUG2	FUG2	VOC	See Cond. 3.A	Permit to Construct 08036 and 33-15-12-02,

Emission Unit Description	EU	EP	Pollutant/ Parameter	Emission Limit	NDAC Applicable Requirement
					Subparts A and KKK, as applicable
Fugitive emissions subject to NSPS OOOO	FUG5	FUG5	VOC	See Cond. 3.B	40 CFR Part 60, Subpart OOOO
VOC combustor for condensate tanks	COMBUST	COMBUST	VOC	20% (60%*)	33-15-03-03.1

*Permissible for not more than one six-minute period per hour.

**The minimum amount of fuel gas (less than 2 grains of sulfur per 100 cubic feet) to be added when flaring is 0.51 times the acid gas volume.

***The potential-to-emit for the emergency generator engine (EU G-100) is based on operating no more than 500 hours per year. However, G-100 is subject to 40 CFR 63, Subpart ZZZZ requirements and beginning in 2013 must comply with applicable requirements for emergency compression ignition engines which includes a limit on nonemergency operating hours of no more than 100 hours for maintenance and testing. There is no limit on emergency operating hours.

Applicable Requirement: 40 CFR 63, Subpart ZZZZ

5. Monitoring Requirements and Conditions:

A. Requirements

Emission Unit Description	Pollutant/ Parameter	Monitoring Requirement (Method)	Condition Number	NDAC Applicable Requirement
White Superior 8GTL-825 engine (EU WHITE3)	NO_x	Emissions Test	5.B.1	33-15-14-06.5.a.(3)(a)
	CO	Emissions Test	5.B.1	33-15-14-06.5.a.(3)(a)
	Opacity	Recordkeeping	5.B.2	33-15-14-06.5.a.(3)(a)
White Superior 8GTL-825 engine (EU WHITE2)	NO _x	Emissions Test	5.B.1	33-15-14-06.5.a.(3)(a)
	CO	Emissions Test	5.B.1	33-15-14-06.5.a.(3)(a)
	Opacity	Recordkeeping	5.B.2	33-15-14-06.5.a.(3)(a)
Yuba hot oil heater (EU RH-900)	Opacity	Recordkeeping	5.B.2	33-15-14-06.5.a.(3)(a)
Acid gas/process/emergency flare (EU Flare)	SO ₂	Parameter Monitoring	5.B.3	33-15-14-06.5.a.(3)(a)
	Opacity	Visible Emissions Observations, as	5.B.4 & 5.B.9	33-15-14-06.5.a.(3)(a) & 40 CFR 60.18

Emission Unit Description	Pollutant/Parameter	Monitoring Requirement (Method)	Condition Number	NDAC Applicable Requirement
		applicable		
Heater treater (EU HT-100)	Opacity	Recordkeeping	5.B.2	33-15-14-06.5.a.(3)(a)
Emergency generator engine (EU G-100)	Opacity	Recordkeeping	5.B.2	33-15-14-06.5.a.(3)(a)
	Hours of Operation/Work Practices	Recordkeeping	Cond. 4 *** Note & Cond. 3.C	40 CFR 63, Subpart ZZZZ*
TEG dehydration unit still vent (EU D-1) (controlled by BTEX Flare)	Benzene	Recordkeeping	5.B.5, 5.B.6 & 5.B.9	33-15-14-06.5.a(3)(a) & 33-15-22-03, Subpart HH
	Opacity	Visible Emissions Observations, as applicable	5.B.2	33-15-14-06.5.a(3)(a)
Fugitive emissions subject to NSPS KKK (EU FUG2)	VOC	Leak Detection and Repair (LDAR)	5.B.7	33-15-12-02, Subparts A and KKK, as applicable
Fugitive emissions subject to NSPS OOOO (EU FUG5)	VOC	Leak Detection and Repair (LDAR)	5.B.8	40 CFR Part 60, Subpart OOOO
VOC combustor for condensate tanks	Opacity	Visible Emissions Observations, as applicable	5.B.2	33-15-14-06.5.a(3)(a)

* 40 CFR 63, Subpart ZZZZ compliance date is May 3, 2013.

B. Monitoring Conditions

1) Engines (excluding emergency generator):

Once every six months, or when changes are made to an engine that may increase emission rates, whichever is more frequent, to provide a reasonable assurance of compliance, the permittee shall conduct an emissions test to measure NO_x and CO emissions, using at a minimum, a portable analyzer with quality assurance procedures equivalent to Conditional Test Methods 22 and/or 30 as outlined in EPA's Emission Measurement Center or the Department's Standard Operating Procedure, Use of Portable Analyzer for Title V Semi-Annual Testing. A test shall consist of three runs, with each run at least 20 minutes in length.

2) For purposes of compliance monitoring, burning of fuel as outlined in Condition 2.A shall be considered credible evidence of compliance with any applicable opacity standard. However, results from tests conducted in accordance with the test methods in 40 CFR Parts

50, 51, 60, 61, or 75 will take precedence over burning of fuel as outlined in Condition 2, for evidence of compliance or noncompliance with any applicable opacity standard, in the event of enforcement action.

- 3) During each occurrence of acid gas flaring, the permittee shall calculate and record the SO₂ emission rate (lb/hr) based on the H₂S content and amount of gas flared, and record the amount of fuel gas added. Any calculated exceedances of the SO₂ emissions rate for the acid gas flare shall be reported to the Department within 10 working days.
- 4) If the acid gas flaring lasts longer than 24 hours, the permittee shall conduct a formal visible emissions evaluation of the flare to determine if the emissions are in compliance with the applicable opacity standard. Opacity readings shall consist of three consecutive six-minute periods per day of flaring using EPA Reference Method 9 and conducted by a certified visible emissions reader.
- 5) The TEG dehydration unit still vent shall be routed to either ~~a combustion device or recycled to inlet~~ **the BTEX flare or the acid gas/process/emergency flare.**
- 6) Benzene emissions from the TEG dehydration unit still vent and flash vent shall be determined at least annually using average glycol circulation rate, average gas process rate, and GRI-GLYCalc emissions model, Version 3.0 or higher. In accordance with 40 CFR Part 63 for area sources of HAPs, records of benzene emissions shall be kept to demonstrate exemption from MACT control requirements.
- 7) Records shall be maintained of process unit modifications that could initiate NSPS Subpart KKK applicability. Records shall be maintained of LDAR program for FUG2, consistent with applicable requirements of 40 CFR 60 Subpart KKK.
- 8) Records shall be maintained of process unit modifications that could initiate NSPS Subpart OOOO applicability. Records shall be maintained of LDAR program for FUG5, consistent with applicable requirements of 40 CFR 60 Subpart OOOO.**
- 89)** Records of condensate throughput shall be maintained.
- 910)** For the flares, the presence of a flame shall be monitored using a thermocouple or any other equivalent device approved by the Department.

Applicable Requirements: NDAC 33-15-14-06.5.a.(3)(a) and NDAC 33-15-14-06.5.b.(1)

6. Recordkeeping Requirements:

- A. The permittee shall maintain compliance monitoring records as outlined in Table 1 (Monitoring Records), that include the following information.
 - 1) The date, place (as defined in the permit) and time of sampling or measurement.

- 2) The date(s) testing was performed.
- 3) The company, entity, or person that performed the testing.
- 4) The testing techniques or methods used.
- 5) The results of such testing.
- 6) The operating conditions for the engines (i.e., ambient conditions, horsepower calculations, suction/discharge pressures, testing rate compared to rated capacity, timing, air to fuel ratio and rpm that existed at the time of sampling or measurement.

Applicable Requirement: NDAC 33-15-14-06-5.a.(3)(b)[1]

Table 1
 Monitoring Records

Emissions Unit Description	Pollutant/ Parameter	Compliance Monitoring Record
White Superior 8GTL-825 engine- (EU WHITE3)	NO_x	Emissions Test Data
	CO	Emissions Test Data
	Opacity	Type of Fuel Usage
White Superior 8GTL-825 engine (EU WHITE2)	NO _x	Emissions Test Data
	CO	Emissions Test Data
	Opacity	Type of Fuel Usage
	Work Practices	Log Work Practices
Yuba hot oil heater (EU RH-900)	Opacity	Type of Fuel Usage
Acid gas/process/emergency flare (EU Flare)	SO ₂	H ₂ S Content, Amount of Gas Flared. Amount of Fuel Gas Added, SO ₂ (lb/hr)
	Opacity	Visible Emissions Observations Readings
Heater treater (EU HT-100)	Opacity	Type of Fuel Usage
Emergency generator engine (EU G-100)	Opacity	Type of Fuel Usage
	Hours of Operation/ Work Practices	Log Hours of Operation/Work Practices

TEG dehydration unit still vent (EU D-1)	Benzene	Glycol Regenerator Still Vent Controlled by BTEX Flare or Acid Gas/Process/Emergency Flare Annual GLYCalc Calculation
Fugitive emissions (EU's FUG1 and FUG3)	VOC	Log for NSPS Subpart KKK and OOOO Applicability
Fugitive emissions (EU FUG2)	VOC	LDAR Records, as applicable
Fugitive emissions (EU FUG5)	VOC	LDAR Records, as applicable

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

Applicable Requirement: NDAC 33-15-14-06-5.a.(3)(b)[2]

7. Reporting:

- A. The permittee shall submit a semi-annual monitoring report for all monitoring records required under Condition 6, on forms supplied or approved by the Department. All instances of deviations from the permit must be identified in the report. A monitoring report shall be submitted within 45 days after June 30 and December 31 of each year.

The semi-annual monitoring report shall also include the following information regarding each acid gas flaring event:

- 1) Reason for flaring from EU Flare.
- 2) Date and length of time that flaring occurred.
- 3) Amount of gas flared (ft³) and H₂S content.
- 4) Calculated average SO₂ lb/hr.

Applicable Requirements: NDAC 33-15-14-06.5.a(3)(c)[1] and [2]

- B. The permittee shall submit an annual compliance certification report within 45 days after December 31 of each year on forms supplied or approved by the Department.

Applicable Requirement: NDAC 33-15-14-06.5.c(5)

- C. For emission units where the method of compliance monitoring is demonstrated by either an EPA Test Method or a portable analyzer test, the test report shall be submitted to the Department within 60 days after completion of the test.

Applicable Requirement: NDAC 33-15-14-06.5.a(6)(e)

- D. The permittee shall submit an annual emission inventory report on forms supplied or approved by the Department. This report shall be submitted by March 15 of each calendar year. Insignificant units/activities listed in this permit do not need to be included in the report.

Applicable Requirements: NDAC 33-15-14-06.5.a(7) and NDAC 33-15-23-04

8. **Facility Wide Operating Conditions:**

A. **Ambient Air Quality Standards:**

- 1) Particulate and gases. The permittee shall not emit air contaminants in such a manner or amount that would violate the standards of ambient air quality listed in Table 1 of NDAC 33-15-02 at any place beyond the premises on which the source is located.
- 2) Radioactive substances. The permittee shall not release into the ambient air any radioactive substances exceeding the concentrations specified in NDAC 33-10.
- 3) Other air contaminants. The permittee shall not emit any other air contaminants in concentrations that would be injurious to human health or well-being or unreasonably interfere with the enjoyment of property or that would injure plant or animal life.
- 4) Disclaimer. Nothing in any other part or section of this permit may in any manner be construed as authorizing or legalizing the emission of air contaminants in such manner that would violate the standards in Paragraphs 1), 2) and 3) of this condition.

Applicable Requirement: NDAC 33-15-02-04

B. **Fugitive Emissions:** The release of fugitive emissions shall comply with the applicable requirements in NDAC 33-15-17.

Applicable Requirement: NDAC 33-15-17

C. **Open Burning:** The permittee may not cause, conduct, or permit open burning of refuse, trade waste, or other combustible material, except as provided for in section 33-15-04-02 and may not conduct, cause, or permit the conduct of a salvage operation by open burning. Any permissible open burning under NDAC 33-15-04-02 must comply with the requirements of that section.

Applicable Requirement: NDAC 33-15-04

D. **Asbestos Renovation or Demolition:** Any asbestos renovation or demolition at the facility shall comply with emission standard for asbestos in NDAC 33-15-13.

Applicable Requirement: NDAC 33-15-13-02

E. **Requirements for Organic Compounds Gas Disposal:**

- 1) The owner/operator shall incinerate, flare or treat in an equally effective manner any organic compounds, gases and vapors which are generated as wastes as the result of storage, refining, or process operations and which contain hydrogen sulfide before being released to the ambient air.

- 2) Each flare must be equipped and operated with an automatic ignitor or a continuous burning pilot.

Applicable Requirement: NDAC 33-15-07-02

- F. **Rotating Pumps and Compressors:** All rotating pumps and compressors handling volatile organic compounds must be equipped and operated with properly maintained seals designed for their specific product service and operating conditions.

Applicable Requirement: NDAC 33-15-07-01.5

- G. **Shutdowns/Malfunction/Continuous Emission Monitoring System Failure:**

- 1) Maintenance Shutdowns. In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Department at least twenty-four hours prior to the planned shutdown provided that the air contaminating source will be operated while the control equipment is not in service. Such prior notice shall include the following:
 - a) Identification of the specific facility to be taken out of service as well as its location and permit number.
 - b) The expected length of time that the air pollution control equipment will be out of service.
 - c) The nature and estimated quantity of emissions of air pollutants likely to be emitted during the shutdown period.
 - d) Measures, such as the use of off-shift labor and equipment, that will be taken to minimize the length of the shutdown period.
 - e) The reasons that it would be impossible or impractical to shutdown the source operation during the maintenance period.
 - f) Nothing in this subsection shall in any manner be construed as authorizing or legalizing the emission of air contaminants in excess of the rate allowed by this article or a permit issued pursuant to this article.

Applicable Requirement: NDAC 33-15-01-13.1

- 2) Malfunctions.
 - a) When a malfunction in any installation occurs that can be expected to last longer than twenty-four hours and cause the emission of air contaminants in violation of this article or other applicable rules and regulations, the person responsible for such

installation shall notify the Department of such malfunction as soon as possible during normal working hours. The notification must contain a statement giving all pertinent facts, including the estimated duration of the breakdown. The department shall be notified when the condition causing the malfunction has been corrected.

- b) Immediate notification to the department is required for any malfunction that would threaten health or welfare, or pose an imminent danger. During normal working hours the Department can be contacted at 701-328-5188. After hours the department can be contacted through the twenty-four-hour state radio emergency number 1-800-472-2121. If calling from out of state, the twenty-four-hour number is 701-328-9921.
- c) Unavoidable Malfunction. The owner or operator of a source who believes any excess emissions resulted from an unavoidable malfunction shall submit a written report to the Department which includes evidence that:
 - [1] The excess emissions were caused by a sudden, unavoidable breakdown of technology that was beyond the reasonable control of the owner or operator.
 - [2] The excess emissions could not have been avoided by better operation and maintenance, did not stem from an activity or event that could have been foreseen and avoided, or planned for.
 - [3] To the extent practicable, the source maintained and operated the air pollution control equipment and process equipment in a manner consistent with good practice for minimizing emissions, including minimizing any bypass emissions.
 - [4] Any necessary repairs were made as quickly as practicable, using off-shift labor and overtime as needed and possible.
 - [5] All practicable steps were taken to minimize the potential impact of the excess emissions on ambient air quality.
 - [6] The excess emissions are not part of a recurring pattern that may have been caused by inadequate operation or maintenance, or inadequate design of the malfunctioning equipment.

The report shall be submitted within thirty days of the end of the calendar quarter in which the malfunction occurred or within thirty days of a written request by the department, whichever is sooner.

The burden of proof is on the owner or operator of the source to provide sufficient information to demonstrate that an unavoidable equipment

malfunction occurred. The Department may elect not to pursue enforcement action after considering whether excess emissions resulted from an unavoidable equipment malfunction. The Department will evaluate, on a case-by-case basis, the information submitted by the owner or operator to determine whether to pursue enforcement action.

Applicable Requirement: NDAC 33-15-01-13.2

- 3) **Continuous Emission Monitoring System Failures.** When a failure of a continuous emission monitoring system occurs, an alternative method for measuring or estimating emissions must be undertaken as soon as possible. The owner or operator of a source that uses an alternative method shall have the burden of demonstrating that the method is accurate. Timely repair of the emission monitoring system must be made.

Applicable Requirement: NDAC 33-15-01-13.3

H. **Noncompliance Due to an Emergency:** The permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency. To do so, the permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

- 1) An emergency occurred and that the permittee can identify the cause(s) of the emergency;
- 2) The permitted facility was at the time being properly operated;
- 3) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and
- 4) The permittee submitted notice of the emergency to the Department within one working day of the time when emission limitations were exceeded longer than 24-hours due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. Those emergencies not reported within one working day, as well as those that were, will be included in the semi-annual report.
- 5) In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
 - a) Technology-based emission limits are those established on the basis of emission reductions achievable with various control measures or process changes (e.g., a New Source Performance Standard) rather than those established to attain a health based air quality standard.
 - b) An “emergency” means any situation arising from sudden and reasonably unforeseeable events beyond the control of this source, including acts of God,

which requires immediate corrective action to restore normal operation, and that causes this source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

Applicable Requirement: NDAC 33-15-14-06.5.g

- I. **Air Pollution from Internal Combustion Engines:** The permittee shall comply with all applicable requirements of NDAC 33-15-08-01 – Internal Combustion Engine Emissions Restricted.

Applicable Requirement: NDAC 33-15-08-01

- J. **Prohibition of Air Pollution:**

- 1) The permittee shall not permit or cause air pollution, as defined in NDAC 33-15-01-04.
- 2) Nothing in any other part of this permit or any other regulation relating to air pollution shall in any manner be construed as authorizing or legalizing the creation or maintenance of air pollution.

Applicable Requirement: NDAC 33-15-01-15

- K. **Performance Tests:**

- 1) The Department may reasonably require the permittee to make or have made tests, at a reasonable time or interval, to determine the emission of air contaminants from any source, for the purpose of determining whether the permittee is in violation of any standard or to satisfy other requirements of NDCC 23-25. All tests shall be made and the results calculated in accordance with test procedures approved or specified by the Department including the North Dakota Department of Health Emission Testing Guideline. All tests shall be conducted by reputable, qualified personnel. The Department shall be given a copy of the test results in writing and signed by the person responsible for the tests.
- 2) The Department may conduct tests of emissions of air contaminants from any source. Upon request of the Department, the permittee shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

Applicable Requirement: NDAC 33-15-01-12

- 3) Except for sources subject to 40 CFR Part 63, the permittee shall notify the Department by submitting a Proposed Test Plan, or its equivalent, at least 30 calendar days in advance of any tests of emissions of air contaminants required by the Department. The permittee shall notify the Department at least 60 calendar days in advance of any performance testing required under 40 CFR Part 63. If the permittee is unable to conduct the performance test on the scheduled date, the permittee shall notify the Department as soon as practicable when conditions warrant, and shall coordinate a new test date with the Department.

