TASCOSA ALLIANCE COMPANY

UPDATED APPLICATION FOR PERMIT RENEWAL

TITLE V OPERATING PERMIT NO. P051-R3
(PERMIT NUMBER AFTER RENEWAL)

Submitted to:

New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

Prepared for:

HOLLYFRONTIER.

Artesia Refinery
HollyFrontier Navajo Refining LLC
501 East Main Street
Artesia, Eddy County, New Mexico
Agency Interest No. 198

Prepared by:

Tascosa Alliance Company
4915 Cross Creek Court
Arlington, Texas 76017
817.726.6949

Tascosa Project No: 108-16

Initially Submitted May 2019

(Updated August 2020)

August 31, 2020

Mr. Ted Schooley
Permitting Section Chief, Air Quality Bureau
New Mexico Environment Department
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

Via Email

Re: Title V Operating Permit No. P051-R3
Updated Application for Permit Renewal
HollyFrontier Navajo Refining LLC
Artesia Refinery
Agency Interest No. 198

Dear Mr. Schooley,

HollyFrontier Navajo Refining LLC (Navajo) is submitting this updated application for renewal of the current Title V Operating Permit No. P051-R2M1 for Navajo's Artesia, NM refinery. The initial application was submitted to the New Mexico Environment Department (NMED) on May 6, 2019. This updated application addresses revisions to the corresponding New Source Review/Prevention of Significant Deterioration (NSR/PSD) air permit that NMED has issued since the initial Title V renewal application was submitted.

Navajo is submitting this application in accordance with 20.2.70.300 NMAC. The New Mexico Environment Department (NMED) last issued/renewed the Title V permit on May 6, 2015. It has a five-year term, and therefore expires May 6, 2020. In accordance with 20.2.70.300.B.(2) NMAC, the initial renewal application was submitted at least twelve months prior to the expiration date.

By this submittal, Navajo requests the NMED renew and update the Title V permit to reflect the Title V and New Source Review (NSR) permitting actions that have been approved by NMED since the last Title V permit issuance/renewal. For reference, the current NSR permit for the Artesia Refinery is NSR Permit No. PSD-NM-0195-M39R1. In addition, Navajo requests NMED update the Title V permit to reflect regulatory updates and changes since the last Title V permit issuance/renewal. These permitting actions and regulatory updates are summarized below.

In addition to this cover letter, the application includes the following attachments:

Attachment 1 Application Form Table of Contents, NMED Form, and Supplemental Information - A detailed Table of Contents for the application form is provided at the beginning of Attachment 1. It is followed by the application form with supplemental information inserted where applicable. The detailed Table of Contents expands the Table of Contents included in the NMED Universal Air Quality Permit Application form (end of Section 1 of application form). Supplemental information includes emission calculations (end of Section 6) and regulatory applicability tables (end of Section 13) that were previously submitted as part of the most recent NSR permitting actions.

Navajo requests the NMED update the Title V permit to reflect the following NMED-approved permitting actions (as repeated in Section 3 of the application form):

1. **PSD-NM-0195-M39R1 NSR Re-Opening -** Navajo requested and NMED approved corrections to the issued M39 permit and changes in representations for the gasoline blending tanks (T-0020, T-0021, T-0022, and T-0023).

2. **PSD-NM-0195-M39 Flare Emission Limit and Other Permit Updates NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for:
   - Update of flare emission limits for normal operations
   - Update of flare emission limits for Startup, Shutdown, and Maintenance (SSM)
   - Emissions to be generated by four internal floating roof (IFR) tanks to be installed for gasoline blending (T-0020, T-0021, T-0022, and T-0023) and associated fugitive components, and by a slop tank (T-0914) to be installed

   In addition, the following changes to the NSR permit were implemented.
   - Correction/clarification of Boiler B-0000 PSD and BACT requirements
   - Tank number changes and removals
   - Corrected the FCC Regenerator NO_X hourly emission limit
   - Addition of fugitive components
   - Engine removals and replacements
   - Corrections to previously permitted emission units

   With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Permit condition A102.C
   - Permit condition A106.E
   - Permit conditions A204.C Monitoring (5), A204.K, and A204.M through O
   - Table 103.C, Summary Applicability – Tanks
   - Table 103.J, Summary Applicability – Engines
   - Table 106.A, Allowable Emission Limits and footnotes
   - Table 106.B(1) Internal Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.C, Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.D Storage Tank Throughput and Temperature Limits
   - Table 106.E Storage Tank VOC and H_2S Emission Limits
   - Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 107.A, Maintenance Startup and Shutdown Emission Limits

3. **PSD-NM-0195-M38R2 Temporary Cooling Tower Y-0015 Administrative Revision and Title V Notification for Section 502(b)(10) Operational Flexibility Change** - By this submittal, Navajo requested and NMED approved authorization for emissions from a new temporary cooling tower which was exempt from construction permitting requirements per

20.2.72.202.B.(5) NMAC. NMED concurrently approved and made federally enforceable a limit on annual cooling tower operating hours via a 502(b)(10) Operational Flexibility Change per 20.2.70.302.H NMAC. The temporary cooling tower (Y-0015) was installed and has been removed. Therefore, with respect to the Title V permit no changes are required.

4. **PSD-NM-0195-M38 Renewable Diesel Unit NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions to be generated from the following Renewable Diesel Unit (RDU) emissions-units to be installed, and components to be added to the existing FUG-FUEL GAS Fuel Gas Fugitive Area:
    - B-0010 Boiler 10 RDU Receiving
    - H-2601 Unit 26 RDU Reactor Heater
    - T-0904 through T-0913 (Ten) Fixed Roof Feed Tanks (exempt from permitting)
    - T-0901, T-0902, and T-0903 (Three) Fixed Roof or Floating Roof Tanks
    - RLO-26 RDU Railcar Loading & Off-Loading Rack
    - Y-0014 RDU Cooling Tower
    - FUG-26-RDU Renewable Diesel Unit Fugitive Area

    In addition, the following changes to the NSR permit were implemented.
    - Speciated particulate matter (PM) emission limits for all the refinery cooling towers to include the $PM_{2.5}$ and PM_{10} emissions subsets
    - Updated the applicability for SRU2 from NSPS J to NSPS Ja
    - Corrected the FCC Regenerator NO_X hourly emission limit
    - Updated regulatory applicability references to reflect the repeal of NMAC regulations for petroleum refineries

    With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
    - Table 103.B, Summary Applicability – Fugitives
    - Table 103.C, Summary Applicability – Tanks
    - Table 103.D, Summary Applicability – Loading
    - Table 103.E, Summary Applicability – Heaters and Boilers
    - Table 103.F, Summary Applicability – Colling Towers
    - Table 104.A, Regulated Source List
    - Table 106.A, Allowable Emission Limits
    - Table 106.C, Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
    - Table 106.D, Storage Tank Throughput and Temperature Limits
    - Table 106.E, Storage Tank VOC and H_2S Emission Limits
    - Table 106.F, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC) Fugitive Emissions from Equipment Leaks
    - Table 106.G Miscellaneous Sources, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC's)
    - Table 106.H Cooling Towers, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds and PM

5. **PSD-NM-0195-M37R3 KOH Manufacturing NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from two new air emissions-generating activities which are exempt from construction permitting requirements per 20.2.72.202.B.(5) NMAC. As reflected in the application Table 2-B, these activities are Lime Handling (Unit No. LIME TRANSFER) and Lime Delivery Road (Unit No. LIME ROAD). These emission units do not have applicable requirements and meet the criteria of NMED Title V Insignificant Activity 1.a (i.e., have potential to emit not more than one ton per year of any regulated pollutant). Therefore, with respect to the Title V permit no changes are required.

6. **PSD-NM-0195-M37R2 Fuels Truck Loading Rack Vapor Combustion Unit NSR Technical Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from the addition of a Vapor Combustion Unit (TL-4 VCU) as an alternate control device for the reduction of emissions generated at the existing Fuels Truck Loading Rack (TL-4), and incorporation of revised truck loading throughput and control representations. The TL-4 VCU control device is used as an alternate control device to the existing Vapor Recovery Unit (TL-4 VRU), which serves as the primary control device. With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
    - Permit condition A102.C
    - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
    - Table 105.A: Control Methods
    - Permit condition A106.I
    - Permit condition A210.C Equipment Specific Requirements for Loading Racks
    - Table 106.A Allowable Emission Limits
    - Table 106.G: Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOCs)

7. **PSD-NM-0195-M37R1 Server Backup Generator and Propane Dryness Testing NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new source and a new activity which are exempt from construction permitting requirements per 20.2.72.202.B NMAC.

    As reflected in the application Table 2-B, the new activity is Propane Dryness Testing (Unit No. PROP TEST). It does not have applicable requirements and meets the criteria of NMED Insignificant Activity 1.a (i.e., has potential to emit not more than one ton per year of any regulated pollutant). Therefore with respect to the Title V permit, no changes are required for PROP TEST.

    As reflected in the application Table 2-B, the new source is the Server Backup Generator (Unit No. G-0102). It is subject to 40 CFR Part 60 New Source Performance Standard Subpart IIII (NSPS IIII) and 40 CFR Part 63 Maximum Achievable Control Technology Subpart ZZZZ (MACT ZZZZ) and is therefore excluded from consideration as a NMED Title V Insignificant Activity. Accordingly, with respect to the Title V permit the new G-0102 engine will result in changes to the following:
    - Permit condition A102.C
    - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
    - Permit condition A201.A and B
    - Table 103.J, Summary Applicability – Engines

- Table 104.A: Regulated Sources List
- Table 106.A Allowable Emission Limits

8. **PSD-NM-0195-M37 Debottleneck Project NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from process equipment modifications to increase production at the following units:
   - Unit FUG-06-NHDU – Naphtha Hydrodesulfurization Unit
   - Unit FUG-13-NHDU – Naphtha Hydrodesulfurization Unit
   - Unit FUG-20-ISOM – BenFree Unit (previously identified as Isom Unit)
   - Unit FUG-33-DIST HDU – Diesel Hydrodesulfurization Unit
   - Additionally, routing of a stream from Unit 44 (Gas Oil Hydrotreater) to Unit 33.

   In addition, the following changes to the NSR permit were implemented.
   - Removed the following storage tanks: T-0013, T-0058, T-0404, T-0405, T-0409, T-0810, and T-0078
   - Changed tank ID No. TK-NEWETHANOL to T-0451, and changed associated tank type from external floating roof tank to internal floating roof tank
   - Changed tank ID No. TK- BIODIESEL to T-0452, and changed associated tank type from fixed roof tank to internal floating roof tank
   - Removed SSM T-0078, SSM T-0079, SSM T-0737 and SSM T-1225. SSM tank emissions were included under ID "SSM Tanks" which was updated as part of the project
   - Moved SSM Misc 1 for catalyst handling emissions from the Regulated Emission Sources (per application Table 2A) to the Exempted Equipment/Insignificant Activities (per application Table 2B)

   With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Permit condition A102.C
   - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
   - Permit conditions A107.D through F
   - Permit condition A203.E
   - Permit condition A204.D
   - Permit condition A206.B
   - Permit condition A209.A through D
   - Table 103.B, Summary Applicability – Fugitives
   - Table 103.C, Summary Applicability – Tanks
   - Table 106.A Allowable Emission Limits
   - Table 106.B(1) Internal Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.B(2) External Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.C Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.D Storage Tank Throughput and Temperature Limits

- Table 106.E Storage Tank VOC and H_2S Emission Limits
- Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 107.A Maintenance, Startup, and Shutdown Emission Limits

9. **PSD-NM-0195-M36 Prime G Project NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new Prime G operating unit. The project included:
   - Installation of a reactor charge heater H-5401
   - Installation of an external floating roof tank for off-spec material T-5401
   - Additional piping component fugitive emissions
   - Updating the emission calculations for the wastewater unit

   With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Permit condition A102.C
   - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
   - Permit condition A204.B
   - Table 103.B, Summary Applicability – Fugitives
   - Table 103.C, Summary Applicability – Tanks
   - Table 103.E, Summary Applicability – Heaters and Boilers
   - Table 104.A: Regulated Sources List
   - Table 106.A Allowable Emission Limits
   - Table 106.B(2) External Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.D Storage Tank Throughput and Temperature Limits
   - Table 106.E Storage Tank VOC and H_2S Emission Limits
   - Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
   - Table 106.I API Oil/Water Separators, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)

10. **PSD-NM-0195-M35R2 Wastewater Storage Tank T-7107 NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new wastewater tank, T-7107, which is exempt from construction permitting requirements per 20.2.72.202.B.(2) NMAC. As reflected in the application Table 2-B, the tank does not have applicable requirements and meets the criteria of NMED Title V Insignificant Activity 1.b (i.e., has potential to emit not more than the lessor of one or the de minimis level of Hazardous Air Pollutant [HAP]). Therefore, with respect to the Title V permit no changes are required.

11. **Title V Operating Permit No. P051-R2M1 Owner/Permittee Name Change Administrative Revision -** By this submittal, Navajo requested and NMED approved the name change on the permit from Navajo Refining Company L.L.C. to HollyFrontier Navajo Refining LLC.

In addition, Navajo requests NMED correct a typographical error in the Title V permit as follows:

12. **FCC Regenerator NO_X Hourly Emission Limit** - Revise the FCC Regenerator NO_X hourly emission limit in Table 106.A to 34.9 lb/hr instead of the currently-listed 35.0 lb/hr, consistent with the Equipment Specific Requirement A211.A.(2)(a).

Further, Navajo requests NMED update the Title V permit to reflect the following regulatory updates and changes since the last Title V permit issuance/renewal (also, as repeated in Section 3 of the application form). These updates and changes are included in the electronic permit markup submitted with this application.

13. **SRU2 NSPS Ja Applicability** - Change the applicability for SRU2 from NSPS J to NSPS Ja (Equipment Specific Requirements A207.D, consistent with E of this condition for SRU3 (the two units recover sulfur from a common source of sour gas); make corresponding changes to Table 103.I in the permit).

14. **Repeal of 20.2.36 NMAC Petroleum Refinery Sulfur -** Remove or update the references to 20.2.36 NMAC which NMED repealed effective February 15, 2016.

15. **Repeal of 20.2.37 Petroleum Processing Facilities -** Remove or update the references to 20.2.37 NMAC which NMED repealed effective September 12, 2016.

16. **20.2.61 NMAC Applicability** - Due to the repeal of 20.2.37.202 NMAC Particulate Matter requirements, 20.2.61 NMAC Smoke and Visible Emissions requirements (specifically 20.2.61.109 opacity requirements) now apply to stationary combustion equipment, and we request that NMED update the Title V permit to reflect this.

17. **Refinery Sector Rule Applicability** - The detailed applicability sub-citations in the spreadsheets included in the electronic submittal accompanying this application address applicability determinations to date as related to the Refinery Sector Rule (RSR). The spreadsheets reflect NSPS J, NSPS Ja, MACT CC, and MACT UUU applicability determinations that have been required to be completed thus far under the RSR.

And finally, the following representations are included in this application but do not result in changes to the Title V permit (as repeated in Section 20 of the application form):

1. Updated and corrected Table 2-H Stack Exit Conditions
2. Updated Table 2-J: Fuel, to provide new information in new “Fuel Source” column and to add required information for the new Server Backup Generator
3. Updated Table 2-N: CEM Equipment
4. Updated Section 17 Compliance History

Per NMED’s direction, this updated application is being submitted via email and/or electronic upload only.

We would like to thank you in advance for your review of this permit renewal application.

If you have any questions regarding the information presented in this application, please do not hesitate to contact me at (575) 746-5487 or Scott.Denton@HollyFrontier.com, or Brian Gunzelman of Tascosa Alliance Company, our consultant on this project, at (817) 726-6949 or bgunzelman@tas-all.com.

Sincerely,

Scott M. Denton
Environmental Manager

cc: NMED: Melinda Owens, Title V Program Manager, Air Quality Bureau, New Mexico Environment Department, 525 Camino de los Marquez, Suite 1, Santa Fe, NM 87505, (505) 476-4346, via email to Melinda.Owens@state.nm.us
HollyFrontier: P. Miller, T. Wheeler, S. Gokhale
Tascosa: Brian L. Gunzelman, P.E.

ATTACHMENT 1

Application Form Table of Contents, Form, and Supplemental Information

Title V Operating Permit No. P051-R3
Application for Permit Renewal

Section 3: Application Summary

Section 4: Process Flow Sheet

Section 5: Plot Plan Drawn to Scale

Section 6: All Calculations

Section 7: Information Used to Determine Emissions

Section 8: Map(s)

~~Section 9: Proof of Public Notice~~

Section 10: Written Description of the Routine Operations of the Facility

Section 11: Source Determination

~~Section 12: PSD Applicability Determination for All Sources & Special Requirements for a PSD Application~~

Section 13: Discussion Demonstrating Compliance with Each Applicable State & Federal Regulation

Section 14: Operational Plan to Mitigate Emissions

Section 15: Alternative Operating Scenarios

Section 16: Air Dispersion Modeling

Section 17: Compliance Test History

Section 18: ~~Addendum for Streamline Applications (streamline applications only)~~

Not Applicable. This application is not a streamline application.

Section 19: Requirements for the Title V (20.2.70 NMAC) Program (Title V applications only)

Section 20: Other Relevant Information

Section 21: ~~Addendum for Landfill Applications~~

Not Applicable. This application is not a Landfill application.

Section 22: Certification Page

Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		AIRS No.:

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. See Section 1-I for submittal instructions for other permits.

This application is submitted as (check all that apply)**:** ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: ☐ Not Constructed ☐ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC ☐ 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ■ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:

■ I acknowledge that a pre-application meeting is available to me upon request. ■ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

☐ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).

☐ Check No.: in the amount of $500

■ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.219.D NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): 198	Updating Permit/NOI #: Title V Permit No. P051-R2M1
1	Facility Name: Artesia Refinery	Plant primary SIC Code (4 digits): 2911	
		Plant NAIC code (6 digits): 324110	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 501 E. Main St., Artesia, NM 88210		
2	Plant Operator Company Name: HollyFrontier Navajo Refining LLC	Phone/Fax: (575) 748-3311	
a	Plant Operator Address: P.O. Box 159, Artesia, NM 88211-0159		
b	Plant Operator's New Mexico Corporate ID or Tax ID: Tax ID is CRS # 02-488869-00-9		

3	Plant Owner(s) name(s): HollyFrontier Navajo Refining LLC	Phone/Fax: (575) 748-3311
a	Plant Owner(s) Mailing Address(s): P.O. Box 159, Artesia, NM 88211-0159	
4	Bill To (Company): HollyFrontier Navajo Refining LLC	Phone/Fax: (575) 746-5487 / (575) 746-5451
a	Mailing Address: P.O. Box 159, Artesia, NM 88211-0159	E-mail: Scott.Denton@HollyFrontier.com
5	☐ Preparer: ■ Consultant: Brian L. Gunzelman, Tascosa Alliance Company	Phone/Fax: (817) 726-6949 / NA
a	Mailing Address: 4915 Cross Creek Court, Arlington, TX 76017	E-mail: bgunzelman@tas-all.com
6	Plant Operator Contact: Scott M. Denton	Phone/Fax: (575) 746-5487 / (575) 746-5451
a	Address: P.O. Box 159, Artesia, NM 88211-0159	E-mail: Scott.Denton@HollyFrontier.com
7	Air Permit Contact: Scott M. Denton	Title: Environmental Manager
a	E-mail: Scott.Denton@HollyFrontier.com	Phone/Fax: (575) 746-5487 / (575) 746-5451
b	Mailing Address: P.O. Box 159, Artesia, NM 88211-0159	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ■ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ■ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ■ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ■ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ■ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ■ Yes ☐ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ■Yes ☐No ☐N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ■ Yes ☐ No	If yes, the permit No. is: P051-R2M1
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ■ No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ■ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ■ Yes ☐ No	If yes, the permit No. is: PSD-NM-0195-M39R1
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ■ No	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: N/A	Daily: N/A	Annually: N/A
b	Proposed	Hourly: N/A	Daily: N/A	Annually: N/A
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: N/A	Daily: N/A	Annually: N/A
b	Proposed	Hourly: N/A	Daily: N/A	Annually: N/A

Section 1-D: Facility Location Information

1	Section: 9	Range: 26E	Township: 17S	County: Eddy	Elevation (ft): 3,365
2	UTM Zone: ☐ 12 or ■ 13			Datum: ☐ NAD 27 ■ NAD 83 ☐ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 556,600			UTM N (in meters, to nearest 10 meters): 3,634,000	
b	**AND** Latitude (deg., min., sec.): 32° 50' 33.4"			Longitude (deg., min., sec.): -104° 23' 42.6"	
3	Name and zip code of nearest New Mexico town: Artesia 88210				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): Refinery is within Artesia city limits.				
5	The facility is on the East side of Artesia				
6	Status of land at facility (check one): ■ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Eddy County, Chaves County, Artesia				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☐ Yes ■ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers:				
9	Name nearest Class I area: Carlsbad Caverns National Park				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 71 km				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 12 m				
12	Method(s) used to delineate the Restricted Area: Fencing, walls, and gates. "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ■ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:		☐AM ☐PM	End:	☐AM ☐PM	
3	Month and year of anticipated start of construction: NA – already operating					
4	Month and year of anticipated construction completion: NA – already operating					
5	Month and year of anticipated startup of new or modified facility: NA – already operating					
6	Will this facility operate at this site for more than one year? ■ Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ■ Yes ☐ No If yes, specify: See Section 19	
a	If yes, NOV date or description of issue:	NOV Tracking No:

b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ■ No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☐ Yes ■ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ■ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ■ Yes ☐ No		
a	If Yes, what type of source? ■ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☐ **Minor** (☐ <10 tpy of any single HAP **AND** ☐ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ■ Yes ☐ No		
a	If yes, include the name of company providing commercial electric power to the facility: __Xcel Energy_____ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application

(This section applies to 20.2.72.300 NMAC Streamline applications only)

1	☐ I have filled out Section 18, "Addendum for Streamline Applications." ■ N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) Parrish R. Miller (20.2.70.300.D.2 NMAC):	Phone: (575) 748-3311
a	R.O. Title: Vice President and Refinery Manager	R.O. e-mail:
b	R. O. Address: P.O. Box 159, Artesia, NM 88211-0159	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):	Phone:
a	A. R.O. Title:	A. R.O. e-mail:
b	A. R. O. Address:	
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):	
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.): HollyFrontier Corporation	
a	Address of Parent Company: 2828 N. Harwood, Suite 1300, Dallas, TX 75201	
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Scott M. Denton (575) 746-5487	
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: Carlsbad Caverns National Park – 71 km, Salt Creek Wilderness Area – 80 km	

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

■ secure electronic transfer. Air Permit Contact Name Brian L. Gunzelman

Email bgunzelman@tas-all.com

Phone number (817) 726-6949

a. If the file transfer service is chosen by the applicant, after receipt of the application, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Submission of the electronic files through the file transfer service needs to be completed within 3 business days after the invitation is received, so the applicant should ensure that the files are ready when sending the hard copy of the application. The applicant will not need a password to complete the transfer. **Do not use the file transfer service for NOIs, any type of GCP, or technical revisions to NSR permits.**

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.

5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

   If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted as 2 separate CDs or submitted through the AQB secure file transfer service. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible

format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision number (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. Do not use special symbols (#, @, etc.) in file names. The footer information should not be modified by the applicant.

Table of Contents

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RW-6	Fixed Roof Tank	NA	NA	NA	200 bbl	200 bbl	NA / 1978	NA / RW-6	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0040	Fixed Roof Tank	NA	NA	NA	730 bbl	730 bbl	NA / <1973	NA / T-0040	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0041	Fixed Roof Tank	NA	NA	NA	730 bbl	730 bbl	NA / <1973	NA / T-0041	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0049	Fixed Roof Tank	NA	NA	NA	667 bbl	667 bbl	NA / 1965	NA / T-0049	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0055	Fixed Roof Tank	NA	NA	NA	11,300 bbl	11,300 bbl	NA / 1979	NA / T-0055	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0059	Fixed Roof Tank	NA	NA	NA	5,100 bbl	5,100 bbl	NA / <1973	NA / T-0059	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0061	Fixed Roof Tank	NA	NA	NA	10,500 bbl	10,500 bbl	NA / <1973	NA / T-0061	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0063	Fixed Roof Tank	NA	NA	NA	10,700 bbl	10,700 bbl	NA / <1973	NA / T-0063	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0065	Fixed Roof Tank	NA	NA	NA	10,500 bbl	10,500 bbl	NA / 1999	NA / T-0065	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0075	Fixed Roof Tank	NA	NA	NA	18,900 bbl	18,900 bbl	NA / 2003	NA / T-0075	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0081	Fixed Roof Tank	NA	NA	NA	100,000 bbl	100,000 bbl	NA / 7/2/1905	NA / T-0081	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0082	Fixed Roof Tank	NA	NA	NA	60,000 bbl	60,000 bbl	NA / 7/2/1905	NA / T-0082	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0110	Fixed Roof Tank	NA	NA	NA	57,900 bbl	57,900 bbl	NA / 1929	NA / T-0110	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0400	Fixed Roof Tank	NA	NA	NA	96,300 bbl	96,300 bbl	NA / 1983	NA / T-0400	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0410	Fixed Roof Tank	NA	NA	NA	35,700 bbl	35,700 bbl	NA / <1973	NA / T-0410	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0418	Fixed Roof Tank	NA	NA	NA	19,600 bbl	19,600 bbl	NA / <1973	NA / T-0418	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0419	Fixed Roof Tank	NA	NA	NA	10,800 bbl	10,800 bbl	NA / <1973	NA / T-0419	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T-0420	Fixed Roof Tank	NA	NA	NA	10,400 bbl	10,400 bbl	NA / <1973	NA / T-0420	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0422	Fixed Roof Tank	NA	NA	NA	10,400 bbl	10,400 bbl	NA / <1973	NA / T-0422	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0423	Fixed Roof Tank	NA	NA	NA	10,500 bbl	10,500 bbl	NA / <1970	NA / T-0423	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0431	Fixed Roof Tank	NA	NA	NA	56,500 bbl	56,500 bbl	NA / <1973	NA / T-0431	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0432	Fixed Roof Tank	NA	NA	NA	55,000 bbl	55,000 bbl	NA / <1972	NA / T-0432	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0433	Fixed Roof Tank	NA	NA	NA	79,900 bbl	79,900 bbl	NA / <1973	NA / T-0433	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0434	Fixed Roof Tank	NA	NA	NA	78,400 bbl	78,400 bbl	NA / 6/1/1905	NA / T-0434	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0438	Fixed Roof Tank	NA	NA	NA	54,200 bbl	54,200 bbl	NA / 6/1/1978	NA / T-0438	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0814	Fixed Roof Tank	NA	NA	NA	11,200 bbl	11,200 bbl	NA / 2005	NA / T-0814	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0815	Fixed Roof Tank	NA	NA	NA	85,250 bbl	85,250 bbl	NA / 2005	NA / T-0815	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0838	Fixed Roof Tank	NA	NA	NA	29,400 bbl	29,400 bbl	NA / 4/1/1977	NA / T-0838	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0901	Fixed Roof Tank	NA	NA	NA	109,000 bbl	109,000 bbl	NA / 2020	NA / T-0901	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0902	Fixed Roof Tank	NA	NA	NA	109,000 bbl	109,000 bbl	NA / 2020	NA / T-0902	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0903	Fixed Roof Tank	NA	NA	NA	109,000 bbl	109,000 bbl	NA / 2020	NA / T-0903	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0914	Fixed Roof Tank	NA	NA	NA	31,000 bbl	31,000 bbl	NA / 2020	NA / T-0914	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-1227	Fixed Roof Tank	NA	NA	NA	30,000 bbl	30,000 bbl	NA / 8/19/2008	NA / T-1227	40301099	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0011	Internal Floating Roof Tank	NA	NA	NA	32,600 bbl	32,600 bbl	NA / <1973	NA / T-0011	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0012	Internal Floating Roof Tank	NA	NA	NA	32,300 bbl	32,300 bbl	NA / <1973	NA / T-0012	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T-0020	Internal Floating Roof Tank	NA	NA	NA	50,000 bbl	50,000 bbl	NA >2019	NA T-0020	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0021	Internal Floating Roof Tank	NA	NA	NA	50,000 bbl	50,000 bbl	NA >2019	NA T-0021	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0022	Internal Floating Roof Tank	NA	NA	NA	30,000 bbl	50,000 bbl	NA >2019	NA T-0022	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0023	Internal Floating Roof Tank	NA	NA	NA	30,000 bbl	50,000 bbl	NA >2019	NA T-0023	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0056	Internal Floating Roof Tank	NA	NA	NA	10,800 bbl	10,800 bbl	NA <1973	NA T-0056	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0106	Internal Floating Roof Tank	NA	NA	NA	24,800 bbl	24,800 bbl	NA <1971	NA T-0106	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0107	Internal Floating Roof Tank	NA	NA	NA	25,000 bbl	25,000 bbl	NA <1971	NA T-0107	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0108	Internal Floating Roof Tank	NA	NA	NA	22,900 bbl	22,900 bbl	NA <1951	NA T-0108	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0109	Internal Floating Roof Tank	NA	NA	NA	22,300 bbl	22,300 bbl	NA <1971	NA T-0109	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0111	Internal Floating Roof Tank	NA	NA	NA	9,100 bbl	9,100 bbl	NA <1973	NA T-0111	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0112	Internal Floating Roof Tank	NA	NA	NA	10,400 bbl	10,400 bbl	NA <1973	NA T-0112	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0124	Internal Floating Roof Tank	NA	NA	NA	6,200 bbl	6,200 bbl	NA 6/3/1905	NA T-0124	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0413	Internal Floating Roof Tank	NA	NA	NA	21,900 bbl	21,900 bbl	NA 1960	NA T-0413	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0415	Internal Floating Roof Tank	NA	NA	NA	29,900 bbl	29,900 bbl	NA 1953	NA T-0415	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0417	Internal Floating Roof Tank	NA	NA	NA	9,300 bbl	9,300 bbl	NA <1973	NA T-0417	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0439	Internal Floating Roof Tank	NA	NA	NA	108,000 bbl	108,000 bbl	NA 11/1/1978	NA T-0439	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0451	Internal Floating Roof Tank	NA	NA	NA	6,900 bbl	6,900 bbl	2015 2015	NA T-0451	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0452	Internal Floating Roof Tank	NA	NA	NA	6,900 bbl	6,900 bbl	2015 2015	NA T-0452	40301150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T-0057	External Floating Roof Tank	NA	NA	NA	50,400 bbl	50,400 bbl	NA / 1981	NA / T-0057	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0079	External Floating Roof Tank	NA	NA	NA	80,000 bbl	80,000 bbl	NA / 9/7/2008	NA / T-0079	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0117	External Floating Roof Tank	NA	NA	NA	14,000 bbl	14,000 bbl	NA / 1960	NA / T-0117	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0401	External Floating Roof Tank	NA	NA	NA	53,000 bbl	53,000 bbl	NA / 1982	NA / T-0401	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0402	External Floating Roof Tank	NA	NA	NA	53,000 bbl	53,000 bbl	NA / 1983	NA / T-0402	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0411	External Floating Roof Tank	NA	NA	NA	52,000 bbl	52,000 bbl	NA / <1951	NA / T-0411	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0412	External Floating Roof Tank	NA	NA	NA	52,000 bbl	52,000 bbl	NA / <1951	NA / T-0412	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0435	External Floating Roof Tank	NA	NA	NA	5,000 bbl	5,000 bbl	NA / 1997	NA / T-0435	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0437	External Floating Roof Tank	NA	NA	NA	85,000 bbl	85,000 bbl	NA / 11/1/1975	NA / T-0437	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0450	External Floating Roof Tank	NA	NA	NA	80,000 bbl	80,000 bbl	NA / 6/19/1905	NA / T-0450	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0737	External Floating Roof Tank	NA	NA	NA	20,000 bbl	20,000 bbl	NA / 2/11/2009	NA / T-0737	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0802	External Floating Roof Tank	NA	NA	NA	10,000 bbl	10,000 bbl	NA / 2002	NA / T-0802	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0821	External Floating Roof Tank	NA	NA	NA	65,000 bbl	65,000 bbl	2016 / 2016	NA / T-0821	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0830	External Floating Roof Tank	NA	NA	NA	100,000 bbl	100,000 bbl	NA / 7/3/1905	NA / T-0830	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0834	External Floating Roof Tank	NA	NA	NA	40,000 bbl	40,000 bbl	NA / 1967	NA / T-0834	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T-0835	External Floating Roof Tank	NA	NA	NA	61,000 bbl	61,000 bbl	NA <1973	NA T-0835	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-1225	External Floating Roof Tank	NA	NA	NA	100,000 bbl	100,000 bbl	NA 1/15/2008	NA T-1225	40301130	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-06-NHDU	Naphtha HDS Unit 06	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-13-NHDU	Naphtha HDS Unit 13	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-20-ISOM	BenFree Unit	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-33-DIST HDU	Diesel HDS Unit w/CVS	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-44-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM T-0737	T-0737 Roof Landing	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM Tanks	Tank SSM	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
B-0007	Boiler 7	Todd/John Zink Burners	unknown	unknown	215 MMBtu/hr LHV	215 MMBtu/hr LHV	2001 2001	NA B-0007	10200701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
B-0008	Boiler 8	Todd/John Zink Burners	unknown	unknown	215 MMBtu/hr LHV	215 MMBtu/hr LHV	2003 2003	NA B-0008	10200701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
B-0009	Boiler 9	Babcock & Wilcox	unknown	unknown	220 MMBtu/hr HHV	220 MMBtu/hr HHV	2012 2012	NA B-0009	10200701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
B-0010	Boiler 10 RDU Receiving	To Be Determined	TBD	TBD	10 MMBtu/hr LHV	10 MMBtu/hr LHV	2019 2019	NA B-0010	10200701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0009	Unit 13 Naphtha Splitter Reboiler	Zeeco Burners	GSFW-12 Burners	unknown	44 MMBtu/hr LHV	44 MMBtu/hr LHV	1970 1970	NA H-0009	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0011	Unit 21 Vacuum Unit Heater	Unknown	unknown	unknown	38 MMBtu/hr LHV	38 MMBtu/hr LHV	5/23/2001 5/23/2001	NA H-0011	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0018	Unit 06 HDS Reboiler	Zeeco Burners	GSFW-8 Burners	unknown	32 MMBtu/hr LHV	32 MMBtu/hr LHV	est. 1991 est. 1991	NA H-0018	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0019	South Crude Charge Heater	Callidus Technologies, LLC Burners	CUBL-8W Burners	unknown	54 MMBtu/hr LHV	54 MMBtu/hr LHV	2005 2005	NA H-0019	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0020	South Crude Charge Heater	Callidus Technologies, LLC Burners	CUBL-12W Burners	unknown	78 MMBtu/hr LHV	78 MMBtu/hr LHV	2005 2005	NA H-0020	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
H-0028	Unit 21 Heater	John Zink Burners	PSFG-12 Burners	unknown	12.3 MMBtu/hr LHV	12.3 MMBtu/hr LHV	11/1/1993 11/1/1993	NA H-0028	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0030	Unit 06 Charge Heater	John Zink Burners	PSFG-16R Burners	unknown	42 MMBtu/hr LHV	42 MMBtu/hr LHV	12/19/2001 12/19/2001	NA H-0030	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0040	Unit 13 Charge Heater	John Zink Burners	PSFG-16 Burners	unknown	42 MMBtu/hr LHV	42 MMBtu/hr LHV	11/1/1997 11/1/1997	NA H-0040	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0303	Unit 05 Charge Heater	John Zink Burners	HEVD-Q-18 Burners	unknown	11 MMBtu/hr LHV	11 MMBtu/hr LHV	1982 1982	NA H-0303	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0312	Unit 10 FCC Feed Heater	John Zink Burners	VYD-18 Burners	unknown	35 MMBtu/hr LHV	35 MMBtu/hr LHV	1990 1990	NA H-0312	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0352/0353/0354	Unit 70 CCR Reformer Heaters	Callidus Technologies, LLC Burners	CUBL-10W Burners	unknown	200 MMBtu/hr LHV	200 MMBtu/hr LHV	2006 2006	NA H-0352/0353/0354	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0355	Unit 70 Stabilizer Reboiler Heater	John Zink Burners	unknown	unknown	24 MMBtu/hr LHV	24 MMBtu/hr LHV	8/28/1990 8/28/1990	NA H-0355	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0362/0363/0364	Unit 70 CCR Heaters	Callidus Technologies, LLC Burners	CUBL-8W Burners	unknown	125 MMBtu/hr LHV	125 MMBtu/hr LHV	May-2006 May-2006	NA H-0362/0363/0364	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0421	Unit 44 Charge Heater	John Zink Burners	LNC-PC-18 Burners	unknown	27 MMBtu/hr LHV	27 MMBtu/hr LHV	5/23/2001 5/23/2001	NA H-0421	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0464	SRU Hot Oil Heater	Callidus Technologies, LLC Burners	LE-CSG-4W Burners	unknown	9.6 MMBtu/hr LHV	9.6 MMBtu/hr LHV	11/1/2003 11/1/2003	NA H-0464	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0600	Unit 09 Depropanizer Reboiler Heater	Callidus Technologies, LLC Burners	CUBL-12W Burners	unknown	84 MMBtu/hr LHV	84 MMBtu/hr LHV	2009 2009	NA H-0600	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0601	Unit 33 Charge Heater	Callidus Technologies, LLC Burners	CUB-8P-CW Burners	unknown	78 MMBtu/hr LHV	78 MMBtu/hr LHV	2003 2003	NA H-0601	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-2421	Unit 45 Charge Heater	Zeeco Burners	GLSF-14 Burners	unknown	27 MMBtu/hr LHV	27 MMBtu/hr LHV	2006 2006	NA H-2421	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-2501	Unit 25 ROSE® Unit No. 2 Hot Oil Heater	John Zink Burners	COOLstar-18 Burners	unknown	120 MMBtu/hr LHV	120 MMBtu/hr LHV	2009 2009	NA H-2501	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-2601	Unit 26 RDU Reactor Heater	To Be Determined	TBD	TBD	39 MMBtu/hr LHV	39 MMBtu/hr LHV	>2019 >2019	NA H-2601	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-3101	SRU3 Hot Oil Heater	Callidus Technologies, LLC Burners	unknown	unknown	9.6 MMBtu/hr LHV	9.6 MMBtu/hr LHV	2009 2009	NA H-3101	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-3402	Unit 34 Hydrocracker Reboiler 1	Callidus Technologies, LLC Burners	LE-CSG-12W Burners	unknown	52 MMBtu/hr LHV	52 MMBtu/hr LHV	2009 2009	NA H-3402	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-3403	Unit 34 Hydrocracker Reactor Charge Heater	Callidus Technologies, LLC Burners	CUBL-10W Burners	unknown	32 MMBtu/hr LHV	32 MMBtu/hr LHV	2011 2011	NA H-3403	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
H-8801/8802	Unit 63 Hydrogen Plant Reformer Furnaces	Zeeco Burners	LE-CSG-12W-PSA Burners	unknown	120 MMBtu/hr LHV	120 MMBtu/hr LHV	3/1/2006 3/1/2006	NA H-8801/8802	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-9851	Unit 64 Hydrogen Plant Reformer	Callidus Technologies, LLC Burners	CUBL-3WDF Burners	unknown	337 MMBtu/hr LHV	337 MMBtu/hr LHV	2009 2009	NA H-9851	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-5401	Unit 54 HDS Reactor Heater	Tulsa Heaters Inc.	unknown	unknown	21.3 MMBtu/hr HHV	21.3 MMBtu/hr HHV	2016 2016	NA H-5401	30600106	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FCC Regen	FCC Regenerator Scrubber	Exxon	IV	unknown	NA	NA	1971 1971	NA FCC Reg	30600201	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
H-0473	SRU1 and SRU2 Tail Gas Incinerator	Unknown	unknown	unknown	NA	NA	2001 12/2001	NA H-0473	30609904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SRU3-TGI	SRU3 Tail Gas Incinerator	Callidus Technologies, LLC Burners	unknown	unknown	NA	NA	2009 5/11/2009	NA SRU3-TGI	30609904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
TLO-1	Asphalt Truck Loading and Off-Loading Rack	NA	NA	NA	300 bbl/hr	300 bbl/hr	- -	NA TLO-1	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
TL-2	Asphalt Truck Loading Rack #2	NA	NA	NA	300 bbl/hr	300 bbl/hr	- -	NA TL-2	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
TL-4	Fuels Truck Loading Rack	NA	NA	NA	3,571 bbl/hr	3,571 bbl/hr	- -	TL-4 VRU TL-4 VCU TL-4	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
TL-7	CBO/LCO Truck Loading Rack	NA	NA	NA	381 bbl/hr	381 bbl/hr	- -	NA TL-7	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
RLO-8	Railcar Loading & Off-Loading Rack	NA	NA	NA	300 bbl/hr	300 bbl/hr	- -	NA RLO-8	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
RLO-19	Railcar Loading & Off-Loading Rack	NA	NA	NA	1,575 bbl/hr	1,575 bbl/hr	- -	NA RLO-19	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
TLO-20	Asphalt/Pitch Truck Loading Rack	NA	NA	NA	600 bbl/hr	600 bbl/hr	- -	NA TLO-20	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
RLO-26	RDU Railcar Loading & Off-Loading Rack	NA	NA	NA	2,250 bbl/hr	2,250 bbl/hr	NA >2019	NA RLO-26	40400150	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-ODOR	Odor control atomizer	NA	NA	NA	NA	NA	2013 2013	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-02-SP CRUDE	South Division Crude Unit	NA	NA	NA	NA	NA	2009 2009	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-05-KERO	Kerosene HDS Unit	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FUG-07-N AMINE	Amine Unit-Treating/Regen. 3	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-07-SWS1	Sour Water Stripper	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-08-TRUCK RK	Loading Racks	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-09-N ALKY	North Alkylation Unit (New-Inside battery limits)	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-10-FCC	FCC w/CVS	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-18-LSR MEROX TRT	Merox/Merichem Treating Units	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-21-SP VACUUM	Flasher/Vacuum Unit	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-25-ROSE-2	ROSE Unit	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-26-RDU	RDU Cooling Tower	NA	NA	NA	3,000 gpm	3,000 gpm	NA >2019	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-29-BLENDER/TK FARM	Light Oil Tankage	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-31-SRU3/TGTU3/TGI3	SRU3 Unit	NA	NA	NA	NA	NA	2007 2007	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-34-HYDROCRACKER	WX Hydrocracker	NA	NA	NA	NA	NA	2008 2008	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-35-SAT GAS	Saturates Gas Plant	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-41-PBC	PBC Unit	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-43-S ALKY	South Alky Unit (W-76)	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-45-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-63-H2 PLANT-1	Hydrogen Plant	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-64-H2 PLANT-2	Hydrogen Plant	NA	NA	NA	NA	NA	2008 2008	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FUG-70-CCR	CCR Reformer (w/in battery limits)	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-73-SP UTIL	Utilities	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-80-WWTP CVS	Oil/Water Separator	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-ASPHALT STG	Asphalt/Heavy Oil Storage	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-FUEL GAS	Fuel Gas Distribution System	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-LPG	LPG Storage System	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-RLO-ASPHALT	Asphalt/Pitch Loading Rack	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-RRTOTRUCK	Crude oil unloading system	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-SRU1/SRU2/TGTU	SRU1/SRU2/SWS w/CVS	NA	NA	NA	NA	NA	- -	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FUG-54-PRIMEG	Prime G Unit	NA	NA	NA	NA	NA	2016 2016	NA NA	40388801	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0001	TCC Cooling Tower	NA	NA	NA	5,000 gpm	5,000 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0002	S. Alky Cooling Tower (Marley Cooling Tower)	NA	NA	NA	5,000 gpm	5,000 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0008	North Alky Cooling Tower	NA	NA	NA	12,500 gpm	12,500 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0011	FCC & NP Cooling Tower	NA	NA	NA	30,000 gpm	30,000 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0012	Hydrogen Plants Cooling Tower	NA	NA	NA	10,000 gpm	10,000 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
CT TT-0006	Unit 07 Amine W-0745 Cooling Tower	NA	NA	NA	3,000 gpm	3,000 gpm	- -	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Y-0014	RDU Cooling Tower	NA	NA	NA	3,000 gpm	3,000 gpm	NA 2019	NA NA	30600701	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FL-400	North Plant Flare	NA	NA	NA	NA	NA	- 2009	NA FL-400	30600904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FL-401	South Plant Flare	NA	NA	NA	NA	NA	- 2009	NA FL-401	30600904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FL-402	FCC Flare	NA	NA	NA	NA	NA	- 2009	NA FL-402	30600904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FL-403	Alky Flare	NA	NA	NA	NA	NA	- 2009	NA FL-403	30600904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
FL-404	GOHT Flare	NA	NA	NA	NA	NA	- 2009	NA FL-404	30600904	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
E-8010	WWTP Diesel Pump Engine	John Deere	6090HF485	RG6090L101484	400 HP	400 HP	02/2011 11/4/2013	NA NA	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
V-0543	Portable Air Compressor	Cummins	QSC 8.3	44358719	280 HP	280 HP	2012 2012	NA V-0543	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
V-0545	Portable Air Compressor	Cummins	QSC 8.3	46338720	280 HP	280 HP	2012 2012	NA V-0545	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
V-0546	Portable Air Compressor	Doosan/ Cummins	QSB 4.5	489581UKACF68	138 HP	138 HP	2019 2019	NA V-0546	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
G-0100	UPS backup generator	Deutz	F4L912GEN	Engine Family WDZXL05.7010	52 HP	52 HP	1998 2002	NA G-0100	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
G-0101	UPS backup generator	Deutz	F4L 1011 F	EI97-68CA00-000-0053	54 HP	54 HP	1999 <2006	NA G-0101	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
E-0600W	Fire Water Pump Engine	Clarke Diesel (John Deere)	JW6H-UFAD70	RG6090L113548	376 HP	376 HP	07/2012 11/2012	NA E-0600W	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
E-0601M	Fire Water Pump Engine	Clarke Diesel (John Deere)	JW6H-UFAD70	RG6090L113561	376 HP	376 HP	07/2012 11/2012	NA E-0601M	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
E-0602E	Fire Water Pump Engine	Clarke Diesel (John Deere)	JW6H-UFAD70	RG6090L113574	376 HP	376 HP	07/2012 11/2012	NA E-0602E	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
E-0603	Fire Water Pump Engine	Clarke Diesel (John Deere)	JU6H-UFADX8	PE6068L228486	305 HP	305 HP	2012 04/2013	NA E-0603	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
E-0901	Fire Water Pump Engine	Clarke Diesel (John Deere)	JX6H-UF30	RG6125A016118	430 HP	430 HP	10/2007 03/2008	NA E-0901	20200102	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced	CI	
MAIN-API	Separators and Drain System	NA	NA	NA	1,200 gal/min	1,200 gal/min	- -	D-0829/0830 D-0829/0830	30600503	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0829	Wastewater Equalization Tank	NA	NA	NA	30,500 bbl	30,500 bbl	2014 2014	N/A T-0829	30600519	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
T-0836	Enhanced Biodegradation Tank T-0836	NA	NA	NA	1,200 gal/min	1,200 gal/min	1998 1998	NA T-0836	30600519	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T-0801	Enhanced Biodegradation Tank T-0801	NA	NA	NA	1,200 gal/min	1,200 gal/min	1987 1987	NA T-0801	30600519	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
DAF-0896	DAF Unit T-0896	NA	NA	NA	1,200 gal/min	1,200 gal/min	- -	NA DAF-0896	30600516	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
DAF-0806	DAF Unit T-0806	NA	NA	NA	1,200 gal/min	1,200 gal/min	- -	NA DAF-0806	30600516	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM H-9851	H-9851 SCR Downtime	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM SRU3-TGI	SRU3-TGI Startup/Shutdown	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM FL-HEP-PORT	Temporary Portable Flare for NG pipeline Maintenance	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM SRU2-TGI	H-0473 Startup/Shutdown	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM Flare Cap	Flare SSM Activity	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
Flares Malf Cap	Flare Upset and Malfunction	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
SSM Misc 2	Low-Emitting Maintenance Activity	NA	NA	NA	NA	NA	- -	NA NA		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.

[2] Specify dates required to determine regulatory applicability.

[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.

