Trinity Consultants
9737 Great Hills Trail, Ste 340, Austin, TX 78759 / P 512.349.5800 / F 512.233.0803 / **trinityconsultants.com**

July 18, 2024

Air Permits Initial Review Team (APIRT)
Texas Commission on Environmental Quality
12100 Park 35 Circle
Building C, Third Floor, MC-161
Austin, TX 78753

Submitted via STEERS

Re: Permits by Rule (PBRs) §§106.352(l), 106.359, 106.511, and 106.512 - Initial Application
Batson Compressor Station, RN TBD
Blackfin Pipeline, LLC, CN606266211
Hardin County, Texas

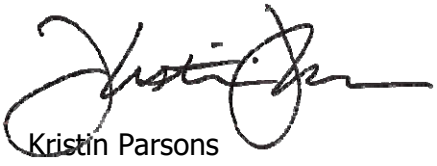
Dear APIRT:

Blackfin Pipeline, LLC (Blackfin) is submitting the attached initial application to authorize emissions for the proposed sources under the Permits by Rule (PBRs) §§106.352(l), 106.359, 106.511, and 106.512 at the Batson Compressor Station, located in Hardin County, Texas.

Blackfin is certifying emissions associated with this PBR registration via the State of Texas Environmental Electronic Reporting System (STEERS). This registration demonstrates that the applicable PBR requirements will be met. Note that at the time of this PBR submittal in STEERS, the 106.512 Engines and Turbines section had an internal limit in the system that engines and turbines could not input a horsepower (HP) value greater than 20,000. The turbines represented in this application are each rated at 30,079 HP; however, each turbine is listed in STEERS as 20,000 HP.

If you have any questions or comments about the information presented in this application, please contact Mr. Scott Wolverton, Blackfin, at 913-424-0035 (swolverton@wwm-llc.com) or me at kristin.parsons@trinityconsultants.com.

Sincerely,
TRINITY CONSULTANTS



Kristin Parsons
Senior Consultant

cc: Ms. Sarah Kirksey, Air Section Manager, TCEQ Region 10 – Beaumont
Mr. Scott Wolverton, Blackfin Pipeline, LLC
Mr. Caleb Ryan, Blackfin Pipeline, LLC

TCEQ PERMIT BY RULE INITIAL APPLICATION
30 TAC §§106.352(l), 106.359, 106.511, and 106.512

Blackfin Pipeline, LLC
Batson Compressor Station

Batson, Hardin County, Texas

Prepared By:

TRINITY CONSULTANTS
12700 Park Central Drive
Suite 600
Dallas, TX 75251
(972) 661-8100

July 2024

Project 234401.0179

Trinity Consultants

Certification and Registration for Permits by Rule
Form PI-7-CERT
Page 1
Texas Commission on Environmental Quality

I.	Registrant Information
A. Company or Other Legal Customer Name:	**Blackfin Pipeline, LLC**
B. Company Official Contact Information	☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:
Name:	**Caleb Ryan**
Title:	**Chief Operating Officer**
Mailing Address:	**100 Congress Ave, Ste 2200**
City:	**Austin**
State:	**TX**
ZIP Code:	**78701**
Telephone No.:	**512-953-2105**
Fax No.:	
Email Address:	**caleb@wwm-llc.com**
All PBR registration responses will be sent via e-mail.	
C. Technical Contact Information	☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:
Name:	**Scott Wolverton**
Title:	**Project Manager**
Company Name:	**Blackfin Pipeline, LLC**
Mailing Address:	**100 Congress Ave, Ste 2200**
City:	**Austin**
State:	**TX**
ZIP Code:	**78701**
Telephone No.:	**913-424-0035**
Fax No.:	
Email Address:	**swolverton@wwm-llc.com**

II. Facility and Site Information
A. Name and Type of Facility
Facility Name: **Batson Compressor Station**
Type of Facility: ☒ Permanent ☐ Temporary
For portable units, please provide the serial number of the equipment being registered below.
Serial No(s):
B. Facility Location Information
Street Address: **N/A**
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 the intersection of FM 770 and Hwy 105 E, travel east on Hwy 105 E for 5.1 miles. Turn right (North) onto County Road 2071 and travel 4.6 miles. Turn right onto Pipeline/Lopez Loop and travel 1.1 mile to the site on the right-hand-side of the road.
City: **Batson**
County: **Hardin**
ZIP Code: **77519**
C. TCEQ Core Data Form
Is the Core Data Form (TCEQ Form 10400) attached? ☐ YES ☒ NO
If "NO," provide customer reference number (CN) and regulated entity number (RN) below.
Customer Reference Number (CN): **CN606266211**
Regulated Entity Number (RN): **RN TBD**
D. TCEQ Account Identification Number (if known): **TBD**
E. Type of Action
☒ Initial Application ☐ Change to Registration
For Change to Registration provide the Registration Number: **TBD**
F. PBR number(s) claimed under 30 TAC 106
(List all the individual rule number(s) that are being claimed.)
106. **352(I)**
106. **359**
106. **511**
106. **512**

II. Facility and Site Information *(continued)*		
G. Historical Standard Exemption or PBR		
Are you claiming a historical standard exemption or PBR?	☐ YES	☒ NO
If "YES," enter rule number(s) and associated effective date in the spaces provided below.		
Rule Number:	Effective Date:	
Rule Number:	Effective Date:	
H. 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 dates in the spaces provided below.		
Standard Exemption and PBR Registration Number(s):		
Effective Date:		
I. 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):		
Effective Date:		
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s):		
Effective Date:		
J. 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.		
K. Affected Air Preconstruction Permits		
Does the PBR being claimed directly affect any permitted facility?	☐ YES	☒ NO

II. Facility and Site Information *(continued)*			
If "YES," enter permit number(s) in the spaces provided below.			
L. Federal Operating Permit (FOP) Requirements (30 TAC Chapter 122 Applicability)			
1. Is this facility located at a site which is required to obtain a FOP pursuant to 30 TAC Chapter 122?	☐ YES	☒ NO	☐ To Be Determined
If the site currently has an existing federal operating permit, enter the permit number:			
Check the requirements of 30 TAC Chapter 122 that will be triggered if this certification is accepted. *(check all that apply)*			
☐ Initial Application for an FOP	☐ Significant Revision for an SOP	☐ Minor Revision for an SOP	
☐ Operational Flexibility/off Permit Notification for an SOP		☐ Revision for GOP	
☐ To be determined	☒ None		
2. 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 application (*submitted or under APD review*)	
☒ N/A	☐ SOP application/revision application (*submitted or under APD review*)		
III. Fee Information *(See Section VII. for address to send fee or go to www.tceq.texas.gov/epay to pay online)*			
A. Fee Requirements			
Is a fee required per Title 30 TAC § 106.50?		☒ YES	☐ NO
If "NO," specify the exception. There are three exceptions to paying a PBR fee.		*(check all that apply)*	
1. Registration is solely to establish a federally enforceable emission limit.		☐	
2. Registration is within six-months of an initial PBR review, and it is addressing deficiencies, administrative changes, or other allowed changes.		☐	
3. Registration is for a remediation project (30 TAC §106.533).		☐	
B. Fee amount			
1. A $100 fee is required if any of the answers in III.B.1 are "YES."			
This business has less than 100 employees.		☐ YES	☒ NO
This business has less than 6 million dollars in annual gross receipts.		☐ YES	☒ NO
This registration is submitted by a governmental entity with a population of <10,000.		☐ YES	☒ NO
This registration is submitted by a non-profit organization.		☐ YES	☒ NO

III.	**Fee Information** *(See Section VII. for address to send fee or go to www.tceq.texas.gov/epay to pay online) (continued)*		
2.	A $450 fee is required for all other registrations.		
A.	Payment Information		
Check/money order/transaction or voucher number:	**Paid online via STEERS/ePay**		
Individual or company name on check:			
Fee amount:	**$450**		
Was fee Paid online?		☒ YES	☐ NO
IV.	**Technical Information Including State And Federal Regulatory Requirements** **Check the appropriate box to indicate what is included it in your submittal.** **NOTE:** *Any technical or essential information needed to confirm that facilities are meeting the requirements of the PBR must be provided. Not providing key information could result in an automatic deficiency and voiding of the project.*		
A.	PBR 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 §106.4 are met?		☒ YES	☐ NO
Did you demonstrate that the Individual Requirements of the specific PBR are met?		☒ YES	☐ NO
B.	Confidential Information Included (If confidential information is submitted with this registration, all confidential pages must be properly marked "CONFIDENTIAL")	☐ YES	☒ NO
C.	Process Flow Diagram	☒ YES	☐ NO
D.	Process Description	☒ YES	☐ NO
E.	Maximum Emissions Data and Calculations	☒ YES	☐ NO
Note: *If the facilities listed in this registration are subject to the Mass Emissions Cap & Trade program under* ***30 TAC Chapter 101, Subchapter H, Division 3****, the owner/operator of these facilities must possess NOx allowances equivalent to the actual NOx, emissions from these facilities.*			
F.	Is this certification being submitted to certify the emissions for the entire site?	☒ YES	☐ NO
If "NO", include a summary of the specific facilities and emissions being certified.			
G.	Table 1(a) (Form 10153) Emission Point Summary	☐ YES	☒ NO
H.	Distances to Property Line and Nearest Off-Property Structure		
Distance from this facility's emission release point to the nearest property line:	**≥ 50**	feet	
Distance from this facility's emission release point to the nearest off-property structure:	**≥ 5,280**	feet	

IV. Technical Information Including State And Federal Regulatory Requirements **Check the appropriate box to indicate what is included it in your submittal.** **NOTE:** *Any technical or essential information needed to confirm that facilities are meeting the requirements of the PBR must be provided. Not providing key information could result in an automatic deficiency and voiding of the project.*
I. Project Status
Has the company implemented the project or waiting on a response from TCEQ? ☒ Implemented ☐ Waiting
J. Projected Start of Construction and Projected Start of Operation Dates
Projected start of Construction (provide date):
Projected start of Operation (provide date):
V. Delinquent Fees
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 is paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: www.tceq.texas.gov/agency/financial/fees/delin/index.html.
VI. Signature For Registration And Certification
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 this application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7, Texas Clean Air Act (TCAA), as amended, or any of the air quality rules and regulations 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):
Caleb Ryan
Signature (original signature required):
(e-signed via STEERS)
Date:

VII. Submitting Copies of the Certification and Registration

Copies must be sent as listed below:
Processing delays may occur if copies are not sent as noted.

Who	Where	What
Air Permits Initial Review Team (APIRT)	Regular, Certified, Priority Mail MC 161, P.O. Box 13087 Austin, Texas 78711-3087 Hand Delivery, Overnight Mail MC 161, 12100 Park 35 Circle, Building C, Third Floor Austin, Texas 78753	Originals Form PI-7-CERT, Core Data Form and all attachments. Not required if using ePermits[1].
Revenue Section, TCEQ	Regular, Certified, Priority Mail MC 214, P.O. Box 13088 Austin, Texas 78711-3088 Hand Delivery, Overnight Mail MC 214, 12100 Park 35 Circle, Building A, Third Floor Austin, Texas 78753	Original Money Order or Check, Copy of Form PI-7-CERT and Core Data Form. Not required if fee was paid using ePay[2].
Appropriate TCEQ Regional Office	To find your Regional Office address, go to the TCEQ website at ww.tceq.texas.gov/agency/directory/region, or call (512) 239-1250.	Copy of Form PI-7-CERT, Core Data Form, and all attachments. Not required if using ePermits.
Appropriate Local Air Pollution Control Program(s)	To Find your local or Regional Air Pollution Control Programs go to the TCEQ, APD website at www.tceq.texas.gov/permitting/air/local_programs.html, or call (512) 239-1250	Copy of Form PI-7-CERT, Core Data Form, and all attachments.

[1] ePermits located at **www.3.tceq.texas.gov/steers/**

[2] ePay located at **www.tceq.texas.gov/epay**

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SECTION 1

Project Overview

Project Information

Section 1.1

General Information	
Company Name	Blackfin Pipeline, LLC
Site Name	Batson Compressor Station
Authorization	Permits by Rule (PBRs) §§106.352(l), 106.359, 106.511, and 106.512
Application Type	Initial Application
PBR Project Type	Registration & Certification (Form PI-7 CERT)
SIC Code	4922
NAICS	486210
Nearest City or Town	Batson
Zip Code	77519
County	Hardin
Area Attainment Status	Classified as attainment or unclassified for all pollutants Source: U.S. EPA Green Book; http://www3.epa.gov/airquality/greenbook/anayo_tx.html
TCEQ Region	Region 10, Beaumont
Latitude	30.311190
Longitude	-94.655565
State	Texas
Driving Directions	From the intersection of FM 770 and Hwy 105 E, travel east on Hwy 105 E for 5.1 miles. Turn right (North) onto County Road 2071 and travel 4.6 miles. Turn right onto Pipeline/Lopez Loop and travel 1.1 mile to the site on the right-hand-side of the
Distance to Nearest Property Line	≥ 50 ft
Distance to Nearest Receptor	≥ 5,280 ft
Customer Number	CN606266211
Regulated Number	RN TBD
Permit/Registration Number	TBD
Date of Application	July 2024

Project Information

Section 1.1

Contact Information	Technical Contact	Responsible Official
Contact Name	Scott Wolverton	Caleb Ryan
Organization	Blackfin Pipeline, LLC	Blackfin Pipeline, LLC
Title	Project Manager	Chief Operating Officer
Address	100 Congress Ave, Ste 2200	100 Congress Ave, Ste 2200
City	Austin	Austin
State	TX	TX
Zip	78701	78701
Telephone	913-424-0035	512-953-2105
Email	swolverton@wwm-llc.com	caleb@wwm-llc.com

Project Scope

Blackfin Pipeline, LLC (Blackfin) owns and operates the Batson Compressor Station, a new natural gas compressor station located near Batson in Hardin County, Texas. The purpose of this application is to register the facilities, listed in the table at the end of this section, under Permits by Rule (PBRs) §§106.352(l), 106.359, 106.511, and 106.512 (Registration No. TBD).

This project includes the emission sources listed in the table at the end of this section. This application provides the information necessary to demonstrate compliance with all applicable state and federal standards and authorization being claimed.

Process Description

The Batson Compressor Station is a natural gas compressor station. Residue gas from gas processing plants is received and transferred by pipeline to the Batson Compressor Station. After the gas enters the station, it passes through an inlet scrubber where wastewater is separated from the inlet gas. The only liquids expected to be dropped out of the separator are small volumes of wastewater.

After passing through the inlet scrubber, inlet gas is routed to the compressor system, which consists of the four turbines (EPNs: TURB1, TURB2, TURB3, TURB4). The proposed turbines will be four (4) new and identical Solar® Titan 250 gas turbine-driven compressor units. Each turbine drives a centrifugal compressor, which recompresses the natural gas. Increasing the pressure of the natural gas creates the energy needed to move the gas through the transmission pipeline. The turbines will use natural gas from the pipeline as fuel.

The new turbines will have a simple cycle design and will be built with the SoLoNOXTM dry low emissions (DLE) technology. Solar®'s proprietary SoLoNO$_X$^{TM} dry emissions system will reduce pollution by limiting the formation of NO$_X$, CO, and unburned hydrocarbons (UHC) to meet emission regulations. Emissions of SO$_2$ and PM/PM$_{10}$/PM$_{2.5}$ will be minimized through the use of pipeline quality natural gas. The compressed, dry, sweet gas will leave the facility through the discharge pipeline. There may be some wastewater that falls out of the sealable natural gas coming from upstream compression, and this wastewater is collected and stored in the wastewater tank (EPN: WWTK). A small quantity of lube oil (EPN: LUBETK) is stored on site and used as lubricant. Diesel is also stored on site for fuel for the emergency generator (EPN: DIESELTK).

Additional sources include a diesel-fired emergency engine and sitewide fugitives from equipment leaks (EPNs: EMERGEN1 and FUG, respectively). Planned MSS emissions including compressor blowdowns (FIN: BLDWN), pipeline blowdowns (FIN: PIPEBD), turbine start-up/shutdown events (FIN: MSS-TURBINE), miscellaneous surface coating and abrasive blasting operations (FIN: SCAB), and low-emitting MSS activities (FIN: MSS-MISC) are also authorized at the site. All MSS emissions are vented directly to the atmosphere (EPN: MSS).

A simplified process flow diagram is included in this section (see Section 1.3).

Project Information

Section 1.1

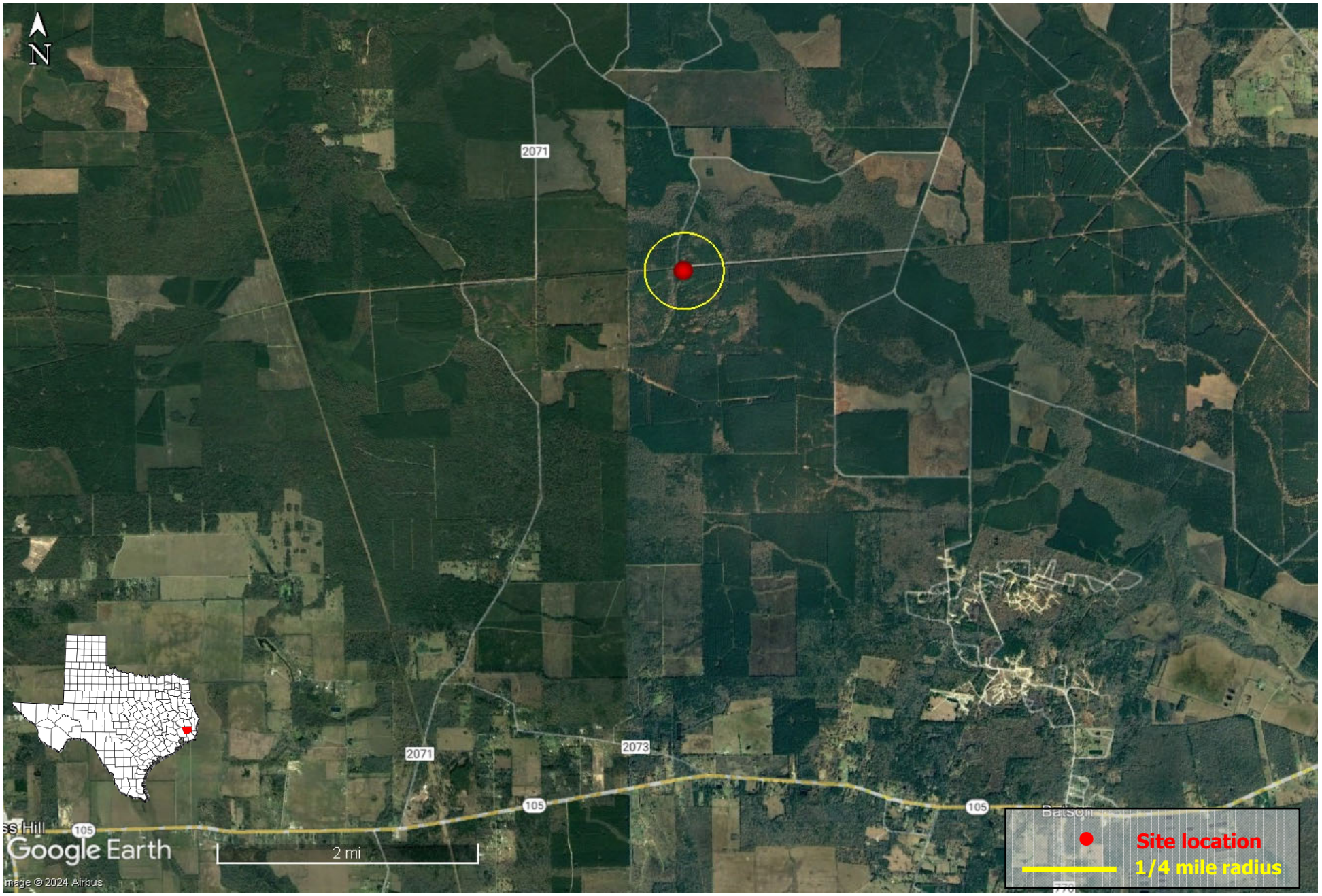
Sulfur Content	
Maximum H_2S Content of Production (ppm_v)	≤10.0
Is the production sweet or sour?	Sweet

