Devon Energy Corporation
333 West Sheridan Avenue
Oklahoma City, OK 73102

361 275 0971 Phone
www.devonenergy.com

March 6, 2025

Texas Commission on Environmental Quality
Permits Initial Review Team, MC 163
P. O. Box 13087
Austin, Texas 78711-3087
(512) 239-1000

Re: **Devon Energy Production Company, L.P.** **Submitted via STEERS**
P. Frisbie A Pad 1
CN600132344
RN112083555
Non-Rule Standard Permit No. 178263

Dear Reader:

Devon Energy Production Company, L.P. (Devon) owns and operates P. Frisbie A Pad 1 in DeWitt County, Texas. Devon is submitting the enclosed documentation to register and certify emissions from two (2) engines, two (2) heater treaters, four (4) oil tanks, two (2) produced water tanks, one (1) flare, truck loading, and associated sitewide fugitives.

If you have any questions concerning this certification or wish to discuss the information provided with this letter, please contact me at (361) 275-0971.

Sincerely,

Ryan Kainer

Ryan Kainer
Environmental Professional

TCEQ
NON-RULE STANDARD PERMIT REGISTRATION
OIL & GAS HANDLING AND PRODUCTION FACILITIES
DEVON ENERGY PRODUCTION COMPANY, L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

For Information Contact:
Ryan Kainer
EHS Professional
Devon Energy Production Company, L.P.
333 W. Sheridan Ave.
Oklahoma City, Oklahoma 73102
(361) 275-0971

Submitted To:
Texas Commission on Environmental Quality
Office of Air Quality
New Source Review Program
P.O. Box 13087
Austin, Texas 78711-3087

Prepared By:
Altamira-US, LLC
525 Central Park Dr., Suite 500
Oklahoma City, Oklahoma 73105

March 2025

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1.0 INTRODUCTION

Devon Energy Production Company, L.P. (Devon) is registering the P. Frisbie A Pad 1 in DeWitt County, Texas, under a Texas Commission on Environmental Quality (TCEQ) Non-Rule Standard Permit (NRSP). A New Project Notification Form was submitted. To authorize this site, Devon is submitting this application under the TCEQ NRSP for Oil and Gas Handling and Production Facilities. The emission sources to be authorized under NRSP No. 178263 are as follows:

- Two (2) Caterpillar G3516 Engines (ENGINE1, ENGINE2)
- Two (2) Heater Treaters (HT1 through HT2)
- Four (4) 1,000 bbl Oil Tanks (TANK1 through TANK4)
- Two (2) 1,000 bbl Produced Water Tanks (PWTANK1 through PWTANK2)
- One (1) Flare (FLARE1)
- Oil Loading (LOAD1)
- Produced Water Loading (PWLOAD1)
- Sitewide Fugitives (FUGITIVES)
- MSS Activities/Blowdowns (MSS)

2.0 TCEQ STANDARD PERMIT APPLICATION FORMS

The following TCEQ permit application form is included in this section:

- PI-1S Form
- Table 29 – ENGINE1
- Table 29 – ENGINE2

Form PI-1S
Registrations for Air Standard Permit
(Page 1)
Texas Commission on Environmental Quality

I. Registrant Information
A. Company or Other Legal Customer Name:
Devon Energy Production Company, L.P.
B. Company Official Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:)_____
Name: Jimmy Turnini
Title: Manager Production Engineering
Mailing Address: 333 West Sheridan Ave.
City: Oklahoma City
State: Oklahoma
ZIP Code: 73102
Telephone No.: 405-228-4479
Fax No.:
Email Address: Jimmy.Turnini@dvn.com
All permit correspondence will be sent via email.
C. Technical Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:)_____
Name: Ryan Kainer
Title: EHS Professional
Company Name: Devon Energy Production Company, L.P.
Mailing Address: 333 West Sheridan Ave.
City: Oklahoma City
State: Oklahoma
ZIP Code: 73102
Telephone No.: (361) 275-0971
Fax No.:
Email Address: ryan.kainer@dvn.com
II. Facility and Site Information
A. Name and Type of Facility
Facility Name: P. Frisbie A Pad 1
Type of Facility: ☒ Permanent ☐ Temporary

Form PI-1S
Registrations for Air Standard Permit
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Texas Commission on Environmental Quality

II. Facility and Site Information *(continued)*
For portable units, please provide the serial number of the equipment being authorized below.
Serial No(s):
B. Facility Location Information
Street Address:
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).
FROM YORKTOWN HEAD W ON 72 TURN R ON FM 952W & GO 4.5 MI TO COTTONPATCH INTX CONT
STRAIGHT ON FM 2656 FOR 3.7 MI TURN L ON CKODRE RD FOR 1.7 MI TURN L ON CABEZA RD FOR 1.25
MI TURN R ON ROGGE-SEIFERT RD FOR 1.17 MI & ENTRANCE ON L CONT TO THE SECOND PAD
City: Runge
County: DeWitt
ZIP Code: 78151
C. Core Data Form (**required** for Standard Permits 6006, 6007, and 6013).
Is the Core Data Form (TCEQ Form 10400) attached? ☐ Yes ☒ No
Customer Reference Number (CN): 600132344
Regulated Entity Number (RN): 112083555
D. TCEQ Account Identification Number (if known):
E. Type of Action
☒ Initial Application ☐ Change to Registration ☐ Renewal ☐ Renewal Certification
For Change to Registration, Renewal, or Renewal Certification actions provide the following:
Registration Number: 178263
Expiration Date:
F. Standard Permit Claimed: 6002 - Oil & Gas Handling & Production Facility
G. Previous Standard Exemption or PBR Registration Number:
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR? ☐ Yes ☒ No
If "Yes," enter previous standard exemption number(s) and PBR registration number(s) and associated effective date in the spaces provided below.

II. Facility and Site Information *(continued)*
H. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit? ☐ Yes ☒ No
If "Yes," enter standard exemption number(s), PBR registration number(s), and Standard Permit registration number(s), and associated effective date in the spaces provided below.
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s) and Effective Date(s)
I. Other Air Preconstruction Permits
Are there any other air preconstruction permits at this site? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
J. Affected Air Preconstruction Permits
Does the standard permit directly affect any permitted facility? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
K. Federal Operating Permit (FOP) Requirements
Is this facility located at a site that is required to obtain a FOP pursuant to 30 TAC Chapter 122? ☐ Yes ☒ No ☐ To Be Determined
Check the requirements of 30 TAC Chapter 122 that will be triggered if this standard permit is approved (*check all that apply).*
☐ Initial Application for a FOP ☐ Significant Revision for a SOP ☐ Minor Revision for a SOP
☐ Operational Flexibility/Off Permit Notification for a SOP ☐ Revision for a GOP
☐ To be Determined ☒ None
Identify the type(s) of FOP issued and/or FOP application(s) submitted/pending for the site. *(check all that apply)*
☐ SOP ☐ GOP ☐ GOP application/revision (submitted or under APD review) ☒ N/A
☐ SOP application/revision (submitted or under APD review)

Form PI-1S
Registrations for Air Standard Permit
(Page 4)
Texas Commission on Environmental Quality

III. Fee Information *(go to www.tceq.texas.gov/epay to pay online)*
A. Fee Amount: $850 via ePay ($50 paid with new project notification form)
B. Voucher number from ePay:
IV. Public Notice *(if applicable)*
A. Responsible Person (☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other:)_____
Name:
Title:
Company:
Mailing Address:
City:
State:
ZIP Code:
Telephone No.:
Fax No.:
Email Address:
B. Technical Contact (☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other):_____
Name:
Title:
Company:
Mailing Address:
City:
State:
ZIP Code:
Telephone No.:
Fax No.:
Email Address:
C. Bilingual Notice
Is a bilingual program required by the Texas Education Code in the School District? ☐ Yes ☐ No
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district? ☐ Yes ☐ No

IV.	**Public Notice *(continued)*** *(if applicable) (continued)*	
If "Yes," list which language(s) are required by the bilingual program below?		
D.	Small Business Classification and Alternate Public Notice	
Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than $6 million in annual gross receipts?		☐ Yes ☐ No
Is the site a major source under 30 TAC Chapter 122, Federal Operating Permit Program?		☐ Yes ☐ No
Are the site emissions of any individual regulated air contaminant equal to or greater than 50 tpy?		☐ Yes ☐ No
Are the site emissions of all regulated air contaminant combined equal to or greater than 75 tpy?		☐ Yes ☐ No
V.	**Renewal Certification Option**	
A.	Does the permitted facility emit an air contaminant on the Air Pollutant Watch List, and is the permitted facility located in an area on the watch list?	☐ Yes ☐ No
B.	For facilities participating in the Houston/Galveston/Brazoria area (HGB) cap and trade program for highly reactive VOCs (HRVOCs), do the HRVOCs need to be speciated on the maximum allowable emission rates table (MAERT)?	☐ Yes ☐ No
C.	Does the company and/or site have an unsatisfactory compliance history?	☐ Yes ☐ No
D.	Are there any applications currently under review for this standard permit registration?	☐ Yes ☐ No
E.	Are scheduled maintenance, startup, or shutdown emissions required to be included in the standard permit registration at this time?	☐ Yes ☐ No
F.	Are any of the following actions being requested at the time of renewal:	☐ Yes ☐ No
1.	Are there any facilities that have been permanently shutdown that are proposed to be removed from the standard permit registration?	☐ Yes ☐ No
2.	Do changes need to be made to the standard permit registration in order to remain in compliance?	☐ Yes ☐ No
3.	Are sources or facilities that have always been present and represented, but never identified in the standard permit registration, proposed to be included with this renewal?	☐ Yes ☐ No
4.	Are there any changes to the current emission rates table being proposed?	☐ Yes ☐ No
*Note: If answers to all of the questions in Section V. Renewal Certification Option are "No," use the certification option and skip to Section VII. of this form. If the answers to any of the questions in Section V. Renewal Certification Option are "Yes," the certification option **cannot** be used.*		
*If notice is applicable and comments are received in response to the public notice, the application does not qualify for the renewal certification option.		

VI. Technical Information Including State and Federal Regulatory Requirements	
Place a check next to the appropriate box to indicate what you have included in your submittal. *Note: Any technical or essential information needed to confirm that facilities are meeting the requirements of the standard permit must be provided. Not providing key information could result in an automatic deficiency and voiding of the project*.	
A. Standard Permit requirements (Checklists are optional; however, your review will go faster if you provide applicable checklists.)	
Did you demonstrate that the general requirements in 30 TAC Sections 116.610 and 116.615 are met?	☒ Yes ☐ No
Did you demonstrate that the individual requirements of the specific standard permit are met?	☒ Yes ☐ No
B. Confidential Information (All pages properly marked "CONFIDENTIAL").	☐ Yes ☒ No
C. Process Flow Diagram.	☒ Yes ☐ No
D. Process Description.	☒ Yes ☐ No
E. Maximum Emissions Data and Calculations.	☒ Yes ☐ No
F. Plot Plan.	☐ Yes ☒ No
G. Projected Start Of Construction Date, Start Of Operation Date, and Length of Time at Site:	☒ Yes ☐ No
Projected Start of Construction (provide date):	
Projected Start of Operation (provide date):	
Length of Time at the Site: Site is currently operational.	
VII. Delinquent Fees and Penalties	
This form **will not be processed** until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ website at: www.tceq.texas.gov/agency/financial/fees/delin/index.html.	

VIII. Signature Requirements
The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382, the Texas Clean Air Act (TCAA) the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.
Name (printed): Ryan Kainer
Signature (original signature required): Signed electronically in STEERS
Date:
IX. Copies of the Registration
The PI-1S application must be submitted through ePermits. No additional copies need to be sent to the Regional Office or local Air Pollution Control Program(s). The link to ePermits can be found here: www3.tceq.texas.gov/steers/.

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data

Manufacturer:	Model No.	Serial No.	Manufacture Date:
Caterpillar	G3516B	TBD	1/1/2013
Rebuilds Date:	**No. of Cylinders:**	**Compression Ratio:**	**EPN:**
N/A	8	8.0:1	ENGINE1

Application: ☒ Gas Compression ☐ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by

☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☒ Carbureted ☒ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected

☐ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged

☐ Intercooled ☐ I.C. Water Temperature ☒ Lean Burn ☐ Rich Burn

Ignition/Injection Timing: Fixed: Variable:

Manufacture Horsepower Rating: 1380 Proposed Horsepower Rating: 1380

Discharge Parameters

Stack Height (Feet)	Stack Diameter (Feet)	Stack Temperature (°F)	Exit Velocity (FPS)
23.00	1.00	931	193.66

II. Fuel Data

Type of Fuel: ☒ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☐ Diesel

Fuel Consumption (BTU/bhp-hr): 7050 Heat ing Value: 1117 Btu/scf Lower Heating Value:

Sulfur Content (grains/100 scf - weight %): Negligible

III. Emission Factors (Before Control)

NO_X		CO		SO_2		VOC		Formaldehyde		PM_{10}	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
1.00		2.80				0.70					

Source of Emission Factors: ☒ Manufacturer Data ☐ AP-42 ☒ Other (specify): NSPS JJJJ

IV. Emission Factors (Post Control)

NO_X		CO		SO_2		VOC		Formaldehyde		PM_{10}	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
1.00		2.00				0.70		0.11			

Method of Emission Control: ☐ NSCR Catalyst ☒ Lean Operation ☐ Parameter Adjustment

☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): Oxidation Catalyst

Note: *Must submit a copy of any manufacturer control information that demonstrates control efficiency.*

Is Formaldehyde included in the VOCs? ☐ Yes ☒ No

V. Federal and State Standards (Check all that apply)

☒ NSPS JJJJ ☒ MACT ZZZZ ☐ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____

VI. Additional Information

1. Submit a copy of the engine manufacturer's site rating or general rating specification data.
2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents.
3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).

Reset Form Print Form

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data			
Manufacturer: Caterpillar	Model No. G3516B	Serial No. TBD	Manufacture Date: 1/1/2013
Rebuilds Date: N/A	No. of Cylinders: 8	Compression Ratio: 8.0:1	EPN: ENGINE2

Application: ☒ Gas Compression ☐ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by

☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☒ Carbureted ☒ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected

☐ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged

☐ Intercooled ☐ I.C. Water Temperature ☒ Lean Burn ☐ Rich Burn

Ignition/Injection Timing: Fixed: Variable:

Manufacture Horsepower Rating: 1380 Proposed Horsepower Rating: 1380

Discharge Parameters

Stack Height (Feet)	Stack Diameter (Feet)	Stack Temperature (°F)	Exit Velocity (FPS)
23.00	1.00	931	193.66

II. Fuel Data

Type of Fuel: ☒ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☐ Diesel

Fuel Consumption (BTU/bhp-hr): 7050 Heat ing Value: 1117 Btu/scf Lower Heating Value:

Sulfur Content (grains/100 scf - weight %): Negligible

III. Emission Factors (Before Control)

NO_X		CO		SO_2		VOC		Formaldehyde		PM_{10}	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
1.00		2.80				0.70					

Source of Emission Factors: ☒ Manufacturer Data ☐ AP-42 ☒ Other (specify): NSPS JJJJ

IV. Emission Factors (Post Control)

NO_X		CO		SO_2		VOC		Formaldehyde		PM_{10}	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
1.00		2.00				0.70		0.11			

Method of Emission Control: ☐ NSCR Catalyst ☒ Lean Operation ☐ Parameter Adjustment

☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): Oxidation Catalyst

Note: *Must submit a copy of any manufacturer control information that demonstrates control efficiency.*

Is Formaldehyde included in the VOCs? ☐ Yes ☒ No

V. Federal and State Standards (Check all that apply)

☒ NSPS JJJJ ☒ MACT ZZZZ ☐ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____

VI. Additional Information

1. Submit a copy of the engine manufacturer's site rating or general rating specification data.
2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents.
3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).

Reset Form Print Form

3.0 FACILITY LOCATION AND DESCRIPTION

Devon owns and operates P. Frisbie A Pad 1 (Facility) located in DeWitt County, Texas. As shown on Figure 3-1, the Facility is located approximately 6.5 miles northeast of Nordheim, Texas. A Process Flow Diagram is provided as Figure 3-2.

The latitude-longitude and Universal Transverse Mercator (UTM) coordinates of the Facility are:

Latitude: 28.97536
Longitude: -97.70460
UTM Coordinates: NAD 83, Zone 14
626,207 m Easting
3,205,947 m Northing

The Facility is an oil and natural gas production site. Annual natural gas throughput is expected to be about 10,950 million standard cubic feet (MMSCF). Annual oil production is expected to be about 3,285,000 barrels per year (BPY). Annual water production is expected to be about 2,007,500 BPY. Maximum daily production levels are expected to be about 16,000 barrels oil per day (BOPD), 17,000 barrels water per day (BWPD), and 50 MMSCF per day.

