Trinity Consultants
9737 Great Hills Trail, Suite 340, Austin, TX 78759 / P 713-955-1230 / F (713) 955-1201 / **trinityconsultants.com**

August 4, 2026

Permit Programs Manager
NMED Air Quality Bureau
525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816

RE: Application for Title V Permit Modification P146-R4-M3 – Frontier Field Services, LLC – Empire Abo Compressor Station – Revised August 2026.

Permit Programs Manager:

Frontier Field Services, LLC is submitting this application pursuant to 20.2.70.404.C(1)(a) NMAC to modify the Title V Permit P146-R4 by incorporating the revisions authorized in NSR Permit No. 0126-M12, issued May 22, 2024, and NSR Permit No. 0126-M13, issued May 29, 2026.

This application was originally submitted at least twelve (12) months after commencing operation of the first change (NSR Permit No. 0126-M12) per 20.2.70.404.C(3)(b). Afterwards, NSR Permit No. 0126-M13 was issued by NMED. NMED provided for Frontier to submit an updated Title V application that incorporates the 0126-M13 NSR Permit, hence this revised application.

The format and content of this application are consistent with the Bureau's current policy regarding Title V applications, and it is a complete application package using the most current application forms. The original Section 22 Certification page was mailed under a separate cover with the original application.

We will provide the electronic files via secure electronic file transfer. The contact information to provide the files is listed in the application.

Please feel free to contact me at (512)484-4478 or by email at dawna.allen@trinityconsultants.com if you have any questions regarding this application. You may also contact Molly Greer with Frontier Field Services, LLC at (432)236-0033 or by email at mgreer@kinetik.com.

Sincerely,

Dawna L. Allen
Managing Consultant
Trinity Consultants

Cc: Molly Greer (Frontier Field Services, LLC)

NMED AIR QUALITY
TITLE V MODIFICATION APPLICATION

Frontier Field Services, LLC
Empire Abo Compressor Station

Prepared By:

Dawna L. Allen – Managing Consultant
Josh Reddoch – Senior Consultant

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Project 254404.0118

Revision 1 - August 2026

Trinity Consultants

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		

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.

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: ☐ 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

☒ 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.

☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.70.404.C(1)(a) 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: 191	Updating Permit/NOI #: P146-R5
1	Facility Name: Empire Abo Compressor Station	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 211130	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From Artesia, travel 10 miles E on Hwy 82. Turn right on CR 225 and travel approximately 3.6 miles to plant.		
2	Plant Operator Company Name: Frontier Field Services, LLC	Phone/Fax: (432) 789-1333	

a	Plant Operator Address: 303 Veterans Airpark Lane, Suite 200; Midland, Texas 79705	
b	Plant Operator's New Mexico Corporate ID or Tax ID: 2343077	
3	Plant Owner(s) name(s): Frontier Field Services, LLC	Phone/Fax: (432) 789-1333
a	Plant Owner(s) Mailing Address(s): 303 Veterans Airpark Lane, Suite 200; Midland, Texas 79705	
4	Bill To (Company): Frontier Field Services, LLC	Phone/Fax: (432) 789-1333
a	Mailing Address: 303 Veterans Airpark Lane, Suite 200; Midland, Texas 79705	E-mail: mgreer@kinetik.com
5	☒ Preparer: Dawna Allen ☒ Consultant: Trinity Consultants - Austin	Phone/Fax: (512) 484-4478
a	Mailing Address: 9737 Great Hills Trail, Suite 340; Austin, TX 78759	E-mail: dawna.allen@trinityconsultants.com
6	Plant Operator Contact: Jodie C. Floyd	Phone/Fax: (432) 234-0390
a	Address: 132766 Lovington Highway, Loco Hills, NM 88255	E-mail: jfloyd@kinetik.com
7	Air Permit Contact: Molly Greer	Title: Environmental Project Manager
a	E-mail: mgreer@kinetik.com	Phone/Fax: (432) 236-0033
b	Mailing Address: 303 Veterans Airpark Lane, Suite 200; Midland, Texas 79705	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

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): N/A
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: P146-R4
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☒ No	If yes, the NPR No. is: N/A
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☒ No	If yes, the NOI No. is: N/A
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: 0126-M13
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☒ No	If yes, the register No. is: N/A

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: 1.04 MMscf	Daily: 25 MMscf	Annually: 9,125 MMscf
b	Proposed	Hourly: 1.04 MMscf	Daily: 25 MMscf	Annually: 9,125 MMscf
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: 1.04 MMscf	Daily: 25 MMscf	Annually: 9,125 MMscf
b	Proposed	Hourly: 1.04 MMscf	Daily: 25 MMscf	Annually: 9,125 MMscf

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.775397	Longitude (decimal degrees): -104.260247	County: Eddy	Elevation (ft): 3,560
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☐ NAD 83 ☒ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 569280	UTM N (in meters, to nearest 10 meters): 3626630		
3	Name and zip code of nearest New Mexico town: Artesia, NM 88210			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Artesia, travel 10 miles E on Hwy 82. Turn right on CR 225 and travel approximately 3.6 miles to plant.			
5	The facility is 10 miles East of Artesia, NM.			
6	Land Status of facility (check one): ☒ Private ☐ Indian/Pueblo ☐ Government ☐ BLM ☐ Forest Service ☐ Military			
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: Loco Hills Community; Artesia, NM; Eddy County, NM			
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/air-quality/modeling-publications/)? ☐ Yes ☒ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: N/A			
9	Name nearest Class I area: Carlsbad Caverns			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 68.9 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: 640 meters			
12	Method(s) used to delineate the Restricted Area: Fence "**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? N/A			

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 ($\frac{hours}{day}$): 24	($\frac{days}{week}$): 7	($\frac{weeks}{year}$): 52	($\frac{hours}{year}$): 8,760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{hours}{day}$)? Start: N/A		☐AM ☐PM	End: N/A	☐AM ☐PM	
3	Month and year of anticipated start of construction: N/A					
4	Month and year of anticipated construction completion: N/A					
5	Month and year of anticipated startup of new or modified facility: N/A					
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: FRO-0191-2401	
a	If yes, NOV date or description of issue: 1/14/2025	NOV Tracking No: FRO-0191-2401

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: N/A	Date: N/A	Requirement # (or page # and paragraph #): N/A
d	Provide the required text to be inserted in this permit: N/A		
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 **x** No		
a	If yes, include the name of company providing commercial electric power to the facility: N/A 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.) (20.2.70.300.D.2 NMAC): Bryan Graham	Phone: (832) 444-7239
a	R.O. Title: Vice President of Operations	R.O. e-mail: bgraham@kinetik.com
b	R. O. Address: 303 Veterans Airpark Ln, Suite 2000, Midland, Texas 79705	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): N/A	Phone: N/A
a	A. R.O. Title: N/A	A. R.O. e-mail: N/A
b	A. R. O. Address: N/A	
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): N/A	
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.): Kinetik Holdings, LLC	
a	Address of Parent Company: 2700 Post Oak Blvd, Suite 300, Houston, Texas 77056	
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.): N/A	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Rebecca Moore – (713) 540-2081 Jodie C. Floyd – (432) 234-0390	
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: N/A	

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: Dawna Allen; Email: dawna.allen@trinityconsultants.com, Phone number: 512-484-4478.

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.

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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.
E4-310	4SLB RICE	Caterpillar	3516TA	WPW02577	1340 hp	1340 hp	12/3/2008 9/13/2011	Catalyst-1 Catalyst-1	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
E4-311	4SLB RICE	Caterpillar	3516TA	WPW01965	1340 hp	1340 hp	3/12/2009 9/13/2011	Catalyst-2 Catalyst-2	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
E4-312	4SLB RICE	Caterpillar	3516TA	WPW01801	1340 hp	1340 hp	11/1/2007 9/29/2011	Catalyst-3 Catalyst-3	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
E4-313	4SLB RICE	Caterpillar	3516TA	WPW02341	1340 hp	1340 hp	8/11/2008 9/29/2011	Catalyst-4 Catalyst-4	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
E4-314	4SLB RICE	Caterpillar	3516TA	WPW02867	1340 hp	1340 hp	4/3/2009 9/1/2011	Catalyst-5 Catalyst-5	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
E4-315	4SLB RICE	Caterpillar	3516TA	NA[5]	1340 hp	1340 hp	NA[5] NA[5]	Catalyst-6 Catalyst-6	20200254	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
FUG40	Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	N/A 1/11/2016	N/A N/A	31088811	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
D-2302	Flare Pilot	Callidus Tech Flare Tip	N/A	N/A	0.32 MMBtu/hr (Pilot/Purge)	0.32 MMBtu/hr (Pilot/Purge)	1/20/2004 1/1/2005	N/A N/A	31000215	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-C	Condensate Storage Tank	BAT	N/A	5822	300 bbl	300 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-D	Condensate Storage Tank	BAT	N/A	5820	300 bbl	300 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-E	Condensate Storage Tank	BAT	N/A	5824	300 bbl	300 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-F	Condensate Storage Tank	BAT	N/A	5825	300 bbl	300 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-H	Produced Water Storage Tank	BAT	N/A	5816	210 bbl	210 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
V2-1104-I	Produced Water Storage Tank	BAT	N/A	5818	210 bbl	210 bbl	2/1/2021 3/3/2021	TO2 TO2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
L1	Truck Loadout	N/A	N/A	N/A	36500 bbl/yr	36500 bbl/yr	2/1/2021 3/3/2021	TO2 TO2	40400250	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A

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.
DEHY1	TEG Dehydrator	Exterran	CLB-15-823	B52346	25 MMscfd	25 MMscfd	2015 2015	TO1 TO1	31000227	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO1	Thermal Oxidizer	Edge	100 MSCD	24x20	5.4 MMBtu/hr	5.4 MMBtu/hr	8/14/2014 1/1/2017	N/A N/A	31088811	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO2	Thermal Oxidizer	Kimark	N/A	151627	2.19 MMBtu/hr	2.19 MMBtu/hr	2/1/2021 3/3/2021	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
C-310	Recip Gas Compressor	Ariel	JGT/4	F-35485	1340 hp	1340 hp	4/8/2011 4/8/2011	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-311	Recip Gas Compressor	Ariel	JGT/4	F-35488	1340 hp	1340 hp	4/8/2011 4/8/2011	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-312	Recip Gas Compressor	Ariel	JGT/4	F-35489	1340 hp	1340 hp	4/8/2011 4/8/2011	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-313	Recip Gas Compressor	Ariel	JGT/4	F-35497	1340 hp	1340 hp	4/8/2011 4/8/2011	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-314	Recip Gas Compressor	Ariel	JGT/4	F-35819	1340 hp	1340 hp	8/1/2011 8/1/2011	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
C-315	Recip Gas Compressor	TBD	TBD	TBD	1340 hp	1340 hp	TBD TBD	N/A N/A	31000313	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[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

[5] Unit E4-315 has not been installed.

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 https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/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 Onc
V6-1103-2	#1 Gasoline Bullet Tank (out of service)			42171 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1103-1	#2 Gasoline Bullet Tank (out of service)			42126 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1102-2	#3 Gasoline Bullet Tank (out of service)			53728 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1102-1	#4 Gasoline Bullet Tank (out of service)			53608 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1101-5	#5 Gasoline Bullet Tank (out of service)			61229 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1101-4	#6 Purchased Propane Bullet Tank			59120 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1101-3	#7 Gasoline Bullet Tank			43624 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1101-2	#8 Gasoline Bullet Tank			43488 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V6-1101-1	#9 Gasoline Bullet Tank			63052 / Gallons	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-400	Methanol Storage Tank			1000 / Gallons	20.2.72.202.B NMAC / Insignificant activity 1.b		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1800-1	North Process Drain Tank (out of service)			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1800-2	South Process Drain Tank			500 / bbls	20.2.72.202.B.2.a NMAC / Insignificant activity 5		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1304	Wastewater Tank			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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 https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/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 Onc
V2-1400-1	South Raw Water Storage Tank			5000 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1400-2	North Raw Water Storage Tank			5000 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1500-1	RO Water			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1500-2	RO Water			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-310-1	East Lube Oil Tank			322 / bbls	20.2.72.202.B.2.a NMAC / Insignificant activity 5		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-310-2	West Lube Oil Tank			322 / bbls	20.2.72.202.B.2.a NMAC / Insignificant activity 5		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-309	#9 Engine J. W. Tank			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-2701	Amine Day Tank			1500 / Gallons	20.2.72.202.B.2.a NMAC / Insignificant activity 5		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-2700-1	North Amine Storage Tank			280 / bbls	20.2.72.202.B.2.a NMAC / Insignificant activity 5		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-2800-2	South Amine Storage Tank (out of service)			185 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-300	Main Engine J.W. Tank			210 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-2700-2	South Amine Storage Tank (out of service)			195 / bbls	Not a source of regulated pollutants / Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
V2-1104-1	South (Dirty) Slop Oil Tank			387 / bbls	20.2.72.202.B.5 NMAC /		☐ Existing (unchanged) X To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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 https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/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 Onc
L-2	Produced Water Loading			5131 bbls/yr	20.2.72.202.B.5 NMAC Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
HAUL	Unpaved Haul Road Emissions			N/A N/A	20.2.72.202.B.5 NMAC Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
REB1	Glycol Dehydrator Reboiler			1.1 MMBtu/hr	20.2.72.202.B.5 NMAC Insignificant activity 1.a		☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
H4	Heater	Flameco	SB20-10 0503-669	0.8 MMscfd	20.2.72.202.B.5 NMAC Insignificant activity 1.a	1/1/2021 1/1/2021	☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ 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
Catalyst-1	Oxidation Catalyst	9/13/2011	CO, HCHO, VOC	E4-310	80%, 75%, 75%	Vendor Data
Catalyst-2	Oxidation Catalyst	9/13/2011	CO, HCHO, VOC	E4-311	80%, 75%, 75%	Vendor Data
Catalyst-3	Oxidation Catalyst	9/29/2011	CO, HCHO, VOC	E4-312	80%, 75%, 75%	Vendor Data
Catalyst-4	Oxidation Catalyst	9/29/2011	CO, HCHO, VOC	E4-313	80%, 75%, 75%	Vendor Data
Catalyst-5	Oxidation Catalyst	9/1/2011	CO, HCHO, VOC	E4-314	80%, 75%, 75%	Vendor Data
Catalyst-6	Oxidation Catalyst	TBD[2]	CO, HCHO, VOC	E4-315	80%, 75%, 75%	Vendor Data
TO-1	Thermal Oxidizer	8/14/2014	VOC, HAP, H2S	DEHY1	98%	Mfg. Data
TO-2	Thermal Oxidizer	3/3/2021	VOC, HAP, H2S	V2-1104-C through F, H, I, L1	98%	Mfg. Data
D-2302	South Flare	1/20/2004	VOC, HAP, H2S	Inlet Gas Combustion	98%	Mfg. Data

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

[2] This unit has not yet been installed.

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
E4-310	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-311	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-312	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-313	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-314	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-315	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
FUG40	-	-	-	-	3.85	16.86	-	-	-	-	-	-	-	-	0.12	0.53	-	-
D-2302	0.09	0.39	0.18	0.79	-	-	0.01	0.04	-	-	-	-	-	-	4.57E-06	2.00E-05	-	-
V2-1104-C	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-D	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-E	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-F	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-H	-	-	-	-	0.47	2.06	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-I	-	-	-	-	0.47	2.06	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	66.96	5.91	-	-	-	-	-	-	-	-	-	-	-	-
DEHY-1	-	-	-	-	24.13	105.68	-	-	-	-	-	-	-	-	12.67	55.50	-	-
TO1	0.02	0.10	0.02	0.08	-	-	3.21E-03	0.01	1.71E-03	0.01	1.71E-03	0.01	1.71E-03	0.01	-	-	-	-
TO2	0.0012	0.01	0.0010	0.0044	-	-	1.71E-04	0.0008	9.12E-05	3.99E-04	9.12E-05	3.99E-04	9.12E-05	3.99E-04	-	-	-	-
Totals	26.70	116.95	33.52	146.82	133.66	236.50	0.86	3.78	0.61	2.66	0.61	2.66	0.61	2.66	12.79	56.04	-	-

[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
E4-310	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-311	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-312	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-313	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-314	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-315	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
FUG40	-	-	-	-	3.85	16.86	-	-	-	-	-	-	-	-	0.12	0.53	-	-
D-2302	0.09	0.39	0.18	0.79	-	-	0.01	0.04	-	-	-	-	-	-	4.57E-06	2.00E-05	-	-
V2-1104-C[1]	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-D[1]	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-E[1]	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-F[1]	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-H[1]	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-I[1]	Emissions are controlled by TO2 and represented under TO2.																	
L1	-	-	-	-	0.87	0.077	-	-	-	-	-	-	-	-	-	-	-	-
DEHY1[2]	Emissions are returned to inlet and controlled by TO1.																	
TO1	0.55	2.42	0.46	2.03	0.48	2.11	23.86	104.49	0.04	0.18	0.04	0.18	0.04	0.18	0.25	1.11		
TO2	0.21	0.16	0.18	0.13	1.89	1.36	1.7E-04	7.5E-04	0.016	0.012	0.016	0.012	0.016	0.012	-	-	-	-
Totals	27.44	119.42	10.82	46.74	10.79	36.61	24.72	108.26	0.66	2.85	0.66	2.85	0.66	2.85	0.38	1.64	-	-

1 Tanks (Units V2-1104-C to F, H, I), and loading (Unit L-1) emissions are controlled by a combustor. Controlled emissions are considered under Unit TO2.

2 Emissions from the dehydator condensers (Units DEHY1) are controlled by a combustor and emissions from the dehydrator flash tanks are recycled to the inlet. Controlled condenser emissions are considered under Unit TO1.

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		PM[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 (D-2302)	242.9	23.1	484.9	46.1	479.0	45.5	3490.6	131.0	-	-	-	-	-	-	37.1	3.5	-	-
MALF (D-2302)		10.00		10.00		10.00		10.00	-	-	-	-	-	-		10.00	-	-
Totals	242.9	33.1	484.9	56.1	479.0	55.5	3490.6	141.0	-	-	-	-	-	-	37.1	13.5	-	-

[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

X 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)			
E4-310	E4-310	V	No	35.0	854	7644	-	-	162.2	1.00
E4-311	E4-311	V	No	35.0	854	7644	-	-	162.2	1.00
E4-312	E4-312	V	No	35.0	854	7644	-	-	162.2	1.00
E4-313	E4-313	V	No	35.0	854	7644	-	-	162.2	1.00
E4-314	E4-314	V	No	35.0	854	7644	-	-	162.2	1.00
E4-315	E4-315	V	No	35.0	854	7644	-	-	162.2	1.00
D-2302	D-2302	V	No	114.0	1832	287	-	-	65.6	2.40
TO1	DEHY1	V	No	54.5	1150	257	-	-	27.7	3.50
TO2	V2-1104-C through F, H, I, L1	V	No	33.2	1200	40	-	-	1.81	5.33

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		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Xylenes ☑ 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		
Catalyst-1	E4-310	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
Catalyst-2	E4-311	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
Catalyst-3	E4-312	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
Catalyst-4	E4-313	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
Catalyst-5	E4-314	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
Catalyst-6	E4-315	0.2	1.0	0.1	0.3	0.1	0.4	0.1	0.2	0.004	0.019	0.011	0.049	0.004	0.018	0.002	0.008		
FUG40	FUG40	0.4	1.9	-	-	-	-	-	-	0.094	0.41	0.16	0.69	0.12	0.53	0.036	0.16		
D-2302	D-2302	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-		
TO2	V2-1104-C[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	V2-1104-D[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	V2-1104-E[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	V2-1104-F[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	V2-1104-H[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	V2-1104-I[1]	Emissions are controlled by TO2 and represented under TO2.																	
TO2	L1[1]	0.12	0.01	-	-	-	-	-	-	0.014	0.001	0.024	0.002	0.006	0.001	0.001	4.81E-05		
TO1	DEHY1[2]	Emissions are returned to inlet and controlled by TO1.																	
TO1	TO1	0.2	0.7	-	-	-	-	-	-	0.111	0.487	0.010	0.045	0.033	0.146	0.001	0.005		
TO2	TO2	0.28	0.21	-	-	-	-	-	-	0.033	0.023	0.056	0.041	0.014	0.010	0.001	0.001		
D-2302	SSM	13.3	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
D-2302	MALF		8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Totals:		15.64	18.16	0.44	1.94	0.51	2.22	0.31	1.37	0.28	1.04	0.31	1.07	0.20	0.80	0.05	0.21		

1 Tank (Units V2-1104-C to F, H, I), and loading (Unit L-1) emissions are controlled by a combustor. Controlled emissions are considered under Unit TO2.

2 Emissions from the dehydator condenser (Units DEHY1) is controlled by a combustor and emissions from the dehydrator flash tank is recycled to the inlet. Controlled condenser emissions are considered under Unit TO1.

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
E4-310	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
E4-311	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
E4-312	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
E4-313	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
E4-314	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
E4-315	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	9910.75 scf/hr	86.82 MMscf/yr	5	-
D-2302	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	200.00 scf/hr	1.75 MMscf/yr	5	-
TO1	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	860.35 scf/hr	7.54 MMscf/yr	5	-
TO2	Natural Gas	Pipeline Quality Natural Gas	1020 Btu/scf	12.00 scf/hr	0.11 MMscf/yr	5	-

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)
V2-1104-C	40400311	Condensate	Condensate	5.40	52.44	71.63	10.77	83.68	12.88
V2-1104-D	40400311	Condensate	Condensate	5.40	52.44	71.63	10.77	83.68	12.88
V2-1104-E	40400311	Condensate	Condensate	5.40	52.44	71.63	10.77	83.68	12.88
V2-1104-F	40400311	Condensate	Condensate	5.40	52.44	71.63	10.77	83.68	12.88
V2-1104-H	40400311	Produced Water	Produced Water	8.28	55.58	71.42	8.79	83.42	10.80
V2-1104-I	40400311	Produced Water	Produced Water	8.28	55.58	71.42	8.79	83.42	10.80

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			
V2-1140-C	3/3/2021	Condensate	N/A	VFR	300	48	3.7	7.6	MG	MG	Good	383,250	30.42
V2-1140-D	3/3/2021	Condensate	N/A	VFR	300	48	3.7	7.6	MG	MG	Good	383,250	30.42
V2-1140-E	3/3/2021	Condensate	N/A	VFR	300	48	3.7	7.6	MG	MG	Good	383,250	30.42
V2-1140-F	3/3/2021	Condensate	N/A	VFR	300	48	3.7	7.6	MG	MG	Good	383,250	30.42
V2-1104-H	3/3/2021	Produced Water	N/A	VFR	210	33	3.05	7.6	MG	MG	Good	383,250	43.45
V2-1104-I	3/3/2021	Produced Water	N/A	VFR	210	33	3.05	7.6	MG	MG	Good	383250	43.45

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)**
Wet Gas	Wet Natural Gas	Gas	25 MMSCFD	Dehydrated Natural Gas	Natural Gas	Gas	25MMSCFD
				Condensate	Condensate	Liquid	36,500 bbl/yr
				Produced Water	Produced Water	Liquid	18,250 bbl/yr

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
There is no CEM equipment present at the faciltiy.									

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
There is no PEM equipment present at the faciltiy.								

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**	**265**	**28**	**22,800**	**footnote 3**										
E4-310	**mass GHG**	5179.14	0.0098	0.0976											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
E4-311	**mass GHG**	5179.14	0.0098	0.10											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
E4-312	**mass GHG**	5179.14	0.0098	0.0976											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
E4-313	**mass GHG**	5179.14	0.0098	0.0976											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
E4-314	**mass GHG**	5179.14	0.0098	0.0976											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
E4-315	**mass GHG**	5179.14	0.0098	0.0976											5179.25	
	CO_2e	5179.14	2.59	2.73												5184.46
D-2302	**mass GHG**	3.63	6.84E-06	6.84E-05											3.63	
	CO_2e	3.63	0.00	0.00												3.63
TO1	**mass GHG**	2766.74	0.005	0.05											2766.8	
	CO_2e	2766.74	1.38	1.46												2769.6
TO2	**mass GHG**	190.80	0.0004	0.0036											190.81	
	CO_2e	190.80	0.10	0.10												191.00
SSM/ MALF	**mass GHG**	15649.44	0.03	0.29											15649.77	
	CO_2e	15649.44	7.82	8.26												15665.51
FUG40	**mass GHG**	0.00	0.0000	11.8554											11.86	
	CO_2e	0.00	0.00	331.95												331.95
	mass GHG															
	CO2e															
Total	**mass GHG**	49685.47	0.09	12.79											49698.4	
	CO_2e	49685.47	24.81	358.17												50068.5

[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 0.8 MMscfd

[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.

The Empire Abo facility is currently permitted under NSR Permit No. 0126-M13 and Title V Permit No. P-146-R4.

Frontier Field Services is submitting this application pursuant to 20.2.70.404.C.(1). A Title V significant permit modification application is required to be submitted within twelve (12) months after commencing operation per 20.2.70.404.C(3)(b). This application will incorporate changes to the facility that were authorized in NSR Permit No. 0126-M12, issued May 22, 2024 and NSR Permit No. 0126-M13, issued May 29, 2026. Below is a discussion of the changes made in the NSR revisions.

In the NSR permit revision resulting in NSR Permit No. 0126-M12, Frontier Field Services increased the number of SSM hours authorized to the Empire Abo Gas Plant South Flare (Unit No. D-2302). The proposed modification was a change in the method of operation of the flare that would increase the potential annual emission rate of pollutants, with no change in the potential hourly emissions rates. The total volume of flaring from the D-2302 South Flare SSM was increased to 206.7 MMscf/year. There were no other changes to the facility. The revision did not increase the facility's total capacity and caused no auxiliary emissions increases.

In the NSR permit revision resulting in NSR Permit No. 0126-M13, the NSR revision consisted of increasing VOC emissions from one thermal oxidizer (TO-2), four condensate tanks (V2-1104-C, V2-1104-D, V2-1104-E, V2-1104-F), two produced water tanks (V2-1104-H, V2-1104-I), and condensate truck loadout (L1); decreasing the maximum throughputs for the condensate tanks and condensate truck loadout; updating the location of one thermal oxidizer (TO-2), the condensate tanks, produced water tanks, and condensate truck loadout north on the facility property; moving the heater (H4) to the exempted sources list which was approved by NMED on December 22, 2025; removing slop tank (V2-1104-1) as it was removed from the site; and updating light liquid BTEX speciation based on an updated condensate liquids sample. The revision did not increase the facility's total capacity and caused minor increases in VOC and HAP emissions.

Pursuant to 20.2.70.302.J(1), the department shall expressly include in a Part 70 permit a provision stating that compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that:

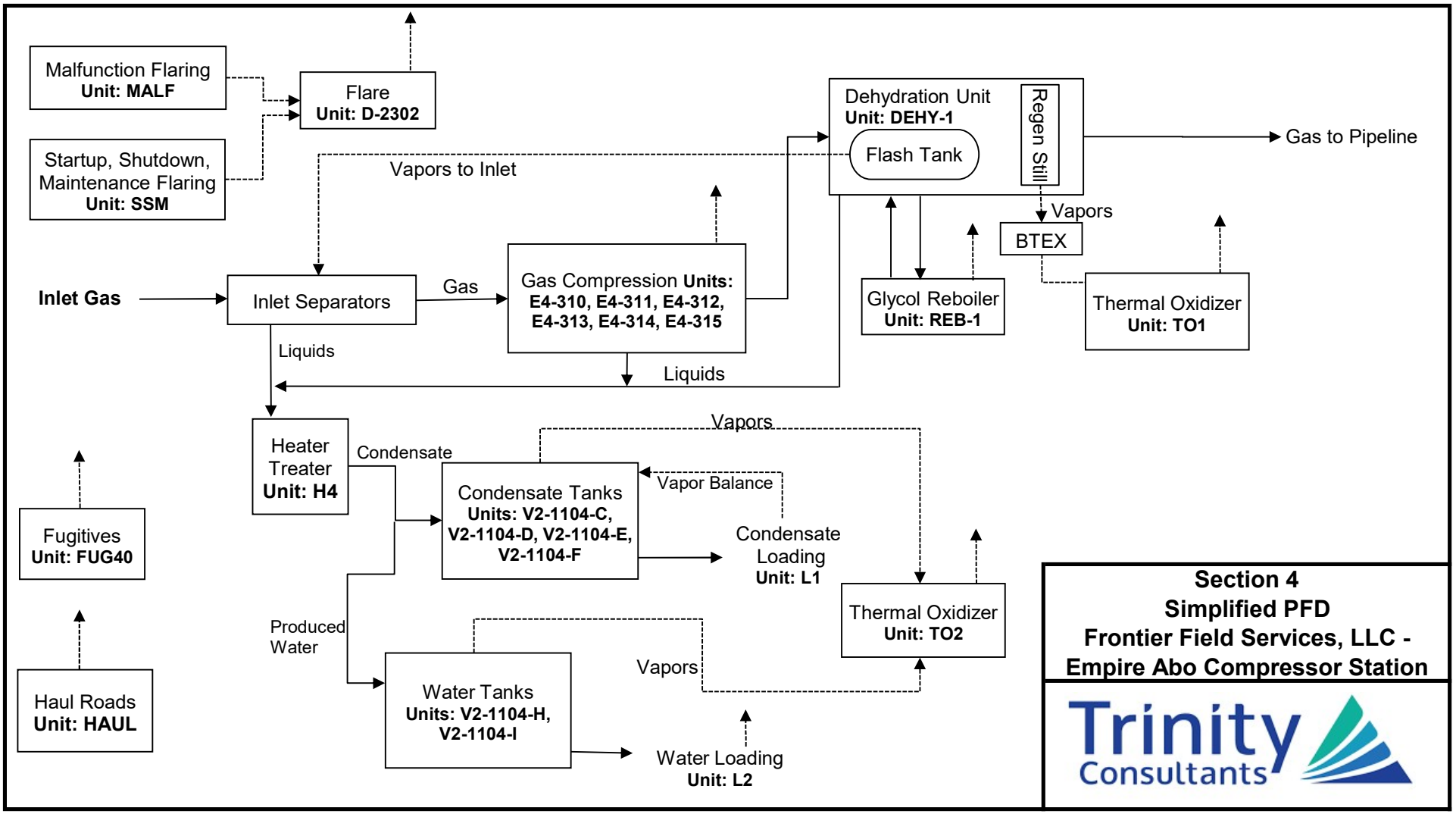
a) Such applicable requirements are included and specifically identified in the permit; or
b) The department, in action on the permit application or significant permit modification, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

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 is attached.