Project Information

Section 1.1

Site Operations, Equipment, and Emission Sources

Equipment/Activity Category	Source Name:	EPN(s):	FIN(s):	Description
Compressor Turbine	Solar Titan 250 Turbine 1	TURB1	TURB1	30,079-hp Simple Cycle turbine
Compressor Turbine	Solar Titan 250 Turbine 2	TURB2	TURB2	30,079-hp Simple Cycle turbine
Compressor Turbine	Solar Titan 250 Turbine 3	TURB3	TURB3	30,079-hp Simple Cycle turbine
Compressor Turbine	Solar Titan 250 Turbine 4	TURB4	TURB4	30,079-hp Simple Cycle turbine
Emergency Diesel Engine	Emergency Generator Engine	EMGEN1	EMGEN1	2,150-hp diesel-fired engine. Annual Operation = 100 hr/yr
Fixed Roof Storage Tank	Wastewater Tank	WWTK	WWTK	93-bbl Horizontal Tank; Annual Throughput: 365 bbl/yr
Ancilliary/Miscellaneous Tank	Diesel Fuel Storage Tank	DIESELTK	DIESELTK	126-bbl Horizontal Tank; Annual Throughput: 1,512 bbl/yr
Ancilliary/Miscellaneous Tank	Lube Oil Tank	LUBETK	LUBETK	Emissions are deemed negligible based on engineering judgement due to low vapor pressure and throughput
Truck Loading	Wastewater Loading	WWTL	WWTL	Uncontrolled loading; 36,500 bbl/yr of wastewater loaded
MSS	Compressor Blowdowns	MSS	BLDWN	533,946 scf/event/unit; 36 events/yr/unit
MSS	Turbine Start-up/ Shutdown Events	MSS	MSS-TURBINE	36 events/yr/turbine
MSS	Pipeline Maintenance & Blowdowns	MSS	PIPEBD	2,305,861 scf/event; 5 events/yr
MSS	Miscellaneous MSS Activities	MSS	MSS-MISC	TCEQ miscellaneous MSS activities
MSS	Surface Coating & Blasting	SCAB	SCAB	Painting and abrasive blasting activities
Fugitives	Piping Component Fugitives	FUG	FUG	--



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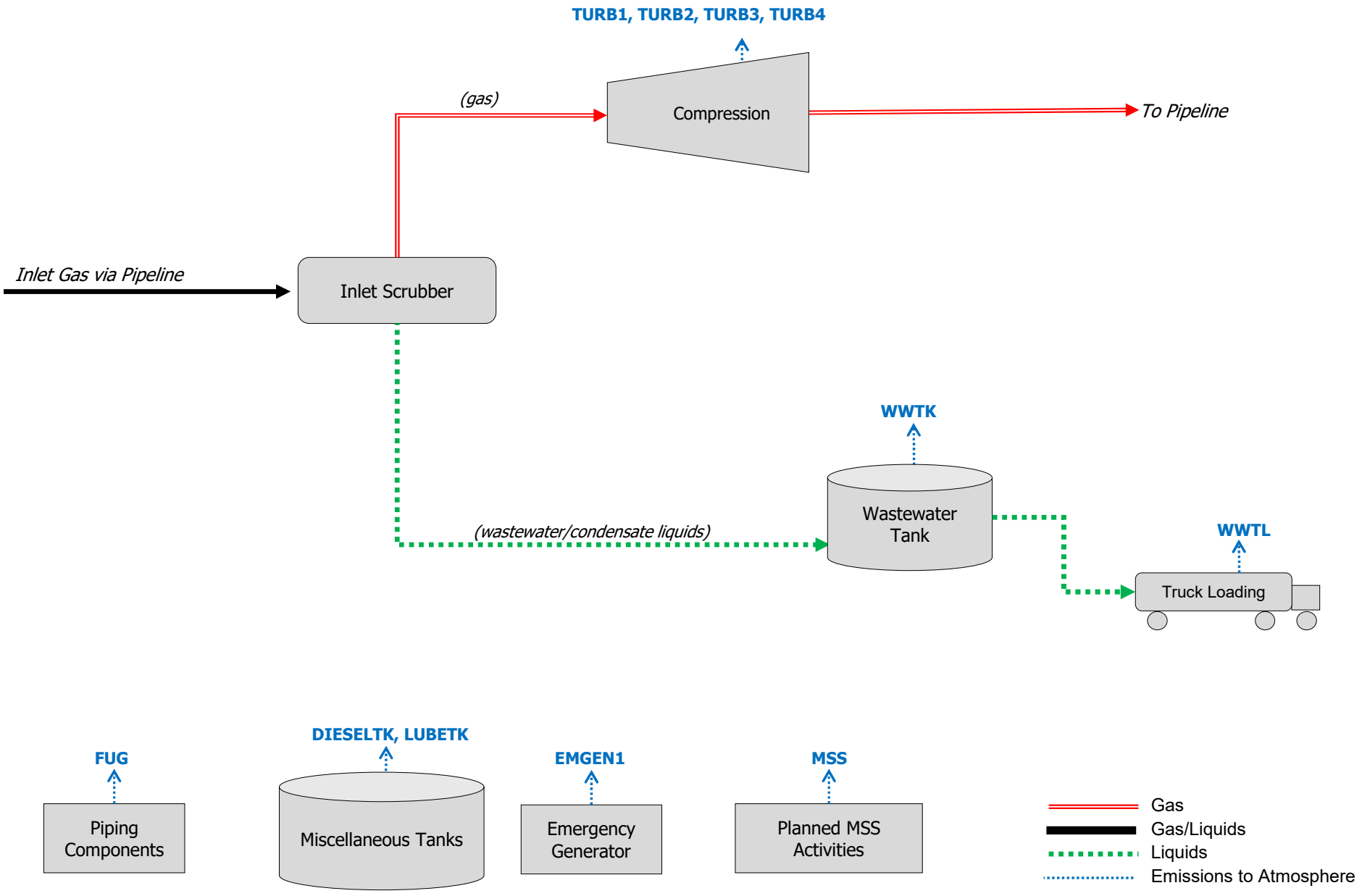
Batson Compressor Station
Blackfin Pipeline, LLC
Hardin County (30.31119, -94.655565)

Section 1.2
AREA MAP



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Batson Compressor Station
Blackfin Pipeline, LLC
July 2024

Section 1.3
PROCESS FLOW DIAGRAM

Emission Summary

Section 1.4

EPN	FIN	Source Name	VOC		NO_x		CO		$PM_{TOTAL/10/2.5}$		SO_2		H_2S		HAPs	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
TURB1	TURB1	Solar Titan 250 Turbine 1	0.74	3.24	11.73	51.38	11.90	52.14	0.06	0.26	0.67	2.93	--	--	0.12	0.51
TURB2	TURB2	Solar Titan 250 Turbine 2	0.74	3.24	11.73	51.38	11.90	52.14	0.06	0.26	0.67	2.93	--	--	0.12	0.51
TURB3	TURB3	Solar Titan 250 Turbine 3	0.74	3.24	11.73	51.38	11.90	52.14	0.06	0.26	0.67	2.93	--	--	0.12	0.51
TURB4	TURB4	Solar Titan 250 Turbine 4	0.74	3.24	11.73	51.38	11.90	52.14	0.06	0.26	0.67	2.93	--	--	0.12	0.51
EMGEN1	EMGEN1	Emergency Generator Engine	0.67	0.03	31.09	1.55	2.56	0.13	1.32	0.07	19.10	0.95	--	--	0.03	<0.01
WWTK	WWTK	Wastewater Tank	0.24	<0.01	--	--	--	--	--	--	--	--	--	--	--	--
DIESELTK	DIESELTK	Diesel Fuel Storage Tank	0.15	<0.01	--	--	--	--	--	--	--	--	--	--	--	--
LUBETK	LUBETK	Lube Oil Tank	<0.01	<0.01	--	--	--	--	--	--	--	--	--	--	--	--
WWTL	WWTL	Wastewater Loading	0.28	<0.01	--	--	--	--	--	--	--	--	--	--	--	--
MSS	BLDWN	Compressor Blowdowns	65.35	3.76	--	--	--	--	--	--	--	--	0.19	0.01	--	--
MSS	MSS-TURBINE	Turbine Start-up/ Shutdown Events	4.00	0.29	2.00	0.14	45.00	3.24	--	--	--	--	--	--	--	--
MSS	PIPEBD	Pipeline Maintenance & Blowdowns	282.21	0.71	--	--	--	--	--	--	--	--	0.82	<0.01	--	--
MSS	MSS-MISC	Miscellaneous MSS Activities	0.06	0.25	--	--	--	--	--	--	--	--	--	--	<0.01	0.01
SCAB	SCAB	Surface Coating & Blasting	0.08	0.35	--	--	--	--	0.13	0.01	--	--	--	--	--	--
FUG	FUG	Piping Component Fugitives	0.12	0.52	--	--	--	--	--	--	--	--	<0.01	<0.01	--	--
TOTAL EMISSIONS			356.10	**18.87**	80.02	**207.22**	95.18	**211.93**	1.69	**1.13**	21.77	**12.69**	1.01	**0.01**	0.50	**2.07**

Emission Summary - Emission Limit Review

Section 1.5

EMISSIONS TYPE	VOC	NO_x	CO	PM	PM_{10}	$PM_{2.5}$	SO_2	H_2S	HAPs
TOTAL HOURLY EMISSIONS								**1.01 lb/hr**	
HOURLY EMISSIONS LIMITS - PBR §106.352(l)								*4.00 lb/hr*	
TOTAL ANNUAL EMISSIONS	**18.87 tpy**	**207.22 tpy**	**211.93 tpy**	**1.11 tpy**	**0.65 tpy**	**0.24 tpy**	**12.69 tpy**	**0.01 tpy**	**2.07 tpy**
TOTAL ANNUAL EMISSION LIMITS	*25 tpy*	*250 tpy*	*250 tpy*	*25 tpy*	*15 tpy*	*10 tpy*	*25 tpy*	*25 tpy*	*no limit*

FEDERAL EMISSION THRESHOLDS	VOC	NO_x	CO	PM	PM_{10}	$PM_{2.5}$	SO_2	H_2S	HAPs
TOTAL EMISSIONS MINUS FUGITIVES [1]	**18.35 tpy**	**207.22 tpy**	**211.93 tpy**	**1.11 tpy**	**0.65 tpy**	**0.24 tpy**	**12.69 tpy**	**0.01 tpy**	**2.07 tpy**
Title V Major Source Thresholds	*100 tpy*	*100 tpy*	*100 tpy*	*100 tpy*	*100 tpy*	*100 tpy*	*100 tpy*	*100 tpy*	*25 tpy*
Less than Threshold?	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
PSD Major Source Thresholds	*250 tpy*	*250 tpy*	*250 tpy*	*250 tpy*	*250 tpy*	*250 tpy*	*250 tpy*	*250 tpy*	
Less than Threshold?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

[1] Because this site is not a named source, fugitive emissions are not considered in federal major source threshold comparisons.

SECTION 5

Lab Analyses & Compositions

Batson Compressor Station
Blackfin Pipeline, LLC
TCEQ Permit by Rule Initial Application
July 2024

Inlet Gas Composition

Section 2.1

Gas Sample Information	
Site	Waha Compressor Station GC Data
Gas Sample Type	Representative Sample
Point in Process	Inlet Gas

Component	**Molecular Weight** lb/lb-mole	**Mole %**	**Weight %**	**Heating Values**	
				Net/LHV Btu/scf	**Gross/HHV** Btu/scf
H_2S	34.08	0.0004%	0.0008%	586.8	637.02
Nitrogen	28.01	3.0250%	4.9966%	--	--
Carbon Dioxide	44.01	0.1340%	0.3477%	--	--
Methane (C1)	16.04	93.2670%	88.2262%	909.4	1,009.7
Ethane (C2)	30.07	3.4690%	6.1507%	1,618.7	1,768.7
Propane (C3)	44.10	0.0990%	0.2574%	2,314.9	2,517.2
Isobutane (i-C4)	58.12	0.0020%	0.0069%	3,000.4	3,256.6
n-Butane (n-C4)	58.12	0.0040%	0.0137%	3,010.8	3,262.0
Isopentane (i-C5)	72.15	--	--	3,699.0	3,999.7
n-Pentane (n-C5)	72.15	--	--	3,703.9	4,000.7
Other Hexanes (C6)	86.18	--	--	4,395.14	4,747.3
Heptanes (C7)	100.20	--	--	5,100.3	5,502.5
Octanes (C8)	114.23	--	--	5,796.2	6,248.9
Nonanes (C9)	128.25	--	--	6,493.6	6,996.5
Decanes Plus (C10+)	142.28	--	--	7,189.9	7,742.9
Benzene	78.11	--	--	3,590.9	3,741.9
Toluene	92.14	--	--	4,273.6	4,474.8
Ethylbenzene	106.16	--	--	4,970.5	5,222.1
Xylenes	106.17	--	--	4,958.2	5,208.7
n-Hexane	86.18	--	--	4,395.14	4,756.1
2,2,4-Trimethylpentane	114.23	--	--	5,778.9	6,231.7
Totals:	**16.96**	**100.00%**	**100.00%**	**906.8**	**1,005.76**

Other Sample Properties	**Value**	**Unit**
TOC	94.6549%	Weight %
VOC	0.2780%	Weight %
HAPs	0.0000%	Weight %

Batson Compressor Station
Blackfin Pipeline, LLC
TCEQ Permit by Rule Initial Application
July 2024

Fuel Gas Composition

Section 2.2

Gas Sample Information	
Site	Solar Predicted Engine Performance
Gas Sample Type	Representative Sample
Point in Process	Fuel Gas
Enter H_2S ppmv to Overwrite Analysis Mole%	4 ppmv

Component	**Molecular Weight** lb/lb-mole	**Mole %**	**Weight %**	**Heating Values**	
				Net/LHV Btu/scf	**Gross/HHV** Btu/scf
H_2S	34.08	--	0.00082%*	586.8	637.02
Nitrogen	28.01	1.4500%	2.4471%	--	--
Carbon Dioxide	44.01	0.0600%	0.1591%	--	--
Methane (C1)	16.04	95.9500%	92.7376%	909.4	1,009.7
Ethane (C2)	30.07	2.5000%	4.5290%	1,618.7	1,768.7
Propane (C3)	44.10	0.0400%	0.1063%	2,314.9	2,517.2
Isobutane (i-C4)	58.12	0.0013%	0.0046%	3,000.4	3,256.6
n-Butane (n-C4)	58.12	0.0015%	0.0053%	3,010.8	3,262.0
Isopentane (i-C5)	72.15	--	--	3,699.0	3,999.7
n-Pentane (n-C5)	72.15	0.0016%	0.0070%	3,703.9	4,000.7
Other Hexanes (C6)	86.18	0.0008%	0.0042%	4,395.14	4,747.3
Heptanes (C7)	100.20	--	--	5,100.3	5,502.5
Octanes (C8)	114.23	--	--	5,796.2	6,248.9
Nonanes (C9)	128.25	--	--	6,493.6	6,996.5
Decanes Plus (C10+)	142.28	--	--	7,189.9	7,742.9
Benzene	78.11	--	--	3,590.9	3,741.9
Toluene	92.14	--	--	4,273.6	4,474.8
Ethylbenzene	106.16	--	--	4,970.5	5,222.1
Xylenes	106.17	--	--	4,958.2	5,208.7
n-Hexane	86.18	--	--	4,395.14	4,756.1
2,2,4-Trimethylpentane	114.23	--	--	5,778.9	6,231.7
Totals:	**16.60**	**100.01%**	**100.00%**	**914.14**	**1,014.22**

*Note: Due to the natural variation of H_2S in gas, the H_2S weight% has been adjusted to reflect the above H_2S concentration of up to 4 ppmv which is used in the emission calculations.

Other Sample Properties	**Value**	**Unit**
TOC	97.3938%	Weight %
VOC	0.1272%	Weight %
HAPs	0.0000%	Weight %

SECTION 3

Emission Calculations

Natural Gas-fired Turbines

Section 3.1

EPN(s): TURB1, TURB2, TURB3, TURB4
FIN(s): TURB1, TURB2, TURB3, TURB4
Source Name: **Solar Titan 250 Turbines**

Total Emissions:

Pollutant	lb/hr	tpy	lb/hr/turbine	tpy/turbine
VOC	2.96	12.96	0.74	3.24
NOx	46.92	205.52	11.73	51.38
CO	47.62	208.56	11.90	52.14
$PM_{TOTAL/10/2.5}$	0.24	1.05	0.06	0.26
SO_2	2.68	11.73	0.67	2.93
HCHO	0.17	0.72	0.04	0.18
Benzene	0.01	0.04	<0.01	0.01
HAPs	0.47	2.06	0.12	0.51

Calculation Basis:

Emissions from the natural gas-fired turbine, including NO_x, CO, VOC, SO_2, PM, HCHO, and HAP, are calculated in accordance with US EPA's AP-42 Chapter 3.1, according to fuel type, method of control, and emission factors as indicated in the below emission calculations.

VOC emissions are based on 10% of the unburned hydrocarbon (UHC) emission rate per Solar Turbines PIL 168, Rev 4, May 14, 2012.

Fuel heat content is based on the representative sample taken from Solar Predicted Engine Performance - Fuel Gas

PM emissions, including filterable and condensable PM10 and PM2.5, are calculated using updated emission factors developed by EPA and documented in EPA's "NG_process_gas_LPG_PM_factors" spreadsheet (Revision date March 2012; *https://www.epa.gov/sites/default/files/2018-11/natgas_procgas_lpg_pm_efs_not_ap42_032012_revisions.xlsx*).

No control efficiency is applied to the HAP emissions. Represented HAP emissions are worst-case uncontrolled.

Background Information:

Turbine Data

Engine Manufacturer	Solar	
Engine Model	Titan 250-31900S	
Turbine Manufacture Date	After	5/1/2023
Turbine Serial Number	TBD	
Turbine Application	Gas Compression	
Number of Turbines	4	
Cycle	Simple Cycle	
Method of Emission Control	SoLoNOx DLE Technology	
Horsepower	30,079	hp
Power Output	22,430	kWm
Fuel Consumption Rate	6,547	Btu/hp-hr
Annual Operation	8,760	hr/yr

Stack Parameters

Stack Height	≥ 55.0	ft
Stack Diameter	10.8	ft
Stack Temperature	870	°F
Stack Flow	307,176	cfm
	56.4	fps

Federal/State Standards Applicability

NSPS Subpart KKKK	Yes
MACT Subpart YYYY	Yes
30 TAC Chapter 117	No

Natural Gas-fired Turbines

Section 3.1

EPN(s): TURB1, TURB2, TURB3, TURB4
FIN(s): TURB1, TURB2, TURB3, TURB4
Source Name: **Solar Titan 250 Turbines**

Fuel Data

Basis for Fuel Heat Content		Solar Predicted Engine Performance - Fuel Gas
Primary Fuel type		Natural Gas
Heat Content	(LHV)	914 Btu/scf
	(HHV)	1,014 Btu/scf

Optional Turbine Data

No. of Cylinders	
Compression Ratio	

Emission Factors (EF) from Vendor/Manufacturer

Pollutant	Unit	Pre-control	% Reduction	Post-control	Source of EF Data
NOx	lb/MMBtu			0.05957	Vendor (15 ppm NOx)
CO	lb/MMBtu			0.06045	Vendor (25 ppm CO)
UHC	lb/MMBtu		N/A	0.035	Vendor
VOC	lb/MMBtu		N/A	0.0035	Vendor/Solar PIL 168
HCHO	lb/MMBtu		N/A	0.00021	Vendor/Solar PIL 168

Does **VOC** EF include formaldehyde (HCHO)?	No
Does **VOC** EF include acetaldehyde/acrolein (aldehydes)?	No

Emission Calculations:

Pollutants	Emission Factor (EF)	Units	Source of Emission Factor	Turbine Emissions	
				lb/hr	tpy
VOC w/o Aldehydes	0.0035	lb/MMBtu	Vendor/Solar PIL 168	**0.69**	**3.02**
VOC (with Aldehydes)	---	---	See Note [1]	**0.74**	**3.24**
NO_x	0.0595682	lb/MMBtu	Vendor (15 ppm NOx)	**11.73**	**51.38**
CO	0.0604493	lb/MMBtu	Vendor (25 ppm CO)	**11.90**	**52.14**
PM (condensable)	0.0001373	lb/MMBtu	Updated EPA Factors	**0.03**	**0.12**
PM_{10} (filterable)	0.0001667	lb/MMBtu	Updated EPA Factors	**0.03**	**0.14**
$PM_{2.5}$ (filterable)	0.000049	lb/MMBtu	Updated EPA Factors	**0.01**	**0.04**
$PM_{TOTAL/10/2.5}$	0.0003039	lb/MMBtu	Updated EPA Factors	**0.06**	**0.26**
SO_2	0.0034	lb/MMBtu	AP-42, Table 3.1-2a	**0.67**	**2.93**
TOTAL HAP	--	--	See Speciated HAP	**0.12**	**0.51**

[1] Formaldehyde, acetaldehyde, and acrolein emissions have been added to the VOC without aldehydes emissions to yield total VOC.

