

**APPLICATION FOR AUTHORIZATION
TO USE GENERAL PERMIT GP-5**

(Modification at an Existing Facility with a GP-5 Authorization)

For the:

Laurel Mountain Midstream Operating, LLC
SPRINGHILL COMPRESSOR STATION
Springhill Township, Fayette County, Pennsylvania

Submitted to:



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHWEST REGIONAL OFFICE
AIR QUALITY PROGRAM

Submitted by:



Laurel Mountain Midstream Operating, LLC
Park Place Corporate Center 2
2000 Commerce Drive
Pittsburgh, PA 15275

Prepared by:



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May 2015

**APPLICATION FOR AUTHORIZATION
TO USE GENERAL PERMIT GP-5**

Laurel Mountain Midstream Operating, LLC
SPRINGHILL COMPRESSOR STATION
Springhill Township, Fayette County, Pennsylvania

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GENERAL PLAN APPROVAL & GENERAL OPERATING PERMIT (GP-5)
(Modification at an Existing Facility with a GP-5 Authorization)**

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

**APPLICATION FOR AUTHORIZATION TO USE
GENERAL PLAN APPROVAL AND/OR GENERAL OPERATING PERMIT**

**General Permit or BAQ-GPA/GP-5
Natural Gas Compression and/or Processing Facilities**

**SECTION A.
APPLICATION TYPES**

This application is for:

- ☐ A new authorization for General Plan Approval & Operating Permit
- ☐ A General Plan Approval Only
- ☐ A re-authorization with no modification (Specify the first GP-5 authorization date): **na**
- ☐ A re-authorization with modification (Specify the first GP-5 authorization date): **na**
- ☐ A new authorization due to transfer of ownership.
- ☒ Modification at an existing facility with a GP-5 authorization.
- Source(s) associated with: ☒ Marcellus Shale ☐ Utica Shale
- ☐ Coal bed methane or gob gas ☐ None-Specify:

Remarks: Replace Two (2) CAT G3516LE Engines (CE-02 AND -03) w/ Two (2) Cat G3516B Engines (CE-04 and -05), and Add One (1) 40 MMscfd Dehydrator (DEHY-02) w/ One (1) 0.75 MMBtu/hr Reboiler (BLR-02).

**SECTION B.
OWNER INFORMATION**

Owner's Name: **Laurel Mountain Midstream Operating, LLC (274129)**

Tax ID: **26-4578063**

Address Line1: **Park Place Corporate Center 2**

Address Line2: **2000 Commerce Drive**

City State Zip+4: **Pittsburgh, PA 15275** Phone: **(412) 787-7300**

**SECTION C.
OPERATOR INFORMATION (If different from Owner)**

Operator's Name: **na - The Owner (LMM) is also the Operator**

Address Line1: **---**

Address Line2: **---**

City State Zip+4: **---** Phone: **---**

**SECTION D.
CONTACT INFORMATION**

Contact Name: **Joseph R. McCay**

Contact Title: **Environmental Specialist**

Address Line1: **Park Place Corporate Center 2**

Address Line2: **2000 Commerce Drive**

City State Zip+4: **Pittsburgh, PA 15275**

Email Address: **Joe.McCay@Williams.com** Phone: **412-787-4197**

**SECTION E.
PERMIT INFORMATION**

Is this facility currently permitted?: ☒ Yes, provide current and past authorization numbers: ☐ No

Springhill CS (720794)

Auth#: 984180	Permit#: GP5-26-00587C	Status: Current
Auth#: 894174	Permit#: GP5-26-00587B	Status: Current
Auth#: 812704	Permit#: GP5-26-00587A	Status: Replaced
Auth#: 791422	Permit#: GP5-26-00587	Status: Replaced

Does the facility contain source(s) previously exempted and not listed in this application? ☐ If yes, List the source(s) w/ date of exemption(s): ☒ No

Source: **na** Date: **na**

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SECTION F.
BAQ-GPA/GP-5 Application
APPLICANT'S CHECKLIST

I have enclosed the following:

- | | |
|--|---|
| <input checked="" type="checkbox"/> General Information Form (GIF). (Att B-1)
<input checked="" type="checkbox"/> General Permit fees. (Att D-7)
<input checked="" type="checkbox"/> Engine performance data sheets. (Att D-1)
<input checked="" type="checkbox"/> Process Flow Diagram showing all associated equipment and emission points/stacks. (Sup)
<input checked="" type="checkbox"/> Attachment-A (the Questionnaire and Checklist for Single Source Determination). (Att A)
<input checked="" type="checkbox"/> Proof of submittal of municipal notification along with a copy of application for authorization to use GP-5. (Att D-6)
<input type="checkbox"/> Map/Layout of nearby facilities ¹ under common control. Mark SIC code, permit number (if any) of each source, and indicate distances between boundaries of compressor station(s), the well(s), and associated natural gas processing plant(s), natural gas wastewater storage and treatment facilities, interconnect/metering stations, natural gas storage facilities and transmission stations on the map/layout. Show all natural gas gathering and transmission pipelines and any ethane/other natural gas liquids pipelines. See attachment-A. (Att A - Not Applicable)
<input type="checkbox"/> Pennsylvania Natural Diversity Inventory (PNDI) review receipt and clearance letter ² . (Att D-4 - Not Applicable) | <input checked="" type="checkbox"/> Compliance Review Form (CRF). (Att B-2)
<input checked="" type="checkbox"/> Control device manufacturer guarantees. (Att D-1)
<input checked="" type="checkbox"/> GRI-GLYCalc data. (Att D-2)
<input checked="" type="checkbox"/> Tank emission data (using EPA's Tanks software, Simulation Software, or TANKCalc, etc.). (Att C) |
|--|---|

¹ e.g., well(s), compressor station(s), processing plant(s), etc.² See instructions

SECTION G.
AFFIDAVIT

I certify that, subject to the penalties of Title 18 Pa. C.S.A. Section 4904 and 35 P.S. Section 4009(b)(2), I am the responsible official having primary responsibility for the design and operation of the facilities to which this application applies and that the information provided in this application is true, accurate and complete to the best of my knowledge, information and belief formed after reasonable inquiry. I further certify that the facility will be operated in conformity with the information provided in this application form and all limitations and conditions of the Natural Gas Compression and/or Processing Facilities General Permit (BAQ-GPA/GP-5).