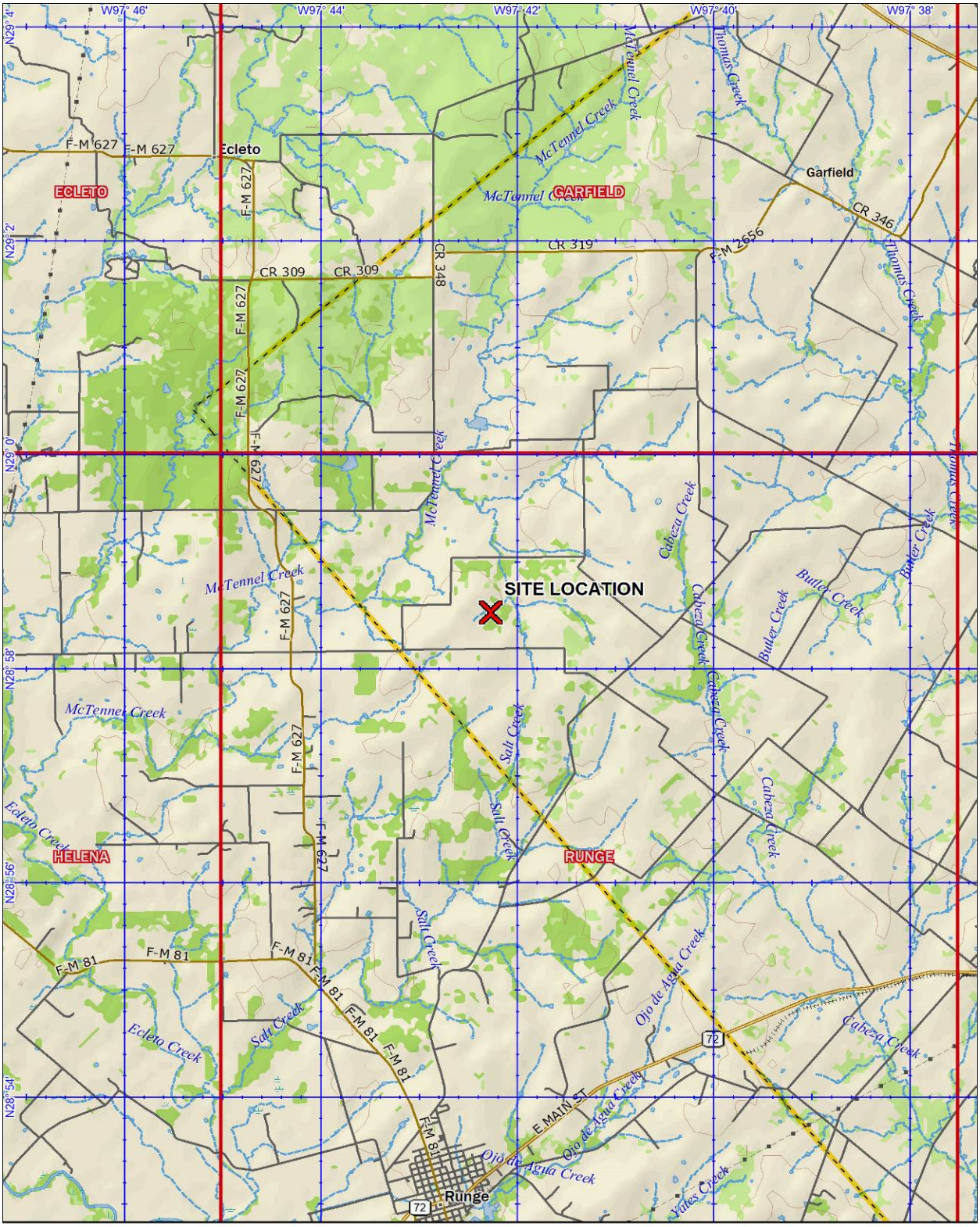
Fluids pass through high pressure separators, gas goes to sales and the remaining fluids are sent to the heater treaters. Oil from the separators can also flow directly to the oil pipeline or through a blow case, then to the oil pipeline. From the heater treaters, water is sent to the water tanks, oil is sent primarily to the oil pipeline, or the oil tanks as needed, and gas is sent to the sales line. The flare is utilized to control flashing, working, and breathing losses from the oil and water tanks.

The oil is transferred offsite via pipeline. The water is transferred offsite via trucks or pipeline. The trucks are in dedicated normal service.

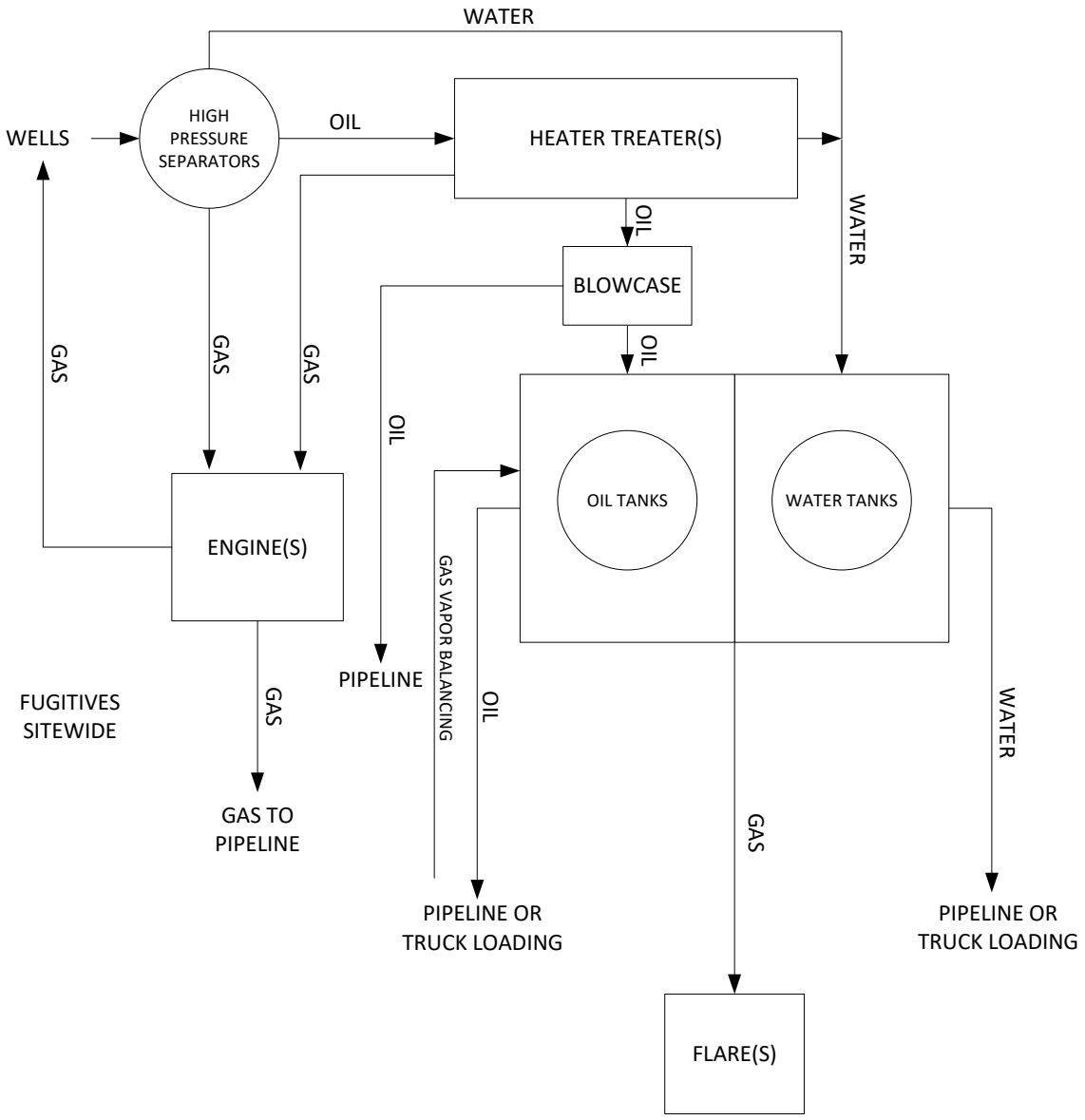
The flare may be equipped with an automatic spark ignition system. The average heating value of the gas sent to the flare is estimated to be less than 1,800 Btu/scf. The flare tip velocity is estimated to be less than 400 ft/sec. Ambient air is added to ensure combustion.

Emissions from blowdowns and MSS activities are included in this application.

The Facility was constructed after December 6, 2022; therefore, the site is not subject to NSPS Subpart OOOO or OOOOa. Cumulative PTE emissions are greater than 6 T/yr per tank battery; therefore, the tanks are subject to NSPS Subpart OOOOb. The fugitive equipment components are subject to the LDAR monitoring and AVO inspection requirements of Subpart OOOOb. There may be pneumatic pumps and controllers onsite that are subject to NSPS Subpart OOOOb and are routed to the tank header through a closed vent system.



ALTAMIRA 525 CENTRAL PARK DR. SUITE 500 OKLAHOMA CITY, OK 73105 www.altamira-us.com	FIGURE TITLE AREA MAP	DATE	2/26/2025
		SCALE	AS SHOWN
	DOCUMENT TITLE NON-RULE STANDARD PERMIT REGISTRATION	DESIGNED BY	AT
		APPROVED BY	CM
		DRAWN BY	AT
	CLIENT DEVON ENERGY PRODUCTION COMPANY, L.P.	PROJECT NUMBER	DVNATX2501
	LOCATION P. FRISBIE A PAD 1 DEWITT COUNTY, TEXAS	FIGURE NUMBER	3-1



ALTAMIRA	FIGURE TITLE: PROCESS FLOW DIAGRAM	DATE	2/26/2025
		SCALE	NOT TO SCALE
		DESIGNED BY	AT
		APPROVED BY	CM
		DRAWN BY	AT
525 CENTRAL PARK DR. SUITE 500 OKLAHOMA CITY, OK 73105 www.altamira-us.com	DOCUMENT TITLE: NON-RULE STANDARD PERMIT REGISTRATION	PROJECT NUMBER	DVNATX2501
	CLIENT: DEVON ENERGY PRODUCTION COMPANY, L.P.	FIGURE NUMBER	3-2
	LOCATION: P. FRISBIE A PAD 1 DEWITT COUNTY, TEXAS		

4.0 AIR EMISSIONS

Emissions from fuel gas combustion for the heater treaters (HT1, HT2) are based on the AP-42 natural gas combustion factors and maximum firing rates. Heater treater emission calculations are included in Appendix A.

Emissions from the engines (ENGINE1, ENGINE2) are based on AP-42, NSPS Subpart JJJJ, and manufacturer data emission factors. Emission calculations are included in Appendix A. The engine manufacturer data sheet is provided in Appendix B.

The representative analysis was taken from a nearby facility within the same formation and used to create a ProMax simulation. Please note that the ProMax simulation used by Devon takes the composite analysis and recombines the oil, gas and water streams. Those recombined streams are then simulated through each process vessel at estimated site conditions (Temp/Pressure) allowing for a more accurate estimation of the tank input stream and emissions. Oil and water tank emission calculations are included in Appendix A. ProMax flow diagrams are included in Appendix A.

Equipment leak fugitive emissions (FUGITIVES) were estimated using estimated component counts (i.e., valves, flanges, etc.), TCEQ Technical Guidance Document: Equipment Leak Fugitives, and representative gas and liquid stream VOC contents. The calculations are provided in Appendix A.

Emissions from truck loading operations were estimated using the AP-42 calculation methodology. The calculations are provided in Appendix A.

Emissions from the flare (FLARE1) were estimated using TCEQ and EPA flare factors, and ProMax process simulation. The calculations are provided in Appendix A.

5.0 GENERAL REQUIREMENTS

As required by Section VI of the TCEQ Standard Permit Registration Form PI-1S, this section addresses Devon's compliance with the applicable general requirements for the non-rule standard permit specified in Texas Health and Safety Code section 382.05195 and with the requirements specific to Non-Rule Air Quality Standard Permit for Oil and Gas Handling and Production Facilities.

5.1 Non-Rule Standard Permit Applicability

Devon will meet the conditions specified in this section, specifically:

(a) Applicability

Devon is voluntarily registering the Facility under the requirements in (a) – (k). The Facility is not located in the Barnett Shale Area.

(b) Definitions and Scope

This Facility is not a major stationary source under Nonattainment or Prevention of Significant Deterioration Review Definitions.

(c)(1) Existing oil and gas sites (OGS) which are authorized by previous versions of this standard permit require registration unless otherwise specified.

The Facility is not authorized by any previous versions of this Standard Permit.

(c)(2)(A) All facilities shall not exceed the thresholds for major source or major modification as defined in 30 TAC §116.12, Nonattainment and Prevention of Significant Deterioration Review Definitions, and in Federal Clean Air Act §112(g) or §112(j).

This Facility is not a major stationary source under Nonattainment or Prevention of Significant Deterioration Review Definitions.

(c)(2)(B) All facilities shall comply with all applicable 40 Code of Federal Regulations (CFR), Parts 60, 61, and 63 requirements for New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), and Maximum Achievable Control Technology (MACT).

The Facility will comply with the applicable requirements of Parts 60.

(c)(2)(C) All facilities shall comply with all applicable requirements of 30 TAC Chapters 111, Control of Air Pollution from Visible Emissions and Particulate Matter, 112, Control of Air Pollution from Sulfur Compounds, 113, Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants, 115, Control of Air Pollution from Volatile Organic Compounds, and 117, Control of Air Pollution from Nitrogen Compounds.

Devon will comply with the applicable sections of Chapter 111, Chapter 112, and Chapter 113. Chapter 115 and Chapter 117 are not applicable because of the site location.

(c)(4) Co-located facilities previously authorized by, and continuing to meet, the conditions of a PBR must be incorporated into the standard permit and meet the requirements of paragraphs (e), (i), and (j). Previously authorized facilities that are unchanged do not need to meet the requirements of paragraph (h).

There are no previously authorized facilities at the site.

(d) Only specific facilities and groups of facilities may be evaluated for a standard permit, along with supporting infrastructure equipment and facilities.

Only authorized facilities and equipment are authorized under this standard permit.

(e)(1) All facilities which have the potential to emit air contaminants must be maintained in good working order and operate properly during facility operations. Each operator shall establish and maintain a program to replace, repair, and/or maintain facilities to keep them in good working order.

Devon will maintain the Facility in good working order and keep all required maintenance records.

(e)(2) Any OGS facility shall be operated at least 50 feet from any property line or receptor (whichever is closer to the facility).

All equipment authorized under this standard permit will be located more than 50 feet from the nearest property line.

(e)(3) Engine and turbines shall meet the emission and performance standards listed in Table 6 in paragraph (m).

The engines will comply with the applicable performance standards listed in Table 6.

(e)(4) Open-topped tanks or ponds containing VOCs or H_2S are allowed up to a PTE equal to 1 tpy of VOC and 0.1 tpy of H_2S.

No open-topped tanks or ponds will be located at the Facility; therefore, this subsection is not applicable.

(e)(5) All process equipment and storage facilities individually must meet the requirements of BACT listed in Table 10 in paragraph (m). Any combination of process equipment and storage facilities with an uncontrolled PTE of equal to or greater than 25 tpy of VOC must also meet the requirements of Table 10, row titled "Combined Control Requirements".

All equipment at the Facility will meet the requirements of BACT in Table 10.

(e)(6) All fugitive components shall meet the requirements of this subsection.

The fugitive components will be inspected quarterly and if components are found to be leaking, the leaks will be repaired no later than 60 days after the leak is found.

(e)(7) Tanks and vessels must utilize a paint color that minimizes the effects of solar heating (including, but not limited to, white or aluminum).

All tanks located at the Facility are required to be painted tan.

(e)(8) All emission estimation methods including GRI-GLYCalc, AmineCalc, E&P Tanks, and Tanks 4.0, must be used with monitoring data generated in accordance with Table 8 in subsection (m). All emission estimation methods must also be used in a way that is consistent with protocols established by the commission or promulgated in federal regulations. Where control of emissions is relied upon to meet subsection (k) of this section, control monitoring is required.

All emission estimation methods were prepared in accordance with this subsection.

(e)(9) Process reboilers, heaters, and furnaces that are also used for control of waste gas streams may claim 50 to 99% destruction efficiency for VOCs and H_2S depending on the design and level of monitoring applied.

The heater treaters are not used to control waste gas streams; therefore, this subsection is not applicable.

(e)(10) Vapor recovery systems (VRSs) may claim up to 100% control. The control efficiency is based on whether it is a mechanical VRU (mVRU) or a liquid VRU (lVRU). The VRUs must meet the appropriate design, monitoring, and record-keeping in Table 7 and Table 8 in paragraph (m).

There are no vapor recovery systems at the Facility; therefore, this subsection is not applicable.

(e)(11) Flares used for control of emissions from production, planned MSS, emergency, or upset events may claim design destruction efficiency of 98% for VOCs and H_2S and 99% for VOCs containing no more than three carbon atoms that contain no element other than carbon and hydrogen.

The flare will meet the requirements of this subsection.

(e)(12) Thermal oxidation and vapor combustion control devices may claim design destruction efficiency from 90% to 99.9% for VOCs and H_2S depending on the design and the level of monitoring and testing applied.

There are no thermal oxidizers or vapor combustors located at the Facility; therefore, this subsection is not applicable.

(f) For all previous claims of this standard permit (or any previous version of this standard permit) existing authorized facilities, or group of facilities, are not required to meet the requirements of this standard permit, with the exception of planned MSS, until a renewal under the standard permit is submitted after December 31, 2015.

There are no previous claims of this standard permit.

(g) Any claim under this standard permit must comply with all applicable requirements of 30 TAC §116.610; §116.611, Registration to Use a Standard Permit; §116.614, Standard Permit Fees; and §116.615, General Conditions. This standard permit supersedes: the notification requirements of 30 TAC §116.615, General Conditions; and the emission limitations of 30 TAC §116.610(a)(1), Applicability.

The Facility will comply with all applicable requirements of §116.610, §116.611, §116.614, and §116.615.

(h) Total maximum estimated registered or certified emissions shall meet the most stringent limits in this standard permit. All emissions estimates must be based on representative worst-case operations and planned MSS activities.

The emissions estimated represented in this standard permit reflect the worse-case operations for the Facility.

(i)(1) Prior to February 5, 2012, representations and registration of planned MSS is voluntary, but if represented, must meet the applicability limits of this standard permit. After February 5, 2012, all emissions from planned MSS activities and facilities must be considered for compliance with applicable limits of this standard permit unless otherwise specified in (b)(7). This standard permit may not be used at a site or for facilities authorized under 30 TAC §116.111 if planned MSS has already been authorized under that permit.

All planned MSS emissions will comply with the applicable limits of this standard permit.

(i)(2) As specified, releases of air contaminants during, or as result of, planned MSS must be quantified and meet the emission limits in this standard permit, as applicable.

All planned MSS emissions meet the emission limits of this standard permit.

(i)(3) Other planned MSS activities authorized by this standard permit are limited. These planned MSS activities require only recordkeeping of the activity.

There are no other planned MSS emissions from the Facility.