Failure to give the proper notification may prevent the Department from observing the test. If the Department is unable to observe the test because of improper notification, the test results may be rejected.

Applicable Requirements: NDAC 33-15-14-06.5.a(3)(a), NDAC 33-15-12-02 Subpart A (40 CFR 60.8), NDAC 33-15-13-01.2 Subpart A (40 CFR 61.13), NDAC 33-15-22-03 Subpart A (40 CFR 63.7), 40 CFR 60.8, 40 CFR 61.13, 40 CFR 63.7

- L. **Pesticide Use and Disposal:** Any use of a pesticide or disposal of surplus pesticides and empty pesticide containers shall comply with the requirements in NDAC 33-15-10.

Applicable Requirements: NDAC 33-15-10-01 and NDAC 33-15-10-02

- M. **Air Pollution Emergency Episodes:** When an air pollution emergency episode is declared by the Department, the permittee shall comply with the requirements in NDAC 33-15-11.

Applicable Requirements: NDAC 33-15-11-01 through NDAC 33-15-11-04

- N. **Stratospheric Ozone Protection:** The permittee shall comply with any applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for MVACs in Subpart B:

- 1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to Section 82.156.
- 2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to Section 82.158.
- 3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to Section 82.161.
- 4) Persons owning commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to Section 82.156.

Applicable Requirement: 40 CFR Part 82

O. **Chemical Accident Prevention:** The permittee shall comply with all applicable requirements of Chemical Accident Prevention pursuant to 40 CFR Part 68. The permittee shall comply with the requirements of this part no later than the latest of the following dates:

- 1) Three years after the date on which a regulated substance is first listed under this part; or
- 2) The date on which a regulated substance is first present above a threshold quantity in a process.

Applicable Requirement: 40 CFR Part 68

P. **Air Pollution Control Equipment:** The permittee shall maintain and operate air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. The manufacturer's recommended Operations and Maintenance (O&M) procedures, or a site-specific O&M procedure developed from the manufacturer's recommended O&M procedures, shall be followed to assure proper operation and maintenance of the equipment. The permittee shall have the O&M procedures available onsite and provide the Department with a copy when requested.

Applicable Requirement: NDAC 33-15-14-06.5.b(1)

Q. **Prevention of Significant Deterioration of Air Quality (40 CFR 52.21 as incorporated by NDAC Chapter 33-15-15):** If this facility is classified as a major stationary source under the Prevention of Significant Deterioration of Air Quality (PSD) rules, a Permit to Construct must be obtained from the Department for any project which meets the definition of a "major modification" under 40 CFR 52.21(b)(2).

If this facility is classified as a major stationary source under the PSD rules and the permittee elects to use the method specified in 40 CFR 52.21(b)(41)(ii)(a) through (c) for calculating the projected actual emissions of a proposed project, then the permittee shall comply with all applicable requirements of 40 CFR 52.21(r)(6).

Applicable Requirement: NDAC 33-15-15-01.2

9. **General Conditions:**

A. **Annual Fee Payment:** The permittee shall pay an annual fee, for administering and monitoring compliance, which is determined by the actual annual emissions of regulated contaminants from the previous calendar year. The Department will send a notice, identifying the amount of the annual permit fee, to the permittee of each affected installation. The fee is due within sixty days following the date of such notice. Any source that qualifies as a "small business" may petition the Department to reduce or exempt any fee required under this section. Failure to pay the fee in a timely manner or submit a certification for exemption may cause this Department to initiate action to revoke the permit.

Applicable Requirements: NDAC 33-15-14-06.5.a(7) and NDAC 33-15-23-04

- B. **Permit Renewal and Expiration:** This permit shall be effective from the date of its issuance for a fixed period of 5 years. The permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least six months, but no more than eighteen months, prior to the date of permit expiration. The Department shall approve or disapprove the renewal application within sixty days of receipt. Unless the Department requests additional information or otherwise notifies the applicant of incompleteness, the application shall be deemed complete. For timely and complete renewal applications for which the Department has failed to issue or deny the renewal permit before the expiration date of the previous permit, all terms and conditions of the permit, including any permit shield previously granted shall remain in effect until the renewal permit has been issued or denied. The application for renewal shall include the current permit number, description of any permit revisions and off-permit changes that occurred during the permit term, and any applicable requirements that were promulgated and not incorporated into the permit during the permit term.

Applicable Requirements: NDAC 33-15-14-06.4 and NDAC 33-15-14-06.6

- C. **Transfer of Ownership or Operation:** This permit may not be transferred except by procedures allowed in Chapter 33-15-14 and is to be returned to the Department upon the destruction or change of ownership of the source unit(s), or upon expiration, suspension or revocation of this permit. A change in ownership or operational control of a source is treated as an administrative permit amendment if no other change in the permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the Department.

Applicable Requirement: NDAC 33-15-14-06.6.d

- D. **Property Rights:** This permit does not convey any property rights of any sort, or any exclusive privilege.

Applicable Requirement: NDAC 33-15-14-06.5.a(6)(d)

E. **Submissions:**

- 1) Reports, test data, monitoring data, notifications, and requests for renewal shall be submitted to:

North Dakota Department of Health
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947

- 2) Any document submitted shall be certified as being true, accurate, and complete by a responsible official.

Applicable Requirement: NDAC 33-15-14-06.4.d

- F. **Right of Entry:** Any duly authorized officer, employee or agent of the North Dakota Department of Health may enter and inspect any property, premise or place listed on this permit or where records are kept concerning this permit at any reasonable time for the purpose of ascertaining the state of compliance with this permit and the North Dakota Air Pollution Control Rules. The Department may conduct tests and take samples of air contaminants, fuel, processing material, and other materials which affect or may affect emissions of air contaminants from any source. The Department shall have the right to access and copy any records required by the Department's rules and to inspect monitoring equipment located on the premises.

Applicable Requirements: NDAC 33-15-14-06.5.c(2) and NDAC 33-15-01-06

- G. **Compliance:** The permittee must comply with all conditions of this permit. Any noncompliance with a federally-enforceable permit condition constitutes a violation of the Federal Clean Air Act. Any noncompliance with any State enforceable condition of this permit constitutes a violation of NDCC Chapter 23-25 and NDAC 33-15. Violation of any condition of this permit is grounds for enforcement action, for permit termination, revocation and reissuance or modification, or for denial of a permit renewal application. Noncompliance may also be grounds for assessment of penalties under the NDCC 23-25. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Applicable Requirements: NDAC 33-15-14-06.5.a(6)(a) and NDAC 33-15-14-06.5.a(6)(b)

- H. **Duty to Provide Information:** The permittee shall furnish to the Department, within a reasonable time, any information that the Department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of records that the permittee is required to keep by this permit, or for information claimed to be confidential, the permittee may furnish such recourse directly to the Department along with a claim of confidentiality. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. The permittee shall also provide additional information as necessary to address any requirements that become applicable to the source after the date a complete renewal application was submitted but prior to release of a draft permit.

Applicable Requirements: NDAC 33-15-14-06.5.a(6)(e) and NDAC 33-15-14-06.4.b

- I. **Reopening for Cause:** The Department will reopen and revise this permit as necessary to remedy deficiencies in the following circumstances:
- 1) Additional applicable requirements under the Federal Clean Air Act become applicable to the permittee with a remaining permit term of three or more years. Such a reopening shall be completed not later than eighteen months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the expiration date of this permit.

- 2) The Department or the United States Environmental Protection Agency determines that this permit contains a material mistake or inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.

Applicable Requirement: NDAC 33-15-14-06.6.f(1)(c)

- 3) The Department or the United States Environmental Protection Agency determines that the permit must be revised or revoked to assure compliance with the applicable requirements.
- 4) Reopenings shall not be initiated before a notice of intent to reopen is provided to the permittee by the Department at least 30 days in advance of the date that this permit is to be reopened, except that the Department may provide a shorter time period in the case of an emergency. Proceedings to reopen and issue this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening shall be made as expeditiously as practicable.

Applicable Requirement: NDAC 33-15-14-06.6.f

- J. **Permit Changes:** The permit may be modified, revoked, reopened, and reissued or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Applicable Requirement: NDAC 33-15-14-06.5.a(6)(c)

- K. **Off-Permit Changes:** A permit revision is not required for changes that are not addressed or prohibited by this permit, provided the following conditions are met:

- 1) No such change may violate any term or condition of this permit.
- 2) Each change must comply with all applicable requirements.
- 3) Changes under this provision may not include changes or activities subject to any requirement under Title IV or that are modifications under any provision of Title I of the Federal Clean Air Act.
- 4) A Permit to Construct under NDAC 33-15-14-02 has been issued, if required.
- 5) Before the permit change is made, the permittee must provide written notice to both the Department and Air Program (8P-AR), Office of Partnerships & Regulatory Assistance, US EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129, except for changes that qualify as insignificant activities in Section 33-15-14-06. This notice shall describe each change, the date of the change, any change in emissions, pollutants emitted, and any applicable requirement that would apply as a result.
- 6) The permittee shall record all changes that result in emissions of any regulated air pollutant subject to any applicable requirement not otherwise regulated under this permit, and the emissions resulting from those changes. The record shall reside at the permittee's facility.

Applicable Requirement: NDAC 33-15-14-06.6.b(3)

L. **Administrative Permit Amendments:** This permit may be revised through an administrative permit amendment, if the revision to this permit accomplishes one of the following:

- 1) Corrects typographical errors.
- 2) Identifies a change in the name, address or phone number of any person identified in this permit, or provides a similar minor administrative change at the source.
- 3) Requires more frequent monitoring or reporting by the permittee.
- 4) Allows for a change in ownership or operational control of the source where the Department determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittee has been submitted to the Department.
- 5) Incorporates into the Title V permit the requirements from a Permit to Construct when the review was substantially equivalent to Title V requirements for permit issuance, renewal, reopenings, revisions and permit review by the United States Environmental Protection Agency and affected state review, that would be applicable to the change if it were subject to review as a permit modification and compliance requirements substantially equivalent to Title V requirements for permit content were contained in the Permit to Construct.
- 6) Incorporates any other type of change which the Administrator of the United States Environmental Protection Agency has approved as being an administrative permit amendment as part of the Department's approved Title V operating permit program.

Applicable Requirement: NDAC 33-15-14-06.6.d

M. **Minor Permit Modification:** This permit may be revised by a minor permit modification, if the proposed permit modification meets the following requirements:

- 1) Does not violate any applicable requirement.
- 2) Does not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in this permit.
- 3) Does not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis.
- 4) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include a federally enforceable emissions cap assumed to avoid classification as a modification under any provision of Title I of the Federal Clean Air Act;

and alternative emissions limit approved pursuant to regulations promulgated under Section 112(i)(5) of the Federal Clean Air Act.

- 5) Are not modifications under NDAC 33-15-12, 33-15-13, and 33-15-15 or any provision of Title I of the Federal Clean Air Act.
- 6) Are not required to be processed as a significant modification.

Applicable Requirement: NDAC 33-15-14-06.6.e(1)

N. Significant Modifications:

- 1) Significant modification procedures shall be used for applications requesting permit modifications that do not qualify as minor permit modifications or as administrative amendments. Every significant change in existing monitoring permit terms or conditions and every relaxation of reporting or recordkeeping permit terms or conditions shall be considered significant. Nothing therein shall be construed to preclude the permittee from making changes consistent with this subsection that would render existing permit compliance terms and conditions irrelevant.
- 2) Significant permit modifications shall meet all Title V requirements, including those for applications, public participation, review by affected states, and review by the United States Environmental Protection Agency, as they apply to permit issuance and permit renewal. The Department shall complete review of significant permit modifications within nine months after receipt of a complete application.

Applicable Requirement: NDAC 33-15-14-06.6.e(3)

- O. Operational Flexibility:** The permittee is allowed to make a limited class of changes within the permitted facility that contravene the specific terms of this permit without applying for a permit revision, provided the changes do not exceed the emissions allowable under this permit, are not Title I modifications and a Permit to Construct is not required. This class of changes does not include changes that would violate applicable requirements; or changes to federally-enforceable permit terms or conditions that are monitoring, recordkeeping, reporting, or compliance certification requirements.

The permittee is required to send a notice to both the Department and Air Program (8P-AR), Office of Partnerships & Regulatory Assistance, US EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129, at least seven days in advance of any change made under this provision. The notice must describe the change, when it will occur and any change in emissions, and identify any permit terms or conditions made inapplicable as a result of the change. The permittee shall attach each notice to its copy of this permit. Any permit shield provided in this permit does not apply to changes made under this provision.

Applicable Requirement: NDAC 33-15-14-06.6.b(2)

- P. Relationship to Other Requirements:** Nothing in this permit shall alter or affect the following:

- 1) The provisions of Section 303 of the Federal Clean Air Act (emergency orders), including the authority of the administrator of the United States Environmental Protection Agency under that section.
- 2) The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance.
- 3) The ability of the United States Environmental Protection Agency to obtain information from a source pursuant to Section 114 of the Federal Clean Air Act.
- 4) Nothing in this permit shall relieve the permittee of the requirement to obtain a Permit to Construct.

Applicable Requirements: NDAC 33-15-14-06.3 and NDAC 33-15-14-06.5.f(3)(a), (b) and (d)

- Q. **Severability Clause:** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

Applicable Requirement: NDAC 33-15-14-06.5.a(5)

- R. **Circumvention:** The permittee shall not cause or permit the installation or use of any device of any means which conceals or dilutes an emission of air contaminants which would otherwise violate this permit.

Applicable Requirement: NDAC 33-15-01-08

10. **State Enforceable Only Conditions (not Federally enforceable):**

- A. **General Odor Restriction:** The permittee shall not discharge into the ambient air any objectionable odorous air contaminant which exceeds the limits established in NDAC 33-15-16.

Applicable Requirement: NDAC 33-15-16

- B. **Hydrogen Sulfide Restriction:** The permit shall not discharge into the ambient air hydrogen sulfide (H₂S) in concentrations that would be objectionable on land owned or leased by the complainant or in areas normally accessed by the general public. For the purpose of complaint resolution under this section, two samples with concentrations greater than 0.05 parts per million (50 parts per billion) sampled at least 15 minutes apart within a two-hour period constitutes a violation. An ambient air analyzer designed for monitoring hydrogen sulfide (H₂S) is the method used for determining the concentrations of emissions at the point of measurement, or other instrumental methods as approved by the Department.

Applicable Requirements: NDAC 33-15-16-02.1 and NDAC 33-15-16-04

Appendix B – Emissions Calculations

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Facility Emissions Summary - Annual**

Unit ID	Description	NOx	CO	VOC	SO ₂	PM	H ₂ S	HCHO	HAP	CO _{2e}
		TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
WHITE2	1,100-hp White-Superior 8GTL-825 Engine	21.24	31.87	10.62	0.02	0.72	--	0.77	1.21	4,372.38
G-100	350-hp Roline Emergency Generator	2.98	0.64	0.02	0.20	0.21	--	<0.01	<0.01	110.55
D-1	20-mmscfd Glycol Dehydration Unit	--	--	See note ¹	--	--	See note ¹	--	See note ¹	See note ¹
HT100	0.50-mmBtu/hr Heater Treater	0.21	0.18	0.01	<0.01	0.02	--	<0.01	<0.01	256.44
RH900	26.00-mmBtu/hr Hot Oil Heater	11.10	9.32	0.61	0.07	0.84	--	0.01	0.21	13,335.11
BFlare	BTEX Flare	0.19	0.72	1.76	<0.01	<0.01	0.00	<0.01	0.52	317.84
CTK-1.3	400-bbl Condensate Tank	--	--	1.71	--	--	--	--	0.12	0.00
CTK-2.4	400-bbl Condensate Tank	--	--	0.11	--	--	--	--	0.04	0.00
CTK-3	400-bbl Condensate/Produced Water Tank	--	--	0.07	--	--	--	--	<0.01	0.00
CTK-4	400-bbl Condensate/Produced Water Tank	--	--	0.07	--	--	--	--	<0.01	0.00
COMBUST	Combustor for Tank Emissions	0.13	0.58	1.91	0.00	--	--	--	0.28	218.86
TL-1	Condensate Truck Loading	--	--	7.17	--	--	--	--	0.38	0.00
FLARE	Acid Gas/Process/Emergency Flare	3.55	15.80	27.50	147.48	0.01	1.60	<0.01	0.42	6,603.62
TK-M1	200-bbl Methanol Tank	--	--	0.17	--	--	--	--	0.17	--
TK-M2	12-bbl Methanol Tank	--	--	0.01	--	--	--	--	0.01	--
FUG-1	Fugitive Emissions not Subject to NSPS KKK or OOOO	--	--	31.73	--	--	0.67	--	8.31	268.91
FUG-2	Fugitive Emissions Subject to NSPS KKK	--	--	1.51	--	--	0.08	--	0.16	32.91
FUG-3	Fugitive Emissions Exempt from NSPS KKK and OOOO	--	--	0.67	--	--	0.00	--	0.00	113.83
FUG-5	Fugitive Emissions Subject to NSPS OOOO	--	--	1.33	--	--	0.07	--	0.16	27.74
BD	Blowdowns	--	--	14.90	--	--	1.08	--	0.75	401.00
Total =		39.40	59.10	101.87	147.77	1.81	3.50	0.77	12.76	26,059.20

Note:

1) Emissions from the dehydration unit are routed to the BTEX flare. Unburned emissions reported at the BTEX flare.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Facility Emissions Summary - Hourly**