Signature

Daniel Haefelin

Date

Manager of Operations

Typed/Printed Name

Title

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SECTION H.
BAQ-GPA/GP-5 Application
FACILITY INFORMATION
 (If necessary, use Oil & Gas Application Form 5500-PM-OG0001)
 (Use extra pages, if necessary)

Facility Name: Springhill Compressor Station (720794)									
Address of Proposed Facility - Line 1: 585 Hope Hollow Road (T325) (~1.5 miles NE of Point Marion)									
Address of Proposed Facility - Line 2: Lake Lynn, PA 15451									
Municipality: Springhill Township									
County: Fayette County									
NAICS or SIC Code: NAICS 213112 - Support Activities for Oil and Gas Operations (SIC 1389 - O&G Field Services, NEC)									
Project Description: Remove Two (2) 1,340 bhp CAT G3516LE Compressor Engines (CE-02 and CE-03). Install Two (2) 1,380 bhp CAT G3516B Compressor Engines (CE-04 and CE-05). Install One (1) 40 MMscfd TEG Dehydrator (DEHY-02) w/ One (1) 0.75 MMBtu/hr Reboiler (BLR-02).									
Location of Stack Point of Origin		Latitude		Longitude					
		Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
Approx. Center of Property		39	45	03.5	-79	52	22.5		
DEP Client ID Number: 283562		Project Number: na							
List all sources to be covered by this application (e.g., IC engine, Turbine, Dehydrator, Fractionator, Tanks, Pumps etc.):									
Unit ID	Description	Status	Unit ID	Description					
CE-01	Electric Motor Driven Compressor	Existing	DEHY-01	25.0 MMscfd Dehydrator					
			BLR-01	0.25 MMBtu/hr Reboiler					
CE-02	1,340-bhp CAT G3516LE Compressor Engine	Remove							
CE-03	1,340-bhp CAT G3516LE Compressor Engine	Remove	DEHY-02	40.0 MMscfd Dehydrator					
			BLR-02	0.75 MMBtu/hr Reboiler					
CE-04	1,380 bhp CAT G3516B Compressor Engine	NEW							
CE-05	1,380 bhp CAT G3516B Compressor Engine	NEW	TKS	424 bbl (Total) Produced Water Tanks					
			TLO	11,000 bbl/yr Produced Water Load-Out					
RPC	Compressor Rod Packing / Engine Crankcase	Modified							
SSM	Startup/Shutdown/Maintenance (Blowdown)	Modified	FUG	Piping and Equipment Fugitives					
				Modified*					
(*Modified the emission estimating protocols, the activities/operations generating the emissions did not change.)									
Remarks: Compressor Rod-Packing/Engine Crankcase (RPC), Startup/Shutdown/Maintenance (and Blowdown) (SSM), and Truck Load-Out (TLO) emissions are provided in Attachment C and the results are included on the GP 5 Application Emission Summary Forms H10 and H11.									

SECTION H1.
BAQ-GPA/GP-5 Application
INTERNAL COMBUSTION (IC) ENGINE(S) INFORMATION
(Copy this section to describe each engine.)

Engine ID: CE-04 and CE-05 (Engine 04 and 05) (Each)		Model & Serial No: CAT G3516B (SN tbd) CAT G3516B (SN tbd)		Date of engine's initial installation at any facility: tbd	
Manufacturer: Caterpillar (CAT)	Combustion Type: <input type="checkbox"/> Rich Burn <input checked="" type="checkbox"/> Lean Burn		Order Date for New or Reconstructed Engine: tbd		Date of engine's initial installation at this facility: tbd
Date of Manufacture: > 07/01/10	Engine Displacement: 264 in ³ /cylinder		Projected Startup Date for New or Reconstructed Engine 2015		
Max. Rated Capacity (BHP) (Specify site-rated HP if de-rated for site conditions): 1,380 BHP @ 1,400 RPM					
Stroke Type: <input type="checkbox"/> 2 Stroke <input checked="" type="checkbox"/> 4 Stroke					
General description of engine function and purpose: Driver for Natural Gas Compressor					
Check Applicable Federal Rules for this Engine:	<input checked="" type="checkbox"/> 40CFR60, Subpart JJJJ Engines (SHCE)	<input checked="" type="checkbox"/> 40CFR60, Subpart OOOO Oil & Gas (Compressor)	<input checked="" type="checkbox"/> 40CFR63, Subpart ZZZZ Engines (JJJJ Only)	<input type="checkbox"/> Other:	
ENGINE CONTROL					
Engine ID: CE-04 and CE-05 (Each)					
<input type="checkbox"/> Non-Selective Catalytic Reduction (NSCR)		<input checked="" type="checkbox"/> Oxidation Catalyst (OxCat)			
Is this engine equipped with an Air/Fuel ratio controller?		<input checked="" type="checkbox"/> Yes (Details): na		<input type="checkbox"/> No	
Details of process control used for proper mixing/control of reducing agent with gas stream:		na			
Manufacturer: Miratech	Design operating temperature: 992 °F (at 100 °F Ambient)		Model No: SP-ZESO-36X31-14-XH2B1 (or equivalent)		Design gas volume: 9,126 acfm
Service life of catalyst: Guaranteed for 1 yr from installation		Attach efficiency and other pertinent information: See Attachment D-1			
Operating Parameters:					
Volume of Gas Handled: 9,126 acfm	@	992 °F	Operating temp for NSCR/OxCat: 550 °F		to 1,250 °F
Reducing Agent used, if any: na			Ammonia Slip (ppm): na		
Pressure drop across catalyst bed ΔP (if monitored): na inches of H ₂ O					
Describe the warning/alarm system that protects unit when operation is not meeting design conditions:					
Describe fully with sketch giving location of equipment, control systems, important parameters and method of operation:					
Remarks: Engines CE-04 and CE-05 are NEW compressor engines to replace CE-02 and CE-03 compressor engines					

GP-5 Application

ENGINE FUEL INFORMATION:

Engine ID: CE-04 and CE-05 (Each)

Fuel Type(s) (Specify)	Fuel Use @ 100% load - scf/hr	Annual Fuel Consumption (MMscf/yr)		Fuel Heating Value (Btu/SCF)	Sulfur Content (% wt.)
		Actual Reported for Calendar Year	Maximum Estimated Amount		
Natural Gas	11,163	na	97.79	1,020 HHV	0.001% Max
Fuel Usage Metered?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

Remarks:

ENGINE EMISSIONS DATA

Engine ID: CE-04 and CE-05 (Each)