Malfunction Flaring
Unit: MALF
Flare
Unit: D-2302
Startup, Shutdown, Maintenance Flaring
Unit: SSM
Vapors to Inlet
Dehydration Unit
Unit: DEHY-1
Flash Tank
Regen Still
Gas to Pipeline
Vapors
BTEX
Thermal Oxidizer
Unit: TO1
Glycol Reboiler
Unit: REB-1
Inlet Gas
Inlet Separators
Gas
Gas Compression Units: E4-310, E4-311, E4-312, E4-313, E4-314, E4-315
Liquids
Liquids
Heater Treater
Unit: H4
Condensate
Vapors
Condensate Tanks
Units: V2-1104-C, V2-1104-D, V2-1104-E, V2-1104-F
Vapor Balance
Condensate Loading
Unit: L1
Fugitives
Unit: FUG40
Thermal Oxidizer
Unit: TO2
Produced Water
Haul Roads
Unit: HAUL
Water Tanks
Units: V2-1104-H, V2-1104-I
Vapors
Water Loading
Unit: L2
Section 4
Simplified PFD
Frontier Field Services, LLC -
Empire Abo Compressor Station
Trinity Consultants

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 attached.



Empire Abo Compressor Station
Site Plot Plan
Jan 2026

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.

Storage Tanks (Units V2-1104-C through F)

A condensate liquids analysis from the oil leg of the separator and condensate throughput (100 bbl/day) was used to quantify tank emissions using BR&E ProMax. For conservatism and to represent maximum emissions, the condensate liquids were not simulated as being processed by the stabilizer prior to entering the tanks. Flash, working and breathing emissions were quantified with BR&E ProMax. All overhead emissions from these units are sent to a thermal oxidizer and are represented under Unit TO2.

Produced Water Storage Tanks (Units V2-1104-H, I)

Produced water is water that has separated from the inlet liquids. The condensate liquids analysis, water, and a produced water throughput of 50 bbl/day was used to quantify tank emissions using BR&E ProMax. Working and breathing emissions were quantified with BR&E ProMax. There are no flash emissions from the produced water tanks. All overhead emissions from these units are sent to a thermal oxidizer and are represented under Unit TO2.

Condensate and Produced Water Loading (Units L1, L2)

Condensate and produced water loading emissions are calculated using EPA's AP-42, 5th Edition, Section 5.2 and the maximum hourly and annual loading volumes. Condensate Loading emissions are sent to a thermal oxidizer and are represented under Unit TO2. The small percentage of emissions from condensate loading that are uncaptured are represented under Unit L1. Produced water loading emissions are considered an exempt source pursuant to 20.2.72.202.B(5) NMAC.

Tanks, and Loading Thermal Oxidizer (Unit TO2)

Unit TO2 combusts gas from tank and loading emissions. The TO is conservatively represented as having a VOC, HAP and H_2S destruction efficiency of 98%. Emissions are also calculated for the TO2 pilot. Emission factors from EPA's AP-42 Section 1.4 are used to quantify emissions.

Facility-Wide Fugitive Emissions (Unit FUG40)

Facility-wide fugitive emissions are calculated using the most recent count of fugitive components at the facility and with gas and liquid compositions used to quantify emissions at the facility. The BTEX speciation uses the condensate liquid analysis.

Emergency Flare (Unit D-2302 (South Flare), SSM, and MALF)

The D-2302 South Flare will combust inlet gas and the operation of other facility equipment will not occur during SSM flaring events. The emissions are calculated using the volume of gas for max hourly and annual basis, Texas's TNRCC RG-109 emission factors, and 98% destruction efficiency.

Compressor Engines (Units E4-310 to E4-315)

The engines operating at the facility include Caterpillar 3516TA engines. These engines will compress inlet gas and send the gas to the TEG dehydration units. Engine emissions are calculated using catalyst control guarantees from equipment manufacturers and vendors. AP-42 emission factors are also used to quantify HAP and PM emissions. A fuel sulfur content of 5 gr/100 scf is assumed to calculate engine SO_2 emissions.

TEG Dehydrator (Unit DEHY1)

TEG dehydrator emissions are calculated using a BR&E ProMax simulation designed to incorporate the operating parameters that will be used at the facility. Flash tank overhead emissions are routed to the inlet. Regenerator emissions are controlled by a condenser. Condenser overhead emissions are sent to a thermal oxidizer and are represented under Unit TO1.

Heater (Unit H4) (Exempt per 20.2.72.202.B(5) NMAC)

Emissions from heaters installed at the facility are calculated using emission factors from AP-42 Section 1.4. HAP emissions are calculated using GRI HAPCalc.

TEG Dehydrator Thermal Oxidizer (Unit TO1)

Unit TO1 combusts gas from the TEG dehydrator condenser. The TO is conservatively represented as having a VOC, HAP, and H_2S destruction efficiency of 98%.

Haul Road Emissions (Exempt per 20.2.72.202.B(5) NMAC)

Haul trucks will be utilized at this facility to transport condensate and produced water off-site. The emission calculations provided in this section demonstrate that these activities will generate less than 0.5 tpy of PM emissions. This activity is therefore considered exempt and is not a regulated source of emissions.

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)

Frontier Field Services, LLC - Empire Abo Compressor Station

Compressor Station Emission Summary

Maximum Emissions

Unit No.	Description	NOx		CO		VOC		SOx		PM		PM10		PM2.5		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
E4-310	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-311	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-312	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-313	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-314	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-315	Compressor Engine	4.43	19.41	5.55	24.32	1.74	7.62	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
FUG40	Facility-Wide Fugitives	-	-	-	-	3.85	16.86	-	-	-	-	-	-	-	-	0.12	0.53	-	-
D-2302 / South Flare	D 2302 South Flare	0.090	0.39	0.18	0.79	-	-	0.0092	0.040	-	-	-	-	-	-	4.57E-06	2.00E-05	-	-
V2-1104-C[1]	Condensate Tank	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-D[1]	Condensate Tank	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-E[1]	Condensate Tank	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-F[1]	Condensate Tank	-	-	-	-	6.84	14.56	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-H[1]	Produced Water Tank	-	-	-	-	0.47	2.06	-	-	-	-	-	-	-	-	-	-	-	-
V2-1104-I[1]	Produced Water Tank	-	-	-	-	0.47	2.06	-	-	-	-	-	-	-	-	-	-	-	-
L1	Condensate Loading	-	-	-	-	66.96	5.91	-	-	-	-	-	-	-	-	-	-	-	-
DEHY1[2]	TEG Dehydrator	-	-	-	-	24.13	105.68	-	-	-	-	-	-	-	-	12.6722	55.504	-	-
TO1	Thermal Oxidizer	0.023	0.099	0.019	0.083	-	-	0.0032	0.014	0.0017	0.0075	0.0017	0.0075	0.0017	0.0075	-	-	-	-
TO2	Thermal Oxidizer	0.001	0.005	0.001	0.004	-	-	0.0002	0.001	0.0001	0.0004	0.0001	0.0004	0.0001	0.0004	-	-	-	-
SSM (D-2302)	SSM Flaring	242.88	23.07	484.87	46.06	478.97	45.50	3490.64	131.04	-	-	-	-	-	-	37.09	3.52	-	-
MALF (D-2302)	MALF Flaring		10.00		10.00		10.00		10.00	-	-	-	-	-	-		10.00	-	-
Totals		**269.58**	**150.02**	**518.40**	**202.89**	**612.63**	**292.01**	**3491.50**	**144.82**	**0.61**	**2.66**	**0.61**	**2.66**	**0.61**	**2.66**	**49.88**	**69.56**	**-**	**-**

Requested Allowable Emissions

Unit No.	Description	NOx		CO		VOC		SOx		PM		PM10		PM2.5		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
E4-310	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-311	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-312	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-313	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-314	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
E4-315	Compressor Engine	4.43	19.41	1.67	7.30	0.62	2.70	0.14	0.62	0.10	0.44	0.10	0.44	0.10	0.44	-	-	-	-
FUG40	Facility-Wide Fugitives	-	-	-	-	3.85	16.86	-	-	-	-	-	-	-	-	0.12	0.53	-	-
D-2302	Emergency Flare Pilot	0.090	0.39	0.18	0.79	-	-	0.0092	0.040	-	-	-	-	-	-	4.57E-06	2.00E-05	-	-
V2-1104-C[1]	Condensate Tank	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-D[1]	Condensate Tank	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-E[1]	Condensate Tank	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-F[1]	Condensate Tank	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-H[1]	Produced Water Tank	Emissions are controlled by TO2 and represented under TO2.																	
V2-1104-I[1]	Produced Water Tank	Emissions are controlled by TO2 and represented under TO2.																	
L1	Condensate Loading	-	-	-	-	0.87	0.08	-	-	-	-	-	-	-	-	-	-	-	-
DEHY1[2]	TEG Dehydrator	Emissions are returned to inlet and controlled by TO1.																	
TO1	Thermal Oxidizer	0.55	2.42	0.464	2.03	0.48	2.11	23.86	104.49	0.042	0.184	0.0419	0.184	0.0419	0.184	2.53E-01	1.1101	-	-
TO2	Thermal Oxidizer	0.215	0.16	0.180	0.13	1.89	1.36	0.0002	0.001	0.0163	0.012	0.0163	0.012	0.0163	0.012	0.00E+00	0.00E+00	-	-
SSM (D-2302)	SSM Flaring	242.88	23.07	484.87	46.06	478.97	45.50	3490.64	131.04	-	-	-	-	-	-	37.09	3.52	-	-
MALF (D-2302)	MALF Flaring		10.00		10.00		10.00		10.00	-	-	-	-	-	-		10.00	-	-
Totals		**270.32**	**152.49**	**495.69**	**102.80**	**489.76**	**92.11**	**3515.35**	**249.30**	**0.66**	**2.85**	**0.66**	**2.85**	**0.66**	**2.85**	**37.46**	**15.17**	**-**	**-**

[1] Condesate tanks (Units C 5822, D 5820, E 5824, F 5825), produced water tanks (Units H 5816, I 5818), and loading (Unit L-1) emissions are controlled by a combustor. Controlled emissions are considered under Unit TO2.

[2] Emissions from the dehydator condenser (Unit DEHY1) are controlled by a combustor and emissions from the dehydrator flash tanks are recycled to the inlet. Controlled condenser emissions are considered under Unit TO1.

Frontier Field Services, LLC - Empire Abo Compressor Station

Compressor Station Emission Summary - HAPs and GHG - Requested Allowable Emissions

Unit No.	HAPs																GHGs							
	Total HAPs		Formaldehyde		Acetaldehyde		Acrolein		Benzene		n-Hexane		Toluene		Xylenes		CO_2		N_2O		CH_4		CO_2e	
	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	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
E4-310	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
E4-311	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
E4-312	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
E4-313	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
E4-314	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
E4-315	0.23	1.02	0.07	0.32	0.085	0.37	0.052	0.23	0.0044	0.019	0.011	0.049	0.0041	0.018	0.0019	0.0081	1182.45	5179.14	0.0022	0.0098	0.022	0.098	1183.67	5184.46
FUG40	0.43	1.90	-	-	-	-	-	-	0.09	0.41	0.16	0.69	0.121	0.531	0.036	0.16	0.00	0.00	0.000	0.000	2.7	11.9	75.79	331.95
D-2302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.18	3.63	7.20E-05	6.84E-06	7.20E-04	6.84E-05	38.22	3.63
V2-1104-C[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
V2-1104-D[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
V2-1104-E[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
V2-1104-F[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
V2-1104-H[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
V2-1104-I[1]	Emissions are controlled by TO2 and represented under TO2.																Emissions are controlled by TO2 and represented under TO2.							
L1	0.12	0.01	-	-	-	-	-	-	1.40E-02	1.23E-03	2.36E-02	2.09E-03	5.74E-03	5.07E-04	5.44E-04	4.81E-05	3.51E-03	3.10E-04	0.000	0.000	2.33E-03	2.06E-04	0.07	0.01
DEHY1[2]	Emissions are returned to inlet and controlled by TO1.																Emissions are returned to inlet and controlled by TO1.							
TO1	0.16	0.68	-	-	-	-	-	-	0.11	0.49	0.010	0.045	0.033	0.15	0.0011	0.0046	631.68	2766.74	1.19E-03	0.0052	0.0119	0.052	632.33	2769.59
TO2	0.28	0.21	-	-	-	-	-	-	0.033	0.023	0.056	0.041	0.014	0.010	0.001	0.001	43.56	190.80	8.21E-05	0.0004	8.21E-04	0.0036	43.61	191.00
SSM (D-2302)	13.25	1.259	-	-	-	-	-	-	-	-	-	-	-	-	-	-	164730.95	15649.44	0.310	0.03	3.10	0.29	164900.16	15665.51
MALF (D-2302)		8.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Totals	**15.64**	**18.16**	**0.44**	**1.94**	**0.51**	**2.22**	**0.31**	**1.37**	**0.28**	**1.04**	**0.31**	**1.07**	**0.20**	**0.80**	**0.05**	**0.21**	**172539.09**	**49685.47**	**0.33**	**0.09**	**5.96**	**12.79**	**172792.17**	**50068.46**

[1] Condesate tanks (Units C 5822, D 5820, E 5824, F 5825), produced water tanks (Units H 5816, I 5818), and loading (Unit L-1) emissions are controlled by a combustor. Controlled emissions are considered under Unit TO2.

[2] Emissions from the dehydator condenser (Unit DEHY1) are controlled by a combustor and emissions from the dehydrator flash tanks are recycled to the inlet. Controlled condenser emissions are considered under Unit TO1.

Frontier Field Services, LLC - Empire Abo Compressor Station

Thermal Oxidizer

Emission unit number(s):	TO2	
Source description:	Thermal Oxidizer	
Streams Controlled:	Condensate Tanks, PW Tanks, Condensate Loading	
Control Device DRE:	98%	Kimark SmartFlare KSF-64 Spec Sheet specifies at least 99.9% DRE

Maximum Input Parameters	**Oil**	**PW**		
Heat Value of Combusted VOC from Tks	2,977	3,462	Btu/scf	ProMax
Heat Value of Combusted VOC from Tks	21,150.8	20,565.0	Btu/lb	ProMax (Streams "Tank Flash") - (Btu/scf) / (Lb/hr) / (24 hr/day) * (MMSCF/day) * 10^6 scf/MMSCF
Vapors to TO2 from Tks (hourly)	28.8	0.94	lb/hr	Condensate Tanks tab, PW Tanks tab
Gas Produced	2.49	0.14	Mscfd	ProMax for respective stream
Input Heat Rate - Max Hourly:	0.61	0.02	MMBtu/hr	Calculated (Heat Value * Gas Produced / 10^6 Btu/MMBtu)
Input Heat Rate - Annual Avg:	0.31	0.02	MMBtu/hr	Calculated (Heat Value * Gas Produced / 24 hrs per day)
Heat Value of Combusted VOC from L-1	3080	3697	Btu/scf	ProMax (Stream "Oil Loading")
Heat Value of Combusted VOC from L-1	21,278	19,798	Btu/lb	ProMax (Stream "Oil Loading") - (Btu/scf) / (Lb/hr) / (24 hr/day) * (MMSCF/day) * 10^6 scf/MMSCF
Vapors to TO2 from L-1	72.7	0	lb/hr	Load tab, Condensate Loading
Vapors to TO2 from L-1	12,839.9	0	lb/yr	Load tab, Condensate Loading
Input Heat Rate - Max Hourly:	1.55	0	MMBtu/hr	Calculated (Heat Value * Gas Produced / 10^6 Btu/MMBtu)
Input Heat Rate - Annual Avg:	0.03	0	MMBtu/hr	Calculated (Heat Value Annual * Gas Produced / 8760 hrs/yr)

Totals for TO2:

Total Heat Input Rate:	2.18	MMBtu/hr	Max Hourly Process
Total Heat Input Rate:	0.36	MMBtu/hr	Annual Avg Process
Total VOC Mass Flow Rate - Max	94.38	lb/hr	All based on ProMax Condensate Tank + PW Tank + Condensate Loading
Total H2S Mass Flow Rate - Max	0.00	lb/hr	
Total HAP Mass Flow Rate - Max	14.20	lb/hr	
Total VOC Mass Flow Rate - Annual Avg	15.57	lb/hr	
Total H2S Mass Flow Rate - Annual Avg	0.00	lb/hr	
Total HAP Mass Flow Rate - Annual Avg	2.34	lb/hr	

Exhaust Parameters (F-factor method)

Max Hourly Heat Rate:	2.19	MMBtu/hr	Tanks, Loading Heat Input and Pilot Input
Annual Avg Heat Rate:	0.37	MMBtu/hr	Tanks, Annual Avg Loading Heat Input and Pilot Input
Exhaust temp (Tstk):	1200	°F	Manufacturer Specifications
Exhaust flow	40.5	cfs	Manufacturer Specifications
Stack diameter:	5.3	ft	Manufacturer Specifications
Stack height:	33.2	ft	Manufacturer Specifications
Exhaust velocity:	1.81	ft/sec	Manufacturer Specifications

Fuel Data

Themal Oxidizer Pilot	12	scf/hr	TO2 Spec Sheet
	0.000012	MMscf/hr	
	1020	Btu/scf	Pipeline Gas, HHV
	0.01	MMBtu/hr	

Emission Rates (Pilot Only)

NOx	CO	VOC [1]	SO_2 [2]	H_2S [2]	PM [3]	HAP		
100	84	-	-	-	7.6	-	lb/MMscf	AP-42 Table 1.4-1 & 2
0.0980	0.0824	-	-	-	0.0075	-	lb/MMBtu	AP-42 Table 1.4-1, Footnote a
-	-	-	50	-	-	-	gr S/Mscf	Purchased natural gas, 5 gr S/100scf
-	-	-	-	-	-	-	lb/hr	Mass Flow Rate
0.001	**0.001**	**-**	**0.0002**	**-**	**0.0001**	**-**	**lb/hr**	
0.005	**0.004**	**-**	**0.001**	**-**	**0.0004**	**-**	**tpy**	8760 hrs

Emission Rates (Process Gas + Pilot)

NOx	CO	VOC [1]	SO_2 [2]	H_2S [2]	PM [3]	HAP [1]		
100	84	-	-	-	7.6	-	lb/MMscf	AP-42 Table 1.4-1 & 2
0.0980	0.0824	-	-	-	0.0075	-	lb/MMBtu	AP-42 Table 1.4-1, Footnote a
-	-	94.38	-	0.0E+00	-	14.20	lb/hr Max	Mass Flow Rate
-	-	15.57	-	0.0E+00	-	2.34	lb/hr Avg	Mass Flow Rate
0.215	**0.18**	**1.89**	**0.0002**	**0.0E+00**	**0.0163**	**0.28**	**lb/hr**	Based on Max Hourly Rates
0.16	**0.13**	**1.36**	**0.001**	**0.0E+00**	**0.012**	**0.21**	**tpy**	Based on Annual Avg Rates

0.0

[1] The thermal oxidizer is at least 98% efficient for combustion of VOC and HAP per the spec sheet

[2] H_2S is combusted with at least 98% efficiency. 100% of sulfur is converted to SO_2. Pilot uses same natural gas as other gas-fired sources.

[3] PM (Total) = TSP = PM-10 = PM-2.5

Greenhouse Gas Emissions

CO_2	N_2O	CH_4	CO_2e		
53.06	0.0001	0.001		kg/MMBtu	40 CFR 98 Tables C-1 and C-2
1	265	28		GWP	40 CFR 98 Table A-1
190.80	0.0004	0.004		tons/yr[4]	

[3] Tons GHG = GHG EF (kg/MMBtu) * MMBtu/hr rate (annual avg) * Operating hrs/yr * 2.20462 (lbs/kg) / 2,000 (lbs/ton)

Frontier Field Services, LLC - Empire Abo Compressor Station

Condensate Storage Tanks

Emission unit number(s): V2-1104-C, D, E, F
Source description: Condensate Tanks

Annual Operating Hours:	8,760	
Control Efficiency:	98%	Kimark SmartFlare KSF-64 Spec Sheet specifies at least 99.9% DRE
Number of Tanks:	4	
Capacity of Tanks:	300	bbl
Hourly Throughout:	4.17	bbl/hr
Daily Throughput:	100.00	bbl/d
Annual Throughput:	36,500	bbl/yr
Hourly Throughout per Tank:	1.04	bbl/hr
Daily Throughput per Tank:	25	bbl/d
Annual Throughput per Tank:	9,125	bbl/yr

Condensate Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Total Flash (lb/hr)	Total Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Flash (tpy)	Total Working and Breathing (tpy)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Hydrogen Sulfide								
Carbon Dioxide	0.04	4.69E-03	1.16E-02	0.14	0.08	0.05	0.01	0.05
Nitrogen	0.06	1.64E-03	1.60E-02	0.27	0.02	0.07	0.02	0.07
Methane	0.05	4.97E-03	1.44E-02	0.20	0.05	0.06	2.88E-04	1.28E-03
Ethane	1.19	0.13	0.33	3.21	1.80	1.25	6.63E-03	0.03
Propane	5.74	0.64	1.60	11.31	6.08	4.35	0.03	0.09
i-Butane	2.02	0.23	0.56	3.29	1.70	1.25	0.01	0.02
n-Butane	6.20	0.70	1.72	9.64	4.91	3.64	0.03	0.07
i-Pentane	2.78	0.31	0.77	3.98	1.96	1.48	0.02	0.03
n-Pentane	3.02	0.34	0.84	4.22	2.05	1.57	0.02	0.03
C6Alkanes(iso)	1.56	0.18	0.43	2.09	0.99	0.77	8.68E-03	0.02
Heptane	1.21	0.14	0.34	1.51	0.67	0.54	6.73E-03	0.01
Octane	0.34	0.04	0.10	0.41	0.17	0.15	1.91E-03	2.92E-03
Nonane	0.03	3.72E-03	0.01	0.04	0.02	0.01	1.84E-04	2.65E-04
Benzene	0.51	0.06	0.14	0.67	0.31	0.25	2.84E-03	4.93E-03
Toluene	0.23	0.03	0.06	0.29	0.13	0.10	1.28E-03	2.09E-03
Ethylbenzene	0.02	2.17E-03	0.01	0.02	0.01	8.29E-03	1.08E-04	1.66E-04
p-Xylene	0.02	2.67E-03	0.01	0.03	0.01	0.01	1.32E-04	2.04E-04
n-Hexane	0.88	0.10	0.24	1.15	0.53	0.42	4.88E-03	8.39E-03
2,2,4-Trimethylpentane	0.01	1.64E-03	4.07E-03	0.02	0.01	6.68E-03	8.13E-05	1.34E-04
Decanes+	5.43E-07	6.08E-08	1.51E-07	0.00	0.00	1.25E-07	3.02E-09	2.50E-09
Water								
VOC	**24.59**	**2.76**	**6.84**	**38.67**	**19.55**	**14.56**	**0.14**	**0.29**
Total HAPS	**4.45**	**0.50**	**1.24**	**5.78**	**2.66**	**2.11**	**0.02**	**0.042**
H_2S	**0.0E+00**	**0.0E+00**	**0.0E+00**	**0.0E+00**	**0.0E+00**	**0.0E+00**	**0.0E+00**	**0.0E+00**

[1] Emissions from the condensate tanks are controlled by the thermal oxidizer (TO2) using 98% DRE.

[2] Emissions are calculated using BR&E ProMax. Hourly emissions are based on the maximum hourly throughput. Annual emissions are based on the maximum hourly emissions and total operating hour of the site.

Frontier Field Services, LLC - Empire Abo Compressor Station

Produced Water Storage Tanks

Emission unit number(s): V2-1104-H, I
Source description: Produced Water Tanks

Annual Operating Hours:	8,760	
Control Efficiency:	98%	Kimark SmartFlare KSF-64 Spec Sheet specifies at least 99.9% DRE
Number of Tanks:	2	
Capacity of Tanks:	210	bbl
Hourly Throughout:	2.08	bbl/hr
Daily Throughput:	50.00	bbl/d
Annual Throughput:	18,250	bbl/yr
Hourly Throughout per Tank:	1.04	bbl/hr
Daily Throughput per Tank:	25	bbl/d
Annual Throughput per Tank:	9,125	bbl/yr

Produced Water Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Worst Case Flash (lb/hr)	Total Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Flash (tpy)	Total Working and Breathing (tpy)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Hydrogen Sulfide								
Carbon Dioxide								
Nitrogen								
Methane								
Ethane					1.57E-02	0.01		0.00
Propane	0.0041	0.055	0.03		2.60E-01	0.13	0.00	0.00
i-Butane	0.0016	0.049	0.03		2.23E-01	0.11	0.00	0.00
n-Butane	0.0047	0.215	0.11		9.63E-01	0.48	0.00	0.01
i-Pentane	0.0021	0.162	0.08		7.71E-01	0.39	0.00	0.01
n-Pentane	0.0023	0.176	0.09		8.16E-01	0.41	0.00	0.01
C6Alkanes(iso)	0.0012	0.090	0.05		3.95E-01	0.20	9.16E-04	0.00
Heptane	0.0009	0.070	0.04		2.69E-01	0.13	7.09E-04	0.00
Octane	0.0003	0.020	0.01		6.97E-02	0.03	2.01E-04	6.97E-04
Nonane	0.0000	0.002	0.00		6.10E-03	0.00	1.93E-05	6.10E-05
Benzene	0.0003	0.020	0.01		8.48E-02	0.04	1.98E-04	8.48E-04
Toluene	0.0002	0.012	0.01		4.71E-02	0.02	1.21E-04	4.71E-04
Ethylbenzene	0.0000	0.001	0.00		3.91E-03	1.95E-03	1.11E-05	3.91E-05
p-Xylene	0.0000	0.001	0.00		4.84E-03	0.00	1.37E-05	4.84E-05
n-Hexane	0.0007	0.051	0.03		2.12E-01	0.11	5.15E-04	2.12E-03
2,2,4-Trimethylpentane	0.0000	0.001	4.28E-04		3.32E-03	1.66E-03	8.55E-06	3.32E-05
Decanes+	0.0000	0.000	1.56E-08		3.96E-08	1.98E-08	3.12E-10	3.96E-10
Water								
VOC	**0.02**	**0.92**	**0.47**	**0.00**	**4.13**	**2.06**	**0.01**	**0.04**
Total HAPS	**0.00**	**0.25**	**0.12**	**0.00**	**1.02**	**0.51**	**0.00**	**0.01**
H_2S	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**	**0.00E+00**

[1] Emissions from the produced water tanks are controlled by the thermal oxidizer (TO2) using 98% DRE.

[2] Emissions are calculated using BR&E ProMax. Hourly emissions are based on the maximum hourly throughput. Annual emissions are based on the maximum hourly emissions and total operating hour of the site.