Unit ID	Description	NOx	CO	VOC	SO ₂	PM	H ₂ S	HCHO	HAP	CO _{2e}
		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
WHITE2	1,100-hp White-Superior 8GTL-825 Engine	4.85	7.28	2.43	0.01	0.17	--	0.17	0.28	998.26
G-100	350-hp Roline Emergency Generator	11.92	2.57	0.09	0.78	0.84	--	<0.01	0.02	442.20
D-1	20-mmscf Glycol Dehydration Unit	--	--	See note ¹	--	--	See note ¹	--	See note ¹	See note ¹
HT100	0.50-mmBtu/hr Heater Treater	0.05	0.04	<0.01	<0.01	<0.01	--	<0.01	<0.01	58.55
RH900	26.00-mmBtu/hr Hot Oil Heater	2.53	2.13	0.14	0.02	0.19	--	<0.01	0.05	3,044.55
BFlare	BTEX Flare ³	0.04	0.16	0.40	<0.01	<0.01	0.00	<0.01	0.12	72.57
CTK-1.3	400-bbl Condensate Tank	--	--	0.39	--	--	--	--	0.03	0.00
CTK-2.4	400-bbl Condensate Tank	--	--	0.03	--	--	--	--	0.01	0.00
CTK-3	400-bbl Condensate/Produced Water Tank	--	--	0.02	--	--	--	--	<0.01	0.00
CTK-4	400-bbl Condensate/Produced Water Tank	--	--	0.02	--	--	--	--	<0.01	0.00
COMBUST	Combustor for Tank Emissions ³	0.03	0.13	0.44	0.00	--	--	--	0.06	49.97
TL-1	Condensate Truck Loading	--	--	1.64	--	--	--	--	0.09	0.00
FLARE	Acid Gas/Process/Emergency Flare ³	6.92	31.43	55.00	See note ²	<0.01	0.37	<0.01	0.83	12,980.06
TK-M1	200-bbl Methanol Tank	--	--	0.04	--	--	--	--	0.04	--
TK-M2	12-bbl Methanol Tank	--	--	<0.01	--	--	--	--	<0.01	--
FUG-1	Fugitive Emissions not Subject to NSPS KKK or OOOO	--	--	7.24	--	--	0.15	--	1.90	61.40
FUG-2	Fugitive Emissions Subject to NSPS KKK	--	--	0.34	--	--	0.02	--	0.04	7.51
FUG-3	Fugitive Emissions Exempt from NSPS KKK and OOOO	--	--	0.15	--	--	0.00	--	0.00	25.99
FUG-5	Fugitive Emissions Subject to NSPS OOOO	--	--	0.30	--	--	0.02	--	0.04	6.33
BD	Blowdowns	--	--	--	--	--	--	--	--	--
Total =		26.34	43.74	68.66	0.80	1.20	0.55	0.18	3.49	17,747.38

Notes:

- 1) Emissions from the dehydration unit are routed to the BTEX flare. Unburned emissions reported at the BTEX flare.
- 2) ORM requests to retain the current hourly limitation on SO₂ of 1,416 lb/hr.
- 3) Hourly representations for the flares and combustor are not representative of actual hourly operation, but have been included for totals to reflect an annual hourly average.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Facility Analyses**

Component	Molecular Weight	Stream 1				Stream 2				Stream 3			
		Inlet Gas				Condensate				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	2.0000%	0.68	2.62%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
Carbon Dioxide	44.010	1.1490%	0.51	1.94%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
Nitrogen	28.013	2.5440%	0.71	2.74%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
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	63.0980%	10.12	38.93%	42.00%	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%	0.00%
Ethane	30.069	15.1660%	4.56	17.54%	18.92%	0.0004%	0.00	0.00%	0.00%	0.0159%	0.00	0.01%	0.01%
Propane	44.096	8.7380%	3.85	14.82%	15.99%	1.4300%	0.63	0.75%	0.75%	16.6000%	7.32	11.41%	11.41%
i-Butane	58.122	1.0470%	0.61	2.34%	2.52%	1.6400%	0.95	1.14%	1.14%	7.7600%	4.51	7.03%	7.03%
n-Butane	58.122	3.2900%	1.91	7.35%	7.93%	9.7600%	5.67	6.76%	6.76%	32.1000%	18.66	29.08%	29.08%
i-Pentane	72.149	0.9140%	0.66	2.54%	2.74%	8.8100%	6.36	7.57%	7.57%	12.4000%	8.95	13.95%	13.95%
n-Pentane	72.149	1.0790%	0.78	2.99%	3.23%	16.6000%	11.98	14.27%	14.27%	17.8000%	12.84	20.02%	20.02%
n-Hexane	86.175	0.3320%	0.29	1.10%	1.19%	30.0000%	25.85	30.80%	30.80%	10.2000%	8.79	13.70%	13.70%
Other Hexanes	86.175	0.6220%	0.54	2.06%	2.22%	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%	0.00%
Heptanes	100.202	0.5150%	0.52	1.98%	2.14%	17.5000%	17.54	20.89%	20.89%	2.0800%	2.08	3.25%	3.25%
Benzene	78.114	0.0490%	0.04	0.15%	0.16%	1.4900%	1.16	1.39%	1.39%	0.5110%	0.40	0.62%	0.62%
Toluene	92.141	0.0780%	0.07	0.28%	0.30%	2.3500%	2.17	2.58%	2.58%	0.2360%	0.22	0.34%	0.34%
Ethylbenzene	106.167	0.0120%	0.01	0.05%	0.05%	0.2890%	0.31	0.37%	0.37%	0.0104%	0.01	0.02%	0.02%
Xylenes	106.167	0.0360%	0.04	0.15%	0.16%	0.6250%	0.66	0.79%	0.79%	0.0188%	0.02	0.03%	0.03%
Octanes	114.229	0.0710%	0.08	0.31%	0.34%	6.6200%	7.56	9.01%	9.01%	0.2740%	0.31	0.49%	0.49%
2,2,4-Trimethylpentane	114.231	0.0240%	0.03	0.11%	0.11%	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%	2.0100%	2.58	3.07%	3.07%	0.0293%	0.04	0.06%	0.06%
Decanes	142.282	0.0000%	0.00	0.00%	0.00%	0.3670%	0.52	0.62%	0.62%	0.0004%	0.00	0.00%	0.00%
Totals =		100.7640%	26.00	100.00%	100.00%	99.4914%	83.94	100.00%	100.00%	100.0358%	64.15	100.00%	100.00%
		Total HC =	24.10	Total VOC =	39.08%	Total HC =	83.94	Total VOC =	100.00%	Total HC =	64.15	Total VOC =	99.99%
				Total HAP =	1.97%			Total HAP =	35.92%			Total HAP =	14.71%

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Facility Analyses (Continued)**

Component	Molecular Weight	Stream 4				Stream 5		
		Residue Gas				Acid Gas		
		Mole %	Equiv. Wt. Basis	Weight %	HC Weight %	Mole %	Equiv. Wt. Basis	Weight %
Hydrogen Sulfide	34.081	0.0000%	0.00	0.00%	-	59.0000%	20.11	52.70%
Carbon Dioxide	44.010	2.0000%	0.88	4.89%	-	41.0000%	18.04	47.30%
Nitrogen	28.013	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%
Helium	4.003	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%
Methane	16.043	93.0000%	14.92	82.87%	87.12%	0.0000%	0.00	0.00%
Ethane	30.069	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Propane	44.096	5.0000%	2.20	12.25%	12.88%	0.0000%	0.00	0.00%
i-Butane	58.122	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
n-Butane	58.122	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
i-Pentane	72.149	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
n-Pentane	72.149	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
n-Hexane	86.175	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Other Hexanes	86.175	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Heptanes	100.202	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Benzene	78.114	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Toluene	92.141	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Ethylbenzene	106.167	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Xylenes	106.167	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Octanes	114.229	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
2,2,4-Trimethylpentane	114.231	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Nonanes	128.255	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Decanes	142.282	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%
Totals =		100.0000%	18.00	100.00%	100.00%	100.0000%	38.15	100.00%
		Total HC =	17.12	Total VOC =	12.88%	Total HC =	0.00	
				Total HAP =	0.00%			

Notes:

1) Inlet gas analysis attached. Condensate and flash gas compositions calculated with ProMax process simulation. Residue gas assumed to have a maximum of 5% VOC for a conservative estimate of emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Engine Information and Manufacturer Emission Factors**

Equipment Information	
	WHITE2
Make	White-Superior
Model	8GTL-825
Design Rating (hp)	1,100
Fuel Consumption (Btu/hp-hr)	7,750
Fuel Consumption (scfh)	8,309
Fuel Consumption (mmBtu/hr)	8.53
Fuel Consumption (scf/yr)	72,786,550
Fuel Heating Value (Btu/scf)	1,026
Design Class	4S-RB
Controls	None
Operating Hours	8,760
Stack Diameter (ft)	1.0
Exhaust Temperature (°F)	990
Exhaust Flow (acfm)	6,279
Exhaust Flow (scfh)	137,185
Exit Velocity (ft/s)	133.24

Uncontrolled Emission Factors	
	WHITE2
NOx (g/hp-hr)	2.00
CO (g/hp-hr)	3.00
VOC (g/hp-hr)	1.00

Notes:

- 1) Emission Factor Source: Permit Factors

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Engine AP-42/EPA Emission Factors**

Emission Factors	
	4S-RB
SO₂ (lb/mmBtu)	5.88E-04
PM_{10/2.5} (lb/mmBtu)	9.50E-03
PM_{COND} (lb/mmBtu)	9.91E-03
PM_{TOT} (lb/mmBtu)	1.94E-02
Acetaldehyde (lb/mmBtu)	2.79E-03
Acrolein (lb/mmBtu)	2.63E-03
Benzene (lb/mmBtu)	1.58E-03
Ethylbenzene (lb/mmBtu)	2.48E-05
Formaldehyde (lb/mmBtu)	2.05E-02
Methanol (lb/mmBtu)	3.06E-03
Toluene (lb/mmBtu)	5.58E-04
Xylenes (lb/mmBtu)	1.95E-04
Other HAP (lb/mmBtu)	1.08E-03
Carbon Dioxide (CO₂) (kg/mmBtu)	5.31E+01
Methane (CH₄) (kg/mmBtu)	1.00E-03
Nitrous Oxide (N₂O) (kg/mmBtu)	1.00E-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, LLC
Lignite Gas Plant
Engine Emissions Calculations**

Unit ID: **WHITE2**

Pollutant	Emission Factor			Capacity			Conversion		Hourly Emissions	Operating Hours			Conversion		Annual Emissions
NOx	2.00E+00	g/hp-hr	X	1,100	hp	X	0.00220462	lb/gr	= 4.85 lb/hr	X	8,760	X	0.0005	ton/lb	= 21.24 TPY
CO	3.00E+00	g/hp-hr	X	1,100	hp	X	0.00220462	lb/gr	= 7.28 lb/hr	X	8,760	X	0.0005	ton/lb	= 31.87 TPY
VOC	1.00E+00	g/hp-hr	X	1,100	hp	X	0.00220462	lb/gr	= 2.43 lb/hr	X	8,760	X	0.0005	ton/lb	= 10.62 TPY
SO₂	5.88E-04	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.02 TPY
PM_{10/2.5}	9.50E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.08 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.35 TPY
PM_{COND}	9.91E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.08 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.37 TPY
PM_{TOT}	1.94E-02	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.17 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.72 TPY
Acetaldehyde	2.79E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.02 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.10 TPY
Acrolein	2.63E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.02 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.10 TPY
Benzene	1.58E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.06 TPY
Ethylbenzene	2.48E-05	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= <0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= <0.01 TPY
Formaldehyde	2.05E-02	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.17 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.77 TPY
Methanol	3.06E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.03 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.11 TPY
Toluene	5.58E-04	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= <0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.02 TPY
Xylenes	1.95E-04	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= <0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.01 TPY
Other HAP	1.08E-03	lb/mmBtu	X	8.53	mmBtu/hr	X	-	-	= 0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.04 TPY
CO₂	5.31E+01	kg/mmBtu	X	8.53	mmBtu/hr	X	2.20462	lb/kg	= 997.23 lb/hr	X	8,760	X	0.0005	ton/lb	= 4,367.87 TPY
CH₄	1.00E-03	kg/mmBtu	X	8.53	mmBtu/hr	X	2.20462	lb/kg	= 0.02 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.08 TPY
N₂O	1.00E-04	kg/mmBtu	X	8.53	mmBtu/hr	X	2.20462	lb/kg	= <0.01 lb/hr	X	8,760	X	0.0005	ton/lb	= 0.01 TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Generator Information**

Equipment Information	
	G-100
Make	Roline
Model	Unknown
Design Rating (hp)	350
Fuel Consumption (Btu/hp-hr)	7,722
Est. Fuel Consumption (gal/hr)	21
Fuel Consumption (mmBtu/hr)	2.70
Fuel Heating Value (Btu/gal)	128,700
Design Class	Diesel
Controls	None
Operating Hours	500

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Generator AP-42/EPA Emission Factors**

Emission Factors	
	Diesel
NO_x (lb/mmBtu)	4.41E+00
CO (lb/mmBtu)	9.50E-01
VOC (lb/mmBtu)	3.50E-02
SO₂ (lb/mmBtu)	2.90E-01
PM_{10/2.5} (lb/mmBtu)	3.10E-01
PM_{COND} (lb/mmBtu)	3.10E-01
PM_{TOT} (lb/mmBtu)	3.10E-01
Acetaldehyde (lb/mmBtu)	7.67E-04
Acrolein (lb/mmBtu)	9.25E-05
Benzene (lb/mmBtu)	9.33E-04
Formaldehyde (lb/mmBtu)	1.18E-03
Toluene (lb/mmBtu)	4.09E-04
Xylenes (lb/mmBtu)	2.85E-04
Other HAP (lb/mmBtu)	2.79E-03
Carbon Dioxide (CO₂) (kg/mmBtu)	7.40E+01
Methane (CH₄) (kg/mmBtu)	3.00E-03
Nitrous Oxide (N₂O) (kg/mmBtu)	6.00E-04

Notes:

1) Criteria pollutant and hazardous air pollutant emission factors from AP-42 Tables 3.3-1 and 3.3-2 (10/96).
Greenhouse gas emission factors are from 40 CFR Tables C-1 and C-2.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Generator Emissions Calculations**

Unit ID: **G-100**

Pollutant	Emission Factor			Capacity			Conversion		Hourly Emissions		Operating Hours			Conversion		Annual Emissions			
NOx	4.41E+00	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	11.92	lb/hr	X	500	X	0.0005	ton/lb	=	2.98	TPY
CO	9.50E-01	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	2.57	lb/hr	X	500	X	0.0005	ton/lb	=	0.64	TPY
VOC	3.50E-02	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.09	lb/hr	X	500	X	0.0005	ton/lb	=	0.02	TPY
SO₂	2.90E-01	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.78	lb/hr	X	500	X	0.0005	ton/lb	=	0.20	TPY
PM_{10/2.5}	3.10E-01	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.84	lb/hr	X	500	X	0.0005	ton/lb	=	0.21	TPY
PM_{COND}	3.10E-01	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.84	lb/hr	X	500	X	0.0005	ton/lb	=	0.21	TPY
PM_{TOT}	3.10E-01	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.84	lb/hr	X	500	X	0.0005	ton/lb	=	0.21	TPY
Acetaldehyde	7.67E-04	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Acrolein	9.25E-05	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Benzene	9.33E-04	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Formaldehyde	1.18E-03	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.00	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Toluene	4.09E-04	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Xylenes	2.85E-04	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
Other HAP	2.79E-03	lb/mmBtu	X	2.70	mmBtu/hr	X	-	-	=	0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
CO₂	7.40E+01	kg/mmBtu	X	2.70	mmBtu/hr	X	2.20462	lb/kg	=	440.69	lb/hr	X	500	X	0.0005	ton/lb	=	110.17	TPY
CH₄	3.00E-03	kg/mmBtu	X	2.70	mmBtu/hr	X	2.20462	lb/kg	=	0.02	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY
N₂O	6.00E-04	kg/mmBtu	X	2.70	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X	500	X	0.0005	ton/lb	=	<0.01	TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Dehydration Unit Information and Operating Parameters**

Equipment Information	
	D-1
Maximum Throughput (MMSCFD)	20.00
Wet Gas Temperature (°F)	81
Wet Gas Pressure (psig)	731
Pump Type (Electric/Gas)	Electric
Glycol Flow Rate (gpm)	2.00
Regenerator Still Vent Controls	Condenser/Flare
Condenser Temperature (°F)	120
Condenser Pressure (psig)	14.7
Combustion Device Efficiency (%)	98%
Operating Hours	8,760

Notes:

1) Regenerator still vent emissions are controlled by a condenser and BTEX flare.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Dehydration Unit Emissions**

Unit ID: D-1

Proposed Emissions - For Reference Only¹

Pollutant	GLYCalc Results Still Vent Hourly Emissions		GLYCalc Results Still Vent Annual Emissions		GLYCalc Results Flash Tank Hourly Emissions		GLYCalc Results Flash Tank Annual Emissions		Proposed Hourly Emissions			Proposed Annual Emissions		
Total VOC	0.4325	lb/hr	1.8944	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.43	lb/hr	1.89	TPY
H₂S	0.1574	lb/hr	0.6892	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.16	lb/hr	0.69	TPY
2,2,4-Trimethylpentane	0.0005	lb/hr	0.0023	TPY	+	0.0000	lb/hr	0.0000	TPY	=	<0.01	lb/hr	<0.01	TPY
n-Hexane	0.0119	lb/hr	0.0521	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.01	lb/hr	0.05	TPY
Benzene	0.0519	lb/hr	0.2272	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.05	lb/hr	0.23	TPY
Toluene	0.0638	lb/hr	0.2796	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.06	lb/hr	0.28	TPY
Ethylbenzene	0.0059	lb/hr	0.0258	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.01	lb/hr	0.03	TPY
Xylene	0.0209	lb/hr	0.0917	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.02	lb/hr	0.09	TPY
Total HAP	0.1549	lb/hr	0.6787	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.15	lb/hr	0.68	TPY
CO₂²	0.0024	lb/hr	0.0105	TPY	+	0.0000	lb/hr	0.0000	TPY	=	<0.01	lb/hr	0.01	TPY
CH₄	0.0480	lb/hr	0.2101	TPY	+	0.0000	lb/hr	0.0000	TPY	=	0.05	lb/hr	0.21	TPY

Notes:

1) GLYCalc reports attached. Emissions shown here for reference only. Unburned emissions reported at the BTEX flare.