Pollutants	Emission Rates and Control Efficiency				Estimated Atmospheric Emissions*		Estimation Basis (e.g., Source Test, Vendor Data or, AP-42, etc.)
	Allowable g/bhp-hr	Pre-Control g/bhp-hr	Post-Control g/bhp-hr	Control Eff (%)	Post-Control lb/hr	Post-Control Tons/yr (TPY)	
Criteria	NOX	0.50	0.50	0.0%	1.52	6.66	Vendor Data
	NMNEHC	0.25	0.48	0.25	0.76	3.33	Vendor Data
	VOC	---	0.91	0.28	0.85	3.73	NMNEHC+HCHO
	CO	47 ppmvd or 93%	2.43	0.17	0.52	2.27	Vendor Data
	SO2	---	2.2E-03	0.0%	0.01	0.03	AP-42 Table 3.2-3
	PM10/2.5	---	0.04	0.0%	0.11	0.50	AP-42 Table 3.2-3
HAP	HCHO	0.05	0.43	0.03	0.09	0.40	Vendor Data
	Benzene	---	1.6E-03	8.6E-04	2.6E-03	0.01	AP-42 Table 3.2-3
	Ethylbenzene	---	1.5E-04	7.7E-05	2.4E-04	0.00	AP-42 Table 3.2-3
	n-Hexane	---	4.2E-03	2.2E-03	6.6E-03	0.03	AP-42 Table 3.2-3
	Toluene	---	1.5E-03	8.0E-04	2.4E-03	0.01	AP-42 Table 3.2-3
	2,2,4-TMP	---	9.4E-04	4.9E-04	1.5E-03	0.01	AP-42 Table 3.2-3
	Xylene	---	6.9E-04	3.6E-04	1.1E-03	4.8E-03	AP-42 Table 3.2-3
	Methanol	---	0.01	4.9E-03	0.01	0.06	AP-42 Table 3.2-3
	Other HAP	---	0.05	0.03	0.09	0.37	AP-42 Table 3.2-3
	Total HAP	---	0.50	0.07	0.21	0.90	SUM
GHG	CO2	---	472	472	0.0%	1,436	Vendor Data
	CH4	---	4.04	4.04	0.0%	12.29	THC-NMHC
	N2O	---	8.3E-04	8.3E-04	0.0%	2.5E-03	40CFR98 - Table C-2
	CO2e	---	573	573	0.0%	1,744	40CFR98 - Table A-1

Identify Engine(s) on a Flow Chart and Identify the Emissions Points:

See Application Supplement

* Based on post-control emissions and 8,760 hours. See application instruction for Section H1 and H2.

Remarks: ** NMNEHC is non-methane/non-ethane hydrocarbons, excluding HCHO, expressed as propane.

*** VOC includes NMNEHC and HCHO.

NOT APPLICABLE

SECTION H2.
BAQ-GPA/GP-5 Application
SIMPLE CYCLE NATURAL GAS TURBINE(S) INFORMATION
(Copy this section to describe each additional turbine)

Turbine ID:	Manufacturer:	Manufr of OxCat:	OxCat Temp:	of
Make:	Model/Serial #:	Model of OxCat:	Gas Volume:	acfm
Date Manufactd:	Capacity (BHP):	Max Temp:	Press Drop:	in H2O
Capacity:	Date Installed:	Gas Volume:	MMscf/yr	OxCat Life: yrs

Describe the warning/alarm system that protects catalyst when operation is not meeting design conditions:

TURBINE EMISSIONS DATA

Turbine ID

Pollutants	Emission Rates and Control Efficiency				Estimated Atmospheric Emissions*		Estimation Basis (e.g., Source Test, Vendor Data or, AP-42, etc.)
	Allowable ppm @ 15% O2	Pre-Control ppm @ 15% O2	Post-Control ppm @15% O2	Control Eff (%)	Post-Control lb/hr	Post-Control tpy	
Criteria							
HAP							
GHG							

Identify Turbine(s) on a Flow Chart and Identify the Emissions Points:

Remarks:

* Based on post-control emissions and 8,760 hours. See application instruction for Section H1 and H2.

** NMNNEHC is non-methane, non-ethane hydrocarbons excluding HCHO expressed as propane.

*** VOC includes NMNNEHC and HCHO.

Check Applicable Federal Rules for this Turbine: ☐ 40CFR60, Subpart KKKK Turbines ☐ Other:

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SECTION H3.a BAQ-GPA/GP-5 Application DEHYDRATOR AND ASSOCIATED EQUIPMENT INFORMATION (Copy this section to describe each unit)					
Unit ID:		BLR-01 (Reboiler 01)		Date Installed: > 01/04/10	
Make, Model & Serial No.:		na		Date of Manufacture:	na
Dehydrator Control* Type:		na		Control make/model/serial no.:	na
*Also use appropriate form(s) under section H8. to provide further details.					
Annual Average Dehydrator Gas Throughput:		25.0 MMscfd 17,400 scfm		Water Content:	0.05 vol % 0.002 vol %
Annual Average Glycol Circulation Rate (gpm):		3.50		Water Content in Rich Glycol:	2.57 wt% H2O
				Water Content in Lean Glycol:	1.50 wt%
Glycol Type: <input type="checkbox"/> Ethylene Glycol (EG) <input type="checkbox"/> Di-Ethylene Glycol (DEG) <input checked="" type="checkbox"/> Tri-Ethylene Glycol (TEG)					
Reboiler Heat Input:		0.25 MMBtu/hr (LHV)		0.28 MMBtu/hr (HHV)	
Check all applicable Federal rules for this unit: <input type="checkbox"/> 40CFR60 Subpart OOOO <input checked="" type="checkbox"/> 40CFR63 Subpart HH <input type="checkbox"/> Other-specify:					
Emissions Data					
Pollutants		Uncontrolled Emissions* (lb/hr)	Controlled Emissions (lb/hr)	Estimated Atmospheric Emissions** (tpy)	Emissions Estimation Methods
Criteria	VOC	1.5E-03	1.54E-03	0.01	EPA AP-42 Table 1.4-2
	NOX	0.03	0.03	0.12	EPA AP-42 Table 1.4-1
	SO2	1.6E-04	1.63E-04	7.14E-04	EPA AP-42 Table 1.4-2
	CO	0.02	0.02	0.10	EPA AP-42 Table 1.4-1
	PM10/2.5	2.1E-03	2.07E-03	0.01	EPA AP-42 Table 1.4-2
HAP	HCHO	2.0E-05	2.04E-05	8.93E-05	EPA AP-42 Table 1.4-3
	Benzene	5.7E-07	5.71E-07	2.50E-06	EPA AP-42 Table 1.4-3
	Ethylbenzene	---	---	---	EPA AP-42 Table 1.4-3
	n-Hexane	4.9E-04	4.89E-04	2.14E-03	EPA AP-42 Table 1.4-3
	Toluene	---	---	---	EPA AP-42 Table 1.4-3
	2,2,4-TMP	9.2E-07	9.24E-07	4.05E-06	EPA AP-42 Table 1.4-3
	Xylenes	---	---	---	EPA AP-42 Table 1.4-3
	Methanol	---	---	---	EPA AP-42 Table 1.4-3
	Other HAP	5.2E-07	5.16E-07	2.26E-06	EPA AP-42 Table 1.4-3
	Total HAP	5.1E-04	5.12E-04	2.24E-03	EPA AP-42 Table 1.4-3
GHG	CO2	33	33	143	EPA AP-42 Table 1.4-2
	CH4	6.3E-04	6.25E-04	2.74E-03	EPA AP-42 Table 1.4-2
	N2O	6.0E-04	5.98E-04	2.62E-03	EPA AP-42 Table 1.4-2
	CO2e	33	33	144	40CFR98 - Table A-1
General description and function of the unit: The Reboiler heats Rich Glycol to drive off water, creating Lean Glycol.					
Remarks: Only the Reboiler 01 (BLR-01) combustion emissions are shown above. The total dehydrator emissions includes waste gas from Dehydrator 01 (DEHY-01) plus combustion emissions from the Reboiler 01 (BLR-01).					
*Emissions from the reboiler must be included.					
**Based on 8,760 hrs/yr.					