Frontier Field Services, LLC - Empire Abo Compressor Station

Condensate & Produced Water Loading

Emission unit number: L1, L2
Source description: Condensate and Produced Water Loading

Condensate Production: 100.00 bbl/day
Condensate Production: 36,500 bbl/yr
Max Loading Rate: 7560 gallons/hr

Produced Water Production: 50.33 bbl/day
Produced Water Production: 18,370 bbl/yr

Equation[1]:

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

Variables[1]:

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

Maximum Hourly Emission Estimate

Loading		Saturation Factor S	True Vapor Pressure psia	Mole Weight lb/lb-mol	Maximum Temperature Deg F	Maximum Temperature Deg R	Loading Loss lb/1000 gallon	Hourly Loading Rate gallons/hr	Water Content Reduction %	Total Emissions lb/hr	Capture Efficiency %	Emissions To Atmosphere lbs/hr
Condensate (L1)	Submerged loading: dedicated normal	0.6	12.88	54.93	83.34	542.91	9.74	7,560	0%	73.65	98.7%	0.96
Produced Water (L2)	Submerged loading: dedicated normal	0.6	12.88	70.87	83.34	542.91	12.57	7,560	90%	9.50	0%	9.50

Average Annual Emission Estimate

Loading		Saturation Factor S	True Vapor Pressure psia	Mole Weight lb/lb-mol	Maximum Temperature Deg F	Maximum Temperature Deg R	Loading Loss lb/1000 gallon	Annual Loading Rate gallons/year	Water Content Reduction %	Total Emissions tons/year	Capture Efficiency %	Emissions To Atmosphere tons/year
Condensate (L1)	Submerged loading: dedicated normal	0.6	10.774	54.93	61.80	521.37	8.49	1,533,000	0%	6.50	98.7%	0.08
Produced Water (L2)	Submerged loading: dedicated normal	0.6	8.794	70.87	61.80	521.37	8.94	771,540	90%	0.34	0.0%	0.34

Component	Condensate Loading					Produced Water Loading				
	Oil W&B	Total Speciated Vapors Captured During Loading and sent to TO2		Total Speciated Vapors Uncaptured During Loading		PW W&B	Total Speciated Vapors Captured During Loading and sent to TO2		Total Speciated Vapors Uncaptured During Loading	
	Wt%	lb/hour	tons/year	lb/hour	tons/year	Wt%	lb/hour	tons/year	lb/hour	tons/year
Hydrogen Sulfide										
Carbon Dioxide	3.66E-01	2.66E-01	2.35E-02	3.51E-03	3.10E-04	1.87E-03			1.78E-04	6.44E-06
Nitrogen	8.43E-02	6.13E-02	5.41E-03	8.07E-04	7.13E-05					
Methane	2.43E-01	1.77E-01	1.56E-02	2.33E-03	2.06E-04					
Ethane	8.39E+00	6.100	0.54	8.04E-02	7.10E-03	3.71E-01			3.52E-02	1.28E-03
Propane	2.83E+01	20.54	1.81	0.271	0.02	6.12E+00			5.81E-01	2.11E-02
i-Butane	7.90E+00	5.75	0.51	0.08	0.01	5.25E+00			4.99E-01	1.81E-02
n-Butane	2.28E+01	16.60	1.47	0.22	0.02	2.27E+01			2.16E+00	7.82E-02
i-Pentane	9.11E+00	6.62	0.58	0.09	0.01	1.82E+01			1.73E+00	6.26E-02
n-Pentane	9.54E+00	6.94	0.61	0.09	0.01	1.92E+01			1.83E+00	6.63E-02
C6Alkanes(iso)	4.60E+00	3.34	0.30	0.04	0.00	9.31E+00			8.84E-01	3.21E-02
Heptane	3.12E+00	2.27	0.20	0.03	0.00	6.33E+00			6.02E-01	2.18E-02
Octane	8.09E-01	0.59	0.05	0.008	0.00	1.64E+00			1.56E-01	5.66E-03
Nonane	7.12E-02	0.05	0.00	0.001	0.00	1.44E-01			1.37E-02	4.95E-04
Benzene	1.46E+00	1.06	0.09	0.01	0.00	2.00E+00			1.90E-01	6.89E-03
Toluene	6.00E-01	0.44	0.04	0.006	0.001	1.11E+00			1.05E-01	3.83E-03
Ethylbenzene	4.61E-02	0.03	0.00	0.000	0.000	9.21E-02			8.76E-03	3.18E-04
p-Xylene	5.68E-02	0.04	0.00	0.001	0.00	1.14E-01			1.08E-02	3.93E-04
n-Hexane	2.47E+00	1.80	0.16	2.36E-02	2.09E-03	5.00E+00			4.75E-01	1.72E-02
2,2,4-Trimethylpentane	3.85E-02	0.03	2.47E-03	3.69E-04	3.26E-05	7.83E-02			7.44E-03	2.70E-04
Decanes+	4.73E-07	3.44E-07	3.04E-08	4.53E-09	4.00E-10	9.34E-07			8.87E-08	3.22E-09
Water						2.35E+00			2.23E-01	8.09E-03
TOTAL	100.00	72.69	6.42	0.96	0.08	100.00	0.00	0.00	9.50	0.34
Total VOC	90.91	66.09	5.84	0.87	0.08	97.28	0.00	0.00	9.24	0.34
Total HAPs	12.38	9.00	0.79	0.12	0.01	24.04	0.00	0.00	2.28	0.08

1. Saturation factor is from EPA's AP-42, 5th Edition, Section 5.2, Table 5.2-1; for type of loading operation.
2. Vapor Pressure and Molecular weight of vapors was taken from ProMax.
3. Short-term loading loss factor is calculated based on the worst-case (highest) temperature and vapor pressure.
4. Annual loading loss factor is calculated based on the average temperature and vapor pressure.
5. If the volume of liquids loaded includes a percentage of water, the percentage of water is removed from the overall emissions.
6. Condensate truck loading emissions are vapor balanced back to the tanks, which are controlled by TO2.

Frontier Field Services, LLC - Empire Abo Compressor Station

Fugitive Emissions

Source: **Fugitives**
Source ID: **FUG40**

Updated only with the updated light liquid BTEX speciation based on the updated condensate liquids sample

Gas Service	**Number of Components**	**Factor**	**Total VOC Emissions**		**Total Emissions**	
Fugitive Component Type		**(lb/hr/source)**	**(lbs/hr)**	**(tons/yr)**	**(lbs/hr)**	**(tons/yr)**
Valves	523	0.0099	1.510	6.61	5.189	22.73
Pump Seals	6	0.0053	0.009	0.04	0.032	0.14
Connectors	1192	0.0004	0.153	0.67	0.526	2.30
Flanges	149	0.0009	0.037	0.16	0.128	0.56
Open-Ended Lines	0	0.0044	0.000	0.00	0.000	0.00
Other	16	0.0194	0.090	0.40	0.310	1.36
		Total	1.799	7.88	6.184	27.09

Light Oil Service	**Number of Components**	**Factor**	**Total VOC Emissions**	
		(lb/hr/source)	**(lbs/hr)**	**(tons/yr)**
Valves	259	0.0055	1.427	6.25
Pump Seals	11	0.0287	0.315	1.38
Connectors	611	0.0005	0.283	1.24
Flanges	32	0.0002	0.008	0.03
Open-Ended Lines	0	0.0031	0.000	0.00
Other	1	0.0165	0.017	0.07
		Total	2.050	8.98

Gas Service Speciation	**Stream Weight %** [3]	**Emissions (lb/hr)**	**Emissions (tons/yr)**
H2S	1.97%	0.122	0.534
Benzene	0.31%	0.019	0.084
Toluene	0.24%	0.015	0.064
E-Benzene	0.0039%	0.000	0.001
Xylene	0.03%	0.002	0.009
n-Hexane	0.46%	0.029	0.125
Total VOC	29.10%	1.799	7.881

Light Liq. Service Speciation	**Stream Weight %** [4]	**Emissions (lb/hr)**	**Emissions (tons/yr)**
H2S	0.000%	0.00000	0.00000
Benzene	3.64%	0.07462	0.327
Toluene	5.200%	0.10659	0.467
E-Benzene	1.28%	0.02634	0.115
Xylene	1.66%	0.03412	0.149
n-Hexane	6.24%	0.12800	0.561
Total VOC	100.00%	2.04992	8.979

Total Fugitive Emissions	**Emissions (lb/hr)**	**(tons/yr)**
H2S	0.12	0.53
Benzene	0.09	0.41
Toluene	0.121	0.531
E-Benzene	0.027	0.116
Xylene	0.036	0.16
n-Hexane	0.16	0.69
Total VOC	3.85	16.86

Greenhouse Gas Emissions

Gas Service Speciation	**Stream Weight %** [3]	**Emissions (lb/hr)**	**Emissions (tons/yr)**
Methane	43.77%	2.71	11.86

Notes:
(1) Emission factors are EPA/API average emission factors, for oil and gas production operations, issued August 1995, for fugitive components
(2) Component counts are estimates based on similar facilities.
(3) Natural gas speciation based on facility natural gas analysis.
(4) Light Liquid BTEX speciation based facility separator oil analysis, updated 9/5/2025 sample.

Frontier Field Services, LLC - Empire Abo Compressor Station

Compressor Engines

Units: E4-310 and E4-315
Source Description: Natural Gas Engines
Manufacturer: Caterpillar
Model: 3516 TALE
Engine Type: 4-Stroke Lean-Burn

Control
Method: Oxidation Catalyst

Specifications

RPM	1400	rpm	Catalyst Data
Max Capacity (hp)	1340	hp	
Site Capacity (hp)	1340	hp	Catalyst Data

Fuel Consumption

BSFC (LHV):	7544	Btu/hp-hr	Mfg. Spec.
Fuel Heat Value	1020	Btu/scf	Pipeline Gas
Heat input	10.11	MMBtu/hr	Calculated
Fuel consumption	9.91	Mscf/hr	Calculated
Fuel consumption	0.0099	MMscf/hr	Calculated
Fuel consumption	86.82	MMscf/yr	Calculated

Emission Calculations Uncontrolled

NO_X	CO	VOC [1]	SO_2	PM_{10} [2]	$PM_{2.5}$ [3]	Total HAPs	Formaldehyde	Acetaldehyde	Acrolein	Benzene	Ethylbenzene	n-Hexane	Toluene	Xylene	Units	Comments
1.50	1.88	0.31		0.034			0.25								g/bhp-hr	Manufacturer's Data
			50												gr S/Mscf	Pipeline Specification
				0.010	0.010			0.0084	0.0051	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	From AP-42 Table 3.2-2
								0.0084	0.0051	0.0004	0.0000	0.0011	0.0004	0.0002	lb/MMBtu	Scaled Emissions (EF *1020/Fuel Heat Value)
4.43	**5.55**	**1.74**	**0.14**	**0.10**	**0.10**	**0.90**	**0.74**	**0.085**	**0.052**	**0.0044**	**4.01E-04**	**0.0111**	**0.0041**	**0.0019**	lb/hr	Calculated hourly emission rate
19.41	**24.32**	**7.62**	**0.62**	**0.44**	**0.44**	**3.93**	**3.23**	**0.37**	**0.23**	**0.019**	**0.0018**	**0.0487**	**0.018**	**0.0081**	tpy	Annual emission rate (hrs/yr) = 8760

Emission Calculations Controlled

NO_X	CO	VOC [1]	SO_2	PM_{10} [2]	$PM_{2.5}$ [3]	Total HAPs	Formaldehyde	Acetaldehyde	Acrolein	Benzene	Ethylbenzene	n-Hexane	Toluene	Xylene	Units	Comments
1.50	0.56	0.16					0.025								g/bhp-hr	Catalyst Data
	70%	50%					90%								DRE %	Catalyst Data
			50				0.00250								gr S/Mscf	Pipeline Specification
				0.010	0.010			0.0084	0.0051	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	From AP-42 Table 3.2-2
								0.0084	0.0051	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	Scaled Emissions (EF *1020/Fuel Heat Value)
4.43	**1.67**	**0.62**	**0.14**	**0.10**	**0.10**	**0.23**	**0.07**	**0.085**	**0.052**	**0.0044**	**4.01E-04**	**1.11E-02**	**0.0041**	**0.0019**	lb/hr	Calculated hourly emission rate
19.41	**7.30**	**2.70**	**0.62**	**0.44**	**0.44**	**1.02**	**0.32**	**0.37**	**0.23**	**0.019**	**0.0018**	**0.0487**	**0.018**	**0.0081**	tpy	Annual emission rate (hrs/yr) = 8760

Notes:
1. VOC emissions include aldehydes per NMED guidance / AECTool.
2. PM_{10} = AP-42 PM_{10} (filterable) + PM (condensable).
3. $PM_{2.5}$ = AP-42 $PM_{2.5}$ (filterable) + PM (condensable).

GHG Emission Calculations (*Uncontrolled)*

CO_2	N_2O	CH_4	Units	Comments
53.06	0.0001	0.001	kg/MMBtu	From 40 CFR Part 98, Subpart C
1,182.45	**0.0022**	**0.022**	lb/hr	Calculated hourly emission rate
5,179.14	**0.0098**	**0.098**	tpy	Annual emission rate (hrs/yr) = 8760

Frontier Field Services, LLC - Empire Abo Compressor Station

Gas Composition Used for Calculations				
Component	**MW**	**Process Gas[1] Mol%**	**MW * wet vol %**	**Weight %**
Water	18.02	0.00%	0.000	0.00%
Hydrogen Sulfide	34.08	0.72%	0.245	1.07%
Carbon Dioxide	44.01	0.78%	0.343	1.50%
Nitrogen	28.01	2.02%	0.566	2.48%
Oxygen	32.00	0.00%	0.000	0.00%
Methane	16.04	71.72%	11.505	50.39%
Ethane	30.07	13.42%	4.035	17.67%
Propane	44.10	6.63%	2.924	12.81%
i-Butane	58.12	0.86%	0.499	2.19%
n-Butane	58.12	2.01%	1.168	5.11%
i-Pentane	72.15	0.50%	0.362	1.59%
Pentanes	72.15	0.49%	0.356	1.56%
Hexanes+	86.18	0.83%	0.713	3.12%
Benzene	78.11	0.089%	0.070	0.30%
E-benzene	106.17	0.000%	0.000	0.00%
Toulene	92.14	0.048%	0.045	0.20%
Xylenes	106.16	0.004%	0.004	0.02%
Totals		**1.001**	**22.83**	**100%**
NMNEHC (VOC)			***6.14***	***26.89%***

Sum of Hexanes+ 0.97%

Frontier Field Services, LLC - Empire Abo Compressor Station

Emergency Flare

Emission Units: D-2302 (South Flare), SSM, and MALF

Fuel Data

Flare Pilot	200	scf/hr	Design	
	0.0002	MMscf/hr		
	1020	Btu/scf	Pipeline Gas, HHV	
	0.20	MMBtu/hr		
Purge Gas	120	scf/hr		
	0.00012	MMscf/hr		
	1020	Btu/scf	Pipeline Gas, HHV	
	0.12	MMBtu/hr		
Flared Gas - Short Term	24.8	MMscf/day	ProMax Inlet Gas Flow	
	1.03	MMscf/hr	Effective hourly flowrate = MMscf/day ÷ 24 hr/day	
	1,363	Btu/scf	Inlet Gas from ProMax	
	1,408	MMBtu/hr	Hourly heat rate = Heating value * Effective hourly flow rate.	
Flared Gas - Annual	190.0	hrs	Annual hours of flaring	
	196.3	MMscf/yr	Engineering estimate	
Total	1408.3	MMBtu/hr	Pilot + Flared gas	

Stack Parameters

98%		Control Efficiency of VOC, HAP, H_2S	
1000	˚C	Exhaust temperature	Per NMAQB guidelines
20	m/sec	Exhaust velocity	Per NMAQB guidelines
115	ft	Flare height	

Pilot and Purge Gas only

16.04	g/mol	Pilot gas molecular weight	Mol. wt. of methane, the dominant species
22,848	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
18,456		q_n	$q_n = q(1\text{-}0.048(MW)^{1/2})$
0.1359	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Pilot and Flared Gas

24.29	g/mol	Flared gas molecular weight	Volume weighted mol. wt. of all components
9.86E+07	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
7.53E+07		q_n	$q_n = q(1\text{-}0.048(MW)^{1/2})$
8.6752	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Emission Rates

Pilot and Purge Gas

	NOx	CO	VOC	H_2S	SO_2	HAP	Units	
	0.1380	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
				3.6E-04			lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
				1.1E-04			lb H_2S/hr	H_2S rate * fuel usage
					0.0071		lb S/Mscf	Purchased sweet natural gas fuel, 5 gr S/100scf
					0.0046		lb SO_2/hr	SO_2 rate * fuel usage
	100%	100%		100%	100%		%	Safety Factor
	0.2760	0.5510					lb/MMBtu	Unit emission rate with Safety Factor
Pilot & Purge Only Table UA2-D and E	**0.090**	**0.18**					lb/hr	lb/MMBtu * MMBtu/hr
			-	**4.6E-06**	**0.0092**		lb/hr	98% combustion H_2S; 100% conversion to SO_2
	0.39	**0.79**	**-**	**2.0E-05**	**0.040**		tpy	8760 hrs/yr

Flared Gas

	NOx	CO	VOC	H_2S	SO_2	HAP	Units	
	0.1380	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
			19,158.94	1,854.40		530.15	lb/hr	ProMax max hourly (no change to hourly emissions)
				732.80			lb/hr	Annualized hourly
	194.30	387.90					lb/hr	lb/MMBtu * MMBtu/hr
	194.39	**388.08**	**383.18**	**37.09**	**3,490.64**	**10.60**	lb/hr	Uncontrolled emissions at maximum rate would include only VOC and H2S
					1,379.39		lb/hr annualized	
Total - Flared, Pilot, & Purge Gas	**18.46**	**36.85**	**36.40**	**3.52**	**131.04**	**1.01**	tpy	

	NOx	CO	VOC	H_2S	SO_2	HAP	Units	
SSM without Safety Factor	**194.30**	**387.90**	**383.18**	**37.09**	**3490.64**	**10.6**	lb/hr	Emissions not including Safety factor
	18.46	**36.85**	**36.40**	**3.52**	**131.04**	**1.01**	tpy	
Requested SSM Table UA2-F	**242.88**	**484.87**	**478.97**	**37.09**	**3490.64**	**13.25**	lb/hr	NOx, VOC SSM safety factor 25%
	23.07	**46.06**	**45.50**	**3.52**	**131.04**	**1.26**	tpy	CO SSM Safety factor 25%

GHG Emissions

Pilot and Purge Gas

CO_2	N_2O	CH_4	CO_2e	Units	Comments	
53.06	0.0001	0.001		kg/MMBtu	From 40 CFR Part 98, Subpart C	
38.18	**7.20E-05**	**7.20E-04**	**38.22**	lb/hr	Calculated hourly emission rate	
3.63	**6.84E-06**	**6.84E-05**	**3.63**	tpy	Annual emission rate (hrs/yr) =	190

Flared Gas

CO_2	N_2O	CH_4	CO_2e	Units	Comments	
53.06	0.0001	0.001		kg/MMBtu	From 40 CFR Part 98, Subpart C	
164,730.95	**0.310**	**3.10**	**164901.09**	lb/hr	Calculated hourly emission rate	
15,649.44	**0.029**	**0.29**	**15665.60**	tpy	Annual emission rate (hrs/yr) =	190

Frontier Field Services, LLC - Empire Abo Compressor Station

TEG Dehydrator Emissions

Emission Units: DEHY1
Source Description: Triethylene Glycol Dehydrator Condenser
Manufacturer: Kimray 45015
Glycol Pump Type Gas
Maximum Flowrate: 25 MMSCFD Each
Outlet Gas Dewpoint: 7 lb H20/MMscf
Glycol Recirculation Rate: 7.5 gpm (maximum pump rate)

Control Device: Condenser & Thermal Oxidizer

Pollutant		Uncontrolled Emission Rates per Unit [1]			
		Condenser		Flash Tank	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC		24.13	105.68	-	-
H_2S		12.67	55.50	-	-
CO_2		2.33	10.21	-	-
CH_4		21.04	92.14	-	-
CO_2e		528.23	2313.65	-	-
HAP	n-Hexane	0.51	2.23	-	-
	Benzene	5.56	24.35	-	-
	2,2,4-TMP	0.00	0.00	-	-
	Toluene	1.67	7.31	-	-
	Ethylbenzene	0.006	0.024	-	-
	Xylenes	0.053	0.23	-	-
Total HAP		7.79	34.14	-	-

Notes:

[1] Emissions from the dehydrator flash tanks are routed to the inlet. Condenser overheads are controlled by a thermal oxidizer. Controlled emissions are represented under Unit TO1. Emissions from the Regenerator are routed to the inlet.

Frontier Field Services, LLC - Empire Abo Compressor Station

Heater

Exempt per 20.2.72.202.B.5 NMAC

Emission unit number(s): H4
Source description: Heater Treater

Fuel consumption			
Input heat rate:	0.80	MMBtu/hr	Engineer Estimate
Fuel heat value:	1,020	Btu/scf	Heat value of fuel
Fuel rate:	0.82	Mscf/hr	Input heat rate / Fuel heat value
Annual fuel usage:	7.1	MMscf/yr	

Stack Exhaust Parameters			
Exhaust temp:	600	°F	Eng. estimate
Stack height:	30	ft	Measured Stack Height
Stack diameter:	2.5	ft	Measured Stack Diameter
F Factor:	10610	wscf/MMBtu	F factor-40 CFR 60 Appx A Method 19
Exhaust flow:	141	scfm	Heat input * F factor/60
Site Elevation:	3,560	ft MSL	USGS 7.5 minute quadrangle
Standard Pressure:	29.92	in Hg	
Pressure at Elevation:	26.26	in Hg	Hess, Introduction to Theoretical Meteorology, eqn. 6.8
Standard Temperature:	520	R	
Exhaust flow:	329	acfm	Va = Vs*(Ps/Pa)*(Ta/Ts)
Exhaust velocity:	1.12	ft/sec	Exhaust flow / stack area

Emission Rates Per Unit

NOx	CO	VOC	SO_2[1]	PM[2]	Total HAPs[3]	Units	
100	84	5.5		7.6		lb/MMscf	Unit emission rates from AP-42 Table 1.4-1 & 2
100	84	5.5		7.6		lb/MMscf	Emission Factor Adjusted for heat value
			50			gr Total Sulfur/Mscf	Pipeline specification
0.082	**0.069**	**0.0045**	**0.012**	**0.0062**	**0.0011**	lb/hr	Unit emissions * Input heat rate
0.36	**0.30**	**0.020**	**0.051**	**0.027**	**0.0049**	tpy	

[1]SO_2 emissions are calculated based on fuel consumption and fuel H_2S concentration of 200 gr/Mscf.
200 gr S/1000 scf x fuel scf/hr x 1 lb/7000 gr x 64 lb SO_2 / 32 lb S = lb/hr SO_2
SO_2 calculation assumes 100% conversion of fuel elemental sulfur to SO_2.
[2]Assumes PM (Total) = TSP = PM-10 = PM-2.5
[3]HAPs are from GRI HAPCalc 3.01

Greenhouse Gas Emissions

CO_2	N_2O	CH_4	CO_2e		
53.06	0.0001	0.001		kg/MMBtu	40 CFR 98 Tables C-1 and C-2
1	298	25		GWP	40 CFR 98 Table A-1
409.9	0.00077	0.0077		tons/yr[5]	
409.9	0.230	0.193	**410.3**	tons/yr CO_2e[6]	

[5]GHG ton/yr = EF (kg/MMBtu) * Reboiler Fuel consumption (MMBtu/hr) * 1tonne/1000kg * Hours of operation (hr/yr) * 1.1023ton/tonne +Flash Gas GHG ton/yr
CH_4 ton/yr = EF (kg/MMBtu) * Reboiler Fuel consumption (MMBtu/hr) * 1tonne/1000kg * Hours of operation (hr/yr) * 1.1023ton/tonne + 2% x Flash Gas CH_4 ton/yr
[6]tons/yr CO2e = ton/yr * GWP

Frontier Field Services, LLC - Empire Abo Compressor Station

Thermal Oxidizer

Emission unit number(s): TO1
Source description: Thermal Oxidizer
Streams Controlled: Glycol Dehydrator Condenser Overheads

Maximum Input Parameters

Heat Value of Combusted Gas	1218	Btu/scf	ProMax (Stream 3)
Gas Flow Rate	20.6	Mscfd	ProMax (Stream 3)
Input Heat Rate:	5.40	MMBtu/hr	Manufacturer Specifications
Total VOC Mass Flow Rate from Condenser	24.13	lb/hr	ProMax (Stream 3)
Total H_2S Mass Flow Rate from Condenser	12.67	lb/hr	ProMax (Stream 3)
Total HAP Mass Flow Rate from Condenser	7.79	lb/hr	ProMax (Stream 3)

Exhaust Parameters (F-factor method)

Heat Rate:	5.63	MMBtu/hr	Condenser Input + Pilot Input
Exhaust temp (Tstk):	1150	°F	Manufacturer Specifications
Exhaust flow	257.4	cfs	Manufacturer Specifications
Stack diameter:	3.5	ft	Manufacturer Specifications
Stack height:	54.5	ft	Manufacturer Specifications
Exhaust velocity:	27.7	ft/sec	Manufacturer Specifications

Fuel Data

Themal Oxidizer Pilot	225	scf/hr	Engineer Estimate
	2.25E-04	MMscf/hr	
	1020	Btu/scf	Pipeline Gas, HHV
	0.23	MMBtu/hr	

Emission Rates (Pilot Only)

NOx	CO	VOC [1]	SO_2 [2]	H_2S [2]	PM [3]	HAP		
100	84	-	-	-	7.6	-	lb/MMscf	AP-42 Table 1.4-1 & 2
0.0980	0.0824	-	-	-	0.0075	-	lb/MMBtu	AP-42 Table 1.4-1, Footnote a
-	-	-	50	-	-	-	gr S/Mscf	Nominal
-	-	-	-	-	-	-	lb/hr	Mass Flow Rate
0.023	**0.019**	**-**	**0.0032**	**-**	**0.0017**	**-**	**lb/hr**	
0.099	**0.083**	**-**	**0.014**	**-**	**0.0075**	**-**	**tpy**	8760 hrs

Emission Rates (Process Gas & Pilot)

NOx	CO	VOC [1]	SO_2 [2]	H_2S [2]	PM [3]	HAP [1]		
100	84	-	-	-	7.6	-	lb/MMscf	AP-42 Table 1.4-1 & 2
0.0980	0.0824	-	-	-	0.0075	-	lb/MMBtu	AP-42 Table 1.4-1, Footnote a
-	-	24.13	-	12.67	-	7.79	lb/hr	Mass Flow Rate
0.55	**0.46**	**0.48**	**23.86**	**0.25**	**0.042**	**0.16**	**lb/hr**	
2.42	**2.03**	**2.11**	**104.49**	**1.11**	**0.184**	**0.68**	**tpy**	8760 hrs

[1] The thermal oxidizer is 98% efficient for combustion of VOC and HAP.
[2] H_2S is combusted with a 98% efficiency. 100% of combusted H_2S is converted to SO_2.
[3] PM (Total) = TSP = PM-10 = PM-2.5

Greenhouse Gas Emissions

CO_2	N_2O	CH_4	CO_2e		
53.06	0.0001	0.001		kg/MMBtu	40 CFR 98 Tables C-1 and C-2
1	298	25		GWP	40 CFR 98 Table A-1
2766.74	0.0052	0.052		tons/yr[4]	
2766.74	1.55	1.30	**2769.60**	tons/yr CO_2e[5]	

[4]GHG ton/yr = EF (kg/MMBtu) * Reboiler Fuel consumption (MMBtu/hr) * 1tonne/1000kg * Hours of operation (hr/yr) * 1.1023ton/tonne +Flash Gas GHG ton/yr
CH_4 ton/yr = EF (kg/MMBtu) * Reboiler Fuel consumption (MMBtu/hr) * 1tonne/1000kg * Hours of operation (hr/yr) * 1.1023ton/tonne + 2% x Flash Gas CH_4 ton/yr
[5]tons/yr CO2e = ton/yr * GWP

Frontier Field Services, LLC - Empire Abo Compressor Station

Unpaved Haul Road (Exempt Per 20.2.72.202.b(5) NMAC)

Haul Input Information	
Unit(s):	HAUL
Description:	Unpaved haul road emissions

Input Data		
Empty vehicle weight[1]	16	tons
Load weight[2]	26.6	tons
Loaded vehicle[3]	42.6	tons
Mean vehicle weight[4]	29.32	tons
Oil & Water Throughput	150	bbl/day
Loadout volume	54870	bbl/yr
Vehicle size	180	bbl
Vehicle frequency[5]	1	vehicles/day
Round-trip distance	0.2	mile/trip
Truck Size:	7560	gal
Filling Time:	0.75	Nominal
Oil Loadout Spots	1	Assumed
Trip frequency[6]	1.3	trips/hour
Trip frequency[7]	305	trips/yr
Surface silt content[8]	4.8	%
Annual wet days[9]	70	days/yr
Vehicle miles traveled[10]	0.27	mile/hr
Vehicle miles traveled	61.0	miles/yr

Emission Factors and Constants			
Parameter	**PM_{30}**	**PM_{10}**	**$PM_{2.5}$**
k, lb/VMT[11]	4.9	1.5	0.15
a, lb/VMT[11]	0.70	0.90	0.90
b, lb/VMT[11]	0.45	0.45	0.45
Hourly EF, lb/VMT[12]	7.20	1.83	0.18
Annual EF, lb/VMT[13]	5.82	1.48	0.15

Emission Calculations for Particulate Matter			
PM_{30}	**PM_{10}**	**$PM_{2.5}$**	
1.92	0.49	0.049	lb/hr[14]
0.18	0.05	0.005	ton/yr[15]

[1] Empty vehicle weight includes driver and occupants and full fuel load.