2) CO₂ emissions calculated using mass balance and inlet gas analysis as follows:

tons CH₄ * ton mole CH₄/16 ton CH₄ * ton mole gas/ton mole CH₄ * ton mole CO₂/ton mole gas * 44 ton CO₂/ton mole CO₂ = ton CO₂/yr

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
BTEX Flare Information and Emission Factors**

Equipment Information	
	BFlare
Description	BTEX Flare
VOC to Flare (lb/hr)	20.03
Stream Heat Content (Btu/scf)	1,878
Stream Net Btu Value (Btu/hr)	504,159
Operating Hours	8,760
Control Efficiency	98%
Pilot Stream Heat Content (Btu/scf)	1,026
Pilot Gas Flow Rate (scfh)	88
Pilot Gas Capacity (mmBtu/hr)	0.090
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 ₂ O) (kg/mmBtu)	0.0001/Mass Balance	Nitrous Oxide (N ₂ O) (kg/mmBtu)	1.00E-04

Notes:

1) NOx and CO emission factors (lb/mmBtu), flare stream: AP-42, Table 13.5-1 (4/2015). 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, LLC
Lignite Gas Plant
BTEX Flare Emissions Calculations**

Unit ID: BFlare

Total: Stream + Pilot

Pollutant	Hourly Emissions	Annual Emissions
NOx	0.04 lb/hr	0.19 TPY
CO	0.16 lb/hr	0.72 TPY
VOC	0.40 lb/hr	1.76 TPY
SO ₂	<0.01 lb/hr	<0.01 TPY
PM _{10/2.5}	<0.01 lb/hr	<0.01 TPY
PM _{COND}	<0.01 lb/hr	<0.01 TPY
PM _{TOT}	<0.01 lb/hr	<0.01 TPY
Formaldehyde	<0.01 lb/hr	<0.01 TPY
n-Hexane	0.01 lb/hr	0.05 TPY
Benzene	0.04 lb/hr	0.19 TPY
Toluene	0.05 lb/hr	0.21 TPY
Ethylbenzene	<0.01 lb/hr	0.02 TPY
Xylenes	0.01 lb/hr	0.06 TPY
Other HAP	<0.01 lb/hr	<0.01 TPY
CO ₂	71.19 lb/hr	311.81 TPY
CH ₄	0.05 lb/hr	0.23 TPY
N ₂ O	<0.01 lb/hr	<0.01 TPY

Stream Emissions

Pollutant	Emission Factor	Capacity	Conversion	Hourly Emissions	Operating Hours	Conversion	Annual Emissions
NOx	6.80E-02 lb/mmBtu	X 5.04E-01 mmBtu/hr	X - -	= 0.03 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.15 TPY
CO	3.10E-01 lb/mmBtu	X 5.04E-01 mmBtu/hr	X - -	= 0.16 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.68 TPY
VOC	- -	- -	- -	= 0.40 lb/hr	X 8,760 X	0.0005 ton/lb	= 1.75 TPY
SO ₂	- -	- -	- -	= 0.00 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.00 TPY
n-Hexane	- -	- -	- -	= 0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.04 TPY
Benzene	- -	- -	- -	= 0.04 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.19 TPY
Toluene	- -	- -	- -	= 0.05 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.21 TPY
Ethylbenzene	- -	- -	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.02 TPY
Xylenes	- -	- -	- -	= 0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.06 TPY
Other HAP	- -	- -	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
CO ₂	5.31E+01 kg/mmBtu	X 5.04E-01 mmBtu/hr	X 2.20462 lb/kg	= 58.98 lb/hr	X 8,760 X	0.0005 ton/lb	= 258.31 TPY
CO ₂	- -	- -	- -	= 1.65 lb/hr	X 8,760 X	0.0005 ton/lb	= 7.24 TPY
CH ₄	1.00E-03 kg/mmBtu	X 5.04E-01 mmBtu/hr	X 2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
CH ₄	- -	- -	- -	= 0.05 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.23 TPY
N ₂ O	1.00E-04 kg/mmBtu	X 5.04E-01 mmBtu/hr	X 2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
BTEX Flare Emissions Calculations (Continued)**

Pilot Emissions

Pollutant	Emission Factor	Capacity	Conversion	Hourly Emissions	Operating Hours	Conversion	Annual Emissions
NOx	1.00E+02 lb/mmscf	X 8.80E-05 mmscf/hr	X - -	= 0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.04 TPY
CO	8.40E+01 lb/mmscf	X 8.80E-05 mmscf/hr	X - -	= 0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.03 TPY
VOC	5.50E+00 lb/mmscf	X 8.80E-05 mmscf/hr	X - -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
SO ₂	6.00E-01 lb/mmscf	X 8.80E-05 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 8.80E-05 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 8.80E-05 mmscf/hr	X - -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
PM _{TOT}	7.60E+00 lb/mmscf	X 8.80E-05 mmscf/hr	X - -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
Formaldehyde	7.50E-02 lb/mmscf	X 8.80E-05 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 8.80E-05 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 8.80E-05 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 8.80E-05 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 8.80E-05 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 9.03E-02 mmBtu/hr	X 2.20462 lb/kg	= 10.56 lb/hr	X 8,760 X	0.0005 ton/lb	= 46.26 TPY
CH ₄	1.00E-03 kg/mmBtu	X 9.03E-02 mmBtu/hr	X 2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
N ₂ O	1.00E-04 kg/mmBtu	X 9.03E-02 mmBtu/hr	X 2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
BTEX Flare Emissions Calculations - Flare Stream Analysis**

Unit ID: **BFlare**

Component	Molecular Weight	Stream 1		Total Streams Burned in Flare					Net Heating Value	Net Btu Rate	
		D-1 Still Vent Emissions		Uncontrolled		scfd	Controlled				
		2.68E+02	scfh	lb/hr	TPY		lb/hr	TPY	Btu/scf	Btu/hr	
		Mole %	lb/hr	lb/hr	TPY	lb/hr	TPY	Btu/scf	Btu/hr		
Water	18.0153	11.600%	1.48	1.48	6.48	747	1.48	6.48	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	5.310%	1.65	1.65	7.24	342	1.65	7.24	0.00	0	
Nitrogen	28.013	1.090%	0.22	0.22	0.95	70	0.22	0.95	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	23.000%	2.61	2.61	11.43	1,482	0.05	0.23	909.40	56,139	
Ethane	30.069	15.200%	3.23	3.23	14.16	979	0.06	0.28	1,618.70	66,038	
Propane	44.096	15.000%	4.68	4.68	20.49	966	0.09	0.41	2,314.90	93,198	
i-Butane	58.122	1.970%	0.81	0.81	3.55	127	0.02	0.07	3,000.40	15,865	
n-Butane	58.122	7.940%	3.26	3.26	14.30	511	0.07	0.29	3,010.80	64,163	
i-Pentane	72.149	2.800%	1.43	1.43	6.26	180	0.03	0.13	3,699.00	27,799	
n-Pentane	72.149	2.440%	1.25	1.25	5.45	157	0.02	0.11	3,706.90	24,276	
n-Hexane	86.175	0.841%	0.51	0.51	2.25	54	0.01	0.04	4,403.80	9,940	
Other Hexanes	86.175	2.510%	1.53	1.53	6.70	162	0.03	0.13	4,403.80	29,668	
Heptanes	100.202	1.539%	1.09	1.09	4.78	99	0.02	0.10	5,100.00	21,066	
Benzene	78.114	3.870%	2.14	2.14	9.37	249	0.04	0.19	3,590.90	37,299	
Toluene	92.141	3.640%	2.37	2.37	10.39	234	0.05	0.21	4,273.60	41,752	
Ethylbenzene	106.167	0.274%	0.21	0.21	0.90	18	0.00	0.02	4,970.50	3,655	
Xylenes	106.167	0.970%	0.73	0.73	3.19	62	0.01	0.06	4,957.10	12,906	
Octanes	114.229	0.001%	0.00	0.00	0.00	0	0.00	0.00	5,796.00	15	
2,2,4-Trimethylpentane	114.231	0.025%	0.02	0.02	0.09	2	0.00	0.00	5,778.80	380	
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 =		100.019%	29.22	29.22	127.98	6,443	--	--	--	504,159	
Total VOC =		43.819%	20.03	20.03	87.72	--	0.40	1.75			
				Total HAP =	5.98	26.18	--	0.12	0.52	Heat Value (Btu/scf)	1,878
				Total H₂S=	0.00	0.00	--	0.00	0.00		
				MW of Stream =	41.30						

Notes:

1) Stream compositions and flow rates calculated by GLYCalc. 10% safety factor was added to GLYCalc condenser vent stream flow rate of 244 scfh for a conservative estimate of emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Heater Information and Emission Factors**

Equipment Information		
	HT100	RH900
Description	Heater Treater	Hot Oil Heater
Combustor Type	Uncontrolled	Uncontrolled
Burner Design (mmBtu/hr)	0.50	26.00
Fuel Consumption (mmscf/hr)	4.87E-04	2.53E-02
Fuel Consumption (mmscf/yr)	4.27	221.99
Fuel HHV (Btu/scf)	1,026	1,026
Operating Hours	8,760	8,760

AP-42/EPA Emission Factors	
	Uncontrolled
NOx (lb/mmscf)	100.0
CO (lb/mmscf)	84.0
VOC (lb/mmscf)	5.5
SO₂ (lb/mmscf)	0.6
PM_{10/2.5} (lb/mmscf)	1.9
PM_{COND} (lb/mmscf)	5.7
PM_{TOT} (lb/mmscf)	7.6
Benzene (lb/mmscf)	2.10E-03
Formaldehyde (lb/mmscf)	7.50E-02
n-Hexane (lb/mmscf)	1.80E+00
Toluene (lb/mmscf)	3.40E-03
Other HAP (lb/mmscf)	1.90E-03
Carbon Dioxide (CO₂) (kg/mmBtu)	53.06
Methane (CH₄) (kg/mmBtu)	1.00E-03
Nitrous Oxide (N₂O) (kg/mmBtu)	1.00E-04

Notes:

1) Criteria pollutant emission factor source: AP-42 Tables 1.4-1, -2 (7/98); HAP emission factor source: AP-42 Table 1.4-3 (7/98); GHG emission factor source: 40 CFR 98 Tables C-1 and C-2.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Heater Emissions Calculations**

Unit ID: HT100

Pollutant	Emission Factor	Capacity	Conversion	Hourly Emissions	Operating Hours	Conversion	Annual Emissions
NOx	1.00E+02 lb/mmscf X	4.87E-04 mmscf/hr X	- -	= 0.05 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.21 TPY
CO	8.40E+01 lb/mmscf X	4.87E-04 mmscf/hr X	- -	= 0.04 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.18 TPY
VOC	5.50E+00 lb/mmscf X	4.87E-04 mmscf/hr X	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.01 TPY
SO₂	6.00E-01 lb/mmscf X	4.87E-04 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	4.87E-04 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	4.87E-04 mmscf/hr X	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.01 TPY
PM_{TOT}	7.60E+00 lb/mmscf X	4.87E-04 mmscf/hr X	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.02 TPY
Benzene	2.10E-03 lb/mmscf X	4.87E-04 mmscf/hr X	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
Formaldehyde	7.50E-02 lb/mmscf X	4.87E-04 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	4.87E-04 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	4.87E-04 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	4.87E-04 mmscf/hr X	- -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
CO₂	5.31E+01 kg/mmBtu X	5.00E-01 mmBtu/hr X	2.20462 lb/kg	= 58.49 lb/hr	X 8,760 X	0.0005 ton/lb	= 256.18 TPY
CH₄	1.00E-03 kg/mmBtu X	5.00E-01 mmBtu/hr X	2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
N₂O	1.00E-04 kg/mmBtu X	5.00E-01 mmBtu/hr X	2.20462 lb/kg	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY

Notes:

1) All PM (total, condensable and filterable) is assumed to be <1 micrometer in diameter. Total PM is the sum of filterable PM and condensable PM.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Heater Emissions Calculations**

Unit ID: **RH900**

Pollutant	Emission Factor	Capacity	Conversion	Hourly Emissions	Operating Hours	Conversion	Annual Emissions
NOx	1.00E+02 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 2.53 lb/hr	X 8,760 X	0.0005 ton/lb	= 11.10 TPY
CO	8.40E+01 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 2.13 lb/hr	X 8,760 X	0.0005 ton/lb	= 9.32 TPY
VOC	5.50E+00 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 0.14 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.61 TPY
SO₂	6.00E-01 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 0.02 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.07 TPY
PM_{10/2.5}	1.90E+00 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 0.05 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.21 TPY
PM_{COND}	5.70E+00 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 0.14 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.63 TPY
PM_{TOT}	7.60E+00 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= 0.19 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.84 TPY
Benzene	2.10E-03 lb/mmscf	X 2.53E-02 mmscf/hr	X - -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
Formaldehyde	7.50E-02 lb/mmscf	X 2.53E-02 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 2.53E-02 mmscf/hr	X - -	= 0.05 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.20 TPY
Toluene	3.40E-03 lb/mmscf	X 2.53E-02 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 2.53E-02 mmscf/hr	X - -	= <0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= <0.01 TPY
CO₂	5.31E+01 kg/mmBtu	X 2.60E+01 mmBtu/hr	X 2.20462 lb/kg	= 3,041.41 lb/hr	X 8,760 X	0.0005 ton/lb	= 13,321.36 TPY
CH₄	1.00E-03 kg/mmBtu	X 2.60E+01 mmBtu/hr	X 2.20462 lb/kg	= 0.06 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.25 TPY
N₂O	1.00E-04 kg/mmBtu	X 2.60E+01 mmBtu/hr	X 2.20462 lb/kg	= 0.01 lb/hr	X 8,760 X	0.0005 ton/lb	= 0.03 TPY

Notes:

1) All PM (total, condensable and filterable) is assumed to be <1 micrometer in diameter. Total PM is the sum of filterable PM and condensable PM.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Tank Information**

Equipment Information		
	CTK-1.3, -2.4	CTK-3, -4
Contents¹	Condensate	Condensate/Produced Water
Number of Tanks	2	2
Capacity (bbl)	400	400
Capacity (gal)	16,800	16,800
Total Throughput (bbl/yr)	24,000	12,000
Total Throughput (gal/yr)	1,008,000	504,000
Per Tank Throughput (bbl/yr)²	24,000	12,000
Per Tank Throughput (gal/yr)²	1,008,000	504,000
TANKS 4.0.9d Working Losses (lb/yr)³	7,226.84	2,800.77
TANKS 4.0.9d Breathing Losses (lb/yr)³	3,782.58	3,782.58
Flash Calculation Method	Process Simulation	N/A
VOC Tank Flashing Emission Factor (lb VOC/bbl)³	6.666	0.000
CO₂ Tank Flashing Emission Factor (lb CO₂/bbl)³	0.000	0.000
CH₄ Tank Flashing Emission Factor (lb CH₄/bbl)³	0.000	0.000
Control Type	Combustor	Combustor
Capture Efficiency⁴	98%	98%
Control Efficiency⁴	98%	98%

Notes:

- 1) CTK-1.3 and CTK-2.4 contain condensate produced on-site, while CTK-3 and CTK-4 contain condensate trucked in from other sites and produced water.
- 2) CTK-1.3 and CTK-2.4 are connected in series; therefore, station total produced condensate throughput flows through both tanks and only flashes at the inlet of CTK-1.3.
- 3) Working and breathing calculated using EPA TANKS 4.0.9d. Flashing calculated with site specific ProMax process simulation. There is no flashing associated with the trucked in condensate. See attached reports and following tables.
- 4) Assumed 98% capture efficiency and 98% combustor control efficiency for 96% effective control efficiency.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Condensate Tank Emissions Calculations**

Unit ID: CTK-1.3

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions		Operating Hours		Conversion		Hourly Emissions ¹			
VOC ²	3.61	TPY	+	1.89	TPY	+	79.99	TPY	=	85.50	TPY	/	8,760	X	2,000	lb/ton	=	19.52	lb/hr
n-Hexane	0.06	TPY	+	0.03	TPY	+	1.28	TPY	=	1.37	TPY	/	8,760	X	2,000	lb/ton	=	0.31	lb/hr
Benzene	0.03	TPY	+	0.02	TPY	+	0.72	TPY	=	0.77	TPY	/	8,760	X	2,000	lb/ton	=	0.18	lb/hr
Toluene	0.05	TPY	+	0.02	TPY	+	1.04	TPY	=	1.11	TPY	/	8,760	X	2,000	lb/ton	=	0.25	lb/hr
Ethylbenzene	<0.01	TPY	+	<0.01	TPY	+	0.08	TPY	=	0.09	TPY	/	8,760	X	2,000	lb/ton	=	0.02	lb/hr
Xylenes	0.02	TPY	+	0.01	TPY	+	0.40	TPY	=	0.43	TPY	/	8,760	X	2,000	lb/ton	=	0.10	lb/hr
Other HAP	0.03	TPY	+	0.02	TPY	+	0.72	TPY	=	0.77	TPY	/	8,760	X	2,000	lb/ton	=	0.18	lb/hr
CO ₂ ³	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄ ³	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr

Uncaptured Emissions³

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions		Operating Hours		Conversion		Hourly Emissions			
VOC	0.07	TPY	+	0.04	TPY	+	1.60	TPY	=	1.71	TPY	/	8,760	X	2,000	lb/ton	=	0.39	lb/hr
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	0.03	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Benzene	<0.01	TPY	+	<0.01	TPY	+	0.01	TPY	=	0.02	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	0.03	TPY	+	<0.01	TPY	+	0.01	TPY	=	0.05	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO ₂	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr

Estimated HAP Composition (% by Weight)⁴

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, CO₂ and CH₄ 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: CH₄ and CO₂ 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 CH₄ or CO₂.
- 4) Assumed 98% capture efficiency and 98% combustor control efficiency for 98% effective control efficiency. Uncaptured VOC reported at tanks. Unburned VOC reported at combustor.
- 5) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Condensate Tank Emissions Calculations**

Unit ID: CTK-2.4

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses ¹		Annual Emissions		Operating Hours			Conversion		Hourly Emissions ²			
VOC ³	3.61	TPY	+	1.89	TPY	+	0.00	TPY	=	5.50	TPY	/	8,760	X	2,000	lb/ton	=	1.26	lb/hr
n-Hexane	0.06	TPY	+	0.03	TPY	+	0.00	TPY	=	0.09	TPY	/	8,760	X	2,000	lb/ton	=	0.02	lb/hr
Benzene	0.03	TPY	+	0.02	TPY	+	0.00	TPY	=	0.05	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Toluene	0.05	TPY	+	0.02	TPY	+	0.00	TPY	=	0.07	TPY	/	8,760	X	2,000	lb/ton	=	0.02	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	0.02	TPY	+	0.01	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Other HAP	0.03	TPY	+	0.02	TPY	+	0.00	TPY	=	0.05	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO ₂	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr

Uncaptured Emissions⁴

Pollutant	Working Losses			Breathing Losses			Flashing Losses		Annual Emissions		Operating Hours			Conversion		Hourly Emissions			
VOC	0.07	TPY	+	0.04	TPY	+	0.00	TPY	=	0.11	TPY	/	8,760	X	2,000	lb/ton	=	0.03	lb/hr
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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	0.03	TPY	+	<0.01	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO ₂	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	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 =	6.300%

Notes:

- 1) Tanks are connected in series; therefore, station total condensate throughput flows through each tank and only flashes at the inlet to the first tank.
- 2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
- 3) VOC TPY working and breathing losses calculated from lb/yr TANKS 4.0.9d results as follows: lb/yr * 1/2000 = TPY.
- 4) Assumed 98% capture efficiency and 98% combustor control efficiency for 96% effective control efficiency. Uncaptured VOC reported at tanks. Unburned VOC reported at combustor.
- 5) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Condensate Tank Emissions Calculations**

Unit ID: CTK-3

Uncontrolled Emissions

Pollutant	Working Losses		Breathing Losses		Flashing Losses ¹		Annual Emissions		Operating Hours		Conversion		Hourly Emissions ²						
VOC ³	1.40	TPY	+	1.89	TPY	+	0.00	TPY	=	3.29	TPY	/	8,760	X	2,000	lb/ton	=	0.75	lb/hr
n-Hexane	0.02	TPY	+	0.03	TPY	+	0.00	TPY	=	0.05	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Benzene	0.01	TPY	+	0.02	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Toluene	0.02	TPY	+	0.02	TPY	+	0.00	TPY	=	0.04	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	=	0.02	TPY	/	8,760	X	2,000	lb/ton	=	<0.01	lb/hr
Other HAP	0.01	TPY	+	0.02	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO ₂	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr

Uncaptured Emissions⁴

Pollutant	Working Losses		Breathing Losses		Flashing Losses		Annual Emissions		Operating Hours		Conversion		Hourly Emissions						
VOC	0.03	TPY	+	0.04	TPY	+	0.00	TPY	=	0.07	TPY	/	8,760	X	2,000	lb/ton	=	0.02	lb/hr
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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)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) There is no flashing associated with the trucked in condensate and/or produced water. To be conservative, emissions calculated assuming only condensate throughput.
- 2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
- 3) VOC TPY working and breathing losses calculated from lb/yr TANKS 4.0.9d results as follows: lb/yr * 1/2000 = TPY.
- 4) Control efficiency is based on VRU being 100% efficient when operating, plus 5% downtime.
- 4) Assumed 98% capture efficiency and 98% combustor control efficiency for 96% effective control efficiency. Uncaptured VOC reported at tanks. Unburned VOC reported at combustor.
- 5) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Condensate Tank Emissions Calculations**

Unit ID: CTK-4

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses ¹			Annual Emissions		Operating Hours			Conversion		Hourly Emissions ²		
VOC ³	1.40	TPY	+	1.89	TPY	+	0.00	TPY	=	3.29	TPY	/	8,760	X	2,000	lb/ton	=	0.75	lb/hr
n-Hexane	0.02	TPY	+	0.03	TPY	+	0.00	TPY	=	0.05	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Benzene	0.01	TPY	+	0.02	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Toluene	0.02	TPY	+	0.02	TPY	+	0.00	TPY	=	0.04	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	=	0.02	TPY	/	8,760	X	2,000	lb/ton	=	<0.01	lb/hr
Other HAP	0.01	TPY	+	0.02	TPY	+	0.00	TPY	=	0.03	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO ₂ ³	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄ ³	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr

Uncaptured Emissions⁴

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions		Operating Hours			Conversion		Hourly Emissions		
VOC	0.03	TPY	+	0.04	TPY	+	0.00	TPY	=	0.07	TPY	/	8,760	X	2,000	lb/ton	=	0.02	lb/hr
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	<0.01	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	2,000	lb/ton	=	<0.01	lb/hr
CO ₂	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH ₄	-	TPY	+	-	TPY	+	0.00	TPY	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	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) There is no flashing associated with the trucked in condensate and/or produced water. To be conservative, emissions calculated assuming only condensate throughput.
- 2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
- 3) VOC TPY working and breathing losses calculated from lb/yr TANKS 4.0.9d results as follows: lb/yr * 1/2000 = TPY.
- 4) Assumed 98% capture efficiency and 98% combustor control efficiency for 96% effective control efficiency. Uncaptured VOC reported at tanks. Unburned VOC reported at combustor.
- 5) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Combustor Information and Emission Factors**

Equipment Information	
	COMBUST
Description	Combustor
VOC to Combustor (lb/hr)	21.83
Stream Heat Content (Btu/scf)	3,304
Stream Net Btu Value (Btu/hr)	426,714
Operating Hours	8,760
Control Efficiency	98%

AP-42/EPA Emission Factors¹	
	Combustor Stream
NOx (lb/mmBtu)	0.068
CO (lb/mmBtu)	0.31
VOC	Mass Balance
SO ₂	Stoichiometric
n-Hexane	Mass Balance
Benzene	Mass Balance
Toluene	Mass Balance
Ethylbenzene	Mass Balance
Xylenes	Mass Balance
Other HAP	Mass Balance
Carbon Dioxide (CO ₂) (kg/mmBtu)	53.06/Mass Balance
Methane (CH ₄) (kg/mmBtu)	0.001/Mass Balance
Nitrous Oxide (N ₂ O) (kg/mmBtu)	0.0001/Mass Balance

Notes:

1) NOx and CO emission factors (lb/mmBtu), flare stream: AP-42, Table 13.5-1 (4/2015). GHG emission factors (kg/mmBtu): 40 CFR 98.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Combustor Emissions Calculations**

Unit ID: **COMBUST**

Total:

Pollutant	Hourly Emissions		Annual Emissions	
NOx	0.03	lb/hr	0.13	TPY
CO	0.13	lb/hr	0.58	TPY
VOC	0.44	lb/hr	1.91	TPY
SO ₂	0.00	lb/hr	0.00	TPY
n-Hexane	0.06	lb/hr	0.26	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	49.92	lb/hr	218.63	TPY
CH ₄	<0.01	lb/hr	<0.01	TPY
N ₂ O	<0.01	lb/hr	<0.01	TPY

Stream Emissions

Pollutant	Emission Factor			Capacity			Conversion		Hourly Emissions		Operating Hours			Conversion		Annual Emissions			
NOx	6.80E-02	lb/mmBtu	X	4.27E-01	mmBtu/hr	X	-	-	=	0.03	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.13	TPY
CO	3.10E-01	lb/mmBtu	X	4.27E-01	mmBtu/hr	X	-	-	=	0.13	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.58	TPY
VOC	-	-	-	-	-	-	-	-	=	0.44	lb/hr	X	8,760	X	0.0005	ton/lb	=	1.91	TPY
SO ₂	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.00	TPY
n-Hexane	-	-	-	-	-	-	-	-	=	0.06	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.26	TPY
Benzene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.01	TPY
Toluene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.01	TPY
Ethylbenzene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
Xylenes	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
Other HAP	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
CO ₂	5.31E+01	kg/mmBtu	X	4.27E-01	mmBtu/hr	X	2.20462	lb/kg	=	49.92	lb/hr	X	8,760	X	0.0005	ton/lb	=	218.63	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	4.27E-01	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
CH ₄	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.00	TPY
N ₂ O	1.00E-04	kg/mmBtu	X	4.27E-01	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Combustor Emissions Calculations - Combustor Stream Analysis**

Unit ID: **COMBUST**

Component	Molecular Weight	Stream 1		Total Streams Burned in Combustor					Net Heating Value	Net Btu Rate
		Flash Gas		Uncontrolled		scfd	Controlled			
		1.29E+02	scfh	lb/hr	TPY		lb/hr	TPY		
		Mole %	lb/hr	lb/hr	TPY	lb/hr	TPY	Btu/scf		
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	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Nitrogen	28.013	0.000%	0.00	0.00	0.00	0	0.00	0.00	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	0.000%	0.00	0.00	0.00	0	0.00	0.00	909.40	0
Ethane	30.069	0.016%	<0.01	<0.01	0.01	0	<0.01	<0.01	1,618.70	33
Propane	44.096	16.600%	2.49	2.49	10.91	514	0.05	0.22	2,314.90	49,610
i-Butane	58.122	7.760%	1.53	1.53	6.72	240	0.03	0.13	3,000.40	30,058
n-Butane	58.122	32.100%	6.35	6.35	27.81	995	0.13	0.56	3,010.80	124,771
i-Pentane	72.149	12.400%	3.04	3.04	13.33	384	0.06	0.27	3,699.00	59,215
n-Pentane	72.149	17.800%	4.37	4.37	19.14	552	0.09	0.38	3,706.90	85,184
n-Hexane	86.175	10.200%	2.99	2.99	13.10	316	0.06	0.26	4,403.80	57,990
Other Hexanes	86.175	0.000%	0.00	0.00	0.00	0	0.00	0.00	4,403.80	0
Heptanes	100.202	2.080%	0.71	0.71	3.11	64	0.01	0.06	5,100.00	13,695
Benzene	78.114	0.511%	0.14	0.14	0.59	16	<0.01	0.01	3,590.90	2,369
Toluene	92.141	0.236%	0.07	0.07	0.32	7	<0.01	0.01	4,273.60	1,302
Ethylbenzene	106.167	0.010%	<0.01	<0.01	0.02	0	<0.01	<0.01	4,970.50	67
Xylenes	106.167	0.019%	0.01	0.01	0.03	1	<0.01	<0.01	4,957.10	120
Octanes	114.229	0.274%	0.11	0.11	0.47	8	<0.01	0.01	5,796.00	2,050
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	0.029%	0.01	0.01	0.06	1	<0.01	<0.01	6,493.20	246
Decanes	142.282	0.000%	<0.01	<0.01	<0.01	0	<0.01	<0.01	7,189.60	4
Totals =		100.036%	21.83	21.83	95.62	3,100	--	--	--	426,714
Total VOC =		100.020%	21.83	21.83	95.61	--	0.44	1.91	Heat Value (Btu/scf)	3,304
				Total HAP =	3.21	14.07	--	0.06		
				Total H₂S=	0.00	0.00	--	0.00		
				MW of Stream =	64.13					

Notes:

1) Flash gas composition calculated by ProMax used for composition of all tank emissions for conservative estimate.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
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) ¹	2,016
Throughput (10 ⁶ gal/yr) ¹	2.016
Maximum Loading Rate (gal/hr)	7,500
P=True Vapor Pressure of Liquid Loaded (avg. psia) ²	9
M=Molecular Weight of Vapor (lb/lb-mol) ²	55
T= Temperature of Bulk Liquid Loaded (average °F) ¹	60
T = Temperature of bulk liquid loaded (°F + 460 = °R)	520.00
Annual Emission Factor (lb/1000 gal) ³	7.12
TOC Emission Factor (tonne/10 ⁶ gal) ⁴	0.91
TOC Emission Factor (ton/10 ⁶ gal) ⁴	1.00
ProMax Flash Gas CH ₄ wt%	0.000%
ProMax Flash Gas CO ₂ wt%	0.000%
Control Type	None

Notes:

1) Throughputs for tanks CTK-3 and CTK-4 were doubled, since condensate is loaded both into and out of the tanks.

2) Properties of condensate in ORM system.

3) AP-42 5.2-4 Eq. 1: Loading Loss (lb/1000 gal) = 12.46 *S*P*M/T.

4) API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, Table 5-12. Emission factor converted as follows: tonne/10⁶ gal * 1.10231131 ton/tonne.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
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	7.12	lb/1000 gal	X	2,016	1000 gal/yr	X	0.0005	ton/lb	=	7.17	TPY	/	8,760	X	2,000	lb/ton	=	1.64	lb/hr
n-Hexane	-	-	-	-	-	-	-	-	=	0.11	TPY	/	8,760	X	2,000	lb/ton	=	0.03	lb/hr
Benzene	-	-	-	-	-	-	-	-	=	0.06	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Toluene	-	-	-	-	-	-	-	-	=	0.09	TPY	/	8,760	X	2,000	lb/ton	=	0.02	lb/hr
Ethylbenzene	-	-	-	-	-	-	-	-	=	0.01	TPY	/	8,760	X	2,000	lb/ton	=	<0.01	lb/hr
Xylenes	-	-	-	-	-	-	-	-	=	0.04	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
Other HAP	-	-	-	-	-	-	-	-	=	0.06	TPY	/	8,760	X	2,000	lb/ton	=	0.01	lb/hr
CO₂	1.00	ton/10 ⁶ gal	X	2,016	10 ⁶ gal/yr	X	0.000%	Wt%	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	lb/hr
CH₄	1.00	ton/10 ⁶ gal	X	2,016	10 ⁶ gal/yr	X	0.000%	Wt%	=	0.00	TPY	/	8,760	X	2,000	lb/ton	=	0.00	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) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Flare Information and Emission Factors**

Equipment Information	
	FLARE
Description	Acid Gas/Process/Emergency Flare
VOC to Flare (lb/hr)	313.89
Stream Heat Content (Btu/scf)	1,384
Stream Net Btu Value (Btu/hr)	11,567,738
Approximate Operating Hours	1,000
Control Efficiency	98%
Pilot Stream Heat Content (Btu/scf)	1,026
Pilot Gas Flow Rate (scfh)	243.66
Pilot Gas Capacity (mmBtu/hr)	0.25
Pilot Operating Hours	8,760

AP-42/EPA Emission Factors ¹			
	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 ₂ O) (kg/mmBtu)	0.0001/Mass Balance	Nitrous Oxide (N ₂ O) (kg/mmBtu)	1.00E-04

Notes:

1) NOx and CO emission factors (lb/mmBtu), flare stream: AP-42, Table 13.5-1 (4/2015). 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, LLC
Lignite Gas Plant
Flare Emissions Calculations**

Unit ID: **FLARE**

Total: Stream + Pilot

Pollutant	Hourly Emissions ¹		Annual Emissions	
NO _x	6.92	lb/hr	3.55	TPY
CO	31.43	lb/hr	15.80	TPY
VOC	55.00	lb/hr	27.50	TPY
SO ₂	See note ¹	lb/hr	147.48	TPY
PM _{10/2.5}	<0.01	lb/hr	<0.01	TPY
PM _{COND}	<0.01	lb/hr	0.01	TPY
PM _{TOT}	<0.01	lb/hr	0.01	TPY
Formaldehyde	<0.01	lb/hr	<0.01	TPY
n-Hexane	0.45	lb/hr	0.23	TPY
Benzene	0.06	lb/hr	0.03	TPY
Toluene	0.11	lb/hr	0.06	TPY
Ethylbenzene	0.02	lb/hr	0.01	TPY
Xylenes	0.06	lb/hr	0.03	TPY
Other HAP	0.12	lb/hr	0.06	TPY
CO ₂	12,076.04	lb/hr	6,151.49	TPY
CH ₄	35.89	lb/hr	17.95	TPY
N ₂ O	0.02	lb/hr	0.01	TPY

Stream Emissions

Pollutant	Emission Factor			Capacity			Conversion		Hourly Emissions		Est. Operating Hours			Conversion		Annual Emissions			
NO _x	6.80E-02	lb/mmBtu	X	1.16E+01	mmBtu/hr	X	-	-	=	6.89	lb/hr	X	1,000	X	0.0005	ton/lb	=	3.45	TPY
CO	3.10E-01	lb/mmBtu	X	1.16E+01	mmBtu/hr	X	-	-	=	31.41	lb/hr	X	1,000	X	0.0005	ton/lb	=	15.71	TPY
VOC	-	-	-	-	-	-	-	-	=	54.99	lb/hr	X	1,000	X	0.0005	ton/lb	=	27.50	TPY
SO ₂	-	-	-	-	-	-	-	-	=	See note ¹	lb/hr	X	1,000	X	0.0005	ton/lb	=	147.48	TPY
n-Hexane	-	-	-	-	-	-	-	-	=	0.45	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.23	TPY
Benzene	-	-	-	-	-	-	-	-	=	0.06	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.03	TPY
Toluene	-	-	-	-	-	-	-	-	=	0.11	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.06	TPY
Ethylbenzene	-	-	-	-	-	-	-	-	=	0.02	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.01	TPY
Xylenes	-	-	-	-	-	-	-	-	=	0.06	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.03	TPY
Other HAP	-	-	-	-	-	-	-	-	=	0.12	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.06	TPY
CO ₂	5.31E+01	kg/mmBtu	X	1.16E+01	mmBtu/hr	X	2.20462	lb/kg	=	11,853.69	lb/hr	X	1,000	X	0.0005	ton/lb	=	5,926.84	TPY
CO ₂	-	-	-	-	-	-	-	-	=	193.10	lb/hr	X	1,000	X	0.0005	ton/lb	=	96.55	TPY
CH ₄	1.00E-03	kg/mmBtu	X	1.16E+01	mmBtu/hr	X	2.20462	lb/kg	=	0.22	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.11	TPY
CH ₄	-	-	-	-	-	-	-	-	=	35.67	lb/hr	X	1,000	X	0.0005	ton/lb	=	17.84	TPY
N ₂ O	1.00E-04	kg/mmBtu	X	1.16E+01	mmBtu/hr	X	2.20462	lb/kg	=	0.02	lb/hr	X	1,000	X	0.0005	ton/lb	=	0.01	TPY

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Flare Emissions Calculations (Continued)**

Pilot Emissions

Pollutant	Emission Factor			Capacity			Conversion		Hourly Emissions		Operating Hours		Conversion		Annual Emissions				
NOx	1.00E+02	lb/mmscf	X	2.44E-04	mmscf/hr	X	-	-	=	0.02	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.11	TPY
CO	8.40E+01	lb/mmscf	X	2.44E-04	mmscf/hr	X	-	-	=	0.02	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.09	TPY
VOC	5.50E+00	lb/mmscf	X	2.44E-04	mmscf/hr	X	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.01	TPY
SO₂	6.00E-01	lb/mmscf	X	2.44E-04	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	2.44E-04	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	2.44E-04	mmscf/hr	X	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.01	TPY
PM_{TOT}	7.60E+00	lb/mmscf	X	2.44E-04	mmscf/hr	X	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.01	TPY
Formaldehyde	7.50E-02	lb/mmscf	X	2.44E-04	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	2.44E-04	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	2.44E-04	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	2.44E-04	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	2.44E-04	mmscf/hr	X	-	-	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
CO₂	5.31E+01	kg/mmBtu	X	2.50E-01	mmBtu/hr	X	2.20462	lb/kg	=	29.24	lb/hr	X	8,760	X	0.0005	ton/lb	=	128.09	TPY
CH₄	1.00E-03	kg/mmBtu	X	2.50E-01	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY
N₂O	1.00E-04	kg/mmBtu	X	2.50E-01	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	<0.01	TPY

Note:

1) Hourly emissions are averages based on 8,760 hours of operation. ORM requests to retain the current hourly limitation on SO₂ of 1,416 lb/hr.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Flare Emissions Calculations - Flare Stream Analysis**