[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check One
SSM Misc 1	Catalyst Handling	NA	NA NA	NA NA	20.2.72.202.B.5 IA #1a	unknown unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-7107	Water storage tank	NA	NA NA	3,325 barrels	20.2.72.202.B.2 IA #1b	2015 2015	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0891	Ground water storage tank	NA	NA NA	unknown unknown	- IA #1b	unknown unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0892	Ground water storage tank	NA	NA NA	unknown unknown	- IA #1b	unknown unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0904	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0905	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0906	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0907	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0908	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0909	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0910	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0911	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0912	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
T-0913	RDU Feed Tank	NA	NA NA	114,000 barrels	20.2.72.202.B.2 IA #5	2019 2019	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check One
TRLO-9	Truck/Railcar Loading & Off-Loading Rack	NA	NA	NA	-		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a		
TL-5	LPG Truck Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TLO-13	Butane Truck Loading & Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TLO-14	LPG Loading & Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TLO-17	Truck Loading & Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-10	Gasoline Blends Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-11	Transmix Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-12	HF Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-15	Ethanol Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-16	TEL Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-18	Crude Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-21	Gas Oil Truck Off-Loading for use with a portable pump	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-3	Gas Oil Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
TO-6	Asphalt Truck Off-Loading Rack	NA	NA	NA	-	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
LIME TRANSFER	Lime Handling	NA	NA	NA	20.2.72.202.B.5	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
LIME ROAD	Lime Delivery Road	NA	NA	NA	20.2.72.202.B.5	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	
PROP TEST	Propane Dryness Testing	NA	NA	NA	20.2.72.202.B.5	unknown	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			NA	NA	IA #1a	unknown	

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check One
G-0102	Server Backup Generator	John Deere	4045HFS80 / NA	100 / hp	20.2.72.202.B.3 / NA	Jan-18 / NA	■ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced
							☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced
							☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced
							☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced
							☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced
							☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
D-0829/0830	Main API Carbon Canisters	Unknown	VOC	MAIN API	95%	
FCC Scrubber	FCC Regenerator Tertiary Cyclones and Wet Gas Scrubber	Unknown	PM10 and SO2	FCC Regenerator vent	PM-85% & SO2-99%	
Chlorsorb	CCR Regenerator Vent Control		HAP and PM10	CCR Regenerator Vent	99%	
FL-0400	North Plant Flare		VOC and H2S	Refinery Process Units	98%	
FL-0401	South Plant Flare		VOC and H2S	Refinery Process Units	98%	
FL-0402	FCC Flare		VOC and H2S	Refinery Process Units	98%	
FL-0403	Alky Flare		VOC	Refinery Process Units	98%	
FL-0404	GOHT Flare		VOC and H2S	Refinery Process Units	98%	
H-0473	SRU1 and 2 Tail Gas Incinerator		H2S	SRU1 and SRU2	98%	
SRU3-TGI	SRU3 Tail Gas Incinerator		H2S	SRU3	98%	
SCR	Selective Catalytic Reduction		NOx	H-9851	64%	
FL-HEP-PORT	Portable Flare for Holly Energy Partners (HEP) Pipeline Pigging		VOC	Pipeline Pigging Operations	98%	
TL-4 VRU	Fuels Truck Loading Rack Vapor Recovery Unit		VOC	TL-4	90%	
TL-4 VCU	Fuels Truck Loading Rack Vapor Combustion Unit		VOC	TL-4	98%	

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

■ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals																		

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
B-0007	12.90	56.50	19.57	85.69	1.28	5.61	7.84	12.74	1.77	7.75	1.77	7.75	1.77	7.75	-	-	-	-
B-0008	12.90	56.50	19.57	85.69	1.28	5.61	7.84	12.74	1.77	7.75	1.77	7.75	1.77	7.75	-	-	-	-
B-0009	4.40	19.27	8.14	35.65	0.88	3.85	2.60	11.40	1.64	7.18	1.64	7.18	1.64	7.18	-	-	-	-
B-0010	0.22	0.97	0.67	2.92	0.06	0.26	0.14	0.60	0.08	0.36	0.08	0.36	0.08	0.36	-	-	-	-
H-0009	3.96	17.34	4.00	17.54	0.26	1.20	1.60	2.61	0.36	1.59	0.36	1.59	0.36	1.59	-	-	-	-
H-0011	9.47	31.55	3.46	15.20	0.23	0.99	1.39	2.25	0.31	1.37	0.31	1.37	0.31	1.37	-	-	-	-
H-0018	3.47	15.18	2.91	12.75	0.19	0.84	1.17	1.90	0.26	1.15	0.26	1.15	0.26	1.15	-	-	-	-
H-0019	2.90	12.46	4.91	21.52	0.32	1.41	1.97	3.20	0.44	2.00	0.44	2.00	0.44	2.00	-	-	-	-
H-0020	4.17	18.28	7.10	31.09	0.46	2.04	2.84	4.62	0.64	2.81	0.64	2.81	0.64	2.81	-	-	-	-
H-0028	2.17	9.50	1.12	4.90	0.07	0.32	0.45	0.73	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
H-0030	3.19	13.98	3.82	16.80	0.25	1.10	1.53	2.49	0.40	1.51	0.40	1.51	0.40	1.51	-	-	-	-
H-0040	3.78	16.56	3.82	16.80	0.25	1.10	1.53	2.49	0.40	1.51	0.40	1.51	0.40	1.51	-	-	-	-
H-0303	1.19	5.22	1.00	4.38	0.07	0.29	0.40	0.65	0.09	0.40	0.09	0.40	0.09	0.40	-	-	-	-
H-0312	4.62	20.24	3.19	13.95	0.21	0.91	1.28	2.07	0.29	1.26	0.29	1.26	0.29	1.26	-	-	-	-
H-0352/0353/0354	9.00	39.42	18.20	79.72	1.19	5.22	7.29	11.85	1.70	7.21	1.70	7.21	1.70	7.21	-	-	-	-
H-0355	2.16	9.46	2.18	9.57	0.14	0.63	0.88	1.42	0.20	0.87	0.20	0.87	0.20	0.87	-	-	-	-
H-0362/0363/0364	6.88	30.11	11.38	49.82	0.74	3.26	4.56	7.41	1.03	4.51	1.03	4.51	1.03	4.51	-	-	-	-
H-0421	2.43	10.64	2.46	10.76	0.16	0.70	0.98	1.60	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-
H-0464	0.52	2.28	0.87	3.83	0.06	0.25	0.35	0.57	0.08	0.40	0.08	0.40	0.08	0.40	-	-	-	-
H-0600	4.70	20.33	7.64	33.48	0.50	2.19	3.07	4.98	0.69	3.03	0.69	3.03	0.69	3.03	-	-	-	-
H-0601	3.51	15.37	7.10	31.09	0.46	2.04	2.84	4.62	0.64	2.81	0.64	2.81	0.64	2.81	-	-	-	-
H-2421	1.22	5.32	2.46	10.76	0.16	0.70	0.98	1.60	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-
H-2501	3.60	15.77	7.20	31.54	0.72	3.13	4.38	7.11	0.99	4.33	0.99	4.33	0.99	4.33	-	-	-	-
H-2601	1.29	5.66	2.59	11.33	0.23	1.02	0.53	2.31	0.32	1.41	0.32	1.41	0.32	1.41	-	-	-	-
H-3101	0.29	1.26	0.87	3.83	0.06	0.25	0.35	0.57	0.08	0.40	0.08	0.40	0.08	0.40	-	-	-	-
H-3402	1.56	6.83	4.73	20.73	0.31	1.36	1.90	3.08	0.43	1.88	0.43	1.88	0.43	1.88	-	-	-	-
H-3403	0.96	4.20	2.91	12.75	0.19	0.84	1.17	1.90	0.26	1.15	0.26	1.15	0.26	1.15	-	-	-	-
H-8801/8802	4.20	18.40	10.92	47.83	0.72	3.13	0.18	0.78	0.99	4.33	0.99	4.33	0.99	4.33	-	-	-	-
H-9851	4.21	18.45	20.22	88.56	2.01	8.79	0.50	2.20	2.77	12.20	2.77	12.20	2.77	12.20	-	-	-	-
H-0473	6.50	28.47	27.66	121.15	0.13	0.59	30.00	81.75	0.50	2.20	0.50	2.20	0.50	2.20	0.30	1.31		
SRU3-TGI	6.50	28.47	15.00	65.70	0.13	0.59	30.00	81.75	0.50	2.20	0.50	2.20	0.50	2.20	0.30	1.31		
FCC REGEN	34.89	101.93	121.90	106.78	-	-	27.86	61.02	25.00	109.50	25.00	109.50	25.00	109.50	-	-	-	-
FL-0400	2.86	5.36	13.02	24.44	19.25	21.68	5.70	3.49	-	-	-	-	-	-	-	-	-	-

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FL-0401	0.59	0.97	2.68	4.40	5.61	1.42	9.03	6.98	-	-	-	-	-	-	-	-	-	-
FL-0402	1.10	1.46	5.01	6.65	9.42	8.59	0.56	0.33	-	-	-	-	-	-	-	-	-	-
FL-0403	1.12	0.89	5.11	4.07	10.88	8.66	1.26	1.00	-	-	-	-	-	-	-	-	-	-
FL-0404	12.58	19.06	57.35	86.90	51.84	58.91	84.79	10.47	-	-	-	-	-	-	-	-	-	-
TLO-1	-	-	-	-	0.01	0.04	-	-	-	-	-	-	-	-	-	-	-	-
TL-2	-	-	-	-	0.01	0.03	-	-	-	-	-	-	-	-	-	-	-	-
TL-4	-	-	-	-	4.65	5.33	-	-	-	-	-	-	-	-	-	-	-	-
TL-7	-	-	-	-	6.30	1.63	-	-	-	-	-	-	-	-	-	-	-	-
RLO-8	-	-	-	-	6.30	2.09	-	-	-	-	-	-	-	-	-	-	-	-
RLO-19	-	-	-	-	8.39	5.60	-	-	-	-	-	-	-	-	-	-	-	-
TLO-20	-	-	-	-	0.02	0.06	-	-	-	-	-	-	-	-	-	-	-	-
RLO-26	-	-	-	-	4.76	1.54	-	-	-	-	-	-	-	-	-	-	-	-
Fugitive	-	-	-	-	236.95	1037.83	-	-	-	-	-	-	-	-	-	-	-	-
FUG-ODOR	-	-	-	-	0.46	2.02	-	-	-	-	-	-	-	-	-	-	-	-
TANKS	-	-	-	-	826.07	314.45	-	-	-	-	-	-	-	-	1.26	0.83	-	-
Wastewater	-	-	-	-	1.34	5.89	-	-	-	-	-	-	-	-	-	-	-	-
Cooling Twr	-	-	0.58	2.54	12.94	56.64	-	-	2.08	9.13	1.25	5.49	0.0047	0.0206	-	-	-	-
V-0543	1.84	8.06	1.61	7.06	1.84	8.06	3.48E-03	1.53E-02	0.09	0.40	0.09	0.40	0.09	0.40	-	-	-	-
V-0545	1.84	8.06	1.61	7.06	1.84	8.06	3.48E-03	1.53E-02	0.09	0.40	0.09	0.40	0.09	0.40	-	-	-	-
V-0546	0.09	0.40	1.13	4.97	0.04	0.19	1.72E-03	7.52E-03	4.5E-03	0.02	4.5E-03	0.02	4.5E-03	0.02	-	-	-	-
G-0100	1.61	0.40	0.35	0.09	0.13	0.03	6.47E-04	1.62E-04	0.11	0.03	0.11	0.03	0.11	0.03	-	-	-	-
G-0101	1.67	0.42	0.36	0.09	0.13	0.03	6.72E-04	1.68E-04	0.12	0.03	0.12	0.03	0.12	0.03	-	-	-	-
E-0600W	2.49	0.12	2.16	0.11	2.49	0.12	4.68E-03	2.34E-04	0.12	0.01	0.12	0.01	0.12	0.01	-	-	-	-
E-0601M	2.49	0.12	2.16	0.11	2.49	0.12	4.68E-03	2.34E-04	0.12	0.01	0.12	0.01	0.12	0.01	-	-	-	-
E-0602E	2.49	0.12	2.16	0.11	2.49	0.12	4.68E-03	2.34E-04	0.12	0.01	0.12	0.01	0.12	0.01	-	-	-	-
E-0603	2.02	0.10	1.75	0.09	2.02	0.10	3.79E-03	1.90E-04	0.10	0.01	0.10	0.01	0.10	0.01	-	-	-	-
															-	-	-	-
E-8010	2.63	2.88	2.30	2.52	2.63	2.88	4.97E-03	5.45E-03	0.13	0.14	0.13	0.14	0.13	0.14	-	-	-	-
H-5401	0.64	2.81	0.64	2.81	0.12	0.50	0.71	1.15	0.16	0.70	0.16	0.70	0.16	0.70	-	-	-	-
TL-4 VCU	0.99	0.82	0.99	0.82	-	-	5.14E-01	1.35E-02	0.07	0.04	0.07	0.04	0.07	0.04	-	-	-	-
Totals	202.80	708.01	450.53	1258.93	1235.14	1612.87	253.01	360.48	48.54	208.39	47.71	204.75	46.46	199.28	1.86	3.46	0	0

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
SSM H-9851	10.11	1.2132	20.22	2.43	2.01	0.24	0.50	0.06	2.77	0.33	2.77	0.33	2.77	0.33	-	-	-	-
SSM T-0737	-	-	-	-	33	0.5	-	-	-	-	-	-	-	-	-	-	-	-
SSM SRU3-TGI	6.5	0.1	15	0.1	0.13	0.1	159	0.4	-	-	-	-	-	-	6.5	0.1	-	-
FL-HEP-PORT	173.4	0.1	943.5	0.5	160.7	0.1	1.7	0.1	-	-	-	-	-	-	0.02	0.1	-	-
SSM H-0473	6.5	0.1	27.7	0.2	0.2	0.1	159	0.4	-	-	-	-	-	-	6.6	0.1	-	-
SSM Flare Cap	162.9	18.3	1243	77	1376.3	68.7	1133.4	14.9	-	-	-	-	-	-	0.4	0.1	-	-
Flares Malf Cap	-	10	-	10	-	10	-	10	-	-	-	-	-	-	-	-	-	-
SSM Misc 2	17	1.9	127.1	7.8	137.7	6.9	129.3	1.6	0.06	0.02	0.06	0.02	0.06	0.02	0.7	0.1	-	-
SSM Tanks	-	-	-	-	173.1	10.6	-	-	-	-	-	-	-	-	0.1	0.1	-	-
Totals	376.41	31.71	2376.52	98.03	1883.17	97.22	1582.90	27.46	2.83	0.35	2.83	0.35	2.83	0.35	14.32	0.60	0	0

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

■ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		□ H_2S or □ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
B-0007	B-0007	V	No	75	275	1037	594	19	47.9	5.3
B-0008	B-0008	V	No	65	250	999	593	19	62.8	4.5
B-0009	B-0009	V	No	60	300	937	519	19	47.7	5.0
B-0010	B-0010	V	No	20	300	51	28	19	47.7	1.2
H-0009	H-0009	V	No	78	530	285	121	19	17.9	4.5
H-0011	H-0011	V	No	80	850	327	105	19	26.0	4.0
H-0018	H-0018	V	No	75	700	245	88.98	19	19.5	4.0
H-0019	H-0019	V	No	156	450	322	149	19	21.4	4.4
H-0020	H-0020	V	No	175	330	405	216	19	12.2	6.5
H-0028	H-0028	V	No	50	850	105	34	19	18.8	2.7
H-0030	H-0030	V	No	67	575	283	115	19	22.5	4.0
H-0040	H-0040	V	No	101	590	287	115	19	22.8	4.0
H-0303	H-0303	V	No	62	800	91	30	19	5.7	4.5
H-0312	H-0312	V	No	96	675	256	95	19	20.4	4.0
H-0352/0353/0354	H-0352/0353/0354	V	No	211	300	992	550	19	16.5	8.8
H-0355	H-0355	V	No	135	442	141	66	19	28.7	2.5
H-0362/0363/0364	H-0362/0363/0364	V	No	206	338	650	343	19	16.9	7.0
H-0421	H-0421	V	No	82	650	197	75	19	23.7	3.3
H-0464	H-0464	V	No	80	450	57	26	19	9.6	2.8
H-0600	H-0600	V	No	177	500	548	241	19	33.0	4.6
H-0601	H-0601	V	No	131	300	385	213	19	11.6	6.5
H-2421	H-2421	V	No	87	890	239	74	19	24.8	3.5
H-2501	H-2501	V	No	168	710	915	329	19	19.0	7.8
H-2601	H-2601	V	No	85	700	302	110	19	34.6	3.3

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
H-3101	H-3101	V	No	80	450	57	26	19	9.6	2.8
H-3402	H-3402	V	No	67	575	351	143	19	27.9	4.0
H-3403	H-3403	V	No	86	705	244	88	19	19.4	4.0
H-8801/8802	H-8801/8802	V	No	130	600	870	346	19	75.4	3.8
H-9851	H-9851	V	No	176	350	1869	972	19	23.8	10.0
H-0473	H-0473 (SRU1/SRU2 TGI)	V	No	150	1150	555	145	19	44.2	4.0
SRU3-TGI	SRU3-TGI	V	No	150	1200	627	159	19	49.9	4.0
FCCREGEN	FCC Regenerator	V	No	153	125	800	711.26	0	28.3	6.0
FL-0400	FL-0400	V	No	162	1832	N/A	N/A	N/A	65.6	5.3
FL-0401	FL-0401	V	No	200	1832	N/A	N/A	N/A	65.6	2.4
FL-0402	FL-0402	V	No	167	1832	N/A	N/A	N/A	65.6	3.3
FL-0403	FL-0403	V	No	220	1832	N/A	N/A	N/A	65.6	3.2
FL-0404	FL-0404	V	No	200	1832	N/A	N/A	N/A	65.6	11.5
V-0543	V-0543	V	No	6	1000 est.	21	N/A	N/A	244.8	0.3
V-0545	V-0545	V	No	6	1000 est.	21	N/A	N/A	244.8	0.3
V-0546	V-0546	V	No	6	1000 est.	20	N/A	N/A	226.0	0.3
G-0100	G-0100	V	No	10	1000 est.	5	N/A	N/A	229.8	0.2
G-0101	G-0101	V	No	10	1000 est.	5	N/A	N/A	238.7	0.2
E-0600W	E-0600W	V	No	20	1000 est.	31	N/A	N/A	354.0	0.3
E-0601M	E-0601M	V	No	20	1000 est.	31	N/A	N/A	354.0	0.3
E-0602E	E-0602E	V	No	20	1000 est.	31	N/A	N/A	354.0	0.3
E-0603	E-0603	V	No	10	1000 est.	25	N/A	N/A	287.2	0.3
E-0901	E-0901	V	No	10	1000 est.	35	N/A	N/A	404.9	0.3
E-8010	E-8010	V	No	10	1000 est.	33	N/A	N/A	376.6	0.3
H-5401	H-5401	V	No	83	643	62	N/A	19	8.8	3.0

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Benzene ■ HAP or □ TAP		Ethylbenzene ■ HAP or □ TAP		n-Hexane ■ HAP or □ TAP		Toluene ■ HAP or □ TAP		Xylene ■ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
-	TANKS	24.41	78.31	5.71	22.81	0.87	3.28	14.54	40.60	2.42	8.06	0.87	3.57						
-	Fugitive	28.57	125.13	2.33	10.21	2.40	10.49	18.60	81.46	3.43	15.02	1.82	7.96						
-	Load	0.41	0.44	4.2E-03	4.4E-03	-	-	0.41	0.44	-	-	-	-						
-	Cooling Twr	2.95	12.91	0.49	2.15	0.56	2.47	0.66	2.87	0.81	3.55	0.43	1.87						
B-0007	B-0007	0.42	1.84	4.9E-04	2.1E-03	-	-	0.42	1.84	7.9E-04	3.5E-03	-	-						
B-0008	B-0008	0.42	1.84	4.9E-04	2.1E-03	-	-	0.42	1.84	7.9E-04	3.5E-03	-	-						
B-0009	B-0009	0.39	1.71	4.5E-04	2.0E-03	-	-	0.39	1.70	7.3E-04	3.2E-03	-	-						
B-0010	B-0010	0.02	0.09	2.3E-05	1.0E-04	-	-	0.02	0.09	3.7E-05	1.6E-04	-	-						
H-0009	H-0009	0.09	0.38	1.0E-04	4.4E-04	-	-	0.09	0.38	1.6E-04	7.1E-04	-	-						
H-0011	H-0011	0.07	0.33	8.6E-05	3.8E-04	-	-	0.07	0.32	1.4E-04	6.1E-04	-	-						
H-0018	H-0018	0.06	0.27	7.3E-05	3.2E-04	-	-	0.06	0.27	1.2E-04	5.2E-04	-	-						
H-0019	H-0019	0.11	0.46	1.2E-04	5.4E-04	-	-	0.11	0.46	2.0E-04	8.7E-04	-	-						
H-0020	H-0020	0.15	0.67	1.8E-04	7.8E-04	-	-	0.15	0.67	2.9E-04	1.3E-03	-	-						
H-0028	H-0028	0.02	0.11	2.8E-05	1.2E-04	-	-	0.02	0.11	4.5E-05	2.0E-04	-	-						
H-0030	H-0030	0.08	0.36	9.6E-05	4.2E-04	-	-	0.08	0.36	1.5E-04	6.8E-04	-	-						
H-0040	H-0040	0.08	0.36	9.6E-05	4.2E-04	-	-	0.08	0.36	1.5E-04	6.8E-04	-	-						
H-0303	H-0303	0.02	0.09	2.5E-05	1.1E-04	-	-	0.02	0.09	4.1E-05	1.8E-04	-	-						
H-0312	H-0312	0.07	0.30	8.0E-05	3.5E-04	-	-	0.07	0.30	1.3E-04	5.6E-04	-	-						
H-0352/0353/0354	H-0352/0353/0354	0.39	1.71	4.6E-04	2.0E-03	-	-	0.39	1.71	7.4E-04	3.2E-03	-	-						
H-0355	H-0355	0.05	0.21	5.5E-05	2.4E-04	-	-	0.05	0.20	8.8E-05	3.9E-04	-	-						
H-0362/0363/0364	H-0362/0363/0364	0.24	1.07	2.8E-04	1.2E-03	-	-	0.24	1.07	4.6E-04	2.0E-03	-	-						
H-0421	H-0421	0.05	0.23	6.1E-05	2.7E-04	-	-	0.05	0.23	9.9E-05	4.4E-04	-	-						
H-0464	H-0464	0.02	0.08	2.2E-05	9.6E-05	-	-	0.02	0.08	3.5E-05	1.5E-04	-	-						
H-0600	H-0600	0.16	0.72	1.9E-04	8.4E-04	-	-	0.16	0.72	3.1E-04	1.4E-03	-	-						
H-0601	H-0601	0.15	0.67	1.8E-04	7.8E-04	-	-	0.15	0.67	2.9E-04	1.3E-03	-	-						

Stack No.	Unit No.(s)	Total HAPs		Benzene ■ HAP or □ TAP		Ethylbenzene ■ HAP or □ TAP		n-Hexane ■ HAP or □ TAP		Toluene ■ HAP or □ TAP		Xylene ■ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
H-2421	H-2421	0.05	0.23	6.1E-05	2.7E-04	-	-	0.05	0.23	9.9E-05	4.4E-04	-	-						
H-2501	H-2501	0.23	1.03	2.7E-04	1.2E-03	-	-	0.23	1.02	4.4E-04	1.9E-03	-	-						
H-2601	H-2601	0.08	0.33	8.9E-05	3.9E-04	-	-	0.08	0.33	1.4E-04	6.3E-04	-	-						
H-3101	H-3101	0.02	0.08	2.2E-05	9.6E-05	-	-	0.02	0.08	3.5E-05	1.5E-04	-	-						
H-3402	H-3402	0.10	0.45	1.2E-04	5.2E-04	-	-	0.10	0.44	1.9E-04	8.4E-04	-	-						
H-3403	H-3403	0.06	0.27	7.3E-05	3.2E-04	-	-	0.06	0.27	1.2E-04	5.2E-04	-	-						
H-5401	H-5401	0.04	0.17	4.4E-05	1.9E-04	-	-	0.04	0.17	7.1E-05	3.1E-04	-	-						
H-8801/8802	H-8801/8802	0.23	1.03	2.7E-04	1.2E-03	-	-	0.23	1.02	4.4E-04	1.9E-03	-	-						
H-9851	H-9851	0.66	2.89	7.7E-04	3.4E-03	-	-	0.66	2.88	1.2E-03	5.4E-03	-	-						
V-0543	V-0543	3.6E-03	1.6E-02	2.1E-03	9.2E-03	-	-	-	-	9.2E-04	4.0E-03	6.4E-04	2.8E-03						
V-0545	V-0545	3.6E-03	1.6E-02	2.1E-03	9.2E-03	-	-	-	-	9.2E-04	4.0E-03	6.4E-04	2.8E-03						
V-0546	V-0546	1.8E-03	7.9E-03	1.0E-03	4.5E-03	-	-	-	-	4.5E-04	2.0E-03	3.1E-04	1.4E-03						
G-0100	G-0100	6.8E-04	3.0E-03	3.9E-04	1.7E-03	-	-	-	-	1.7E-04	7.5E-04	1.2E-04	5.2E-04						
G-0101	G-0101	7.0E-04	3.1E-03	4.0E-04	1.8E-03	-	-	-	-	1.8E-04	7.7E-04	1.2E-04	5.4E-04						
E-0600W	E-0600W	4.9E-03	2.1E-02	2.8E-03	1.2E-02	-	-	-	-	1.2E-03	5.4E-03	8.6E-04	3.8E-03						
E-0601M	E-0601M	4.9E-03	2.1E-02	2.8E-03	1.2E-02	-	-	-	-	1.2E-03	5.4E-03	8.6E-04	3.8E-03						
E-0602E	E-0602E	4.9E-03	2.1E-02	2.8E-03	1.2E-02	-	-	-	-	1.2E-03	5.4E-03	8.6E-04	3.8E-03						
E-0603	E-0603	4.0E-03	1.7E-02	2.3E-03	1.0E-02	-	-	-	-	1.0E-03	4.4E-03	7.0E-04	3.0E-03						
E-0901	E-0901	5.6E-03	2.5E-02	3.2E-03	1.4E-02	-	-	-	-	1.4E-03	6.2E-03	9.8E-04	4.3E-03						
E-8010	E-8010	5.2E-03	2.3E-02	3.0E-03	1.3E-02	-	-	-	-	1.3E-03	5.7E-03	9.1E-04	4.0E-03						
-	Wastewater	0.38	1.65	0.12	0.53					0.15	0.65	0.11	0.47						
-	SSM Tanks	25.69	1.57	5.57	0.34	0.67	0.04	16.88	1.03	1.78	0.11	0.78	0.05						
-	SSM Flare Cap	313.80	15.66	52.21	2.61	60.06	3.00	69.83	3.48	86.30	4.31	45.39	2.27						
-																			
Totals:		400.80	255.82	66.47	38.76	64.56	19.28	125.46	149.79	94.91	31.77	49.40	16.22						

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
B-0007	Refinery Gas	Process Gas	749 Btu/scf	237.6 MMBtu HHV	2,081,157 MMBtu HHV	0.02	0
B-0008	Refinery Gas	Process Gas	749 Btu/scf	237.6 MMBtu HHV	2,081,157 MMBtu HHV	0.02	0
B-0009	Refinery Gas	Process Gas	749 Btu/scf	220.0 MMBtu HHV	1,927,200 MMBtu HHV	0.02	0
B-0010	Natural Gas	Naural Gas	1,000 Btu/scf	11.1 MMBtu HHV	97,236 MMBtu HHV	0.07	0
H-0009	Refinery Gas	Process Gas	749 Btu/scf	48.6 MMBtu HHV	425,911 MMBtu HHV	0.02	0
H-0011	Refinery Gas	Process Gas	749 Btu/scf	42.0 MMBtu HHV	367,832 MMBtu HHV	0.02	0
H-0018	Refinery Gas	Process Gas	749 Btu/scf	35.4 MMBtu HHV	309,754 MMBtu HHV	0.02	0
H-0019	Refinery Gas	Process Gas	749 Btu/scf	59.7 MMBtu HHV	522,709 MMBtu HHV	0.02	0
H-0020	Refinery Gas	Process Gas	749 Btu/scf	86.2 MMBtu HHV	755,024 MMBtu HHV	0.02	0
H-0028	Refinery Gas	Process Gas	749 Btu/scf	13.6 MMBtu HHV	119,062 MMBtu HHV	0.02	0
H-0030	Refinery Gas	Process Gas	749 Btu/scf	46.4 MMBtu HHV	406,552 MMBtu HHV	0.02	0
H-0040	Refinery Gas	Process Gas	749 Btu/scf	46.4 MMBtu HHV	406,552 MMBtu HHV	0.02	0
H-0303	Refinery Gas	Process Gas	749 Btu/scf	12.2 MMBtu HHV	106,478 MMBtu HHV	0.02	0
H-0312	Refinery Gas	Process Gas	749 Btu/scf	38.7 MMBtu HHV	338,793 MMBtu HHV	0.02	0
H-0352/0353/0354	Refinery Gas	Process Gas	749 Btu/scf	221.0 MMBtu HHV	1,935,960 MMBtu HHV	0.02	0
H-0355	Refinery Gas	Process Gas	749 Btu/scf	26.5 MMBtu HHV	232,315 MMBtu HHV	0.02	0
H-0362/0363/0364	Refinery Gas	Process Gas	749 Btu/scf	138.1 MMBtu HHV	1,209,975 MMBtu HHV	0.02	0
H-0421	Refinery Gas	Process Gas	749 Btu/scf	29.8 MMBtu HHV	261,355 MMBtu HHV	0.02	0

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
H-0464	Refinery Gas	Process Gas	749 Btu/scf	10.6 MMBtu HHV	92,926 MMBtu HHV	0.02	0
H-0600	Refinery Gas	Process Gas	749 Btu/scf	92.8 MMBtu HHV	813,103 MMBtu HHV	0.02	0
H-0601	Refinery Gas	Process Gas	749 Btu/scf	86.2 MMBtu HHV	755,024 MMBtu HHV	0.02	0
H-2421	Refinery Gas	Process Gas	749 Btu/scf	29.8 MMBtu HHV	261,355 MMBtu HHV	0.02	0
H-2501	Refinery Gas	Process Gas	749 Btu/scf	132.6 MMBtu HHV	1,161,576 MMBtu HHV	0.02	0
H-2601	Refinery Gas	Naural Gas	1,000 Btu/scf	43.1 MMBtu HHV	377,556 MMBtu HHV	0.02	0
H-3101	Refinery Gas	Process Gas	749 Btu/scf	10.6 MMBtu HHV	92,926 MMBtu HHV	0.02	0
H-3402	Refinery Gas	Process Gas	749 Btu/scf	57.5 MMBtu HHV	503,350 MMBtu HHV	0.02	0
H-3403	Refinery Gas	Process Gas	749 Btu/scf	35.4 MMBtu HHV	309,754 MMBtu HHV	0.02	0
H-8801/8802	Refinery Gas	Process Gas	749 Btu/scf	132.6 MMBtu HHV	1,161,576 MMBtu HHV	0.001	0
H-9851	Refinery Gas	Process Gas	749 Btu/scf	372.4 MMBtu HHV	3,262,093 MMBtu HHV	0.001	0
V-0543	Diesel	Refinery Product	19,300 Btu/lb	2.24 MMBtu	19,622 MMBtu	0.0015	0
V-0545	Diesel	Refinery Product	19,300 Btu/lb	2.24 MMBtu	19,622 MMBtu	0.0015	0
V-0546	Diesel	Refinery Product	19,300 Btu/lb	1.10 MMBtu	9,671 MMBtu	0.0015	0
G-0100	Diesel	Refinery Product	19,300 Btu/lb	0.42 MMBtu	208 MMBtu	0.0015	0
G-0101	Diesel	Refinery Product	19,300 Btu/lb	0.43 MMBtu	216 MMBtu	0.0015	0
E-0600W	Diesel	Refinery Product	19,300 Btu/lb	3.01 MMBtu	301 MMBtu	0.0015	0
E-0601M	Diesel	Refinery Product	19,300 Btu/lb	3.01 MMBtu	301 MMBtu	0.0015	0
E-0602E	Diesel	Refinery Product	19,300 Btu/lb	3.01 MMBtu	301 MMBtu	0.0015	0
E-0603	Diesel	Refinery Product	19,300 Btu/lb	2.44 MMBtu	244 MMBtu	0.0015	0

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
E-0901	Diesel	Refinery Product	19,300 Btu/lb	3.44 MMBtu	344 MMBtu	0.0015	0
E-8010	Diesel	Refinery Product	19,300 Btu/lb	3.20 MMBtu	7008 MMBtu	0.0015	0
H-5401	Refinery Gas	Process Gas	749 Btu/scf	21.3 MMBtu HHV	186,588 MMBtu HHV	0.02	0

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
RW-6	See 2A	High VP	Varies	Varies	66	77	4.9	100	11
T-0040	See 2A	Low VP	Varies	Varies	130	64	0.01	100	0.1
T-0041	See 2A	Low VP	Varies	Varies	130	64	0.01	100	0.1
T-0049	See 2A	Moderate VP	Varies	Varies	130	64	1.5	100	1.5
T-0055	See 2A	Low VP	Varies	Varies	130	64	0.01	100	0.1
T-0059	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.2
T-0061	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0063	See 2A	Low VP	Varies	Varies	190	140	0.001	170	0.2
T-0065	See 2A	Low VP	Varies	Varies	190	140	0.001	170	0.2
T-0075	See 2A	Low VP	Varies	Varies	190	140	0.001	170	0.2
T-0081	See 2A	Low VP	Varies	Varies	409	470	0.00013	510	0.00019
T-0082	See 2A	Low VP	Varies	Varies	409	470	0.00013	510	0.00019
T-0110	See 2A	Low VP	Varies	Varies	409	310	0.00013	350	0.00019
T-0400	See 2A	Low VP	Varies	Varies	190	200	0.01	250	0.05
T-0410	See 2A	Low VP	Varies	Varies	409	310	0.00013	350	0.00019
T-0418	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0419	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0420	See 2A	Low VP	Varies	Varies	190	230	0.02	270	0.2
T-0422	See 2A	Low VP	Varies	Varies	190	140	0.001	250	0.1
T-0423	See 2A	Low VP	Varies	Varies	190	140	0.001	250	0.1
T-0431	See 2A	Low VP	Varies	Varies	190	230	0.02	270	0.1
T-0432	See 2A	Low VP	Varies	Varies	190	230	0.02	270	0.1
T-0433	See 2A	Low VP	Varies	Varies	190	200	0.01	250	0.05
T-0434	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0438	See 2A	Low VP	Varies	Varies	190	200	0.01	250	0.05
T-0814	See 2A	Low VP	Varies	Varies	409	470	0.00013	510	0.00019

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
T-0815	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0838	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0901	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0902	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0903	See 2A	Low VP	Varies	Varies	130	90	0.02	130	0.1
T-0914	See 2A	Moderate VP	Varies	Varies	80	64	0.74	100	0.74
T-1227	See 2A	Low VP	Varies	Varies	409	470	0.00013	510	0.00019
T-0011	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0012	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0020	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0021	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0022	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0023	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0056	See 2A	High VP	Varies	6.4	90	62	3.00	100	11
T-0106	See 2A	High VP	Varies	8.34	130	62	0.02	100	11
T-0107	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0108	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0109	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0111	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0112	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0124	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0413	See 2A	High VP	Varies	7.1	130	62	0.02	100	11
T-0415	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0417	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0439	See 2A	High VP	Varies	6.4	90	62	3.00	100	11
T-0451	See 2A	High VP	Varies	7.1	130	62	0.02	100	11
T-0452	See 2A	High VP	Varies	6.61	46	62	0.70	100	11
T-0057	See 2A	High VP	Varies	6.4	90	62	3.00	100	11
T-0079	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0117	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0401	See 2A	High VP	Varies	5.6	66	62	5.38	100	11

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
T-0402	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0411	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0412	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0435	See 2A	High VP	Varies	8.34	58	62	6.06	100	11
T-0437	See 2A	High VP	Varies	7	58	62	6.06	100	11
T-0450	See 2A	High VP	Varies	6.4	90	62	3.00	100	11
T-0737	See 2A	High VP	Varies	8.34	130	62	0.022	100	11
T-0802	See 2A	High VP	Varies	8.34	130	62	0.022	100	11
T-0821	See 2A	High VP	Varies	5.6	66	62	5.38	100	11
T-0830	See 2A	High VP	Varies	8.34	130	62	1.5	100	11
T-0834	See 2A	Moderate VP	Varies	7.1	130	62	0.02	100	1.5
T-0835	See 2A	High VP	Varies	7.1	130	62	0.022	100	11
T-1225	See 2A	High VP	Varies	7	58	62	6.06	100	11

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
RW-6	1978	High Vapor Pressure	NA	FX	200		1.8	0.9	Brown	Brown	Good	N/A	N/A
T-0040	<1973	Low Vapor Pressure	NA	FX	730		2.7	11.0	WH	WH	Good	N/A	N/A
T-0041	<1973	Low Vapor Pressure	NA	FX	730		2.7	11.0	WH	WH	Good	N/A	N/A
T-0049	1965	Moderate Vapor Pressure	NA	FX	667		3.0	1.5	WH	WH	Good	N/A	N/A
T-0055	1979	Low Vapor Pressure	NA	FX	11,300		14.6	5.6	WH	WH	Good	N/A	N/A
T-0059	<1973	Low Vapor Pressure	NA	FX	5,100		10.7	4.7	BL	BL	Good	N/A	N/A
T-0061	<1973	Low Vapor Pressure	NA	FX	10,500		15.2	4.7	BL	BL	Good	N/A	N/A
T-0063	<1973	Low Vapor Pressure	NA	FX	10,700		15.5	4.7	BL	BL	Good	N/A	N/A
T-0065	1999	Low Vapor Pressure	NA	FX	10,500		15.2	4.7	BL	BL	Good	N/A	N/A
T-0075	2003	Low Vapor Pressure	NA	FX	18,900		19.8	5.1	BL	BL	Good	N/A	N/A
T-0081	2010	Low Vapor Pressure	NA	FX	100,000		42.7	6.5	AS	AS	Good	N/A	N/A
T-0082	2010	Low Vapor Pressure	NA	FX	60,000		33.1	6.4	AS	AS	Good	N/A	N/A
T-0110	1929	Low Vapor Pressure	NA	FX	57,900		32.9	5.7	WH	WH	Good	N/A	N/A
T-0400	1983	Low Vapor Pressure	NA	FX	96,300		36.6	7.7	BL	BL	Good	N/A	N/A
T-0410	<1973	Low Vapor Pressure	NA	FX	35,700		24.1	6.3	WH	WH	Good	N/A	N/A
T-0418	<1973	Low Vapor Pressure	NA	FX	19,600		20.4	6.5	WH	WH	Good	N/A	N/A
T-0419	<1973	Low Vapor Pressure	NA	FX	10,800		16.2	4.1	WH	WH	Good	N/A	N/A
T-0420	<1973	Low Vapor Pressure	NA	FX	10400		15.2	4.7	WH	WH	Good	N/A	N/A
T-0422	<1973	Low Vapor Pressure	NA	FX	10,400		15.2	4.7	WH	WH	Good	N/A	N/A
T-0423	<1970	Low Vapor Pressure	NA	FX	10,500		15.2	4.7	WH	WH	Good	N/A	N/A
T-0431	<1973	Low Vapor Pressure	NA	FX	56,500		33.2	5.2	WH	WH	Good	N/A	N/A
T-0432	<1972	Low Vapor Pressure	NA	FX	55,000		33.2	5.2	WH	WH	Good	N/A	N/A
T-0433	<1973	Low Vapor Pressure	NA	FX	79,900		35.7	6.8	WH	WH	Good	N/A	N/A
T-0434	1979	Low Vapor Pressure	NA	FX	78,400		35.7	6.8	WH	WH	Good	N/A	N/A
T-0438	6/1/1978	Low Vapor Pressure	NA	FX	54,200		27.4	7.6	BL	BL	Good	N/A	N/A
T-0814	2005	Low Vapor Pressure	NA	FX	11,200		15.2	5.0	AS	AS	Good	N/A	N/A
T-0815	2005	Low Vapor Pressure	NA	FX	85,250		42.1	5.3	WH	WH	Good	N/A	N/A
T-0838	4/1/1977	Low Vapor Pressure	NA	FX	29,400		22.6	6.3	WH	WH	Good	N/A	N/A
T-0901	2020	Low Vapor Pressure	NA	FX	109,000		38.1	8.0	WH	WH	Good	N/A	N/A
T-0902	2020	Low Vapor Pressure	NA	FX	109,000		38.1	8.0	WH	WH	Good	N/A	N/A
T-0903	2020	Low Vapor Pressure	NA	FX	109,000		38.1	8.0	WH	WH	Good	N/A	N/A
T-0914	2020	Moderate Vapor Pressure	NA	FX	23,000		19.8	6.3	WH	WH	Good	N/A	N/A
T-1227	8/19/2008	Low Vapor Pressure	NA	FX	30,000		23.5	6.3	AS	AS	Good	N/A	N/A
T-0011	<1973	High Vapor Pressure	3C	IF	32,600		27.1	NA	WH	WH	Good	N/A	N/A
T-0012	<1973	High Vapor Pressure	3C	IF	32,300		26.8	NA	WH	WH	Good	N/A	N/A
T-0020	>2019	High Vapor Pressure	1B	IF	50,000		80	NA	WH	WH	Good	N/A	N/A

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
T-0021	>2019	High Vapor Pressure	1B	IF	50,000		80	NA	WH	WH	Good	N/A	N/A
T-0022	>2019	High Vapor Pressure	1B	IF	50,000		80	NA	WH	WH	Good	N/A	N/A
T-0023	>2019	High Vapor Pressure	1B	IF	50,000		80	NA	WH	WH	Good	N/A	N/A
T-0056	<1973	High Vapor Pressure	3C	IF	10,800		14.6	NA	WH	WH	Good	N/A	N/A
T-0106	<1971	High Vapor Pressure	3C	IF	24,800		20.4	NA	WH	WH	Good	N/A	N/A
T-0107	<1971	High Vapor Pressure	3C	IF	25,000		20.4	NA	WH	WH	Good	N/A	N/A
T-0108	<1951	High Vapor Pressure	3C	IF	22,900		20.4	NA	WH	WH	Good	N/A	N/A
T-0109	<1971	High Vapor Pressure	3C	IF	22,300		20.4	NA	WH	WH	Good	N/A	N/A
T-0111	<1973	High Vapor Pressure	3C	IF	9,100		14.9	NA	WH	WH	Good	N/A	N/A
T-0112	<1973	High Vapor Pressure	3C	IF	10,400		14.9	NA	WH	WH	Good	N/A	N/A
T-0124	1981	High Vapor Pressure	3C	IF	6,200		20.4	NA	WH	WH	Good	N/A	N/A
T-0413	1960	High Vapor Pressure	3C	IF	21,900		20.4	NA	WH	WH	Good	N/A	N/A
T-0415	1953	High Vapor Pressure	3C	IF	29,900		15.2	NA	WH	WH	Good	N/A	N/A
T-0417	<1973	High Vapor Pressure	3C	IF	9,300		15.2	NA	WH	WH	Good	N/A	N/A
T-0439	11/1/1978	High Vapor Pressure	1C	IF	108,000		39.6	NA	WH	WH	Good	N/A	N/A
T-0451	2016	Low Vapor Pressure	1C	IF	6,854		10.7	NA	WH	WH	Good	N/A	N/A
T-0452	2016	High Vapor Pressure	1C	IF	6,854		10.7	NA	WH	WH	Good	N/A	N/A
T-0829	2015	Wastewater	1C	IF	30,500		25.2	NA	WH	WH	Good	N/A	N/A
T-0057	1981	High Vapor Pressure	1C	EF	50,400		27.4	NA	WH	WH	Good	N/A	N/A
T-0079	9/7/2008	High Vapor Pressure	1C	EF	80,000		38.1	NA	WH	WH	Good	N/A	N/A
T-0117	1960	High Vapor Pressure	1C	EF	14,000		14.6	NA	WH	WH	Good	N/A	N/A
T-0401	1982	High Vapor Pressure	1C	EF	53,000		27.4	NA	WH	WH	Good	N/A	N/A
T-0402	1983	High Vapor Pressure	1C	EF	53,000		27.4	NA	WH	WH	Good	N/A	N/A
T-0411	<1951	High Vapor Pressure	1C	EF	52,000		30.5	NA	WH	WH	Good	N/A	N/A
T-0412	<1951	High Vapor Pressure	1C	EF	52,000		30.5	NA	WH	WH	Good	N/A	N/A
T-0435	1997	High Vapor Pressure	1C	EF	5,000		9.1	NA	WH	WH	Good	N/A	N/A
T-0437	11/1/1975	High Vapor Pressure	1C	EF	85,000		36.6	NA	WH	WH	Good	N/A	N/A
T-0450	1997	High Vapor Pressure	1C	EF	80,000		36.6	NA	WH	WH	Good	N/A	N/A
T-0737	2/11/2009	High Vapor Pressure	1C	EF	20,000		19.2	NA	WH	WH	Good	N/A	N/A
T-0802	2002	High Vapor Pressure	1C	EF	10,000		13.7	NA	WH	WH	Good	N/A	N/A
T-0821	TBD	High Vapor Pressure	1C	EF	65,000		32.0	NA	WH	WH	Good	N/A	N/A
T-0830	2011	High Vapor Pressure	1C	EF	100,000		45.7	NA	WH	WH	Good	N/A	N/A
T-0834	1967	Moderate Vapor Pressure	1A	EF	40,000		19.8	NA	WH	WH	Good	N/A	N/A
T-0835	<1973	High Vapor Pressure	1C	EF	61,000		14.6	NA	WH	WH	Good	N/A	N/A
T-1225	1/15/2008	High Vapor Pressure	1C	EF	100,000		45.7	NA	WH	WH	Good	N/A	N/A

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Crude Oil	Mixed Hydrocarbons	Liquid	N/A-Varies	Butanes	Butanes	Gas	N/A-Varies
Casinghead Gas	Mixed Hydrocarbons	Liquid	N/A-Varies	Propanes	Propanes	Gas	N/A-Varies
Transmix	Mixed Hydrocarbons	Liquid	N/A-Varies	Liquified Petroleum Gas	Butanes, Propanes	Gas	N/A-Varies
Isobutane	Isobutane	Gas	N/A-Varies	Kerosenes	Mixed Hydrocarbons	Liquid	N/A-Varies
Raw Kerosenes	Mixed Hydrocarbons	Liquid	N/A-Varies	Jet Fuels	Mixed Hydrocarbons	Liquid	N/A-Varies
Raw Jet Fuels	Mixed Hydrocarbons	Liquid	N/A-Varies	Naphthas	Mixed Hydrocarbons	Liquid	N/A-Varies
Naphthas	Mixed Hydrocarbons	Liquid	N/A-Varies	Gasolines	Mixed Hydrocarbons	Liquid	N/A-Varies
Raw Gasolines	Mixed Hydrocarbons	Liquid	N/A-Varies	Diesel Fuels	Mixed Hydrocarbons	Liquid	N/A-Varies
Gas Oils	Mixed Hydrocarbons	Liquid	N/A-Varies	Gas Oils	Mixed Hydrocarbons	Liquid	N/A-Varies
Asphalts	Mixed Hydrocarbons	Liquid	N/A-Varies	Fuel Oils	Mixed Hydrocarbons	Liquid	N/A-Varies
				Asphalts	Mixed Hydrocarbons	Liquid	N/A-Varies
				Carbon Black Oil	Mixed Hydrocarbons	Liquid	N/A-Varies
				Pitch	Mixed Hydrocarbons	Liquid	N/A-Varies
				Sulfur	Sulfur	Liquid	N/A-Varies
				Refinery Gas	Mixed Hydrocarbons	Gas	N/A-Varies
Renewable Oil	Mixed Hydrocarbons	Liquid	N/A-Varies	Renewable Diesel	Mixed Hydrocarbons	Liquid	N/A-Varies

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
B-0007	NOx	California Analytical	600 CLD				0-3,000 ppm		
B-0008	NOx	California Analytical	600 CLD				0-3,000 ppm		
FCC Regenerator	CO	Servomex	04902C1				0-1,000 ppm	2 ppm	2 ppm
FCC Regenerator	NOx	California Analytical	600-CLD				0-300 ppm	10 ppb	1.5 ppm
FCC Regenerator	SO2	California Analytical	ZRF1AGY2-2EJYY				0-2,000 ppm	20 ppm	10 ppm
H-8801/8802	CO	Servomex	04902C1				0-600 ppm	.5 ppm	.5 ppm
H-8801/8802	CO	Servomex	04902C1				0-2,000 ppm	2 ppm	2 ppm
H-9851	CO	Unknown	-				0-600 ppm	.5 ppm	.5 ppm
H-9851	CO	Unknown	-				0-2,000 ppm	2 ppm	2 ppm
H-2501	CO	Unknown	-				0-600 ppm	.5 ppm	.5 ppm
H-2501	CO	Unknown	-				0-2,000 ppm	2 ppm	2 ppm
H-2501	NOx	Unknown	-				0-300 ppm	10 ppb	1.5 ppm
HP Fuel Gas	H2S	Trace Environmental	320				0-300 ppm	1 ppb	6 ppm
LP Fuel Gas	H2S	Trace Environmental	223				0-300 ppm	1 ppb	6 ppm
H-0473	SO2	California Analytical	601-NDIR				0-500 ppm	5 ppm	2.5 ppm
H-0473	SO2	California Analytical	601-NDIR				0-2,500 ppm	25 ppm	17.5 ppm
SRU3-TGI	SO2	Unknown	-				0-500 ppm	5 ppm	2.5 ppm
SRU3-TGI	SO2	Unknown	-				0-2,500 ppm	25 ppm	17.5 ppm
TL-4	VOC	Infrared Industries	IR8400D	4814	20 Seconds		0-2%		0.0706

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
NA - The Artesia Refinery does not have any parametric emission measurement equipment.								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
B-0007	**mass GHG**	135,349	1.38	6.88											135,357	
	CO_2e	135,349	410.18	172.05												135,931
B-0008	**mass GHG**	135,349	1.38	6.88											135,357	
	CO_2e	135,349	410.18	172.05												135,931
B-0009	**mass GHG**	125,336	1.27	6.37											125,344	
	CO_2e	125,336	379.83	159.33												125,875
B-0010	**mass GHG**	6,327	0.06	0.32											6,327	
	CO_2e	6,327	19.17	8.04												6,354
H-0009	**mass GHG**	27,699	0.28	1.41											27,701	
	CO_2e	27,699	83.94	35.21												27,818
H-0011	**mass GHG**	23,922	0.24	1.22											23,924	
	CO_2e	23,922	72.50	30.41												24,025
H-0018	**mass GHG**	20,145	0.20	1.02											20,146	
	CO_2e	20,145	61.05	25.61												20,232
H-0019	**mass GHG**	33,995	0.35	1.73											33,997	
	CO_2e	33,995	103.02	43.21												34,141
H-0020	**mass GHG**	49,103	0.50	2.50											49,106	
	CO_2e	49,103	148.81	62.42												49,314
H-0028	**mass GHG**	7,743	0.08	0.39											7,744	
	CO_2e	7,743	23.47	9.84												7,777
H-0030	**mass GHG**	26,440	0.27	1.34											26,442	
	CO_2e	26,440	80.13	33.61												26,554
H-0040	**mass GHG**	26,440	0.27	1.34											26,442	
	CO_2e	26,440	80.13	33.61												26,554
H-0303	**mass GHG**	6,925	0.07	0.35											6,925	
	CO_2e	6,925	20.99	8.80												6,955
H-0312	**mass GHG**	22,033	0.22	1.12											22,035	
	CO_2e	22,033	66.77	28.01												22,128
H-0352/0353/0354	**mass GHG**	125,906	1.28	6.40											125,913	
	CO_2e	125,906	381.56	160.05												126,447
H-0355	**mass GHG**	15,109	0.15	0.77											15,110	
	CO_2e	15,109	45.79	19.21												15,174
H-0362/0363/0364	**mass GHG**	78,691	0.80	4.00											78,696	
	CO_2e	78,691	238.47	100.03												79,030
H-0421	**mass GHG**	16,997	0.17	0.86											16,998	
	CO_2e	16,997	51.51	21.61												17,070
H-0464	**mass GHG**	6,043	0.06	0.31											6,044	
	CO_2e	6,043	18.31	7.68												6,069
H-0600	**mass GHG**	52,880	0.54	2.69											52,884	
	CO_2e	52,880	160.25	67.22												53,108

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									**Total GHG** Mass Basis ton/yr[4]	**Total CO_2e** ton/yr[5]
Unit No.	**GWPs** [1]	**1**	**298**	**25**	**22,800**	**footnote 3**										
H-0601	**mass GHG**	49,103	0.50	2.50											49,106	
	CO_2e	49,103	148.81	62.42												49,314
H-2421	**mass GHG**	16,997	0.17	0.86											16,998	
	CO_2e	16,997	51.51	21.61												17,070
H-2501	**mass GHG**	75,543	0.77	3.84											75,548	
	CO_2e	75,543	228.93	96.03												75,868
H-2601	**mass GHG**	24,552	0.25	1.25											24,553	
	CO_2e	24,552	74.40	31.21												24,657
H-3101	**mass GHG**	6,043	0.06	0.31											6,044	
	CO_2e	6,043	18.31	7.68												6,069
H-3402	**mass GHG**	32,735	0.33	1.66											32,737	
	CO_2e	32,735	99.21	41.61												32,876
H-3403	**mass GHG**	20,145	0.20	1.02											20,146	
	CO_2e	20,145	61.05	25.61												20,232
H-8801/8802	**mass GHG**	75,543	0.77	3.84											75,548	
	CO_2e	75,543	228.93	96.03												75,868
H-9851	**mass GHG**	212,151	2.16	10.79											212,164	
	CO_2e	212,151	642.93	269.68												213,064
H-5401	**mass GHG**	12,162	0.12	0.62											12,163	
	CO_2e	12,162	36.86	15.46												12,215
FCC REGEN	**mass GHG**	416,273	2.44	12.19											416,288	
	CO_2e	416,273	726.78	304.86												417,305
H-0473	**mass GHG**	22,734													22,734	
	CO_2e	22,734														22,734
SRU3-TGI	**mass GHG**	17,384													17,384	
	CO_2e	17,384														17,384
FL-400	**mass GHG**	12,451	0.12	46.45											12,498	
	CO_2e	12,451	37.10	1,161.13												13,649
FL-401	**mass GHG**	2,370	0.02	13.21											2,383	
	CO_2e	2,370	7.06	330.27												2,708
FL-402	**mass GHG**	3,950	0.04	7.47											3,958	
	CO_2e	3,950	11.77	186.77												4,149
FL-403	**mass GHG**	5,000	0.05	3.89											5,004	
	CO_2e	5,000	14.90	97.17												5,113
FL-404	**mass GHG**	32,003	0.32	106.34											32,110	
	CO_2e	32,003	95.37	2,658.43												34,757
E-8010	**mass GHG**	2,285	0.02	0.09											2,285	
	CO_2e	2,285	5.52	2.32												2,293
V-0543	**mass GHG**	1,600	0.01	0.06											1,600	
	CO_2e	1,600	3.87	1.62												1,605
V-0545	**mass GHG**	1,600	0.01	0.06											1,600	
	CO_2e	1,600	3.87	1.62												1,605
V-0546	**mass GHG**	788	0.01	0.03											788	
	CO_2e	788	1.91	0.80												791
G-0100	**mass GHG**	297	0.002	0.01											297	
	CO_2e	297	0.72	0.30												298

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									**Total GHG** Mass Basis ton/yr[4]	**Total CO_2e** ton/yr[5]
Unit No.	**GWPs** [1]	**1**	**298**	**25**	**22,800**	**footnote 3**										
G-0101	**mass GHG**	309	0.003	0.01											309	
	CO_2e	309	0.75	0.31												310
E-0600W	**mass GHG**	2,148	0.02	0.09											2,148	
	CO_2e	2,148	5.19	2.18												2,156
E-0601M	**mass GHG**	2,148	0.02	0.09											2,148	
	CO_2e	2,148	5.19	2.18												2,156
E-0602E	**mass GHG**	2,148	0.02	0.09											2,148	
	CO_2e	2,148	5.19	2.18												2,156
E-0603	**mass GHG**	1,743	0.01	0.07											1,743	
	CO_2e	1,743	4.21	1.77												1,749
E-0901	**mass GHG**	2,457	0.02	0.10											2,457	
	CO_2e	2,457	5.94	2.49												2,465
SSM FL-HEP-PORT	**mass GHG**	580,475	451	2,256											583,182	
	CO_2e	580,475	134,398	56,400												771,273
SSM Flare Cap	**mass GHG**	38,156	30.52	152.62											38,339	
	CO_2e	38,156	9,096.29	3,815.56												51,067
Flares Malf Cap	**mass GHG**	9,167	6.67	22.22											9,196	
	CO_2e	9,167	1,986.67	555.56												11,709
SSM Misc 2	**mass GHG**	3,833	3.07	15.33											3,852	
	CO_2e	3,833	913.87	383.33												5,131
SSM Tanks	**mass GHG**			15.31											15	
	CO_2e			382.78												383
TANKS	**mass GHG**			49.15											49	
	CO_2e			1,228.82												1,229
Fugitive	**mass GHG**	816.5	0.005	26.3											843	
	CO_2e	816.5	1.49	656.5												1,474
TL-4 VCU	**mass GHG**	909.2	0.008	0.038											909	
	CO_2e	909.2	2.26	0.95												912
	mass GHG															
	CO_2e															
	mass GHG															
	CO2e															
Total	**mass GHG**	2,630,455	509	2,802											2,633,766	
	CO_2e	2,630,455	151,781	70,045												2,852,281

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

HollyFrontier Navajo Refining LLC (Navajo) is submitting this updated application for renewal of the current Title V Operating Permit No. P051-R2M1 for Navajo's Artesia, NM refinery. The initial application was submitted to the New Mexico Environment Department (NMED) on May 6, 2019. This updated application addresses revisions to the corresponding New Source Review/Prevention of Significant Deterioration (NSR/PSD) air permit that NMED has issued since the initial Title V renewal application was submitted.

By this submittal, Navajo requests the NMED renew and update the Title V permit to reflect the Title V and New Source Review (NSR) permitting actions that have been approved by NMED since the last Title V permit issuance/renewal. For reference, the current NSR permit for the Artesia Refinery is NSR Permit No. PSD-NM-0195-M39R1. In addition, Navajo requests NMED update the Title V permit to reflect regulatory updates and changes since the last Title V permit issuance/renewal. These permitting actions and regulatory updates are summarized below.

1. **PSD-NM-0195-M39R1 NSR Re-Opening -** Navajo requested and NMED approved corrections to the issued M39 permit and changes in representations for the gasoline blending tanks (T-0020, T-0021, T-0022, and T-0023).

2. **PSD-NM-0195-M39 Flare Emission Limit and Other Permit Updates NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for:
   - Update of flare emission limits for normal operations
   - Update of flare emission limits for Startup, Shutdown, and Maintenance (SSM)
   - Emissions to be generated by four internal floating roof (IFR) tanks to be installed for gasoline blending (T-0020, T-0021, T-0022, and T-0023) and associated fugitive components, and by a slop tank (T-0914) to be installed

   In addition, the following changes to the NSR permit were implemented.
   - Correction/clarification of Boiler B-0000 PSD and BACT requirements
   - Tank number changes and removals
   - Corrected the FCC Regenerator NO_X hourly emission limit
   - Addition of fugitive components
   - Engine removals and replacements
   - Corrections to previously permitted emission units

   With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Permit condition A102.C

- Permit condition A106.E
- Permit conditions A204.C Monitoring (5), A204.K, and A204.M through O
- Table 103.C, Summary Applicability – Tanks
- Table 103.J, Summary Applicability – Engines
- Table 106.A, Allowable Emission Limits and footnotes
- Table 106.B(1) Internal Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 106.C, Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 106.D Storage Tank Throughput and Temperature Limits
- Table 106.E Storage Tank VOC and H_2S Emission Limits
- Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 107.A, Maintenance Startup and Shutdown Emission Limits

3. **PSD-NM-0195-M38R2 Temporary Cooling Tower Y-0015 Administrative Revision and Title V Notification for Section 502(b)(10) Operational Flexibility Change** - By this submittal, Navajo requested and NMED approved authorization for emissions from a new temporary cooling tower which was exempt from construction permitting requirements per 20.2.72.202.B.(5) NMAC. NMED concurrently approved and made federally enforceable a limit on annual cooling tower operating hours via a 502(b)(10) Operational Flexibility Change per 20.2.70.302.H NMAC. The temporary cooling tower (Y-0015) was installed and has been removed. Therefore, with respect to the Title V permit no changes are required.

4. **PSD-NM-0195-M38 Renewable Diesel Unit NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions to be generated from the following Renewable Diesel Unit (RDU) emissions-units to be installed, and components to be added to the existing FUG-FUEL GAS Fuel Gas Fugitive Area:
   - B-0010 Boiler 10 RDU Receiving
   - H-2601 Unit 26 RDU Reactor Heater
   - T-0904 through T-0913 (Ten) Fixed Roof Feed Tanks (exempt from permitting)
   - T-0901, T-0902, and T-0903 (Three) Fixed Roof or Floating Roof Tanks
   - RLO-26 RDU Railcar Loading & Off-Loading Rack
   - Y-0014 RDU Cooling Tower
   - FUG-26-RDU Renewable Diesel Unit Fugitive Area

   In addition, the following changes to the NSR permit were implemented.
   - Speciated particulate matter (PM) emission limits for all the refinery cooling towers to include the $PM_{2.5}$ and PM_{10} emissions subsets
   - Updated the applicability for SRU2 from NSPS J to NSPS Ja
   - Corrected the FCC Regenerator NO_X hourly emission limit
   - Updated regulatory applicability references to reflect the repeal of NMAC regulations for petroleum refineries

   With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Table 103.B, Summary Applicability – Fugitives
   - Table 103.C, Summary Applicability – Tanks
   - Table 103.D, Summary Applicability – Loading
   - Table 103.E, Summary Applicability – Heaters and Boilers
   - Table 103.F, Summary Applicability – Colling Towers
   - Table 104.A, Regulated Source List
   - Table 106.A, Allowable Emission Limits

- Table 106.C, Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 106.D, Storage Tank Throughput and Temperature Limits
- Table 106.E, Storage Tank VOC and H_2S Emission Limits
- Table 106.F, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC) Fugitive Emissions from Equipment Leaks
- Table 106.G Miscellaneous Sources, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC's)
- Table 106.H Cooling Towers, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds and PM

5. **PSD-NM-0195-M37R3 KOH Manufacturing NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from two new air emissions-generating activities which are exempt from construction permitting requirements per 20.2.72.202.B.(5) NMAC. As reflected in the application Table 2-B, these activities are Lime Handling (Unit No. LIME TRANSFER) and Lime Delivery Road (Unit No. LIME ROAD). These emission units do not have applicable requirements and meet the criteria of NMED Title V Insignificant Activity 1.a (i.e., have potential to emit not more than one ton per year of any regulated pollutant). Therefore, with respect to the Title V permit no changes are required.