GP-5 Application

SECTION H3.b
BAQ-GPA/GP-5 Application
DEHYDRATOR AND ASSOCIATED EQUIPMENT INFORMATION
(Copy this section to describe each unit)

Unit ID:		BLR-02 (Reboiler 02)		Date Installed:		tbd	
Make, Model & Serial No.:		na		Date of Manufacture:		tbd	
Dehydrator Control* Type:		na		Control Efficiency (%):		na	
				Control make/model/serial no.:		na	
*Also use appropriate form(s) under section H8. to provide further details.							
Annual Average Dehydrator Gas Throughput:		40.0 MMscfd 27,800 scfm		Water Content:		Wet Gas: 0.05 vol % Dry Gas: 0.002 vol %	
Annual Average Glycol Circulation Rate (gpm):		7.50		Water Content in Rich Glycol:		2.29 wt% H2O	
				Water Content in Lean Glycol:		1.50 wt%	
Glycol Type:		<input type="checkbox"/> Ethylene Glycol (EG)		<input type="checkbox"/> Di-Ethylene Glycol (DEG)		<input checked="" type="checkbox"/> Tri-Ethylene Glycol (TEG)	
Reboiler Heat Input:		0.75 MMBtu/hr (LHV)				0.83 MMBtu/hr (HHV)	
Check all applicable Federal rules for this unit:		<input type="checkbox"/> 40CFR60 Subpart OOOO		<input checked="" type="checkbox"/> 40CFR63 Subpart HH		<input type="checkbox"/> Other-specify:	
Emissions Data							
Pollutants		Uncontrolled Emissions* (lb/hr)		Controlled Emissions (lb/hr)		Estimated Atmospheric Emissions** (tpy)	
						Emissions Estimation Methods	
Criteria	VOC	4.6E-03		4.63E-03		0.02 EPA AP-42 Table 1.4-2	
	NOX	0.08		0.08		0.36 EPA AP-42 Table 1.4-1	
	SO2	4.9E-04		4.89E-04		2.14E-03 EPA AP-42 Table 1.4-2	
	CO	0.07		0.07		0.30 EPA AP-42 Table 1.4-1	
	PM10/2.5	0.01		0.01		0.03 EPA AP-42 Table 1.4-2	
HAP	HCHO	6.1E-05		6.11E-05		2.68E-04 EPA AP-42 Table 1.4-3	
	Benzene	1.7E-06		1.71E-06		7.50E-06 EPA AP-42 Table 1.4-3	
	Ethylbenzene	---		---		--- EPA AP-42 Table 1.4-3	
	n-Hexane	1.5E-03		1.47E-03		0.01 EPA AP-42 Table 1.4-3	
	Toluene	---		---		--- EPA AP-42 Table 1.4-3	
	2,2,4-TMP	2.8E-06		2.77E-06		1.21E-05 EPA AP-42 Table 1.4-3	
	Xylenes	---		---		--- EPA AP-42 Table 1.4-3	
	Methanol	---		---		--- EPA AP-42 Table 1.4-3	
	Other HAP	1.5E-06		1.55E-06		6.78E-06 EPA AP-42 Table 1.4-3	
	Total HAP	1.5E-03		1.53E-03		0.01 EPA AP-42 Table 1.4-3	
GHG	CO2	98		98		428 EPA AP-42 Table 1.4-2	
	CH4	1.9E-03		1.88E-03		0.01 EPA AP-42 Table 1.4-2	
	N2O	1.8E-03		1.79E-03		0.01 EPA AP-42 Table 1.4-2	
	CO2e	98		98.41		431.02 40CFR98 - Table A-1	
General description and function of the unit:		The Reboiler heats Rich Glycol to drive off water, creating Lean Glycol.					
Remarks:		Only the Reboiler 02 (BLR-02) combustion emissions are shown above. The total dehydrator emissions includes waste gas from Dehydrator 02 (DEHY-02) plus combustion emissions from the Reboiler 02 (BLR-02).					
*Emissions from the reboiler must be included.							
*Based on 8,760 hrs/yr.							

GP-5 Application

SECTION H4.a
BAQ-GPA/GP-5 Application
FLASH TANK and/or REGENERATOR INFORMATION
(Copy this section to describe each additional unit)

Unit ID:	DEHY-01 (Dehydrator 01)	Unit Make, Model & Serial No.:	NATCO D-104367 SN EL2G30603-01	Tank Capacity:	na	Tank Contents:	na
Control* Type:	na	Control Efficiency (%):	na	Control make/ model/serial no.:	na	Burner Rating (MMBtu/hr):	na
*Also use appropriate form(s) under section H8. to provide further details.							
Flash Tank:		Inlet Pressure:	na psig	Inlet Temperature:		na °F	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Outlet Pressure:	na psig	Outlet Temperature:		na °F	
Check applicable Federal rules:		<input type="checkbox"/> 40CFR60 Subpart KKK	<input type="checkbox"/> 40CFR60 Subpart OOOO	<input checked="" type="checkbox"/> 40CFR63 Subpart HH	<input type="checkbox"/> 40CFR60 Subpart K, Ka or Kb	<input type="checkbox"/> Other Specify	
Emissions Data							
Pollutants		Uncontrolled Emissions (lbs/hr)	Controlled Emissions (lbs/hr)	Estimated Atmospheric Emissions (tpy)*	Emission Estimation Method		
Criteria	VOC	2.26	2.26	9.90	GRI-GLYCalc 4.0		
	NOX	---	---	---	---		
	SO2	---	---	---	---		
	CO	---	---	---	---		
	PM10/2.5	---	---	---	---		
HAP	HCHO	---	---	---	---		
	Benzene	0.21	0.21	0.90	GRI-GLYCalc 4.0		
	Ethylbenzene	0.18	0.18	0.80	GRI-GLYCalc 4.0		
	n-Hexane	0.02	0.02	0.10	GRI-GLYCalc 4.0		
	Toluene	0.14	0.14	0.60	GRI-GLYCalc 4.0		
	2,2,4-TMP	0.02	0.02	0.10	GRI-GLYCalc 4.0		
	Xylenes	0.23	0.23	1.00	GRI-GLYCalc 4.0		
	Methanol	---	---	---	GRI-GLYCalc 4.0		
	Other HAP	---	---	---	GRI-GLYCalc 4.0		
Total HAP	0.80	0.80	3.50	GRI-GLYCalc 4.0			
GHG	CO2	---	---	---	---		
	CH4	135	135	590	GRI-GLYCalc 4.0		
	N2O	---	---	---	---		
	CO2e	3,368	3,368	14,750	40CFR98 - Table A-1		
Describe the function of this unit, include flow chart including all associated equipment and emission points: <div style="margin-top: 10px;"> <div style="float: left; width: 30%;"> Only the Dehydrator 01 (DEHY-01) waste gas emissions are shown above. The total dehydrator emissions includes waste gas from Dehydrator 01 (DEHY-01) plus combustion emissions from the Reboiler 01 (BLR-01). </div> </div>							
Remarks:							