Unit ID: **FLARE**

Component	Molecular Weight	Stream 1 Inlet Gas 30 MMSCF/yr		Stream 4 Residue Gas 25 MMSCF/yr		Stream 5 Acid Gas 2.0 MMSCF/yr		Stream 6 Process Flaring 16 MMSCF/yr		Total Streams Burned in Flare						Net Heating Value Btu/scf	Net Btu Rate Btu/hr
		3.42E+03		2.85E+03		2.28E+02		1.83E+03		Uncontrolled		scfd	Controlled				
		scfh	scfh	scfh	scfh	scfh	scfh	lb/hr	TPY	lb/hr	TPY		lb/hr	TPY			
		Mole %	lb/hr	Mole %	lb/hr	Mole %	lb/hr	Mole %	lb/hr	lb/hr	TPY	lb/hr	TPY	Btu/scf	Btu/hr		
Water	18.0153	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0	
Hydrogen Sulfide	34.081	2.000%	6.15	0.000%	0.00	59.000%	12.10	0.000%	0.00	18.25	9.13	4,877	0.37	0.18	586.80	119,236	
Carbon Dioxide	44.010	1.149%	4.56	2.000%	6.62	41.000%	10.86	0.000%	0.00	22.04	11.02	4,561	22.04	11.02	0.00	0	
Nitrogen	28.013	2.544%	6.43	0.000%	0.00	0.000%	0.00	0.000%	0.00	6.43	3.22	2,091	6.43	3.22	0.00	0	
Helium	4.003	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0	
Oxygen	31.999	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0	
Methane	16.043	63.098%	91.37	93.000%	112.23	0.000%	0.00	0.000%	0.00	203.60	101.80	115,560	4.07	2.04	909.40	4,378,761	
Ethane	30.069	15.166%	41.16	0.000%	0.00	0.000%	0.00	0.000%	0.00	41.16	20.58	12,465	0.82	0.41	1,618.70	840,726	
Propane	44.096	8.738%	34.78	5.000%	16.58	0.000%	0.00	100.000%	212.28	263.65	131.82	54,442	5.27	2.64	2,314.90	5,251,176	
i-Butane	58.122	1.047%	5.49	0.000%	0.00	0.000%	0.00	0.000%	0.00	5.49	2.75	861	0.11	0.05	3,000.40	107,583	
n-Butane	58.122	3.290%	17.26	0.000%	0.00	0.000%	0.00	0.000%	0.00	17.26	8.63	2,704	0.35	0.17	3,010.80	339,231	
i-Pentane	72.149	0.914%	5.95	0.000%	0.00	0.000%	0.00	0.000%	0.00	5.95	2.98	751	0.12	0.06	3,699.00	115,784	
n-Pentane	72.149	1.079%	7.03	0.000%	0.00	0.000%	0.00	0.000%	0.00	7.03	3.51	887	0.14	0.07	3,706.90	136,978	
n-Hexane	86.175	0.332%	2.58	0.000%	0.00	0.000%	0.00	0.000%	0.00	2.58	1.29	273	0.05	0.03	4,403.80	50,071	
Other Hexanes	86.175	0.622%	4.84	0.000%	0.00	0.000%	0.00	0.000%	0.00	4.84	2.42	511	0.10	0.05	4,403.80	93,807	
Heptanes	100.202	0.515%	4.66	0.000%	0.00	0.000%	0.00	0.000%	0.00	4.66	2.33	423	0.09	0.05	5,100.00	89,949	
Benzene	78.114	0.049%	0.35	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.35	0.17	40	0.01	0.00	3,590.90	6,026	
Toluene	92.141	0.078%	0.65	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.65	0.32	64	0.01	0.01	4,273.60	11,416	
Ethylbenzene	106.167	0.012%	0.11	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.11	0.06	10	0.00	0.00	4,970.50	2,043	
Xylenes	106.167	0.036%	0.34	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.34	0.17	30	0.01	0.00	4,957.10	6,111	
Octanes	114.229	0.071%	0.73	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.73	0.37	58	0.01	0.01	5,796.00	14,093	
2,2,4-Trimethylpentane	114.231	0.024%	0.25	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.25	0.12	20	0.00	0.00	5,778.80	4,750	
Nonanes	128.255	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.00	0.00	0	0.00	0.00	6,493.20	0	
Decanes	142.282	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.000%	0.00	0.00	0.00	0	0.00	0.00	7,189.60	0	
Totals =		100.764%	234.71	100.000%	135.43	100.000%	22.96	100.000%	212.28	605.38	302.69	200,628	--	--	--	11,567,738	
Total VOC =		16.807%	85.03	5.000%	16.58	0.000%	0.00	100.000%	212.28	313.89	166.96	--	6.28	3.14			
									Total HAP =	4.28	2.14	--	0.09	0.04	Heat Value (Btu/scf)	1,384	
									Total H₂S=	18.25	9.13	--	0.37	0.18			
									MW of Stream =	27.48							

Notes:

1) Volumes are based on maximum anticipated annual throughputs for each stream. Residue gas is added to acid gas during acid gas flaring. Residue gas can also be flared when the residue pipeline is shut in. Residue gas assumed to have 5% VOC for a conservative estimate of emissions. Composition for routine process flaring assumed to be propane for conservative estimate of emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Methanol Tank Information**

Equipment Information		
	TK-M1	TK-M2
Contents	Methanol	Methanol
Capacity (bbl)	200	12
Capacity (gal)	8,400	504
Total Throughput (bbl/yr)	10,400	624
Total Throughput (gal/yr)	436,800	26,208
TANKS 4.0.9d Working Losses (lb/yr)²	237.40	7.96
TANKS 4.0.9d Breathing Losses (lb/yr)²	101.28	4.38
Control Type	None	None

Notes:

1) Working and breathing calculated using EPA TANKS 4.0.9d. See attached reports and following table.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Methanol Tank Emissions Calculations**

Unit ID: TK-M1

Uncontrolled Emissions

Pollutant	Working Losses		Breathing Losses		Annual Emissions		Operating Hours			Conversion		Hourly Emissions ¹				
VOC/Methanol ²	0.12	TPY	+	0.05	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, LLC
Lignite Gas Plant
Methanol Tank Emissions Calculations**

Unit ID: TK-M2

Uncontrolled Emissions

Pollutant	Working Losses		+	Breathing Losses		=	Annual Emissions		/	Operating Hours		X	Conversion		=	Hourly Emissions¹	
VOC/Methanol²	<0.01	TPY		<0.01	TPY		=	0.01	TPY	/	8,760	X	2,000	lb/ton	=	<0.01	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, LLC
Lignite Gas Plant
Fugitive Equipment Data and Emission Factors - Components not Subject to NSPS KKK or OOOO

Equipment Information - Gas Service							TOC Emissions										
Component	Count ¹		Emission Factor ²		Control Efficiency		Hourly Emissions		Operating Hours		Conversion		Annual Emissions				
Valves - Gas	467	X	9.92E-03	lb/hr/source	X	0.00%	=	4.63	lb/hr	X	8,760	X	0.0005	ton/lb	=	20.29	TPY
Connectors - Gas	2,026	X	4.41E-04	lb/hr/source	X	0.00%	=	0.89	lb/hr	X	8,760	X	0.0005	ton/lb	=	3.91	TPY
Relief Valves - Gas	16	X	1.94E-02	lb/hr/source	X	0.00%	=	0.31	lb/hr	X	8,760	X	0.0005	ton/lb	=	1.36	TPY
Compressor Seals - Gas	0	X	1.94E-02	lb/hr/source	X	0.00%	=	0.00	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.00	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	627	X	5.51E-03	lb/hr/source	X	0.00%	=	3.46	lb/hr	X	8,760	X	0.0005	ton/lb	=	15.14	TPY
Connectors - Light Oil	2,638	X	4.63E-04	lb/hr/source	X	0.00%	=	1.22	lb/hr	X	8,760	X	0.0005	ton/lb	=	5.35	TPY
Pump Seals - Light Oil	10	X	2.87E-02	lb/hr/source	X	0.00%	=	0.29	lb/hr	X	8,760	X	0.0005	ton/lb	=	1.26	TPY

Notes:

1) Component counts taken from facility drawings.

2) Emission Factor Source: EPA-453/R-95-017. TOC multiplied by pollutant content of streams (weight %) to obtain pollutant emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Emissions Calculations - Components not Subject to NSPS KKK or OOOO**

Component	VOC Emissions				CO ₂ Emissions				CH ₄ Emissions				H ₂ S Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	1.81	7.93	0.09	0.39	1.95	8.52	0.12	0.53								
Connectors - Gas	0.35	1.53	0.02	0.08	0.38	1.64	0.02	0.10								
Relief Valves - Gas	0.12	0.53	0.01	0.03	0.13	0.57	0.01	0.04								
Compressor Seals - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Valves - Light Oil	3.46	15.14	0.00	0.00	0.00	0.00	0.00	0.00								
Connectors - Light Oil	1.22	5.35	0.00	0.00	0.00	0.00	0.00	0.00								
Pump Seals - Light Oil	0.29	1.26	0.00	0.00	0.00	0.00	0.00	0.00								
Total	7.24	31.73	0.11	0.60	2.45	10.74	0.15	0.67								

Component	n-Hexane Emissions				Benzene Emissions				Toluene Emissions				Ethylbenzene Emissions				Xylene Emissions				2,2,4-Trimethylpentane Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.05	0.24	0.01	0.03	0.01	0.06	<0.01	0.01	0.01	0.06	<0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.02		
Connectors - Gas	0.01	0.05	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Relief Valves - Gas	<0.01	0.02	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Compressor Seals - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Valves - Light Oil	1.06	4.66	0.05	0.21	0.09	0.39	0.01	0.06	0.01	0.06	0.01	0.06	0.03	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Connectors - Light Oil	0.38	1.65	0.02	0.07	0.03	0.14	<0.01	0.02	0.01	0.04	<0.01	0.02	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pump Seals - Light Oil	0.09	0.39	<0.01	0.02	0.01	0.03	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	1.60	7.00	0.08	0.34	0.15	0.64	0.02	0.09	0.06	0.21	0.05	0.21	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03		

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

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Equipment Data and Emission Factors - Components Subject to NSPS KKK**

Equipment Information - Gas Service							TOC Emissions										
Component	Count ¹		Emission Factor ²		Control Efficiency		Hourly Emissions		Operating Hours		Conversion		Annual Emissions				
Valves - Gas	216	X	9.92E-03	lb/hr/source	X	75.00%	=	0.54	lb/hr	X	8,760	X	0.0005	ton/lb	=	2.35	TPY
Connectors - Gas	123	X	4.41E-04	lb/hr/source	X	30.00%	=	0.04	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.17	TPY
Relief Valves - Gas	28	X	1.94E-02	lb/hr/source	X	75.00%	=	0.14	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.59	TPY
Compressor Seals - Gas	1	X	1.94E-02	lb/hr/source	X	75.00%	=	0.00	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.02	TPY

Equipment Information - Liquid Service							TOC Emissions										
Component	Count ¹		Emission Factor ²		Control Efficiency		Hourly Emissions		Operating Hours		Conversion		Annual Emissions				
Pump Seals - Light Oil	9	X	2.87E-02	lb/hr/source	X	75.00%	=	0.06	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.28	TPY

Notes:

- 1) Actual component counts from NSPS KKK process units.
- 2) Emission Factor Source: EPA-453/R-95-017. TOC multiplied by pollutant content of streams (weight %) to obtain pollutant emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Emissions Calculations - Components Subject to NSPS KKK**

Component	VOC Emissions				CO ₂ Emissions				CH ₄ Emissions				H ₂ S Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.21	0.92	0.01	0.05	0.22	0.99	0.01	0.06	0.01	0.06	0.01	0.06	0.01	0.06		
Connectors - Gas	0.01	0.06	<0.01	<0.01	0.02	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Relief Valves - Gas	0.05	0.23	<0.01	0.01	0.06	0.25	<0.01	0.02	<0.01	0.02	<0.01	0.02	<0.01	0.02		
Compressor Seals - Gas	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Pump Seals - Light Oil	0.06	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	0.34	1.51	0.01	0.06	0.30	1.31	0.02	0.08	0.02	0.08	0.02	0.08	0.02	0.08		

Component	n-Hexane Emissions				Benzene Emissions				Toluene Emissions				Ethylbenzene Emissions				Xylene Emissions				2,2,4-Trimethylpentane Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Connectors - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Relief Valves - Gas	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Compressor Seals - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Pump Seals - Light Oil	0.02	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00	0.00	<0.01	0.00	<0.01	0.00		
Total	0.03	0.12	<0.01	0.01	<0.01	0.01	0.02	0.02	<0.01	0.02	<0.01	<0.01	<0.01	0.01	0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01		

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

ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Equipment Data and Emission Factors - Components Exempt from NSPS KKK and OOOO

Equipment Information - Gas Service							TOC Emissions										
Component	Count ¹		Emission Factor ²		Control Efficiency		Hourly Emissions		Operating Hours		Conversion		Annual Emissions				
Valves - Gas	96	X	9.92E-03	lb/hr/source	X	0.00%	=	0.95	lb/hr	X	8,760	X	0.0005	ton/lb	=	4.17	TPY
Connectors - Gas	408	X	4.41E-04	lb/hr/source	X	0.00%	=	0.18	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.79	TPY
Relief Valves - Gas	3	X	1.94E-02	lb/hr/source	X	0.00%	=	0.06	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.25	TPY
Compressor Seals - Gas	0	X	1.94E-02	lb/hr/source	X	0.00%	=	0.00	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.00	TPY

Notes:

1) Component counts taken from facility drawings.

2) Emission Factor Source: EPA-453/R-95-017. TOC multiplied by pollutant content of streams (weight %) to obtain pollutant emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Emissions Calculations - Components Exempt from NSPS KKK and OOOO**

Component	VOC Emissions				CO ₂ Emissions				CH ₄ Emissions				H ₂ S Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.12	0.54	0.05	0.20	0.83	3.63	0.00	0.00								
Connectors - Gas	0.02	0.10	0.01	0.04	0.16	0.69	0.00	0.00								
Relief Valves - Gas	0.01	0.03	<0.01	0.01	0.05	0.22	0.00	0.00								
Compressor Seals - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Total	0.15	0.67	0.06	0.25	1.04	4.54	0.00	0.00								

Component	n-Hexane Emissions				Benzene Emissions				Toluene Emissions				Ethylbenzene Emissions				Xylene Emissions				2,2,4-Trimethylpentane Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Connectors - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Relief Valves - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Compressor Seals - Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

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

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Equipment Data and Emission Factors - Components Subject to NSPS OOOO**

Equipment Information - Gas Service							TOC Emissions							
Component	Count ¹		Emission Factor ²		Control Efficiency		Hourly Emissions		Operating Hours		Conversion		Annual Emissions	
Valves - Gas	247	X	9.92E-03	lb/hr/source	X	97.00%	=	0.07 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.32 TPY
Connectors - Gas	1,677	X	4.41E-04	lb/hr/source	X	30.00%	=	0.52 lb/hr	X	8,760	X	0.0005 ton/lb	=	2.27 TPY
Relief Valves - Gas	14	X	1.94E-02	lb/hr/source	X	97.00%	=	0.01 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.04 TPY
Compressor Seals - Gas	3	X	1.94E-02	lb/hr/source	X	95.00%	=	0.00 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.01 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	108	X	5.51E-03	lb/hr/source	X	97.00%	=	0.02 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.08 TPY
Connectors - Light Oil	133	X	4.63E-04	lb/hr/source	X	30.00%	=	0.04 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.19 TPY
Pump Seals - Light Oil	3	X	2.87E-02	lb/hr/source	X	93.00%	=	0.01 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.03 TPY
Other - Light Oil	2	X	1.65E-02	lb/hr/source	X	97.00%	=	0.00 lb/hr	X	8,760	X	0.0005 ton/lb	=	0.00 TPY

Notes:

1) Actual component counts from NSPS OOOO process units.

2) Emission Factor Source: EPA-453/R-95-017. TOC multiplied by pollutant content of streams (weight %) to obtain pollutant emissions.

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Fugitive Emissions Calculations - Components Subject to NSPS 0000**

Component	VOC Emissions				CO ₂ Emissions				CH ₄ Emissions				H ₂ S Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	0.03	0.13	<0.01	0.01	0.03	0.14	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01		
Connectors - Gas	0.20	0.89	0.01	0.04	0.22	0.95	0.01	0.06	0.01	0.06	0.01	0.06	0.01	0.06		
Relief Valves - Gas	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01		
Compressor Seals - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01		
Valves - Light Oil	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Connectors - Light Oil	0.04	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pump Seals - Light Oil	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Other - Light Oil	<0.01	<0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	0.30	1.33	0.01	0.05	0.25	1.11	0.02	0.07	0.02	0.07	0.02	0.07	0.02	0.07		

Component	n-Hexane Emissions				Benzene Emissions				Toluene Emissions				Ethylbenzene Emissions				Xylene Emissions				2,2,4-Trimethylpentane Emissions			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY		
Valves - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Connectors - Gas	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Relief Valves - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Compressor Seals - Gas	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Valves - Light Oil	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00	0.00		
Connectors - Light Oil	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00	0.00		
Pump Seals - Light Oil	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00	0.00		
Other - Light Oil	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00	0.00		
Total	0.03	0.12	<0.01	0.01	<0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		

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

**ONEOK Rockies Midstream, LLC
Lignite Gas Plant
Blowdown Emissions Calculations**

Component	Molecular Weight	Stream 1	Emissions	
		Inlet Gas	scf/yr ¹	TPY ²
		Mole %		
Hydrogen Sulfide	34.081	2.000%	24,000	1.08
Carbon Dioxide	44.010	1.149%	13,788	0.80
Nitrogen	28.013	2.544%	30,528	1.13
Helium	4.003	0.000%	0	0.00
Oxygen	31.999	0.000%	0	0.00
Methane	16.043	63.098%	757,176	16.01
Ethane	30.069	15.166%	181,992	7.21
Propane	44.096	8.738%	104,856	6.09
i-Butane	58.122	1.047%	12,564	0.96
n-Butane	58.122	3.290%	39,480	3.02
i-Pentane	72.149	0.914%	10,968	1.04
n-Pentane	72.149	1.079%	12,948	1.23
n-Hexane	86.175	0.332%	3,984	0.45
Other Hexanes	86.175	0.622%	7,464	0.85
Heptanes	100.202	0.515%	6,180	0.82
Benzene	78.114	0.049%	588	0.06
Toluene	92.141	0.078%	936	0.11
Ethylbenzene	106.167	0.012%	144	0.02
Xylenes	106.167	0.036%	432	0.06
Octanes	114.229	0.071%	852	0.13
2,2,4-Trimethylpentane	114.231	0.024%	288	0.04
Nonanes	128.255	0.000%	0	0.00
Decanes	142.282	0.000%	0	0.00
Totals =		100.764%	1,209,168	41.12
		Total VOC =	201,684	14.90
		Total HAP =	6,372	0.75

Estimated Annual Volume

1,200,000 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.