6. **PSD-NM-0195-M37R2 Fuels Truck Loading Rack Vapor Combustion Unit NSR Technical Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from the addition of a Vapor Combustion Unit (TL-4 VCU) as an alternate control device for the reduction of emissions generated at the existing Fuels Truck Loading Rack (TL-4), and incorporation of revised truck loading throughput and control representations. The TL-4 VCU control device is used as an alternate control device to the existing Vapor Recovery Unit (TL-4 VRU), which serves as the primary control device. With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
   - Permit condition A102.C
   - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
   - Table 105.A: Control Methods
   - Permit condition A106.I
   - Permit condition A210.C Equipment Specific Requirements for Loading Racks
   - Table 106.A Allowable Emission Limits
   - Table 106.G: Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOCs)

7. **PSD-NM-0195-M37R1 Server Backup Generator and Propane Dryness Testing NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new source and a new activity which are exempt from construction permitting requirements per 20.2.72.202.B NMAC.

   As reflected in the application Table 2-B, the new activity is Propane Dryness Testing (Unit No. PROP TEST). It does not have applicable requirements and meets the criteria of NMED Insignificant Activity 1.a (i.e., has potential to emit not more than one ton per year of any regulated pollutant). Therefore with respect to the Title V permit, no changes are required for PROP TEST.

   As reflected in the application Table 2-B, the new source is the Server Backup Generator (Unit No. G-0102). It is subject to 40 CFR Part 60 New Source Performance Standard Subpart IIII (NSPS IIII) and 40 CFR Part 63 Maximum Achievable Control Technology Subpart ZZZZ (MACT ZZZZ) and is therefore excluded from consideration as a NMED Title V Insignificant Activity. Accordingly, with respect to the Title V permit the new G-0102 engine will result in changes to the following:
   - Permit condition A102.C
   - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
   - Permit condition A201.A and B
   - Table 103.J, Summary Applicability – Engines
   - Table 104.A: Regulated Sources List
   - Table 106.A Allowable Emission Limits

8. **PSD-NM-0195-M37 Debottleneck Project NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from process equipment modifications to increase production at the following units:
    - Unit FUG-06-NHDU – Naphtha Hydrodesulfurization Unit
    - Unit FUG-13-NHDU – Naphtha Hydrodesulfurization Unit
    - Unit FUG-20-ISOM – BenFree Unit (previously identified as Isom Unit)
    - Unit FUG-33-DIST HDU – Diesel Hydrodesulfurization Unit
    - Additionally, routing of a stream from Unit 44 (Gas Oil Hydrotreater) to Unit 33.

    In addition, the following changes to the NSR permit were implemented.
    - Removed the following storage tanks: T-0013, T-0058, T-0404, T-0405, T-0409, T-0810, and T-0078
    - Changed tank ID No. TK-NEWETHANOL to T-0451, and changed associated tank type from external floating roof tank to internal floating roof tank
    - Changed tank ID No. TK- BIODIESEL to T-0452, and changed associated tank type from fixed roof tank to internal floating roof tank
    - Removed SSM T-0078, SSM T-0079, SSM T-0737 and SSM T-1225. SSM tank emissions were included under ID "SSM Tanks" which was updated as part of the project
    - Moved SSM Misc 1 for catalyst handling emissions from the Regulated Emission Sources (per application Table 2A) to the Exempted Equipment/Insignificant Activities (per application Table 2B)

    With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:
    - Permit condition A102.C
    - Table 102.A: Total Potential Pollutant Emissions from Entire Facility
    - Permit conditions A107.D through F
    - Permit condition A203.E
    - Permit condition A204.D
    - Permit condition A206.B
    - Permit condition A209.A through D
    - Table 103.B, Summary Applicability – Fugitives
    - Table 103.C, Summary Applicability – Tanks
    - Table 106.A Allowable Emission Limits
    - Table 106.B(1) Internal Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
    - Table 106.B(2) External Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
    - Table 106.C Fixed Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
    - Table 106.D Storage Tank Throughput and Temperature Limits
    - Table 106.E Storage Tank VOC and H_2S Emission Limits
    - Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
    - Table 107.A Maintenance, Startup, and Shutdown Emission Limits

9. **PSD-NM-0195-M36 Prime G Project NSR Significant Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new Prime G operating unit. The project included:
    - Installation of a reactor charge heater H-5401
    - Installation of an external floating roof tank for off-spec material T-5401
    - Additional piping component fugitive emissions

- Updating the emission calculations for the wastewater unit

With respect to the Title V permit, this permitting action will be reflected as changes to the following which are reflected in NSR Permit No. PSD-NM-0195-M39R1:

- Permit condition A102.C
- Table 102.A: Total Potential Pollutant Emissions from Entire Facility
- Permit condition A204.B
- Table 103.B, Summary Applicability – Fugitives
- Table 103.C, Summary Applicability – Tanks
- Table 103.E, Summary Applicability – Heaters and Boilers
- Table 104.A: Regulated Sources List
- Table 106.A Allowable Emission Limits
- Table 106.B(2) External Floating Roof Storage Tanks, Vapor Pressure Limitations for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 106.D Storage Tank Throughput and Temperature Limits
- Table 106.E Storage Tank VOC and H_2S Emission Limits
- Table 106.F Fugitive Emissions from Equipment Leaks, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)
- Table 106.I API Oil/Water Separators, Emission Limits for Refinery Non-Combustion Sources of Volatile Organic Compounds (VOC)

10. **PSD-NM-0195-M35R2 Wastewater Storage Tank T-7107 NSR Administrative Revision -** By this submittal, Navajo requested and NMED approved authorization for emissions from a new wastewater tank, T-7107, which is exempt from construction permitting requirements per 20.2.72.202.B.(2) NMAC. As reflected in the application Table 2-B, the tank does not have applicable requirements and meets the criteria of NMED Title V Insignificant Activity 1.b (i.e., has potential to emit not more than the lessor of one or the de minimis level of Hazardous Air Pollutant [HAP]). Therefore, with respect to the Title V permit no changes are required.

11. **Title V Operating Permit No. P051-R2M1 Owner/Permittee Name Change Administrative Revision -** By this submittal, Navajo requested and NMED approved the name change on the permit from Navajo Refining Company L.L.C. to HollyFrontier Navajo Refining LLC.

In addition, Navajo requests NMED correct a typographical error in the Title V permit as follows:

12. **FCC Regenerator NO_X Hourly Emission Limit** - Revise the FCC Regenerator NO_X hourly emission limit in Table 106.A to 34.9 lb/hr instead of the currently-listed 35.0 lb/hr, consistent with the Equipment Specific Requirement A211.A.(2)(a).

Further, Navajo requests NMED update the Title V permit to reflect the following regulatory updates and changes since the last Title V permit issuance/renewal (also, as repeated in Section 3 of the application form). These updates and changes are included in the electronic permit markup submitted with this application.

13. **SRU2 NSPS Ja Applicability** - Change the applicability for SRU2 from NSPS J to NSPS Ja (Equipment Specific Requirements A207.D, consistent with E of this condition for SRU3 (the two units recover sulfur from a common source of sour gas); make corresponding changes to Table 103.I in the permit).

14. **Repeal of 20.2.36 NMAC Petroleum Refinery Sulfur -** Remove or update the references to 20.2.36 NMAC which NMED repealed effective February 15, 2016.

15. **Repeal of 20.2.37 Petroleum Processing Facilities -** Remove or update the references to 20.2.37 NMAC which NMED repealed effective September 12, 2016.

16. **20.2.61 NMAC Applicability** - Due to the repeal of 20.2.37.202 NMAC Particulate Matter requirements, 20.2.61 NMAC Smoke and Visible Emissions requirements (specifically 20.2.61.109 opacity requirements) now apply to stationary combustion equipment, and we request that NMED update the Title V permit to reflect this.

17. **Refinery Sector Rule Applicability** - The detailed applicability sub-citations in the spreadsheets included in the electronic submittal accompanying this application address applicability determinations to date as related to the Refinery Sector Rule (RSR). The spreadsheets reflect NSPS J, NSPS Ja, MACT CC, and MACT UUU applicability determinations that have been required to be completed thus far under the RSR.

In addition, representation changes are included in this application that do not result in changes to the Title V permit. They are summarized in Section 20 of this application form

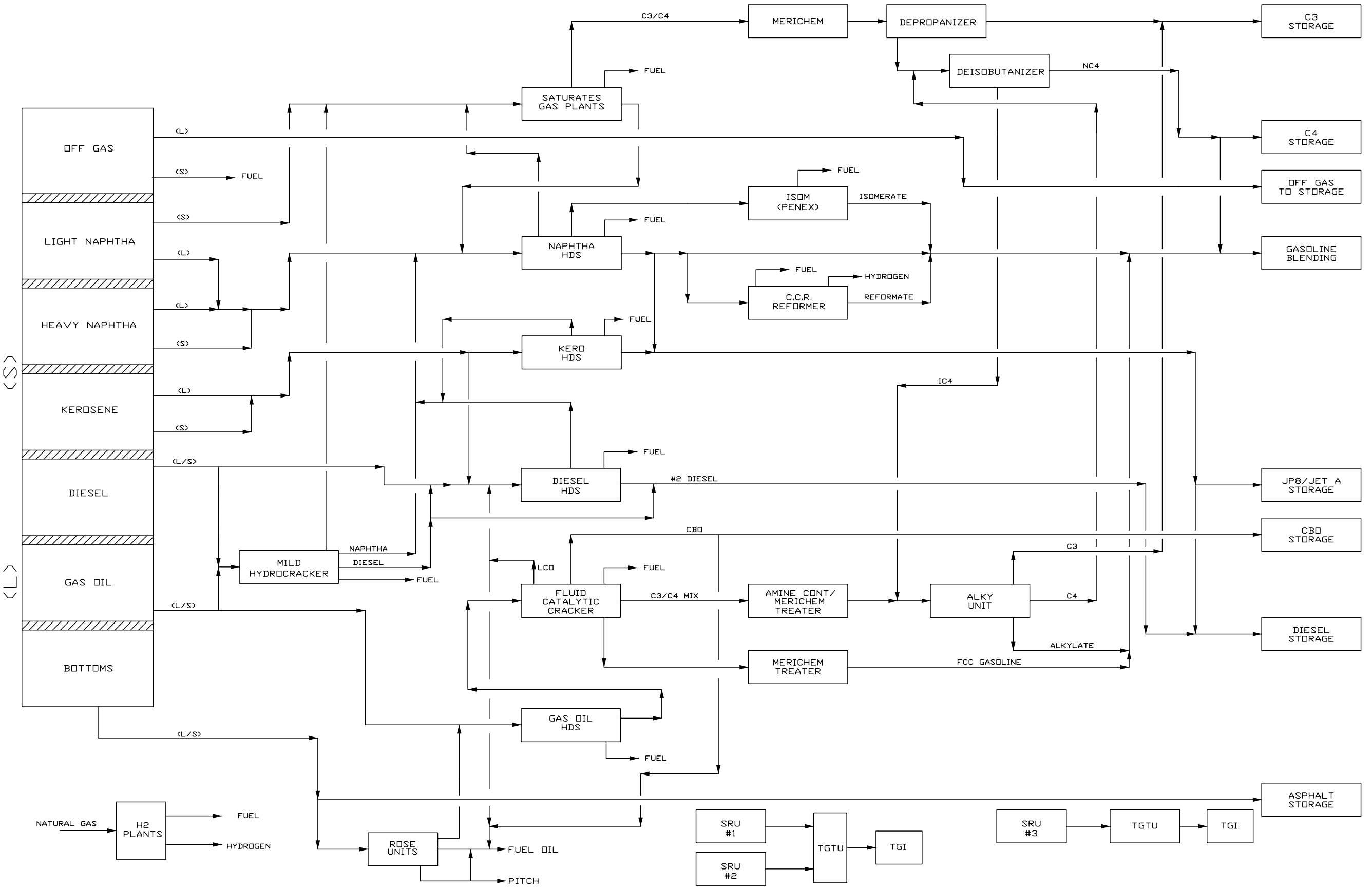
Section 4

Process Flow Sheet

A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

A process flow diagram for the refinery is included in this section.

CRUDE UNITS
LOVINGTON / SOUTH (S)
(L)



NOTES

REFERENCE DRAWINGS

NO.	REVISIONS	BY	CHK.	DATE	APPR.	APPR.
13	REVISED PER MC	DWW		6-19-08		
11	REVISED PER MC	DWW		05-14-07		
10	REVISED PER MPK (PRELIM)	DGJ		07-20-96		

NO.	REVISIONS	BY	CHK.	DATE	APPR.	APPR.
9	REVISED PER GKC	DGJ		12-18-96		
8	REVISED PER JLH	DGJ		12-26-94		
7	REVISED PER JER	DGJ		11-23-94		
6	REVISED PER SLB	DGJ	SLB	12-22-93		
5	REVISED PER SLB	DGJ	SLB	2-04-93		
4	REVISED PER RRH MARK-UP	BHR	DGJ	4-24-96		
3	UPDATED NOMENCLATURE	DLW	DGJ	9-9-94		
2	REDRAWN & UPDATED PER JLM	PETE	DJ	8-1-94		
1	UPDATED PER JLM	PETE		5-94		

DRAWING TITLE

SIMPLIFIED
BLOCK FLOW
NAV6076

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

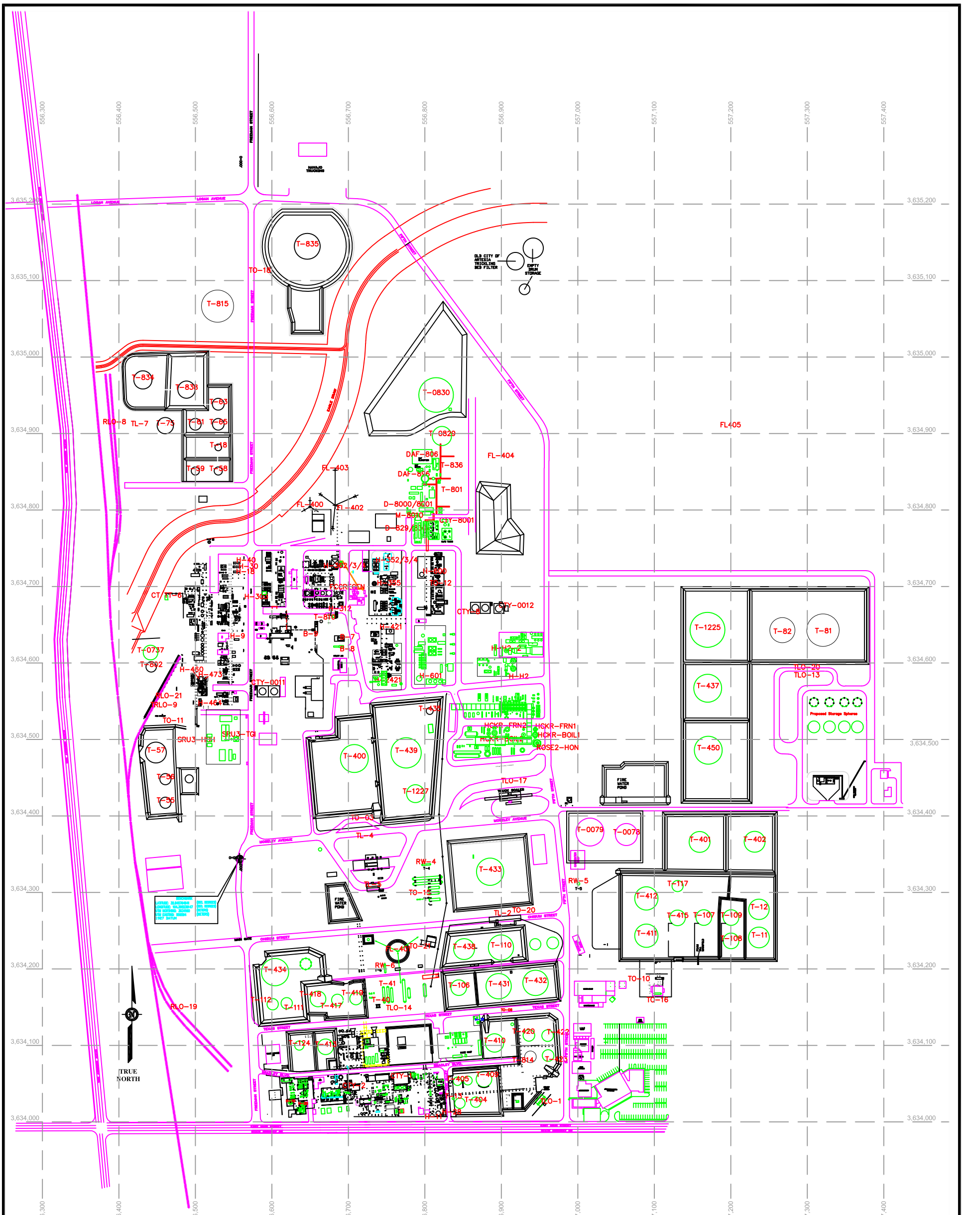
DRAWN BY	CHK'D BY	SCALE
DGJ		NONE
DATE	APPR BY	DRAWING NUMBER / REV.
08-01-94		55-V-1001-D-01 / 13

Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

A plot plan is included in this section.



TASCOSA ALLIANCE COMPANY

Navajo REFINING COMPANY Artesia, New Mexico

FIGURE 1-2
PLOT Plan

Artesia Refinery
Artesia, new Mexico

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:

A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.

B. At least 5 significant figures shall be retained in all intermediate calculations.

C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

(1) If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;

(2) If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**

(3) If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.

(4) The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device

regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Emission calculations for all sources are included in this section. Files containing emission calculations for all sources are included with the submitted electronic files.

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following □ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:
Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Greenhouse gas potential to emits are included in the calculations in Section 6.

BOILER AND HEATER POTENTIAL TO EMIT

				Emission Factors [a]						Emission Rates									
		Design Capacity (LHV)	Design Capacity (HHV)	CO	NOx	PM	SO_2 ($ppmv\ H_2S$)		VOC	CO		NO_X		PM		SO_2		VOC	
ID	Description	MMBtu/hr	MMBtu/hr	lb/MMBtu	lb/MMBtu	lb/MMBtu	Max	Avg	lb/MMBtu	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
B-0007	Boiler 7	215	238	0.082	0.06 [c]	0.0075	162	60 [f]	0.0054	19.57	85.69	12.90	56.50	1.77	7.75	7.84	12.74	1.28	5.61
B-0008	Boiler 8	215	238	0.082	0.06 [c]	0.0075	162	60 [f]	0.0054	19.57	85.69	12.90	56.50	1.77	7.75	7.84	12.74	1.28	5.61
B-0009	Boiler 9	-	220	0.037 [b]	0.02 [b]	0.0075	59	59 [g]	0.0040 [b]	8.14	35.65	4.40	19.27	1.64	7.18	2.60	11.40	0.88	3.85
B-0010	**Boiler 10 RDU Receiving**	**10.05**	**11.1**	**0.060 [b]**	**0.02 [b]**	**0.0075**	**60**	**60 [f]**	**0.0054**	**0.67**	**2.92**	**0.22**	**0.97**	**0.083**	**0.36**	**0.14**	**0.60**	**0.06**	**0.26**
H-0009	Unit 13 Naphtha Splitter Reboiler	44	49	0.082	0.09 [c]	0.0075	162	60 [f]	0.0054	4.00	17.54	3.96	17.34	0.36	1.59	1.60	2.61	0.26	1.20
H-0011	Unit 21 Vacuum Unit Heater	38	42	0.082	- [e]	0.0075	162	60 [f]	0.0054	3.46	15.20	9.47	31.55	0.31	1.37	1.39	2.25	0.23	0.99
H-0018	Unit 06 HDS Reboiler	32	35	0.082	0.098039	0.0075	162	60 [f]	0.0054	2.91	12.75	3.47	15.18	0.26	1.15	1.17	1.90	0.19	0.84
H-0019	South Crude Charge Heater	54	60	0.082	0.0527 [d]	0.0075	162	60 [f]	0.0054	4.91	21.52	2.90	12.46	0.44	2.00	1.97	3.20	0.32	1.41
H-0020	South Crude Charge Heater	78	86	0.082	0.0535 [d]	0.0075	162	60 [f]	0.0054	7.10	31.09	4.17	18.28	0.64	2.81	2.84	4.62	0.46	2.04
H-0028	Unit 21 Heater	12.3	14	0.082	0.1763 [d]	0.0075	162	60 [f]	0.0054	1.12	4.90	2.17	9.50	0.10	0.44	0.45	0.73	0.07	0.32
H-0030	Unit 06 Charge Heater	42	46	0.082	0.076 [c]	0.0075	162	60 [f]	0.0054	3.82	16.80	3.19	13.98	0.40	1.51	1.53	2.49	0.25	1.10
H-0040	Unit 13 Charge Heater	42	46	0.082	0.09 [c]	0.0075	162	60 [f]	0.0054	3.82	16.80	3.78	16.56	0.40	1.51	1.53	2.49	0.25	1.10
H-0303	Unit 05 Charge Heater	11	12	0.082	0.098039	0.0075	162	60 [f]	0.0054	1.00	4.38	1.19	5.22	0.09	0.40	0.40	0.65	0.07	0.29
H-0312	Unit 10 FCC Feed Heater	35	39	0.082	0.132 [c]	0.0075	162	60 [f]	0.0054	3.19	13.95	4.62	20.24	0.29	1.26	1.28	2.07	0.21	0.91
H-0352/0353/0354	Unit 70 CCR Reformer Heaters	200	221	0.082	0.045 [d]	0.0075	162	60 [f]	0.0054	18.20	79.72	9.00	39.42	1.70	7.21	7.29	11.85	1.19	5.22
H-0355	Unit 70 Stabilizer Reboiler Heater	24	27	0.082	0.09 [c]	0.0075	162	60 [f]	0.0054	2.18	9.57	2.16	9.46	0.20	0.87	0.88	1.42	0.14	0.63
H-0362/0363/0364	Unit 70 CCR Heaters	125	138	0.082	0.055 [d]	0.0075	162	60 [f]	0.0054	11.38	49.82	6.88	30.11	1.03	4.51	4.56	7.41	0.74	3.26
H-0421	Unit 44 Charge Heater	27	30	0.082	0.09 [c]	0.0075	162	60 [f]	0.0054	2.46	10.76	2.43	10.64	0.22	0.97	0.98	1.60	0.16	0.70
H-0464	SRU Hot Oil Heater	9.6	11	0.082	0.04902	0.0075	162	60 [f]	0.0054	0.87	3.83	0.52	2.28	0.08	0.40	0.35	0.57	0.06	0.25
H-0600	Unit 09 Depropanizer Reboiler Heater	84	93	0.082	0.05 [b]	0.0075	162	60 [f]	0.0054	7.64	33.48	4.70	20.33	0.69	3.03	3.07	4.98	0.50	2.19
H-0601	Unit 33 Charge Heater	78	86	0.082	0.045 [c]	0.0075	162	60 [f]	0.0054	7.10	31.09	3.51	15.37	0.64	2.81	2.84	4.62	0.46	2.04
H-2421	Unit 45 Charge Heater	27	30	0.082	0.045 [c]	0.0075	162	60 [f]	0.0054	2.46	10.76	1.22	5.32	0.22	0.97	0.98	1.60	0.16	0.70
H-2501	Unit 25 ROSE® Unit No. 2 Hot Oil Heater	120	133	0.060 [c]	0.03 [c]	0.0075	162	60 [f]	0.0054	7.20	31.54	3.60	15.77	0.99	4.33	4.38	7.11	0.72	3.13
H-2601	**Unit 26 RDU Reactor Heater**	**39.0**	**43.1**	**0.060 [b]**	**0.03 [b]**	**0.0075**	**60**	**60 [f]**	**0.0054**	**2.59**	**11.33**	**1.29**	**5.66**	**0.32**	**1.41**	**0.53**	**2.31**	**0.23**	**1.02**
H-3101	SRU3 Hot Oil Heater	9.6	11	0.082	0.03 [c]	0.0075	162	60 [f]	0.0054	0.87	3.83	0.29	1.26	0.08	0.40	0.35	0.57	0.06	0.25
H-3402	Unit 34 Hydrocracker Reboiler 1	52	57	0.082	0.03 [c]	0.0075	162	60 [f]	0.0054	4.73	20.73	1.56	6.83	0.43	1.88	1.90	3.08	0.31	1.36
H-3403	Unit 34 Hydrocracker Reactor Charge Heater	32	35.4	0.082	0.03 [c]	0.0075	162	60 [f]	0.0054	2.91	12.75	0.96	4.20	0.26	1.15	1.17	1.90	0.19	0.84
H-5401	Unit 54 HDS Reactor Heater	19.3	21.3	0.030 [b]	0.03 [b]	0.0075	162	60 [f]	0.0054	0.64	2.81	0.64	2.81	0.16	0.70	0.71	1.15	0.12	0.50
H-8801/8802	Unit 63 Hydrogen Plant Reformer Furances	120	133	0.082	0.035 [c]	0.0075	9	9 [h]	0.0054	10.92	47.83	4.20	18.40	0.99	4.33	0.18	0.78	0.72	3.13
H-9851	Unit 64 Hydrogen Plant Reformer	337	372	0.060 [c]	0.0125 [c]	0.0075	9	9 [h]	0.0054	20.22	88.56	4.21	18.45	2.77	12.20	0.50	2.20	2.01	8.79

[a] Unless otherwise noted, the emission factors are from AP-42 Tables 1.4-1 and 1.4-2, dated 7/98. Factors are converted to lb/MMBtu by dividing by 1020 Btu/scf as specified in AP-42 and are based on HHV.

[b] Based on manufacturer guarantee on HHV basis.

[c] Based on manufacturer guarantee on LHV basis.

[d] Factor based on performance testing and LHV basis.

[e] Permitted emission factor based on AP-42 Section 1.4 dated 5/74: Hourly factor = 230 lb/MMscf and Annual = 175 lb/MMscf

[f] Except as indicated, the hourly SO_2 emissions are calculated based on the NSPS Subpart J limit of 0.1 gr/dscf or 3-hr rolling NSPS Ja limit (both 162 ppmv H_2S) and the annual SO_2 emissions are calculated based on the NSPS Subpart Ja, 365-day calendar roliing average limit of 60 ppmv H_2S.

[g] Permitted emission factor of 0.035 gr S/scf fuel and a HHV of 845.

[h] Permitted emission factor of 0.005 gr S/scf fuel based on LHV of 975 Btu/scf.

Example calculation for SO_2 emissions:

(H_2S Conc., lbmol/MMlbmol gas) / (379 scf gas/lbmol gas) / (749 Btu/scf gas) * (1-lbmol SO2/lbmol H_2S) * (64 lb SO_2/lbmol) * (LHV, MMBtu/hr)

Note: Fuel with LHV of 749 (HHV 827) is used to calculate SO2 emissions. HHV of 845 was used in supporting calculations for B-0009.

H-9851 Ammonia Slip Emissions:

NH3 Exhaust Concentration = 7 ppmv, wet basis

Exhaust Flow Rate = 73500 scfm @ 70°F

NH_3 Emission = (7 lbmol NH3 / 10^6 lbmol exhaust) (73,500 scfm exhaust) (60 min/hr) (17 lb NH3/lbmol) / (379 scf/lbmol) = **1.38 lb/hr**

(1.38 lb/hr) (8760 hr/yr) / (2000 lb/ton) = **6.06 ton/yr**

SSM H-9851:

NOx Emission = (0.03 lb/MMBtu NOx) * (337 MMBtu/hr = **10.1 lb/hr**

(10.1 lb/hr) * (240 hr/yr) / (2,000 lb/ton) = **1.2 tons/yr**

CO Emission = (0.060 lb/MMBtu) * (337 MMBtu/hr) = **20.2 lb/hr**

(20.2 lb/hr) * (240 hr/yr) / (2,000 lb/ton) = **2.4 ton/yr**

VOC Emission = (0.0054 lb/MMBtu) * (372 MMBtu/hr) = **2.0 lb/hr**

(2.0 lb/hr) * (240 hr/yr) / (2,000 lb/ton) = **0.2 ton/yr**

PM10/PM2.5 Emissio (0.0075 lb/MMBtu) * (372 MMBtu/hr) = **2.8 lb/hr**

(2.8 lb/hr) * (240 hr/yr) / (2,000 lb/ton) = **0.3 ton/yr**

SO2 Emission = **0.5 lb/hr**

(0.5 lb/hr) * (240 hr/yr) / (2,000 lb/ton) = **0.1 ton/yr**

BOILER AND HEATER POTENTIAL TO EMIT HAP and GHG

HAP	Emission Factor[a] lb/MMBtu
Benzene	2.1E-06
Dichlorobenzene	1.2E-06
Formaldehyde	7.4E-05
Hexane	1.8E-03
Toluene	3.3E-06

a. Factors from AP-42 Table 1.4-3 and converted per footnote a.

GHG	Emission Factor[b] lb/MMBtu
CO_2	130.07
CH_4	0.007
NO_2	0.001

b. Factors from 40 CFR 98 Tables C-1 and C-2.

ID	Design Capacity (HHV) (MMBtu/hr)	Benzene		Dichlorobenzene		Formaldehyde		Hexane		Toluene		Total HAP		CO_2	CH_4	N_2O
	MMBtu/hr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr	ton/yr	ton/yr
B-0007	238	4.9E-04	2.1E-03	2.8E-04	1.2E-03	1.7E-02	7.7E-02	0.4193	1.8363	0.0008	0.0035	0.438	1.920	135,349	6.9	1.4
B-0008	238	4.9E-04	2.1E-03	2.8E-04	1.2E-03	1.7E-02	7.7E-02	0.4193	1.8363	0.0008	0.0035	0.438	1.920	135,349	6.9	1.4
B-0009	220	4.5E-04	2.0E-03	2.6E-04	1.1E-03	1.6E-02	7.1E-02	0.3882	1.7005	0.0007	0.0032	0.406	1.778	125,336	6.4	1.3
B-0010	**11.1**	**2.3E-05**	**1.0E-04**	**1.3E-05**	**5.7E-05**	**8.2E-04**	**3.6E-03**	**0.0196**	**0.0858**	**0.00004**	**0.0002**	**0.020**	**0.090**	**6,327**	**0.3**	**0.1**
H-0009	49	1.0E-04	4.4E-04	5.7E-05	2.5E-04	3.6E-03	1.6E-02	0.0858	0.3758	0.0002	0.0007	0.090	0.393	27,699	1.4	0.3
H-0011	42	8.6E-05	3.8E-04	4.9E-05	2.2E-04	3.1E-03	1.4E-02	0.0741	0.3246	0.0001	0.0006	0.077	0.339	23,922	1.2	0.2
H-0018	35	7.3E-05	3.2E-04	4.2E-05	1.8E-04	2.6E-03	1.1E-02	0.0624	0.2733	0.0001	0.0005	0.065	0.286	20,145	1.0	0.2
H-0019	60	1.2E-04	5.4E-04	7.0E-05	3.1E-04	4.4E-03	1.9E-02	0.1053	0.4612	0.0002	0.0009	0.110	0.482	33,995	1.7	0.3
H-0020	86	1.8E-04	7.8E-04	1.0E-04	4.4E-04	6.3E-03	2.8E-02	0.1521	0.6662	0.0003	0.0013	0.159	0.696	49,103	2.5	0.5
H-0028	14	2.8E-05	1.2E-04	1.6E-05	7.0E-05	1.0E-03	4.4E-03	0.0240	0.1051	0.0000	0.0002	0.025	0.110	7,743	0.4	0.1
H-0030	46	9.6E-05	4.2E-04	5.5E-05	2.4E-04	3.4E-03	1.5E-02	0.0819	0.3587	0.0002	0.0007	0.086	0.375	26,440	1.3	0.3
H-0040	46	9.6E-05	4.2E-04	5.5E-05	2.4E-04	3.4E-03	1.5E-02	0.0819	0.3587	0.0002	0.0007	0.086	0.375	26,440	1.3	0.3
H-0303	12	2.5E-05	1.1E-04	1.4E-05	6.3E-05	8.9E-04	3.9E-03	0.0215	0.0940	0.0000	0.0002	0.022	0.098	6,925	0.4	0.1
H-0312	39	8.0E-05	3.5E-04	4.6E-05	2.0E-04	2.8E-03	1.2E-02	0.0683	0.2989	0.0001	0.0006	0.071	0.313	22,033	1.1	0.2
H-0352/0353/0354	221	4.6E-04	2.0E-03	2.6E-04	1.1E-03	1.6E-02	7.1E-02	0.3900	1.7082	0.0007	0.0032	0.408	1.786	125,906	6.4	1.3
H-0355	27	5.5E-05	2.4E-04	3.1E-05	1.4E-04	2.0E-03	8.5E-03	0.0468	0.2050	0.0001	0.0004	0.049	0.214	15,109	0.8	0.2
H-0362/0363/0364	138	2.8E-04	1.2E-03	1.6E-04	7.1E-04	1.0E-02	4.4E-02	0.2438	1.0676	0.0005	0.0020	0.255	1.116	78,691	4.0	0.8
H-0421	30	6.1E-05	2.7E-04	3.5E-05	1.5E-04	2.2E-03	9.6E-03	0.0527	0.2306	0.0001	0.0004	0.055	0.241	16,997	0.9	0.2
H-0464	11	2.2E-05	9.6E-05	1.2E-05	5.5E-05	7.8E-04	3.4E-03	0.0187	0.0820	0.0000	0.0002	0.020	0.086	6,043	0.3	0.1
H-0600	93	1.9E-04	8.4E-04	1.1E-04	4.8E-04	6.8E-03	3.0E-02	0.1638	0.7174	0.0003	0.0014	0.171	0.750	52,880	2.7	0.5
H-0601	86	1.8E-04	7.8E-04	1.0E-04	4.4E-04	6.3E-03	2.8E-02	0.1521	0.6662	0.0003	0.0013	0.159	0.696	49,103	2.5	0.5
H-2421	30	6.1E-05	2.7E-04	3.5E-05	1.5E-04	2.2E-03	9.6E-03	0.0527	0.2306	0.0001	0.0004	0.055	0.241	16,997	0.9	0.2
H-2501	133	2.7E-04	1.2E-03	1.6E-04	6.8E-04	9.8E-03	4.3E-02	0.2340	1.0249	0.0004	0.0019	0.245	1.071	75,543	3.8	0.8
H-2601	**43.1**	**8.9E-05**	**3.9E-04**	**5.1E-05**	**2.2E-04**	**3.2E-03**	**1.4E-02**	**0.0761**	**0.3331**	**0.0001**	**0.0006**	**0.080**	**0.348**	**24,552**	**1.2**	**0.2**
H-3101	11	2.2E-05	9.6E-05	1.2E-05	5.5E-05	7.8E-04	3.4E-03	0.0187	0.0820	0.0000	0.0002	0.020	0.086	6,043	0.3	0.1
H-3402	57	1.2E-04	5.2E-04	6.8E-05	3.0E-04	4.2E-03	1.9E-02	0.1014	0.4441	0.0002	0.0008	0.106	0.464	32,735	1.7	0.3
H-3403	35	7.3E-05	3.2E-04	4.2E-05	1.8E-04	2.6E-03	1.1E-02	0.0624	0.2733	0.0001	0.0005	0.065	0.286	20,145	1.0	0.2
H-5401	21	4.4E-05	1.9E-04	2.5E-05	1.1E-04	1.6E-03	6.9E-03	0.0377	0.1650	0.0001	0.0003	0.039	0.173	12,162	0.6	0.1
H-8801/8802	133	2.7E-04	1.2E-03	1.6E-04	6.8E-04	9.8E-03	4.3E-02	0.2340	1.0249	0.0004	0.0019	0.245	1.071	75,543	3.8	0.8
H-9851	372	7.7E-04	3.4E-03	4.4E-04	1.9E-03	2.7E-02	1.2E-01	0.6572	2.8783	0.0012	0.0054	0.687	3.009	212,151	10.8	2.2
TOTAL:			**0.02**		**0.01**		**0.83**		**19.91**		**0.04**		**20.81**			

SRU POTENTIAL TO EMIT

TGI Stack Exhaust Flow Rate: 9,600 dscfm

Pollutant	MW	H-0473 (SRU1/SRU2 TGI)				SRU3-TGI			
		Maximum Concentrations	Average Concentrations	Emission Rates		Maximum Concentrations	Average Concentrations	Emission Rates	
		ppmvd		lb/hr	ton/yr	ppmvd		lb/hr	ton/yr
NOx	46	93.0	93.0	6.50	28.47	93.0	93.0	6.50	28.47
CO	28	650.0	650.0	27.66	121.15	352.5	352.5	15.00	65.70
VOC	44	2.0	2.0	0.13	0.59	2.0	2.0	0.13	0.59
SO2	64	308.4	191.9	30.00	81.75	308.4	191.9	30.00	81.75
H2S	34	5.8	5.8	0.30	1.31	5.8	5.8	0.30	1.31

PM10 Emissions: (0.006 gr/dscf) / (7,000 gr/lb) * (9,600 dscfm) * (60 min/hr) = 0.50 lb/hr
(0.50 lb/hr) * (8,760 hr/yr) / (2,000 lb/ton) = 2.20 tons/yr

GHG Emissions:

	2015	2014	2013	2012	2011	PTE
Unit[a]	Uncorrected CO_2 Emissions					CO2
	metric tons/yr					tons/yr
SRU2	6,995	10,312	6,668	6,443	5,986	22,734
SRU3	3,779	6,705	6,608	7,885	7,343	17,384

FCC REGEN POTENTIAL TO EMIT

Calculation Basis:		Units
FCC Stack Exhaust Flow Rate	55,000	dscfm
Conversion Factor	379	scf/lbmol
Annual Hours of Operation	8,760	hr/yr

Pollutant	PM/PM_{10}	
Maximum PM emission rate from Consent Decree	lb/1000 lb coke	1
Maximum Coke Burn Rate	lb/hr	25,000

3-hy average basis

Pollutant		NO_x [a]	CO [b]	SO_2 [c]
Molecular Weight	lb/lb-mol	46	28	64
Concentration for Maximum Hourly Emission Rate	ppmvd	87.1	500	50
Concentration for Annual Average Emission Rate	ppmvd	58.1	100	25

a Concentration for maximum hourly NOx emission rate is 87.3 ppmvd at 0% O2 on a daily 7-day rolling average basis per Consent Decree.
Concentration for annual average NOx emission rate is 58.1 ppmvd at 0% O2 on a daily rolling 365-day average basis per Consent Decree.

b Concentration for maximum hourly CO emission rate is 500 ppmvd at 0% O2 on a 1-hour average basis per NSPS Subpart J.
Concentration for annual average CO emission rate is 100 ppmvd at 0% O2 on a daily rolling 365-day average basis.

c Concentration for maximum hourly SO2 emission rate is 50 ppmvd at 0% O2 on a daily 7-day rolling average basis per Consent Decree.
Concentration for annual average SO2 emission rate is 25 ppmvd at 0% O2 on a daily rolling 365-day average basis per Consent Decree.

Proposed Permit Allowable Emission Rates:					
Pollutant		PM/PM_{10}	NO_x	CO	SO_2
Maximum Hourly Emission Rate	lb/hr	25.00	34.89	121.90	27.86
Annual Average Emission Rate	tons/yr	109.50	101.93	106.78	61.02

Sample Calculations:

25.00 lb/hr PM/PM10 = 1 lb/1000 lb coke * 25000 lb coke/hr

121.90 lb/hr CO = 55,000 dscfm * (60 min/hr) / (379 scf/lbmol) * 500.0 ppmvd CO / 1,000,000 ppmvd exhaust* 28 lb/lb-mol

GHG Emissions:

YEAR	CO_2	CH_4	N_2O
	metric tons		
2015	161,430	4.73	0.95
2014	173,016	5.07	1.01
2013	164,815	4.83	0.97
2012	188,819	5.53	1.11
2011	184,232	5.40	1.08
PTE tpy:	**416,273**	**12.19**	**2.44**

FLARE POTENTIAL TO EMIT

Molar Volume:	**385.4**	**scf/lbmol (STP 68°F and 14.7 psia)**	
NOx Factor:	**0.068**	**lb/MMBtu**	per EPA AP-42, Table 13.5-1, dated 12/2016
CO Factor:	**0.31**	**lb/MMBtu**	per EPA AP-42, Table 13.5-2, dated 12/2016
VOC Factor:	**0.66**	**lb/MMBtu**	per EPA AP-42, Table 13.5-2, dated 12/2016
Flare VOC Eff:	**98.0%**		

Emission Calculations for Proposed Permit 0195-M39 Emission Limits [a]

	FLOW	LHV	VOC	VOC MW	S	NOx	CO	VOC[b]	SO2
Flare ID	**Mscfh**	**Btu/scf**	**mol%**	**lb/lbmol**	**ppmv**	**lb/hr**			
FL-400	70	600	10%	53	490	2.86	13.02	19.25	5.70
FL-401	16	540	13%	52	3,400	0.59	2.68	5.61	9.03
FL-402	21	770	16%	54	162	1.10	5.01	9.42	0.56
FL-403[c]	22	749	-	-	20.0 gr/100 scf	1.12	5.11	10.88	1.26
FL-404	370	500	5%	54	1380	12.58	57.35	51.84	84.79
					SUM OF PROPOSED EMISSION LIMITS:	**18.24**	**83.17**	**97.00**	**101.34**
						TPY			
FL-400	30	600	6%	53	160	5.36	24.44	21.68	3.49
FL-401	6	540	2%	52	1600	0.97	4.40	1.42	6.98
FL-402	10	490	7%	54	45	1.46	6.65	8.59	0.33
FL-403[c]	4	749	-	-	20.0 gr/100 scf	0.89	4.07	8.66	1.00
FL-404	160	400	3%	54	90	19.06	86.90	58.91	10.47
					SUM OF PROPOSED EMISSION LIMITS:	**27.74**	**126.46**	**99.27**	**22.28**

a. Emission limits are based on flare monitoring data. Inputs used in calculations above (e.g., flow, lower heating value, VOC molecular weight, sulfur content, etc) are for representation purposes only. They are not proposed limits.

b. For flares other than FL-403, a 98% control efficiency is used; however, 99% control is expected on compounds with 3 carbon atoms or less.

c. Hourly and annual SO_2 emission limits are calculated based on permit limit of 20.0 grains or less of total sulfur per 100 standard cubic feet for "natural gas". VOC emissions ae calculated based on repesentative heat content and EPA AP-42 emission factor.

TOTAL FLARE EMISSIONS

		Emissions							
		NO_x		CO		VOC		SO_2	
Unit ID	**Description**	**(lb/hr)**	**(tons/yr)**	**(lb/hr)**	**(tons/yr)**	**(lb/hr)**	**(tons/yr)**	**(lb/hr)**	**(tons/yr)**
FL-400	North Plant Flare	2.86	5.36	13.02	24.44	19.25	21.68	5.70	3.49
FL-401	South Plant Falre	0.59	0.97	2.68	4.40	5.61	1.42	9.03	6.98
FL-402	FCC Flare	1.10	1.46	5.01	6.65	9.42	8.59	0.56	0.33
FL-403	Alky Flare	1.12	0.89	5.11	4.07	10.88	8.66	1.26	1.00
FL-404	GOHT Flare	12.58	19.06	57.35	86.90	51.84	58.91	84.79	10.47
	SUM:	**18.24**	**27.74**	**83.17**	**126.46**	**97.00**	**99.27**	**101.34**	**22.28**

FLARE GREENHOUSE GAS (GHG) EMISSIONS [d]

GHG GWP		
CO_2	CH_4	N_2O
1	25	298

	FLOW [e]	Carbon [e]	Methane [e]	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	Total
Flare ID	**Mscfh**	**Mol%**	**mol%**	**TPY**			**CO_2e TPY**			
FL-400	30	83%	42%	12,451	46.45	0.12	12,451	1,161.13	37.10	13,649
FL-401	6	79%	60%	2,370	13.21	0.02	2,370	330.27	7.06	2,708
FL-402	10	79%	20%	3,950	7.47	0.04	3,950	186.77	11.77	4,149
FL-403[e]	4	250%	25%	5,000	3.89	0.05	5,000	97.17	14.90	5,113
FL-404	160	40%	18%	32,003	106.34	0.32	32,003	2,658.43	95.37	34,757
						PROPOSED TOTAL:				60,375

d. GHG emissions are calculated using 40 CFR Part 98, Subpart Y equations and based on average flow, carbon percent, and methane percent from monitoring data.

e. Flare FL-403 not monitored so Carbon% assumes gas is 75% propane and 25% methane.

TRUCK AND RAILCAR LOADING POTENTIAL TO EMIT [a, b]

Loading Rack	Loading Rack Description	Material Loaded	M	S	T_{max}	T_{avg}	P_{max}	P_{avg}	Control Efficiency	Loading Throughputs		Uncontrolled Loading Loss		Uncontrolled VOC Emissions		Controlled VOC Emissions	
			Molecular Weight	Saturation Factor	Max Loading Temp.	Annual Average Loading Temp.	Vapor Pressure at Max Loading Temp.	Vapor Pressure at Annual Average Loading Temp.		Hourly	Annual	Max Hourly	Avg Annual				
			lb/lbmol		°F	°F	psia	psia	%	bbl/hr	bbl/yr	lb/Mgal	lb/Mgal	lb/hr	ton/yr	lb/hr	ton/yr
TLO-1	Asphalt Truck Loading and Off-Loading Rack	Asphalt/Pitch	409	0.6	400	320	0.00019	0.00013	0%	300	3,662,756	0.0007	0.0005	0.01	0.04	**0.01**	**0.04**
TL-2	Asphalt Truck Loading Rack #2	Asphalt/Pitch	409	0.6	400	320	0.00019	0.00013	0%	300	2,507,143	0.0007	0.0005	0.01	0.03	**0.01**	**0.03**
TL-4	Fuels Truck Loading Rack [c, d]	Gasoline - MACT	Emissions based on 10 mg/L as required by MACT CC.							1,214	2,555,000					4.25	4.48
		Gasoline - Uncontrolled to VCU	66	0.6	100	61	11	5.3800	90%	850	2,555,000	9.6921	5.0952	346.01	273.38		
		Diesel	130	0.6	100	61	0.022	0.0120	90%	2,000	17,520,000	0.0382	0.0224	3.21	8.24	0.321	0.824
		Jet Fuel	130	0.6	100	61	0.029	0.0085	90%	357	1,021,718	0.0503	0.0159	0.75	0.34	0.075	0.034
		TOTAL VOC								3571						**4.65**	**5.33**
TL-7	CBO/LCO Truck Loading Rack	Carbon Black Oil	190	0.6	250	176	0.25	0.0670	0%	300	500,808	0.5002	0.1496	6.30	1.57	6.302	1.574
		Light Cycle Oil	190	0.6	180	61	0.1	0.0500	0%	381	20,119	0.2219	0.1363	3.55	0.06	3.552	0.058
		TOTAL VOC														**6.30**	**1.63**
RLO-8	Railcar Loading & Off-Loading Rack	Carbon Black Oil	190	0.6	250	176	0.25	0.0670	0%	300	365,000	0.5002	0.1496	6.30	1.15	6.302	1.147
		Diesel	130	0.6	100	61	0.022	0.0120	0%	200	1,144,000	0.0382	0.0224	0.32	0.54	0.321	0.538
		Jet Fuel	130	0.6	100	61	0.029	0.0085	0%	200	1,144,000	0.0503	0.0159	0.42	0.38	0.423	0.381
		Asphalt	409	0.6	400	320	0.00019	0.0001	0%	300	2,628,000	0.0007	0.0005	0.01	0.03	0.009	0.028
		TOTAL VOC														**6.30**	**2.09**
RLO-19	Railcar Loading & Off-Loading Rack	Asphalt/Pitch	409	0.6	400	320	0.00019	0.00013	0%	1575	9,830,832	0.0007	0.0005	0.04	0.11	0.045	0.105
		Gas Oil	190	0.6	100	61	0.05	0.032	0%	1575	3,057,600	0.1268	0.0872	8.39	5.60	8.389	5.602
		Fuel Oil	130	0.6	100	61	0.022	0.012	0%	1575	4,968,600	0.0382	0.0224	2.53	2.34	2.526	2.336
		TOTAL VOC	*e subtotal for RLO-19 is a maximum of the individual liquid values to reflect the physical limitations of the rac*													**8.39**	**5.60**
TLO-20	Asphalt/Pitch Truck Loading Rack	Asphalt/Pitch	409	0.6	400	320	0.00019	0.00013	0%	600	5,256,000	0.0007	0.0005	0.02	0.06	**0.02**	**0.06**
RLO-26	RDU Railcar Loading & Off-Loading Rack	Distillates	130	0.6	100	61	0.029	0.012	0%	2,250	3,285,000	0.0503	0.0224	4.76	1.54	**4.76**	**1.54**

Note:

a. Loading emissions are calculated per AP-42, Section 5.2, dated June 2008 per the sample calculation for diesel loading at the Fuels Truck Loading Rack below.

b. For the Fuels Truck Loading Rack, the maximum hourly emissions are calculated based on all materials being loaded concurrently. For the other racks, the maximum hourly emissions reflect only the highest-emitting material being loaded in any hour.

c. Gasoline loading controlled emissions are calculated based on MACT R (§63.422(b)) emission standard of 10 mg organic compounds per liter of gasoline loaded, as referenced by MACT CC (§63.650(a)).

d. Gasoline loading uncontrolled emissions are calculated for input into products-of-combustion emission calculations for the Vapor Combustion Unit (VCU).

Sample Calculations for Diesel Loading at the Fuels Truck Loading Rack:

Loading Loss (lb/Mgal) = 12.46 * S * P * M / T (AP-42 Section 5.2)
Average Loading Loss = 12.46 * 0.60 * 0.012 * 130 / (61+ 460) = 0.0224 lb/Mgal

Annual VOC Emissions = (Annual Throughput, bbl/yr) * 42 gal/bbl * (Mgal/1000 gal) * (Average Loading Loss, lb/Mgal) * (ton/2000 lbs) * (1 - Control Efficiency)
Annual VOC Emissions = (17,520,000 bbl/yr) * (42 gal/bbl) * (Mgal/1000 gal) * (0.0224 lb/Mgal) * (ton/2000 lbs) * (1 - 0.90) = 0.824 ton/yr

TL-4 HAP Emissions from Gasoline Loading

HAP	Liquid wt%	Vapor wt%	lb/hr	ton/yr
Benzene	0.34%	0.10%	0.004	0.004
n-Hexane	21.62%	9.75%	0.415	0.437

FUELS TRUCK LOADING RACK VAPOR COMBUSTION UNIT PRODUCTS OF COMBUSTION POTENTIAL TO EMIT

Streams to VCU [a]	Heat Content-HHV)	Flow to VCU		Heat Input to VCU		NOx Emissions		CO Emissions		SO_2 Emissions		$PM/PM_{10}/PM_{2.5}$ Emissions	
	(Btu/scf or Btu/lb)	(scfm or lb/hr)	(MMscf/yr or ton/yr)	(MMBtu/hr)	(MMBtu/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Scenario 1 - Maximum Assist Gas Only													
Assist Gas	1,020 Btu/scf	150 scfm	--	9.18	--	0.900	--	0.756	--	0.514	--	0.068	--
Scenario 2 - Maximum Loading Throughputs, No Assist Gas													
Pilot Gas	1,020 Btu/scf	0.9 scfm	0.47 MMscf/yr	0.06	482.5	0.0054	0.024	0.0045	0.020	0.003	0.014	0.00041	0.0018
Gasoline Vapor	20,190 Btu/lb	346.01 lb/hr	273.38 ton/yr	6.99	11,039.1	0.978	0.773	0.978	0.773	--	--	0.052	0.041
Diesel Vapor	18,993 Btu/lb	3.21 lb/hr	8.24 ton/yr	0.061	312.8	0.009	0.022	0.009	0.022	--	--	0.0005	0.0012
Jet Fuel Vapor	18,993 Btu/lb	0.75 lb/hr	0.34 ton/yr	0.014	12.9	0.0020	0.0009	0.0020	0.0009	--	--	0.00011	0.00005
					Scenario 2 Subtotals =	0.994	0.819	0.993	0.815	0.003	0.014	0.053	0.044

Potential to Emit = Maximum of Scenarios 1 or 2 =	**0.994**	**0.819**	**0.993**	**0.815**	**0.514**	**0.014**	**0.068**	**0.044**

NOx Emission Factors [b]		CO Emission Factors [b]		SO_2 Emission Factors [c]	PM Emission Factors [b]	
(lb/MMscf)	(lb/MMBtu)	(lb/MMscf)	(lb/MMBtu)	(gr/100 scf)	(lb/MMscf)	(lb/MMBtu)
100	0.14	84	0.14	20	7.6	0.0075

Notes:

a. Scenarios 1 and 2 reflect the two Vapor Combustion Unit (VCU) operating scenarios with the highest hourly products-of-combustion emissions. Scenario 1 reflects when the VCU is receiving minimal, if any, heat input contribution from the loading vapors and therefore assist gas flow is required. In actual operations, Scenario 1 will occur for a limited number of minutes each hour and at less than maximum assist gas flow. The Scenario 1 hourly emissions are conservatively calculated assuming maximum assist gas flow occurring continuously for an entire hour. Scenario 2 reflects maximum loading vapors to the VCU when no assist gas is required. "Flow to VCU" conservatively reflects the total uncontrolled loading emissions including the amount not combusted in the VCU.

b. For assist gas and pilot gas combustion, NOx and CO emission factors (in terms of lb/MMscf) for assist and pilot gas are from AP-42 Table 1.4-1 dated July 1998 for uncontrolled, small boilers (100 MMBtu/hr).
For fuel vapor combustion , NOx and CO emission factors (in terms of lb/MMBtu) are from the VCU manufacturer.
For all gas combustion, the PM emission factor is from AP-42 Table 1.4-1. Per footnote a to Table 1.4-1, the PM lb/MMscf emission factor is converted to lb/MMBtu by dividing by the average heating content, 1020 Btu/scf, of the natural gas basis for the emission factor.

c. SO_2 emission are calculated based on permit limit of 20.0 grains or less of total sulfur per 100 standard cubic feet for permit-defined "natural gas".

Sample Calculations:

Gasoline Vapor Flow = (Uncontrolled Loading Emissions, lb/hr) from Fuels Truck Loading Rack Potential to Emit-VOC calculations
= 346.01 lb/hr

Gasoline Heat Input = = (Gasoline Vapor Flow, lb/hr)*(Heat Content, Btu/lb)*(MMBtu/10^6 Btu)
= (346.01 lb/hr)*(20,190 Btu/lb)*(MMBtu/10^6 Btu) = 6.99 MMBtu/hr

Gasoline NOx = = (Gasoline Heat Input, MMBtu/hr)*(Emission Factor, lb/MMBtu) = (6.99 MMBtu/hr)*(0.140 lb/MMBtu) = 0.978 lb/hr

Assist Gas SO_2 = = (Assist Gas Flow, scfm)*(60 min/hr)*(ccf/100 scf)*(Natural Gas Sulfur Content, gr/ccf)*(lb/7,000 gr)*(64 lb SO2/32 lb S)
= (150 scfm)*(60 min/hr)*(ccf/100 scf)*(20 gr/ccf)*(lb/7,000 gr)*(64 lb SO2/32 lb S) = 0.514 lb/hr

GREENHOUSE GAS (GHG) EMISSIONS

Streams to VCU	Heat Input to VCU	Emission Factors (lb/MMBtu) [d]			Annual Emissions (ton/yr)		
	(MMBtu/yr)	CO_2	N_2O	CH_4	CO_2	N_2O	CH_4
Pilot Gas	482.5	116.98	0.00022	0.0022	28.22	5.3E-05	5.3E-04
Gasoline Vapor	11,039.1	154.81	0.0013	0.0066	854.46	7.3E-03	3.7E-02
Diesel Vapor	312.8	163.05	0.0013	0.0066	25.51	2.1E-04	1.0E-03
Jet Fuel Vapor	12.9	159.22	0.0013	0.0066	1.03	8.5E-06	4.3E-05
					909.21	**0.008**	**0.038**

d. Emission factors from 40 CFR Part 98 Tables C-1 and C-2.

