west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G35-D GENERAL PERMIT REGISTRATION APPLICATION

PREVENTION AND CONTROL OF AIR POLLUTION IN REGARD TO THE CONSTRUCTION, MODIFICATION, RELOCATION, ADMINISTRATIVE UPDATE AND OPERATION OF NATURAL GAS COMPRESSOR AND/OR DEHYDRATION FACILITIES

☐CONSTRUCTION
☐MODIFICATION
☐RELOCATION
☒CLASS I ADMINISTRATIVE UPDATE
☐CLASS II ADMINISTRATIVE UPDATE

SECTION 1. GENERAL INFORMATION

Name of Applicant (as registered with the WV Secretary of State's Office): Goff Connector LLC

Federal Employer ID No. (FEIN): 82-3535826

Applicant's Mailing Address: 4630 N. Loop 1604, Suite 206

City: San Antonio	State: TX	ZIP Code: 78249

Facility Name: Connector Compressor Station

Operating Site Physical Address:
If none available, list road, city or town and zip of facility.

City: Bridgeport	Zip Code: 26330	County: Harrison

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: 39.23405N
Longitude: 80.17733W

SIC Code: 1311 NAICS Code: 211130	DAQ Facility ID No. (For existing facilities) 033-00272

CERTIFICATION OF INFORMATION

This G35-D General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of the Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. **Any administratively incomplete or improperly signed or unsigned G35-D Registration Application will be returned to the applicant. Furthermore, if the G35-D forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.**

I hereby certify that Mike Hopkins is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Division of Air Quality immediately.

I hereby certify that all information contained in this G35-D General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible.

Responsible Official Signature: _____

Name and Title: Mike Hopkins	Phone: 918-284-1382	Fax: N/A
Email: mhopkins@fullstreameh.com	Date: 4/27/2018	

If applicable:
Authorized Representative Signature: _____

Name and Title:	Phone:	Fax:
Email:	Date:	

If applicable:
Environmental Contact

Name and Title: Chris Rumer	Phone: 412-221-1100 ext. 216	Fax: N/A
Email: crumer@se-env.com	Date: 4/27/2018	

OPERATING SITE INFORMATION
Briefly describe the proposed new operation and/or any change(s) to the facility: Goff Connector LLC recently received approval to install emissions units at the Connector Compressor Station under Registration# G35-D135. Three (3) dehydration units rated at 175 MMscfd were included in the original application. The permitted throughput listed in Registration #G35-D135 is 125 MMscfd per unit. Goff Connector is requesting this Class I Administrative Update to for consistency from the original application to what is listed in Registration #G35-D135.
Directions to the facility: From Bridgeport, WV, head east on Route 50 for 1.2 miles. Turn right onto WV-76E (0.7 mi). Continue straight onto Oral Lake Drive (3.4 mi). Turn right onto Pigtail Run-Green Valley (0.7 mi). Turn left to stay on Pigtail-Green Valley (0.4 mi). Slight left onto Co Rte 77/7 (0.7 mi). Site is on the left at the fork.

ATTACHMENTS AND SUPPORTING DOCUMENTS	
I have enclosed the following required documents:	
Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22). ☐ Check attached to front of application. ☐ I wish to pay by electronic transfer. Contact for payment (incl. name and email address): ☐ I wish to pay by credit card. Contact for payment (incl. name and email address): ☐$500 (Construction, Modification, and Relocation) ☐$300 (Class II Administrative Update) ☐$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO and/or OOOOa [1] ☐$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH [2] [1] Only one NSPS fee will apply. [2] Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ. *NSPS and NESHAP fees apply to new construction or if the source is being modified.*	
☒ Responsible Official or Authorized Representative Signature (if applicable)	
☐ Single Source Determination Form **(must be completed in its entirety)** – Attachment A	
☐ Siting Criteria Waiver (if applicable) – Attachment B	☒ Current Business Certificate – Attachment C
☒ Process Flow Diagram – Attachment D	☐ Process Description – Attachment E
☐ Plot Plan – Attachment F	☒ Area Map – Attachment G
☐ G35-D Section Applicability Form – Attachment H	☒ Emission Units/ERD Table – Attachment I
☐ Fugitive Emissions Summary Sheet – Attachment J	
☐ Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment K	
☐ Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment L	
☐ Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment M	
☐ Tanker Truck Loading Data Sheet (if applicable) – Attachment N	
☒ Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment O	
☐ Pneumatic Controllers Data Sheet – Attachment P	
☐ Centrifugal Compressor Data Sheet – Attachment Q	
☐ Reciprocating Compressor Data Sheet – Attachment R	
☐ Blowdown and Pigging Operations Data Sheet – Attachment S	
☐ Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment T	
☒ Emission Calculations (please be specific and include all calculation methodologies used) – Attachment U	
☒ Facility-wide Emission Summary Sheet(s) – Attachment V	
☐ Class I Legal Advertisement – Attachment W	
☐ One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

All attachments must be identified by name, divided into sections, and submitted in order.

ATTACHMENT C

Current Business Certificate

ATTACHMENT C – CURRENT BUSINESS CERTIFICATE

If the applicant is a resident of West Virginia, the applicant should provide a copy of the current Business Registration Certificate issued to them from the West Virginia Secretary of State's Office. If the applicant is not a resident of the State of West Virginia, the registrant should provide a copy of the Certificate of Authority/Authority of LLC/Registration. This information is required for all sources to operate a business in West Virginia regardless of whether it is a construction, modification, or administrative update.

If you are a new business to West Virginia and have applied to the West Virginia Secretary of State's Office for a business license, please include a copy of your application.

Please note: Under the West Virginia Bureau of Employment Programs, 96CSR1, the DAQ may not grant, issue, or renew approval of any permit, general permit registration, or Certificate to Operate to any employing unit whose account is in default with the Bureau of Employment Programs Unemployment Compensation Division.

State of West Virginia

Certificate

I, Mac Warner, Secretary of State,
of the State of West Virginia, hereby certify that

GOFF CONNECTOR LLC

has filed the appropriate registration documents in my office according to the provisions of the West Virginia Code and hereby declare the organization listed above as duly registered with the Secretary of State's Office.

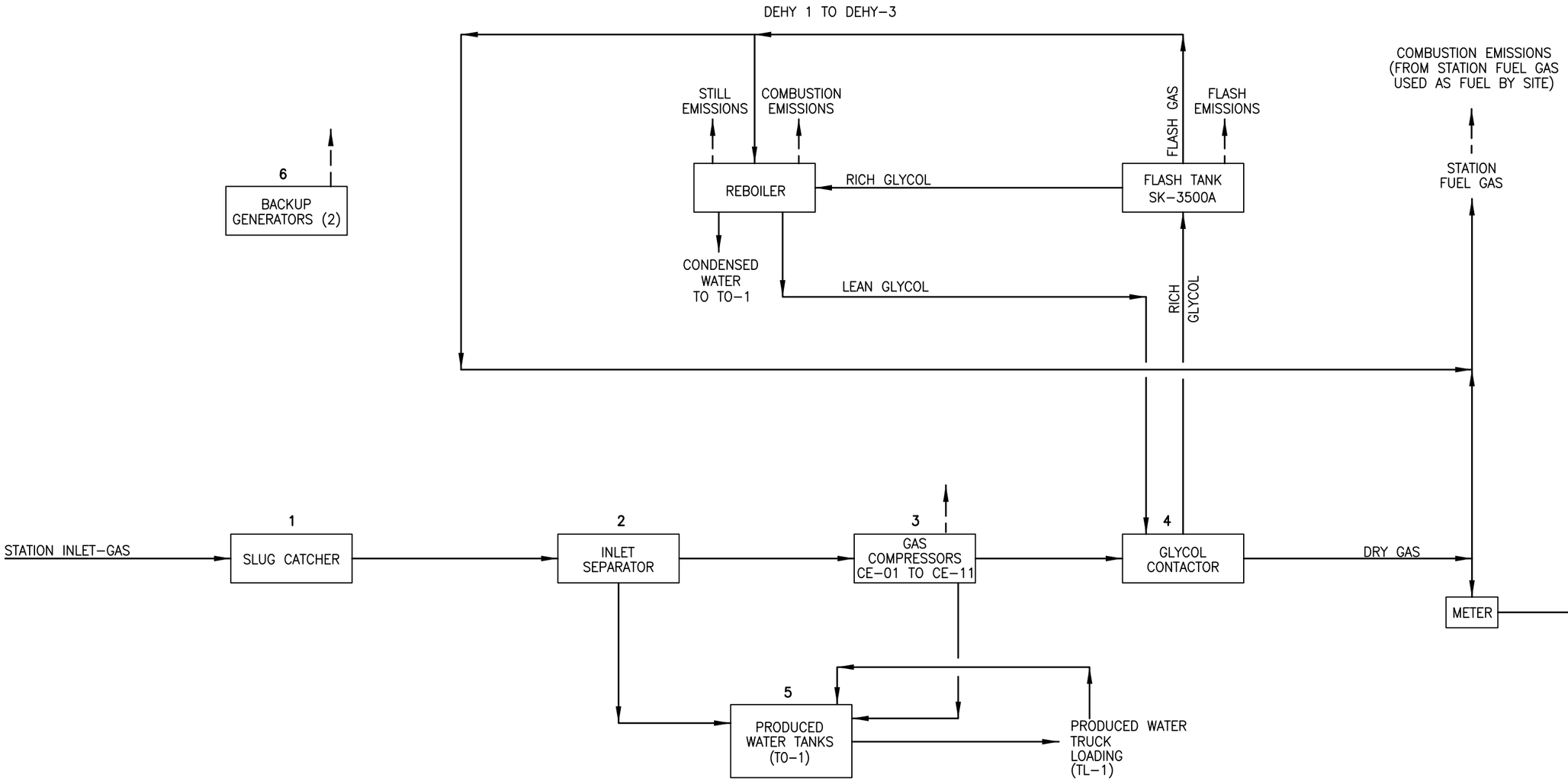
Given under my hand and
the Great Seal of West Virginia
on this day of
December 08, 2017

Mac Warner

Secretary of State

ATTACHMENT D

Process Flow Diagram



LEGEND:

— — ► AIR EMISSIONS

DRAWN BY	DJF
DATE	2/7/18
CHECKED BY	CMR
SET JOB NO.	218011–01
SET DWG FILE	CONNECTOR CS FDb01.dwg
DRAWING SCALE	N.T.S.

TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221–1100

GOFF CONNECTOR, LLC

CONNECTOR COMPRESSOR STATION
HARRISON COUNTY, WEST VIRGINIA
BLOCK FLOW DIAGRAM

DRAWING NAME: FIGURE D1

REV. 0

ATTACHMENT G

Area Map

ATTACHMENT G – AREA MAP

Provide an Area Map showing the current or proposed location of the operation. On this map, identify plant or operation property lines, access roads and any adjacent dwelling, business, public building, school, church, cemetery, community or institutional building or public park within a 300' boundary circle of the collective emission units.

Please provide a 300' boundary circle on the map surrounding the proposed emission units collectively.

