July 31, 2017

Texas Commission on Environmental Quality (TCEQ)
Air Permits Division
Rule Registrations Section
Air Permits Initial Review Team (APIRT)
(Submitted via STEERS)
12100 Park 35 Circle
Building C, Third Floor, MC 163
Austin, TX 78753

RE: *Permit By Rule Registration*
MMEX Resources Corporation

Customer Reference Number: TBA

Regulated Entity Reference Number: TBA

Dear Sir or Madam:

MMEX Resources Corporation (MMEX) is proposing to construct and operate a greenfield modular refinery located near Fort Stockton, in Pecos County, Texas (Pecos County Refinery [PCR]). MMEX is a new customer; therefore, is requesting Texas Commission on Environmental Quality (TCEQ) to assign a Customer Reference No. (CN) and TCEQ Regulated Entity Reference No. (RN) for the modular Pecos County Refinery.

On June 7, 2017, MMEX met with Kristyn Campbell, Ryan Tedford, and David Reyna to discuss pre-application air permitting considerations for the Pecos County Refinery.

With this Permit by Rule (PBR) Registration, MMEX proposes to authorize emissions from all equipment at the modular Pecos County Refinery under the following PBRs:

- 30 Texas Administrative Code (30 TAC) §106.183 - Boilers, Heaters, and Other Combustion Devices;
- 30 TAC §106.261 - Facilities (Emission Limitations);
- 30 TAC §106.263 - Routine Maintenance, Startup and Shutdown of Facilities, and Temporary Maintenance Facilities;
- 30 TAC §106.355 - Pipeline Metering, Purging, and Maintenance;
- 30 TAC §106.478 - Storage Tank and Change of Service;
- 30 TAC §106.492 - Flares;
- 30 TAC §106.511 - Portable and Emergency Engines and Turbines; and
- 30 TAC §106.532 - Water and Wastewater Treatment.

TCEQ checklists and additional supporting documentation are included herein. The enclosed application demonstrates that the applicable requirements of 30 TAC Chapter 106 will be met. The PBR application is being submitted via the TCEQ STEERS system. The $100 PBR fee has been submitted to the TCEQ Revenue Section via the STEERS ePermits system at the time of submittal. Please do not hesitate to contact our technical contact, Brian Burdorf, at [redacted] or me at [redacted] if you have any questions or require further information regarding this Permit by Rule registration.

Sincerely,

MMEX Resources Corporation

By: Jack W. Hanks, President

Jack W. Hanks

President, CEO & Director

Attachments

cc: Mr. Camilo Chavez, Jr, TCEQ Region 7, Air Section, Manager, Midland

Ms. Kristyn Campbell, TCEQ Rule Registrations Section, Team Leader, Austin

Mr. Brian Burdorf, Trinity Consultants, Inc., Director

TCEQ PERMIT BY RULE REGISTRATION

MMEX Resources Corporation > Pecos County Refinery
Pecos County, Texas

MMEX RESOURCES CORPORATION

Prepared By:

Brian Burdorf – Director
Neelesh Sule – Senior Consultant
Nicholas Blandino – Consultant

TRINITY CONSULTANTS
12700 Park Central Drive
Suite 2100
Dallas, TX 75251
(972) 661-8100
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July 2017

Project 174401.0159

Trinity Consultants

Environmental solutions delivered uncommonly well

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APPENDIX A: SUPPLEMENTAL INFORMATION A-1

1. TCEQ FORMS

Core Data Form

PI-7 CERT

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)

☒ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)

☐ Renewal (Core Data Form should be submitted with the renewal form) ☐ Other

2. Customer Reference Number (if issued): CN

Follow this link to search for CN or RN numbers in Central Registry**

3. Regulated Entity Reference Number (if issued): RN

SECTION II: Customer Information

4. General Customer Information | 5. Effective Date for Customer Information Updates (mm/dd/yyyy)

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (If an individual, print last name first: e.g.: Doe, John) | If new Customer, enter previous Customer below:

MMEX Resources Corporation

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
0802736207	32063912656		

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees: ☐ 0-20 ☒ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated? ☒ Yes ☐ No

14. Customer Role (Proposed or Actual) - as it relates to the Regulated Entity listed on this form. Please check one of the following:

☐ Owner ☐ Operator ☒ Owner & Operator

☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address: 3616 Far West Blvd #117-321

City	Austin	State	TX	ZIP	78731	ZIP + 4	3082

16. Country Mailing Information (if outside USA) | 17. E-Mail Address (if applicable)

[redacted]

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
([redacted]		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If "New Regulated Entity" is selected below this form should be accompanied by a permit application)

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)

Pecos County Refinery

23. Street Address of the Regulated Entity: (No PO Boxes)							
	City		State		ZIP		ZIP + 4	
24. County	Pecos						

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	From intx of E Dickison Blvd and N Main St in Fort Stockton go 0.5 mi. Right onto FM 1053 N, go 12.5 mi. Turn right, go 7.2 miles. Cross the railroad tracks. Go straight (new road to be built) and follow the new road 2.6 mi to the site.				
26. Nearest City			State		Nearest ZIP Code
Fort Stockton			TX		79735
27. Latitude (N) In Decimal:	30.984957		28. Longitude (W) In Decimal:		-102.722038
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	59	5.84	-102	43	19.34

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
2911		324110	

33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)

Crude oil refinery

34. Mailing Address:	3616 Far West Blvd #117-321						
	City	Austin	State	TX	ZIP	78731	ZIP + 4	3082
35. E-Mail Address:	[redacted]						

36. Telephone Number	37. Extension or Code	38. Fax Number (if applicable)
([redacted]) [redacted]		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☒ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name: Brian Burdorf			41. Title: Director
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
([redacted]) [redacted]		( ) -	[redacted]

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	MMEX Resources Corporation	Job Title:	Chief Executive Officer
Name(*In Print*):	Jack W. Hanks	Phone:	([redacted]) [redacted]
Signature:		Date:	

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

I. Registrant Information		
A. Company or Other Legal Customer Name: MMEX Resources Corporation		
B. Company Official Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other _____)		
Name: Jack W. Hanks		
Title: Chief Executive Officer		
Mailing Address: 3616 Far West Blvd #117-321		
City: Austin	State: TX	ZIP Code: 78731-3082
Phone: [redacted]	Fax:	
E-mail Address: [redacted]		
All PBR registration responses will be sent via e-mail unless a hard copy is specifically requested. The company official must initial here if hard copy is requested. _____ *(please initial)*		
C. Technical Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other _____)		
Name: Brian Burdorf		
Title: Director		
Company Name: Trinity Consultants		
Mailing Address: 12700 Park Central Dr, Suite 2100		
City: Dallas	State: TX	ZIP Code: 75251
Phone: [redacted]	Fax:	
E-mail: [redacted]		
II. Facility and Site Information		
A. Name and Type of Facility		
Facility Name: Pecos County Refinery		
Type of Facility: Modular Refinery ☒ Permanent ☐ Temporary		
For portable units, please provide the serial number of the equipment being authorized below.		
Serial No:	Serial No:	
B. Facility Location Information		
Street Address:		
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).		
From intx of E Dickison Blvd and N Main St in Fort Stockton go 0.5 miles. Right onto FM 1053 N, go 12.5 mi. Turn right, go 7.2 miles. Cross the railroad tracks. Go straight (new road to be built) and follow the new road 2.6 mi to the site.		
City: Fort Stockton	County: Pecos	ZIP Code: 79735

II. Facility and Site Information *(continued)*	
C. TCEQ Core Data Form	
Is the Core Data Form (TCEQ Form Number 10400) attached?	☒ YES ☐ NO
If "NO," provide customer reference number (CN) and regulated entity number (RN) below.	
Customer Reference Number (CN):	
Regulated Entity Number (RN):	
D. TCEQ Account Identification Number (if known):	
E. PBR number(s) claimed under 30 TAC Chapter 106	
(List all the individual rule number(s) that are being claimed.)	
106.183	106.355
106.261	106.478
106.263	106.492, and 106.511
F. 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(s)	Effective Date
G. Previous Standard Exemption or PBR Registration Number	
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR?	☐ YES ☒ NO
If "YES," enter previous standard exemption number(s) and PBR registration number(s), and associated effective dates in the spaces provided below.	
Standard Exemption and PBR Registration Number(s)	Effective Date
H. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit	
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit?	☐ YES ☒ NO
If "YES," enter standard exemption number(s), PBR registration number(s), and Standard Permit registration number(s), and associated effective date in the spaces provided below.	
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s)	Effective Date

II. Facility and Site Information *(continued)*	
I. Other Air Preconstruction Permits	
Are there any other air preconstruction permits at this site?	☐ YES ☒ NO
If "YES," enter permit number(s) in the spaces provided below.	
J. Affected Air Preconstruction Permits	
Does the PBR being claimed directly affect any permitted facility?	☐ YES ☒ NO
If "YES," enter the permit number(s) in the spaces provided below.	
K. Federal Operating Permit (FOP) Requirements (30 TAC Chapter 122 Applicability)	
1. Is this facility located at a site that is required to obtain an FOP pursuant to 30 TAC Chapter 122?	☐ YES ☒ NO ☐ To Be Determined
If the site currently has an existing FOP, 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 a 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 (submitted or under APD review) ☒ N/A ☐ SOP application/revision (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 (*check all that apply*)	
1. Registration is solely to establish a federally enforceable emission limit.	☐ YES ☐ NO
2. Registration is within six months of an initial PBR review, and it is addressing deficiencies, administrative changes, or other allowed changes.	☐ YES ☐ NO
3. Registration is for a remediation project (30 TAC § 106.533).	☐ 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)*	
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 less than 10,000.	☐ YES ☒ NO
This registration is submitted by a non-profit organization.	☐ YES ☒ NO
2. A $450 fee is required for all other registrations.	
C. Payment Information	
Check/money order/transaction or voucher number:	
Individual or company name on check:	
Fee Amount: $ 100.00	
Was fee paid online?	☒ YES ☐ NO
IV. Technical Information Including State And Federal Regulatory Requirements **Place a check next to the appropriate box to indicate what is included 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 (All pages properly marked "CONFIDENTIAL")	☐ YES ☒ NO
C. Process Flow Diagram	☒ YES ☐ NO
D. Process Description	☒ YES ☐ NO
E. Maximum Emissions Data and Calculations	☒ YES ☐ NO
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 NO_x allowances equivalent to the actual NO_x, emissions from these facilities.*	

IV. Technical Information Including State And Federal Regulatory Requirements *(continued)*

Place a check next to the appropriate box to indicate what is included 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.

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 from Property Line and Nearest Off-Property Structure	
Distance from this facility's emission release point to the nearest property line: 250 feet	
Distance from this facility's emission release point to the nearest off-property structure: > 5,000 feet	
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): 10/1/2017	
Projected Start of Operation (provide date): 10/1/2018	

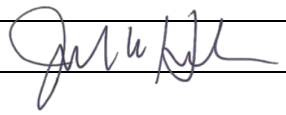
V. Delinquent Fees

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/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; the Texas Health and Safety Code, Chapter 382, the Texas Clean Air Act (TCAA); the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name (printed): Jack W. Hanks

Signature (original signature required): 

Date: JULY 31, 2017

2. PERMIT BY RULE FEE

Per Title 30 of the Texas Administrative Code (30 TAC) Chapter 106 Section (§) 50 – *Registration Fees for Permits by Rule*, a $100 fee is required to be submitted for this registration. This fee was submitted to the TCEQ Revenue Section via TCEQ's STEERS ePermits system.

3. EXECUTIVE SUMMARY

MMEX Resources Corporation (MMEX) is proposing to construct and operate a greenfield modular refinery located near Fort Stockton, in Pecos County, Texas (Pecos County Refinery [PCR]). MMEX is a new customer; therefore, is requesting Texas Commission on Environmental Quality (TCEQ) to assign a Customer Reference No. (CN) and TCEQ Regulated Entity Reference No. (RN) for the modular PCR. MMEX met with Kristyn Campbell, Ryan Tedford, and David Reyna on June 7, 2017, to discuss air permitting considerations for the Pecos County Refinery.

Pecos County is currently classified as an attainment or unclassified area for all criteria pollutants.[1] The Pecos County Refinery will be a minor source with respect to Prevention of Significant Deterioration (PSD) and for Federal Operating Permit program (aka Title V).

The proposed modular refinery will have a nominal refining capacity of 10,000 bpd of crude oil to extract diesel. With this Permit By Rule (PBR) Registration, MMEX proposes to authorize emissions from all equipment at the modular PCR under the following PBRs.

- 30 Texas Administrative Code (30 TAC) §106.183, Boilers, Heaters, and Other Combustion Devices;
- 30 TAC §106.261, Facilities (Emission Limitations);
- 30 TAC §106.263, Routine Maintenance, Startup and Shutdown of Facilities, and Temporary Maintenance Facilities;
- 30 TAC §106.355, Pipeline Metering, Purging, and Maintenance;
- 30 TAC §106.478, Storage Tank and Change of Service;
- 30 TAC §106.492, Flares;
- 30 TAC §106.511, Portable and Emergency Engines and Turbines; and
- 30 TAC §106.532, Water and Wastewater Treatment.

This registration package includes TCEQ Core Data Form, PI-7-CERT, process description, process flow diagram, emissions calculations, regulatory applicability assessments, and additional supporting documentation demonstrating that the applicable requirements of 30 TAC Chapter 106 will be met. The PBR application is being submitted via the TCEQ STEERS system. The $100 PBR fee has been submitted to the TCEQ Revenue Section via the STEERS ePermits system at the time of submittal.

[1] The United States Environmental Protection Agency (U.S.EPA) Green Book. Source: https://www3.epa.gov/airquality/greenbook/hbcs.html#TX . Accessed in June 2017.

4. PROCESS DESCRIPTION & FLOW DIAGRAM

Crude oil from the crude oil storage tanks (EPN TK50 and TK51) will be pumped to the crude distillation unit (CDU) for refining. A CDU is a simplified refinery and allows for distillation of crude into low-octane naphtha, diesel and residual. It does not include more complex refinery processes such as hydrotreating (to reduce the sulfur content in the diesel), reforming (to increase the octane of the naphtha and convert it to gasoline) or cracking (to convert heavier residual products into diesel and gasoline).

The crude oil before entering the crude fractionator tower is partially vaporized by passing it through a crude oil heater (EPN H-400). The crude oil heater is fired by off-gas and natural gas. The partially vaporized crude is then routed to the base of the crude fractionator tower where it begins to rise and cool as they pass through the fractionating trays and the unvaporized liquid collects in the bottom section of the tower. The unvaporized liquid or residual fuel oil (ATB- atmospheric tank bottoms) is pumped to two (2) 25,000 bbl vertical fixed roof heated tanks (EPN TK56 and TK57). This modular refinery is expected to produce approximately 23% of residuals/ATB. As the vapor cools, hydrocarbons with different boiling temperatures precipitate out of the vapor. The hydrocarbons with the highest boiling points which are made up the longest chains of hydrogen and carbon atoms precipitate out first near the bottom of the tower. The hydrocarbons with the lowest boiling points and which are made up of the shortest chains of hydrogen and carbon precipitate out last at the top of the tower. The uncondensed light hydrocarbon vapors and inert gases (off-gas) are released from the top of crude fractionator tower. This modular refinery is expected to produce about 3% of off-gas; which is used as fuel for crude oil heater (EPN H-400). In case of upset or unplanned maintenance of the crude fractionator tower the off-gas will be routed to the vapor combustor unit (EPN VCU) before being released to the atmosphere.

Precipitating at the top of the crude fractionator tower are the liquid petroleum gases consisting of hydrocarbon molecules containing three to four carbon atoms. The next produced in the crude fractionator tower are naphthas with 4 to 12 hydrocarbon molecules; which are a primary feedstock for gasoline. This modular refinery is expected to produce approximately 35% of naphtha which is stored in two (2) 25,000 bbl internal floating roof tanks (EPN TK52 & TK53). The next product to separate from the crude fractionator tower is diesel; hydrocarbons with 15 to 18 carbon atoms per molecule. The diesel production split is expected to be 39% and will be stored in two (2) 30,000 bbl vertical fixed roof tanks (EPN TK54 and TK55). In order to provide operational flexibility, MMEX has assumed additional 20% production of naphtha (42%), diesel (45%), and residual/ATB (28%).

The products from the refinery will be loaded out of the facility via truck or railcar. Diesel will shipped out of the refinery via trucks and naphtha and residual/ATB will shipped out via railcars. The naphtha loading emissions (EPN LOAD1) are controlled using a vapor combustor unit (EPN VCU) before being released to the atmosphere.

The scheduled maintenance startup and shutdown (MSS) emissions (EPN MSS) include internal roof and fixed roof storage tank cleaning and low emitting MSS activities. The storage tank cleaning MSS emissions are controlled using a portable flare (EPN MSS-FLR) before being released to the atmosphere.

The process wastewater generated at the facility will be first treated in oil/water separator (OWS). The emissions from OWS (EPN WWTRT) will controlled using carbon adsorption system (CAS). The separated slop oil will be stored in a 2,000-bbl internal floating roof slop oil tank (EPN TK59). The separated water from OWS along with the storm water run-off will be stored in an evaporation pond (EPN EVAPND).

The modular refinery will have one 670 hp diesel fuel powered emergency generator engine (EPN EG-1) and one 300 hp diesel fuel fire water pump engine (EPN P-676B). There will be a 210-bbl diesel fuel tank (EPN TK58) to store diesel for fueling the emergency generator and/or fire pump engine.

EA-330	EA-340	E-810	E-830	E-840	H-400	D-100	D-130	E-831	EA-300	D-110	D-150	EA-310	D-160	F-900
DIESEL COOLER XXX SQ FT XX MMBTU/HR XX HP	RESIDUAL COOLER XXX SQ FT XX MMBTU/HR XX HP	OVERHEAD EXCHANGER XXX SQ FT XX MMBTU/HR	CRUDE/DIESEL EXCHANGER XXX SQ FT XX MMBTU/HR	CRUDE/RESID EXCHANGER XXX SQ FT XX MMBTU/HR	CRUDE HEATER XX MMBTU/HR GAS-FIRED	CRUDE FRACTIONATOR øXX x 45'-6" S/S XX MMBTU/HR 50 PSIG @ 700°F	DIESEL STRIPPER øXX x 31'-0" E/E 50 PSIG @ 650°F	DIESEL REBOILER XXX SQ FT XX MMBTU/HR	NAPHTHA OVERHEAD CONDENSOR XXX SQ FT XX MMBTU/HR XX HP	OVERHEAD ACCUMULATOR øXX x 8'-0" S/S 50 PSIG @ 150°F	FUEL GAS DRUM ø3'-0" x 6'-0" S/S 15 PSIG @ 150°F	NAPHTHA COOLER XXX SQ FT XX MMBTU/HR XX HP	FLARE KO DRUM øX'-0" X X'-0" S/S 50 PSIG @ 175°F	FLARE/COMBUSTOR

CRUDE OIL A002 FROM STORAGE

10

P-600 A/B

OSBL ISBL

20

E-810

EA-300

M

D-150

D-160

F-900

DIESEL A002 TO STORAGE

EA-330

M

E-830

P-650 A/B

RESIDUAL A002 TO STORAGE

EA-340

M

E-840

P-645 A/B

D-110

P-610 A/B

ISBL OSBL

EA-310

M

NAPHTHA A002

OILY WATER A002

E-845

H-400

X

D-100

MAKE-UP GAS OSBL

P-640 A/B

D-130

E-831

P-630 A/B

P-600 A/B	P-640 A/B	P-645 A/B	P-630 A/B	P-610 A/B	P-650 A/B
CRUDE CHARGE PUMPS XXX GPM XX TDH XX HP	RESID PRODUCT PUMPS XXX GPM XX TDH XX HP	PUMPAROUND PUMPS XXX GPM XX TDH XX HP	DIESEL PUMPS XXX GPM XX TDH XX HP	NAPHTHA PUMPS XXX GPM XX TDH XX HP	FUEL GAS PUMPS XXX GPM XX TDH XX HP

NOTES:
1. ø
2.

REFERENCE DRAWINGS	
DWG. NO.	DESCRIPTION

REVISIONS					
No.	BY	DATE	DESCRIPTION	CHK'D.	APP'D.
A	BEK	5/10/17	ISSIED FOR APPROVAL	MDM	
B	BEK	6/27/17	GENERAL UPDATE	MDM	
C	BEK	7/31/17	GENERAL UPDATE	MDM	

VFUELS Oil & Gas Engineering

BAR MEASURES 1" ON FULL SIZE DRAWING. ADJUST SCALES ACCORDINGLY.

SCALE	PROJ #	CHK'D	DATE	APP'D	DATE
NONE	N/A	MDM	5/10/17	MDM	5/10/17

DRAWN	BEK	DATE	5/10/17

DRAWING #	REV
A001	C

PRELIMINARY
NOT FOR CONSTRUCTION

ISSUED FOR APPROVAL

PROCESS FLOW DIAGRAM
CRUDE DISTILLATION UNIT (CDU)
MMEX RESOURCES CORP
FORT STOCKTON, TX

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T-50	T-51	T-52	T-53	T-54	T-55	T-56	T-57	T-58	T-59	T-60
CRUDE TANK	CRUDE TANK	NAPHTHA TANK	NAPHTHA TANK	DIESEL TANK	DIESEL TANK	RESIDUAL TANK	RESIDUAL TANK	DIESEL FUEL TANK	SLOP TANK	FIRE WATER TANK
75,000 BBL	75,000 BBL	25,000 BBL	25,000 BBL	30,000 BBL	30,000 BBL	25,000 BBL	25,000 BBL	210 BBL	2,000 BBL	15,000 BBL
ø95' x 60'-0"	ø95' x 60'-0"	ø67' x 40'-0"	ø67' x 40'-0"	ø75' x 40'-0"	ø75' x 40'-0"	ø67' x 40'-0"	ø67' x 40'-0"	ø10' x 15'-0"	ø25' x 24'-0"	ø52' x 40'-0"

OWS-720 — OIL/WATER SEPARATOR

D-700 — AIR COMPRESSOR SYSTEM

SLOP A002

P-677

TRUCK UNLOADING BAY #5 — P-670A

TRUCK UNLOADING BAY #6 — P-670B

TRUCK UNLOADING BAY #7 — P-670C

NAPHTHA A001 FROM CDU

DIESEL A001 FROM CDU

RESIDUAL A001 FROM CDU

CRUDE A001 TO CDU

TANKS PROCESS CLOSED & OPEN DRAINS

WATER — P-674B — WATER EVAPORATION POND

OIL — P-674A — OIL TO SLOP A002

P-671 A/B

NAPHTHA LOADING BAY #1

NAPHTHA RAIL CAR LOADING

P-672 A/B

DIESEL LOADING BAY #2

DIESEL LOADING BAY #3

P-673

RESIDUAL LOADING BAY #4

RESIDUAL RAIL CAR LOADING

D-700 — TO USERS COMPRESSED AIR

WATER FROM CITY OR WELL

P-676 A/B/C — WATER TO FIRE HYDRANTS

P-675 A/B — BACKUP POWER GENERATOR; DIESEL FIRE SYSTEM PUMP

P-670 A/B/C	P-677	P-671 A/B	P-672 A/B	P-673 A/B	P-674A	P-674 B	P-675 A/B	P-676 A/B/C
TRUCK UNLOADING PUMPS	SLOP PUMP	NAPHTHA PUMPS	DIESEL PUMPS	RESIDUAL PUMPS	OIL PUMP	WATER PUMP	FUEL PUMPS	FIREWATER PUMPS
300 GPM	200 GPM	300 GPM	300 GPM	300 GPM	50 GPM	200 GPM	20 GPM	XX GPM
160 TDH	160 TDH	168 TDH	162 TDH	158 TDH	80 TDH	40 TDH	185 TDH	185 TDH
25 HP	15 HP	25 HP	25 HP	25 HP	5 HP	15 HP	5 HP	XX HP

NOTES:
1. ø
2.

PRELIMINARY
NOT FOR CONSTRUCTION
ISSUED FOR APPROVAL

REFERENCE DRAWINGS	
DWG. NO.	DESCRIPTION

REVISIONS					
No.	BY	DATE	DESCRIPTION	CHK'D.	APP'D.
A	BEK	05/10/17	ISSIED FOR APPROVAL	MDM	
B	BEK	06/27/17	GENERAL UPDATE	MDM	

VFUELS Oil & Gas Engineering

BAR MEASURES 1" ON FULL SIZE DRAWING. ADJUST SCALES ACCORDINGLY.

PROCESS FLOW DIAGRAM
CRUDE DISTILLATION UNIT (CDU)
MMEX RESOURCES CORP
FORT STOCKTON, TX

SCALE	PROJ #	DRAWN	BEK	DATE	5/10/17	DRAWING #	REV
NONE		CHK'D	DATE	APP'D	DATE	A002	B
		MDM	5/10/17	MDM	5/10/17		

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5. SUMMARY OF EMISSIONS

EMISSIONS SUMMARY
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN / Emission Source	Specific VOC or Other Pollutants	VOC		NO_x		CO		PM_{10}		$PM_{2.5}$		SO_2		HAP	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
H-400 /CDU Heater		0.21	0.92	3.82	16.75	3.21	14.07	0.29	1.27	0.29	1.27	1.22	5.36	0.07	0.32
D-950 /Steam Boiler		0.02	0.09	0.39	1.72	0.33	1.44	0.03	0.13	0.03	0.13	0.13	0.55	<0.01	0.03
EG-1 /Emergency Generator		1.12	0.11	3.29	0.33	3.86	0.39	0.22	0.02	0.22	0.02	<0.01	<0.01	<0.01	<0.01
P-676B /Fire Water Pump Engine		0.50	0.05	1.47	0.15	1.73	0.17	0.10	<0.01	0.10	<0.01	0.62	0.06	<0.01	<0.01
FUG /Fugitives		0.71	3.10	--	--	--	--	--	--	--	--	--	--	0.22	0.98
FUGDUST /Fugitive Dust		--	--	--	--	--	--	0.49	2.13	0.05	0.21	--	--	--	--
LOAD1 /Loading		2.31	1.14	--	--	--	--	--	--	--	--	--	--	--	--
LOAD2 /Loading		0.53	1.16	--	--	--	--	--	--	--	--	--	--	--	--
LOAD3 /Loading		0.53		--	--	--	--	--	--	--	--	--	--	--	--
LOAD4 /Loading		0.44	0.16	--	--	--	--	--	--	--	--	--	--	--	--
TK50 /Crude Oil Tank		0.65	1.78	--	--	--	--	--	--	--	--	--	--	--	--
TK51 /Crude Oil Tank		0.65	1.78	--	--	--	--	--	--	--	--	--	--	--	--
TK52 /Naphtha Tank		0.74	2.60	--	--	--	--	--	--	--	--	--	--	--	--
TK53 /Naphtha Tank		0.74	2.60	--	--	--	--	--	--	--	--	--	--	--	--
TK54 /Diesel Tank		1.00	0.60	--	--	--	--	--	--	--	--	--	--	--	--
TK55 /Diesel Tank		1.00	0.60	--	--	--	--	--	--	--	--	--	--	--	--
TK56 /Residual/ATB Tank		0.12	0.08	--	--	--	--	--	--	--	--	--	--	--	--
TK57 /Residual/ATB Tank		0.12	0.08	--	--	--	--	--	--	--	--	--	--	--	--
TK58 /Diesel Fuel Tank		0.07	<0.01	--	--	--	--	--	--	--	--	--	--	--	--
TK59 /Slop Tank		0.51	0.26	--	--	--	--	--	--	--	--	--	--	--	--
WWTRT /Oily Water Treatment		0.04	0.20	--	--	--	--	--	--	--	--	--	--	--	--
EVAPND /Evaporation Pond		0.37	1.62	--	--	--	--	--	--	--	--	--	--	0.03	0.13
VCU /Vapor Combustion Unit		<0.01	<0.01	0.47	0.26	0.94	0.52	--	--	--	--	<0.01	<0.01	<0.01	<0.01
MSS-FLR /MSS Flaring Emissions		<0.01	<0.01	0.45	0.08	0.90	0.15	--	--	--	--	<0.01	<0.01	<0.01	<0.01
MSS /MSS		81.56	1.26	--	--	--	--	0.07	<0.01	<0.01	<0.01	--	--	13.39	0.03
SITE-WIDE TOTAL EMISSIONS (TPY):			**20.19**		**19.28**		**16.74**		**3.57**		**1.65**		**5.97**		**1.49**

Maximum Operating Schedule:	**Hours/Day**	24	**Days/Week**	7	**Weeks/Year**	52	**Hours/Year**	8760

6. EMISSIONS DATA AND CALCULATIONS

30 TAC 106.261/262 EMISSION LIMITS EVALUATION
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY

Speciated Compound	Limit [1] (lb/hr)	Basis	FUG (lb/hr)	LOAD1 (lb/hr)	LOAD2 (lb/hr)	LOAD3 (lb/hr)	LOAD4 (lb/hr)	Total (lb/hr)	Under Limit? (Y/N)
Crude Oil	6	a	0.16	--	--	--	--	0.16	Y
Refinery Petroleum Fractions	6	a	0.35	2.31	0.53	0.53	0.44	4.17	Y
Propane	6	a	0.04	--	--	--	--	0.04	Y
Isobutane	6	a	0.02	--	--	--	--	0.15	Y
n-Butane			0.13	--	--	--	--		
Total VOC Emissions			**0.70**	**2.31**	**0.53**	**0.53**	**0.44**	**4.52**	

[1] Limit values based on the following:
a 30 TAC 106.261(a)(2)

Speciated Compound	Limit [1] (tpy)	Basis	FUG (tpy)	LOAD1 (tpy)	LOAD2 (tpy)	LOAD3 (tpy)	LOAD4 (tpy)	Total (tpy)	Under Limit? (Y/N)
Crude Oil	10	a	0.70	--	--	--	--	0.70	Y
Refinery Petroleum Fractions	10	a	1.54	1.14	1.16		0.16	4.00	Y
Propane	10	a	0.18	--	--	--	--	0.18	Y
Isobutane	10	a	0.10	--	--	--	--	0.66	Y
n-Butane			0.56	--	--	--	--		
Total VOC Emissions			**3.08**	**1.14**	**1.16**	**0.00**	**0.16**	**5.54**	

[1] Limit values based on the following:
a 30 TAC 106.261(a)(2)

HEATER AND BOILER EMISSIONS DATA
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN	UNIT	HEAT RATE (MMBtu/hr)	RUNTIME (hr/yr)	AP42 FUEL HEAT VALUE (Btu/scf)
H-400	CDU Heater	39.00	8,760	1,020
D-950	Steam Boiler	4.00	8,760	1,020

EPN	MAXIMUM HOURLY EMISSIONS					ANNUAL EMISSIONS				
	$PM/PM_{10}/PM_{2.5}$ (lb/hr)	NO_X (lb/hr)	CO (lb/hr)	SO_2 (lb/hr)	VOC (lb/hr)	$PM/PM_{10}/PM_{2.5}$ (tpy)	NO_X (tpy)	CO (tpy)	SO_2 (tpy)	VOC (tpy)
H-400	0.29	3.82	3.21	1.22	0.21	1.27	16.75	14.07	5.36	0.92
D-950	0.03	0.39	0.33	0.13	0.02	0.13	1.72	1.44	0.55	0.09

Emission Factors [1] (<100 MMBtu/hr Heat Input) (lb/MMscf)				
$PM/PM_{10}/PM_{2.5}$	NO_X	CO	SO_2 [2]	VOC
7.6	100	84	32	5.5

[1] Emission factors based on AP-42 Section 1.4 Tables 1.4-1 & 1.4-2.