(i)(4) Engine/compressor start-ups associated with preventative system shutdown activities have the option to be authorized as part of typical operations.

These emissions are not included in this application.

(j) All records shall be maintained at a site in written or electronic form and be readily available to the agency or local air pollution control program with jurisdiction upon request. All required records must be kept at the facility site. If the facility normally operates unattended, records must be maintained at tan office within Texas having day-to-day operational control of the plant site.

Devon will maintain records at the facility.

(k) All impact evaluations must be completed on a contaminant-by-contaminant basis for only any net emissions increases resulting from a project and must meet the following as appropriate: (A) Compliance with state or federal ambient air standards shall be demonstrated for NO_2, SO_2, and H_2S at any property-line within 1 mile of a project; (B)

Compliance with hourly effects screening levels (ESLs) for benzene and annual ESL for benzene, shall be determined at the nearest receptor within 1 mile of a project.

The benzene emission rate is greater than 0.039 lb/hr; therefore, a benzene ESL review is required. The site-wide NOx emission rate is greater than 4.0 lb/hr; the site-wide SO_2 emission rate is less than 2.0 lb/hr; and the site-wide H_2S emission rate is greater than 0.025 lb/hr; therefore, an impacts review for SO_2 is not required.

An impacts review was conducted for benzene, H_2S, and NO_2 using the TCEQ lookup tables from the TCEQ Oil and Gas spreadsheet. The results are included in Appendix C and show that the site passes the impacts review for benzene, H_2S, and NO_2.

5.2 30 TAC §116.610 Applicability

Devon will meet the conditions specified in this section, specifically:

116.610 (a)(1) Any project that results in a net increase in emissions of air contaminants from the project other than carbon dioxide, water, nitrogen, methane, ethane, hydrogen, oxygen, or those for which a national ambient air quality standard has been established must meet the emission limitations of §106.261 of this title (relating to Facilities (Emission Limitations), unless otherwise specified by a particular standard permit.

This section is not applicable to sites authorized under the Non-Rule Standard Permit.

116.610 (a)(2) Construction or operation of the project must be commenced prior to the effective date of a revision to this subchapter under which the project would no longer meet the requirements for a standard permit.

This section is not applicable to sites authorized under the Non-Rule Standard Permit.

116.610 (a)(3) The proposed project must comply with the applicable provisions of the Federal Clean Air Act (FCAA), §111 (concerning New Source Performance Standards) as listed under 40 Code of Federal Regulations (CFR) Part 60, promulgated by the United States Environmental Protection Agency (EPA).

The facility will comply with all applicable requirements of 40 CFR Part 60.

116.610 (a)(4) **The proposed project must comply with the applicable provisions of FCAA, §112 (HAPS) as listed under 40 CFR Part 61.**

40 CFR 61 requirements relating to hazardous air pollutants do not apply to this Facility, thus compliance is not required.

116.610 (a)(5) **The proposed project must comply with the applicable maximum achievable control technology standards as listed under 40 CFR Part 63.**

The Facility is not a major source of HAPS, but is classified as an area source. The engines at the Facility are subject to MACT ZZZZ.

116.610 (a)(6) **If subject to Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program) the proposed facility, group of facilities, or account must obtain allocation to operate.**

This project is not subject to Chapter 101, Subchapter H, Division 3 (Mass Emissions Cap and Trade Program).

116.610 (b) **Any project that constitutes a new major stationary source or major modification as defined in §116.12 of this title (relating to Nonattainment and Prevention of Significant Deterioration Review Definitions) is subject to the requirements of §116.110 of this title (relating to Applicability) rather than this subchapter.**

This Facility is not a major stationary source under Nonattainment or Prevention of Significant Deterioration Review Definitions.

116.610 (c) **Persons may not circumvent by artificial limitations the requirements of §116.110 of this title.**

Devon will not circumvent the requirements of §116.110.

116.610 (d) **Any project involving a proposed affected source (as defined in §116.15(1) of this title (relating to Section 112(g) Definitions)) shall comply with all applicable requirements under Subchapter E of this chapter (relating to Hazardous Air Pollutants: Regulations Governing Constructed or Reconstructed Major Sources (FCAA, §112(g), 40 CFR Part 63)). Affected sources subject to Subchapter E of this chapter may use a standard permit under this subchapter only if the terms and conditions of the specific standard permit meet the requirements of Subchapter E of this chapter.**

This project does not involve an affected source, as defined in §116.15(1) of this title; therefore, this section is not applicable.

5.3 30 TAC §116.611 Registration to Use a Standard Permit

Devon will meet the conditions specified in this section, specifically:

116.611(a) **If required, registration to use a standard permit shall be sent be certified mail, return receipt requested, or hand delivered to the executive director, the appropriate commission regional office, and any local air program with jurisdiction, before a standard permit can be used. The registration must be submitted on the required form and must document compliance with the requirements of this section.**

The standard permit shall be prepared and submitted in accordance with this section and the requirements of the Non-Rule Standard Permit.

116.611(b) **Construction may begin any time after receipt of written notification from the executive director that there are no objections or 45 days after receipt by the executive director of the registration, whichever occurs first, except where a different time period is specified for a particular standard permit.**

This section is not applicable to sites authorized under the Non-Rule Standard Permit.

116.611(c) **In order to avoid applicability of Chapter 122 of this title (relating to Federal Operating Permits), a certified registration shall be submitted.**

A PI-1S form is being submitted with this registration.

5.4 30 TAC §116.614 Standard Permit Fees

Devon will meet the conditions specified in this section by submitting the standard permit fee of $900.

5.5 30 TAC §116.615. General Conditions

Devon will meet the conditions specified in this section, specifically:

116.615(1) **Protection of public health and welfare**

The emissions from the Facility comply with all applicable rules and regulations of the TCEQ.

116.615(2) Standard permit representations

Devon understands that the representations made in this application become conditions upon which the Facility operates.

116.615(3) Standard permit in lieu of permit amendment

The Facility does not operate under any permits authorized under 116.110.

116.615(4) Construction progress

The notification requirements do not apply to sites authorized under the Non-Rule Standard Permit.

116.615(5) Start-up notification

The notification requirements do not apply to sites authorized under the Non-Rule Standard Permit.

116.615(6) Sampling requirements

If sampling is required, Devon will contact the Corpus Christi Regional Office to obtain the necessary forms and procedures and to obtain approval of the testing procedures.

116.615(7) Equivalency of methods

Devon will contact the Corpus Christi Regional Office if alternate methods of controls, testing, or monitoring are proposed.

116.615(8) Recordkeeping

Devon will maintain sufficient records to demonstrate compliance with this standard permit.

116.615(9) Maintenance of emission control

Devon will maintain all air pollution emission capture and abatement equipment in good working order and will operate it properly during normal facility operations.

116.615(10) Compliance with rules

The Facility will comply with all applicable air quality rules.

116.615(11) Distance limitations, setbacks, and buffer zones

This section is not applicable to sites authorized under the Non-Rule Standard Permit.

APPENDICES

APPENDIX A
EMISSION CALCULATIONS

TABLE A-1

STEERS Entry

Authorization Type Standard

Maximum Site-wide Emissions

Air Contaminant	Steady State (lb/hr)	< 30 psig periodic (lb/hr)	≥ 30 psig periodic (lb/hr) - up to 600 hr/yr	Annual (tpy)
Total VOC				59.48
Total Crude Oil or Condensate VOC	6.92	106.71	6.92	
Total Natural Gas VOC	13.18	13.18	70.94	
Benzene	0.09	0.73	0.19	0.61
H2S	0.01	0.06	0.04	0.14
SO2	0.59	0.59		0.86
NO_x	7.56	7.56		30.31
CO	15.27	15.27		60.52
PM10 and PM2.5	0.21	0.21		0.90

TABLE A-2

Total Emission Summary

Owner/Operator: Devon Energy
Location: P. Frisbie A Pad 1

Emission Source	# Units		NOx		CO		VOC		PM		SO2		H2S		Total HAPS		Methane		Benzene	
			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
Flare	1	All	1.319	2.950	2.963	6.626	7.490	13.095			0.561	0.749	0.006	0.008	0.290	0.442	1.884	4.409	0.040	0.052
Fugitive	1	All					1.472	3.223					0.000	0.001	0.071	0.155	0.142	0.310	0.003	0.006
Heater Treater 1	1	All	0.081	0.353	0.068	0.296	0.004	0.019	0.006	0.027	0.007	0.032	0.000	0.000	0.002	0.007	0.002	0.008	0.000	0.000
Heater Treater 2	1	All	0.081	0.353	0.068	0.296	0.004	0.019	0.006	0.027	0.007	0.032	0.000	0.000	0.002	0.007	0.002	0.008	0.000	0.000
Engine 1	1	All	3.042	13.326	6.085	26.651	2.546	11.150	0.097	0.426	0.006	0.025			0.498	2.181	12.161	53.266	0.004	0.019
Engine 2	1	All	3.042	13.326	6.085	26.651	2.546	11.150	0.097	0.426	0.006	0.025			0.498	2.181	12.161	53.266	0.004	0.019
Oil Loadout	1	All					47.135	4.687					0.007	0.001	1.160	0.115	0.716	0.071	0.091	0.009
Water Loadout	1	All					1.132	3.174					0.043	0.118	0.836	1.884	2.469	8.423	0.208	0.454
MSS	1	All					109.281	3.651					0.024	0.001	11.506	0.171	144.980	5.804	0.440	0.008
Oil Tank	4	All					5.583	8.692					0.001	0.001	0.149	0.236	0.184	0.377	0.012	0.018
Water Tank	2	All					0.455	0.623					0.005	0.006	0.107	0.116	0.285	0.409	0.026	0.028
Sum			7.565	30.306	15.268	60.521	177.648	59.483	0.207	0.905	0.587	0.864	0.086	0.137	15.118	7.495	174.987	126.351	0.828	0.613

NOTES:

- The oil tank, oil loadout, water tank, water loadout, flare, fugitive, heater treater, engine, and MSS emission calculations were performed by Devon Energy Production Company, L.P. using a ProMax simulation.
- Engine VOC includes aldehydes.

TABLE A-3

Flare

Owner/Operator: Devon Energy
Facility: P. Frisbie A Pad 1

Equipment Specifications:

# of Flares	1	Flare 1
MF Capacity	mscfd	740
Control Efficiency		98%

Emission Factors: *Per TCEQ Memorandum - 2/13/1995, (BTU/SCF)*(MSCF/D)*(1000 SCF/MSCF)*(1 D/24HR)*(1 MMBTU/ 10^6 BTU)*(LB/BTU)

	LB/MMBTU		
Pollutant	BTU/SCF	BTU/SCF	*The more conservative (higher) lb/MMBtu factor is selected from between the TCEQ guidance and AP-42 Ch. 13
NOX	0.138	0.068	*Per TCEQ Guidance: Technical Supplement 4 - Flares and EPA AP-42 - Ch 13, Table 13.5.1
CO	0.31	0.5496	*Per TCEQ Guidance: Technical Supplement 4 - Flares and EPA AP-42 - Ch 13, Table 13.5.2

		Daily (MSCFD)	Hourly (Mscf/hr)	Annual (Mscf/yr)	Percent to Flare	Control Efficiency	Corrected Gas to Flare (MSCF/yr)	Heating Value (Btu/ft^3)	Emissions															
									NOX		CO		VOC		SO2		H2S		Total HAP		Methane		Benzene	
									lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Pilot Light[a]		3.12	0.13	1138.80	100.00%	98.00%	1138.80	1117.04	0.020	0.088	0.045	0.197	0.027	0.118	0.000	0.000	0.000	0.000	0.001	0.002	0.011	0.049	0.000	0.000
1st Stage Sep	**All**	33100.60	2298.14	12081719.24	0.05%	98.00%	6040.86	1117.04	0.177	0.466	0.398	1.046	0.237	0.624	0.000	0.001	0.000	0.000	0.005	0.012	0.765	2.011	0.000	0.001
HT	**All**	2243.02	167.19	818700.66	1.00%	98.00%	8187.01	1562.18	0.360	0.882	0.810	1.982	1.310	3.224	0.032	0.079	0.000	0.001	0.034	0.083	0.647	1.579	0.002	0.006
Oil Tanks	**All**	24.24	1.76	8846.62	98.00%	98.00%	8669.69	2417.59	0.575	1.446	1.291	3.249	5.471	8.518	0.067	0.102	0.001	0.001	0.146	0.231	0.180	0.369	0.011	0.018
Water Tanks	**All**	2.41	1.22	879.76	98.00%	98.00%	862.17	1134.89	0.186	0.068	0.419	0.152	0.446	0.611	0.462	0.568	0.005	0.006	0.105	0.114	0.280	0.401	0.026	0.027
Total		**35373.38**	**2468.44**	**12911285.08**			24898.52		1.319	2.950	2.963	6.626	7.490	13.095	0.561	0.749	0.006	0.008	0.290	0.442	1.884	4.409	0.040	0.052
		Weighted Average						1716.88																

***98% Control Efficiency, 100% Conversion of combusted H2S to SO2 assumed**
***Heating values are from Promax streams**
[a]Pilot gas includes flare assist gas

Flare Heat Release Rate: 6,733,528 **BTU/hr**

1148.13 **Hourly Weighted Average Heating Value (BTU/scf)**
5.86 **MSCF/Hr to Flare (SCF/hr / 1000)**

Note: Flare Tip Velocity (ft/sec) = (Flare Volume (SCF/Hr) x 1 hr/60 min x 1 min/60 sec) / (3.1416 x (Flare Diameter (ft)2 /4))

Flare Volume 5864.80 **SCF/Hr (Sum of [Hourly MSCF/hr x Percent to Flare x 1000])**
Flare Diameter 0.17 **ft**
Flare Tip Velocity 74.67 **ft/sec**

TABLE A-4

Heater Treaters

Owner/Operator: Devon Energy
Facility: P. Frisbie A Pad 1

Equipment Specifications:

# of Heaters	2	Heater 1	Heater 2
Design Heat Rating	mmbtuh	0.75	0.75

Emission Factors:

Pollutant	Emission Factors[a] (lb/MMSCF)	Adjusted Factors[b] (lb/MMSCF)
NOx (a)	100.00	109.514
CO (a)	84.00	91.992
VOC (a)	5.50	6.023
SO2 (c)	9.94	9.940
H2S (c)	0.11	0.108
PM/PM_{10} (a)	7.60	8.323
Methane	2.30	2.519
Formaldehyde (d)	0.075	0.082
Benzene (d)	0.002	0.002

[a] Criteria Pollutant Emission Factors obtained from AP-42 Nat Gas Combustion, Table 1.4-1, (7/98) < 100 MMBtu/hr heat input; & Table 1.4-2, (7/98).
[b] As per EPA AP-42 Emission Factor Adjusted for Fuel Gas Heating Value
[c] As per EPA AP-42 Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion, Table 1.4-2
[d] As per EPA AP-42 Emission Factors for Speciated Organic Compounds from Natural Gas Combustion

SO2 Emission Factor:	mol H2S in feed gas	Molecular Weight SO2	Combustion Efficiency	Calculated EF
*Assumes ideal gas law:	fractional	lb/lbmol	fractional	lb/MMSCF
379 scf/lbmol	0.0001	64.066	0.98	9.9395

Calculation Method: (1/379)(lbmol/scf)(10^6 SCF/MMSCF)(Combustion Efficiency)(Mol fraction H2S)(64.066 lb/lbmol SO2) = lb/MMSCF
1. H2S emissions are calculated in the same manner, except using the bypass fraction instead of combustion efficiency and the molecular weight of H2S (34.081 lb/lbmol)
2. If the calculated SO2 EF is less than 0.6 lb/MMSCF (per AP-42 table 1.4-2), the EF is conservatively set at 0.6 lb/MMSCF

	Heat Rating (mmbtuh)	Run Hours	Heating Value (Btu/ft^3)	Emissions																	
				NO_x		CO		VOC		SO2		H2S		PM		Total HAP		Methane		Benzene	
				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
Heater 1	0.75	8760.0	1117.0	0.081	0.353	0.068	0.296	0.004	0.019	0.007	0.032	0.000	0.000	0.006	0.027	0.002	0.007	0.002	0.008	0.000	0.000
Heater 2	0.75	8760.0	1117.0	0.081	0.353	0.068	0.296	0.004	0.019	0.007	0.032	0.000	0.000	0.006	0.027	0.002	0.007	0.002	0.008	0.000	0.000

TABLE A-5

Fugitives

Owner/Operator: Devon Energy
Facility: P. Frisbie A Pad 1

Component Count:
Liquid Stream Compositions STX - Seifert A 1H First Stage Separator Liquid
Gas Stream Compositions STX - Seifert A 1H First Stage Separator Gas
Equipment Count Method Used Count 1
Run Hours 8760

Gas Service

Component	Count	Emission Factor[a] (lb/hr/component)	Emissions	
			lb/hr	tpy
Valve	182	0.00992	1.805	7.908
Flanges	178	0.00086	0.153	0.670
Pump	0	0.00529	0.000	0.000
Compressor Seal	4	0.01940	0.078	0.340
Relief Valve	20	0.01940	0.388	1.699
Open-Ended Line	0	0.00441	0.000	0.000
Connectors	336	0.00044	0.148	0.648
Other	0	0.01940	0.000	0.000
Total			**2.572**	**11.265**

Component	wt fraction	lb/hr	tpy
Total VOC	0.2278	0.586	2.566
Hydrogen Sulfide	0.0001	0.000	0.001
Methane	0.5714	0.039	0.172
Total HAP	0.0076	0.020	0.086
Benzene	0.0004	0.001	0.004

Light Oil > 20° API

Component	Count	Emission Factor[a] (lb/hr/component)	Emissions	
			lb/hr	tpy
Valve	122	0.0055	0.671	2.939
Flanges	240	0.0002	0.058	0.252
Pump	1	0.0287	0.029	0.126
Compressor Seal	0	0.0165	0.000	0.000
Relief Valve	2	0.0165	0.033	0.145
Open-Ended Line	4	0.0031	0.012	0.054
Connectors	252	0.0005	0.116	0.508
Other	0	0.0165	0.000	0.000
Total			**0.919**	**4.023**