FUGITIVE PIPING COMPONENT POTENTIAL TO EMIT

		Valves					Flanges		Pump Seals				Relief Valves	
		Gas		Light Liquid		Heavy Liquid	All		Light Liquid			Heavy Liquid	All	
		Non-Monitored	MACT Control	Non-Monitored	MACT Control	Non-Monitored	Non-Monitored	AVO Control	Non-Monitored	Dual Seals	MACT Control	Non-Monitored	Non-Monitored	MACT Control
Emission Factor: [1]		0.059	96%	0.024	95%	0.00051	0.00055	30%	0.251	100%	88%	0.046	0.35	70%
UNIT ID	**PROCESS UNIT**	**COMPONENT COUNTS**												
FUG-02-SP CRUDE	South Division Crude Unit		314		1054	331	2923				17	10	7	1
FUG-05-KERO	Kerosene HDS Unit	30		27		180	352		2			5	4	
FUG-06-NHDU	Naphtha HDS Unit 06	59	264	5	683	0	2284	0	0	0	13	0	0	0
FUG-07-N AMINE	Amine Unit-Treating/Regen. [2]		273	4	1078	0	643	3			13	0	8	2
FUG-07-SWS1	Sour Water Stripper		124		50		221	13			2		3	
FUG-08-TRUCK RK	Loading Racks		19	6	83	37	54	40	2		1	21	1	
FUG-09-N ALKY	North Alkylation Unit (New-Inside battery limits)		328	4	1663	0	841	92		19	7	0	22	
FUG-10-FCC	FCC w/CVS		181		570	665	1862				16	23	8	4
FUG-13-NHDU	Naphtha HDS Unit 13	0	361		805	0	1211		0	0	24	0	18	0
FUG-18-LSR MEROX TRT	Merox/Merichem Treating Units		6		78	0	116	5			1	0	2	
FUG-20-ISOM	BenFree Unit		32		442		704				4	0	13	
FUG-20-ISOM - New Compone	**BenFree Unit - New Components**				**21**		**53**							
FUG-21-SP VACUUM	Flasher/Vacuum Unit	6	1	22	4	349	900					23	0.00	
FUG-25-ROSE-2	ROSE Unit		343		300	526	1593	40			8	12	0	
FUG-26-RDU	Renewable Diesel Unit				62	535	1493					7		
FUG-29-BLENDER/TK FARM	Light Oil Tankage	0	8	12	1471	15	1167	90	0	0	42	1	7	0
FUG-29-BLENDER/TK FARM - New Components	Light Oil Tankage - New Components				204			570			8			
FUG-31-SRU3/TGTU3/TGI3	SRU3 Unit		50		130	60	300				2	4	0	
FUG-33-DIST HDU	Diesel HDS Unit w/CVS		747		236	1044	1440	46			6	19	21	
FUG-34-HYDROCRACKER	WX Hydrocracker		416		422	912	4520				12	26	0	
FUG-35-SAT GAS	Saturates Gas Plant	174	39	75	305	0	601		5		8	0	9	
FUG-35-SAT GAS - New Compo	**Saturates Gas Plant - New Components**		**1**		**29**		**75**				**4**			
FUG-41-PBC	PBC Unit			64		0	131		4			0	2	
FUG-43-S ALKY	South Alky Unit (W-76)		46		163	0	243				4	0	2	
FUG-44-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)		62	8	42	1172	315	4	1			16	2	
FUG-45-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)		40		50	290	370					11	0	
FUG-54-PRIMEG	Prime G Unit		361		795		2890				6			
FUG-63-H2 PLANT-1	Hydrogen Plant		150		150	0	1260				2	0	0	
FUG-64-H2 PLANT-2	Hydrogen Plant		150		150	0	1260				2	0	0	
FUG-70-CCR	CCR Reformer (w/in battery limits)		1236	5	661	8	1564	52			17	3	29	
FUG-73-SP UTIL	Utilities	109		148		0	422		2			0	8	
FUG-80-WWTP CVS	Oil/Water Separator				36	0	180			6	2	0	0	4
FUG-ASPHALT STG	Asphalt/Heavy Oil Storage					304	656					10	7	
FUG-FUEL GAS	Fuel Gas Distribution System	349		3		0	477					0	6	
FUG-LPG	LPG Storage System	82		208		0	564		6			0	20	
FUG-RLO-ASPHALT	Asphalt/Pitch Loading Rack					222	432					7	0	
FUG-RRTOTRUCK	Crude oil unloading system			2			12							
FUG-SRU1/SRU2/TGTU	SRU1/SRU2/SWS w/CVS		141	3	155	30	120	8			4	4	4	

1. Emission factors (lb/hr/source) are from "Protocol for Equipment Leak Estimates," EPA-453/R-95-017, Table 2-2, Nov. 1995, previously approved submittals to NMED, or equivalent factors from guidance.
2. Monitored under MACT as a voluntary permit condition. Does not contain HAP.
3. Maximum VOC% applies to all stream unless otherwise specified.

FUGITIVE PIPING COMPONENT POTENTIAL TO EMIT

	WW Drain System		Compressor Seals												
	All		Gas												
	Non-Monitored	NSPS Control	Non-Monitored	Dual Seal	H_2 Service	Total Emissions, lb/hr						Gas VOC	Other VOC [3]	VOC Emissions	
	0.07	50%	1.40	100%	30%										
UNIT ID						**Valves**	**Flanges**	**Pump Seals**	**Relief Valves**	**WW Drain**	**Compressor Seals**	**%**	**%**	**(lb/hr)**	**(tons/yr)**
FUG-02-SP CRUDE	0	42	1			2.175	1.608	0.972	2.555	1.470	1.400		100%	10.2	44.6
FUG-05-KERO	0	10				2.510	0.194	0.732	1.400	0.350	0.000		100%	5.2	22.7
FUG-06-NHDU	0	12	0	0	0	5.044	1.256	0.392	0.000	0.420	0.000		100%	7.11	31.15
FUG-07-N AMINE	0	14				2.034	0.355	0.392	3.010	0.490	0.000		100%	6.3	27.5
FUG-07-SWS1						0.353	0.127	0.060	1.050	0.000	0.000		100%	1.6	7.0
FUG-08-TRUCK RK	0	16				0.307	0.045	1.498	0.350	0.560	0.000		100%	2.8	12.1
FUG-09-N ALKY	0	20				2.866	0.498	0.211	7.700	0.700	0.000		100%	12.0	52.45
FUG-10-FCC	0	61	1			1.450	1.024	1.540	3.220	2.135	1.400		100%	10.8	47.2
FUG-13-NHDU	0	19	0	1	0	1.818	0.666	0.723	6.300	0.665	0.000		100%	10.17	44.55
FUG-18-LSR MEROX TRT	0	74				0.108	0.066	0.030	0.700	2.590	0.000		100%	3.5	15.3
FUG-20-ISOM	0	8				0.606	0.387	0.120	4.550	0.280	0.000		100%	5.94	26.03
FUG-20-ISOM - New Compone						**0.025**	**0.029**	**0.000**	**0.000**	**0.000**	**0.000**		**100%**	**0.05**	**0.24**
FUG-21-SP VACUUM	0	16	0			1.067	0.495	1.058	0.000	0.560	0.000		100%	3.2	13.9
FUG-25-ROSE-2	0	20	3			1.438	0.892	0.793	0.000	0.700	4.200		100%	8.0	35.1
FUG-26-RDU			1			0.347	0.821	0.322	0.000	0.000	1.400	40%	100%	2.05	8.98
FUG-29-BLENDER/TK FARM	0	7	0	0	0	2.080	0.677	1.311	2.450	0.245	0.000		100%	6.8	29.6
FUG-29-BLENDER/TK FARM - New Components						0.245	0.219	0.241	0.000	0.000	0.000		100%	0.71	3.09
FUG-31-SRU3/TGTU3/TGI3	0	0				0.305	0.165	0.244	0.000	0.000	0.000		100%	0.7	3.1
FUG-33-DIST HDU	0	48				2.579	0.810	1.055	7.350	1.680	0.000		100%	13.47	59.01
FUG-34-HYDROCRACKER	0	6				1.953	2.486	1.557	0.000	0.210	0.000		100%	6.2	27.2
FUG-35-SAT GAS	0	22				12.524	0.331	1.496	3.150	0.770	0.000		100%	18.3	80.0
FUG-35-SAT GAS - New Compo						**0.037**	**0.041**	**0.120**	**0.000**	**0.000**	**0.000**		**100%**	**0.20**	**0.87**
FUG-41-PBC	0	1				1.536	0.072	1.004	0.700	0.035	0.000		100%	3.35	14.7
FUG-43-S ALKY	0	13				0.304	0.134	0.120	0.700	0.455	0.000		100%	1.7	7.5
FUG-44-DIST-HDU	0	27	4			0.986	0.175	0.987	0.700	0.945	5.600		100%	9.39	41.14
FUG-45-DIST-HDU	0	4	1			0.302	0.204	0.506	0.000	0.140	1.400		100%	2.6	11.2
FUG-54-PRIMEG		19	1			1.806	1.590	0.181	0.000	0.665	1.400		100%	5.6	24.7
FUG-63-H2 PLANT-1	0	8			2	0.534	0.693	0.060	0.000	0.280	0.980		100%	2.55	11.2
FUG-64-H2 PLANT-2	0	8			2	0.534	0.693	0.060	0.000	0.280	0.980		100%	2.55	11.2
FUG-70-CCR	0	24	5			3.834	0.880	0.650	10.150	0.840	7.000		100%	23.4	102.3
FUG-73-SP UTIL	0	12	2			9.983	0.232	0.502	2.800	0.420	2.800		100%	16.7	73.3
FUG-80-WWTP CVS	0	18				0.043	0.099	0.060	0.420	0.630	0.000		100%	1.3	5.5
FUG-ASPHALT STG	0	2				0.155	0.361	0.460	2.450	0.070	0.000		100%	3.5	15.3
FUG-FUEL GAS	0	1				20.663	0.262	0.000	2.100	0.035	0.000		20%	4.61	20.20
FUG-LPG	0	3	2			9.830	0.310	1.506	7.000	0.105	2.800		100%	21.6	94.4
FUG-RLO-ASPHALT	0	0				0.113	0.238	0.322	0.000	0.000	0.000		100%	0.7	2.95
FUG-RRTOTRUCK						0.048	0.007	0.000	0.000	0.000	0.000		100%	0.1	0.2
FUG-SRU1/SRU2/TGTU	0	0				0.606	0.069	0.304	1.400	0.000	0.000		100%	2.4	10.4
												TOTAL:	TOTAL:	**236.95**	**1037.83**

FUGITIVE PIPING COMPONENT POTENTIAL TO EMIT HAP & GHG

ID Number	Material	VOC Emissions		Benzene			Ethylbenzene			n-Hexane			Toluene			Xylene		
				Liquid[a]	Emission		Liquid[a]	Emission		Liquid[a]	Emission		Liquid[a]	Emission		Liquid[a]	Emission	
		lb/hr	ton/yr	wt%	lb/hr	ton/yr	wt%	lb/hr	ton/yr	wt%	lb/hr	ton/yr	wt%	lb/hr	ton/yr	wt%	lb/hr	ton/yr
FUG-02-SP CRUDE	Crude	10.18	44.59	3.79%	0.39	1.69	4.36%	0.44	1.95	5.07%	0.52	2.26	6.27%	0.64	2.80	3.30%	0.34	1.47
FUG-05-KERO	Distillates	5.19	22.71	0.10%	0.01	0.02	0.10%	0.01	0.02	0.10%	0.01	0.02	0.10%	0.01	0.02	0.10%	0.01	0.02
FUG-06-NHDU	Naphtha	7.11	31.15	3.79%	0.27	1.18	4.36%	0.31	1.36	5.07%	0.36	1.58	6.27%	0.45	1.95	3.30%	0.23	1.03
FUG-08-TRUCK RK	Gasoline	2.76	12.09	0.34%	0.01	0.04	0%	0.00	0.00	21.62%	0.60	2.61	0%	0.00	0.00	0%	0.00	0.00
FUG-09-N ALKY	Gasoline	11.97	52.45	0.34%	0.04	0.18	0%	0.00	0.00	21.62%	2.59	11.34	0%	0.00	0.00	0%	0.00	0.00
FUG-10-FCC	Gasoline	10.77	47.17	0.34%	0.04	0.16	0%	0.00	0.00	21.62%	2.33	10.20	0%	0.00	0.00	0%	0.00	0.00
FUG-13-NHDU	Naphtha	10.17	44.55	3.79%	0.39	1.69	4.36%	0.44	1.94	5.07%	0.52	2.26	6.27%	0.64	2.79	3.30%	0.34	1.47
FUG-18-LSR MEROX TRT	Gasoline	3.49	15.30	0.34%	0.01	0.05	0%	0.00	0.00	21.62%	0.76	3.31	0%	0.00	0.00	0%	0.00	0.00
FUG-20-ISOM	Gasoline	5.94	26.03	0.34%	0.02	0.09	0%	0.00	0.00	21.62%	1.28	5.63	0%	0.00	0.00	0%	0.00	0.00
FUG-20-ISOM - New Components	**Gasoline**	**0.05**	**0.24**	**0.34%**	**0.00**	**0.00**	**0%**	**0.00**	**0.00**	**21.62%**	**0.01**	**0.05**	**0%**	**0.00**	**0.00**	**0%**	**0.00**	**0.00**
FUG-26-RDU	Naphtha	2.05	8.98	3.79%	0.08	0.34	4.36%	0.09	0.39	5.07%	0.10	0.46	6.27%	0.13	0.56	3.30%	0.07	0.30
FUG-29-BLENDER/TK FARM	Gasoline	6.76	29.62	0.34%	0.02	0.10	0%	0.00	0.00	21.62%	1.46	6.40	0%	0.00	0.00	0%	0.00	0.00
FUG-29-BLENDER/TK FARM - New Components	Gasoline	0.71	3.09	0.34%	0.00	0.01	0%	0.00	0.00	21.62%	0.15	0.67	0%	0.00	0.00	0%	0.00	0.00
FUG-33-DIST HDU	Distillates	13.47	59.01	0.10%	0.01	0.06	0.10%	0.01	0.06	0.10%	0.01	0.06	0.10%	0.01	0.06	0.10%	0.01	0.06
FUG-34-HYDROCRACKER	Naphtha	6.21	27.19	3.79%	0.24	1.03	4.36%	0.27	1.19	5.07%	0.31	1.38	6.27%	0.39	1.70	3.30%	0.20	0.90
FUG-35-SAT GAS	Naphtha	18.27	80.03	3.79%	0.69	3.03	4.36%	0.80	3.49	5.07%	0.93	4.06	6.27%	1.15	5.02	3.30%	0.60	2.64
FUG-35-SAT GAS - New Components	**Naphtha**	**0.20**	**0.87**	**3.79%**	**0.01**	**0.03**	**4.36%**	**0.01**	**0.04**	**5.07%**	**0.01**	**0.04**	**6.27%**	**0.01**	**0.05**	**3.30%**	**0.01**	**0.03**
FUG-43-S ALKY	Gasoline	1.71	7.50	0.34%	0.01	0.03	0%	0.00	0.00	21.62%	0.37	1.62	0%	0.00	0.00	0%	0.00	0.00
FUG-44-DIST-HDU	Distillates	9.39	41.14	0.10%	0.01	0.04	0.10%	0.01	0.04	0.10%	0.01	0.04	0.10%	0.01	0.04	0.10%	0.01	0.04
FUG-45-DIST-HDU	Distillates	2.55	11.18	0.10%	0.00	0.01	0.10%	0.00	0.01	0.10%	0.00	0.01	0.10%	0.00	0.01	0.10%	0.00	0.01
FUG-54-PRIMEG	Gasoline	5.64	24.71	0.34%	0.02	0.08	0%	0.00	0.00	21.62%	1.22	5.34	0%	0.00	0.00	0%	0.00	0.00
FUG-70-CCR	Gasoline	23.35	102.29	0.34%	0.08	0.35	0%	0.00	0.00	21.62%	5.05	22.11	0%	0.00	0.00	0%	0.00	0.00
TOTAL:					**2.33**	**10.21**		**2.40**	**10.49**		**18.60**	**81.46**		**3.43**	**15.02**		**1.82**	**7.96**

a. Liquid HAP concentrations for naphtha, which has the highest concentration of HAP, and conservatively applied for all materials except gasoline and distillate. Distillate HAP concentrations in ppm concentrations, so an estimate of 0.1 wt% was conservatively assumed for each HAP.

GHG Emissions:

$$CH_4 = (0.4 \times N_{CD} + 0.2 \times N_{PU1} + 0.1 \times N_{PU2} + 4.3 \times N_{H2} + 6 \times N_{FGS}) \quad \text{(Eq. Y-21)}$$

CH_4 = Annual methane emissions from equipment leaks (metric tons/yr).

N_{CD} = Number of atmospheric crude distillation columns at the facility.

N_{PU1} = Cumulative number of catalytic cracking units, coking units, hydrocracking, and full-range distillation columns at the facility.

N_{PU2} = Cumulative number of hydrotreating/hydrorefining units, catalytic reforming units, and visbreaking units at the facility.

N_{H2} = Total number of hydrogen plants at the facility.

N_{FGS} = Total number of fuel gas systems at the facility.

Variable	Number of Units	Unit Descriptions
N_{CD}	1	South Division Crude Unit 02
N_{PU1}	9	FCC Unit 10, Rose Unit 25, and Hydrocracker Unit 34. Sat Gas Unit 35 - 4 columns, PBC Unit 41 - 2 columns.
N_{PU2}	10	Kerosene HDS Unit 05, Naphtha HDS Units 06 and 13, Merox/Merichem Treating Unit 18, Diesel HDS Unit 33, GOH Unit 44, GOH Unit 45, CCR Unit 70, Skid Treaters Unit 16, and Prime G Unit 54.
N_{H2}	2	Hydrogen Units 63 and 64.
N_{FGS}	2	Unit 7 HP and LP systems

CH_4 = 23.8 metric tons/yr = 26.2 tons/yr

The CCR catalytic reforming unit only has fugitive emission sources reported in the permit. Additional GHG emissions associated with catalyst regeneration is included with the fugitive emissions. The maximum reported rate was increased by 100% to estimate the potential to emit.

YEAR	CO_2	CH_4	N_2O
	metric tons		
2015	285.66	0.008	0.002
2014	370.37	0.011	0.002
2013	323.35	0.009	0.002
2012	240.16	0.007	0.001
2011	219.39	0.006	0.001
CCR PTE tpy:	**816.52**	**0.024**	**0.005**

Fugitive GHG TOTAL		
CO_2	CH_4	N_2O
816.52	**26.3**	**0.005**

Odor Control Material Potential to Emit

Number of Nozzles:	50	(conservative estimate)
Material Usage:	25	mL/hr/nozzle
VOC Composition:	16.73	wt%

VOC Emissions:

(25 ml/hr/nozzle) * (50 nozzles) * (16.73 lb VOC/100 lb Material) * (1 g/ml material) / (453.6 g/lb) = 0.46 lb/hr

(0.46 lb/hr) * (8,760 hrs/yr) / (2,000 lb/ton) = 2.02 tons/yr

STORAGE TANK EMISSIONS SUMMARY

Tank ID	Typical Liquid Stored	Maximum Material Class Stored[a]	Type (FX/IFR/ EFR)	Annual Throughput	VOC Emissions		H_2S Emissions	
				(bbl/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
~~RW-4~~	Out of Service							
~~RW-5~~	Out of Service							
RW-6	Ground Water	High VP	FX	2,400	145.2	2.19	0	0
~~T-0013~~	Out of Service							
T-0040	Spent Caustic	Low VP	FX	28,000	3.12	0.01	0	0
T-0041	Spent Caustic	Low VP	FX	28,000	3.12	0.01	0	0
T-0049	Slop	Moderate VP	FX	449,590	58.50	44.71	0	0
T-0055	Distillates	Low VP	FX	1,088,772	5.46	0.50	0	0
~~T-0058~~	Out of Service							
T-0059	Distillates	Low VP	FX	47,578	3.12	0.16	0	0
T-0061	Distillates	Low VP	FX	1,011,690	2.34	1.27	0	0
T-0063	Black Oil	Low VP	FX	430,537	22.80	0.06	0	0
T-0065	Black Oil	Low VP	FX	430,537	22.80	0.06	0	0
T-0075	Black Oil	Low VP	FX	430,537	22.80	0.07	0	0
T-0081	Asphalt/Pitch	Low VP	FX	5,000,000	0.19	0.16	0	0
T-0082	Asphalt/Pitch	Low VP	FX	6,000,000	0.19	0.18	0	0
T-0110	Asphalt/Pitch	Low VP	FX	5,256,000	0.05	0.15	0	0
T-0400	Gas Oils	Low VP	FX	12,037,500	22.80	9.46	0	0
~~T-0404~~	Out of Service							
~~T-0405~~	Out of Service							
~~T-0409~~	Out of Service							
T-0410	Asphalt/Pitch	Low VP	FX	5,256,000	0.05	0.15	0	0
T-0418	Distillates	Low VP	FX	4,927,500	3.12	5.32	0	0
T-0419	Distillates	Low VP	FX	26,097,500	3.12	26.99	0	0
T-0420	Fuel Oil	Low VP	FX	97,022	22.80	0.29	0	0
T-0422	Black Oil	Low VP	FX	1,002,055	11.40	0.09	0	0
T-0423	Black Oil	Low VP	FX	1,011,690	11.40	0.10	0	0
T-0431	Fuel Oil	Low VP	FX	5,256,000	30.40	9.55	0	0
T-0432	Fuel Oil	Low VP	FX	5,256,000	30.40	9.55	0	0
T-0433	Gas Oils	Low VP	FX	6,511,000	5.70	4.90	0	0
T-0434	Distillates	Low VP	FX	15,695,000	31.20	16.94	0	0
T-0438	Gas Oils	Low VP	FX	6,511,000	5.70	5.13	0	0
~~T-0810~~	Out of Service							
T-0814	Asphalt/Pitch	Low VP	FX	3,360,000	0.05	0.09	0	0
T-0815	Distillates	Low VP	FX	26,097,500	46.80	27.74	0	0
T-0838	Distillates	Low VP	FX	26,097,500	8.58	27.18	0	0
T-0901	Distillates	Low VP	FX	1,095,000	55.90	2.17	0	0
T-0902	Distillates	Low VP	FX	1,095,000	55.90	2.17	0	0
T-0903	Distillates	Low VP	FX	1,095,000	55.90	2.17	0	0
T-0914	Slop	Moderate VP	FX	79,200	29.60	8.66	0	0
T-1227	Asphalt/Pitch	Low VP	FX	6,000,000	0.09	0.17	0	0
T-0011	Gasolines	High VP	IFR	5,780,000	2.62	3.66	0	0
T-0012	Gasolines	High VP	IFR	5,780,000	2.59	3.62	0	0
T-0020	Gasolines	High VP	IFR	2,500,000	0.79	1.09	0	0
T-0021	Gasolines	High VP	IFR	2,500,000	0.79	1.09	0	0
T-0022	Gasolines	High VP	IFR	2,500,000	0.79	1.09	0	0
T-0023	Gasolines	High VP	IFR	2,500,000	0.79	1.09	0	0
T-0056	Naphtha	High VP	IFR	9,855,000	1.94	2.13	0	0
T-0106	Sour Water	High VP	IFR	2,390,000	3.65	0.23	0.16	0.001
T-0107	Gasolines	High VP	IFR	3,197,400	2.90	3.83	0	0
T-0108	Gasolines	High VP	IFR	3,452,000	1.67	2.37	0	0
T-0109	Gasolines	High VP	IFR	3,452,000	2.44	3.24	0	0
T-0111	Gasolines	High VP	IFR	1,415,000	1.44	1.89	0	0

STORAGE TANK EMISSIONS SUMMARY

Tank ID	Typical Liquid Stored	Maximum Material Class Stored[a]	Type (FX/IFR/ EFR)	Annual Throughput (bbl/yr)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)	H_2S Emissions (lb/hr)	H_2S Emissions (tons/yr)
T-0112	Gasolines	High VP	IFR	30,000	1.41	1.74	0	0
T-0124	Gasolines	High VP	IFR	2,308,000	1.78	2.30	0	0
T-0413	Distillates	High VP	IFR	4,927,500	5.56	0.40	0	0
T-0415	Gasolines	High VP	IFR	3,452,000	1.73	2.10	0	0
T-0417	Gasolines	High VP	IFR	1,415,000	2.26	2.84	0	0
T-0439	Naphtha	High VP	IFR	18,067,500	5.19	5.24	0	0
T-0451	Biodiesel	High VP	IFR	949,000	2.00	0.15	0	0
T-0452	Ethanol	High VP	IFR	142,350	0.96	0.11	0	0
T-0057	Naphtha	High VP	EFR	9,855,000	3.37	2.52	0	0
~~T-0078~~	Out of Service							
T-0079	Gasolines	High VP	EFR	5,780,000	3.13	3.88	0	0
T-0117	Gasolines	High VP	EFR	1,292,000	3.42	4.10	0	0
T-0401	Gasolines	High VP	EFR	5,110,000	2.34	3.24	0	0
T-0402	Gasolines	High VP	EFR	10,091,000	2.34	3.46	0	0
T-0411	Gasolines	High VP	EFR	3,197,400	4.01	5.17	0	0
T-0412	Gasolines	High VP	EFR	1,292,000	4.02	5.09	0	0
T-0435	Sour Water	High VP	EFR	2,628,000	1.66	3.91	0.13	0.12
T-0437	Crude Oil	High VP	EFR	38,106,000	4.27	10.76	0.32	0.30
T-0450	Naphtha	High VP	EFR	9,855,000	5.82	3.90	0	0
T-0737	Sour Water	High VP	EFR	5,006,000	2.37	0.48	0.11	0.001
T-0802	Sour Water	High VP	EFR	5,006,000	2.13	0.66	0.10	0.001
T-0821	Gasolines	High VP	EFR	6,394,800	2.85	3.92	0	0
T-0830	Slop	High VP	EFR	600,000	8.82	2.68	0	0
T-0834	Distillates	Moderate VP	EFR	26,097,500	1.44	2.10	0	0
T-0835	Distillates	High VP	EFR	26,097,500	6.16	2.76	0	0
T-1225	Crude Oil	High VP	EFR	38,106,000	4.02	7.30	0.43	0.40
				TOTAL	**826.07**	**314.45**	**1.26**	**0.83**
				SUBTOTAL FOR FIXED-ROOF TANKS	**720.59**	**208.33**	**0.00**	**0.00**
				SUBTOTAL FOR FLOATING-ROOF TANKS	**105.48**	**106.12**	**1.26**	**0.83**

a. Maximum material class identified but lower classes may also be stored, i.e. High VP tanks can store all material classifications. Material class definitions are as follows:

Low VP includes: Diesel (raw or finished), Kerosene (raw or finished), JP-8, CBO, LCO, Slurry, Heavy Slop, Cutback Asphalt, Cutter, VGO, AGO, and other refinery feedstocks, intermediates, products, byproducts, and wastes having a max vapor pressure less than 0.5 psia under actual storage conditions.

Moderate VP includes: Desulfurized Naphtha (Splitter Bottoms), Light Slop, and other refinery feeedstocks, intermediates, products and by products, and wastes having a max vapor pressure of 1.5 psia or less under actual storage conditions, or for the material stored in tank T-0914 having a max vapor pressure of less than 0.75 psia under actual storage conditions.

High VP includes: Crude, Naphtha (raw or treated), Unleaded Gasolines (subgrade, regular, premium, and other blends), Alkylate, Reformate, FCC Gasoline, Ethanol, Isomerate, Straight Run Gasoline, and other refinery feedstocks, intermediates, products, byproducts, and wastes having a max vapor pressure of 11 psia or less under actual storage conditions.

GHG Calculations:

CH_4 = 0.1 * (Total Tank throughput, MMbbl/yr) * (1.10231 tons/metric tons) = 0.1 * (446 MMbbl/yr) * 1.10231 =

CH_4 = 49.2 tons/yr

$$CH_4 = \left(0.1 \times Q_{Ref}\right) \quad \text{(Eq. Y-22)}$$

CH_4 = Annual methane emissions from storage tanks (metric tons/yr).

Q_{Ref} = Quantity of crude oil and intermediate products received from off site (MMbbl/yr).

STORAGE TANK POTENTIAL TO EMIT HAP

Tank Number	Material	Average Material Vapor Pressure	Tank Type (EFR/IFR)	VOC Emissions		Average Tank Temp[a]	Benzene			Ethylbenzene			n-Hexane			Toluene			Xylene		
				Lr+Lf+Ld	Lw		Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission
		psia		ton/yr	ton/yr	°F	wt%	wt%	ton/yr	wt%	wt%	ton/yr	wt%	wt%	ton/yr	wt%	wt%	ton/yr	wt%	wt%	ton/yr
T-0057	Naphtha	3.00	EFR	2.02	0.50	62	3.79%	1.56%	0.050	4.36%	0.17%	0.025	5.07%	3.41%	0.094	6.27%	0.73%	0.046	3.30%	0.15%	0.019
T-0079	Gasolines	5.38	EFR	3.70	0.18	62	0.34%	0.08%	0.003	0%	0.00%	0.000	21.62%	8.09%	0.339	0%	0.00%	0.000	0%	0.00%	0.000
T-0117	Gasolines	5.38	EFR	4.00	0.11	62	0.34%	0.08%	0.003	0%	0.00%	0.000	21.62%	8.09%	0.347	0%	0.00%	0.000	0%	0.00%	0.000
T-0401	Gasolines	5.38	EFR	3.01	0.22	62	0.34%	0.08%	0.003	0%	0.00%	0.000	21.62%	8.09%	0.293	0%	0.00%	0.000	0%	0.00%	0.000
T-0402	Gasolines	5.38	EFR	3.01	0.44	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	8.09%	0.340	0%	0.00%	0.000	0%	0.00%	0.000
T-0411	Gasolines	5.38	EFR	5.04	0.13	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	8.09%	0.435	0%	0.00%	0.000	0%	0.00%	0.000
T-0412	Gasolines	5.38	EFR	5.04	0.05	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	8.09%	0.419	0%	0.00%	0.000	0%	0.00%	0.000
T-0435	Sour Water	6.06	EFR	1.84	2.07	62	3.79%	0.77%	0.093	4.36%	0.08%	0.092	5.07%	1.69%	0.136	6.27%	0.36%	0.136	3.30%	0.08%	0.070
T-0437	Crude Oil	6.06	EFR	4.47	6.29	62	3.79%	0.77%	0.273	4.36%	0.08%	0.278	5.07%	1.69%	0.394	6.27%	0.36%	0.411	3.30%	0.08%	0.211
T-0450	Naphtha	3.00	EFR	3.53	0.37	62	3.79%	1.56%	0.069	4.36%	0.17%	0.022	5.07%	3.41%	0.139	6.27%	0.73%	0.049	3.30%	0.15%	0.018
T-0830	Slop	1.50	EFR	2.66	0.02	62	3.79%	3.12%	0.084	4.36%	0.34%	0.010	5.07%	6.82%	0.182	6.27%	1.47%	0.041	3.30%	0.30%	0.009
T-1225	Crude Oil	6.06	EFR	6.04	1.26	62	3.79%	0.77%	0.094	4.36%	0.08%	0.060	5.07%	1.69%	0.166	6.27%	0.36%	0.101	3.30%	0.08%	0.046
T-0821	Gasolines	5.38	EFR	3.68	0.24	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	8.09%	0.350	0%	0.00%	0.000	0%	0.00%	0.000
T-0011	Gasolines	5.38	IFR	3.38	0.27	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	8.09%	0.333	0%	0.00%	0.000	0%	0.00%	0.000
T-0012	Gasolines	5.38	IFR	3.34	0.28	62	0.34%	0.08%	0.004	0%	0.00%	0.000	21.62%	0.08	0.330	0%	0.00%	0.000	0%	0.00%	0.000
T-0020	Gasolines	5.38	IFR	0.96	0.13	62	0.34%	0.08%	0.001	0%	0.00%	0.000	21.62%	8.09%	0.105	0%	0.00%	0.000	0%	0.00%	0.000
T-0021	Gasolines	5.38	IFR	0.96	0.13	62	0.34%	0.08%	0.001	0%	0.00%	0.000	21.62%	8.09%	0.105	0%	0.00%	0.000	0%	0.00%	0.000
T-0022	Gasolines	5.38	IFR	0.96	0.13	62	0.34%	0.08%	0.001	0%	0.00%	0.000	21.62%	8.09%	0.105	0%	0.00%	0.000	0%	0.00%	0.000
T-0023	Gasolines	5.38	IFR	0.96	0.13	62	0.34%	0.08%	0.001	0%	0.00%	0.000	21.62%	8.09%	0.105	0%	0.00%	0.000	0%	0.00%	0.000
T-0056	Naphtha	3.00	IFR	1.18	0.95	62	3.79%	1.56%	0.054	4.36%	0.17%	0.043	5.07%	3.41%	0.089	6.27%	0.73%	0.068	3.30%	0.15%	0.033
T-0107	Gasolines	5.38	IFR	3.64	0.19	62	0.34%	0.08%	0.003	0%	0.00%	0.000	21.62%	8.09%	0.336	0%	0.00%	0.000	0%	0.00%	0.000
T-0108	Gasolines	5.38	IFR	2.16	0.21	62	0.34%	0.08%	0.002	0%	0.00%	0.000	21.62%	8.09%	0.220	0%	0.00%	0.000	0%	0.00%	0.000
T-0109	Gasolines	5.38	IFR	3.04	0.21	62	0.34%	0.08%	0.003	0%	0.00%	0.000	21.62%	8.09%	0.291	0%	0.00%	0.000	0%	0.00%	0.000
T-0111	Gasolines	5.38	IFR	1.77	0.12	62	0.34%	0.08%	0.002	0%	0.00%	0.000	21.62%	8.09%	0.169	0%	0.00%	0.000	0%	0.00%	0.000
T-0112	Gasolines	5.38	IFR	1.73	0.00	62	0.34%	0.08%	0.001	0%	0.00%	0.000	21.62%	8.09%	0.141	0%	0.00%	0.000	0%	0.00%	0.000
T-0124	Gasolines	5.38	IFR	2.16	0.14	62	0.34%	0.08%	0.002	0%	0.00%	0.000	21.62%	8.09%	0.205	0%	0.00%	0.000	0%	0.00%	0.000
T-0413	Distillates	0.02	IFR	0.02	0.37	62	0.10%	5.61%	0.002	0.10%	0.53%	0.000	0.10%	9.16%	0.002	0.10%	1.60%	0.001	0.10%	0.63%	0.001
T-0415	Gasolines	5.38	IFR	1.82	0.28	62	0.34%	0.08%	0.002	0%	0.00%	0.000	21.62%	8.09%	0.208	0%	0.00%	0.000	0%	0.00%	0.000
T-0417	Gasolines	5.38	IFR	2.73	0.11	62	0.34%	0.08%	0.002	0%	0.00%	0.000	21.62%	8.09%	0.246	0%	0.00%	0.000	0%	0.00%	0.000
T-0439	Naphtha	3.00	IFR	2.56	2.67	62	3.79%	1.56%	0.141	4.36%	0.17%	0.121	5.07%	3.41%	0.223	6.27%	0.73%	0.186	3.30%	0.15%	0.092
RW-6	Ground Water	4.90	FX	2.19	-	77	3.79%	2.50%	0.055	4.36%	0.34%	0.008	5.07%	5.14%	0.113	6.27%	1.32%	0.029	3.30%	0.30%	0.007
T-0049	Slop	1.50	FX	44.71	-	64	0.10%	0.21%	0.096	0.10%	0.03%	0.012	0.10%	0.33%	0.148	0.10%	0.07%	0.031	0.10%	0.03%	0.013
T-0055	Distillates	0.01	FX	0.50	-	64	0.10%	50.43%	0.251	0.10%	6.05%	0.030	0.10%	77.69%	0.387	0.10%	16.14%	0.080	0.10%	7.09%	0.035
T-0059	Distillates	0.02	FX	0.16	-	90	0.10%	20.31%	0.032	0.10%	2.44%	0.004	0.10%	31.29%	0.050	0.10%	6.50%	0.010	0.10%	2.85%	0.005
T-0061	Distillates	0.02	FX	1.27	-	90	0.10%	20.31%	0.258	0.10%	2.44%	0.031	0.10%	31.29%	0.398	0.10%	6.50%	0.083	0.10%	2.85%	0.036
T-0418	Distillates	0.02	FX	5.32	-	90	0.10%	20.31%	1.080	0.10%	2.44%	0.130	0.10%	31.29%	1.664	0.10%	6.50%	0.346	0.10%	2.85%	0.152
T-0419	Distillates	0.02	FX	26.99	-	90	0.10%	20.31%	5.482	0.10%	2.44%	0.658	0.10%	31.29%	8.446	0.10%	6.50%	1.754	0.10%	2.85%	0.770
T-0434	Distillates	0.02	FX	16.94	-	90	0.10%	20.31%	3.442	0.10%	2.44%	0.413	0.10%	31.29%	5.302	0.10%	6.50%	1.101	0.10%	2.85%	0.484
T-0815	Distillates	0.02	FX	27.74	-	90	0.10%	20.31%	5.634	0.10%	2.44%	0.676	0.10%	31.29%	8.680	0.10%	6.50%	1.803	0.10%	2.85%	0.792
T-0838	Distillates	0.02	FX	27.18	-	90	0.10%	20.31%	5.521	0.10%	2.44%	0.662	0.10%	31.29%	8.506	0.10%	6.50%	1.767	0.10%	2.85%	0.776
T-0914	Slop	0.74	FX	8.66	-	90	0.10%	0.44%	0.038	0.10%	0.05%	0.005	0.10%	0.67%	0.058	0.10%	0.14%	0.012	0.10%	0.06%	0.005
Emissions (ton/yr):									**22.807**			**3.279**			**40.598**			**8.055**			**3.573**

a. Vapor wt% for all tanks with an average temperature above 62 °F are calculated using the HAP vapor pressure at 100 °F.

b. Liquid HAP concentrations for naphtha, which has the highest concentration of HAP, conservatively applied for all materials stored except gasoline, slop in Tank T-0049, and distillate. HAP concentrations in the analysis for naphtha an gasoline were increased by 50%. Distillate contains HAP in ppm concentrations, so HAP emissions were conservatively estimated assuming 0.1 wt% for each HAP.

STORAGE TANK POTENTIAL TO EMIT HAP

Tank Number	Material	Maximum Material Vapor Pressure	Tank Type (EFR/IFR)	VOC Emissions		Maximum Tank Temp.	Benzene			Ethylbenzene			n-Hexane			Toluene			Xylene		
				Lr+Lf+Ld	Lw		Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission	Liquid[b]	Vapor	Emission
		psia		lb/hr	lb/hr	°F	wt%	wt%	lb/hr	wt%	wt%	lb/hr	wt%	wt%	lb/hr	wt%	wt%	lb/hr	wt%	wt%	lb/hr
T-0057	Naphtha	11.00	EFR	3.11	0.25	100	3.79%	1.11%	0.044	4.36%	0.15%	0.016	5.07%	2.29%	0.084	6.27%	0.59%	0.034	3.30%	0.14%	0.013
T-0079	Gasolines	11.00	EFR	2.80	0.33	100	0.34%	0.10%	0.004	0%	0.00%	0.000	21.62%	9.75%	0.344	0%	0.00%	0.000	0%	0.00%	0.000
T-0117	Gasolines	11.00	EFR	3.03	0.40	100	0.34%	0.10%	0.004	0%	0.00%	0.000	21.62%	9.75%	0.381	0%	0.00%	0.000	0%	0.00%	0.000
T-0401	Gasolines	11.0	EFR	2.28	0.05	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.234	0%	0.00%	0.000	0%	0.00%	0.000
T-0402	Gasolines	11.0	EFR	2.28	0.05	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.234	0%	0.00%	0.000	0%	0.00%	0.000
T-0411	Gasolines	11.0	EFR	3.82	0.19	100	0.34%	0.10%	0.004	0%	0.00%	0.000	21.62%	9.75%	0.413	0%	0.00%	0.000	0%	0.00%	0.000
T-0412	Gasolines	11.0	EFR	3.82	0.20	100	0.34%	0.10%	0.004	0%	0.00%	0.000	21.62%	9.75%	0.415	0%	0.00%	0.000	0%	0.00%	0.000
T-0435	Sour Water	11.0	EFR	1.19	0.47	100	3.79%	1.11%	0.031	4.36%	0.15%	0.022	5.07%	2.29%	0.051	6.27%	0.59%	0.037	3.30%	0.14%	0.017
T-0437	Crude Oil	11.0	EFR	2.89	1.39	100	3.79%	1.11%	0.085	4.36%	0.15%	0.065	5.07%	2.29%	0.136	6.27%	0.59%	0.104	3.30%	0.14%	0.050
T-0450	Naphtha	11.0	EFR	5.43	0.39	100	3.79%	1.11%	0.075	4.36%	0.15%	0.025	5.07%	2.29%	0.144	6.27%	0.59%	0.056	3.30%	0.14%	0.020
T-0830	Slop	11.0	EFR	8.75	0.07	100	3.79%	1.11%	0.100	4.36%	0.15%	0.016	5.07%	2.29%	0.204	6.27%	0.59%	0.056	3.30%	0.14%	0.014
T-1225	Crude Oil	11.0	EFR	3.90	0.11	100	3.79%	1.11%	0.048	4.36%	0.15%	0.011	5.07%	2.29%	0.095	6.27%	0.59%	0.030	3.30%	0.14%	0.009
T-0821	Gasolines	11.0	EFR	2.79	0.06	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.284	0%	0.00%	0.000	0%	0.00%	0.000
T-0011	Gasolines	11.0	IFR	2.56	0.06	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.263	0%	0.00%	0.000	0%	0.00%	0.000
T-0012	Gasolines	11.0	IFR	2.53	0.06	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.260	0%	0.00%	0.000	0%	0.00%	0.000
T-0020	Gasolines	11.0	IFR	0.73	0.06	100	0.34%	0.10%	0.001	0%	0.00%	0.000	21.62%	9.75%	0.085	0%	0.00%	0.000	0%	0.00%	0.000
T-0021	Gasolines	11.0	IFR	0.73	0.06	100	0.34%	0.10%	0.001	0%	0.00%	0.000	21.62%	9.75%	0.085	0%	0.00%	0.000	0%	0.00%	0.000
T-0022	Gasolines	11.0	IFR	0.73	0.06	100	0.34%	0.10%	0.001	0%	0.00%	0.000	21.62%	9.75%	0.085	0%	0.00%	0.000	0%	0.00%	0.000
T-0022	Gasolines	11.0	IFR	0.73	0.06	100	0.34%	0.10%	0.001	0%	0.00%	0.000	21.62%	9.75%	0.085	0%	0.00%	0.000	0%	0.00%	0.000
T-0056	Naphtha	11.0	IFR	1.82	0.12	100	3.79%	1.11%	0.025	4.36%	0.15%	0.008	5.07%	2.29%	0.048	6.27%	0.59%	0.018	3.30%	0.14%	0.006
T-0107	Gasolines	11.0	IFR	2.76	0.14	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.300	0%	0.00%	0.000	0%	0.00%	0.000
T-0108	Gasolines	11.0	IFR	1.64	0.04	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.167	0%	0.00%	0.000	0%	0.00%	0.000
T-0109	Gasolines	11.0	IFR	2.30	0.14	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.255	0%	0.00%	0.000	0%	0.00%	0.000
T-0111	Gasolines	11.0	IFR	1.34	0.10	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.152	0%	0.00%	0.000	0%	0.00%	0.000
T-0112	Gasolines	11.0	IFR	1.31	0.10	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.150	0%	0.00%	0.000	0%	0.00%	0.000
T-0124	Gasolines	11.0	IFR	1.64	0.14	100	0.34%	0.10%	0.002	0%	0.00%	0.000	21.62%	9.75%	0.191	0%	0.00%	0.000	0%	0.00%	0.000
T-0413	Distillates	11.0	IFR	5.18	0.38	100	0.10%	0.03%	0.002	0.10%	0.00%	0.001	0.10%	0.05%	0.003	0.10%	0.01%	0.001	0.10%	0.00%	0.001
T-0415	Gasolines	11.0	IFR	1.38	0.35	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.210	0%	0.00%	0.000	0%	0.00%	0.000
T-0417	Gasolines	11.0	IFR	2.07	0.19	100	0.34%	0.10%	0.003	0%	0.00%	0.000	21.62%	9.75%	0.243	0%	0.00%	0.000	0%	0.00%	0.000
T-0439	Naphtha	11.0	IFR	3.95	1.24	100	3.79%	1.11%	0.091	4.36%	0.15%	0.060	5.07%	2.29%	0.153	6.27%	0.59%	0.101	3.30%	0.14%	0.046
RW-6	Ground Water	11.0	FX	145.2	-	100	3.79%	1.11%	1.612	4.36%	0.15%	0.223	5.07%	2.29%	3.323	6.27%	0.59%	0.853	3.30%	0.14%	0.197
T-0049	Slop	1.5	FX	58.5	-	100	0.10%	0.21%	0.126	0.10%	0.03%	0.015	0.10%	0.33%	0.193	0.10%	0.07%	0.040	0.10%	0.03%	0.018
T-0055	Distillates	0.1	FX	5.46	-	100	0.10%	3.22%	0.176	0.10%	0.39%	0.021	0.10%	4.96%	0.271	0.10%	1.03%	0.056	0.10%	0.45%	0.025
T-0059	Distillates	0.2	FX	3.12	-	130	0.10%	1.61%	0.050	0.10%	0.19%	0.006	0.10%	2.48%	0.077	0.10%	0.52%	0.016	0.10%	0.23%	0.007
T-0061	Distillates	0.1	FX	2.34	-	130	0.10%	3.22%	0.075	0.10%	0.39%	0.009	0.10%	4.96%	0.116	0.10%	1.03%	0.024	0.10%	0.45%	0.011
T-0418	Distillates	0.1	FX	3.12	-	130	0.10%	3.22%	0.100	0.10%	0.39%	0.012	0.10%	4.96%	0.155	0.10%	1.03%	0.032	0.10%	0.45%	0.014
T-0419	Distillates	0.1	FX	3.12	-	130	0.10%	3.22%	0.100	0.10%	0.39%	0.012	0.10%	4.96%	0.155	0.10%	1.03%	0.032	0.10%	0.45%	0.014
T-0434	Distillates	0.1	FX	31.2	-	130	0.10%	3.22%	1.005	0.10%	0.39%	0.121	0.10%	4.96%	1.548	0.10%	1.03%	0.322	0.10%	0.45%	0.141
T-0815	Distillates	0.1	FX	46.8	-	130	0.10%	3.22%	1.507	0.10%	0.39%	0.181	0.10%	4.96%	2.322	0.10%	1.03%	0.482	0.10%	0.45%	0.212
T-0838	Distillates	0.1	FX	8.58	-	130	0.10%	3.22%	0.276	0.10%	0.39%	0.033	0.10%	4.96%	0.426	0.10%	1.03%	0.088	0.10%	0.45%	0.039
T-0914	Slop	0.74	FX	29.6	-	130	0.10%	0.44%	0.129	0.10%	0.05%	0.015	0.10%	0.67%	0.198	0.10%	0.14%	0.041	0.10%	0.06%	0.018
Emissions (lb/hr):									**5.710**			**0.872**			**14.538**			**2.424**			**0.871**

	Antoine Constants[a]			Vapor Pressures @ T (°F/°C)		
	A	B	C	62	100	130
				17	38	54
Pollutant	na	°C	°C	psia	psia	psia
Benzene	6.905	1211.033	220.79	1.23	3.22	6.19
Ethylbenzene	6.975	1424.255	213.21	0.12	0.39	0.87
n-Hexane	6.876	1171.17	224.41	2.02	4.96	9.17
Toluene	6.954	1344.8	219.48	0.35	1.03	2.14
Xylene[b]	7.009	1426.266	215.11	0.14	0.45	1.01

a. Antoine constants from AP-42 Table 7.1-5.

b. Constants for m-xylene which yields highest vapor pressure for xylene isomers.

STORAGE TANK POTENTIAL TO EMIT
Fixed Roof Tank Calculations

Variable	Description	Units	Value
-	Roof Construction (vertical tanks)	-	Cone
DPb	Breather vent pressure range	psi	0.06
I	Solar insolation factor	Btu/ft^2-day	1810
P_A	Atmospheric Pressure	psia	12.9
T	Annual Average Temperature	°F	62
T_{AX}	Daily Maximum Ambient Temperature	°R	535.3
T_{AN}	Daily Minimum Ambient Temperature	°R	507.5
DT_A	Daily average ambient temperature range	°R	27.8
K_N	Turnover Factor	-	1
K_P	Product Factor	-	1

a. Data for Roswell, NM.

			Material Properties					Tank Parameters					
			Mv	T_{LA}	Tmax	P_{VA}	P_{MAX}	FX/HZ	D	H/L	CAPACITY	COLOR	α
Tank No.	Maximum Material Class Stored[a]	Typical Material Stored	Vapor Molecular Weight	Daily Average Liquid Surface Temp.	Maximum Liquid Temp.	Average True Vapor Pressure	Maximum Vapor Pressure	Tank Type	Tank Dia.	Tank Height/ Length	Tank Capacity	Tank Color	Paint Solar Absorbance Factor
			(lb/lbmol)	(°R)	(°R)	(psia)	(psia)		(ft)	(ft)	(bbl)		
RW-6	High VP	Ground Water	66	537	560	4.9	11	HZ	6	40	200	Brown	0.91
T-0040	Low VP	Spent Caustic	130	524	560	0.01	0.1	FX	9	72	730	White	0.17
T-0041	Low VP	Spent Caustic	130	524	560	0.01	0.1	FX	9	72	730	White	0.17
T-0049	Moderate VP	Slop	130	524	560	1.50	1.5	HZ	10	47	667	White	0.17
T-0055	Low VP	Distillates	130	524	560	0.01	0.1	FX	48	36	11,300	White	0.17
T-0059	Low VP	Distillates	130	550	590	0.02	0.2	FX	35	30	5,100	Black	0.91
T-0061	Low VP	Distillates	130	550	590	0.02	0.1	FX	50	30	10,500	Black	0.91
T-0063	Low VP	Black Oil	190	600	630	0.001	0.2	FX	51	30	10,700	Black	0.91
T-0065	Low VP	Black Oil	190	600	630	0.001	0.2	FX	50	30	10,500	Black	0.91
T-0075	Low VP	Black Oil	190	600	630	0.001	0.2	FX	65	32	18,900	Black	0.91
T-0081	Low VP	Asphalt/Pitch	409	930	970	0.00013	0.00019	FX	140	40	100,000	Aluminum Specular	0.68
T-0082	Low VP	Asphalt/Pitch	409	930	970	0.00013	0.00019	FX	108.5	40	60,000	Aluminum Specular	0.68
T-0110	Low VP	Asphalt/Pitch	409	770	810	0.00013	0.00019	FX	108	35	57,900	White	0.17
T-0400	Low VP	Gas Oils	190	660	710	0.01	0.05	FX	120	48	96,300	Black	0.91
T-0410	Low VP	Asphalt/Pitch	409	770	810	0.00013	0.00019	FX	79	40	35,700	White	0.17
T-0418	Low VP	Distillates	130	550	590	0.02	0.1	FX	67	41	19,600	White	0.17
T-0419	Low VP	Distillates	130	550	590	0.02	0.1	FX	53	26	10,800	White	0.17
T-0420	Low VP	Fuel Oil	190	690	730	0.02	0.2	FX	50	30	10,400	White	0.17
T-0422	Low VP	Black Oil	190	600	710	0.001	0.1	FX	50	30	10,400	White	0.17
T-0423	Low VP	Black Oil	190	600	710	0.001	0.1	FX	50	30	10,500	White	0.17
T-0431	Low VP	Fuel Oil	190	690	730	0.02	0.1	FX	109	32	56,500	White	0.17
T-0432	Low VP	Fuel Oil	190	690	730	0.02	0.1	FX	109	32	55,000	White	0.17
T-0433	Low VP	Gas Oils	190	660	710	0.01	0.05	FX	117	42	79,900	White	0.17
T-0434	Low VP	Distillates	130	550	590	0.02	0.1	FX	117	42	78,400	White	0.17
T-0438	Low VP	Gas Oils	190	660	710	0.01	0.05	FX	90	48	54,200	Black	0.91
T-0814	Low VP	Asphalt/Pitch	409	930	970	0.00013	0.00019	FX	50	32	11,200	Aluminum Specular	0.68
T-0815	Low VP	Distillates	130	550	590	0.02	0.1	FX	138	32	85,250	White	0.17
T-0838	Low VP	Distillates	130	550	590	0.02	0.1	FX	74	40	29,400	White	0.17
T-0901	Low VP	Distillates	130	550	590	0.02	0.1	FX	125	50	109,000	White	0.17
T-0902	Low VP	Distillates	130	550	590	0.02	0.1	FX	125	50	109,000	White	0.17
T-0903	Low VP	Distillates	130	550	590	0.02	0.1	FX	125	50	109,000	White	0.17
T-0914	Moderate VP	Slop	80	550	590	0.74	0.74	FX	75	40	31,000	White	0.17
T-1227	Low VP	Asphalt/Pitch	409	930	970	0.00013	0.00019	FX	77	40	30,000	Aluminum Specular	0.68

STORAGE TANK POTENTIAL TO EMIT

Fixed Roof Tank Calculations

Sample Calculations
L_S = Standing loss (lb/yr) = 365 V_V W_V K_E K_S
L_W = Working loss (lb/yr) = 0.001 Mv P_{VA} Q K_N K_P
L_T = Total Loss (lb/yr) = L_s + L_w
L_H = Hourly loss (lb/hr) = 0.001 Mv P_{MAX} Q_H K_P

NOTE: Tank emissions are based on the equations found in EPA AP 42 Chapter 7.