[2] The SO_2 emission factors based on AP-42 Section 1.4 Table 1.4-2 is multiplied by (106,666 gr/MMscf / 2,000 gr/MMscf) to represent the site-specific sulfur content of 160 ppmV.

Proposed Speciated HAP Emissions for the Heater and Boiler

Pollutant	Emission Factor [1] (lb/MMscf)	H-400		D-950	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
2-Methylnaphthalene	2.40E-05	9.18E-07	4.02E-06	9.41E-08	4.12E-07
3-Methylchloranthrene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	6.12E-07	2.68E-06	6.27E-08	2.75E-07
Acenaphthene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Acenaphthylene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Anthracene	2.40E-06	9.18E-08	4.02E-07	9.41E-09	4.12E-08
Benz(a)anthracene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Benzene	2.10E-03	8.03E-05	3.52E-04	8.24E-06	3.61E-05
Benzo(a)pyrene	1.20E-06	4.59E-08	2.01E-07	4.71E-09	2.06E-08
Benzo(b)fluoranthene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Benzo(g,h,i)perylene	1.20E-06	4.59E-08	2.01E-07	4.71E-09	2.06E-08
Benzo(k)fluoranthene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Chrysene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Dibenzo(a,h)anthracene	1.20E-06	4.59E-08	2.01E-07	4.71E-09	2.06E-08
Dichlorobenzene	1.20E-03	4.59E-05	2.01E-04	4.71E-06	2.06E-05
Fluoranthene	3.00E-06	1.15E-07	5.02E-07	1.18E-08	5.15E-08
Fluorene	2.80E-06	1.07E-07	4.69E-07	1.10E-08	4.81E-08
Formaldehyde	7.50E-02	2.87E-03	1.26E-02	2.94E-04	1.29E-03
Hexane	1.80E+00	6.88E-02	3.01E-01	7.06E-03	3.09E-02
Indeno(1,2,3-cd)pyrene	1.80E-06	6.88E-08	3.01E-07	7.06E-09	3.09E-08
Naphthalene	6.10E-04	2.33E-05	1.02E-04	2.39E-06	1.05E-05
Phenanathrene	1.70E-05	6.50E-07	2.85E-06	6.67E-08	2.92E-07
Pyrene	5.00E-06	1.91E-07	8.37E-07	1.96E-08	8.59E-08
Toluene	3.40E-03	1.30E-04	5.69E-04	1.33E-05	5.84E-05
Arsenic	2.00E-04	7.65E-06	3.35E-05	7.84E-07	3.44E-06
Beryllium	1.20E-05	4.59E-07	2.01E-06	4.71E-08	2.06E-07
Cadmium	1.10E-03	4.21E-05	1.84E-04	4.31E-06	1.89E-05
Chromium	1.40E-03	5.35E-05	2.34E-04	5.49E-06	2.40E-05
Cobalt	8.40E-05	3.21E-06	1.41E-05	3.29E-07	1.44E-06
Manganese	3.80E-04	1.45E-05	6.36E-05	1.49E-06	6.53E-06
Mercury	2.60E-04	9.94E-06	4.35E-05	1.02E-06	4.47E-06
Nickel	2.10E-03	8.03E-05	3.52E-04	8.24E-06	3.61E-05
Selenium	2.40E-05	9.18E-07	4.02E-06	9.41E-08	4.12E-07
Total		**7.22E-02**	**3.16E-01**	**7.40E-03**	**3.24E-02**

[1] Emission Factors from AP-42, Section 1.4, Table 1.4-3 and Table 1.4-4

EMERGENCY GENERATOR DIESEL ENGINE EMISSIONS CALCULATIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN	Description [1]	Site rating (hp)	Hours of Operation (hr/yr)	Maximum Potential Hourly Emissions [2] (lb/hr)					Maximum Potential Annual Emissions [3] (tpy)				
				NO_X	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_2
EG-1	Emergency Generator	670	200	3.29	3.86	1.12	0.22	0.01	0.33	0.39	0.11	0.02	0.00
			Totals	**3.29**	**3.86**	**1.12**	**0.22**	**0.01**	**0.33**	**0.39**	**0.11**	**0.02**	**0.00**

[1] EPN EG-1 is a compression ignition engine.

[2] Maximum Potential Hourly Emissions (lb/hr) = Site Rating (hp) x Emission Factor (lb/hp-hr)

Example NO_x Hourly Emission Rate (lb/hr) = 670 hp × 0.005 lb/hp-hr = 3.29 lb/hr

[3] Maximum Potential Annual Emission (tpy) = Hourly Emission Rate (lb/hr) x Hours of Operation (hr/yr) / (2,000 lb/ton)

Example NO_x Annual Emission Rate (tpy) = 3.29 lb/hr × 200 hr/yr × 1 ton/2,000 lb = 0.33 ton/yr

Criteria Pollutant Emission Factors

Pollutant	EG-1 Emission Factor [1] (lb/hp-hr)
NO_x [2]	0.0049
CO	0.0058
VOC [3]	0.0017
$PM/PM_{10}/PM_{2.5}$ [4]	0.0003
SO_2 [5]	0.00001

[1] Emission factors obtained from 40 CFR 89.112, Table 1 for a Tier 3 engine with a power rating of between 450 and 560 kW. SO_2 factor obtained from AP-42 Section 3.4 for Stationary Combustion Engines, Table 3.4-1 for Diesel Fuel.

[2] NO_x +NMHC factors are ratiod 74.6% NO_x and 25.4% NMHC based on the linear relationship of NO_x to NMHC from Table 1 of Subpart IIII, Table 1 from 40 CFR 89.112, to Tables 4, 5, and 6 from 40 CFR 1039.102.

[3] VOC is assumed to be the total of the TOC factors.

[4] Assumed total PM and $PM_{2.5}$ is equal to PM_{10}.

[5] SO_2 is based on the total weight percent of sulfur in diesel fuel equal to 15 ppmw.

HAP Combustion Emission Calculations

Constituent	Emission Factors[1] (lb/MMBtu)	Emission Factors[2] (lb/hp-hr)	EG-1 (lb/hr)	(tpy)
Benzene	7.76E-04	5.43E-06	3.64E-03	3.64E-04
Toluene	2.81E-04	1.97E-06	1.32E-03	1.32E-04
Xylene	1.93E-04	1.35E-06	9.05E-04	9.05E-05
Formaldehyde	7.89E-05	5.52E-07	3.70E-04	3.70E-05
Acetaldehyde	2.52E-05	1.76E-07	1.18E-04	1.18E-05
Acrolein	7.88E-06	5.52E-08	3.70E-05	3.70E-06
Naphthalene	1.30E-04	9.10E-07	6.10E-04	6.10E-05
Acenaphthene	4.68E-06	3.28E-08	2.19E-05	2.19E-06
Acenaphthylene	9.23E-06	6.46E-08	4.33E-05	4.33E-06
Fluorene	1.28E-05	8.96E-08	6.00E-05	6.00E-06
Phenanthrene	4.08E-05	2.86E-07	1.91E-04	1.91E-05
Anthracene	1.23E-06	8.61E-09	5.77E-06	5.77E-07
Fluoranthene	4.03E-06	2.82E-08	1.89E-05	1.89E-06
Pyrene	3.71E-06	2.60E-08	1.74E-05	1.74E-06
Benzo(a)anthracene	6.22E-07	4.35E-09	2.92E-06	2.92E-07
Chrysene	1.53E-06	1.07E-08	7.18E-06	7.18E-07
Benzo(b)fluoranthene	1.11E-06	7.77E-09	5.21E-06	5.21E-07
Benzo(k)fluoranthene	2.18E-07	1.53E-09	1.02E-06	1.02E-07
Benzo(a)pyrene	2.57E-07	1.80E-09	1.21E-06	1.21E-07
Ineno(1,2,3-cd)pyrene	4.14E-07	2.90E-09	1.94E-06	1.94E-07
Dibenz(a,h)anthracene	3.46E-07	2.42E-09	1.62E-06	1.62E-07
Benzo(g,h,l)perylene	5.56E-07	3.89E-09	2.61E-06	2.61E-07
		Total	7.38E-03	7.38E-04

[1] Emission Factors from AP-42, Section 3.4, Tables 3.4-3 and 3.4-4 (10/96). Some speciated constituents are not identified as HAP within this AP-42 Section; however, these constituents have been identified as HAP in other AP-42 Sections, such as AP-42, Section 3.2.

[2] An average brake-specific fuel consumption of 7,000 Btu/hp-hr is used to convert from lb/MMBtu to lb/hp-hr per reference (a) of Table 3.4-1 within AP-42, Section 3.4.

FIRE WATER PUMP DIESEL ENGINE EMISSIONS CALCULATIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN	Description [1]	Site rating (hp)	Hours of Operation (hr/yr)	Maximum Potential Hourly Emissions [2] (lb/hr)					Maximum Potential Annual Emissions [3] (tpy)				
				NO_X	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_2
P-676B	Fire Water Pump Engine	300	200	1.47	1.73	0.50	0.10	0.62	0.15	0.17	0.05	0.01	0.06
			Totals	**1.47**	**1.73**	**0.50**	**0.10**	**0.62**	**0.15**	**0.17**	**0.05**	**0.01**	**0.06**

[1] EPN P-676B is a compression ignition engine.

[2] Maximum Potential Hourly Emissions (lb/hr) = Site Rating (hp) x Emission Factor (lb/hp-hr)

Example NO_x Hourly Emission Rate (lb/hr) = 300 hp × 0.005 lb/hp-hr = 1.47 lb/hr

[3] Maximum Potential Annual Emission (tpy) = Hourly Emission Rate (lb/hr) x Hours of Operation (hr/yr) / (2,000 lb/ton)

Example NO_x Annual Emission Rate (tpy) = 1.47 lb/hr × 200 hr/yr × 1 ton/2,000 lb = 0.15 ton/yr

Criteria Pollutant Emission Factors

Pollutant	P-676B Emission Factor [1] (lb/hp-hr)
NO_x [2]	0.0049
CO	0.0058
VOC [3]	0.0017
$PM/PM_{10}/PM_{2.5}$ [4]	0.0003
SO_2	0.0021

[1] Emission factors obtained from 40 CFR 60 Subpart IIII, Table 4 for an engine with a power rating of between 130 and 225 kW. SO_2 factor obtained from AP-42 Section 3.3 for Stationary Combustion Engines, Table 3.3-1 for Diesel Fuel.

[2] NO_x +NMHC factors are ratiod 74.6% NO_x and 25.4% NMHC based on the linear relationship of NO_x to NMHC from Table 1 of Subpart IIII, Table 1 from 40 CFR 89.112, to Tables 4, 5, and 6 from 40 CFR 1039.102.

[3] VOC is assumed to be the total of the TOC factors.

[4] Assumed total PM and $PM_{2.5}$ is equal to PM_{10}.

HAP Combustion Emission Calculations

Constituent	Emission Factors[1] (lb/MMBtu)	Emission Factors[2] (lb/hp-hr)	P-676B (lb/hr)	(tpy)
Benzene	9.33E-04	6.53E-06	1.96E-03	1.96E-04
Toluene	4.09E-04	2.86E-06	8.59E-04	8.59E-05
Xylene	2.85E-04	2.00E-06	5.99E-04	5.99E-05
1,3-Butadiene	3.91E-05	2.74E-07	8.21E-05	8.21E-06
Formaldehyde	1.18E-03	8.26E-06	2.48E-03	2.48E-04
Acetaldehyde	7.67E-04	5.37E-06	1.61E-03	1.61E-04
Acrolein	9.25E-05	6.48E-07	1.94E-04	1.94E-05
Naphthalene	8.48E-05	5.94E-07	1.78E-04	1.78E-05
Acenaphthene	5.06E-06	3.54E-08	1.06E-05	1.06E-06
Acenaphthylene	1.42E-06	9.94E-09	2.98E-06	2.98E-07
Fluorene	2.92E-05	2.04E-07	6.13E-05	6.13E-06
Phenanthrene	2.94E-05	2.06E-07	6.17E-05	6.17E-06
Anthracene	1.87E-06	1.31E-08	3.93E-06	3.93E-07
Fluoranthene	7.61E-06	5.33E-08	1.60E-05	1.60E-06
Pyrene	4.78E-06	3.35E-08	1.00E-05	1.00E-06
Benzo(a)anthracene	1.68E-06	1.18E-08	3.53E-06	3.53E-07
Chrysene	3.53E-07	2.47E-09	7.41E-07	7.41E-08
Benzo(b)fluoranthene	9.91E-08	6.94E-10	2.08E-07	2.08E-08
Benzo(k)fluoranthene	1.55E-07	1.09E-09	3.26E-07	3.26E-08
Benzo(a)pyrene	1.88E-07	1.32E-09	3.95E-07	3.95E-08
Ineno(1,2,3-cd)pyrene	3.75E-07	2.63E-09	7.88E-07	7.88E-08
Dibenz(a,h)anthracene	5.83E-07	4.08E-09	1.22E-06	1.22E-07
Benzo(g,h,l)perylene	4.89E-07	3.42E-09	1.03E-06	1.03E-07
		Total	8.13E-03	8.13E-04

[1] Emission Factors from AP-42, Section 3.3, Tables 3.3-3 (10/96). Some speciated constituents are not identified as HAP within this AP-42 Section; however, these constituents have been identified as HAP in other AP-42 Sections, such as AP-42, Section 3.2.

[2] An average brake-specific fuel consumption of 7,000 Btu/hp-hr is used to convert from lb/MMBtu to lb/hp-hr per reference (a) of Table 3.4-1 within AP-42, Section 3.3.

FUGITIVE EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN: FUG

COMPONENT	FUGITIVE COUNT [1]	TCEQ [2] FACTOR (lb/hr-src)	REDUCTION ALLOWED FOR LDAR	% VOC IN STREAM	TOTAL VOC EMISSIONS (lb/hr)	TOTAL VOC EMISSIONS (tpy)	% H_2S [3] IN STREAM	TOTAL H2S EMISSIONS (lb/hr)	TOTAL H_2S EMISSIONS (tpy)	% HAP IN STREAM	TOTAL HAP EMISSIONS (lb/hr)	TOTAL HAP EMISSIONS (tpy)	% BENZENE IN STREAM	TOTAL BENZENE EMISSIONS (lb/hr)	TOTAL BENZENE EMISSIONS (tpy)
OFF-GAS (gas)															
VALVES	90	0.059	97%	100%	0.1593	0.6977	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
FLANGES/CONNECTORS	250	0.00055	97%	100%	0.0041	0.0181	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
RELIEF VALVES	3	0.35	97%	100%	0.0315	0.1380	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
NAPHTHA (light liquid)															
VALVES	140	0.024	97%	100%	0.1008	0.4415	0.00%	0.000	0.0000	83.75%	0.0844	0.3697	5.23%	0.0053	0.0231
FLANGES/CONNECTORS	430	0.00055	97%	100%	0.0071	0.0311	0.00%	0.000	0.0000	83.75%	0.0059	0.0260	5.23%	0.0004	0.0016
PUMP SEALS	7	0.251	93%	100%	0.1230	0.5387	0.00%	0.000	0.0000	83.75%	0.1030	0.4511	5.23%	0.0064	0.0282
RELIEF VALVES	1	0.35	97%	100%	0.0105	0.0460	0.00%	0.000	0.0000	83.75%	0.0088	0.0385	5.23%	0.0005	0.0024
CRUDE OIL (light liquid)															
VALVES	70	0.024	97%	100%	0.0504	0.2208	0.20%	0.000	0.0004	10.00%	0.0050	0.0221	1.00%	0.0005	0.0022
FLANGES/CONNECTORS	220	0.00055	97%	100%	0.0036	0.0159	0.20%	0.000	0.0000	10.00%	0.0004	0.0016	1.00%	0.0000	0.0002
PUMP SEALS	6	0.251	93%	100%	0.1054	0.4617	0.20%	0.000	0.0009	10.00%	0.0105	0.0462	1.00%	0.0011	0.0046
DIESEL (heavy liquid)															
VALVES	140	0.00051	97%	100%	0.0021	0.0094	0.00%	0.000	0.0000	9.00%	0.0002	0.0008	0.00%	0.0000	0.0000
FLANGES/CONNECTORS	360	0.00055	97%	100%	0.0059	0.0260	0.00%	0.000	0.0000	9.00%	0.0005	0.0023	0.00%	0.0000	0.0000
PUMP SEALS	7	0.046	93%	100%	0.0225	0.0987	0.00%	0.000	0.0000	9.00%	0.0020	0.0089	0.00%	0.0000	0.0000
RELIEF VALVES	3	0.35	97%	100%	0.0315	0.1380	0.00%	0.000	0.0000	9.00%	0.0028	0.0124	0.00%	0.0000	0.0000
RESIDUAL (heavy liquid)															
VALVES	150	0.00051	97%	100%	0.0023	0.0101	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
FLANGES/CONNECTORS	390	0.00055	97%	100%	0.0064	0.0282	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
PUMP SEALS	6	0.046	93%	100%	0.0193	0.0846	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
RELIEF VALVES	2	0.35	97%	100%	0.0210	0.0920	0.00%	0.000	0.0000	0.00%	0.0000	0.0000	0.00%	0.0000	0.0000
				TOTAL	**0.707**	**3.097**		**0.000**	**0.001**		**0.224**	**0.980**		**0.014**	**0.062**

[1] Fugitive emission source counts were calculated based on the types of field equipment at the facility and a general source count per equipment.

[2] Factors are from TCEQ Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives Facility/Compound Specific Fugitive Emission Factors - Refinery.

[3] Naptha, diesel, and residual stream compositions based on representative safety data sheets (SDS) from US Oil Refining Company, Citgo, and Valero respectively.

PRODUCT LOADING EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

Equation[1]:

$$L_L = 12.46 * \frac{SPM}{T}$$

Variables[1]:

L_L - Loading Loss (lbs/1000 gal loaded)
S - Saturation Factor (From Table 5.2-1 of AP-42, Section 5.2)
P - True Vapor Pressure of Loaded Liquid (psia)
M - Molecular Weight of Vapor (lb/lb mol)
T- Temperature of Bulk Liquid (°R = [°F + 460])

EPN	Product	Loading Method	S[2]	P_{max}[3] (psia)	M[3] (lb/lbmol)	T[3] (°R)	L_L (lbs/1000 gal)	Max Hourly Throughput[4] (gal/hr)	VOC Content[5] (wt %)	Uncontrolled Hourly Emissions (lb/hr)	% Capture[6]	% Control[6]	Controlled Hourly VOC Emissions[6] (lb/hr)	Fugitive Hourly VOC Emissions[8] (lb/hr)
LOAD1	Naphtha	Submerged	0.60	11.00	52	554.67	7.71	60,000	100	462.58	100.0	99.5	2.31	--
LOAD2	Diesel	Submerged	0.60	0.02	130	554.67	0.03	16,000	100	0.53	0.0	0	--	0.53
LOAD3	Diesel	Submerged	0.60	0.02	130	554.67	0.03	16,000	100	0.53	0.0	0	--	0.53
LOAD4	Residual/ATB	Splash	1.45	0.00150	190	709.67	0.01	60,000	100	0.44	0.0	0	--	0.44

EPN		Loading Method	S[2]	P_{max}[7] (psia)	M[7] (lb/lbmol)	T[7] (°R)	L_L (lbs/1000 gal)	Annual Throughput (gal/yr)	VOC Content[5] (wt %)	Uncontrolled Annual Emissions (tpy)	% Capture[6]	% Control[6]	Controlled Annual VOC Emissions[6] (tpy)	Fugitive Annual VOC Emissions[8] (tpy)
LOAD1	Naphtha	Submerged	0.60	10.00	52	549.67	7.07	64,386,000	100	227.68	100.0	99.5	1.14	--
LOAD2	Diesel	Submerged	0.60	0.02	130	549.67	0.03	68,985,000	100	1.16	0.0	0	--	1.16
LOAD3	Diesel	Submerged	0.60	0.02	130	549.67	0.03							
LOAD4	Residual/ATB	Splash	1.45	0.0015	190	709.67	0.01	42,924,000	100	0.16	0.0	0	--	0.16

[1] Loading Loss Equation and Variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.

[2] The S-factor for naphtha and diesel is based on submerged loading in dedicated normal service. The S-factor for residual/ATB is based on splash loading in dedicated normal service.

[3] Vapor pressure and molecular weight obtained from TANKS 4.09d runs. The maximum true vapor pressure is used to calculate the hourly emission rate and is based on maximum temperature of 95°F.

[4] The maximum hourly throughput for naphtha and residual/ATB is based on the maximum capacity of a railcar (30,000 gallons) and assumes 2 railcars per hour. The maximum hourly throughput for diesel is based on the maximum capacaity of a tanker truck (8,000 gallons) and assumes 2 tanker trucks loaded per hour per loading bay.

[5] The VOC content conservatively assumes 100% product.

[6] Controlled loading emissions are based on normal operations which account for a capture efficiency of 100% for trucks passing the NSPS-level annual tests per AP-42 Section 5.2. The Vapor Combustor Unit (VCU) has a DRE of 99.5%. The captured vapor/emissions are sent to and controlled by the VCU during normal operations but are represented under EPN LOAD1.

[7] Vapor pressure, molecular weight, and average annual temperature obtained from TANKS 4.09d runs.

[8] Fugitive loading emissions are based on normal operations which account for 0% of uncontrolled emissions being released fugitively due to capture efficiency of 100% and are represented under EPN LOAD1.

STORAGE TANK EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

								Uncontrolled			Controlled	
EPN	FIN	Tank Description	Tank Size	Tank Type	Diameter (ft)	Height (ft)	Annual Throughput (gal)	VOC Emissions (lb/hr) [1]	VOC Emissions (tpy) [1]	Control Efficiency	VOC Emissions (tpy) [1]	VOC Emissions (tpy) [1]
TK50	TK50	Crude Oil Tank	75,000 bbl	Internal Floating Roof	95	60	91,980,000	0.65	1.78	0.00%	0.65	1.78
TK51	TK51	Crude Oil Tank	75,000 bbl	Internal Floating Roof	95	60	91,980,000	0.65	1.78	0.00%	0.65	1.78
TK52	TK52	Naphtha Tank	25,000 bbl	Internal Floating Roof	67	40	32,193,000	0.74	2.60	0.00%	0.74	2.60
TK53	TK53	Naphtha Tank	25,000 bbl	Internal Floating Roof	67	40	32,193,000	0.74	2.60	0.00%	0.74	2.60
TK54	TK54	Diesel Tank	30,000 bbl	Vertical Fixed Cone Roof	75	40	34,492,500	1.00	0.60	0.00%	1.00	0.60
TK55	TK55	Diesel Tank	30,000 bbl	Vertical Fixed Cone Roof	75	40	34,492,500	1.00	0.60	0.00%	1.00	0.60
TK56	TK56	Residual/ATB Tank	25,000 bbl	Vertical Fixed Cone Roof	67	40	21,462,000	0.12	0.08	0.00%	0.12	0.08
TK57	TK57	Residual/ATB Tank	25,000 bbl	Vertical Fixed Cone Roof	67	40	21,462,000	0.12	0.08	0.00%	0.12	0.08
TK58	TK58	Diesel Fuel Tank	210 bbl	Vertical Fixed Cone Roof	10	15	18,396	0.07	<0.01	0.00%	0.07	<0.01
TK59[2]	TK59[2]	Slop Tank	950 bbl	Internal Floating Roof	25.0	24.0	5,040,000	0.51	0.26	0.00%	0.51	0.26

[1] Emissions for EPNs TK50-TK55 and TK58-TK59 are calculated using U.S. EPA TANKS 4.09d. Emissions for EPNs TK56-TK57 are calculated using TanksESP.
[2] Slop Tank emissions are controlled using a carbon adsoprtion system with efficiency of 95%.

Internal Floating Roof Storage Tanks Losses

EPN	FIN	Tank Description	Rim Seal Losses (lb/yr)	Withdrawal Losses (lb/yr)	Deck Fitting Losses (lb/yr)	Deck Seam Losses (lb/yr)
TK50	TK50	Crude Oil Tank	136.06	967.01	2451.96	0.00
TK51	TK51	Crude Oil Tank	136.06	967.01	2451.96	0.00
TK52	TK52	Naphtha Tank	319.84	91.57	4783.29	0.00
TK53	TK53	Naphtha Tank	319.84	91.57	4783.29	0.00
TK59	TK59	Slop Tank	13.95	165.19	339.93	0.00

Vertical Fixed Cone Roof Storage Tanks Annual Losses

EPN	FIN	Tank Description	Working Losses (lb/yr)	Breathing Losses (lb/yr)
TK54	TK54	Diesel Tank	888.48	319.46
TK55	TK55	Diesel Tank	888.48	319.46
TK56	TK56	Residual/ATB Tank	117.00	44.00
TK57	TK57	Residual/ATB Tank	117.00	44.00
TK58	TK58	Diesel Fuel Tank	0.47	1.95

Vertical Fixed Cone Roof Storage Tanks Hourly Losses

EPN	FIN	Tank Description	Hourly Throughput (gal/hr)	Maximum Daily Liquid Surface Temperature (Rankine)	Vapor Pressure at Maximum Liquid Surface Temperature (psia)	Vapor Molecular Weight (lb/lb-mol)	Hourly Working and Breathing Losses [1] (lb/hr)
TK54	TK54	Diesel Tank	18000	554.67	0.019	130	1.00
TK55	TK55	Diesel Tank	18000	554.67	0.019	130	1.00
TK58	TK58	Diesel Fuel Tank	1200	554.67	0.019	130	0.07

[1] Hourly emissions are calculated based on TCEQ guidance, *Estimating Short Term Emission Rates from Tanks (APDG 6250)* . Methodology is detailed below.