Component	wt fraction	lb/hr	tpy
Total VOC	0.9646	0.886	3.881
Hydrogen Sulfide	0.0000	0.000	0.000
Methane	0.0148	0.102	0.448
Total HAP	0.0556	0.051	0.224
Benzene	0.0020	0.002	0.008

Water/Light Oil Service

Component	Count	Emission Factor[a] (lb/hr/component)	Emissions	
			lb/hr	tpy
Valve	116	0.0002	0.025	0.110
Flanges	230	0.0000	0.001	0.006
Pump	2	0.0001	0.000	0.000
Compressor Seal	0	0.0309	0.000	0.000
Relief Valve	2	0.0309	0.062	0.271
Open-Ended Line	2	0.0006	0.001	0.005
Connectors	236	0.0002	0.057	0.251
Other	0	0.0309	0.000	0.000
Total			**0.147**	**0.644**

Component	wt fraction	lb/hr	tpy
Total VOC	9.89E-05	0.000	0.000
Hydrogen Sulfide	2.64E-06	0.000	0.000
Methane	1.53E-07	0.000	0.000
Total HAP	2.75E-05	0.000	0.000
Benzene	9.56E-06	0.000	0.000

Fugitive Emissions Summary

Component		lb/hr	tpy
Total VOC		1.472	3.223
Hydrogen Sulfide		0.000	0.001
Methane		0.142	0.310
Total HAP		0.071	0.155
Benzene		0.003	0.006

[a] Per TCEQ Fugitive Guidance for Oil/Gas Production Operations, (lb/hr/component)(hr/yr)(1 ton/2000 lbs) = tpy emissions

TABLE A-6

Oil Tank Emissions

Owner/Operator:	**Devon Energy**
Facility:	**P. Frisbie A Pad 1**
Throughput (bbl/hr)	666.67
Throughput (bbl/day)	9,000.00
Throughput (bbl/yr)	3,285,000.00
# Tanks	4.00
Controls	Flare
Control Efficiency	98%
Capture Efficiency	98%
Meteorological Data	Victoria, TX
Run Hours	8760
VRU Capture	0%

Flashing Emissions

Pollutant	Emission Factors[a]		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.044	0.240	158.223	393.703	98.426	3.164	7.874	1.969
H2S	0.000	0.000	0.020	0.051	0.013	0.000	0.001	0.000
Methane	0.002	0.011	7.402	18.203	4.551	0.148	0.364	0.091
Total HAP	0.001	0.007	4.342	10.779	2.695	0.087	0.216	0.054
Benzene	0.000	0.001	0.334	0.829	0.207	0.007	0.017	0.004

Working/Standing

Pollutant	Emission Factors[b]		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.003	0.018	10.925	29.958	7.490	0.219	0.599	0.150
H2S	0.000	0.000	0.001	0.004	0.001	0.000	0.000	0.000
Methane	0.000	0.000	0.124	0.455	0.114	0.002	0.009	0.002
Total HAP	0.000	0.000	0.399	0.738	0.184	0.008	0.015	0.004
Benzene	0.000	0.000	0.030	0.058	0.014	0.001	0.001	0.000

Vapor Balance Emissions

Pollutant	Emission Factors		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr (95°F)	ton/yr	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.001	0.007	109.982	10.936	2.734	2.200	0.219	0.055
H2S	0.000	0.000	0.015	0.002	0.000	0.000	0.000	0.000
Methane	0.000	0.000	1.672	0.166	0.042	0.033	0.003	0.001
Total HAP	0.000	0.000	2.707	0.269	0.067	0.054	0.005	0.001
Benzene	0.000	0.000	0.212	0.021	0.005	0.004	0.000	0.000

Total Emissions

Pollutant	Emission Factors		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.048	0.265	279.130	434.597	108.649	5.583	8.692	2.173
H2S	0.000	0.000	0.037	0.057	0.014	0.001	0.001	0.000
Methane	0.002	0.011	9.197	18.825	4.706	0.184	0.377	0.094
Total HAP	0.001	0.007	7.448	11.785	2.946	0.149	0.236	0.059
Benzene	0.000	0.001	0.575	0.908	0.227	0.012	0.018	0.005

[a] ProMax Oil Tk Gas Stream
[b] Promax W &S Stream

TABLE A-7

Water Tank Emissions

Owner/Operator:	**Devon Energy**
Facility:	**P. Frisbie A Pad 1**
Throughput (bbl/hr)	708.33
Throughput (bbl/day)	5500.00
Throughput (bbl/yr)	2,007,500.00
# Tanks	2.00
Controls	Flare
Control Efficiency	98%
Capture Efficiency	98%
Meteorological Data	Victoria, TX
Run Hours	8760
VRU Capture	0%

Flashing Emissions

Pollutant	Emission Factors[a]		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.004	0.025	17.390	24.726	12.363	0.348	0.495	0.247
H2S	0.000	0.000	0.053	0.075	0.038	0.001	0.002	0.001
Methane	0.003	0.018	12.934	18.217	9.109	0.259	0.364	0.182
Total HAP	0.000	0.002	1.404	1.979	0.990	0.028	0.040	0.020
Benzene	0.000	0.000	0.333	0.471	0.236	0.007	0.009	0.005

Working/Standing

Pollutant	Emission Factors[b]		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.001	0.006	5.355	6.425	3.212	0.107	0.128	0.064
H2S	0.000	0.000	0.202	0.239	0.119	0.004	0.005	0.002
Methane	0.000	0.002	1.338	2.250	1.125	0.027	0.045	0.023
Total HAP	0.001	0.004	3.955	3.814	1.907	0.079	0.076	0.038
Benzene	0.000	0.001	0.983	0.919	0.459	0.020	0.018	0.009

Total Emissions

Pollutant	Emission Factors		Emissions					
			Uncontrolled			Controlled		
	tpy/bopd	lb/bbl	lb/hr	tpy	tpy/tank	lb/hr	tpy	tpy/tank
VOC	0.006	0.031	22.745	31.151	15.576	0.455	0.623	0.312
H2S	0.000	0.000	0.255	0.314	0.157	0.005	0.006	0.003
Methane	0.004	0.020	14.273	20.468	10.234	0.285	0.409	0.205
Total HAP	0.001	0.006	5.358	5.793	2.897	0.107	0.116	0.058
Benzene	0.000	0.001	1.316	1.390	0.695	0.026	0.028	0.014

[a] ProMax Water Tank Gas Stream
[b] ProMax Water W & S Gas Stream

TABLE A-8

Loading Emissions

Owner/Operator: Devon Energy
Facility: P. Frisbie A Pad 1

Oil Loading	Hourly	Annual	
Throughput (bbl/hr)	300.00	-	*Amount of liquids that can be loading in one hour
Throughput (bbl/day)	16000.00	9000.00	
Run Hours	8760		
Throughput (bbl/yr)	-	3,285,000.00	
Saturation Factor, S	1.00		*Per AP-42 Table 5.2-1, Saturation Factors
Average Surface Temperature, (^{o}F)	98.89	74.14	
Temperature, T (R)	558.9	534.1	
TVP, (psia)	14.19	13.40	*Promax Oil Losses Stencil
Vapor MW, M (lb/lbmol)	48.19	44.29	*Promax Oil Losses Stencil
L_L, lb/1000 gal	15.250	13.848	*Per AP-42 5.2.2.1.1 - LL = 12.46*SPM/T
VOC wt%	81.77%		
H2S wt%	0.01%		
Methane wt%	1.24%		
Total HAP wt%	2.01%		
Benzene wt%	0.16%		
Oil to Pipeline	Y		
% Oil to Pipeline	98%		
Controls	Vapor Balancing		
Capture Efficiency, eff	70%		

Pollutant	Emission Factors	Emissions	
		Uncontrolled	
	lb/bbl	lb/hr (95^{o}F)	ton/yr
VOC	0.003	47.135	4.687
H2S	0.000	0.007	0.001
Methane	0.000	0.716	0.071
Total HAP	0.000	1.160	0.115
Benzene	0.000	0.091	0.009

Water Loading	Hourly	Annual	
Throughput (bbl/hr)	300.00	-	
Throughput (bbl/day)	17000.00	5500.00	
Run Hours	8760		
Throughput (bbl/yr)	-	2,007,500.00	
Saturation Factor, S	0.6		*Per AP-42 Table 5.2-1, Saturation Factors
Average Surface Temperature, (^{o}F)	98.89	74.14	*Promax Water Losses Stencil
Temperature, T (R)	558.9	534.1	
TVP, (psia)	14.33	13.67	*Promax Water Losses Stencil
Vapor MW, M (lb/lbmol)	27.96	27.77	
L_L, lb/1000 gal	5.359	5.313	*Per AP-41 5.2.2.1.1 - LL = 12.46*SPM/T*wt% VOC
VOC wt%	17.46%		
H2S wt%	0.65%		
Methane wt%	6.12%		
Total HAP wt%	10.37%		
Benzene wt%	2.50%		
Water to Pipeline	N		
% Water to Pipeline	0%		

Pollutant	Emission Factors	Emissions	
		Uncontrolled	
	lb/bbl	lb/hr (95^{o}F)	ton/yr
VOC	0.003	1.132	3.174
H2S	0.000	0.043	0.118
Methane	0.008	2.469	8.423
Total HAP	0.002	0.836	1.884
Benzene	0.000	0.208	0.454

TABLE A-9

Engine 1

Owner/Operator:	**Devon Energy**
Facility:	**P. Frisbie A Pad 1**
Make/Model:	CAT 3516
Manufactured Date:	1/1/2013
Serial Number:	TBD
Emission Factors (Uncontrolled):	AP-42
Emission Factors (Controlled):	Manufacturer-User
Engine Make/Model:	CAT 3516
Max HP, 100% Load:	1380
Annual Run Time, hrs	8760
Design Class:	4-Stroke Lean Burn
Fuel Type:	Natural Gas
Ignition Type:	Spark
Fuel Consumption, Btu/bhp*hr	7050
Fuel Consumption, MMBtu/hr	9.73
Gas Heating Value, Btu/scf	1117.04
Stack Height (ft)	23.00
Stack Diameter (ft)	1.00
Exit Temperature (^{o}F)	931.00
Exhaust Gas Flowrate (ft^3/min)	9126.00
Exhaust Velocity (ft/s)	193.66

*STX - Seifert A 1H First Stage Separator Gas

Engine Controls	
Controls?	N
Control Type	AFR/CC
Control Efficiency	0

Engine 1 Emission Calculations

Pollutant	Controlled Emissions				
	Emission Factors				
	EF	Units	Reference	lb/hr	ton/yr
NO_X	1	g/(hp*hr)	Manufacturer-User	3.042	13.326
VOC	0.7	g/(hp*hr)	Manufacturer-User	2.546	11.150
CO	2	g/(hp*hr)	Manufacturer-User	6.085	26.651
PM_{10}	0.0099871	(lb/MMBtu)	AP-42	0.097	0.426
$PM_{2.5}$	0.0099871	(lb/MMBtu)	AP-42	0.097	0.426
SO_2	0.000588	(lb/MMBtu)	AP-42	0.006	0.025
Methane	1.25	(lb/MMBtu)	AP-42	12.161	53.266
Formaldehyde	0.11	g/(hp*hr)	Manufacturer-User	0.335	1.466
Acetaldehyde	0.00836	(lb/MMBtu)	AP-42	0.081	0.356
Benzene	0.00044	(lb/MMBtu)	AP-42	0.004	0.019

**VOC includes Formaldehyde and Acetaldehyde*

TABLE A-10

Engine 2

Owner/Operator:	**Devon Energy**
Facility:	**P. Frisbie A Pad 1**
Make/Model:	CAT 3516
Manufactured Date:	1/1/2013
Serial Number:	TBD
Emission Factors (Uncontrolled):	AP-42
Emission Factors (Controlled):	Manufacturer-User
Engine Make/Model:	CAT 3516
Max HP, 100% Load:	1380
Annual Run Time, hrs	8760
Design Class:	4-Stroke Lean Burn
Fuel Type:	Natural Gas
Ignition Type:	Spark
Fuel Consumption, Btu/bhp*hr	7050
Fuel Consumption, MMBtu/hr	9.73
Gas Heating Value, Btu/scf	1117.04
Stack Height (ft)	23.00
Stack Diameter (ft)	1.00
Exit Temperature (^{o}F)	931.00
Exhaust Gas Flowrate (ft^3/min)	9126.00
Exhaust Velocity (ft/s)	193.66

*STX - Seifert A 1H First Stage Separator Gas

Engine Controls

Controls?	N
Control Type	AFR/CC
Control Efficiency	0

Engine 2 Emission Calculations

Pollutant	Controlled Emissions				
	Emission Factors				
	EF	Units	Reference	lb/hr	ton/yr
NO_X	1	g/(hp*hr)	Manufacturer-User	3.042	13.326
VOC	0.7	g/(hp*hr)	Manufacturer-User	2.546	11.150
CO	2	g/(hp*hr)	Manufacturer-User	6.085	26.651
PM_{10}	0.0099871	(lb/MMBtu)	AP-42	0.097	0.426
$PM_{2.5}$	0.0099871	(lb/MMBtu)	AP-42	0.097	0.426
SO_2	0.000588	(lb/MMBtu)	AP-42	0.006	0.025
Methane	1.25	(lb/MMBtu)	AP-42	12.161	53.266
Formaldehyde	0.11	g/(hp*hr)	Manufacturer-User	0.335	1.466
Acetaldehyde	0.00836	(lb/MMBtu)	AP-42	0.081	0.356
Benzene	0.00044	(lb/MMBtu)	AP-42	0.004	0.019

**VOC includes Formaldehyde and Acetaldehyde*

TABLE A-11

MSS Summary

Owner/Operator: Devon Energy
Facility: P. Frisbie A Pad 1

MSS Activity	Component	Max Hourly Emissions lb/hr	Annual Emissions ton/yr	Annual Controlled lb/hr	Annual Controlled Emissions ton/yr	Events Per Year	Comments
Blowdown	VOC	57.764	2.311	57.764	2.311	40.00	40 events/yr (1 event = 2 hrs/day)
	H2S	0.024	0.001	0.024	0.001		
	Methane	144.931	5.797	144.931	5.797		
	Total HAP	1.940	0.078	1.940	0.078		
	Benzene	0.101	0.004	0.101	0.004		
Oil Tank Degassing	VOC	4.259	0.706	4.259	0.706	6.00	6 events/yr (1 event = 2 hrs/day)
	H2S	0.000	0.000	0.000	0.000		
	Methane	0.039	0.006	0.039	0.006		
	Total HAP	0.105	0.017	0.105	0.017		
	Benzene	0.008	0.001	0.008	0.001		
Water Tank Degassing	VOC	0.043	0.007	0.043	0.007	6.00	6 events/yr (1 event = 2 hrs/day)
	H2S	0.000	0.000	0.000	0.000		
	Methane	0.000	0.000	0.000	0.000		
	Total HAP	0.001	0.000	0.001	0.000		
	Benzene	0.000	0.000	0.000	0.000		
Oil Tank VAC Truck	VOC	46.689	0.374	46.689	0.374	8.00	8 events/yr (1 event = 2 hrs/day)
	H2S	0.000	0.000	0.000	0.000		
	Methane	0.010	0.000	0.010	0.000		
	Total HAP	9.367	0.075	9.367	0.075		
	Benzene	0.328	0.003	0.328	0.003		
Water Tank VAC Truck	VOC	0.467	0.004	0.467	0.004	4.00	4 events/yr (1 event = 2 hrs/day)
	H2S	0.000	0.000	0.000	0.000		
	Methane	0.000	0.000	0.000	0.000		
	Total HAP	0.094	0.001	0.094	0.001		
	Benzene	0.003	0.000	0.003	0.000		
Misc. MSS	VOC	0.060	0.250	0.060	0.250	-	Misc. MSS Emissions (TCEQ Default)
Totals	VOC	109.281	3.651	109.281	3.651	-	*Total hourly emissions assumes all events would occur simulataneously, which is extremely unlikely
	H2S	0.024	0.001	0.024	0.001		
	Methane	144.980	5.804	144.980	5.804		
	Total HAP	11.506	0.171	11.506	0.171		
	Benzene	0.440	0.008	0.440	0.008		

APPENDIX B
SUPPORTING DOCUMENTATION

TABLE OF CONTENTS

G3516B

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED (rpm):	1400	RATING STRATEGY:	STANDARD
COMPRESSION RATIO:	8:1	APPLICATION:	GAS COMPRESSION
AFTERCOOLER TYPE:	SCAC	RATING LEVEL:	CONTINUOUS
AFTERCOOLER - STAGE 2 INLET (°F):	130	FUEL:	NAT GAS
AFTERCOOLER - STAGE 1 INLET (°F):	201	FUEL SYSTEM:	CAT WIDE RANGE
JACKET WATER OUTLET (°F):	210		WITH AIR FUEL RATIO CONTROL
ASPIRATION:	TA	FUEL PRESSURE RANGE(psig):	7.0-40.0
COOLING SYSTEM:	JW+OC+1AC, 2AC	FUEL METHANE NUMBER:	80
CONTROL SYSTEM:	ADEM3	FUEL LHV (Btu/scf):	905
EXHAUST MANIFOLD:	DRY	ALTITUDE CAPABILITY AT 100°F INLET AIR TEMP. (ft):	6000
COMBUSTION:	LOW EMISSION		
NOx EMISSION LEVEL (g/bhp-hr NOx):	1.0		