Tank No.	Q	Q_H	DT_V	DP_V	H_{RO}	H_{VO}	V_V	W_V	K_E	K_S	L_S	L_W	L_T	L_H
	Annual Throughput	Maximum Hourly Throughput	Daily Vapor T Range	Daily Vapor Pressure Range	Tank Roof Outage	Vapor Space Outage	Vapor Space Volume	Vapor Density	Vapor Expansion Factor	Vented Vapor Saturation Factor	Standing Loss	Working Loss	Total Annual Loss	Maximum Hourly Loss
	(bbl/yr)	(bbl/hr)	(^oR)	(psia)	(ft)	(ft)	(ft^3)	(lb/ft^3)			(tpy)	(tpy)	(tpy)	(lb/hr)
RW-6	2,400.00	200	66.1	3.09	0.000	2.4	565	5.6E-02	0.502	0.621	1.80	0.39	2.19	145.20
T-0040	28,000	240	28.6	0.0033	0.094	36.1	2,296	1.5E-04	0.052	0.988	0.00	0.01	0.01	3.12
T-0041	28,000	240	28.6	0.0033	0.094	36.1	2,296	1.5E-04	0.052	0.988	0.00	0.01	0.01	3.12
T-0049	449,590	300	28.6	0.5552	0.000	3.9	1,846	3.5E-02	0.098	0.762	0.87	43.84	44.71	58.50
T-0055	1,088,772	420	28.6	0.0033	0.500	18.5	33,477	1.5E-04	0.052	0.994	0.05	0.45	0.50	5.46
T-0059	47,578	120	66.1	0.0174	0.365	15.4	14,782	3.5E-04	0.119	0.987	0.11	0.05	0.16	3.12
T-0061	1,011,690	180	66.1	0.0174	0.521	15.5	30,475	3.5E-04	0.119	0.987	0.23	1.04	1.27	2.34
T-0063	430,537	600	66.1	0.0011	0.531	15.5	31,728	2.7E-05	0.119	0.999	0.02	0.04	0.06	22.80
T-0065	430,537	600	66.1	0.0011	0.521	15.5	30,475	2.7E-05	0.119	0.999	0.02	0.04	0.06	22.80
T-0075	430,537	600	66.1	0.0011	0.677	16.7	55,340	2.7E-05	0.119	0.999	0.03	0.04	0.07	22.80
T-0081	5,000,000	2,400	54.5	0.0001	1.458	21.5	330,325	5.3E-06	0.098	1.000	0.03	0.13	0.16	0.19
T-0082	6,000,000	2,400	54.5	0.0001	1.130	21.1	195,368	5.3E-06	0.098	1.000	0.02	0.16	0.18	0.19
T-0110	5,256,000	600	28.6	0.0001	1.125	18.6	170,621	6.4E-06	0.052	1.000	0.01	0.14	0.15	0.05
T-0400	12,037,500	2,400	66.1	0.0075	1.250	25.3	285,571	1.9E-04	0.119	0.990	1.19	8.26	9.46	22.80
T-0410	5,256,000	600	28.6	0.0001	0.823	20.8	102,067	6.4E-06	0.052	1.000	0.01	0.14	0.15	0.05
T-0418	4,927,500	240	28.6	0.0075	0.698	21.2	74,736	3.5E-04	0.052	0.983	0.24	5.08	5.32	3.12
T-0419	26,097,500	240	28.6	0.0075	0.552	13.6	29,898	3.5E-04	0.052	0.989	0.10	26.89	26.99	3.12
T-0420	97,022	600	28.6	0.0073	0.521	15.5	30,475	4.6E-04	0.052	0.986	0.13	0.16	0.29	22.80
T-0422	1,002,055	600	28.6	0.0005	0.521	15.5	30,475	2.7E-05	0.052	0.999	0.01	0.09	0.09	11.40
T-0423	1,011,690	600	28.6	0.0005	0.521	15.5	30,475	2.7E-05	0.052	0.999	0.01	0.09	0.10	11.40
T-0431	5,256,000	1,600	28.6	0.0073	1.135	17.1	159,896	4.6E-04	0.052	0.984	0.67	8.87	9.55	30.40
T-0432	5,256,000	1,600	28.6	0.0073	1.135	17.1	159,896	4.6E-04	0.052	0.984	0.67	8.87	9.55	30.40
T-0433	6,511,000	600	28.6	0.0032	1.219	22.2	238,881	1.9E-04	0.052	0.992	0.43	4.47	4.90	5.70
T-0434	15,695,000	2,400	28.6	0.0075	1.219	22.2	238,881	3.5E-04	0.052	0.982	0.77	16.17	16.94	31.20
T-0438	6,511,000	600	66.1	0.0075	0.938	24.9	158,646	1.9E-04	0.119	0.991	0.66	4.47	5.13	5.70
T-0814	3,360,000	600	54.5	0.0001	0.521	16.5	32,439	5.3E-06	0.098	1.000	0.00	0.09	0.09	0.05
T-0815	26,097,500	3,600	28.6	0.0075	1.438	17.4	260,815	3.5E-04	0.052	0.986	0.84	26.89	27.74	46.80
T-0838	26,097,500	660	28.6	0.0075	0.771	20.8	89,332	3.5E-04	0.052	0.983	0.29	26.89	27.18	8.58
T-0901	1,095,000	4,300	28.6	0.0075	1.302	26.3	322,775	3.5E-04	0.052	0.978	1.04	1.13	2.17	55.90
T-0902	1,095,000	4,300	28.6	0.0075	1.302	26.3	322,775	3.5E-04	0.052	0.978	1.04	1.13	2.17	55.90
T-0903	1,095,000	4,300	28.6	0.0075	1.302	26.3	322,775	3.5E-04	0.052	0.978	1.04	1.13	2.17	55.90
T-0914	79,200	500	28.6	0.2565	0.781	20.8	91,809	1.0E-02	0.068	0.551	6.32	2.34	8.66	29.60
T-1227	6,000,000	1,200	54.5	0.0001	0.802	20.8	96,868	5.3E-06	0.098	1.000	0.01	0.16	0.17	0.09

STORAGE TANK POTENTIAL TO EMIT

External Floating Roof Tank Calculations

Variable	Description	Units	Value
P_A	Atmospheric Pressure	psia	12.9
V	Windspeed for EFR Tanks	mph	8.68
T	Annual Average Temperature	°F	62
K_c	Product Factor	-	1

Sample Calculations
L_R = Rim Seal Loss (lb/yr) = $(K_{Ra} + K_{Rb} v^n)$ D P* Mv Kc
L_{WD} = Withdrawl Loss (lb/yr) = 0.943 Q Cs W_L / D
L_F = Deck Fitting Loss (lb/yr) = F_F P* Mv Kc
L_D = Deck Seam Loss (lb/yr) = 0 for welded tanks
$L_T = L_R + L_{WD} + L_F + L_D$

		Material Properties					Tank Parameters									
Tank ID	Maximum Material Class Stored[a]	Typical Material Stored	Mv	W_L	P_{MAX}	P_{AVG}	D	H	CAPACITY	Tank Construction (Welded/ Bolted)	Primary Seal (MS/LM/VP)	Secondary Seal (None/SM/ RM/WS)	K_{Ra}	K_{Rb}	n	F_F
			Vapor Molecular Weight	Average Liquid Density	Maximum Hourly Vapor Pressure	Average True Vapor Pressure	Tank Diameter	Tank Height	Tank Capacity				Zero Wind Speed Rim Seal Loss Factor	Wind Speed Dependent Rim Seal Loss Factor	Seal Related Wind Speed Exponent	Deck Fitting Loss Factor
			(lb/lbmol)	(lb/gal)	(psia)	(psia)	(ft)	(ft)	(bbl)				lbmol/ft-yr	lbmol/mph^{n}ft-yr		(lb-mol/yr)
T-0437	High VP	Crude Oil	58	7.00	11.00	6.06	120	48	85,000	Welded	LM	RM	0.3	0.6	0.3	805
T-1225	High VP	Crude Oil	58	7.00	11.00	6.06	150	40	100,000	Welded	MS	RM	0.6	0.4	1	713
T-0834	Moderate VP	Distillates	130	7.10	1.50	0.022	65	73	40,000	Welded	MS	None	5.8	0.3	2.1	720
T-0835	High VP	Distillates	130	7.10	11.00	0.022	48	195	61,000	Welded	MS	RM	0.6	0.4	1	707
T-0079	High VP	Gasolines	66	5.60	11.00	5.38	125	40	80,000	Welded	MS	RM	0.6	0.40	1	326
T-0117	High VP	Gasolines	66	5.60	11.00	5.38	48	49	14,000	Welded	MS	RM	0.6	0.4	1	707
T-0401	High VP	Gasolines	66	5.60	11.00	5.38	90	52	53,000	Welded	MS	RM	0.6	0.4	1	314
T-0402	High VP	Gasolines	66	5.60	11.00	5.38	90	52	53,000	Welded	MS	RM	0.6	0.4	1	314
T-0411	High VP	Gasolines	66	5.60	11.00	5.38	100	43	52,000	Welded	MS	RM	0.6	0.4	1	731
T-0412	High VP	Gasolines	66	5.60	11.00	5.38	100	43	52,000	Welded	MS	RM	0.6	0.4	1	731
T-0057	High VP	Naphtha	90	6.40	11.00	3.00	90	50	50,400	Welded	MS	RM	0.6	0.4	1	314
T-0450	High VP	Naphtha	90	6.40	11.00	3.00	120	40	80,000	Welded	MS	RM	0.6	0.4	1	698
T-0435	High VP	Sour Water	58	8.34	11.00	6.06	30	40	5,000	Welded	MS	RM	0.6	0.4	1	281
T-0737	High VP	Sour Water	130	8.34	11.00	0.022	63	40	20,000	Welded	MS	RM	0.6	0.4	1	85
T-0802	High VP	Sour Water	130	8.34	11.00	0.022	45	40	10,000	Welded	MS	RM	0.6	0.4	1	116
T-0821	High VP	Gasolines	66	5.60	11.00	5.38	105	48	65,000	Welded	MS	RM	0.6	0.4	1	404
T-0830	High VP	Slop	130	8.34	11.00	1.50	150	40	100,000	Welded	MS	RM	0.6	0.4	1	713

STORAGE TANK POTENTIAL TO EMIT

External Floating Roof Tank Calculations

(Continued)

			Rim Seal Losses				Withdrawal Losses			Deck Fitting Losses		Total Losses	
Tank ID	Q_H	Q	P^*_{MAX}	P^*_{AVG}	L_{RH}	L_R	Cs	L_{WDH}	L_{WD}	L_{FH}	L_F	L_{TH}	L_T
	Maximum Hourly Throughput	Annual Throughput	Vapor Pressure Function at Max Temp.	Vapor Pressure Function at Average Temp.	Maximum Hourly	Annual	Shell Clingage Factor	Maximum Hourly	Annual	Maximum Hourly	Annual	Maximum Hourly Losses	Annual Loss
	(bbl/hr)	(bbl/yr)	(psia)	(psia)	(lb/hr)	(lb/yr)	(bbl/ 1000 ft²)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(T/yr)
T-0437	4,200	38,106,000	0.445	0.157	0.512	1,586.3	0.006	1.39	12,576.89	2.37	7,354.41	4.27	10.76
T-1225	1,714	38,106,000	0.445	0.157	1.801	5,579.9	0.0015	0.11	2,515.38	2.10	6,508.81	4.02	7.30
T-0834	660	26,097,500	0.031	0.000	1.010	122.2	0.0015	0.10	4,032.24	0.33	39.93	1.44	2.10
T-0835	960	26,097,500	0.445	0.000	1.292	10.8	0.0015	0.20	5,460.33	4.67	39.21	6.16	2.76
T-0079	5,200	5,780,000	0.445	0.134	1.708	4,509.5	0.0015	0.33	366.28	1.09	2,886.40	3.13	3.88
T-0117	2,400	1,292,000	0.445	0.134	0.656	1,731.7	0.0015	0.40	213.21	2.37	6,260.73	3.42	4.10
T-0401	600	5,110,000	0.445	0.134	1.230	3,246.9	0.0015	0.05	449.75	1.05	2,780.39	2.34	3.24
T-0402	600	10,091,000	0.445	0.134	1.230	3,246.9	0.0015	0.05	888.14	1.05	2,780.39	2.34	3.46
T-0411	2,400	3,197,400	0.445	0.134	1.367	3,607.6	0.0015	0.19	253.27	2.45	6,471.65	4.01	5.17
T-0412	2,520	1,292,000	0.445	0.134	1.367	3,607.6	0.0015	0.20	102.34	2.45	6,471.65	4.02	5.09
T-0057	2,520	9,855,000	0.445	0.066	1.677	2,180.1	0.0015	0.25	991.28	1.44	1,866.91	3.37	2.52
T-0450	5,200	9,855,000	0.445	0.066	2.236	2,906.8	0.0015	0.39	743.46	3.19	4,151.60	5.82	3.90
T-0435	300	2,628,000	0.445	0.157	0.360	1,116.0	0.006	0.47	4,133.64	0.83	2,569.01	1.66	3.91
T-0737	572	5,006,000	0.445	0.000	1.696	14.2	0.0015	0.11	937.39	0.56	4.74	2.37	0.48
T-0802	572	5,006,000	0.445	0.000	1.211	10.2	0.0015	0.15	1,312.34	0.77	6.44	2.13	0.66
T-0821	730	6,394,800	0.445	0.134	1.435	3,788.0	0.0015	0.06	482.42	1.36	3,579.30	2.85	3.92
T-0830	857	600,000	0.445	0.031	4.038	2,453.9	0.0015	0.07	47.19	4.71	2,862.36	8.82	2.68

STORAGE TANK POTENTIAL TO EMIT

Internal Floating Roof Tank Calculations

Variable	Description	Units	Value
P_A	Atmospheric Pressure	psia	12.9
V	Windspeed for IFR Tanks	mph	0
T	Annual Average Temperature	°F	62
K_c	Product Factor	-	1

Sample Calculations
L_R = Rim Seal Loss (lb/yr) = K_{Ra} D P* Mv Kc
L_{WD} = Withdrawl Loss (lb/yr) = 0.943 Q Cs W_L (1 + Nc Fc/D) / D
L_F = Deck Fitting Loss (lb/yr) = F_F P* Mv Kc
L_D = Deck Seam Loss (lb/yr) = 0.14 SD D^2 P* Mv Kc (welded=0)
$L_T = L_R + L_{WD} + L_F + L_D$

		Material Properties					Tank Parameters									
Tank ID	Maximum Material Class Stored[a]	Typical Material Stored	Mv	W_L	P_{MAX}	P_{AVG}	D	H	CAPACITY	Tank Construction (Welded/ Bolted)	Primary Seal (MS/LM/VP)	Secondary Seal (None/SM/ RM/WS)	Nc	Fc	K_{Ra}	F_F
			Vapor Molecular Weight	Average Liquid Density	Maximum Hourly Vapor Pressure	Average True Vapor Pressure	Tank Diameter	Tank Height	Tank Capacity				Number of Columns	Effective Column Diameter	Zero Wind Speed Rim Seal Loss Factor	Deck Fitting Loss Factor
			(lb/lbmol)	(lb/gal)	(psia)	(psia)	(ft)	(ft)	(bbl)					ft	lbmol/ft-yr	(lb-mol/yr)
T-0413	High VP	Distillates	130	7.10	11.00	0.022	67	40	21,900	Welded	VM	RM	1	1	2.2	636
T-0011	High VP	Gasolines	66	5.60	11.00	5.38	89	35	32,600	Welded	VM	RM	6	1	2.2	568
T-0012	High VP	Gasolines	66	5.60	11.00	5.38	88	35	32,300	Welded	VM	RM	6	1	2.2	561
T-0020	High VP	Gasolines	66	5.60	11.00	5.38	80	56	50,000	Welded	MS	SM	1	1	1.6	89
T-0021	High VP	Gasolines	66	5.60	11.00	5.38	80	56	50,000	Welded	MS	SM	1	1	1.6	89
T-0022	High VP	Gasolines	66	5.60	11.00	5.38	80	56	50,000	Welded	MS	SM	1	1	1.6	89
T-0023	High VP	Gasolines	66	5.60	11.00	5.38	80	56	50,000	Welded	MS	SM	1	1	1.6	89
T-0107	High VP	Gasolines	66	5.60	11.00	5.38	67	45	25,000	Bolted	VM	RM	1	1	2.2	586
T-0108	High VP	Gasolines	66	5.60	11.00	5.38	67	42	22,900	Welded	VM	RM	1	1	2.2	340
T-0109	High VP	Gasolines	66	5.60	11.00	5.38	67	42	22,300	Welded	VM	RM	1	1	2.2	538
T-0111	High VP	Gasolines	66	5.60	11.00	5.38	49	34	9,100	Welded	VM	RM	1	1	2.2	293
T-0112	High VP	Gasolines	66	5.60	11.00	5.38	49	36	10,400	Bolted	VM	RM	1	1	2.2	237
T-0124	High VP	Gasolines	66	5.60	11.00	5.38	67	15	6,200	Welded	VM	RM	1	1	2.2	340
T-0415	High VP	Gasolines	66	5.60	11.00	5.38	50	92	29,900	Welded	VM	RM	1	1	2.2	301
T-0417	High VP	Gasolines	66	5.60	11.00	5.38	50	30	9,300	Welded	VM	RM	1	1	2.2	506
T-0056	High VP	Naphtha	90	6.40	11.00	3.00	48	40	10,800	Welded	VM	RM	1	1	2.2	293
T-0439	High VP	Naphtha	90	6.40	11.00	3.00	130	50	108,000	Welded	MS	RM	8	1	0.6	785
T-0106	High VP	Sour Water	130	8.34	11.00	0.022	67	45	24,800	Welded	VM	RM	1	1	2.2	340
T-0451	High VP	Biodiesel	130	7.10	11.00	0.022	35	40	6,854	Welded	MS	RM	1	0.7	0.6	271
T-0452	High VP	Ethanol	46	6.61	11.00	0.704	35	40	6,854	Welded	MS	RM	1	0.7	0.6	271

STORAGE TANK POTENTIAL TO EMIT

Internal Floating Roof Tank Calculations

(Continued)

			Rim Seal Losses				Withdrawal Losses			Deck Fitting Losses		Deck Seam Losses			Total Losses	
Tank ID	Q_H	Q	P^*_{MAX}	P^*_{AVG}	L_{RH}	L_R	Cs	L_{WDH}	L_{WD}	L_{FH}	L_F	S_D	L_{DH}	L_D	L_{TH}	L_T
	Maximum Hourly Throughput	Annual Throughput	Vapor Pressure Function at Max Temp.	Vapor Pressure Function at Average Temp.	Maximum Hourly	Annual	Shell Clingage Factor	Maximum Hourly	Annual	Maximum Hourly	Annual	Deck Seam Length Factor	Maximum Hourly	Annual	Maximum Hourly	Annual
	(bbl/hr)	(bbl/yr)	(psia)	(psia)	(lb/hr)	(lb/yr)	(bbl/ 1000 ft²)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(ft/ft²)	(lb/hr)	(lb/yr)	(lb/hr)	(T/yr)
T-0413	2,520	4,927,500	0.445	0.000	0.974	8.2	0.0015	0.38	749.63	4.20	35.30				5.56	0.40
T-0011	624	5,780,000	0.445	0.134	0.657	1,734.1	0.0015	0.06	549.11	1.91	5034.78				2.62	3.66
T-0012	624	5,780,000	0.445	0.134	0.650	1,714.7	0.0015	0.06	555.75	1.88	4964.81				2.59	3.62
T-0020	624	2,500,000	0.445	0.134	0.429	1,133.7	0.0015	0.06	250.63	0.30	790.64				0.79	1.09
T-0021	624	2,500,000	0.445	0.134	0.429	1,133.7	0.0015	0.06	250.63	0.30	790.64				0.79	1.09
T-0022	624	2,500,000	0.445	0.134	0.429	1,133.7	0.0015	0.06	250.63	0.30	790.64				0.79	1.09
T-0023	624	2,500,000	0.445	0.134	0.429	1,133.7	0.0015	0.06	250.63	0.30	790.64				0.79	1.09
T-0107	1,200	3,197,400	0.445	0.134	0.495	1,305.5	0.0015	0.14	383.66	1.97	5191.81	0.14	0.30	779.25	2.90	3.83
T-0108	300	3,452,000	0.445	0.134	0.495	1,305.5	0.0015	0.04	414.21	1.14	3013.67				1.67	2.37
T-0109	1,200	3,452,000	0.445	0.134	0.495	1,305.5	0.0015	0.14	414.21	1.81	4767.30				2.44	3.24
T-0111	600	1,415,000	0.445	0.134	0.362	954.8	0.0015	0.10	233.41	0.98	2593.87				1.44	1.89
T-0112	600	30,000	0.445	0.134	0.362	954.8	0.0015	0.10	4.95	0.79	2097.89	0.14	0.16	416.79	1.41	1.74
T-0124	1,200	2,308,000	0.445	0.134	0.495	1,305.5	0.0015	0.14	276.94	1.14	3013.67				1.78	2.30
T-0415	2,160	3,452,000	0.445	0.134	0.369	974.2	0.0015	0.35	557.82	1.01	2663.83				1.73	2.10
T-0417	1,200	1,415,000	0.445	0.134	0.369	974.2	0.0015	0.19	228.65	1.70	4483.00				2.26	2.84
T-0056	600	9,855,000	0.445	0.066	0.483	628.0	0.0015	0.12	1,897.37	1.34	1741.67				1.94	2.13
T-0439	4,200	18,067,500	0.445	0.066	0.357	463.9	0.006	1.24	5,342.36	3.59	4665.76				5.19	5.24
T-0106	2,400	2,390,000	0.445	0.000	0.974	8.2	0.0015	0.43	427.10	2.25	18.88				3.65	0.23
T-0451	226	949,000	0.445	0.0004	0.139	1.2	0.0015	0.07	277.75	1.79	15.05				2.00	0.15
T-0452	1,024	142,350	0.445	0.014	0.049	13.6	0.0015	0.28	38.79	0.63	175.24				0.96	0.11

STORAGE TANK POTENTIAL TO EMIT

Hydrogen Sulfide Tank Calculations

H2S emissions are estimated using the Antoine Equation to calculate the H2S vapor pressure at maximum and average temperatures.

H2S Vapor Pressure: **$\text{Log10}(P^\circ) = A - B/(T + C)$**

P° = Vapor pressure, bar
A= 4.52887
B= 958.587
C= -0.539
T= Temperature, K

Constants from: Stull, Daniel R., Vapor Pressure of Pure Substances. Organic and Inorganic Compounds, Ind. Eng. Chem., 1947, 39, 4, 517-540.

Vapor H2S Concentrations:

207 lb/lb-mol molecular weight (MW) of crude oil
34 lb/lb-mol MW of H_2S
0.10% H_2S wt% in crude oil (same assumed for diesel layer on sour water)
x = H_2S liquid phase mole fraction, where x = (wt fraction H_2S) (MW oil) / (MW H_2S) = 0.0061
y = mole fraction of a component in the vapor phase = x * °P / P
P = Atmospheric Pressure, psia = 12.9

	T, °F	T, K	P°,psia	y
MAX	100	311	402	0.19
AVG	62	290	239	0.11

				VOC Emissions				H_2S Emission	
		Vapor	Tank Type	Withdrawl		Evaporative			
Tank ID	Liquid	Mw	(IFR or EFR)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
T-0437	Crude Oil	58	EFR	1.39	6.29	2.89	4.47	0.32	0.30
T-1225	Crude Oil	58	EFR	0.11	1.26	3.90	6.04	0.43	0.40
T-0106	Sour Water	130	IFR	0.43	0.21	3.22	0.01	0.16	0.001
T-0435	Sour Water	58	EFR	0.47	2.07	1.19	1.84	0.13	0.12
T-0737	Sour Water	130	EFR	0.11	0.47	2.26	0.01	0.11	0.001
T-0802	Sour Water	130	EFR	0.15	0.66	1.98	0.01	0.10	0.001
								1.26	**0.83**

Sample Calculations:

(2.89 lb Vapor/hr) / (58 lb/lbmol Vapor)*(0.19 lbmol H2S/lbmol Vapor)*(34 lb H2S/lbmol) + (1.39 lb Liquid/hr)*(0.001 H2S wt. fraction)
= 0.32 lb/hr

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	Loss Factors			Number of Fittings							
					T-0020	T-0021	T-0022	T-0023	T-0056	T-0106	T-0107	T-0108
		KFa	KFb	m	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR
Access hatch	Bolted cover, gasketed	1.6	0	0	1	1	1	1				
	Unbolted cover, gasketed	31	5.2	1.2					1	1		1
	Unbolted cover, ungasketed	36	5.9	1.3							1	
Fixed roof support column well	Round pipe, ungasketed sliding cover	31										
	Round pipe, gasketed sliding cover	25										
	Round pipe, flexible fabric sleeve seal	10										
	Built-up column, ungasketed sliding cover	47									7	
	Built-up column, gasketed sliding cover	33			1	1	1	1	1	1		1
Unslotted guide-pole and well	Ungasketed sliding cover	31	150	1.4								
	Ungasketed sliding cover w/pole sleeve	25	2.2	2.1								
	Gasketed sliding cover	25	13	2.2								
	Gasketed sliding cover w/pole wiper	14	3.7	0.78								
	Gasketed sliding cover w/pole sleeve	8.6	12	0.81								
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	43	270	1.4					1	1	1	1
	Ungasketed or gasketed sliding cover, w/float	31	36	2								
	Gasketed sliding cover, w/pole wiper	41	48	1.4								
	Gasketed sliding cover, w/pole sleeve	11	46	1.4								
	Gasketed sliding cover, w/pole sleeve, pole wiper	8.3	4.4	1.6					1	1		1
	Gasketed sliding cover, w/float, pole wiper	21	7.9	1.8								
	Gasketed sliding cover, w/float, pole sleeve, pole wiper	11	9.9	0.89	1	1	1	1				
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed	14	5.4	1.1							1	
	Unbolted cover, gasketed	4.3	17	0.38					1	1		1
	Bolted cover, gasketed	2.8	0	0	1	1	1	1				
Gauge-hatch/sample port	Weighted mechanical action, gasketed	0.47	0.02	0.97	1	1	1	1	1	1		1
	Weighted mechanical actuation, ungasketed	2.3	0	0								
	Slit fabric seal, 10% open area	12										
Vacuum breaker	Weighted mechanical actuation, ungasketed	7.8	0.01	4								
	Weighted mechanical actuation, gasketed	6.2	1.2	0.94	1	1	1	1	1	1	1	1
Deck drain	Open	1.5	0.21	1.7								
	90% closed	1.8	0.14	1.1	19	19	19	19				
Stub drain		1.2										
Deck leg	Adjustable, internal floating deck	7.9							14	20	20	20
	Adjustable, pontoon area -ungasketed	2	0.37	0.91								
	Adjustable, pontoon area -gasketed	1.3	0.08	0.65								
	Adjustable, pontoon area -sock	1.2	0.14	0.65								
	Adjustable, center area -ungasketed	0.82	0.53	0.14								
	Adjustable, center area -gasketed	0.53	0.11	0.13								
	Adjustable, center area -sock	0.49	0.16	0.14								
	Adjustable, double-deck roofs	0.82	0.53	0.14								
	Fixed	0	0	0								
Rim Vent	Weighted mechanical actuation, ungasketed	0.68	1.8	1								
	Weighted mechanical actuation, gasketed	0.71	0.1	1								
Ladder well (IFR only)	Sliding cover, ungasketed	76										
	Sliding cover, gasketed	56							1	1		1
	TOTAL:											

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	Number of Fittings										
		T-0109	T-0111	T-0112	T-0011	T-0124	T-0012	T-0413	T-0415	T-0417	T-0439	T-0451
		IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR
Access hatch	Bolted cover, gasketed											1
	Unbolted cover, gasketed	1	1	1	1	1	1	1	1	1	1	
	Unbolted cover, ungasketed											
Fixed roof support column well	Round pipe, ungasketed sliding cover											
	Round pipe, gasketed sliding cover											
	Round pipe, flexible fabric sleeve seal											
	Built-up column, ungasketed sliding cover							7				
	Built-up column, gasketed sliding cover	7	1	1	6	1	6		1	1	8	1
Unslotted guide-pole and well	Ungasketed sliding cover											
	Ungasketed sliding cover w/pole sleeve											
	Gasketed sliding cover											
	Gasketed sliding cover w/pole wiper											
	Gasketed sliding cover w/pole sleeve											
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	1	1	1	1	1	1	1	1	1	1	1
	Ungasketed or gasketed sliding cover, w/float											
	Gasketed sliding cover, w/pole wiper											
	Gasketed sliding cover, w/pole sleeve											
	Gasketed sliding cover, w/pole sleeve, pole wiper	1	1	1	1	1	1	1	1	1	1	1
	Gasketed sliding cover, w/float, pole wiper											
	Gasketed sliding cover, w/float, pole sleeve, pole wiper											
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed											
	Unbolted cover, gasketed	1	1	1	1	1	1	1	1	1	1	1
	Bolted cover, gasketed											
Gauge-hatch/sample port	Weighted mechanical action, gasketed	1	1	1	1	1	1	1	1	1	1	1
	Weighted mechanical actuation, ungasketed											
	Slit fabric seal, 10% open area											
Vacuum breaker	Weighted mechanical actuation, ungasketed											
	Weighted mechanical actuation, gasketed	1	1	1	1	1	1	1	1	1	1	1
Deck drain	Open											
	90% closed											
Stub drain												
Deck leg	Adjustable, internal floating deck	20	14	14	28	20	27	20	15	41	47	15
	Adjustable, pontoon area -ungasketed											
	Adjustable, pontoon area -gasketed											
	Adjustable, pontoon area -sock											
	Adjustable, center area -ungasketed											
	Adjustable, center area -gasketed											
	Adjustable, center area -sock											
	Adjustable, double-deck roofs											
	Fixed											
Rim Vent	Weighted mechanical actuation, ungasketed											
	Weighted mechanical actuation, gasketed											
Ladder well (IFR only)	Sliding cover, ungasketed											
	Sliding cover, gasketed	1	1		1	1	1	1	1	1	1	1
	TOTAL:											

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	Number of Fittings										
		T-0452	T-0829	T-0079	T-0117	T-0401	T-0402	T-0411	T-0412	T-0435	T-0437	T-0450
		IFR	IFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR
Access hatch	Bolted cover, gasketed	1		1	1	1	1	1	1	1	1	1
	Unbolted cover, gasketed		1									
	Unbolted cover, ungasketed											
Fixed roof support column well	Round pipe, ungasketed sliding cover											
	Round pipe, gasketed sliding cover											
	Round pipe, flexible fabric sleeve seal											
	Built-up column, ungasketed sliding cover											
	Built-up column, gasketed sliding cover	1	1									
Unslotted guide-pole and well	Ungasketed sliding cover											
	Ungasketed sliding cover w/pole sleeve											
	Gasketed sliding cover										1	
	Gasketed sliding cover w/pole wiper											
	Gasketed sliding cover w/pole sleeve											
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	1	1									
	Ungasketed or gasketed sliding cover, w/float											
	Gasketed sliding cover, w/pole wiper				1			1	1			1
	Gasketed sliding cover, w/pole sleeve											
	Gasketed sliding cover, w/pole sleeve, pole wiper	1	1									
	Gasketed sliding cover, w/float, pole wiper			1		1	1			1		
	Gasketed sliding cover, w/float, pole sleeve, pole wiper											
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed											
	Unbolted cover, gasketed	1	1	1	1	1	1	1	1	1	1	
	Bolted cover, gasketed											
Gauge-hatch/sample port	Weighted mechanical action, gasketed	1	1	1	1	1	1	1	1	1	1	1
	Weighted mechanical actuation, ungasketed											
	Slit fabric seal, 10% open area											
Vacuum breaker	Weighted mechanical actuation, ungasketed											
	Weighted mechanical actuation, gasketed	1	1	1	1	1	1	1	1	1	1	1
Deck drain	Open		1		1	1	1	1	1		1	
	90% closed			1								1
Stub drain												
Deck leg	Adjustable, internal floating deck	15										
	Adjustable, pontoon area -ungasketed		18									
	Adjustable, pontoon area -gasketed				6	16	16	17	17	4	19	19
	Adjustable, pontoon area -sock			19								
	Adjustable, center area -ungasketed		16									
	Adjustable, center area -gasketed				6	12	12	16	16	2	24	24
	Adjustable, center area -sock			24								
	Adjustable, double-deck roofs											
	Fixed		20									
Rim Vent	Weighted mechanical actuation, ungasketed		4									
	Weighted mechanical actuation, gasketed			1	1	1	1	1	1		1	1
Ladder well (IFR only)	Sliding cover, ungasketed		1									
	Sliding cover, gasketed	1										
	TOTAL:											

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	Number of Fittings							
		T-0057	T-0802	T-0830	T-0834	T-0835	T-1225	T-0737	T-0821
		EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR
Access hatch	Bolted cover, gasketed	1	1	1	1	1	1	11	1
	Unbolted cover, gasketed								
	Unbolted cover, ungasketed								
Fixed roof support column well	Round pipe, ungasketed sliding cover								
	Round pipe, gasketed sliding cover								
	Round pipe, flexible fabric sleeve seal								
	Built-up column, ungasketed sliding cover								
	Built-up column, gasketed sliding cover								
Unslotted guide-pole and well	Ungasketed sliding cover								
	Ungasketed sliding cover w/pole sleeve								
	Gasketed sliding cover								
	Gasketed sliding cover w/pole wiper		1					1	1
	Gasketed sliding cover w/pole sleeve								
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover								
	Ungasketed or gasketed sliding cover, w/float								
	Gasketed sliding cover, w/pole wiper			1	1	1	1		
	Gasketed sliding cover, w/pole sleeve								
	Gasketed sliding cover, w/pole sleeve, pole wiper								
	Gasketed sliding cover, w/float, pole wiper	1							1
	Gasketed sliding cover, w/float, pole sleeve, pole wiper								
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed								
	Unbolted cover, gasketed	1			1	1			1
	Bolted cover, gasketed		1	1			1	1	
Gauge-hatch/sample port	Weighted mechanical action, gasketed	1	1	1	1	1	1	1	1
	Weighted mechanical actuation, ungasketed								
	Slit fabric seal, 10% open area								
Vacuum breaker	Weighted mechanical actuation, ungasketed								
	Weighted mechanical actuation, gasketed	1	1	1	1	1	1	1	1
Deck drain	Open	1			1	1			1
	90% closed		1	1			1	1	
Stub drain									
Deck leg	Adjustable, internal floating deck								
	Adjustable, pontoon area -ungasketed								18
	Adjustable, pontoon area -gasketed	16		24	13	6	24	9	
	Adjustable, pontoon area -sock		4						
	Adjustable, center area -ungasketed								16
	Adjustable, center area -gasketed	12		30	9	6	30	7	
	Adjustable, center area -sock		4						
	Adjustable, double-deck roofs								
	Fixed								
Rim Vent	Weighted mechanical actuation, ungasketed								
	Weighted mechanical actuation, gasketed	1	1	1	1	1	1	1	1
Ladder well (IFR only)	Sliding cover, ungasketed								
	Sliding cover, gasketed		1						
	TOTAL:								

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	TOTAL DECK FITTING FACTORS, Ff lbmol/yr										
		T-0020	T-0021	T-0022	T-0023	T-0056	T-0106	T-0107	T-0108	T-0109	T-0111	T-0112
		IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR
Access hatch	Bolted cover, gasketed	1.60	1.60	1.60	1.60	-	-	-	-	-	-	-
	Unbolted cover, gasketed	-	-	-	-	31.00	31.00	-	31.00	31.00	31.00	31.00
	Unbolted cover, ungasketed	-	-	-	-	-	-	36.00	-	-	-	-
Fixed roof support column well	Round pipe, ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, flexible fabric sleeve seal	-	-	-	-	-	-	-	-	-	-	-
	Built-up column, ungasketed sliding cover	-	-	-	-	-	-	329.00	-	-	-	-
	Built-up column, gasketed sliding cover	33.00	33.00	33.00	33.00	33.00	33.00	-	33.00	231.00	33.00	33.00
Unslotted guide-pole and well	Ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Ungasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover w/pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	-	-	-	-	43.00	43.00	43.00	43.00	43.00	43.00	43.00
	Ungasketed or gasketed sliding cover, w/float	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve, pole wiper	-	-	-	-	8.30	8.30	-	8.30	8.30	8.30	8.30
	Gasketed sliding cover, w/float, pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/float, pole sleeve, pole wiper	11.00	11.00	11.00	11.00	-	-	-	-	-	-	-
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed	-	-	-	-	-	-	14.00	-	-	-	-
	Unbolted cover, gasketed	-	-	-	-	4.30	4.30	-	4.30	4.30	4.30	4.30
	Bolted cover, gasketed	2.80	2.80	2.80	2.80	-	-	-	-	-	-	-
Gauge-hatch/sample port	Weighted mechanical action, gasketed	0.47	0.47	0.47	0.47	0.47	0.47	-	0.47	0.47	0.47	0.47
	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Slit fabric seal, 10% open area	-	-	-	-	-	-	-	-	-	-	-
Vacuum breaker	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Weighted mechanical actuation, gasketed	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20
Deck drain	Open	-	-	-	-	-	-	-	-	-	-	-
	90% closed	34.20	34.20	34.20	34.20	-	-	-	-	-	-	-
Stub drain		-	-	-	-	-	-	-	-	-	-	-
Deck leg	Adjustable, internal floating deck	-	-	-	-	110.60	158.00	158.00	158.00	158.00	110.60	110.60
	Adjustable, pontoon area -ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, pontoon area -gasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, pontoon area -sock	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, center area -ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, center area -gasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, center area -sock	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, double-deck roofs	-	-	-	-	-	-	-	-	-	-	-
	Fixed	-	-	-	-	-	-	-	-	-	-	-
Rim Vent	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Weighted mechanical actuation, gasketed	-	-	-	-	-	-	-	-	-	-	-
Ladder well (IFR only)	Sliding cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Sliding cover, gasketed	-	-	-	-	56.00	56.00	-	56.00	56.00	56.00	-
	TOTAL:	**89.27**	**89.27**	**89.27**	**89.27**	**292.87**	**340.27**	**586.20**	**340.27**	**538.27**	**292.87**	**236.87**

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	TOTAL DECK FITTING FACTORS, Ff lbmol/yr										
		T-0011	T-0124	T-0012	T-0413	T-0415	T-0417	T-0439	T-0451	T-0452	T-0829	T-0079
		IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	IFR	EFR
Access hatch	Bolted cover, gasketed	-	-	-	-	-	-	-	1.60	1.60	-	1.60
	Unbolted cover, gasketed	31.00	31.00	31.00	31.00	31.00	31.00	31.00	-	-	31.00	-
	Unbolted cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
Fixed roof support column well	Round pipe, ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, flexible fabric sleeve seal	-	-	-	-	-	-	-	-	-	-	-
	Built-up column, ungasketed sliding cover	-	-	-	329.00	-	-	-	-	-	-	-
	Built-up column, gasketed sliding cover	198.00	33.00	198.00	-	33.00	33.00	264.00	33.00	33.00	33.00	-
Unslotted guide-pole and well	Ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Ungasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover w/pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	-
	Ungasketed or gasketed sliding cover, w/float	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve, pole wiper	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	-
	Gasketed sliding cover, w/float, pole wiper	-	-	-	-	-	-	-	-	-	-	220.94
	Gasketed sliding cover, w/float, pole sleeve, pole wiper	-	-	-	-	-	-	-	-	-	-	-
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Unbolted cover, gasketed	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	37.93
	Bolted cover, gasketed	-	-	-	-	-	-	-	-	-	-	-
Gauge-hatch/sample port	Weighted mechanical action, gasketed	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.58
	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Slit fabric seal, 10% open area	-	-	-	-	-	-	-	-	-	-	-
Vacuum breaker	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Weighted mechanical actuation, gasketed	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	12.69
Deck drain	Open	-	-	-	-	-	-	-	-	-	1.50	-
	90% closed	-	-	-	-	-	-	-	-	-	-	2.81
Stub drain		-	-	-	-	-	-	-	-	-	-	-
Deck leg	Adjustable, internal floating deck	221.20	158.00	213.30	158.00	118.50	323.90	371.30	118.50	118.50	-	-
	Adjustable, pontoon area -ungasketed	-	-	-	-	-	-	-	-	-	36.00	-
	Adjustable, pontoon area -gasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, pontoon area -sock	-	-	-	-	-	-	-	-	-	-	31.34
	Adjustable, center area -ungasketed	-	-	-	-	-	-	-	-	-	13.12	-
	Adjustable, center area -gasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, center area -sock	-	-	-	-	-	-	-	-	-	-	16.70
	Adjustable, double-deck roofs	-	-	-	-	-	-	-	-	-	-	-
	Fixed	-	-	-	-	-	-	-	-	-	-	-
Rim Vent	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	2.72	-
	Weighted mechanical actuation, gasketed	-	-	-	-	-	-	-	-	-	-	1.31
Ladder well (IFR only)	Sliding cover, ungasketed	-	-	-	-	-	-	-	-	-	76.00	-
	Sliding cover, gasketed	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	-	-
	TOTAL:	**568.47**	**340.27**	**560.57**	**636.27**	**300.77**	**506.17**	**784.57**	**271.37**	**271.37**	**255.61**	**325.90**

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	TOTAL DECK FITTING FACTORS, Ff lbmol/yr										
		T-0117	T-0401	T-0402	T-0411	T-0412	T-0435	T-0437	T-0450	T-0057	T-0802	T-0830
		EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR	EFR
Access hatch	Bolted cover, gasketed	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
	Unbolted cover, gasketed	-	-	-	-	-	-	-	-	-	-	-
	Unbolted cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
Fixed roof support column well	Round pipe, ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Round pipe, flexible fabric sleeve seal	-	-	-	-	-	-	-	-	-	-	-
	Built-up column, ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Built-up column, gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
Unslotted guide-pole and well	Ungasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Ungasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover	-	-	-	-	-	-	699.61	-	-	-	-
	Gasketed sliding cover w/pole wiper	-	-	-	-	-	-	-	-	-	29.01	-
	Gasketed sliding cover w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	-	-	-	-	-	-	-	-	-	-	-
	Ungasketed or gasketed sliding cover, w/float	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole wiper	633.48	-	-	633.48	633.48	-	-	633.48	-	-	633.48
	Gasketed sliding cover, w/pole sleeve	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve, pole wiper	-	-	-	-	-	-	-	-	-	-	-
	Gasketed sliding cover, w/float, pole wiper	-	220.94	220.94	-	-	220.94	-	-	220.94	-	-
	Gasketed sliding cover, w/float, pole sleeve, pole wiper	-	-	-	-	-	-	-	-	-	-	-
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Unbolted cover, gasketed	37.93	37.93	37.93	37.93	37.93	37.93	37.93	-	37.93	-	-
	Bolted cover, gasketed	-	-	-	-	-	-	-	-	-	2.80	2.80
Gauge-hatch/sample port	Weighted mechanical action, gasketed	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Slit fabric seal, 10% open area	-	-	-	-	-	-	-	-	-	-	-
Vacuum breaker	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Weighted mechanical actuation, gasketed	12.69	12.69	12.69	12.69	12.69	12.69	12.69	12.69	12.69	12.69	12.69
Deck drain	Open	5.94	5.94	5.94	5.94	5.94	-	5.94	-	5.94	-	-
	90% closed	-	-	-	-	-	-	-	2.81	-	2.81	2.81
Stub drain		-	-	-	-	-	-	-	-	-	-	-
Deck leg	Adjustable, internal floating deck	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, pontoon area -ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, pontoon area -gasketed	9.34	24.91	24.91	26.47	26.47	6.23	29.58	29.58	24.91	-	37.37
	Adjustable, pontoon area -sock	-	-	-	-	-	-	-	-	-	6.60	-
	Adjustable, center area -ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Adjustable, center area -gasketed	4.01	8.03	8.03	10.70	10.70	1.34	16.05	16.05	8.03	-	20.07
	Adjustable, center area -sock	-	-	-	-	-	-	-	-	-	2.78	-
	Adjustable, double-deck roofs	-	-	-	-	-	-	-	-	-	-	-
	Fixed	-	-	-	-	-	-	-	-	-	-	-
Rim Vent	Weighted mechanical actuation, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Weighted mechanical actuation, gasketed	1.31	1.31	1.31	1.31	1.31	-	1.31	1.31	1.31	1.31	1.31
Ladder well (IFR only)	Sliding cover, ungasketed	-	-	-	-	-	-	-	-	-	-	-
	Sliding cover, gasketed	-	-	-	-	-	-	-	-	-	56.00	-
	TOTAL:	**706.89**	**313.93**	**313.93**	**730.71**	**730.71**	**281.30**	**805.30**	**698.11**	**313.93**	**116.18**	**712.71**

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

STORAGE TANK POTENTIAL TO EMIT
Floating Roof Tank Fitting Factor Calculations

Fitting Type	Fitting Detail	TOTAL DECK FITTING FACTORS, Ff lbmol/yr				
		T-0834	T-0835	T-1225	T-0737	T-0821
		EFR	EFR	EFR	EFR	EFR
Access hatch	Bolted cover, gasketed	1.60	1.60	1.60	17.60	1.60
	Unbolted cover, gasketed	-	-	-	-	-
	Unbolted cover, ungasketed	-	-	-	-	-
Fixed roof support column well	Round pipe, ungasketed sliding cover	-	-	-	-	-
	Round pipe, gasketed sliding cover	-	-	-	-	-
	Round pipe, flexible fabric sleeve seal	-	-	-	-	-
	Built-up column, ungasketed sliding cover	-	-	-	-	-
	Built-up column, gasketed sliding cover	-	-	-	-	-
Unslotted guide-pole and well	Ungasketed sliding cover	-	-	-	-	-
	Ungasketed sliding cover w/pole sleeve	-	-	-	-	-
	Gasketed sliding cover	-	-	-	-	-
	Gasketed sliding cover w/pole wiper	-	-	-	29.01	29.01
	Gasketed sliding cover w/pole sleeve	-	-	-	-	-
Slotted guide-pole/sample well	Ungasketed or gasketed sliding cover	-	-	-	-	-
	Ungasketed or gasketed sliding cover, w/float	-	-	-	-	-
	Gasketed sliding cover, w/pole wiper	633.48	633.48	633.48	-	-
	Gasketed sliding cover, w/pole sleeve	-	-	-	-	-
	Gasketed sliding cover, w/pole sleeve, pole wiper	-	-	-	-	-
	Gasketed sliding cover, w/float, pole wiper	-	-	-	-	220.94
	Gasketed sliding cover, w/float, pole sleeve, pole wiper	-	-	-	-	-
Gauge-float well (auto. gauge)	Unbolted cover, ungasketed	-	-	-	-	-
	Unbolted cover, gasketed	37.93	37.93	-	-	37.93
	Bolted cover, gasketed	-	-	2.80	2.80	-
Gauge-hatch/sample port	Weighted mechanical action, gasketed	0.58	0.58	0.58	0.58	0.58
	Weighted mechanical actuation, ungasketed	-	-	-	-	-
	Slit fabric seal, 10% open area	-	-	-	-	-
Vacuum breaker	Weighted mechanical actuation, ungasketed	-	-	-	-	-
	Weighted mechanical actuation, gasketed	12.69	12.69	12.69	12.69	12.69
Deck drain	Open	5.94	5.94	-	-	5.94
	90% closed	-	-	2.81	2.81	-
Stub drain		-	-	-	-	-
Deck leg	Adjustable, internal floating deck	-	-	-	-	-
	Adjustable, pontoon area -ungasketed	-	-	-	-	70.11
	Adjustable, pontoon area -gasketed	20.24	9.34	37.37	14.01	-
	Adjustable, pontoon area -sock	-	-	-	-	-
	Adjustable, center area -ungasketed	-	-	-	-	24.02
	Adjustable, center area -gasketed	6.02	4.01	20.07	4.68	-
	Adjustable, center area -sock	-	-	-	-	-
	Adjustable, double-deck roofs	-	-	-	-	-
	Fixed	-	-	-	-	-
Rim Vent	Weighted mechanical actuation, ungasketed	-	-	-	-	-
	Weighted mechanical actuation, gasketed	1.31	1.31	1.31	1.31	1.31
Ladder well (IFR only)	Sliding cover, ungasketed	-	-	-	-	-
	Sliding cover, gasketed	-	-	-	-	-
	TOTAL:	**719.80**	**706.89**	**712.71**	**85.49**	**404.13**

For EFR tanks, Kv= 0.7

Average wind speed = 8.6

Deck -Fitting Loss Factors from AP-42, Table 7.1-12 (Sept. 1997)

Average wind speed from AP-42, Table 7.1-9 (Sept. 1997)

Wastewater System Emissions Summary

Equipment No.	Source Name	VOC	
		lb/hr	ton/yr
MAIN API	Above Ground API Oil-Water Separator (T-0894/T-0895) and enclosed drain system[b].	0.001	0.006
T-0829	Equalization Tank IFR T-0829	0.0005	0.002
T-0836	Enhanced Biodegradation Tank T-0836	0.81	3.54
T-0801	Enhanced Biodegradation Tank T-0801	0.23	0.99
DAF-0896	DAF Unit T-0896	0.15	0.68
DAF-0806	DAF Unit T-0806	0.15	0.68
	TOTALS	**1.34**	**5.89**

HAP Emissions:

HAP	Mg/yr	ton/yr
Benzene	0.48	0.53
Formaldehyde	0.01	0.01
Toluene	0.59	0.65
Xylene	0.43	0.47

Notes:

a. Emissions estimated using EPA Water9 program.

b. Emissions include drain system components vented to carbon canister.

Water9 concentration inputs based on wastewater Sample 09/23/2015

Chemical	Sample mg/L	Chemical in Water9?	Base conc. mg/L	Water9 Conc. mg/L	Basis for Concentration
Carbon Disulfide	0.063	yes	0.063	0.19	Base x3
Acetone	2.5	na			
1,2-Dichloroethene	0.024	yes	0.141	0.42	Base x3
Benzene	0.412	yes	0.412	5.00	Toxchem model
Toluene	1.52	yes	1.52	8.50	Toxchem model
Tetrachloroethene	0.117	no	Added to dichloroethylene		
Ethylbenzene	0.451	yes	0.451	3.10	Toxchem model
Xylene	1.22	yes	1.22	7.10	Toxchem model
Isopropylbenzene (Cumene)	0.05	yes	0.05	0.15	Base x3
nPropylbenzene	0.109	yes	0.75	2.25	Base x3
1,3,5-Trimethylbenzene	0.104	no	Added to nPropylbenzene		
1,2,4-Trimethylbenzene	0.537	no	Added to nPropylbenzene		
sec-Butylbenzene	0.044	yes	0.111	0.33	Base x3
p-Isopropyltoluene	0.067	no	Added to butylbenzene		
Naphthalene	0.447	yes	0.447	1.34	Base x3
Formaldehyde	33.5	yes	33.5	100.50	Base x3
Phenol	-	yes		1.34	Naphthalene

COOLING TOWER POTENTIAL TO EMIT

Input Data:

Cooling Tower	Water Circulation Rate (gal/min)	Annual Circulation Rate (MM gal/yr)	Annual Hours of Operation (hr/yr)
Y-0001	5,000	2,628	8760
Y-0002	5,000	2,628	8760
Y-0008	12,500	6,570	8760
Y-0011	30,000	15,768	8760
Y-0012	10,000	5,256	8760
CT TT-0006	3,000	1,576.8	8760
Y-0014	2,500	1,314	8760

TDS (ppmw) [1] 3,500

Emission Factors:

Cooling Tower	VOC Controlled (LDAR)?	VOC Emission Factor (lb/MMgal) [2]	Drift Eliminator Efficiency (% drift)
Y-0001	No	6	0.003
Y-0002	No	6	0.003
Y-0008	Yes	0.7	0.003
Y-0011	Yes	0.7	0.001
Y-0012	Yes	0.7	0.001
CT TT-0006	No	6	0.003
Y-0014	No	0.7	0.001

Emissions:

Cooling Tower	Emissions [3, 4]									
	VOC	VOC	TSP		PM-10		PM2.5		CO	CO
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
Y-0001	1.80	7.88	0.26	1.15	0.16	0.69	0.0006	0.0026	--	--
Y-0002	1.80	7.88	0.26	1.15	0.16	0.69	0.0006	0.0026	--	--
Y-0008 [4]	6.48	28.32	0.66	2.88	0.40	1.73	0.0015	0.0065	0.58	2.54
Y-0011	1.26	5.52	0.53	2.30	0.32	1.38	0.0012	0.0052	--	--
Y-0012	0.42	1.84	0.18	0.77	0.11	0.46	0.0004	0.0017	--	--
CT TT-0006	1.08	4.73	0.16	0.69	0.09	0.42	0.0004	0.0016	--	--
Y-0014	0.11	0.46	0.044	0.19	0.026	0.115	0.0001	0.0004	--	--
TOTAL	**12.94**	**56.64**	**2.08**	**9.13**	**1.25**	**5.49**	**0.0047**	**0.0206**	**0.58**	**2.54**

Sample Calculations (CT Y-0001):

1.80 VOC (lb/hr) = (5000 gal/min) * (60 min/hr) * (MMgal/10^6 gal)* (6 lb VOC/MMgal)

0.26 TSP (lb/hr) = (5000 gal/min) * (60 min/hr) * (8.34 lb/gal) * (3500 lb TDS/MMlb H20) * (MMlb/10^6 lb)* (0.003 % drift)

0.16 PM-10 (lb/hr) = (0.26 lb/hr TSP) * (60.161 % PM-10)

Notes:

[1] Total dissolved solids (TDS) is based on cooling water sampling data.

[2] VOC emission factors are from AP-42 Table 5.1-3 (dated 4/15). No VOC emissions are expected from WWTP cooling tower CTY-8001.

[3] Total Suspended Particulate (TSP) emissions are calculated per AP-42 Section 13.4, dated January 1995.

[4] $PM_{2.5}$ and PM_{10} emissions are calculated in accordance with NMED's Technical Memorandum "Calculating TSP, PM-10 and PM-2.5 from Cooling Towers" dated 9/9/2013. For a TDS of 3,5000 ppmw and per the size distribution table in the memorandum (average between 3,000 ppmw and 4,000 ppmw), the percents mass of total particulate emissions represented by PM2.5 and PM10 are as follows:

% Mass PM_{10} = 60.161 % Mass $PM_{2.5}$ = 0.226

[5] CT Y-0008 emissions include VOC and CO emissions from both hydrogen plant deaerator vents (V-H2 & V-H2-2), which are routed to the cooling water of CT Y-8 and do not vent directly to the atmosphere. Contact with cooling tower water is assumed to control 100% of NH3 emissions. VOC emissions are 5.95 lb/hr and 26.02 ton/yr.

HAP Emissions:

HAP	Liquid	Emissions	
	wt%	lb/hr	ton/yr
Benzene	3.79%	0.49	2.15
Ethylbenzene	4.36%	0.56	2.47
n-Hexane	5.07%	0.66	2.87
Toluene	6.27%	0.81	3.55
Xylene	3.30%	0.43	1.87

a. Liquid wt% based on naphtha sample.