[2] Cargo, transported materials, etc. (Density (lb/gal) *7560 gal truck/ 2000lb/ton)

[3] Loaded vehicle weight = Empty + Load Size

[4] Mean Vehicle weight = (Loaded Weight + Empty Weight) / 2

[5] Vehicles per day = Loadout volume / Truck size

[6] Trips per hour = Total loadout spots / Loading time

[7] Trips per year = Total throughput (bbl/yr) / Truck size (bbl)

[8] AP-42 Table 13.2.2-1

[9] Per NMED Guidance

[10] VMT/hr = Vehicle Miles Traveled per hour= Trips per hour * Segment Length

[11] Table 13.2.2-2, Industrial Roads

[12] AP-42 13.2.2, Equation 1a

[13] AP-42 13.2.2, Equation 2

[14] lb/hr = Hourly EF (lb/VMT) * VMT (mile/hr)

[15] ton/yr = Annual EF (lb/VMT) * VMT (mile/hr) * Hours of operation (hr/yr)

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.

Storage Tanks (Units V2-1104-C through F, H, I)
- Liquids analysis for condensate
- BR&E ProMax simulation

Thermal Oxidizers (Units TO1 and TO2)
- AP-42 Section 1.4
- Manufacturer specifications
- BR&E ProMax Simulation
- 40 CFR 98 Subpart A Table A-1, 40 CFR 98 Subpart C Tables C-1 & C-2

Condensate and Produced Water Loading (Units L1)
- Liquids analyses for condensate
- BR&E ProMax Simulation
- EPA's AP-42, 5th Edition, Section 5.2

Facility-Wide Fugitive Emissions (Unit FUG40)
- Gas analyses derived from BR&E ProMax. Condensate analysis.
- Facility fugitive component counts

Compressor Engines (Units E4-310 to E4-315)
- Engine manufacturer data
- AP-42 Section 3.2
- Catalyst vendor data

Emergency Flares (Units D-2302, SSM, and MALF)
- Gas analyses derived from BR&E ProMax
- BR&E ProMax simulation
- TNRCC Flare Emission Factors

TEG Dehydrator (Units DEHY1)
- Inlet gas analysis
- BR&E ProMax simulation

Heater (Unit H4)

- AP-42 Section 1.4
- GRI-HAPCalc 3.0

Unpaved Haul Roads

- AP-42 Section 3.2.2

PANTECHS LABORATORIES

TRUEassay
A Pantechs TRUE Service

ANALYTICALreport

9/15/2025

Customer:	Kinetik
Location:	Abo Compressor Station
Order:	3541-10303
Received:	9/5/2025
Primary Contact:	Jeremy Aucoin
Description:	Extended Condensate Analysis

REPORT DISTRIBUTION:

Jeremy Aucoin , Teffanie Fawks

All data reported in this Report is in compliance with the test method(s) performed as of the date noted above. The validity and integrity of this report will remain intact as long as it is accompanied by this page and reproduced in full. Any datafile (e.g. txt, csv, etc.) produced which is associated with the results in this report shall be considered for convenience only and does not supersede this report as the official test results. We reserve the right to return to you any unused samples received if we consider so necessary (e.g. samples identified as hazardous waste).

We appreciate you choosing Pantechs Laboratories. If you have any questions concerning this report, please feel free to contact us at any time.

COLLECTION LIST- 1

FLUID	OPERATOR	LOCATION	SITE	SAMPLE POINT	DATE	TIME
Condensate	Kinetik	Abo Compressor Station	Condensate Tanks	Oil Leg of Separator	9/5/2025	11:08 AM

PANTECHS LABORATORIES

ANALYSIScertificate

OPERATOR	Kinetik	PRESS/TEMP	26 psig/152 F
LOCATION	Abo Compressor Station	ATM TEMP	70 F
SITE	Condensate Tanks	DATE/TIME	09/05/2025 11:08 AM
SAMPLE POINT	Oil Leg of Separator	COLLECTION BY	Daniel Jett
METER ID		SPOT/COMP	Spot
CONTAINER(S)	PL1020	BASE	14.650 psi/60 F

FRACTIONAL: GPA 2186-22

COMPOUND	FORMULA	MOL%	LIQ VOL%	WT%
NITROGEN	N2	0.0214	0.0059	0.0068
CARBON DIOXIDE	CO2	0.0111	0.0048	0.0055
HYDROGEN SULFIDE	H2S	0.0000	0.0000	0.0000
METHANE	C1	0.0337	0.0144	0.0061
ETHANE	C2	0.5715	0.3858	0.1948
PROPANE	C3	3.3109	2.3025	1.6547
I-BUTANE	iC4	1.7956	1.4832	1.1828
N-BUTANE	nC4	7.5082	5.9750	4.9459
I-PENTANE	iC5	6.0133	5.5513	4.9171
N-PENTANE	nC5	8.3804	7.6685	6.8526
NEO PENTANE (2,2 dimethylpropane)	C5H12	0.0326	0.0316	0.0267
HEXANES PLUS	C6+	72.3213	76.5770	80.2070
BENZENE		4.1117	2.9046	3.6401
N-HEXANE		6.3934	6.6364	6.2443
OTHER HEXANES		8.2732	8.6134	8.0803
2,2,4-TRIMETHYLPENTANE		0.2195	0.2280	0.2443
TOLUENE		4.9794	4.2093	5.1998
OTHER HEPTANES		21.9927	21.9753	22.8129
ETHYLBENZENE		1.0677	1.0402	1.2847
M+P XYLENE		1.0157	0.9927	1.2221
O XYLENE		0.3677	0.3529	0.4424
OTHER OCTANES		16.5986	19.1659	19.9883
NONANES		4.1701	5.9234	6.0617
DECANES+		3.1316	4.5349	4.9861
TOTALS:		100.0000	100.0000	100.0000

Value of "0.0000" in fractional interpreted as below detectable limit.

CALCULATED PROPERTIES

MOL WT	REL DEN (60/60)	ABS DEN, LBM/GAL	API GRAVITY	VP 100F, PSIA	RVPE, PSI
88.233	0.7050	5.8593	69.2	23.3	19.4

Abo Compressor Station:Condensate Tanks:Oil Leg of Separator::9/5/2025

HEXANES+detail

C6 GROUP	FORMULA	MOL%	LIQ VOL%	WT%
benzene	C6H6	4.1117	2.9046	3.6401
2-methylpentane	C6H14	4.7653	4.9931	4.6542
2,2-dimethylbutane	C6H14	0.1213	0.1278	0.1185
2,3-dimethylbutane+cyclopentane	C6H14	0.8006	0.8286	0.7819
3-methylpentane	C6H14	2.5860	2.6639	2.5257
n-hexane	C6H14	6.3934	6.6364	6.2443
TOTALS:		**18.7783**	**18.1544**	**17.9647**

C7 GROUP	FORMULA	MOL%	LIQ VOL%	WT%
cyclohexane	C6H12	7.0401	6.0480	6.7151
methylcyclopentane	C6H12	4.6192	4.1260	4.4060
toluene	C7H8	4.9794	4.2093	5.1998
3-Ethylpentane	C7H14	0.9201	0.9641	1.0239
trans-1,2-dimethylcyclopentane+2,2,4-trimethylpentane	C7H14	0.2195	0.2280	0.2443
trans-1,3-dimethylcyclopentane	C7H14	0.9811	1.0226	1.0918
1,1-dimethylcyclopentane+3-methylhexane	C7H16	2.0605	2.3883	2.3400
2-methylhexane	C7H16	1.5234	1.7870	1.7301
2,2-dimethylpentane	C7H16	0.0569	0.0672	0.0646
2,3-dimethylpentane	C7H16	0.3826	0.4384	0.4345
2,4-dimethylpentane	C7H16	0.0185	0.0219	0.0210
3,3-dimethylpentane	C7H16	0.0612	0.0702	0.0695
n-heptane	C7H16	4.0331	4.6969	4.5802
other heptanes	C7Hx	0.2960	0.3447	0.3362
TOTALS:		**27.1916**	**26.4126**	**28.2570**

C8 GROUP	FORMULA	MOL%	LIQ VOL%	WT%
methylcyclohexane+1,1,3-trimethylcyclopentane+2,2-dimethylhexane	C7H14	7.5425	7.6556	8.3937
ethylbenzene	C8H10	1.0677	1.0402	1.2847
m-xylene+p-xylene	C8H10	1.0157	0.9927	1.2221
o-xylene	C8H10	0.3677	0.3529	0.4424
2-methylheptane+4-methylheptane	C8H18	2.1982	2.8612	2.8458
2,2,3-trimethylpentane	C8H18	0.3074	0.3901	0.3980
2,3,4-trimethylpentane	C8H18	0.3225	0.4076	0.4175
2,5-dimethylhexane+2,4-dimethylhexane+ethylcyclopentane	C8H18	0.7127	0.7260	0.7931
3-methylheptane	C8H18	0.7073	0.9104	0.9157
3,3-dimethylhexane	C8H18	0.1900	0.2432	0.2460
n-octane	C8H18	2.2104	2.8584	2.8616
other octanes	C8Hx	2.4076	3.1134	3.1169
TOTALS:		**19.0497**	**21.5517**	**22.9375**

C9 GROUP	FORMULA	MOL%	LIQ VOL%	WT%
n-nonane	C9H20	0.6591	0.9362	0.9581
other nonanes	C9Hx	3.5110	4.9872	5.1036

TOTALS:		4.1701	5.9234	6.0617

C10 GROUP	FORMULA	MOL%	LIQ VOL%	WT%
1,2,4-trimethylbenzene+tert-butylbenzene	C9H12	0.2436	0.2660	0.3318
1,3,5-trimethylbenzene	C9H12	0.0734	0.0812	0.1000
isopropylbenzene+cis,cis-1,2,3-trimethylcyclohexane	C9H12	0.2627	0.2914	0.3579
propylbenzene	C9H12	0.2341	0.2597	0.3189
tert-butylcyclohexane	C10H20	0.0485	0.0666	0.0771
n-decane	C10H22	0.2262	0.3505	0.3648
other decanes	C10Hx	1.0925	1.6926	1.7617
TOTALS:		**2.1810**	**3.0080**	**3.3122**

C11+ GROUP	FORMULA	MOL%	LIQ VOL%	WT%
C11+	C11Hx+	**0.9506**	**1.5269**	**1.6739**

Groupings by GPA 2186-22

ANALYSIS METHODS AND DESCRIPTION

ITEM	METHOD	FLUID	DESCRIPTION
NGLEXTC11+	GPA 2186-22	Condensate	Method for Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography through C11+

SAMPLING METHODS AND DESCRIPTION

FLUID	METHOD	DESCRIPTION
GAS	GPA 2166-22	Obtaining Natural Gas Samples for Analysis by Gas Chromatography
LIQUID	GPA 2174-20	Obtaining Liquid Hydrocarbons Samples For Analysis by Gas Chromatography

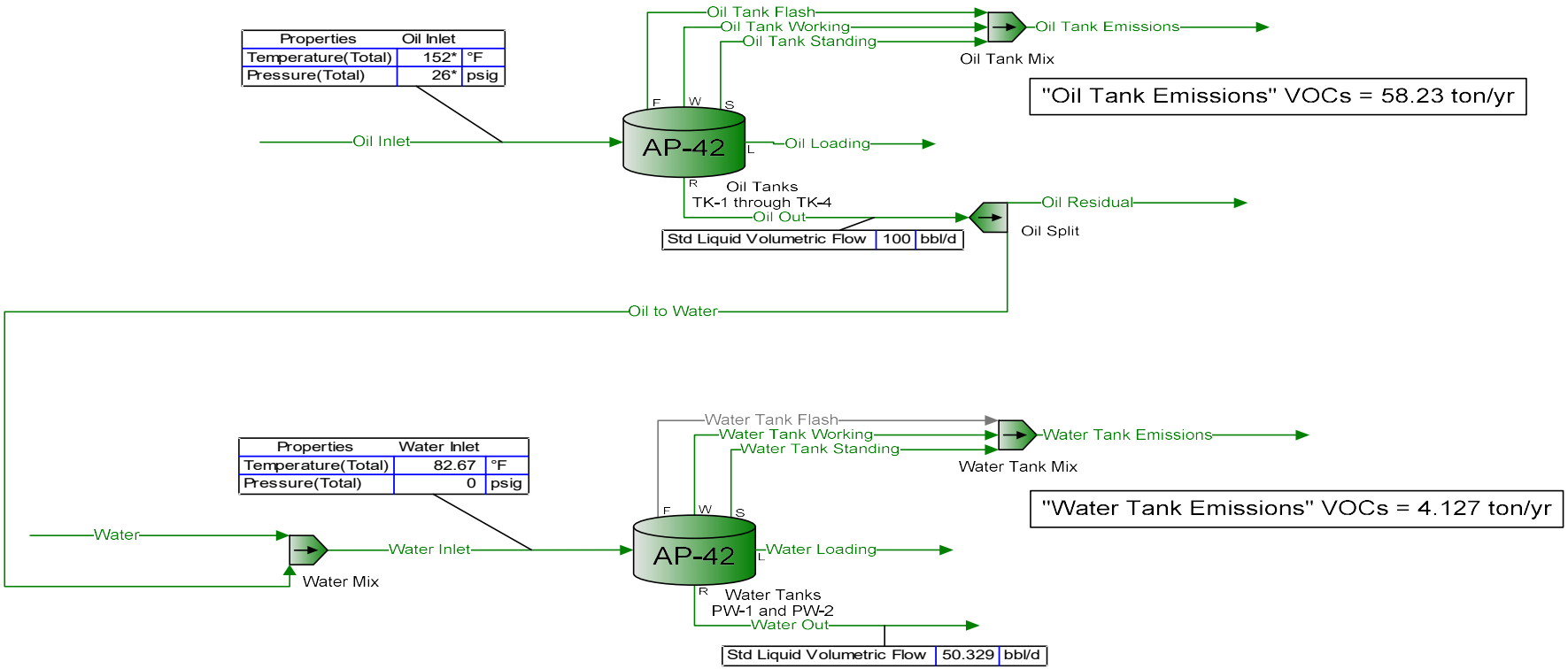
CALCULATION METHODS AND DESCRIPTION

METHOD	DESCRIPTION
GPA 2145-16	Table of Physical Properties for Hydrocarbons and Other Compounds of Interest to the Natural Gas and Natural Gas Liquids Industries
GPA 2172-19	Calculation of Gross Heating Value, Relative Density, Compressibility and Theoretical Hydrocarbon Liquid Content for Natural Gas Mixtures for Custody Transfer
ASTM 3588	Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

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Kimark Systems, Inc.
2105 Greenwood Dr.
Southlake Texas 76092
P 817-416-8881 F 817-416-8886
www.kimark.com

Specfications:	
Model Number	SmartFlare KSF-64
Total Height	33 feet 2 inches
Flare Diameter	64 inches
Enrichment Gas?	No
Design Heat Release	25.6 MMBTU/hr
Destruction Efficiency	99.90%
Normal Operating Pressure	Ounces 0 to 16
Max Structural Design Pressure	80 PSI
Max Design Temperature	1900 degree shutdown
Min Design Temperature	1200 degrees
Normal Operating Temp	1400 degrees
Pilot Volumetric Rate	8.5 to 12 SCF/hr
Pilot Continuous or Automatic?	Automatic
Number of burner tips	6
Diameter of burner tips (inches)	3 inch


Properties
Oil Inlet
Temperature(Total)
152*
°F
Pressure(Total)
26*
psig
Oil Tank Flash
Oil Tank Working
Oil Tank Standing
Oil Tank Emissions
Oil Tank Mix
"Oil Tank Emissions" VOCs = 58.23 ton/yr
Oil Inlet
F
W
S
AP-42
L
Oil Loading
R
Oil Tanks
TK-1 through TK-4
Oil Out
Oil Residual
Oil Split
Std Liquid Volumetric Flow
100
bbl/d
Oil to Water
Properties
Water Inlet
Temperature(Total)
82.67
°F
Pressure(Total)
0
psig
Water Tank Flash
Water Tank Working
Water Tank Standing
Water Tank Emissions
Water Tank Mix
"Water Tank Emissions" VOCs = 4.127 ton/yr
Water
Water Inlet
Water Mix
F
W
S
AP-42
L
Water Loading
R
Water Tanks
PW-1 and PW-2
Water Out
Std Liquid Volumetric Flow
50.329
bbl/d

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Oil Tank Emissions	Oil Tank Flash	Oil Tank Standing	Oil Tank Working	Oil to Water	Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ıks TK-1 throug	ıks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Mole Fraction		%	%	%	%	%	%	%	%	%	%
Hydrogen Sulfide		0*	0	0	0	0	0	0	0	0	0*
Carbon Dioxide		0.0111*	0.0869662	0.000779135	0.000779135	0.409990	0.393410	0.442526	0.442526	0.000779135	0*
Nitrogen		0.0214*	0	0	0	0.848486	1.19937	0.159909	0.159909	0	0*
Methane		0.0337*	0	0	0	1.33617	1.60598	0.806689	0.806689	0	0*
Ethane		0.5715*	10.9686	0.226120	0.226120	13.9200	13.4530	14.8366	14.8366	0.226120	0*
Propane		3.3109*	34.8627	2.54509	2.54509	32.9087	32.3202	34.0634	34.0634	2.54509	0*
i-Butane		1.7956*	7.84004	1.65665	1.65665	7.16590	7.13345	7.22959	7.22959	1.65665	0*
n-Butane		7.5082*	22.8107	7.16178	7.16178	20.8968	20.8996	20.8913	20.8913	7.16178	0*
i-Pentane		6.0133*	7.34587	5.99131	5.99131	6.86311	6.94103	6.71020	6.71020	5.99131	0*
n-Pentane		8.413*	7.67740	8.44290	8.44290	7.25754	7.37222	7.03250	7.03250	8.44290	0*
C6Alkanes(iso)		8.2732*	3.07740	8.41011	8.41011	2.98188	3.05588	2.83666	2.83666	8.41011	0*
Heptane		21.9927*	1.75482	22.5148	22.5148	1.81542	1.89795	1.65347	1.65347	22.5148	0*
Octane		16.5986*	0.393248	17.0170	17.0170	0.426523	0.451941	0.376645	0.376645	17.0170	0*
Nonane		4.1701*	0.0303246	4.27710	4.27710	0.0345249	0.0370754	0.0295198	0.0295198	4.27710	0*
Benzene		4.1117*	1.07084	4.19083	4.19083	1.05341	1.08453	0.992354	0.992354	4.19083	0*
Toluene		4.9794*	0.367332	5.09844	5.09844	0.378795	0.395559	0.345897	0.345897	5.09844	0*
Ethylbenzene		1.0677*	0.0241088	1.09465	1.09465	0.0260691	0.0275906	0.0230833	0.0230833	1.09465	0*
p-Xylene		1.3834*	0.0297579	1.41836	1.41836	0.0321001	0.0339525	0.0284648	0.0284648	1.41836	0*
n-Hexane		6.3934*	1.64077	6.51678	6.51678	1.62503	1.67689	1.52328	1.52328	6.51678	0*
2,2,4-Trimethylpentane		0.2195*	0.0191249	0.224674	0.224674	0.0195285	0.0203401	0.0179360	0.0179360	0.224674	0*
Decanes+		3.1316*	7.73717E-08	3.21263	3.21263	1.48289E-07	1.78176E-07	8.96378E-08	8.96378E-08	3.21263	0*
Water		0*	0	0	0	0	0	0	0	0	100*
Mass Fraction		%	%	%	%	%	%	%	%	%	%
Hydrogen Sulfide		0*	0	0	0	0	0	0	0	0	0*
Carbon Dioxide		0.00509417*	0.0696771	0.000353519	0.000353519	0.337864	0.323451	0.366343	0.366343	0.000353519	0*
Nitrogen		0.00625149*	0	0	0	0.445075	0.627677	0.0842641	0.0842641	0	0*
Methane		0.00563774*	0	0	0	0.401379	0.481313	0.243433	0.243433	0	0*
Ethane		0.179201*	6.00432	0.0700991	0.0700991	7.83759	7.55709	8.39184	8.39184	0.0700991	0*
Propane		1.52246*	27.9866	1.15705	1.15705	27.1724	26.6248	28.2544	28.2544	1.15705	0*
i-Butane		1.08832*	8.29571	0.992718	0.992718	7.79894	7.74566	7.90422	7.90422	0.992718	0*
n-Butane		4.55074*	24.1364	4.29157	4.29157	22.7428	22.6933	22.8407	22.8407	4.29157	0*
i-Pentane		4.52424*	9.64863	4.45661	4.45661	9.27198	9.35555	9.10684	9.10684	4.45661	0*
n-Pentane		6.32971*	10.0841	6.28020	6.28020	9.80485	9.93675	9.54425	9.54425	6.28020	0*
C6Alkanes(iso)		7.43465*	4.82793	7.47202	7.47202	4.81167	4.91968	4.59826	4.59826	7.47202	0*
Heptane		22.9805*	3.20112	23.2593	23.2593	3.40625	3.55285	3.11657	3.11657	23.2593	0*
Octane		19.7720*	0.817777	20.0406	20.0406	0.912305	0.964435	0.809300	0.809300	20.0406	0*
Nonane		5.57731*	0.0708049	5.65559	5.65559	0.0829144	0.0888337	0.0712181	0.0712181	5.65559	0*
Benzene		3.34921*	1.52277	3.37497	3.37497	1.54077	1.58261	1.45810	1.45810	3.37497	0*
Toluene		4.78434*	0.616158	4.84318	4.84318	0.653533	0.680878	0.599501	0.599501	4.84318	0*
Ethylbenzene		1.18205*	0.0465962	1.19815	1.19815	0.0518240	0.0547218	0.0460981	0.0460981	1.19815	0*
p-Xylene		1.53156*	0.0575144	1.55247	1.55247	0.0638131	0.0673395	0.0568451	0.0568451	1.55247	0*
n-Hexane		5.74538*	2.57410	5.78988	5.78988	2.62221	2.69962	2.46925	2.46925	5.78988	0*
2,2,4-Trimethylpentane		0.261465*	0.0397711	0.264594	0.264594	0.0417702	0.0434054	0.0385393	0.0385393	0.264594	0*
Decanes+		9.16996*	3.95524E-07	9.30059	9.30059	7.79700E-07	9.34679E-07	4.73469E-07	4.73469E-07	9.30059	0*
Water		0*	0	0	0	0	0	0	0	0	100*
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Hydrogen Sulfide		0*	0	0	0	0	0	0	0	0	0*
Carbon Dioxide		0.0529941*	0.000699706	0.00362596	0.00360786	0.0493681	0.0313807	0.00958692	0.00840047	1.81066E-05	0*
Nitrogen		0.0650336*	0	0	0	0.0650336	0.0608962	0.00220513	0.00193223	0	0*
Methane		0.0586488*	0	0	0	0.0586488	0.0466962	0.00637047	0.00558208	0	0*
Ethane		1.86421*	0.0602960	0.718990	0.715400	1.14522	0.733177	0.219608	0.192430	0.00359034	0*
Propane		15.8380*	0.281045	11.8676	11.8083	3.97039	2.58310	0.739397	0.647891	0.0592618	0*
i-Butane		11.3216*	0.0833065	10.1821	10.1312	1.13957	0.751472	0.206847	0.181249	0.0508451	0*
n-Butane		47.3408*	0.242381	44.0177	43.7979	3.32315	2.20167	0.597725	0.523752	0.219806	0*
i-Pentane		47.0652*	0.0968926	45.7104	45.4821	1.35481	0.907661	0.238319	0.208826	0.228259	0*
n-Pentane		65.8473*	0.101265	64.4146	64.0930	1.43267	0.964047	0.249766	0.218856	0.321660	0*
C6Alkanes(iso)		77.3419*	0.0484826	76.6388	76.2561	0.703074	0.477299	0.120333	0.105441	0.382703	0*
Heptane		239.063*	0.0321460	238.565	237.374	0.497715	0.344692	0.0815582	0.0714648	1.19130	0*
Octane		205.686*	0.00821220	205.552	204.526	0.133304	0.0935679	0.0211788	0.0185578	1.02644	0*
Nonane		58.0202*	0.000711031	58.0081	57.7184	0.0121153	0.00861851	0.00186372	0.00163308	0.289668	0*
Benzene		34.8415*	0.0152919	34.6163	34.4435	0.225135	0.153542	0.0381573	0.0334351	0.172860	0*
Toluene		49.7709*	0.00618753	49.6754	49.4274	0.0954931	0.0660577	0.0156885	0.0137469	0.248059	0*
Ethylbenzene		12.2967*	0.000467924	12.2891	12.2278	0.00757243	0.00530902	0.00120635	0.00105706	0.0613668	0*
p-Xylene		15.9326*	0.000577566	15.9233	15.8438	0.00932426	0.00653317	0.00148759	0.00130349	0.0795144	0*
n-Hexane		59.7686*	0.0258494	59.3854	59.0889	0.383153	0.261913	0.0646184	0.0566214	0.296546	0*
2,2,4-Trimethylpentane		2.71999*	0.000399386	2.71389	2.70033	0.00610340	0.00421112	0.00100855	0.000883731	0.0135520	0*
Decanes+		95.3941*	3.97189E-09	95.3941	94.9177	1.13928E-07	9.06811E-08	1.23903E-08	1.08569E-08	0.476359	0*
Water		0*	0	0	0	0	0	0	0	0	728.569*

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Tank Emissi	il Tank Flas	Tank Stand	Tank Worki	Oil to Water	Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ıks TK-1 throug	ıks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Property	Units										
Temperature	°F	152*	82.6768	82.6768	82.6768	82.6768	82.6768	82.6768	82.6768	82.6768	82.6768*
Pressure	psia	38.88*	12.88	12.88	12.88	12.88	12.88	12.88	12.88	12.88	12.88*
Molecular Weight	lb/lbmol	95.8950	54.9296	96.9944	96.9944	53.4044	53.5283	53.1615	53.1615	96.9944	18.0153
Mass Density	lb/ft^3	40.3596	0.124168	43.4720	43.4720	0.120561	0.120843	0.120007	0.120007	43.4720	62.1540
Mass Flow	lb/h	1040.29	1.00421	1025.68	1020.56	14.6118	9.70184	2.61693	2.29306	5.12181	728.569
Std Vapor Volumetric Flow	MMSCFD	0.0988013	0.000166503	0.0963094	0.0958285	0.00249191	0.00165073	0.000448331	0.000392847	0.000480930	0.368328
Std Liquid Volumetric Flow	sgpm	2.96962*	0.00359894	2.91667	2.90210	0.0529569	0.0350523	0.00954283	0.00836183	0.0145646	1.45646*
Specific Gravity			1.89658	0.697017	0.697017	1.84392	1.84819	1.83553	1.83553	0.697017	0.996557
API Gravity				68.2417	68.2417					68.2417	9.99848
Net Ideal Gas Heating Value	Btu/ft^3	4819.57	2842.72	4873.21	4873.21	2746.65	2747.59	2744.79	2744.79	4873.21	0
Gross Ideal Gas Heating Value	Btu/ft^3	5180.86	3079.95	5237.90	5237.90	2976.54	2977.37	2974.90	2974.90	5237.90	50.3100