RATING		NOTES	LOAD	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	bhp	1380	1035	690
ENGINE EFFICIENCY	(ISO 3046/1)	(2)	%	36.1	33.6	31.4
ENGINE EFFICIENCY	(NOMINAL)	(2)	%	35.4	33.0	30.8
ENGINE DATA						
FUEL CONSUMPTION	(ISO 3046/1)	(3)	Btu/bhp-hr	7050	7570	8095
FUEL CONSUMPTION	(NOMINAL)	(3)	Btu/bhp-hr	7187	7717	8252
AIR FLOW (77°F, 14.7 psia)	(WET)	(4) (5)	ft3/min	2989	2317	1604
AIR FLOW	(WET)	(4) (5)	lb/hr	13254	10273	7112
FUEL FLOW (60ºF, 14.7 psia)			scfm	183	147	105
COMPRESSOR OUT PRESSURE			in Hg(abs)	99.3	87.8	66.9
COMPRESSOR OUT TEMPERATURE			°F	363	342	265
AFTERCOOLER AIR OUT TEMPERATURE			°F	133	132	131
INLET MAN. PRESSURE		(6)	in Hg(abs)	90.7	73.2	52.1
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(7)	°F	145	145	142
TIMING		(8)	°BTDC	30	28	24
EXHAUST TEMPERATURE - ENGINE OUTLET		(9)	°F	990	952	1018
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(10) (5)	ft3/min	8712	6589	4785
EXHAUST GAS MASS FLOW	(WET)	(10) (5)	lb/hr	13754	10677	7399
EMISSIONS DATA - ENGINE OUT						
NOx (as NO2)		(11)(12)	g/bhp-hr	1.00	1.00	1.00
CO		(11)(13)	g/bhp-hr	2.80	3.02	3.27
THC (mol. wt. of 15.84)		(11)(13)	g/bhp-hr	3.78	3.60	3.42
NMHC (mol. wt. of 15.84)		(11)(13)	g/bhp-hr	0.57	0.54	0.51
NMNEHC (VOCs) (mol. wt. of 15.84)		(11)(13)(14)	g/bhp-hr	0.38	0.36	0.34
HCHO (Formaldehyde)		(11)(13)	g/bhp-hr	0.40	0.41	0.40
CO2		(11)(13)	g/bhp-hr	449	485	526
EXHAUST OXYGEN		(11)(15)	% DRY	8.7	8.2	7.6
LAMBDA		(11)(15)		1.67	1.61	1.56
ENERGY BALANCE DATA						
LHV INPUT		(16)	Btu/min	165289	133116	94894
HEAT REJECTION TO JACKET WATER (JW)		(17)(25)	Btu/min	23835	24569	20240
HEAT REJECTION TO ATMOSPHERE		(18)	Btu/min	6110	5092	4074
HEAT REJECTION TO LUBE OIL (OC)		(19)(25)	Btu/min	4475	3978	3363
HEAT REJECTION TO EXHAUST (LHV TO 77°F)		(20)(21)	Btu/min	58081	42911	31718
HEAT REJECTION TO EXHAUST (LHV TO 350°F)		(20)	Btu/min	39645	28952	22411
HEAT REJECTION TO A/C - STAGE 1 (1AC)		(22)(25)	Btu/min	8972	7559	2454
HEAT REJECTION TO A/C - STAGE 2 (2AC)		(23)(26)	Btu/min	4464	4285	2952
PUMP POWER		(24)	Btu/min	833	833	833

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1. (Standard reference conditions of 77°F, 29.60 in Hg barometric pressure.) No overload permitted at rating shown. Consult the altitude deration factor chart for applications that exceed the rated altitude or temperature.

Emission levels are at engine exhaust flange prior to any after treatment. Values are based on engine operating at steady state conditions, adjusted to the specified NOx level at 100% load. Tolerances specified are dependent upon fuel quality. Fuel methane number cannot vary more than ± 3.

For notes information consult page three.

FUEL USAGE GUIDE

CAT METHANE NUMBER	30	35	40	45	50	55	60	65	70	75	80	85
SET POINT TIMING	25	25	25	25	26	27	28	30	30	30	30	30
DERATION FACTOR	0.90	0.92	0.93	0.95	0.96	0.97	0.99	1	1	1	1	1

ALTITUDE DERATION FACTORS AT RATED SPEED

INLET AIR TEMP °F	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1	1	1	1	1	1	0.97	0.89	0.67	No Rating	No Rating	No Rating	No Rating
120	1	1	1	1	1	1	0.98	0.92	0.86	No Rating	No Rating	No Rating	No Rating
110	1	1	1	1	1	1	0.99	0.94	0.89	0.71	No Rating	No Rating	No Rating
100	1	1	1	1	1	1	1	0.95	0.91	0.86	No Rating	No Rating	No Rating
90	1	1	1	1	1	1	1	0.96	0.91	0.86	0.73	0.57	No Rating
80	1	1	1	1	1	1	1	0.96	0.91	0.86	0.76	0.63	No Rating
70	1	1	1	1	1	1	1	0.97	0.92	0.87	0.76	0.63	No Rating
60	1	1	1	1	1	1	1	0.97	0.92	0.87	0.76	0.63	No Rating
50	1	1	1	1	1	1	1	0.97	0.92	0.87	0.76	0.63	No Rating

ALTITUDE (FEET ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS (ACHRF)

INLET AIR TEMP °F	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.33	1.38	1.42	1.48	1.53	1.58	1.63	1.65	1.65	No Rating	No Rating	No Rating	No Rating
120	1.26	1.31	1.36	1.41	1.46	1.51	1.56	1.58	1.58	No Rating	No Rating	No Rating	No Rating
110	1.19	1.24	1.29	1.34	1.39	1.44	1.49	1.51	1.51	1.51	No Rating	No Rating	No Rating
100	1.13	1.18	1.22	1.27	1.32	1.37	1.42	1.44	1.44	1.44	No Rating	No Rating	No Rating
90	1.06	1.11	1.16	1.20	1.25	1.30	1.35	1.36	1.36	1.36	1.36	1.36	No Rating
80	1	1.04	1.09	1.13	1.18	1.23	1.28	1.29	1.29	1.29	1.29	1.29	No Rating
70	1	1	1.02	1.07	1.11	1.16	1.21	1.22	1.22	1.22	1.22	1.22	No Rating
60	1	1	1	1	1.04	1.09	1.14	1.15	1.15	1.15	1.15	1.15	No Rating
50	1	1	1	1	1	1.02	1.07	1.08	1.08	1.08	1.08	1.08	No Rating

ALTITUDE (FEET ABOVE SEA LEVEL)

MINIMUM SPEED CAPABILITY AT THE RATED SPEED'S SITE TORQUE (RPM)

INLET AIR TEMP °F	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1050	1050	1050	1050	1050	1050	1110	1170	1180	No Rating	No Rating	No Rating	No Rating
120	1050	1050	1050	1050	1050	1050	1090	1150	1180	No Rating	No Rating	No Rating	No Rating
110	1050	1050	1050	1050	1050	1050	1070	1140	1170	1180	No Rating	No Rating	No Rating
100	1050	1050	1050	1050	1050	1050	1050	1130	1160	1180	No Rating	No Rating	No Rating
90	1050	1050	1050	1050	1050	1050	1050	1120	1150	1170	1190	1200	No Rating
80	1050	1050	1050	1050	1050	1050	1050	1080	1120	1160	1190	1200	No Rating
70	1050	1050	1050	1050	1050	1050	1050	1070	1110	1150	1180	1200	No Rating
60	1050	1050	1050	1050	1050	1050	1050	1070	1110	1150	1180	1200	No Rating
50	1050	1050	1050	1050	1050	1050	1050	1070	1110	1150	1180	1200	No Rating

ALTITUDE (FEET ABOVE SEA LEVEL)

FUEL USAGE GUIDE:

This table shows the derate factor and full load set point timing required for a given fuel. Note that deration and set point timing reduction may be required as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar methane number calculation program.

ALTITUDE DERATION FACTORS:

This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site.

ACTUAL ENGINE RATING:

To determine the actual rating of the engine at site conditions, one must consider separately, limitations due to fuel characteristics and air system limitations. The Fuel Usage Guide deration establishes fuel limitations. The Altitude/Temperature deration factors and RPC (reference the Caterpillar Methane Program) establish air system limitations. RPC comes into play when the Altitude/Temperature deration is less than 1.0 (100%). Under this condition, add the two factors together. When the site conditions do not require an Altitude/ Temperature derate (factor is 1.0), it is assumed the turbocharger has sufficient capability to overcome the low fuel relative power, and RPC is ignored. To determine the actual power available, take the lowest rating between 1) and 2).

1) Fuel Usage Guide Deration
2) 1-((1-Altitude/Temperature Deration) + (1-RPC))

AFTERCOOLER HEAT REJECTION FACTORS(ACHRF):

To maintain a constant air inlet manifold temperature, as the inlet air temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor (ACHRF) to adjust for inlet air temp and altitude conditions. See notes 25 and 26 for application of this factor in calculating the heat exchanger sizing criteria. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail.

MINIMUM SPEED CAPABILITY AT THE RATED SPEED'S SITE TORQUE (RPM):

This table shows the minimum allowable engine turndown speed where the engine will maintain the Rated Speed's Torque for the given ambient conditions. For some ambient conditions, the engine is not capable of being loaded continuously from idle to the max site torque at the indicated speed.

NOTES:

1. Engine rating is with two engine driven water pumps. Tolerance is ± 3% of full load.
2. ISO 3046/1 engine efficiency tolerance is (+)0, (-)5% of full load % efficiency value. Nominal engine efficiency tolerance is ± 3.0% of full load % efficiency value.
3. ISO 3046/1 fuel consumption tolerance is (+)5, (-)0% of full load data. Nominal fuel consumption tolerance is ± 3.0% of full load data.
4. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.
5. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.
6. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.
7. Inlet manifold temperature is a nominal value with a tolerance of ± 9°F.
8. Timing indicated is for use with the minimum fuel methane number specified. Consult the appropriate fuel usage guide for timing at other methane numbers.
9. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.
10. Exhaust flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 6 %.
11. Emissions data is at engine exhaust flange prior to any after treatment.
12. NOx values are "Not to Exceed".
13. CO, CO2, THC, NMHC, NMNEHC, and HCHO values are "Not to Exceed" levels. THC, NMHC, and NMNEHC do not include aldehydes. An oxidation catalyst may be required to meet Federal, State or local CO or HC requirements.
14. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ
15. Exhaust Oxygen tolerance is ± 0.5; Lambda tolerance is ± 0.05. Lambda and Exhaust Oxygen level are the result of adjusting the engine to operate at the specified NOx level.
16. LHV rate tolerance is ± 3.0%.
17. Heat rejection to jacket water value displayed includes heat to jacket water alone. Value is based on treated water. Tolerance is ± 10% of full load data.
18. Heat rejection to atmosphere based on treated water. Tolerance is ± 50% of full load data.
19. Lube oil heat rate based on treated water. Tolerance is ± 20% of full load data.
20. Exhaust heat rate based on treated water. Tolerance is ± 10% of full load data.
21. Heat rejection to exhaust (LHV to 77°F) value shown includes unburned fuel and is not intended to be used for sizing or recovery calculations.
22. Heat rejection to A/C - Stage 1 based on treated water. Tolerance is ±5% of full load data.
23. Heat rejection to A/C - Stage 2 based on treated water. Tolerance is ±5% of full load data.
24. Pump power includes engine driven jacket water and aftercooler water pumps. Engine brake power includes effects of pump power.
25. Total Jacket Water Circuit heat rejection is calculated as: (JW x 1.1) + (OC x 1.2) + (1AC x 1.05) + [0.95 x (1AC + 2AC) x (ACHRF - 1) x 1.05]. Heat exchanger sizing criterion is maximum circuit heat rejection at site conditions, with applied tolerances. A cooling system safety factor may be multiplied by the total circuit heat rejection to provide additional margin.
26. Total Second Stage Aftercooler Circuit heat rejection is calculated as: (2AC x 1.05) + [(1AC + 2AC) x 0.05 x (ACHRF - 1) x 1.05]. Heat exchanger sizing criterion is maximum circuit heat rejection at site conditions, with applied tolerances. A cooling system safety factor may be multiplied by the total circuit heat rejection to provide additional margin.

FREE FIELD MECHANICAL & EXHAUST NOISE

MECHANICAL: Sound Power (1/3 Octave Frequencies)

Percent Load	Engine Power	Overall	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz
%	bhp	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
100	1380	116.2	79.2	77.2	80.1	80.6	89.3	88.1	92.5	95.7	95.8	98.7
75	1035	115.4	78.0	76.9	79.1	79.6	88.1	86.9	92.4	95.4	95.9	99.5
50	690	113.2	74.7	74.2	76.5	77.5	86.0	84.6	90.3	94.7	94.8	98.2

MECHANICAL: Sound Power (1/3 Octave Frequencies)

Percent Load	Engine Power	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz
%	bhp	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
100	1380	101.7	102.2	98.7	100.7	101.8	96.8	96.6	96.6	94.1	105.6	115.2
75	1035	102.6	103.3	100.4	103.0	104.5	101.0	104.8	104.3	106.2	109.2	103.9
50	690	101.2	103.5	99.0	102.1	102.8	100.9	104.0	103.4	103.8	102.4	102.1

EXHAUST: Sound Power (1/3 Octave Frequencies)

Percent Load	Engine Power	Overall	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz
%	bhp	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
100	1380	130.0	101.4	99.0	106.2	105.5	100.7	97.7	98.5	101.7	108.5	113.2
75	1035	120.5	100.2	99.1	103.8	101.6	97.4	95.2	95.3	98.7	104.5	110.1
50	690	117.8	99.3	96.7	101.7	97.8	95.1	92.6	94.9	98.2	103.3	107.4

EXHAUST: Sound Power (1/3 Octave Frequencies)

Percent Load	Engine Power	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz
%	bhp	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
100	1380	113.0	112.0	114.7	119.7	122.4	120.3	121.2	122.5	120.8	118.8	116.9
75	1035	111.0	103.2	105.3	106.1	107.2	109.1	111.0	110.9	111.2	110.5	107.4
50	690	101.5	101.4	102.7	102.4	105.4	107.5	108.7	108.6	108.2	107.8	107.3

SOUND PARAMETER DEFINITION:

Sound Power Level Data - DM8702-02

Sound power is defined as the total sound energy emanating from a source irrespective of direction or distance. Sound power level data is presented under two index headings:
Sound power level -- Mechanical
Sound power level -- Exhaust

Mechanical: Sound power level data is calculated in accordance with ISO 6798. The data is recorded with the exhaust sound source isolated.

Exhaust: Sound power level data is calculated in accordance with ISO 6798 Annex A. Exhaust data is post-catalyst on gas engine ratings labeled as "Integrated Catalyst".

Measurements made in accordance with ISO 6798 for engine and exhaust sound level only. No cooling system noise is included unless specifically indicated. Sound level data is indicative of noise levels recorded on one engine sample in a survey grade 3 environment.

How an engine is packaged, installed and the site acoustical environment will affect the site specific sound levels. For site specific sound level guarantees, sound data collection needs to be done on-site or under similar conditions.

PROMAX REPORT - OIL TANKS - HOURLY

Project information	
File Name	DEET - Muir D Pad 3
Company	Devon Energy
City, State	{"Custom Location","Custom Location","Custom Location"}
Equation of State	{"Peng-Robinson","Peng-Robinson","Peng-Robinson"}
Description	DEET Emissions Report

Stream Selection for Tank Losses Stencil	
Name of Property Stencil	Oil Tank Losses
Name of Process Stream	Tank Inlet[Oil Tanks]

Loading Information	
Mode of Operation	Submerged Loading of a Clean Cargo Tank
Cargo Carrier	Tank Truck or Rail Tank Car
Saturation Factor	1.0
VOCs [C3+]	86

Tank Information	
Shell Height [ft]	30
Diameter [ft]	15.5
Maximum Fill Percent [%]	90
Number of Tanks	4
Average Fill Percent [%]	50
Total Tank Volume [bbl]	4032.9
Net Throughput [bbl/hr]	116800
Max Liquid Surface Temperature [°F]	101.575
Average Liquid Surface Temperature [°F]	98.8939
MW	48.1922
Turnovers (per year)	35.9899
Paint Characteristics	
Shell Color	Tan
Shell Paint Condition	Average
Roof Color	Tan
Roof Condition	Average
Roof Characteristics	
Type	Dome
Dome Radius [ft]	
Slope [ft/ft]	--
Breather Vent Settings	
Vacuum Settings [psig]	-0.0300000
Pressure Settings [psig]	0.0300000

Meteorological Data	
Location	Custom Location
Ambient Pressure [psia]	14.67
Min Ambient Temperature [°F]	95
Max Ambient Temperature [°F]	95
Solar Insolation [BTU/ft2*day]	1460
Wind Speed [mph]	9.95

Emission Summary							
Item		Flash Gas	W/B Losses	Loading Losses	Heater Treater Gas	ULPS Gas	
		%	%	%	%	%	
Capture Effeciency		98	98	70	0	0	
Percent to Tank		98	98	98	0	0	

Emission Summary							
Item		Flash Gas	W/B Losses	Loading Losses	Heater Treater Gas	ULPS Gas	Total Losses
		[lb/h]	[lb/h]	[lb/h]	[lb/h]	[lb/h]	[lb/h]
VOCs [C3+]		3.164	0.219	0.452	0.000	0.000	3.835
Benzene		0.007	0.001	0.001	0.000	0.000	0.008
H2S		0.000	0.000	0.000	0.000	0.000	0.000