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

DRAWN BY	DJF
DATE	1/31/18
CHECKED BY	CMR
SET JOB NO.	218011
SET DWG FILE	CONNECTOR CS 300 FT RADm01.dwg
DRAWING SCALE	1"=200'

SE TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

GOFF CONNECTOR, LLC

CONNECTOR COMPRESSOR STATION
HARRISON COUNTY, WEST VIRGINIA
300' RADIUS

DRAWING NAME	REV.
FIGURE G1	0

ATTACHMENT I

Emission Units / Emission Reduction Devices (ERD)

ATTACHMENT I – EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

Include ALL emission units and air pollution control devices/ERDs that will be part of this permit application review. Do not include fugitive emission sources in this table. Deminimis storage tanks shall be listed in the Attachment K table. This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed	Manufac. Date[3]	Design Capacity	Type[4] and Date of Change	Control Device(s)[5]	ERD(s)[6]
CE-01	S01	Caterpillar G3606 Compressor Engine	NEW	2006	1,775 hp	NEW	1C	N/A
CE-02	S02	Caterpillar G3606 Compressor Engine	NEW	2002	1,775 hp	NEW	2C	N/A
CE-03	S03	Caterpillar G3606 Compressor Engine	NEW	1998	1,775 hp	NEW	3C	N/A
CE-04	S04	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	4C	N/A
CE-05	S05	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	5C	N/A
CE-06	S06	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	6C	N/A
CE-07	S07	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	7C	N/A
CE-08	S08	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	8C	N/A
CE-09	S09	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	9C	N/A
CE-10	S10	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	10C	N/A
CE-11	S11	Caterpillar G3608 Compressor Engine	NEW	After 2011	2,500 hp	NEW	11C	N/A
GE-01	S12	Generac MG300 Generator (EPA Certified)	NEW	TBD	460 hp	NEW	N/A	N/A
GE-02	S13	Generac MG300 Generator (EPA Certified)	NEW	TBD	460 hp	NEW	N/A	N/A
DEHY-1	S14	175 MMscfd Glycol Dehydration Unit	NEW	TBD	175 MMscfd	NEW	N/A	N/A
DEHY-2	S15	175 MMscfd Glycol Dehydration Unit	NEW	TBD	175 MMscfd	NEW	N/A	N/A
DEHY-3	S16	175 MMscfd Glycol Dehydration Unit	NEW	TBD	175 MMscfd	NEW	N/A	N/A
REB1	S17	Reboiler	NEW	TBD	2 MMBtu/hr	NEW	N/A	N/A
REB2	S18	Reboiler	NEW	TBD	2 MMBtu/hr	NEW	N/A	N/A
REB3	S19	Reboiler	NEW	TBD	2 MMBtu/hr	NEW	N/A	N/A
TO-1	S20	Five (5) 400-bbl Produced Water Tanks	NEW	TBD	400 bbls	NEW	N/A	N/A

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] When required by rule
[4] New, modification, removal, existing
[5] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.
[6] For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

ATTACHMENT O

Glycol Dehydration Unit(s) Data Sheet

ATTACHMENT O – GLYCOL DEHYDRATION UNIT DATA SHEET

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI- GLYCalc™ input and aggregate report. Use extra pages if necessary.

Manufacturer: TBD	Model: TBD
Max. Dry Gas Flow Rate: 175 mmscf/day	Reboiler Design Heat Input: 2.0 MMBTU/hr
Design Type: ☒ TEG ☐ DEG ☐ EG	Source Status[1]: NS
Date Installed/Modified/Removed[2]: TBD	Regenerator Still Vent APCD/ERD[3]: NA
Control Device/ERD ID#[3]: NA	Fuel HV (BTU/scf): 1034
H_2S Content (gr/100 scf): 0	Operation (hours/year): 8,760
Pump Rate (scfm): 0 (Electric-Driven Pneumatic)	
Water Content (wt %) in: Wet Gas: Saturated	Dry Gas: 5.5 lb H2O/MMscf

Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? X Yes ☐ No: If Yes, answer the following:

The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. ☐ Yes X No

The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. X Yes ☐ No

Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? ☐ Yes X No

Is a lean glycol pump optimization plan being utilized? ☐ Yes X No

Recycling the glycol dehydration unit back to the flame zone of the reboiler.
☐ Yes ☒ No
If yes:
Is the reboiler configured to accept flash drum vapors (straight from the glycol dehydrator)? ☒ Yes ☐ No
Is the reboiler configured to accept still vent vapors (after a condenser)? ☐ Yes ☒ No
Is the reboiler configured to accept both in the same operation? ☐ Yes ☒ No

Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.
☒ Yes ☐ No

What happens when temperature controller shuts off fuel to the reboiler?
☒ Still vent emissions to the atmosphere.
☐ Still vent emissions stopped with valve.
☐ Still vent emissions to glow plug.

Please indicate if the following equipment is present.
☒ Flash Tank
☐ Burner management system that continuously burns condenser or flash tank vapors

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)
VOC (Flash)	
BTEX (Flash)	
Total HAPs (Flash)	

Emissions Data

Emission Unit ID / Emission Point ID[4]	Description	Calculation Methodology[5]	PTE[6]	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)
REB1/S17 REB2/S18 REB3/S19	Reboiler Vent	AP-42	NO_x	0.20	0.86
		AP-42	CO	0.17	0.73
		AP-42	VOC	0.01	0.05
		AP-42	SO_2	<0.01	<0.01

		AP-42	PM_{10}	0.02	0.07
		Subpart W	GHG (CO_2e)	236.69	1,037
DEHY-1/S14 DEHY-2/S15 DEHY-3/S16	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	0.92	4.01
		GRI-GlyCalc™	Benzene	0.08	0.34
		GRI-GlyCalc™	Toluene	0.13	0.57
		GRI-GlyCalc™	Ethylbenzene	0.18	0.76
		GRI-GlyCalc™	Xylenes	0.25	1.07
		GRI-GlyCalc™	n-Hexane	0.02	0.50
DEHY-1/S14 DEHY-2/S15 DEHY-3/S16	Glycol Flash Tank	GRI-GlyCalc™	VOC	0.71	3.08
		GRI-GlyCalc™	Benzene	0.03	0.011
		GRI-GlyCalc™	Toluene	0.004	0.015
		GRI-GlyCalc™	Ethylbenzene	0.003	0.014
		GRI-GlyCalc™	Xylenes	0.004	0.014
		GRI-GlyCalc™	n-Hexane	0.008	0.032

1 Enter the Source Status using the following codes:

NS	Construction of New Source	ES	Existing Source
MS	Modification of Existing Source		

2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.

3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:

NA	None	CD	Condenser	FL	Flare	
CC	Condenser/Combustion Combination	TO	Thermal Oxidizer	O	Other	(please list)

4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

5 Enter the Potential Emissions Data Reference designation using the following codes:

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-GLYCalc™	OT	Other	(please list)

6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

Gas Analytical Services

CHARLESTON, WV
304-677-9926

Good
LELAP Certification #
04048

Customer	: 0034 - MK MIDSTREAM	**Date Sampled**	: 12/13/2016
Station ID	: 2601	**Date Analyzed**	: 12/19/2016
Cylinder ID	: 0280	**Effective Date**	: 01/01/2017
Producer	:	**Cyl Pressure**	: 625
Lease	: GOFF WEST	**Temp**	: 60
Area	: 190 - UNKNOWN	**Cylinder Type**	: Spot
State	: WV	**Sample By**	: HT

COMPONENT	MOL %	GPM@14.73(PSIA)
Methane	96.8791	0.000
Ethane	3.4142	0.915
Propane	0.2210	0.061
Iso-Butane	0.0133	0.004
Normal-Butane	0.0198	0.006
Neo-Pentane	0.0006	0.000
Iso-Pentane	0.0038	0.001
Normal-Pentane	0.0022	0.001
Nitrogen	0.2624	0.000
Carbon-Dioxide	0.1770	0.000
Oxygen	0.0020	0.000
BENZENE	0.0000	0.000
ETHYLBENZENE	0.0000	0.000
TOLUENE	0.0000	0.000
M-XYLENE/P-XYLENE	0.0000	0.000
C6's	0.0026	0.001
C8's	0.0004	0.000
C9's	0.0000	0.000
C7's	0.0016	0.001
C10's	0.0000	0.000
C11's	0.0000	0.000
C12's	0.0000	0.000
TOTAL	100.0000	0.990

Compressibility Factor (Z) @ 14.73 @ 60 Deg. F = 0.9979 — **C5+ GPM** : 0.00200

Ideal Gravity: 0.5761 — **Real Gravity**: 0.5771 — **C5+ Mole %** : 0.0106

BTU @ (PSIA)	@14.65	@14.696	@14.73	@15.025
Ideal GPM	0.983	0.986	0.989	1.008
Ideal BTU Dry	1,032.69	1,035.94	1,038.33	1,059.13
Ideal BTU Sat	1,014.62	1,017.86	1,020.26	1,041.05
Real GPM	0.985	0.989	0.991	1.011
Real BTU Dry	1,034.91	1,038.16	1,040.57	1,061.46
Real BTU Sat	1,017.14	1,020.40	1,022.81	1,043.70

Comments:

Gas Analysis performed in accordance with GPA 2286 — **Sample Count** : 220000003

Analytical Calculations performed in accordance with GPA 2172 — **COC** :

Measurement Analyst: _____ **Ashley Free**

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Goff Compressor Station
File Name: C:\Rogers_Files\Fullstream\175MMCFD RAD 1-22-18.ddf
Date: February 02, 2018

DESCRIPTION:

Description: Preliminary Run
175 MMSCFD
Inlet Gas at 1220 psi
60% Flash Gas Control Via Fuel for
Re-Boiler
Glycol Recirc. Rate of 2.85

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 100.00 deg. F
Pressure: 1220.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.1770
Nitrogen	0.2624
Methane	95.8791
Ethane	3.4142
Propane	0.2210
Isobutane	0.0133
n-Butane	0.0198
Isopentane	0.0044
n-Pentane	0.0022
n-Hexane	0.0013
Other Hexanes	0.0013
Heptanes	0.0016
Benzene	0.0001
Toluene	0.0001
Ethylbenzene	0.0001
Xylenes	0.0001
C8+ Heavies	0.0040

DRY GAS:

Flow Rate: 175.0 MMSCF/day
Water Content: 5.5 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Recirculation Ratio: 2.9 gal/lb H2O

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Combustion device
Flash Control Efficiency: 60.00 %
Temperature: 210.0 deg. F
Pressure: 35.0 psig

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Goff Compressor Station
File Name: C:\Rogers_Files\Fullstream\175MMCFD RAD 1-22-18.ddf
Date: January 22, 2018

DESCRIPTION:

Description: Preliminary Run
175 MMSCFD
Inlet Gas at 1220 psi
60% Flash Gas Control Via Fuel for
Re-Boiler
Glycol Recirc. Rate of 2.85

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.2696	30.471	5.5610
Ethane	0.6190	14.857	2.7114
Propane	0.1593	3.822	0.6975
Isobutane	0.0196	0.472	0.0861
n-Butane	0.0435	1.044	0.1906
Isopentane	0.0109	0.262	0.0479
n-Pentane	0.0080	0.192	0.0350
n-Hexane	0.0112	0.269	0.0491
Other Hexanes	0.0075	0.181	0.0330
Heptanes	0.0353	0.847	0.1546
Benzene	0.0770	1.848	0.3372
Toluene	0.1287	3.088	0.5635
Ethylbenzene	0.1717	4.121	0.7520
Xylenes	0.2430	5.831	1.0642
Total Emissions	2.8044	67.305	12.2832
Total Hydrocarbon Emissions	2.8044	67.305	12.2832
Total VOC Emissions	0.9157	21.977	4.0108
Total HAP Emissions	0.6315	15.157	2.7661
Total BTEX Emissions	0.6203	14.888	2.7170

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	12.2344	293.625	53.5866
Ethane	2.2134	53.121	9.6946
Propane	0.2745	6.589	1.2025
Isobutane	0.0268	0.643	0.1173
n-Butane	0.0490	1.177	0.2148
Isopentane	0.0124	0.297	0.0542
n-Pentane	0.0077	0.184	0.0335
n-Hexane	0.0072	0.172	0.0314
Other Hexanes	0.0060	0.145	0.0265
Heptanes	0.0135	0.324	0.0591
Benzene	0.0025	0.061	0.0111

Toluene	0.0033	0.079	0.0144
Ethylbenzene	0.0030	0.073	0.0132
Xylenes	0.0031	0.074	0.0136
C8+ Heavies	0.2938	7.052	1.2870
Total Emissions	15.1507	363.616	66.3599
Total Hydrocarbon Emissions	15.1507	363.616	66.3599
Total VOC Emissions	0.7029	16.870	3.0787
Total HAP Emissions	0.0191	0.459	0.0838
Total BTEX Emissions	0.0120	0.287	0.0524