ENGINE POTENTIAL TO EMIT

				Emission Factors, g/hp-hr					Potential to Emit									
									NOx		CO		VOC		SO2		PM10	
Engine	Description	HP	Operating	NOx	CO	VOC	SO2	PM10	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
V-0543	Portable Air Compressor	280	8760	3.0	2.6	3.0	0.0056	0.15	1.84	8.06	1.61	7.06	1.84	8.06	0.003	0.015	0.09	0.40
V-0545	Portable Air Compressor	280	8760	3.0	2.6	3.0	0.0056	0.15	1.84	8.06	1.61	7.06	1.84	8.06	0.003	0.015	0.09	0.40
V-0546	Portable Air Compressor	138	8760	0.3	3.7	0.14	0.0056	0.015	0.09	0.40	1.13	4.97	0.04	0.19	0.002	0.008	4.5E-03	0.02
G-0100	UPS backup generator	52	500	14.1	3.0	1.1	0.0056	1.0	1.61	0.40	0.35	0.09	0.13	0.03	0.001	0.0002	0.11	0.03
G-0101	UPS backup generator	54	500	14.1	3.0	1.1	0.0056	1.0	1.67	0.42	0.36	0.09	0.13	0.03	0.001	0.0002	0.12	0.03
G-0102	Server Backup Generator	99.23	500	3.5	3.7	3.5	0.0056	0.3	0.77	0.19	0.81	0.20	0.77	0.19	0.001	0.0003	0.07	0.02
E-0600W	Fire Water Pump Engine	376	100	3.0	2.6	3.0	0.0056	0.15	2.49	0.12	2.16	0.11	2.49	0.12	0.005	0.0002	0.12	0.01
E-0601M	Fire Water Pump Engine	376	100	3.0	2.6	3.0	0.0056	0.15	2.49	0.12	2.16	0.11	2.49	0.12	0.005	0.0002	0.12	0.01
E-0602E	Fire Water Pump Engine	376	100	3.0	2.6	3.0	0.0056	0.15	2.49	0.12	2.16	0.11	2.49	0.12	0.005	0.0002	0.12	0.01
E-0603	Fire Water Pump Engine	305	100	3.0	2.6	3.0	0.0056	0.15	2.02	0.10	1.75	0.09	2.02	0.10	0.004	0.0002	0.10	0.01
E-8010	WWTP Emergency Engine	400	2190	3.0	2.6	3.0	0.0056	0.15	2.63	2.88	2.30	2.52	2.63	2.88	0.005	0.005	0.13	0.14

Sample calculation for V-0547:

NOx(lb/hr) = (Factor,g/hp-hr)*(Engine Rating, HP) / (453.6 g/lb) = (3.0 g/hp-hr) * (280 hp) / (453.6 g/lb) = 1.84 lb/hr

NOx(tpy) = (Factor,g/hp-hr)*(Engine Rating, HP) / (453.6 g/lb) / (2,000 lb/ton) * (Operating hrs, hrs/yr) = (3.0 g/hp-hr) * (280 hp) / (453.6 g/lb) / (2,000 lb/ton) * (8760 hrs/yr) = 8.06 tpy

HAP and GHG Emission Calculations:

HAP	Emission Factor[a] lb/MMBtu
Acetaldehyde	7.7E-04
Benzene	9.3E-04
Formaldehyde	1.2E-03
Toluene	4.1E-04
Xylene	2.9E-04

a. Factors from AP-42 Table 1.4-3 and converted per footnote a.

GHG	Emission Factor[b] lb/MMBtu
CO_2	163.05
CH_4	0.007
NO_2	0.001

b. Factors from 40 CFR 98 Tables C-1 and C-2.

		Acetaldehyde		Benzene		Formaldehyde		Toluene		Xylene		HAP		CO_2	CH_4	NO_2
Engine	Description	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr	ton/yr	ton/yr
V-0543	Portable Air Compressor	0.0017	0.0075	0.0021	0.0092	0.0026	0.0116	0.0009	0.0040	0.0006	0.0028	0.0080	0.0351	1,600	0.065	0.013
V-0545	Portable Air Compressor	0.0017	0.0075	0.0021	0.0092	0.0026	0.0116	0.0009	0.0040	0.0006	0.0028	0.0080	0.0351	1,600	0.065	0.013
V-0546	Portable Air Compressor	0.0008	0.0037	0.0010	0.0045	0.0013	0.0057	0.0005	0.0020	0.0003	0.0014	0.0039	0.0173	788	0.032	0.006
G-0100	UPS backup generator	0.0003	0.0014	0.0004	0.0017	0.0005	0.0022	0.0002	0.0007	0.0001	0.0005	0.0015	0.0065	297	0.012	0.002
G-0101	UPS backup generator	0.0003	0.0015	0.0004	0.0018	0.0005	0.0022	0.0002	0.0008	0.0001	0.0005	0.0015	0.0068	309	0.013	0.003
G-0102	Server Backup Generator	0.0006	0.0027	0.0007	0.0032	0.0009	0.0041	0.0003	0.0014	0.0002	0.0010	0.0028	0.0124	567	0.023	0.005
E-0600W	Fire Water Pump Engine	0.0023	0.0101	0.0028	0.0123	0.0035	0.0155	0.0012	0.0054	0.0009	0.0038	0.0108	0.0471	2,148	0.087	0.017
E-0601M	Fire Water Pump Engine	0.0023	0.0101	0.0028	0.0123	0.0035	0.0155	0.0012	0.0054	0.0009	0.0038	0.0108	0.0471	2,148	0.087	0.017
E-0602E	Fire Water Pump Engine	0.0023	0.0101	0.0028	0.0123	0.0035	0.0155	0.0012	0.0054	0.0009	0.0038	0.0108	0.0471	2,148	0.087	0.017
E-0603	Fire Water Pump Engine	0.0019	0.0082	0.0023	0.0100	0.0029	0.0126	0.0010	0.0044	0.0007	0.0030	0.0087	0.0382	1,743	0.071	0.014
E-8010	WWTP Emergency Engine	0.0025	0.0108	0.0030	0.0131	0.0038	0.0165	0.0013	0.0057	0.0009	0.0040	0.0114	0.0501	2,285	0.093	0.019
	TOTAL:		**0.0735**		**0.0895**		**0.1131**		**0.0392**		**0.0273**		**0.3427**			

Sour Water Tank (SSM T-0737) Roof Landing Emissions

External Floating Roof Standing Storage Losses - Drain-Dry Case

The tank will be drained-dry and then the residual tank vapors will be evacuated to the atmosphere in order to make the tank safe for entry. Residual vapor emissions are calculated using the ideal gas equation and assuming the vapor space is 60% saturated (per AP-42).

$L_{SL,\ max}$ = 0.60 x P x Vv / R / T x Mv

P = true vapor pressure of the liquid inside the tank, psia
= 11 psia

Vv = volume of the vapor space, ft^3
= π x D^2 / 4 x h
= 10900 ft^3

h = leg height, ft
= 3.5 ft

R = ideal gas constant, psia ft^3/lb-mole ^oR
= 10.731 psia ft^3/lb-mole ^oR

T = average temperature of the vapor and liquid below the floating roof, ^oR (=T_{AA})
= 100 ^oF
= 559.67 ^oR

Mv = molecular weight of stored material, lb/lb-mole
= 66 lb/lb-mole

$L_{SL,\ max}$ = (0.60 × 11 psia × 10900 ft^2 × 66 lb) / (10.731 psia ft^3 × 559.67 ^oR × lb-mole)

$L_{SL,\ max}$ = 791 lb/event

External Floating Roof Filling Losses - Drain-Dry Case

Vapors are also generated when the tank is refilled.

L_{FL} = P x Vv / R / T x Mv x S

L_{FL} = Tank Refilling Losses, lb/event

P = true vapor pressure of the liquid within the tank, psia
= 11 psia

Vv = volume of the vapor space, ft^3
= 10900 ft^3

R = ideal gas constant, psia ft^3/lb-mole ^oR
= 10.731 psia ft^3/lb-mole ^oR

T = average temperature of the vapor and liquid below the floating roof, ^oR
= 100 ^oF
= 559.67 ^oR

Mv = stock vapor molecular weight, lb/lb-mole
= 66 lb/lb-mole

S = Filling saturation factor
= 0.15

L_{FL} = (11 psia × 10900 ft^3 × 66 lb × 0.15) / (10.731 psia ft^3 × 559.67 ^oR × lb-mole)

L_{FL} = 198 lb/event

Total Emissions From Tank Landing

Total emissions from the tank landing event are equal to the standing storage losses plus the refilling losses.

L_{TOTAL} = 989 lb/event

Standing Loss Emissions	Time to Evacuate Tank	Filling Loss Emissions	Vapor Space Volume	Maximum Refill Rate	Filling Loss Duration	Emissions	
(lb/event)	(hr)	(lb/event)	(ft^3)	(bbl/hr)	(hr/event)	(lb/hr)	(ton/yr)
791	24	198	10,900	286	6.79	33	0.50

SRU3 Startup and Shutdown Emissions

Proposed SRU3

Shutdown Emissions

Moles of H2S Sent to SUR3-TGI During Shutdown = 9.617 lb-mole H2S/event
Duration = 8 hr
Assumed H2S Left Unconverted = 2%

Note: NOx, CO, and VOC emissions during shutdown are expected to be within proposed permit limits for normal operation.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU3-TGI	6.50	0.026	15.00	0.06	0.13	0.00052	76.94	0.3078	6.54	0.0262

Sample Calculation:

Hourly SO2 Emissions = (moles of H2S sent to SRU3-TGI/event) (1 mole SO2/1 mole H2S) (64 lb SO2/lb-mole SO2) / (event duration)
= (9.617 lb-mole H2S/event) (1 mole SO2/1 mole H2S) (64 lb SO2/lb-mole SO2) / (8 hr)
= 76.94 lb SO2/hr

Startup Emissions

Total Sulfur Feed = 62.3 lb-mole/hr
Sulfur Recovery Efficiency = 96%
Assumed H2S Left Unconverted = 2%
Duration = 1 hr

Note: NOx, CO, and VOC emissions during startup are expected to be within proposed permit limits for normal operation.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU3-TGI	6.50	0.00325	15.00	0.0075	0.13	0.000065	159	0.0795	1.69	0.000845

Sample Calculation:

Hourly H2S Emissions = (moles of S sent to SRU/hr) (1 - S recovery efficiency)(1 mole H2S/1 mole S) (34 lb H2S/lb-mole H2S) (% H2S left unconverted)
= (62.3 lb-mole S/hr) (1 - 96%) (1 mole H2S/1 mole S) (34 lb H2S/lb-mole H2S) (2%)
= 1.69 lb H_2S/hr

SSM FL-HEP-PORT POTENTIAL TO EMIT

Constants:			
Data	Unit	Description	Data Source
64	lb/lb-mol	MW of SO2	
8.44E-05	T/scf	Consent Decree Conversion Factor	Paragraph 20.D of consent decree
379	scf/lb-mol	Volumetric conversion factor	
0.068	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
2.0	%	Uncombusted H2S to flare.	Percentage of uncombusted H2S based 98% destruction efficiency basis.

Inputs:			
Data	Unit	Description	Data Source
2,500,000	SCF	Total flow to flare (estimated)	Estimated maximum volume allowed for flaring under 0.5 ton/yr limit required by 20.2.72.202.B(5) NMAC.
	SCF		
0.000004	scf H2S/scf gas	H2S content of gas flared	Pipeline quality natural gas standard of 0.25 gr/100 dscf.
1020	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare	Emission factors for Criteria Pollutants and Greenhouse Gases from Natural Combustion, AP-42 Section 1-4, Table 1.4-2, 01/1995, reference a.
17.1	lb/lb-mole	Molecular Weight	Calculated according to composition of natural gas from 2010 NM Gas Company Monthly Analyses Artesia, Purchased Natural Gas LHV Estimate.xls calculation sheet.

Dates and Times

Date & Time		Description	Reason
04/01/2011 06:00		Flaring started	Assumed starting time.
04/01/2011 21:00		Flaring stopped	Assumed ending time to limit to 15 h/yr.

Calculations:

15.0000	hr	= Duration of Flaring started to Flaring stopped = (Flaring stopped) - (Flaring started) = (04/01/2011 09:00 PM - 04/01/2011 06:00 AM)
	hr	n/a
15:00	hh:mm	= Total Duration
15.0000	hr	= Total Duration

166,667	SCFH	=Flow rate [FR1]
	SCFH	=Flow rate [FR2]

0.00084	**Tons SO2**	**= SO2 release amount (Tons)** "=[(166,667 SCFH)("&A33&" hr)+("&A42&" SCFH)("&A36&" hr)]["&A21&" scf H2S/scf gas]["&A10&"]"
1.69	**lb SO2**	**= SO2 release amount (pounds)** "=[(166,667 SCFH)("&A33&" hr)+("&A42&" SCFH)("&A36&" hr)]["&A21&" scf H2S/scf gas]["&A10&"]" x 2000 lb/Ton

170.0	MM Btu/hr	=Heat release rate for FR1
	MM Btu/hr	=Heat release rate for FR2

0.087	**Tons NOx**	**= NOx release amount (Tons)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.068 lb NOx/MM Btu] / [2000 lb/ton]
173.40	**lb NOx**	**= NOx release amount (pounds)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.068 lb NOx/MM Btu]

0.47	**Tons CO**	**= CO release amount (Tons)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
943.5	**lb CO**	**= CO release amount (pounds)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.37 lb CO/MM Btu]
0.080	**Tons VOC**	**= VOC release amount (Tons)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
160.7	**lb VOC**	**= VOC release amount (pounds)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.063 lb VOC/MM Btu]

0.00001	**Tons H2S**	**= H2S release amount (Tons)** = [(166.667 SCFH)(15 hr)+(0 SCFH)(0 hr)][0.000004 scf H2S/scf gas][0.0000844] / 64 (lb/lb-mole) x 34 (lb/lb-mole) x 2/100
0.02	**lb H2S**	**= H2S release amount (pounds)** = [(170 MM Btu/hr)(15 hr)+(0 MM Btu/hr)(0 hr)][0.063 lb VOC/MM Btu] x 2000 lb/Ton / 64 (lb/lb-molr) x 32 (lb/lb-mole) x 2/100

Pollutant	(lb/hr)	(tons/yr)
NOX	173.4	0.09
SO2	1.7	0.001
CO	943.5	0.5
VOC	160.7	0.1
H2S	0.02	0.00001

GHG Emissions:

GHG	Emission, tpy	Basis for Calculation
CO2	580,475	Assume 100% combustion and 2 carbon atoms.
CH4	2,256	Assume gas 100% methane and 98% control.
N2O	451	Ratio of fuel gas GHG factors for methane and N2O.

SSM Emissions Summary
SRU2 Startup and Shutdown Emissions
EPN H-0473 (SRU2-TGI)

Proposed SRU2

Shutdown Emissions

Moles of H2S Sent to SRU2-TGI During Shutdown =	9.617	lb-mole H2S/event
Duration =	8	hr
Assumed H2S Left Unconverted =	2%	

Note: NOx, CO, and VOC emissions during shutdown are expected to be within proposed permit limits for normal operation.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU2-TGI (H-0473)	6.50	0.026	27.66	0.1106	0.13	0.000535	76.94	0.3078	6.54	0.0262

Sample Calculation:

Hourly SO2 Emissions = (moles of H2S sent to SRU2-TGI/event) (1 mole SO2/1 mole H2S) (64 lb SO2/lb-mole SO2) / (event duration)
= (9.617 lb-mole H2S/event) (1 mole SO2/1 mole H2S) (64 lb SO2/lb-mole SO2) / (8 hr)
= 76.94 lb SO2/hr

Startup Emissions

Total Sulfur Feed =	62.3	lb-mole/hr
Sulfur Recovery Efficiency =	96%	
Assumed H2S Left Unconverted =	2%	
Duration =	1	hr

Note: NOx, CO, and VOC emissions during startup are expected to be within proposed permit limits for normal operation.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU2-TGI (H-0473)	6.50	0.00325	27.66	0.0138	0.13	0.000065	159	0.0795	1.69	0.000845

Sample Calculation:

Hourly H2S Emissions = (moles of S sent to SRU/hr) (1 - S recovery efficiency)(1 mole H2S/1 mole S) (34 lb H2S/lb-mole H2S) (% H2S left unconverted)
= (62.3 lb-mole S/hr) (1 - 96%) (1 mole H2S/1 mole S) (34 lb H2S/lb-mole H2S) (2%)
= 1.69 lb SO2/hr

Proposed Total Emissions from H-0473 (SRU2-TGI) startup and shutdown

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU2-TGI (H-0473)	6.5	0.1	27.7	0.2	0.2	0.1	159.0	0.4	6.6	0.1

SSM MISC 2 Potential to Emit

Low-Emitting Maintenance Activities such as de-inventorying small equipment, clearing piping associated with emission units, and routine maintenance activities such as heat exchanger repair and vapor combustion unit (VCU) products of combustion for control of tank venting emissions (associated VOC emissions are authorized under SSM Tanks).

Non-PM emissions are estimated as ten percent of the SSM emissions for flares and the TGI, rounded up. PM emissions are calculated

Sources		SSM Emissions for Flares and TGI											
		NOx		SO2		CO		$PM/PM_{10}/PM_{2.5}$		VOC		H2S	
Unit	Description	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
SRU2-TGI (H-0473)	Emissions from SRU2 startup and shutdown	6.50	0.10	159.00	0.40	27.70	0.20	--	--	0.20	0.10	6.60	0.10
Flare Cap SSM	Emissions from venting SSM activity gases to FL-400, FL-401,FL-402, FL-403, or FL-404.	162.93	18.30	1,133.37	14.90	1,243.00	77.00	--	--	1,376.33	68.68	0.37	0.10
Total SSM Emissions for Flares and TGI:		**169.43**	**18.40**	**1,292.37**	**15.30**	**1,270.70**	**77.20**	**--**	**--**	**1,376.53**	**68.78**	**6.97**	**0.20**
Low-Emitting Maintenance Activities (SSM Misc 2):		**17.00**	**1.90**	**129.30**	**1.60**	**127.10**	**7.80**	**--**	**--**	**137.70**	**6.90**	**0.70**	**0.10**

		Inlet Heat Input to VCU		Heat Content-HHV)	Fuel Inlet Flow to VCU		$PM/PM_{10}/PM_{2.5}$	
Unit	Description	(MMBtu/hr)	(MMBtu/yr)	(Btu/gal)	(Mgal/hr)	(Mgal/yr)	(lb/hr)	(ton/yr)
SSM Tank VCU [a, b]	VCU products of combustion when firing supplemental fuel (propane) only.	7.5	5,400	91,500	0.082	59.02	0.057	0.021
Low-Emitting Maintenance Activities (SSM Misc 2):							**0.057**	**0.021**

PM Emission Factor	
Propane AP-42 (lb/Mgal)	
0.7	

Notes:

a. Worst-case scenario for PM emissions is when the VCU is receiving minimal, if any, heat input contribution from the tank vapors and therefore supplemental fuel is required. In actual operations, this scenario will occur for a limited number of minutes each hour for startup and at less than maximum flow. The hourly PM emissions are conservatively calculated assuming maximum supplemental flow (i.e., burner heat input capacity) occurring continuously for an entire hour.

In actual operations, this scenario will occur for a limited number of hours each year because the tank landing/cleaning activities and associated startups will be undertaken infrequently (i.e., less than 10 times per year) and again for only a limited minutes for each startup. The annual PM emissions are conservatively calculated assuming maximum hourly emissions would occur 24 hr/day for 30 day/yr.

b. For propane combustion, the PM emission factor (in terms of lb/Mgal) is from AP-42 Table 1.5-1 dated July 2008 for boilers.

Sample Calculations:

Propane Inlet Flow = (VCU Heat Input Capacity, MMBtu/hr)/Propane Heat Content (Btu/gal)*(1,000 Mgal/MMgal)
= (7.5 MMBtu/hr)/(91,500 Btu/gal)*(1,000 Mgal/MMgal) = 0.082 Mgal/hr

Propane PM = (Propane Inlet Flow, Mgal/hr)*(Emission Factor, lb/Mgal) = (0.082 Mgal/hr)*(0.7 lb/Mgal) = 0.057 lb/hr

GHG Emissions:

GHG	Emission, tpy	Basis for Calculation
CO2	3,833.33	Assume all VOC entering flare has 5 carbons, 100% combustion, and VOC same Mw as CO2.
CH4	15.33	VOC emissions based 45% VOC in gas. Conservatively assumed vent gas 100% methane.
N2O	3.07	Ratio of fuel gas GHG factors for methane and N2O.

FLOATING ROOF TANK SSM POTENTIAL TO EMIT

Variable	Description	Units	Value
I	Solar insolation factor	Btu/ft^2-day	2441
α	Paint Solar Absorbance		0.17
P_A	Atmospheric Pressure	psia	12.9
T_{AA}	Annual Average Temperature	°F	540.7
T_{AX}	Daily Maximum Ambient Temperature	°R	554.6
T_{AN}	Daily Minimum Ambient Temperature	°R	526.7
ΔT_A	Daily average ambient temperature range	°R	27.9
T_{LA}	Daily average liquid surface temp	°R	543.9
S or K_S	Saturation Factor	-	0.6

a. Data for Roswell, NM in July.

Tank ID	Type of Tank	D	H_L	Material Stored	P_{VA}	Liquid Density	M_V	V_V	K_E	L_{SL}	Refloating Losses	Maximum VOC Emissions
		Tank Diameter	Leg Height		VP at Daily Max Liq Temp		Vapor Molecular Weight	Vapor Space Volume	Vapor Expansion Factor	Roof Landing Losses		
		(ft)	(ft)		(psia)	(lb/gal)	(lb/lbmol)	(ft^3)		(lbs/day)	(lbs/day)	lb/hr
T-0011	IFR	89	4.5	Gasolines	8.1	5.6	66	28,000	0.23536	363.52	1544.54	64.36
T-0012	IFR	88	4.5	Gasolines	8.1	5.6	66	27,370	0.23536	355.34	1509.79	62.91
T-0056	IFR	48	4.5	Naphtha	2.3	6.4	90	8,140	0.11735	20.09	171.17	7.13
T-0106	IFR	67	4.5	Sour Water	1.0	8.34	130	15,870	0.05829	12.36	212.09	8.84
T-0107	IFR	67	4.5	Gasolines	8.1	5.6	66	15,870	0.23536	206.04	875.42	36.48
T-0108	IFR	67	4.5	Gasolines	8.1	5.6	66	15,870	0.23536	206.04	875.42	36.48
T-0109	IFR	67	4.5	Gasolines	8.1	5.6	66	15,870	0.23536	206.04	875.42	36.48
T-0111	IFR	49	4.5	Gasolines	8.1	5.6	66	8,490	0.23536	110.23	468.33	19.51
T-0112	IFR	49	4.5	Gasolines	8.1	5.6	66	8,490	0.23536	110.23	468.33	19.51
T-0124	IFR	67	4.5	Gasolines	8.1	5.6	66	15,870	0.23536	206.04	875.42	36.48
T-0413	IFR	67	4.5	Distillates	0.0	7.1	130	15,870	0.05883	0.16	2.74	0.11
T-0415	IFR	50	4.5	Gasolines	8.1	5.6	66	8,840	0.23536	114.77	487.63	20.32
T-0417	IFR	50	4.5	Gasolines	8.1	5.6	66	8,840	0.23536	114.77	487.63	20.32
T-0439	IFR	130	4.5	Naphtha	2.3	6.4	90	59,730	0.11735	147.39	1255.98	52.33
T-0057	EFR	90	4.5	Naphtha	2.3	6.4	90	28,630	0.00000	223.52	602.02	25.08
T-0079	EFR	125	4.5	Gasolines	8.1	5.6	66	55,220	0.00000	1146.09	3046.05	126.92
T-0117	EFR	48	4.5	Gasolines	8.1	5.6	66	8,140	0.00000	440.10	449.02	18.71
T-0401	EFR	90	4.5	Gasolines	8.1	5.6	66	28,630	0.00000	825.19	1579.29	65.80
T-0402	EFR	90	4.5	Gasolines	8.1	5.6	66	28,630	0.00000	825.19	1579.29	65.80
T-0411	EFR	100	4.5	Gasolines	8.1	5.6	66	35,340	0.00000	916.88	1949.43	81.23
T-0412	EFR	100	4.5	Gasolines	8.1	5.6	66	35,340	0.00000	916.88	1949.43	81.23
T-0435	EFR	30	4.5	Sour Water	8.8	8.34	58	3,180	0.00000	274.56	166.13	11.44
T-0437	EFR	120	4.5	Crude Oil	8.8	7	58	50,890	0.00000	1098.25	2658.65	110.78
T-0450	EFR	120	4.5	Naphtha	2.3	6.4	90	50,890	0.00000	298.03	1070.10	44.59
T-0737	EFR	63	4.5	Sour Water	0.0	8.34	130	14,030	0.00000	1.17	2.43	0.10
T-0802	EFR	45	4.5	Sour Water	0.0	8.34	130	7,160	0.00000	0.84	1.24	0.05
T-0830	EFR	150	4.5	Slop	1.0	8.34	130	79,520	0.00000	224.18	1062.72	44.28
T-0834	EFR	65	4.5	Distillates	0.0	7.1	130	14,930	0.00000	1.21	2.58	0.11
T-0835	EFR	48	4.5	Distillates	0.0	7.1	130	8,140	0.00000	0.89	1.41	0.06
T-1225	EFR	150	4.5	Crude Oil	8.8	7	58	79,520	0.00000	1372.82	4154.37	173.10
											Max Hourly:	**173.10**
										Subtotal (lb):	10,738.8	30,384.1
										Subtotal (ton):	5.37	15.19
										Annual (ton/yr):	**10.59**	assuming average of 51.5% tanks landed per year

HAP & GHG Emission Estimate

HAP	Max Vapor	Emission	
	wt%	lb/hr	ton/yr
Benzene	3.22%	5.57	0.34
Ethhylbenzene	0.39%	0.67	0.04
n-Hexane	9.75%	16.88	1.03
Toluene	1.03%	1.78	0.11

SSM Flare Cap Potential to Emit

Unit Name	Activity	NOx		CO		VOC		SO2		H2S	
		(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	Emissions from depressurizing equipment to flare.	21.8	0.1	118.0	0.4	7.3	0.1	32.0	0.1	0.3	0.1
FL-403	Emissions when FL-404 is unavailable.	3.6	15.8	13.5	59.0	2.3	10.1	2.4	10.3	--	--
South Crude	Emissions from depressurizing equipment to flare.	3.17	0.002	24	0.018	4.1	0.003	756	0.55	--	--
Naphtha Kero Hydrotreater	Emissions from depressurizing equipment to flare.	1.19	0.0006	--	--	--	--	276	0.14	--	--
Alkylation - North	Depressure during shutdown.	9.70	0.044	74	0.34	12.6	0.057	0.07	0.0003	--	--
Alkylation - North	Periodic Depressuring of D-653 Non-Condensables to flare	0.35	0.091	2.7	0.69	0.5	0.118	0.002	0.0006	--	--
FCCU	Depressure during shutdown.	3.26	0.005	25	0.04	4.2	0.006	56	0.08	--	--
FCCU	Alky Feed Flaring on Startup	39.7	1.62	303	12.4	51.5	2.11	0.75	0.03	--	--
FCCU	Wet Gas Compressor Flaring on Startup	148.1	0.50	1130	3.8	192.4	0.65	1030	3.48	--	--
Naphtha Hydrotreater	Emissions from depressurizing equipment to flare.	0.53	0.0003	--	--	--	--	242	0.12	--	--
Vacuum	Emissions from depressurizing equipment to flare.	0.04	0.00002	0.27	0.0001	0.05	0.00	4.94	0.002	--	--
Mixed Distillate Hydrotreater	Depressure during shutdown.	38.40	0.019	292.96	0.15	49.88	0.025	7.30	0.0037	--	--
Hydrogen Plant #1	Depressure during shutdown.	2.50	0.024	19.05	0.18	3.24	0.031	0.035	0.00033	--	--
Catalytic Cracking and Reforming	Depressure during shutdown.	0.48	0.0002	3.67	0.0018	0.63	0.0003	0.016	0.000008	--	--
	Total	148.1	18.3	1130.0	77.0			1030.3	14.9	0.3	0.1
	Additional 10% added to lb/hr for flexibility.	14.8		113.0				103.0		0.03	
	Total with 10% added on lb/hr	**162.93**	**18.30**	**1,243.00**	**77.00**			**1,133.37**	**14.90**	**0.37**	**0.10**

Maximum SSM lb/hr and 12-Month Rolling ton/yr from flare monitoring data = 1,376.33 68.68

GHG Emissions:

GHG	Emission, tpy	Basis for Calculation
CO2	38,156	Assume all VOC entering flare has 5 carbons, 100% combustion, and VOC same Mw as CO2.
CH4	152.6	VOC emissions based 45% VOC in gas. Conservatively assumed vent gas 100% methane.
N2O	30.52	Ratio of fuel gas GHG factors for methane and N2O.

HAP Emissions:

HAP	Liquid	SSM Flare Cap	
	wt%	lb/hr	ton/yr
Benzene	3.79%	52.21	2.61
Ethylbenzene	4.36%	60.06	3.00
n-Hexane	5.07%	69.83	3.48
Toluene	6.27%	86.30	4.31
Xylene	3.30%	45.39	2.27

a. Liquid wt% based on naphtha sample.

Proposed Unit Depressure to Flare Emissions

Proposed Saturates Gas Plant

Total Volume Sent to Flare =	37,943	scf/event
Stream LHV =	2,400	Btu/scf
Assumed Flaring Duration =	8	hr
Hourly Flaring Rate =	11	MMBtu/hr

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(gr/dscf)
THC	0.14	--
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
SO_2[3]	--	0.1

[1] Emission factors are from AP-42 Tables 13.5-1 and 13.5-2 (dated 9/91) except for VOC and SO_2.

[2] VOC emissions are calculated by assuming a 45% non-methane contribution to TOC, per Table 13.5-2.

[3] SO_2 emissions are calculated using a material balance on the assumed stream sulfur content with a 100% conversion to SO_2.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	0.77	0.003096	4.21	0.0168	0.72	0.002868	0.1355	0.000542	--	--

Proposed ROSE Unit ROSE-2

Total Volume Sent to Flare =	336,566	scf/event
Stream LHV =	1,200	Btu/scf
Assumed Flaring Duration =	8	hr
Hourly Flaring Rate =	50	MMBtu/hr

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(gr/dscf)
THC	0.14	--
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
SO_2[3]	--	0.1

[1] Emission factors are from AP-42 Tables 13.5-1 and 13.5-2 (dated 9/91) except for VOC and SO_2.

[2] VOC emissions are calculated by assuming a 45% non-methane contribution to TOC, per Table 13.5-2.

[3] SO_2 emissions are calculated using a material balance on the assumed stream sulfur content with a 100% conversion to SO_2.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	3.43	0.0137	18.68	0.0747	3.18	0.0127	1.2	0.0048	--	--

Proposed Hydrocracker

Initial Flow Rate =	887.5	lb-mole/hr
Stream MW =	20.4	lb/lb-mole
Stream LHV =	950	Btu/scf
Stream VOC Content =	10	mol %
Stream H2S Content =	0.2249	mol %
VOC Destruction Efficiency =	98%	
Assumed H2S Left Unconverted =	2%	
Assumed Flaring Duration =	4	hr

	Emission Factor[1]
Pollutant	(lb/MMBtu)
CO	0.37
NO_x	0.068

[1] Emission factors are from AP-42 Tables 13.5-1 and 13.5-2 (dated 9/91).

Initial Flow Rate =	336,806	scf/hr
	320	MMBtu/hr
VOC Sent to Flare =	364	lb/hr
H2S Sent to Flare =	17	lb/hr

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	21.76	0.0435	118.00	0.236	7.28	0.0146	31.94	0.0639	0.3393	0.000679

Proposed Hydrogen Plant H2-2

Total Volume Sent to Flare =	708,333	scf/event
Stream LHV =	500	Btu/scf
Assumed Flaring Duration =	8	hr
Hourly Flaring Rate =	44	MMBtu/hr

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(gr/dscf)
THC	0.14	--
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
SO_2[3]	--	0.1

[1] Emission factors are from AP-42 Tables 13.5-1 and 13.5-2 (dated 9/91) except for VOC and SO_2.

[2] VOC emissions are calculated by assuming a 45% non-methane contribution to TOC, per Table 13.5-2.

[3] SO_2 emissions are calculated using a material balance on the assumed stream sulfur content with a 100% conversion to SO_2.

	NOx		CO		VOC		SO2		H2S	
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	3.01	0.012	16.38	0.0655	2.79	0.0112	2.53	0.0101	--	--

Total Flare Emissions

	NOx		CO		VOC		SO2		H2S	
Emission P	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-404	21.76	0.072	118.00	0.39	7.28	0.041	31.94	0.079	0.34	0.00068

Flare FL-403 (CCR/Alky Flare)

Refinery Hydrogen Flaring

Input Data:

Flare design capacity =	16.49	MMBtu/hr
Fuel fired =	Refinery Hydrogen	
Maximum Sulfur Content =	Negligible	
Min Hourly Heating Value of Total Fuel =	445	Btu/scf
Avg Annual Heating Value of Total Fuel =	445	Btu/scf
Maximum Hourly Fuel Consumption Rate	0.0371	MMscf/hr
Average Annual Fuel Consumption Rate =	0.0371	MMscf/hr
Annual hours of operation =	8760	hr/yr

Emission Factors:

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(lb/MMscf)
VOC	--	--
CO	--	--
NO_x	0.068	--
PM/PM_{10}	0	
SO_2	--	--

[1] The only pollutant produced by burning hydrogen is NO_x. The NO_x emission factor is from AP-42 Table 13.5-1 (dated 1/95).

Emissions - Refinery Hydrogen Flaring:

	NO_x	NO_x	CO	CO	VOC	VOC	SO_2	SO_2	PM/PM_{10}	PM/PM_{10}
Emission Po	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-403	1.12	4.91	--	--	--	--	--	--	--	--

Separator Gas Flaring

Input Data:

Flare design capacity =	27.76	MMBtu/hr
Fuel fired =	Separator Gas	
Maximum Sulfur Content =	0.1	gr/scf
Natural Gas Min Hourly Heating Value =	445	Btu/scf
Natural Gas Avg Annual Heating Value =	445	Btu/scf
Maximum Hourly Fuel Consumption Rate	0.0624	MMscf/hr
Average Annual Fuel Consumption Rate =	0.0624	MMscf/hr
Annual hours of operation =	8760	hr/yr

Emission Factors:

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(lb/MMscf)
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
PM/PM_{10}[3]	0	
SO_2[4]	--	28.57

[1] All emission factors except SO_2 are from AP-42 Table 13.5-1 (dated 1/95).

[2] VOC emission factor is based on a 45% non-methane contribution to the total hydrocarbon emission factor (0.14 lb/MMBtu) in AP-42, Table 13.5-1 (dated 1/95).

[3] This flare is smokeless, so particulate emissions are zero.

[4] SO_2 emission factor is based on the maximum sulfur content of natural gas, assuming 7,000 gr/lb, and a 100% conversion of sulfur to SO_2 during combustion.

Emissions - Separator Gas Flaring:

	NO_x	NO_x	CO	CO	VOC	VOC	SO_2	SO_2	PM/PM_{10}	PM/PM_{10}
Emission Po	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-403	1.89	8.27	10.27	44.99	1.75	7.66	1.78	7.81	--	--

Recontactor Gas Flaring

Input Data:

Flare design capacity =	8.53	MMBtu/hr
Fuel fired =	Recontactor Gas	
Maximum Sulfur Content =	0.1	gr/scf
Natural Gas Min Hourly Heating Value =	445	Btu/scf
Natural Gas Avg Annual Heating Value =	445	Btu/scf
Maximum Hourly Fuel Consumption Rate	0.0192	MMscf/hr
Average Annual Fuel Consumption Rate =	0.0192	MMscf/hr
Annual hours of operation =	8760	hr/yr

Emission Factors:

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(lb/MMscf)
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
PM/PM_{10}[3]	0	
SO_2[4]	--	28.57

[1] All emission factors except SO_2 are from AP-42 Table 13.5-1 (dated 1/95).

[2] VOC emission factor is based on a 45% non-methane contribution to the total hydrocarbon emission factor (0.14 lb/MMBtu) in AP-42, Table 13.5-1 (dated 1/95).

[3] This flare is smokeless, so particulate emissions are zero.

[4] SO_2 emission factor is based on the maximum sulfur content of natural gas, assuming 7,000 gr/lb, and a 100% conversion of sulfur to SO_2 during combustion.

Emissions - Recontactor Gas Flaring:

	NO_x	NO_x	CO	CO	VOC	VOC	SO_2	SO_2	PM/PM_{10}	PM/PM_{10}
Emission Po	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-403	0.58	2.54	3.16	13.82	0.54	2.35	0.55	2.40	--	--

Pilot and Purge Gas Flaring

Input Data:

Flare design capacity =	0.11	MMBtu/hr
Fuel fired =	Natural Gas and Refinery Fuel Gas	
Maximum Sulfur Content =	0.1	gr/scf
Natural Gas Min Hourly Heating Value =	445	Btu/scf
Natural Gas Avg Annual Heating Value =	445	Btu/scf
Maximum Hourly Fuel Consumption Rate	0.0002	MMscf/hr
Average Annual Fuel Consumption Rate =	0.0002	MMscf/hr
Annual hours of operation =	8760	hr/yr

Emission Factors:

	Emission Factor[1]	
Pollutant	(lb/MMBtu)	(lb/MMscf)
VOC[2]	0.063	--
CO	0.37	--
NO_x	0.068	--
PM/PM_{10}[3]	0	
SO_2[4]	--	28.57

[1] All emission factors except SO_2 are from AP-42 Table 13.5-1 (dated 1/95).

[2] VOC emission factor is based on a 45% non-methane contribution to the total hydrocarbon emission factor (0.14 lb/MMBtu) in AP-42, Table 13.5-1 (dated 1/95).

[3] This flare is smokeless, so particulate emissions are zero.

[4] SO_2 emission factor is based on the maximum sulfur content of natural gas, assuming 7,000 gr/lb, and a 100% conversion of sulfur to SO_2 during combustion.

Emissions - Pilot and Purge Gas Flaring:

	NO_x	NO_x	CO	CO	VOC	VOC	SO_2	SO_2	PM/PM_{10}	PM/PM_{10}
Emission Po	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
FL-403	0.01	0.03	0.04	0.18	0.01	0.03	0.01	0.03	--	--

Total Flare Emissions

Emission Po	NO_x (lb/hr)	NO_x (tons/yr)	CO (lb/hr)	CO (tons/yr)	VOC (lb/hr)	VOC (tons/yr)	SO_2 (lb/hr)	SO_2 (tons/yr)	PM/PM_{10} (lb/hr)	PM/PM_{10} (tons/yr)
FL-403	3.60	15.75	13.47	58.99	2.29	10.04	2.34	10.24	--	--

Unit Number:	002
Unit Name:	South Crude
Activity:	Emissions from depressurizing equipment to flare.
EPN:	FL - 401
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
42,631	SCF	Total flow to flare (estimated)
1.47	hr	Duration of Flaring
0.154	scf H2S/scf gas	H2S content of gas flared
2246	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

29,067	SCFH	= Flow rate
0.55	Tons SO2	= SO2 release amount (Tons) = [(29067 SCFH)(1.47 hr)][0.154 scf H2S/scf gas][0.0000844]
1,108.2	lb SO2	= SO2 release amount (pounds) = [(29067 SCFH)(1.47 hr)][0.154 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
65.3	MM Btu/hr	= Heat release rate
0.0023	Tons NOx	= NOx release amount (Tons) = [(65.3 MM Btu/hr)(1.47 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
4.6	lb NOx	= NOx release amount (pounds) = [(65.3 MM Btu/hr)(1.47 hr)][0.0485 lb NOx/MM Btu]
0.018	Tons CO	= CO release amount (Tons)
		= [(65.3 MM Btu/hr)(1.47 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
35.4	lb CO	= CO release amount (pounds)
		= [(65.3 MM Btu/hr)(1.47 hr)][0.37 lb CO/MM Btu]
0.0030	Tons VOC	= VOC release amount (Tons)
		= [(65.3 MM Btu/hr)(1.47 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
6.0	lb VOC	= VOC release amount (pounds)
		= [(65.3 MM Btu/hr)(1.47 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	SO2	CO	VOC
lb/hr	3.2	755.6	24.2	4.1
tpy	0.0023	0.55	0.018	0.0030

Unit Number:	006			
Unit Name:	Naptha Kero Hydrotreater			
Activity:	Emissions from depressurizing equipment to flare.			
EPN:	FL - 400			
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.			
Constants:				
Data	Units	Description	Data Source	
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.	
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.	
Inputs:				
Data	Unit	Description		
81,728	SCF	Total flow to flare (estimated)		
0.417	hr	Duration of Flaring		
0.02	scf H2S/scf gas	H2S content of gas flared		
300	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare		
Calculations:				
196,147	SCFH	= Flow rate		
0.14	Tons SO2	= SO2 release amount (Tons) = [(196150 SCFH)(0.417 hr)][0.02 scf H2S/scf gas][0.0000844]		
275.9	lb SO2	= SO2 release amount (pounds) = [(196150 SCFH)(0.417 hr)][0.02 scf H2S/scf gas][0.0000844] x 2000 lb/Ton		
58.8	MM Btu/hr	= Heat release rate		
5.95E-04	Tons NOx	= NOx release amount (Tons) = [(58.8 MM Btu/hr)(0.417 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]		
1.189	lb NOx	= NOx release amount (pounds) = [(58.8 MM Btu/hr)(0.417 hr)][0.0485 lb NOx/MM Btu]		
Summary:				
	NOx	**SO2**		
lb/hr [1]	1.19	276		
tpy	5.95E-04	0.14		

Notes

[1] Because the duration of flaring is less than one hour, lb/hr values are represented as the total lbs released during the activity.

Unit Number:	009
Unit Name:	Alkylation - North
Activity:	Depressure during shutdown.
EPN:	FL - 403
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
779,416	SCF	Total flow to flare (estimated)
9.08	hr	Duration of Flaring
0.0000046	scf H2S/scf gas	H2S content of gas flared
2331	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

85,807	SCFH	= Flow rate
0.0003	Tons SO2	= SO2 release amount (Tons) = [(85807 SCFH)(9.08 hr)][0.0000046 scf H2S/scf gas][0.0000844]
0.6	lb SO2	= SO2 release amount (pounds) = [(85807 SCFH)(9.08 hr)][0.0000046 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
200.0	MM Btu/hr	= Heat release rate
0.0441	Tons NOx	= NOx release amount (Tons) = [(200 MM Btu/hr)(9.08 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
88.1	lb NOx	= NOx release amount (pounds) = [(200 MM Btu/hr)(9.08 hr)][0.0485 lb NOx/MM Btu]
0.336	Tons CO	= CO release amount (Tons)
		= [(200 MM Btu/hr)(9.08 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
672.2	lb CO	= CO release amount (pounds)
		= [(200 MM Btu/hr)(9.08 hr)][0.37 lb CO/MM Btu]
0.0572	Tons VOC	= VOC release amount (Tons)
		= [(200 MM Btu/hr)(9.08 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
114.5	lb VOC	= VOC release amount (pounds)
		= [(200 MM Btu/hr)(9.08 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	SO2	CO	VOC
lb/hr	9.70	0.07	74.0	12.60
tpy	0.044	0.00030	0.34	0.057

Unit Number:	009
Unit Name:	Alkylation - North
Activity:	Periodic Depressuring of D-653 Non-Condensables to flare
EPN:	FL - 403
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
24	events/year	Estimated number of events/year
71,117	SCF	Total flow to flare (estimated)
21.33	hr	Duration of Flaring
0.0000039	scf H2S/scf gas	H2S content of gas flared
2189	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

3,334	SCFH	= Flow rate
0.00056	Tons SO2	= SO2 release amount (Tons) = [(3333.6 SCFH)(21.3 hr)][0.0000039 scf H2S/scf gas][0.0000844][24 events/year]
0.05	lb SO2	= SO2 release amount (pounds) = [(3333.6 SCFH)(21.3 hr)][0.0000039 scf H2S/scf gas][0.0000844][24 events/year] x 2000 lb/Ton
7.3	MM Btu/hr	= Heat release rate
0.0906	Tons NOx	= NOx release amount (Tons) = [(7.3 MM Btu/hr)(21.3 hr)][0.0485 lb NOx/MM Btu][24 events/year] / [2000 lb/ton]
7.6	lb NOx	= NOx release amount (pounds) = [(7.3 MM Btu/hr)(21.3 hr)][0.0485 lb NOx/MM Btu]
0.691	Tons CO	= CO release amount (Tons) = [(7.3 MM Btu/hr)(21.3 hr)][0.37 lb CO/MM Btu][24 events/year] / [2000 lb/ton]
57.6	lb CO	= CO release amount (pounds) = [(7.3 MM Btu/hr)(21.3 hr)][0.37 lb CO/MM Btu]
0.1177	Tons VOC	= VOC release amount (Tons) = [(7.3 MM Btu/hr)(21.3 hr)][0.063 lb VOC/MM Btu][24 events/year] / [2000 lb/ton]
9.8	lb VOC	= VOC release amount (pounds) = [(7.3 MM Btu/hr)(21.3 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr	0.35	0.0022	2.7	0.46
tpy	0.091	0.00056	0.69	0.118

Unit Number:	010
Unit Name:	FCCU
Activity:	Depressure during shutdown.
EPN:	FL - 402
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
76,585	SCF	Total flow to flare (estimated)
3.00	hr	Duration of Flaring
0.013	scf H2S/scf gas	H2S content of gas flared
2633	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

25,528	SCFH	= Flow rate
0.08	Tons SO2	= SO2 release amount (Tons) = [(25528 SCFH)(3 hr)][0.0130937213716694 scf H2S/scf gas][0.0000844]
169.3	lb SO2	= SO2 release amount (pounds) = [(25528 SCFH)(3 hr)][0.0130937213716694 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
67.2	MM Btu/hr	= Heat release rate
0.0049	Tons NOx	= NOx release amount (Tons) = [(67.2 MM Btu/hr)(3 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
9.8	lb NOx	= NOx release amount (pounds) = [(67.2 MM Btu/hr)(3 hr)][0.0485 lb NOx/MM Btu]
0.037	Tons CO	= CO release amount (Tons)
		= [(67.2 MM Btu/hr)(3 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
74.6	lb CO	= CO release amount (pounds)
		= [(67.2 MM Btu/hr)(3 hr)][0.37 lb CO/MM Btu]
0.0064	Tons VOC	= VOC release amount (Tons)
		= [(67.2 MM Btu/hr)(3 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
12.7	lb VOC	= VOC release amount (pounds)
		= [(67.2 MM Btu/hr)(3 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	SO2	CO	VOC
lb/hr	3.3	56.4	24.9	4.2
tpy	0.0049	0.08	0.037	0.0064

Unit Number:	010
Unit Name:	FCCU
Activity:	Alky Feed Flaring on Startup
EPN:	FL - 402
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
25,387,207	SCF	Total flow to flare (estimated)
81.73	hr	Duration of Flaring
0.000014	scf H2S/scf gas	H2S content of gas flared
2633	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

310,610	SCFH	= Flow rate
0.03	Tons SO2	= SO2 release amount (Tons) = [(310610 SCFH)(81.7 hr)][1.43682968226968E-05 scf H2S/scf gas][0.0000844]
61.6	lb SO2	= SO2 release amount (pounds) = [(310610 SCFH)(81.7 hr)][1.43682968226968E-05 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
817.8	MM Btu/hr	= Heat release rate
1.6210	Tons NOx	= NOx release amount (Tons) = [(818 MM Btu/hr)(81.7 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
3,242.0	lb NOx	= NOx release amount (pounds) = [(818 MM Btu/hr)(81.7 hr)][0.0485 lb NOx/MM Btu]
12.366	Tons CO	= CO release amount (Tons) = [(818 MM Btu/hr)(81.7 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
24,732.5	lb CO	= CO release amount (pounds) = [(818 MM Btu/hr)(81.7 hr)][0.37 lb CO/MM Btu]
2.1056	Tons VOC	= VOC release amount (Tons) = [(818 MM Btu/hr)(81.7 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
4,211.2	lb VOC	= VOC release amount (pounds) = [(818 MM Btu/hr)(81.7 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr	39.7	0.8	302.6	51.5
tpy	1.62	0.031	12.37	2.11

Unit Number:	010
Unit Name:	FCCU
Activity:	Wet Gas Compressor Flaring on Startup
EPN:	FL - 402
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
7,107,405	SCF	Total flow to flare (estimated)
6.75	hr	Duration of Flaring
0.0058	scf H2S/scf gas	H2S content of gas flared
2900	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

1,053,122	SCFH	= Flow rate
3.48	Tons SO2	= SO2 release amount (Tons) = [(1053100 SCFH)(6.75 hr)][0.00579600000042271 scf H2S/scf gas][0.0000844]
6,953.6	lb SO2	= SO2 release amount (pounds) = [(1053100 SCFH)(6.75 hr)][0.00579600000042271 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
3,054.1	MM Btu/hr	= Heat release rate
0.4998	Tons NOx	= NOx release amount (Tons) = [(3050 MM Btu/hr)(6.75 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
999.7	lb NOx	= NOx release amount (pounds) = [(3050 MM Btu/hr)(6.75 hr)][0.0485 lb NOx/MM Btu]
3.813	Tons CO	= CO release amount (Tons) = [(3050 MM Btu/hr)(6.75 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
7,626.2	lb CO	= CO release amount (pounds) = [(3050 MM Btu/hr)(6.75 hr)][0.37 lb CO/MM Btu]
0.6493	Tons VOC	= VOC release amount (Tons) = [(3050 MM Btu/hr)(6.75 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
1,298.5	lb VOC	= VOC release amount (pounds) = [(3050 MM Btu/hr)(6.75 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr	148	1,030	1,130	192
tpy	0.50	3.477	3.81	0.65

Unit Number:	013
Unit Name:	Naphtha Hydrotreater
Activity:	Emissions from depressurizing equipment to flare.
EPN:	FL - 400
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.

Inputs:

Data	Unit	Description
22,750	SCF	Total flow to flare (estimated)
0.25	hr	Duration of Flaring
0.063	scf H2S/scf gas	H2S content of gas flared
481	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

91,000	SCFH	= Flow rate
0.12	Tons SO2	= SO2 release amount (Tons) = [(91000 SCFH)(0.25 hr)][0.063 scf H2S/scf gas][0.0000844]
241.9	lb SO2	= SO2 release amount (pounds) = [(91000 SCFH)(0.25 hr)][0.063 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
43.8	MM Btu/hr	= Heat release rate
2.65E-04	Tons NOx	= NOx release amount (Tons) = [(43.8 MM Btu/hr)(0.25 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
0.531	lb NOx	= NOx release amount (pounds) = [(43.8 MM Btu/hr)(0.25 hr)][0.0485 lb NOx/MM Btu]

Summary:

	NOx	SO2		
lb/hr [1]	0.53	242		
tpy	2.65E-04	0.12		

Notes

[1] Because the duration of flaring is less than one hour, lb/hr values are represented as the total lbs released during the activity.

Unit Number:	021
Unit Name:	Vacuum
Activity:	Emissions from depressurizing equipment to flare.
EPN:	FL - 401
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
475	SCF	Total flow to flare (estimated)
0.083	hr	Duration of Flaring
0.0616	scf H2S/scf gas	H2S content of gas flared
1559	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

5,700	SCFH	= Flow rate
2.47E-03	Tons SO2	= SO2 release amount (Tons) = [(5700 SCFH)(0.0833 hr)][0.0616 scf H2S/scf gas][0.0000844]
4.9	lb SO2	= SO2 release amount (pounds) = [(5700 SCFH)(0.0833 hr)][0.0616 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
8.9	MM Btu/hr	= Heat release rate
1.80E-05	Tons NOx	= NOx release amount (Tons) = [(8.89 MM Btu/hr)(0.0833 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
0.036	lb NOx	= NOx release amount (pounds) = [(8.89 MM Btu/hr)(0.0833 hr)][0.0485 lb NOx/MM Btu]
1.37E-04	Tons CO	= CO release amount (Tons)
		= [(8.89 MM Btu/hr)(0.0833 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
0.27	lb CO	= CO release amount (pounds)
		= [(8.89 MM Btu/hr)(0.0833 hr)][0.37 lb CO/MM Btu]
2.33E-05	Tons VOC	= VOC release amount (Tons)
		= [(8.89 MM Btu/hr)(0.0833 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
0.047	lb VOC	= VOC release amount (pounds)
		= [(8.89 MM Btu/hr)(0.0833 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr [1]	0.036	4.94	0.27	0.047
tpy	1.80E-05	2.47E-03	1.37E-04	2.33E-05

Notes

[1] Because the duration of flaring is less than one hour, lb/hr values are represented as the total lbs released during the activity.

Unit Number:	033
Unit Name:	Mixed Distillate Hydrotreater
Activity:	Depressure during shutdown.
EPN:	FL - 404
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
1,649,524	SCF	Total flow to flare (estimated)
0.017	hr	Duration of Flaring
0.000026	scf H2S/scf gas	H2S content of gas flared
480	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

98,971,446	SCFH	= Flow rate
0.0037	Tons SO2	= SO2 release amount (Tons) = [(98971000 SCFH)(0.0167 hr)][0.000026 scf H2S/scf gas][0.0000844]
7.3	lb SO2	= SO2 release amount (pounds) = [(98971000 SCFH)(0.0167 hr)][0.000026 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
47,506.3	MM Btu/hr	= Heat release rate
0.0192	Tons NOx	= NOx release amount (Tons) = [(47500 MM Btu/hr)(0.0167 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
38.4	lb NOx	= NOx release amount (pounds) = [(47500 MM Btu/hr)(0.0167 hr)][0.0485 lb NOx/MM Btu]
0.146	Tons CO	= CO release amount (Tons)
		= [(47500 MM Btu/hr)(0.0167 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
293.0	lb CO	= CO release amount (pounds)
		= [(47500 MM Btu/hr)(0.0167 hr)][0.37 lb CO/MM Btu]
0.0249	Tons VOC	= VOC release amount (Tons)
		= [(47500 MM Btu/hr)(0.0167 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
49.9	lb VOC	= VOC release amount (pounds)
		= [(47500 MM Btu/hr)(0.0167 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	SO2	CO	VOC
lb/hr [1]	38.40	7.30	293.0	49.88
tpy	0.019	0.0037	0.15	0.025

Notes

[1] Because the duration of flaring is less than one hour, lb/hr values are represented as the total lbs released during the activity.

Unit Number:	063
Unit Name:	Hydrogen Plant #1
Activity:	Depressure during shutdown.
EPN:	FL - 404
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
2	events/year	Estimated number of events/year
1,635,740	SCF	Total flow to flare (estimated)
9.53	hr	Duration of Flaring
0.0000012	scf H2S/scf gas	H2S content of gas flared
300	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

171,581	SCFH	= Flow rate
0.00033	Tons SO2	= SO2 release amount (Tons) = [(171580 SCFH)(9.53 hr)][0.0000012 scf H2S/scf gas][0.0000844][2 events/year]
0.33	lb SO2	= SO2 release amount (pounds) = [(171580 SCFH)(9.53 hr)][0.0000012 scf H2S/scf gas][0.0000844][2 events/year] x 2000 lb/Ton
51.5	MM Btu/hr	= Heat release rate
0.0238	Tons NOx	= NOx release amount (Tons) = [(51.5 MM Btu/hr)(9.53 hr)][0.0485 lb NOx/MM Btu][2 events/year] / [2000 lb/ton]
23.8	lb NOx	= NOx release amount (pounds) = [(51.5 MM Btu/hr)(9.53 hr)][0.0485 lb NOx/MM Btu]
0.182	Tons CO	= CO release amount (Tons) = [(51.5 MM Btu/hr)(9.53 hr)][0.37 lb CO/MM Btu][2 events/year] / [2000 lb/ton]
181.6	lb CO	= CO release amount (pounds) = [(51.5 MM Btu/hr)(9.53 hr)][0.37 lb CO/MM Btu]
0.0309	Tons VOC	= VOC release amount (Tons) = [(51.5 MM Btu/hr)(9.53 hr)][0.063 lb VOC/MM Btu][2 events/year] / [2000 lb/ton]
30.9	lb VOC	= VOC release amount (pounds) = [(51.5 MM Btu/hr)(9.53 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr	2.50	0.0346	19.0	3.24
tpy	0.024	0.00033	0.18	0.031

Unit Number:	070
Unit Name:	Catalytic Cracking and Reforming
Activity:	Depressure during shutdown.
EPN:	FL - 404
Calculation Method:	Use flaring duration, flow rate, composition to estimate emissions. The operating conditions in this scenario are not meant to represent binding limitations. These representations can be exceeded provided that the total emission rates represented on Table 2-E (hourly and annual) are not exceeded.