*Based on 8,760 hrs/yr.

GP-5 Application

SECTION H4.b
BAQ-GPA/GP-5 Application
FLASH TANK and/or REGENERATOR INFORMATION
(Copy this section to describe each additional unit)

Unit ID:	DEHY-02 (Dehydrator 02)	Unit Make, Model & Serial No.:	Frederick Logan Co.	Tank Capacity:	na	Tank Contents:	na
Control* Type:	na	Control Efficiency (%):	na	Control make/ model/serial no.:	na	Burner Rating (MMBtu/hr):	na
*Also use appropriate form(s) under section H8. to provide further details.							
Flash Tank:		Inlet Pressure: 1,000 psig		Inlet Temperature: 120 °F			
<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		Outlet Pressure: 40 psig		Outlet Temperature: 70 °F			
Check applicable Federal rules:		<input type="checkbox"/> 40CFR60 Subpart KKK <input type="checkbox"/> 40CFR60 Subpart OOOO <input checked="" type="checkbox"/> 40CFR63 Subpart HH		<input type="checkbox"/> 40CFR60 Subpart K, Ka or Kb		<input type="checkbox"/> Other Specify	
Emissions Data							
Pollutants		Uncontrolled Emissions (lbs/hr)	Controlled Emissions (lbs/hr)	Estimated Atmospheric Emissions (tpy)*	Emission Estimation Method		
Criteria	VOC	1.12	1.12	4.90	GRI-GLYCalc 4.0		
	NOX	---	---	---	---		
	SO2	---	---	---	---		
	CO	---	---	---	---		
	PM10/2.5	---	---	---	---		
HAP	HCHO	---	---	---	---		
	Benzene	0.21	0.21	0.90	GRI-GLYCalc 4.0		
	Ethylbenzene	0.25	0.25	1.10	GRI-GLYCalc 4.0		
	n-Hexane	0.02	0.02	0.10	GRI-GLYCalc 4.0		
	Toluene	0.18	0.18	0.80	GRI-GLYCalc 4.0		
	2,2,4-TMP	0.02	0.02	0.10	GRI-GLYCalc 4.0		
	Methanol	---	---	---	GRI-GLYCalc 4.0		
	Xylenes	0.32	0.32	1.40	GRI-GLYCalc 4.0		
	Other HAP	---	---	---	GRI-GLYCalc 4.0		
	Total HAP	1.00	1.00	4.40	GRI-GLYCalc 4.0		
GHG	CO2	---	---	---	---		
	CH4	136	136	595	GRI-GLYCalc 4.0		
	N2O	---	---	---	---		
	CO2e	3,396	3,396	14,875	40CFR98 - Table A-1		
Describe the function of this unit, include flow chart including all associated equipment and emission points:		<p>Only the Dehydrator 02 (DEHY-02) waste gas emissions are shown above. The total dehydrator emissions includes waste gas from Dehydrator 02 (DEHY-02) plus combustion emissions from the Reboiler 02 (BLR-02).</p>					
Remarks:							

*Based on 8,760 hrs/yr.

NOT APPLICABLE

SECTION H5.
BAQ-GPA/GP-5 Application
FRACTIONATOR INFORMATION
(Copy this section to describe each additional unit)

Unit ID:		Unit make/model/serial no.		Control* make/model/serial no.	
Fractionator:	Inlet Pressure (psig)	Outlet Pressure (psig)	Inlet temperature (°F)	Outlet temperature (°F)	
Control type:		Control Efficiency (%)		Chemical byproducts:	
*Also use appropriate form(s) under section H8. to provide further details					
Liquid throughput (gpm):		Rating of heat source (MMBtu/hr)			
Check all applicable Federal rules for this unit	<input type="checkbox"/> 40 CFR Part 60, Subpart OOOO	<input type="checkbox"/> 40 CFR Part 63, Subpart HH	<input type="checkbox"/> 40 CFR Part 60, Subpart KKK	<input type="checkbox"/> Other specify	
Emissions Data					
Pollutants	Uncontrolled emissions (lbs/hr)	Controlled emissions (lbs/hr)	Estimated Atmospheric Emissions* (TPY)	Emission estimation method	
VOC					
NOx					
CO					
HAPs (Total with CH3OH & Benzene)					
Benzene (Put separately)					
SOx					
Others					
Describe the function of this unit, include flow chart including all associated equipment and emission points:					
Remarks:					

*Based on 8760 hrs.

GP-5 Application

SECTION H6. BAQ-GPA/GP-5 Application CONDENSATE OR MISCELLANEOUS STORAGE TANK INFORMATION (Copy this section to describe each unit)					
Tank ID: TKS (Tanks 01 thru 04)		Tank Capacity: 17,800 gal (Total)		Tank Contents: Produced Water	
Maximum Allowable Working Pressure: Atm psig		Tank Design Pressure: Atm psig			
Tank Content: Produced Water		Vapor Pressure of Contents: < 1.5 psia			
Liquid/Gas Throughput: 462,000 gal/yr (Total)		Year(s) tank(s) were placed in service: 2010			
Pressure Relief Valve Set Point: na psig		Pressure Relief Valve Set Point: na psig of vacuum			
Control Type*: na *Also use appropriate form(s) under section H8 to provide further details		Year(s) tank(s) were placed in service: 2010			
Control Efficiency: na %		Tank Throughput: 462,000 gal/yr (Total)			
Check all applicable Federal rules: <input type="checkbox"/> 40CFR60 Subpart OOOO <input type="checkbox"/> 40CFR63 Subpart HH <input type="checkbox"/> 40CFR60 Subpart K, Ka, Kb <input type="checkbox"/> Other-Specify: na					
Emissions Data					
Pollutants		Uncontrolled Emissions* (lbs/hr)	Controlled Emissions (lbs/hr)*	Estimated Atmospheric Emissions** (TPY)	Emission estimation method
	VOC	0.21	0.21	0.94	EPA-450/3-85-001a
HAP	Benzene	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	Ethylbenzene	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	HCHO	---	---	---	---
	n-Hexane	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	Toluene	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	2,2,4-TMP	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	Xylenes	4.3E-03	4.3E-03	0.02	EPA-450/3-85-001a
	Methanol	0.17	0.17	0.73	Mass Balance
	Other HAP	---	---	---	---
	Total HAP	0.19	0.19	0.84	EPA-450/3-85-001a
GHG	CO2	---	---	---	---
	CH4	0.62	0.62	2.72	Laboratory Analysis
	N2O	---	---	---	---
	GHG (CO2e)	15.51	15.51	67.91	40CFR98 - Table A-1
Describe the function of this unit: Storage tanks are used to hold produced water from facility operations prior to off-site shipment.					
Remarks: na					