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	30.5860	734.063	133.9665
Ethane	5.5335	132.803	24.2366
Propane	0.6864	16.472	3.0062
Isobutane	0.0669	1.606	0.2932
n-Butane	0.1226	2.943	0.5371
Isopentane	0.0309	0.742	0.1355
n-Pentane	0.0191	0.460	0.0839
n-Hexane	0.0179	0.430	0.0785
Other Hexanes	0.0151	0.363	0.0662
Heptanes	0.0338	0.810	0.1478
Benzene	0.0063	0.152	0.0278
Toluene	0.0082	0.198	0.0361
Ethylbenzene	0.0076	0.181	0.0331
Xylenes	0.0078	0.186	0.0340
C8+ Heavies	0.7346	17.630	3.2175
Total Emissions	37.8767	909.040	165.8998
Total Hydrocarbon Emissions	37.8767	909.040	165.8998
Total VOC Emissions	1.7573	42.174	7.6968
Total HAP Emissions	0.0478	1.148	0.2095
Total BTEX Emissions	0.0299	0.718	0.1310

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	13.5040	324.096	59.1476
Ethane	2.8324	67.978	12.4060
Propane	0.4338	10.411	1.9000
Isobutane	0.0464	1.114	0.2033
n-Butane	0.0926	2.221	0.4054
Isopentane	0.0233	0.559	0.1021
n-Pentane	0.0157	0.376	0.0685
n-Hexane	0.0184	0.441	0.0805
Other Hexanes	0.0136	0.326	0.0595
Heptanes	0.0488	1.171	0.2137
Benzene	0.0795	1.909	0.3484
Toluene	0.1320	3.167	0.5780
Ethylbenzene	0.1747	4.193	0.7653
Xylenes	0.2461	5.906	1.0778
C8+ Heavies	0.2938	7.052	1.2870
Total Emissions	17.9550	430.921	78.6431
Total Hydrocarbon Emissions	17.9550	430.921	78.6431
Total VOC Emissions	1.6186	38.847	7.0895

Total HAP Emissions	0.6507	15.616	2.8499
Total BTEX Emissions	0.6323	15.175	2.7694

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	139.5275	59.1476	57.61
Ethane	26.9479	12.4060	53.96
Propane	3.7038	1.9000	48.70
Isobutane	0.3792	0.2033	46.38
n-Butane	0.7276	0.4054	44.29
Isopentane	0.1834	0.1021	44.33
n-Pentane	0.1189	0.0685	42.33
n-Hexane	0.1276	0.0805	36.90
Other Hexanes	0.0992	0.0595	40.02
Heptanes	0.3024	0.2137	29.33
Benzene	0.3650	0.3484	4.56
Toluene	0.5996	0.5780	3.61
Ethylbenzene	0.7851	0.7653	2.53
Xylenes	1.0982	1.0778	1.86
C8+ Heavies	3.2175	1.2870	60.00
Total Emissions	178.1830	78.6431	55.86
Total Hydrocarbon Emissions	178.1830	78.6431	55.86
Total VOC Emissions	11.7076	7.0895	39.45
Total HAP Emissions	2.9756	2.8499	4.22
Total BTEX Emissions	2.8480	2.7694	2.76

EQUIPMENT REPORTS:

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:	3.94	lbs. H2O/MMSCF
Temperature:	100.0	deg. F
Pressure:	1220.0	psig
Dry Gas Flow Rate:	175.0000	MMSCF/day
Glycol Losses with Dry Gas:	3.7018	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	50.54	lbs. H2O/MMSCF
Specified Lean Glycol Recirc. Ratio:	2.85	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.79%	92.21%
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	99.93%	0.07%
n-Pentane	99.91%	0.09%
n-Hexane	99.86%	0.14%
Other Hexanes	99.89%	0.11%
Heptanes	99.78%	0.22%
Benzene	94.45%	5.55%
Toluene	92.27%	7.73%
Ethylbenzene	91.21%	8.79%
Xylenes	87.71%	12.29%
C8+ Heavies	99.44%	0.56%

FLASH TANK

Flash Control: Combustion device
Flash Control Efficiency: 60.00 %
Flash Temperature: 210.0 deg. F
Flash Pressure: 35.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.66%	0.34%
Carbon Dioxide	23.01%	76.99%
Nitrogen	3.83%	96.17%
Methane	3.99%	96.01%
Ethane	10.06%	89.94%
Propane	18.83%	81.17%
Isobutane	22.69%	77.31%
n-Butane	26.19%	73.81%
Isopentane	26.49%	73.51%
n-Pentane	29.80%	70.20%
n-Hexane	38.80%	61.20%
Other Hexanes	33.97%	66.03%
Heptanes	51.36%	48.64%
Benzene	92.77%	7.23%
Toluene	94.45%	5.55%
Ethylbenzene	96.22%	3.78%
Xylenes	97.31%	2.69%
C8+ Heavies	11.62%	88.38%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	28.01%	71.99%
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	1.89%	98.11%
n-Pentane	1.68%	98.32%
n-Hexane	1.29%	98.71%
Other Hexanes	2.94%	97.06%
Heptanes	0.97%	99.03%
Benzene	5.39%	94.61%
Toluene	8.37%	91.63%
Ethylbenzene	10.82%	89.18%
Xylenes	13.29%	86.71%
C8+ Heavies	103.51%	-3.51%

STREAM REPORTS:

WET GAS STREAM

Temperature: 100.00 deg. F
Pressure: 1234.70 psia
Flow Rate: 7.30e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.06e-001	3.69e+002
Carbon Dioxide	1.77e-001	1.50e+003
Nitrogen	2.62e-001	1.41e+003
Methane	9.58e+001	2.96e+005
Ethane	3.41e+000	1.97e+004
Propane	2.21e-001	1.87e+003
Isobutane	1.33e-002	1.49e+002
n-Butane	1.98e-002	2.21e+002
Isopentane	4.40e-003	6.10e+001
n-Pentane	2.20e-003	3.05e+001
n-Hexane	1.30e-003	2.15e+001
Other Hexanes	1.30e-003	2.15e+001
Heptanes	1.60e-003	3.08e+001
Benzene	9.99e-005	1.50e+000
Toluene	9.99e-005	1.77e+000
Ethylbenzene	9.99e-005	2.04e+000
Xylenes	9.99e-005	2.04e+000
C8+ Heavies	4.00e-003	1.31e+002
Total Components	100.00	3.21e+005

DRY GAS STREAM

Temperature: 100.00 deg. F
Pressure: 1234.70 psia
Flow Rate: 7.29e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	8.31e-003	2.87e+001
Carbon Dioxide	1.77e-001	1.49e+003
Nitrogen	2.62e-001	1.41e+003
Methane	9.59e+001	2.96e+005
Ethane	3.41e+000	1.97e+004

Component		
Propane	2.21e-001	1.87e+003
Isobutane	1.33e-002	1.48e+002
n-Butane	1.98e-002	2.21e+002
Isopentane	4.40e-003	6.10e+001
n-Pentane	2.20e-003	3.05e+001
n-Hexane	1.30e-003	2.15e+001
Other Hexanes	1.30e-003	2.15e+001
Heptanes	1.60e-003	3.07e+001
Benzene	9.45e-005	1.42e+000
Toluene	9.23e-005	1.63e+000
Ethylbenzene	9.12e-005	1.86e+000
Xylenes	8.77e-005	1.79e+000
C8+ Heavies	3.98e-003	1.30e+002
Total Components	100.00	3.21e+005

LEAN GLYCOL STREAM

Temperature: 100.00 deg. F
Flow Rate: 1.56e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	8.65e+003
Water	1.50e+000	1.32e+002
Carbon Dioxide	2.43e-012	2.14e-010
Nitrogen	2.01e-013	1.76e-011
Methane	1.22e-017	1.07e-015
Ethane	3.31e-008	2.90e-006
Propane	3.92e-010	3.44e-008
Isobutane	2.96e-011	2.60e-009
n-Butane	4.69e-011	4.12e-009
Isopentane	2.39e-006	2.10e-004
n-Pentane	1.55e-006	1.36e-004
n-Hexane	1.67e-006	1.46e-004
Other Hexanes	2.61e-006	2.29e-004
Heptanes	3.95e-006	3.47e-004
Benzene	4.99e-005	4.39e-003
Toluene	1.34e-004	1.18e-002
Ethylbenzene	2.37e-004	2.08e-002
Xylenes	4.24e-004	3.73e-002
C8+ Heavies	1.14e-003	9.99e-002
Total Components	100.00	8.78e+003

RICH GLYCOL STREAM

Temperature: 100.00 deg. F
Pressure: 1234.70 psia
Flow Rate: 1.64e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.44e+001	8.65e+003
Water	5.15e+000	4.72e+002
Carbon Dioxide	2.33e-002	2.14e+000
Nitrogen	1.92e-003	1.76e-001
Methane	3.48e-001	3.19e+001

Ethane	6.71e-002	6.15e+000
Propane	9.23e-003	8.46e-001
Isobutane	9.45e-004	8.66e-002
n-Butane	1.81e-003	1.66e-001
Isopentane	4.59e-004	4.21e-002
n-Pentane	2.98e-004	2.73e-002
n-Hexane	3.20e-004	2.93e-002
Other Hexanes	2.50e-004	2.29e-002
Heptanes	7.57e-004	6.94e-002
Benzene	9.57e-004	8.77e-002
Toluene	1.62e-003	1.49e-001
Ethylbenzene	2.18e-003	2.00e-001
Xylenes	3.14e-003	2.88e-001
C8+ Heavies	9.07e-003	8.31e-001
Total Components	100.00	9.16e+003

FLASH TANK OFF GAS STREAM

Temperature: 210.00 deg. F
Pressure: 49.70 psia
Flow Rate: 8.53e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.91e+000	1.58e+000
Carbon Dioxide	1.66e+000	1.64e+000
Nitrogen	2.69e-001	1.69e-001
Methane	8.49e+001	3.06e+001
Ethane	8.19e+000	5.53e+000
Propane	6.93e-001	6.86e-001
Isobutane	5.12e-002	6.69e-002
n-Butane	9.39e-002	1.23e-001
Isopentane	1.91e-002	3.09e-002
n-Pentane	1.18e-002	1.91e-002
n-Hexane	9.25e-003	1.79e-002
Other Hexanes	7.81e-003	1.51e-002
Heptanes	1.50e-002	3.38e-002
Benzene	3.61e-003	6.34e-003
Toluene	3.98e-003	8.25e-003
Ethylbenzene	3.17e-003	7.56e-003
Xylenes	3.25e-003	7.76e-003
C8+ Heavies	1.92e-001	7.35e-001
Total Components	100.00	4.13e+001

FLASH TANK GLYCOL STREAM

Temperature: 210.00 deg. F
Flow Rate: 1.63e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.48e+001	8.65e+003
Water	5.16e+000	4.70e+002
Carbon Dioxide	5.39e-003	4.91e-001
Nitrogen	7.40e-005	6.75e-003
Methane	1.39e-002	1.27e+000

Ethane	6.79e-003	6.19e-001
Propane	1.75e-003	1.59e-001
Isobutane	2.15e-004	1.96e-002
n-Butane	4.77e-004	4.35e-002
Isopentane	1.22e-004	1.11e-002
n-Pentane	8.91e-005	8.13e-003
n-Hexane	1.25e-004	1.14e-002
Other Hexanes	8.52e-005	7.77e-003
Heptanes	3.91e-004	3.56e-002
Benzene	8.92e-004	8.14e-002
Toluene	1.54e-003	1.40e-001
Ethylbenzene	2.11e-003	1.93e-001
Xylenes	3.07e-003	2.80e-001
C8+ Heavies	1.06e-003	9.65e-002
Total Components	100.00	9.12e+003

FLASH GAS EMISSIONS

Flow Rate: 1.94e+003 scfh
Control Method: Combustion Device
Control Efficiency: 60.00