Maximum Short-Term Emission Formula for Fixed Roof Tanks

Where $L_{MAX} = \frac{M_V P_{VA}}{RT} FR_M$

L_{MAX}= Maximum short term emission rate, lbs/hour
M_v= vapor molecular weight, lb/lb-mole
P_{VA}= VP at max daily liquid surface temperature, psia
FR_M= Maximum filling rate, gal/hr
R= Ideal gas constant, (psia gal)/(lb-mol °R)
T= Max daily liquid surface temperature, °R

VAPOR COMBUSTOR EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN **VCU**

Total Emissions from VCU [1]

Pollutant	(lb/hr)	(tpy)
NO_x	0.473	0.260
CO	0.944	0.518
VOC	9.57E-05	4.19E-04
SO_2	1.66E-04	7.25E-04
Formaldehyde	3.75E-06	1.64E-05

[1] Total emissions from the vapor combustor includes emissions from loading, and combustion of fuel gas. The VOC and HAP emissions from loading are represented under EPN LOAD1.

Calculations of Naphtha Loading Emissions

	Naphtha Loading		
Parameters [1]	**Hourly Value**	**Annual Value**	**Unit**
Vapor MW	52	52	lb/lb-mol
Gross heating value	1000.00	1000.00	Btu/scf
Vapor volumetric flow	3376.80	--	scfh
Vapor volumetric flow	--	3324200.891	SCFY
VOC Destruction Efficiency [2]	99.5%		%

		Loading	
Pollutant	**Emission Factor (lb/MMBtu)**	**Hourly Emissions (lb/hr)**	**Annual Emissions (tpy)**
NO_x [3, 4]	0.138	0.466	0.2294
CO [3, 4]	0.2755	0.930	0.458

[1] Vapor MW, heating values, and vapor volumetric flow are obtained from the naphtha liquid stream and loading calculations.

[2] VOC Destruction Efficiency assumed to be 99.5%.

[3] Emission Factors for high-BTU streams from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers (RG-109, 10/2000). Assuming the high-BTU emission factors due to cnaptha vent stream.

[4] Emissions are calculated as (Emission Factor)*(Gross Heating Value)*(Vapor Volumetric Flow)/(1,000,000 Btu/MMBtu). Annual emission are converted to tons per year.

Calculations of Pilot Gas Combustion Emissions

VCU Information[1]		
VOC DRE [1]	99.5	%
Fuel Gas Flow [1]	50	scfh
Heat Content [2]	1000	Btu/scf

Pollutant	Emission Factor [3, 6]		Emissions (lb/hr)	Emissions (tpy)
NO_x [4]	0.138	lb/MMBtu	0.01	0.03
CO [4]	0.2755	lb/MMBtu	0.01	0.06
CH_2O [5]	0.075	lb/MMscf	3.75E-06	1.64E-05

[1] Information based on a similar facility.

[2] Heat Content from fuel gas analysis.

[3] Emission Factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers (RG-109, 10/2000).

[4] Emissions calculated as (Emission Factor)(Fuel Gas Heat Content)(Fuel gas Flow)(1 MMBtu/ 1,000,000 Btu). Annual emission include conversion factors to convert to tons per year.

[5] Emissions calculated as (Emission Factor)(Fuel gas Flow)(1 MMscf/ 1,000,000 scf). Annual emission include conversion factors to convert to tons per year.

[6] Formaldehyde emission factor is based on AP-42 Chapter 1.4 (Natural Gas Combustion, 7/1998), Table 1.4-3.

Calculations of Fuel Gas VOC Emissions

$$M=\frac{(MW)PV}{RT}$$

Where *m=mass flow rate in lb/hr*
MW=molecular weight in lb/lbmole
P=standard pressure=14.7 psia
V=flow rate in scfh
R=gas constant=10.73 psia · ft 3. lbmol -1. ºR -1 , and
T=standard temperature=528ºR

Constituent[1]	Molecular Weight (lb/lb-mole)	Mole %[1] (%)	Volume Flow Rate (scf/hr)	Mass Flow Rate (lb/hr)	Fuel Gas Emissions (lb/hr)	Fuel Gas Emissions (tpy)
N_2	28.013		0.00	0.00	0.00E+00	0.00E+00
CO_2	44.010		0.00	0.00	0.00E+00	0.00E+00
Methane	16.043		0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethane	30.070		0.00E+00	0.00E+00	0.00E+00	0.00E+00
Propane	44.097	0.200	0.10	1.14E-02	5.72E-05	2.51E-04
i-Butane	58.124	0.030	0.02	2.26E-03	1.13E-05	4.95E-05
n-Butane	58.124	0.030	0.02	2.26E-03	1.13E-05	4.95E-05
i-Pentane	72.151	0.010	5.00E-03	9.36E-04	4.68E-06	2.05E-05
n-Pentane	72.151	0.010	5.00E-03	9.36E-04	4.68E-06	2.05E-05
Hexanes +	100.204	0.010	5.00E-03	1.30E-03	6.50E-06	2.85E-05
Hydrogen Sulfide[2]	34.076	0.0020	1.00E-03	8.84E-05	4.42E-07	1.94E-06
				TOTAL	9.61E-05	4.21E-04
				TOTAL VOC	9.57E-05	4.19E-04
				TOTAL HAPs	6.50E-06	2.85E-05

[1] Speciated composition is based on https://www.uniongas.com/about-us/about-natural-gas/chemical-composition-of-natural-gas.

[2] Assuming 20 ppm of H_2S in natural gas.

Calculations of Fuel Gas SO_2 Emissions

SO_2 is based on a material balance with 99.5% combustion efficiency.

Gas Stream	Combustion Efficiency Fraction	SO_2 [1] (lb/hr)	SO_2 [1] (tpy)
Fuel Gas	99.5%	1.66E-04	7.25E-04

[1] Emissions calculated are equal to (Combustion Efficiency Fraction)*(Mass Fuel Sulfur Burned)*(Mole Wt. of SO2)/(Mole Wt. of Sulfur). Annual emission are converted to tons per year.

SO2 Emission Rate (lb/hr)	Heat Release [1] (Btu/hr)
1.66E-04	8.78

1. Heat release calculated is equal to $(0.53)*(10^5)*$(SO2 lb/hr)

FUGITIVE DUST EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN:	**FUGDUST**	
Loading Trucks		
No. of Loading Trips	25	trips/day
No. of Unloading Trips	25	trips/day
Weight of Truck	40	tons
Personal Vehicles		
No. of Trips	30	trips/day
Weight if Vehicle	2	tons
Road Length Each way	14,000	feet
	2.65	miles
Annual Miles Traveled	155,000	VMT/year
Average Weight of Vehicle	26	tons
Average Silt Content[1]	4.80%	

	PM_{30}	PM_{10}	$PM_{2.5}$
Emission Factor, (lb/VMT)[2]	0.2714	0.0275	0.0028

Emissions	lb/hr	tpy
PM_{30}	4.80	21.04
PM_{10}	0.49	2.13
$PM_{2.5}$	0.05	0.21

[1] Assumed average silt content of 4.8% for Sand and gravel processing from AP-42 Section 13.2.2, Table 13.2.2-1.
[2] Emission factor estimated using formula 1a from AP-42 Section 13.2.2.

OILY WATER TREATMENT EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN: **WWTRT**

Water	77,000	gal/year
Annual Rainfall[1]	1.26	feet
Area of facility	200,000	ft^2
Volume of Rainfall	251,833	ft^3/year
	1,884,000	gal/year
Total Volume of Water to be Treated	1,961,000	gal/year
VOC Emission Factor[2]	0.2	lb/1000 gal

Emissions	lb/hr	tpy
VOC	0.04	0.20

[1] Average annual precipitation for Fort Stockton, http://www.usclimatedata.com/climate/fort-stockton/texas/united-states/ustx0473/2013/2

[2] VOC controlled emission factor for oil/water separator from AP-42 Section 5.1.1, Table 5.1-3. The VOC emissions will be controlled using activated carbon canisters.

EVAPORATION POND EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

EPN **EVAPND**

Water 9 Modeling Results for Retention Pond - Lagoon

Compound Name	CAS No.	HAP ?	Modeled Throughput (l/s)	Modeled Influent Concentration (ppmw)	Modeled Emissions (g/s)	Modeled Emissions (Mg/yr)	Modeled Emissions (lb/hr)	Modeled Emissions (tpy)
2,2,4-Trimethylpentane	540-84-1	Yes	2.52	0.11	1.16E-05	3.65E-04	9.21E-05	4.02E-04
Benzene	71-43-2	Yes	2.52	4.86	1.18E-03	3.72E-02	9.37E-03	4.10E-02
Biphenyl	92-52-4	Yes	2.52	0.00	1.13E-07	3.56E-06	8.97E-07	3.92E-06
Cresols	1319-77-3	Yes	2.52	1.85	1.09E-07	3.42E-06	8.65E-07	3.77E-06
Cumene	98-82-8	Yes	2.52	0.06	6.53E-06	2.06E-04	5.18E-05	2.27E-04
Ethylbenzene	100-41-4	Yes	2.52	0.42	6.36E-05	2.00E-03	5.05E-04	2.20E-03
Hexane	110-54-3	Yes	2.52	0.23	4.78E-05	1.51E-03	3.79E-04	1.66E-03
Methyl tertiary-butyl ether	1634-04-4	Yes	2.52	4.76	1.23E-03	3.89E-02	9.76E-03	4.29E-02
Naphthalene	91-20-3	Yes	2.52	0.10	2.79E-05	8.78E-04	2.21E-04	9.68E-04
Phenol	108-95-2	Yes	2.52	3.89	3.57E-06	1.13E-04	2.83E-05	1.25E-04
Styrene	100-42-5	Yes	2.52	0.44	4.72E-04	1.49E-02	3.75E-03	1.64E-02
Toluene	108-88-3	Yes	2.52	3.89	5.41E-04	1.71E-02	4.29E-03	1.88E-02
Xylene	1330-20-7	Yes	2.52	1.60	2.90E-04	9.15E-03	2.30E-03	1.01E-02
1,3-Butadiene	106-99-0	Yes	2.52	0.01	4.31E-06	1.36E-04	3.42E-05	1.50E-04
Other VOCs (using butane)	106-97-8	No	2.52	77.78	4.27E-02	1.35E+00	3.39E-01	1.49E+00
						Total VOC Emissions	0.37	1.62
						Total HAP Emissions	0.03	0.13

SUMMARY OF MSS EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY

HOURLY EMISSIONS

EPN	Description	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	Benzene (lb/hr)	H_2S (lb/hr)	Total HAPs (lb/hr)
MSS	IFR Tank Cleanings	--	--	3.86	--	--	--	--	--	--	--
	IFR Tank Landings	--	--	0.47	--	--	--	--			
	Fixed Tank Cleanings	--	--	4.17	--	--	--	--			
	Surface Coating	--	--	73.00	0.77	0.07	5.36E-03	--	--	--	13.39
	Low Emitting MSS Activities [1]	--	--	0.06	--	--	--	--	--	--	--
	MSS TOTAL	**--**	**--**	**81.56**	**0.77**	**0.07**	**5.36E-03**	**--**	**--**	**--**	**13.39**

[1] Emissions based on default emission rates from TCEQ Oil and Gas Emissions Calculations Workbook. The default emission rates cover low emitting activities noted in PBR §106.359(b)(1)-(6). Low emitting activities include: 1) engine, compressor, and other combustion 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 previously.

ANNUAL EMISSIONS

EPN	Description	NO_x (tpy)	CO (tpy)	VOC (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	Benzene (tpy)	H_2S (tpy)	Total HAPs (tpy)
MSS	IFR Tank Cleanings	--	--	0.40	--	--	--	--	--	--	--
	IFR Tank Landings	--	--	0.08	--	--	--	--			
	Fixed Tank Cleanings	--	--	0.38	--	--	--	--			
	Surface Coating	--	--	0.15	1.54E-03	1.39E-04	1.07E-05	--	--	--	0.03
	Low Emitting MSS Activities [1]	--	--	0.25	--	--	--	--	--	--	
	MSS TOTAL	**--**	**--**	**1.26**	**1.54E-03**	**1.39E-04**	**1.07E-05**	**--**	**--**	**--**	**0.03**

[1] Emissions based on default emission rates from TCEQ Oil and Gas Emissions Calculations Workbook. The default emission rates cover low emitting activities noted in PBR §106.359(b)(1)-(6). Low emitting activities include: 1) engine, compressor, and other combustion 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 previously.

Summary of MSS Emissions - IFR Tank Cleanings

Summary of Tanks MSS VOC Emissions

Description	EPN	Hourly VOC Emissions[1, 2] (lb/hr)	Annual VOC Emissions [2] (tpy)
Standing Idle		0.26	0.06
Vapor Space Purge		0.98	0.08
Sludge Removal		3.86	0.25
Refilling		0.12	0.02
Total		**3.9**	**0.4**

[1] It is assumed that only one of the tank cleaning operations will occur within one hour on a tank by tank basis.

[2] Associated NO_X, SO_2, and CO emissions from the combustion of the waste gas associated with these activities are presented within the control device emission calculation tables.

Tank Cleanings - Standing Idle Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," p. 3, November 2007

IFR with Liquid Heel Standing Idle Calculations

$$h_{le} = \left(h_l + \frac{sD}{72}\right)$$

h_{le} = effective height of the stock liquid and sludge for a given stage in the tank cleaning process (ft)
h_l = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)
s = slope of the tank bottom (in/ft)
D = tank diameter (ft)

$$h_v = h_d - h_{le}$$

h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
h_d = height of the floating roof deck above the tank bottom at the tank shell (ft)
h_{le} = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)

$$V_v = (h_v)\left(\frac{\pi D^2}{4}\right)$$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$$L_{SR(max)} = 5.9D^2 h_{le} W_l$$

$L_{SR(max)}$ = maximum sludge removal loss per cleaning (lb)
D = tank diameter (ft)
h_{le} = the effective height of the stock liquid and sludge for the given sludge removal period (ft)
W_l = stock liquid density (lb/gal)

$$L_s = n_d K_E \left(\frac{PV_V}{RT}\right) M_V K_S$$

L_S = standing idle loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole°R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
n_d = the time that the tank stands idle (days)
K_E = vapor space expansion factor (dimensionless)
K_S = the standing idle saturation factor (dimensionless)

Floating Roof Tank Standing Idle Emissions

								Uncontrolled		Controlled	
EPN	FIN	ΔT_V (°R)	K_E	h_v (ft)	V_v (ft^3)	K_S	L_S (lb/event)	Hourly VOC Emissions (lb/hr) [1]	Annual VOC Emissions [2] (tpy)	Hourly VOC Emissions (lb/hr)	Annual VOC Emissions [3] (tpy)
T-50	T-50	55.02	0.36	6.13	43,418	0.25	1588.7	13.24	0.79	0.26	0.02
T-51	T-51	55.02	0.36	6.13	43,418	0.25	1588.7	13.24	0.79	0.26	0.02
T-52	T-52	55.02	0.58	6.36	22,418	0.21	1410.4	11.75	0.71	0.24	0.01
T-53	T-53	55.02	0.58	6.36	22,418	0.21	1410.4	11.75	0.71	0.24	0.01
							Total	**13.24**	**3.00**	**0.26**	**0.06**

[1] It is conservatively assumed that the total uncontrolled emissions released per event are released in an hourly basis (i.e., one hour).

[2] Uncontrolled Annual Emissions (tpy) = L_S (lb/event) x Number of Events (events/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{1589 \text{ lb}}{\text{event}} \mid \frac{1 \text{ event}}{\text{yr}} \mid \frac{\text{ton}}{2{,}000 \text{ lb}}$ = 0.79 tpy

[3] Controlled Annual Emissions (tpy) = Uncontrolled Annual Emissions (tpy) x [1 - Control Efficiency (%) / 100%]

Example Annual Emissions = $\frac{0.79 \text{ tpy}}{} \mid \frac{[1 - 0 \% / 100 \%]}{}$ = 0.02 tpy

Tank Cleanings - Vapor Space Purge Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," p. 3, November 2007

IFR Vapor Space Purge Calculations

$h_v = h_d - h_l$

h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
h_d = height of the floating roof deck above the tank bottom at the tank shell (ft)
h_l = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)

$V_v = (h_v)(\frac{\pi D^2}{4})$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$L_p = \left(\frac{PV_v}{RT}\right) M_v S$

L_P = vapor purge loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole°R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
S = filling saturation factor (dimensionless)

Vapor Space Purge Emissions

					Uncontrolled		Controlled	
EPN	**FIN[1]**	**h_V (ft)**	**V_v (ft^3)**	**L_p (lb/event)**	**Hourly VOC Emissions[2] (lb/hr)**	**Annual VOC Emissions[3] (tpy)**	**Hourly VOC Emissions[4] (lb/hr)**	**Annual VOC Emissions[5] (tpy)**
T-50	T-50	6.92	49,029	2358.4	49.1	1.18	1.0	0.02
T-51	T-51	6.92	49,029	2358.4	49.1	1.18	1.0	0.02
T-52	T-52	6.92	24,387	1491.1	31.1	0.75	0.6	0.01
T-53	T-53	6.92	24,387	1491.1	31.1	0.75	0.6	0.01
				Total	**49.1**	**3.85**	**1.0**	**0.08**

[1] Tank cleaning operations will only occur for one of the floating roof tanks in one hour.

[2] Uncontrolled Hourly Emissions (lb/hr) = L_P (lb/event) / Activity Duration (hr/event)

Example Hourly Emissions = $\frac{2{,}358 \text{ lb}}{\text{event}} \left| \frac{\text{event}}{48 \text{ hr}} \right. = \frac{49.1 \text{ lb}}{\text{hr}}$

[3] Uncontrolled Annual Emissions (tpy) = L_P (lb/event) x Number of Events (events/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{2{,}358 \text{ lb}}{\text{event}} \left| \frac{1 \text{ event}}{\text{yr}} \right| \frac{\text{ton}}{2{,}000 \text{ lb}} = 1.18 \text{ tpy}$

Tank Cleanings - Sludge Removal Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," November 2007

Sludge Removal Calculations

$$C_v = \left(\frac{average\ \%\ LEL\ as\ displayed}{100}\right)\left(\frac{LEL\ of\ the\ calibration\ gas, volume\ \%\ in\ air}{100}\right)RF$$

C_V = average vapor concentration by volume during sludge removal (dimensionless)
RF = response factor for a given vapor composition (dimensionless)

$$C_{V(max)} = \frac{P}{Pa}$$

$C_{V(max)}$ = maximum vapor concentration by volume during sludge removal (dimensionless)
P = true vapor pressure of exposed material in the tank (psia)
P_a = atmospheric pressure at the tank location (psia)

$$L_{SR} = 60 Q_v n_{SR} t_v C_v \frac{P_a M_v}{RT}$$

L_{SR} = sludge removal loss per cleaning (lb)
Q_v = ventilation rate during sludge removal (ft^3/minute)
n_{SR} = time for sludge removal (days)
t_v = daily period of forced ventilation (hours/day)
C_V = average vapor concentration by volume during sludge removal (dimensionless)
P_a = atmospheric pressure at the tank location (psia)
M_v = stock vapor molecular weight (lb/lb-mol)
R = ideal gas constant (psia ft^3 per lb-mole°R) = 10.731
T = average temperature of the vapor space (degrees Rankine)

$$L_{SR(max)} = 5.9 D^2 h_{le} W_l$$

$L_{SR(max)}$ = maximum sludge removal loss per cleaning (lb)
D = tank diameter (ft)
h_{le} = the effective height of the stock liquid and sludge for the given sludge removal period (ft)
W_l = stock liquid density (lb/gal)

Sludge Removal Emissions

								Uncontrolled		Controlled	
EPN	FIN	Number of Days Sludge Removal Occurs per Event	Number of Sludge Removal Events Per Year	C_v	$C_{v(max)}$	L_{SR} (lb/yr)	$L_{SR(max)}$ (lb/yr)	Hourly VOC Emissions[1,2] (lb/hr)	Annual VOC Emissions[3] (tpy)	Hourly VOC Emissions (lb/hr)	Annual VOC Emissions (tpy)
T-50	T-50	4	1.00	6.93E-04	0.612	9,262	330,674	193.0	4.63	3.9	0.09
T-51	T-51	4	1.00	6.93E-04	0.612	9,262	330,674	193.0	4.63	3.9	0.09
T-52	T-52	4	1.00	6.93E-04	0.748	3,194	95,120	66.5	1.60	1.3	0.03
T-53	T-53	4	1.00	6.93E-04	0.748	3,194	95,120	66.5	1.60	1.3	0.03
							Total	**193.0**	**12.46**	**3.9**	**0.25**

[1] Hourly emissions are based on the expected total annual hours of sludge removal (i.e., 4 days per year, 12 hours per day for a total 48 hours per year per tank).

[2] Uncontrolled Hourly Emissions (lb/hr) = L_{SR} (lb/yr) / n_{SR} (days/event) / t_V (hr/day) / Number of Sludge Removal Events (events/yr)

Example Hourly Emissions = $\frac{9{,}262\ lb}{yr} \left| \frac{event}{4\ days} \right| \frac{day}{12\ hr} \left| \frac{yr}{1\ event} \right. = \frac{193.0\ lb}{hr}$

[3] Uncontrolled Annual Emissions (tpy) = L_{SR} (lb/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{9{,}262\ lb}{yr} \left| \frac{ton}{2{,}000\ lb} \right. = 4.6\ tpy$

Tank Cleanings - Tank Refilling Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," p. 3, November 2007

Floating Roof Tank Filling Calculations

$h_v = h_d$ for conservatively high estimate

h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
h_d = height of the floating roof deck above the tank bottom at the tank shell (ft)

$V_v = (h_v)(\frac{\pi D^2}{4})$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$L_F = \left(\frac{PV_v}{RT}\right) M_v S$

L_F = filling loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole °R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
S = filling saturation factor (dimensionless)

Floating Roof Tank Refilling Emissions

						Uncontrolled		Controlled	
EPN	FIN	h_v (ft)	Diameter (ft)	V_v (ft^3)	L_F (lb/event)	Hourly VOC Emissions[1] (lb/hr)	Annual VOC Emissions[2] (tpy)	Hourly VOC Emissions (lb/hr)	Annual VOC Emissions (tpy)
T-50	T-50	6.1	95	43,418	522.1	2.98	0.26	0.06	0.01
T-51	T-51	6.1	95	43,418	522.1	2.98	0.26	0.06	0.01
T-52	T-52	6.4	67	22,418	342.7	5.87	0.17	0.12	0.00
T-53	T-53	6.4	67	22,418	342.7	5.87	0.17	0.12	0.00
					Total	**5.87**	**0.86**	**0.12**	**0.02**

[1] Uncontrolled Hourly Emissions (lb/hr) = L_F (lb/event) / Time to Refill Tank (hours/event)

Example Hourly Emissions = $\frac{522.1 \text{ lb}}{\text{event}} \Big| \frac{\text{event}}{175.0 \text{ hr}} = \frac{3.0 \text{ lb}}{\text{hr}}$

[2] Uncontrolled Annual Emissions (tpy) = L_F (lb/event) x Number of Events (events/yr) x / 2,000 (lb/ton)

Example Annual Emissions = $\frac{522.1 \text{ lb}}{\text{event}} \Big| \frac{1 \text{ event}}{\text{yr}} \Big| \frac{\text{ton}}{2{,}000 \text{ lb}} =$ 0.26 tpy

Summary of MSS Emissions - Tank Roof Landings

Summary of Tanks MSS VOC Emissions

Description	EPN	Hourly VOC Emissions[1, 2] (lb/hr)	Annual VOC Emissions [2] (tpy)
Standing Idle		0.26	0.01
Refilling		0.47	0.07
Total		**0.5**	**0.1**

[1] It is assumed that only one of the tank cleaning operations will occur within one hour on a tank by tank basis.

[2] Associated NO_X, SO_2, and CO emissions from the combustion of the waste gas associated with these activities are presented within the control device emission calculation tables.

Tank Landings - Standing Idle Emissions

Basis: API Technical Report 2567, "Evaporative Loss from Storage Tank Floating Roof Landings," p. 24, April 2005

IFR with Liquid Heel Standing Idle Calculations

$$h_{le} = \left(h_l + \frac{sD}{72}\right)$$

h_{le} = effective height of the stock liquid and sludge for a given stage in the tank cleaning process (ft)
h_l = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)
s = slope of the tank bottom (in/ft)
D = tank diameter (ft)

$$h_v = h_d - h_{le}$$

h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
h_d = height of the floating roof deck above the tank bottom at the tank shell (ft)
h_{le} = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)

$$V_v = (h_v)\left(\frac{\pi D^2}{4}\right)$$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$$L_{SR(max)} = 5.9D^2 h_{le} W_l$$

$L_{SR(max)}$ = maximum sludge removal loss per cleaning (lb)
D = tank diameter (ft)
h_{le} = the effective height of the stock liquid and sludge for the given sludge removal period (ft)
W_l = stock liquid density (lb/gal)

$$L_s = n_d K_E \left(\frac{PV_V}{RT}\right) M_V K_S$$

L_S = standing idle loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole°R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
n_d = the time that the tank stands idle (days)
K_E = vapor space expansion factor (dimensionless)
K_S = the standing idle saturation factor (dimensionless)

Floating Roof Tank Standing Idle Emissions

								Uncontrolled		Controlled	
EPN	FIN	ΔT_V (°R)	K_E	h_v (ft)	V_v (ft^3)	K_S	L_S (lb/event)	Hourly VOC Emissions (lb/hr) [1]	Annual VOC Emissions [2] (tpy)	Hourly VOC Emissions (lb/hr)	Annual VOC Emissions [3] (tpy)
T-50	T-50	55.02	0.36	6.13	43,418	0.25	317.7	13.24	0.16	0.26	0.00
T-51	T-51	55.02	0.36	6.13	43,418	0.25	317.7	13.24	0.16	0.26	0.00
T-52	T-52	55.02	0.58	6.36	22,418	0.21	282.1	11.75	0.14	0.24	0.00
T-53	T-53	55.02	0.58	6.36	22,418	0.21	282.1	11.75	0.14	0.24	0.00
							Total	**13.24**	**0.60**	**0.26**	**0.01**

[1] It is conservatively assumed that the total emissions released per day are released in an hourly basis (i.e., one hour).

[2] Uncontrolled Annual Emissions (tpy) = L_S (lb/event) x Number of Events (events/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{318 \text{ lb}}{\text{event}} \mid \frac{1 \text{ event}}{\text{yr}} \mid \frac{\text{ton}}{2{,}000 \text{ lb}}$ = 0.16 tpy

[3] Controlled Annual Emissions (tpy) = Uncontrolled Annual Emissions (tpy) x [1 - Control Efficiency (%) / 100%]

Example Annual Emissions = 0.16 tpy | [1 - 98 % / 100 %] = 0.00 tpy

Tank Landings - Tank Refilling Emissions

Basis: API Technical Report 2567, "Evaporative Loss from Storage Tanks Floating Roof Landings," p. 24, April 2005

Floating Roof Tank Filling Calculations

$h_v = h_d$ for conservatively high estimate

h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
h_d = height of the floating roof deck above the tank bottom at the tank shell (ft)

$V_v = (h_v)(\frac{\pi D^2}{4})$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$L_F = \left(\frac{PV_v}{RT}\right) M_v S$

L_F = filling loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole°R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
S = filling saturation factor (dimensionless)

Floating Roof Tank Refilling Emissions

						Uncontrolled		Controlled	
EPN	FIN	h_v (ft)	Diameter (ft)	V_v (ft^3)	L_F (lb/event)	Hourly VOC Emissions[1] (lb/hr)	Annual VOC Emissions[2] (tpy)	Hourly VOC Emissions[1] (lb/hr)	Annual VOC Emissions[2] (tpy)
T-50	T-50	6.1	95	43,418	2,088.5	11.93	1.04	0.24	0.02
T-51	T-51	6.1	95	43,418	2,088.5	11.93	1.04	0.24	0.02
T-52	T-52	6.4	67	22,418	1,370.7	23.50	0.69	0.47	0.01
T-53	T-53	6.4	67	22,418	1,370.7	23.50	0.69	0.47	0.01
					Total	**23.50**	**3.46**	**0.47**	**0.07**

[1] Uncontrolled Hourly Emissions (lb/hr) = L_F (lb/event) / Time to Refill Tank (hours/event)

Example Hourly Emissions = $\frac{2088.5 \text{ lb}}{\text{event}} \left| \frac{\text{event}}{175.0 \text{ hr}} \right. = \frac{11.9 \text{ lb}}{\text{hr}}$

[2] Uncontrolled Annual Emissions (tpy) = L_F (lb/event) x Number of Events (events/yr) x / 2,000 (lb/ton)

Example Annual Emissions = $\frac{2088.5 \text{ lb}}{\text{event}} \left| \frac{1 \text{ event}}{\text{yr}} \right| \frac{\text{ton}}{2{,}000 \text{ lb}} =$ 1.04 tpy

Summary of MSS Emissions - Fixed Tank Cleanings

Summary of Tanks MSS VOC Emissions

Description	EPN	Hourly VOC Emissions[1, 2] (lb/hr)	Annual VOC Emissions [2] (tpy)
Vapor Space Purge		0.39	4.28E-04
Sludge Removal		4.17	0.38
Total		**4.2**	**0.4**

[1] It is assumed that only one of the tank cleaning operations will occur within one hour on a tank by tank basis.