*Emissions from liquid loading arms (if applicable) have to be included

**Based on 8,760 hrs.

NOT APPLICABLE

SECTION H7.
BAQ-GPA/GP-5 Application
STORAGE TANK (Pressure vessel)
(Copy this section to describe each additional unit)

Tank ID:		Maximum Allowable Working Pressure (psig):	
Tank capacity (gallons):		Tank Design Pressure (psig):	
Tank Content (Natural gas liquids (NGLs), Methyl or Ethyl Mercaptan etc.):		Vapor pressure of the content:	
Control Description:		Control Efficiency:	
Liquid/Gas Throughput (gallons/year):		Year(s) tank(s) were placed in service:	
Liquid/Gas Temp (°F):		Pressure Relief Valve Set Point (psig):	
		Rupture Disk Set Point (psig)	
Is this pressure relief valve connected to an overflow storage tank?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is overflow tank connected to an air cleaning device		<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes, please provide overflow storage tank and air pollution control equipment details as asked on Section H6 for "CONDENSATE OR MISCELLANEOUS STORAGE TANK INFORMATION" and on Section H8 for "AIR POLLUTION CONTROL EQUIPMENT INFORMATION" using extra page. Include flow chart to identify the tank and the control:			
Remarks:			

SECTION H8.1 ADSORPTION EQUIPMENT
BAQ-GPA/GP-5 Application

AIR POLLUTION CONTROL EQUIPMENT INFORMATION

(Copy this section to describe additional air pollution control equipment. Do not include engine or turbine control devices in this section.)

NOT APPLICABLE

1. ADSORPTION EQUIPMENT

Equipment Specifications

Equipment ID: _____	
Equipment connected to which unit? _____	Type (VRU etc.): _____ (Attach schematic diagram)
Manufacturer: _____	Make/ Model No.: _____
Design Inlet Volume (SCFM): _____ Adsorbent charge per adsorber vessel and number of adsorber vessels: _____	
Length of Mass Transfer Zone (MTZ), supplied by the manufacturer based upon laboratory data: _____	
Adsorber diameter (ft.) and area ft ² : _____	Adsorption bed depth (ft.): _____
Adsorbent information: _____	
Adsorbent type and physical properties: _____	Overall Control Efficiency% _____
Working capacity of adsorbent (%): _____	Heel percent of unrecoverable solvent weight % in the adsorbent after regeneration. _____

Operating Parameters

Inlet volume (SCFM) _____ @ _____ °F	Breakthrough capacity: Lbs. of VOC / 100 lbs. of adsorbent = _____
Adsorption time per adsorption bed _____	Vapor pressure of VOC(s) at the inlet temperature _____ Pounds of steam to regenerate the carbon adsorber bed (if applicable) _____
Percent relative saturation of each VOC at the inlet temperature: _____	
Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment: _____	
Describe the warning/alarm system that protects against operation when unit is not meeting design requirements. _____	
Check all applicable Federal rules for this unit	<input type="checkbox"/> 40 CFR Part 60, Subpart OOOO <input type="checkbox"/> 40 CFR Part 63, Subpart HH <input type="checkbox"/> Other specify _____

Emissions Data

Pollutants	Inlet (TPY)	Outlet (TPY)	Removal Efficiency (%)	Pollutants	Inlet (TPY)	Outlet (TPY)	Removal Efficiency (%)
VOC				PM _{2.5}			
HAPs				SOX			
NOX				Others			
CO							
PM ₁₀							
Remarks: _____							

NOT APPLICABLE

SECTION H8.2a OXIDIZER (Incinerator)
BAQ-GPA/GP-5 Application
AIR POLLUTION CONTROL EQUIPMENT (APCE) INFORMATION
(Copy this section to describe additional air pollution control equipment. Do not include engine or turbine control devices in this section.)

2. OXIDIZER (Incinerator)

Unit ID:	Manufacturer:	Model No.
Gas Flow Rate: scfm	Residence Time:	secs
Control Type:	Operating Temp. °F to °F	Rated Heat Input: MMBtu/hr
Control Efficiency: %	Fuel Used	Date Manufactured:
Describe design features, which will ensure mixing in combustion chamber:		
Method of preheating incoming gases:		
Describe heat exchanger system for heat recovery:		
Catalyst Used:	Life: mo.	Temp Rise: °F
		Dimensions: Dia./Width in Bed: in Height: ft
Are temperature sensing devices being provided to measure the temperature rise across the catalyst? <input type="checkbox"/> Yes <input type="checkbox"/> No		

If yes, describe

Describe any temperature sensing and/or recording devices (including specific location of temperature probe in a drawing or sketch.

Pressure drop range across catalytic bed (in. of water). Method for regeneration or disposal of catalyst.

Warning/Alarm system that protects against operation when unit is not meeting design requirements:

Applicable Federal Rules: ☐ 40 CFR Part 60, Subpart OOOO ☐ 40 CFR Part 63, Subpart HH ☐ Other-Specify:

EMISSIONS DATA (tpy)

Pollutants	Dry Gas Seals	Blowdown	Pre-Controlled Emissions (INLET)	Control %	Controlled Emissions	Combustion Emissions	TOTAL EMISSIONS (OUTLET)
Criteria							
VOC							
NOX							
CO							
PM10/2.5							
SO2							
HAP							
Benzene							
Ethylbenzene							
Formaldehyde							
n-Hexane							
Toluene							
2,2,4-TMP							
Xylenes							
Methanol							
Other HAP							
Total HAP							
GHG							
CO2 (GWP=1)							
CH4 (GWP=25)							
N2O (GWP=298)							
CO2e							

Remarks:

NOT APPLICABLE

SECTION H8.3 FLARE
BAQ-GPA/GP-5 Application
AIR POLLUTION CONTROL EQUIPMENT (APCE) INFORMATION

(Copy this section to describe additional air pollution control equipment. Do not include engine or turbine control devices in this section.)