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.46e+001	5.03e+001
Carbon Dioxide	2.88e+001	6.49e+001
Nitrogen	1.18e-001	1.69e-001
Methane	1.49e+001	1.22e+001
Ethane	1.44e+000	2.21e+000
Propane	1.22e-001	2.75e-001
Isobutane	8.99e-003	2.68e-002
n-Butane	1.65e-002	4.90e-002
Isopentane	3.35e-003	1.24e-002
n-Pentane	2.07e-003	7.66e-003
n-Hexane	1.62e-003	7.17e-003
Other Hexanes	1.37e-003	6.05e-003
Heptanes	2.63e-003	1.35e-002
Benzene	6.34e-004	2.54e-003
Toluene	6.99e-004	3.30e-003
Ethylbenzene	5.56e-004	3.02e-003
Xylenes	5.71e-004	3.10e-003
C8+ Heavies	3.37e-002	2.94e-001
Total Components	100.00	1.31e+002

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.18e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.94e+001	3.39e+002
Carbon Dioxide	5.90e-002	4.91e-001
Nitrogen	1.27e-003	6.75e-003
Methane	4.18e-001	1.27e+000
Ethane	1.09e-001	6.19e-001

Propane	1.91e-002	1.59e-001
Isobutane	1.79e-003	1.96e-002
n-Butane	3.96e-003	4.35e-002
Isopentane	8.01e-004	1.09e-002
n-Pentane	5.85e-004	7.99e-003
n-Hexane	6.88e-004	1.12e-002
Other Hexanes	4.63e-004	7.54e-003
Heptanes	1.86e-003	3.53e-002
Benzene	5.21e-003	7.70e-002
Toluene	7.38e-003	1.29e-001
Ethylbenzene	8.54e-003	1.72e-001
Xylenes	1.21e-002	2.43e-001
Total Components	100.00	3.42e+002

ANNUAL AIR-COOLED CONDENSER PERFORMANCE:

ANNUAL AIR-COOLED CONDENSER PERFORMANCE

Nearest Site for Air Temperature Data: Charleston, WV

Ambient Air Dry Bulb Temperature (deg. F)	Frequency (%)	Condenser Outlet Temperature (deg. F)
<=50	39.66	<=70
51-55	8.12	71-75
56-60	8.65	76-80
61-65	9.55	81-85
66-70	11.00	86-90
71-75	9.30	91-95
76-80	6.39	96-100
81-85	4.50	101-105
86-90	2.27	106-110
91-95	0.49	111-115
96-100	0.06	116-120
>100	0.01	>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	0.342	0.342	0.00
BTEX	2.739	2.739	0.00
Total HAP	2.794	2.794	0.00
VOC	4.288	4.288	0.00

ATTACHMENT U

Emissions Calculations

ATTACHMENT U – EMISSIONS CALCULATIONS

Provide detailed potential to emit (PTE) emission calculations for criteria and hazardous air pollutants (HAPs) for each emission point identified in the application. For hazardous air pollutants and volatile organic compounds (VOCs), the speciated emission calculations must be included.

Use the following guidelines to ensure complete emission calculations:

- All emission sources and fugitive emissions are included in the emission calculations, as well as all methods used to calculate the emissions.
- Proper emission point identification numbers and APCD and ERD identification numbers are used consistently in the emission calculations that are used throughout the application.
- A printout of the emission summary sheets is attached to the registration application.
- Printouts of any modeling must be included with the emission calculations. The modeling printout must show all inputs/outputs or assumptions that the modeled emissions are based upon.
- If emissions are provided from the manufacturer, the manufacturer's documentation and/or certified emissions must also be included.
- The emission calculations results must match the emissions provided on the emissions summary sheet.
- If calculations are based on a compositional analysis of the gas, attach the laboratory analysis. Include the following information: the location that the sample was taken as representative; the date the sample was taken; and, if the sample is considered representative, the reasons that it is considered representative (same gas field, same formation and depth, distance from actual site, etc.).
- Potential to emit (PTE) from the main or backup control device may be calculated based on the highest emission from a control device that could handle the stream, plus any intrinsic emission such as those from pilot flames.
- Provide any additional clarification as necessary. Additional clarification or information is especially helpful when reviewing modeling calculations to assist the engineer in understanding the basis of assumptions and/or inputs.

Please follow specific guidance provided on the emissions summary sheet when providing the calculations.