Process Streams		Water Inlet	Water Loading	Water Out	Water Tank Emissions	Water Tank Flash	Water Tank Standing	Water Tank Working
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Mole Fraction		%	%	%	%	%	%	%
Hydrogen Sulfide		0	0	0	0	0	0	0
Carbon Dioxide		1.01600E-06	1.07064E-19	1.84258E-22	0.00271352	0.00292660	0.00271352	0.00271352
Nitrogen		0	0	0	0	0	0	0
Methane		0	0	0	0	0	0	0
Ethane		0.000294862	8.69393E-18	3.45194E-20	0.787516	5.58898	0.787516	0.787516
Propane		0.00331881	2.66491E-17	3.76624E-19	8.86386	30.0096	8.86386	8.86386
i-Butane		0.00216028	6.90882E-18	2.85733E-19	5.76967	8.05321	5.76967	5.76967
n-Butane		0.00933902	1.85165E-17	1.14293E-18	24.9426	23.9510	24.9426	24.9426
i-Pentane		0.00781272	11.7053	0.00179033	16.0863	8.32158	16.0863	16.0863
n-Pentane		0.0110096	22.6641	0.00463783	17.0223	8.92279	17.0223	17.0223
C6Alkanes(iso)		0.0109668	16.2208	0.00838686	6.89900	3.71716	6.89900	6.89900
Heptane		0.0293594	11.5867	0.0278583	4.03707	2.31755	4.03707	4.03707
Octane		0.0221903	2.69443	0.0218545	0.918700	0.551247	0.918700	0.918700
Nonane		0.00557738	0.209320	0.00555266	0.0715745	0.0449431	0.0715745	0.0715745
Benzene		0.00546487	3.97047	0.00485466	1.63460	0.884585	1.63460	1.63460
Toluene		0.00664840	2.11748	0.00636260	0.769681	0.436672	0.769681	0.769681
Ethylbenzene		0.00142743	0.154474	0.00140720	0.0554363	0.0330508	0.0554363	0.0554363
p-Xylene		0.00184956	0.192486	0.00182454	0.0686299	0.0408337	0.0686299	0.0686299
n-Hexane		0.00849793	9.48382	0.00711185	3.70903	2.04247	3.70903	3.70903
2,2,4-Trimethylpentane		0.000292977	0.126578	0.000276695	0.0437622	0.0248219	0.0437622	0.0437622
Decanes+		0.00418929	6.01482E-07	0.00419086	2.12367E-07	2.10711E-07	2.12367E-07	2.12367E-07
Water		99.8696	18.8740	99.9039	8.31755	5.05652	8.31755	8.31755
Mass Fraction		%	%	%	%	%	%	%
Hydrogen Sulfide		0	0	0	0	0	0	0
Carbon Dioxide		2.46787E-06	6.64853E-20	4.47989E-22	0.00186949	0.00229825	0.00186949	0.00186949
Nitrogen		0	0	0	0	0	0	0
Methane		0	0	0	0	0	0	0
Ethane		0.000489353	3.68870E-18	5.73426E-20	0.370700	2.99874	0.370700	0.370700
Propane		0.00807722	1.65811E-17	9.17482E-19	6.11874	23.6125	6.11874	6.11874
i-Butane		0.00693004	5.66608E-18	9.17482E-19	5.24972	8.35215	5.24972	5.24972
n-Butane		0.0299589	1.51858E-17	3.66993E-18	22.6948	24.8401	22.6948	22.6948
i-Pentane		0.0311110	11.9165	0.00713601	18.1690	10.7133	18.1690	18.1690
n-Pentane		0.0438413	23.0730	0.0184858	19.2261	11.4873	19.2261	19.2261
C6Alkanes(iso)		0.0521613	19.7239	0.0399279	9.30706	5.71585	9.30706	9.30706
Heptane		0.162370	16.3822	0.154214	6.33266	4.14374	6.33266	6.33266
Octane		0.139901	4.34288	0.137915	1.64283	1.12359	1.64283	1.64283
Nonane		0.0394810	0.378811	0.0393432	0.143707	0.102855	0.143707	0.143707
Benzene		0.0235603	4.37619	0.0209493	1.99881	1.23294	1.99881	1.99881
Toluene		0.0338097	2.75294	0.0323869	1.11018	0.717932	1.11018	1.11018
Ethylbenzene		0.00836412	0.231406	0.00825340	0.0921338	0.0626110	0.0921338	0.0921338
p-Xylene		0.0108376	0.288349	0.0107011	0.114061	0.0773547	0.114061	0.114061
n-Hexane		0.0404184	11.5320	0.0338579	5.00365	3.14069	5.00365	5.00365
2,2,4-Trimethylpentane		0.00184710	0.204019	0.00174610	0.0782560	0.0505937	0.0782560	0.0782560
Decanes+		0.0649263	2.38318E-06	0.0650121	9.33528E-07	1.05578E-06	9.33528E-07	9.33528E-07
Water		99.3019	4.79781	99.4301	2.34574	1.62547	2.34574	2.34574
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Hydrogen Sulfide		0	0	0	0	0	0	0
Carbon Dioxide		1.81066E-05	8.36423E-23	3.28252E-21	1.81066E-05	0	9.86859E-06	8.23797E-06
Nitrogen		0	0	0	0	0	0	0
Methane		0	0	0	0	0	0	0
Ethane		0.00359034	4.64059E-21	4.20162E-19	0.00359034	0	0.00195684	0.00163350
Propane		0.0592618	2.08600E-20	6.72260E-18	0.0592618	0	0.0322994	0.0269624
i-Butane		0.0508451	7.12825E-21	6.72260E-18	0.0508451	0	0.0277120	0.0231331
n-Butane		0.219806	1.91046E-20	2.68904E-17	0.219806	0	0.119801	0.100006
i-Pentane		0.228259	0.0149916	0.0522872	0.175972	0	0.0959096	0.0800621
n-Pentane		0.321660	0.0290272	0.135450	0.186210	0	0.101490	0.0847204
C6Alkanes(iso)		0.382703	0.0248138	0.292561	0.0901417	0	0.0491298	0.0410119
Heptane		1.19130	0.0206098	1.12996	0.0613337	0	0.0334286	0.0279051
Octane		1.02644	0.00546359	1.01053	0.0159113	0	0.00867209	0.00723917
Nonane		0.289668	0.000476566	0.288277	0.00139184	0	0.000758593	0.000633248
Benzene		0.172860	0.00550549	0.153501	0.0193591	0	0.0105513	0.00880783
Toluene		0.248059	0.00346336	0.237306	0.0107525	0	0.00586040	0.00489207
Ethylbenzene		0.0613668	0.000291121	0.0604745	0.000892343	0	0.000486353	0.000405991
p-Xylene		0.0795144	0.000362759	0.0784097	0.00110472	0	0.000602102	0.000502615
n-Hexane		0.296546	0.0145079	0.248085	0.0484618	0	0.0264131	0.0220487
2,2,4-Trimethylpentane		0.0135520	0.000256667	0.0127941	0.000757933	0	0.000413095	0.000344838
Decanes+		0.476359	2.99818E-09	0.476359	9.04150E-09	0	4.92787E-09	4.11362E-09
Water		728.569	0.00603592	728.547	0.0227192	0	0.0123826	0.0103366

Process Streams		Water Inlet	Water Loadin	Water Out	r Tank Emiss	ter Tank Fla	r Tank Stan	r Tank Working
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Property	**Units**							
Temperature	°F	82.6716	82.4183	82.4183	82.4183	82.4183	82.4183	82.4183
Pressure	psia	12.88	12.88	12.88	12.88	12.88	12.88	12.88
Molecular Weight	lb/lbmol	18.1183	70.8701	18.1011	63.8787	56.0419	63.8787	63.8787
Mass Density	lb/ft^3	61.9707	41.8444	62.0212	0.192223		0.192223	0.192223
Mass Flow	lb/h	733.691	0.125806	732.723	0.968530	0	0.527876	0.440653
Std Vapor Volumetric Flow	MMSCFD	0.368809	1.61675E-05	0.368671	0.000138090	0	7.52628E-05	6.28269E-05
Std Liquid Volumetric Flow	sgpm	1.47103	0.000369873	1.46792	0.00310511	0	0.00169237	0.00141274
Specific Gravity		0.993618	0.670919	0.994428				
API Gravity		10.3996	75.7824	10.2952				
Net Ideal Gas Heating Value	Btu/ft^3	6.35470	3422.03	5.15895	3198.75	2848.47	3198.75	3198.75
Gross Ideal Gas Heating Value	Btu/ft^3	57.0746	3697.29	55.7994	3461.71	3087.14	3461.71	3461.71

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Oil Tank Emissions	Oil Tank Flash	Oil Tank Standing	Oil Tank Working	Oil to Water	Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ks TK-1 throug	ks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Mole Fraction		%	%			%	%	%	%		
Hydrogen Sulfide		0	0			0	0	0	0		
Carbon Dioxide		0.455876	0.0869662			0.409990	0.393410	0.442526	0.442526		
Nitrogen		5.12983	0			0.848486	1.19937	0.159909	0.159909		
Methane		2.96301	0			1.33617	1.60598	0.806689	0.806689		
Ethane		11.7414	10.9686			13.9200	13.4530	14.8366	14.8366		
Propane		25.7103	34.8627			32.9087	32.3202	34.0634	34.0634		
i-Butane		6.18817	7.84004			7.16590	7.13345	7.22959	7.22959		
n-Butane		19.1395	22.8107			20.8968	20.8996	20.8913	20.8913		
i-Pentane		7.32453	7.34587			6.86311	6.94103	6.71020	6.71020		
n-Pentane		8.27116	7.67740			7.25754	7.37222	7.03250	7.03250		
C6Alkanes(iso)		3.93217	3.07740			2.98188	3.05588	2.83666	2.83666		
Heptane		3.32577	1.75482			1.81542	1.89795	1.65347	1.65347		
Octane		0.990650	0.393248			0.426523	0.451941	0.376645	0.376645		
Nonane		0.101983	0.0303246			0.0345249	0.0370754	0.0295198	0.0295198		
Benzene		1.49540	1.07084			1.05341	1.08453	0.992354	0.992354		
Toluene		0.684957	0.367332			0.378795	0.395559	0.345897	0.345897		
Ethylbenzene		0.0596366	0.0241088			0.0260691	0.0275906	0.0230833	0.0230833		
p-Xylene		0.0729345	0.0297579			0.0321001	0.0339525	0.0284648	0.0284648		
n-Hexane		2.37901	1.64077			1.62503	1.67689	1.52328	1.52328		
2,2,4-Trimethylpentane		0.0337152	0.0191249			0.0195285	0.0203401	0.0179360	0.0179360		
Decanes+		5.01198E-06	7.73717E-08			1.48289E-07	1.78176E-07	8.96378E-08	8.96378E-08		
Water		0	0			0	0	0	0		
Mass Fraction		%	%			%	%	%	%		
Hydrogen Sulfide		0	0			0	0	0	0		
Carbon Dioxide		0.365006	0.0696771			0.337864	0.323451	0.366343	0.366343		
Nitrogen		2.61443	0			0.445075	0.627677	0.0842641	0.0842641		
Methane		0.864793	0			0.401379	0.481313	0.243433	0.243433		
Ethane		6.42315	6.00432			7.83759	7.55709	8.39184	8.39184		
Propane		20.6258	27.9866			27.1724	26.6248	28.2544	28.2544		
i-Butane		6.54352	8.29571			7.79894	7.74566	7.90422	7.90422		
n-Butane		20.2386	24.1364			22.7428	22.6933	22.8407	22.8407		
i-Pentane		9.61428	9.64863			9.27198	9.35555	9.10684	9.10684		
n-Pentane		10.8568	10.0841			9.80485	9.93675	9.54425	9.54425		
C6Alkanes(iso)		6.16486	4.82793			4.81167	4.91968	4.59826	4.59826		
Heptane		6.06284	3.20112			3.40625	3.55285	3.11657	3.11657		
Octane		2.05874	0.817777			0.912305	0.964435	0.809300	0.809300		
Nonane		0.237963	0.0708049			0.0829144	0.0888337	0.0712181	0.0712181		
Benzene		2.12511	1.52277			1.54077	1.58261	1.45810	1.45810		
Toluene		1.14819	0.616158			0.653533	0.680878	0.599501	0.599501		
Ethylbenzene		0.115186	0.0465962			0.0518240	0.0547218	0.0460981	0.0460981		
p-Xylene		0.140871	0.0575144			0.0638131	0.0673395	0.0568451	0.0568451		
n-Hexane		3.72981	2.57410			2.62221	2.69962	2.46925	2.46925		
2,2,4-Trimethylpentane		0.0700660	0.0397711			0.0417702	0.0434054	0.0385393	0.0385393		
Decanes+		2.56044E-05	3.95524E-07			7.79700E-07	9.34679E-07	4.73469E-07	4.73469E-07		
Water		0	0			0	0	0	0		
Mass Flow		lb/h	lb/h			lb/h	lb/h	lb/h	lb/h		
Hydrogen Sulfide		0	0			0	0	0	0		
Carbon Dioxide		0.000565950	0.000699706			0.0493681	0.0313807	0.00958692	0.00840047		
Nitrogen		0.00405372	0			0.0650336	0.0608962	0.00220513	0.00193223		
Methane		0.00134088	0			0.0586488	0.0466962	0.00637047	0.00558208		
Ethane		0.00995922	0.0602960			1.14522	0.733177	0.219608	0.192430		
Propane		0.0319807	0.281045			3.97039	2.58310	0.739397	0.647891		
i-Butane		0.0101459	0.0833065			1.13957	0.751472	0.206847	0.181249		
n-Butane		0.0313803	0.242381			3.32315	2.20167	0.597725	0.523752		
i-Pentane		0.0149071	0.0968926			1.35481	0.907661	0.238319	0.208826		
n-Pentane		0.0168337	0.101265			1.43267	0.964047	0.249766	0.218856		
C6Alkanes(iso)		0.00955874	0.0484826			0.703074	0.477299	0.120333	0.105441		
Heptane		0.00940055	0.0321460			0.497715	0.344692	0.0815582	0.0714648		
Octane		0.00319213	0.00821220			0.133304	0.0935679	0.0211788	0.0185578		
Nonane		0.000368967	0.000711031			0.0121153	0.00861851	0.00186372	0.00163308		
Benzene		0.00329502	0.0152919			0.225135	0.153542	0.0381573	0.0334351		
Toluene		0.00178028	0.00618753			0.0954931	0.0660577	0.0156885	0.0137469		
Ethylbenzene		0.000178599	0.000467924			0.00757243	0.00530902	0.00120635	0.00105706		
p-Xylene		0.000218423	0.000577566			0.00932426	0.00653317	0.00148759	0.00130349		
n-Hexane		0.00578314	0.0258494			0.383153	0.261913	0.0646184	0.0566214		
2,2,4-Trimethylpentane		0.000108639	0.000399386			0.00610340	0.00421112	0.00100855	0.000883731		
Decanes+		3.97001E-08	3.97189E-09			1.13928E-07	9.06811E-08	1.23903E-08	1.08569E-08		
Water		0	0			0	0	0	0		

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Tank Emissi	il Tank Flas	Tank Standi	Tank Worki	Oil to Water	Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ks TK-1 throug	ks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Property	Units										
Temperature	°F	152	82.6768			82.6768	82.6768	82.6768	82.6768		
Pressure	psia	38.88	12.88			12.88	12.88	12.88	12.88		
Molecular Weight	lb/lbmol	54.9658	54.9296			53.4044	53.5283	53.1615	53.1615		
Mass Density	lb/ft^3	0.340562	0.124168			0.120561	0.120843	0.120007	0.120007		
Mass Flow	lb/h	0.155052	1.00421			14.6118	9.70184	2.61693	2.29306		
Std Vapor Volumetric Flow	MMSCFD	2.56915E-05	0.000166503			0.00249191	0.00165073	0.000448331	0.000392847		
Std Liquid Volumetric Flow	sgpm	0.000543124	0.00359894			0.0529569	0.0350523	0.00954283	0.00836183		
Specific Gravity		1.89783	1.89658			1.84392	1.84819	1.83553	1.83553		
API Gravity											
Net Ideal Gas Heating Value	Btu/ft^3	2754.45	2842.72			2746.65	2747.59	2744.79	2744.79		
Gross Ideal Gas Heating Value	Btu/ft^3	2982.30	3079.95			2976.54	2977.37	2974.90	2974.90		

Process Streams	Water Inlet	Water Loading	Water Out	Water Tank Emissions	Water Tank Flash	Water Tank Standing	Water Tank Working
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Mole Fraction				%		%	%
Hydrogen Sulfide				0		0	0
Carbon Dioxide				0.00358184		0.00358184	0.00358184
Nitrogen				0		0	0
Methane				0		0	0
Ethane				1.03560		1.03560	1.03560
Propane				11.4770		11.4770	11.4770
i-Butane				7.18775		7.18775	7.18775
n-Butane				30.2757		30.2757	30.2757
i-Pentane				17.4962		17.4962	17.4962
n-Pentane				17.5071		17.5071	17.5071
C6Alkanes(iso)				5.46553		5.46553	5.46553
Heptane				1.30238		1.30238	1.30238
Octane				0.112034		0.112034	0.112034
Nonane				0.00304057		0.00304057	0.00304057
Benzene				1.11569		1.11569	1.11569
Toluene				0.243195		0.243195	0.243195
Ethylbenzene				0.00695736		0.00695736	0.00695736
p-Xylene				0.00821608		0.00821608	0.00821608
n-Hexane				2.52454		2.52454	2.52454
2,2,4-Trimethylpentane				0.0148164		0.0148164	0.0148164
Decanes+				3.52313E-14		3.52313E-14	3.52313E-14
Water				4.22060		4.22060	4.22060
Mass Fraction				%		%	%
Hydrogen Sulfide				0		0	0
Carbon Dioxide				0.00251756		0.00251756	0.00251756
Nitrogen				0		0	0
Methane				0		0	0
Ethane				0.497324		0.497324	0.497324
Propane				8.08263		8.08263	8.08263
i-Butane				6.67209		6.67209	6.67209
n-Butane				28.1037		28.1037	28.1037
i-Pentane				20.1604		20.1604	20.1604
n-Pentane				20.1730		20.1730	20.1730
C6Alkanes(iso)				7.52216		7.52216	7.52216
Heptane				2.08422		2.08422	2.08422
Octane				0.204387		0.204387	0.204387
Nonane				0.00622811		0.00622811	0.00622811
Benzene				1.39183		1.39183	1.39183
Toluene				0.357868		0.357868	0.357868
Ethylbenzene				0.0117965		0.0117965	0.0117965
p-Xylene				0.0139307		0.0139307	0.0139307
n-Hexane				3.47450		3.47450	3.47450
2,2,4-Trimethylpentane				0.0270299		0.0270299	0.0270299
Decanes+				1.57999E-13		1.57999E-13	1.57999E-13
Water				1.21434		1.21434	1.21434
Mass Flow				lb/h		lb/h	lb/h
Hydrogen Sulfide				0		0	0
Carbon Dioxide				1.80490E-05		9.83721E-06	8.21177E-06
Nitrogen				0		0	0
Methane				0		0	0
Ethane				0.00356544		0.00194327	0.00162217
Propane				0.0579463		0.0315824	0.0263639
i-Butane				0.0478338		0.0260708	0.0217630
n-Butane				0.201482		0.109814	0.0916687
i-Pentane				0.144535		0.0787755	0.0657592
n-Pentane				0.144625		0.0788250	0.0658005
C6Alkanes(iso)				0.0539282		0.0293924	0.0245358
Heptane				0.0149422		0.00814395	0.00679830
Octane				0.00146530		0.000798628	0.000666668
Nonane				4.46508E-05		2.43360E-05	2.03148E-05
Benzene				0.00997839		0.00543851	0.00453989
Toluene				0.00256564		0.00139835	0.00116729
Ethylbenzene				8.45719E-05		4.60941E-05	3.84778E-05
p-Xylene				9.98726E-05		5.44334E-05	4.54392E-05
n-Hexane				0.0249095		0.0135764	0.0113331
2,2,4-Trimethylpentane				0.000193784		0.000105618	8.81661E-05
Decanes+				1.13273E-15		6.17370E-16	5.15360E-16
Water				0.00870593		0.00474498	0.00396095

Process Streams		Water Inlet	Water Loadin	Water Out	r Tank Emiss	ter Tank Flar	Tank Stana	r Tank Workin
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Property	**Units**							
Temperature	°F				82.4183		82.4183	82.4183
Pressure	psia				12.88		12.88	12.88
Molecular Weight	lb/lbmol				62.6142		62.6142	62.6142
Mass Density	lb/ft^3				0.142458		0.142458	0.142458
Mass Flow	lb/h				0.716924		0.390744	0.326180
Std Vapor Volumetric Flow	MMSCFD				0.000104281		5.68361E-05	4.74449E-05
Std Liquid Volumetric Flow	sgpm				0.00236068		0.00128664	0.00107404
Specific Gravity					2.16191		2.16191	2.16191
API Gravity								
Net Ideal Gas Heating Value	Btu/ft^3				3182.49		3182.49	3182.49
Gross Ideal Gas Heating Value	Btu/ft^3				3445.24		3445.24	3445.24

Process Streams	Oil Inlet	Oil Loading	Oil Out	Oil Residual	Oil Tank Emissions	Oil Tank Flash	Oil Tank Standing	Oil Tank Working	Oil to Water	Water
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liqui From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ks TK-1 throug	ks TK-1 throug	Oil Split	--
To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Mole Fraction	%		%	%					%	
Hydrogen Sulfide	0		0	0					0	
Carbon Dioxide	0.0109843		0.000779135	0.000779135					0.000779135	
Nitrogen	0.0200713		0	0					0	
Methane	0.0329381		0	0					0	
Ethane	0.568595		0.226120	0.226120					0.226120	
Propane	3.30507		2.54509	2.54509					2.54509	
i-Butane	1.79446		1.65665	1.65665					1.65665	
n-Butane	7.50517		7.16178	7.16178					7.16178	
i-Pentane	6.01296		5.99131	5.99131					5.99131	
n-Pentane	8.41304		8.44290	8.44290					8.44290	
C6Alkanes(iso)	8.27433		8.41011	8.41011					8.41011	
Heptane	21.9976		22.5148	22.5148					22.5148	
Octane	16.6027		17.0170	17.0170					17.0170	
Nonane	4.17116		4.27710	4.27710					4.27710	
Benzene	4.11238		4.19083	4.19083					4.19083	
Toluene	4.98052		5.09844	5.09844					5.09844	
Ethylbenzene	1.06796		1.09465	1.09465					1.09465	
p-Xylene	1.38374		1.41836	1.41836					1.41836	
n-Hexane	6.39444		6.51678	6.51678					6.51678	
2,2,4-Trimethylpentane	0.219548		0.224674	0.224674					0.224674	
Decanes+	3.13241		3.21263	3.21263					3.21263	
Water	0		0	0					0	
Mass Fraction	%		%	%					%	
Hydrogen Sulfide	0		0	0					0	
Carbon Dioxide	0.00504052		0.000353519	0.000353519					0.000353519	
Nitrogen	0.00586269		0	0					0	
Methane	0.00550966		0	0					0	
Ethane	0.178270		0.0700991	0.0700991					0.0700991	
Propane	1.51961		1.15705	1.15705					1.15705	
i-Butane	1.08750		0.992718	0.992718					0.992718	
n-Butane	4.54840		4.29157	4.29157					4.29157	
i-Pentane	4.52348		4.45661	4.45661					4.45661	
n-Pentane	6.32904		6.28020	6.28020					6.28020	
C6Alkanes(iso)	7.43484		7.47202	7.47202					7.47202	
Heptane	22.9830		23.2593	23.2593					23.2593	
Octane	19.7746		20.0406	20.0406					20.0406	
Nonane	5.57811		5.65559	5.65559					5.65559	
Benzene	3.34939		3.37497	3.37497					3.37497	
Toluene	4.78488		4.84318	4.84318					4.84318	
Ethylbenzene	1.18221		1.19815	1.19815					1.19815	
p-Xylene	1.53176		1.55247	1.55247					1.55247	
n-Hexane	5.74568		5.78988	5.78988					5.78988	
2,2,4-Trimethylpentane	0.261493		0.264594	0.264594					0.264594	
Decanes+	9.17133		9.30059	9.30059					9.30059	
Water	0		0	0					0	
Mass Flow	lb/h		lb/h	lb/h					lb/h	
Hydrogen Sulfide	0		0	0					0	
Carbon Dioxide	0.0524281		0.00362596	0.00360786					1.81066E-05	
Nitrogen	0.0609798		0	0					0	
Methane	0.0573079		0	0					0	
Ethane	1.85425		0.718990	0.715400					0.00359034	
Propane	15.8060		11.8676	11.8083					0.0592618	
i-Butane	11.3115		10.1821	10.1312					0.0508451	
n-Butane	47.3095		44.0177	43.7979					0.219806	
i-Pentane	47.0503		45.7104	45.4821					0.228259	
n-Pentane	65.8305		64.4146	64.0930					0.321660	
C6Alkanes(iso)	77.3323		76.6388	76.2561					0.382703	
Heptane	239.054		238.565	237.374					1.19130	
Octane	205.682		205.552	204.526					1.02644	
Nonane	58.0198		58.0081	57.7184					0.289668	
Benzene	34.8382		34.6163	34.4435					0.172860	
Toluene	49.7692		49.6754	49.4274					0.248059	
Ethylbenzene	12.2965		12.2891	12.2278					0.0613668	
p-Xylene	15.9324		15.9233	15.8438					0.0795144	
n-Hexane	59.7628		59.3854	59.0889					0.296546	
2,2,4-Trimethylpentane	2.71988		2.71389	2.70033					0.0135520	
Decanes+	95.3941		95.3941	94.9177					0.476359	
Water	0		0	0					0	

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Tank Emissi	il Tank Flas	Tank Stand	Tank Worki	Oil to Water	Water
Properties Status:		Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liqui From Block:		--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ks TK-1 throug	ks TK-1 throug	Oil Split	--
To Block:		ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Property	**Units**										
Temperature	°F	152		82.6768	82.6768					82.6768	
Pressure	psia	38.88		12.88	12.88					12.88	
Molecular Weight	lb/lbmol	95.9057		96.9944	96.9944					96.9944	
Mass Density	lb/ft^3	41.0792		43.4720	43.4720					43.4720	
Mass Flow	lb/h	1040.13		1025.68	1020.56					5.12181	
Std Vapor Volumetric Flow	MMSCFD	0.0987756		0.0963094	0.0958285					0.000480930	
Std Liquid Volumetric Flow	sgpm	2.96908		2.91667	2.90210					0.0145646	
Specific Gravity		0.658650		0.697017	0.697017					0.697017	
API Gravity		68.7354		68.2417	68.2417					68.2417	
Net Ideal Gas Heating Value	Btu/ft^3	4820.11		4873.21	4873.21					4873.21	
Gross Ideal Gas Heating Value	Btu/ft^3	5181.44		5237.90	5237.90					5237.90	