3. FLARE**Equipment Specifications**

Equipment connected to which unit(s)?

(Attach schematic diagram)

Flare ID

Flare Type

Rating (MMBtu/Hr)

Control Efficiency%

Constant Pilot Light

☐ Yes☐ No

Pilot Burner Rating (MMBtu/Hr)

Check all applicable Federal rules for this unit

☐ 40 CFR Part 60, Subpart OOOO☐ 40 CFR §60.18☐ 40 CFR part 63, Subpart HH☐ Other specify**Emissions Data**

Pollutants

Inlet (TPY)

Outlet (TPY)

Removal Efficiency (%)

VOC

NOX

CO

SO₂PM_{10/2.5}

THC

NMHC

NMNEHC

Benzene

Ethylbenzene

HCHO

n-Hexane

Toluene

Xylenes

Methanol

Other HAP

Total HAP

CO₂CH₄N₂OCO_{2e}

GHG

Remarks:

NOT APPLICABLE

SECTION H8.4. CONDENSER
BAQ-GPA/GP-5 Application
AIR POLLUTION CONTROL EQUIPMENT INFORMATION
(Copy this section to describe additional air pollution control equipment. Do not include engine or turbine control devices in this section.)

4. VENT CONDENSER**Equipment Specifications**

Equipment connected to which unit?		(Attach schematic diagram)	
Condenser ID: [REDACTED]			
Condenser Type:	[REDACTED]	Make/ Model/Serial no.:	[REDACTED]
Coolant Type:	[REDACTED]	Coolant inlet & outlet temp	[REDACTED] °F [REDACTED] °F
Gas inlet & outlet temp	[REDACTED] °F [REDACTED] °F	Control Efficiency (%)	[REDACTED]
Remarks: [REDACTED]			
Check all applicable Federal rules for this unit		<input type="checkbox"/> 40 CFR Part 63, Subpart HH	<input type="checkbox"/> Other specify [REDACTED]

Emissions Data

Pollutants	Inlet (TPY)	Outlet (TPY)	Removal Efficiency (%)
VOC	[REDACTED]	[REDACTED]	[REDACTED]
HAPs	[REDACTED]	[REDACTED]	[REDACTED]
Others	[REDACTED]	[REDACTED]	[REDACTED]
Remarks	[REDACTED]		

NOT APPLICABLE

**SECTION H8.5. OTHER
BAQ-GPA/GP-5 Application
AIR POLLUTION CONTROL EQUIPMENT INFORMATION**
(Copy this section to describe additional air pollution control equipment.
Do not include engine or turbine control devices in this section.)

5. OTHER AIR POLLUTION CONTROL EQUIPMENT (Specify)

Equipment connected to which unit? (Attach schematic diagram)

Equipment ID:

Equipment Type: Make/Model/Serial no.:

Overall Control Efficiency %

Remarks:

List all applicable Federal and State rules for this device

Emissions Data

Pollutants	Inlet (TPY)	Outlet (TPY)	Removal Efficiency (%)
VOC			
HAPs			
NOx			
CO			
PM ₁₀			
PM _{2.5}			
SOx			
Others			

Remarks:

SECTION H9.

BAQ-GPA/GP-5 Application

FUGITIVE EMISSIONS FROM COMPONENT LEAKS

(Use extra page for each associated source/equipment if needed.)

Associated Source/Equipment:		FUG - Piping and Equipment Fugitives							
Leak Detection Methods Used:		<input checked="" type="checkbox"/> Audible, Visual and Olfactory ("AVO") Inspections		<input checked="" type="checkbox"/> Infrared ("FLIR") Cameras		<input type="checkbox"/> Other Department Approved Leak Detection Monitoring Devices			
Component Type	Count	Leak Emission Factors lb/hr/comp.	Source of Leak Emission Factors	Stream Type (Gas/Liquid etc.)	Estimated Atmospheric Emissions (TPY)				GHG (CO2e)
					VOC	n-Hex, BTEX, TMP (ea)	Total HAP	CH4	
Connectors	1,474	4.41E-04	EPA Protocol	Gas	0.01	0.00	0.00	2.85	71
Flanges	240	0.00086	EPA Protocol	Gas	4.2E-03	2.1E-05	1.2E-04	0.90	23
Open-ended lines	28	0.00441	EPA Protocol	Gas	0.00	1.2E-05	7.5E-05	0.54	14
Pump Seals	---	---	EPA Protocol	Gas	---	---	---	---	---
Valves	514	0.00992	EPA Protocol	Gas	0.10	5.1E-04	0.00	22.33	559
Other*	60	0.01940	EPA Protocol	Gas	0.02	0.00	0.00	5.10	128
TOTAL	2,316	na	na	na	0.15	0.00	0.00	31.72	793

* "Other" equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc.

Remarks: na

EMISSIONS DATA			
FUG - Piping and Equipment Fugitives			
Emissions	Estimated Atmospheric Emissions		Emission estimation method
	lb/hr	tpy*	
VOC	0.03	0.15	EPA Protocol
HCHO	---	---	---
Benzene	1.7E-04	7.3E-04	EPA Protocol
Ethylbenzene	1.7E-04	7.3E-04	EPA Protocol
n-Hexane	1.7E-04	7.3E-04	EPA Protocol
Toluene	1.7E-04	7.3E-04	EPA Protocol
2,2,4-TMP	1.7E-04	7.3E-04	EPA Protocol
Xylenes	1.7E-04	7.3E-04	EPA Protocol
Methanol	---	---	---
Other HAP	---	---	EPA Protocol
Total HAP	1.0E-03	4.4E-03	EPA Protocol
GHG			
CO2	0.13	0.58	---
CH4	7.24	31.72	EPA Protocol
N2O	---	---	---
GHG (CO2e)	181	793	40CFR98 - Table A-1

Remarks: na

*Based on 8760 hrs. Include fugitives from component leaks and emissions from all sources located at the facility including reboller, truck/rail car liquid loading arm, refrigeration equipment, cryogenic/JT unit, electric compressors etc. Include emissions from blowdowns, start-up and shut-down of engines and turbines.

SECTION H10.a
BAQ-GPA/GP-5 Application
ESTIMATED ATMOSPHERIC EMISSIONS (TPY)¹ FROM EACH SOURCE LOCATED AT THIS FACILITY
 (Use extra page as needed and attach all the emission calculations.)