Goff Connector LLC - Connector CS

February 7, 2018

POTENTIAL AIR EMISSIONS

Emissions are for EACH Emissions Unit unless noted otherwise

Company ID	Permit # or Status	Emission Unit	Process Unit	Process Unit SCC	Maximum Hourly Throughput	Maximum Annual Throughput	Throughput Units	Annual Hours of Operation	No of Units	Pollutant	Capture Efficiency	Point Control Efficiency	Point Control	Fugitive Control Efficiency	Fugitive Control	EF	EF Units	EF Conversion Factor	EF Conversion Factor Units	Uncontrolled Emissions lb/hr	Uncontrolled Emissions tpy	Point Emissions Controlled lb/hr	Point Emissions Controlled tpy	Fugitive Emissions Controlled lb/hr	Fugitive Emissions Controlled tpy	Total Controlled (Point + Fugitive) lb/hr	Total Controlled (Point + Fugitive) tpy	Emission Factor Source / Notes
	NEW		**Gas Compressor Engine (SCC = 20200254)**																									
CE-01			Make = Caterpillar	20200254	1,775		bhp	8760	3	NOx	100%					0.5	g/bhp-hr	0.002204624	lb/g	1.957	8.57	1.957	8.570	0.000	0.000	1.957	8.570	Manufacturer
CE-02			Model = G3606		1,775		bhp	8760	3	CO	100%	93.10%	Catalyst			2.74	g/bhp-hr	0.002204624	lb/g	10.722	46.96	0.740	3.240	0.000	0.000	0.740	3.240	Manufacturer
CE-03			Engine Type = NG Lean Burn		1,775		bhp	8760	3	VOC	100%	75.00%	Catalyst			0.89	g/bhp-hr	0.002204624	lb/g	3.483	15.25	0.871	3.814	0.000	0.000	0.871	3.814	Manufacturer
			Fuel Consumption (HHV) =		1,775		bhp	8760	3	CO2	100%					441	g/bhp-hr	0.002204624	lb/g	1725.725	7558.67	1725.725	7558.675	0.000	0.000	1725.725	7558.675	Manufacturer
			7609 BTU/BHP-HR		1,775		bhp	8760	3	Formaldehyde	100%	93.00%	Catalyst			0.26	g/bhp-hr	0.002204624	lb/g	1.017	4.46	0.071	0.312	0.000	0.000	0.071	0.312	Manufacturer
			Non-Certified Engine		1,775		bhp	8760	3	TOC	100%					6.3	g/bhp-hr	0.002204624	lb/g	24.653	107.98	24.653	107.981	0.000	0.000	24.653	107.981	Manufacturer
			Construction date		1,775		bhp	8760	3	CH4	100%					5.36	g/bhp-hr	0.002204624	lb/g	20.975	91.87	20.975	91.870	0.000	0.000	20.975	91.870	Manufacturer
			Unit #0586: 10/27/2006		13.506		MMBtu	8760	3	SO2	100%					5.88E-04	lb/MMBtu			0.008	0.03	0.008	0.035	0.000	0.000	0.008	0.035	AP-42 (4-stroke lean burn)
			Unit #0153: 10/02/2002		13.506		MMBtu	8760	3	PM10	100%					7.71E-05	lb/MMBtu			0.001	0.00	0.001	0.005	0.000	0.000	0.001	0.005	AP-42 (4-stroke lean burn)
			Unit #0030: 09/15/1998		13.506		MMBtu	8760	3	PM2.5	100%					7.71E-05	lb/MMBtu			0.001	0.00	0.001	0.005	0.000	0.000	0.001	0.005	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	PM	100%					9.91E-03	lb/MMBtu			0.134	0.59	0.134	0.586	0.000	0.000	0.134	0.586	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	N2O	100%					0.0002205	lb/MMBtu			0.003	0.01	0.003	0.013	0.000	0.000	0.003	0.013	40 CFR 98, Table C-2
					13.506		MMBtu	8760	3	acrolein	100%	75.00%	Catalyst			0.0052942	lb/MMBtu			0.072	0.31	0.018	0.078	0.000	0.000	0.018	0.078	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	acetaldehyde	100%	75.00%	Catalyst			0.00836	lb/MMBtu			0.113	0.49	0.028	0.124	0.000	0.000	0.028	0.124	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	biphenyl	100%	75.00%	Catalyst			0.0002184	lb/MMBtu			0.003	0.01	0.001	0.003	0.000	0.000	0.001	0.003	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	benzene	100%	75.00%	Catalyst			0.0004532	lb/MMBtu			0.006	0.03	0.002	0.007	0.000	0.000	0.002	0.007	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	toluene	100%	75.00%	Catalyst			0.0004202	lb/MMBtu			0.006	0.02	0.001	0.006	0.000	0.000	0.001	0.006	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	Ethylbenzene	100%	75.00%	Catalyst			4.09E-05	lb/MMBtu			0.001	0.00	0.000	0.001	0.000	0.000	0.000	0.001	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	Xylenes	100%	75.00%	Catalyst			0.0001895	lb/MMBtu			0.003	0.01	0.001	0.003	0.000	0.000	0.001	0.003	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	methanol	100%	75.00%	Catalyst			0.002575	lb/MMBtu			0.035	0.15	0.009	0.038	0.000	0.000	0.009	0.038	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	n-hexane	100%	75.00%	Catalyst			0.0011433	lb/MMBtu			0.015	0.07	0.004	0.017	0.000	0.000	0.004	0.017	AP-42 (4-stroke lean burn)
					13.506		MMBtu	8760	3	HAPs										1.270	5.562	0.134	0.588	0.000	0.000	0.134	0.588	AP-42 (4-stroke lean burn)
	NEW		**Gas Compressor Engine (SCC = 20200254 Int Comb)**																									
CE-04			Make = Caterpillar	20200254	2,500		bhp	8760	8	NOx	100%					0.3	g/bhp-hr	0.002204624	lb/g	1.653	7.24	1.653	7.242	0.000	0.000	1.653	7.242	Manufacturer
CE-05			Model = G3608		2,500		bhp	8760	8	CO	100%	93.20%	Catalyst			2.49	g/bhp-hr	0.002204624	lb/g	13.724	60.11	0.933	4.087	0.000	0.000	0.933	4.087	Manufacturer
CE-06			Engine Type = NG Lean Burn		2,500		bhp	8760	8	VOC	100%	75.00%	Catalyst			0.43	g/bhp-hr	0.002204624	lb/g	2.370	10.38	0.592	2.595	0.000	0.000	0.592	2.595	Manufacturer
CE-07			Fuel Consumption (HHV) =		2,500		bhp	8760	8	CO2	100%					425	g/bhp-hr	0.002204624	lb/g	2342.413	10259.77	2342.413	10259.771	0.000	0.000	2342.413	10259.771	Manufacturer
CE-08			7595 BTU/BHP-HR		2,500		bhp	8760	8	CH4	100%					4	g/bhp-hr	0.002204624	lb/g	22.046	96.56	22.046	96.563	0.000	0.000	22.046	96.563	Manufacturer
CE-09			Construction date = 2016 or 2017		2,500		bhp	8760	8	Formaldehyde	100%	93.00%	Catalyst			0.16	g/bhp-hr	0.002204624	lb/g	0.882	3.86	0.062	0.270	0.000	0.000	0.062	0.270	Manufacturer
CE-10			Non-Certified Engine		2,500		bhp	8760	8	TOC	100%					4.738	g/bhp-hr	0.002204624	lb/g	26.114	114.38	26.114	114.378	0.000	0.000	26.114	114.378	Manufacturer
CE-11					18.988		MMBtu	8760	8	SO2	100%					5.88E-04	lb/MMBtu			0.011	0.05	0.011	0.049	0.000	0.000	0.011	0.049	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	PM10	100%					7.71E-05	lb/MMBtu			0.001	0.01	0.001	0.006	0.000	0.000	0.001	0.006	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	PM2.5	100%					7.71E-05	lb/MMBtu			0.001	0.01	0.001	0.006	0.000	0.000	0.001	0.006	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	PM	100%					9.91E-03	lb/MMBtu			0.188	0.82	0.188	0.824	0.000	0.000	0.188	0.824	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	N2O	100%					0.0002205	lb/MMBtu			0.004	0.02	0.004	0.018	0.000	0.000	0.004	0.018	40 CFR 98, Table C-2
					18.988		MMBtu	8760	8	acrolein	100%	75.00%	Catalyst			0.0052942	lb/MMBtu			0.101	0.44	0.025	0.110	0.000	0.000	0.025	0.110	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	acetaldehyde	100%	75.00%	Catalyst			0.00836	lb/MMBtu			0.159	0.70	0.040	0.174	0.000	0.000	0.040	0.174	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	biphenyl	100%	75.00%	Catalyst			0.0002184	lb/MMBtu			0.004	0.02	0.001	0.005	0.000	0.000	0.001	0.005	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	benzene	100%	75.00%	Catalyst			0.0004532	lb/MMBtu			0.009	0.04	0.002	0.009	0.000	0.000	0.002	0.009	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	toluene	100%	75.00%	Catalyst			0.0004202	lb/MMBtu			0.008	0.03	0.002	0.009	0.000	0.000	0.002	0.009	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	Ethylbenzene	100%	75.00%	Catalyst			4.09E-05	lb/MMBtu			0.001	0.00	0.000	0.001	0.000	0.000	0.000	0.001	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	Xylenes	100%	75.00%	Catalyst			0.0001895	lb/MMBtu			0.004	0.02	0.001	0.004	0.000	0.000	0.001	0.004	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	methanol	100%	75.00%	Catalyst			0.002575	lb/MMBtu			0.049	0.21	0.012	0.054	0.000	0.000	0.012	0.054	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	n-hexane	100%	75.00%	Catalyst			0.0011433	lb/MMBtu			0.022	0.10	0.005	0.024	0.000	0.000	0.005	0.024	AP-42 (4-stroke lean burn)
					18.988		MMBtu	8760	8	HAPs										1.237	5.417	0.150	0.659	0.000	0.000	0.150	0.659	AP-42 (4-stroke lean burn)
	NEW		**Alternate Power Source**																									
GE-01			Make = Generac	20200254	460		bhp	8760	2	NOx	100%					0.03	g/bhp-hr	0.002204624	lb/g	0.030	0.13	0.030	0.133	0.000	0.000	0.030	0.133	Manufacturer
GE-02			Model = SG275, 300		460		bhp	8760	2	CO	100%					0.17	g/bhp-hr	0.002204624	lb/g	0.172	0.76	0.172	0.755	0.000	0.000	0.172	0.755	Manufacturer
			Engine Type = NG Lean Burn		3.220		bhp	8760	2	VOC	100%					0.118	lb/MMBtu			0.380	1.66	0.380	1.664	0.000	0.000	0.380	1.664	Manufacturer
			7000 BTU/BHP-HR		3.220		MMBtu	8760	2	CO2	100%					110	lb/MMBtu			354.200	1551.40	354.200	1551.396	0.000	0.000	354.200	1551.396	AP-42 (4-stroke lean burn)
			Certified Engines		3.220		MMBtu	8760	2	CH4	100%					1.25	lb/MMBtu			4.025	17.63	4.025	17.630	0.000	0.000	4.025	17.630	AP-42 (4-stroke lean burn)
					3.220		bhp	8760	2	Formaldehyde	100%					0.0528	lb/MMBtu			0.170	0.74	0.170	0.745	0.000	0.000	0.170	0.745	Manufacturer
					3.220		bhp	8760	2	TOC	100%					1.47	lb/MMBtu			4.733	20.73	4.733	20.732	0.000	0.000	4.733	20.732	Manufacturer
					3.220		MMBtu	8760	2	SO2	100%					5.88E-04	lb/MMBtu			0.002	0.01	0.002	0.008	0.000	0.000	0.002	0.008	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	PM10	100%					7.71E-05	lb/MMBtu			0.000	0.00	0.000	0.001	0.000	0.000	0.000	0.001	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	PM2.5	100%					7.71E-05	lb/MMBtu			0.000	0.00	0.000	0.001	0.000	0.000	0.000	0.001	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	PM	100%					9.91E-03	lb/MMBtu			0.032	0.14	0.032	0.140	0.000	0.000	0.032	0.140	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	N2O	100%					0.0002205	lb/MMBtu			0.001	0.00	0.001	0.003	0.000	0.000	0.001	0.003	40 CFR 98, Table C-2
					3.220		MMBtu	8760	2	acrolein	100%					0.0052942	lb/MMBtu			0.017	0.07	0.017	0.075	0.000	0.000	0.017	0.075	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	acetaldehyde	100%					0.00836	lb/MMBtu			0.027	0.12	0.027	0.118	0.000	0.000	0.027	0.118	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	biphenyl	100%					0.0002184	lb/MMBtu			0.001	0.00	0.001	0.003	0.000	0.000	0.001	0.003	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	benzene	100%					0.0004532	lb/MMBtu			0.001	0.01	0.001	0.006	0.000	0.000	0.001	0.006	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	toluene	100%					0.0004202	lb/MMBtu			0.001	0.01	0.001	0.006	0.000	0.000	0.001	0.006	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	Ethylbenzene	100%					4.09E-05	lb/MMBtu			0.000	0.00	0.000	0.001	0.000	0.000	0.000	0.001	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	Xylenes	100%					0.0001895	lb/MMBtu			0.001	0.00	0.001	0.003	0.000	0.000	0.001	0.003	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	methanol	100%					0.002575	lb/MMBtu			0.008	0.04	0.008	0.036	0.000	0.000	0.008	0.036	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	n-hexane	100%					0.0011433	lb/MMBtu			0.004	0.02	0.004	0.016	0.000	0.000	0.004	0.016	AP-42 (4-stroke lean burn)
					3.220		MMBtu	8760	2	HAPs										0.230	1.008	0.230	1.008	0.000	0.000	0.230	1.008	AP-42 (4-stroke lean burn)
	NEW		**175 MMSCFD Dehydration Unit (each)**																									
DEHY-1			**Reboiler 1**	31000302	2.000		MMBtu	8760	3	NOx	100%					100	Lbs/MMCF	0.000980392	scf/BTU	0.1961	0.8588	0.1961	0.8588	0.0000	0.0000	0.1961	0.8588	AP-42, Table 1.4
DEHY-2			**Reboiler 2**		2.000		MMBtu	8760	3	CO	100%					84	Lbs/MMCF	0.000980392	scf/BTU	0.1647	0.7214	0.1647	0.7214	0.0000	0.0000	0.1647	0.7214	AP-42, Table 1.4
DEHY-3			**Reboiler 3**		2.000		MMBtu	8760	3	CO2	100%					120000	Lbs/MMCF	0.000980392	scf/BTU	235.2941	1030.5882	235.2941	1030.5882	0.0000	0.0000	235.2941	1030.5882	AP-42, Table 1.4
			SCC = 31000302		2.000		MMBtu	8760	3	VOC	100%					5.5	Lbs/MMCF	0.000980392	scf/BTU	0.0108	0.0472	0.0108	0.0472	0.0000	0.0000	0.0108	0.0472	AP-42, Table 1.4
					2.000		MMBtu	8760	3	TOC	100%					11	Lbs/MMCF	0.000980392	scf/BTU	0.0216	0.0945	0.0216	0.0945	0.0000	0.0000	0.0216	0.0945	EPA Webfire for SCC 31000404
					2.000		MMBtu	8760	3	PM	100%					7.6	Lbs/MMCF	0.000980392	scf/BTU	0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	AP-42, Table 1.4
					2.000		MMBtu	8760	3	PM10	100%					7.6	Lbs/MMCF	0.000980392	scf/BTU	0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	AP-42, Table 1.4
					2.000		MMBtu	8760	3	PM2.5	100%					7.6	Lbs/MMCF	0.000980392	scf/BTU	0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	AP-42, Table 1.4
					2.000		MMBtu	8760	3	SO2	100%					0.6	Lbs/MMCF	0.000980392	scf/BTU	0.0012	0.0052	0.0012	0.0052	0.0000	0.0000	0.0012	0.0052	AP-42, Table 1.4
					2.000		MMBtu	8760	3	CH4	100%					2.3	Lbs/MMCF	0.000980392	scf/BTU	0.0045	0.0198	0.0045	0.0198	0.0000	0.0000	0.0045	0.0198	AP-42, Table 1.4
					2.000		MMBtu	8760	3	N2O	100%					2.2	Lbs/MMCF	0.000980392	scf/BTU	0.0043	0.0189	0.0043	0.0189	0.0000	0.0000	0.0043	0.0189	AP-42, Table 1.4
			Still Vent + Flash Gas	31000303				8760	3	TOC	100%		Reboiler			40.6811				178.1832	17.9550	78.6431	0.0000	0.0000	17.9550	78.6431	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
			175 MMscfd glycol dehydration unit.					8760	3	VOC	100%		Reboiler			2.6730				11.7077	1.6186	7.0895	0.0000	0.0000	1.6186	7.0895	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
			60% of flash gas will route to					8760	3	CH4	100%		Reboiler			31.8556				139.5275	13.5040	59.1476	0.0000	0.0000	13.5040	59.1476	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
			reboiler					8760	3	HAPs	100%		Reboiler			0.6793				2.9753	0.6507	2.8499	0.0000	0.0000	0.6507	2.8499	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
								8760	3	n-Hexane	100%		Reboiler			0.0291				0.1275	0.0184	0.0805	0.0000	0.0000	0.0184	0.0805	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
								8760	3	Benzene	100%		Reboiler			0.0833				0.3649	0.0795	0.3484	0.0000	0.0000	0.0795	0.3484	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
								8760	3	Toluene	100%		Reboiler			0.1367				0.5988	0.1320	0.5780	0.0000	0.0000	0.1320	0.5780	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
								8760	3	Ethylbenzene	100%		Reboiler			0.1793				0.7853	0.1747	0.7653	0.0000	0.0000	0.1747	0.7653	GlyCalc - Flash gas routes to the reboiler (results in 60% control)
								8760	3	Xylenes	100%		Reboiler			0.2508				1.0985	0.2461	1.0778	0.0000	0.0000	0.2461	1.0778	GlyCalc - Flash gas routes to the reboiler (results in 60% control)