Natural Gas-fired Turbines

Section 3.1

EPN(s): TURB1, TURB2, TURB3, TURB4
FIN(s): TURB1, TURB2, TURB3, TURB4
Source Name: **Solar Titan 250 Turbines**

Emission Calculations - Speciated HAP:

Pollutants	Emission Factor (EF)	Units	Source of Emission Factor	Engine Emissions	
				lb/hr	tpy
1,3-Butadiene	0.0000004	lb/MMBtu	AP-42, Table 3.1-2a	**8.47E-05**	**3.71E-04**
Acetaldehyde	0.00004	lb/MMBtu	AP-42, Table 3.1-2a	**0.01**	**0.03**
Acrolein	0.0000064	lb/MMBtu	AP-42, Table 3.1-2a	**1.26E-03**	**0.01**
Benzene	0.000012	lb/MMBtu	AP-42, Table 3.1-2a	**2.36E-03**	**0.01**
Ethylbenzene	0.00013	lb/MMBtu	AP-42, Table 3.1-2a	**0.03**	**0.11**
Formaldehyde (HCHO)	0.00021	lb/MMBtu	Vendor	**0.04**	**0.18**
Naphthalene	0.0000013	lb/MMBtu	AP-42, Table 3.1-2a	**2.56E-04**	**1.12E-03**
PAH	0.0000022	lb/MMBtu	AP-42, Table 3.1-2a	**4.33E-04**	**1.90E-03**
Toluene	0.00013	lb/MMBtu	AP-42, Table 3.1-2a	**0.03**	**0.11**
Xylenes	0.000064	lb/MMBtu	AP-42, Table 3.1-2a	**0.01**	**0.06**

Equations used:

A. Pollutant Emissions, lb/hr = (Pollutant EF, g/hp-hr) x (Turbine Horsepower, hp) / (453.5924 g/lb)

B. Pollutant Emissions, lb/hr = (Pollutant EF, lb/MMBtu) x (Turbine Horsepower, hp) x (Fuel Consumption, Btu/hp-hr) / (10^6 Btu/MMBtu)

C. Pollutant Emissions, tpy = (Pollutant Emissions, lb/hr) x (Annual Operation, hr/yr) / (2,000 lb/ton)

Texas Commission on Environmental Quality
Table 31
Combustion Turbines

Equipment Information	
Manufacturer: **Solar**	
Model No. **Titan 250-31900S**	Serial No. **TBD**
Emission Point Number (EPN) From Table 1(a): **TURB1, TURB2, TURB3, TURB4**	

Turbine Application

☐ Electric Generation ☐ Base Load ☐ Peaking ☐ Load Following ☒ Gas Compression

☐ Other (specify): _____

Cycle

☒ Simple Cycle **8,760** hours/year ☐ Regenerative Cycle ☐ Cogeneration ☐ Combined Cycle

Model represented is based on *(30 TAC §116.116(a))*

☐ Preliminary Design ☒ Contract Award ☐ Other (specify): _____

Nominal Power Output at Baseload, ISO: **30,079** ☐ MW or ☒ hp

Manufacturer's rated gross heat rate at baseload at expected conditions (efficiency in BTU/hp-hr):

6,547 BTU/hp-hr

Fuel Data

Primary Fuels:

☒ Natural Gas (Sulfur content **1.5** gr S/100 dscf; HHV **1,014** Btu/scf)

☐ Process Offgas ☐ Landfill/Digester Gas ☐ Fuel Oil ☐ Refinery Gas

☐ Other (specify): _____

Backup Fuels:

☒ Not Provided ☐ Process Offgas ☐ Ethane ☐ Fuel Oil ☐ Refinery Gas

☐ Other (specify): _____

If using fuels other than natural gas, attach fuel analyses, including maximum sulfur content, heating value (specify LHV or HHV) and mole percent of gaseous constituents.

Emissions Data

Attach manufacturer's information showing emissions of NO_X, CO, VOC, SO_X, and PM for each proposed fuel at turbine loads and site ambient temperatures representative of the range of proposed operation. The information must be sufficient to determine maximum hourly and annual emission rates. Annual emissions may be based on a conservatively low approximation of site annual average temperature. Provide emissions in pounds per hour and except for PM, parts per million by volume at actual conditions and corrected to dry, 15% oxygen conditions. In Table 1(a), provide speciation of $PM/PM_{10}/PM_{2.5}$.

Method of Emission Control:

☐ Lean-Premix Combusto ☐ Oxidation Catalys ☐ Water Injection

☐ Low-NOx Combustors ☐ SCR Catalyst ☐ Steam Injection

☒ Other (specify): **SoLoNOx DLE Technology**

Emergency Diesel Engine

Section 3.2

EPN(s): EMGEN1
FIN(s): EMGEN1
Source Name: **Emergency Generator Engine**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	0.67	0.03
NOx	31.09	1.55
CO	2.56	0.13
$PM_{TOTAL/10/2.5}$	1.32	0.07
SO_2	19.10	0.95
HCHO	<0.01	<0.01
Benzene	0.01	<0.01
HAPs	0.03	<0.01

Calculation Basis:

Emissions from the diesel-fired internal combustion engine, including NO_x, CO, VOC, SO_2, PM, HCHO, and HAP, are calculated in accordance with US EPA's AP-42 Chapter 3.4, according to emission factors as indicated in the below emission calculations.

Fuel Heat Value (19,433 Btu/lb) for diesel fuel is based on the following values from AP-42 Appendix A, https://www3.epa.gov/ttnchie1/ap42/appendix/appa.pdf:
- 137,000 Btu/gal taken from Liquid Fuels/Diesel in table: "Typical Parameters of Various Fuels"
- Fuel density of 7.05 lb/gal taken from Fuels/Distillate Oil in table: "Densities of Selected Substances"

Background Information:

Diesel Engine Data

Engine Manufacturer	CAT DIESEL GENSET	
Engine Model	TBD	
Engine Manufacture Date	After	7/1/2010
Engine Construction Date	After	6/12/2006
Number of Engines	1	
Engine Rebuild Date	N/A	
Engine Serial Number	TBD	
Engine Application	Emergency	
Method of Emission Control	None	
Horsepower	2,150	hp
Fuel Consumption Rate	138	gal/hr
Fuel Consumption Rate	8,793	Btu/hp-hr
Annual Operation	100	hr/yr

Stack Parameters

Stack Height	≥ 15.0	ft
Stack Diameter	n/a	ft
Stack Temperature	n/a	°F
Stack Flow	n/a	cfm
	TBD	fps

Federal/State Standards Applicability

NSPS Subpart IIII	Yes
MACT Subpart ZZZZ	Yes
30 TAC Chapter 117	No

Emergency Diesel Engine

Section 3.2

EPN(s): EMGEN1
FIN(s): EMGEN1
Source Name: **Emergency Generator Engine**

Fuel Data

Basis for Fuel Heat Content	No. 2 Diesel (AP-42)
Fuel type	Diesel
Heat Content	19,433 Btu/lb
	137,000 Btu/gal

Optional Engine Data

No. of Cylinders	12
Compression Ratio	10:1

Emission Factors (EF)

Pollutant	Unit	Pre-control	---	---	Source of EF Data
NOx	g/hp-hr	6.56			Vendor/EPA Tier 2
CO	g/hp-hr	0.54			Vendor/EPA Tier 2
VOC	g/hp-hr	0.14			Vendor/EPA Tier 2

Does VOC EF Include Aldehydes?	No

Emission Calculations:

Pollutants	Emission Factor (EF)	Units	Source of Emission Factor	Engine Emissions	
				lb/hr	tpy
VOC (w/o Aldehydes)	0.14	g/hp-hr	Vendor/EPA Tier 2	**0.66**	**0.03**
VOC (with Aldehydes)	---	---	See Note [1]	**0.67**	**0.03**
NO_x	6.56	g/hp-hr	Vendor/EPA Tier 2	**31.09**	**1.55**
CO	0.54	g/hp-hr	Vendor/EPA Tier 2	**2.56**	**0.13**
PM (condensable)	0.0077	lb/MMBtu	AP-42, Table 3.4-1	**0.15**	**0.01**
PM_{10} (filterable)	0.062	lb/MMBtu	AP-42, Table 3.4-1	**1.17**	**0.06**
$PM_{TOTAL/10/2.5}$	0.0697	lb/MMBtu	AP-42, Table 3.4-1	**1.32**	**0.07**
SO_2	1.01	lb/MMBtu	AP-42, Table 3.4-1	**19.10**	**0.95**
TOTAL HAP	--	--	See Speciated HAP	**0.03**	**1.41E-03**

Emergency Diesel Engine

Section 3.2

EPN(s): EMGEN1
FIN(s): EMGEN1
Source Name: **Emergency Generator Engine**

Emission Calculations - Speciated HAP:

Pollutants	Emission Factor (EF)	Units	Source of Emission Factor	Engine Emissions	
				lb/hr	tpy
Acetaldehyde	0.0000252	lb/MMBtu	AP-42, Table 3.4-1	**4.76E-04**	**2.38E-05**
Acrolein	0.0000079	lb/MMBtu	AP-42, Table 3.4-1	**1.49E-04**	**7.45E-06**
Benzene	0.000776	lb/MMBtu	AP-42, Table 3.4-1	**0.01**	**7.34E-04**
Formaldehyde (HCHO)	0.0000789	lb/MMBtu	AP-42, Table 3.4-1	**1.49E-03**	**7.46E-05**
Naphthalene	0.00013	lb/MMBtu	AP-42, Table 3.4-1	**2.46E-03**	**1.23E-04**
Toluene	0.000281	lb/MMBtu	AP-42, Table 3.4-1	**0.01**	**2.66E-04**
Xylenes	0.000193	lb/MMBtu	AP-42, Table 3.4-1	**3.65E-03**	**1.82E-04**

Equations used:

A. Pollutant Emissions, lb/hr = (Pollutant EF, g/hp-hr) X (Engine Horsepower, hp) / (453.5924 g/lb)

B. Pollutant Emissions, lb/hr = (Pollutant EF, lb/MMBtu) X (Engine Horsepower, hp) X (Fuel Consumption, Btu/hp-hr) / (10^6 Btu/MMBtu)

C. Pollutant Emissions, tpy = (Pollutant Emissions, lb/hr) X (Annual Operation, hr/yr) / (2,000 lb/ton)

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Total Emissions

Pollutant	lb/hr	tpy
VOC	0.24	1.79E-03

Calculation Basis:

Emissions from fixed roof tanks are a result of working and standing (W&S) losses. Working losses occur during tank filling because the rising liquid causes vapors inside the tank to be displaced and expelled through the tank breather vent. Standing losses occur because of the daily temperature fluctuations. During the day, the temperature will increase, causing the vapors in the tank vapor space to expand, and therefore be expelled through the tank breather vent. W&S Losses were calculated using equations from AP-42, Chapter 7 (dated 06/2020). Short-term emissions were calculated using guidance from the TCEQ's Air Permit Reviewer Reference Guide APDG 6250v3, "Estimating Short Term Emission Rates from Fixed Roof Tanks", 02/2020.

Background Information:

Tank Data

Type:	Horizontal Tank
Capacity:	93 bbl
Shell Diameter (**D**):	6.0 ft
Tank Length:	18.5 ft
Type of Roof:	
Underground Tank?	No
Average Liquid Height (ft):	n/a
n/a	
Shell Color/Shade:	Gray/Light
Shell Condition:	Average
n/a	
n/a	

Breather Vent - Pressure Setting (P_{BP}):	0.03 psig
Breather Vent - Vacuum Setting (P_{BV}):	-0.03 psig
Tank Fill Method:	Submerged
Constant-Level Tank?	No
Maximum Liquid Height (H_{LX}):	n/a
Average Change in Liquid Height (H_{LX}-H_{LN}):	n/a
Maximum Fill Rate (Q_{MAX}):	93 bbl/hr
Is tank vapor balanced?	No
Does flash occur in the tank?	No

Location

Nearest City (Used for Meteorolgical Data):	Houston, TX

Annual Emissions Basis

Using Annual Avg parameters, or sum of monthly emissions?	Annual Average

Tank Throughput

Annual Throughput:	365	bbl/yr
Number of Turnovers (**N**):	3.92 (dimensionless)	

Material/Product Stored

AP-42 Defined Material:	Condensate (Midcontinent Crude Oil)
Percent Reduction for Water:	99% (Working & Standing Losses)
VP Calculation Method:	Clausius-Clapeyron Equation
Vapor Molecular Weight (lb/lb-mole):	50.0
Liquid Density (lb/gal):	7.1
RVP:	5.0
Vapor Pressure Constant A:	11.2634
Vapor Pressure Constant B:	5,303.9235

Vapor Composition	
Pollutant	Wt%
VOC	100.00%

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Meteorological Data

Data Source: AP-42, Chapter 7, Table 7.1-7

City Used for Meteorological Data:	**Houston, TX**								
	AP-42 Parameter								
	Avg Atm. Pressure	Daily Maximum Ambient Temperature		Daily Minimum Ambient Temperature		Average Daily Ambient Temperature		Avg Daily Ambient Temp. Range	Daily Total Solar Insolation Factor
Month	**P_A**	**T_{AX}**		**T_{AN}**		**T_{AA}**		**ΔT_A**	**I**
Annual	14.7 psia	79.0 °F	538.67 °R	60.1 °F	519.77 °R	69.55 °F	529.22 °R	18.90 °R	1,404 Btu/ft²•d

Tank Data - Values Used in Tank Liquid Temperature Calculations

Parameter		**Value**	**Reference**
Tank surface solar absorptance	α	0.58 (dim)	AP-42, Ch. 7, Table 7.1-6 & based on tank color/condition: Gray/Light, Average
Tank Shell Height	H_S	4.71 ft	Calculated Effective Height, AP-42 Ch. 7 Eqn. 1-15
Tank Diameter	D	11.89 ft	Calculated Effective Diameter, AP-42 Ch. 7 Eqn. 1-14

Tank Liquid Temperatures - Calculated Values

Month	Liquid Bulk Temperature		Average Daily Liquid Surface Temperature		Average Vapor Temperature	Average Vapor Temperature Range	Maximum Daily Liquid Surface Temperature		Minimum Daily Liquid Surface Temperature	
	T_B		**T_{LA}**		**T_V**	**ΔT_V**	**T_{LX}**		**T_{LN}**	
Annual	72.0 °F	531.7 °R	75.0 °F	534.6 °R	537.61 °R	28.81 °R	82.2 °F	541.8 °R	67.8 °F	527.4 °R

Equations Used:

Equation 1-6:
Average Daily Vapor Temperature Range for an uninsulated tank

$$\Delta T_V = (1 - \frac{0.8}{2.2\,(HS/D) + 1.9})\Delta T_A + \frac{0.042\,\alpha_R\,I + 0.026\,(H_S/D)\alpha_S\,I}{2.2\,(H_S/D) + 1.9}$$

Equation 1-11:
Daily Average Ambient Temperature Range

$$\Delta T_A = T_{AX} - T_{AN}$$

Equation 1-27:
Average Daily Liquid Surface Temperature

$$T_{LA} = (0.5 - \frac{0.8}{4.4\,(H_S/D) + 3.8})T_{AA} + (0.5 + \frac{0.8}{4.4\,(H_S/D) + 3.8})T_B + \frac{0.021\,\alpha_R\,I + 0.013\,(H_S/D)\alpha_S\,I}{4.4\,(H_S/D) + 3.8}$$

Equation 1-30:
Daily Average Ambient Temperature

$$T_{AA} = \frac{T_{AX} + T_{AN}}{2}$$

Equation 1-31:
Liquid Bulk Temperature

$$T_B = T_{AA} + 0.003\alpha_S\,I$$

Equation 1-32:
Average Vapor Temperature for an uninsulated tank

$$T_V = \frac{[2.2(H_S/D) + 1.1]T_{AA} + (0.8)T_B + 0.021\,\alpha_R\,I + 0.013\,(H_S/D)\alpha_S\,I]}{2.2\,(H_S/D) + 1.9}$$

Figure 7.1-17
Average Daily Maximum Liquid Surface Temperature

$$T_{LX} = T_{LA} + 0.25\,\Delta T_V$$

Average Daily Minimum Liquid Surface Temperature

$$T_{LN} = T_{LA} - 0.25\,\Delta T_V$$

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Vapor Pressure Calculation Method

The average, maximimum, and minimum vapor pressures ($P_{VA,}$ $P_{VX,}$ P_{VN}) at the average, maximimum, and minimum daily liquid surface temperatures (T_{LA}, T_{LX}, T_{LN}) are calculated according to the method indicated below.

Parameter	Value
Vapor Pressure Calculation Method	Clausius-Clapeyron Equation
Vapor Molecular Weight	50.00 lb/lb-mol
Liquid Density	7.10 lb/gal
RVP	5.00 psia
Material Category	Crude Oil
Vapor Pressure Constant A	11.2634 (dim)
Vapor Pressure Constant B	5303.92 °R

Calculated Vapor Pressures at Liquid Surface Temperatures:

	Daily Liquid Surface Temperatures			Vapor Pressure at Liquid Surface Temperatures		
	AVG	MAX	MIN	AVG @ T_{LA}	MAX @ T_{LX}	MIN @ T_{LN}
Month	**T_{LA}**	**T_{LX}**	**T_{LN}**	**P_{VA}**	**P_{VX}**	**P_{VN}**
Annual	534.6 °R	541.8 °R	527.43 °R	3.83 psia	4.37 psia	3.34 psia
AP-42 Calc. Reference:	Ch. 7, Equation 1-27			See "Equations Used" below		

Calculated Vapor Pressures at Defined Liquid Bulk Temperatures:

Parameter	Max Value	Annual Value	Reference
Vapor Molecular Weight, **M_V**	50 lb/lb-mol	50 lb/lb-mol	AP-42, Table 7.1-2 / 7.1-3
Vapor Pressure, **P**	5.48 psia	3.62 psia	See "Equations Used" below
Liquid Bulk Temperature, **T_B**	95.0 °F	72.0 °F	AP-42, Ch. 7, Equation 1-31 *(Calculated above)*
	554.7 °R	531.7 °R	

Equations Used:

Clausius-Clapeyron Equation

This equation (also referred to as the "Vapor Pressure Equation") calculates the vapor pressure based on defined or calculated constants, A and B, for petroleum liqu

AP-42, Ch. 7, Equation 1-25 (for Petroleum Liquid Stocks):

$$P_{VA} = \exp\left[A - \frac{B}{T_{LA}}\right]$$

where: P_{VA} = vapor pressure, psia
A = constant in the vapor pressure equation, dimensionless
B = constant in the vapor pressure equation, °R
T_{LA} = average daily liquid surface temperature, °R
RVP = Reid Vapor Pressure, psi
ln = natural logarithm function

Vapor Pressure Constants A & B for Crude Oils (AP-42, Fig. 7.1-16):

$$A = 12.82 - 0.9672 \ln(RVP)$$
$$B = 7{,}261 - 1{,}216 \ln(RVP)$$

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Tank Loss Calculations

Tank Variables - Values used in Standing and Working Loss Calculations

Parameter	Calculated Value	AP-42, Ch. 7 Reference	Parameter	User-entered Value
Horizontal Tank Effective Diameter, D_E	11.89 ft	Eqn 1-14: $D_E = [L \times D_H / (\pi/4)]^{0.5}$	Horizontal Tank Length, **L**	18.50 ft
Horizontal Tank Effective Height, H_E	4.71 ft	Eqn 1-15: $H_E = (\pi/4)\ D_H$	Horizontal Tank Cross-Section Diameter, D_H	6.00 ft
Vapor Space Outage, H_{VO}	2.36 ft	Eqn 1-17(horizontal): $H_{VO} = ½\ H_E$ Eqn 1-16(vertical): $H_{VO} = H_S - H_L + H_{RO}$	Vertical Tank Shell Diameter, D_V	n/a
			Tank Diameter, **D**	11.89 ft
Breather Vent Pressure Setting Range, ΔP_B	0.06 psig	Eqn 1-10: $\Delta P_B = P_{BP} - P_{BV}$ (where P_{BP} = 0.03 psig & P_{BV} = -0.03 psig	Tank Height, H_S	4.71 ft
			Vapor Molecular Weight, M_V	50.0 lb/lb-mole
Vapor Space Volume, V_V	261.54 ft³	Eqn 1-3: $V_V = (\pi/4)\ D^2\ H_{VO}$	Tank Capacity	93 bbl
Constant			Percent Reduction for Produced Water	99% (Working & Standing Losses)
Ideal Gas Constant, **R**		10.731 psia ft³/lb-mole °R		

Tank Variables - Values used in Standing and Working Loss Calculations

Month	Average Vapor Temperature	Average Liquid Surface Temperature	Average Vapor Temperature Range	Vapor Pressure at Liquid Surface Temperatures			Average Vapor Pressure Range
	T_V	T_{LA}	ΔT_V	P_{VA}	P_{VX}	P_{VN}	ΔP_V
Annual	537.61 °R	534.64 °R	28.81 psia	3.83 psia	4.37 psia	3.34 psia	1.03 psia
AP-42, Ch. 7 Reference	Calculated above	Calculated above	Calculated above	Calculated above			Eqn. 1-9