PROMAX REPORT - OIL TANKS - HOURLY

Emission Composition							
No.	Component	Flash Gas [Mol%]	W/B Losses [Mol%]	Loading Losses [Mol%]	Heater Treater [Mol%]	ULPS [Mol%]	
1	Hydrogen Sulfide	0.014	0.013	0.013	--	--	
2	Nitrogen	0.001	0.000	0.000	--	--	
3	Carbon Dioxide	0.888	0.664	0.664	--	--	
4	Methane	10.671	3.060	3.060	--	--	
5	Ethane	21.379	19.617	19.617	--	--	
6	Propane	30.650	31.256	31.256	--	--	
7	i-Butane	7.878	8.855	8.855	--	--	
8	n-Butane	14.479	17.147	17.147	--	--	
9	2,2-Dimethylpropane	0.146	0.181	0.181	--	--	
10	i-Pentane	4.680	6.268	6.268	--	--	
11	n-Pentane	4.055	5.621	5.621	--	--	
12	2,2-Dimethylbutane	0.095	0.138	0.138	--	--	
13	Cyclopentane	0.000	0.000	0.000	--	--	
14	2,3-Dimethylbutane	0.129	0.191	0.191	--	--	
15	2-Methylpentane	0.780	1.169	1.169	--	--	
16	3-Methylpentane	0.430	0.651	0.651	--	--	
17	n-Hexane	0.837	1.297	1.297	--	--	
18	Methylcyclopentane	0.237	0.361	0.361	--	--	
19	Benzene	0.099	0.151	0.151	--	--	
20	Cyclohexane	0.157	0.243	0.243	--	--	
21	2-Methylhexane	0.202	0.327	0.327	--	--	
22	3-Methylhexane	0.146	0.239	0.239	--	--	
23	2,2,4-Trimethylpentane	0.000	0.000	0.000	--	--	
24	n-Heptane	0.289	0.480	0.480	--	--	
25	Methylcyclohexane	0.177	0.291	0.291	--	--	
26	Toluene	0.130	0.215	0.215	--	--	
27	n-Octane	0.182	0.320	0.320	--	--	
28	Ethylbenzene	0.015	0.026	0.026	--	--	
29	m-Xylene	0.025	0.044	0.044	--	--	
30	p-Xylene	0.026	0.046	0.046	--	--	
31	o-Xylene	0.014	0.026	0.026	--	--	
32	n-Nonane	0.042	0.078	0.078	--	--	
33	n-Decane	0.016	0.032	0.032	--	--	
34	Undecane	0.004	0.008	0.008	--	--	
35	Dodecane	0.001	0.002	0.002	--	--	
36	Tridecane	0.000	0.001	0.001	--	--	
37	Tetradecane	0.000	0.000	0.000	--	--	
38	Pentadecane	0.000	0.000	0.000	--	--	
39	Hexadecane	0.000	0.000	0.000	--	--	
40	Heptadecane	0.000	0.000	0.000	--	--	
41	Octadecane	0.000	0.000	0.000	--	--	
42	Nonadecane	0.000	0.000	0.000	--	--	
43	Eicosane	0.000	0.000	0.000	--	--	
44	Heneicosane	0.000	0.000	0.000	--	--	
45	Docosane	0.000	0.000	0.000	--	--	
46	Tricosane	0.000	0.000	0.000	--	--	
47	Tetracosane	0.000	0.000	0.000	--	--	
48	Pentacosane	0.000	0.000	0.000	--	--	
49	Hexacosane	0.000	0.000	0.000	--	--	
50	Heptacosane	0.000	0.000	0.000	--	--	
51	Octacosane	0.000	0.000	0.000	--	--	
52	Nonacosane	0.000	0.000	0.000	--	--	
53	C30	0.000	0.000	0.000	--	--	
54	Water	1.122	0.981	0.981	--	--	
55	C10+	0.000	0.000	0.000	--	--	

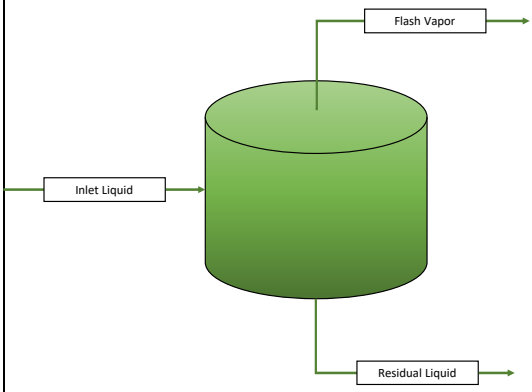
PROMAX REPORT - OIL TANKS - HOURLY

Stream Compositional Data							
No.	Component	Flash Gas [lb/h]	W/B Losses [lb/h]	Loading Losses [lb/h]	Heater Treater [lb/h]	ULPS [lb/h]	Total Losses [lb/h]
1	Hydrogen Sulfide	0.000	0.000	0.000	--	--	0.000
2	Nitrogen	0.000	0.000	0.000	--	--	0.000
3	Carbon Dioxide	0.034	0.001	0.003	--	--	0.038
4	Methane	0.148	0.002	0.005	--	--	0.156
5	Ethane	0.556	0.030	0.061	--	--	0.647
6	Propane	1.169	0.069	0.144	--	--	1.382
7	i-Butane	0.396	0.026	0.054	--	--	0.475
8	n-Butane	0.728	0.050	0.104	--	--	0.882
9	2,2-Dimethylpropane	0.009	0.001	0.001	--	--	0.011
10	i-Pentane	0.292	0.023	0.047	--	--	0.362
11	n-Pentane	0.253	0.020	0.042	--	--	0.316
12	2,2-Dimethylbutane	0.007	0.001	0.001	--	--	0.009
13	Cyclopentane	0.000	0.000	0.000	--	--	0.000
14	2,3-Dimethylbutane	0.010	0.001	0.002	--	--	0.012
15	2-Methylpentane	0.058	0.005	0.010	--	--	0.074
16	3-Methylpentane	0.032	0.003	0.006	--	--	0.041
17	n-Hexane	0.062	0.006	0.012	--	--	0.080
18	Methylcyclopentane	0.017	0.002	0.003	--	--	0.022
19	Benzene	0.007	0.001	0.001	--	--	0.008
20	Cyclohexane	0.011	0.001	0.002	--	--	0.015
21	2-Methylhexane	0.017	0.002	0.003	--	--	0.023
22	3-Methylhexane	0.013	0.001	0.002	--	--	0.016
23	2,2,4-Trimethylpentane	0.000	0.000	0.000	--	--	0.000
24	n-Heptane	0.025	0.002	0.005	--	--	0.032
25	Methylcyclohexane	0.015	0.001	0.003	--	--	0.019
26	Toluene	0.010	0.001	0.002	--	--	0.013
27	n-Octane	0.018	0.002	0.004	--	--	0.024
28	Ethylbenzene	0.001	0.000	0.000	--	--	0.002
29	m-Xylene	0.002	0.000	0.000	--	--	0.003
30	p-Xylene	0.002	0.000	0.001	--	--	0.003
31	o-Xylene	0.001	0.000	0.000	--	--	0.002
32	n-Nonane	0.005	0.001	0.001	--	--	0.006
33	n-Decane	0.002	0.000	0.000	--	--	0.003
34	Undecane	0.001	0.000	0.000	--	--	0.001
35	Dodecane	0.000	0.000	0.000	--	--	0.000
36	Tridecane	0.000	0.000	0.000	--	--	0.000
37	Tetradecane	0.000	0.000	0.000	--	--	0.000
38	Pentadecane	0.000	0.000	0.000	--	--	0.000
39	Hexadecane	0.000	0.000	0.000	--	--	0.000
40	Heptadecane	0.000	0.000	0.000	--	--	0.000
41	Octadecane	0.000	0.000	0.000	--	--	0.000
42	Nonadecane	0.000	0.000	0.000	--	--	0.000
43	Eicosane	0.000	0.000	0.000	--	--	0.000
44	Heneicosane	0.000	0.000	0.000	--	--	0.000
45	Docosane	0.000	0.000	0.000	--	--	0.000
46	Tricosane	0.000	0.000	0.000	--	--	0.000
47	Tetracosane	0.000	0.000	0.000	--	--	0.000
48	Pentacosane	0.000	0.000	0.000	--	--	0.000
49	Hexacosane	0.000	0.000	0.000	--	--	0.000
50	Heptacosane	0.000	0.000	0.000	--	--	0.000
51	Octacosane	0.000	0.000	0.000	--	--	0.000
52	Nonacosane	0.000	0.000	0.000	--	--	0.000
53	C30	0.000	0.000	0.000	--	--	0.000
54	Water	0.017	0.001	0.002	--	--	0.020
55	C10+	0.000	0.000	0.000	--	--	0.000

Stream Properties							
		Flash Gas	W/B Losses	Loading Losses	Heater Treater	ULPS	
MW		45.334	50.275	50.275	30.219	--	
Heating Value [BTU/scf]		2339.238	2590.480	2590.480	1558.015	--	
Specific Gravity		1.565	1.736	1.736	1.043	--	
VOC Concentration [wt%]		100.000	100.000	100.000	100.000	--	
Temperature [°F]		83.932	101.575	101.575	130.000	--	
Gas Volumetric Flow [scf/hr]		1640.753	95.501	31.380	0.000	0.000	

PROMAX REPORT - OIL TANKS - HOURLY

Inlet Stream Data	
Component	Tank Inlet [Mol%]
Hydrogen Sulfide	0.003
Nitrogen	0.000
Carbon Dioxide	0.148
Methane	1.692
Ethane	3.877
Propane	8.028
i-Butane	2.995
n-Butane	6.941
2,2-Dimethylpropane	0.088
i-Pentane	4.548
n-Pentane	5.005
2,2-Dimethylbutane	0.180
Cyclopentane	0.000
2,3-Dimethylbutane	0.314
2-Methylpentane	2.059
3-Methylpentane	1.257
n-Hexane	3.077
Methylcyclopentane	0.802
Benzene	0.351
Cyclohexane	0.665
2-Methylhexane	1.506
3-Methylhexane	1.192
2,2,4-Trimethylpentane	0.000
n-Heptane	3.084
Methylcyclohexane	1.783
Toluene	1.517
n-Octane	6.138
Ethylbenzene	0.528
m-Xylene	0.987
p-Xylene	0.986
o-Xylene	0.644
n-Nonane	4.398
n-Decane	5.196
Undecane	4.075
Dodecane	3.129
Tridecane	3.001
Tetradecane	2.507
Pentadecane	2.153
Hexadecane	1.798
Heptadecane	1.677
Octadecane	1.425
Nonadecane	1.440
Eicosane	1.214
Heneicosane	0.918
Docosane	0.916
Tricosane	0.805
Tetracosane	0.678
Pentacosane	0.651
Hexacosane	0.479
Heptacosane	0.475
Octacosane	0.448
Nonacosane	0.361
C30	1.672
Water	0.189
C10+	0.000



Residual Liquid Data	
Flow (bbl/d)	320.000
TVP [psia]	14.194

PROMAX REPORT - WATER TANKS - HOURLY

Project information	
File Name	DEET - Muir D Pad 3
Company	Devon Energy
City, State	{"Custom Location","Custom Location","Custom Location"}
Equation of State	{"Peng-Robinson","Peng-Robinson","Peng-Robinson"}
Description	DEET Emissions Report

Stream Selection for Tank Losses Stencil	
Name of Property Stencil	Water Tank Losses
Name of Process Stream	Inlet[Water Tanks]

Loading Information	
Mode of Operation	Submerged Loading of a Clean Cargo Tank
Cargo Carrier	Tank Truck or Rail Tank Car
Saturation Factor	0.6
VOCs [C3+]	17

Tank Information	
Shell Height [ft]	30
Diameter [ft]	15.5
Maximum Fill Percent [%]	90
Number of Tanks	2
Average Fill Percent [%]	50
Total Tank Volume [bbl]	2016.4
Net Throughput [bbl/yr]	6.19458E+06
Max Liquid Surface Temperature [°F]	101.575
Average Liquid Surface Temperature [°F]	98.8939
MW	27.9647
Turnovers (per year)	3864.49
Paint Characteristics	
Shell Color	Tan
Shell Paint Condition	Average
Roof Color	Tan
Roof Condition	Average
Roof Characteristics	
Type	Dome
Dome Radius [ft]	
Slope [ft/ft]	--
Breather Vent Settings	
Vacuum Settings [psig]	-0.0300000
Pressure Settings [psig]	0.0300000

Meteorological Data	
Location	Custom Location
Ambient Pressure [psia]	14.67
Min Ambient Temperature [°F]	95
Max Ambient Temperature [°F]	95
Solar Insolation [BTU/ft2*day]	1460
Wind Speed [mph]	9.95

Emission Summary							
Item		Flash Gas	W/B Losses				
		%	%				
Capture Effeciency		98	98				
Percent to Flare		98	98				

Emission Summary							
Item		Flash Gas	W/B Losses				Total Losses
		[lb/h]	[lb/h]				[lb/h]
VOCs [C3+]		0.348	0.107				0.455
Benzene		0.007	0.020				0.026
H2S		0.001	0.004				0.005

PROMAX REPORT - WATER TANKS - HOURLY

Emission Composition							
No.	Component	Flash Gas [Mol%]	W/B Losses [Mol%]				
1	Hydrogen Sulfide	0.074	0.538				
2	Nitrogen	0.008	0.001				
3	Carbon Dioxide	8.755	24.049				
4	Methane	38.415	7.563				
5	Ethane	21.635	5.563				
6	Propane	9.848	1.785				
7	i-Butane	1.057	0.117				
8	n-Butane	3.012	0.506				
9	2,2-Dimethylpropane	0.011	0.001				
10	i-Pentane	0.530	0.057				
11	n-Pentane	0.287	0.016				
12	2,2-Dimethylbutane	0.004	0.000				
13	Cyclopentane	0.000	0.000				
14	2,3-Dimethylbutane	0.012	0.001				
15	2-Methylpentane	0.061	0.004				
16	3-Methylpentane	0.070	0.010				
17	n-Hexane	0.039	0.001				
18	Methylcyclopentane	0.060	0.014				
19	Benzene	0.203	1.140				
20	Cyclohexane	0.074	0.036				
21	2-Methylhexane	0.008	0.000				
22	3-Methylhexane	0.006	0.000				
23	2,2,4-Trimethylpentane	0.000	0.000				
24	n-Heptane	0.009	0.000				
25	Methylcyclohexane	0.045	0.010				
26	Toluene	0.291	1.690				
27	n-Octane	0.003	0.000				
28	Ethylbenzene	0.037	0.199				
29	m-Xylene	0.059	0.317				
30	p-Xylene	0.062	0.347				
31	o-Xylene	0.038	0.206				
32	n-Nonane	0.000	0.000				
33	n-Decane	0.000	0.000				
34	Undecane	0.000	0.000				
35	Dodecane	0.000	0.000				
36	Tridecane	0.000	0.000				
37	Tetradecane	0.000	0.000				
38	Pentadecane	0.000	0.000				
39	Hexadecane	0.000	0.000				
40	Heptadecane	0.000	0.000				
41	Octadecane	0.000	0.000				
42	Nonadecane	0.000	0.000				
43	Eicosane	0.000	0.000				
44	Heneicosane	0.000	0.000				
45	Docosane	0.000	0.000				
46	Tricosane	0.000	0.000				
47	Tetracosane	0.000	0.000				
48	Pentacosane	0.000	0.000				
49	Hexacosane	0.000	0.000				
50	Heptacosane	0.000	0.000				
51	Octacosane	0.000	0.000				
52	Nonacosane	0.000	0.000				
53	C30	0.000	0.000				
54	Water	15.284	55.826				
55	C10+	0.000	0.000				

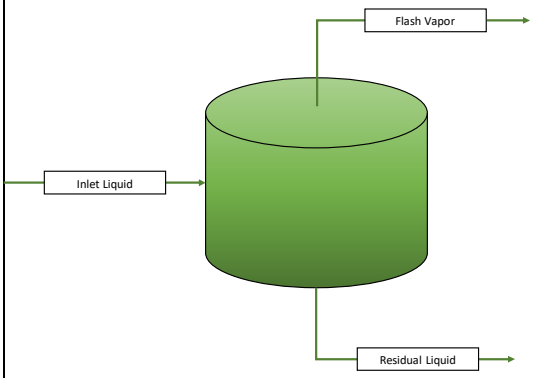
PROMAX REPORT - WATER TANKS - HOURLY

Stream Compositional Data							
No.	Component	Flash Gas [lb/h]	W/B Losses [lb/h]				Total Losses [lb/h]
1	Hydrogen Sulfide	0.001	0.004				0.005
2	Nitrogen	0.000	0.000				0.000
3	Carbon Dioxide	0.162	0.233				0.395
4	Methane	0.259	0.027				0.285
5	Ethane	0.273	0.037				0.310
6	Propane	0.182	0.017				0.200
7	i-Butane	0.026	0.001				0.027
8	n-Butane	0.073	0.006				0.080
9	2,2-Dimethylpropane	0.000	0.000				0.000
10	i-Pentane	0.016	0.001				0.017
11	n-Pentane	0.009	0.000				0.009
12	2,2-Dimethylbutane	0.000	0.000				0.000
13	Cyclopentane	0.000	0.000				0.000
14	2,3-Dimethylbutane	0.000	0.000				0.000
15	2-Methylpentane	0.002	0.000				0.002
16	3-Methylpentane	0.003	0.000				0.003
17	n-Hexane	0.001	0.000				0.001
18	Methylcyclopentane	0.002	0.000				0.002
19	Benzene	0.007	0.020				0.026
20	Cyclohexane	0.003	0.001				0.003
21	2-Methylhexane	0.000	0.000				0.000
22	3-Methylhexane	0.000	0.000				0.000
23	2,2,4-Trimethylpentane	0.000	0.000				0.000
24	n-Heptane	0.000	0.000				0.000
25	Methylcyclohexane	0.002	0.000				0.002
26	Toluene	0.011	0.034				0.046
27	n-Octane	0.000	0.000				0.000
28	Ethylbenzene	0.002	0.005				0.006
29	m-Xylene	0.003	0.007				0.010
30	p-Xylene	0.003	0.008				0.011
31	o-Xylene	0.002	0.005				0.007
32	n-Nonane	0.000	0.000				0.000
33	n-Decane	0.000	0.000				0.000
34	Undecane	0.000	0.000				0.000
35	Dodecane	0.000	0.000				0.000
36	Tridecane	0.000	0.000				0.000
37	Tetradecane	0.000	0.000				0.000
38	Pentadecane	0.000	0.000				0.000
39	Hexadecane	0.000	0.000				0.000
40	Heptadecane	0.000	0.000				0.000
41	Octadecane	0.000	0.000				0.000
42	Nonadecane	0.000	0.000				0.000
43	Eicosane	0.000	0.000				0.000
44	Heneicosane	0.000	0.000				0.000
45	Docosane	0.000	0.000				0.000
46	Tricosane	0.000	0.000				0.000
47	Tetracosane	0.000	0.000				0.000
48	Pentacosane	0.000	0.000				0.000
49	Hexacosane	0.000	0.000				0.000
50	Heptacosane	0.000	0.000				0.000
51	Octacosane	0.000	0.000				0.000
52	Nonacosane	0.000	0.000				0.000
53	C30	0.000	0.000				0.000
54	Water	0.116	0.222				0.337
55	C10+	0.000	0.000				0.000