POTENTIAL AIR EMISSIONS

Emissions are for EACH Emissions Unit unless noted otherwise

Company ID	Permit # or Status	Emission Unit	Process Unit	Process Unit SCC	Maximum Hourly Throughput	Maximum Annual Throughput	Throughput Units	Annual Hours of Operation	No of Units	Pollutant	Capture Efficiency	Point Control Efficiency	Point Control	Fugitive Control Efficiency	Fugitive Control	EF	EF Units	EF Conversion Factor	EF Conversion Factor Units	Uncontrolled Emissions		Point Emissions Controlled		Fugitive Emissions Controlled		Total Controlled (Point + Fugitive)		Emission Factor Source / Notes
																				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
			Total Dehy Potential Emissions							PM										0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	
			Reboiler + Still Vent							PM10										0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	
			Total Emissions are Per Dehy							PM2.5										0.0149	0.0653	0.0149	0.0653	0.0000	0.0000	0.0149	0.0653	
										SO2										0.0012	0.0052	0.0012	0.0052	0.0000	0.0000	0.0012	0.0052	
										NOx										0.1961	0.8588	0.1961	0.8588	0.0000	0.0000	0.1961	0.8588	
										CO										0.1647	0.7214	0.1647	0.7214	0.0000	0.0000	0.1647	0.7214	
										TOC										0.0216	0.0945	0.0216	0.0945	0.0000	0.0000	0.0216	0.0945	
										VOC										0.0108	0.0472	0.0108	0.0472	0.0000	0.0000	0.0108	0.0472	
										Lead										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										CO2										235.2941	1030.5882	235.2941	1030.5882	0.0000	0.0000	235.2941	1030.5882	
										CH4										0.0045	0.0198	0.0045	0.0198	0.0000	0.0000	0.0045	0.0198	
										N2O										0.0043	0.0189	0.0043	0.0189	0.0000	0.0000	0.0043	0.0189	
										HAPs										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										n-Hexane										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										Benzene										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										Toluene										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										Ethylbenzene										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										Xylenes										0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
	NEW	**FIVE (5) 400-bbl PRODUCED WATER TANKS (SCC = 31000213 = Industrial Processes > Oil and Gas Production > Natural Gas Production > Produced Water Storage Tank)**																										
T01			**Flash Gas**	31000213				8760	1	TOC	100%									0.36924	1.6173	0.369	1.617	0.000	0.000	0.369	1.617	See Produced Water tab
T02								8760	1	VOC	100%									0.00353	0.0155	0.004	0.015	0.000	0.000	0.004	0.015	See Produced Water tab
T03								8760	1	CO2	100%									0.01475	0.0646	0.015	0.065	0.000	0.000	0.015	0.06460	See Produced Water tab
T04								8760	1	CH4	100%									0.33189	1.4537	0.332	1.454	0.000	0.000	0.332	1.45E+00	See Produced Water tab
T05								8760	1	HAPs	100%									0.00008	0.0003	0.000	0.000	0.000	0.000	0.000	0.000	See Produced Water tab
								8760	1	n-Hexane	100%									0.00000	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	See Produced Water tab
			Working and Breathing Losses			107.89	lbs	8760	1	TOC	100%					0.967	lb/lb			0.01191	0.0522	0.012	0.052	0.000	0.000	0.012	0.052	See Tanks 4.09d Output
						107.89	lbs	8760	1	VOC	100%					0.035	lb/lb			0.00043	0.0019	0.000	0.002	0.000	0.000	0.000	0.002	See Tanks 4.09d Output
						107.89	lbs	8760	1	CO2	100%					0.032	lb/lb			0.00039	0.0017	0.000	0.002	0.000	0.000	0.000	0.002	See Tanks 4.09d Output
						107.89	lbs	8760	1	CH4	100%					0.776	lb/lb			0.00956	0.0419	0.010	0.042	0.000	0.000	0.010	0.042	See Tanks 4.09d Output
						107.89	lbs	8760	1	HAPs	100%					0.000	lb/lb			0.00000	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	See Tanks 4.09d Output
						107.89	lbs	8760	1	n-Hexane	100%					0.000	lb/lb			0.00000	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	See Tanks 4.09d Output
			TOTAL EMISSIONS							TOC										0.381	1.669	0.381	1.669	0.000	0.000	0.381	1.669	Flash + Working/Breathing
										VOC										0.004	0.017	0.004	0.017	0.000	0.000	0.004	0.017	Flash + Working/Breathing
										CO2										0.015	0.066	0.015	0.066	0.000	0.000	0.015	0.066	Flash + Working/Breathing
										CH4										0.341	1.496	0.341	1.496	0.000	0.000	0.341	1.496	Flash + Working/Breathing
										HAPs										7.74E-05	0.000	0.000	0.000	0.000	0.000	7.74E-05	3.39E-04	Flash + Working/Breathing
										n-Hexane										5.72E-07	0.000	0.000	0.000	0.000	0.000	5.72E-07	2.51E-06	Flash + Working/Breathing
	NEW	**BLOWDOWNS (SCC = 30600402)**																										
			G3608Compressor Blowdowns	30600402	4,500	180,000	SCF		8	TOC	100%					0.991	lb/lb	0.0428	lb/scf	190.85	3.82	190.85	3.82	0.00	0.00	190.85	3.82	From inlet gas analysis
			4,500 scf per blowdown		4,500	180,000	SCF		8	VOC	100%					0.008	lb/lb	0.1200	lb/scf	4.07	0.08	4.07	0.08	0.00	0.00	4.07	0.08	From inlet gas analysis
			40 Blowdowns per year per unit		4,500	180,000	SCF		8	CH4	100%					0.922	lb/lb	0.0423	lb/scf	175.47	3.51	175.47	3.51	0.00	0.00	175.47	3.51	From inlet gas analysis
					4,500	180,000	SCF		8	HAPs	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
					4,500	180,000	SCF		8	n-Hexane	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
			G3606 Compressor Blowdowns	30600402	4,500	180,000	SCF		3	TOC	100%					0.991	lb/lb	0.0428	lb/scf	190.85	3.82	190.85	3.82	0.00	0.00	190.85	3.82	From inlet gas analysis
			4,500 scf per blowdown		4,500	180,000	SCF		3	VOC	100%					0.008	lb/lb	0.1200	lb/scf	4.07	0.08	4.07	0.08	0.00	0.00	4.07	0.08	From inlet gas analysis
			40 Blowdowns per year per unit		4,500	180,000	SCF		3	CH4	100%					0.922	lb/lb	0.0423	lb/scf	175.47	3.51	175.47	3.51	0.00	0.00	175.47	3.51	From inlet gas analysis
					4,500	180,000	SCF		3	HAPs	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
					4,500	180,000	SCF		3	n-Hexane	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
			Engine Startups	30600402	4,500	180,000	SCF		11	TOC	100%					0.991	lb/lb	0.0428	lb/scf	190.85	3.82	190.85	3.82	0.00	0.00	190.85	3.817	From inlet gas analysis
			4,500 scf per blowdown		4,500	180,000	SCF		11	VOC	100%					0.008	lb/lb	0.1200	lb/scf	4.07	0.08	4.07	0.08	0.00	0.00	4.07	0.081	From inlet gas analysis
			40 Startups per year per unit		4,500	180,000	SCF		11	CH4	100%					0.922	lb/lb	0.0423	lb/scf	175.47	3.51	175.47	3.51	0.00	0.00	175.47	3.509	From inlet gas analysis
					4,500	180,000	SCF		11	HAPs	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
					4,500	180,000	SCF		11	n-Hexane	100%					0.000	lb/lb	0.2274	lb/scf	0.14	0.00	0.14	0.00	0.00	0.00	0.14	0.003	From inlet gas analysis
			Station Blowdown	30600402	9,000,000	3.60E+07	SCF		1	TOC	100%					0.991	lb/lb	0.0428	lb/scf	381690.07	763.38	381690.07	763.38	0.00	0.00	381690.07	763.380	From inlet gas analysis
			9,000,000 scf per blowdown		9,000,000	3.60E+07	SCF		1	VOC	100%					0.008	lb/lb	0.1200	lb/scf	8135.79	16.27	8135.79	16.27	0.00	0.00	8135.79	16.272	From inlet gas analysis
			4 station blowdowns per year		9,000,000	3.60E+07	SCF		1	CH4	100%					0.922	lb/lb	0.0423	lb/scf	350940.03	701.88	350940.03	701.88	0.00	0.00	350940.03	701.880	From inlet gas analysis
					9,000,000	3.60E+07	SCF		1	HAPs	100%					0.000	lb/lb	0.2274	lb/scf	274.82	0.55	274.82	0.55	0.00	0.00	274.82	0.550	From inlet gas analysis
					9,000,000	3.60E+07	SCF		1	n-Hexane	100%					0.000	lb/lb	0.2274	lb/scf	274.82	0.55	274.82	0.55	0.00	0.00	274.82	0.550	From inlet gas analysis
			TOTAL BLOWDOWN EMISSIONS		9,013,500	39,960,000	SCF			TOC						0.991	lb/lb	0.0428	lb/scf	385888.661	847.352	385888.661	847.352	0.000	0.000	385888.661	847.352	Total from All Blowdowns
										VOC						0.008	lb/lb	0.1200	lb/scf	8225.287	18.061	8225.287	18.061	0.000	0.000	8225.287	18.061	Total from All Blowdowns
										CH4						0.922	lb/lb	0.0423	lb/scf	354800.372	779.087	354800.372	779.087	0.000	0.000	354800.372	779.087	Total from All Blowdowns
										HAPs						0.000	lb/lb	0.2274	lb/scf	277.840	0.610	277.840	0.610	0.000	0.000	277.840	0.610	Total from All Blowdowns
										n-Hexane						0.000	lb/lb	0.2274	lb/scf	277.840	0.610	277.840	0.610	0.000	0.000	277.840	0.610	Total from All Blowdowns
	NEW	**PIGGING OPERATIONS (SCC = 31000211)**																										
			Pigging Operations	31000211	8,916	17,831	scf		1	TOC	100%					0.991	lb/lb	0.0428	lb/scf	378.109	0.38	378.11	0.38	0.00	0.00	378.11	0.378	See Pigging Operations tab
			8,916 scf/event		8,916	17,831	scf		1	VOC	100%					0.008	lb/lb	0.1200	lb/scf	8.059	0.01	8.06	0.01	0.00	0.00	8.06	0.008	See Pigging Operations tab
			2 events/year		8,916	17,831	scf		1	CH4	100%					0.922	lb/lb	0.0423	lb/scf	347.647	0.35	347.65	0.35	0.00	0.00	347.65	0.348	See Pigging Operations tab
					8,916	17,831	scf		1	HAPs	100%					0.000	lb/lb	0.2274	lb/scf	0.272	0.00	0.27	0.00	0.00	0.00	0.27	0.000	See Pigging Operations tab
					8,916	17,831	scf		1	n-Hexane	100%					0.000	lb/lb	0.2274	lb/scf	0.272	0.00	0.27	0.00	0.00	0.00	0.27	0.000	See Pigging Operations tab
	NEW	**TRUCK LOADING (PRODUCED WATER) (SCC = 31000299 Industrial Processes > Oil and Gas Production > Natural Gas Production > Other Not Classified)**																										
			125 bbl/truck	31000299	5.25	756	Mgal	8760	1	TOC	100%					0.075	lb/Mgal			0.391	0.028	0.391	0.028	0.000	0.000	0.391	0.028	See Truck Loading tab; Based on unloading one (1) tank per day
			1500 bbl loaded per month		5.25	756	Mgal	8760	1	VOC	100%					0.003	lb/Mgal			0.014	0.001	0.014	0.001	0.000	0.000	0.014	0.001	See Truck Loading tab; Based on unloading one (1) tank per day
			Max one truck loaded per hour		5.25	756	Mgal	8760	1	CO2	100%					0.002	lb/Mgal			0.013	0.001	0.013	0.001	0.000	0.000	0.013	0.001	See Truck Loading tab; Based on unloading one (1) tank per day
					5.25	756	Mgal	8760	1	CH4	100%					0.058	lb/Mgal			0.304	0.022	0.304	0.022	0.000	0.000	0.304	0.022	See Truck Loading tab; Based on unloading one (1) tank per day
					5.25	756	Mgal	8760	1	HAPs	100%					0.000	lb/Mgal			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	See Truck Loading tab; Based on unloading one (1) tank per day
					5.25	756	Mgal	8760	1	n-Hexane	100%					0.000	lb/Mgal			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	See Truck Loading tab; Based on unloading one (1) tank per day
	NEW	**FUGITIVE EQUIPMENT LEAKS (SCC = 31000220)**																										
			Fugitive Equipment Leaks	31000220				8760	1	TOC										10.815	47.371	0.000	0.000	10.815	47.371	10.815	47.371	See Equipment Leaks tab
			(see Equipment Leaks tab)					8760	1	VOC										0.082	0.360	0.000	0.000	0.082	0.360	0.082	0.360	See Equipment Leaks tab
								8760	1	CO2										0.051	0.223	0.000	0.000	0.051	0.223	0.051	0.223	See Equipment Leaks tab
								8760	1	CH4										10.061	44.069	0.000	0.000	10.061	44.069	10.061	44.069	See Equipment Leaks tab
								8760	1	HAPs										0.001	0.006	0.000	0.000	0.001	0.006	0.001	0.006	See Equipment Leaks tab
								8760	1	n-Hexane										0.001	0.006	0.000	0.000	0.001	0.006	0.001	0.006	See Equipment Leaks tab
	NEW	**FUGITIVE - PAVED AND UNPAVED ROADS**																										
			Unpaved Roads	S0100201	1.52	261.8	VMT	8760	1	PM2.5	0%					0.10	lb/VMT			0.151	0.01	0.000	0.000	0.15	0.01	0.151	0.013	See Unpaved Roads tab
					1.52	261.8	VMT	8760	1	PM10	0%					1.00	lb/VMT			1.509	0.13	0.000	0.000	1.51	0.13	1.509	0.130	See Unpaved Roads tab
					1.52	261.8	VMT	8760	1	PM	0%					4.26	lb/VMT			6.461	0.56	0.000	0.000	6.46	0.56	6.461	0.558	See Unpaved Roads tab