Standing Losses

Month	Days/ Month	Average Atmospheric Pressure	Stock Vapor Density	Vapor Space Expansion Factor	Vented Vapor Saturation Factor	Standing Losses
		P_A	W_V	K_E	K_S	L_S
Annual	365	14.65 psia	0.03 lb/ft³	0.1 (dimensionless)	0.7 (dimensionless)	**306.65 lb**
AP-42, Ch. 7 Reference		Table 7.1-7	Eqn. 1-22	Eqn. 1-5	Eqn. 1-21	Eqn. 1-2

Working Loss Variables

Month	Days/ Month	Average Atmospheric Pressure	Net Throughput	Maximum Liquid Height	Minimum Liquid Height	Sum of Liquid Level Increases	Number of Turnovers
		P_A	Q	H_{LX}	H_{LN}	ΣH_{QI}	N
Annual	365	14.65 psia	365 bbl	4.7 ft	0.0 ft	18.5 ft	3.92 (dim)
AP-42, Ch. 7 Reference		Table 7.1-7	User-entered	Pg. 7.1-28		Eqn. 1-37	Eqn. 1-36

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Working Losses

Month	Days/ Month	Stock Vapor Density	Net Working Loss Throughput	Working Loss Turnover (Saturation) Factor	Working Loss Product Factor	Vent Setting Correction Factor	Working Losses
		W_V	V_Q	K_N	K_P	K_B	L_W
Annual	365	0.03 lb/ft³	2,049 ft³	1.00 (dim)	0.75 (dim)	1.00 (dim)	**51.01 lb**
AP-42, Ch. 7 Reference		Eqn. 1-22	Eqn. 1-39	Pg. 7.1-28		Eqns. 1-40 & 1-41	Eqn. 1-35

AP-42, Ch. 7 Equations Used:

Equation 1-9:	$\Delta P_V = P_{VX} - P_{VN}$	**Average Vapor Pressure Range, ΔP_V,** psia
Equation 1-22:	$W_V = \frac{M_V P_{VA}}{R T_V}$	**Stock Vapor Density, W_V,** lb/ft³
Equation 1-5:	$K_E = \frac{\Delta P_V - \Delta P_{VB}}{P_A - P_{VA}} + \frac{\Delta T_V}{T_{LA}}$	**Vapor Space Expansion Factor, K_E,** dimensionless
Equation 1-21:	$K_S = \frac{1}{1 + 0.053\, P_{VA}\, H_{VO}}$	**Vented Vapor Saturation Factor, K_S,** dimensionless
Equation 1-36:	$N = \sum H_{QI} / (H_{LX} - H_{LN})$	**Number of Turnovers per year, N,** dimensionless
Equation 1-37:	$\sum H_{QI} = (5.614\, Q) / ((\pi/4)\, D^2)$	**Annual Sum of Increases in Liquid Level, $\sum H_{QI}$,** ft/yr
Equation 1-39:	$V_Q = 5.614\, Q$	**Net Working Loss Throughput, V_Q,** ft³/yr
Equation 1-40:	$K_N \times \frac{P_{BP} + P_A}{P_I - P_A} > 1$	If condition in Equation 1-40 is met, then K_B must be determined using Equation 1-41
Equation 1-41:	$K_B = \frac{[(P_I + P_A)/K_N] - P_{VA}}{P_{BP} + P_A - P_{VA}}$, else $K_B = 1$	**Vent Setting Correction Factor, K_B,** dimensionless where: P_I = Vapor space pressure, psig (P_I=0 psig for atmospheric tanks)
Pg. 7.1-28	$K_N = (180 + N)/6N$ *(For turnovers, N > 36)* $K_N = 1$ *(For turnovers, N ≤ 36)*	**Working Loss Turnover (Saturation) Factor, K_N ,** dimensionless
Pg. 7.1-28	$K_P = 0.75$ *(For crude oils)* $K_P = 1$ *(For all other organic liquids)*	**Working Loss Product Factor, K_P ,** dimensionless
Equation 1-2:	$L_S = 365\, V_V\, W_V\, K_E\, K_S$	**Standing Losses, L_S,** lb/yr
Equation 1-35:	$L_W = V_Q\, W_V\, K_N\, K_P\, K_B$	**Working Loss, L_W,** lb/yr

Total Tank Losses - Annual

Month		Days/ Month	Tank Losses [2]			Tank Losses (w/ Reduction Applied)		
			Standing	Working	Total	Standing	Working	Total
			L_S	L_W	L_T	L_S	L_W	L_T
Annual	[1]	365	306.65 lb	51.01 lb	**357.66 lb**	3.07 lb	0.51 lb	**3.58 lb**

AP-42, Ch. 7 Equations Used:

Equation 1-1:	$L_T = L_S + L_W$	**Total Routine Losses, L_T,** lb/yr

Note: [1] Annual Tank Losses are based on the annual average values for temperature and pressure.
[2] Tank losses represented are before the 99% reduction is applied to the working & standing losses.

Fixed Roof Storage Tank - Wastewater Tank

Section 3.3

EPN(s): WWTK
FIN(s): WWTK
Source Name: **Wastewater Tank**

Maximum Short-Term Emissions

Short-term emissions are calculated according to TCEQ guidance document "Estimating Short Term Emission Rates from Fixed Roof Tanks", APDG 6250v3, 02/20. This guidance applies to vertical fixed roof tanks and horizontal tanks.

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emissrates-tanks6250.pdf

Parameter	Symbol	Value	Data Source or TCEQ APDG 6250v3 Reference
Vapor Molecular Weight	M_V	50.0 lb/lb-mole	User Entered
Vapor Pressure at Worst-case Liquid Temp	P_{VX}	5.48 psia	AP-42, Ch. 7, Equation 1-25 (for Petroleum Liquid Stocks)
Maximum Filling Rate	F_{RM}	3,906 gal/hr	User Entered
Ideal Gas Constant	R	80.273 psia gal/lb-mole °R	User Entered
Maximum Liquid Surface Temperature	T	95.00 °F 554.67 °R	Use higher of actual temperature or 95˚F
Maximum Short-Term Emissions	L_{MAX}	**24.04 lb/hr**	$L_{MAX} = \frac{M_V P_{VA}}{R T} \times F_{RM}$
Percent TOC Reduction for Produced Water		99%	Applied to Working & Standing Losses
Maximum Short-Term Emissions (w/ Percent Reduction Applied)	L_{MAX}	**0.24 lb/hr**	$L_{MAX} = \frac{M_V P_{VA}}{R T} \times F_{RM} (100\% - 99\%)$

Speciated Emissions

Pollutant	Vapor Wt%	Standing Losses		Working Losses		TOTAL W&S Losses	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC	100.00%	0.0006	0.0015	0.2404	0.0003	**0.2404**	**0.0018**

Equations used:

A. (Pollutant Annual Working Losses, tpy) = (Working Losses, lb/yr) x (Pollutant Content, Wt%) / (2,000 lb/ton)

B. (Pollutant Annual Standing Lossess, tpy) = (Standing Losses, lb/yr) x (Pollutant Content, Wt%) / (2,000 lb/ton)

C. (Pollutant Hourly Working Losses, lb/hr) = (Short-Term Emissions, lb/hr) x (Pollutant Content, Wt%)

D. (Pollutant Hourly Standing Losses, lb/hr) = [MAX(Monthly Standing Losses/Days per Month) / (24 hours/day)] x (Pollutant Content, Wt%)

E. (Pollutant W&S Hourly Losses, lb/hr) = MAX[(Pollutant Hourly Working Losses, lb/hr), (Pollutant Hourly Standing Losses, lb/hr)]

Batson Compressor Station
Blackfin Pipeline, LLC
TCEQ Permit by Rule Initial Application
July 2024

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Total Emissions

Pollutant	lb/hr	tpy
VOC	0.15	1.75E-03

Calculation Basis:

Emissions from fixed roof tanks are a result of working and standing (W&S) losses. Working losses occur during tank filling because the rising liquid causes vapors inside the tank to be displaced and expelled through the tank breather vent. Standing losses occur because of the daily temperature fluctuations. During the day, the temperature will increase, causing the vapors in the tank vapor space to expand, and therefore be expelled through the tank breather vent. W&S Losses were calculated using equations from AP-42, Chapter 7 (dated 06/2020). Short-term emissions were calculated using guidance from the TCEQ's Air Permit Reviewer Reference Guide APDG 6250v3, "Estimating Short Term Emission Rates from Fixed Roof Tanks", 02/2020.

Background Information:

Tank Data

Type:	Horizontal Tank
Capacity:	126 bbl
Shell Diameter (**D**):	8.0 ft
Tank Length:	14.0 ft
Type of Roof:	
Underground Tank?	No
Average Liquid Height (ft):	n/a
n/a	
Shell Color/Shade:	Gray/Light
Shell Condition:	Average
n/a	
n/a	

Breather Vent - Pressure Setting (P_{BP}):	0.03 psig
Breather Vent - Vacuum Setting (P_{BV}):	-0.03 psig
Tank Fill Method:	Submerged
Constant-Level Tank?	No
Maximum Liquid Height (H_{LX}):	n/a
Average Change in Liquid Height (H_{LX}-H_{LN}):	n/a
Maximum Fill Rate (Q_{MAX}):	63 bbl/hr
Is tank vapor balanced?	No
Does flash occur in the tank?	No

Location

Nearest City (Used for Meteorolgical Data):	Houston, TX

Annual Emissions Basis

Using Annual Avg parameters, or sum of monthly emissions?	Annual Average

Tank Throughput

Annual Throughput:	1,512	bbl/yr
Number of Turnovers (**N**):	12.00 (dimensionless)	

Material/Product Stored

AP-42 Defined Material:	Diesel Fuel (No. 2 Fuel Oil (Diesel))
VP Calculation Method:	Clausius-Clapeyron Equation
Vapor Molecular Weight (lb/lb-mole):	130.0
Liquid Density (lb/gal):	7.1
Vapor Pressure Constant A:	12.101
Vapor Pressure Constant B:	8,907.00

Vapor Composition	
Pollutant	Wt%
VOC	100.00%

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Meteorological Data

Data Source: AP-42, Chapter 7, Table 7.1-7

City Used for Meteorological Data:	**Houston, TX**								
	AP-42 Parameter								
	Avg Atm. Pressure	Daily Maximum Ambient Temperature		Daily Minimum Ambient Temperature		Average Daily Ambient Temperature		Avg Daily Ambient Temp. Range	Daily Total Solar Insolation Factor
Month	**P_A**	**T_{AX}**		**T_{AN}**		**T_{AA}**		**ΔT_A**	**I**
Annual	14.7 psia	79.0 °F	538.67 °R	60.1 °F	519.77 °R	69.55 °F	529.22 °R	18.90 °R	1,404 Btu/ft²•d

Tank Data - Values Used in Tank Liquid Temperature Calculations

Parameter		**Value**	**Reference**
Tank surface solar absorptance	α	0.58 (dim)	AP-42, Ch. 7, Table 7.1-6 & based on tank color/condition: Gray/Light, Average
Tank Shell Height	H_S	6.28 ft	Calculated Effective Height, AP-42 Ch. 7 Eqn. 1-15
Tank Diameter	D	11.94 ft	Calculated Effective Diameter, AP-42 Ch. 7 Eqn. 1-14

Tank Liquid Temperatures - Calculated Values

Month	Liquid Bulk Temperature		Average Daily Liquid Surface Temperature		Average Vapor Temperature	Average Vapor Temperature Range	Maximum Daily Liquid Surface Temperature		Minimum Daily Liquid Surface Temperature	
	T_B		**T_{LA}**		**T_V**	**ΔT_V**	**T_{LX}**		**T_{LN}**	
Annual	72.0 °F	531.7 °R	74.8 °F	534.5 °R	537.27 °R	28.78 °R	82.0 °F	541.7 °R	67.6 °F	527.3 °R

Equations Used:

Equation 1-6:
Average Daily Vapor Temperature Range for an uninsulated tank

$$\Delta T_V = (1 - \frac{0.8}{2.2\,(HS/D) + 1.9})\Delta T_A + \frac{0.042\,\alpha_R\,I + 0.026\,(H_S/D)\alpha_S\,I}{2.2\,(H_S/D) + 1.9}$$

Equation 1-11:
Daily Average Ambient Temperature Range

$$\Delta T_A = T_{AX} - T_{AN}$$

Equation 1-27:
Average Daily Liquid Surface Temperature

$$T_{LA} = (0.5 - \frac{0.8}{4.4\,(H_S/D) + 3.8})T_{AA} + (0.5 + \frac{0.8}{4.4\,(H_S/D) + 3.8})T_B + \frac{0.021\,\alpha_R\,I + 0.013\,(H_S/D)\alpha_S\,I}{4.4\,(H_S/D) + 3.8}$$

Equation 1-30:
Daily Average Ambient Temperature

$$T_{AA} = \frac{T_{AX} + T_{AN}}{2}$$

Equation 1-31:
Liquid Bulk Temperature

$$T_B = T_{AA} + 0.003\alpha_S\,I$$

Equation 1-32:
Average Vapor Temperature for an uninsulated tank

$$T_V = \frac{[2.2(H_S/D) + 1.1]T_{AA} + (0.8)T_B + 0.021\,\alpha_R\,I + 0.013\,(H_S/D)\alpha_S\,I]}{2.2\,(H_S/D) + 1.9}$$

Figure 7.1-17
Average Daily Maximum Liquid Surface Temperature

$$T_{LX} = T_{LA} + 0.25\,\Delta T_V$$

Average Daily Minimum Liquid Surface Temperature

$$T_{LN} = T_{LA} - 0.25\,\Delta T_V$$

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Vapor Pressure Calculation Method

The average, maximimum, and minimum vapor pressures ($P_{VA,}$ $P_{VX,}$ P_{VN}) at the average, maximimum, and minimum daily liquid surface temperatures (T_{LA}, T_{LX}, T_{LN}) are calculated according to the method indicated below.

Parameter	Value
Vapor Pressure Calculation Method	Clausius-Clapeyron Equation
Vapor Molecular Weight	130.00 lb/lb-mol
Liquid Density	7.10 lb/gal
RVP	0.00 psia
Material Category	Refined Petroleum Stock
Slope of ASTM Curve at 10% Evaporated, S	--
Vapor Pressure Constant A	12.1010 (dim)
Vapor Pressure Constant B	8907.00 °R

Calculated Vapor Pressures at Liquid Surface Temperatures:

	Daily Liquid Surface Temperatures			Vapor Pressure at Liquid Surface Temperatures		
	AVG	MAX	MIN	AVG @ T_{LA}	MAX @ T_{LX}	MIN @ T_{LN}
Month	**T_{LA}**	**T_{LX}**	**T_{LN}**	**P_{VA}**	**P_{VX}**	**P_{VN}**
Annual	534.5 °R	541.7 °R	527.27 °R	0.01 psia	0.01 psia	0.01 psia
AP-42 Calc. Reference:	Ch. 7, Equation 1-27			See "Equations Used" below		

Calculated Vapor Pressures at Defined Liquid Bulk Temperatures:

Parameter	Max Value	Annual Value	Reference
Vapor Molecular Weight, **M_V**	130 lb/lb-mol	130 lb/lb-mol	AP-42, Table 7.1-2 / 7.1-3
Vapor Pressure, **P**	0.02 psia	0.01 psia	See "Equations Used" below
Liquid Bulk Temperature, **T_B**	95.0 °F	72.0 °F	AP-42, Ch. 7, Equation 1-31 *(Calculated above)*
	554.7 °R	531.7 °R	

Equations Used:

Clausius-Clapeyron Equation

This equation (also referred to as the "Vapor Pressure Equation") calculates the vapor pressure based on defined or calculated constants, A and B, for petroleum liqu

AP-42, Ch. 7, Equation 1-25 (for Petroleum Liquid Stocks):

$$P_{VA} = \exp\left[A - \frac{B}{T_{LA}}\right]$$

Vapor Pressure Constants A & B for Refined Petroleum Stocks (AP-42, Fig. 7.1-15):

$$A = 15.64 - 1.854 * S^{0.5} - (0.8742 - 0.3280 * S^{0.5}) \ln(RVP)$$

$$B = 8{,}742 - 1{,}042 * S^{0.5} - (1{,}049 - 179.4 * S^{0.5}) \ln(RVP)$$

where:
P_{VA} = vapor pressure, psia
A = constant in the vapor pressure equation, dimensionless
B = constant in the vapor pressure equation, °R
T_{LA} = average daily liquid surface temperature, °R
RVP = Reid Vapor Pressure, psi
ln = natural logarithm function
S = Slope of ASTM distillation curve at 10% evaporated, °F

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Tank Loss Calculations

Tank Variables - Values used in Standing and Working Loss Calculations

Parameter	Calculated Value	AP-42, Ch. 7 Reference	Parameter	User-entered Value
Horizontal Tank Effective Diameter, D_E	11.94 ft	Eqn 1-14: $D_E = [L \times D_H / (\pi/4)]^{0.5}$	Horizontal Tank Length, **L**	14.00 ft
Horizontal Tank Effective Height, H_E	6.28 ft	Eqn 1-15: $H_E = (\pi/4)\ D_H$	Horizontal Tank Cross-Section Diameter, D_H	8.00 ft
Vapor Space Outage, H_{VO}	3.14 ft	Eqn 1-17(horizontal): $H_{VO} = ½\ H_E$ Eqn 1-16(vertical): $H_{VO} = H_S - H_L + H_{RO}$	Vertical Tank Shell Diameter, D_V	n/a
			Tank Diameter, **D**	11.94 ft
Breather Vent Pressure Setting Range, ΔP_B	0.06 psig	Eqn 1-10: $\Delta P_B = P_{BP} - P_{BV}$ (where P_{BP} = 0.03 psig & P_{BV} = -0.03 psig	Tank Height, H_S	6.28 ft
			Vapor Molecular Weight, M_V	130.0 lb/lb-mole
Vapor Space Volume, V_V	351.86 ft³	Eqn 1-3: $V_V = (\pi/4)\ D^2\ H_{VO}$	Tank Capacity	126 bbl
Constant			Percent Reduction for Produced Water	N/A
Ideal Gas Constant, **R**		10.731 psia ft³/lb-mole °R		

Tank Variables - Values used in Standing and Working Loss Calculations

Month	Average Vapor Temperature	Average Liquid Surface Temperature	Average Vapor Temperature Range	Vapor Pressure at Liquid Surface Temperatures			Average Vapor Pressure Range
	T_V	T_{LA}	ΔT_V	P_{VA}	P_{VX}	P_{VN}	ΔP_V
Annual	537.27 °R	534.47 °R	28.78 psia	0.01 psia	0.01 psia	0.01 psia	0.00 psia
AP-42, Ch. 7 Reference	Calculated above	Calculated above	Calculated above	Calculated above			Eqn. 1-9

Standing Losses

Month	Days/ Month	Average Atmospheric Pressure	Stock Vapor Density	Vapor Space Expansion Factor	Vented Vapor Saturation Factor	Standing Losses
		P_A	W_V	K_E	K_S	L_S
Annual	365	14.65 psia	2.3E-04 lb/ft³	0.1 (dimensionless)	1.0 (dimensionless)	**1.51 lb**
AP-42, Ch. 7 Reference		Table 7.1-7	Eqn. 1-22	Eqn. 1-5	Eqn. 1-21	Eqn. 1-2

Working Loss Variables

Month	Days/ Month	Average Atmospheric Pressure	Net Throughput	Maximum Liquid Height	Minimum Liquid Height	Sum of Liquid Level Increases	Number of Turnovers
		P_A	Q	H_{LX}	H_{LN}	ΣH_{QI}	N
Annual	365	14.65 psia	1,512 bbl	6.3 ft	0.0 ft	75.8 ft	12.00 (dim)
AP-42, Ch. 7 Reference		Table 7.1-7	User-entered	Pg. 7.1-28		Eqn. 1-37	Eqn. 1-36

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Working Losses

Month	Days/ Month	Stock Vapor Density	Net Working Loss Throughput	Working Loss Turnover (Saturation) Factor	Working Loss Product Factor	Vent Setting Correction Factor	Working Losses
		W_V	V_Q	K_N	K_P	K_B	L_W
Annual	365	0.00 lb/ft³	8,488 ft³	1.00 (dim)	1.00 (dim)	1.00 (dim)	**1.99 lb**
AP-42, Ch. 7 Reference		Eqn. 1-22	Eqn. 1-39	Pg. 7.1-28		Eqns. 1-40 & 1-41	Eqn. 1-35

AP-42, Ch. 7 Equations Used:

Equation 1-9:	$\Delta P_V = P_{VX} - P_{VN}$	**Average Vapor Pressure Range, ΔP_V,** psia
Equation 1-22:	$W_V = \frac{M_V P_{VA}}{R T_V}$	**Stock Vapor Density, W_V,** lb/ft³
Equation 1-5:	$K_E = \frac{\Delta P_V - \Delta P_{VB}}{P_A - P_{VA}} + \frac{\Delta T_V}{T_{LA}}$	**Vapor Space Expansion Factor, K_E,** dimensionless
Equation 1-21:	$K_S = \frac{1}{1 + 0.053\, P_{VA}\, H_{VO}}$	**Vented Vapor Saturation Factor, K_S,** dimensionless
Equation 1-36:	$N = \sum H_{QI} / (H_{LX} - H_{LN})$	**Number of Turnovers per year, N,** dimensionless
Equation 1-37:	$\sum H_{QI} = (5.614\, Q) / ((\pi/4)\, D^2)$	**Annual Sum of Increases in Liquid Level, $\sum H_{QI}$,** ft/yr
Equation 1-39:	$V_Q = 5.614\, Q$	**Net Working Loss Throughput, V_Q,** ft³/yr
Equation 1-40:	$K_N \times \frac{P_{BP} + P_A}{P_I - P_A} > 1$	If condition in Equation 1-40 is met, then K_B must be determined using Equation 1-41
Equation 1-41:	$K_B = \frac{[(P_I + P_A)/K_N] - P_{VA}}{P_{BP} + P_A - P_{VA}}$, else $K_B = 1$	**Vent Setting Correction Factor, K_B,** dimensionless where: P_I = Vapor space pressure, psig (P_I=0 psig for atmospheric tanks)
Pg. 7.1-28	$K_N = (180 + N)/6N$ *(For turnovers, N > 36)* $K_N = 1$ *(For turnovers, N ≤ 36)*	**Working Loss Turnover (Saturation) Factor, K_N ,** dimensionless
Pg. 7.1-28	$K_P = 0.75$ *(For crude oils)* $K_P = 1$ *(For all other organic liquids)*	**Working Loss Product Factor, K_P ,** dimensionless
Equation 1-2:	$L_S = 365\, V_V\, W_V\, K_E\, K_S$	**Standing Losses, L_S,** lb/yr
Equation 1-35:	$L_W = V_Q\, W_V\, K_N\, K_P\, K_B$	**Working Loss, L_W,** lb/yr

Total Tank Losses - Annual

Month		Days/ Month	Tank Losses			Tank Losses (w/ Reduction Applied)		
			Standing	Working	Total	Standing	Working	Total
			L_S	L_W	L_T	L_S	L_W	L_T
Annual	[1]	365	1.51 lb	1.99 lb	**3.5 lb**	1.51 lb	1.99 lb	**3.5 lb**

AP-42, Ch. 7 Equations Used:

Equation 1-1:	$L_T = L_S + L_W$	**Total Routine Losses, L_T,** lb/yr

Note: [1] Annual Tank Losses are based on the annual average values for temperature and pressure.