[2] Associated NO_X, SO_2, and CO emissions from the combustion of the waste gas associated with these activities are presented within the control device emission calculation tables.

Tank Cleanings - Vapor Space Purge Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," p. 3, November 2007

Fixed Roof Tanks Vapor Space Purge Calculations

$$H_{VO} = H_S - h_l + H_{RO}$$

H_{VO} = height of the fixed roof tank vapor space outage (ft)
H_S = height of the tank shell (ft)
h_l = height of the stock liquid and sludge above the tank bottom at the tank shell for a given stage in the tank cleaning process (ft)
H_{RO} = height of the roof outage (the effective height of the vapor space enclosed by the tank roof) (ft)

$$V_v = (H_{VO})\left(\frac{\pi D^2}{4}\right)$$

V_v = volume of the vapor space under the floating roof (ft^3)
h_v = height of the vapor space under the floating roof for the given standing idle period (ft)
D = tank diameter (ft)

$$S = \frac{0.5(n_d)+1}{6}$$

S = filling saturation factor
n_d = standing idle time (days)

$$L_p = \left(\frac{PV_v}{RT}\right) M_v S$$

L_p = vapor purge loss per cleaning (lb)
P = true vapor pressure of exposed material in the tank (psia)
V_v = volume of the vapor space under the floating roof (ft^3)
R = ideal gas constant (psia ft^3 per lb-mole° R) = 10.731
T = average temperature of the vapor space (degrees Rankine)
M_v = stock vapor molecular weight (lb/lb-mol)
S = filling saturation factor (dimensionless)

Vapor Space Purge Emissions

					Uncontrolled		Controlled	
EPN	**FIN[1]**	**H_{VO} (ft)**	**V_v (ft^3)**	**L_p (lb/event)**	**Hourly VOC Emissions[2] (lb/hr)**	**Annual VOC Emissions[3] (tpy)**	**Hourly VOC Emissions[2] (lb/hr)**	**Annual VOC Emissions[3] (tpy)**
TK54	TK54	40.18	177,498	19.5	19.53	9.76E-03	0.39	1.95E-04
TK55	TK55	40.18	177,498	19.5	19.53	9.76E-03	0.39	1.95E-04
TK56	TK56	40.15	141,554	1.3	1.32	6.62E-04	0.03	1.32E-05
TK57	TK57	40.15	141,554	1.3	1.32	6.62E-04	0.03	1.32E-05
TK58	TK58	14.95	1,174	0.1	0.10	4.76E-05	1.90E-03	9.52E-07
TK592	TK592	24.00	11,783	1.0	0.96	4.78E-04	0.02	9.56E-06
				Total	**19.53**	**0.02**	**0.39**	**4.28E-04**

[1] Tank cleaning operations will only occur for one of the tanks in one hour.

[2] Uncontrolled Hourly Emissions (lb/hr) = L_p (lb/event) / Activity Duration (hr/event)

Example Hourly Emissions = $\frac{20 \text{ lb}}{\text{event}} \Big| \frac{\text{event}}{01 \text{ hr}} = \frac{19.53 \text{ lb}}{\text{hr}}$

[3] Uncontrolled Annual Emissions (tpy) = L_P (lb/event) x Number of Events (events/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{20 \text{ lb}}{\text{event}} \Big| \frac{1 \text{ event}}{\text{yr}} \Big| \frac{\text{ton}}{2{,}000 \text{ lb}} =$ 0.01 tpy

[4] Controlled Hourly Emissions (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x (100% - Control Efficiency (%))

Example Hourly Emissions = $\frac{19.53 \text{ lb}}{\text{hr}} \Big| (100\% - 98\%) = \frac{0.39 \text{ lb}}{\text{hr}}$

[5] Controlled Annual Emissions (tpy) = Uncontrolled Annual Emissions (tpy) x (100% - Control Efficiency (%))

Example Annual Emissions = 9.76E-03 tpy | (100% - 98%) = 1.95E-04 tpy

Tank Cleanings - Sludge Removal Emissions

Basis: API Technical Report 2568, "Evaporative Loss from the Cleaning of Storage Tanks," November 2007

Sludge Removal Calculations

$$C_v = \left(\frac{average\ \%\ LEL\ as\ displayed}{100}\right)\left(\frac{LEL\ of\ the\ calibration\ gas, volume\ \%\ in\ air}{100}\right)RF$$

C_V = average vapor concentration by volume during sludge removal (dimensionless)
RF = response factor for a given vapor composition (dimensionless)

$$C_{V(max)} = \frac{P}{Pa}$$

$C_{V(max)}$ = maximum vapor concentration by volume during sludge removal (dimensionless)
P = true vapor pressure of exposed material in the tank (psia)
P_a = atmospheric pressure at the tank location (psia)

$$L_{SR} = 60 Q_v n_{SR} t_v C_v \frac{P_a M_v}{RT}$$

L_{SR} = sludge removal loss per cleaning (lb)
Q_v = ventilation rate during sludge removal (ft^3/minute)
n_{SR} = time for sludge removal (days)
t_v = daily period of forced ventilation (hours/day)
C_V = average vapor concentration by volume during sludge removal (dimensionless)
P_a = atmospheric pressure at the tank location (psia)
M_v = stock vapor molecular weight (lb/lb-mol)
R = ideal gas constant (psia ft^3 per lb-mole $^\circ$R) = 10.731
T = average temperature of the vapor space (degrees Rankine)

$$L_{SR(max)} = 5.9 D^2 h_{le} W_l$$

$L_{SR(max)}$ = maximum sludge removal loss per cleaning (lb)
D = tank diameter (ft)
h_{le} = the effective height of the stock liquid and sludge for the given sludge removal period (ft)
W_l = stock liquid density (lb/gal)

Sludge Removal Emissions

								Uncontrolled		Controlled	
EPN	FIN	Number of Days Sludge Removal Occurs per Event	Number of Sludge Removal Events Per Year	C_v	$C_{v(max)}$	L_{SR} (lb/yr)	$L_{SR(max)}$ (lb/yr)	Hourly VOC Emissions[1,2] (lb/hr)	Annual VOC Emissions[3] (tpy)	Hourly VOC Emissions[1,2] (lb/hr)	Annual VOC Emissions[3] (tpy)
TK54	TK54	4	1.00	6.93E-04	0.001	10,006	166,827	208.5	5.00	4.2	0.10
TK55	TK55	4	1.00	6.93E-04	0.001	10,006	166,827	208.5	5.00	4.2	0.10
TK56	TK56	4	1.00	6.93E-04	0.000	8,603	134,188	179.2	4.30	3.6	0.09
TK57	TK57	4	1.00	6.93E-04	0.000	8,603	134,188	179.2	4.30	3.6	0.09
TK58	TK58	4	1.00	6.93E-04	0.001	49	697	1.0	0.02	0.0	0.00
TK592	TK592	4	1.00	6.93E-04	0.001	492	7,627	10.2	0.25	0.2	0.00
							Total	**208.5**	**18.88**	**4.2**	**0.38**

[1] Hourly emissions are based on the expected total annual hours of sludge removal (i.e., 4 days per year, 12 hours per day for a total 48 hours per year per tank).

[2] Uncontrolled Hourly Emissions (lb/hr) = L_{SR} (lb/yr) / n_{SR} (days/event) / t_v (hr/day) / Number of Sludge Removal Events (events/yr)

Example Hourly Emissions = $\frac{10{,}006\ lb}{yr} \left| \frac{event}{4\ days} \right| \frac{day}{12\ hr} \left| \frac{yr}{1\ events} \right. = \frac{208.5\ lb}{hr}$

[3] Uncontrolled Annual Emissions (tpy) = L_{SR} (lb/yr) / 2,000 (lb/ton)

Example Annual Emissions = $\frac{10{,}006\ lb}{yr} \left| \frac{ton}{2{,}000\ lb} \right. = 5.0\ tpy$

FLARE EMISSIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

Flare Pilot Emissions

Input Data

EPN	MSS-FLR	
Heating Value of Natural Gas =	1,000	Btu/scf
Fuel Gas Flow rate per Pilot =	50	scf/hr-pilot
Number of Pilots =	1	
Gas Stream Heat Input =	0.05	MMBtu/hr
Gas Stream Heat Input =	438.00	MMBtu/yr
Hours of Operation =	8,760	hr/yr

Pollutant	Emission Factor (lb/MMBtu)	Source [1]	Hourly Emissions [2] (lb/hr)	Annual Emissions [3] (tpy)
NO_X	0.138	TCEQ Guidance	0.01	0.03
CO	0.2755	TCEQ Guidance	0.01	0.06

[1] From TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000) Table 4, emission factors for industrial flares combusting high-Btu vapors.

[2] Maximum Potential Hourly Emission Rate (lb/hr) = Gas Stream Heat Input (MMBtu/hr) x Emission Factor (lb/MMBtu)

Example NO_X Hourly Emission Rate (lb/hr) = $\frac{0.05 \text{ MMBtu}}{\text{hr}} \times \frac{0.138 \text{ lb}}{\text{MMBtu}} = \frac{0.01 \text{ lb}}{\text{hr}}$

[3] Maximum Potential Annual Emission Rate (tpy) = Gas Stream Heat Input (MMBtu/yr) x Emission Factor (lb/MMBtu) / (2,000 lb/ton)

Example NO_X Annual Emission Rate (tpy) = $\frac{438.00 \text{ MMBtu}}{\text{yr}} \times \frac{0.138 \text{ lb}}{\text{MMBtu}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}} = \frac{0.03 \text{ ton}}{\text{yr}}$

Compound	Composition [1] (Mole %)	MW (lb/lb-mole)	DRE (%)	Gas Vented to Flare [2,3] (lb/hr)	Gas Vented to Flare [2,3] (tpy)	Controlled Emissions [4] (lb/hr)	Controlled Emissions [4] (tpy)
H_2S [5]	0.002	34.08	98%	8.98E-05	3.93E-04	1.80E-06	7.87E-06
Propane	0.20	44.10	99%	0.01	0.05	1.16E-04	5.09E-04
i-Butane	0.03	58.12	98%	2.30E-03	0.01	4.59E-05	2.01E-04
n-Butane	0.03	58.12	98%	2.30E-03	0.01	4.59E-05	2.01E-04
i-Pentane	0.01	72.15	98%	9.51E-04	4.16E-03	1.90E-05	8.33E-05
n-Pentane	0.01	72.15	98%	9.51E-04	4.16E-03	1.90E-05	8.33E-05
Hexane	0.01	86.18	98%	1.14E-03	4.97E-03	2.27E-05	9.95E-05
Heptane		100.21	98%	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOC	0.290			0.02	0.08	2.69E-04	1.18E-03
HAPS [6]	0.01			1.14E-03	4.97E-03	2.27E-05	9.95E-05
SO_2		64				1.65E-04	7.24E-04

[1] Speciated composition is based on https://www.uniongas.com/about-us/about-natural-gas/chemical-composition-of-natural-gas.

[2] Gas Vented to Flare (lb/hr) = Volume (scf/hr) x Mole Percent / 100 x MW (lb/lb-mole) / 379.5 (scf/lb-mole)

Example Propane Hourly Emission Rate (lb/hr) = $\frac{050 \text{ scf}}{\text{hr}} \times 0.20\ \% \times \frac{44.10 \text{ lb}}{\text{lb-mole}} \times \frac{\text{lb-mole}}{379.5 \text{ scf}} = \frac{0.01 \text{ lb}}{\text{hr}}$

[3] Annual Emissions vented to flare (tpy) = Hourly Emissions (lb/hr) x Operation (hrs/yr) x (1 ton / 2,000 lb)

Example Propane Vented to Flare Annual Emission Rate (tpy) = $\frac{0.01 \text{ lb}}{\text{hr}} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}} = 0.05 \text{ tpy}$

[4] Controlled Hourly Emission Rate (lb/hr) = Gas Vented to Flare (lb/hr) x (1 - DRE)

Example Controlled Propane Hourly Emission Rate (lb/hr) = $\frac{0.01 \text{ lb}}{\text{hr}} \times (1 - 99\ \%) = \frac{0.00 \text{ lb}}{\text{hr}}$

[5] Assuming 20 ppm of H_2S in natural gas

[6] The weight percent of Hexane is used to conservatively account for the total HAP emissions.

Flare Waste Gas Combustion Emissions - MSS Operations

Input Data

Heating Value of Waste Gas [1] =	1,000.00	Btu/scf
Vapor MW =	50.00	lb/lb-mol
Maximum Waste Gas Volume =	3,223.68	scf/hr
Annual Waste Gas Volume =	654,408	scf/yr
Gas Stream Heat Input =	3.22	MMBtu/hr
Gas Stream Heat Input =	654	MMBtu/yr

[1] The heating value is based on the off-gas stream.

Pollutant	Emission Factor (lb/MMBtu)	Source [1]	Hourly Emissions [2] (lb/hr)	Annual Emissions [3] (tpy)
NO_X	0.138	TCEQ Guidance	0.44	0.05
CO	0.2755	TCEQ Guidance	0.89	0.09

[1] From TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000) Table 4, emission factors for industrial flares combusting high-Btu vapors.

[2] Maximum Potential Hourly Emission Rate (lb/hr) = Gas Stream Heat Input (MMBtu/hr) x Emission Factor (lb/MMBtu)

Example NO_X Hourly Emission Rate (lb/hr) = $\frac{3.22 \text{ MMBtu}}{\text{hr}} \times \frac{0.138 \text{ lb}}{\text{MMBtu}} = \frac{0.44 \text{ lb}}{\text{hr}}$

[3] Maximum Potential Annual Emission Rate (tpy) = Gas Stream Heat Input (MMBtu/yr) x Emission Factor (lb/MMBtu) / (2,000 lb/ton)

Example NO_X Annual Emission Rate (tpy) = $\frac{0{,}654 \text{ MMBtu}}{\text{yr}} \times \frac{0.138 \text{ lb}}{\text{MMBtu}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}} = \frac{0.05 \text{ ton}}{\text{yr}}$

SURFACE COATING MSS EMISSIONS CALCULATIONS
MMEX RESOURCES CORPORATION
PECOS COUNTY REFINERY
07/27/2017

Basis of Calculation:

TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012

VOC calculations are based on the product usage, VOC or HAP content, and density of a general paint used for MSS. The paint chosen has the highest VOC content of all paints typically used for these activities. It has been assumed that all VOC in the solution escapes to atmosphere. Emissions are calculated using the following equations:

Hourly VOC Emissions (lb/hr) = [Usage Rate (gal/hr)] * [VOC or HAP Content (lb/gal)]

Annual VOC Emissions (tpy) = [Usage Rate (gal/yr)] * [VOC or HAP Content lb/gal)] / [2,000 (lb/ton)]

It is assumed that all surface coating products are sprayed. Particulate emissions are calculated based on the usage rate and solids content for the product, as well as a transfer efficiency and fallout factor obtained from TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications. The following equations are used to calculated particulate emissions:

Short-term PM emissions (lb/hr) = Solids Content (%) x Density (lb/gal) x Volume of Product used (gal/hr) x (1 - Transfer Efficiency (%)) x (1-Fallout Factor (%))

Annual PM emissions (tpy) = Solids Content (%) x Density (lb/gal) x Volume of Product used (gal/yr) x (1 - Transfer Efficiency (%)) x (1-Fallout Factor (%)) / 2,000 (lb/ton)

Potential VOC and HAP Emissions from Paint Usage (MSS)

Product	Density (lb/gal) [1]	VOC Content (lb/gal) [1]	HAP Content (wt %) [1]	Usage Rates		VOC Emissions		HAP Emissions	
				(gal/hr)	(gal/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Paint	10.71	2.92	5.0	25.0	100.0	73.00	0.15	13.39	0.03
					Totals	**73.00**	**0.15**	**13.39**	**0.03**

[1] Per the representative Material Safety Data Sheet (MSDS).

Potential $PM/PM_{10}/PM_{2.5}$ Emissions from Spray Paint Usage (MSS)

25	Solids Content [1] (wt %)	Usage Rates		Object Coated	Transfer Efficiency [2] (%)	Fallout Factor (%) [3]			PM Emissions		PM_{10} Emissions		$PM_{2.5}$ Emissions	
		(gal/hr)	(gal/yr)			PM	PM_{10}	$PM_{2.5}$	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Paint	80	25.00	100.00	Flat Surface	75	98.56	99.87	99.99	7.71E-01	1.54E-03	6.96E-02	1.39E-04	5.36E-03	1.07E-05

[1] Per the representative Material Safety Data Sheet (MSDS).

[2] Transfer efficiency per TCEQ guidance (TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012).

[3] Fallout factors per TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012, Table 2.

Speciated Emissions

Composition	% by Weight	Emissions	
		(lb/hr)	(tpy)
Ethylbenzene	0.7	1.87	3.75E-03
Xylene	4.0	10.71	0.02
Medium Aromatic Hydrocarbons	2.0	5.36	0.01
Naphthalene	0.3	0.80	1.61E-03
Methyl Ethyl Ketone	5.0	13.39	0.03
n-Butyl Acetate	9.0	24.10	0.05
1-methoxy-2-propanol Acetate	6.0	16.07	0.03
		72.29	**0.14**

Default VOC emissions for Miscellaneous MSS activities

Company Name	MMEX RESOURCES CORPORATION

Default VOC emissions (tpy) associated with miscellaneous MSS activities	**0.250**
Add default VOC emissions from miscellaneous MSS activities to the emissions summary	Yes

#	Activity	Description / comments	Default parameters		Equation used		Input parameters		Annual emissions (tpy)
1	***(b)(1) Engine Oil changes / Filter changes*** The emissions associated with an engine oil/filter change occur during the draining of the used engine oil into oil pan or container.	-Engine has been isolated and blow down occurs prior to oil change. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Oil is drained into a 4 ft x 4 ft open pan and transferred to a closed container per Best Management Practice (BMP). -Input parameters based on manufacturer specifications of engine oil SAE 10W (a). -Used a 1380 hp Caterpillar G3516B LE engine (b) as basis for calculation. In order to account for emissions from larger horse power engines, the emissions are doubled. An average engine uses 112 gallons of motor oil and manufacturer recommends changing oil every 1000 hrs. We used 10 changes of oil per year as a conservative estimate. -Emission estimates for 1380 hp engine are being doubled to be conservative and to accommodate engines with higher hp.	Temperature (°F)	212	Loading loss L_L (lb/1000 gal)	0.009	Number of engines	2	0.021
			Vapor pressure (psia)	0.001					
			Saturation factor	1	Loading loss per activity (lb/activity)	0.001			
			Molecular weight (lb/lbmol)	500					
			Motor oil (gal/activity)	112					
			U wind speed (m/s)	3.52	Evaporation Loss (lb/activity)	1.027			
			Vapor pressure P_v (Pa)	10					
			Molecular weight (lb/lbmol)	500					
			Surface Area A_p (m^2) (4ft * 4ft)	1.48					
			Evaporation time t (hrs)	10					
			Number of activities per year (Number of oil changes per engine per year)	10	Total (lbs/yr/engine)	20.565			
			Factor used to account for larger horsepower engines	2					
2	***(b)(1) & (b)(4) Changing Engine Rod Packings*** Emissions from changing of the rod would be from clingage of lubricant in the casing.	-Engine has been isolated and blow down occurs prior to changing rod packing. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Emissions from clingage are the evaporation of the lubricant adhered to the rod packing casing. -Casing volume for calculations is based on field observation of casing for a 1380hp G3516B LE engine(b). -Input parameters based on material specifications for AP 101(c) grease.	Temperature (°F)	104	Clingage loss (lb/activity)	0.0001	Number of engines	2	1.16744E-06
			Vapor pressure (psia)	0.001					
			Molecular weight (lb/lb-mole)	500					
			V_V Casing volume (ft^3) (1ft * 3ft)	2.355					
			Ideal gas constant (psia-ft3/lb-mol-°R)	10.73					
			Number of activities per year (Number of rod packing changes per year per engine)	10	Total (lbs/yr/engine)	0.0012			
3	***(b)(3) Changing wet and dry seals*** Emissions from changing seals would be from clingage of lubricant in the casing.	-Engine has been isolated and blow down occurs prior to changing seals. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Emissions from clingage are the evaporation of the lubricant adhered to the rod packing casing. -Casing volume for calculations is based on field observation of casing for a 1380 hp Caterpillar G3516B LE engine (b). -Input parameters based on material specifications for AP 101(c) grease.	Temperature (°F)	104	Clingage loss (lb/activity)	0.0001	Number of engines	2	0.000000
			Vapor pressure of material stored (psia)	0.001					
			Molecular weight (lb/lb-mole)	500					
			V_V Casing volume (ft^3) (1ft * 3ft)	2.355					
			Ideal gas constant (psia-ft3/lb-mol-°R)	10.73					
			Number of activities per year (Number of seal changes per year)	2	Total (lbs/yr/engine)	0.0002			

#	Activity	Description / comments	Default parameters		Equation used		Input parameters		Annual emissions (tpy)
4	***(b)(2) Aerosol Lubricants***	-45-50% VOC by weight volatilizes. -Material specification per Lubricant MSDS (f). -VOC evaporation is based off standard engineering judgment consistent with product specification. - Standard Industrial Size Cans (oz.) 16			Pounds of emissions per can (lb/can)	0.5	Number of 16 oz cans used	100	0.025
5	***(b)(3) Pneumatic controllers***	Based on field experience and recent site visits to two plants in Central Texas area, changing pneumatic controllers of equipment under pressure requires isolation of pipe section or process equipment and a blow down. There are no emissions associated with changing the controller.							
6	***(b)(2) Calibration***	-Per Monitoring Division's Laboratory and Quality Assurance Section - One cylinder of pentane or other calibration gas used per year and a typical cylinder contains 100	Pounds of pentane in one cylinder (lb)	100	Pounds of pentane in one cylinder (lb/cylinder)	100	Number of cylinders	1	0.050
7	***(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.							1	0.028

	TPY	lbs/hr
Total VOC Emissions	**0.124**	**0.028**

7. GENERAL PBR REQUIREMENTS

This section lists the general requirements for authorization under PBR with a description of how the PCR will comply with each requirement. Requirements of each specific PBR claimed in this registration are identified and discussed in Section 8 of this registration. A PBR §106.4 checklist is provided in Section 11.

7.1 REQUIREMENTS FOR PERMITTING BY RULE (30 TAC §106.4) EFFECTIVE APRIL 17, 2014

(a) To qualify for a permit by rule, the following general requirements must 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 or less ($PM_{2.5}$); or
(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).

As presented in Sections 6 and 7 of this registration, the total emissions from the MSS activities authorized via PBR will not exceed the emission limitations set forth in this section.

(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.

The PCR is located in Pecos County, which is considered an attainment or unclassifiable area for all criteria pollutants;[2] therefore, Nonattainment New Source Review (NNSR) permitting requirements do not apply to the MSS activities proposed in this PBR.

(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

[2] The United States Environmental Protection Agency (U.S.EPA) Green Book. Source: https://www3.epa.gov/airquality/greenbook/hbcs.html#TX . Accessed in June2017.

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.

The PCR will be a minor source under the PSD program. As such, PSD permitting is not applicable.

(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)).

The PCR has not gone through public notice as required in Chapter 116, Subchapter B of this title. The total emissions from the MSS activities authorized in this PBR are below the emission limits of this paragraph; therefore, this requirement has been met.

(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.

The PCR meets the requirements under the PBRs currently in effect. In the event that the facilities are modified, MMEX will re-evaluate the applicability of the PBR in effect at the time of modification.

(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.

PCR will comply with applicable NSPS, MACT, and federal NSR requirements.

(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.

The PCR has no TCEQ permits that preclude the use of a PBR under this chapter.

(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).

The requirements of 30 TAC Chapter 101, Subchapter H, Division 3 of this title applies to facilities located in the Houston/Galveston/Brazoria nonattainment area. The site is not located in the affected area; therefore, this section does not apply.

(b) No person shall circumvent by artificial limitations the requirements of §116.110 of this title (relating to Applicability).

The affected facilities meet all the requirements of Chapter 106; therefore, a state permit is not required, and 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.*

The PCR will be in compliance with the rules and regulations of the TCAA. In addition, compliance with the requirements of 30 TAC Chapter 106 ensures protection of health and property of the public.

(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 TCAA, §382.113 and any other applicable law.*

There are no local air pollution control agencies with jurisdiction over the PCR.

7.2 REQUIREMENTS FOR RECORDKEEPING (30 TAC §106.8) EFFECTIVE NOVEMBER 1, 2001

(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 equipment and activities covered in this registration are not de minimis facilities and are subject to the requirements of 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 PCR is not using a PBR that only names the type of facility and imposes no other conditions in the PBR. Therefore, the proposed MSS activities are not exempt from the recordkeeping requirements of subsection (c) of this section and PCR will comply with the applicable requirements in this section.

(c) *Owners or operators of all other facilities authorized to be constructed and operate under a PBR must retain records as follows:*

(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;*

MMEX will maintain a copy of the PBRs claimed in this registration, including a copy of the general conditions of 30 TAC §106.4, as required by this provision. The PBRs claimed are the most recent versions as of the date of this registration.

(2) maintain records containing sufficient information to demonstrate compliance with the following: 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 all applicable PBR conditions;

MMEX will maintain records containing sufficient information to demonstrate compliance with the general requirements of 30 TAC §106.4 and the conditions of the specific PBRs claimed.

(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;

MMEX will maintain all records needed to demonstrate compliance with this section at the Pecos County Refinery. If the Pecos County Refinery site operates unattended, records will be maintained at the nearest Texas Office with day-to-day operational control.

(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;

MMEX will maintain records in a reviewable format and will make them available to the TCEQ or any other air pollution control program having jurisdiction upon request.

(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

As required, MMEX will maintain records to support compliance demonstrations for any consecutive 12-month period.

(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 supersede any retention conditions of an individual PBR.

MMEX will maintain records for a period of at least two years since the Pecos County Refinery is a major source under the Title V program.

8. SPECIFIC PBR REQUIREMENTS

This section provides a summary of the applicable state requirements and conditions outlined in the respective applicable PBRs. The table below summarizes the emission sources and the PBRs claimed to meet the emissions requirements. Regulatory text is provided in italics.

Emissions Source	EPN	PBR Claimed
Process Heater/Boiler	H-400 and D-950	106.183
Diesel Engines/Generators	EG-1 and P-676B	106.511
Sitewide Fugitives	FUG	106.261
Fugitive Dust	FUGDUST	106.261
Product Loading	LOAD1, LOAD2, LOAD3, and LOAD4	106.261
Storage Tanks	TK50 through TK59	106.478
Oil/Water Separation	WWTRT	106.532
Evaporation Pond	EVAPND	106.532
Vapor Combustor	VCU	106.261
MSS Flaring	MSS-FLR	106.492
MSS	MSS	106.263

8.1 REQUIREMENTS FOR BOILERS, HEATERS, AND OTHER COMBUSTION DEVICES (30 TAC §106.183) EFFECTIVE SEPTEMBER 4, 2000

Boilers, heaters, drying or curing ovens, furnaces, or other combustion units, but not including stationary internal combustion engines or turbines are permitted by rule, provided that the following conditions are met.

(1) The only emissions shall be products of combustion of the fuel.

The only emissions from combustion devices at the PCR will be products of the combustion of natural gas and off-gas.

(2) The maximum heat input shall be 40 million British thermal unit (Btu) per hour with the fuel being:

(A) sweet natural gas;

(B) liquid petroleum gas;

(C) fuel gas containing no more than 0.1 grain of total sulfur compounds, calculated as sulfur, per dry standard cubic foot; or

(D) combinations of the fuels in subparagraphs (A) - (C) of this paragraph.

The maximum heat input of any combustion device at the PCR will be less than 40 MMBtu/hr.