Stream Properties							
		Flash Gas	W/B Losses				
MW		27.588	28.565				
Heating Value [BTU/scf]		1127.915	394.091				
Specific Gravity		0.953	0.986				
VOC Concentration [wt%]		100.000	100.000				
Temperature [°F]		130.224	101.575				
Gas Volumetric Flow [scf/hr]		796.462	418.605				

PROMAX REPORT - WATER TANKS - HOURLY

Inlet Stream Data	
Component	Tank Inlet [Mol%]
Hydrogen Sulfide	0.000
Nitrogen	0.000
Carbon Dioxide	0.004
Methane	0.007
Ethane	0.004
Propane	0.002
i-Butane	0.000
n-Butane	0.001
2,2-Dimethylpropane	0.000
i-Pentane	0.000
n-Pentane	0.000
2,2-Dimethylbutane	0.000
Cyclopentane	0.000
2,3-Dimethylbutane	0.000
2-Methylpentane	0.000
3-Methylpentane	0.000
n-Hexane	0.000
Methylcyclopentane	0.000
Benzene	0.000
Cyclohexane	0.000
2-Methylhexane	0.000
3-Methylhexane	0.000
2,2,4-Trimethylpentane	0.000
n-Heptane	0.000
Methylcyclohexane	0.000
Toluene	0.000
n-Octane	0.000
Ethylbenzene	0.000
m-Xylene	0.000
p-Xylene	0.000
o-Xylene	0.000
n-Nonane	0.000
n-Decane	0.000
Undecane	0.000
Dodecane	0.000
Tridecane	0.000
Tetradecane	0.000
Pentadecane	0.000
Hexadecane	0.000
Heptadecane	0.000
Octadecane	0.000
Nonadecane	0.000
Eicosane	0.000
Heneicosane	0.000
Docosane	0.000
Tricosane	0.000
Tetracosane	0.000
Pentacosane	0.000
Hexacosane	0.000
Heptacosane	0.000
Octacosane	0.000
Nonacosane	0.000
C30	0.000
Water	99.982
C10+	0.000



Residual Liquid Data	
Flow (bbl/d)	16971.451
TVP [psia]	14.326

PROMAX REPORT - OIL TANKS - ANNUALLY

Project information	
File Name	DEET - Muir D Pad 3
Company	Devon Energy
City, State	{"Victoria, TX","Victoria, TX","Victoria, TX"}
Equation of State	{"Peng-Robinson","Peng-Robinson","Peng-Robinson"}
Description	DEET Emissions Report

Stream Selection for Tank Losses Stencil	
Name of Property Stencil	Oil Tank Losses
Name of Process Stream	Tank Inlet[Oil Tanks]

Loading Information	
Mode of Operation	Submerged Loading of a Clean Cargo Tank
Cargo Carrier	Tank Truck or Rail Tank Car
Saturation Factor	1.0
VOCs [C3+]	82

Tank Information	
Shell Height [ft]	30
Diameter [ft]	15.5
Maximum Fill Percent [%]	90
Number of Tanks	4
Average Fill Percent [%]	50
Total Tank Volume [bbl]	4032.9
Net Throughput [bbl/yr]	65700.0
Max Liquid Surface Temperature [°F]	81.0441
Average Liquid Surface Temperature [°F]	74.1378
MW	44.2905
Turnovers (per year)	20.4481
Paint Characteristics	
Shell Color	Tan
Shell Paint Condition	Average
Roof Color	Tan
Roof Condition	Average
Roof Characteristics	
Type	Dome
Dome Radius [ft]	
Slope [ft/ft]	--
Breather Vent Settings	
Vacuum Settings [psig]	-0.0300000
Pressure Settings [psig]	0.0300000

Meteorological Data	
Location	Victoria, TX
Ambient Pressure [psia]	14.63
Min Ambient Temperature [°F]	60.5
Max Ambient Temperature [°F]	80.1
Solar Insolation [BTU/ft2*day]	1439
Wind Speed [mph]	9.2

Emission Summary							
Item		Flash Gas	W/B Losses	Loading Losses	Heater Treater Gas	ULPS Gas	
		%	%	%	%	%	
Capture Effeciency		98	98	70	0	0	
Percent to Flare		98	98	98	0	0	

Emission Summary							
Item		Flash Gas	W/B Losses	Loading Losses	Heater Treater Gas	ULPS Gas	Total Losses
		[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]
VOCs [C3+]		7.874	0.599	0.219	0.000	0.000	8.692
Benzene		0.017	0.001	0.000	0.000	0.000	0.018
H2S		0.001	0.000	0.000	0.000	0.000	0.001

PROMAX REPORT - OIL TANKS - ANNUALLY

Emission Composition							
No.	Component	Flash Gas [Mol%]	W/B Losses [Mol%]	Loading Losses [Mol%]	Heater Treater [Mol%]	ULPS [Mol%]	
1	Hydrogen Sulfide	0.014	0.016	0.016	--	--	
2	Nitrogen	0.001	0.000	0.000	--	--	
3	Carbon Dioxide	0.848	0.795	0.795	--	--	
4	Methane	10.570	3.631	3.631	--	--	
5	Ethane	21.367	24.571	24.571	--	--	
6	Propane	30.751	33.612	33.612	--	--	
7	i-Butane	7.900	8.361	8.361	--	--	
8	n-Butane	14.518	15.129	15.129	--	--	
9	2,2-Dimethylpropane	0.145	0.150	0.150	--	--	
10	i-Pentane	4.682	4.697	4.697	--	--	
11	n-Pentane	4.054	4.016	4.016	--	--	
12	2,2-Dimethylbutane	0.096	0.094	0.094	--	--	
13	Cyclopentane	0.000	0.000	0.000	--	--	
14	2,3-Dimethylbutane	0.129	0.125	0.125	--	--	
15	2-Methylpentane	0.782	0.754	0.754	--	--	
16	3-Methylpentane	0.431	0.414	0.414	--	--	
17	n-Hexane	0.838	0.794	0.794	--	--	
18	Methylcyclopentane	0.236	0.226	0.226	--	--	
19	Benzene	0.099	0.095	0.095	--	--	
20	Cyclohexane	0.157	0.149	0.149	--	--	
21	2-Methylhexane	0.201	0.187	0.187	--	--	
22	3-Methylhexane	0.146	0.135	0.135	--	--	
23	2,2,4-Trimethylpentane	0.000	0.000	0.000	--	--	
24	n-Heptane	0.289	0.264	0.264	--	--	
25	Methylcyclohexane	0.176	0.163	0.163	--	--	
26	Toluene	0.130	0.119	0.119	--	--	
27	n-Octane	0.181	0.160	0.160	--	--	
28	Ethylbenzene	0.015	0.013	0.013	--	--	
29	m-Xylene	0.025	0.022	0.022	--	--	
30	p-Xylene	0.026	0.023	0.023	--	--	
31	o-Xylene	0.014	0.013	0.013	--	--	
32	n-Nonane	0.041	0.035	0.035	--	--	
33	n-Decane	0.016	0.013	0.013	--	--	
34	Undecane	0.004	0.003	0.003	--	--	
35	Dodecane	0.001	0.001	0.001	--	--	
36	Tridecane	0.000	0.000	0.000	--	--	
37	Tetradecane	0.000	0.000	0.000	--	--	
38	Pentadecane	0.000	0.000	0.000	--	--	
39	Hexadecane	0.000	0.000	0.000	--	--	
40	Heptadecane	0.000	0.000	0.000	--	--	
41	Octadecane	0.000	0.000	0.000	--	--	
42	Nonadecane	0.000	0.000	0.000	--	--	
43	Eicosane	0.000	0.000	0.000	--	--	
44	Heneicosane	0.000	0.000	0.000	--	--	
45	Docosane	0.000	0.000	0.000	--	--	
46	Tricosane	0.000	0.000	0.000	--	--	
47	Tetracosane	0.000	0.000	0.000	--	--	
48	Pentacosane	0.000	0.000	0.000	--	--	
49	Hexacosane	0.000	0.000	0.000	--	--	
50	Heptacosane	0.000	0.000	0.000	--	--	
51	Octacosane	0.000	0.000	0.000	--	--	
52	Nonacosane	0.000	0.000	0.000	--	--	
53	C30	0.000	0.000	0.000	--	--	
54	Water	1.116	1.221	1.221	--	--	
55	C10+	0.000	0.000	0.000	--	--	

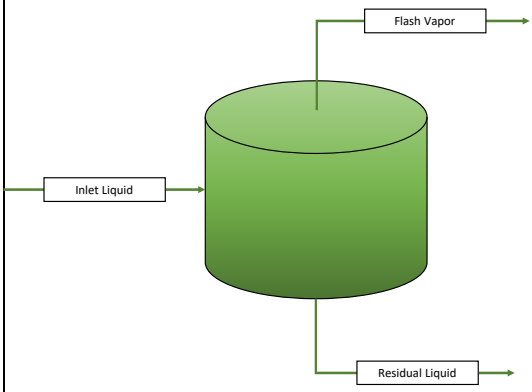
PROMAX REPORT - OIL TANKS - ANNUALLY

Stream Compositional Data							
No.	Component	Flash Gas [ton/yr]	W/B Losses [ton/yr]	Loading Losses [ton/yr]	Heater Treater [ton/yr]	ULPS [ton/yr]	Total Losses [ton/yr]
1	Hydrogen Sulfide	0.001	0.000	0.000			0.001
2	Nitrogen	0.000	0.000	0.000			0.000
3	Carbon Dioxide	0.080	0.005	0.002			0.088
4	Methane	0.364	0.009	0.003			0.377
5	Ethane	1.379	0.116	0.042			1.537
6	Propane	2.912	0.232	0.085			3.228
7	i-Butane	0.986	0.076	0.028			1.090
8	n-Butane	1.812	0.137	0.050			1.999
9	2,2-Dimethylpropane	0.023	0.002	0.001			0.025
10	i-Pentane	0.725	0.053	0.019			0.798
11	n-Pentane	0.628	0.045	0.017			0.690
12	2,2-Dimethylbutane	0.018	0.001	0.000			0.019
13	Cyclopentane	0.000	0.000	0.000			0.000
14	2,3-Dimethylbutane	0.024	0.002	0.001			0.026
15	2-Methylpentane	0.145	0.010	0.004			0.159
16	3-Methylpentane	0.080	0.006	0.002			0.087
17	n-Hexane	0.155	0.011	0.004			0.170
18	Methylcyclopentane	0.043	0.003	0.001			0.047
19	Benzene	0.017	0.001	0.000			0.018
20	Cyclohexane	0.028	0.002	0.001			0.031
21	2-Methylhexane	0.043	0.003	0.001			0.047
22	3-Methylhexane	0.031	0.002	0.001			0.034
23	2,2,4-Trimethylpentane	0.000	0.000	0.000			0.000
24	n-Heptane	0.062	0.004	0.002			0.068
25	Methylcyclohexane	0.037	0.002	0.001			0.041
26	Toluene	0.026	0.002	0.001			0.028
27	n-Octane	0.044	0.003	0.001			0.048
28	Ethylbenzene	0.003	0.000	0.000			0.004
29	m-Xylene	0.006	0.000	0.000			0.006
30	p-Xylene	0.006	0.000	0.000			0.006
31	o-Xylene	0.003	0.000	0.000			0.004
32	n-Nonane	0.011	0.001	0.000			0.012
33	n-Decane	0.005	0.000	0.000			0.005
34	Undecane	0.001	0.000	0.000			0.001
35	Dodecane	0.000	0.000	0.000			0.000
36	Tridecane	0.000	0.000	0.000			0.000
37	Tetradecane	0.000	0.000	0.000			0.000
38	Pentadecane	0.000	0.000	0.000			0.000
39	Hexadecane	0.000	0.000	0.000			0.000
40	Heptadecane	0.000	0.000	0.000			0.000
41	Octadecane	0.000	0.000	0.000			0.000
42	Nonadecane	0.000	0.000	0.000			0.000
43	Eicosane	0.000	0.000	0.000			0.000
44	Heneicosane	0.000	0.000	0.000			0.000
45	Docosane	0.000	0.000	0.000			0.000
46	Tricosane	0.000	0.000	0.000			0.000
47	Tetracosane	0.000	0.000	0.000			0.000
48	Pentacosane	0.000	0.000	0.000			0.000
49	Hexacosane	0.000	0.000	0.000			0.000
50	Heptacosane	0.000	0.000	0.000			0.000
51	Octacosane	0.000	0.000	0.000			0.000
52	Nonacosane	0.000	0.000	0.000			0.000
53	C30	0.000	0.000	0.000			0.000
54	Water	0.043	0.003	0.001			0.048
55	C10+	0.000	0.000	0.000			0.000

Stream Properties							
		Flash Gas	W/B Losses	Loading Losses	Heater Treater	ULPS	
MW		45.373	46.868	46.868	30.270	--	
Heating Value [BTU/scf]		2342.180	2417.592	2417.592	1562.179	--	
Specific Gravity		1.567	1.618	1.618	1.045	--	
VOC Concentration [wt%]		100.000	100.000	100.000	100.000	--	
Temperature [°F]		83.787	81.044	81.044	130.000	--	
Gas Volumetric Flow [scf/hr]		930.134	67.731	17.177	0.000	0.000	

PROMAX REPORT - OIL TANKS - ANNUALLY

Inlet Stream Data	
Component	Tank Inlet [Mol%]
Hydrogen Sulfide	0.003
Nitrogen	0.000
Carbon Dioxide	0.142
Methane	1.685
Ethane	3.894
Propane	8.083
i-Butane	3.013
n-Butane	6.978
2,2-Dimethylpropane	0.088
i-Pentane	4.559
n-Pentane	5.014
2,2-Dimethylbutane	0.181
Cyclopentane	0.000
2,3-Dimethylbutane	0.317
2-Methylpentane	2.069
3-Methylpentane	1.262
n-Hexane	3.087
Methylcyclopentane	0.800
Benzene	0.352
Cyclohexane	0.665
2-Methylhexane	1.504
3-Methylhexane	1.192
2,2,4-Trimethylpentane	0.000
n-Heptane	3.087
Methylcyclohexane	1.780
Toluene	1.516
n-Octane	6.126
Ethylbenzene	0.526
m-Xylene	0.984
p-Xylene	0.984
o-Xylene	0.642
n-Nonane	4.386
n-Decane	5.179
Undecane	4.061
Dodecane	3.118
Tridecane	2.990
Tetradecane	2.498
Pentadecane	2.145
Hexadecane	1.792
Heptadecane	1.671
Octadecane	1.420
Nonadecane	1.435
Eicosane	1.210
Heneicosane	0.915
Docosane	0.913
Tricosane	0.802
Tetracosane	0.675
Pentacosane	0.649
Hexacosane	0.477
Heptacosane	0.474
Octacosane	0.446
Nonacosane	0.360
C30	1.666
Water	0.189
C10+	0.000



Residual Liquid Data	
Flow (bbl/d)	180.000
TVP [psia]	13.403

PROMAX REPORT - WATER TANKS - ANNUALLY

Project information	
File Name	DEET - Muir D Pad 3
Company	Devon Energy
City, State	{"Victoria, TX","Victoria, TX","Victoria, TX"}
Equation of State	{"Peng-Robinson","Peng-Robinson","Peng-Robinson"}
Description	DEET Emissions Report

Stream Selection for Tank Losses Stencil	
Name of Property Stencil	Water Tank Losses
Name of Process Stream	Inlet[Water Tanks]

Loading Information	
Mode of Operation	Submerged Loading of a Clean Cargo Tank
Cargo Carrier	Tank Truck or Rail Tank Car
Saturation Factor	0.6
VOCs [C3+]	17

Tank Information	
Shell Height [ft]	30
Diameter [ft]	15.5
Maximum Fill Percent [%]	90
Number of Tanks	2
Average Fill Percent [%]	50
Total Tank Volume [bbl]	2016.4
Net Throughput [bbl/yr]	2.00119E+06
Max Liquid Surface Temperature [°F]	81.0441
Average Liquid Surface Temperature [°F]	74.1378
MW	27.7721
Turnovers (per year)	1242.90
Paint Characteristics	
Shell Color	Tan
Shell Paint Condition	Average
Roof Color	Tan
Roof Condition	Average
Roof Characteristics	
Type	Dome
Dome Radius [ft]	
Slope [ft/ft]	--
Breather Vent Settings	
Vacuum Settings [psig]	-0.0300000
Pressure Settings [psig]	0.0300000

Meteorological Data	
Location	Victoria, TX
Ambient Pressure [psia]	14.63
Min Ambient Temperature [°F]	60.5
Max Ambient Temperature [°F]	80.1
Solar Insolation [BTU/ft2*day]	1439
Wind Speed [mph]	9.2

Emission Summary							
Item		Flash Gas	W/B Losses				
		%	%				
Capture Effeciency		98	98				
Percent to Flare		98	98				

Emission Summary							
Item		Flash Gas	W/B Losses				Total Losses
		[ton/yr]	[ton/yr]				[ton/yr]
VOCs [C3+]		0.495	0.128				0.623
Benzene		0.009	0.018				0.028
H2S		0.002	0.005				0.006