Fixed Roof Storage Tank - Diesel Tank

Section 3.4

EPN(s): DIESELTK
FIN(s): DIESELTK
Source Name: **Diesel Fuel Storage Tank**

Maximum Short-Term Emissions

Short-term emissions are calculated according to TCEQ guidance document "Estimating Short Term Emission Rates from Fixed Roof Tanks", APDG 6250v3, 02/20. This guidance applies to vertical fixed roof tanks and horizontal tanks.

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emissrates-tanks6250.pdf

Parameter	Symbol	Value	Data Source or TCEQ APDG 6250v3 Reference
Vapor Molecular Weight	M_V	130.0 lb/lb-mole	User Entered
Vapor Pressure at Worst-case Liquid Temp	P_{VX}	0.02 psia	AP-42, Ch. 7, Equation 1-25 (for Petroleum Liquid Stocks)
Maximum Filling Rate	F_{RM}	2,646 gal/hr	User Entered
Ideal Gas Constant	R	80.273 psia gal/lb-mole °R	User Entered
Maximum Liquid Surface Temperature	T	95.00 °F 554.67 °R	Use higher of actual temperature or 95°F
Maximum Short-Term Emissions	L_{MAX}	**0.15 lb/hr**	$L_{MAX} = \frac{M_V P_{VA}}{R T} \times F_{RM}$

Speciated Emissions

Pollutant	Vapor Wt%	Standing Losses		Working Losses		TOTAL W&S Losses	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC	100.00%	0.0003	0.0008	0.1477	0.001	**0.1477**	**0.0018**

Equations used:

A. (Pollutant Annual Working Losses, tpy) = (Working Losses, lb/yr) x (Pollutant Content, Wt%) / (2,000 lb/ton)

B. (Pollutant Annual Standing Lossess, tpy) = (Standing Losses, lb/yr) x (Pollutant Content, Wt%) / (2,000 lb/ton)

C. (Pollutant Hourly Working Losses, lb/hr) = (Short-Term Emissions, lb/hr) x (Pollutant Content, Wt%)

D. (Pollutant Hourly Standing Losses, lb/hr) = [MAX(Monthly Standing Losses/Days per Month) / (24 hours/day)] x (Pollutant Content, Wt%)

E. (Pollutant W&S Hourly Losses, lb/hr) = MAX[(Pollutant Hourly Working Losses, lb/hr), (Pollutant Hourly Standing Losses, lb/hr)]

Truck Loading

Section 3.5

EPN(s): WWTL
FIN(s): WWTL
Source Name: Wastewater Loading

Total Emissions:

Pollutant	lb/hr	tpy
VOC	0.28	<0.01

Calculation Basis:

Loading loss emissions are estimated using the methodology in AP-42, Chapter 5, section 5.2-4 (Fifth Edition, June 2008). Saturation factors taken from Table 5.2-1 of AP-42 (Fifth Edition, June 2008).

Liquid and vapor properties for the Wastewater are from the AP-42 tank calculations included in this document.

Background Information:

Material Loaded:		Wastewater
Loadout Volume:	Hourly	180 bbl/hr
	Annual	365 bbl/yr
Tank Truck / Mode of Operation:		Submerged Loading: Dedicated Normal Service
Control Device:		Atmosphere
Tank Truck Control Device Capture Efficiency Category:		N/A
Control Device Capture Efficiency:		0.0%
Source of Material Property Data:		AP-42 Tank Calculations

Water Content:

Material Loaded:	**Wastewater**
Percent Reduction for Water as VOC/Oil/Condensate:	99.0%

Note: A percent reduction is entered here only if the material loaded is mostly water and the loading loss emission rate (L_L) is based on condensate/oil properties with the full water throughput.

Emission Calculations

Parameter	**Note/ Reference**	**Wastewater Loading**	
		Hourly Value	**Annual Value**
Loadout Volume	User-entered	7,560 gal/hr	15,330 gal/yr
Vapor Molecular Weight, $\mathbf{M_V}$	See AP-42 Tank Calculations	50.0 lb/lb-mol	50.0 lb/lb-mol
Vapor Pressure, $\mathbf{P_V}$ (@ Bulk Temp)		5.480 psia	3.623 psia
Temperature of Bulk Liquid Loaded, $\mathbf{T_B}$		95.0 °F	72.0 °F
		554.67 °R	531.66 °R
Saturation factor, **S**	AP-42, Tbl 5.2-1	0.60 (dim)	0.60 (dim)
Loading Loss Emission Rate, $\mathbf{L_L}$	See Eqn. Used	3.6928 lb/Mgal	2.5471 lb/Mgal
Loading Losses	See Eqn. Used	**27.92 lb/hr**	**39.05 lb/yr**

Equations used:

A. Loading Loss Emission Rate, (AP-42, Chapter 5.2), L_L (lb/Mgal) = 12.46 X S P_V M_V / T_B

B. Loading Losses, lb = L_L (lb/Mgal) X Loadout Volume (bbl) X 42 gal/bbl X Mgal/1,000 gal

Truck Loading

Section 3.5

EPN(s): WWTL
FIN(s): WWTL
Source Name: Wastewater Loading

Total Loading Emissions:

Pollutant	Wastewater Loading		
	Wt%	**lb/hr**	**tpy**
VOC	100.00%	0.28	1.95E-04

Equations used:

C. Total Loading Emissions per Pollutant, lb/hr = (Loading Losses, lb/hr) x (Pollutant Content, Wt%)

D. Total Loading Emissions per Pollutant, tpy = (Loading Loss, lb/yr) x (Pollutant Content, Wt%) / (2,000 lb/ton)

E. Total Loading Emissions per Pollutant, lb/hr or tpy = (Total Loading Emissions per Pollutant, lb/hr or tpy) x (100% – Percent Reduction for Water, %)

Equipment Leak Fugitives

Section 3.6

EPN(s): FUG
FIN(s): FUG
Source Name: **Piping Component Fugitives**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	0.12	0.52
H_2S	<0.01	<0.01

Calculation Basis:

This site has unintentional emissions from pressurized equipment leaks. These emissions are fugitive in nature, and result from leakage through components such as valves, flanges, connectors, open-ended lines (OELs), pressure relief valves (PRVs), and other components. Emissions are estimated using emission factors from TCEQ's Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance (APDG 6422v2, Revised 06/18), which are based on US EPA's Protocol for Equipment Leak Emission Estimates, November 1995. Total emissions are then speciated using the stream compositions for the facility specified below.

Fugitive components at this site are subject LDAR requirements per NSPS OOOOb. No LDAR program reductions have been applied to the estimated emissions.

Calculation Method	
Emission Factors Used	Oil and Gas Production
Component Count Source	Subpart W
Component Count Safety Factor	50%
Applicable LDAR Program(s) (For Regulatory Compliance)	*NSPS OOOOb*
Annual Hours of Operation	8,760 hr/yr

Component Count Basis:

Site-specific component counts were not available; therefore, estimated counts were calculated using the method provided in EPA's Mandatory Reporting Rule for Greenhouse Gases (MRR). Site-specific major equipment counts were compiled (i.e., wellheads, separators, in-line heaters, etc.), and default component counts were applied to each equipment type. Component counts per major equipment type are from 40 CFR 98 Subpart W Tables W-1B and W-1C, for the Western U.S. The "Compressor Seals" component type has been added to account for leaks associated with natural gas compressors (as applicable).

For each type of type of equipment, associated fugitive components can be in gas service, liquid service, or both. Equipment that is in both gas and liquid service (such as wellheads or separators) are assumed to have a percentage of total components in gas service and a percentage in liquid service.

Additionally, the component counts include a safety factor of 50%.

Equipment Leak Fugitives

Section 3.6

EPN(s): FUG
FIN(s): FUG
Source Name: **Piping Component Fugitives**

Equipment Counts & Subpart W Defaults Component Counts

Equipment Type	Site-Specific Equipment Counts	Service Stream Split of Components[1]		Default Component Counts per Major Equipment Type									
				Valves	Valves	Flanges	Connectors	Connectors	Compressor Seals	Pressure Relief Valves	Open-ended Lines	Open-ended Lines	Other
		Gas	Liquid	Gas	Liquid	Liquid	Gas	Liquid	Gas	Gas	Gas	Liquid	Liquid
Separators	6	90%	10%	34	6	12	106	10	0	2	6	0	0
Meters/piping[2]	1	100%	0%	14	0	0	51	0	0	1	1	0	0
Headers	1	0%	100%	0	5	10	0	4	0	0	0	0	0
Compressors	4	100%	0%	73	0	0	179	0	1	4	3	0	0
Calculated Counts with 50% Safety Factor				**735**	**14**	**27**	**2,010**	**15**	**6**	**42**	**69**	**--**	**--**

[1] Any liquids handled are assumed to be Light Oil for purposes of fugitive emission calculations.

[2] The MRR uses equipment types from the listed in a 1996 GRI/EPA study. The equipment type "meters/piping" can be found in the Fugitives report under onshore production. This equipment type is a catch-all category for counts of individual fugitive components (such as valves, connectors, OELs, PRV's) that were not attached to another major piece of equipment. Therefore, there was one "meters/piping" per site. For more information, refer to Hummel, K.E., L.M. Campbell, and M.R. Harrison. *Methane Emissions from the Natural Gas Industry, Volume 8: Equipment Leaks*, Final Report, GRI-94/0257.25 and EPA-600/R-96-080h. Gas Research Institute and U.S. Environmental Protection Agency, June 1996. http://www.epa.gov/gasstar/documents/emissions_report/8_equipmentleaks.pdf, accessed April 28, 2011.

Equations Used:

A. (Calculated Components, per Component & Service Types) = (Site-Specific Equipment Count) x (Default Components per Equipment Type) x (% Service Stream Split) x (100% + Safety Factor)

Equipment Leak Fugitives

Section 3.6

EPN(s): FUG
FIN(s): FUG
Source Name: **Piping Component Fugitives**

Emission Calculations

Area/Stream Name	Component		Service Type	Emission Factor lb/hr/ component	Pre-Control TOC Emissions		LDAR Program (for emission reduction credit)		Post-Control TOC Emissions	
	Type	Count			lb/hr	tpy	Program	% Reduction	lb/hr	tpy
Gas/Vapor Service	Valves	735	Gas	0.00992	7.291	31.935	None	--	7.291	31.935
Gas/Vapor Service	Connectors	2,010	Gas	0.00044	0.884	3.874	None	--	0.884	3.874
Gas/Vapor Service	Compressor Seals	6	Gas	0.0194	0.116	0.510	None	--	0.116	0.510
Gas/Vapor Service	Relief Valves	42	Gas	0.0194	0.815	3.569	None	--	0.815	3.569
Gas/Vapor Service	Open-Ended Lines	69	Gas	0.00441	0.304	1.333	None	--	0.304	1.333
Liquid Service	Valves	14	Light Liquid	0.0055	0.077	0.337	None	--	0.077	0.337
Liquid Service	Flanges	27	Light Liquid	0.000243	0.007	0.029	None	--	0.007	0.029
Liquid Service	Connectors	15	Light Liquid	0.000463	0.007	0.030	None	--	0.007	0.030

Subtotals by Area/Stream:	Count		lb/hr	tpy		lb/hr	tpy
Gas/Vapor Service	2,862		9.411	41.221		9.411	41.221
Liquid Service	56		0.091	0.396		0.091	0.396
TOTAL	**2,918**		**9.502**	**41.617**		**9.502**	**41.617**

Equations Used:

A. Pre-Control Hourly Emissions, lb/hr = (Emission Factor, lb/hr/component) x (Component Count)

B. Pre-Control Annual Emissions, tpy = (Uncontrolled Hourly Emissions, lb/hr) x (Hours of Operation Per Year, hr/yr) / (2,000 lb/ton)

Speciated Emissions

Area/Stream Name:	Gas/Vapor Service			Liquid Service		
Pollutant	**Wt%**	**lb/hr**	**tpy**	**Wt%**	**lb/hr**	**tpy**
TOC	94.65%	9.411	41.221	100.00%	0.091	0.396
VOC	0.28%	0.028	0.121	100.00%	0.091	0.396
H2S	0.0008%	<0.001	<0.001	--	--	--
Note Reference:	[1]			[2]		

[1] Gas/Vapor Service service stream composition based on the molecular weight and composition are based on the representative sample taken from Waha Compressor Station GC Data - Inlet Gas.

[2] Liquid Service service stream composition based on theservice stream composition conservatively based on 100% VOC.

Equations Used:

C. Per Service Type: (Emission of Individual Pollutant, lb/hr or tpy) = (Sum of Emissions per Service Type, lb/hr or tpy) x (Individual Pollutant Content per Service Type, Wt%) / (TOC Emissions per Service Type, lb/hr or tpy)

Total Speciated Emissions

Pollutant	Hourly lb/hr	Annual tpy
TOC	9.502	41.617
VOC	0.118	0.517
H2S	<0.001	<0.001

Compressor Blowdowns

Section 3.7

EPN(s): MSS
FIN(s): BLDWN
Source Name: **Compressor Blowdowns**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	65.35	3.76
H_2S	0.19	0.01

Calculation Basis:

Compressor blowdown emissions are calculated based on the volume of natural gas released per event, the number of events per hour and per year, and the properties of the natural gas stream.

The molecular weight, heat content, and composition are based on the representative sample taken from Waha Compressor Station GC Data - Inlet Gas. Gas Constant is based on TCEQ Standard Conditions as defined in 30 TAC §101.1(99) (68 °F and 14.7 psia).

Background Information

Number of Compressors	4	
Actual Volume of Vented Unit - Max	5,625	ft^3/unit
Actual Volume of Vented Unit - Avg	4,500	ft^3/unit
Gas Temperature Before Release	100	°F
	559.67	°R
Gas Pressure Before Release	1,480	psig
	1516.0	psia
Max Volume Released (per unit)	533,945.93	scf/event/unit
Avg Volume Released (per unit)	427,156.75	scf/event/unit
Hourly Blowdowns (total)	1	event/hr
Annual Events (per unit)	36	events/yr/unit
Total Annual Events	144	events/yr
Basis for Physical Properties of Gas	Waha Compressor Station GC Data - Inlet Gas	
Gas Constant	385.22	scf/lb-mole
Standard Temperature	68 °F	527.67 °R
Standard Pressure	14.7 psia	
Molecular Weight	16.96	lb/lb-mole
Net / Low Heat Value (LHV)	906.80	Btu/scf
Emissions Routed to	Atmosphere	

Compressor Blowdowns

Section 3.7

EPN(s): MSS
FIN(s): BLDWN
Source Name: **Compressor Blowdowns**

Emissions Calculations:

Parameters	Hourly	Annual
Total Volume Released	533,945.93 scf/hr	61,510,571.50 scf/yr
Mass Released	23,507.37 lb/hr	2,708,049.26 lb/yr

Speciated Emissions

Pollutant	Wt%	Emissions	
		lb/hr	tpy
VOC	0.2780%	65.35	3.76
H_2S	0.0008%	0.19	0.01
Propane (C3)	0.2574%	60.51	3.49
Isobutane (i-C4)	0.0069%	1.61	0.09
n-Butane (n-C4)	0.0137%	3.22	0.19

Equations used:

A. Total Volume Released, scf = (Volume Released per Event, scf/event) x (Total Number of Events)
B. Mass Released, lb = (Total Volume Released, scf) x (Molecular Weight, lb/lb-mole) / (Gas Constant at STP, scf/lb-mole)
C. Hourly Pollutant Emissions, lb/hr = (Pollutant Content, Wt%) x (Mass Released per Hour, lb/hr)
D. Annual Pollutant Emissions, tpy = (Pollutant Content, Wt%) x (Mass Released per Year, lb/yr) / (2,000 lb/ton)

Turbine Start-up & Shutdown Events

Section 3.8

EPN(s): MSS
FIN(s): MSS-TURBINE
Source Name: **Turbine Start-up/ Shutdown Events**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	4.00	0.29
NOx	2.00	0.14
CO	45.00	3.24

Calculation Basis:

The turbines are shutdown periodically for planned maintenance. The emissions released during the shutdown and start-up of the turbines are based on the manufacturer's data presented below.

Start-up and shutdown emission rates are from Table 4 of Solar Turbines Product Information Letter (PIL170 Revision 10, September 15, 2020). Hourly emissions assume that both a start-up and shutdown event would occur in the same hour.

Background Information

Number of Turbines	4	
Hourly Blowdowns (total)	1	event/hr
Annual Events (per Turbine)	36	events/yr/turbine
Total Annual Events	144	events/yr
Emissions Routed to	Atmosphere	

Emission Factors:

Pollutant	Start-up	Shutdown	Total
NOx (lb/event)	1.00	1.00	2.00
CO (lb/event)	24.00	21.00	45.00
VOC (lb/event)	2.00	2.00	4.00

Turbine Start-up & Shutdown Events

Section 3.8

EPN(s): MSS
FIN(s): MSS-TURBINE
Source Name: **Turbine Start-up/ Shutdown Events**

Calculated Emissions

Pollutant	Emissions	
	lb/hr	tpy
NOx	2.00	0.14
CO	45.00	3.24
VOC	4.00	0.29

Equations used:

A. Annual Pollutant Emissions, tpy = (Emission Rate, lb/event) x (Number of Events) x (Number of Turbines) / (2,000 lb/ton)

MSS Pipeline Maintenance

Section 3.9

EPN(s): MSS
FIN(s): PIPEBD
Source Name: **Pipeline Maintenance & Blowdowns**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	282.21	0.71
H_2S	0.82	2.04E-03

Calculation Basis:

Emissions resulting from pipeline maintenance are calculated based on the volume of pipeline degassed at the specified pipeline pressure, the number of events per hour and per year, and the properties of the natural gas stream (all of which are indicated in the background information below).

The molecular weight, heat content, and composition are based on the representative sample taken from Waha Compressor Station GC Data - Inlet Gas Gas Constant is based on TCEQ Standard Conditions as defined in 30 TAC §101.1(99) (68 °F and 14.7 psia).