Constants:

Data	Units	Description	Data Source
0.0000844	T/scf	SO2 Consent Decree Conversion Factor	Paragraph 20.D of consent decree.
0.0485	lb/MM Btu	NOx Flare emission factor for high-Btu, steam assisted flare (lb/MM Btu)	TCEQ Guidance RG-109, October 2000, Flares and Vapor Oxidizers, Table 4.
0.37	lb/MM Btu	CO emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.
0.063	lb/MM Btu	VOC emission factor.	AP-42, Chapter 13.5, Industrial Flares, Table 13.5-1, 01/1995.

Inputs:

Data	Unit	Description
23,736	SCF	Total flow to flare (estimated)
0.433	hr	Duration of Flaring
0.000004	scf H2S/scf gas	H2S content of gas flared
418	Btu/scf (LHV)	Lower Heating Value (LHV) of gas to flare

Calculations:

54,775	SCFH	= Flow rate
0.0000	Tons SO2	= SO2 release amount (Tons) = [(54775 SCFH)(0.433 hr)][0.000004 scf H2S/scf gas][0.0000844]
0.0	lb SO2	= SO2 release amount (pounds) = [(54775 SCFH)(0.433 hr)][0.000004 scf H2S/scf gas][0.0000844] x 2000 lb/Ton
22.9	MM Btu/hr	= Heat release rate
0.0002	Tons NOx	= NOx release amount (Tons) = [(22.9 MM Btu/hr)(0.433 hr)][0.0485 lb NOx/MM Btu] / [2000 lb/ton]
0.5	lb NOx	= NOx release amount (pounds) = [(22.9 MM Btu/hr)(0.433 hr)][0.0485 lb NOx/MM Btu]
0.002	Tons CO	= CO release amount (Tons)
		= [(22.9 MM Btu/hr)(0.433 hr)][0.37 lb CO/MM Btu] / [2000 lb/ton]
3.7	lb CO	= CO release amount (pounds)
		= [(22.9 MM Btu/hr)(0.433 hr)][0.37 lb CO/MM Btu]
0.0003	Tons VOC	= VOC release amount (Tons)
		= [(22.9 MM Btu/hr)(0.433 hr)][0.063 lb VOC/MM Btu] / [2000 lb/ton]
0.6	lb VOC	= VOC release amount (pounds)
		= [(22.9 MM Btu/hr)(0.433 hr)][0.063 lb VOC/MM Btu]

Summary:

	NOx	**SO2**	**CO**	**VOC**
lb/hr [1]	0.48	0.016	3.7	0.63
tpy	0.00024	0.0000080	0.0018	0.00031

Notes

[1] Because the duration of flaring is less than one hour, lb/hr values are represented as the total lbs released during the activity.

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☐ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☐ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☐ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☐ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

Supporting documentation for the Section 6 emission calculations is provided in this section.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylcholanthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

United States Environmental Protection Agency
Office of Air Quality Planning and Standards Research Triangle Park NC 27711
EPA-453/R-95-017 November 1995
Air

EPA

Protocol for Equipment Leak Emission Estimates

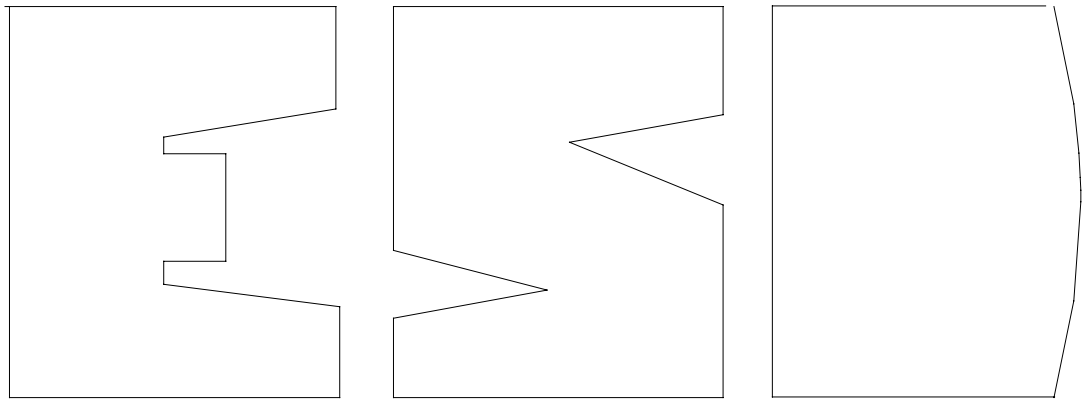


TABLE 2-2. REFINERY AVERAGE EMISSION FACTORS[a]

Equipment type	Service	Emission factor (kg/hr/source)[b]
Valves	Gas	0.0268
	Light liquid	0.0109
	Heavy liquid	0.00023
Pump seals[c]	Light liquid	0.114
	Heavy liquid	0.021
Compressor seals	Gas	0.636
Pressure relief valves	Gas	0.16
Connectors	All	0.00025
Open-ended lines	All	0.0023
Sampling connections	All	0.0150

[a]Source: Reference 2.

[b]These factors are for non-methane organic compound emission rates.

[c]The light liquid pump seal factor can be used to estimate the leak rate from agitator seals.

TABLE G-2. DETERMINATION OF LDAR CONTROL EFFECTIVENESS AT REFINERY PROCESS UNITS

Equipment type	Control program	Leak definition (ppmv)	Initial leak fraction (percent)	Initial leak rate (kg/hr)	Immediately after LDAR monit.	Immediately prior to LDAR monit.	Cycle average	Final leak rate (kg/hr)	LDAR control effectiveness (percent)
LL Valves	Monthly	10000	11.0	0.0109	0.39	1.72	1.06	0.00258	76
	Quarterly	10000	11.0	0.0109	1.15	5.07	3.11	0.00430	61
	HON reg neg	500	28.5	0.0109	0.00	2.00	1.00	0.00057	95
Gas Valves	Monthly	10000	10.0	0.0268	0.36	1.60	0.98	0.00317	88
	Quarterly	10000	10.0	0.0268	1.06	4.69	2.88	0.00813	70
	HON reg neg	500	24.0	0.0268	0.00	2.00	1.00	0.00120	96
LL Pumps	Monthly	10000	24.0	0.1140	0.00	11.28	5.64	0.03597	68
	Quarterly	10000	24.0	0.1140	0.00	24.00	12.00	0.06300	45
	HON reg neg	1000	48.0	0.1140	0.00	10.00	5.00	0.01365	88
Connectors	HON reg neg	500	1.7	0.00025	0.00	0.50	0.25	0.00005	81

Control Efficiencies for TCEQ Leak Detection and Repair Programs

Equipment/Service	28M	28RCT	28VHP	28MID	28LAER	Audio/Visual/Olfactory[1]
Valves						
Gas/Vapor	75%	97%	97%	97%	97%	97%
Light Liquid	75%	97%	97%	97%	97%	97%
Heavy Liquid[2]	0%[3]	0%[4]	0%[4]	0%[4]	0%[4]	97%
Pumps						
Light Liquid	75%	75%	85%	93%	93%	93%
Heavy Liquid[2]	0%[3]	0%[3]	0%[5]	0%[6]	0%[6]	93%
Flanges/Connectors						
Gas/Vapor[7]	30%	30%	30%	30%	97%	97%
Light Liquid[7]	30%	30%	30%	30%	97%	97%
Heavy Liquid	30%	30%	30%	30%	30%	97%
Compressors	75%	75%	85%	95%	95%	95%
Relief Valves (Gas/Vapor)	75%	97%	97%	97%	97%	97%
Open-ended Lines[8]	75%	97%	97%	97%	97%	97%
Sampling Connections	75%	97%	97%	97%	97%	97%

1. Audio, visual, and olfactory walk-through inspections are applicable for inorganic/odorous and low vapor pressure compounds such as chlorine, ammonia, hydrogen sulfide, hydrogen fluoride, and hydrogen cyanide.
2. Monitoring components in heavy liquid service is not required by any of the 28 Series LDAR programs. If monitored with an instrument, the applicant must demonstrate that the VOC being monitored has sufficient vapor pressure to allow reduction.
3. No credit may be taken if the concentration at saturation is below the leak definition of the monitoring program (i.e. (0.044 psia/14.7 psia) x 106 = 2,993 ppmv versus leak definition = 10,000 ppmv).
4. Valves in heavy liquid service may be given a 97% reduction credit if monitored at 500 ppmv by permit condition provided that the concentration at saturation is greater than 500 ppmv.
5. Pumps in heavy liquid service may be given an 85% reduction credit if monitored at 2,000 ppmv by permit condition provided that the concentration at saturation is greater than 2,000 ppmv.
6. Pumps in heavy liquid service may be given a 93% reduction credit if monitored at 500 ppmv by permit condition provided that the concentration at saturation is greater than 500 ppmv.
7. If the applicant decides to monitor connectors using an organic vapor analyzer (OVA) at the same leak definition as valves, then the applicable valve reduction credit may be used instead of the 30% reduction credit. If this option is chosen, the applicant shall continue to perform the weekly physical inspections in addition to the quarterly OVA monitoring.
8. The 28 Series quarterly LDAR programs require open-ended lines to be equipped with an appropriately sized cap, blind flange, plug, or a second valve. If so equipped, open-ended lines may be given a 100% control credit.

Table 5.1-3 (Metric And English Units). FUGITIVE EMISSION FACTORS FOR PETROLEUM REFINERIES[a]

EMISSION FACTOR RATING: D

Emission Source	Emission Factor Units	Emission Factors		Applicable Control Technology
		Uncontrolled Emissions	Controlled Emissions	
Cooling towers[b]	kg/10^6 L cooling water	0.7	0.08	Minimization of hydrocarbon leaks into cooling water system; monitoring of cooling water for hydrocarbons
	lb/10^6 gal cooling water	6	0.7	Minimization of hydrocarbon leaks into cooling water system; monitoring of cooling water for hydrocarbons
Oil/water separators[c]	kg/10^3 L waste water	0.6	0.024	Covered separators and/or vapor recovery systems
	lb/10^3 gal waste water	5	0.2	Covered separators and/or vapor recovery systems
Storage	See Chapter 7 - Liquid Storage Tanks			
Loading	See Section 5.2 - Transportation And Marketing Of Petroleum Liquids			

[a] References 2,4,12-13.

[b] If cooling water rate is unknown (in liters or gallons) assume it is 40 times the refinery feed rate (in liters or gallons). Refinery feed rate is defined as the crude oil feed rate to the atmospheric distillation column. 1 bbl (oil) = 42 gallons (gal), 1 m^3 = 1000 L.

[c] If waste water flow rate to oil/water separators is unknown (in liters or gallons) assume it is 0.95 times the refinery feed rate (in liters or gallons). Refinery feed rate is defined as the crude oil feed rate to the atmospheric distillation column. 1 bbl (oil) = 42 gal, 1 m^3 = 1000 L.

Table 13.4-1 (Metric And English Units). PARTICULATE EMISSIONS FACTORS FOR WET COOLING TOWERS[a]

Tower Type[d]	Total Liquid Drift[b]				PM-10[c]		
	Circulating Water Flow[b]	g/daL	lb/10^3 gal	EMISSION FACTOR RATING	g/daL[e]	lb/10^3 gal	EMISSION FACTOR RATING
Induced Draft (SCC 3-85-001-01, 3-85-001-20, 3-85-002-01)	0.020	2.0	1.7	D	0.023	0.019	E
Natural Draft (SCC 3-85-001-02, 3-85-002-02)	0.00088	0.088	0.073	E	ND	ND	—

[a] References 1-17. Numbers are given to 2 significant digits. ND = no data. SCC = Source Classification Code.

[b] References 2,5-7,9-10,12-13,15-16. Total liquid drift is water droplets entrained in the cooling tower exit air stream. Factors are for % of circulating water flow (10^{-2} L drift/L [10^{-2} gal drift/gal] water flow) and g drift/daL (lb drift/10^3 gal) circulating water flow. 0.12 g/daL = 0.1 lb/10^3 gal; 1 daL = 10^1 L.

[c] See discussion in text on how to use the table to obtain PM-10 emission estimates. Values shown above are the arithmetic average of test results from References 2,4,8, and 11-14, and they imply an effective TDS content of approximately 12,000 parts per million (ppm) in the circulating water.

[d] See Figure 13.4-1 and Figure 13.4-2. Additional SCCs for wet cooling towers of unspecified draft type are 3-85-001-10 and 3-85-002-10.

[e] Expressed as g PM-10/daL (lb PM-10/10^3 gal) circulating water flow.

parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water. This estimated cooling tower TDS can be used to calculate the PM-10 emission factor as above. If neither of these methods can be used, the arithmetic average PM-10 factor given in Table 13.4-1 can be used. Table 13.4-1 presents the arithmetic average PM-10 factor calculated from the test data in References 2, 4, 8, and 11 - 14. Note that this average corresponds to an effective cooling tower recirculating water TDS content of approximately 11,500 ppm for induced draft towers. (This can be found by dividing the total liquid drift factor into the PM-10 factor.)

As an alternative approach, if TDS data are unavailable for an induced draft tower, a value may be selected from Table 13.4-2 and then be combined with the total liquid drift factor in Table 13.4-1 to determine an apparent PM-10 factor.

As shown in Table 13.4-2, available data do not suggest that there is any significant difference between TDS levels in counter and cross flow towers. Data for natural draft towers are not available.

Since flares do not lend themselves to conventional emission testing techniques, only a few attempts have been made to characterize flare emissions. Recent EPA tests using propylene as flare gas indicated that efficiencies of 98 percent can be achieved when burning an offgas with at least 11,200 kJ/m^3 (300 Btu/ft^3). The tests conducted on steam-assisted flares at velocities as low as 39.6 meters per minute (m/min) (130 ft/min) to 1140 m/min (3750 ft/min), and on air-assisted flares at velocities of 180 m/min (617 ft/min) to 3960 m/min (13,087 ft/min) indicated that variations in incoming gas flow rates have no effect on the combustion efficiency. Flare gases with less than 16,770 kJ/m^3 (450 Btu/ft^3) do not smoke.

Table 13.5-1 presents flare emission factors, and Table 13.5-2 presents emission composition data obtained from the EPA tests.[1] Crude propylene was used as flare gas during the tests. Methane was a major fraction of hydrocarbons in the flare emissions, and acetylene was the dominant intermediate hydrocarbon species. Many other reports on flares indicate that acetylene is always formed as a stable intermediate product. The acetylene formed in the combustion reactions may react further with hydrocarbon radicals to form polyacetylenes followed by polycyclic hydrocarbons.[2]

In flaring waste gases containing no nitrogen compounds, NO is formed either by the fixation of atmospheric nitrogen (N) with oxygen (O) or by the reaction between the hydrocarbon radicals present in the combustion products and atmospheric nitrogen, by way of the intermediate stages, HCN, CN, and OCN.[2] Sulfur compounds contained in a flare gas stream are converted to SO_2 when burned. The amount of SO_2 emitted depends directly on the quantity of sulfur in the flared gases.

Table 13.5-1 (English Units). EMISSION FACTORS FOR FLARE OPERATIONS[a]

EMISSION FACTOR RATING: B

Component	Emission Factor ($lb/10^6$ Btu)
Total hydrocarbons[b]	0.14
Carbon monoxide	0.37
Nitrogen oxides	0.068
Soot[c]	0 - 274

[a] Reference 1. Based on tests using crude propylene containing 80% propylene and 20% propane.
[b] Measured as methane equivalent.
[c] Soot in concentration values: nonsmoking flares, 0 micrograms per liter (µg/L); lightly smoking flares, 40 µg/L; average smoking flares, 177 µg/L; and heavily smoking flares, 274 µg/L.

Table 3.3-1. EMISSION FACTORS FOR UNCONTROLLED GASOLINE AND DIESEL INDUSTRIAL ENGINES[a]

Pollutant	Gasoline Fuel (SCC 2-02-003-01, 2-03-003-01)		Diesel Fuel (SCC 2-02-001-02, 2-03-001-01)		EMISSION FACTOR RATING
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	
NO_x	0.011	1.63	0.031	4.41	D
CO	6.96 E-03[d]	0.99[d]	6.68 E-03	0.95	D
SO_x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10[b]	7.21 E-04	0.10	2.20 E-03	0.31	D
CO_2[c]	1.08	154	1.15	164	B
Aldehydes	4.85 E-04	0.07	4.63 E-04	0.07	D
TOC					
Exhaust	0.015	2.10	2.47 E-03	0.35	D
Evaporative	6.61 E-04	0.09	0.00	0.00	E
Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
Refueling	1.08 E-03	0.15	0.00	0.00	E

[a] References 2,5-6,9-14. When necessary, an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr was used to convert from lb/MMBtu to lb/hp-hr. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code. TOC = total organic compounds.

[b] PM-10 = particulate matter less than or equal to 10 μm aerodynamic diameter. All particulate is assumed to be ≤ 1 μm in size.

[c] Assumes 99% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 86 weight % carbon in gasoline, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and gasoline heating value of 20,300 Btu/lb.

[d] Instead of 0.439 lb/hp-hr (power output) and 62.7 lb/mmBtu (fuel input), the correct emissions factors values are 6.96 E-03 lb/hp-hr (power output) and 0.99 lb/mmBtu (fuel input), respectively. This is an editorial correction. March 24, 2009

Title 40: Protection of Environment
PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (CONTINUED)
Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

---

TABLE 4 TO SUBPART IIII OF PART 60—EMISSION STANDARDS FOR STATIONARY FIRE PUMP ENGINES

[As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines]

Maximum engine power	Model year(s)	NMHC + NO_X	CO	PM
KW<8 (HP<11)	2010 and earlier	10.5 (7.8)	8.0 (6.0)	1.0 (0.75)
	2011 +	7.5 (5.6)		0.40 (0.30)
8≤KW<19 (11≤HP<25)	2010 and earlier	9.5 (7.1)	6.6 (4.9)	0.80 (0.60)
	2011 +	7.5 (5.6)		0.40 (0.30)
19≤KW<37 (25≤HP<50)	2010 and earlier	9.5 (7.1)	5.5 (4.1)	0.80 (0.60)
	2011 +	7.5 (5.6)		0.30 (0.22)
37≤KW<56 (50≤HP<75)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011 +[1]	4.7 (3.5)		0.40 (0.30)
56≤KW<75 (75≤HP<100)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011 +[1]	4.7 (3.5)		0.40 (0.30)
75≤KW<130 (100≤HP<175)	2009 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2010 +[2]	4.0 (3.0)		0.30 (0.22)
130≤KW<225 (175≤HP<300)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +[3]	4.0 (3.0)		0.20 (0.15)
225≤KW<450 (300≤HP<600)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +[3]	4.0 (3.0)		0.20 (0.15)
450≤KW≤560 (600≤HP≤750)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +	4.0 (3.0)		0.20 (0.15)
KW>560 (HP>750)	2007 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2008 +	6.4 (4.8)		0.20 (0.15)

[1]For model years 2011-2013, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines.

[2]For model years 2010-2012, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines.

[3]In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

Title 40: Protection of Environment
PART 89—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES
Subpart B—Emission Standards and Certification Provisions

---

§89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

(a) Exhaust emission from nonroad engines to which this subpart is applicable shall not exceed the applicable exhaust emission standards contained in Table 1, as follows:

Table 1.—Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW≤560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW>560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

[1] The model years listed indicate the model years for which the specified tier of standards take effect.

View or download PDF

(b) Exhaust emissions of oxides of nitrogen, carbon monoxide, hydrocarbon, and nonmethane hydrocarbon are measured using the procedures set forth in subpart E of this part.

(c) Exhaust emission of particulate matter is measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines. This procedure is incorporated by reference. See §89.6.

(d) In lieu of the NO_X standards, NMHC + NO_X standards, and PM standards specified in paragraph (a) of this section, manufacturers may elect to include engine families in the averaging, banking, and trading program, the provisions of which are specified in subpart C of this part. The manufacturer must set a family emission limit (FEL) not to exceed the levels contained in Table 2. The FEL established by the manufacturer serves as the standard for that engine family. Table 2 follows:

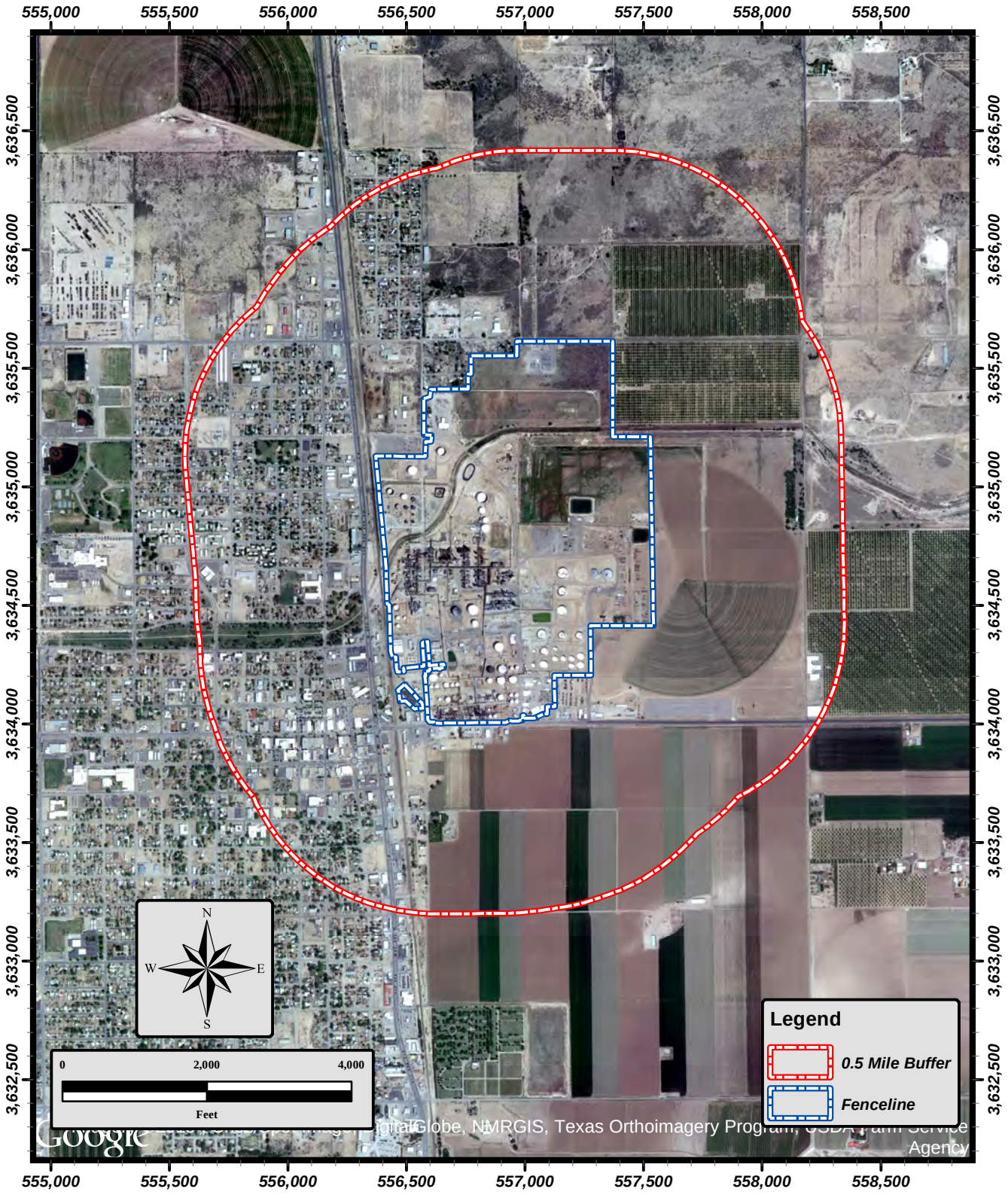
Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

Figure 1 is a map of the refinery and surrounding area.



Grid Presented is UTM Zone 13, NAD 1983

TASCOSA ALLIANCE COMPANY

Navajo

FIGURE 1 AREA MAP

Artesia Refinery
Artesia, New Mexico

from USGS Quadrangle Artesia, New Mexico
Ground Condition Depicted May 2014
Digital Data Courtesy of Google Earth

Section 10

Written Description of the Routine Operations of the Facility

A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

The Artesia Refinery operates one crude oil distillation unit and various downstream process units to produce various petroleum products. The Artesia Refinery processes crude oil, as well as, intermediates received from outside sources such as Navajo's Lovington, NM refinery and other third-party sources. The crude oil and other intermediates enter the Artesia refinery via pipeline, truck, or rail. The Artesia refinery produces butane, propane, liquefied petroleum gas (LPG), jet fuels, kerosene, diesel fuel, various grades of gasoline, carbon black oil (CBO), gas oils, fuel oils, asphalt, pitch, and molten sulfur. For its own use, the Artesia refinery produces refinery fuel gas, hydrogen, nitrogen, and steam.

The initial refining process separates crude oil into different fractions based upon their boiling point ranges. Some of the lighter and intermediate fractions are blended into products. Heavier fractions may be further processed by cracking the large hydrocarbon molecules into smaller ones. The structures of some molecules may also be rearranged to produce the desired components.

The main process operations at the Navajo Artesia Refinery are listed below:

- Atmospheric Crude Distillation Unit,
- Saturates Gas Plants,
- PBC Butane Splitter Unit,
- Flasher/Vacuum Distillation Unit,
- Solvent De-Asphalting (SDA or ROSE) Units,
- MEROX® /Merichem Treaters,
- Hydrotreating Units,
- Fluid Catalytic Cracking Unit (FCCU),
- Hydrocracking Unit,
- Isomerization (or Penex) Unit,
- Continuous Catalytic Reforming (CCR) Unit,
- Alkylation Unit,
- Hydrogen Production Units,
- Storage Tanks,
- Loading and Unloading Racks,
- Amine Units,
- Sour Water Stripper Units (SWS),
- Sulfur Recovery Units (SRUs),
- Boilers,
- Cooling Towers,
- Flares, and
- Wastewater Collection and Treatment System.

The processes associated with each of these operations are described in the following paragraphs.

Atmospheric Crude Distillation Unit (CDU)

The Artesia Refinery has one Atmospheric CDU. Crude oil from tankage is pumped to the CDU where it is preheated and desalted. The desalted crude is further heated and then charged to an atmospheric crude distillation tower. The distillation tower produces the desired number, quantity, and range of distillates for downstream processing.

Normally, the CDU produces the following materials in varying proportions:

- Light Naphtha and Crude Unit Off-Gas: Sent to the Saturates Gas Plant for stabilization,
- Heavy Naphtha: Sent to the Naphtha Hydrotreater for desulfurization,
- Kerosene: Sent to the Kerosene Hydrotreater for desulfurization,
- Diesel: Sent to the Diesel Hydrotreater for desulfurization,
- Atmospheric Gas Oil (AGO): Sent to the Gas Oil Hydrotreaters or Hydrocracker for desulfurization, and
- Atmospheric Resid: Sent to the Flasher/Vacuum Unit or ROSE Units for further fractionation.

Emissions from the Crude Unit result from fuel gas combustion emissions associated with crude oil charge Heaters H-0019 and H-0020. There are also VOC equipment leak emissions from piping components, pumps, heat exchangers, and vessels (FUG-02-SP CRUDE).

Saturates Gas Plants

The Artesia Refinery existing Saturates Gas Plant (Sat Gas Plant) uses distillation and fractionation processes to upgrade the light naphtha and crude unit off-gas to more useful materials. The Saturates Gas Plants include a deethanizer column, a debutanizer column, and a depropanizer column.

The Saturates Gas Plant fractionates the incoming streams to produce the following:
- dry gas (C1 and C2),
- propane (C3),
- isobutane and normal butane (iC4 and nC4) mixture, and
- stabilized light naphtha termed "straight-run naphtha."

The dry gas is sent to the Amine Unit for sweetening and then to the Refinery fuel gas system to be used as fuel within the Refinery. The mixed butane stream is used for PBC charge or is sent to storage tanks for use in gasoline blending. The propane mixes with propane from the Alkylation Unit in the pressurized storage tanks for later sale. Navajo can route the propane streams to the fuel gas system. The straight-run naphtha is normally sent to the naphtha hydrotreating unit for sweetening, but may optionally be sweetened in the Straight-Run MEROX® Treater.

There are no fuel gas combustion emissions associated with the Saturates Gas Plant. Emissions from the Saturates Gas Plant are due to equipment leaks of VOC from piping components and equipment (FUG 35-SAT GAS).

PBC Butane Splitter Unit

The PBC Unit (butane splitter) separates isobutane from normal butane. The mixed isobutane and normal butane feed comes from the Saturates Gas Plants depropanizer bottoms and the Alkylation Unit debutanizer overhead streams. This mixed isobutane or normal butane stream is also called field grade butane. In addition to being produced on site, the Artesia Refinery may purchase field-grade butane, isobutene, or normal butane.

There are no fuel gas combustion emissions associated with the PBC butanes splitter. Emissions from the PBC Unit are due to equipment leaks of VOC from piping components (FUG-41-PBC).

Flasher/Vacuum Distillation Unit

The purpose of the Flasher/Vacuum Distillation Unit is to separate the residue stream from the bottom of the atmospheric crude tower, which contains heavy gas oil and asphalt. Other residue streams from sources such as the Lovington Refinery CDU or purchased feed stocks from other sources can also be fed to the Flasher/Vacuum Distillation Unit.

The residue stream is first heated in Heater H-0011 to a high temperature and then flash-separated at atmospheric pressure in a Flash Tower and Fractionator. Flasher gas oil is sent to the Gas Oil Hydrotreater (GOHT) Unit or is sent to storage. The flasher residue is sent to the vacuum tower.

The flasher residue is first heated in Vacuum Heater H-0028 and then charged to the Vacuum Tower. In the Vacuum Tower heavy gas oil is removed from asphalt by means of vacuum distillation. The gas oil product is sent to the GOHT or the FCCU as feed or to storage. The asphalt product is sent to one of the Solvent De-asphalting Units or to storage.

Emissions from the flasher/vacuum units include combustion emissions from Heaters H-0011 and H-0028 and equipment leaks of VOC (FUG-21-SP VACUUM) from the associated piping, heat exchangers, pumps, and vessels.

Solvent De-Asphalting (SDA) Units

The Artesia Refinery has an existing SDA Unit (also referred to as ROSE units) which separates additional gas oil components out of the asphalt produced by the Vacuum Unit. SDAs increase the amount of gas oil generated per barrel of oil processed.

The hot residue/asphalt stream produced by the Vacuum Unit is contacted by a solvent (butane) to recover de-asphalted oil (DAO, i.e., gas oil components) out of the residue/asphalt. The residue/asphalt is then heated and steam stripped to remove any remaining solvent and then pumped to tankage for storage and shipping or fuel oil blending. The extract mixture is heated prior to the DAO separator where solvent is recovered from the DAO. Any remaining solvent is then removed by steam stripping the DAO. The solvent recovered from the extract mixture and the DAO unit is recycled for reuse while the DAO is piped to existing gas oil storage tanks or directly to the GOHT.

Heat for each SDA is provided by a hot oil heater (H-2501). There are also equipment leak emissions of VOC from the piping components (FUG-25-ROSE 2) which are associated with the SDA unit.

MEROX®/Merichem Treaters

The MEROX® and Merichem processes remove H_2S and convert other sulfur compounds such as mercaptans to disulfide oils. The removal of sulfur-bearing compounds is sometimes referred to as sweetening. H_2S and mercaptans may be present in various streams. MEROX®/Merichem units use a caustic treatment process to remove and convert these sulfur compounds. The Artesia Refinery uses fixed-bed and liquid MEROX® processes.

A MEROX® fixed-bed process may optionally be used to treat the straight-run (virgin: non-cracked, non-reformed) light naphtha from the Saturates Gas Plants. In this process, the light naphtha is first washed with caustic for initial H_2S removal. The process stream is then combined with air and passed over a reactor for final sweetening. Caustic is removed from the reactor effluent in the caustic settling drum and re-circulated to the reactor feed, with MEROX® reagent added as necessary to refresh the catalyst bed. The treated straight-run gasoline goes to storage.

Another fixed-bed MEROX® process treats the heavy naphtha from the FCC. The sweetened naphtha is subsequently used as a blend stock for jet fuels.

A Merichem process treats the gasoline blend stock from the FCCU. The sweetened FCC gasoline flows to storage where it is used for gasoline blending.

A liquid Merichem process treats the light ends from both the Saturates Gas Plants for LPG production and the FCC for Alkylation Unit feed (after primary removal of H_2S in the Amine Unit).

Emissions from the MEROX®/Merichem Treaters are due to equipment leaks of VOC from the piping components (FUG-18-LSR MEROX TRT).

Kerosene Hydrotreating Unit

The Kerosene Hydrotreating Unit lowers the sulfur content of the raw kerosene. Raw kerosene is mixed with hydrogen in the presence of a catalyst at high pressure and high temperature. Sulfur atoms in the raw kerosene combine with the hydrogen to form H_2S gas. H_2S is then stripped or distilled away from the oil along with the other light ends. Heat is provided by Heater H-0303.

Raw kerosene comes from the Artesia CDU, the Lovington Refinery CDU, or purchased feed stocks from other sources. After processing is complete, the desulfurized kerosene is sent to storage.

Combustion emissions result from operation of Heater H-0303. There are also equipment leak emissions of VOC from the piping components (FUG-05-KERO) which are associated with the kerosene hydrotreating unit.

Naphtha Hydrotreating Units

The Naphtha Hydrotreating Units remove most of the sulfur from the raw light or heavy naphthas. Raw naphtha charge is mixed with hydrogen in the presence of a catalyst at high pressure and temperature. Sulfur atoms combine with the hydrogen to form H_2S gas, which is then stripped or distilled away from the oil along with the other light ends. The Naphtha HDS

Charge Heaters (H-0030 and H-0040), the Naphtha Debutanizer Reboiler (H-0018), and Naphtha HDS Splitter Tower Reboiler (H-0009) provide the necessary heat.

Raw naphtha comes from the Artesia CDU, the Lovington Refinery CDU, or purchased feed stocks from other sources. After processing, the desulfurized naphtha is stabilized. LPG-range material is removed and sent to the Sat Gas Plant. Light naphtha goes to the Isomerization Unit; and the heavy naphtha is fed to the CCR Reformer or is sent to storage.

Combustion emissions result from operation of the Naphtha HDS Charge Heaters (H-0030 and H-0040), the Naphtha Debutanizer Reboiler (H-0018), and Naphtha HDS Splitter Tower Reboiler (H-0009). Equipment leak emissions of VOC from the piping components (FUG-06-NHDU and FUG-13-NHDU) are also associated with the Naphtha Hydrotreating Units.

Diesel Hydrotreating Unit

The Diesel Hydrotreating Unit lowers the sulfur content of the diesel and the light cycle oil (LCO) charge. Diesel and LCO charge are mixed with hydrogen in the presence of a catalyst at high pressure and temperature. Sulfur atoms combine with the hydrogen to form H_2S gas, which is then stripped or distilled away from the oil along with the other light ends.

Raw diesel processed in the Diesel Hydrotreating Unit comes from the Artesia CDU, the Lovington Refinery CDU, or purchased feed stocks from other sources. The LCO comes from the FCCU. Heater H-0601 provides the necessary heat.

Fuel gas combustion emissions result from operation of Heater H-0601. There are also equipment leak emissions of VOC from the piping components which are associated with the Diesel Hydrotreating Unit (FUG-33-DIST HDU).

Gas Oil Hydrotreating Units

The GOHT Units lower the sulfur content of the gas oil charge. The gas oils are mixed with hydrogen in the presence of a catalyst at high pressure and high temperature. Sulfur atoms combine with the hydrogen to form H_2S gas, which is then stripped or distilled away from the oil along with the other light ends.

Raw gas oil processed in the GOHT Units comes from the Artesia CDU, Vacuum Unit, SDA Unit, the Lovington Refinery CDU, or purchased feed stocks from other sources. Heaters (H-0421 and H-2421) provide the necessary heat.

Fuel gas combustion emissions result from operation of Heaters H-0421 and H-2421. There are also equipment leak emissions of VOC from the piping components that are associated with the GOHT Units (FUG-44-DIST-HDU and FUG-45-DIST-HDU).

Fluid Catalytic Cracking Unit (FCCU)

Fluid catalytic cracking is a conversion process that converts, or cracks, heavy hydrocarbon feed into lighter, more valuable, refinery products. The process uses a bed of solid catalyst that is fluidized by the movement of the feed and air.

The FCCU processes atmospheric gas oil (AGO), vacuum gas oil (VGO) and atmospheric residue from the Artesia Refinery CDU, the Flasher Unit, the Vacuum Distillation Unit, from the Lovington Refinery CDU, or purchased feed stocks from other sources. The FCCU consists of a reactor and a catalyst regenerator, a main fractionator, a deethanizer absorber/stripper, and a debutanizer.

The gas oils are preheated in Heater H-0312 and then cracked in the presence of a very hot solid catalyst. The cracked products are recovered in the fractionators as dry gas, C3=/C4=/C5= LPG, FCC gasoline, a middle distillate (LCO or diesel), and a heavy slurry oil (a.k.a. slurry oil or carbon black oil (CBO)). The FCC gasoline is further split into light cat naphtha (LCN) and heavy cat naphtha (HCN), both of which are used as components in gasoline blending. Similarly, LCO may be further split into light cycle oil (LLCO) and heavy light cycle oil (HLCO) which are used as components in fuel oil blending or as charge to the diesel hydrotreating unit.

During the cracking process, carbon deposits form on the catalyst as coke. The coke is burned off in the regenerator (FCC-REGEN). The FCC regeneration process is exothermic and provides the necessary heat for the endothermic cracking reaction. This is a high-temperature regeneration (HTR) process, which also burns off hydrocarbons (VOC), ammonia, and total reduced sulfur compounds.

The FCCU produces the following process streams:

- heavy slurry oil (a.k.a. CBO, which after catalyst fines removal becomes clarified slurry oil) is cooled, stored, and sold.
- LCO is sent to one of the hydrotreaters or to storage,
- dry gas (gas with LPG removed) is sent to the Amine Unit for H_2S removal before entering the Refinery fuel gas system,
- C3=/C4=/C5= LPG product is sent to the Amine Unit for H_2S removal, then to the Merichem Treaters for mercaptan extraction and deethanization, and then to the alkylation units as feed, and
- FCC gasoline is sent to the Merichem treaters for sweetening and then to storage.

Emissions from the FCCU result from the FCCU Feed Heater (H-0312), from the Startup Heater (H-0351), from the FCC Regenerator Stack (FCC-REGEN), and from torch oil during startup and sometimes to maintain catalyst temperature. The FCCU Startup Heater (H-0351) is used during start-up of the entire unit after a complete shutdown. This occurs infrequently because during many process upsets, the unit can be placed in a recirculation mode that requires less additional heat to resume operations. Heater H-0351 exhausts through the FCC Regenerator Stack. During start-up, torch oil is fired to heat the catalyst bed to the required temperature. Emissions from the regenerator flow first through the cyclones that capture a part of the catalyst fines from the regeneration process, and then sent to the FCCU Regenerator Scrubber. The scrubber controls emissions of particulate matter, sulfur dioxide (SO_2), and carbon monoxide (CO). These emissions are included in FCC-REGEN. If the scrubber is shut down because of a malfunction or routine maintenance, the FCCU Regenerator emissions exhaust to the atmosphere through the FCC Regenerator Stack. There are also VOC equipment leaks from piping components (FUG-10-FCC) associated with this unit.

Hydrocracking Unit

Hydrocracking is a two-stage process using catalyst to split heavy hydrocarbons into lighter products via a hydrogenation reaction coupled with hydrotreating to remove sulfur and nitrogen form the hydrocarbon feed.

In the first stage of the hydrocracking process, preheated hydrocarbon feed is mixed with recycled hydrogen and sent to the first stage reactor. This reactor uses a catalyst to convert and remove most of the sulfur and nitrogen compounds, as well as crack some of the heavy hydrocarbons in the feed. After the first stage reactor, the hydrocarbons are cooled, the hydrogen is separated out and recycled, and the hydrocarbons are separated in a fractionator. The fractionator bottoms are again mixed with hydrogen and then charged to the second stage reactor. This reactor uses higher temperatures to remove more sulfur and nitrogen and to further crack the hydrocarbons. As before, the hydrogen is separated out and recycled, and the hydrocarbons are separated in the fractionator.

In the Hydrocracking Unit, fuel gas combustion emissions result from the Hydrocracker Reactor Charge Heater (H-3403) and the Hydrocracker Reboiler (H-3402). Equipment leaks of VOC due to piping components are represented as FUG-34-HYDROCRACKER.

Isomerization (or Penex) Unit

The Isomerization Unit processes light sweet naphtha from the Naphtha Hydrotreating Unit using the Penex process. The unit isomerizes the naphtha to form isomerate gasoline, a high-octane blending stock for gasoline motor fuels and to saturate benzene in the stream. Isomerate is routed from the Isom Unit to gasoline blending. The only routine emissions from the Isom Unit are VOC equipment leak emissions from piping components (FUG-20-ISOM).

CCR Reformer

Feed for the CCR Reformer is heavy sweet naphtha from the Naphtha Hydrotreating Unit. The reformed naphtha is called reformate and is used as a blending stock for gasoline motor fuels.

The CCR Reformer rearranges the naphtha molecules to be transformed into high-octane aromatic hydrocarbons. The CCR Reformer also produces hydrogen for use in the various hydrotreating units.

During the reforming process the catalyst becomes deactivated with carbon. Deactivated catalyst is regenerated in the CCR Regenerator. The CCR Regenerator vent emissions are controlled by a ChlorSorb® unit to reduce the chloride emissions. Other miscellaneous process vents form the CCR catalyst handling system are vented into the firebox of CCR Heaters H-0352 and H-0353.

In the CCR Unit, fuel gas combustion emissions result from:

- CCR Heaters H-0352, H-0353, H-0354 which share a common stack,
- CCR Heaters H-0362, H-0363, H-0364 which share a common stack, and
- the Reformate Stabilizer Reboiler H-0355.

Equipment leaks of VOC due to piping components are represented as FUG-70-CCR.

Alkylation Unit

Alkylation involves reactions between isobutane and olefins in the presence of a strong acid catalyst. This alkylation process makes alkylated paraffinic compounds (alkylate), primarily isoheptane and isooctane. The Alkylation Unit is comprised of an iso-stripper, depropanizer, HF stripper, debutanizer, and an alkylate splitter.

Olefins, and part of the isobutane feed, come from the FCCU after sulfur removal and treating in the Amine Unit and the Merichem Treaters. The remaining isobutane is supplied from the PBC Unit and from outside purchases. The produced alkylate is sent to gasoline blending or to storage.

There are combustion emissions from the gas-fired Alkylation Depropanizer Reboiler Heater (H-600). In addition, there are VOC emissions from equipment leaks associated with the towers, pumps, vessels, heat exchangers, and piping systems in this unit (FUG-09-N ALKY and FUG-43-S ALKY).

Hydrogen Production Units

Removal of sulfur from finished gasoline, jet fuel, and diesel to meet product specifications requires hydrogen (H_2). The Hydrogen Plants use pipeline quality natural gas, Refinery fuel gas, or a mixture of the two, as process feed and fuel. The feed gas flows through guard desulfurizers to Hydrogen Plant Reformer Furnaces (H-8801, H-8802, and H-9851). Steam and feed gas are combined and heated in the Reformer Furnaces, where the hydrocarbons are converted into mixture of CO, carbon dioxide (CO_2), an H_2. The mixture then goes to the shift converter where CO and water (H_2O) react over a catalyst to form CO_2 and H_2. From the shift converter, the stream flows through several heat exchangers to a hot condensate separator and then a cold condensate separator. Gas from the separators will be cooled and sent through a series of parallel pressure swing adsorbers (PSAs) to purify the H_2 gas stream. From the PSAs, the purified H_2 gas will be sent to the Refinery H_2 piping system and distributed as needed to the Hydrotreating Units. The off-gas from the PSAs, consisting primarily of CO_2 and smaller amounts of CO, H_2, and methane, will be returned to the Reformer Heaters and combusted as fuel.

Equipment leak emissions of VOC from the piping components (FUG-63-H2 PLANT-1 and FUG-64-H2 PLANT-2) are also associated with the Hydrogen Production Units.

Storage Tanks

Navajo utilizes pressurized tanks for lighter petroleum fractions to keep them in the liquid phase. High vapor pressure materials (vapor pressure ≤11 psia) are stored in floating roof tanks to minimize VOC emissions. Fixed roof tanks are used for low (<1 psia) and moderate (≤1.5 psia) vapor pressure materials.

The Artesia Refinery handles a variety of materials and requires operational flexibility to store each material in any of several tanks. If each storage tank were only allowed to store a single material, then changes in product demand, routine tank outages, or other changes would require frequent revisions to the Permit. The storage tank representations in the current permit and in associated applications are designed to provide the required operational flexibility.

The calculations presented in Section 6 of this Application specify the most volatile category of liquids that may be stored in each tank – high, moderate, or low vapor pressure liquids. Liquids in lower volatility categories may be stored in any tank. In other words, tanks allowed to store high vapor pressure category liquids can also store moderate and low vapor pressure category liquids; tanks allowed to store moderate vapor pressure category liquids can also store low vapor pressure category liquids.

High Vapor Pressure Liquids include: Crude, Naphtha (raw or treated), Unleaded Gasolines (sub-grade, regular, premium, and other blends), Alkylate, Reformate, FCC Gasoline, Ethanol, Isomerate, Straight Run Gasoline, and other Refinery feedstocks, intermediates, products, byproducts, and wastes having a maximum vapor pressure of 11 psia or less under actual storage conditions.

Moderate Vapor Pressure Liquids include: Desulfurized Naphtha (Splitter Bottoms), Light Slop, and other Refinery feedstocks, intermediates, products, byproducts, and wastes having a maximum vapor pressure of 1.5 psia or less under actual storage conditions.

Low Vapor Pressure Liquids include: Diesel (raw or finished), Kerosene (raw or finished), Jet Fuels, Fuel Oil, CBO, LCO, Slurry, Heavy Slop, Cutback Asphalt, Cutter, VGO, AGO, and other Refinery feedstocks, intermediates, products, byproducts, and wastes having a maximum vapor pressure less than 1 psia under actual storage conditions.

Storage Tanks T-0040 and T-0041 are a special case. These tanks store caustic but may have a diesel blanket. Thus, diesel emissions may occur.

The Artesia Refinery also uses pressure tanks (i.e., bullet tanks) to store high-pressure products such as LPG. Pressurized tanks maintain sufficient pressure to prevent any emissions, with the exception of emergency releases from pressure relief devices designed to prevent catastrophic failure of the storage vessel. Therefore, the pressure tanks are not represented in this permit application. However, equipment leaks of VOC for the piping components associated with the LPG storage tanks (FUG-LPG) occur and thus, are represented in this application.

For light oil storage tanks, equipment leak emissions from piping components are represented as FUG-29-BLENDER/TK FARM. Included with the light oil tankage is the blending unit which consists of various control valves, metering, and piping. FUG-29-BLENDER/TK FARM includes equipment leaks from the blending unit. For heavy oil storage tanks, equipment leak emissions from piping components are represented as FUG-ASPHALT STG.

Utility and Vessels

The Refinery contains several fractionators and process vessels which have no set or routine function in the day-to-day operation of the Refinery, but instead operate from time-to-time in various fractionating, stripping, absorbing, receiving, and accumulation services.

Emissions from these process vessels include VOC equipment leak emissions (FUG-73-SP UTIL) from the towers and vessels and their associated piping, pumps, and heat exchangers. There are no combustion devices associated with this equipment.

Loading and Unloading Racks

Loading rack emissions result from displacement of organic vapors present in "empty" cargo tanks. The organic vapors that are displaced during liquid loading are referred to as loading losses. Emissions from off-loading operations occur at the receiving storage tanks.

Equipment leaks of VOC for all loading rack and off-loading piping components, except those associated with RLO-19, are represented as FUG 08-TRUCK RK. Equipment leaks of VOC associated with RLO-19 are represented as FUG-RLO-ASPHALT.

Amine Units

Amine Units are used to extract H_2S from gas and LPG (Alkylation Unit feed) streams produced in the Refinery. Amines, because of their chemical structure, have an affinity for H_2S but will also release absorbed H_2S if heated. Thus, amines provide a method to remove H_2S from gaseous streams and then to recover it later. The Artesia Refinery converts the recovered H_2S into sulfur in the Sulfur Recovery Units (SRUs).

The Artesia Refinery Amine Units consist of multiple amine contactors within the various process units and three amine strippers. (Note that the amine contactor and amine stripper in the SRU tail gas treating unit are addressed separately in the section discussing the SRUs). The contactors provide the amine liquid surface area for H_2S absorption from the gaseous process streams. The amine strippers remove the H_2S from the rich amine solution. This regenerates the amine solution for re use in the contactors. The recovered H_2S-rich stream is then routed to the SRUs. Amine Unit emissions are due to equipment leaks of VOC from piping components (FUG-07-N AMINE).

Sour Water Strippers (SWS)

The purpose of the sour water strippers is to remove H_2S and ammonia (NH_3) from various process water streams produced in the Refinery. The overhead gas stream from the sour water strippers consists of steam, NH_3 and H_2S. This stream is also feed for the SRUs. Emissions from the SWS are due to equipment leaks of VOC from piping components (FUG-07-SWS1).

Sulfur Recovery Units (SRU)

The Artesia Refinery has three, three-stage Claus Sulfur Recovery Units (SRU1, SRU2, and SRU3). SRU1 and SRU2 share a common tail gas treatment unit (TGTU), and a common tail gas incinerator (TGI). SRU3 has its own TGTU and its own TGI. There are no direct stack emissions to the atmosphere from the SRUs or the TGTUs. The emissions are from the TGIs (H-0473 (SRU1/SRU2 TGI) and SRU3-TGI). Emissions from the SRUs also include combustion emissions from the SRU Hot Oil Heaters (H-0464 and H-3101).

The SRUs process H_2S-bearing gases and convert the H_2S to elemental sulfur for sale. The sulfur recovery process significantly reduces air pollution and generates steam for Refinery consumption.

A Claus SRU converts H_2S to elemental sulfur by first oxidizing one-third of the H_2S to SO_2 to form elemental sulfur by the following endothermic reaction:

$2\ H_2S + SO2 \dashrightarrow 3\ S + 2\ H2O$

The acid gas first passes through knockout drums designed to remove entrained sour water and condensed hydrocarbons from the amine acid gas and the sour water stripper gas. The gases are then fed to a thermal reactor. Heat for the reactor is provided by the combustion of the acid gas.

After the thermal reactor, the hot effluent gases pass through a transition section and enter a steam generator. In the steam generator, the hot gases from the reactor are cooled and steam is generated. The process gas stream then passes through a condenser where molten sulfur is removed and transferred to the sulfur pit and/or tanks. The remaining gas passes through a series of three catalytic reactor beds and sulfur condensers where the remaining sulfur entering the plant is recovered. The additional gas-fired hot oil heater provides the heat to the catalytic reactor via a closed-loop hot oil circulation system. H_2S and sulfur vapors from the sulfur storage pit and tanks are captured and routed to the TGI for destruction.

Any gas remaining after the reactor beds is processed in the TGTU, which is comprised of a reactor, amine contactor, amine stripper, and a startup/auxiliary tail gas unit blower. The TGTU operates downstream of the SRU and upstream of the TGI.

Tail gas containing unrecovered sulfur compounds flows from the SRU to the TGTU where the sulfur compounds pass through a reactor converting the sulfur compounds into the H_2S. The reactor effluent then flows into a vessel for contact with lean (low sulfur) amine solution. The H_2S is absorbed by the amine while the treated tail gas flows to the TGI for combustion. The rich (high sulfur) amine solution then flows from the contactor to a stripper column, which regenerates, lean amine from rich amine by removing the H_2S. The concentrated H_2S gas stream produced by the stripper is recycled to the SRU. The regenerated lean amine is pumped back to the contactor for reuse.

The TGI will receive any remaining gases from the TGTU, as well as the vent stream from the sulfur pit and/or tanks. The TGI will further reduce H_2S emissions by combusting the H_2S to form SO_2. A continuous emissions monitor system (CEMS) will continuously measure and record SO_2 concentrations in each TGI stack.

Equipment leak emissions of VOC from the piping components (FUG-SRU1/SRU2/TGTU, FUG-07-SWS1, and FUG-31-SRU3/TGTU3/TGI3) are also associated with the SRUs.

Boilers

Steam Boilers B-0007, B-0008, and B-0009 provide the Artesia Refinery with process steam. For fuel, the Artesia boilers use Refinery fuel gas. Boiler steam production results in combustion emissions. Note that steam is also produced in a number of process steam generators located throughout the Refinery.

A fuel gas distribution system provides fuel gas for the boilers and process heaters at the Refinery. Equipment leak emissions of VOC from the fuel gas distribution system's piping components are included in EPN FUG-FUEL GAS.

Cooling Towers

Water removes waste heat from process streams in a variety of heat exchangers throughout the process units. The water is cooled through evaporation in the cooling towers. Hydrocarbons processed in refining operations may end up in the cooling water from leaking heat exchangers. Cooling tower evaporation processes may result in emissions of entrained hydrocarbons when the liquid surface becomes exposed to the atmosphere and the exposed hydrocarbons volatilize. Particulates entrained in the water may also be emitted with the "drift" that escapes from the cooling towers.

Flares

Process streams are flared to control VOC emissions during upsets, scheduled maintenance, process vents, and certain operating conditions. Combustion emissions result from this control effort. Combustion emissions also occur due to operation of the flare pilot, and combustion of the purge, or sweep, gas necessary to ensure flow through the flare header in the proper direction. All of the flares (FL-0400, FL-0401, FL-0402, FL-0403, FL-0404) at the Artesia Refinery are steam assisted for smokeless operation. The flare pilots all burn fuel gas.

Equipment leaks of VOC due to piping components associated with the flare system are represented as closed vent system components within the various process units.

Wastewater Collection and Treatment System

The Artesia Refinery wastewater system collects process wastewater and storm water runoff from process units. Wastewater enters the system through a junction box and other underground components before entering API separators T-0894 and T-0895. The API separators and drain system components all vent to a carbon canister, and emissions for these sources are identified under Equipment ID MAIN API. Oil skimmed from the API separators is stored in Tank T-0049.

During storm events when water flow to the system increases beyond capacity, the flow is diverted to the Stormwater Surge Tank (T-0830). However, stormwater is not segregated from the wastewater, so T-0830 has a floating roof and is subject to NSPS QQQ requirements.

After the API, the water enters biological treatment units T-0829, T-0836, and T-0801. Tanks T-829, T-836, and T-801 are fixed roof tanks that are equipped with air bubblers which act to provide oxygen and mix sludge suspended in the water. The bubblers are needed for aggressive biological treatment. After biological treatment, the wastewater enters a flocculation tank (T-0805) where polymer is added to aid in coagulation of the hydrocarbons. Further wastewater treatment is provided downstream of the flocculation tank by a dissolved air floatation unit (T-0806 and T-0896), which bubbles air through the water to recover additional entrained hydrocarbon solids. The treated water stream then passes through a filter at the plant outfall and is finally discharged.

For the wastewater treatment system, the main components of atmospheric emissions are fugitive VOC and dissolved gases that evaporate from the surfaces of the wastewater residing in the open process drains and wastewater separators.