Appendix C – Support Documents

GRI GLYCalc Input Summary Report

GRI GLYCalc Aggregate Calculations Report

Extended Gas Analysis

Process Simulation Results

TANKS 4.0.9d Reports

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Lignite PTE
 File Name: \\apexcos.sharepoint.com@SSL\DavWWWRoot\sites\TulsaOK\Shared Documents\Clients\ONEOK\Air Files\Permitting\ND Lignite_452953-004\2016Jul_TVR\Lignite_GLYCalc.ddf
 Date: July 08, 2016

DESCRIPTION:

 Description: Gas analysis 12/31/2015
 Maximum throughput 20 MMSCFD
 Maximum pump rate 2 gpm
 Condenser and BTEX flare

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

 Temperature: 81.00 deg. F
 Pressure: 731.00 psig
 Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	1.1490
Nitrogen	2.5440
Methane	63.0980
Ethane	15.1660
Propane	9.9740
Isobutane	1.0470
n-Butane	3.2900
Isopentane	0.7880
n-Pentane	1.0790
Cyclopentane	0.1260
n-Hexane	0.3320
Cyclohexane	0.1430
Other Hexanes	0.4790
Heptanes	0.4280
Methylcyclohexane	0.0870
2,2,4-Trimethylpentane	0.0240
Benzene	0.0490
Toluene	0.0780
Ethylbenzene	0.0120
Xylenes	0.0360
C8+ Heavies	0.0710

DRY GAS:

 Flow Rate: 20.0 MMSCF/day
 Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

 Glycol Type: TEG
 Water Content: 1.5 wt% H2O
 Flow Rate: 2.0 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Condenser
Temperature: 120.0 deg. F
Pressure: 14.7 psia

Control Device: Combustion Device
Destruction Efficiency: 98.0 %
Excess Oxygen: 0.0 %
Ambient Air Temperature: 60.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Lignite PTE
 File Name: \\apexcos.sharepoint.com@SSL\DavWWWRoot\sites\TulsaOK\Shared Documents\Clients\ONEOK\Air
 Files\Permitting\ND Lignite_452953-004\2016Jul_TV\TVR\Lignite_GLYCalc.ddf
 Date: July 08, 2016

DESCRIPTION:

Description: Gas analysis 12/31/2015
 Maximum throughput 20 MMSCFD
 Maximum pump rate 2 gpm
 Condenser and BTEX flare

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0475	1.139	0.2079
Ethane	0.0591	1.418	0.2587
Propane	0.0850	2.040	0.3724
Isobutane	0.0147	0.354	0.0646
n-Butane	0.0594	1.427	0.2604
Isopentane	0.0149	0.357	0.0652
n-Pentane	0.0227	0.544	0.0993
Cyclopentane	0.0108	0.260	0.0474
n-Hexane	0.0093	0.224	0.0409
Cyclohexane	0.0152	0.364	0.0664
Other Hexanes	0.0124	0.297	0.0541
Heptanes	0.0128	0.307	0.0560
Methylcyclohexane	0.0069	0.165	0.0300
2,2,4-Trimethylpentane	0.0004	0.009	0.0016
Benzene	0.0389	0.935	0.1706
Toluene	0.0432	1.038	0.1894
Ethylbenzene	0.0038	0.090	0.0164
Xylenes	0.0133	0.318	0.0581
C8+ Heavies	<0.0001	<0.001	0.0001
Total Emissions	0.4702	11.284	2.0593
Total Hydrocarbon Emissions	0.4702	11.284	2.0593
Total VOC Emissions	0.3636	8.727	1.5928
Total HAP Emissions	0.1089	2.613	0.4769
Total BTEX Emissions	0.0992	2.380	0.4344

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	2.3766	57.040	10.4097
Ethane	2.9785	71.484	13.0458
Propane	4.4369	106.486	19.4338
Isobutane	0.8023	19.255	3.5140
n-Butane	3.3314	79.954	14.5916

Isopentane	0.9753	23.407	4.2718
n-Pentane	1.6575	39.780	7.2598
Cyclopentane	0.8389	20.133	3.6743
n-Hexane	0.9206	22.094	4.0321
Cyclohexane	1.7862	42.868	7.8234
Other Hexanes	1.0293	24.703	4.5083
Heptanes	2.3917	57.401	10.4758
Methylcyclohexane	1.3160	31.584	5.7640
2,2,4-Trimethylpentane	0.0649	1.556	0.2841
Benzene	5.3599	128.638	23.4765
Toluene	13.2361	317.666	57.9740
Ethylbenzene	3.0339	72.812	13.2883
Xylenes	12.6716	304.118	55.5015
C8+ Heavies	1.0908	26.178	4.7776

Total Emissions	60.2982	1447.158	264.1063
Total Hydrocarbon Emissions	60.2982	1447.158	264.1063
Total VOC Emissions	54.9431	1318.635	240.6508
Total HAP Emissions	35.2869	846.885	154.5565
Total BTEX Emissions	34.3014	823.235	150.2403

EQUIPMENT REPORTS:

CONDENSER AND COMBUSTION DEVICE

Condenser Outlet Temperature: 120.00 deg. F
 Condenser Pressure: 14.70 psia
 Condenser Duty: 9.61e-002 MM BTU/hr
 Hydrocarbon Recovery: 2.97 bbls/day
 Produced Water: 2.13 bbls/day
 Ambient Temperature: 60.00 deg. F
 Excess Oxygen: 0.00 %
 Combustion Efficiency: 98.00 %
 Supplemental Fuel Requirement: 9.61e-002 MM BTU/hr

Component	Emitted	Destroyed

Methane	2.00%	98.00%
Ethane	1.98%	98.02%
Propane	1.92%	98.08%
Isobutane	1.84%	98.16%
n-Butane	1.78%	98.22%
Isopentane	1.53%	98.47%
n-Pentane	1.37%	98.63%
Cyclopentane	1.29%	98.71%
n-Hexane	1.01%	98.99%
Cyclohexane	0.85%	99.15%
Other Hexanes	1.20%	98.80%
Heptanes	0.53%	99.47%
Methylcyclohexane	0.52%	99.48%
2,2,4-Trimethylpentane	0.56%	99.44%
Benzene	0.73%	99.27%
Toluene	0.33%	99.67%
Ethylbenzene	0.12%	99.88%
Xylenes	0.10%	99.90%
C8+ Heavies	0.00%	100.00%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages: 1.25
 Calculated Dry Gas Dew Point: 2.60 lbs. H2O/MMSCF

Temperature: 81.0 deg. F
 Pressure: 731.0 psig
 Dry Gas Flow Rate: 20.0000 MMSCF/day
 Glycol Losses with Dry Gas: 0.2468 lb/hr
 Wet Gas Water Content: Saturated
 Calculated Wet Gas Water Content: 41.50 lbs. H2O/MMSCF
 Calculated Lean Glycol Recirc. Ratio: 3.68 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	6.25%	93.75%
Carbon Dioxide	99.86%	0.14%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.97%	0.03%
Propane	99.95%	0.05%
Isobutane	99.94%	0.06%
n-Butane	99.92%	0.08%
Isopentane	99.92%	0.08%
n-Pentane	99.90%	0.10%
Cyclopentane	99.57%	0.43%
n-Hexane	99.85%	0.15%
Cyclohexane	99.32%	0.68%
Other Hexanes	99.89%	0.11%
Heptanes	99.75%	0.25%
Methylcyclohexane	99.30%	0.70%
2,2,4-Trimethylpentane	99.89%	0.11%
Benzene	93.63%	6.37%
Toluene	91.62%	8.38%
Ethylbenzene	89.16%	10.84%
Xylenes	84.91%	15.09%
C8+ Heavies	99.59%	0.41%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	34.12%	65.88%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%

Isopentane	0.50%	99.50%
n-Pentane	0.50%	99.50%
Cyclopentane	0.50%	99.50%
n-Hexane	0.50%	99.50%
Cyclohexane	3.20%	96.80%
Other Hexanes	1.00%	99.00%
Heptanes	0.50%	99.50%
Methylcyclohexane	4.00%	96.00%
2,2,4-Trimethylpentane	1.50%	98.50%
Benzene	5.00%	95.00%
Toluene	7.90%	92.10%
Ethylbenzene	10.40%	89.60%
Xylenes	12.89%	87.11%
C8+ Heavies	12.00%	88.00%

STREAM REPORTS:

WET GAS STREAM

Temperature: 81.00 deg. F
 Pressure: 745.70 psia
 Flow Rate: 8.34e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	8.74e-002	3.46e+001
Carbon Dioxide	1.15e+000	1.11e+003
Nitrogen	2.54e+000	1.57e+003
Methane	6.30e+001	2.22e+004
Ethane	1.52e+001	1.00e+004
Propane	9.97e+000	9.66e+003
Isobutane	1.05e+000	1.34e+003
n-Butane	3.29e+000	4.20e+003
Isopentane	7.87e-001	1.25e+003
n-Pentane	1.08e+000	1.71e+003
Cyclopentane	1.26e-001	1.94e+002
n-Hexane	3.32e-001	6.29e+002
Cyclohexane	1.43e-001	2.64e+002
Other Hexanes	4.79e-001	9.07e+002
Heptanes	4.28e-001	9.42e+002
Methylcyclohexane	8.69e-002	1.88e+002
2,2,4-Trimethylpentane	2.40e-002	6.02e+001
Benzene	4.90e-002	8.41e+001
Toluene	7.79e-002	1.58e+002
Ethylbenzene	1.20e-002	2.80e+001
Xylenes	3.60e-002	8.40e+001
C8+ Heavies	7.09e-002	2.66e+002
Total Components	100.00	5.69e+004

DRY GAS STREAM

Temperature: 81.00 deg. F
 Pressure: 745.70 psia

Flow Rate: 8.33e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.47e-003	2.16e+000
Carbon Dioxide	1.15e+000	1.11e+003
Nitrogen	2.54e+000	1.57e+003
Methane	6.31e+001	2.22e+004
Ethane	1.52e+001	1.00e+004
Propane	9.97e+000	9.66e+003
Isobutane	1.05e+000	1.34e+003
n-Butane	3.29e+000	4.20e+003
Isopentane	7.88e-001	1.25e+003
n-Pentane	1.08e+000	1.71e+003
Cyclopentane	1.26e-001	1.93e+002
n-Hexane	3.32e-001	6.28e+002
Cyclohexane	1.42e-001	2.63e+002
Other Hexanes	4.79e-001	9.06e+002
Heptanes	4.27e-001	9.40e+002
Methylcyclohexane	8.64e-002	1.86e+002
2,2,4-Trimethylpentane	2.40e-002	6.02e+001
Benzene	4.59e-002	7.87e+001
Toluene	7.15e-002	1.45e+002
Ethylbenzene	1.07e-002	2.50e+001
Xylenes	3.06e-002	7.13e+001
C8+ Heavies	7.07e-002	2.65e+002
Total Components	100.00	5.68e+004

LEAN GLYCOL STREAM

Temperature: 81.00 deg. F
Flow Rate: 1.99e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.81e+001	1.10e+003
Water	1.50e+000	1.68e+001
Carbon Dioxide	1.35e-011	1.51e-010
Nitrogen	1.77e-012	1.98e-011
Methane	7.14e-018	7.99e-017
Ethane	1.26e-007	1.41e-006
Propane	1.61e-008	1.81e-007
Isobutane	2.15e-009	2.41e-008
n-Butane	7.38e-009	8.26e-008
Isopentane	4.38e-004	4.90e-003
n-Pentane	7.44e-004	8.33e-003
Cyclopentane	3.77e-004	4.22e-003
n-Hexane	4.13e-004	4.63e-003
Cyclohexane	5.28e-003	5.90e-002
Other Hexanes	9.29e-004	1.04e-002
Heptanes	1.07e-003	1.20e-002
Methylcyclohexane	4.90e-003	5.48e-002
2,2,4-Trimethylpentane	8.82e-005	9.87e-004
Benzene	2.52e-002	2.82e-001
Toluene	1.01e-001	1.14e+000
Ethylbenzene	3.15e-002	3.52e-001
Xylenes	1.68e-001	1.88e+000

C8+ Heavies	1.33e-002	1.49e-001

Total Components	100.00	1.12e+003

RICH GLYCOL STREAM

Temperature: 81.00 deg. F
 Pressure: 745.70 psia
 Flow Rate: 2.19e+000 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.05e+001	1.10e+003
Water	4.06e+000	4.93e+001
Carbon Dioxide	1.25e-001	1.51e+000
Nitrogen	1.63e-002	1.98e-001
Methane	1.96e-001	2.38e+000
Ethane	2.45e-001	2.98e+000
Propane	3.66e-001	4.44e+000
Isobutane	6.61e-002	8.02e-001
n-Butane	2.75e-001	3.33e+000
Isopentane	8.08e-002	9.80e-001
n-Pentane	1.37e-001	1.67e+000
Cyclopentane	6.95e-002	8.43e-001
n-Hexane	7.62e-002	9.25e-001
Cyclohexane	1.52e-001	1.85e+000
Other Hexanes	8.57e-002	1.04e+000
Heptanes	1.98e-001	2.40e+000
Methylcyclohexane	1.13e-001	1.37e+000
2,2,4-Trimethylpentane	5.43e-003	6.58e-002
Benzene	4.65e-001	5.64e+000
Toluene	1.18e+000	1.44e+001
Ethylbenzene	2.79e-001	3.39e+000
Xylenes	1.20e+000	1.45e+001
C8+ Heavies	1.02e-001	1.24e+000

Total Components	100.00	1.21e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 1.05e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	6.53e+001	3.25e+001
Carbon Dioxide	1.25e+000	1.51e+000
Nitrogen	2.56e-001	1.98e-001
Methane	5.37e+000	2.38e+000
Ethane	3.59e+000	2.98e+000
Propane	3.65e+000	4.44e+000
Isobutane	5.00e-001	8.02e-001
n-Butane	2.08e+000	3.33e+000
Isopentane	4.90e-001	9.75e-001
n-Pentane	8.32e-001	1.66e+000
Cyclopentane	4.33e-001	8.39e-001

n-Hexane	3.87e-001	9.21e-001
Cyclohexane	7.69e-001	1.79e+000
Other Hexanes	4.33e-001	1.03e+000
Heptanes	8.65e-001	2.39e+000
Methylcyclohexane	4.86e-001	1.32e+000
2,2,4-Trimethylpentane	2.06e-002	6.49e-002
Benzene	2.49e+000	5.36e+000
Toluene	5.20e+000	1.32e+001
Ethylbenzene	1.04e+000	3.03e+000
Xylenes	4.32e+000	1.27e+001
C8+ Heavies	2.32e-001	1.09e+000

Total Components	100.00	9.45e+001

CONDENSER PRODUCED WATER STREAM

 Temperature: 120.00 deg. F
 Flow Rate: 6.22e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	9.99e+001	3.11e+001	999342.
Carbon Dioxide	4.65e-003	1.45e-003	47.
Nitrogen	1.59e-005	4.96e-006	0.
Methane	3.69e-004	1.15e-004	4.
Ethane	5.23e-004	1.63e-004	5.
Propane	7.74e-004	2.41e-004	8.
Isobutane	7.31e-005	2.28e-005	1.
n-Butane	3.91e-004	1.22e-004	4.
Isopentane	6.90e-005	2.15e-005	1.
n-Pentane	1.13e-004	3.51e-005	1.
Cyclopentane	3.79e-004	1.18e-004	4.
n-Hexane	3.85e-005	1.20e-005	0.
Cyclohexane	3.53e-004	1.10e-004	4.
Other Hexanes	4.11e-005	1.28e-005	0.
Heptanes	2.92e-005	9.08e-006	0.
Methylcyclohexane	7.61e-005	2.37e-005	1.
2,2,4-Trimethylpentane	5.50e-007	1.71e-007	0.
Benzene	2.56e-002	7.96e-003	256.
Toluene	2.33e-002	7.26e-003	233.
Ethylbenzene	1.53e-003	4.75e-004	15.
Xylenes	7.48e-003	2.33e-003	75.
C8+ Heavies	2.96e-008	9.22e-009	0.

Total Components	100.00	3.11e+001	1000000.

CONDENSER RECOVERED OIL STREAM

 Temperature: 120.00 deg. F
 Flow Rate: 8.65e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	5.16e-002	1.90e-002
Carbon Dioxide	2.05e-002	7.55e-003
Nitrogen	1.86e-003	6.85e-004
Methane	9.99e-003	3.68e-003
Ethane	6.76e-002	2.49e-002

Propane	5.05e-001	1.86e-001
Isobutane	1.76e-001	6.49e-002
n-Butane	9.76e-001	3.59e-001
Isopentane	6.27e-001	2.31e-001
n-Pentane	1.42e+000	5.23e-001
Cyclopentane	8.10e-001	2.98e-001
n-Hexane	1.23e+000	4.54e-001
Cyclohexane	2.80e+000	1.03e+000
Other Hexanes	1.12e+000	4.11e-001
Heptanes	4.76e+000	1.75e+000
Methylcyclohexane	2.64e+000	9.73e-001
2,2,4-Trimethylpentane	1.27e-001	4.68e-002
Benzene	9.25e+000	3.40e+000
Toluene	3.01e+001	1.11e+001
Ethylbenzene	7.73e+000	2.85e+000
Xylenes	3.26e+001	1.20e+001
C8+ Heavies	2.96e+000	1.09e+000

Total Components	100.00	3.68e+001

CONDENSER VENT STREAM

Temperature: 120.00 deg. F
Pressure: 14.70 psia
Flow Rate: 2.44e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	1.16e+001	1.35e+000
Carbon Dioxide	5.31e+000	1.50e+000
Nitrogen	1.09e+000	1.97e-001
Methane	2.30e+001	2.37e+000
Ethane	1.52e+001	2.95e+000
Propane	1.50e+001	4.25e+000
Isobutane	1.97e+000	7.37e-001
n-Butane	7.94e+000	2.97e+000
Isopentane	1.60e+000	7.45e-001
n-Pentane	2.44e+000	1.13e+000
Cyclopentane	1.20e+000	5.41e-001
n-Hexane	8.41e-001	4.67e-001
Cyclohexane	1.40e+000	7.58e-001
Other Hexanes	1.11e+000	6.18e-001
Heptanes	9.90e-001	6.39e-001
Methylcyclohexane	5.42e-001	3.43e-001
2,2,4-Trimethylpentane	2.45e-002	1.80e-002
Benzene	3.87e+000	1.95e+000
Toluene	3.64e+000	2.16e+000
Ethylbenzene	2.74e-001	1.88e-001
Xylenes	9.70e-001	6.63e-001
C8+ Heavies	9.39e-004	1.03e-003

Total Components	100.00	2.66e+001

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia

Flow Rate: 4.01e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	2.80e+001	4.75e-002
Ethane	1.86e+001	5.91e-002
Propane	1.83e+001	8.50e-002
Isobutane	2.40e+000	1.47e-002
n-Butane	9.68e+000	5.94e-002
Isopentane	1.95e+000	1.49e-002
n-Pentane	2.98e+000	2.27e-002
Cyclopentane	1.46e+000	1.08e-002
n-Hexane	1.03e+000	9.33e-003
Cyclohexane	1.70e+000	1.52e-002
Other Hexanes	1.36e+000	1.24e-002
Heptanes	1.21e+000	1.28e-002
Methylcyclohexane	6.61e-001	6.86e-003
2,2,4-Trimethylpentane	2.99e-002	3.61e-004
Benzene	4.72e+000	3.89e-002
Toluene	4.44e+000	4.32e-002
Ethylbenzene	3.35e-001	3.75e-003
Xylenes	1.18e+000	1.33e-002
C8+ Heavies	1.15e-003	2.06e-005
Total Components	100.00	4.70e-001

CONDENSER CONTROL CURVE DATA REPORT:

CONDENSER CONTROL EFFICIENCY CURVES

Note: Condenser curves computed for the range 40.0 F <= T <= 170.0 F. DO NOT
EXTRAPOLATE BEYOND THIS RANGE!