Sources ²	CRITERIA POLLUTANT										GREENHOUSE GAS (GHG)							
	VOC		NOX		CO		PM10/2.5		SO2		CO2		CH4		N2O		GHG (CO2e)	
	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
CE-01	Zero Emissions from the Electric Motor																	
CE-02	Remove and Replace CE-02 w/ CE-04 - 1,380 bhp CAT G3516B Engine 04																	
CE-03	Remove and Replace CE-03 w/ CE-05 - 1,380 bhp CAT G3516B Engine 05																	
CE-04	0.85	3.73	1.52	6.66	0.52	2.27	0.11	0.50	0.01	0.03	1,436	6,290	12.29	53.84	2.5E-03	0.01	1,744	7,639
CE-05	0.85	3.73	1.52	6.66	0.52	2.27	0.11	0.50	0.01	0.03	1,436	6,290	12.29	53.84	2.5E-03	0.01	1,744	7,639
RPC	0.09	0.39									25	110	8.96	39.26			249	1,092
SSM		0.32									0.29	1	15.46	67.72			387	1,694
DEHY-01	2.26	9.90											134.70	590.00			3,368	14,750
BLR-01	1.5E-03	0.01	0.03	0.12	0.02	0.10	2.1E-03	0.01	1.6E-04	7.1E-04	33	143	6.3E-04	2.7E-03	6.0E-04	0.00	33	144
DEHY-02	1.12	4.90											135.84	595.00			3,396	14,875
BLR-02	4.6E-03	0.02	0.08	0.36	0.07	0.30	0.01	0.03	4.9E-04	2.1E-03	98	428	1.9E-03	0.01	1.8E-03	0.01	98	431
TKS	0.21	0.94											0.62	2.72			16	68
TLO		0.37																
FUG	0.03	0.15									0.13	0.58	7.24	31.72			181	793
TOTAL	5.42	24.45	3.15	13.80	1.13	4.93	0.24	1.03	0.01	0.06	3,028	13,263	327	1,434	0.01	0.03	11,216	49,125

¹ Based on 8,760 hrs.² Include fugitives from component leaks and emissions from all sources located at the facility including reboiler, loading arm, refrigeration equipment, cryogenic/JT unit etc. Include emissions from blowdowns, start-up and shut-down of engines and turbines.

(Use extra page as needed and attach all the emission calculations.)

HAZARDOUS AIR POLLUTANT (HAP)																				
Sources ²	Benzene	Ethylbenzene	Formaldehyde	n-Hexane	Toluene	2,2,4-TMP	Xylenes	Methanol	Other HAP	Total HAP										
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy										
CE-01	Zero Emissions from the Electric Motor																			
CE-02	Remove and Replace CE-02 w/ CE-04 - 1,380 bhp CAT G3516B Engine 04																			
CE-03	Remove and Replace CE-03 w/ CE-05 - 1,380 bhp CAT G3516B Engine 05																			
CE-04	2.6E-03	0.01	2.4E-04	1.0E-03	0.09	0.40	0.01	0.03	2.4E-03	0.01	1.5E-03	0.01	1.1E-03	4.8E-03	0.01	0.06	0.09	0.37	0.21	0.90
CE-05	2.6E-03	0.01	2.4E-04	1.0E-03	0.09	0.40	0.01	0.03	2.4E-03	0.01	1.5E-03	0.01	1.1E-03	4.8E-03	0.01	0.06	0.09	0.37	0.21	0.90
RPC	8.5E-04	3.7E-03	8.5E-04	3.7E-03	0.02	0.10	8.5E-04	3.7E-03	8.5E-04	3.7E-03	8.5E-04	3.7E-03	8.5E-04	3.7E-03	0.03	0.12	0.03	0.12	0.03	0.12
SSM	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01	1.6E-03	0.01
DEHY-01	0.21	0.90	0.18	0.80	2.3E-02	0.10	0.14	0.60	0.02	0.10	0.23	1.00	0.03	0.12	0.03	0.12	0.03	0.12	0.03	0.12
BLR-01	5.7E-07	2.5E-06	2.0E-05	8.9E-05	4.9E-04	2.1E-03	9.2E-07	4.0E-06	5.2E-07	2.3E-06	5.1E-04	2.2E-03	5.1E-04	2.2E-03	5.1E-04	2.2E-03	5.1E-04	2.2E-03	5.1E-04	2.2E-03
DEHY-02	0.21	0.90	0.25	1.10	2.3E-02	0.10	0.18	0.80	0.02	0.10	0.32	1.40	0.03	0.12	0.03	0.12	0.03	0.12	0.03	0.12
BLR-02	1.7E-06	7.5E-06	6.1E-05	2.7E-04	1.5E-03	6.4E-03	2.8E-06	1.2E-05	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02
TKS	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02	4.3E-03	0.02
TLO	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	0.11
FUG	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04	1.7E-04	7.3E-04
TOTAL	0.42	1.86	0.44	1.93	0.21	0.90	0.07	0.30	0.33	1.45	0.05	0.25	0.56	2.44	0.20	0.86	0.17	0.75	2.44	10.80

2 Include fugitives from component leaks and emissions from all sources located at the facility including reboiler, loading arm, refrigeration equipment,

² Include fugitives from component leaks and emissions from all sources located at the facility including rebolter, loading arm, refrigeration equipment, cryogenic/JT unit etc. Include emissions from blowdowns, start-up and shut-down of engines and turbines.

SECTION H11.
TOTAL ESTIMATED ATMOSPHERIC EMISSIONS FROM ALL SOURCES LOCATED AT THIS FACILITY
 (Attach all the emission calculations.)

Pollutants		Estimated Atmospheric Emissions	
	lb/hr	TPY ¹	
Criteria	Volatile Organic Compounds (VOC)	5.42	24.45
	Nitrogen Oxides (NOX)	3.15	13.80
	Carbon Monoxide (CO)	1.13	4.93
	Sulfur Dioxide (SO ₂)	0.01	0.06
	Particulate Matter (PM10/2.5)	0.24	1.03
	Formaldehyde (HCHO)	0.21	0.90
	Benzene	0.42	1.86
	Ethylbenzene	0.44	1.93
	n-Hexane	0.07	0.30
	Toluene	0.33	1.45
HAP	2,2,4-Trimethylpentane (TMP)	0.05	0.25
	Xylenes	0.56	2.44
	Methanol (CH ₃ OH)	0.20	0.86
	Other HAP	0.17	0.75
	Total HAP	2.44	10.80
	CO ₂	3,028	13,263
	CH ₄	327	1,434
	Nitrous Oxides (N ₂ O)	0.01	0.03
	CO ₂ e	11,216	49,125
	GHG		

¹Based on 8,760 hrs. Estimated emissions from all sources located at the facility must also include emissions which are not covered by this General Permit like pigging operations and pipeline purging/venting.