PROMAX REPORT - WATER TANKS - ANNUALLY

Emission Composition							
No.	Component	Flash Gas [Mol%]	W/B Losses [Mol%]				
1	Hydrogen Sulfide	0.075	0.606				
2	Nitrogen	0.008	0.001				
3	Carbon Dioxide	8.418	33.509				
4	Methane	38.413	12.133				
5	Ethane	21.815	9.540				
6	Propane	9.960	3.147				
7	i-Butane	1.068	0.231				
8	n-Butane	3.040	0.889				
9	2,2-Dimethylpropane	0.011	0.002				
10	i-Pentane	0.534	0.109				
11	n-Pentane	0.289	0.026				
12	2,2-Dimethylbutane	0.004	0.000				
13	Cyclopentane	0.000	0.000				
14	2,3-Dimethylbutane	0.012	0.002				
15	2-Methylpentane	0.062	0.007				
16	3-Methylpentane	0.070	0.019				
17	n-Hexane	0.039	0.002				
18	Methylcyclopentane	0.060	0.026				
19	Benzene	0.204	1.017				
20	Cyclohexane	0.074	0.064				
21	2-Methylhexane	0.008	0.001				
22	3-Methylhexane	0.006	0.001				
23	2,2,4-Trimethylpentane	0.000	0.000				
24	n-Heptane	0.009	0.000				
25	Methylcyclohexane	0.045	0.019				
26	Toluene	0.291	1.536				
27	n-Octane	0.004	0.000				
28	Ethylbenzene	0.036	0.167				
29	m-Xylene	0.059	0.344				
30	p-Xylene	0.062	0.339				
31	o-Xylene	0.038	0.173				
32	n-Nonane	0.000	0.000				
33	n-Decane	0.000	0.000				
34	Undecane	0.000	0.000				
35	Dodecane	0.000	0.000				
36	Tridecane	0.000	0.000				
37	Tetradecane	0.000	0.000				
38	Pentadecane	0.000	0.000				
39	Hexadecane	0.000	0.000				
40	Heptadecane	0.000	0.000				
41	Octadecane	0.000	0.000				
42	Nonadecane	0.000	0.000				
43	Eicosane	0.000	0.000				
44	Heneicosane	0.000	0.000				
45	Docosane	0.000	0.000				
46	Tricosane	0.000	0.000				
47	Tetracosane	0.000	0.000				
48	Pentacosane	0.000	0.000				
49	Hexacosane	0.000	0.000				
50	Heptacosane	0.000	0.000				
51	Octacosane	0.000	0.000				
52	Nonacosane	0.000	0.000				
53	C30	0.000	0.000				
54	Water	15.284	36.089				
55	C10+	0.000	0.000				

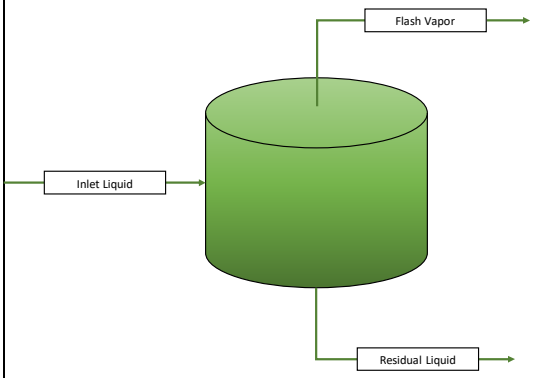
PROMAX REPORT - WATER TANKS - ANNUALLY

Stream Compositional Data							
No.	Component	Flash Gas [ton/yr]	W/B Losses [ton/yr]				Total Losses [ton/yr]
1	Hydrogen Sulfide	0.002	0.005				0.006
2	Nitrogen	0.000	0.000				0.000
3	Carbon Dioxide	0.219	0.341				0.560
4	Methane	0.364	0.045				0.409
5	Ethane	0.388	0.066				0.454
6	Propane	0.260	0.032				0.292
7	i-Butane	0.037	0.003				0.040
8	n-Butane	0.104	0.012				0.116
9	2,2-Dimethylpropane	0.000	0.000				0.000
10	i-Pentane	0.023	0.002				0.025
11	n-Pentane	0.012	0.000				0.013
12	2,2-Dimethylbutane	0.000	0.000				0.000
13	Cyclopentane	0.000	0.000				0.000
14	2,3-Dimethylbutane	0.001	0.000				0.001
15	2-Methylpentane	0.003	0.000				0.003
16	3-Methylpentane	0.004	0.000				0.004
17	n-Hexane	0.002	0.000				0.002
18	Methylcyclopentane	0.003	0.001				0.003
19	Benzene	0.009	0.018				0.028
20	Cyclohexane	0.004	0.001				0.005
21	2-Methylhexane	0.000	0.000				0.000
22	3-Methylhexane	0.000	0.000				0.000
23	2,2,4-Trimethylpentane	0.000	0.000				0.000
24	n-Heptane	0.001	0.000				0.001
25	Methylcyclohexane	0.003	0.000				0.003
26	Toluene	0.016	0.033				0.049
27	n-Octane	0.000	0.000				0.000
28	Ethylbenzene	0.002	0.004				0.006
29	m-Xylene	0.004	0.008				0.012
30	p-Xylene	0.004	0.008				0.012
31	o-Xylene	0.002	0.004				0.007
32	n-Nonane	0.000	0.000				0.000
33	n-Decane	0.000	0.000				0.000
34	Undecane	0.000	0.000				0.000
35	Dodecane	0.000	0.000				0.000
36	Tridecane	0.000	0.000				0.000
37	Tetradecane	0.000	0.000				0.000
38	Pentadecane	0.000	0.000				0.000
39	Hexadecane	0.000	0.000				0.000
40	Heptadecane	0.000	0.000				0.000
41	Octadecane	0.000	0.000				0.000
42	Nonadecane	0.000	0.000				0.000
43	Eicosane	0.000	0.000				0.000
44	Heneicosane	0.000	0.000				0.000
45	Docosane	0.000	0.000				0.000
46	Tricosane	0.000	0.000				0.000
47	Tetracosane	0.000	0.000				0.000
48	Pentacosane	0.000	0.000				0.000
49	Hexacosane	0.000	0.000				0.000
50	Heptacosane	0.000	0.000				0.000
51	Octacosane	0.000	0.000				0.000
52	Nonacosane	0.000	0.000				0.000
53	C30	0.000	0.000				0.000
54	Water	0.163	0.150				0.313
55	C10+	0.000	0.000				0.000

Stream Properties							
		Flash Gas	W/B Losses				
MW		27.572	31.827				
Heating Value [BTU/scf]		1134.893	538.675				
Specific Gravity		0.952	1.099				
VOC Concentration [wt%]		100.000	100.000				
Temperature [°F]		130.224	81.044				
Gas Volumetric Flow [scf/hr]		256.122	100.174				

PROMAX REPORT - WATER TANKS - ANNUALLY

Inlet Stream Data	
Component	Tank Inlet [Mol%]
Hydrogen Sulfide	0.000
Nitrogen	0.000
Carbon Dioxide	0.004
Methane	0.007
Ethane	0.004
Propane	0.002
i-Butane	0.000
n-Butane	0.001
2,2-Dimethylpropane	0.000
i-Pentane	0.000
n-Pentane	0.000
2,2-Dimethylbutane	0.000
Cyclopentane	0.000
2,3-Dimethylbutane	0.000
2-Methylpentane	0.000
3-Methylpentane	0.000
n-Hexane	0.000
Methylcyclopentane	0.000
Benzene	0.000
Cyclohexane	0.000
2-Methylhexane	0.000
3-Methylhexane	0.000
2,2,4-Trimethylpentane	0.000
n-Heptane	0.000
Methylcyclohexane	0.000
Toluene	0.000
n-Octane	0.000
Ethylbenzene	0.000
m-Xylene	0.000
p-Xylene	0.000
o-Xylene	0.000
n-Nonane	0.000
n-Decane	0.000
Undecane	0.000
Dodecane	0.000
Tridecane	0.000
Tetradecane	0.000
Pentadecane	0.000
Hexadecane	0.000
Heptadecane	0.000
Octadecane	0.000
Nonadecane	0.000
Eicosane	0.000
Heneicosane	0.000
Docosane	0.000
Tricosane	0.000
Tetracosane	0.000
Pentacosane	0.000
Hexacosane	0.000
Heptacosane	0.000
Octacosane	0.000
Nonacosane	0.000
C30	0.000
Water	99.982
C10+	0.000



Residual Liquid Data	
Flow (bbl/d)	5482.718
TVP [psia]	13.667

APPENDIX C

IMPACTS EVALUATION

TABLE C-1

Benzene Impact Review

Benzene Short Term ESL ($\mu g/m^3$):	170
Benzene Long Term ESL ($\mu g/m^3$):	4.5

Benzene Hourly - Impact Review

EPN	Source Name		Which impacts table corresponds to this EPN?	Hourly estimated emissions for each EPN (lbs/hr)	WR_{EPNx}	$ESL_{benzene,\ short\ term}$ ($\mu g/m^3$)	Distance from emission point to nearest receptor (ft)	Height of emission release point (ft)	G_{EPNx}	$E_{max,EPNx,\ hourly,steadystate}$ (lb/hr)
Flare	Flare	All	C-6 - Flare	0.0398	4.81E-02	170	50	30	43	1.90E-01
Fugitive	Fugitive	All	C-4 - Fugitives	0.0029	3.49E-03	170	50	3	2625	2.26E-04
Heater Treater 1	Heater Treater 1	All	C-7 - Heater Treater	0.0000	2.04E-06	170	50	20	58	5.99E-06
Heater Treater 2	Heater Treater 2	All	C-7 - Heater Treater	0.0000	2.04E-06	170	50	20	58	5.99E-06
Engine 1	Engine 1	All	C-8 - Engine	0.0043	5.17E-03	170	50	23	9	9.77E-02
Engine 2	Engine 2	All	C-8 - Engine	0.0043	5.17E-03	170	50	23	9	9.77E-02
MSS	MSS	All	C-5 - MSS ≥30 psig	0.1007	1.22E-01	170	50	23	25	8.27E-01
MSS	MSS	All	C-5 - MSS <30 psig	0.3393	4.10E-01	170	50	3	4304	1.62E-02
Oil Tank	Oil Tank	All	C-4 - Tank Hatch	0.0115	1.39E-02	170	50	30	183	1.29E-02
Water Tank	Water Tank	All	C-4 - Tank Hatch	0.0263	3.18E-02	170	50	30	183	2.95E-02
Oil Loadout	Oil Loadout	All	C-4 - Loading	0.0908	1.10E-01	170	50	10	739	2.52E-02
Water Loadout	Water Loadout	All	C-4 - Loading	0.2078	2.51E-01	170	50	10	739	5.77E-02
							Passed			
				$E_{estimated,total,hourly,steadys}$	**Total**					$E_{max,total,\ hourly,steadystate}$ (lb/hr)
				0.828	1.00					1.355

Benzene Annual - Impact Review

EPN	Source Name		What amount of time is this source is emitting? (hrs/yr)	Which impacts table corresponds to this EPN?	Annual estimated emissions for each EPN (tons/yr)	WR_{EPNx}	$ESL_{benzene,\ long\ term}$ ($\mu g/m^3$)	Distance from emission point to nearest receptor (ft)	Height of emission release point (ft)	G_{EPNx}	$E_{max,EPNx,\ annual}$ (tons/yr)
Flare	Flare	All	8760	C-6 - Flare	0.0519	8.48E-02	4.5	50	30	43	4.86E-01
Fugitive	Fugitive	All	8760	C-4 - Fugitives	0.0063	1.03E-02	4.5	50	3	2625	9.68E-04
Heater Treater 1	Heater Treater 1	All	8760	C-7 - Heater Treater	0.0000	1.21E-05	4.5	50	20	58	5.13E-05
Heater Treater 2	Heater Treater 2	All	8760	C-7 - Heater Treater	0.0000	1.21E-05	4.5	50	20	58	5.13E-05
Engine 1	Engine 1	All	8760	C-8 - Engine	0.0187	3.06E-02	4.5	50	23	9	8.38E-01
Engine 2	Engine 2	All	8760	C-8 - Engine	0.0187	3.06E-02	4.5	50	23	9	8.38E-01
MSS	MSS	All	8760	C-5 - MSS ≥30 psig	0.0000	0.00E+00	4.5	50	23	25	0.00E+00
MSS	MSS	All	8760	C-5 - MSS <30 psig	0.0081	1.31E-02	4.5	50	3	4304	7.52E-04
Oil Tank	Oil Tank	All	8760	C-4 - Tank Hatch	0.0182	2.96E-02	4.5	50	30	183	3.99E-02
Water Tank	Water Tank	All	8760	C-4 - Tank Hatch	0.0278	4.54E-02	4.5	50	30	183	6.11E-02
Oil Loadout	Oil Loadout	All	8760	C-4 - Loading	0.0090	1.47E-02	4.5	50	10	739	4.91E-03
Water Loadout	Water Loadout	All	8760	C-4 - Loading	0.4539	7.41E-01	4.5	50	10	739	2.47E-01
								Passed			
					$E_{estimated,total,annual}$ (tons/yr)	**Total**					$E_{max,total,\ annual}$ (tons/yr)
					0.613	1.00					2.516

TABLE C-2

H2S Impact Review

H_2S Hourly SAAQS (µg/m3):	108

H_2S Hourly - Impact Review

EPN	Source Name		Which impacts table corresponds to this EPN?	Hourly estimated emissions for each EPN (lbs/hr)	WR_{EPNx}	$AAQS_{H2S,\ hourly}$ (µg/m^3)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G_{EPNx}	$E_{max,EPNx,\ hourly,steadystate}$ (lb/hr)
Flare	Flare	All	C-6 - Flare	0.0062	1.68E-01	108	50	30	43	4.23E-01
Fugitive	Fugitive	All	C-4 - Fugitives	0.0002	6.65E-03	108	50	3	2625	2.73E-04
Heater Treater 1	Heater Treater 1	All	C-7 - Heater Treater	0.0001	2.17E-03	108	50	20	58	4.03E-03
Heater Treater 2	Heater Treater 2	All	C-7 - Heater Treater	0.0001	2.17E-03	108	50	20	58	4.03E-03
MSS	MSS	All	C-5 - MSS ≥30 psig	0.0000	0.00E+00	108	50	23	9	0.00E+00
MSS	MSS	All	C-5 - MSS <30 psig	0.0242	6.61E-01	108	50	3	9	7.93E+00
Oil Tank	Oil Tank	All	C-4 - Tank Hatch	0.0007	2.02E-02	108	50	3	25	8.73E-02
Water Tank	Water Tank	All	C-4 - Tank Hatch	0.0051	1.39E-01	108	50	30	4304	3.50E-03
Oil Loadout	Oil Loadout	All	C-4 - Loading	0.0000	0.00E+00	108	50	10	183	0.00E+00
Water Loadout	Water Loadout	All	C-4 - Loading	0.0000	0.00E+00	108	50	10	739	0.00E+00
				$E_{estimated,total,hourly,\ steadystate}$ (lb/hr)	Total		Passed			$E_{max,total,\ hourly,steadystate}$ (lb/hr)
				0.037	1.00					8.454

TABLE C-3

NO2 Impact Review

NO_2 **Hourly NAAQS (µg/m3):**	188

NO_2 Hourly Steady State - Impact Review

EPN	Source Name	Which impacts table corresponds to this EPN?	Steady state hourly estimated NO_2 emissions for each EPN (lbs/hr)	WR_{EPNx}	$AAQS_{NO2,\ hourly}$ ($\mu g/m^3$)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G_{EPNx}	$E_{max,EPNx,\ hourly,steadystate}$ (lb/hr)
Flare	Flare	C-6 - Flare	1.0552	4.39E-01	188	50	30	43	1.92E+00
Heater Treater 1	Heater Treater 1	C-7 - Heater Treater	0.0644	2.68E-02	188	50	20	58	8.70E-02
Heater Treater 2	Heater Treater 2	C-7 - Heater Treater	0.0644	2.68E-02	188	50	20	58	8.70E-02
Engine 1	Engines	C-8 - Engine	0.6085	2.53E-01	188	50	23	9	5.29E+00
Engine 2	Engines	C-8 - Engine	0.6085	2.53E-01	188	50	23	9	5.29E+00
			$E_{estimated,total,hourly,\ steadystate}$ (lb/hr)	Total		Passed			$E_{max,total,\ hourly,steadystate}$ (lb/hr)
			2.401	1					12.683

TABLE C-4
DEVON ENERGY PRODUCTION COMPANY L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

Generic Modeling Factor (G) Look-up	
Fugitive	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	3
G [(µg/m³)/(lb/hr)]:	2625

Generic Modeling Factor (G) Look-up	
Loading	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	10
G [(µg/m³)/(lb/hr)]:	739

Generic Modeling Factor (G) Look-up	
Tank Hatch	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	30
G [(µg/m³)/(lb/hr)]:	183

TABLE C-5
DEVON ENERGY PRODUCTION COMPANY L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

Generic Modeling Factor (G) Look-up	
Low Pressure (< 30 psig) Blowdowns, Purging, and Pigging	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	3
G [(µg/m³)/(lb/hr)]:	4304

Generic Modeling Factor (G) Look-up	
High Pressure (≥ 30 psig) Blowdowns, Purging, and Pigging	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	23
G [(µg/m³)/(lb/hr)]:	25

TABLE C-6
DEVON ENERGY PRODUCTION COMPANY L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

Generic Modeling Factor (G) Look-up	
Flares and Thermal Destruction Devices	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	30
G [(µg/m³)/(lb/hr)]:	43

TABLE C-7
DEVON ENERGY PRODUCTION COMPANY L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

Generic Modeling Factor (G) Look-up	
Flares and Thermal Destruction Devices	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	20
G [(µg/m³)/(lb/hr)]:	58

TABLE C-8
DEVON ENERGY PRODUCTION COMPANY L.P.
P. FRISBIE A PAD 1
DEWITT COUNTY, TEXAS

Generic Modeling Factor (G) Look-up	
Engines Greater Than 1,000 and Less Than or Equal to 1,500 hp	
Distance from emission source to nearest receptor or property line (ft):	50
Height of emission release point (ft):	23
G [(µg/m³)/(lb/hr)]:	9