Equipment leak emissions of VOC from the piping components associated with the Wastewater Treatment Plant are included in EPN FUG-80-WWTP CVS.

Section 11
Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe)**:**

The source is comprised of all emission units at the Artesia Refinery.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

■ **Yes** □ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

■ **Yes** □ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

■ **Yes** □ **No**

C. Make a determination:

■ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

□ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 13

Discussion Demonstrating Compliance with Each Applicable State & Federal Regulation

---

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. Title V applications, see exemption at 20.2.3.9 NMAC The TSP NM ambient air quality standard was repealed by the EIB effective November 30, 2018.
20.2.7 NMAC	Excess Emissions	Yes	Facility	The entire facility or individual pieces of equipment are subject to emissions limits in a permit or numerical emissions standards in a federal or state regulation. Therefore, this applies.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	The refinery is not in the affected areas. This regulation applies to areas subject to a mitigation plan pursuant to 40 CFR 51.930. http://164.64.110.134/parts/title20/20.002.0023.html As of January 2019, the only areas of the State subject to a mitigation plan per 40 CFR 51.930 are in Doña Ana and Luna Counties.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	Yes	See Attached List	The refinery has gas burning equipment having a potential heat input of greater than 1,000,000 million British Thermal Units per year per unit See summary of applicable rules for heaters and boilers at the end of this section.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No		This facility **does not have** oil burning equipment (external combustion emission sources, such as oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No		This facility is **NOT** subject to the requirements of NMAC 2.35 for "New Natural **Gas Processing** Plants for which a modification commenced on or after July 1, 1974.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	The refinery had equipment subject to 20.2.36 and 20.2.37 NMAC before the repeal of these rules. Therefore, the affected combustion emission sources are now subject to 20.2.61 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	Yes	See Attached List	Select storage tanks are subject to requirements.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No		20.2.39.113 – This rule is not applicable to units subject to an emission standard in another regulation.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	See Attached Lists	Heaters, SRU tail gas incinerators, flares, and engines are subject to this regulation that limits opacity to 20% because it applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless that equipment is subject to another state regulation that limits particulate matter such as 20.2.19 NMAC (see 20.2.61.109 NMAC).
20.2.70 NMAC	Operating Permits	Yes	Facility	Source is major for NOx, CO, VOC, SO_2, PM10, and HAP.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	Yes, this facility is subject to 20.2.70 NMAC and has a permit that includes numerical ton per year emission limits. Therefore, it is subject to 20.2.71 NMAC.
20.2.72 NMAC	Construction Permits	Yes	Facility	This facility is subject to 20.2.72 NMAC and NSR Permit number: 0195-M38.

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	**NOI:** NA **Emissions Inventory Reporting:** 20.2.73.300 NMAC applies. All Title V major sources meet the applicability requirements of 20.2.73.300 NMAC
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	As provided by 20.2.74.7.AG(1) NMAC, the facility is a major stationary source because it is a stationary source in a category listed in Table 1 (20.2.74.501 NMAC) which emits, or has the potential to emit, emissions equal to or greater than one hundred (100) tons per year of any stack and fugitive emissions (as defined) of any regulated NSR pollutant. The facility is subject to PSD requirements in NSR Permit No. PSD-NM-0195-M38. Pursuant to 20.2.74.200.A NMAC, each "project" at the facility is subject to the applicability determination requirements at 20.2.74.200.D(1) through (5) NMAC to determine if the project is a major modification for which a PSD permit may be required.
20.2.75 NMAC	Construction Permit Fees	No		The facility is not subject to the 75.11.E annual fees because it is subject to 20.2.71 NMAC.
20.2.77 NMAC	New Source Performance	Yes	See Attached Lists	See summary of applicable rules for each project-affected emission unit at the end of this section.
20.2.78 NMAC	Emission Standards for HAPS	Yes	Facility	The refinery is subject to 40 CFR 61, Subpart FF but is exempt from control requirements.
20.2.79 NMAC	Permits – Nonattainment Areas	No		This facility is located in an area classified as attainment for all criteria pollutants. Therefore, it is not an existing nonattainment major source pursuant to 20.2.79.7.V NMAC.
20.2.80 NMAC	Stack Heights	No		Not cited as applicable in NSR Permit 0195-M38.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	See Attached Lists	See summary of applicable rules for each affected emission unit at the end of this section. This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

Table for Applicable FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	Defined as applicable at 20.2.70.7.E.11, Any national ambient air quality standard.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	See Attached Lists	Applies if any other NSPS Subpart in 40 CFR 60 applies. Applies to flares.
NSPS 40 CFR 60.40, Subpart D	Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators	No		The Navajo Refinery boilers have capacities that are less than the applicability threshold. The heaters are not steam generating units as defined in 40 CFR 60, Subpart D.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No		The Navajo Refinery does not have electric utility steam generating units as defined in 40 CFR 60, Subpart Da.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	Yes	See Attached Lists	(a) The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour). Units are complying with SO2 emission limitation in NSPS J or Ja. The NOx and PM emission limitations are not applicable to units firing refinery fuel gas.
NSPS 40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	See Attached Lists	Select heaters are subject to requirements.
NSPS 40 CFR 60, Subpart J	Standards of Performance for Petroleum Refineries	Yes	See Attached Lists	Select boilers and heaters, and the FCC regenerator, SRU1, and are subject to requirements.
NSPS 40 CFR 60, Subpart Ja	Standards of Performance for Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After May 14, 2007	Yes	See Attached Lists	Select boilers and heaters, SRU2 and SRU3, and the flares are subject to requirements.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	Yes	T-0437	Select storage tanks are affected units.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	Yes	See Attached Lists	The refinery has storage vessels with capacities greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978. Select storage tanks are subject to requirements.
NSPS 40 CFR 60, 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	Yes	See Attached Lists	This facility has storage vessels with capacities greater than or equal to 75 cubic meters (m^3) that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Select storage tanks are subject to requirements.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No		The Artesia Refinery does not have any stationary gas turbines.
NSPS 40 CFR 60, Subpart GGG	Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006	No		The refinery fugitive areas are subject to other fugitive requirements.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart GGGa	Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006	Yes	See Attached Lists	Select fugitive areas are subject to requirements.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No		The refinery is not a gas plant by definition.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No		The refinery is not a natural gas processing plant.
NSPS 40 CFR 60, Subpart QQQ	Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems	Yes	T-0049 MAIN API See attached lists	The storage tank, MAIN API, and fugitive areas are affected units.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No		The refinery is not a crude oil and natural gas production, transmission, and distribution facility.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	No		The refinery does not consist of any affected crude oil and natural gas facilities.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	Yes	See Attached Lists	Select engines are subject to requirements.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No		The refinery does not have any engines subject to NSPS JJJJ.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No		The refinery does not have any electric generating units.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No		The refinery is not an electric utility.
NESHAP 40 CFR 61 Subpart A	General Provisions	Yes	See Attached Lists	Applies if any other Subpart in 40 CFR 61 applies.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No		The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge
NESHAP 40 CFR 61 Subpart J	National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene	No		The refinery does not have benzene streams which are defined as having benzene concentration of 10 percent by weight or more.
NESHAP 40 CFR 61 Subpart Q	National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers	Yes	See Attached Lists	Select cooling towers were subject but chromium additives are no longer used. Therefore, there are no current requirements.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No		The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated. Benzene is a VHAP (See 40 CFR 61 Subpart J). Link to 40 CFR 61 Subpart V Note: If 40 CFR 60 also applies source only needs to comply with this part.
NESHAP 40 CFR 61	National Emission Standard for	Yes	See	Select storage tanks and the wastewater units are subject to requirements.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
Subpart FF	Benzene Waste Operations		Attached Lists	
MACT 40 CFR 63, Subpart A	General Provisions	Yes	See Attached Lists	Applies if any other Subpart in 40 CFR 63 applies.
MACT 40 CFR 63 Subpart CC	Emission Standards for Hazardous Air Pollutants From Petroleum Refineries	Yes	See Attached Lists	Select boilers and heaters, storage tanks, a loading rack, the wastewater units, and select cooling towers are subject to requirements.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No		The refinery is not an oil and natural gas production facility.
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No		The refinery is not a natural gas transmission and storage facility that transports or stores natural gas prior to entering the pipeline to a local distribution company or to a final end user.
MACT 40 CFR 63, Subpart UUU	National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units	Yes	See Attached Lists	The FCC regenerator, the Continuous Catalyst Regenerator (CCR), and SRU1, SRU2 and SRU3, are subject to requirements.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	See Attached Lists	Engines are subject to requirements; however, some are meeting the requirements by complying with 40 CFR 60, Subpart IIII.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	Yes	See Attached Lists	Boilers and heaters are subject to requirements.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No		The refinery does not operate electric utility steam generating units.
MACT 40 CFR 63 Subpart BBBBBB	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities	No		The rule applies to HAP area sources only. The refinery is a major HAP source.
MACT 40 CFR 63 Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	No		The rule applies to HAP area sources only. The refinery is a major HAP source.
40 CFR 64	**Compliance Assurance Monitoring**	No		The FCC Regenerator, SRU1, SRU2, and SRU3 are all exempt under 64.2(b)(1)(i) because they are all subject to emission limitations under 40 CFR 63, Subpart UUU which was proposed after 1990. The Fuels Truck Loading Rack, TL-4, is exempt under 64.2(b)(1)(i) because it is subject to an emission limitation under 40 CFR 63, Subpart CC which was proposed after 1990.
40 CFR 68	**Chemical Accident Prevention**	Yes	Facility	The refinery is a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under §68.115, See 40 CFR 68
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No		In reference to 40 CFR 72.6, the facility does not generate commercial electric power or electric power for sale.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No		In reference to 40 CFR 73.2, the facility does not generate commercial electric power or electric power for sale.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No		In reference to 40 CFR 75.2, the facility does not generate commercial electric power or electric power for sale.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No		In reference to 40 CFR 76.1, the facility does not generate commercial electric power or electric power for sale.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	Yes	N/A	The refinery maintains and services building air condition units that may contain affected refrigerants. Therefore, Subpart F of Part 82, which regulates maintenance work on air condition systems is applicable to the refinery. 40 CFR 82 may apply: **(82.150)** if you service, maintain, or repair appliances, dispose of appliances, refrigerant reclaimers, **if you are an owner or operator of an appliance**, if you are a manufacturer of appliances or of recycling and recovery equipment, if you are an approved recycling and recovery equipment testing organization, and/or if you sell or offer for sale or purchase class I or class I refrigerants. **Note:** Owners and operators of appliances subject to 40 CFR 82.150 Recycling and Emissions Reduction have recordkeeping and reporting requirements even if the owner/operator is not performing the actual work. **Note:** Disposal definition in 82.152: Disposal means the process leading to and including: (1) The discharge, deposit, dumping or placing of any discarded appliance into or on any land or water; (2) The disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water; or (3) The disassembly of any appliance for reuse of its component parts. “Major maintenance, service, or repair means” any maintenance, service, or repair that involves the removal of any or all of the following appliance components: compressor, condenser, evaporator, or auxiliary heat exchange coil; or any maintenance, service, or repair that involves uncovering an opening of more than four (4) square inches of “flow area” for more than 15 minutes.

BOILERS AND HEATERS
SUMMARY OF APPLICABLE RULES

FIN	Description	NSPS D	NSPS Db	NSPS Dc	NSPS J	NSPS Ja	MACT DDDDD	20.2.33 NMAC	20.2.61 NMAC	CAM
B-0007	Boiler 7	NO	YES	NO	YES	NO	YES	YES	YES	NO
B-0008	Boiler 8	NO	YES	NO	YES	NO	YES	YES	YES	NO
B-0009	Boiler 9	NO	YES	NO	NO	YES	YES	YES	YES	NO
B-0010	Boiler 10 RDU Receiving	NO	NO	YES	NO	YES	YES	NO	YES	NO
H-0009	Unit 13 Naphtha Splitter Reboiler	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0011	Unit 21 Vacuum Unit Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0018	Unit 06 HDS Reboiler	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0019	South Crude Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0020	South Crude Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0028	Unit 21 Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0030	Unit 06 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0040	Unit 13 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0303	Unit 05 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0312	Unit 10 FCC Feed Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0351	FCC Start-up Heater (exhausts through FCC-REGEN stack)	NO	NO	NO	YES	NO	YES	NO	NO	NO
H-0352	Unit 70 CCR Reformer Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0353	Unit 70 CCR Reformer Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0354	Unit 70 CCR Reformer Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0355	Unit 70 Stabilizer Reboiler Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0362	Unit 70 CCR Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0363	Unit 70 CCR Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0364	Unit 70 CCR Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0421	Unit 44 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-0464	SRU Hot Oil Heater	NO	NO	YES	YES	NO	YES	NO	YES	NO
H-0473 (SRU1/SRU2 TGI)	SRU 1 & 2 Tail Gas Incinerator	NO	NO	NO	YES	NO	NO	NO	YES	NO
H-0600	Unit 09 Depropanizer Reboiler Heater	NO	NO	NO	NO	YES	YES	NO	YES	NO
H-0601	Unit 33 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-2421	Unit 45 Charge Heater	NO	NO	NO	YES	NO	YES	NO	YES	NO
H-2501	Unit 25 ROSE® Unit No. 2 Hot Oil Heater	NO	YES	NO	NO	YES	YES	YES	YES	NO
H-2601	Unit 26 RDU Reactor Heater	NO	NO	NO	NO	YES	YES	NO	YES	NO
H-3101	SRU3 Hot Oil Heater	NO	NO	YES	NO	YES	YES	NO	YES	NO
H-3402	Unit 34 Hydrocracker Reboiler 1	NO	NO	NO	NO	YES	YES	NO	YES	NO
H-3403	Hydrocracker Reactor Charge Heater	NO	NO	NO	NO	YES	YES	NO	YES	NO
H-5401	Unit 54 HDS Reactor Heater	NO	NO	NO	NO	YES	YES	NO	YES	NO
H-8801/8802	Unit 63 Hydrogen Plant Reformer	NO	NO	NO	YES	NO	YES	YES	YES	NO
H-9851	Unit 64 Hydrogen Plant Reformer	NO	NO	NO	NO	YES	YES	YES	YES	NO
SRU3-TGI	SRU3 Tail Gas Incinerator	NO	NO	NO	NO	YES	NO	NO	YES	NO

FCCU
SUMMARY OF APPLICABLE RULES

Unit ID	NSPS J	NSPS Ja	MACT UUU	CAM
FCCREGEN	YES	NO	YES	YES - Satisfied by MACT UUU
CCR	N/A	N/A	YES	NO

SULFUR RECOVERY UNITS
SUMMARY OF APPLICABLE RULES

Source ID	Emission Point ID	NSPS J	NSPS Ja	MACT UUU	20.2.61	20.2.39	CAM
SRU1	H-0473 (SRU1/SRU2 TGI)	YES	NO	YES	YES	NO	YES-Satisfied by MACT UUU
SRU2	H-0473 (SRU1/SRU2 TGI)	NO	YES	YES	YES	NO	YES-Satisfied by MACT UUU
SRU3	SRU3-TGI	NO	YES	YES	YES	NO	YES-Satisfied by MACT UUU

STORAGE TANKS
SUMMARY OF APPLICABLE RULES

Tank No.	NSPS K	NSPS Ka	NSPS Kb	MACT CC Storage	MACT CC Wastewater	NESHAP FF	NSPS QQQ	20.2.38.109 NMAC	20.2.38.110 NMAC	20.2.38.112 NMAC	20.2.38.113 NMAC	CAM
RW-6	NO	NO	NO	NO	N/A	N/A	N/A	NO	YES	NO	YES	NO
T-0001	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0002	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0003	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0004	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0011	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0012	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0020	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0021	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0022	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0023	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0040	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0041	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0042	NO	NO	NO	NO	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0045	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0046	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0049	NO	NO	NO	YES	N/A	YES	YES	NO	NO	NO	NO	NO
T-0055	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0056	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0057	NO	YES	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0059	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0061	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0063	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0065	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0071	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0072	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0073	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0074	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0075	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0076	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0079	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0081	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0082	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0106	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0107	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0108	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0109	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0110	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0111	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0112	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0114	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0115	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0116	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0117	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0119	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0124	NO	YES	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0400	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO

STORAGE TANKS
SUMMARY OF APPLICABLE RULES

Tank No.	NSPS K	NSPS Ka	NSPS Kb	MACT CC Storage	MACT CC Wastewater	NESHAP FF	NSPS QQQ	20.2.38.109 NMAC	20.2.38.110 NMAC	20.2.38.112 NMAC	20.2.38.113 NMAC	CAM
T-0401	NO	YES	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0402	NO	YES	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0410	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0411	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0412	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0413	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0415	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0417	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0418	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0419	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0420	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0422	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0423	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0431	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0432	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0433	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0434	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0435	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0437	YES	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0438	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0439	NO	YES	NO	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0450	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0451	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0452	NO	NO	YES	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0737	NO	NO	YES	YES	N/A	N/A	N/A	NO	YES	NO	YES	NO
T-0802	NO	NO	YES	YES	N/A	N/A	N/A	NO	YES	NO	YES	NO
T-0803	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0804	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0809	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0814	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0815	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0816	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0821	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-0829	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0830	NO	NO	YES	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-0834	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0835	NO	NO	NO	YES	N/A	N/A	N/A	YES	YES	NO	NO	NO
T-0838	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0891	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0892	NO	NO	NO	NO	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0901	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0902	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0903	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0904	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0905	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0906	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0907	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO

STORAGE TANKS
SUMMARY OF APPLICABLE RULES

Tank No.	NSPS K	NSPS Ka	NSPS Kb	MACT CC Storage	MACT CC Wastewater	NESHAP FF	NSPS QQQ	20.2.38.109 NMAC	20.2.38.110 NMAC	20.2.38.112 NMAC	20.2.38.113 NMAC	CAM
T-0908	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0909	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0910	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0911	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0912	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0913	NO	NO	NO	#N/A	N/A	N/A	N/A	NO	NO	NO	NO	NO
T-0914	NO	NO	YES	#N/A	N/A	N/A	YES	NO	NO	NO	NO	NO
T-1224	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO
T-1225	NO	NO	YES	YES	N/A	N/A	N/A	YES	YES	NO	YES	NO
T-1227	NO	NO	NO	YES	N/A	N/A	N/A	NO	NO	NO	NO	NO

LOADING RACKS
SUMMARY OF APPLICABLE RULES

Unit ID	Description	MACT CC	MACT BBBBBB	MACT CCCCCC	CAM
RLO-19	Railcar Loading & Off-Loading Rack	NO	NO	NO	NO
RLO-8	Railcar Loading & Off-Loading Rack	NO	NO	NO	NO
TL-4	Fuels Truck Loading Rack	YES	NO	NO	YES - Satisfied by MACT CC
TL-7	CBO/LCO Truck Loading Rack	NO	NO	NO	NO
TL-2	Asphalt Truck Loading Rack #2	NO	NO	NO	NO
TLO-1	Asphalt Truck Loading and Off-Loading Rack #1	NO	NO	NO	NO
TLO-20	Asphalt/Pitch Truck Loading Rack	NO	NO	NO	NO
RLO-26	RDU Railcar Loading & Off-Loading Rack	NO	NO	NO	NO

FLARES
SUMMARY OF APPLICABLE RULES

Unit ID	Description	NSPS A	NSPS J[a]	NSPS Ja[a]	NESHAP A[b]	MACT A	20.2.61.109 NMAC
FL-400	North Plant Flare	YES	NO	YES	NO	YES	YES
FL-401	South Plant Flare	YES	NO	YES	NO	YES	YES
FL-402	FCCU Flare	YES	NO	YES	NO	YES	YES
FL-403	Alky Flare	YES	NO	YES	NO	YES	YES
FL-404	GOHT Flare	YES	NO	YES	NO	YES	YES

a. All flares subject to NSPS A & J per consent decree Section 19A Page 48. However, Heavy Crude Expansion Project authorized under 0195-M26 adding piping to flares and considered modified under NSPS Ja.
b. Flares are not used as a control device to comply with NESHAP requirements.

WASTEWATER
APPLICABLE RULES

Unit ID	Unit Description	NSPS QQQ	NESHAP FF	MACT CC	CAM
MAIN API	Above Ground API Oil-Water Separator T-0894/ T-0895 and drain system components.	YES	YES	YES	NO
T-0801	Enhanced Biodegradation Tank T-0801	NO	YES	YES	NO
T-0805	Flocculator Tank	NO	YES	YES	NO
T-0836	Enhanced Biodegradation Tank T-0836	NO	YES	YES	NO
T-0897	Treated Water Surge Tank	NO	YES	YES	NO
DAF-0806	DAF Unit T-806	NO	YES	YES	NO
DAF-0896	DAF Unit T-0896	NO	YES	YES	NO

FUGITIVES
SUMMARY OF APPLICABLE RULES

Unit ID	Description	MACT CC	NSPS GGG	NSPS GGGa	NSPS QQQ [a]	NESHAP J [b]	NESHAP V [c]
FUG-02-SP CRUDE	South Division Crude Unit	NO	NO	YES	YES	NO	NO
FUG-05-KERO	Kerosene HDS Unit	NO	NO	YES	YES	NO	NO
FUG-06-NHDU	Naphtha HDS Unit 06	NO	NO	YES	YES	NO	NO
FUG-07-N AMINE	Amine Unit-Treating/Regen.	NO	NO	YES	YES	NO	NO
FUG-07-SWS1	Sour Water Stripper	NO	NO	YES	YES	NO	NO
FUG-08-TRUCK RK	Loading Racks	NO	NO	YES	YES	NO	NO
FUG-09-N ALKY	North Alkylation Unit (New-Inside battery limits)	NO	NO	YES	YES	NO	NO
FUG-10-FCC	FCC w/CVS	NO	NO	YES	YES	NO	NO
FUG-13-NHDU	Naphtha HDS Unit 13	NO	NO	YES	YES	NO	NO
FUG-18-LSR MEROX TRT	Merox/Merichem Treating Units (Out of Service since 2012)	NO	NO	YES	YES	NO	NO
FUG-20-ISOM	BenFree Unit	NO	NO	YES	YES	NO	NO
FUG-21-SP VACUUM	Flasher/Vacuum Unit	NO	NO	YES	YES	NO	NO
FUG-25-ROSE-2	ROSE Unit	NO	NO	YES	YES	NO	NO
FUG-26-RDU	Renewable Diesel Unit	NO	NO	YES	YES	NO	NO
FUG-29-BLENDER/TK FARM	Light Oil Tankage	NO	NO	YES	YES	NO	NO
FUG-31-SRU3/TGTU3/TGI3	SRU3 Unit	NO	NO	YES	YES	NO	NO
FUG-33-DIST HDU	Relocated Diesel HDS Unit w/CVS	NO	NO	YES	YES	NO	NO
FUG-34-HYDROCRACKER	WX Hydrocracker	NO	NO	YES	YES	NO	NO
FUG-35-SAT GAS	Saturates Gas Plant	NO	NO	YES	YES	NO	NO
FUG-41-PBC	PBC Unit	NO	NO	YES	YES	NO	NO
FUG-43-S ALKY	South Alky Unit (Out of Service since 2012)	NO	NO	YES	YES	NO	NO
FUG-44-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)	NO	NO	YES	YES	NO	NO
FUG-45-DIST-HDU	Gas Oil Hydrotreater (incl. CVS)	NO	NO	YES	YES	NO	NO
FUG-54-PRIMEG	Prime G Unit	NO	NO	YES	YES	NO	NO
FUG-63-H2 PLANT-1	Hydrogen Plant	NO	NO	NO	YES	NO	NO
FUG-64-H2 PLANT-2	Hydrogen Plant	NO	NO	NO	YES	NO	NO
FUG-70-CCR	CCR Reformer (w/in battery limits)	NO	NO	YES	YES	NO	NO
FUG-73-SP UTIL	Utilities	NO	NO	NO	YES	NO	NO
FUG-80-WWTP CVS	Oil/Water Separator	NO	NO	YES	YES	NO	NO
FUG-ASPHALT STG	Asphalt/Heavy Oil Storage	NO	NO	NO	YES	NO	NO
FUG-FUEL GAS	Fuel Gas Distribution System	NO	NO	YES	YES	NO	NO
FUG-LPG	LPG Storage System	NO	NO	YES	YES	NO	NO
FUG-RLO-ASPHALT	Asphalt/Pitch Loading Rack	NO	NO	NO	YES	NO	NO
FUG-SRU1/SRU2/TGTU	SRU1/SRU2/SWS w/CVS	NO	NO	YES	YES	NO	NO
FUG-RRTOTRUCK	Crude oil unloading system, closed loop system between railcars and trucks.	NO	NO	NO	YES	NO	NO

a. All wastewater sources subject to NSPS QQQ per consent decreee Section 29B.
b. No refinery streams contain benzene at concentrations of 10 wt% or greater.
c. NESHAP V is only applicable if subject to NESHAP J.

COOLING TOWERS
SUMMARY OF APPLICABLE RULES

Cooling Tower	Description	MACT Q	MACT CC	CAM
Y-0001	TCC Cooling Tower	YES	YES	NO
Y-0002	S. Alky Cooling Tower (Marley Cooling Tower)	YES	YES	NO
Y-0008	North Alky Cooling Tower	YES	YES	NO
Y-0011	FCC & NP Cooling Tower	NO	YES	NO
Y-0012	Hydrogen Plants Cooling Tower	NO	YES	NO
CT TT-0006	Unit 07 Amine W-0745 Cooling Tower	NO	NO	NO
Y-0014	RDU Cooling Tower	NO	YES	NO

ENGINES
SUMMARY OF APPLICABLE RULES

Engine	Description	NSPS IIII	MACT ZZZZ	20.2.61.109 NMAC	20.2.61.114 NMAC	CAM
E-0602E	Fire Water Pump Engine	YES	YES	YES	YES	NO
E-0603	Fire Water Pump Engine	YES	YES	YES	YES	NO
G-0100	UPS backup generator	NO	YES	YES	YES	NO
G-0101	UPS backup generator	NO	YES	YES	YES	NO
G-0102	Server Backup Generator	YES	YES	YES	YES	NO
V-0543	Portable Air Compressor	YES	YES	YES	YES	NO
V-0545	Portable Air Compressor	YES	YES	YES	YES	NO
V-0546	Portable Air Compressor	YES	YES	YES	YES	NO
E-8010	WWTP Emergency Engine	YES	YES	YES	YES	NO

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

■ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

□ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

□ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Navajo's Standard Operating Procedures describe measures to be taken to mitigate source excess emissions during startup, shutdown, or malfunction. Navajo will comply with the startup, shutdown, and malfunction requirements in 40 CFR 63, Subparts CC and UUU and maintain records to demonstrate compliance. Changes proposed in this application will not affect the current procedures.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

No alternative operating scenarios are proposed.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	X
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☐ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
■ No modeling is required.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
FL-0404 H_2S CEMS	Annual CEMS RATA	03/03/2020
FL-0402 H_2S CEMS	Annual CEMS RATA	02/27/2020
FL-0401 H_2S CEMS	Annual CEMS RATA	02/26/2020
FL-0400 H_2S CEMS	Annual CEMS RATA	03/02/2020
FL-0404 H_2S CEMS	Annual CEMS RATA	03/27/2019
FL-0402 H_2S CEMS	Annual CEMS RATA	02/19/2019
FL-0401 H_2S CEMS	Annual CEMS RATA	02/21/2019
FL-0400 H_2S CEMS	Annual CEMS RATA	02/20/2019
FL-0404 H_2S CEMS	Annual CEMS RATA	02/14/2018
FL-0402 H_2S CEMS	Annual CEMS RATA	01/23/2018
FL-0401 H_2S CEMS	Annual CEMS RATA	01/26/2018
FL-0400 H_2S CEMS	Annual CEMS RATA	01/24/2018
FL-0404 H_2S CEMS	Annual CEMS RATA	01/19/2017
FL-0402 H_2S CEMS	Annual CEMS RATA	01/20/2017
FL-0401 H_2S CEMS	Annual CEMS RATA	01/17/2017
FL-0400 H_2S CEMS	Annual CEMS RATA	01/24/2017
FL-0404 H_2S CEMS	Initial RATA	02/03/2016
FL-0402 H_2S CEMS	Initial RATA	01/31/2016
FL-0401 H_2S CEMS	Initial RATA	01/26/2016
FL-0400 H_2S CEMS	Initial RATA	01/23/2016
FCC REGEN DynaWave Scrubber CEMS	Annual CEMS RATA	02/05/2020
FCC REGEN DynaWave Scrubber CEMS	Annual CEMS RATA	02/13/2019
FCC REGEN DynaWave Scrubber CEMS	Annual CEMS RATA	01/09/2018
SRU3-TGI	Annual CEMS RATA	03/18/2020
SRU3-TGI	Annual CEMS RATA	04/18/2019
SRU3-TGI	Annual CEMS RATA	03/21/2018
SRU1&2-TGI	Annual CEMS RATA	03/19/2020
SRU1&2-TGI	Annual CEMS RATA	04/10/2019
SRU1&2-TGI	Annual CEMS RATA	03/22/2018
SRU1&2-TGI	Annual CEMS RATA	04/27/2017
B-9	Annual CEMS RATA	03/11/2020
B-9	Annual CEMS RATA	03/20/2019
B-9	Annual CEMS RATA	03/07/2018
B-8	Annual CEMS RATA	03/11/2020
B-8	Annual CEMS RATA	03/19/2019
B-8	Annual CEMS RATA	03/07/2018
B-8	Annual CEMS RATA	06/22/2017

B-7	Annual CEMS RATA	03/10/2020
B-7	Annual CEMS RATA	03/19/2019
B-7	Annual CEMS RATA	03/06/2018
B-7	Annual CEMS RATA	06/21/2017
H-362,363,364 Unit 70	Annual Performance Test	02/07/2020
H-362,363,364 Unit 70	Annual Performance Test	02/14/2019
H-362,363,364 Unit 70	Annual Performance Test	01/31/2018
H-9851	Annual CEMS RATA	02/07/2020
H-9851	Annual CEMS RATA	03/21/2019
H-9851	Annual CEMS RATA	03/20/2018
H-9851	Annual CEMS RATA	06/20/2017
H-8801, H-8802	Annual CEMS RATA	02/12/2020
H-8801, H-8802	Annual CEMS RATA	02/18/2019
H-8801, H-8802	Annual CEMS RATA	01/30/2018
H-5401 (Prime G)	Annual Performance Test	03/16/2020
H-5401 (Prime G)	Annual Performance Test	04/08/2019
H-5401 (Prime G)	Annual Performance Test	03/08/2018
H-5401 (Prime G)	Initial Performance Test	10/25/2017
H-3402 (HCKR-BOIL1)	Annual Performance Test for NOX and CO and O2 CMS RATA (AMP Req is bi-annual)	02/11/2020
H-3402 (HCKR-BOIL1)	Annual Performance Test for NOX and CO and O2 CMS RATA (AMP Req is bi-annual)	02/15/2019
H-3402 (HCKR-BOIL1)	Annual Performance Test for NOX and CO and O2 CMS RATA (AMP Req is bi-annual)	02/22/2018
H-3403 (HCKR) Unit 34	Annual Performance Test	02/10/2020
H-3403 (HCKR) Unit 34	Annual Performance Test	02/14/2019
H-3403 (HCKR) Unit 34	Annual Performance Test	02/01/2018
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	02/13/2020
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	02/10/2019
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	01/10/2018
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	01/09/2017
H-2421	Annual Performance Test	03/13/2020
H-2421	Annual Performance Test	04/18/2019
H-2421	Annual Performance Test	03/20/2018
H-2421	Annual Performance Test	01/05/2017
H-20	Annual Performance Test	02/07/2020
H-20	Annual Performance Test	02/20/2019
H-20	Annual Performance Test	01/11/2018
H-19	Annual Performance Test	02/06/2020
H-19	Annual Performance Test	02/20/2019
H-19	Annual Performance Test	01/11/2018
LP (D-19) Fuel Gas H_2S	Annual CMS RATA	03/17/2020
LP (D-19) Fuel Gas H_2S	Annual CMS RATA	03/07/2019
LP (D-19) Fuel Gas H_2S	Annual CMS RATA	02/15/2018

HP (D-770) Fuel Gas H_2S (Permanent)	Annual CMS RATA	03/17/2020
HP (D-770) Fuel Gas H_2S (Permanent)	Annual CMS RATA	04/04/2019
HP (D-770) Fuel Gas H_2S (Permanent)	Annual CMS RATA	02/27/2018
HP (D-770) Fuel Gas H_2S (Permanent)	Annual CMS RATA	06/22/2017
2 Backup Analyzers (Horiba brand with data logger)	Annual CEMS RATA	12/19/2019-sent to factory for rebuild and recertification.
2 Backup Analyzers (Horiba brand with data logger)	Annual CEMS RATA	03/07/2019
2 Backup Analyzers (Horiba brand with data logger)	Annual CEMS RATA	03/06/2018
2 Backup Analyzers (Horiba brand with data logger)	Annual CEMS RATA	06/20/2017
TL-4	CEMS RATA	11/06/2019
TL-4	CEMS RATA	09/28/2018
TL-4	CEMS RATA	09/12/2017
H-3403 (HCKR) Unit 34	Annual Performance Test	01/23/2017
H-3402 (HCKR-BOIL1)	Annual Performance Test for NOX and CO and O2 CMS RATA (AMP Req is bi-annual)	01/11/2017
H-362,363,364 Unit 70	Annual Performance Test	01/10/2017
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	01/09/2017
H-8801, H-8802	Annual CEMS RATA	01/08/2017
H-20	Annual Performance Test	01/05/2017
H-19	Annual Performance Test	01/05/2017
FCC REGEN DynaWave Scrubber CEMS	Annual CEMS RATA	01/04/2017
FCC REGEN DynaWave Scrubber	Annual Performance Test for CD Alternative Monitoring Plan	01/042017
B-9	Annual CEMS RATA	07/24/2017
H-2421 Unit 45	Annual Performance Test	07/25/2017
LP (D-19) Fuel Gas H2S	Annual CMS RATA	01/03/2017
SRU3-TGI	Annual CEMS RATA	07/26/2017
H-9851	Annual CEMS RATA	07/14/2016
B-7	Annual CEMS RATA	07/13/2016
B-8	Annual CEMS RATA	07/14/2016
2 Backup Analyzers (Horiba brand with data logger)	Annual CEMS RATA	08/16/2016
HP (D-770) Fuel Gas H2S (Permanent)	Annual CMS RATA	07/14/2016
Fuel Gas H2S	Annual CMS RATA	07/13/2016

(Portable Back-up Analyzer)		
SRU1&2-TGI	Annual CEMS RATA	05/05/2016
H-3403 (HCKR) Unit 34	Annual Performance Test	07/12/2016
H-3402 (HCKR-BOIL1)	Annual Performance Test for NOX and CO and O2 CMS RATA (AMP Req is bi-annual)	07/11/2016
H-362,363,364 Unit 70	Annual Performance Test	07/11/2016
H-2501 (ROSE2-HOH) Unit 25	Annual CEMS RATA	05/05/2016
TL-4	CEMS RATA	04/07/2016
B-0009	Boiler B-0009 Initial Compliance Test.	11/6/2015
TL-4	CEMS RATA	09/17/2015
D-19/D-770	Annual CEMS RATA.	07/21/2015 07/23/2015 08/18/2015 08/20/2015
H-9851	Annual CEMS RATA.	07/23/2015
B-0007	Annual CEMS RATA.	07/23/2015
B-0008	Annual CEMS RATA.	07/22/2015
H-0362/0363/0364	Annual Performance Test for NOx, CO, and O2	05/07/2015
H-2421	Periodic Test for NOx, CO, and O2	03/19/2015 08/20/2015
H-2501	Annual CEMS RATA	03/18/2015 08/20/2015
H-3402	Annual Performance Test for NOx, CO and O2	03/18/2015
H-3403	Annual Performance Test for NOx, CO and O2	03/18/2015
H-8801/8802	Annual CEMS RATA	03/17/2015
H-0019	Periodic test for NOx, CO, and O2	02/17/2015
H-0020	Periodic test for NOx, CO, and O2	02/17/2015
FCC REGEN	Annual CEMS RATA	01/06/2015
FCC REGEN	PM periodic test	01/06/2015
H-9851	Annual CEMS RATA.	07/31/2014
D-19/D-770	Annual CEMS RATA.	07/30/2014
B-0007	Annual CEMS RATA.	07/30/2014
B-0008	Annual CEMS RATA.	07/29/2014
H-0362/0363/0364	Annual Performance Test for NOx, CO, and O2	05/16/2014
H-2421	Periodic Test for NOx, CO, and O2	04/23/2014
H-3402	Annual Performance Test for NOx, CO and O2	04/23/2014
H-8801/8802	Annual CEMS RATA	04/22/2014
H-2501	Annual CEMS RATA	03/26/2014
H-3403	Annual Performance Test for NOx, CO and O2	03/25/2014
H-0019	Periodic test for NOx, CO, and O2	01/09/2014
H-0020	Periodic test for NOx, CO, and O2	01/09/2014
FCC REGEN	Annual CEMS RATA	01/08/2014
FCC REGEN	PM periodic test	01/08/2014
H-9851	Annual CEMS RATA.	08/07/2013
D-19/D-770	Annual CEMS RATA.	08/07/2013
B-0007	Annual CEMS RATA.	08/07/2013
B-0008	Annual CEMS RATA.	08/06/2013
H-3402	Annual Performance Test for NOx, CO and O2	07/10/2013
H-8801/8802	Annual CEMS RATA	05/16/2013
H-2421	Periodic Test for NOx, CO, and O2	05/02/2013
H-0362/0363/0364	Annual Performance Test for NOx, CO, and O2	05/01/2013
H-2501	Annual CEMS RATA	04/30/2013
H-3403	Annual Performance Test for NOx, CO and O2	04/30/2013
FCC REGEN	PM periodic test	03/05/2013

H-0019	Periodic test for NOx, CO, and O2	01/09/2013
H-0020	Periodic test for NOx, CO, and O2	01/09/2013
FCC REGEN	Annual CEMS RATA	01/08/2013
FCC REGEN	PM periodic test	01/08/2013

Section 19

Requirements for Title V Program

Do not print this section unless this is a Title V application.

19.1 - 40 CFR 64, Compliance Assurance Monitoring (CAM) (20.2.70.300.D.10.e NMAC)

Any source subject to 40CFR, Part 64 (Compliance Assurance Monitoring) must submit all the information required by section 64.7 with the operating permit application. The applicant must prepare a separate section of the application package for this purpose; if the information is already listed elsewhere in the application package, make reference to that location. Facilities not subject to Part 64 are invited to submit periodic monitoring protocols with the application to help the AQB to comply with 20.2.70 NMAC. Sources subject to 40 CFR Part 64, must submit a statement indicating your source's compliance status with any enhanced monitoring and compliance certification requirements of the federal Act.

CAM applicability is discussed in Section 13 of the application. Certain sources trigger CAM for an emission standard; however, those sources are also subject to another standard under §111 or §112 of the Clean Air Act (e.g., NSPS or MACT standards) promulgated after 1990, which contain sufficient monitoring requirements for the source. Therefore, additional monitoring to satisfy CAM is not required.

19.2 - Compliance Status (20.2.70.300.D.10.a & 10.b NMAC)

Describe the facility's compliance status with each applicable requirement at the time this permit application is submitted. This statement should include descriptions of or references to all methods used for determining compliance. This statement should include descriptions of monitoring, recordkeeping and reporting requirements and test methods used to determine compliance with all applicable requirements. Refer to Section 2, Tables 2-N and 2-O of the Application Form as necessary. (20.2.70.300.D.11 NMAC) For facilities with existing Title V permits, refer to most recent Compliance Certification for existing requirements. Address new requirements such as CAM, here, including steps being taken to achieve compliance.

Applicable federal and state requirements are detailed in Section 13 and the sources included in this application are in compliance with applicable requirements, with the exception of items listed in Section 19.6. Please refer to Navajo's previously-submitted Operating Permit annual compliance certifications and the NSPS and MACT semi-annual reports for the methodologies and documentation used to determine compliance status.

19.3 - Continued Compliance (20.2.70.300.D.10.c NMAC)

Provide a statement that your facility will continue to be in compliance with requirements for which it is in compliance at the time of permit application. This statement must also include a commitment to comply with other applicable requirements as they come into effect during the permit term. This compliance must occur in a timely manner or be consistent with such schedule expressly required by the applicable requirement.

Navajo intends to continue to be in compliance with applicable requirements as represented in this application. A Compliance Plan and Schedule for certain items are described in Section 19.6. Additionally, Navajo is committed to complying with other applicable requirements as they come into effect during the permit term consistent with the schedule required by any such new applicable requirements.

19.4 - Schedule for Submission of Compliance (20.2.70.300.D.10.d NMAC)

You must provide a proposed schedule for submission to the department of compliance certifications during the permit term. This certification must be submitted annually unless the applicable requirement or the department specifies a more frequent period. A sample form for these certifications will be attached to the permit.

Navajo will continue to submit compliance certifications in accordance with the schedule already established for the permit.

19.5 - Stratospheric Ozone and Climate Protection

In addition to completing the four (4) questions below, you must submit a statement indicating your source's compliance status with requirements of Title VI, Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioners).

---

1. Does your facility have any air conditioners or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances? ■ **Yes** □ **No**

2. Does any air conditioner(s) or any piece(s) of refrigeration equipment contain a refrigeration charge greater than 50 lbs? □ **Yes** ■ **No**

   (If the answer is yes, describe the type of equipment and how many units are at the facility.)

3. Do your facility personnel maintain, service, repair, or dispose of any motor vehicle air conditioners (MVACs) or appliances ("appliance" and "MVAC" as defined at 82. 152)? □ **Yes** ■ **No**

4. Cite and describe which Title VI requirements are applicable to your facility (i.e. 40 CFR Part 82, Subpart A through G.)

The refinery maintains and services building air conditioning units that may contain affected refrigerants. Therefore, Subpart F of Part 82, which regulates maintenance work on air conditioning systems is applicable to the refinery. The refinery is subject to and in compliance with requirements in 40 CFR Part 82, Subpart F.

19.6 - Compliance Plan and Schedule

Applications for sources, which are not in compliance with all applicable requirements at the time the permit application is submitted to the department, must include a proposed compliance plan as part of the permit application package. This plan shall include the information requested below:

A. Description of Compliance Status: (20.2.70.300.D.11.a NMAC)
A narrative description of your facility's compliance status with respect to all applicable requirements (as defined in 20.2.70 NMAC) at the time this permit application is submitted to the department.

B. Compliance plan: (20.2.70.300.D.11.B NMAC)
A narrative description of the means by which your facility will achieve compliance with applicable requirements with which it is not in compliance at the time you submit your permit application package.

C. Compliance schedule: (20.2.70.300D.11.c NMAC)
A schedule of remedial measures that you plan to take, including an enforceable sequence of actions with milestones, which will lead to compliance with all applicable requirements for your source. This schedule of compliance must be at least as stringent as that contained in any consent decree or administrative order to which your source is subject. The obligations of any consent decree or administrative order are not in any way diminished by the schedule of compliance.

D. Schedule of Certified Progress Reports: (20.2.70.300.D.11.d NMAC)

A proposed schedule for submission to the department of certified progress reports must also be included in the compliance schedule. The proposed schedule must call for these reports to be submitted at least every six (6) months.

E. Acid Rain Sources: (20.2.70.300.D.11.e NMAC)
If your source is an acid rain source as defined by EPA, the following applies to you. For the portion of your acid rain source subject to the acid rain provisions of title IV of the federal Act, the compliance plan must also include any additional requirements under the acid rain provisions of title IV of the federal Act. Some requirements of title IV regarding the schedule and methods the source will use to achieve compliance with the acid rain emissions limitations may supersede the requirements of title V and 20.2.70 NMAC. You will need to consult with the Air Quality Bureau permitting staff concerning how to properly meet this requirement.

NOTE: The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

See attached Table 19.6 for a Compliance Plan and Schedule. Except as noted on the attached Table 19.6, and based on information and belief formed after reasonable inquiry, Navajo believes it is in compliance with all other applicable requirements.

19.7 - 112(r) Risk Management Plan (RMP)

Any major sources subject to section 112(r) of the Clean Air Act must list all substances that cause the source to be subject to section 112(r) in the application. The permittee must state when the RMP was submitted to and approved by EPA.

The refinery is a major source of hazardous air pollutants (HAP). Navajo has submitted Risk Management Plans in accordance with the requirements of §112(r). The most recent registration was renewed on May 30, 2017.

19.8 - Distance to Other States, Bernalillo, Indian Tribes and Pueblos

Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B NMAC)?

(If the answer is yes, state which apply and provide the distances.)

The refinery is not within 80 km of other states, local pollution control programs, Indian tribes, or Indian pueblos.

19.9 - Responsible Official

Provide the Responsible Official as defined in 20.2.70.7.AD NMAC:

Responsible Official: Parrish R. Miller, Vice President and Refinery Manager

Table 19.6 Compliance Plan and Schedule

Unit No. & Description	Pollutants	Applicable Requirement		Description of Compliance Status	Compliance Plan	Compliance Schedule	Schedule of Certified Progress Reports
		Citation	Description	20.2.70.300.D.11.a NMAC	20.2.70.300.D.11.B NMAC	20.2.70.300.D.11.c NMAC	20.2.70.300.D.11.d NMAC
North Plant Flare (FL-0400) South Plant Flare (FL-0401) FCC Flare (FL-0402) Alky Flare (FL-0403) GOH Flare (FL-0404)	NOx CO SO_2 VOC PM	PSD-NM-0195-M37R2 A106.C., Table 106.A PSD-NM-0195-M37R2 A107.C., A107.E., Table 107.A	Allowable Emission Limits Allowable SSM and Malfunction Emissions	Flare monitoring implemented to meet NSPS Subpart Ja requirements provided new data indicating that the then-current flare permit limits did not reflect actual emissions based on the new flare stream monitoring. Specifically, this data indicates that the flow rate to, and therefore, emissions from, the refinery's flares are higher than the corresponding information used for permitting purposes prior to the installation of Subpart Ja monitoring. As a result, based on this data, actual emissions associated with flaring were above then-currently permitted emission limits.	Navajo worked to quantify emissions from its flares based on post-Subpart Ja monitoring data. A draft permit application to reflect new flare permit limits was provided to and discussed with the NMED in July 2018. Emissions quantification and preparation of a final permit application thereafter proceeded, and a final application for a revised permit reflecting these new flare limits was submitted on March 5, 2020, and a supplement was submitted on April 30, 2020. NMED issued the revised permit on July 2, 2020. Currently open initial excess emission reports will be closed out in coordination with NMED.	Current milestone date: Close out excess emission reports by end of third quarter 2020.	Semiannually as part of or with Title V semiannual monitoring reports.
Facility-wide - Catch basins in individual drain systems	VOC	CD Paragraph 29.B; 40 CFR Part 60 (NSPS) Subpart QQQ	Subpart QQQ Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems	A third-party review of the NSPS Subpart QQQ program indicated that there may be a potential issue regarding certain aspects of the drain systems at the refinery, and in particular, the status of catch basins in these drain systems. NSPS Subpart QQQ exempts drain systems that have catch basins in their existing configuration prior to the rule's applicability date. Navajo has historically sought to comply with Subpart QQQ for these systems and is evaluating the retrofit of these catch basins with covers (inserts), and it has initiated a capital project to address this.	Navajo has initiated and will complete a capital project to retrofit all catch basins with inserts designed to provide a water seal.	Current milestone dates: Installation of inserts is underway, and installation is scheduled to be completed by end of year 2020.	Semiannually as part of or with Title V semiannual monitoring reports.
GOHT Unit, including FL-0404 and H-0601	CO, NOx	20.2.74.1 NMAC *et seq.*	Permits - Prevention of Significant Deterioration	The results of a third-party environmental compliance audit indicated that PSD for CO and NOx may have been triggered in connection with the 2001 GOHT Project if updated FL-0404 emissions data from recent monitoring under NSPS Subpart Ja were to be applied retroactively.	Navajo has prepared and submitted a PSD analysis to NMED, entitled "GOHT Project Impact Analysis," and will take further permitting steps in coordination with NMED following completion of the agency's review. Based on Navajo's current review, BACT for CO and NOx is expected to require neither any reductions below current emission levels nor the installation of any control equipment.	Current milestone dates: PSD analysis submitted December 2018; currently awaiting the results of NMED's review and further agency direction.	Semiannually as part of or with Title V semiannual monitoring reports.

Table 19.6 Compliance Plan and Schedule

Unit No. & Description	Pollutants	Applicable Requirement		Description of Compliance Status	Compliance Plan	Compliance Schedule	Schedule of Certified Progress Reports
		Citation	Description	20.2.70.300.D.11.a NMAC	20.2.70.300.D.11.B NMAC	20.2.70.300.D.11.c NMAC	20.2.70.300.D.11.d NMAC
Alkylation Unit (Unit 09): Depropanizer (W-0623) Alkylation Unit Reactor	VOC	40 CFR Part 60 (NSPS) Subpart NNN 40 CFR Part 60 (NSPS) Subpart RRR	Subpart NNN: Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations Subpart RRR: Standards of Performance for Volatile Organic Compound Emissions from SOCMI Reactor Processes	A recent third-party environmental compliance audit of NSPS Subparts NNN and RRR applicability to covered equipment and processes indicated that the Alkylation Unit Depropanizer (W-623) and reactor may potentially be subject to these rules, respectively.	Initial notification under these programs was submitted on November 11, 2019. As explained in those notifications, Navajo complies with the control requirements of NSPS Subpart NNN (at 40 CFR § 60.662(b)) by combustion of the Alkylation Unit Depropanizer vent in a flare that meets the requirements of 40 CFR § 60.18. In conjunction wtih its NSPS notification, Navajo also submitted to EPA a request for an alternative to the flow monitoring requirement for the relevant flare control device (Alkylation Unit flare, or Alky Flare) set forth in 40 CFR § 60.663(b)(2) of Subpart NNN. With respect to the alkylation unit reactor, it vents to W-623 and it would not be subject to control requirements under Subpart RRR, per 40 CFR § 60.700(c)(5). As part of its initial notifiction, Navajo also submitted a process design description and schematic in satisfaction of requirments at 40 CFR §§ 60.705(c)(5) and 60.705(r).	Current milestone dates: Navajo is curently awaiting EPA's review and response to its request for alternative flow monitoring for the Alky Flare.	Semiannually as part of or with Title V semiannual monitoring reports.
D-829/D-830 Dual Carbon Canister System	VOC	40 CFR 60, Subpart QQQ, 40 C.F.R. § 60.697(f)(1) & 40 C.F.R. § 60.697(f)(3)(i)	Subpart QQQ Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems	An onsite copy of the design specifications of the D-829/D-830 Dual Carbon Canister System and general description of the gas streams entering this canister system and related documentation cannot be located.	The engineering firm that performed the 2010 – 2012 design work for the Artesia stormwater lift station and related equipment has indicated that it has files in storage that may include the design basis for the D-829/D-830 Dual Carbon Canister System. Navajo's consultant in this area has been working with that firm to retrieve and provide this information. Efforts have been hampered by the COVID-19 pandemic, but it is anticipated that design specifications and related information will be in place by end of third quarter 2020.	Current milestone date: it is anticipated that design specifications and related information will be in place by end of third quarter 2020.	Semiannually as part of or with Title V semiannual monitoring reports.
Facility-wide	HAPs	20.2.73.300(B)(6) NMAC	Annual Emissions Reporting	Based on its review, Navajo believes that benzene emissions were inadvertently omitted from the 2016 annual emissions report.	The Company will coordinate with NMED in seeking guidance as to whether it would like this report to be revised and resubmitted.	Current milestone date: Coordinate with NMED in seeking guidance as to whether it would like the 2016 annual emissions report to be revised and resubmitted, and if so, resubmit report by end of 2020.	Semiannually as part of or with Title V semiannual monitoring reports.

Table 19.6 Compliance Plan and Schedule

Unit No. & Description	Pollutants	Applicable Requirement		Description of Compliance Status	Compliance Plan	Compliance Schedule	Schedule of Certified Progress Reports
		Citation	Description	20.2.70.300.D.11.a NMAC	20.2.70.300.D.11.B NMAC	20.2.70.300.D.11.c NMAC	20.2.70.300.D.11.d NMAC
T-0001, T-0844, T-0845, T-0846- New Lift Station and Corresponding Carbon Canister System	VOC	20.2.70.300 NMAC	Permit Applications	As previously explained in Navajo's May 8, 2008 letter to NMED, the above-referenced equipment was reported in Navajo's Air Permit Significant Revision Application No. 0195-M28, filed on February 9, 2011. However, it was erroneously indicated as not constructed in the Facility's Permit No. 0195-M34 Significant Permit Revision Application, submitted May 30, 2013. Navajo plans to address this through the permit revision process.	The Company will submit an application for an update to its NSR permit to include this equipment, and once issued, will submit an application to incorporate this equipment into the Facility's Title V operating permit.	Current milestone date: Submit NSR update application by end of 2020, in coordination with NMED.	Semiannually as part of or with Title V semiannual monitoring reports.
T-0422 T-0423 T-0434	VOC	Title V Permit Condition A203.E, Table 106C	Tank Conditions	The Max TVP of 0.5 psia as represented in Table 106C was exceeded for T-0422, T-0423, and T-0434.	Navajo is in the process of establishing temperature alarms on product rundown streams and/or the tank temperature indicators. Temperature alarms have now been installed on T-0422 and T-0423, and installation of an alarm on Tank T-0434 is pending.	Current milestone date: Install temperature alarm on T-0434 by end of 1st quarter 2021.	Semiannually as part of or with Title V semiannual monitoring reports.

Note:
An EPA Notice of Violation ("NOV"), dated May 1, 2020, included various allegations under the Clean Air Act and implementing regulations that are under review and were also the subject of discussions between Navajo and EPA on June 17, 2020. An NMED post-inspection notification form ("PIN"), signed June 4, 2020, likewise included allegations under the Clean Air Act, and implementing federal and state regulations, and these allegations were the subject of a response to NMED, dated July 7, 2020. EPA has made clear in various orders that allegations in NOVs are not required to be included in Title V permits or compliance schedules because final resolution of the allegations has not been reached. See for example,In the Matter of the Lovett Generating Station, Order Responding to Petitioner's Request that the Administrator Object to Issuance of a State Operating Permit, February 19, 2003, at p. 8 ("[u]ntil a final resolution is made on the matter, the applicant need not revise any pending permit applications to include or reference such an allegation.")

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

In addition to the changes to the Title V permit requested in Section 3, HollyFrontier Navajo Refining LLC (Navajo) is including the following representation changes in this application. These representation changes do not result in changes to the Title V permit.

1. Updated and corrected Table 2-H Stack Exit Conditions
2. Updated Table 2-J: Fuel, to provide new information in new "Fuel Source" column and to add required information for the new Server Backup Generator
3. Updated Table 2-N: CEM Equipment
4. Updated Section 17 Compliance History

Section 22: Certification

Company Name: HollyFrontier Navajo Refining LLC

I, Parrish R. Miller, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 1st day of September, 2020, upon my oath or affirmation, before a notary of the State of

New Mexico.

*Signature

Date 9/1/2020

Parrish R. Miller
Printed Name

Vice-President and Refinery Manager
Title

Scribed and sworn before me on this 1st day of September, 2020.

My authorization as a notary of the State of New Mexico expires on the

30th day of September, 2023.

Notary's Signature

Date 9/1/2020

DORA J. FLOREZ
Notary's Printed Name

OFFICIAL SEAL
DORA J. FLOREZ
NOTARY PUBLIC, STATE OF NEW MEXICO
MY COMMISSION EXPIRES 9-30-2023

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.