Temp (F)	BTEX	Total HAP	VOC
40.0	99.01	98.88	87.19
45.0	98.80	98.64	86.42
50.0	98.55	98.37	85.62
55.0	98.26	98.05	84.79
60.0	97.93	97.68	83.91
65.0	97.53	97.25	82.99
70.0	97.08	96.75	82.02
75.0	96.54	96.17	80.99
80.0	95.92	95.49	79.89
85.0	95.20	94.72	78.71
90.0	94.37	93.82	77.44
95.0	93.40	92.79	76.07
100.0	92.28	91.59	74.59
105.0	90.97	90.22	72.96
110.0	89.46	88.63	71.17
115.0	87.70	86.81	69.21
120.0	85.50	84.52	66.86
125.0	83.04	82.01	64.38
130.0	80.16	79.07	61.59
135.0	76.75	75.61	58.44
140.0	72.69	71.52	54.84
145.0	67.83	66.66	50.72
150.0	61.97	60.82	45.95
155.0	54.84	53.75	40.37
160.0	46.08	45.11	33.78
165.0	35.90	35.11	26.38
170.0	0.04	0.04	0.03

 ANNUAL AIR-COOLED CONDENSER PERFORMANCE:

ANNUAL AIR-COOLED CONDENSER PERFORMANCE

Nearest Site for Air Temperature Data: Bismarck, ND

Ambient Air Dry Bulb Temperature (deg. F)	Frequency (%)	Condenser Outlet Temperature (deg. F)
<=50	59.16	<=70
51-55	6.85	71-75
56-60	7.40	76-80
61-65	7.21	81-85
66-70	6.04	86-90
71-75	4.90	91-95
76-80	3.78	96-100
81-85	2.43	101-105
86-90	1.37	106-110
91-95	0.63	111-115
96-100	0.18	116-120
>100	0.04	>120

Condenser outlet temperature approach to ambient: 20.00 deg. F

 Annual air-cooled condenser emissions and control efficiency:

	Uncontrolled emissions tons/year	Controlled emissions tons/year	% Control
Benzene	23.477	2.859	87.82
BTEX	150.240	6.078	95.95
Total HAP	154.556	6.891	95.54
VOC	240.651	47.604	80.22

AMERICAN MOBILE RESEARCH, INC.

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CASPER, WYOMING 82604

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EXTENDED HYDROCARBON GAS (GLYCALC) STUDY CERTIFICATE OF ANALYSIS

Company **ONEOK ROCKIES MIDSTREAM**
Lab Number CR-16066
Date Sampled 12-31-2015

Study Number CR-10
Date Tested 1-12-2016

Sample Identification **LIGNITE PLANT INLET GAS TO DEHYDRATOR**

Sample Location LIGNITE GAS PLANT, NORTH DAKOTA.
Sample Pressure N/A
Type Sample SPOT
Test Method GPA-2286

Sample Temperature N/A
County..... BURKE
Cylinder ID AMR 087

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	1.149	1.965	0.951
Hydrogen Sulfide.....	1.236	1.637	0.810
Nitrogen.....	2.544	2.769	1.357
Methane.....	63.098	39.334	51.873
Ethane.....	15.166	17.720	19.668
Propane.....	8.738	14.972	11.674
iso-Butane.....	1.047	2.365	1.661
n-Butane.....	3.290	7.431	5.030
iso-Pentane.....	0.788	2.209	1.397
n-Pentane.....	1.079	3.025	1.897
Cyclopentane.....	0.126	0.343	0.181
n-Hexane.....	0.332	1.112	0.662
Cyclohexane.....	0.143	0.468	0.236
Other Hexanes	0.479	1.604	0.955
Heptanes.....	0.428	1.666	0.958
Methylcyclohexane.....	0.087	0.332	0.170
2,2,4-Trimethylpentane..	0.024	0.107	0.060
Benzene.....	0.049	0.149	0.066
Toluene.....	0.078	0.279	0.127
Ethylbenzene.....	0.012	0.050	0.022
Xylenes.....	0.036	0.149	0.068
C8+ Heavies.....	0.071	0.315	0.176
Totals	100.000	100.000	100.000

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.126	0.343	0.181
Cyclohexane	0.143	0.468	0.236
2-Methylpentane	0.344	1.151	0.685
3-Methylpentane	0.135	0.453	0.270
n-Hexane	0.332	1.112	0.662
Methylcyclohexane	0.087	0.332	0.170
2,2,4-Trimethylpentane	0.024	0.107	0.060
Benzene	0.049	0.149	0.066
Toluene	0.078	0.279	0.127
Ethylbenzene	0.012	0.050	0.022
m-Xylene	0.004	0.017	0.008
p-Xylene	0.026	0.106	0.048
o-Xylene	0.006	0.025	0.011

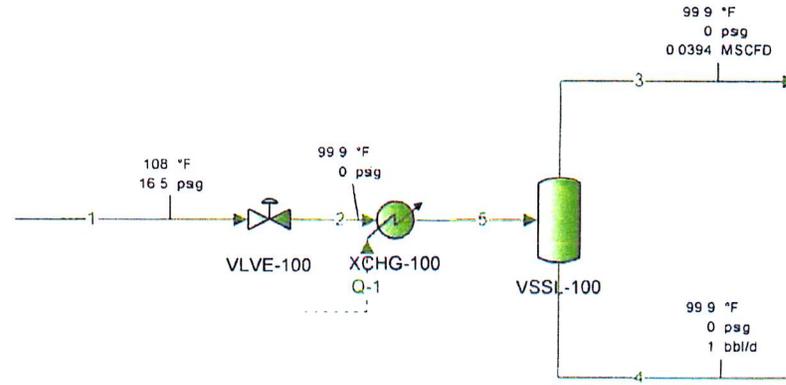
SPECIFIC GRAVITY AT 60/60 F, calculated.....	0.8885
TOTAL GPM (ETHANE INCLUSIVE).....	9.256
CALCULATED BTU / REAL CF AT 14.73 PSIA, dry basis.....	1456.024
CALCULATED BTU / REAL CF AT 14.73 PSIA, wet basis.....	1430.945
AVERAGE MOLECULAR WEIGHT.....	25.735
MOLAR MASS RATIO.....	0.8885
RELATIVE DENSITY ($G \times Z$ (Air) / Z), calculated.....	0.000
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF AT 14.696 PSIA, calculated.....	1444.675
COMPRESSIBILITY FACTOR (Z).....	0.99449

PROPANE GPM.....	2.4011
BUTANE GPM.....	1.3763
GASOLINE GPM (PENTANE AND HEAVIER).....	1.4332

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

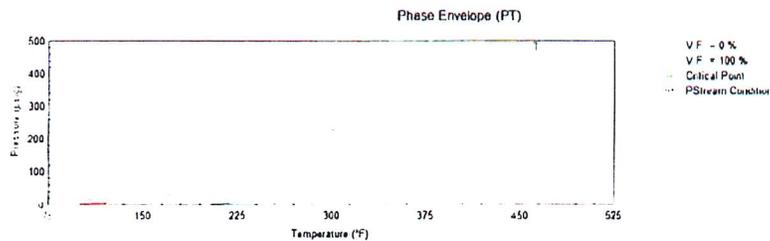
James A. Kane, President
American Mobile Research, Inc.

Lignite - Flash Calc
10/21/2015



Names	Units	1	2	3	4
Temperature	°F	108*	99.9	99.9	99.9
Pressure	psig	16.5*	0*	0	0
Mole Fraction Vapor	%	0	3.64	100	0
Molecular Weight	lb/lbmol	84	84	64.1	84.8
Mass Density	lb/ft^3	40.1	5.11	0.162	40.5
Mass Flow	lb/h	10	10	0.278	9.72
Molar Flow	lbmol/h	0.119	0.119	0.00433	0.115
Compressibility		0.0107	0.0402	0.97	0.00512
Specific Gravity		0.644		2.21	0.65
Std Vapor Volumetric Flow	MMSCFD	0.00108	0.00108	3.94e-005	0.00104
Std Liquid Volumetric Flow	sgpm	0.0301#	0.0301	0.000922	0.0292
Enthalpy	MMBtu/h	-0.00929	-0.00929	-0.000248	-0.00904

Names	Units	1	2	3	4
N2(Mole Fraction)	%	0*	0	0	0
CO2(Mole Fraction)	%	0*	0	0	0
C1(Mole Fraction)	%	0*	0	0	0
C2(Mole Fraction)	%	0.001*	0.001	0.0159	0.000437
C3(Mole Fraction)	%	1.98*	1.98	16.6	1.43
iC4(Mole Fraction)	%	1.87*	1.87	7.76	1.64
nC4(Mole Fraction)	%	10.6*	10.6	32.1	9.76
iC5(Mole Fraction)	%	8.94*	8.94	12.4	8.81
nC5(Mole Fraction)	%	16.6*	16.6	17.8	16.6
C6(Mole Fraction)	%	29.2*	29.2	10.2	30
C7(Mole Fraction)	%	16.9*	16.9	2.08	17.5
C8(Mole Fraction)	%	6.39*	6.39	0.274	6.62
C9(Mole Fraction)	%	1.94*	1.94	0.0293	2.01
C11(Mole Fraction)	%	0.137*	0.137	0.000242	0.142
C12(Mole Fraction)	%	0.217*	0.217	0.000161	0.225
Benzene(Mole Fraction)	%	1.45*	1.45	0.511	1.49
Toluene(Mole Fraction)	%	2.27*	2.27	0.236	2.35
Ethylbenzene(Mole Fraction)	%	0.279*	0.279	0.0104	0.289
o-Xylene(Mole Fraction)	%	0.155*	0.155	0.00445	0.161
m-Xylene(Mole Fraction)	%	0.337*	0.337	0.0107	0.349
p-Xylene(Mole Fraction)	%	0.111*	0.111	0.00366	0.115



Lignite - Flash Calc

10/21/2015

	Flash Gas (lb/d)
N2	0.000
CO2	0.000
C1	0.000
C2	0.000
C3	0.759
iC4	0.4691
nC4	1.9393
iC5	0.9292
nC5	1.3356
C6	0.9134
C7	0.2163
C8	0.0325
C9	3.90E-03
C10	4.77E-04
C11	3.94E-05
C12	2.85E-05
Benzene	4.15E-02
Toluene	2.26E-02
Ethylbenzene	1.15E-03
o-Xylene	4.91E-04
m-Xylene	1.18E-03
p-Xylene	4.04E-04
Total=	6.667

C3+ Flow (lb/d)=	6.666
C6 Flow (lb/d)=	0.9134
HAP Flow (lb/d)=	0.06732
Condensate Flow (bbl/d)=	1.000

C3+ Factor (lb/bbl)=	6.666
C6 Factor (lb/bbl)=	0.9134
HAP Factor (lb/bbl)=	0.06732

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	ORM Lignite - Produced Condensate
City:	
State:	North Dakota
Company:	ONEOK Rockies Midstream, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Each of Two (2) 400-bbl Condensate Tanks - Produced Condensate

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	19.00
Avg. Liquid Height (ft):	10.00
Volume (gallons):	16,074.56
Turnovers:	62.71
Net Throughput(gal/yr):	1,008,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Williston, North Dakota (Avg Atmospheric Pressure = 13.82 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

ORM Lignite - Produced Condensate - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
ONEOK Condensate	All	47.88	38.82	56.94	43.67	8.7119	7.5669	10.3223	53.5810			89.19	
Benzene						0.8262	0.6293	1.0722	78.1100	0.0045	0.0007	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (n-1)						20.7071	17.9500	24.8363	58.1230	0.0534	0.2113	58.12	Option 1: VP40 = 17.95 VP50 = 21.45
Cyclohexane						0.8640	0.6624	1.1144	84.1600	0.1020	0.0168	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Decane (-n)						0.0253	0.0210	0.0311	142.2900	0.0125	0.0001	142.29	Option 1: VP40 = .021003 VP50 = .026411
Ethylbenzene						0.0703	0.0499	0.0975	106.1700	0.0016	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.4217	0.3156	0.5577	100.2000	0.2181	0.0176	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.3832	1.0718	1.7659	86.1700	0.0693	0.0183	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						30.9378	27.0700	36.6639	58.1230	0.0227	0.1342	58.12	Option 1: VP40 = 27.07 VP50 = 31.98
Isopentane						7.4621	5.8780	9.3573	72.1500	0.0654	0.0932	72.15	Option 1: VP40 = 5.878 VP50 = 7.889
Nonane (-n)						0.0490	0.0403	0.0610	128.2600	0.0642	0.0006	128.26	Option 1: VP40 = .040291 VP50 = .051285
Octane (-n)						0.1070	0.0868	0.1353	114.2300	0.2538	0.0052	114.23	Option 1: VP40 = .086844 VP50 = .112388
Pentane (-n)						5.1895	4.1868	6.3841	72.1500	0.0674	0.0668	72.15	Option 3: A=27691, B=7.558
Propane						89.4122	79.6600	103.6074	44.0970	0.0254	0.4339	44.10	Option 1: VP40 = 79.66 VP50 = 92.04
Toluene						0.2238	0.1649	0.2999	92.1300	0.0256	0.0011	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0583	0.0412	0.0811	106.1700	0.0141	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

ORM Lignite - Produced Condensate - Vertical Fixed Roof Tank

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	121.69	63.69	185.39
Decane (-n)	0.44	0.23	0.66
Ethylbenzene	0.16	0.08	0.24
Heptane (-n)	126.99	66.47	193.46
Hexane (-n)	132.35	69.28	201.63
Isobutane	969.71	507.55	1,477.26
Nonane (-n)	4.34	2.27	6.61
Octane (-n)	37.49	19.62	57.11
Pentane (-n)	482.96	252.79	735.75
Propane	3,135.86	1,641.33	4,777.19
Toluene	7.91	4.14	12.05
Benzene	5.13	2.69	7.82
Xylenes (mixed isomers)	1.13	0.59	1.73
Isopentane	673.86	352.70	1,026.56
ONEOK Condensate	7,226.84	3,782.58	11,009.42
Butane (n-1)	1,526.82	799.15	2,325.96

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	ORM Lignite - Trucked Condensate
City:	
State:	North Dakota
Company:	ONEOK Rockies Midstream, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Each of Two (2) 400-bbl Condensate Tanks - Trucked Condensate

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	19.00
Avg. Liquid Height (ft):	10.00
Volume (gallons):	16,074.56
Turnovers:	15.68
Net Throughput(gal/yr):	252,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Williston, North Dakota (Avg Atmospheric Pressure = 13.82 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

ORM Lignite - Trucked Condensate - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
ONEOK Condensate	All	47.88	38.82	56.94	43.67	8.7119	7.5669	10.3223	53.5810			89.19	
Benzene						0.8262	0.6293	1.0722	78.1100	0.0045	0.0007	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (n-1)						20.7071	17.9500	24.8363	58.1230	0.0534	0.2113	58.12	Option 1: VP40 = 17.95 VP50 = 21.45
Cyclohexane						0.8640	0.6624	1.1144	84.1600	0.1020	0.0168	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Decane (-n)						0.0253	0.0210	0.0311	142.2900	0.0125	0.0001	142.29	Option 1: VP40 = .021003 VP50 = .026411
Ethylbenzene						0.0703	0.0499	0.0975	106.1700	0.0016	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.4217	0.3156	0.5577	100.2000	0.2181	0.0176	100.20	Option 3: A=37358, B=8,2585
Hexane (-n)						1.3832	1.0718	1.7659	86.1700	0.0693	0.0183	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						30.9378	27.0700	36.6639	58.1230	0.0227	0.1342	58.12	Option 1: VP40 = 27.07 VP50 = 31.98
Isopentane						7.4621	5.8780	9.3573	72.1500	0.0654	0.0932	72.15	Option 1: VP40 = 5.878 VP50 = 7.889
Nonane (-n)						0.0490	0.0403	0.0610	128.2600	0.0642	0.0006	128.26	Option 1: VP40 = .040291 VP50 = .051285
Octane (-n)						0.1070	0.0868	0.1353	114.2300	0.2538	0.0052	114.23	Option 1: VP40 = .086844 VP50 = .112388
Pentane (-n)						5.1895	4.1868	6.3841	72.1500	0.0674	0.0668	72.15	Option 3: A=27691, B=7,558
Propane						89.4122	79.6600	103.6074	44.0970	0.0254	0.4339	44.10	Option 1: VP40 = 79.66 VP50 = 92.04
Toluene						0.2238	0.1649	0.2999	92.1300	0.0256	0.0011	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.0583	0.0412	0.0811	106.1700	0.0141	0.0002	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

ORM Lignite - Trucked Condensate - Vertical Fixed Roof Tank

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
ONEOK Condensate	2,800.77	3,782.58	6,583.35
Butane (n-1)	591.72	799.15	1,390.86
Cyclohexane	47.16	63.69	110.86
Decane (-n)	0.17	0.23	0.40
Ethylbenzene	0.06	0.08	0.14
Heptane (-n)	49.22	66.47	115.68
Hexane (-n)	51.29	69.28	120.57
Isobutane	375.81	507.55	883.36
Nonane (-n)	1.68	2.27	3.95
Octane (-n)	14.53	19.62	34.15
Pentane (-n)	187.17	252.79	439.96
Propane	1,215.31	1,641.33	2,856.64
Toluene	3.07	4.14	7.21
Benzene	1.99	2.69	4.68
Xylenes (mixed isomers)	0.44	0.59	1.03
Isopentane	261.15	352.70	613.86

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	ORM Lignite 200-bbl Methanol
City:	
State:	North Dakota
Company:	ONEOK Rockies Midstream, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	One (1) 200-bbl Methanol Tank

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	10.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.50
Volume (gallons):	8,225.29
Turnovers:	53.10
Net Throughput(gal/yr):	436,800.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Williston, North Dakota (Avg Atmospheric Pressure = 13.82 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

ORM Lignite 200-bbl Methanol - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Methyl alcohol	All	47.88	38.82	56.94	43.67	0.9738	0.7155	1.3087	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

ORM Lignite 200-bbl Methanol - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	237.40	101.28	338.68

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	ORM Lignite 12-bbl Methanol
City:	
State:	North Dakota
Company:	ONEOK Rockies Midstream, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	One (1) 12-bbl Methanol Tank

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	3.00
Liquid Height (ft) :	4.00
Avg. Liquid Height (ft):	2.00
Volume (gallons):	211.51
Turnovers:	123.91
Net Throughput(gal/yr):	26,208.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Williston, North Dakota (Avg Atmospheric Pressure = 13.82 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

ORM Lignite 12-bbl Methanol - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Methyl alcohol	All	47.88	38.82	56.94	43.67	0.9738	0.7155	1.3087	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

ORM Lignite 12-bbl Methanol - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	7.96	4.38	12.33