(3) *Distillate fuel oil shall be fired as a backup fuel only. Firing shall be limited to 720 hours per year. The fuel oil shall contain less than 0.3% sulfur by weight and shall not be blended with waste oils or solvents.*

The PCR does not plan to burn distillate fuel oil in any heater. However, the PCR will comply with the requirements of this citation if fuel oil is ever used to fuel any boiler or heater.

(4) *All gas fired heaters and boilers with a heat input greater than ten million Btu per hour (higher heating value) shall be designed such that the emissions of nitrogen oxides shall not exceed 0.1 pounds per million Btu heat input.*

The steam boiler (EPN D-950) authorized by this PBR have heat input value of 4 MMBtu/hr which is less than 10 MMBtu/hr (higher heating value); therefore, this requirement does not apply. PCR has a crude oil heater (EPN H-400) with heating value greater than 10 MMBtu/hr. Therefore, MMEX will comply with the emissions requirement of 0.1 lb/MMBtu for nitrogen oxides for crude oil heater.

(5) *Records of hours of fuel oil firing and fuel oil purchases shall be maintained on-site on a two-year rolling retention period and made available upon request to the commission or any local air pollution control agency having jurisdiction.*

The PCR does not plan to combust fuel oil in any boiler or heater. However, the PCR will comply with the requirements of this citation if fuel oil is burned in any boiler or heater.

8.2 REQUIREMENTS FOR FACILITIES (EMISSIONS LIMITATIONS) (30 TAC §106.261) EFFECTIVE NOVEMBER 1, 2003

(a) *Except as specified under subsection (b) of this section, facilities, or physical or operational changes to a facility, are permitted by rule provided that all of the following conditions of this section are satisfied.*

(1) *The facilities or changes shall be located at least 100 feet from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facilities or the owner of the property upon which the facilities are located.*

The location of the emission sources associated with the proposed project are at least 100 ft from any recreational area, residence, or other structure not occupied or used solely by MMEX.

(2) *Total new or increased emissions, including fugitives, shall not exceed 6.0 pounds per hour (lb/hr) and ten tons per year of the following materials: acetylene, argon, butane, crude oil, refinery petroleum fractions (except for pyrolysis naphthas and pyrolysis gasoline) containing less than ten volume percent benzene, carbon monoxide, cyclohexane, cyclohexene, cyclopentane, ethyl acetate, ethanol, ethyl ether, ethylene, fluorocarbons Numbers 11, 12, 13, 14, 21, 22, 23, 113, 114, 115, and 116, helium, isohexane, isopropyl alcohol, methyl acetylene, methyl chloroform, methyl cyclohexane, neon, nonane, oxides of nitrogen, propane, propyl alcohol, propylene, propyl ether, sulfur dioxide, alumina, calcium carbonate, calcium silicate, cellulose fiber, cement dust, emery dust, glycerin mist, gypsum, iron oxide dust, kaolin, limestone, magnesite, marble, pentaerythritol, plaster of paris, silicon, silicon carbide, starch, sucrose, zinc stearate, or zinc oxide.*

Crude oil, refinery petroleum fractions (diesel, naphtha, and ATB) will be emitted from rail/truck loading and equipment fugitives.

(3) Total new or increased emissions, including fugitives, shall not exceed 1.0 lb/hr of any chemical having a limit value (L) greater than 200 milligrams per cubic meter (mg/m^3) as listed and referenced in Table 262 of §106.262 of this title (relating to Facilities (Emission and Distance Limitations)) or of any other chemical not listed or referenced in Table 262. Emissions of a chemical with a limit value of less than 200 mg/m^3 are not allowed under this section.

Total new or increased emissions, including fugitives, will not exceed 1.0 lb/hr for any chemical having a limit value greater than 200 mg/m^3 as listed and referenced in Table 262 or any chemical not listed or referenced in Table 262.

(4) For physical changes or modifications to existing facilities, there shall be no changes to or additions of any air pollution abatement equipment.

The proposed project does not involve physical changes to or additions of air pollution abatement equipment.

(5) Visible emissions, except uncombined water, to the atmosphere from any point or fugitive source shall not exceed 5.0% opacity in any six-minute period.

Visible emissions from the proposed project will not exceed 5.0% opacity in any six-minute averaging period.

(6) For emission increases of five tons per year or greater, notification must be provided using Form PI-7 within ten days following the installation or modification of the facilities. The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any.

The total emissions authorized under this section are less than five tons per year; therefore, this requirement does not apply.

(7) For emission increases of less than five tons per year, notification must be provided using either:

(A) Form PI-7 within ten days following the installation or modification of the facilities. The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any; or

(B) Form PI-7 by March 31 of the following year summarizing all uses of this permit by rule in the previous calendar year. This annual notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any.

The total emissions authorized under this section are less than five tons per year. MMEX is submitting the Form PI-7-CERT and associated documentation within 10 days of the installation of the proposed facilities, and includes all items listed above, as required by the PBR.

(*b*) *The following are not authorized under this section:*

(1) construction of a facility authorized in another section of this chapter or for which a standard permit is in effect; and

The project does not seek to authorize construction of a facility that is authorized in another section of this chapter or a standard permit.

(2) any change to any facility authorized under another section of this chapter or authorized under a standard permit

The project does not see to authorize any changes that are authorized under another section of this chapter or a standard permit.

8.3 REQUIREMENTS FOR ROUTINE MAINTENANCE, START-UP AND SHUTDOWN OF FACILITIES, AND TEMPORARY MAINTENANCE FACILITIES (30 TAC §106.263) EFFECTIVE NOVEMBER 1, 2001

(a) This section authorizes routine maintenance, start-up and shutdown of facilities, and specific temporary maintenance facilities except as specified in subsection (b) of this section.

MMEX is authorizing routine MSS in accordance with this rule.

(b) The following are not authorized under this section:

(1) construction of any new or modified permanent facility;

(2) reconstruction under 40 Code of Federal Regulations, Part 60, New Source Performance Standards, Subpart A, §60.15 (relating to Reconstruction);

(3) physical or operational changes to a facility which increase capacity or production beyond previously existing performance levels or results in the emission of a new air contaminant;

(4) facilities and sources that are de minimis as allowed in §116.119 of this title (relating to De Minimis Facilities or Sources);

(5) piping fugitive emissions authorized under a permit or another permit by rule; and

(6) any emissions associated with operations claimed under the following sections of this chapter:

(A) §106.231 of this title (relating to Manufacturing, Refinishing, and Restoring Wood Products);

(B) §106.351 of this title (relating to Salt Water Disposal (Petroleum));

(C) §106.352 of this title (relating to Oil and Gas Production Facilities);

(D) §106.353 of this title (relating to Temporary Oil and Gas Facilities);

(E) §106.355 of this title (relating to Pipeline Metering, Purging, and Maintenance);

(F) §106.392 of this title (relating to Thermoset Resin Facilities);

(G) §106.418 of this title (relating to Printing Presses);

(H) §106.433 of this title (relating to Surface Coat Facility);

(I) §106.435 of this title (relating to Classic or Antique Automobile Restoration Facility);

(J) §106.436 of this title (relating to Auto Body Refinishing Facility); and

(K) §106.512 of this title (relating to Stationary Engines and Turbines).

The MSS activities included in this registration do not include any of the activities listed above.

(c) The following activities and facilities are authorized under this section:

(1) routine maintenance activities which are those that are planned and predictable and ensure the continuous normal operation of a facility or control device or return a facility or control device to normal operating conditions;

(2) routine start-ups and shutdowns which are those that are planned and predictable; and

(3) temporary maintenance facilities which are constructed in conjunction with maintenance activities. Temporary maintenance facilities include only the following:

(A) facilities used for abrasive blasting, surface preparation, and surface coating on immovable fixed structures;

(B) facilities used for testing and repair of engines and turbines;

(C) compressors, pumps, or engines and associated pipes, valves, flanges, and connections, not operating as a replacement for an existing authorized unit;

(D) flares, vapor combustors, catalytic oxidizers, thermal oxidizers, carbon adsorption units, and other control devices used to control vent gases released during the degassing of immovable, fixed process vessels, storage vessels, and associated piping to atmospheric pressure, plus cleaning apparatus that will have or cause emissions;

(E) temporary piping required to bypass a unit or pipeline section undergoing maintenance; and

(F) liquid or gas-fired vaporizers used for the purpose of vaporizing inert gas.

The MSS activities included in this registration include only activities and facilities authorized under PBR §106.263(c).

(d) Emissions from routine maintenance (excluding temporary maintenance facilities), start-up, and shutdown are:

(1) limited to 24-hour emission totals which are less than the reportable quantities defined in §101.1(82) of this title (relating to Definitions) for individual occurrences;

The 24-hour emission totals will be calculated in the Reportable Quantity Review to demonstrate the emissions from the routine MSS activities in this PBR are less than the reportable quantities defined in §101.1(89).

(2) required to be authorized under Chapter 116 of this title (relating to Control of Air Pollution by Permits for New Construction or Modification) or comply with §101.7 and §101.11 of this title (relating to Maintenance, Start-up and Shutdown Reporting, Recordkeeping, and Operational Requirements, and Demonstrations) if unable to comply with paragraph (1) of this subsection or subsection (f) of this section; and

Emissions from the routine MSS activities in this PBR registration comply with paragraph (1) of this subsection and subsection (f) of this section.

(3) required to comply with subsection (f) of this section.

Emissions from the routine MSS activities in this PBR comply with subsection (f) of this section.

(e) In addition to the emission limits in subsection (f) of this section, specific temporary maintenance facilities as listed in subsection (c)(3) of this section must meet the following additional requirements:

(1) flares or vapor combustors must meet the requirements of §106.492(1) and (2)(C) of this title (relating to Flares);

(2) catalytic oxidizers must meet the requirements of §106.533(5)(C) of this title (relating to Water and Soil Remediation);

(3) thermal oxidizers must meet the requirements of §106.493(2) and (3) of this title (relating to Direct Flame Incinerators);

(4) carbon adsorption systems must meet the requirements of §106.533(5)(D) of this title;

(5) other control devices used to control vents caused by the degassing of process vessels, storage vessels, and associated piping must have an overall vapor collection and destruction or removal efficiency of at least 90%;

(6) any temporary maintenance facility that cannot meet all applicable limitations of this section must obtain authorization under Chapter 116 of this title; and

(7) temporary maintenance facilities may not operate at a given location for longer than 180 consecutive days or the completion of a single project unless the facility is registered. If a single project requires more than 180 consecutive days to complete, the facilities must be registered using a PI-7 Form, along with documentation on the project. Registration and supporting documentation shall be submitted upon determining the length of the project will exceed 180 days, but no later than 180 days after the project begins.

PCR will have a temporary flare to control MSS emissions which will meet the requirements of §106.492(1) and (2)(C).

(f) All emissions covered by this section are limited to, collectively and cumulatively, less than any applicable emission limit under §106.4(a)(1) - (3) of this title (relating to Requirements for Permitting by Rule) in any rolling 12-month period.

Emissions from the activities in this PBR comply with the emission limits of §106.4(a)(1) - (3).

(g) Facility owners or operators must retain records containing sufficient information to demonstrate compliance with this section and must include information listed in paragraphs (1) - (4) of this subsection. Documentation must be separate and distinct from records maintained for any other air authorization. Records must identify the following for all maintenance, start-up, or shutdown activities and temporary maintenance facilities:

(1) the type and reason for the activity or facility construction;

(2) the processes and equipment involved;

(3) the date, time, and duration of the activity or facility operation; and

(4) the air contaminants and amounts which are emitted as a result of the activity or facility operation.

MMEX will maintain the records and documentation required under this subsection.

8.4 REQUIREMENTS FOR PIPELINE METERING, PURGING, AND MAINTENANCE (30 TAC 106.355) EFFECTIVE NOVEMBER 1, 2001

Metering, purging, and maintenance operations for gaseous and liquid petroleum pipelines (including ethylene, propylene, butylene, and butadiene pipelines), between separate sites as defined in §122.10(29) of this title

(relating to General Definitions), are permitted by rule provided that operations are conducted according to the following conditions of this section:

(1) Emissions of volatile organic compounds, except equipment leak fugitive emissions, are burned in a smokeless flare; or

Pipeline metering, purging, and maintenance operations for gaseous and liquid petroleum will be burned in a smokeless flare or will meet the emission limit under 30 TAC 106.355(2).

(2) Total uncontrolled emissions of any air contaminant except carbon dioxide, water, nitrogen, methane, ethane, hydrogen, and oxygen may not exceed one ton during any metering, purging, or maintenance operation. Uncontrolled butadiene emissions may not exceed 0.04 pounds per hour.

Total uncontrolled emissions of any air contaminant except carbon dioxide, water, nitrogen, methane, ethane, hydrogen, and oxygen will not exceed one ton during any metering, purging, or maintenance operation. The uncontrolled butadiene emissions will also not exceed 0.04 pounds per hour.

(3) Venting of sweet, natural gas from pipelines is exempt from paragraphs (1), (2), and (5) of this section. Operators may not vent gas in areas of known or suspected ignition sources.

MMEX will not vent gas in areas of known or suspected ignition sources.

(4) If any maintenance activity cannot meet all of the requirements of this section, or the emissions are not authorized under Chapter 116 of this title (relating to Control of Air Pollution by Permits for New Construction or Modification), then activities must comply with §101.7 and §101.11 of this title (relating to Maintenance, Start-up and Shutdown Reporting, Recordkeeping, and Operational Requirements; and Demonstrations).

All maintenance activities performed at PCR will meet the requirements of this section. The referenced citations, with regard to MSS requirements, under Chapter 116 have been removed from the regulations since the publication of this PBR. These citations are no longer available for use, as TCEQ requires that all MSS activities be authorized.

(5) Records of all maintenance and purging emissions must be kept by the owner or operator of the facility or group of facilities at the nearest office within Texas having day-to-day operational control. These records must include all information required in this paragraph and in paragraphs (1) - (4) of this section. Resetting flow meters (changing orifice plates, etc.) and calibration of meters are considered routine operations under this rule, not maintenance or purging. Records must identify the following for all maintenance and purging activities covered by this section:

(A) the type and reason for the activity;

(B) the processes and equipment involved;

(C) the date, time, and duration of the activity; and

(D) the air contaminants and amounts which are emitted as a result of the activity.

MMEX will maintain relevant records for maintenance and purging activities, as required under this section.

8.5 REQUIREMENTS FOR STORAGE TANK AND CHANGE OF SERVICE (30 TAC 106.478) EFFECTIVE SEPTEMBER 4, 2000

Any fixed or floating roof storage tank, or change of service in any tank, used to store chemicals or mixtures of chemicals shown in Table 478 in paragraph (8) of this section is permitted by rule, provided that all of the following conditions of this section are met:

(1) The tank shall be located at least 500 feet away from any recreational area or residence or other structure not occupied or used solely by the owner of the facility or the owner of the property upon which the facility is located.

The tanks at the PCR proposed to be authorized under PBR §106.478 will be located at least 500 feet away from any recreational area or residence or other structure not occupied or used solely by MMEX. A site plan demonstrating the site layout and tanks proposed to be authorized under this rule is included in Section 13.

(2) The true vapor pressure of the compound to be stored shall be less than 11.0 psia at the maximum storage temperature.

The true vapor pressure of the compounds stored in the tanks will be less than 11.0 psia at the maximum storage temperature.

(3) For those compounds that have a true vapor pressure greater than 0.5 psia and less than 11.0 psia at the maximum storage temperature, any storage vessel larger than 40,000 gallons capacity shall be equipped with an internal floating cover or equivalent control.

(A) An open top tank containing an external floating roof using double seal technology shall be an approved control alternative equivalent to an internal floating cover tank, provided the primary seal consists of either a mechanical shoe seal or a liquid-mounted seal. Double seals having a vapor-mounted primary seal are an approved alternative for existing open top floating roof tanks undergoing a change of service.

(B) The floating cover or floating roof design shall incorporate sufficient flotation to conform to the requirements of American Petroleum Institute Code 650, Appendix C or an equivalent degree of flotation.

The following storage vessels are proposed to be authorized under PBR §106.478.

EPN	FIN	Tank Description	Tank Size, gal	Max. True Vapor Pressure, psia	Tank Type
TK50	TK50	Crude Oil Tank	3,150,000	10	Internal Floating Roof
TK51	TK51	Crude Oil Tank	3,150,000	10	Internal Floating Roof
TK52	TK52	Naphtha Tank	1,050,000	11	Internal Floating Roof
TK53	TK53	Naphtha Tank	1,050,000	11	Internal Floating Roof
TK54	TK54	Diesel Tank	1,260,000	0.02	Vertical Fixed Cone Roof

EPN	FIN	Tank Description	Tank Size, gal	Max. True Vapor Pressure, psia	Tank Type
TK55	TK55	Diesel Tank	1,260,000	0.02	Vertical Fixed Cone Roof
TK56	TK56	Residual/ATB Tank	1,050,000	0.0015	Vertical Fixed Cone Roof
TK57	TK57	Residual/ATB Tank	1,050,000	0.0015	Vertical Fixed Cone Roof
TK59	TK59	Slop Tank	84,000	4.76	Internal Floating Roof

The storage tanks, EPNs TK50, TK51, TK52, TK 53, and TK59 will have storage capacity larger than 40,000 gallons and contain products that have a true vapor pressure greater than 0.5 psia and less than 11.0 psia at the maximum storage temperature. These tanks will be equipment with internal floating roofs. The floating roofs will incorporate sufficient flotation to conform to the requirements of American Petroleum Institute Code 650, Appendix C.

Although storage tanks, EPNs TK54, TK55, TK56, and TK 57 will have storage capacity larger than 40,000 gallons; they will not contain products that have a true vapor pressure greater than 0.5 psia at the maximum storage temperature. Therefore, these tanks are not subject to control requirements and will be vertical fixed roof tanks

(4) *Compounds with a true vapor pressure of 0.5 psia or less at the maximum storage temperature may be stored in a fixed roof or cone roof tank which includes a submerged fill pipe or utilizes bottom loading.*

As stated above, storage tanks, EPNs TK54, TK55, TK56, and TK 57 will have compounds with a true vapor pressure of 0.5 psia or less at the maximum storage temperature. Therefore, they will be stored in fixed roof tanks which include submerged fill pipes.

(5) *For fixed or cone roof tanks having no internal floating cover, all uninsulated tank exterior surfaces exposed to the sun shall be painted chalk white except where a dark color is necessary to help the tank absorb or retain heat in order to maintain the material in the tank in a liquid state.*

All the vertical fixed roof tanks will have all uninsulated tank exterior surfaces exposed to the sun painted chalk white.

(6) *Emissions shall be calculated by methods specified in Section 4.3 of the current edition of the United States Environmental Protection Agency Publication AP-42. This document may be obtained from the Superintendent of Documents, Washington D.C. 20402. It is Stock Number 0550000251-7, Volume I.*

All emissions have been prepared using the most recent version of the United States Environmental Protection Agency Publication AP-42 publication.

(7) *Before construction begins, storage tanks of 25,000 gallons or greater capacity and located in a designated nonattainment area for ozone shall be registered with the commission's Office of Permitting, Remediation, and Registration in Austin using Form PI-7. The registration shall include a list of all tanks, calculated emissions for each carbon compound in tons per year for each tank, and a Table 7 of Form PI-2 for each different tank design.*

The PCR is located in Pecos County which is not a designated nonattainment area for ozone; therefore, the requirements of PBR §106.478(7) do not apply.

(8) Mixtures of the chemicals listed in Table 478 which contain more than a total of 1.0% by volume of all other chemicals not listed in Table 478 are not covered by this section.

No mixtures of the chemicals listed in Table 478 which contain more than a total of 1.0% by volume of all other chemicals not listed in Table 478 will be stored in the tanks authorized under PBR §106.478 at the PCR.

8.6 REQUIREMENTS FOR FLARES (30 TAC §106.492) EFFECTIVE SEPTEMBER 4, 2000

Smokeless gas flares which meet the following conditions of this section are permitted by rule:

(1) design requirements.

(A) The flare shall be equipped with a flare tip designed to provide good mixing with air, flame stability, and a tip velocity less than 60 feet per second (ft/sec) for gases having a lower heating value less than 1,000 British thermal units per cubic foot (Btu/ft$^{3)}$ or a tip velocity less than 400 ft/sec for gases having a lower heating value greater than 1,000 Btu/ft^3.

The flare will be equipped with a flare tip designed to meet the requirements as noted above.

(B) The flare shall be equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition and provides immediate notification of appropriate personnel when the ignition system ceases to function. A gas flare which emits no more than 4.0 pounds per hour (lb/hr) of reduced sulfur compounds, excluding sulfur oxides, is exempted from the immediate notification requirement, provided the emission point height meets the requirements of §106.352(4) of this title (relating to Oil and Gas Production Facilities).

The flare will be equipped with a continuously burning pilot and/or automatic ignition system. The flare emits less than 4.0 lb/hr of reduced sulfur compounds, excluding sulfur oxides, and meters the height requirements of §106.352(4). Therefore, the flare is exempt from the immediate notification requirements above.

(C) A flare which burns gases containing more than 24 parts per million by volume (ppmv) of sulfur, chlorine, or compounds containing either element shall be located at least 1/4 mile from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the flare or the owner of the property upon which the flare is located.

The flare will not burn gases containing more than 24 ppmv of sulfur, chlorine, or compounds containing either element; therefore, there are no restrictions on the location of the flare.

(D) The heat release of a flare which emits sulfur dioxide (SO_2) or hydrogen chloride (HCl) shall be greater than or equal to the values calculated based on the methodology in 30 TAC 106.492(1)(D).

The flare heat release will be greater than or equal to the values calculated based on this section.

(2) operational conditions.

(A) The flare shall burn a combustible mixture of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements. When the gas stream to be burned has a net or lower heating value of more than 200 Btu/ft^3 prior to the addition of air, it may be considered combustible.

The flare will always burn a combustible mixture of gases as specified in this section.

(B) A flare which burns gases containing more than 24 ppmv of sulfur, chlorine, or compounds containing either element shall be registered with the commission's Office of Permitting, Remediation, and Registration in Austin using Form PI-7 prior to construction of a new flare or prior to the use of an existing flare for the new service.

The flare will not burn gases containing more than 24 ppmv of sulfur, chlorine, or compounds containing either element; therefore, registration of the source is not required by TCEQ. However, MMEX is voluntarily registering and certifying emissions from this emissions source.

(C) Under no circumstances shall liquids be burned in the flare.

No liquids will be burned in the flare.

8.7 REQUIREMENTS FOR PORTABLE AND EMERGENCY ENGINES AND TURBINES (30 TAC §106.511) EFFECTIVE SEPTEMBER 4, 2000

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 purpose of this section, "standby" means to be used as a "substitute for" and not "in addition to" other equipment.

The emergency engine (EPN EG-1 and P-676B) will not operate more than 10% of the normal annual operating schedule of the primary equipment; therefore, this engine is permitted by rule.

8.8 REQUIREMENTS FOR WATER AND WASTEWATER TREATMENT (30 TAC § 106.532) EFFECTIVE SEPTEMBER 4, 2000

(1) The facility performs only the following functions:

(A) disinfection;

(B) softening;

(C) filtration;

(D) flocculation;

(E) stabilization;

(F) taste and odor control;

(G) clarification;

(H) carbonation;

(I) sedimentation;
(J) neutralization;
(K) chlorine removal;
(L) activated sludge treatment, anaerobic treatment, and associated control of gases from these treatments;
(M) aerobic oxidation/biodegration using oxygen or peroxide in the absence of nitrogen or other gas that would cause stripping of volaltile organic compounds (VOC) from the water;
(N) stripping VOC, ammonia, or other air contaminants from the water with air or other gas, provided the stripped gases are controlled with an abatement system that meets the requirements of §106.533(5) of this title (relating to Water and Soil Remediation). For ammonia or hydrogen chloride (HCl) or other acid gas emissions, abatement may include a water or caustic scrubbing system as a means of complying with this section. Final emissions of HCl resulting from combustion of chlorine or chlorine-containing compounds shall not exceed 0.1 pounds per hour;
(O) liquid phase separation of VOC and water in which:
(i) the sum of the partial pressures of all species of VOC in any sample is less than 1.5 psia; or
(ii) the separator is enclosed and emissions are vented through an emission abatement system meeting the requirements specified previously for stripped VOC and ammonia;

The wastewater treatment at the PCR has an enclosed oil/water separator (EPN WWTRT). The emissions from oil/water separator will be vented through a carbon adsorption system (CAS) to the atmosphere that will meet the requirements of §106.533(g)(5). PCR will also have stabilization pond (EPN EVAPND) which performs the function in the above list.

(2) Chlorine or sulfur dioxide (SO_2) shall be used only in containers approved by the United States Department of Transportation and emissions of chlorine or SO_2 from treatment of water or decontamination of equipment at any water treatment plant shall not exceed ten tons per year.

The wastewater treatment at the PCR does not process or emit chlorine or sulfur dioxide (SO_2).

(*3) The following shall not be permitted by rule under this section:*
(A) gas stripping or aeration facilities where VOC or other air contaminants are stripped from water directly to the atmosphere;
(B) disposal facilities using land surface treatment;
(C) surface facilities associated with injection wells;
(D) cooling towers in which VOC or other air contaminants may be stripped to the atmosphere.

The wastewater treatment at the PCR does not include any of the above-mentioned facilities or activities.

9. STATE AND FEDERAL APPLICABILITY

This section summarizes the state and federal applicable requirements for the proposed MSS activities at the Pecos County Refinery.

9.1 STATE REQUIREMENTS REVIEW

> 30 TAC Chapter 111 – *Control of Air Pollution from Visible Emissions and Particulate Matter*
  - The activities proposed in this PBR registration do not result in significant emissions of particulate matter or visible emissions; therefore, the site will comply with the limits of this chapter.

> 30 TAC Chapter 112 – *Control of Air Pollution from Sulfur Compounds*
  - The activities at the PCR proposed in this registration are not subject to any citations within Chapter 112, Subchapter A because there will be no sulfuric acid plants, sulfur recovery plants, solid fossil fuel-fired steam generators, or nonferrous smelter processes.
  - The PCR handles sweet crude oil and natural gas. Although the gas could contain trace amounts of hydrogen sulfide, the amounts are not sufficient to pose risk of exceeding the applicable standards.

> 30 TAC Chapter 113 – *Standards of Performance for HAPs and for Designated Facilities and Pollutants*
  - There are 40 CFR Part 63 MACT requirements for engines and boilers applicable to the proposed activities. Therefore, PCR is subject to applicable requirements of this chapter.

> 30 TAC Chapter 115 – *Control of Air Pollution from Volatile Organic Compounds*
  - Under Chapter 115 Subchapter A §115.10 definitions, Pecos County is not considered a covered attainment county; therefore, the PCR is not subject to this chapter.

> 30 TAC Chapter 117 – Control of Air Pollution from Nitrogen Compounds
  - The sources at the PCR are not affected sources under this chapter; therefore, the requirements of this chapter do not apply.

9.2 FEDERAL REQUIREMENTS REVIEW

9.1.1. NSPS Subpart A – General Provisions

Any source subject to a source-specific NSPS is also subject to the general provisions of NSPS Subpart A. Unless specifically excluded by the source-specific NSPS, Subpart A generally requires initial construction notification, initial start-up notification, performance tests, performance test initial notification, general monitoring requirements, general recordkeeping requirements, semiannual monitoring, and/or excess emission reports. Because sources at PCR will be subject to at least one NSPS Subpart, PCR will comply with the general requirements in NSPS Subpart A.

9.1.2. NSPS Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

This subpart applies to steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or

less, but greater than or equal to 2.9 MW (10 MMBtu/hr). PCR uses process heater not steam generating unit. Therefore, MMEX is not subject to the requirements of Subpart Dc.

9.1.3. NSPS Subpart Ja – Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007

This subpart applies to process heaters and flares constructed after May 14, 2007 and June 24, 2008, respectively. MMEX will comply with all applicable requirements in Subpart Ja.

9.1.4. NSPS 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

This subpart applies to tanks with a storage capacity of greater than 19,813 gallons. All tanks except diesel fuel tank (EPN T-58) are greater than 19,813 gallons. MMEX will comply with applicable requirements in Subpart Kb.

9.1.5. NSPS GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

This subpart applies to compressors and process units within a refinery constructed after November 7, 2006. PCR will comply with all applicable requirements in Subpart GGGa.

9.1.6. NSPS Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

NSPS Subpart IIII regulates criteria pollutant emissions from stationary compression ignition (CI) internal combustion engines (ICE) for model year 2007 or later. The emergency generator engine will be subject to requirements in §60.4205 and fire pump (emergency) engine model will be subject to model year requirement listed in Table 4 of NSPS Subpart IIII.