Process Streams	Water Inlet	Water Loading	Water Out	Water Tank Emissions	Water Tank Flash	Water Tank Standing	Water Tank Working
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liqui	From Block: Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block: Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Mole Fraction	%	%	%	%		%	%
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	2.87944E-05	1.30915E-19	5.23314E-21	4.41767E-05		4.41767E-05	4.41767E-05
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.123700	1.07073E-17	1.67154E-17	0.0281996		0.0281996	0.0281996
Propane	2.21116	3.28271E-17	3.21871E-16	1.01606		1.01606	1.01606
i-Butane	1.63312	8.51085E-18	2.88713E-16	1.76460		1.76460	1.76460
n-Butane	7.07776	2.28101E-17	1.15917E-15	10.7377		10.7377	10.7377
i-Pentane	6.10080	14.4197	1.89053	14.8407		14.8407	14.8407
n-Pentane	8.66555	27.9198	4.95028	19.6313		19.6313	19.6313
C6Alkanes(iso)	8.64650	19.9824	8.97262	14.3130		14.3130	14.3130
Heptane	23.1912	14.2736	29.8788	15.7691		15.7691	15.7691
Octane	17.5310	3.31926	23.4444	4.30741		4.30741	4.30741
Nonane	4.40635	0.257861	5.95672	0.357765		0.357765	0.357765
Benzene	2.85921	4.89047	3.12984	4.08963		4.08963	4.08963
Toluene	4.71007	2.60843	5.93234	3.02623		3.02623	3.02623
Ethylbenzene	1.09201	0.190294	1.44854	0.259147		0.259147	0.259147
p-Xylene	1.42904	0.237122	1.90199	0.322373		0.322373	0.322373
n-Hexane	6.70876	11.6831	7.62190	9.30882		9.30882	9.30882
2,2,4-Trimethylpentane	0.231402	0.155931	0.296723	0.168214		0.168214	0.168214
Decanes+	3.30973	7.40965E-07	4.49587	1.09670E-06		1.09670E-06	1.09670E-06
Water	0.0726161	0.0619948	0.0794811	0.0596987		0.0596987	0.0596987
Mass Fraction	%	%	%	%		%	%
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	1.29710E-05	6.93101E-20	2.13168E-21	2.40221E-05		2.40221E-05	2.40221E-05
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.0380723	3.87313E-18	4.65210E-18	0.0104769		0.0104769	0.0104769
Propane	0.998012	1.74136E-17	1.31368E-16	0.553587		0.553587	0.553587
i-Butane	0.971581	5.95080E-18	1.55318E-16	1.26724		1.26724	1.26724
n-Butane	4.21073	1.59489E-17	6.23594E-16	7.71126		7.71126	7.71126
i-Pentane	4.50542	12.5154	1.26248	13.2298		13.2298	13.2298
n-Pentane	6.39948	24.2327	3.30577	17.5005		17.5005	17.5005
C6Alkanes(iso)	7.62680	20.7153	7.15675	15.2400		15.2400	15.2400
Heptane	23.7859	17.2057	27.7110	19.5233		19.5233	19.5233
Octane	20.4974	4.56117	24.7871	6.07941		6.07941	6.07941
Nonane	5.78459	0.397852	7.07123	0.566949		0.566949	0.566949
Benzene	2.28603	4.59545	2.26283	3.94705		3.94705	3.94705
Toluene	4.44209	2.89122	5.05918	3.44519		3.44519	3.44519
Ethylbenzene	1.18667	0.243035	1.42339	0.339937		0.339937	0.339937
p-Xylene	1.55291	0.302840	1.86897	0.422873		0.422873	0.422873
n-Hexane	5.91759	12.1116	6.07938	9.91171		9.91171	9.91171
2,2,4-Trimethylpentane	0.270559	0.214274	0.313718	0.237415		0.237415	0.237415
Decanes+	9.51280	2.50297E-06	11.6849	3.80501E-06		3.80501E-06	3.80501E-06
Water	0.0133904	0.0134356	0.0132531	0.0132885		0.0132885	0.0132885
Mass Flow	lb/h	lb/h	lb/h	lb/h		lb/h	lb/h
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	6.49530E-07	8.30229E-23	8.69025E-23	5.70815E-08		3.11110E-08	2.59705E-08
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.00190649	4.63942E-21	1.89653E-19	2.48954E-05		1.35687E-05	1.13267E-05
Propane	0.0499760	2.08589E-20	5.35551E-18	0.00131544		0.000716952	0.000598487
i-Butane	0.0486525	7.12816E-21	6.33186E-18	0.00301124		0.00164121	0.00137003
n-Butane	0.210855	1.91044E-20	2.54221E-17	0.0183236		0.00998687	0.00833671
i-Pentane	0.225611	0.0149916	0.0514678	0.0314368		0.0171340	0.0143029
n-Pentane	0.320457	0.0290271	0.134767	0.0415848		0.0226649	0.0189199
C6Alkanes(iso)	0.381916	0.0248137	0.291760	0.0362135		0.0197374	0.0164761
Heptane	1.19109	0.0206098	1.12970	0.0463914		0.0252847	0.0211068
Octane	1.02642	0.00546359	1.01050	0.0144460		0.00787346	0.00657250
Nonane	0.289666	0.000476566	0.288274	0.00134719		0.000734257	0.000612933
Benzene	0.114474	0.00550465	0.0922492	0.00937901		0.00511183	0.00426718
Toluene	0.222440	0.00346324	0.206248	0.00818650		0.00446188	0.00372462
Ethylbenzene	0.0594230	0.000291118	0.0580276	0.000807762		0.000440253	0.000367509
p-Xylene	0.0777626	0.000362756	0.0761926	0.00100484		0.000547664	0.000457172
n-Hexane	0.296326	0.0145079	0.247839	0.0235523		0.0128367	0.0107156
2,2,4-Trimethylpentane	0.0135484	0.000256667	0.0127894	0.000564149		0.000307477	0.000256672
Decanes+	0.476359	2.99818E-09	0.476359	9.04150E-09		4.92787E-09	4.11362E-09
Water	0.000670531	1.60938E-05	0.000540292	3.15763E-05		1.72100E-05	1.43663E-05

Process Streams		Water Inlet	Water Loadin	Water Out	r Tank Emissi	ter Tank Flar	Tank Stana	Tank Working
Properties Status:		Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liqui	From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
	To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Property	**Units**							
Temperature	°F	82.6716	82.4183	82.4183	82.4183		82.4183	82.4183
Pressure	psia	12.88	12.88	12.88	12.88		12.88	12.88
Molecular Weight	lb/lbmol	97.6969	83.1265	108.041	80.9336		80.9336	80.9336
Mass Density	lb/ft^3	43.3758	41.1681	44.5741	40.8528		40.8528	40.8528
Mass Flow	lb/h	5.00755	0.119785	4.07671	0.237621		0.129510	0.108111
Std Vapor Volumetric Flow	MMSCFD	0.000466820	1.31240E-05	0.000343659	2.67400E-05		1.45740E-05	1.21659E-05
Std Liquid Volumetric Flow	sgpm	0.0142662	0.000357836	0.0112768	0.000716473		0.000390498	0.000325975
Specific Gravity		0.695473	0.660076	0.714686	0.655021		0.655021	0.655021
API Gravity		68.6917	79.0890	63.5647	80.6222		80.6222	80.6222
Net Ideal Gas Heating Value	Btu/ft^3	4913.97	4215.55	5412.00	4107.73		4107.73	4107.73
Gross Ideal Gas Heating Value	Btu/ft^3	5283.91	4542.99	5812.88	4427.72		4427.72	4427.72

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Oil Tank Emissions	Oil Tank Flash	Oil Tank Standing	Oil Tank Working	Oil to Water	Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ıks TK-1 throug	ıks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Mole Fraction											%
Hydrogen Sulfide											0
Carbon Dioxide											0
Nitrogen											0
Methane											0
Ethane											0
Propane											0
i-Butane											0
n-Butane											0
i-Pentane											0
n-Pentane											0
C6Alkanes(iso)											0
Heptane											0
Octane											0
Nonane											0
Benzene											0
Toluene											0
Ethylbenzene											0
p-Xylene											0
n-Hexane											0
2,2,4-Trimethylpentane											0
Decanes+											0
Water											100
Mass Fraction											%
Hydrogen Sulfide											0
Carbon Dioxide											0
Nitrogen											0
Methane											0
Ethane											0
Propane											0
i-Butane											0
n-Butane											0
i-Pentane											0
n-Pentane											0
C6Alkanes(iso)											0
Heptane											0
Octane											0
Nonane											0
Benzene											0
Toluene											0
Ethylbenzene											0
p-Xylene											0
n-Hexane											0
2,2,4-Trimethylpentane											0
Decanes+											0
Water											100
Mass Flow											lb/h
Hydrogen Sulfide											0
Carbon Dioxide											0
Nitrogen											0
Methane											0
Ethane											0
Propane											0
i-Butane											0
n-Butane											0
i-Pentane											0
n-Pentane											0
C6Alkanes(iso)											0
Heptane											0
Octane											0
Nonane											0
Benzene											0
Toluene											0
Ethylbenzene											0
p-Xylene											0
n-Hexane											0
2,2,4-Trimethylpentane											0
Decanes+											0
Water											728.569

Process Streams		Oil Inlet	Oil Loading	Oil Out	Oil Residual	Tank Emissi	il Tank Flas	Tank Stand	Tank Worki	Oil to Water	Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid	From Block:	--	ıks TK-1 throug	ıks TK-1 throug	Oil Split	Oil Tank Mix	ıks TK-1 throug	ıks TK-1 throug	ıks TK-1 throug	Oil Split	--
	To Block:	ıks TK-1 throug	--	Oil Split	--	--	Oil Tank Mix	Oil Tank Mix	Oil Tank Mix	Water Mix	Water Mix
Property	**Units**										
Temperature	°F										82.6768
Pressure	psia										12.88
Molecular Weight	lb/lbmol										18.0153
Mass Density	lb/ft^3										62.1540
Mass Flow	lb/h										728.569
Std Vapor Volumetric Flow	MMSCFD										0.368328
Std Liquid Volumetric Flow	sgpm										1.45646
Specific Gravity											0.996557
API Gravity											9.99848
Net Ideal Gas Heating Value	Btu/ft^3										0
Gross Ideal Gas Heating Value	Btu/ft^3										50.3100

Process Streams	Water Inlet	Water Loading	Water Out	Water Tank Emissions	Water Tank Flash	Water Tank Standing	Water Tank Working
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Mole Fraction	%	%	%	%		%	%
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	9.80793E-07	4.21140E-21	1.79547E-22	1.43744E-06		1.43744E-06	1.43744E-06
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.000138464	1.16214E-20	1.89557E-20	3.06662E-05		3.06662E-05	3.06662E-05
Propane	0.000520690	7.72215E-21	7.66606E-20	0.000237265		0.000237265	0.000237265
i-Butane	9.32784E-05	4.70925E-22	1.66231E-20	9.90016E-05		9.90016E-05	9.90016E-05
n-Butane	0.000380817	1.19584E-21	6.24649E-20	0.000571124		0.000571124	0.000571124
i-Pentane	9.07363E-05	0.000221306	2.80818E-05	0.000225898		0.000225898	0.000225898
n-Pentane	4.12214E-05	0.000136771	2.34121E-05	9.54824E-05		9.54824E-05	9.54824E-05
C6Alkanes(iso)	2.25587E-05	5.50498E-05	2.29819E-05	3.91228E-05		3.91228E-05	3.91228E-05
Heptane	5.13308E-06	3.00681E-06	6.55665E-06	3.38504E-06		3.38504E-06	3.38504E-06
Octane	5.30991E-07	9.59610E-08	7.06383E-07	1.26024E-07		1.26024E-07	1.26024E-07
Nonane	4.02257E-08	2.25872E-09	5.46591E-08	3.17754E-09		3.17754E-09	3.17754E-09
Benzene	0.00184817	0.00323267	0.00193896	0.00275939		0.00275939	0.00275939
Toluene	0.000687490	0.000379517	0.000833503	0.000451300		0.000451300	0.000451300
Ethylbenzene	4.52731E-05	7.87258E-06	5.69919E-05	1.12043E-05		1.12043E-05	1.12043E-05
p-Xylene	4.07989E-05	6.82275E-06	5.16365E-05	9.64015E-06		9.64015E-06	9.64015E-06
n-Hexane	6.31492E-06	1.16743E-05	7.04873E-06	9.18656E-06		9.18656E-06	9.18656E-06
2,2,4-Trimethylpentane	7.90713E-08	5.10576E-08	1.01947E-07	5.56056E-08		5.56056E-08	5.56056E-08
Decanes+	6.82743E-11	7.77978E-18	1.09968E-10	1.28685E-17		1.28685E-17	1.28685E-17
Water	99.9961	99.9959	99.9970	99.9955		99.9955	99.9955
Mass Fraction	%	%	%	%		%	%
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	2.39569E-06	1.02866E-20	4.38569E-22	3.51101E-06		3.51101E-06	3.51101E-06
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.000231081	1.93944E-20	3.16353E-20	5.11772E-05		5.11772E-05	5.11772E-05
Propane	0.00127433	1.88988E-20	1.87621E-19	0.000580666		0.000580666	0.000580666
i-Butane	0.000300906	1.51912E-21	5.36250E-20	0.000319361		0.000319361	0.000319361
n-Butane	0.00122847	3.85758E-21	2.01507E-19	0.00184234		0.00184234	0.00184234
i-Pentane	0.000363344	0.000886177	0.000112452	0.000904564		0.000904564	0.000904564
n-Pentane	0.000165066	0.000547675	9.37521E-05	0.000382340		0.000382340	0.000382340
C6Alkanes(iso)	0.000107896	0.000263292	0.000109921	0.000187116		0.000187116	0.000187116
Heptane	2.85471E-05	1.67217E-05	3.64645E-05	1.88251E-05		1.88251E-05	1.88251E-05
Octane	3.36643E-06	6.08371E-07	4.47845E-06	7.98961E-07		7.98961E-07	7.98961E-07
Nonane	2.86343E-07	1.60782E-08	3.89090E-07	2.26184E-08		2.26184E-08	2.26184E-08
Benzene	0.00801246	0.0140145	0.00840619	0.0119627		0.0119627	0.0119627
Toluene	0.00351572	0.00194076	0.00426246	0.00230783		0.00230783	0.00230783
Ethylbenzene	0.000266765	4.63871E-05	0.000335820	6.60181E-05		6.60181E-05	6.60181E-05
p-Xylene	0.000240402	4.02013E-05	0.000304264	5.68018E-05		5.68018E-05	5.68018E-05
n-Hexane	3.02036E-05	5.58358E-05	3.37137E-05	4.39373E-05		4.39373E-05	4.39373E-05
2,2,4-Trimethylpentane	5.01304E-07	3.23694E-07	6.46340E-07	3.52525E-07		3.52525E-07	3.52525E-07
Decanes+	1.06405E-09	1.21245E-16	1.71386E-09	2.00551E-16		2.00551E-16	2.00551E-16
Water	99.9842	99.9822	99.9863	99.9813		99.9813	99.9813
Mass Flow	lb/h	lb/h	lb/h	lb/h		lb/h	lb/h
Hydrogen Sulfide	0	0	0	0		0	0
Carbon Dioxide	1.74570E-05	6.19345E-25	3.19562E-21	4.90990E-10		2.67604E-10	2.23387E-10
Nitrogen	0	0	0	0		0	0
Methane	0	0	0	0		0	0
Ethane	0.00168385	1.16771E-24	2.30510E-19	7.15677E-09		3.90065E-09	3.25613E-09
Propane	0.00928585	1.13787E-24	1.36709E-18	8.12021E-08		4.42575E-08	3.69447E-08
i-Butane	0.00219265	9.14648E-26	3.90737E-19	4.46604E-08		2.43412E-08	2.03192E-08
n-Butane	0.00895168	2.32261E-25	1.46827E-18	2.57639E-07		1.40420E-07	1.17218E-07
i-Pentane	0.00264763	5.33558E-08	0.000819375	1.26497E-07		6.89444E-08	5.75525E-08
n-Pentane	0.00120281	3.29749E-08	0.000683121	5.34675E-08		2.91413E-08	2.43262E-08
C6Alkanes(iso)	0.000786220	1.58525E-08	0.000800937	2.61668E-08		1.42617E-08	1.19051E-08
Heptane	0.000208018	1.00680E-09	0.000265697	2.63256E-09		1.43482E-09	1.19774E-09
Octane	2.45306E-05	3.66294E-11	3.26320E-05	1.11729E-10		6.08955E-11	5.08336E-11
Nonane	2.08653E-06	9.68049E-13	2.83509E-06	3.16303E-12		1.72394E-12	1.43909E-12
Benzene	0.0583855	8.43797E-07	0.0612513	1.67289E-06		9.11775E-07	7.61119E-07
Toluene	0.0256185	1.16851E-07	0.0310583	3.22733E-07		1.75899E-07	1.46834E-07
Ethylbenzene	0.00194387	2.79292E-09	0.00244694	9.23216E-09		5.03179E-09	4.20037E-09
p-Xylene	0.00175177	2.42048E-09	0.00221701	7.94334E-09		4.32934E-09	3.61399E-09
n-Hexane	0.000220088	3.36182E-09	0.000245653	6.14432E-09		3.34883E-09	2.79549E-09
2,2,4-Trimethylpentane	3.65292E-06	1.94893E-11	4.70953E-06	4.92982E-11		2.68689E-11	2.24293E-11
Decanes+	7.75355E-09	7.30003E-21	1.24880E-08	2.80456E-20		1.52856E-20	1.27599E-20
Water	728.569	0.00601982	728.546	0.0139817		0.00762041	0.00636127

Process Streams	Water Inlet	/ater Loadin	Water Out	r Tank Emis	ter Tank Fla	r Tank Stan	r Tank Workin
Properties Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid From Block:	Water Mix	Tanks PW-1 an	Tanks PW-1 an	Water Tank Mix	Tanks PW-1 an	Tanks PW-1 an	Tanks PW-1 and PW
To Block:	Tanks PW-1 an	--	--	--	Water Tank Mix	Water Tank Mix	Water Tank Mix
Property **Units**							
Temperature °F	82.6716	82.4183	82.4183	82.4183		82.4183	82.4183
Pressure psia	12.88	12.88	12.88	12.88		12.88	12.88
Molecular Weight lb/lbmol	18.0174	18.0178	18.0172	18.0178		18.0178	18.0178
Mass Density lb/ft^3	62.1538	62.1573	62.1573	62.1566		62.1566	62.1566
Mass Flow lb/h	728.684	0.00602089	728.646	0.0139843		0.00762184	0.00636246
Std Vapor Volumetric Flow MMSCFD	0.368342	3.04344E-06	0.368327	7.06875E-06		3.85267E-06	3.21608E-06
Std Liquid Volumetric Flow sgpm	1.45676	1.20366E-05	1.45665	2.79570E-05		1.52374E-05	1.27197E-05
Specific Gravity	0.996554	0.996609	0.996610	0.996599		0.996599	0.996599
API Gravity	9.99900	9.99732	9.99717	9.99869		9.99869	9.99869
Net Ideal Gas Heating Value Btu/ft^3	0.135011	0.149380	0.114222	0.159763		0.159763	0.159763
Gross Ideal Gas Heating Value Btu/ft^3	50.4504	50.4643	50.4279	50.4759		50.4759	50.4759

Tank Losses Report
Oil Tanks TK-1 through TK-4

Client Name:	KINETIK	**Job:**	
Location:	Abo CS Tanks	**Modified:**	12/18/2025 16:48
Flowsheet:	Flowsheet1	**Status:**	Solved 5:22 PM, 12/19/2025

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Oil Inlet	Inlet		Oil Tank Flash	shing Losses Stre	Oil Tank Mix
Oil Tank Working	Working Losses Stream	Oil Tank Mix	Oil Tank Standing	nding Losses Stre	Oil Tank Mix
Oil Loading	Loading Losses Stream		Oil Out	sidual Liquid Stre	Oil Split

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	15*	ft	Slope of Coned Roof	0.0625	
Shell Diameter	12*	ft	Breather Vent Pressure	0.03	psi
Number of Storage Tanks	4*		Breather Vacuum Pressure	-0.03	psi
Maximum Fraction Fill of Tank	93.33*	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50	%	Time Frame	Year	
Minimum Fraction Fill of Tank	6.67*	%	Known Liquid Bulk Temperature?	FALSE	
Material Category	Light Organics*		Liquid Bulk Temperature	66.3494	°F
Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	FALSE	
Bolted or Riveted Construction?	FALSE		Flashing Temperature	82.6768	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperat	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperatu	47.6	°F
Sum of Increases in Liquid Level	455.489	ft/yr	Atmospheric Pressure at Tank Location	12.88	psia
Shell Color	Dark Green*		Daily Solar Insolation	1722	Btu/(day*ft^2)
Shell Paint Condition	Average		Average Wind Speed	8.7	mph
Roof Color	Dark Green*		Include Short Term Emissions	TRUE	
Roof Paint Condition	Average				

Composition Subset Properties : Scalar Data

Component Subset	All Selected*	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Hydrogen Sulfide	TRUE
Carbon Dioxide	TRUE
Nitrogen	TRUE
Methane	TRUE
Ethane	TRUE
Propane	TRUE
i-Butane	TRUE
n-Butane	TRUE
i-Pentane	TRUE
n-Pentane	TRUE
C6Alkanes(iso)	TRUE
Heptane	TRUE
Octane	TRUE
Nonane	TRUE
Benzene	TRUE

Toluene	TRUE
Ethylbenzene	TRUE
p-Xylene	TRUE
n-Hexane	TRUE
2,2,4-Trimethylpentane	TRUE
Decanes+	TRUE
Water	TRUE

Details Properties : Scalar Data

Vapor Space Volume	862.367	ft^3	Roof Outage	0.125	ft
Vapor Density	0.0984860	lb/ft^3	Tank Roof Height	0.375	ft
Vapor Space Expansion Factor	1	1/day	Tank Shell Radius	6	ft
Vented Vapor Saturation Factor	0.186776		Vapor Molecular Weight	52.4422	lb/lbmol
Vapor Space Outage	7.625	ft	Average Vapor Temperature	534.585	°R
Average Daily Vapor Temperature Range	48.1785	°R	Average Daily Ambient Temperature	521.37	°R
Average Daily Vapor Pressure Range	3.92407	psi	Net Working Loss Throughput	51514.6	ft^3/yr
Breather Vent Pressure Setting Range	0.06	psi	Working Loss Turnover (Saturation) Factor	1	
Vapor Pressure at Average Daily Liquid Surface Temperat	10.7739	psia	Number of Turnovers per Year	35.0403	
Average Daily Liquid Surface Temperature	530.302	°R	Annual Net Throughput	36704.4	bbl/yr
Average Daily Ambient Temperature Range	28.2	°R	Maximum Liquid Height	13.9995	ft
Tank Roof Surface Solar Absorptance	0.9		Minimum Liquid Height	1.0005	ft
Tank Shell Surface Solar Absorptance	0.9		Working Loss Product Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	12.8800	psia	Vent Setting Correction Factor	1	
Vapor Pressure at Minimum Liquid Surface Temperature	8.95593	psia	Saturation Factor	0.5	
Maximum Liquid Surface Temperature	542.347	°R	Vapor Pressure of Liquid Loaded	8.77140	psia
Minimum Liquid Surface Temperature	518.258	°R	Collection Efficiency	70	%
Liquid Height	7.5	ft	Annual Net Throughput Per Tank	9176.09	bbl/yr

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	None
Land Based Mode of Operation	Submerged Loading of a Clean Cargo Tank	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	42.4941	ton/yr	Standing Losses per Tank	2.86553	ton/yr
Working Losses	10.0436	ton/yr	Flashing Losses per Tank	10.6235	ton/yr
Standing Losses	11.4621	ton/yr	Working and Standing Losses	21.5057	ton/yr
Loading Losses	4.39845	ton/yr	Working and Standing Losses per Tank	5.37644	ton/yr
Working Losses per Tank	2.51090	ton/yr	Loading Losses per Tank	1.09961	ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	/orking Losses Mass Flow ton/yr	Standing Losses Mass Flows ton/yr	ding Losses Mass Fling and Standing Losses Mass Flows ton/yr	ton/yr
Hydrogen Sulfide	0	0	0	0	0
Carbon Dioxide	0.137448	0.0367941	0.0419907	0.00306471	0.0787848
Nitrogen	0.266725	0.00846316	0.00965846	0	0.0181216
Methane	0.204529	0.0244495	0.0279027	0	0.0523522
Ethane	3.21132	0.842844	0.961884	0.264097	1.80473
Propane	11.3140	2.83776	3.23856	1.23098	6.07632
i-Butane	3.29145	0.793869	0.905992	0.364882	1.69986
n-Butane	9.64331	2.29404	2.61804	1.06163	4.91207
i-Pentane	3.97555	0.914656	1.04384	0.424390	1.95849
n-Pentane	4.22253	0.958587	1.09397	0.443543	2.05256
C6Alkanes(iso)	2.09057	0.461832	0.527059	0.212354	0.988891
Heptane	1.50975	0.313016	0.357225	0.140800	0.670241
Octane	0.409827	0.0812830	0.0927630	0.0359695	0.174046

Nonane	0.0377491	0.00715287	0.00816311	0.00311432	0.0153160
Benzene	0.672515	0.146446	0.167129	0.0669784	0.313575
Toluene	0.289333	0.0602116	0.0687156	0.0271014	0.128927
Ethylbenzene	0.0232535	0.00462991	0.00528382	0.00204951	0.00991373
p-Xylene	0.0286153	0.00570930	0.00651566	0.00252974	0.0122250
n-Hexane	1.14718	0.248002	0.283028	0.113220	0.531030
2,2,4-Trimethylpentane	0.0184447	0.00387074	0.00441743	0.00174931	0.00828817
Decanes+	3.97183E-07	4.75534E-08	5.42696E-08	1.73969E-08	1.01823E-07
Water	0	0	0	0	0

Short Term Properties : Scalar Data

Maximum Battery Filling Rate	4.167*	bbl/hr	Short-Term Working Losses per Tank	0.725680	lb/h
Short-Term Number of Storage Tanks	4		Short-Term Loading Losses per Tank	0.351505	lb/h
Worst-Case Liquid Surface Temperature	95	°F	Short-Term Vapor Molecular Weight	57.4624	lb/lbmol
Maximum Loading Rate	4.167*	bbl/hr	Vapor Pressure at Worst-Case Temperature	12.8800	psia
Worst-Case Flashing Losses	25.9367	lb/h	Short-Term Control Efficiency	0*	%
Short-Term Working Losses	2.90272	lb/h	Short-Term Truck Annual Leak Test Passed	None	
Short-Term Loading Losses	1.40602	lb/h	Short-Term Overall Reduction Efficiency	0	%
Worst-Case Flashing Losses per Tank	6.48417	lb/h	Short-Term Collection Efficiency	70	%

Short Term Properties : Tabulated Data

Index	Worst-Case Flashing Losses Mass Flows lb/h	erm Working Losses Mas lb/h	Short-Term Loading Losses Mass Flows lb/h
Hydrogen Sulfide	0	0	0
Carbon Dioxide	0.0418399	0.00469266	0.00127465
Nitrogen	0.0622369	0.00164208	0
Methane	0.0526375	0.00497002	0
Ethane	1.19202	0.133694	0.0531248
Propane	5.74415	0.644250	0.302369
i-Butane	2.01589	0.226097	0.110703
n-Butane	6.20091	0.695479	0.343100
i-Pentane	2.78143	0.311958	0.155429
n-Pentane	3.01926	0.338632	0.168980
C6Alkanes(iso)	1.56179	0.175166	0.0876516
Heptane	1.21061	0.135779	0.0680338
Octane	0.343712	0.0385499	0.0193182
Nonane	0.0331497	0.00371799	0.00186357
Benzene	0.510195	0.0572223	0.0286391
Toluene	0.230738	0.0258790	0.0129619
Ethylbenzene	0.0193640	0.00217182	0.00108766
p-Xylene	0.0237953	0.00266882	0.00133665
n-Hexane	0.878317	0.0985099	0.0493254
2,2,4-Trimethylpentane	0.0146280	0.00164064	0.000822141
Decanes+	5.42508E-07	6.08464E-08	3.04224E-08
Water	0	0	0

Notes:

Tank Losses Report
Water Tank PW-1

Client Name:	KINETIK	**Job:**	
Location:	Abo CS Tanks	**Modified:**	12/19/2025 17:23
Flowsheet:	Flowsheet1	**Status:**	Solved 5:23 PM, 12/19/2025

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Water Inlet	Inlet	Water Mix	Water Tank Flash	shing Losses Stre	Water Tank Mix
Water Tank Working	Working Losses Stream	Water Tank Mix	Water Tank Standing	nding Losses Stre	Water Tank Mix
Water Loading	Loading Losses Stream		Water Out	sidual Liquid Stre	

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	15*	ft	Slope of Coned Roof	0.0625	
Shell Diameter	10*	ft	Breather Vent Pressure	0.03	psi
Number of Storage Tanks	2*		Breather Vacuum Pressure	-0.03	psi
Maximum Fraction Fill of Tank	93.33*	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50	%	Time Frame	Year	
Minimum Fraction Fill of Tank	6.67*	%	Known Liquid Bulk Temperature?	FALSE	
Material Category	Light Organics*		Liquid Bulk Temperature	66.3494	°F
Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	FALSE	
Bolted or Riveted Construction?	FALSE		Flashing Temperature	82.4183	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperat	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperatu	47.6	°F
Sum of Increases in Liquid Level	658.832	ft/yr	Atmospheric Pressure at Tank Location	12.88	psia
Shell Color	Dark Green*		Daily Solar Insolation	1722	Btu/(day*ft^2)
Shell Paint Condition	Average		Average Wind Speed	8.7	mph
Roof Color	Dark Green*		Include Short Term Emissions	TRUE	
Roof Paint Condition	Average				

Composition Subset Properties : Scalar Data

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Hydrogen Sulfide	FALSE
Carbon Dioxide	FALSE
Nitrogen	FALSE
Methane	FALSE
Ethane	FALSE
Propane	TRUE
i-Butane	TRUE
n-Butane	TRUE
i-Pentane	TRUE
n-Pentane	TRUE
C6Alkanes(iso)	TRUE
Heptane	TRUE
Octane	TRUE
Nonane	TRUE
Benzene	TRUE

Toluene	TRUE
Ethylbenzene	TRUE
p-Xylene	TRUE
n-Hexane	TRUE
2,2,4-Trimethylpentane	TRUE
Decanes+	TRUE
Water	FALSE

Details Properties : Scalar Data

Vapor Space Volume	597.230 ft^3	Roof Outage	0.104167 ft
Vapor Density	0.0852687 lb/ft^3	Tank Roof Height	0.3125 ft
Vapor Space Expansion Factor	0.980200 1/day	Tank Shell Radius	5 ft
Vented Vapor Saturation Factor	0.220065	Vapor Molecular Weight	55.5829 lb/lbmol
Vapor Space Outage	7.60417 ft	Average Vapor Temperature	534.156 °R
Average Daily Vapor Temperature Range	48.0027 °R	Average Daily Ambient Temperature	521.37 °R
Average Daily Vapor Pressure Range	3.69520 psi	Net Working Loss Throughput	51744.6 ft^3/yr
Breather Vent Pressure Setting Range	0.06 psi	Working Loss Turnover (Saturation) Factor	0.758577
Vapor Pressure at Average Daily Liquid Surface Temperat	8.79387 psia	Number of Turnovers per Year	50.6833
Average Daily Liquid Surface Temperature	530.088 °R	Annual Net Throughput	18434.1 bbl/yr
Average Daily Ambient Temperature Range	28.2 °R	Maximum Liquid Height	13.9995 ft
Tank Roof Surface Solar Absorptance	0.9	Minimum Liquid Height	1.0005 ft
Tank Shell Surface Solar Absorptance	0.9	Working Loss Product Factor	1
Vapor Pressure at Maximum Liquid Surface Temperature	10.7996 psia	Vent Setting Correction Factor	1
Vapor Pressure at Minimum Liquid Surface Temperature	7.10440 psia	Saturation Factor	0.5
Maximum Liquid Surface Temperature	542.088 °R	Vapor Pressure of Liquid Loaded	1.69583 psia
Minimum Liquid Surface Temperature	518.087 °R	Collection Efficiency	70 %
Liquid Height	7.5 ft	Annual Net Throughput Per Tank	9217.06 bbl/yr