POTENTIAL AIR EMISSIONS

Emissions are for EACH Emissions Unit unless noted otherwise

Company ID	Permit # or Status	Emission Unit	Process Unit	Process Unit SCC	Maximum Hourly Throughput	Maximum Annual Throughput	Throughput Units	Annual Hours of Operation	No of Units	Pollutant	Capture Efficiency	Point Control Efficiency	Point Control	Fugitive Control Efficiency	Fugitive Control	EF	EF Units	EF Conversion Factor	EF Conversion Factor Units	Uncontrolled Emissions		Point Emissions Controlled		Fugitive Emissions Controlled		Total Controlled (Point + Fugitive)		Emission Factor Source / Notes
																				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
										TOTALS (Does not include Emissions labeled as FUGITIVE for major source determination)										Uncontrolled		Point Controlled		Fugitive Controlled		Total Controlled (Point + Fugitive)		
																				lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
										NOx										19.75	86.49	19.75	86.49	0.00	0.00	19.75	86.49	
										CO										142.80	625.45	10.52	46.10	0.00	0.00	10.52	46.10	
										VOC										8271.58	185.49	8246.36	75.03	0.00	0.00	8246.36	75.03	
										CO2										25330.79	110948.82	25330.79	110948.82	0.00	0.00	25330.79	110948.82	
										Formaldehyde										10.45	45.76	1.05	4.59	0.00	0.00	1.05	4.59	
										TOC										386681.99	2664.70	386613.81	2366.07	0.00	0.00	386613.81	2366.07	
										CH4										355491.59	2282.96	355436.53	2041.82	0.00	0.00	355436.53	2041.82	
										SO2										0.12	0.53	0.12	0.53	0.00	0.00	0.12	0.53	
										PM10										0.06	0.26	0.06	0.26	0.00	0.00	0.06	0.26	
										PM2.5										0.06	0.26	0.06	0.26	0.00	0.00	0.06	0.26	
										PM										2.02	8.83	2.02	8.83	0.00	0.00	2.02	8.83	
										N2O										0.06	0.25	0.06	0.25	0.00	0.00	0.06	0.25	
										acrolein										1.05	4.61	0.29	1.26	0.00	0.00	0.29	1.26	
										acetaldehyde										1.66	7.28	0.46	2.00	0.00	0.00	0.46	2.00	
										biphenyl										0.04	0.19	0.01	0.05	0.00	0.00	0.01	0.05	
										benzene										0.34	1.49	0.26	1.15	0.00	0.00	0.26	1.15	
										toluene										0.49	2.16	0.42	1.83	0.00	0.00	0.42	1.83	
										Ethylbenzene										0.55	2.39	0.53	2.31	0.00	0.00	0.53	2.31	
										Xylenes										0.79	3.46	0.75	3.28	0.00	0.00	0.75	3.28	
										methanol										0.51	2.24	0.14	0.62	0.00	0.00	0.14	0.62	
										n-hexane										278.43	1.99	278.23	1.13	0.00	0.00	278.23	1.13	
										HAPs										294.31	71.58	282.13	18.21	0.00	0.00	282.13	18.21	

PIGGING EMISSIONS (One Pig Launcher)

PIG RECEIVER

Given:

Length =	**30**	feet				
Diameter =	**2**	feet				
Q_a =	**94.25**	Cubic feet	yields	**2.66879553**	Cubic Meters	Volume of Compressor
P_i=	**83.36**	Atm	yields	**8446.45**	kPa	Pressure of Pipeline
T_i =	**25.00**	Deg C	yields	**298.15**	Deg K	Temperature in Pipeline
P_f=	**1.00**	Atm	yields	**101.33**	kPa	Ambient Pressure (Usually 1 ATM)
T_f=	**25.00**	Deg C	yields	**298.15**	Deg K	Ambient Temperature (Usually 10-25 Deg. C or Standard Temp -15Deg. C)
z_i=	**0.84311**					
z_f=	**1.00111**					

Q_t= **252.460** **Cubic Meters** **or** **8915.56** **Cubic Feet**

Based on EPA's Addendum 1 to the Oil and Gas Production Protocol, Version 1.1 , Equation 22-23

$Q_t=Q_a \times (T_s/P_s) \times (Pi/(z_i*T_i)) - (P_f/(z_f*T_f))$

$Q_a = pi \times r^2 \times h$

Where :

Q_t = Total volume of gas released in cubic meters at STP (15 Deg C and 1 Atm)

Q_a = Actual volume of gas at process conditions in cubic meters

P_s = Standard Pressure in kPa (101.3)

T_s = Standard Temperature in K (288.1)

z = Compressibility factor for the gas

i = initial pressure and temperature

f = final temperature and pressure (generally STP)

PIGGING EMISSIONS (One Pig Launcher)

COMPRESSIBILITY FACTOR (z_i)

Given:

Pressure = **68.03** ATM. yields **6893.1** kPa or **1000** psi
Temperature = **25** °C

Compressibility Factor (z_i) = 0.843113

Based on EPA's Addendum 1 to the Oil and Gas Production Protocol, Version 1.1 , Equation 22.25

$$z = a + bp + cT + dp^2 + eT^2 + fpT$$

Where :

p= Pressure in kPa
T= Temperature in degrees celsius
a= 9.9187E-01
b= -3.3501E-05
c= 6.9652E-04
d= 6.3134E-10
e= -8.6023E-06
f= 2.3290E-07

COMPRESSIBILITY FACTOR (z_f)

Given:

Pressure = **1** ATM. yields **101.33** kPa or **14.7** psi
Temperature = **25** °C

Compressibility Factor (z_f) = 1.001109

Based on EPA's Addendum 1 to the Oil and Gas Production Protocol, Version 1.1 , Equation 22.25

$$z = a + bp + cT + dp^2 + eT^2 + fpT$$

Where :

p= Pressure in kPa
T= Temperature in degrees celsius
a= 9.9187E-01
b= -3.3501E-05
c= 6.9652E-04
d= 6.3134E-10
e= -8.6023E-06
f= 2.3290E-07

TRUCK LOADING EMISSIONS (Produced Water)

Truck Loading

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor LL can be estimated as follows:

$$L_L=12.46*(SPM/T)$$

Where,

Loading Loss	L_L=	0.07453	lbs/1000 gallons
Saturation Factor	S=	0.6	
True Vapor Pressure	P=	0.3	psia
Molecular Weight of Vapors	M=	17.28	lb/lb-mol
Temperature	T=	520	deg R

Goff Connector LLC - Connector CS

Flash Emission Calculations

Using Gas-Oil Ratio Method

Site specific data			
Estimated Gas-water-ratio	=	3.88	scf/bbl
Throughput	=	18,000	bbl/yr
Stock tank gas molecular weight	=	17.28	g/mole

Conversions			
1 lb	=	453.6	g
1 mole	=	22.4	L
1 scf	=	28.32	L
1 ton	=	2000	lb

Equations

$$E_{TOT} = Q\frac{(bbl)}{(yr)} \times R\frac{(scf)}{(bbl)} \times \frac{28.32(L)}{1(scf)} \times \frac{1(mole)}{22.4(L)} \times MW\frac{(g)}{(mole)} \times \frac{1(lb)}{453.6(g)}) \times \frac{1(ton)}{2000(lb)}$$

E_{TOT} = Total stock tank flash emissions (TPY)
R = Measured gas-water ratio (scf/bbl)
Q = Throughput (bbl/yr)
MW = Stock tank gas molecular weight (g/mole)

$$E_{spec} = E_{TOT} \times X_{spec}$$

E_{spec} = Flash emission from constituent

X_{spec} = Weight fraction of constituent in stock tank gas

Flash Emissions

Constituent	TPY
Total	1.6819
VOC	**0.0155**
Nitrogen	0.00E+00
Carbon Dioxide	6.46E-02
Methane	1.45E+00
Ethane	1.48E-01
Propane	1.28E-02
Isobutane	5.05E-04
n-Butane	1.30E-03
2,2 Dimethylpropane	0.00E+00
Isopentane	0.00E+00
n-Pentane	0.00E+00
2,2 Dimethylbutane	0.00E+00
Cyclopentane	0.00E+00
2,3 Dimethylbutane	0.00E+00
2 Methylpentane	0.00E+00
3 Methylpentane	0.00E+00
n-Hexane	0.00E+00
Methylcyclopentane	0.00E+00
Benzene	2.35E-04
Cyclohexane	1.68E-04
2-Methylhexane	0.00E+00
3-Methylhexane	0.00E+00
2,2,4 Trimethylpentane	0.00E+00
Other C7's	0.00E+00
n-Heptane	0.00E+00
Methylcyclohexane	1.01E-04
Toluene	2.69E-04
Other C8's	0.00E+00
n-Octane	0.00E+00
Ethylbenzene	0.00E+00
M & P Xylenes	1.01E-04
O-Xylene	0.00E+00
Other C9's	0.00E+00
n-Nonane	0.00E+00
Other C10's	0.00E+00
n-Decane	0.00E+00
Undecanes (11)	0.00E+00

E_{TOT}

Sum of C3+

Goff Connector LLC - Connector CS

Equipment Leaks (Fugitive) Emissions

Emission Source	Quantity	% Leaking at any time	Emission Factor(1)	VOC %	VOC lb/hr	CO2 %	CO2 lb/hr	CH4 %	CH4 lb/hr	TOC %	TOC lb/hr	n-Hexane %	n-Hexane lb/hr
Light Oil Fugitive Sources													
Gas Fugitive Sources													
Flanges (FL)	3,000	100%	8.58E-04	0.75%	1.9E-02	0.47%	1.2E-02	92.18%	2.4E+00	99.1%	2.6E+00	0.01%	3.5E-04
Valves (V)	400	100%	9.90E-03	0.75%	3.0E-02	0.47%	1.8E-02	92.18%	3.7E+00	99.1%	3.9E+00	0.01%	5.3E-04
Pump Seals (P)	6	100%	5.28E-03	0.75%	2.4E-04	0.47%	1.5E-04	92.18%	2.9E-02	99.1%	3.1E-02	0.01%	4.3E-06
Open Ended Lines (OEL)	8	100%	4.40E-03	0.75%	2.7E-04	0.47%	1.6E-04	92.18%	3.2E-02	99.1%	3.5E-02	0.01%	4.7E-06
Connectors (C)	1400	100%	4.40E-04	0.75%	4.6E-03	0.47%	2.9E-03	92.18%	5.7E-01	99.1%	6.1E-01	0.01%	8.3E-05
Pressure Relief Valves (PRV)	180	100%	1.94E-02	0.75%	2.6E-02	0.47%	1.6E-02	92.18%	3.2E+00	99.1%	3.5E+00	0.01%	4.7E-04
Others	11	100%	1.94E-02	0.75%	1.6E-03	0.47%	9.9E-04	92.18%	2.0E-01	99.1%	2.1E-01	0.01%	2.9E-05
TOTALS					0.0822		0.0510		10.061		10.815		0.0015

Notes

1 Emission Factor Units are in lb/hr/source
2 Gas Fugitive Sources % pollutant is from Fuel Gas Analysis
3 Emission Factors Data Source
4 Component count based on 40 CFR 98 Table W-1B