The diesel emergency generator engine with a displacement of greater than or equal to 30 liters per cylinder will be subject to the following NOx emission standards for engines installed on or after January 1, 2012[3]

- NO_X: 10.7 g/hp-hr for engine speed less than 130 rpm;
- NO_X: $33 \times n^{-0.23}$ g/hp-hr where n (maximum engine speed) is for engine speed 130 or more but less than 2,000 rpm; and
- NO_X: 5.7 g/hp-hr for engine speed greater than or equal to 2,000 rpm.

The diesel emergency generator engine will be subject to the following PM emission standards[4]

- PM: Reduce by 60 percent or more, or limit the emissions of PM emissions to 0.30 g/HP-hr.

The fire pump (emergency) engine with a displacement of less than 30 liters per cylinder will be subject the emission standards in Table 4 of NSPS Subpart IIII [5]

[3] 40 CFR 60.4205(d)(2)

[4] 40 CFR 60.4205(d)(3)

[5] 40 CFR 60.4205(c)

Maximum Engine Power	Model Year	NMHC + NOx, g/hp-hr	PM, g/hp-hr
300≤HP<600	2009+	3.0	0.15

PCR will comply with the requirements by installing non-certified generators pursuant to 40 CFR §60.4211(g), including conducting an initial performance test within one year of startup. 40 CFR §60.4211(e)(2) requires the submittal of a copy of the performance test within 60 days of its completion.

Because the engines will be used as emergency engines, a non-resettable hour meter is required.[6] Per 40 CFR §60.4211(f)(1)-(3), emergency engines are allowed to be operated according to the following time constraints:

- There is no time limit on use in emergency situations.
- The emergency ICE can operate for up to 100 hours per year total for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine; and
- The emergency ICE can operate for up to 50 hours per calendar year in non-emergency situations.

9.2. 40 CFR PART 61 – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

9.2.1. NESHAP Subpart A – *General Provisions*

This subpart applies to any site that has applicable NESHAP Subparts under 40 CFR 61. The Pecos County Refinery is subject to 40 CFR Part 61 FF - National Emission Standard for Benzene Waste Operations. Therefore, PCR will comply with the general requirements in NESHAP Subpart A.

9.2.2. NESHAP Subpart FF – National Emission Standard for Benzene Waste Operations

This subpart applies to owners and operators of petroleum refineries. MMEX will comply with all applicable requirements in Subpart FF.

9.3. 40 CFR PART 63 – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (MACT)

9.3.1. 40 CFR Part 63, Subpart A – General Provisions

This subpart applies to any site that has an applicable MACT Subpart. Because the Pecos County Refinery will be subject to at least one MACT Subpart, PCR will comply with the general requirements in MACT Subpart A.

9.3.2. 40 CFR Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

MACT Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines, applies to reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. At area sources, engines for which construction commenced on or after June 12, 2006, are considered new stationary

[6] 40 CFR 60.4237(a)

RICE.[7] MMEX is proposing to install diesel powered emergency generator and fire water pump engine, which will be classified as a new units.

The emergency generator and fire water pump engine will be subject to 40 CFR 60 (NSPS) Subpart IIII. Per 40 CFR §63.6590(c), a new SI RICE at an area source must meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII for SI ICEs. No further requirements apply for such engines under the RICE MACT. Thus, MMEX will comply with all applicable requirements of 40 CFR 63 Subpart ZZZZ and 40 CFR 60 Subpart IIII for the emergency generator and fire water pump engine.

9.3.3. 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters Major Sources

40 CFR 63 Subpart DDDDD, also known as Boiler MACT, regulates HAP emissions from boilers and process heaters at sites that are a major source of HAP. While the PCR will have a small boiler and a process heater, the facility will be an area source of HAP; therefore, major source Boiler MACT does not apply.

9.3.4. 40 CFR 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers Area Sources

Subpart JJJJJJ regulates HAP emissions from boilers at area sources of HAP. The rule defines a boiler as:[8]

> An enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water. Waste heat boilers, process heaters, and autoclaves are excluded from the definition of *Boiler.*

Per 40 CFR 63.11195, gas-fired boilers are not subject to Subpart JJJJJJ. PCR will be an area source of HAP. PCR will have one gas-fired steam boiler (EPN D-950) and a process heater (EPN H-400). Both the gas-fired boiler and process heater will not be subject to Subpart JJJJJJ.

[7] 40 CFR 63.63.6590(a)(1)(iii) and (a)(2)(iii)

[8] 40 CFR 63.11237

10. CRUDE ANALYSIS

Crude Oil Whole Properties and Light Ends

Crude	Diamond Rogers Blue	**Assay Source**	MMEX Resources
Country of Origin	USA	**Assay Date**	5-Jul-17
API Gravity	43.7		
Specific Gravity	0.8077		
Crude % Sulfur	0.03%		
RVP, psi	6.96		

Light Ends (% of whole crude)

	Wt%	Sp. Gr.	LV%	BP, °F
C1	0.00%	0.3000	0.00%	(259)
C2	0.03%	0.5210	0.05%	(127)
C3	0.41%	0.5070	0.65%	(44)
iC4	0.23%	0.5629	0.33%	11
nC4	1.29%	0.5840	1.78%	31
neoPentane	0.00%	0.5974	0.00%	49
TOTAL	1.96%	0.5626	2.81%	

Pentanes (% of whole crude)

	Wt%	Sp. Gr.	LV%	BP, °F
Isopentane	1.01%	0.6247	1.31%	82
n-Petane	1.56%	0.6311	2.00%	97
Cyclopentane	0.23%	0.7603	0.24%	121
TOTAL	2.80%	0.6376	3.55%	

Crude FVT	°F	1,350

Benzene Precursors (% of whole crude)

	Wt%	Sp. Gr.	LV%
Benzene	0.17%	0.8829	0.16%
MCP	1.07%	0.7540	1.15%
Cyclohex	1.09%	0.7385	1.19%
TOTAL	2.33%	0.8645	2.49%

Whole crude properties

Nickel	wppm	0.3
Vanadium	wppm	0.1
Con Carbon	wt%	0.2%
C5 Insol.	wt%	0.8%
TAN	mg/g KOH	0.00

11. TCEQ CHECKLISTS

PBR 106.4 Checklist

PBR 106.183 Checklist

PBR 106.261 Checklist

PBR 106.263 Checklist

PBR 106.355 Checklist

PBR 106.476 Checklist

PBR 106.478 Checklist

PBR 106.492 Checklist

PBR 106.511 Checklist

Texas Commission on Environmental Quality
Permit by Rule Applicability Checklist
Title 30 Texas Administrative Code § 106.4

The following checklist was developed by the Texas Commission on Environmental Quality (TCEQ), **Air Permits Division**, to assist applicants in determining whether or not a facility meets all of the applicable requirements. Before claiming a specific Permit by Rule (PBR), a facility must first meet all of the requirements of **Title 30 Texas Administrative Code § 106.4** (30 TAC § 106.4), "Requirements for Permitting by Rule." Only then can the applicant proceed with addressing requirements of the specific Permit by Rule being claimed.

The use of this checklist is not mandatory; however, it is the responsibility of each applicant to show how a facility being claimed under a PBR meets the general requirements of 30 TAC § 106.4 and also the specific requirements of the PBR being claimed. If all PBR requirements cannot be met, a facility will not be allowed to operate under the PBR and an application for a construction permit may be required under 30 TAC § 116.110(a).

Registration of a facility under a PBR can be performed by completing **Form PI-7** (Registration for Permits by Rule) or **Form PI-7-CERT** (Certification and Registration for Permits by Rule). The appropriate checklist should accompany the registration form. Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the question number. The PBR forms, tables, checklists, and guidance documents are available from the TCEQ, Air Permits Division Web site at: www.tceq.texas.gov/permitting/air/nav/air_pbr.html.

1. 30 TAC § 106.4(a)(1) and (4): Emission limits	
List emissions in tpy for **each** facility (add additional pages or table if needed): **See attached emission calculations.**	
• Are the SO_2, PM_{10}, VOC, or other air contaminant emissions claimed for **each** facility in this PBR submittal less than 25 tpy?	☒ YES ☐ NO
• Are the NO_x and CO emissions claimed for each facility in this PBR submittal less than 250 tpy?	☒ YES ☐ NO
*If the answer to both is "Yes," continue to the question below. If the answer to either question is "No," a **PBR cannot be claimed**.*	
Has any facility at the property had public notice and opportunity for comment under 30 TAC Section 116 for a regular permit or permit renewal? (This does not include public notice for voluntary emission reduction permits, grandfathered existing facility permits, or federal operating permits.)	☐ YES ☒ NO
If "Yes," skip to Section 2. If "No," continue to the questions below.	
If the site has had no public notice, please answer the following:	
• Are the SO_2, PM_{10}, VOC, or other emissions claimed for **all** facilities in this PBR submittal less than 25 tpy?	☒ YES ☐ NO
• Are the NO_x and CO emissions claimed for all facilities in this PBR submittal less than 250 tpy?	☒ YES ☐ NO
If the answer to both questions is "Yes," continue to Section 2.	
*If the answer to either question is "No," **a PBR cannot be claimed**. A permit will be required under Chapter 116.*	

2. 30 TAC § 106.4(a)(2): Nonattainment check	
• Are the facilities to be claimed under this PBR located in a designated ozone nonattainment county?	☐ YES ☒ NO
If "Yes," please indicate which county by checking the appropriate box to the right.	
(Marginal) - Hardin, Jefferson, and Orange counties:	☐ BPA
(Moderate) - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties:	☐ HGA
(Moderate) - Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties:	☐ DFW
If "Yes," to any of the above, continue to the next question. If "No," continue to Section 3.	
• Does this project trigger a nonattainment review?	☐ YES ☐ NO
Does this project trigger a nonattainment review?	
• Is the project's potential to emit (PTE) for emissions of VOC or NO_x increasing by 100 tpy or more? *PTE is the maximum capacity of a stationary source to emit any air pollutant under its worst-case physical and operational design unless limited by a permit, rules, or made federally enforceable by a certification.*	☐ YES ☐ NO
• Is the site an existing major nonattainment site and are the emissions of VOC or NO_x increasing by 40 tpy or more?	☐ YES ☐ NO
If needed, attach contemporaneous netting calculations per nonattainment guidance.	
Additional information can be found at: www.tceq.texas.gov/permitting/air/forms/newsourcereview/tables/nsr_table8.html and www.tceq.texas.gov/permitting/air/nav/air_docs_newsource.html	
*If "Yes," to any of the above, the project is a major source or a major modification and **a PBR may not be used**. A Nonattainment Permit review must be completed to authorize this project. If "No," continue to Section 3.*	
3. 30 TAC § 106.4(a)(3): Prevention of Significant Deterioration (PSD) check	
Does this project trigger a review under PSD rules?	
To determine the answer, review the information below:	
• Are emissions of any regulated criteria pollutant increasing by 100 tpy of any criteria pollutant at a named source?	☐ YES ☒ NO
• Are emissions of any criteria pollutant increasing by 250 tpy of any criteria pollutant at an unnamed source?	☐ YES ☒ NO
• Are emissions increasing above significance levels at an existing major site?	☐ YES ☒ NO
PSD information can be found at: www.tceq.texas.gov/assets/public/permitting/air/Forms/NewSourceReview/Tables/10173tbl.pdf and www.tceq.texas.gov/permitting/air/nav/air_docs_newsource.html *If "Yes," to any of the above, **a PBR may not be used**. A PSD Permit review must be completed to authorize the project.* *If "No," continue to Section 4.*	

Permit by Rule Applicability Checklist
Title 30 Texas Administrative Code § 106

4. 30 TAC § 106.4(a(6): Federal Requirements	
• Will all facilities under this PBR meet applicable requirements of Title 40 Code of Federal Regulations (40 CFR) Part 60, New Source Performance Standards (NSPS)?	☒ YES ☐ NO ☐ NA
If "Yes," which Subparts are applicable?	Kb, Ja, GGGa, IIII
• Will all facilities under this PBR meet applicable requirements of 40 CFR Part 63, Hazardous Air Pollutants Maximum Achievable Control Technology (MACT) standards?	☒ YES ☐ NO ☐ NA
If "Yes," which Subparts are applicable?	FF
• Will all facilities under this PBR meet applicable requirements of 40 CFR Part 61, National Emissions Standards for Hazardous Air Pollutants (NESHAPs)?	☒ YES ☐ NO ☐ NA
If "Yes," which Subparts are applicable?	ZZZZ
If "Yes" to any of the above, please attach a discussion of how the facilities will meet any applicable standards.	
5. 30 TAC § 106.4(a)(7): PBR prohibition check	
• Are there any air permits at the site containing conditions which prohibit or restrict the use of PBRs?	☐ YES ☒ NO
If "Yes," PBRs may not be used or their use must meet the restrictions of the permit. A new permit or permit amendment may be required.	
List permit number(s):	
6. 30 TAC § 106.4(a)(8): NO_x Cap and Trade	
• Is the facility located in Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County?	☐ YES ☒ NO
If "Yes," answer the question below. If "No," continue to Section 7.	
• Will the proposed facility or group of facilities obtain required allowances for NO_x if they are subject to 30 TAC Chapter 101, Subchapter H, Division 3 (relating to the Mass Emissions Cap and Trade Program)?	☐ YES ☐ NO

7. Highly Reactive Volatile Organic Compounds (HRVOC) check		
• Is the facility located in Harris County?		☐ YES ☒ NO
If "Yes," answer the next question. If "No," skip to the box below.		
• Will the project be constructed after June 1, 2006?		☐ YES ☐ NO
If "Yes," answer the next question. If "No," skip to the box below.		
• Will one or more of the following HRVOC be emitted as a part of this project?		☐ YES ☐ NO
If "Yes," complete the information below:		
	lb/hr	tpy
► 1,3-butadiene		
► all isomers of butene (e.g., isobutene [2-methylpropene or isobutylene])		
► alpha-butylene (ethylethylene)		
► beta-butylene (dimethylethylene, including both cis- and trans-isomers)		
► ethylene		
► propylene		
• Is the facility located in Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County?		☐ YES ☒ NO
If "Yes," answer the next question. If "No," the checklist is complete.		
• Will the project be constructed after June 1, 2006?		☐ YES ☐ NO
If "Yes," answer the next question. If "No," the checklist is complete.		
• Will one or more of the following HRVOC be emitted as a part of this project?		☐ YES ☐ NO
If "Yes," complete the information below:		
	lb//hr	tpy
► ethylene		
► propylene		

Boilers, Heaters, and Other Combustion Devices
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.183

Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the rule number. The PBR forms, tables, checklists, and guidance documents are available from the TCEQ, Air Permits Division Web site at: www.tceq.texas.gov/permitting/air/nav/air_pbr.html.

This PBR (§ 106.183) **does not require registration**. However, you may register the facility and its emissions with the commission's Office of Air in Austin. The facility may be registered by completing Form PI-7, "Registration for Permits by Rule," or Form PI-7-CERT, "Registration and Certification for Permits by Rule." This checklist should accompany the registration form.

For additional assistance with your application, including resources to help calculate your emissions, please visit the Small Business and Local Government Assistance (SBLGA) webpage at the following link: www.TexasEnviroHelp.org

Please Complete the Following:
Will the equipment to be authorized include only boilers, heaters, drying or curing ovens, furnaces, or other combustion units? ☒ YES ☐ NO *If "NO," this PBR cannot be claimed.* **Note:** *Stationary internal combustion engines and turbines may require registration under* ***30 TAC § 106.512****. A* ***§ 106.512 Checklist*** *is available to help verify compliance with the requirements.* Check all that apply: ☐ boilers ☒ heaters ☐ drying or curing ovens ☐ furnaces ☐ other combustion unit (If other please specify):_____
Have you included a **Table 4 (Combustion Units)** or a **Table 6 (Boilers and Heaters)** with the registration? ☒ YES ☐ NO ☒ Table 4 ☐ Table 6
Are the only emissions from the facility products of combustion? ☒ YES ☐ NO
If "NO," the facility does not qualify for this PBR.
What is the maximum heat input of the facility? (MBtu/hr.) **39 MMBtu/hr**
If the facility has a heat input greater than 10 MMBtu/hr (higher heating value), what is the emission rate of nitrogen oxides? (1b/MMBtu) **0.98 MMBtu/hr**
What type of fuel is used? (Check all that apply) ☒ sweet natural gas ☐ liquid petroleum gas ☐ fuel gas with ≤ 0.1 grain total sulfur compounds per dscf
Is the distillate fuel oil used only as a backup fuel? ☐ YES ☒ NO
Total hours of operation (hr./yr): **8760**
Note: *If distillate fuel oil is used, firing cannot exceed 720 hours per year.*
If "YES," please continue. *If "NO," the remaining questions do not apply.*

Boilers, Heaters, and Other Combustion Devices
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.183

Please Complete the Following:	
What is sulfur content of the distillate fuel oil (% sulfur by weight)?	
Is the distillate fuel oil blended with waste oils or solvents?	☐ YES ☐ NO
Will records of hours of fuel oil firing and fuel oil purchases be maintained on-site for at least two years and made available upon request to the commission or any local air pollution control program having jurisdiction?	☐ YES ☐ NO
Other Applicable Rules and Regulations **If assistance is needed in determining other applicable rules and regulation please contact the Rule Registrations Section, Air Permits Division at (512) 239-1250.**	
Is the facility subject to 30 TAC Chapter 117, Subchapter B? Why or Why Not: **Heaters are not steam generating units.**	☐ YES ☒ NO
Is the facility subject to 30 TAC Chapter 117, Subchapter D? Why or Why Not: **Heaters are not steam generating units.**	☐ YES ☒ NO
Is the facility subject to 40 CFR Part 60, NSPS Subpart D? Why or Why Not: **Heaters are not steam generating units.**	☐ YES ☒ NO
Is the facility subject to 40 CFR Part 60, NSPS Subpart Da? Why or Why Not: **Heaters are not steam generating units.**	☐ YES ☒ NO
Is the facility subject to 40 CFR Part 60, NSPS Subpart Db? Why or Why Not: **Heaters are not steam generating units.**	☐ YES ☒ NO
Is the facility subject to 40 CFR Part 60, NSPS Subpart Dc? Why or Why Not: **Natural gas fired heater (EPN H-400) will have a maximum design heat input capacity of greater than 10 MMBtu/hr.**	☒ YES ☒ NO
Is the facility subject to 40 CFR Part 60, NSPS Subpart UUU? Why or Why Not: **Heaters are not used as dryer at a mineral processing plant.**	☐ YES ☒ NO

Record Keeping: In order to demonstrate compliance with the general and specific requirements of this PBR, records of the hours of fuel oil firing and fuel oil purchases must be maintained on-site for at least two years and made immediately available upon request to the commission or any local air pollution control program having jurisdiction. The registrant should also become familiar with the additional record keeping requirements in 30 TAC § 106.8. The records must be made available immediately upon request to the commission or any air pollution control program having jurisdiction. If you have any question about the type of records that should be maintained, contact the Air Program in the TCEQ Regional Office for the region in which the site is located.

Recommended Calculation Method: Emission estimates may be made using the calculation method described in the TCEQ Guidance for Boilers and Heaters at: www.tceq.texas.gov/permitting/air/nav/nsr_fac_index.html and/or use the emission factors for each air contaminant from the EPA Compilation of Air Pollutant Emission Factors (AP-42), Fifth Edition, Volume 1, Chapter 11: External Combustion Sources at: www.epa.gov/ttn/chief/ap42/index.html. If sufficient records are maintained on-site and all requirements are being met, the registrant and the TCEQ will be able to establish these emission rates if needed.

Texas Commission on Enviromental Quality
Title 30 Texas Administrative Code § 106.261
Permit By Rule (PBR) Checklist
Facilities (Emission Limitations)

The following checklist is designed to help you confirm that you meet Title 30 Texas Administrative Code § 106.261 (30 TAC § 106.261) requirements. If you do not meet all the requirements, you may alter the project design or operation in such a way that all the requirements of the PBR are met or you may obtain a construction permit. The PBR forms, tables, checklists, and guidance documents are available from the Texas Commission on Environmental Quality (TCEQ) Air Permits Division website at, www.tceq.texas.gov/permitting/air/air_permits.html

For additional assistance with your application, including resources to help calculate your emissions, please visit the Small Business and Local Government Assistance (SBLGA) webpage at the following link: www.TexasEnviroHelp.org

Check The Most Appropriate Answer		
	Is a description or checklist of how this claim meets the general requirements for the use of PBRs in 30 TAC § 106.4 attached?	☒ YES ☐ NO ☐ NA
b1	Is this claim for construction of a facility authorized in another section of this chapter or for which a standard permit is in effect? *If "YES," this PBR cannot be used to authorize emissions from the project.*	☐ YES ☒ NO ☐ NA
b2	Is this claim for any change to any facility authorized under another section of this chapter or authorized under a standard permit? *If "YES," this PBR cannot be used to authorize emissions from the project.*	☐ YES ☒ NO ☐ NA
a1	Are facilities or changes located at least 100 feet from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facilities or the owner of the property upon which the facilities are located?	☒ YES ☐ NO ☐ NA

Save Form Reset Form

Check The Most Appropriate Answer *(continued)*

a2 Are total new or increased emissions, including fugitives, less than or equal to 6.0 pounds per hour (lb/hr) and ten tons per year of the following materials[1] ☒ YES ☐ NO ☐ NA

Check All That Apply

☐ acetylene	☐ cyclopentane	☐ kaolin	☐ propane
☐ alumina	☐ emery dust	☐ limestone	☐ propyl alcohol
☐ argon	☐ ethanol	☐ magnesite	☐ propyl ether
☐ butane	☐ ethyl acetate	☐ marble	☐ propylene
☐ calcium carbonate	☐ ethyl ether	☐ methyl acetylene	☐ silicon
☐ calcium silicate	☐ ethylene	☐ methyl chloroform	☐ silicon carbide
☐ carbon monoxide	☐ glycerin mist	☐ methyl cyclohexane	☐ starch
☐ cellulose fiber	☐ gypsum	☐ neon	☐ sucrose
☐ cement dust	☐ helium	☐ nonan	☐ sulfur dioxide
☒ crude oil	☐ iron oxide dust	☐ oxides of nitrogen	☐ zinc oxide
☐ cyclohexane	☐ isohexane	☐ pentaerythritol	☐ zinc stearate
☐ cyclohexene	☐ isopropyl alcohol	☐ plaster of paris	

☒ refinery petroleum fractions (except for pyrolysis naphthas and pyrolysis gasoline) containing less than ten volume percent benzene

☐ fluorocarbons Numbers 11, 12, 13, 14, 21, 22, 23, 113, 114, 115, and 116

[1]Any upstream and/or downstream actual emission increases that result from a project for which this PBR is claimed need to be authorized appropriately. Any associated upstream and/or downstream emissions authorized as part of the PBR claim will need to be included as part of the total new or increased emissions, unless: 1) these emissions stay below current authorized emission limits; 2) there is not a change to any underlying air authorizations for the applicable units associated with BACT, health and environmental impacts, or other representations (i.e. construction plans, operating procedures, throughputs, maximum emission rates, etc.); and 3) this claim is certified via PI-7 CERT or APD-CERT. Notwithstanding the exclusion of any upstream and/or downstream emissions under this PBR claim, the total of all emission increases, including upstream and/or downstream actual emission increases, are required to be part of the PBR registration to determine major new source review applicability under Title 30 TAC Chapter 116. The emission increases associated with the PBR claim and all upstream and/or downstream actual emission increases may not circumvent major new source review requirements under 30 TAC Chapter 116.

Texas Commission on Enviromental Quality
Title 30 Texas Administrative Code § 106.261
Permit By Rule (PBR) Checklist
Facilities (Emission Limitations)

Check The Most Appropriate Answer		
a3	Are total new or increased emissions, including fugitives, less than or equal to 1.0 lb/hr of any chemical having a limit value (L) greater than 200 milligrams per cubic meter (mg/m^3) as listed and referenced in Table 262 of 30 TAC § 106.262 of this title (relating to Facilities (Emission and Distance Limitations)? [2]	☐ YES ☒ NO ☐ NA
List chemical(s):	L value(s):	
	Are total new or increased emissions, including fugitives, less than or equal to 1.0 lb/hr of any chemical not listed or referenced in Table 262? [1] List chemical(s):	☐ YES ☒ NO ☐ NA
	Are total new or increased emissions, including fugitives, of a chemical with a limit value of less than 200 mg/m^3*?* [1] *If "YES" the authorization of the chemical is not allowed under this section. We suggest you use 30 TAC § 106.262 to authorize the emissions, if applicable.*	☐ YES ☒ NO ☐ NA
a4	Are there any changes to or additions of any existing air pollution abatement equipment?	☐ YES ☒ NO ☐ NA
a5	Will there be any visible emissions, except uncombined water, emitted to the atmosphere from any point or fugitive source in amounts greater than 5.0% opacity in any six-minute period?	☐ YES ☒ NO ☐ NA
a6	Are emission increases five tons per year or greater? *If "YES," this checklist must be attached to a Form PI-7 within ten days following the installation or modification of the facilities.* [**Note:** *The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any.*]	☒ YES ☐ NO ☐ NA
a7	Are emission increases less than five tons per year? *If "YES," this checklist must be attached to a Form PI-7 and include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any. (pick one):* ☐ Within ten days following the installation or modification of the facilities. The notification shall include a description of the project, calculations, data identifying specific chemical names, limit values, and a description of pollution control equipment, if any ☐ By March 31 of the following year summarizing all uses of this permit by rule in the previous calendar year.	☐ YES ☒ NO ☐ NA

[2] Any upstream and/or downstream actual emission increases that result from a project for which this PBR is claimed need to be authorized appropriately. Any associated upstream and/or downstream emissions authorized as part of the PBR claim will need to be included as part of the total new or increased emissions, unless: 1) these emissions stay below current authorized emission limits; 2) there is not a change to any underlying air authorizations for the applicable units associated with BACT, health and environmental impacts, or other representations (i.e. construction plans, operating procedures, throughputs, maximum emission rates, etc.); and 3) this claim is certified via PI-7 CERT or APD-CERT. Notwithstanding the exclusion of any upstream and/or downstream emissions under this PBR claim, the total of all emission increases, including upstream and/or downstream actual emission increases, are required to be part of the PBR registration to determine major new source review applicability under Title 30 TAC Chapter 116. The emission increases associated with the PBR claim and all upstream and/or downstream actual emission increases may not circumvent major new source review requirements under 30 TAC Chapter 116.

Texas Commission on Enviromental Quality
Storage Tank and Change of Service
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.478

Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the rule number. The permit by rule (PBR) forms, tables, checklists, and guidance documents are available from the Texas Commission on Environmental Quality (TCEQ), Air Permits Division website at: www.tceq.texas.gov/permitting/air/nav/air_pbr.html.

This PBR (§ 106.478) requires registration for storage tanks with a capacity of 25,000 gallons or greater and located in a designated ozone non-attainment area with the commission's Office of Air in Austin before construction begins. The registration shall include a list of all tanks, calculated emissions for each compound in tons per year for each tank, and a Table 7 for each different tank design. The facility may be registered by completing Form PI-7, "Registration for Permits by Rule," or Form PI-7-CERT, "Registration and Certification for Permits by Rule." This checklist should accompany the registration form.

For additional assistance with your application, including resources to help calculate your emissions, please visit the Small Business and Local Government Assistance (SBLGA) webpage at the following link: www.TexasEnviroHelp.org

Questions/Description and Response	
Rule	**Applicability**
(7)	What is the capacity of the tank? **Please see the attached sheet for details**__ gallons
(1)	Is the tank located at least 500 feet from the nearest recreational area, residence, or other structure not occupied or used solely by the owner of the facility or the owner of the property? ☒ YES ☐ NO
Indicate the tank location from the nearest recreational area, residence, or other structure not occupied or used solely by the owner of the facility or the owner of the property: 31,000_____ feet	
(2)	Is the true vapor pressure of the compound being stored less than 11.0 psia? ☒ YES ☐ NO
Indicate the true vapor pressure: **Please see the attached sheet for details**_____ psia	
(3)(A)	Will any storage tank with a capacity of 40,000 gallons or more used to store compounds with a true vapor pressure greater than 0.5 psia and less than 11.0 psia be equipped with an internal floating cover or equivalent control? ☒ YES ☐ NO ☐ N/A
Check the type of tank and control method used: ☒ Internal floating roof tank. ☐ External floating roof tank using double seal technology with a primary mechanical shoe seal. ☐ External floating roof tank using double seal technology with a primary liquid-mounted seal. ☐ An existing open top floating roof tank having a vapor-mounted primary seal, which is undergoing a change of service.	