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	None
Land Based Mode of Operation	Submerged Loading of a Clean Cargo Tank	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	0 ton/yr	Standing Losses per Tank	1.12462 ton/yr
Working Losses	1.87760 ton/yr	Flashing Losses per Tank	0 ton/yr
Standing Losses	2.24925 ton/yr	Working and Standing Losses	4.12684 ton/yr
Loading Losses	0.524592 ton/yr	Working and Standing Losses per Tank	2.06342 ton/yr
Working Losses per Tank	0.938798 ton/yr	Loading Losses per Tank	0.262296 ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	/orking Losses Mass Flow ton/yr	Standing Losses Mass Flows ton/yr	ding Losses Mass Fling and Standing Losses Mass Flows ton/yr	ton/yr
Propane	0	0.118096	0.141471	9.13668E-20	0.259567
i-Butane	0	0.101323	0.121379	3.12217E-20	0.222702
n-Butane	0	0.438024	0.524727	8.36781E-20	0.962751
i-Pentane	0	0.350672	0.420084	0.0656633	0.770756
n-Pentane	0	0.371075	0.444526	0.127139	0.815601
C6Alkanes(iso)	0	0.179632	0.215188	0.108684	0.394821
Heptane	0	0.122224	0.146417	0.0902709	0.268642
Octane	0	0.0317076	0.0379838	0.0239305	0.0696913
Nonane	0	0.00277363	0.00332264	0.00208736	0.00609626
Benzene	0	0.0385783	0.0462145	0.0241141	0.0847928
Toluene	0	0.0214272	0.0256685	0.0151695	0.0470958
Ethylbenzene	0	0.00177824	0.00213022	0.00127511	0.00390846
p-Xylene	0	0.00220145	0.00263721	0.00158888	0.00483866

n-Hexane	0	0.0965735	0.115689	0.0635445	0.212263
2,2,4-Trimethylpentane	0	0.00151039	0.00180936	0.00112420	0.00331975
Decanes+	0	1.80177E-08	2.15841E-08	1.31320E-08	3.96018E-08

Short Term Properties : Scalar Data

Maximum Battery Filling Rate	2.1*	bbl/hr	Short-Term Working Losses per Tank	0.462223	lb/h
Short-Term Number of Storage Tanks	2		Short-Term Loading Losses per Tank	0.114255	lb/h
Worst-Case Liquid Surface Temperature	95	°F	Short-Term Vapor Molecular Weight	56.8636	lb/lbmol
Maximum Loading Rate	2.1*	bbl/hr	Vapor Pressure at Worst-Case Temperature	12.8800	psia
Worst-Case Flashing Losses	0.0184112	lb/h	Short-Term Control Efficiency	0*	%
Short-Term Working Losses	0.924445	lb/h	Short-Term Truck Annual Leak Test Passed	None	
Short-Term Loading Losses	0.228510	lb/h	Short-Term Overall Reduction Efficiency	0	%
Worst-Case Flashing Losses per Tank	0.00920559	lb/h	Short-Term Collection Efficiency	70	%

Short Term Properties : Tabulated Data

Index	Worst-Case Flashing Losses Mass Flows lb/h	erm Working Losses Mas lb/h	Short-Term Loading Losses Mass Flows lb/h
Propane	0.00407108	0.0551493	0
i-Butane	0.00156336	0.0492462	0
n-Butane	0.00474186	0.214911	0
i-Pentane	0.00214580	0.161609	0.0301609
n-Pentane	0.00233608	0.175940	0.0517107
C6Alkanes(iso)	0.00120006	0.0903815	0.0444280
Heptane	0.000928624	0.0699385	0.0425007
Octane	0.000263323	0.0198319	0.0125223
Nonane	2.52323E-05	0.00190035	0.00121419
Benzene	0.000259142	0.0195170	0.00992441
Toluene	0.000158684	0.0119511	0.00693920
Ethylbenzene	1.45628E-05	0.00109678	0.000659864
p-Xylene	1.79618E-05	0.00135278	0.000818151
n-Hexane	0.000674195	0.0507764	0.0271175
2,2,4-Trimethylpentane	1.12069E-05	0.000844040	0.000514612
Decanes+	4.09347E-10	3.08296E-08	2.14649E-08

Notes:

5.2 Transportation And Marketing Of Petroleum Liquids[1-3]

5.2.1 General

The transportation and marketing of petroleum liquids involve many distinct operations, each of which represents a potential source of evaporation loss. Crude oil is transported from production operations to a refinery by tankers, barges, rail tank cars, tank trucks, and pipelines. Refined petroleum products are conveyed to fuel marketing terminals and petrochemical industries by these same modes. From the fuel marketing terminals, the fuels are delivered by tank trucks to service stations, commercial accounts, and local bulk storage plants. The final destination for gasoline is usually a motor vehicle gasoline tank. Similar distribution paths exist for fuel oils and other petroleum products. A general depiction of these activities is shown in Figure 5.2-1.

5.2.2 Emissions And Controls

Evaporative emissions from the transportation and marketing of petroleum liquids may be considered, by storage equipment and mode of transportation used, in four categories:

1. Rail tank cars, tank trucks, and marine vessels: loading, transit, and ballasting losses.
2. Service stations: bulk fuel drop losses and underground tank breathing losses.
3. Motor vehicle tanks: refueling losses.
4. Large storage tanks: breathing, working, and standing storage losses. (See Chapter 7, "Liquid Storage Tanks".)

Evaporative and exhaust emissions are also associated with motor vehicle operation, and these topics are discussed in AP-42 *Volume II: Mobile Sources*.

5.2.2.1 Rail Tank Cars, Tank Trucks, And Marine Vessels -

Emissions from these sources are from loading losses, ballasting losses, and transit losses.

5.2.2.1.1 Loading Losses -

Loading losses are the primary source of evaporative emissions from rail tank car, tank truck, and marine vessel operations. Loading losses occur as organic vapors in "empty" cargo tanks are displaced to the atmosphere by the liquid being loaded into the tanks. These vapors are a composite of (1) vapors formed in the empty tank by evaporation of residual product from previous loads, (2) vapors transferred to the tank in vapor balance systems as product is being unloaded, and (3) vapors generated in the tank as the new product is being loaded. The quantity of evaporative losses from loading operations is, therefore, a function of the following parameters:

- Physical and chemical characteristics of the previous cargo;
- Method of unloading the previous cargo;
- Operations to transport the empty carrier to a loading terminal;
- Method of loading the new cargo; and
- Physical and chemical characteristics of the new cargo.

The principal methods of cargo carrier loading are illustrated in Figure 5.2-2, Figure 5.2-3, and Figure 5.2-4. In the splash loading method, the fill pipe dispensing the cargo is lowered only part way into the cargo tank. Significant turbulence and vapor/liquid contact occur during the splash

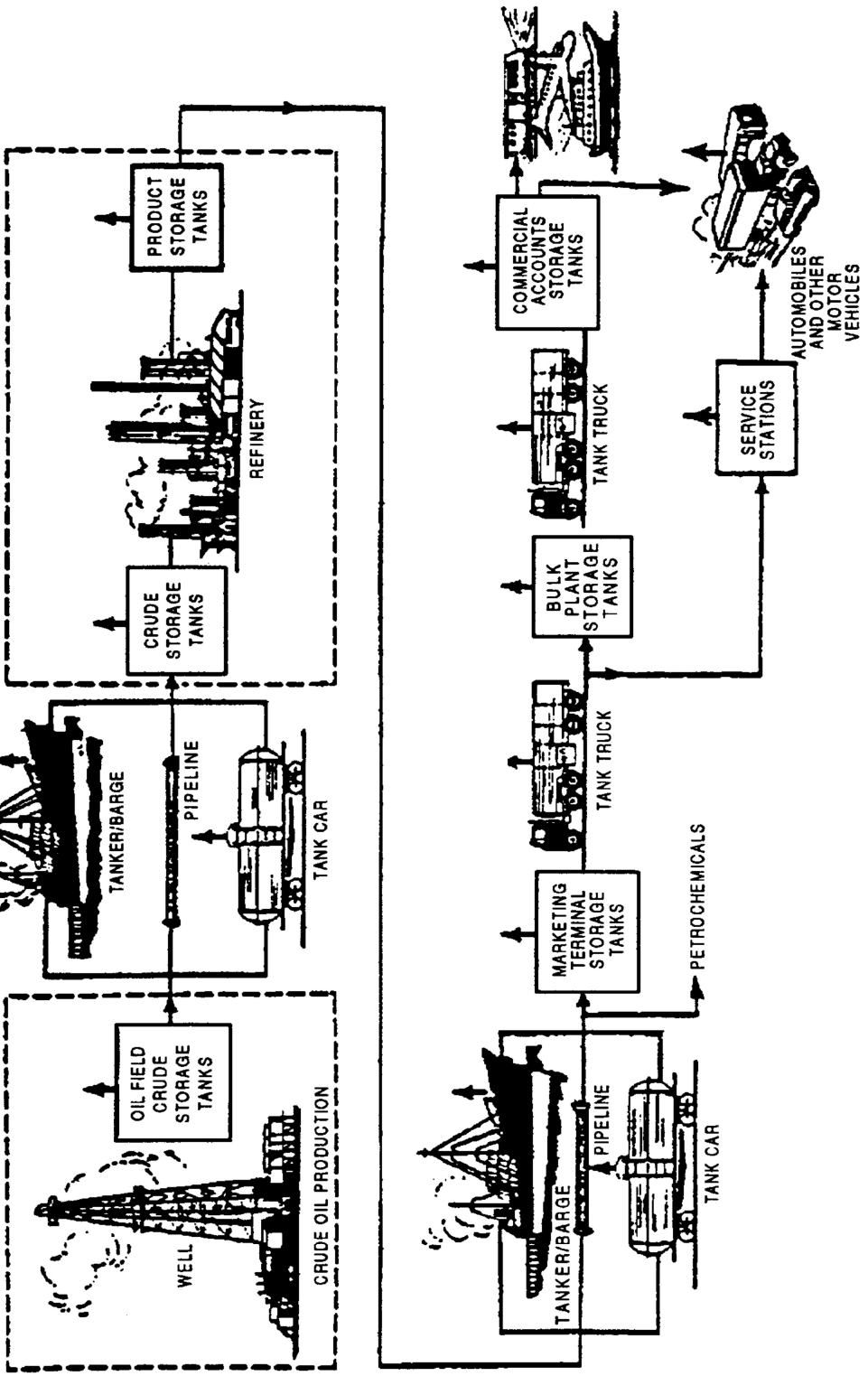


Figure 5.2-1. Flow sheet of petroleum production, refining, and distribution systems. (Points of organic emissions are indicated by vertical arrows.)

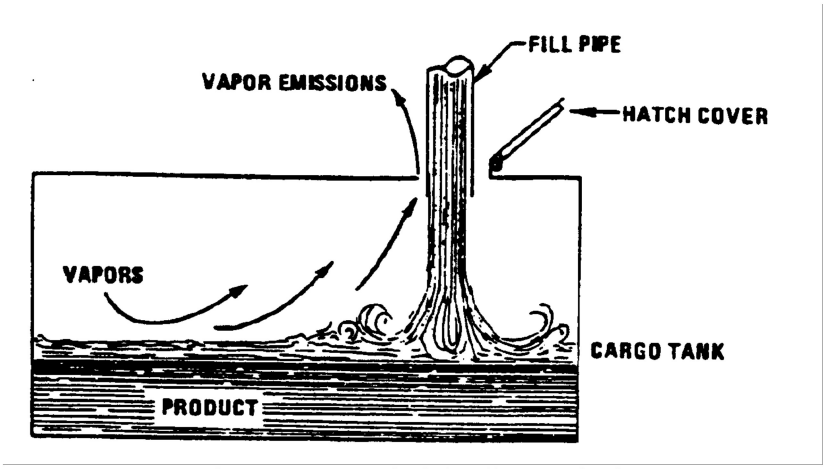


Figure 5.2-2. Splash loading method.

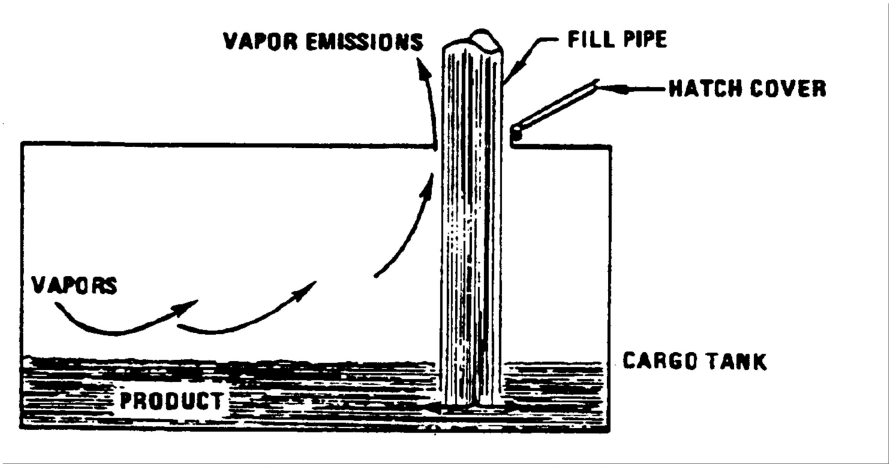


Figure 5.2-3. Submerged fill pipe.

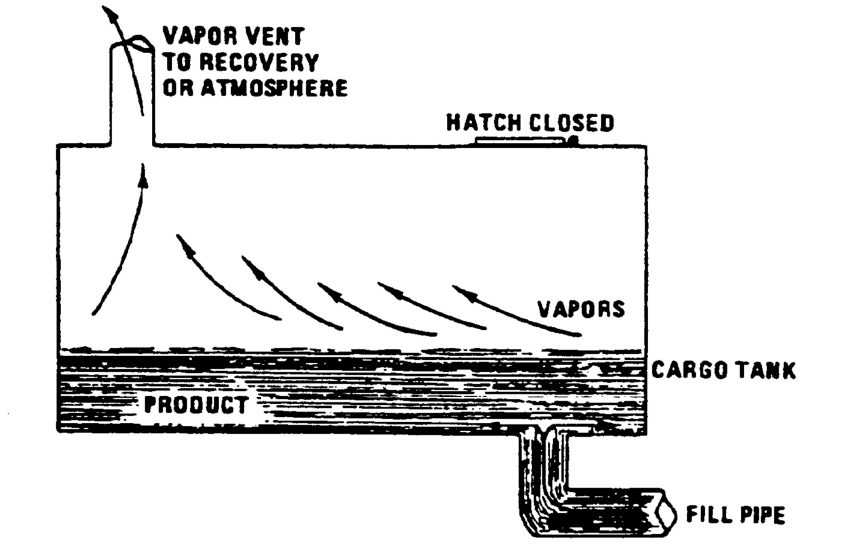


Figure 5.2-4. Bottom loading.

loading operation, resulting in high levels of vapor generation and loss. If the turbulence is great enough, liquid droplets will be entrained in the vented vapors.

A second method of loading is submerged loading. Two types are the submerged fill pipe method and the bottom loading method. In the submerged fill pipe method, the fill pipe extends almost to the bottom of the cargo tank. In the bottom loading method, a permanent fill pipe is attached to the cargo tank bottom. During most of submerged loading by both methods, the fill pipe opening is below the liquid surface level. Liquid turbulence is controlled significantly during submerged loading, resulting in much lower vapor generation than encountered during splash loading.

The recent loading history of a cargo carrier is just as important a factor in loading losses as the method of loading. If the carrier has carried a nonvolatile liquid such as fuel oil, or has just been cleaned, it will contain vapor-free air. If it has just carried gasoline and has not been vented, the air in the carrier tank will contain volatile organic vapors, which will be expelled during the loading operation along with newly generated vapors.

Cargo carriers are sometimes designated to transport only one product, and in such cases are practicing "dedicated service". Dedicated gasoline cargo tanks return to a loading terminal containing air fully or partially saturated with vapor from the previous load. Cargo tanks may also be "switch loaded" with various products, so that a nonvolatile product being loaded may expel the vapors remaining from a previous load of a volatile product such as gasoline. These circumstances vary with the type of cargo tank and with the ownership of the carrier, the petroleum liquids being transported, geographic location, and season of the year.

One control measure for vapors displaced during liquid loading is called "vapor balance service", in which the cargo tank retrieves the vapors displaced during product unloading at bulk plants or service stations and transports the vapors back to the loading terminal. Figure 5.2-5 shows a tank truck in vapor balance service filling a service station underground tank and taking on displaced gasoline vapors for return to the terminal. A cargo tank returning to a bulk terminal in vapor balance service normally is saturated with organic vapors, and the presence of these vapors at the start of submerged loading of the tanker truck results in greater loading losses than encountered during nonvapor balance, or "normal", service. Vapor balance service is usually not practiced with marine vessels, although some vessels practice emission control by means of vapor transfer within their own cargo tanks during ballasting operations, discussed below.

Emissions from loading petroleum liquid can be estimated (with a probable error of ±30 percent)[4] using the following expression:

$$L_L = 12.46 \frac{SPM}{T} \quad (1)$$

where:

L_L = loading loss, pounds per 1000 gallons ($lb/10^3$ gal) of liquid loaded

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see Section 7.1, "Organic Liquid Storage Tanks")
M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) (see Section 7.1, "Organic Liquid Storage Tanks")
T = temperature of bulk liquid loaded, °R (°F + 460)

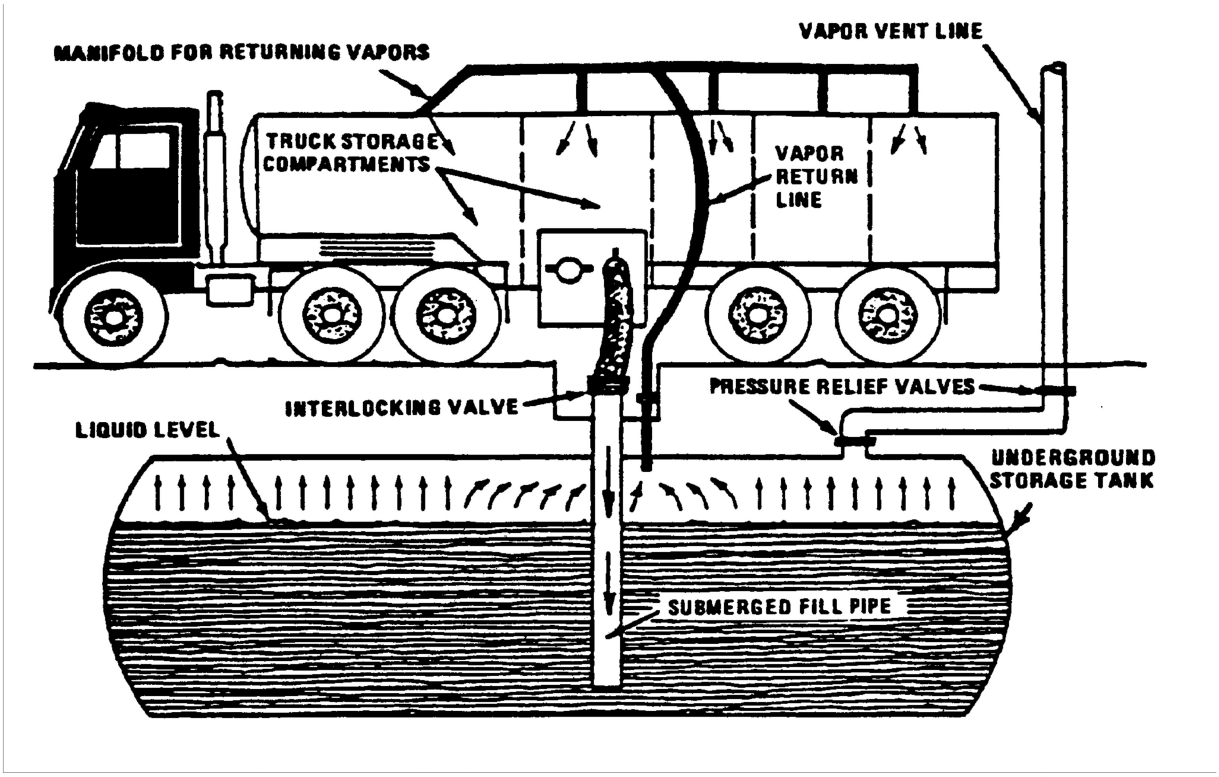


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

Table 5.2-1. SATURATION (S) FACTORS FOR CALCULATING PETROLEUM LIQUID LOADING LOSSES

Cargo Carrier	Mode Of Operation	S Factor
Tank trucks and rail tank cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00
	Splash loading of a clean cargo tank	1.45
	Splash loading: dedicated normal service	1.45
	Splash loading: dedicated vapor balance service	1.00
Marine vessels[a]	Submerged loading: ships	0.2
	Submerged loading: barges	0.5

[a] For products other than gasoline and crude oil. For marine loading of gasoline, use factors from Table 5.2-2. For marine loading of crude oil, use Equations 2 and 3 and Table 5.2-3.

The saturation factor, S, represents the expelled vapor's fractional approach to saturation, and it accounts for the variations observed in emission rates from the different unloading and loading methods. Table 5.2-1 lists suggested saturation factors.

Emissions from controlled loading operations can be calculated by multiplying the uncontrolled emission rate calculated in Equation 1 by an overall reduction efficiency term:

$$\left(1 - \frac{\text{eff}}{100}\right)$$

The overall reduction efficiency should account for the capture efficiency of the collection system as well as both the control efficiency and any downtime of the control device. Measures to reduce loading emissions include selection of alternate loading methods and application of vapor recovery equipment. The latter captures organic vapors displaced during loading operations and recovers the vapors by the use of refrigeration, absorption, adsorption, and/or compression. The recovered product is piped back to storage. Vapors can also be controlled through combustion in a thermal oxidation unit, with no product recovery. Figure 5.2-6 demonstrates the recovery of gasoline vapors from tank trucks during loading operations at bulk terminals. Control efficiencies for the recovery units range from 90 to over 99 percent, depending on both the nature of the vapors and the type of control equipment used.[5-6] However, not all of the displaced vapors reach the control device, because of leakage from both the tank truck and collection system. The collection efficiency should be assumed to be 99.2 percent for tanker trucks passing the MACT-level annual leak test (not more than 1 inch water column pressure change in 5 minutes after pressurizing to 18 inches water followed by pulling a vacuum of 6 inches water).[7] A collection efficiency of 98.7 percent (a 1.3 percent leakage rate) should be assumed for trucks passing the NSPS-level annual test (3 inches pressure change) A collection efficiency of 70 percent should be assumed for trucks not passing one of these annual leak tests[6].

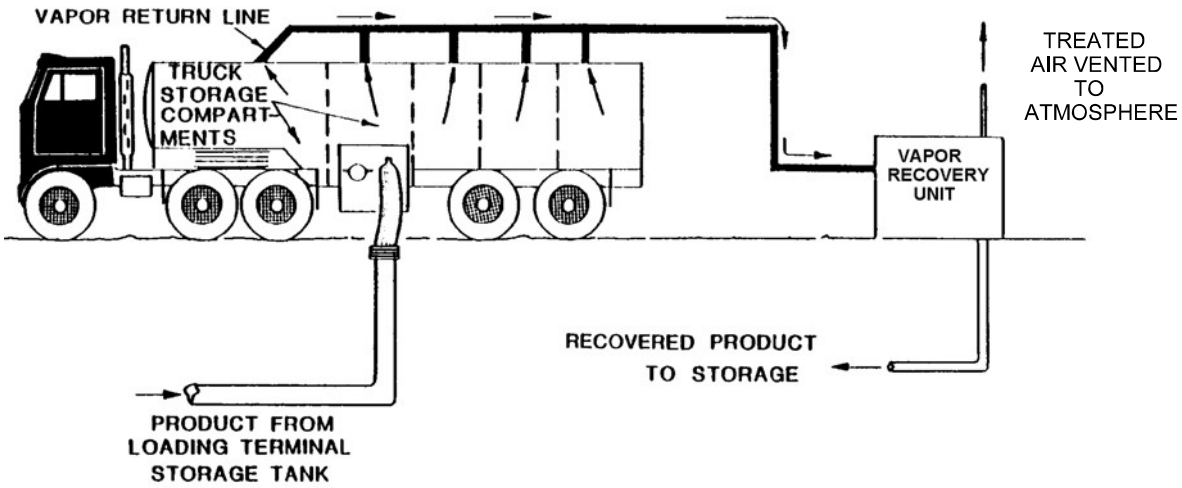


Figure 5.2-6. Tank truck loading with vapor recovery.

Sample Calculation -

Loading losses (L_L) from a gasoline tank truck in dedicated vapor balance service and practicing vapor recovery would be calculated as follows, using Equation 1:

Design basis -

Cargo tank volume is 8000 gal
Gasoline Reid vapor pressure (RVP) is 9 psia
Product temperature is 80°F
Vapor recovery efficiency is 95 percent
Vapor collection efficiency is 98.7 percent (NSPS-level annual leak test)

Loading loss equation -

$$L_L = 12.46 \frac{SPM}{T}\left(1 - \frac{eff}{100}\right)$$

where:

S = saturation factor (see Table 5.2-1) - 1.00
P = true vapor pressure of gasoline = 6.6 psia
M = molecular weight of gasoline vapors = 66
T = temperature of gasoline = 540°R
eff = overall reduction efficiency (95 percent control x 98.7 percent collection) = 94 percent

$$L_L = 12.46 \frac{(1.00)(6.6)(66)}{540}\left(1 - \frac{94}{100}\right)$$

$$= 0.60 \text{ lb}/10^3 \text{ gal}$$

Total loading losses are:

$$(0.60 \text{ lb}/10^3 \text{ gal})(8.0 \times 10^3 \text{ gal}) = 4.8 \text{ pounds (lb)}$$

Measurements of gasoline loading losses from ships and barges have led to the development of emission factors for these specific loading operations.[8] These factors are presented in Table 5.2-2 and should be used instead of Equation 1 for gasoline loading operations at marine terminals. Factors are expressed in units of milligrams per liter (mg/L) and pounds per 1000 gallons (lb/10^3 gal).

Table 5.2-2 (Metric And English Units). VOLATILE ORGANIC COMPOUND (VOC) EMISSION FACTORS FOR GASOLINE LOADING OPERATIONS AT MARINE TERMINALS[a]

Vessel Tank Condition	Previous Cargo	Ships/Ocean Barges[b]		Barges[b]	
		mg/L Transferred	lb/10^3 gal Transferred	mg/L Transferred	lb/10^3 gal Transferred
Uncleaned	Volatile[c]	315	2.6	465	3.9
Ballasted	Volatile	205	1.7	—[d]	—[d]
Cleaned	Volatile	180	1.5	ND	ND
Gas-freed	Volatile	85	0.7	ND	ND
Any condition	Nonvolatile	85	0.7	ND	ND
Gas-freed	Any cargo	ND	ND	245	2.0
Typical overall situation[e]	Any cargo	215	1.8	410	3.4

[a] References 2,9. Factors are for both VOC emissions (which excludes methane and ethane) and total organic emissions, because methane and ethane have been found to constitute a negligible weight fraction of the evaporative emissions from gasoline. ND = no data.
[b] Ocean barges (tank compartment depth about 12.2 m [40 ft]) exhibit emission levels similar to tank ships. Shallow draft barges (compartment depth 3.0 to 3.7 m [10 to 12 ft]) exhibit higher emission levels.
[c] Volatile cargoes are those with a true vapor pressure greater than 10 kilopascals (kPa) (1.5 psia).
[d] Barges are usually not ballasted.
[e] Based on observation that 41% of tested ship compartments were uncleaned, 11% ballasted, 24% cleaned, and 24% gas-freed. For barges, 76% were uncleaned.

In addition to Equation 1, which estimates emissions from the loading of petroleum liquids, Equation 2 has been developed specifically for estimating emissions from the loading of crude oil into ships and ocean barges:

$$C_L = C_A + C_G \quad (2)$$

where:

C_L = total loading loss, lb/10^3 gal of crude oil loaded
C_A = arrival emission factor, contributed by vapors in the empty tank compartment before loading, lb/10^3 gal loaded (see Note below)
C_G = generated emission factor, contributed by evaporation during loading, lb/10^3 gal loaded

Note: Values of C_A for various cargo tank conditions are listed in Table 5.2-3.