Background Information

Number of Lines	1	
Pipeline Length	2,500.00	ft
Pipeline Diameter	3.50	ft
Volume of Pipeline	24,052.82	ft^3/unit
Hourly Events (total)	1	event/hr
Duration of Each Event	0.5	hour
Annual Events (per unit)	5	event/yr/unit
Total Annual Events	5	events/yr
Basis for Physical Properties of Gas	Waha Compressor Station GC Data - Inlet Gas	
Release Temperature	100	°F
	559.67	°R
Release Pressure	1,480	psig
	1494.7	psia
Gas Constant	385.22	scf/lb-mole
Standard Temperature	68 °F	527.67 °R
Standard Pressure	14.7 psia	
Volume Released (per event)	2,305,860.629	scf/event
Molecular Weight	16.96	lb/lb-mole
Net / Low Heat Value (LHV)	906.80	Btu/scf
Emissions Routed to	Atmosphere	

MSS Pipeline Maintenance

Section 3.9

EPN(s): MSS
FIN(s): PIPEBD
Source Name: **Pipeline Maintenance & Blowdowns**

Emissions Calculations:

Parameters	Hourly	Annual
Total Volume Released	2,305,860.63 scf/hr	11,529,303.15 scf/yr
Mass Released	101,517.25 lb/hr	507,586.26 lb/yr

Speciated Emissions

Pollutant	Wt%	Emissions	
		lb/hr	tpy
VOC	0.2780%	282.21	0.71
H_2S	0.0008%	0.82	2.04E-03
Propane (C3)	0.2574%	261.34	0.65
Isobutane (i-C4)	0.0069%	6.96	0.02
n-Butane (n-C4)	0.0137%	13.92	0.03

Equations used:

A. Total Volume Released, scf = (Volume Released per Event, scf/event) x (Total Number of Events)
B. Mass Released, lb = (Total Volume Released, scf) x (Molecular Weight, lb/lb-mole) / (Gas Constant at STP, scf/lb-mole)
C. Hourly Pollutant Emissions, lb/hr = (Pollutant Content, Wt%) x (Mass Released per Hour, lb/hr)
D. Annual Pollutant Emissions, tpy = (Pollutant Content, Wt%) x (Mass Released per Year, lb/yr) / (2,000 lb/ton)

Miscellaneous MSS Activities

Section 3.10

EPN(s): MSS
FIN(s): MSS-MISC
Source Name: **Miscellaneous MSS Activities**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	0.06	0.25
HAPs	2.85E-03	0.01

Calculation Basis:

The planned MSS activities and associated calculations represented here are taken from the TCEQ oil and gas emissions spreadsheet (revised 10/2/2014). These default values conservatively estimate emissions from typical planned MSS activities that may occur at the site. Emissions from miscellaneous activities (as outlined in 30 TAC 106.359(b)) are intended to represent potential emissions from miscellaneous activities and should not be interpreted as an authorization claim under 30 TAC §106.359 unless explicitly stated in this document.

Additionally, not all activities represented below occur at this site, and MSS activities not specifically represented here may occur; however, the emission limits of the permit will not be exceeded. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific facility or activity condition under 30 TAC §116.116(a). Individual activities in this MSS category which are performed may have slight variations in procedure or equipment configuration.

MSS Descriptions and Input Parameters

MSS Activity	§106.359 Paragraph	MSS Activity Description - Emissions asscociated with:	Input Parameters	
Engine Oil changes / Filter Changes	(b)(1)	Engine oil/filter change occur during the draining of the used engine oil into oil pan.	Number of Engine/Turbines	3
			Annual Activities	10
Engine Rod Packing Changes	(b)(1), (b)(4)	Changing of the rod would be from clingage of lubricant in the casing.	Annual Activities	10
Engine Wet / Dry Seal Changes	(b)(3)	Changing seals would be from clingage of lubricant in the casing.	Annual Activities	2
Glycol dehydration unit	(b)(2)	Replacement of glycol solution used in dehydration unit (contactor and regenerator).	No. of Dehy units	0
			Annual Activities	0
Amine unit	(b)(2)	Replacement of solution used in the amine unit (Contactor and regenerator).	No. of Amine units	0
			Annual Activities	0
Heater Treater	(b)(2)	Repair, adjustment, calibration, lubrication, and cleaning of heater treaters.	No. of Heaters	0
			Activities/year	0
Aerosol Lubricants	(b)(2)	Lubrication of site process equipment.	16oz cans used/yr	100
Piping Components	(b)(3)	Replacement of piping components (based on 100 ft pipe length).	No. of pipes	10
			Activities/year	1
Calibration	(b)(2)	Calibration of site process equipment.	No. of cylinders	1

Miscellaneous MSS Activities

Section 3.10

EPN(s): MSS
FIN(s): MSS-MISC
Source Name: **Miscellaneous MSS Activities**

Emission Calculations:

MSS Activity	Default Parameters		Equation Used	Calculated Value	Emissions tpy
Engine Oil Changes/ Filter Changes *(b)(1)*	Temperature, **T**	212 °F	Loading Loss, L_L	0.0093 lb/Mgal	0.03
	Vapor Pressure, P_V	0.001 psia			
	Saturation Factor, **S**	1.0 (dimensionless)			
	Molecular Weight, M_W	500 lb/lb-mol			
	Motor Oil Usage	112 gal/activity		0.001 lb/activity	
	wind speed, **U**	3.52 m/s			
	Vapor Pressure, P_V	10.0 Pa	Evaporation Loss, L_E	1.027 lb/activity	
	Surface Area, A_P	1.48 m²			
	Evaporation time, **t**	10 hours			
	Safety Factor-large HP eng	2.0 (dimensionless)	**Total**	**20.565 lb/yr/engine**	
Engine Rod Packing Changes *(b)(1) & (b)(4)*	Temperature, **T**	104 °F	Clingage Loss, **LSL max**	0.00012 lb/activity	1.75E-06
	Vapor Pressure, P_V	0.001 psia			
	Saturation Factor, **S**	0.60 (dim)			
	Molecular Weight, M_W	500 lb/lb-mol			
	Ideal Gas Constant, **R**	10.73159 psia ft³/lb-mole °R			
	Casing Volume, V_V	2.355 ft³	**Total**	**0.0012 lb/yr/engine**	
Engine Wet / Dry Seal Changes *(b)(3)*	Temperature, **T**	104 °F	Clingage Loss, **LSL max**	0.00012 lb/activity	3.50E-07
	Vapor Pressure, P_V	0.001 psia			
	Saturation Factor, **S**	0.60 (dim)			
	Molecular Weight, M_W	500 lb/lb-mol			
	Ideal Gas Constant, **R**	10.73159 psia ft³/lb-mole °R			
	Casing Volume, V_V	2.355 ft³	**Total**	**0.0002 lb/yr/engine**	
Aerosol Lubricants *(b)(2)*	WD-40 Aerosol Lubricant *based on 16oz can*	45-50 wt% VOC volatilizes	Emissions	0.5 lb/can	0.03
Piping Components *(b)(3)*	Temperature, **T**	100 °F	Clingage Loss, **LSL max**	5.434 lb/activity	0.03
	Vapor Pressure, P_V	10.5 psia			
	Saturation Factor, **S**	0.60 (dim)			
	Molecular Weight, M_W	66 lb/lb-mol			
	Ideal Gas Constant, **R**	10.73159 psia ft³/lb-mole °R	**Total**	**5.4345 lb/yr/unit**	
	Vessel Volume, V_V	78.5 ft³			
Calibration *(b)(2)*	Pounds of pentane in one cylinder of calibration gas	Assumed typical cylinder of calibration gas (pentane) contains 100 lb	**Total**	100 lb pentane/cylinder	0.05
Miscellaneous *(b)(6)*	Safety factor to account for MSS activities with the same character and quantity of emissions as those listed in paragraphs (b) (1) - (5) of §106.359.				187.94%

Emission Rates

Pollutant	Pollutant Wt.% [1]	lb/hr	tpy
VOC	100.00%	0.06	0.25
HAPs	5.00%	2.85E-03	0.01

[1] Composition is conservatively based on 100% VOC.

Miscellaneous MSS Activities

Section 3.10

EPN(s): MSS
FIN(s): MSS-MISC
Source Name: **Miscellaneous MSS Activities**

Equations used:

A. Loading Loss Emission Rate, $\mathbf{L_L}$, lb/Mgal
AP-42, Chapter 5.2, Equation 1

$$L_L = 12.46 \times \frac{S\ P_V\ M_V}{T_B}$$

B. Ideal Gas Law: n = PV/RT

$$\text{Total Emissions} = \frac{P_V\ V_V}{R\ T} \times M_W \times \text{Concentration (Wt\%)}$$

C. Evaporative Loss Equation, $\mathbf{L_E}$
Reference:Ajay Kumar, N.S. Vatcha, and John Schmelzle, "Estimate Emissions from Atmospheric Releases of Hazardous Substances," Environmental Engineering World, November-December 1996.

$$\mathbf{L_E} = 4.14 \times 10^{-5} \times U0.78 \times P_V \times M_W\ 0.67 \times Ap\ 0.94 \times t$$

D. Clingage Loss Equation, $\mathbf{LSL_{max}}$
AP-42, Ch. 7, Equation 3-14
(Constrained by an upper limit = filling loss for IFR w/liquid heel)

$$\mathbf{LSL_{max}} = 0.60 \times \frac{P_V\ V_V}{R\ T} \times M_W$$

where:
S = Saturation Factor - AP-42, Table 5.2-1
P_V = True Vapor Pressure (psia)
M_W = Molecular weight (lb/lb-mol)
T = Standard Temperature (°R)
Ap = liquid surface area (m^2)
t = time (hrs)
V_V = Vessel Volume (ft^3)

Painting and Blasting Operations

Section 3.11

EPN(s): SCAB
FIN(s): SCAB
Source Name: **Surface Coating & Blasting**

Total Emissions:

Pollutant	lb/hr	tpy
VOC	0.08	0.35
$PM_{TOTAL/10/2.5}$	0.13	0.01
PM_{10}	0.13	0.01
$PM_{2.5}$	0.02	1.78E-03

Calculation Basis:

The planned MSS activities and associated calculations represented here are taken from the TCEQ oil and gas emissions spreadsheet (revised 10/2/2014). These default values conservatively estimate emissions from typical planned MSS activities that may occur at the site. Emissions from painting and blasting operations (as outlined in 30 TAC 106.359(b)) are intended to represent potential emissions from these activities and should not be interpreted as an authorization claim under 30 TAC §106.359 unless explicitly stated in this document.

Additionally, not all activities represented below occur at this site, and MSS activities not specifically represented here may occur; however, the emission limits of the permit will not be exceeded. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific facility or activity condition under 30 TAC §116.116(a). Individual activities in this MSS category which are performed may have slight variations in procedure or equipment configuration.

MSS Descriptions and Input Parameters

MSS Activity	§106.359 Paragraph	MSS Activity Description - Emissions asscociated with:	Input Parameters	
Aerosol Cans	(b)(2)	Includes spray paints and primers, decreasers, cleaners, other solvents, and rust inhibitors (where VOC is a propellant). Lubricants not included.	16oz cans used/yr	100
			VOC Content (lb/can)	0.9
Manual Paint Application	(b)(2)	Includes non-spray application of touch up paint/primer. Assumes 100% evaporation rate of VOC. TCEQ survey of MSDS sheets indicates VOC content varies from 2 to 7 lb/gallon. As Chapter 115 limits VOC content to 3.5 lb/gal in nonattainment areas this was used as a conservative amount.	Paint used (gal/yr)	100
			VOC Content (lb/gal)	3
Spray Painting	(b)(2)	Includes spray application of paint/primer. Assumes 100% evaporation rate of VOC. TCEQ survey of MSDS sheets indicates VOC content varies from 2 to 7 lb/gallon. As Chapter 115 limits VOC content to 3.5 lb/gal in nonattainment areas this was used as a conservative amount.	Paint used (gal/yr)	100
			VOC Content (lb/gal)	3
Sandblasting	(b)(2)	Per industry expertise and BMP, blasting occurs for 5 days per year and 8 hrs per day. Emission factor for PM_{10} based on TCEQ Abrasive Blast Cleaning technical guidance document. Emission factor for $PM_{2.5}$ is based on 15% of PM_{10} emission factor.	Application Rate (lb/hr)	375
			Annual Hours of Blasting Operations	40

Painting and Blasting Operations

Section 3.11

EPN(s): SCAB
FIN(s): SCAB
Source Name: **Surface Coating & Blasting**

Emission Calculations:

MSS Activity	Parameters and Emission Factors		Pollutant	Calculated Value	Emissions tpy
Aerosol Cans *(b)(2)*	Standard Industrial Size Can	16 oz	VOC	90.00 lb/yr	0.05
	VOC Content	0.9 lb/can			
	Number of Cans Used/Yr	100			
Non-spray Paint Application *(b)(2)*	Paint Used	100 gal/yr	VOC	300.00 lb/yr	0.15
	VOC Content	3.00 lb/gal			
Spray Painting *(b)(2)*	Paint Used	100 gal/yr	VOC	300.00 lb/yr	0.15
	VOC Content	3.00 lb/gal			
	$PM_{10/2.5}$ Content	8.00 lb/gal	PM	53.20 lb/yr	0.03
	$PM_{10/2.5}$ Transfer Efficiency	65%	PM_{10}	16.80 lb/yr	0.01
	Droplet Factor - PM_{10} Overspray	81%			
	Droplet Factor - PM_{10} Overspray	94%	$PM_{2.5}$	2.80 lb/yr	1.40E-03
	Droplet Factor - $PM_{2.5}$ Overspray	99%			
Sandblasting *(b)(2)*	Application Rate	375.0 lb/hr	PM_{10}	0.13 lb/hr	2.55E-03
	Annual Blasting Operation	40 hr/yr			
	Emission Factor - PM_{10}	0.00034 lb/lb of usage	$PM_{2.5}$	0.02 lb/hr	3.75E-04
	Emission Factor - $PM_{2.5}$	0.00005 lb/lb of usage			

Emission Rates

Pollutant	Pollutant Wt.% [1]	lb/hr	tpy
VOC	100.00%	0.08	0.35
$PM_{TOTAL/10/2.5}$	N/A	0.13	0.03
PM10	N/A	0.13	0.01
PM2.5	N/A	0.02	1.78E-03

[1] Composition is conservatively based on 100% VOC.

Equations used:

A. VOC Usage, lb/yr = (VOC Content, lb/gal or can) x (Number of gallons or cans used per year)
B. PM Usage, lb/yr = (PM Content, lb/gal) X (Number of gallons used per year) X (100% - PM Transfer Efficiency) X (100% - PM Overspray)
C. Hourly Pollutant Emissions, lb/hr = (Pollutant Usage, lb/yr) / (8,760 hr/yr)
D. Annual Pollutant Emissions, tpy = (Pollutant Usage, lb/yr) / (2,000 lb/ton)

SECTION 4

Impacts Analysis

Impacts Evaluation

Section 4.1

In accordance with 30 TAC §101.21 and §112.32, authorized emission sources must be able to demonstrate compliance with the applicable NAAQS and State Property Line Standards.

The site operates gas-fired turbines; therefore, a NAAQS evaluation for NO_2 is included with this application. However, impacts evaluations for SO_2 and H_2S were not conducted as the concentrations are not expected to exceed any applicable standard.

The modeled impacts are based on the input paramaters listed in Section 4.2. Impacts evaluations for SO_2 and H_2S can be provided upon request.

Impacts Evaluation Parameters

Section 4.2

Impacts by Source:

EPN	Emission Source	Rating Value	Rating Units	Annual Operation hr/yr	Stack Height ft	Distance to Receptor ft	Distance to Property Line ft	Modeled Emission Rate lb/hr	Source of Unit Impact Multiplier	Unit Impact Multiplier, G (@Property Line) G_{HOURLY} [1] (µg/m³/lb/hr)
TURB1	Solar Titan 250 Turbine 1	30,079	hp	8,760	55.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**3.50157**
TURB2	Solar Titan 250 Turbine 2	30,079	hp	8,760	55.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**3.50157**
TURB3	Solar Titan 250 Turbine 3	30,079	hp	8,760	55.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**3.50157**
TURB4	Solar Titan 250 Turbine 4	30,079	hp	8,760	55.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**3.50157**
EMGEN1	Emergency Generator Engine	2,150	hp	100	15.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**5.06145**
MSS	Turbine Start-up/ Shutdown Events	N/A	N/A	144	55.0	≥ 5,280	≥ 50	1.0	TCEQ Generic Modeling Results Table 5F	**3.50157**

Notes:

[1] Hourly Unit Impact Multiplers (G_{HOURLY}) are interpolated from TCEQ's Generic Modeling Results Tables or are from SCREEN3 modeling runs.

NO_2 NAAQS Compliance Demonstration

Section 4.3

Basis: This section demonstrates compliance with the NO_2 National Ambient Air Quality Standard (NAAQS) emission limitations in accordance with 30 TAC §101.21 and §112.32.

Method Used	Predicted Impact
County	Hardin
TCEQ Region	Region 10, Beaumont
1-hr Background NO_2 Concentration [4]	70.0 µg/m³
Annual Background NO_2 Concentration [4]	70.0 µg/m³
Short-term NO_2 NAAQS, **P**	188 µg/m³
Long-term NO_2 NAAQS, **P**	100 µg/m³

Impacts by Source:

EPN/FIN	Emission Source	Annual Operation hr/yr	Unit Impact Multiplier, G (@ Property Line) G_{HOURLY} [1] (µg/m³/lb/hr)	NOx Emissions Hourly lb/hr	NOx Emissions Annual tpy	NO_2:NO_x Ratio [2]	NO_2 Emissions Hourly lb/hr	NO_2 Emissions Annual tpy	Predicted Concentration Hourly µg/m³	Predicted Concentration Annual µg/m³
TURB1/ TURB1	Solar Titan 250 Turbine 1	8,760	**3.50157**	11.73	51.38	0.25	2.93	12.85	10.27	0.82
TURB2/ TURB2	Solar Titan 250 Turbine 2	8,760	**3.50157**	11.73	51.38	0.25	2.93	12.85	10.27	0.82
TURB3/ TURB3	Solar Titan 250 Turbine 3	8,760	**3.50157**	11.73	51.38	0.25	2.93	12.85	10.27	0.82
TURB4/ TURB4	Solar Titan 250 Turbine 4	8,760	**3.50157**	11.73	51.38	0.25	2.93	12.85	10.27	0.82
EMGEN1/ EMGEN1	Emergency Generator Engine	100	**5.061445**	31.09	1.55	0.23	7.03	0.35	35.60	2.85
MSS/ MSS-TURBINE	Turbine Start-up/ Shutdown Events	144	**3.50157**	2.00	0.14	0.80	1.60	0.12	5.60	0.45
TOTALS				**80.02**	**207.22**		**20.36**	**51.85**	**82.28**	**6.58**

Site-Wide Impacts:

Compliance Demonstration (Predicted Impact Method)	Hourly	Annual
NO_2 Concentration from Project Sources	82.28 µg/m³	6.58 µg/m³
Background NO_2 Concentration [4]	70.00 µg/m³	70.00 µg/m³
Total Project NO_2 Concentration	**152.28 µg/m³**	**76.58 µg/m³**
NO_2 NAAQS (P)	188 µg/m³	100 µg/m³
Compliance Demonstrated? (Total Concentration < NAAQS)	**Yes**	**Yes**

NO_2 NAAQS Compliance Demonstration

Section 4.3

Notes:

[1] Hourly Unit Impact Multiplers (G_{HOURLY}) are from SCREEN3 modeling runs, or are interpolated from the TCEQ's Generic Modeling Results Tables. Annual Impacts are calculated by multiplying G_{HOURLY} by 0.08, per the TCEQ guidance document "Modeling and Effects Review Applicability (MERA)", APDG 5874v5, Revised 03/18.

[2] The NO_X to NO_2 conversion factor is determined in accordance with 30 TAC §106.512(6)(A) Figure 1, which is based the NOx emission rate (g/hp-hr) and device type.