	Oil & Gas Production Emission Factors (1)					
Component:	**Light Oil** kg / hr / source	**Heavy Oil** kg / hr / source	**Gas** kg / hr / source	**Light Oil** lb / hr / source	**Heavy Oil** lb / hr / source	**Gas** lb / hr / source
Flanges (FL)	1.10E-04	3.90E-07	3.90E-04	2.42E-04	8.58E-07	8.58E-04
Valves (V)	2.50E-03	8.40E-06	4.50E-03	5.50E-03	1.85E-05	9.90E-03
Pump Seals (P)	1.30E-02	3.20E-05	2.40E-03	2.86E-02	7.04E-05	5.28E-03
Open Ended Lines (OEL)	1.40E-03	1.40E-04	2.00E-03	3.08E-03	3.08E-04	4.40E-03
Connectors (C)	2.10E-04	7.50E-06	2.00E-04	4.62E-04	1.65E-05	4.40E-04
Pressure Relief Valves (PRV)	7.50E-03	3.20E-05	8.80E-03	1.65E-02	7.04E-05	1.94E-02
Others	7.50E-03	3.20E-05	8.80E-03	1.65E-02	7.04E-05	1.94E-02

(1) Factors from: Table 2-4 of "Protocol for Equipment Leak Emission Estimates", (EPA-453/R-95-017), USEPA, 11/95

Unpaved Roads Fugitive Emissions

Source: AP-42, 5th edition, Section 13.2.2 Unpaved Roads

Silt content of road surface material, %	s	3.1	%	From http://www.epa.gov/ttnchie1/ap42/ch13/related/c13s02-2.html
Mean Vehicle Weight	W	53	tons	
Number of days per year with precipitation > 0.01 in.	p	140	days	

Equation Constants and Emission Factor

Description	variable	PM-2.5	PM-10	PM
Particle size multiplier, lb/VMT	k	0.15	1.5	4.9
Constant	a	0.9	0.9	0.7
Constant	b	0.45	0.45	0.45
Emission Factor, lb/VMT	EF	0.10	1.00	4.26

EF = (k * (s/12)^a * (W/3)^b) * ((365-p)/365) — US EPA AP-42, Section 13.2.2 (11/06), Equation 1a and 2

Total Trucks per hour	1		
Total Trucks per year	173		
Vehicle travel data and control efficiency			
Length of facility road	4000	feet one way	Tanker trucks typically have a width of 8.2 ft
Vehicle miles traveled per trip	1.52	VMT	
Maximum trips per hour	1.00		
Vehicle miles traveled per hour	1.52	VMT	
Maximum trips per year	173		
Vehicle miles traveled per year	262	VMT	
Control			
Control Efficiency	95%	Gravel + Watering	

Note: If using Gravel + Watering, the control efficiency is 95%

GOR Specification

COMPONENT	MOL %	GPM	WT%
Hydrogen Sulfide	<0.001		<0.001
Nitrogen	0.000		0.000
Carbon Dioxide	1.508		3.841
Methane	93.092		86.433
Ethane	5.060	1.346	8.806
Propane	0.298	0.082	0.761
Isobutane	0.009	0.003	0.030
n-Butane	0.023	0.007	0.077
2,2 Dimethylpropane	0.000	0.000	0.000
Isopentane	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000
2,2 Dimethylbutane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.000	0.000	0.000
2 Methylpentane	0.000	0.000	0.000
3 Methylpentane	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000
Methylcyclopentane	0.000	0.000	0.000
Benzene	0.003	0.001	0.014
Cyclohexane	0.002	0.001	0.010
2-Methylhexane	0.000	0.000	0.000
3-Methylhexane	0.000	0.000	0.000
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.000	0.000	0.000
n-Heptane	0.000	0.000	0.000
Methylcyclohexane	0.001	0.000	0.006
Toluene	0.003	0.001	0.016
Other C8's	0.000	0.000	0.000
n-Octane	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.001	0.000	0.006
O-Xylene	0.000	0.000	0.000
Other C9's	0.000	0.000	0.000
n-Nonane	0.000	0.000	0.000
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.00	1.441	100.00

Goff Connector LLC
Fuel Gas Analysis Information

Connector Compressor Station
Harrison County, WV

Inlet Gas Composition Information

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	TOC	% of VOC
Nitrogen, N2	0.2624	0.074	0.003	0.441			-		0.0026		
Carbon Dioxide, CO2	0.1770	0.078	0.003	0.467			-		0.0018		
Hydrogen Sulfide, H2S		-	-	-			-		-		
Helium, He		-	-	-			-		-		
Oxygen, O2	0.0020	0.001	0.000	0.004			-		0.0000		
Methane, CH4	95.8791	15.382	0.531	92.183	871.9	968.4	9.137		0.9569	92.183	
Ethane, C2H6	3.4142	1.027	0.035	6.153	55.3	60.4	0.569		0.0339	6.153	
Propane	0.2210	0.097	0.003	0.584	5.1	5.6	0.053	0.584	0.0022	0.584	
Iso-Butane	0.0133	0.008	0.000	0.046	0.4	0.4	0.004	0.046	0.0001	0.046	
Normal Butane	0.0198	0.012	0.000	0.069	0.6	0.6	0.006	0.069	0.0002	0.069	
Iso Pentane	0.0038	0.003	0.000	0.016	0.1	0.2	0.001	0.016	0.0000	0.016	
Normal Pentane	0.0028	0.002	0.000	0.012	0.1	0.1	0.001	0.012	0.0000	0.012	
Hexanes	0.0026	0.002	0.000	0.013	0.1	0.1	0.001	0.013	0.0000	0.013	1.7825%
Heptane +	0.0020	0.002	0.000	0.012	0.1	0.1	0.001	0.012	0.0000	0.012	
	100.0	16.686	0.576	100.000	933.8	1,035.9	9.774	0.753	0.9977	99.089	

Ideal Gross (HHV)	1,035.9
Ideal Gross (sat'd)	1,018.7
	-
Real Gross (HHV)	1,038.3
Real Net (LHV)	935.9

Goff Connector LLC
Flash Gas Analysis Information

Connector Compressor Station
Harrison County, WV

Dehy Flash Gas Composition Information

From GRI-GLYCALC Output

	Flash Gas mole %	Flash M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	TOC
Nitrogen, N2		-	-	-			-		-	
Carbon Dioxide, CO2	1.2300	0.541	0.019	3.201			-		0.0123	
Hydrogen Sulfide, H2S		-	-	-			-		-	
Water	0.3810	0.015	0.001	0.090			-		0.0038	
Oxygen, O2		-	-	-			-		-	
Methane, CH4	81.8000	13.123	0.453	77.595	743.9	826.2	7.796		0.8164	77.595
Ethane, C2H6	8.6900	2.613	0.090	15.451	140.7	153.8	1.449		0.0862	15.451
Propane	1.0200	0.450	0.016	2.660	23.6	25.7	0.243	2.660	0.0100	2.660
Iso-Butane	0.1160	0.067	0.002	0.399	3.5	3.8	0.036	0.399	0.0011	0.399
Normal Butane	0.1340	0.078	0.003	0.461	4.0	4.4	0.041	0.461	0.0013	0.461
Iso Pentane	0.0221	0.016	0.001	0.094	0.8	0.9	0.008	0.094	0.0002	0.094
Normal Pentane	0.0099	0.007	0.000	0.042	0.4	0.4	0.004	0.042	0.0001	0.042
n-Hexane	0.0009	0.001	0.000	0.005	0.0	0.0	0.000	0.005	0.0000	0.005
Heptane +	0.0005	0.000	0.000	0.003	0.0	0.0	0.000	0.003	0.0000	0.003
	93.4	16.912	0.584		916.9	1,015.1	9.578	3.663	0.9314	96.709

Ideal Gross (HHV)	1,015.1
Ideal Gross (sat'd)	998.2
	-
Real Gross (HHV)	1,089.9
Real Net (LHV)	984.5

ATTACHMENT V

Facility-Wide Controlled Emissions Summary Sheet

ATTACHMENT V – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		GHG (CO_2e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
CE-01	1.96	8.57	0.74	3.24	0.87	3.82	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2,251	9,860
CE-02	1.96	8.57	0.74	3.24	0.87	3.82	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2,251	9,860
CE-03	1.96	8.57	0.74	3.24	0.87	3.82	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2,251	9,860
CE-04	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-05	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-06	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-07	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-08	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-09	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-10	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
CE-11	1.66	7.25	0.94	4.09	0.60	2.60	0.01	0.05	<0.01	<0.01	<0.01	<0.01	2,895	12,679
GE-01	0.03	0.14	0.18	0.76	0.38	1.67	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	455	2,015
GE-02	0.03	0.14	0.18	0.76	0.38	1.67	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	455	2,015
DEHY-1	--	--	--	--	1.62	7.09	--	--	--	--	--	--	338	1,479
DEHY-2	--	--	--	--	1.62	7.09	--	--	--	--	--	--	338	1,479
DEHY-3	--	--	--	--	1.62	7.09	--	--	--	--	--	--	338	1,479
REB-1	0.20	0.86	0.17	0.73	0.01	0.05	<0.01	<0.01	0.02	0.07	0.02	0.07	237	1,037
REB-2	0.20	0.86	0.17	0.73	0.01	0.05	<0.01	<0.01	0.02	0.07	0.02	0.07	237	1,037

REB-3	0.20	0.86	0.17	0.73	0.01	0.05	<0.01	<0.01	0.02	0.07	0.02	0.07	237	1,037
TO-1	--	--	--	--	<0.01	0.02	--	--	--	--	--	--	9	38
BLOWDOWNS	--	--	--	--	4.13	18.07	--	--	--	--	--	--	4,452	19,500
PIGGING	--	--	--	--	0.002	<0.01	--	--	--	--	--	--	1.99	8.7
TRUCK LOADING	--	--	--	--	0.02	<0.01	--	--	--	--	--	--	7.6	0.55
TOTAL	19.75	86.49	10.52	46.10	17.99	75.03	0.12	0.53	0.06	0.26	0.06	0.26	37,019	162,137

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.
According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

NOTE* Blowdowns, pigging, and truck loading are based on lbs/event and not lbs/hour. The emission calculation sheet part of Attachment U quantifies lbs/event under lb/hour, which is not representative being that blowdowns, pigging, and truck loading are not continuous point source emission rates. Please refer to Attachment U.

ATTACHMENT V – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
CE-01	0.071	0.312	0.002	0.007	0.001	0.006	0.000	0.001	0.001	0.003	0.004	0.017	0.134	0.588
CE-02	0.071	0.312	0.002	0.007	0.001	0.006	0.000	0.001	0.001	0.003	0.004	0.017	0.134	0.588
CE-03	0.071	0.312	0.002	0.007	0.001	0.006	0.000	0.001	0.001	0.003	0.004	0.017	0.134	0.588
CE-04	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-05	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-06	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-07	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-08	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-09	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-10	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
CE-11	0.062	0.27	0.002	0.009	0.002	0.009	0.000	0.001	0.001	0.004	0.005	0.024	0.150	0.659
GE-01	0.170	0.745	0.001	0.006	0.001	0.006	0.000	0.001	0.001	0.003	0.004	0.016	0.230	1.008
GE-02	0.170	0.745	0.001	0.006	0.001	0.006	0.000	0.001	0.001	0.003	0.004	0.016	0.230	1.008
DEHY-1	--	--	0.080	0.349	0.132	0.578	0.175	0.766	0.247	1.078	0.019	0.081	0.651	2.850
DEHY-2	--	--	0.080	0.349	0.132	0.578	0.175	0.766	0.247	1.078	0.019	0.081	0.651	2.850
DEHY-3	--	--	0.080	0.349	0.132	0.578	0.175	0.766	0.247	1.078	0.019	0.081	0.651	2.850
TO-1	--	--	--	--	--	--	--	--	--	--	0.001	0.006	0.001	0.006
Blowdowns	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140	0.610	0.140	0.610
Pigging	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Truck Loading	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL	1.05	4.59	0.264	1.15	0.417	1.84	0.525	2.31	0.754	3.281	0.258	1.134	4.156	18.218

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.
According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.