Texas Commission on Enviromental Quality
Storage Tank and Change of Service
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.478

Questions/Description and Response		
Rule	**Applicability**	
(3)(B)	Does the floating roof or floating cover design of the tank incorporate sufficient flotation to conform to the requirements of American Petroleum Institute (API) Code 650, Appendix C or an equivalent degree of flotation?	☒ YES ☐ NO
Note: *If using an equivalent degree of flotation, please describe how the method used is equivalent to API Code 650, Appendix C.*		
(4)	If the compounds have a true vapor pressure of 0.5 psia or less at the maximum storage temperature, will each fixed or cone roof be equipped with a submerged fill pipe or use bottom loading?	☒ YES ☐ NO ☐ N/A
Indicate the loading method: ☒ submerged fill pipe ☐ bottom loading		
(5)	Is each fixed or cone roof tank not equipped with an internal floating roof painted chalk white, except where a dark color is necessary to help the tank absorb or retain heat in order to maintain the material in the tank in a liquid state?	☒ YES ☐ NO
(6)	Have the tank emissions been calculated using the methods specified in Section 4.3 of the United States Protection Agency Publication AP-42	☒ YES ☐ NO
(7)	If the capacity of the tank is 25,000 gallons or more, have you provided Form PI-7 or Form PI-7-CERT as part of this registration request?	☒ YES ☐ NO
☐ Form PI-7 ☒ Form PI-7-CERT		
(8)	Are the chemicals or mixtures of chemicals to be stored limited to those shown in Table 478?	☒ YES ☐ NO
If "NO," answer the next question.		
(8)	Do mixtures of chemicals listed in Table 478 contain more than a total of 1.0% percent by volume of all other chemicals not listed in Table 478?	☐ YES ☐ NO
If "YES," the facility does not qualify for this PBR.		
Indicate the actual percentage by volume of all unlisted chemicals:		

Chemical Name:	Percent Composition (percent):

Texas Commission on Enviromental Quality
Storage Tank and Change of Service
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.478

Questions/Description and Response	
Other Applicable Rules and Regulations	
Is this facility subject to 30 TAC §§ 115.112-119?	☐ YES ☒ NO
Why or Why Not: The PCR is located in Pecos County which is not a designated nonattainment area for ozone.	
Is this facility subject to 30 TAC §§ 115.120-129?	☐ YES ☒ NO
Why or Why Not: The PCR is located in Pecos County which is not a designated nonattainment area for ozone.	
Is this facility subject to 40 CFR Part 60, NSPS Subpart K?	☐ YES ☒ NO
Why or Why Not: The storage tanks are constructed after June 11, 1973.	
Is this facility subject to 40 CFR Part 60, NSPS Subpart Kb?	☒ YES ☐ NO
Why or Why Not: The storage tanks are constructed after July 23, 1984.	
Is this facility subject to 40 CFR Part 60, NSPS Subpart NNN?	☐ YES ☒ NO
Why or Why Not: PCR does not any chemcial listed in 40 CFR 60.667.	

Record Keeping: There are no additional record keeping requirements other than the general requirements specified in 30 TAC § 106.8. The records must be made available immediately upon request to the commission or any air pollution control program having jurisdiction. If you have any question about the type of records that should be maintained, contact the Air Program in the TCEQ Regional Office for the region in which the site is located.

Recommended Calculation Methods: In order to demonstrate compliance with this PBR, the registrant may use the emission factors for each air contaminant from the EPA Compilation of Air Pollutant Emission Factors (AP-42), Fifth Edition, Volume I, Chapter 7: "Liquid Storage Tanks" at: www.epa.gov/ttn/chief/ap42/index.html. The registrant may also use the calculation method for storage tanks that store chemical compounds as described in the TCEQ guidance for "Storage Tanks" at: www.tceq.texas.gov/permitting/air/guidance/newsourcereview/tanks/nsr_fac_tanks.html.

Texas Commission on Enviromental Quality
Storage Tank and Change of Service
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.478

Tank Capacity and Vapor Pressure

EPN	FIN	Tank Description	Tank Size, gal	True Vapor Pressure, psia	Tank Type
TK50	TK50	Crude Oil Tank	3,150,000	9	Internal Floating Roof
TK51	TK51	Crude Oil Tank	3,150,000	9	Internal Floating Roof
TK52	TK52	Naphtha Tank	1,050,000	10	Internal Floating Roof
TK53	TK53	Naphtha Tank	1,050,000	10	Internal Floating Roof
TK54	TK54	Diesel Tank	1,260,000	0.02	Vertical Fixed Cone Roof
TK55	TK55	Diesel Tank	1,260,000	0.02	Vertical Fixed Cone Roof
TK56	TK56	Residual/ATB Tank	1,050,000	0.0015	Vertical Fixed Cone Roof
TK57	TK57	Residual/ATB Tank	1,050,000	0.0015	Vertical Fixed Cone Roof
TK59	TK59	Slop Tank	84,000	4.76	Internal Floating Roof

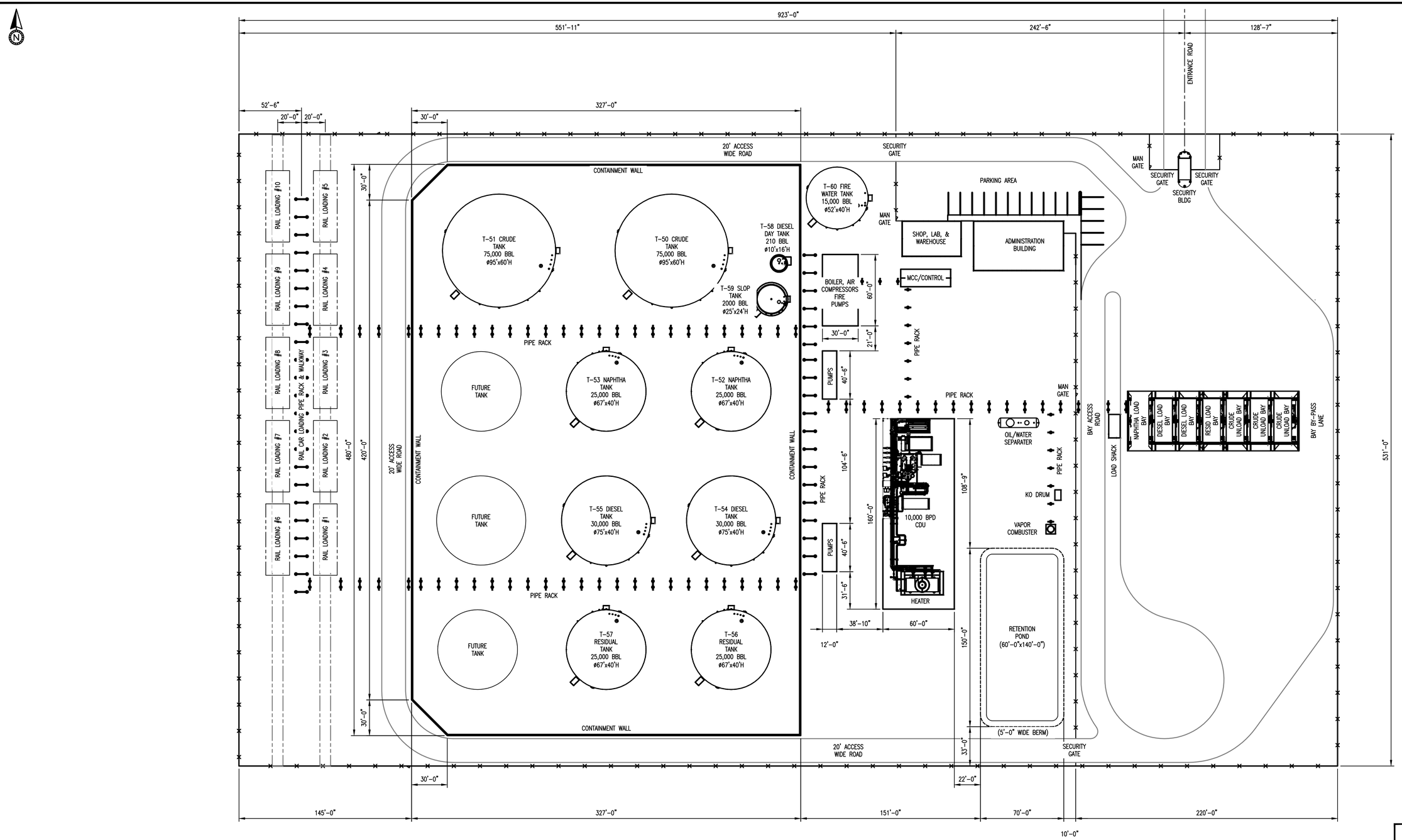
Exemption § 106.532 Checklist
(Previously Standard Exemption 61)
Water and Waste Water Treatment Units

The following checklist has been designed to help you confirm that you meet Exemption § 106.532, previously standard exemption 61 (STDX 61), requirements. **Any "No" answers indicate that the claim of exemption may not meet all requirements for the use of Exemption § 106.532, previously standard exemption 61.** If you do not meet all the requirements, you may alter the project design/operation in such a way that all the requirements of the exemption are met or obtain a construction permit.

For additional assistance with your application, including resources to help calculate your emissions, please visit the Small Business and Local Government Assistance (SBLGA) webpage at the following link: www.TexasEnviroHelp.org

Please Complete The Following:			
Have you included a description of how this exemption claim meets the general rule for the use of exemptions (§ 106.4, previously § 116.211 checklist is available)?	☒ YES	☐ NO	☐ N/A
Are all the facilities claimed for exemption specifically named or described in § 106.532, previously STDX 61's subparagraphs (a)(1)-(15)? Attach a list or detailed description of equipment to be constructed or modified.	☒ YES	☐ NO	☐ N/A
Are all stripping and/or aeration units designed and operated to collect stripped gases and send them to a control device that meets the requirements of § 106.533, previously STDX 68(e)? Attach a list or description of the strippers and/or aerators identifying the control device to be used for each one.	☒ YES	☐ NO	☐ N/A
If combustion is used for control of stripped gases, are all final emissions of HCL resulting from combustion of chlorine or chlorine-containing compounds less than or equal to 0.1 lb/hr?	☐ YES	☐ NO	☒ N/A
If the sum of the partial pressures of all species of VOC in any sample are greater than 1.5 psia, are all liquid phase separators enclosed and vented to a control device meeting the requirements of § 106.533, previously STDX 68(e)? Attach a list or description for each one of the separators identifying the sum of VOC partial pressures or the control device to be used.	☐ YES	☐ NO	☒ N/A
Have you checked to ensure that none of the facilities claimed for exemption fall in any of the categories of prohibited units listed in STDX § 106.532, previously 61(b)?	☒ YES	☐ NO	☐ N/A

12. PLOT PLAN



PRELIMINARY
NOT FOR CONSTRUCTION

ISSUED FOR APPROVAL

40' 30' 20' 10' 0 40'
10m 0 10m

REFERENCE DRAWINGS	
DWG. NO.	DESCRIPTION

REVISIONS					
No.	BY	DATE	DESCRIPTION	CHK'D.	APP'D.
A	BEK	05/11/17	ISSUED FOR APPROVAL	MDM	SA
B	BEK	06/29/17	REVISED – REISSUED FOR APPROVAL	MDM	SA
C	BEK	7/17/17	REORIENTED– REISSUED FOR APPROVAL	MDM	SA

VFUELS Oil & Gas Engineering

BAR MEASURES 1" ON FULL SIZE DRAWING. ADJUST SCALES ACCORDINGLY.

SCALE	PROJ. #	CHK'D	DATE	APP'D	DATE
1:480		MDM	05/10/17	SA	05/11/17

DRAWN	BEK	DATE	05/10/17	DRAWING #	REV
				G001	C

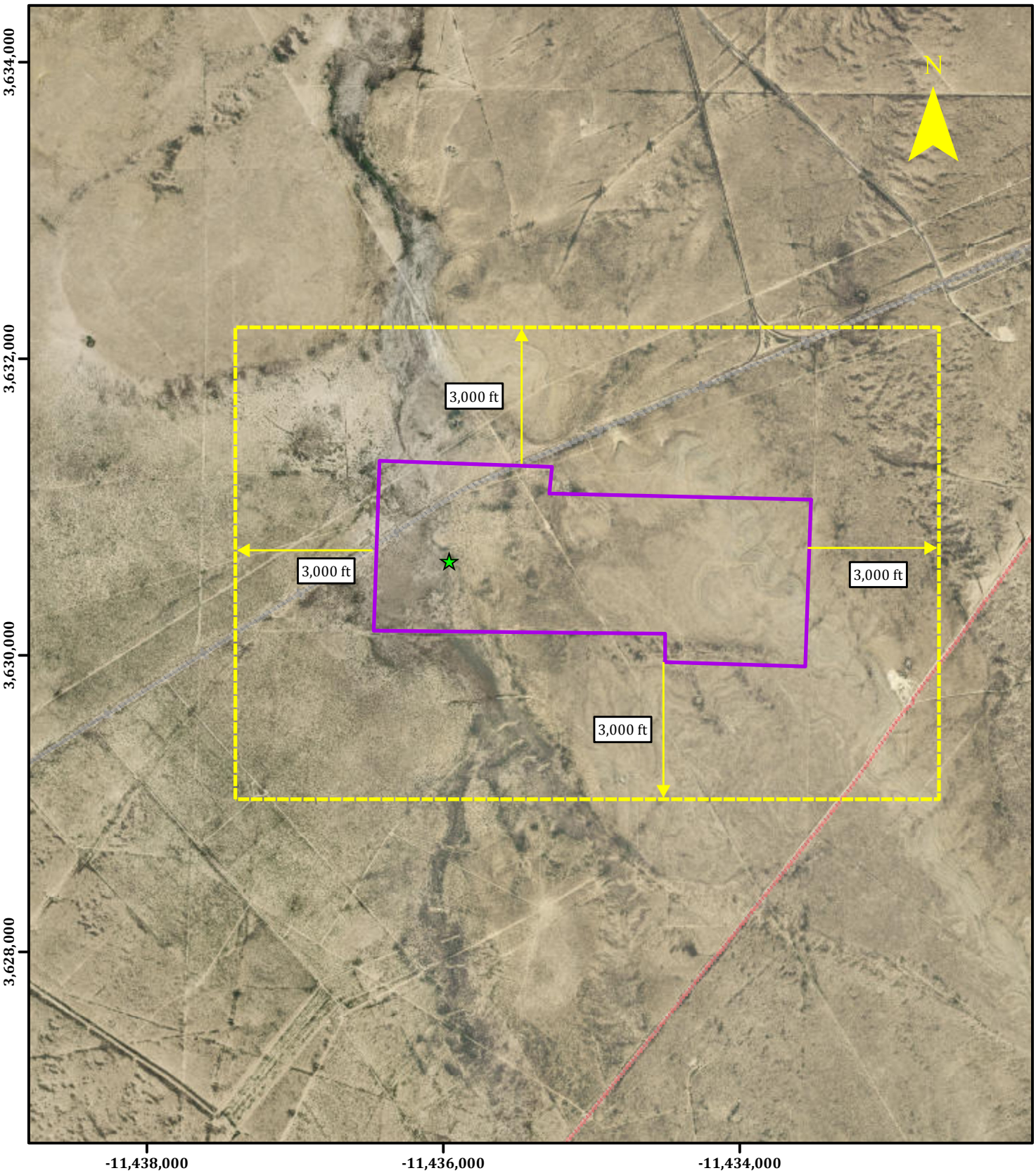
GENERAL ARRANGEMENT PLAN
CRUDE DISTILLATION UNIT
MMEX RESOURCE CORP
FORT STOCKTON, TX

NOTES:
1. DO NOT SCALE FABRICATION DIMENSIONS FROM THIS DRAWING.
2. LAYOUT ARRANGEMENT SUBJECT TO CHANGE PER INDIVIDUAL CLIENT REQUIREMENTS.

M:\DWGS\Client-Specific\MMEX-Resource-G001.dwg

13. AREA MAP

Area Map
Pecos County Refinery
MMEX Resources Corporation



Legend

- Property Line
- Proposed Facility Location

Reference UTM Coordinates are in NAD83, Zone 13

0 0.25 0.5 1 Miles

July 2017

Trinity Consultants

APPENDIX A: SUPPLEMENTAL INFORMATION

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-50/51 Annual Crude MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	Crude Oil Tanks - Annual Emissions

Tank Dimensions

Diameter (ft):	95.00
Volume (gallons):	3,150,000.00
Turnovers:	29.20
Self Supp. Roof? (y/n):	N
No. of Columns:	6.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	30
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-50/51 Annual Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil (RVP 10)	Jan	55.54	49.26	61.82	63.30	6.9189	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Feb	57.96	51.15	64.77	63.30	7.2050	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Mar	62.28	54.64	69.93	63.30	7.7375	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Apr	66.63	58.71	74.55	63.30	8.3035	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	May	70.44	62.52	78.35	63.30	8.8247	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Jun	73.56	65.82	81.30	63.30	9.2705	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Jul	74.50	67.00	82.00	63.30	9.4081	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Aug	73.75	66.52	80.98	63.30	9.2982	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Sep	69.97	63.56	76.38	63.30	8.7599	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Oct	65.56	59.00	72.12	63.30	8.1613	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Nov	60.09	53.83	66.36	63.30	7.4640	N/A	N/A	50.0000			207.00	Option 4: RVP=10
Crude Oil (RVP 10)	Dec	56.37	50.25	62.49	63.30	7.0155	N/A	N/A	50.0000			207.00	Option 4: RVP=10

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-50/51 Annual Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	8.6414	9.1686	10.2122	11.4244	12.6533	13.8075	14.1859	13.8827	12.4939	11.1089	9.6654	8.8169
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.1819	0.1930	0.2150	0.2405	0.2664	0.2907	0.2987	0.2923	0.2630	0.2339	0.2035	0.1856
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.9189	7.2050	7.7375	8.3035	8.8247	9.2705	9.4081	9.2982	8.7599	8.1613	7.4640	7.0155
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Withdrawal Losses (lb):	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840	80.5840
Number of Columns:	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000	7,665,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Deck Fitting Losses (lb):	155.7268	165.2278	184.0344	205.8801	228.0252	248.8258	255.6450	250.1806	225.1527	200.1942	174.1805	158.8903
Value of Vapor Pressure Function:	0.1819	0.1930	0.2150	0.2405	0.2664	0.2907	0.2987	0.2923	0.2630	0.2339	0.2035	0.1856
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Total Losses (lb):	244.9522	254.9803	274.8306	297.8885	321.2624	343.2172	350.4149	344.6473	318.2305	291.8871	264.4298	248.2912

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	7.6468
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	13.3818
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6	33.00	0.00	0.00	946.2877
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	267.6369
Roof Leg or Hanger Well/Adjustable	30	7.90	0.00	0.00	1,132.6777
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	57.3508
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	29.6312

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-50/51 Annual Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude Oil (RVP 10)	136.06	967.01	2,451.96	0.00	3,555.03

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-50/51 Hourly Crude MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	Crude Oil Tanks - Short Term Emissions

Tank Dimensions

Diameter (ft):	95.00
Volume (gallons):	3,150,000.00
Turnovers:	50.06
Self Supp. Roof? (y/n):	N
No. of Columns:	6.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	30
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-50/51 Hourly Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude RVP 11	Jan	55.54	49.26	61.82	63.30	7.9012	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Feb	57.96	51.15	64.77	63.30	8.2194	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Mar	62.28	54.64	69.93	63.30	8.8105	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Apr	66.63	58.71	74.55	63.30	9.4376	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	May	70.44	62.52	78.35	63.30	10.0142	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Jun	73.56	65.82	81.30	63.30	10.5066	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Jul	74.50	67.00	82.00	63.30	10.6585	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Aug	73.75	66.52	80.98	63.30	10.5372	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Sep	69.97	63.56	76.38	63.30	9.9426	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Oct	65.56	59.00	72.12	63.30	9.2802	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Nov	60.09	53.83	66.36	63.30	8.5070	N/A	N/A	50.0000			207.00	Option 4: RVP=11
Crude RVP 11	Dec	56.37	50.25	62.49	63.30	8.0087	N/A	N/A	50.0000			207.00	Option 4: RVP=11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-50/51 Hourly Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	10.5511	11.2367	12.6180	14.2686	16.0020	17.6972	18.2695	17.8102	15.7733	13.8337	11.8901	10.7785
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.2221	0.2366	0.2656	0.3004	0.3369	0.3726	0.3846	0.3750	0.3321	0.2912	0.2503	0.2269
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9012	8.2194	8.8105	9.4376	10.0142	10.5066	10.6585	10.5372	9.9426	9.2802	8.5070	8.0087
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Withdrawal Losses (lb):	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439	138.1439
Number of Columns:	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Deck Fitting Losses (lb):	190.1420	202.4978	227.3900	257.1343	288.3720	318.9219	329.2357	320.9584	284.2507	249.2983	214.2719	194.2407
Value of Vapor Pressure Function:	0.2221	0.2366	0.2656	0.3004	0.3369	0.3726	0.3846	0.3750	0.3321	0.2912	0.2503	0.2269
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000	513.6000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Total Losses (lb):	338.8370	351.8785	378.1520	409.5468	442.5179	474.7630	485.6491	476.9126	438.1679	401.2760	364.3059	343.1632

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	9.5963
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	16.7936
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	6	33.00	0.00	0.00	1,187.5444
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	335.8712
Roof Leg or Hanger Well/Adjustable	30	7.90	0.00	0.00	1,421.4547
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	71.9724
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	37.1857

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-50/51 Hourly Crude MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude RVP 11	170.73	1,657.73	3,076.71	0.00	4,905.17

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-58 Fuel MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Vertical Fixed Roof Tank
Description:	Diesel Fuel Storage

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	10.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	8.00
Volume (gallons):	8,225.29
Turnovers:	2.24
Net Throughput(gal/yr):	18,396.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.50
Slope (ft/ft) (Cone Roof)	0.10

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-58 Fuel MMEX - Vertical Fixed Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	Jan	55.54	49.26	61.82	63.30	0.0061	0.0044	0.0077	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Feb	57.96	51.15	64.77	63.30	0.0068	0.0048	0.0082	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Mar	62.28	54.64	69.93	63.30	0.0078	0.0058	0.0090	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Apr	66.63	58.71	74.55	63.30	0.0085	0.0070	0.0104	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	May	70.44	62.52	78.35	63.30	0.0091	0.0078	0.0115	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jun	73.56	65.82	81.30	63.30	0.0101	0.0083	0.0125	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	74.50	67.00	82.00	63.30	0.0104	0.0085	0.0128	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	73.75	66.52	80.98	63.30	0.0101	0.0084	0.0124	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Sep	69.97	63.56	76.38	63.30	0.0090	0.0080	0.0109	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Oct	65.56	59.00	72.12	63.30	0.0083	0.0071	0.0096	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Nov	60.09	53.83	66.36	63.30	0.0074	0.0056	0.0084	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Dec	56.37	50.25	62.49	63.30	0.0063	0.0046	0.0078	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-58 Fuel MMEX - Vertical Fixed Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	0.1112	0.1212	0.1703	0.1833	0.2014	0.2074	0.2119	0.1997	0.1528	0.1517	0.1278	0.1119
Vapor Space Volume (cu ft):	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687
Vapor Density (lb/cu ft):	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Space Expansion Factor:	0.0445	0.0484	0.0543	0.0559	0.0555	0.0539	0.0519	0.0500	0.0441	0.0456	0.0439	0.0432
Vented Vapor Saturation Factor:	0.9977	0.9974	0.9971	0.9968	0.9965	0.9962	0.9961	0.9962	0.9966	0.9969	0.9972	0.9976
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687	562.8687
Tank Diameter (ft):	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
Vapor Space Outage (ft):	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667
Tank Shell Height (ft):	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
Average Liquid Height (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Roof Outage (ft):	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Roof Height (ft):	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
Roof Slope (ft/ft):	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
Shell Radius (ft):	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
Vapor Density												
Vapor Density (lb/cu ft):	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Daily Avg. Liquid Surface Temp. (deg. R):	515.2115	517.6343	521.9527	526.2999	530.1074	533.2302	534.1708	533.4202	529.6435	525.2298	519.7639	516.0379
Daily Average Ambient Temp. (deg. F):	42.5000	47.1000	55.7000	64.6000	72.7500	79.5500	81.9500	80.8000	73.2500	63.9500	52.5500	44.6000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,039.6938	1,336.6585	1,734.5151	2,055.5923	2,220.5727	2,317.9746	2,231.9945	2,049.8815	1,711.3544	1,471.8155	1,136.7784	967.0390
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0445	0.0484	0.0543	0.0559	0.0555	0.0539	0.0519	0.0500	0.0441	0.0456	0.0439	0.0432
Daily Vapor Temperature Range (deg. R):	25.1089	27.2425	30.5763	31.6726	31.6659	30.9776	29.9923	28.9094	25.6420	26.2298	25.0671	24.4751
Daily Vapor Pressure Range (psia):	0.0033	0.0033	0.0031	0.0033	0.0037	0.0042	0.0043	0.0039	0.0029	0.0025	0.0028	0.0032
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0044	0.0048	0.0058	0.0070	0.0078	0.0083	0.0085	0.0084	0.0080	0.0071	0.0056	0.0046
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0077	0.0082	0.0090	0.0104	0.0115	0.0125	0.0128	0.0124	0.0109	0.0096	0.0084	0.0078
Daily Avg. Liquid Surface Temp. (deg R):	515.2115	517.6343	521.9527	526.2999	530.1074	533.2302	534.1708	533.4202	529.6435	525.2298	519.7639	516.0379
Daily Min. Liquid Surface Temp. (deg R):	508.9343	510.8237	514.3086	518.3817	522.1909	525.4859	526.6727	526.1928	523.2330	518.6724	513.4971	509.9192
Daily Max. Liquid Surface Temp. (deg R):	521.4887	524.4450	529.5967	534.2180	538.0239	540.9746	541.6688	540.6475	536.0541	531.7873	526.0307	522.1567
Daily Ambient Temp. Range (deg. R):	28.0000	29.0000	31.0000	30.4000	29.3000	27.7000	26.9000	26.6000	24.3000	26.7000	27.3000	27.6000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.9977	0.9974	0.9971	0.9968	0.9965	0.9962	0.9961	0.9962	0.9966	0.9969	0.9972	0.9976
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Vapor Space Outage (ft):	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667	7.1667
Working Losses (lb):	0.0290	0.0323	0.0368	0.0401	0.0433	0.0478	0.0491	0.0480	0.0427	0.0393	0.0352	0.0301
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Net Throughput (gal/mo.):	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000	1,533.0000
Annual Turnovers:	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365	2.2365
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880	8,225.2880
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	0.1401	0.1535	0.2071	0.2234	0.2447	0.2551	0.2611	0.2478	0.1954	0.1910	0.1630	0.1420

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-58 Fuel MMEX - Vertical Fixed Roof Tank
Midland-Odessa, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.47	1.95	2.42

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-54/55 Diesel MMEX1
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Vertical Fixed Roof Tank
Description:	Diesel Storage

Tank Dimensions

Shell Height (ft):	40.00
Diameter (ft):	75.00
Liquid Height (ft) :	39.00
Avg. Liquid Height (ft):	20.00
Volume (gallons):	1,288,873.25
Turnovers:	26.76
Net Throughput(gal/yr):	34,492,500.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	3.00
Slope (ft/ft) (Cone Roof)	0.08