[3] Variables used in above Impacts Table:

P: applicable standard - lesser of NAAQS, 30 TAC 112 limit, and ESL (as applicable) ($\mu g/m^3$)

G: applicable generic value ($\mu g/m^3/lb/hr$) from the Generic Modeling Results Tables paragraph (m) OR SCREEN3 modeling runs

[4] Background concentration from TCEQ's Interim 1-Hour NO2 Screening Background Concentrations, located at: http://www.tceq.texas.gov/assets/public/permitting/air/memos/interim_1hr_screen.pdf

Equations used:

A. NO_2 Emissions, lb/hr or tpy = (NOx Emissions, lb/hr or tpy) x (Source NO_2:NOx Ratio)

B. Predicted Hourly Concentration, $\mu g/m^3$ = (Actual Emissions from Source, lb/hr) x (G, $\mu g/m^3/lb/hr$)

C. Predicted Annual Concentration, $\mu g/m^3$ = (Actual Emissions from Source, tpy) x (2,000 lb/ton) x (G, $\mu g/m^3/lb/hr$) X 0.08 / (Annual Operation, hr/yr)

SECTION 5

State and Federal Rule Applicability

PBR §106.4 - Requirements for Permitting by Rule

Section 5.1

Requirement	Company Response
(a) *To qualify for a permit by rule, the following general requirements must be met.*	All of the following requirements will be met.
(1) *Total actual emissions authorized under permit by rule from the facility shall not exceed the following limits, as applicable:* **(A)** *250 tons per year (tpy) of carbon monoxide (CO) or nitrogen oxides (NO_X);* **(B)** *25 tpy of volatile organic compounds (VOC), sulfur dioxide (SO_2), or inhalable particulate matter (PM);* **(C)** *15 tpy of particulate matter with diameters of 10 microns or less (PM_{10});* **(D)** *10 tpy of particulate matter with diameters of 2.5 microns* **(E)** *25 tpy of any other air contaminant except:* **(i)** *water, nitrogen, ethane, hydrogen, and oxygen; and* **(ii)** *notwithstanding any provision in any specific permit by rule to the contrary, greenhouse gases as defined in §101.1 of this title (relating to Definitions).*	All emission rates for each facility to be authorized under Permit by Rule (PBR) are within the specified limits. Please see the Emissions Summary section for details.
(2) *Any facility or group of facilities, which constitutes a new major stationary source, as defined in §116.12 of this title (relating to Nonattainment and Prevention of Significant Deterioration Review Definitions), or any modification which constitutes a major modification, as defined in §116.12 of this title, under the new source review requirements of the Federal Clean Air Act (FCAA), Part D (Nonattainment) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder, must meet the permitting requirements of Chapter 116, Subchapter B of this title (relating to New Source Review Permits) and cannot qualify for a permit by rule under this chapter. Persons claiming a permit by rule under this chapter should see the requirements of §116.150 of this title (relating to New Major Source or Major Modification in Ozone Nonattainment Areas) to ensure that any applicable netting requirements have been satisfied.*	According to 30 TAC §116.12(19), a major source for nonattainment pollutants is a source located in a nonattainment area that emits or has the potential to emit at rates equal to or greater than the major source emission rates listed in Table I of §116.12(20)(A). For existing major sources, a project would be considered a major modification if project emission increases were equal to or greater than the significance levels listed in Table I of §116.12(20)(A). This site is not located in a nonattainment area. Therefore, nonattainment review is not triggered. According to 30 TAC §116.12(19), a major source for prevention of significant deterioration (PSD) pollutants is a source that emits, or has the potential to emit at rates equal to or greater than those listed in 40 CFR §51.166(b)(1). According to 30 TAC §116.12(20)(A), for existing major sources, a project would be considered a major modification if emissions were equal to or greater than the significance levels listed in 40 CFR §51.166(b)(23). This site is a new major source, but is not located in a nonattainment area; therefore, this project does not trigger PSD review Because neither nonattainment nor PSD review is triggered, the use of PBRs is not precluded.

PBR §106.4 - Requirements for Permitting by Rule

Section 5.1

Requirement	Company Response
(3) *Any facility or group of facilities, which constitutes a new major stationary source, as defined in 40 Code of Federal Regulations (CFR) §52.21, or any change which constitutes a major modification, as defined in 40 CFR §52.21, under the new source review requirements of the FCAA, Part C (Prevention of Significant Deterioration) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder because of emissions of air contaminants other than greenhouse gases, must meet the permitting requirements of Chapter 116, Subchapter B of this title and cannot qualify for a permit by rule under this chapter. Notwithstanding any provision in any specific permit by rule to the contrary, a new major stationary source or major modification which is subject to Chapter 116, Subchapter B, Division 6 of this title due solely to emissions of greenhouse gases may use a permit by rule under this chapter for air contaminants that are not greenhouse gases. However, facilities or projects which require a prevention of significant deterioration permit due to emissions of greenhouse gases may not commence construction or operation until the prevention of significant deterioration permit is issued.*	According to 40 CFR §52.21, a new major source under the PSD program is a source that emits, or has the potential to emit at rates equal to or greater than those listed in 40 CFR §52.21(b)(1). According to 40 CFR 52.21(b)(2), a major modification under the PSD program is a project at an existing major source that results in an increase in emissions equal to or greater than the Significance Levels listed in 40 CFR 52.21(b)(23). This site is a new major source. Project emission increases do not exceed the major source thresholds listed in 40 CFR §52.21(b)(1). Therefore, this project does not trigger PSD review. Because PSD review is not triggered, the use of PBRs is not precluded.
(4) *Unless at least one facility at an account has been subject to public notification and comment as required in Chapter 116, Subchapter B or Subchapter D of this title (relating to New Source Review Permits or Permit Renewals), total actual emissions from all facilities permitted by rule at an account shall not exceed 250 tpy of CO or NO_X; or 25 tpy of VOC or SO_2 or PM; or 15 tpy of PM_{10}; or 10 tpy of $PM_{2.5}$; or 25 tpy of any other air contaminant except water, nitrogen, ethane, hydrogen, oxygen, and GHGs (as specified in §106.2 of this title (relating to Applicability)).*	This site has not been through public notice; therefore, the combined emission rates from all facilities to be authorized under PBR will be within the specified limits.
(5) *Construction or modification of a facility commenced on or after the effective date of a revision of this section or the effective date of a revision to a specific permit by rule in this chapter must meet the revised requirements to qualify for a permit by rule.*	This site will meet all current requirements of the applicable permits by rule.
(6) *A facility shall comply with all applicable provisions of the FCAA, §111 (Federal New Source Performance Standards) and §112 (Hazardous Air Pollutants), and the new source review requirements of the FCAA, Part C and Part D and regulations promulgated thereunder.*	Facilities at this site will comply with applicable federal regulations. See the Federal Regulation Applicability Section for details.
(7) *There are no permits under the same commission account number that contain a condition or conditions precluding the use of a permit by rule under this chapter.*	There are no other permits for this site that restrict the use of a PBR.
(8) *The proposed facility or group of facilities shall obtain allowances for NO_X if they are subject to Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program).*	This site is not in the Houston-Galveston Brazoria ozone nonattainment area; therefore, the Mass Emissions Cap and Trade Program is not applicable.

PBR §106.4 - Requirements for Permitting by Rule

Section 5.1

Requirement	Company Response
(b) *No person shall circumvent by artificial limitations the requirements of §116.110 of this title (relating to Applicability).*	The requirements of §116.110, will not be circumvented.
(c) *The emissions from the facility shall comply with all rules and regulations of the commission and with the intent of the Texas Clean Air Act (TCAA), including protection of health and property of the public, and all emissions control equipment shall be maintained in good condition and operated properly during operation of the facility.*	Emissions from this site will comply with all rules, regulations, and intent of the TCAA.
(d) *Facilities permitted by rule under this chapter are not exempted from any permits or registrations required by local air pollution control agencies. Any such requirements must be in accordance with Texas Health and Safety Code, §382.113 and any other applicable law.*	All requirements of any local pollution control agency will be complied with.

Source Note: The provisions of this §106.4 adopted to be effective November 15, 1996, 21 TexReg 10881; amended to be effective April 7, 1998, 23 TexReg 3502; amended to be effective September 4, 2000, 25 TexReg 8653; amended to be effective March 29, 2001, 26 TexReg 2396; amended to be effective May 15, 2011, 36 TexReg 2852; amended to be effective April 17, 2014, 39 TexReg 2891

PBR §106.6 - Registration of Emissions

Section 5.2

Requirement	Company Response
(a) *An owner or operator may certify and register the maximum emission rates from facilities permitted by rule under this chapter in order to establish federally-enforceable allowable emission rates which are below the emission limitations in §106.4 of this title (relating to Requirements for Permitting by Rule).*	This registration is being certified.
(b) *All representations with regard to construction plans, operating procedures, and maximum emission rates in any certified registration under this section become conditions upon which the facility permitted by rule shall be constructed and operated.*	Because the company is certifying this registration, all representations in the permit are also conditions of the permit.
(c) *It shall be unlawful for any person to vary from such representation if the change will cause a change in the method of control of emissions, the character of the emissions, or will result in an increase in the discharge of the various emissions, unless the certified registration is first revised.*	The company understands that it must first revise a certified registration if the method of control, quantity, or character of emissions are changed.
(d) *The certified registration must include documentation of the basis of emission estimates and a written statement by the registrant certifying that the maximum emission rates listed on the registration reflect the reasonably anticipated maximums for operation of the facility.*	Documentation of the basis of the certified emission rates are included in this submittal.
(e) *Certified registrations used to demonstrate that Chapter 122 of this title (relating to Federal Operating Permits) does not apply to a source shall be submitted on the required form to the executive director; to the appropriate commission regional office; and to all local air pollution control agencies having jurisdiction over the site.* **(1)** *Certified registrations established prior to the effective date of this rule shall be submitted on or before February 3, 2003.* **(2)** *Certified registrations established on or after the effective date of this rule shall be submitted no later than the date of operation.*	This registration is being submitted to establish federally enforceable limits.
(f) *All certified registrations shall be maintained on-site and be provided immediately upon request by representatives of the commission or any local air pollution control agency having jurisdiction over the site. If however, the site normally operates unattended, certified registrations and records demonstrating compliance with the certified registration must be maintained at an office within Texas having day-to-day operational control of the site. Upon request, the commission shall make any such records of compliance available to the public in a timely manner.*	A copy of this registration will be maintained on-site or at the office having day-to-day operational control of the site.
(g) *Copies of certified registrations shall be included in permit applications subject to review under Chapter 116, Subchapter B of this title (relating to New Source Review Permits).*	If an application for a New Source Review permit is submitted for this site, it will include a copy of this certified registration.

Source Note: *The provisions of this §106.6 adopted to be effective November 15, 1996, 21 TexReg 10881; amended to be effective September 4, 2000, 25 TexReg 8653; amended to be effective December 11, 2002, 27 TexReg 11569*

PBR §106.8 - Recordkeeping

Section 5.3

Requirement	Company Response
(a) *Owners or operators of facilities and sources that are de minimis as designated in §116.119 of this title (relating to De Minimis Facilities or Sources) are not subject to this section.*	The facilities to be authorized by PBR are not considered *de minimis* sources; therefore, they are subject to this section.
(b) *Owners or operators of facilities operating under a permit by rule (PBR) in Subchapter C of this chapter (relating to Domestic and Comfort Heating and Cooling) or under those PBRs that only name the type of facility and impose no other conditions in the PBR itself do not need to comply with specific recordkeeping requirements of subsection (c) of this section. A list of these PBRs will be available through the commission's Austin central office, regional offices, and the commission's website. Upon request from the commission or any air pollution control program having jurisdiction, claimants must provide information that would demonstrate compliance with §106.4 of this title (relating to Requirements for Permitting by Rule), or the general requirements, if any, in effect at the time of the claim, and the PBR under which the facility is authorized.*	The PBRs used to authorize facilities at this site are not exempt from recordkeeping.
(c) *Owners or operators of all other facilities authorized to be constructed and operate under a PBR must retain records as follows:*	All required records will be kept.
(1) *maintain a copy of each PBR and the applicable general conditions of §106.4 of this title or the general requirements, if any, in effect at the time of the claim under which the facility is operating. The PBR and general requirements claimed should be the version in effect at the time of construction or installation or changes to an existing facility, whichever is most recent. The PBR holder may elect to comply with a more recent version of the applicable PBR and general requirements;*	
(2) *maintain records containing sufficient information to demonstrate compliance with the following:* **(A)** *all applicable general requirements of §106.4 of this title or the general requirements, if any, in effect at the time of the claim; and* **(B)** *all applicable PBR conditions;*	
(3) *keep all required records at the facility site. If however, the facility normally operates unattended, records must be maintained at an office within Texas having day-to-day operational control of the plant site;*	
(4) *make the records available in a reviewable format at the request of personnel from the commission or any air pollution control program having jurisdiction;*	
(5) *beginning April 1, 2002, keep records to support a compliance demonstration for any consecutive 12-month period. Unless specifically required by a PBR, records regarding the quantity of air contaminants emitted by a facility to demonstrate compliance with §106.4 of this title prior to April 1, 2002 are not required under this section; and*	
(6) *for facilities located at sites designated as major in accordance with §122.10(13) of this title (relating to General Definitions) or subject to or potentially subject to any applicable federal requirement, retain all records demonstrating compliance for at least five years. For facilities located at all other sites, all records demonstrating compliance must be retained for at least two years. These record retention requirements supercede any retention conditions of an individual PBR.*	

Source Note: *The provisions of this §106.8 adopted to be effective November 1, 2001, 26 TexReg 8518*

PBR §106.352 - Oil and Gas Handling and Production Facilities

Section 5.4

Requirement	Company Response
(a) - (k)	This project is being authorized under subsection (l). Therefore, subsections (a) through (k) do not apply.
(l) *The requirements in this subsection are applicable to new and modified facilities except those specified in subsection (a)(1) of this section. Any oil or gas production facility, carbon dioxide separation facility, or oil or gas pipeline facility consisting of one or more tanks, separators, dehydration units, free water knockouts, gunbarrels, heater treaters, natural gas liquids recovery units, or gas sweetening and other gas conditioning facilities, including sulfur recovery units at facilities conditioning produced gas containing less than two long tons per day of sulfur compounds as sulfur are permitted by rule, provided that the following conditions of this subsection are met. This subsection applies only to those facilities named which handle gases and liquids associated with the production, conditioning, processing, and pipeline transfer of fluids found in geologic formations beneath the earth's surface.*	This site is not located in one of the Barnett-Shale counties, and meets all other specified requirements. Therefore, this subsection is applicable and all requirements below will be met.
(1) Compressors and flares shall meet the requirements of §106.492 and §106.512 of this title (relating to Flares; and Stationary Engines and Turbines, respectively). Oil and gas facilities which are authorized under historical standard exemptions and remain unchanged maintain that authorization and the remainder of this subsection does not apply.	All engines and turbines will meet the applicable requirements of §106.512. There are no flares at this site.
(2) Total emissions, including process fugitives, combustion unit stacks, separator, or other process vents, tank vents, and loading emissions from all such facilities constructed at a site under this subsection shall not exceed 25 tpy each of SO_2, all other sulfur compounds combined, or all VOCs combined; and 250 tpy each of NO_X and CO. Emissions of VOC and sulfur compounds other than SO_2 must include gas lost by equilibrium flash as well as gas lost by conventional evaporation.	Total emissions authorized under this PBR will not exceed the specified emission limits.
(3) Any facility handling sour gas shall be located at least one-quarter mile from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facility or the owner of the property upon which the facility is located.	Not applicable. This site does not handle sour gas.
(4) Total emissions of sulfur compounds, excluding sulfur oxides, from all vents shall not exceed 4.0 pounds per hour (lb/hr) and the height of each vent emitting sulfur compounds shall meet the following requirements, except in no case shall the height be less than 20 feet, where the total emission rate as H_2S, lb/hr, and minimum vent height (feet), and other values may be interpolated: *(A) 0.27 lb/hr at 20 feet;* *(B) 0.60 lb/hr at 30 feet;* *(C) 1.94 lb/hr at 50 feet;* *(D) 3.00 lb/hr at 60 feet; and* *(E) 4.00 lb/hr at 68 feet.*	Total emissions of sulfur, excluding sulfur oxides will not exceed 4 lb/hr. All vents emitting sulfur compounds and authorized under this PBR will meet the specified vent height requirements.

PBR §106.352 - Oil and Gas Handling and Production Facilities

Section 5.4

Requirement	Company Response
(5) Before operation begins, facilities handling sour gas shall be registered with the executive director in Austin using Form PI-7 along with supporting documentation that all requirements of this subsection will be met. For facilities constructed under §106.353 of this title (relating to Temporary Oil and Gas Facilities), the registration is required before operation under this subsection can begin. If the facilities cannot meet this subsection, a permit under Chapter 116 of this title (relating to Control of Air Pollution by Permits for New Construction or Modification) is required prior to continuing operation of the facilities.	This site handles sweet gas; however, this authorization is being registered before operation begins.

Source Note: *The provisions of this §106.352 adopted to be effective February 27, 2011, 36 TexReg 943; amended to be effective February 2, 2012, 37 TexReg 333; amended to be effective November 22, 2012, 37 TexReg 9100*

PBR §106.359 - Planned Maintenance, Startup, and Shutdown (MSS) at Oil and Gas Handling and Production Facilities

Section 5.4

Requirement	Company Response
(a) Applicability. This section applies to certain authorized oil and gas handling or production facilities or sites, and authorizes emissions from planned maintenance, startup, and shutdown (MSS) facilities and activities, and any associated emission capture and control facilities, if all of the applicable requirements of this section are met. *(1) This section does not apply to oil and gas handling or production facilities or sites authorized under §106.352(a) - (k) of this title (relating to Oil and Gas Handling and Production Facilities), subsections (a) - (k) of the non-rule Air Quality Standard Permit for Oil and Gas Handling and Production Facilities, §106.355 of this title (relating to Pipeline Metering, Purging, and Maintenance), or Subchapter U of this chapter (relating to Tanks, Storage, and Loading).* *(2) This section may not be used to supersede an existing authorization for planned MSS under this chapter or §116.620 of this title (relating to Installation and/or Modification of Oil and Gas Facilities) unless any previously represented emission control methods, techniques, and devices remain in use and there is no resulting increase in hourly emissions.*	This site is not authorized under the Barnett Shale PBR [§106.352(a)-(k)], the Barnett Shale Non-Rule Standard Permit, or §106.355. In addition, this PBR is not being used to supercede an existing authorization under the Oil & Gas Standard Permit [§116.620]. Therefore, MSS emissions may be authorized under this PBR.
(b) Activities. Planned MSS activities and facilities authorized by this section include the following: *(1) engine, compressor, turbine, and other combustion facilities maintenance;* *(2) repair, adjustment, calibration, lubrication, and cleaning of site process equipment;* *(3) replacement of piping components, pneumatic controllers, boiler refractories, wet and dry seals, meters, instruments, analyzers, screens, and filters;* *(4) turbine or engine component swaps;* *(5) piping used to bypass a facility during maintenance;* *(6) planned MSS activities with the same character and quantity of emissions as those listed in paragraphs (1) - (5) of this subsection;* *(7) pigging and purging of piping;* *(8) blowdowns;* *(9) emptying, purging, degassing, or refilling of process equipment, storage tanks and vessels (except landing floating roof tanks for convenience purposes), if subparagraphs (A) - (C) of this paragraph are met.* *(A) all contents from process equipment or tanks must be removed to the maximum extent practicable prior to opening facilities to commence degassing and maintenance.* *(B) facilities must be degassed using best management practices to ensure air contaminants are removed from the system to the extent allowed by facility design.* *(C) tanks may be emptied or degassed by forced ventilation if:* *(i) only one vacuum truck is in use at any time;* *(ii) emissions are directed out the top of the tank; or* *(iii) emissions are routed through a closed system to a control device.* *(10) abrasive blasting, surface preparation, and surface coating of facilities and structures used at the site in oil and gas handling and production.*	Only acitivites listed in this subsection are being authorized by this PBR.

PBR §106.359 - Planned Maintenance, Startup, and Shutdown (MSS) at Oil and Gas Handling and Production Facilities

Section 5.4

Requirement	Company Response
(c) Best Management Practices. *(1) All facilities with the potential to emit air contaminants must be maintained in good condition and operated properly.* *(2) Each permit holder shall establish, implement, and update, as appropriate, a program to maintain and repair facilities as required by paragraph (1) of this subsection. The minimum requirements of this program must include:* *(A) a maintenance program developed by the permit holder for all facilities that is consistent with good air pollution control practices, or alternatively, manufacturer's specifications and recommended programs applicable to facility performance and the effect on emissions;* *(B) cleaning and routine inspection of all facilities;* *(C) repair of facilities on timeframes that minimize failures and maintain performance;* *(D) training of personnel who implement the maintenance program; and* *(E) records of conducted planned MSS activities.*	All facilites authorized by the PBR will be maintained in good condition and operated properly. A maintenance propgram will be developed that is consistent with good pollution control practices and manufacturer's specifications & recommendations. This plan will cover the cleaning and routine inspection of all facilities, will ensure that any repairs are completed in a timely manner, and will ensure that all personnel are appropriately trained. Records of all MSS activiites will be maintained.

Source Note: *The provisions of this §106.359 adopted to be effective September 10, 2013, 38 TexReg 5271*

PBR §106.511 Portable and Emergency Engines and Turbines

Section 5.5

Requirement	Company Response
Internal combustion engine and gas turbine driven compressors, electric generator sets, and water pumps, used only for portable, emergency, and/or standby services are permitted by rule, provided that the maximum annual operating hours shall not exceed 10% of the normal annual operating schedule of the primary equipment; and all electric motors. For purposes of this section, "standby" means to be used as a "substitute for" and not "in addition to" other equipment.	The emergency diesel generator engine will only be used for emergency and/or standby services and the maximum annual operating hours will not exceed 10% of the normal annual operating schedule of the primary equipment (100 hours per year).