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-54/55 Diesel MMEX1 - Vertical Fixed Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	Jan	55.54	49.26	61.82	63.30	0.0061	0.0044	0.0077	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Feb	57.96	51.15	64.77	63.30	0.0068	0.0048	0.0082	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Mar	62.28	54.64	69.93	63.30	0.0078	0.0058	0.0090	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Apr	66.63	58.71	74.55	63.30	0.0085	0.0070	0.0104	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	May	70.44	62.52	78.35	63.30	0.0091	0.0078	0.0115	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jun	73.56	65.82	81.30	63.30	0.0101	0.0083	0.0125	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	74.50	67.00	82.00	63.30	0.0104	0.0085	0.0128	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	73.75	66.52	80.98	63.30	0.0101	0.0084	0.0124	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Sep	69.97	63.56	76.38	63.30	0.0090	0.0080	0.0109	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Oct	65.56	59.00	72.12	63.30	0.0083	0.0071	0.0096	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Nov	60.09	53.83	66.36	63.30	0.0074	0.0056	0.0084	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Dec	56.37	50.25	62.49	63.30	0.0063	0.0046	0.0078	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-54/55 Diesel MMEX1 - Vertical Fixed Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	18.2392	19.8702	27.9036	30.0234	32.9695	33.9273	34.6712	32.6808	25.0134	24.8513	20.9532	18.3616
Vapor Space Volume (cu ft):	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579
Vapor Density (lb/cu ft):	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Space Expansion Factor:	0.0445	0.0484	0.0543	0.0559	0.0555	0.0539	0.0519	0.0500	0.0441	0.0456	0.0439	0.0432
Vented Vapor Saturation Factor:	0.9932	0.9925	0.9914	0.9907	0.9899	0.9889	0.9886	0.9889	0.9901	0.9909	0.9918	0.9930
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579	92,775.1579
Tank Diameter (ft):	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000
Vapor Space Outage (ft):	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000
Tank Shell Height (ft):	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
Average Liquid Height (ft):	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
Roof Outage (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Roof Outage (Cone Roof)												
Roof Outage (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Roof Height (ft):	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
Roof Slope (ft/ft):	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800
Shell Radius (ft):	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000	37.5000
Vapor Density												
Vapor Density (lb/cu ft):	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Daily Avg. Liquid Surface Temp. (deg. R):	515.2115	517.6343	521.9527	526.2999	530.1074	533.2302	534.1708	533.4202	529.6435	525.2298	519.7639	516.0379
Daily Average Ambient Temp. (deg. F):	42.5000	47.1000	55.7000	64.6000	72.7500	79.5500	81.9500	80.8000	73.2500	63.9500	52.5500	44.6000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650	522.9650
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,039.6938	1,336.6585	1,734.5151	2,055.5923	2,220.5727	2,317.9746	2,231.9945	2,049.8815	1,711.3544	1,471.8155	1,136.7784	967.0390
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0445	0.0484	0.0543	0.0559	0.0555	0.0539	0.0519	0.0500	0.0441	0.0456	0.0439	0.0432
Daily Vapor Temperature Range (deg. R):	25.1089	27.2425	30.5763	31.6726	31.6659	30.9776	29.9923	28.9094	25.6420	26.2298	25.0671	24.4751
Daily Vapor Pressure Range (psia):	0.0033	0.0033	0.0031	0.0033	0.0037	0.0042	0.0043	0.0039	0.0029	0.0025	0.0028	0.0032
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0044	0.0048	0.0058	0.0070	0.0078	0.0083	0.0085	0.0084	0.0080	0.0071	0.0056	0.0046
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0077	0.0082	0.0090	0.0104	0.0115	0.0125	0.0128	0.0124	0.0109	0.0096	0.0084	0.0078
Daily Avg. Liquid Surface Temp. (deg R):	515.2115	517.6343	521.9527	526.2999	530.1074	533.2302	534.1708	533.4202	529.6435	525.2298	519.7639	516.0379
Daily Min. Liquid Surface Temp. (deg R):	508.9343	510.8237	514.3086	518.3817	522.1909	525.4859	526.6727	526.1928	523.2330	518.6724	513.4971	509.9192
Daily Max. Liquid Surface Temp. (deg R):	521.4887	524.4450	529.5967	534.2180	538.0239	540.9746	541.6688	540.6475	536.0541	531.7873	526.0307	522.1567
Daily Ambient Temp. Range (deg. R):	28.0000	29.0000	31.0000	30.4000	29.3000	27.7000	26.9000	26.6000	24.3000	26.7000	27.3000	27.6000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.9932	0.9925	0.9914	0.9907	0.9899	0.9889	0.9886	0.9889	0.9901	0.9909	0.9918	0.9930
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Vapor Space Outage (ft):	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000	21.0000
Working Losses (lb):	54.3335	60.5847	69.0862	75.2745	81.2394	89.5744	92.0847	90.0814	80.0342	73.7513	65.9705	56.4658
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0061	0.0068	0.0078	0.0085	0.0091	0.0101	0.0104	0.0101	0.0090	0.0083	0.0074	0.0063
Net Throughput (gal/mo.):	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000	2,874,375.0000
Annual Turnovers:	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617	26.7617
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538	1,288,873.2538
Maximum Liquid Height (ft):	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000
Tank Diameter (ft):	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	72.5728	80.4548	96.9899	105.2979	114.2089	123.5017	126.7559	122.7622	105.0476	98.6026	86.9237	74.8274

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-54/55 Diesel MMEX1 - Vertical Fixed Roof Tank
Midland-Odessa, Texas

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	888.48	319.46	1,207.95

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-52/53 Annual Naphtha MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	Naphtha Tanks - Annual Emissions

Tank Dimensions

Diameter (ft):	67.00
Volume (gallons):	1,050,000.00
Turnovers:	30.66
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	20
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-52/53 Annual Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 15.5)	Jan	55.54	49.26	61.82	63.30	7.7877	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Feb	57.96	51.15	64.77	63.30	8.1432	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Mar	62.28	54.64	69.93	63.30	8.8086	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Apr	66.63	58.71	74.55	63.30	9.5209	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	May	70.44	62.52	78.35	63.30	10.1812	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Jun	73.56	65.82	81.30	63.30	10.7492	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Jul	74.50	67.00	82.00	63.30	10.9250	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Aug	73.75	66.52	80.98	63.30	10.7845	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Sep	69.97	63.56	76.38	63.30	10.0989	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Oct	65.56	59.00	72.12	63.30	9.3415	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Nov	60.09	53.83	66.36	63.30	8.4662	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Dec	56.37	50.25	62.49	63.30	7.9076	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-52/53 Annual Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	18.9148	20.2976	23.1289	26.5970	30.3508	34.1512	35.4676	34.4097	29.8484	25.6739	21.6291	19.3719
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.2172	0.2330	0.2655	0.3054	0.3485	0.3921	0.4072	0.3951	0.3427	0.2948	0.2483	0.2224
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.7877	8.1432	8.8086	9.5209	10.1812	10.7492	10.9250	10.7845	10.0989	9.3415	8.4662	7.9076
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306	7.6306
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000	2,682,750.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Deck Fitting Losses (lb):	282.8753	303.5556	345.8977	397.7641	453.9032	510.7387	530.4255	514.6047	446.3896	383.9583	323.4681	289.7112
Value of Vapor Pressure Function:	0.2172	0.2330	0.2655	0.3054	0.3485	0.3921	0.4072	0.3951	0.3427	0.2948	0.2483	0.2224
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000	300.6000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300	705.1300
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	309.4208	331.4839	376.6572	431.9917	491.8847	552.5206	573.5238	556.6450	483.8686	417.2628	352.7279	316.7138

		Roof Fitting Loss Factors			
Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	25.4952
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	44.6166
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	525.8382
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	892.3314
Roof Leg or Hanger Well/Adjustable	20	7.90	0.00	0.00	2,517.6494
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	685.1831
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	98.7938

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-52/53 Annual Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gasoline (RVP 15.5)	319.84	91.57	4,783.29	0.00	5,194.70

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-52/53 Short Term Naphtha MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	Naphtha Tanks - Short Term Emissions

Tank Dimensions

Diameter (ft):	67.00
Volume (gallons):	1,050,000.00
Turnovers:	150.17
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	20
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-52/53 Short Term Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 15.5)	Jan	55.54	49.26	61.82	63.30	7.7877	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Feb	57.96	51.15	64.77	63.30	8.1432	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Mar	62.28	54.64	69.93	63.30	8.8086	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Apr	66.63	58.71	74.55	63.30	9.5209	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	May	70.44	62.52	78.35	63.30	10.1812	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Jun	73.56	65.82	81.30	63.30	10.7492	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Jul	74.50	67.00	82.00	63.30	10.9250	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Aug	73.75	66.52	80.98	63.30	10.7845	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Sep	69.97	63.56	76.38	63.30	10.0989	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Oct	65.56	59.00	72.12	63.30	9.3415	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Nov	60.09	53.83	66.36	63.30	8.4662	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3
Gasoline (RVP 15.5)	Dec	56.37	50.25	62.49	63.30	7.9076	N/A	N/A	52.0000			92.00	Option 4: RVP=15.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-52/53 Short Term Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	18.9148	20.2976	23.1289	26.5970	30.3508	34.1512	35.4676	34.4097	29.8484	25.6739	21.6291	19.3719
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.2172	0.2330	0.2655	0.3054	0.3485	0.3921	0.4072	0.3951	0.3427	0.2948	0.2483	0.2224
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.7877	8.1432	8.8086	9.5209	10.1812	10.7492	10.9250	10.7845	10.0989	9.3415	8.4662	7.9076
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746	37.3746
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000	13,140,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Deck Fitting Losses (lb):	253.7032	272.2508	310.2263	356.7438	407.0935	458.0677	475.7243	461.5350	400.3547	344.3618	290.1098	259.8342
Value of Vapor Pressure Function:	0.2172	0.2330	0.2655	0.3054	0.3485	0.3921	0.4072	0.3951	0.3427	0.2948	0.2483	0.2224
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000	269.6000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
Vapor Molecular Weight (lb/lb-mole):	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000	52.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	309.9926	329.9230	370.7297	420.7154	474.8189	529.5935	548.5664	533.3193	467.5777	407.4102	349.1135	316.5806

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	25.4952
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	44.6166
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	525.8382
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	892.3314
Roof Leg or Hanger Well/Adjustable	20	7.90	0.00	0.00	2,517.6494
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	191.2139
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	98.7938

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-52/53 Short Term Naphtha MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gasoline (RVP 15.5)	319.84	448.49	4,290.01	0.00	5,058.34

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-59 Slop Oil MMEX
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	Slop Oil Tank - Annual

Tank Dimensions

Diameter (ft):	25.00
Volume (gallons):	84,000.00
Turnovers:	47.66
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	9
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T-59 Slop Oil MMEX - Hourly
City:	Midland-Odessa
State:	Texas
Company:	MMEX Resource Corp
Type of Tank:	Internal Floating Roof Tank
Description:	SLOP Oil Tank - Hourly Emissions

Tank Dimensions

Diameter (ft):	25.00
Volume (gallons):	84,000.00
Turnovers:	1,192.81
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	0.70

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	9
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Midland-Odessa, Texas (Avg Atmospheric Pressure = 13.28 psia)

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

T-59 Slop Oil MMEX - Hourly - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil RVP 6	Jan	55.54	49.26	61.82	63.30	3.3963	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Feb	57.96	51.15	64.77	63.30	3.5567	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Mar	62.28	54.64	69.93	63.30	3.8577	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Apr	66.63	58.71	74.55	63.30	4.1808	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	May	70.44	62.52	78.35	63.30	4.4811	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Jun	73.56	65.82	81.30	63.30	4.7398	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Jul	74.50	67.00	82.00	63.30	4.8201	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Aug	73.75	66.52	80.98	63.30	4.7560	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Sep	69.97	63.56	76.38	63.30	4.4436	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Oct	65.56	59.00	72.12	63.30	4.0993	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Nov	60.09	53.83	66.36	63.30	3.7027	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Dec	56.37	50.25	62.49	63.30	3.4503	N/A	N/A	50.0000			207.00	Option 4: RVP=6

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-59 Slop Oil MMEX - Hourly - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	0.9212	0.9720	1.0696	1.1778	1.2816	1.3738	1.4029	1.3796	1.2684	1.1502	1.0190	0.9382
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.0737	0.0778	0.0856	0.0942	0.1025	0.1099	0.1122	0.1104	0.1015	0.0920	0.0815	0.0751
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3963	3.5567	3.8577	4.1808	4.4811	4.7398	4.8201	4.7560	4.4436	4.0993	3.7027	3.4503
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Withdrawal Losses (lb):	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317	344.5317
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000	8,760,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Deck Fitting Losses (lb):	22.4401	23.6789	26.0560	28.6900	31.2192	33.4656	34.1749	33.6076	30.8992	28.0177	24.8231	22.8554
Value of Vapor Pressure Function:	0.0737	0.0778	0.0856	0.0942	0.1025	0.1099	0.1122	0.1104	0.1015	0.0920	0.0815	0.0751
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Total Losses (lb):	367.8930	369.1827	371.6574	374.3995	377.0325	379.3711	380.1096	379.5189	376.6993	373.6996	370.3738	368.3254

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.9796
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	5.2143
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	61.4548
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	104.2869
Roof Leg or Hanger Well/Adjustable	9	7.90	0.00	0.00	132.4071
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	22.3472
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	11.5461

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-59 Slop Oil MMEX - Hourly - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude Oil RVP 6	13.95	4,134.38	339.93	0.00	4,488.26

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

T-59 Slop Oil MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil RVP 6	Jan	55.54	49.26	61.82	63.30	3.3963	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Feb	57.96	51.15	64.77	63.30	3.5567	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Mar	62.28	54.64	69.93	63.30	3.8577	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Apr	66.63	58.71	74.55	63.30	4.1808	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	May	70.44	62.52	78.35	63.30	4.4811	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Jun	73.56	65.82	81.30	63.30	4.7398	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Jul	74.50	67.00	82.00	63.30	4.8201	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Aug	73.75	66.52	80.98	63.30	4.7560	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Sep	69.97	63.56	76.38	63.30	4.4436	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Oct	65.56	59.00	72.12	63.30	4.0993	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Nov	60.09	53.83	66.36	63.30	3.7027	N/A	N/A	50.0000			207.00	Option 4: RVP=6
Crude Oil RVP 6	Dec	56.37	50.25	62.49	63.30	3.4503	N/A	N/A	50.0000			207.00	Option 4: RVP=6

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-59 Slop Oil MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	0.9212	0.9720	1.0696	1.1778	1.2816	1.3738	1.4029	1.3796	1.2684	1.1502	1.0190	0.9382
Seal Factor A (lb-mole/ft-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Value of Vapor Pressure Function:	0.0737	0.0778	0.0856	0.0942	0.1025	0.1099	0.1122	0.1104	0.1015	0.0920	0.0815	0.0751
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3963	3.5567	3.8577	4.1808	4.4811	4.7398	4.8201	4.7560	4.4436	4.0993	3.7027	3.4503
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Withdrawal Losses (lb):	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655	13.7655
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Net Throughput (gal/mo.):	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000	350,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Deck Fitting Losses (lb):	22.4401	23.6789	26.0560	28.6900	31.2192	33.4656	34.1749	33.6076	30.8992	28.0177	24.8231	22.8554
Value of Vapor Pressure Function:	0.0737	0.0778	0.0856	0.0942	0.1025	0.1099	0.1122	0.1104	0.1015	0.0920	0.0815	0.0751
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000	182.7000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000
Product Factor:	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Total Losses (lb):	37.1269	38.4165	40.8912	43.6333	46.2663	48.6049	49.3434	48.7527	45.9331	42.9334	39.6076	37.5592

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.9796
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	5.2143
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	61.4548
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	104.2869
Roof Leg or Hanger Well/Adjustable	9	7.90	0.00	0.00	132.4071
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	22.3472
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	11.5461

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

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

T-59 Slop Oil MMEX - Internal Floating Roof Tank
Midland-Odessa, Texas

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude Oil RVP 6	13.95	165.19	339.93	0.00	519.07

Input Form for Stock Properties

Enter **Stock Property** data on this page, and **Tank Property** data on page: **Input_Tank**
Enter **Floating Roof** data (incl. entry of No Floating Roof for Fixed-Roof Tanks) on page: **Input_FloatingRoof**

return to: MainMenu

To view current period results:
TankSummaries

To update reports with the current month's data, go to:
MonthlyData

Select the month & year:	Company:	Location:
ANNUAL 2017	**MMEX Resources Corporation**	**Midland-Odessa**

location for meteorological data: MidlandOdessaTX

Average Conditions this period:

Atmospheric Pressure =	**13.28**	annual average (psia)
Daily Total Solar Insolation =	**1689**	average (Btu/ft^2 day)
Daily Minimum Ambient Temperature =	**49.3**	average (degrees F)
Daily Maximum Ambient Temperature =	**77.2**	average (degrees F)
Wind Speed =	**11.1**	average (mph)

select Tank ID from the drop-down list; **after** entering Tank ID No's on page **Input_Tank**

Scroll to the right for **Change of Service**
Scroll further to the right for **Floating Roof Landings**
Scroll even further to the right for **Tank Cleanings**

Tank ID No.	**Throughput This Period** select the appropriate units; select 'feet' if entering change in liquid level	GALLONS	***if stored at ambient conditions, leave these blank*** **Bulk Storage Temperature** (degrees F)	**Is the Tank Insulated?** If constant temp, enter Y	Make separate entries below for each service, but only one entry per tank on the other pgs scroll right to enter dates/days **Type of Petroleum Liquid** select from menu	**RVP** Required when cell color is: (psi)	**Enter data in these fields ONLY when you wish to describe a different stock or to override default properties:** Name (description) of the stock	Crude oil (C) or refined stock (R)? enter letter	Mv Vapor Molecular Weight	Wl Liquid Density (lb/gal)	True Vapor Pressure (psia)
56		21,462,000	250.00	N	Straight Resid						
57		21,462,000	250.00	N	Straight Resid						

Input Form for Storage Tank Properties

Input Form 2 of 3

Return to Input_Service
Go to Input_FloatingRoof

Once tank data have been entered, subsequent entries are required only in the event of a change to a tank configuration.

In fields for entering Vent Relieving Pressures, enter the values for the vent(s) with the lowest settings. If any open vents are present, then enter 0 - regardless of the settings of any other vents that may be present.

Tank ID No.	Tank Diameter (feet)	Tank Height (feet)	Fixed Roof Type: A column-supported(cone); B self-supporting (dome); C no fixed roof (open top); OR D horizontal tank — enter the code letter	Tank Shell Finish: A–L — enter the code letter	Tank Shell Finish: G for good, or P for poor	Tank Roof Finish: A–L — enter the code letter	Tank Roof Finish: G for good, or P for poor	Nominal Operating Pressure (psig)	Vent Relieving Pressures (neg. if vacuum): Minimum Pressure, enter (-0.03) (psig)	Maximum Pressure, enter (0.03) (psig)	Liquid Levels: Max. (Fill Ht.) (feet)	Liquid Levels: Min. (depth of heel) (feet)	Roof Slope, If blank, defaults to 0.75 (3/4 on 12) in. per ft.	Vapor Recovery? If routed to vapor recovery, enter the VRU efficiency (blank, if no vapor recovery; 100% if routed to fuel gas) (%)	Effective Tank Diameter (feet)	Effective Tank Height (feet)	Add'l info for hourly emission rates: Maximum Pump Rate max fill or discharge rate whichever is greater (gal/hr)	Add'l FRT vent info for TX NSR permit applications {Table 7(a)} Enter the quantity of vents (do not include emergency vents) Enter either Combination P/V vents, Separate P & V vents, or Open vents: Comb P/V vents (qty)	Separate: P-vent (qty)	Separate: V-vent (qty)	Open vents (qty)	Add'l info for TX NSR permit appl's {Tables 7(c) & (d)} Condition of Inside of Shell: L Light rust; D Dense rust; G Gunite lined — defaults to L — enter code letter	Add'l info for TX NSR permit appl's {Table 7(c)} Construction of Tank Shell: W Welded; R Riveted — defaults to W — enter code letter	Add'l info for determining NSPS applicability Date Tank was Built or last reconstr'd or modif'd — enter date (mm/dd/yy)	Add'l info for determining MACT applicability Associated Source Categ.: R Petroleum Refining; H Organic Chem Mfr (HON); O OLD; G Gas.Distrib. — enter code letter
56	67	40	A	K	G	K	G								67	40	18,000					L	W		
57	67	40	A	K	G	K	G								67	40	18,000					L	W		

Solar Absorptance values
Guide to finishes:
left column is for Good condition
right column is for Poor condition

A	aluminum-colored paint (specular)	0.39	0.49
B	aluminum-colored paint (diffuse)	0.60	0.68
C	beige/cream-colored paint	0.35	0.49
D	brown paint	0.58	0.67
E	light gray paint	0.54	0.63
F	medium gray paint	0.68	0.74
G	black paint	0.97	0.97
H	red primer or dark green paint	0.89	0.91
I	rust (unpainted iron oxide)	0.38	0.50
J	tan paint	0.43	0.55
K	white paint	0.17	0.34
L	mill finish aluminum (unpainted)	0.10	0.15

Columns below are required ONLY if the tank has NO floating roof. (scroll to the right for TX add'l input)

If blank, vent settings default to typical values shown if equipped with typical breather (conservation) vents:

If blank, Max. defaults to [(tank height) - 1ft]; Min. defaults to 1 foot.

These only differ from the given values for the case of horizontal tanks

For Floating-Roof Tanks:

Entry is required for every field except Floating Roof Type and the Optional Data Entry fields for Deck Fittings (to the far right), all of which will default as indicated if left blank.

Return to Input_Service
Return to Input_Tank

Once floating roof data have been entered, subsequent entries are required only in the event of a change to a floating roof.

Fixed Roof Type

- **A** column-supported(cone)
- **B** self-supporting (dome)
- **C** no fixed roof (open top)

OR

- **D** horizontal tank

Floating Roof Type

- **A** steel pontoon-type EFR (API 650 App.C-type) *(default for EFRTs and Domed EFRTs)*
- **B** steel double-deck EFR (API 650 App.C-type)
- **C** alum. bolted deck IFR (API 650 App.H-type) *(default for IFRTs)*

click here to enter bolted deck constr.

- **D** steel welded deck IFR (API 650 App.H-type) *(includes steel-pan type)*

OR

- **E** **no** floating roof (Fixed-Roof Tank)

Rim Seal Type

Welded Tanks, Avg-Fitting Rim Seals

Mechanical-Shoe Primary Seal

- **A** with NO Secondary Seal
- **B** w/ Shoe-Mtd Secondary Seal
- **C** w/ Rim-Mtd Secondary Seal

Liquid-Mounted Primary Seal

- **D** with NO Secondary Seal
- **E** with a Weather Shield
- **F** w/ Rim-Mtd Secondary Seal

Vapor-Mounted Primary Seal

- **G** with NO Secondary Seal
- **H** with a Weather Shield
- **I** w/ Rim-Mtd Secondary Seal

Add'l Mech-Shoe Seals, Special Conditions

- **J** w/ NO Secondary Seal - tight fitting
- **K** w/ Rim-Mtd Secondary Seal - tight fitting
- **L** w/ NO Sec.- Riveted Tank (loose fitting)
- **M** w/Rim-Mtd Sec.-Riveted Tank(loose fitting)

Unslotted Guidepole Type

Guidepole Code	Deck Cover Gasket	Pole Wiper	Pole Sleeve
A	No	No	No
B	YES	No	No
C	No	No	YES
D	YES	No	YES
E	YES	YES	No

Slotted Guidepole Type

Guidepole Code	Deck Cover Gasket	Float	Pole Wiper	Pole Sleeve
F	Y or N	No	No	No
G	Y or N	YES	No	No
H	YES	No	YES	No
I	YES	No	No	YES
J	YES	YES	YES	No
K	YES	No	YES	YES
L	YES	YES	YES	YES

For emissions estimates, any guidepole type can be entered into either field. However, for TCEQ Table 7, use of 'Unslotted' & 'Slotted' must be followed. ***Gasketed?** is required only for TCEQ Table 7 when selecting 'F' or 'G'; it does not affect the emissions estimate.

Tank ID No.	Diameter (feet)	Fixed Roof Type (A–D)	Floating Roof Type (A–E)	Rim Seal Type (A–M)	Unslotted Guidepole code letter	Unslotted Guidepole quantity	Slotted Guidepole code letter	Slotted Guidepole quantity	Gasketed*? If so, enter Y	Diameter (to nearest 10 feet, for estimating deck fitting quantity)
56	67	A	E							70
57	67	A	E							70

STORAGE TANK EMISSIONS ESTIMATES - Summary Report

Company:	MMEX Resources Corp	Location:	Midland-Odessa

Period	Year	Avg. Conditions	Temp (°F)	delta T	Insolation	Wind Speed
ANNUAL	2017	This Period	63.3	27.9	1689	11.12

Return to Input_Service

Tank ID No.	Diam. (feet)	Tank Type	Product	RVP (psi)	Throughput (gallons)	Liquid Temp Bulk (deg F)	Liquid Temp Surface (deg F)	Avg TVP (psia)	Is this a Landing Loss (or Initial Fill) Event
56	67	FRT(no floating roof)	Straight Resid		21,462,000	250.0	170.1	0.00	No
57	67	FRT(no floating roof)	Straight Resid		21,462,000	250.0	170.1	0.00	No

								SPECIATED EMISSIONS THIS PERIOD (pounds) to the right=>
Days this Period in this Service **(days)**	**Days this Period** Cleaning this Tank **(days)**	**Estimated Losses This Period** If Floating Roof Landing or Initial Fill **Standing** Standing Idle	**Working** Refilling	**VRU Efficiency** normal operations **(%)**	**Does this include a Tank Cleaning Event**	**Estimated Emissions This Period** from Tank Cleaning	**Is a vapor control device used** during tank cleaning?	**Total Estimated Emissions This Period** **Total Emissions (lbs)**
365	0	44	117	0.00%	No	0		**161**
365	0	44	117	0.00%	No	0		**161**

Hourly Emissions		Company: MMEX Resources Cor		Location: Midland-Odessa			
Return to Input_Service Tank ID No.	Total Emissions (lb/hr) 2017	Permit Limits (lb/hr)	check	Tank ID No.	Benzene (lb/hr) 2017	Permit Limits (lb/hr)	check
This report shows estimated short-term emissions based on current service, calc'd per TCEQ guid							
56	0.12	NA	no limit	56	0.021	NA	no limit
57	0.12	NA	no limit	57	0.021	NA	no limit

A LISTING OF INPUT SPECIFICATIONS FOR EACH UNIT

07-25-2017

Type of unit is lagoon

1 Description of unit	1	Retention Pond
2 Wastewater temperature (C)		25
3 Length of impoundment (m)		43
4 Depth of impoundment (m)		3
5 Width of impoundment (m)		18
6 active biomass, impoundment (g/l)		0.05
7 if there is plug flow, enter 1		0
8 time for emissions in lagoon (months)		0
9 Overall biorate (mg/g bio-hr)		19
10 sorption flag for solids settling =1		0
19 pH (enter 0 for no pH adjustment)		0

WASTEWATER TREATMENT SUMMARY I 07-25-2017 18:06:31

Project C:\Users\XLiu\Downloads\MMEX\Lagoon\Lagoon 2017-0725 1805 XL

COMPOUND	RATE (g/s)	Fraction Air	Removal	Exit	Adsorb	error	emissions
TRIMETHYLPENTANE 2,2,4	1.16E-05	.04176	.9344	.0239	0.0000	0.0000	(3.65E-04 Mg/yr)
BENZENE	1.18E-03	.09623	.8552	.0486	0.0000	0.0000	(3.72E-02 Mg/yr)
BIPHENYL	1.13E-07	.02237	.9643	.0134	0.0000	0.0000	(3.56E-06 Mg/yr)
CRESOL	1.09E-07	.00002	.9954	.0046	0.0000	0.0000	(3.42E-06 Mg/yr)
CUMENE (isopropylbenzene)	6.53E-06	.04316	.9316	.0253	0.0000	0.0000	(2.06E-04 Mg/yr)
ETHYLBENZENE	6.36E-05	.06005	.9061	.0339	0.0000	0.0000	(2.00E-03 Mg/yr)
HEXANE(-n)	4.78E-05	.08239	.8712	.0464	0.0000	0.0000	(1.51E-03 Mg/yr)
METHYL TERT-BUTYL ETHER	1.23E-03	.10286	.8071	.09	0.0000	0.0000	(3.89E-02 Mg/yr)
NAPHTHALENE	2.79E-05	.11054	.825	.0645	0.0000	0.0000	(8.78E-04 Mg/yr)
PHENOL	3.57E-06	.00036	.9936	.006	0.0000	0.0000	(1.13E-04 Mg/yr)
ETHENYLBENZENE (styrene)	4.72E-04	.4254	.3359	.2387	0.0000	0.0000	(1.49E-02 Mg/yr)
TOLUENE	5.41E-04	.0552	.9149	.0299	0.0000	0.0000	(1.71E-02 Mg/yr)
XYLENE	2.90E-04	.07199	.8893	.0387	0.0000	0.0000	(9.15E-03 Mg/yr)
BUTADIENE-(1,3)	4.31E-06	.17096	.7451	.0839	0.0000	0.0000	(1.36E-04 Mg/yr)
BUTANE	4.27E-02	.21793	.6768	.1053	0.0000	0.0000	(1.35E+00 Mg/yr)

TOTAL ALL COMPOUNDS	4.66E-02 g/s air emissions
TOTAL ALL COMPOUNDS	1.47E+00 Mg/yr air emissions