Source Note: *The provisions of this §106.511 adopted to be effective March 14, 1997, 22 TexReg 2439; amended to be effective September 4, 2000, 25 TexReg 8653*

PBR §106.512 Stationary Engines and Turbines

Section 5.6

Requirement	Company Response
Gas or liquid fuel-fired stationary internal combustion reciprocating engines or gas turbines that operate in compliance with the following conditions of this section are permitted by rule.	All natural gas-fired engines and turbines at this site will meet the following requirements.
(1) *The facility shall be registered by submitting the commission's Form PI-7, Table 29 for each proposed reciprocating engine, and Table 31 for each proposed gas turbine to the commission's Office of Permitting, Remediation, and Registration in Austin within ten days after construction begins. Engines and turbines rated <240 horsepower (hp) need not be registered, but must meet paragraphs (5) and (6) of this section, relating to fuel and protection of air quality. Engine hp rating shall be based on the engine manufacturer's maximum continuous load rating at the lesser of the engine or driven equipment's maximum published continuous speed. A rich-burn engine is a gas-fired spark-ignited engine that is operated with an exhaust oxygen content less than 4.0% by volume. A lean-burn engine is a gas-fired spark-ignited engine that is operated with an exhaust oxygen content of 4.0% by volume, or greater.*	A Table 31 for each turbine is included in this registration.
(2) *For any engine rated 500 hp or greater, subparagraphs (A) - (C) of this paragraph shall apply.*	There are no engines at this site being registered under this PBR; therefore this section is not applicable.
(A) *The emissions of nitrogen oxides (NO_x) shall not exceed the following limits:* **(i)** *2.0 grams per horsepower-hour (g/hp-hr) under all operating conditions for any gas-fired rich-burn engine;* **(ii)** *2.0 g/hp-hr at manufacturer's rated full load and speed, and other operating conditions, except 5.0 g/hp-hr under reduced speed, 80-100% of full torque conditions, for any spark-ignited, gas-fired lean-burn engine, or any compression-ignited dual fuel-fired engine manufactured new after June 18, 1992;* **(iii)** *5.0 g/hp-hr under all operating conditions for any spark-ignited, gas-fired, lean-burn two-cycle or four-cycle engine or any compression-ignited dual fuel-fired engine rated 825 hp or greater and manufactured after September 23, 1982, but prior to June 18, 1992;* **(iv)** *5.0 g/hp-hr at manufacturer's rated full load and speed and other operating conditions, except 8.0 g/hp-hr under reduced speed, 80-100% of full torque conditions for any spark-ignited, gas-fired, lean-burn four-cycle engine, or any compression-ignited dual fuel-fired engine that:* **(I)** *was manufactured prior to June 18, 1992, and is rated <825 hp; or* **(II)** *was manufactured prior to September 23, 1982;* **(v)** *8.0 g/hp-hr under all operating conditions for any spark-ignited, gas-fired, two-cycle lean-burn engine that:* **(I)** *was manufactured prior to June 18, 1992, and is rated <825 hp; or* **(II)** *was manufactured prior to September 23, 1982;* **(vi)** *11.0 g/hp-hr for any compression-ignited liquid-fired engine.*	
(B) *For such engines which are spark-ignited gas-fired or compression-ignited dual fuel-fired, the engine shall be equipped as necessary with an automatic air-fuel ratio (AFR) controller which maintains AFR in the range required to meet the emission limits of subparagraph (A) of this paragraph. An AFR controller shall be deemed necessary for any engine controlled with a non-selective catalytic reduction (NSCR) converter and for applications where the fuel heating value varies more than ±50 British thermal unit/standard cubic feet from the design lower heating value of the fuel. If an NSCR converter is used to reduce NOx, the automatic controller shall operate on exhaust oxygen control.*	There are no engines at this site being registered under this PBR; therefore this section is not applicable.

PBR §106.512 Stationary Engines and Turbines

Section 5.6

Requirement	Company Response
(C) *Records shall be created and maintained by the owner or operator for a period of at least two years, made available, upon request, to the commission and any local air pollution control agency having jurisdiction, and shall include the following:* **(i)** *documentation for each AFR controller, manufacturer's, or supplier's recommended maintenance that has been performed, including replacement of the oxygen sensor as necessary for oxygen sensor-based controllers. The oxygen sensor shall be replaced at least quarterly in the absence of a specific written recommendation;* **(ii)** *documentation on proper operation of the engine by recorded measurements of NOx and carbon monoxide (CO) emissions as soon as practicable, but no later than seven days following each occurrence of engine maintenance which may reasonably be expected to increase emissions, changes of fuel quality in engines without oxygen sensor-based AFR controllers which may reasonably be expected to increase emissions, oxygen sensor replacement, or catalyst cleaning or catalyst replacement. Stain tube indicators specifically designed to measure NOx and CO concentrations shall be acceptable for this documentation, provided a hot air probe or equivalent device is used to prevent error due to high stack temperature, and three sets of concentration measurements are made and averaged. Portable NOx and CO analyzers shall also be acceptable for this documentation;* **(iii)** *documentation within 60 days following initial engine start-up and biennially thereafter, for emissions of NO x and CO, measured in accordance with United States Environmental Protection Agency (EPA) Reference Method 7E or 20 for NO x and Method 10 for CO. Exhaust flow rate may be determined from measured fuel flow rate and EPA Method 19. California Air Resources Board Method A-100 (adopted June 29, 1983) is an acceptable alternate to EPA test methods. Modifications to these methods will be subject to the prior approval of the Source and Mobile Monitoring Division of the commission. Emissions shall be measured and recorded in the as-found operating condition; however, compliance determinations shall not be established during start-up, shutdown, or under breakdown conditions. An owner or operator may submit to the appropriate regional office a report of a valid emissions test performed in Texas, on the same engine, conducted no more than 12 months prior to the most recent start of construction date, in lieu of performing an emissions test within 60 days following engine start-up at the new site. Any such engine shall be sampled no less frequently than biennially (or every 15,000 hours of elapsed run time, as recorded by an elapsed run time meter) and upon request of the executive director. Following the initial compliance test, in lieu of performing stack sampling on a biennial calendar basis, an owner or operator may elect to install and operate an elapsed operating time meter and shall test the engine within 15,000 hours of engine operation after the previous emission test. The owner or operator who elects to test on an operating hour schedule shall submit in writing, to the appropriate regional office, biennially after initial sampling, documentation of the actual recorded hours of engine operation since the previous emission test, and an estimate of the date of the next required sampling.*	There are no engines at this site being registered under this PBR; therefore this section is not applicable.

PBR §106.512 Stationary Engines and Turbines

Section 5.6

Requirement	Company Response
(3) *For any gas turbine rated 500 hp or more, subparagraphs (A) and (B) of this paragraph shall apply.*	The turbines at this site are ≥500 hp and will comply with subparagraphs (A) and (B).
(A) *The emissions of NOx shall not exceed 3.0 g/hp-hr for gas-firing.*	
(B) *The turbine shall meet all applicable NO x and sulfur dioxide (SO2) (or fuel sulfur) emissions limitations, monitoring requirements, and reporting requirements of EPA New Source Performance Standards Subpart GG--Standards of Performance for Stationary Gas Turbines. Turbine hp rating shall be based on turbine base load, fuel lower heating value, and International Standards Organization Standard Day Conditions of 59 degrees Fahrenheit, 1.0 atmosphere and 60% relative humidity.*	
(4) *Any engine or turbine rated less than 500 hp or used for temporary replacement purposes shall be exempt from the emission limitations of paragraphs (2) and (3) of this section. Temporary replacement engines or turbines shall be limited to a maximum of 90 days of operation after which they shall be removed or rendered physically inoperable.*	There are no temporary engines at this site.
(5) *Gas fuel shall be limited to: sweet natural gas or liquid petroleum gas, fuel gas containing no more than ten grains total sulfur per 100 dry standard cubic feet, or field gas. If field gas contains more than 1.5 grains hydrogen sulfide or 30 grains total sulfur compounds per 100 standard cubic feet (sour gas), the engine owner or operator shall maintain records, including at least quarterly measurements of fuel hydrogen sulfide and total sulfur content, which demonstrate that the annual SO_2 emissions from the facility do not exceed 25 tons per year (tpy). Liquid fuel shall be petroleum distillate oil that is not a blend containing waste oils or solvents and contains less than 0.3% by weight sulfur.*	All fuel will meet the specified requirements.
(6) *There will be no violations of any National Ambient Air Quality Standard (NAAQS) in the area of the proposed facility. Compliance with this condition shall be demonstrated by one of the following three methods:*	There will be no violations of any NAAQS. Please see below.
(A) *ambient sampling or dispersion modeling accomplished pursuant to guidance obtained from the executive director. Unless otherwise documented by actual test data, the following nitrogen dioxide (NO_2)/NOx ratios shall be used for modeling NO_2 NAAQS;* ***NOx Emission Rate (Q)*** *Device — g/hp-hr — NO_2/NOx Ratio* *IC Engine — Less than 2.0 — 0.4* *IC Engine — 2.0 thru 10.0 — 0.15 + (0.5/Q)* *IC Engine — Greater than 10.0 — 0.2* *Turbines — 0.25* *IC Engine with catalytic converter — 0.85*	This method was used to demonstrate compliance. Please see the NO_2 analysis in Section 4.
(B) *all existing and proposed engine and turbine exhausts are released to the atmosphere at a height at least twice the height of any surrounding obstructions to wind flow. Buildings, open-sided roofs, tanks, separators, heaters, covers, and any other type of structure are considered as obstructions to wind flow if the distance from the nearest point on the obstruction to the nearest exhaust stack is less than five times the lesser of the height, Hb, and the width, Wb, where:* *Hb = maximum height of the obstruction, and* *Wb = projected width of obstruction = SQRT(LW/3.141)* *where:* *L = length of obstruction* *W = width of obstruction*	This method was not used to demonstrate compliance.

PBR §106.512 Stationary Engines and Turbines

Section 5.6

Requirement	Company Response
(C) *the total emissions of NOx (nitrogen oxide plus NO_2) from all existing and proposed facilities on the property do not exceed the most restrictive of the following:* **(i)** *250 tpy;* **(ii)** *the value (0.3125 D) tpy, where D equals the shortest distance in feet from any existing or proposed stack to the nearest property line.*	This method was not used to demonstrate compliance.
(7) *Upon issuance of a standard permit for electric generating units, registrations under this section for engines or turbines used to generate electricity will no longer be accepted, except for:* **(A)** *engines or turbines used to provide power for the operation of facilities registered under the Air Quality Standard Permit for Concrete Batch Plants;* **(B)** *engines or turbines satisfying the conditions for facilities permitted by rule under Subchapter E of this title (relating to Aggregate and Pavement); or* **(C)** *engines or turbines used exclusively to provide power to electric pumps used for irrigating crops.*	There are no engines or turbines used to generate electricity at this site being authorized under this PBR.

Source Note: *The provisions of this §106.512 adopted to be effective March 14, 1997, 22 TexReg 2439; amended to be effective September 4, 2000, 25 TexReg 8653; amended to be effective June 13, 2001, 26 TexReg 4108*

State Regulation Applicability

Section 5.7

30 TAC		Rule	Applicable (Yes/No)	Company Response
Chapter 101	Subchapter A	General Rules	**Yes**	This site will comply with all applicable general rules of this Subchapter.
	Subchapter F, Division 1	Emission Events	**Yes**	If an unauthorized emission event occurs, all required records will be maintained, and all required reports will be submitted.
	Subchapter H, Division 3	Mass Emissions Cap and Trade Program	No	This site is not located in the HGB ozone nonattainment area.
Chapter 111	Subchapter A, Division 1	Visible Emissions	**Yes**	This site will comply with the applicable opacity limits and test methods specified in this division.
	Subchapter A, Division 5	Emission Limits on Nonagricultural Processes	**Yes**	This site will comply with the applicable PM emission limits specified in this division.
Chapter 112	Subchapter A	Control of Sulphur Dioxide	**Yes**	Emissions of SO_2 will comply with all applicable requirements of this chapter.
	Subchapter B	Control of Hydrogen Sulfide	**Yes**	Emissions of H_2S will comply with all applicable requirements of this chapter.
Chapter 113	Subchapter B	National Emission Standards for Hazardous Air Pollutants (FCAA, §112, 40 CFR Part 61)	No	This site is not subject to 40 CFR 61, Subpart R. Therefore, it is not subject to this subchapter.
	Subchapter D	National Emission Standards for Hazardous Air Pollutants for Source Categories (FCAA, §112, 40 CFR Part 63)	**Yes**	This chapter addresses the control of hazardous air pollutants. The site will comply with all applicable standards of performance for hazardous air pollutants, as described in the Federal Regulation section.
Chapter 115	Subchapter B, Division 1	Storage of Volatile Organic Compounds	No	This site is not located in a county subject to this division of Chapter 115.
	Subchapter B, Division 2	Vent Gas Control	No	Not applicable. There are no vents subject to this Division at this site.
	Subchapter B, Division 7	Oil and Natural Gas Service in Ozone Nonattainment Areas	No	Not applicable. This site is not located in the HGB or DFW ozone nonattainment areas.'
	Subchapter C, Division 1	Loading and Unloading of Volatile Organic Compounds	No	Not applicable. This site is not a gasoline terminal and/or is not located in the BPA, DFW, or HGB areas.

State Regulation Applicability

Section 5.7

30 TAC		Rule	Applicable (Yes/No)	Company Response
Chapter 117	Subchapter B	Combustion Control at Major Industrial, Commercial, and Institutional Sources in Ozone Nonattainment Areas	No	This site is not located in a county subject to Chapter 117.
	Subchapter D	Combustion Control at Minor Sources in Ozone Nonattainment Areas	No	This site is not located in a county subject to Chapter 117.
Chapter 122	Subchapter B	Federal Operating Permits Program - Permit Requirements	**Yes**	The site is a major source as defined in §122.10 of this title. Therefore it is subject to Title V permitting.

Federal Regulation Applicability

Section 5.8

Title 40 CFR Part 60 – New Source Performance Standards (NSPS)

NSPS Subpart	Rule Title	Applicable (Yes/No)	Company Response
Subpart A	General Provisions	**Yes**	This site is subject to a NSPS and is, therefore, subject to the general provisions of this subpart.
Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No	The storage tanks to be authorized by this project did not commence construction, reconstruction, or modification after June 11, 1973 and prior to May 19, 1978; therefore, this subpart does not apply.
Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and Prior to July 23, 1984	No	The storage tanks to be authorized by this project did not commence construction, reconstruction, or modification after May 18, 1978 and prior to July 23, 1984; therefore, this subpart does not apply.
Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	The storage tanks at the site commenced construction after July 23, 1984 and are used to store VOC liquid; however, each tank has a storage capacity less than 75 m^3 (472 bbl). Therefore, this subpart does not apply per §60.110b(a).
Subpart GG	Standards of Performance for Stationary Gas Turbines	No	This Site operates a stationary gas turbine which commenced construction after October 3, 1977; however, per 60.4305(b), stationary combustion turbines regulated under NSPS KKKK are exempt from the requirements of subpart GG. There are no further requirements under this subpart.
Subpart KKK	Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011	No	This Site does not meet the definition of natural gas processing plant as defined in 40 CFR §60.631; therefore, this subpart does not apply.
Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engine.	**Yes**	The diesel emergency generator engine at this site is subject to this subpart and will comply as applicable.
Subpart JJJJ	Standards of Performance for Stationary Compression Ignition Internal Combustion Engine.	No	This site does not operate an affected facility under this subpart; therefore, this subpart does not apply.

Federal Regulation Applicability

Section 5.8

NSPS Subpart	Rule Title	Applicable (Yes/No)	Company Response
Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	**Yes**	This site includes stationary combustion turbines with a maximum load ≥10 MMBtu/hr and commenced construction, modification, or reconstruction after February 18, 2005; therefore, the turbines are subject to this subpart per §60.4305(a). Compliance with the applicable testing, reporting, monitoring, and recordkeeping requirements of this subpart will be maintained.
Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification, or Reconstruction Commenced after August 23, 2011, and on or before September 18, 2015	No	This subpart covers gas wells, compressors, pneumatic controllers, storage vessels, and specified process equipment that are located at an onshore natural gas processing plant. All potentially affected facilities were constructed after September 18, 2015; therefore, this subpart does not apply.
Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced after September 18, 2015 and On or Before December 6, 2022	No	This site was constructed after December 6, 2022; therefore, this subpart does not apply.
Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022	**Yes**	Affected facilities at this site were constructed or modified after December 6, 2022. These facilities will comply with all applicable requirements.

Title 40 CFR Part 61 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP Subpart	Rule Title	Applicable (Yes/No)	Company Response
Subpart A	General Provisions	No	The facilities authorized by this project are not subject to a NESHAP. Therefore, they are not subject to the general provisions of this subpart.
Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	The facilities to be authorized by this project will not operate in volatile hazardous air pollutant service, as defined in §61.241 of this subpart; therefore, this subpart does not apply.

Federal Regulation Applicability

Section 5.8

Title 40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants
Maximum Achievable Control Technology (MACT)

MACT Subpart	Rule Title	Applicable (Yes/No)	Company Response
Subpart A	General Provisions	**Yes**	This site is subject to a MACT standard and is, therefore, subject to the general provisions of this subpart.
Subpart H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	No	There are no other applicable MACT subparts that reference this subpart. Therefore, this subpart does not apply.
Subpart HH	National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities	No	This subpart applies to affected sources that are located at oil and natural gas production facilities that are major or area sources of HAPs. For area sources, the affected source includes each TEG dehydration unit. This site is an area source of HAP emissions. However, it does not have a TEG dehydration unit. Therefore, this subpart does not apply.
Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	This subpart applies to natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company) and that are major sources of HAP emissions. This site is not a major HAP source; therefore, this subpart does not apply.
Subpart YYYY	National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines	**Yes**	This site includes stationary combustion turbines constructed, modified or reconstructed after January 14, 2003 and located at an area source of HAP emissions. Per §63.6085, the turbines are not affected facilities under this subpart; therefore, this subpart does not apply.
Subpart ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	**Yes**	The diesel generator engine at this site as subject to this subpart and will comply with all applicable requirements.

SECTION 6

Supporting Documentation

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer: **WhiteWater Midstream**	Engine Model: **TITAN 250-31900S CS/MD 59F MATCH**
Job ID: **Blackfin**	
Inquiry Number: **HO22-62322**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Derek Tang** / Date Run: **16-Jun-23**	Engine Emissions Data: **REV. 1.1**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 30079 HP 100.0% Load, Elev. 150 ft, Rel. Humidity 60.0%, Temperature 59.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	51.38	52.14	29.86
lbm/MMBtu (Fuel LHV)	0.060	0.060	0.035
lbm/(MW-hr)	0.52	0.53	0.30
(gas turbine shaft pwr) lbm/hr	11.73	11.90	6.82
2 — 27128 HP 100.0% Load, Elev. 150 ft, Rel. Humidity 60.0%, Temperature 80.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	47.29	47.99	27.48
lbm/MMBtu (Fuel LHV)	0.059	0.060	0.034
lbm/(MW-hr)	0.53	0.54	0.31
(gas turbine shaft pwr) lbm/hr	10.80	10.96	6.28
3 — 23925 HP 100.0% Load, Elev. 150 ft, Rel. Humidity 60.0%, Temperature 100.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	42.91	43.54	24.94
lbm/MMBtu (Fuel LHV)	0.058	0.059	0.034
lbm/(MW-hr)	0.55	0.56	0.32
(gas turbine shaft pwr) lbm/hr	9.80	9.94	5.69

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's SoLoNOx warranty, for ppm values, is available for greater than -20 deg F, and between 40% and 100% load for gas fuel.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer: *WhiteWater Midstream*	Model: **TITAN 250-31900S**
Job ID: **Blackfin**	Package Type: **CS/MD**
Run By: **Derek Tang** / Date Run: **16-Jun-23**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.27.13** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR EXPECTED PERFORMANCE

Elevation	feet	150
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	42.0

		1	2	3
Engine Inlet Temperature	deg F	59.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0
Driven Equipment Speed	RPM	6527	6358	6155
Specified Load	HP	FULL	FULL	FULL
Net Output Power	HP	30079	27128	23925
Fuel Flow	mmBtu/hr	196.92	182.48	167.52
Heat Rate	Btu/HP-hr	6547	6727	7002
Therm Eff	%	38.866	37.827	36.339
Engine Exhaust Flow	lbm/hr	549619	511630	468862
PT Exit Temperature	deg F	870	895	927
Exhaust Temperature	deg F	870	895	927

Fuel Gas Composition (Volume Percent)

Methane (CH4)	95.95
Ethane (C2H6)	2.50
Propane (C3H8)	0.04
I-Butane (C4H10)	0.0013
N-Butane (C4H10)	0.0015
N-Pentane (C5H12)	0.0016
Hexane (C6H14)	0.0008
Carbon Dioxide (CO2)	0.06
Nitrogen (N2)	1.45
Sulfur Dioxide (SO2)	0.0001

Fuel Gas Properties

LHV (Btu/Scf)	914.0	Specific Gravity	0.5730	Wobbe Index at 60F	1207.5

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
GFS-95288