5.2-3 (English Units). AVERAGE ARRIVAL EMISSION FACTORS, C_A, FOR CRUDE OIL LOADING EMISSION EQUATION[a]

Ship/Ocean Barge Tank Condition	Previous Cargo	Arrival Emission Factor, lb/10^3 gal
Uncleaned	Volatile[b]	0.86
Ballasted	Volatile	0.46
Cleaned or gas-freed	Volatile	0.33
Any condition	Nonvolatile	0.33

[a] Arrival emission factors (C_A) to be added to generated emission factors (C_G) calculated in Equation 3 to produce total crude oil loading loss (C_L). Factors are for total organic compounds; VOC emission factors average about 15% lower, because VOC does not include methane or ethane.
[b] Volatile cargoes are those with a true vapor pressure greater than 10 kPa (1.5 psia).

This equation was developed empirically from test measurements of several vessel compartments.[8] The quantity C_G can be calculated using Equation 3:

$$C_G = 1.84\ (0.44\ P - 0.42)\ \frac{M\ G}{T} \qquad (3)$$

where:

P = true vapor pressure of loaded crude oil, psia
M = molecular weight of vapors, lb/lb-mole
G = vapor growth factor = 1.02 (dimensionless)
T = temperature of vapors, °R (°F + 460)

Emission factors derived from Equation 3 and Table 5.2-3 represent total organic compounds. Volatile organic compound (VOC) emission factors (which exclude methane and ethane because they are exempted from the regulatory definition of "VOC") for crude oil vapors have been found to range from approximately 55 to 100 weight percent of these total organic factors. When specific vapor composition information is not available, the VOC emission factor can be estimated by taking 85 percent of the total organic factor.[3]

5.2.2.1.2 Ballasting Losses -

Ballasting operations are a major source of evaporative emissions associated with the unloading of petroleum liquids at marine terminals. It is common practice to load several cargo tank compartments with sea water after the cargo has been unloaded. This water, termed "ballast", improves the stability of the empty tanker during the subsequent voyage. Although ballasting practices vary, individual cargo tanks are ballasted typically about 80 percent, and the total vessel 15 to 40 percent, of capacity. Ballasting emissions occur as vapor-laden air in the "empty" cargo tank is displaced to the atmosphere by ballast water being pumped into the tank. Upon arrival at a loading port, the ballast water is pumped from the cargo tanks before the new cargo is loaded. The ballasting of cargo tanks reduces the quantity of vapors returning in the empty tank, thereby reducing the quantity of vapors emitted during subsequent tanker loading. Regulations administered by the U. S. Coast Guard require that, at marine terminals located in ozone nonattainment areas, large tankers with crude oil washing systems contain the organic vapors from ballasting.[10] This is accomplished principally by displacing the vapors during ballasting into a cargo tank being simultaneously unloaded. In other areas, marine vessels emit organic vapors directly to the atmosphere.

Equation 4 has been developed from test data to calculate the ballasting emissions from crude oil ships and ocean barges[8]:

$$L_B = 0.31 + 0.20\ P + 0.01\ PU_A \qquad (4)$$

where:

L_B = ballasting emission factor, lb/10^3 gal of ballast water
P = true vapor pressure of discharged crude oil, psia
U_A = arrival cargo true ullage, before dockside discharge, measured from the deck, feet; (the term "ullage" here refers to the distance between the cargo surface level and the deck level)

Table 5.2-4 lists average total organic emission factors for ballasting into uncleaned crude oil cargo compartments. The first category applies to "full" compartments wherein the crude oil true ullage just before cargo discharge is less than 1.5 meters (m) (5 ft). The second category applies to lightered, or short-loaded, compartments (part of cargo previously discharged, or original load a partial fill), with an arrival true ullage greater than 1.5 m (5 ft). It should be remembered that these tabulated emission factors are examples only, based on average conditions, to be used when crude oil vapor pressure is unknown. Equation 4 should be used when information about crude oil vapor pressure and cargo compartment condition is available. The following sample calculation illustrates the use of Equation 4.

5.2-4 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS FOR CRUDE OIL BALLASTING[a]

Compartment Condition Before Cargo Discharge	Average Emission Factors			
	By Category		Typical Overall[b]	
	mg/L Ballast Water	lb/10^3 gal Ballast Water	mg/L Ballast Water	lb/10^3 gal Ballast Water
Fully loaded[c]	111	0.9	129	1.1
Lightered or previously short loaded[d]	171	1.4		

[a] Assumes crude oil temperature of 16°C (60°F) and RVP of 34 kPa (5 psia). VOC emission factors average about 85% of these total organic factors, because VOCs do not include methane or ethane.
[b] Based on observation that 70% of tested compartments had been fully loaded before ballasting. May not represent average vessel practices.
[c] Assumed typical arrival ullage of 0.6 m (2 ft).
[d] Assumed typical arrival ullage of 6.1 m (20 ft).

Sample Calculation -

Ballasting emissions from a crude oil cargo ship would be calculated as follows, using Equation 4:

Design basis -

Vessel and cargo description: 80,000 dead-weight-ton tanker, crude oil capacity 500,000 barrels (bbl); 20 percent of the cargo capacity is filled with ballast water after cargo discharge. The crude oil has an RVP of 6 psia and is discharged at 75°F.

Compartment conditions: 70 percent of the ballast water is loaded into compartments that had been fully loaded to 2 ft ullage, and 30 percent is loaded into compartments that had been lightered to 15 ft ullage before arrival at dockside.

Ballasting emission equation -

$$L_B = 0.31 + 0.20\ P + 0.01\ PU_A$$

where:

P = true vapor pressure of crude oil
= 4.6 psia
U_A = true cargo ullage for the full compartments = 2 ft, and true cargo ullage for the lightered compartments = 15 ft

$$L_B = 0.70\ [0.31 + (0.20)\ (4.6) + (0.01)\ (4.6)\ (2)] + 0.30\ [0.31 + (0.20)\ (4.6) + (0.01)\ (4.6)\ (15)]$$

$$= 1.5\ lb/10^3\ gal$$

Total ballasting emissions are:

$$(1.5\ lb/10^3\ gal)\ (0.20)\ (500{,}000\ bbl)\ (42\ gal/bbl) = 6{,}300\ lb$$

Since VOC emissions average about 85 percent of these total organic emissions, emissions of VOCs are about: (0.85)(6,300 lb) = 5,360 lb

5.2.2.1.3 Transit Losses -

In addition to loading and ballasting losses, losses occur while the cargo is in transit. Transit losses are similar in many ways to breathing losses associated with petroleum storage (see Section 7.1, "Organic Liquid Storage Tanks"). Experimental tests on ships and barges[4] have indicated that transit losses can be calculated using Equation 5:

$$L_T = 0.1\ PW \qquad (5)$$

where:

L_T = transit loss from ships and barges, lb/week-10^3 gal transported
P = true vapor pressure of the transported liquid, psia
W = density of the condensed vapors, lb/gal

Emissions from gasoline truck cargo tanks during transit have been studied by a combination of theoretical and experimental techniques, and typical emission values are presented in Table 5.2-5.[11-12] Emissions depend on the extent of venting from the cargo tank during transit, which in turn depends on the vapor tightness of the tank, the pressure relief valve settings, the pressure in the tank at the start of the trip, the vapor pressure of the fuel being transported, and the degree of fuel vapor saturation of the space in the tank. The emissions are not directly proportional to the time spent in transit. If the vapor leakage rate of the tank increases, emissions increase up to a point, and then the rate changes as other determining factors take over. Truck tanks in dedicated vapor balance service usually contain saturated vapors, and this leads to lower emissions during transit because no additional fuel evaporates to raise the pressure in the tank to cause venting. Table 5.2-5 lists "typical" values for transit emissions and "extreme" values that could occur in the unlikely event that all determining factors combined to cause maximum emissions.

Table 5.2-5 (Metric And English Units). TOTAL UNCONTROLLED ORGANIC EMISSION FACTORS FOR PETROLEUM LIQUID RAIL TANK CARS AND TANK TRUCKS

Emission Source	Gasoline[a]	Crude Oil[b]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations[c]						
Submerged loading - Dedicated normal service[d]						
mg/L transferred	590	240	180	1.9	1.7	0.01
lb/10^3 gal transferred	5	2	1.5	0.016	0.014	0.0001
Submerged loading - Vapor balance service[d]						
mg/L transferred	980	400	300	—[e]	—[e]	—[e]
lb/10^3 gal transferred	8	3	2.5	—[e]	—[e]	—[e]
Splash loading - Dedicated normal service						
mg/L transferred	1,430	580	430	5	4	0.03
lb/10^3 gal transferred	12	5	4	0.04	0.03	0.0003
Splash loading - Vapor balance service						
mg/L transferred	980	400	300	—[e]	—[e]	—[e]
lb/10^3 gal transferred	8	3	2.5	—[e]	—[e]	—[e]

Table 5.2-5 (cont.).

Emission Source	Gasoline[a]	Crude Oil[b]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Transit losses						
Loaded with product						
mg/L transported						
Typical	0 - 1.0	ND	ND	ND	ND	ND
Extreme	0 - 9.0	ND	ND	ND	ND	ND
lb/10^3 gal transported						
Typical	0 - 0.01	ND	ND	ND	ND	ND
Extreme	0 - 0.08	ND	ND	ND	ND	ND
Return with vapor						
mg/L transported						
Typical	0 - 13.0	ND	ND	ND	ND	ND
Extreme	0 - 44.0	ND	ND	ND	ND	ND
lb/10^3 gal transported						
Typical	0 - 0.11	ND	ND	ND	ND	ND
Extreme	0 - 0.37	ND	ND	ND	ND	ND

[a] Reference 2. Gasoline factors represent emissions of VOC as well as total organics, because methane and ethane constitute a negligible weight fraction of the evaporative emissions from gasoline. VOC factors for crude oil can be assumed to be 15% lower than the total organic factors, to account for the methane and ethane content of crude oil evaporative emissions. All other products should be assumed to have VOC factors equal to total organics. The example gasoline has an RVP of 69 kPa (10 psia). ND = no data.
[b] The example crude oil has an RVP of 34 kPa (5 psia).
[c] Loading emission factors are calculated using Equation 1 for a dispensed product temperature of 16°C (60°F).
[d] Reference 2.
[e] Not normally used.

In the absence of specific inputs for Equations 1 through 5, the typical evaporative emission factors presented in Tables 5.2-5 and 5.2-6 should be used. It should be noted that, although the crude oil used to calculate the emission values presented in these tables has an RVP of 5, the RVP of crude oils can range from less than 1 up to 10. Similarly, the RVP of gasolines ranges from 7 to 13. In areas where loading and transportation sources are major factors affecting air quality, it is advisable to obtain the necessary parameters and to calculate emission estimates using Equations 1 through 5.

5.2.2.2 Service Stations -

Another major source of evaporative emissions is the filling of underground gasoline storage tanks at service stations. Gasoline is usually delivered to service stations in 30,000-liter (8,000-gal) tank trucks or smaller account trucks. Emissions are generated when gasoline vapors in the underground storage tank are displaced to the atmosphere by the gasoline being loaded into the tank. As with other loading losses, the quantity of loss in service station tank filling depends on several variables, including the method and rate of filling, the tank configuration, and the gasoline temperature, vapor pressure and composition. An average emission rate for submerged filling is 880 mg/L (7.3 lb/1000 gal) of transferred gasoline, and the rate for splash filling is 1380 mg/L (11.5 lb/1000 gal) transferred gasoline (see Table 5.2-7).[5]

Table 5.2-6 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS FOR PETROLEUM MARINE VESSEL SOURCES[a]

Emission Source	Gasoline[b]	Crude Oil[c]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations						
Ships/ocean barges						
mg/L transferred	—[d]	73	60	0.63	0.55	0.004
lb/10^3 gal transferred	—[d]	0.61	0.50	0.005	0.005	0.00004
Barges						
mg/L transferred	—[d]	120	150	1.60	1.40	0.011
lb/10^3 gal transferred	—[d]	1.0	1.2	0.013	0.012	0.00009
Tanker ballasting						
mg/L ballast water	100	—[e]	ND	ND	ND	ND
lb/10^3 gal ballast water	0.8	—[e]	ND	ND	ND	ND
Transit						
mg/week-L transported	320	150	84	0.60	0.54	0.003
lb/week-10^3 gal transported	2.7	1.3	0.7	0.005	0.005	0.00003

[a] Factors are for a dispensed product of 16°C (60°F). ND = no data.
[b] Factors represent VOC as well as total organic emissions, because methane and ethane constitute a negligible fraction of gasoline evaporative emissions. All products other than crude oil can be assumed to have VOC factors equal to total organic factors. The example gasoline has an RVP of 69 kPa (10 psia).
[c] VOC emission factors for a typical crude oil are 15% lower than the total organic factors shown, in order to account for methane and ethane. The example crude oil has an RVP of 34 kPa (5 psia).
[d] See Table 5.2-2 for these factors.
[e] See Table 5.2-4 for these factors.

Emissions from underground tank filling operations at service stations can be reduced by the use of a vapor balance system such as in Figure 5.2-5 (termed Stage I vapor control). The vapor balance system employs a hose that returns gasoline vapors displaced from the underground tank to the tank truck cargo compartments being emptied. The control efficiency of the balance system ranges from 93 to 100 percent. Organic emissions from underground tank filling operations at a service station employing a vapor balance system and submerged filling are not expected to exceed 40 mg/L (0.3 lb/1000 gal) of transferred gasoline.

Table 5.2-7 (Metric And English Units). EVAPORATIVE EMISSIONS FROM GASOLINE SERVICE STATION OPERATIONS[a]

Emission Source	Emission Rate	
	mg/L Throughput	lb/10^3 gal Throughput
Filling underground tank (Stage I)		
Submerged filling	880	7.3
Splash filling	1,380	11.5
Balanced submerged filling	40	0.3
Underground tank breathing and emptying[b]	120	1.0
Vehicle refueling operations (Stage II)		
Displacement losses (uncontrolled)[c]	1,320	11.0
Displacement losses (controlled)	132	1.1
Spillage	80	0.7

[a] Factors are for VOC as well as total organic emissions, because of the methane and ethane content of gasoline evaporative emissions is negligible.
[b] Includes any vapor loss between underground tank and gas pump.
[c] Based on Equation 6, using average conditions.

A second source of vapor emissions from service stations is underground tank breathing. Breathing losses occur daily and are attributable to gasoline evaporation and barometric pressure changes. The frequency with which gasoline is withdrawn from the tank, allowing fresh air to enter to enhance evaporation, also has a major effect on the quantity of these emissions. An average breathing emission rate is 120 mg/L (1.0 lb/1000 gal) of throughput.

5.2.2.3 Motor Vehicle Refueling -

Service station vehicle refueling activity also produces evaporative emissions. Vehicle refueling emissions come from vapors displaced from the automobile tank by dispensed gasoline and from spillage. The quantity of displaced vapors depends on gasoline temperature, auto tank temperature, gasoline RVP, and dispensing rate. Equation 6 can be used to estimate uncontrolled displacement losses from vehicle refueling for a particular set of conditions.[14]

$$E_R = 264.2\ [(-5.909) - 0.0949\ (\Delta T) + 0.0884\ (T_D) + 0.485\ (RVP)] \quad (6)$$

where:

E_R = refueling emissions, mg/L
ΔT = difference between temperature of fuel in vehicle tank and temperature of dispensed fuel, °F
T_D = temperature of dispensed fuel, °F
RVP = Reid vapor pressure, psia

Note that this equation and the spillage loss factor are incorporated into the *MOBILE* model. The *MOBILE* model allows for disabling of this calculation if it is desired to include these emissions in the stationary area source portion of an inventory rather than in the mobile source portion. It is estimated that the uncontrolled emissions from vapors displaced during vehicle refueling average 1320 mg/L (11.0 lb/1000 gal) of dispensed gasoline.[5,13]

Spillage loss is made up of contributions from prefill and postfill nozzle drip and from spit-back and

overflow from the vehicles's fuel tank filler pipe during filling. The amount of spillage loss can depend on several variables, including service station business characteristics, tank configuration, and operator techniques. An average spillage loss is 80 mg/L (0.7 lb/1000 gal) of dispensed gasoline.[5,13]

Control methods for vehicle refueling emissions are based on conveying the vapors displaced from the vehicle fuel tank to the underground storage tank vapor space through the use of a special hose and nozzle, as depicted in Figure 5.2-7 (termed Stage II vapor control). In "balance" vapor control systems, the vapors are conveyed by natural pressure differentials established during refueling. In "vacuum assist" systems, the conveyance of vapors from the auto fuel tank to the underground storage tank is assisted by a vacuum pump. Tests on a few systems have indicated overall systems control efficiencies in the range of 88 to 92 percent.[5,13] When inventorying these emissions as an area source, rule penetration and rule effectiveness should also be taken into account. *Procedures For Emission Inventory Preparation, Volume IV: Mobile Sources*, EPA-450/4-81-026d, provides more detail on this.

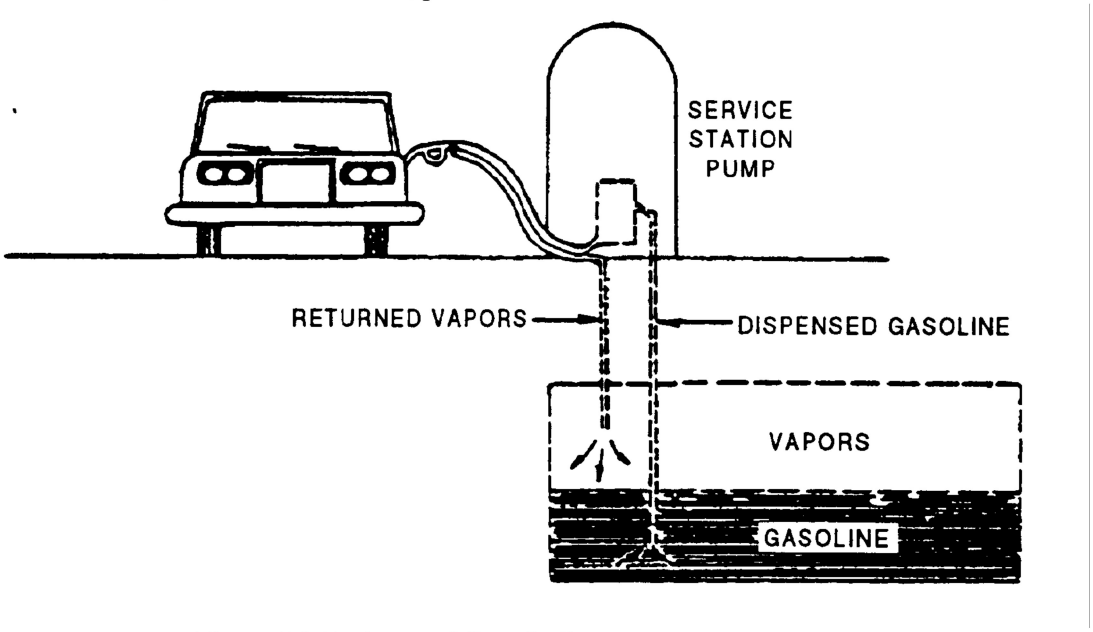


Figure 5.2-7. Automobile refueling vapor recovery system.

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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 $1b/10^6$ 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-Methylchloranthrene[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
205-82-3	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

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

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

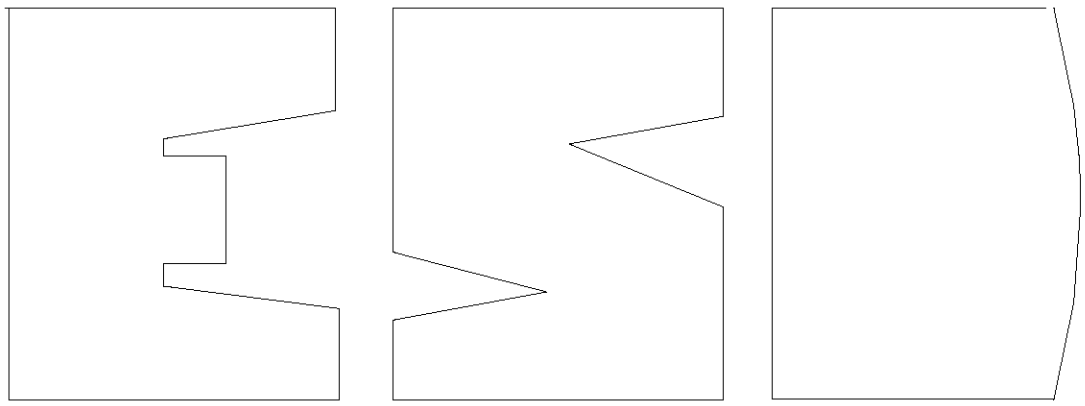


TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

Other Information for Emission Units With No Changes

MECHANICAL EQUIPMENT INC.

May 3, 2021

Durango Permian
2002 Timberloch Place, Ste 110
The Woodlands, TX 77380

Attention: Darin Kennard

Reference: MEI Quote #21-04-5418
Catalyst Efficiencies – MEQGT1.0/ONT

Darin,

Per your request, I am sending you the information regarding the reduction efficiency of the catalysts that you have installed at Abo compressor station.

The Make and Model of the catalyst is a MEQGT-1.0/ONT.

The catalyst will be installed in a Caterpillar 3516TALE:
BHP: 1340
RPM: 1400
Exhaust Temp: 854 Deg F
Exhaust Flow: 7644 cfm

The catalyst mentioned above are guaranteed to meet or exceed the following efficiencies:
70% reduction of CO
50% reduction of VOC
90% reduction of HCHO

If you need any additional information please do not hesitate to contact Mechanical Equipment, Inc. at your earliest convenience and we will be more than happy to assist you. Thank you for your continued business.

Kind Regards,
Kevin Fikes

G3516 LE

NON-CURRENT

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
Exterran
121045 Frontier Field Services 3516

CATERPILLAR®

ENGINE SPEED (rpm):	1400	FUEL SYSTEM:	HPG IMPCO WITH AIR FUEL RATIO CONTROL
COMPRESSION RATIO:	8:1		
AFTERCOOLER WATER INLET (°F):	130	**SITE CONDITIONS:**	
JACKET WATER OUTLET (°F):	210	FUEL:	Gas Analysis
COOLING SYSTEM:	JW+OC, AC	FUEL PRESSURE RANGE(psig):	35.0-40.0
IGNITION SYSTEM:	EIS	FUEL METHANE NUMBER:	90.7
EXHAUST MANIFOLD:	ASWC	FUEL LHV (Btu/scf):	907
COMBUSTION:	Low Emission	ALTITUDE(ft):	3200
NOx EMISSION LEVEL (g/bhp-hr NOx):	1.5	MAXIMUM INLET AIR TEMPERATURE(°F):	100
SET POINT TIMING:	33.0	NAMEPLATE RATING:	1340 bhp@1400rpm

			MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING	**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(1)	bhp	1340	1340	1005	670
INLET AIR TEMPERATURE		°F	100	100	100	100
ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	7544	7544	7805	8285
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	8374	8374	8663	9195
AIR FLOW	(3)(4)	lb/hr	12793	12793	9894	6262
AIR FLOW WET (77°F, 14.7 psia)	(3)(4)	scfm	2885	2885	2231	1412
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	69.9	69.9	55.0	39.1
EXHAUST STACK TEMPERATURE	(6)	°F	854	854	840	842
EXHAUST GAS FLOW (@ stack temp, 14.5 psia)	(7)(4)	ft3/min	7644	7644	5847	3734
EXHAUST GAS MASS FLOW	(7)(4)	lb/hr	13283	13283	10275	6531
EMISSIONS DATA						
NOx (as NO2)	(8)	g/bhp-hr	1.50	1.50	1.50	1.50
CO	(8)	g/bhp-hr	1.88	1.88	1.96	1.89
THC (mol. wt. of 15.84)	(8)	g/bhp-hr	3.06	3.06	3.39	3.59
NMHC (mol. wt. of 15.84)	(8)	g/bhp-hr	0.46	0.46	0.51	0.54
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	0.31	0.31	0.34	0.36
HCHO (Formaldehyde)	(8)	g/bhp-hr	0.25	0.25	0.28	0.30
CO2	(8)	g/bhp-hr	490	490	507	538
EXHAUST OXYGEN	(10)	% DRY	8.3	8.3	8.0	7.8
HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(11)	Btu/min	41273	41273	34512	29683
HEAT REJ. TO ATMOSPHERE	(11)	Btu/min	5313	5313	4428	3543
HEAT REJ. TO LUBE OIL (OC)	(11)	Btu/min	6526	6526	5457	4693
HEAT REJ. TO AFTERCOOLER (AC)	(11)(12)	Btu/min	13788	13788	9320	3302

HEAT EXCHANGER SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+OC)	(12)	Btu/min	53232
TOTAL AFTERCOOLER CIRCUIT (AC)	(12)(13)	Btu/min	14477
A cooling system safety factor of 0% has been added to the heat exchanger sizing criteria.			

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature.
100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature.
Max. rating is the maximum capability for the specified fuel at site altitude and reduced inlet air temperature.
Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

PREPARED BY: Michael Serrett, Exterran
Data generated by Gas Engine Rating Pro Version 3.03.01
Ref. Data Set DM5155-06-000, 4EK, Printed 03May2010

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x [c] 90 - 105% Load	4.08 E+00	B
NO_x [c] <90% Load	8.47 E-01	B
CO [c] 90 - 105% Load	3.17 E-01	C
CO [c] <90% Load	5.57 E-01	B
CO_2 [d]	1.10 E+02	A
SO_2 [e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane [k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene [k]	2.67E-04	D
1,3-Dichloropropene [k]	<2.64 E-05	E
2-Methylnaphthalene [k]	3.32 E-05	C
2,2,4-Trimethylpentane [k]	2.50 E-04	C
Acenaphthene [k]	1.25 E-06	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
Acenaphthylene[k]	5.53 E-06	C
Acetaldehydek,[l]	8.36 E-03	A
Acroleink,[l]	5.14 E-03	A
Benzene[k]	4.40 E-04	A
Benzo(b)fluoranthene[k]	1.66 E-07	D
Benzo(e)pyrene[k]	4.15 E-07	D
Benzo(g,h,i)perylene[k]	4.14 E-07	D
Biphenyl[k]	2.12 E-04	D
Butane	5.41 E-04	D
Butyr/Isobutyraldehyde	1.01 E-04	C
Carbon Tetrachloride[k]	<3.67 E-05	E
Chlorobenzene[k]	<3.04 E-05	E
Chloroethane	1.87 E-06	D
Chloroform[k]	<2.85 E-05	E
Chrysene[k]	6.93 E-07	C
Cyclopentane	2.27 E-04	C
Ethane	1.05 E-01	C
Ethylbenzene[k]	3.97 E-05	B
Ethylene Dibromide[k]	<4.43 E-05	E
Fluoranthene[k]	1.11 E-06	C
Fluorene[k]	5.67 E-06	C
Formaldehyde[k, l]	5.28 E-02	A
Methanol[k]	2.50 E-03	B
Methylcyclohexane	1.23 E-03	C
Methylene Chloride[k]	2.00 E-05	C
n-Hexane[k]	1.11 E-03	C
n-Nonane	1.10 E-04	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

Pollutant	Emission Factor (lb/MMBtu)b (fuel input)	Emission Factor Rating
n-Octane	3.51 E-04	C
n-Pentane	2.60 E-03	C
Naphthalene[k]	7.44 E-05	C
PAH[k]	2.69 E-05	D
Phenanthrene[k]	1.04 E-05	D
Phenol[k]	2.40 E-05	D
Propane	4.19 E-02	C
Pyrene[k]	1.36 E-06	C
Styrene[k]	<2.36 E-05	E
Perchloroethylene[k, m]	2.48 E-06	D
Toluene[k]	4.08 E-04	B
Vinyl Chloride[k]	1.49 E-05	C
Xylene[k]	1.84 E-04	B

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NO_x control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM-10 ≤ Particulate Matter 10 microns (µm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

lb/hp-hr = (lb/MMBtu) (heat input, MMBtu/hr) (1/operating HP, 1/hp)

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

h = heating value of natural gas (assume 1020 Btu/scf at 60°F).
[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6 scf.
[f] Emission factor for TOC is based on measured emission levels from 22 source tests.
[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.31 lb/MMBtu vs. 1.25 lb/MMBtu, respectively.
[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.
[i] Considered ≤ 1 µm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).
[j] PM Condensable = PM Condensable Inorganic + PM-Condensable Organic
[k] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.
[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.
[m]Error identified in pollutant name – October 2024. Pollutant name changed from tetrachloroethane to perchloroethylene.



October 2000
RG-109 (Draft)

Air Permit Technical Guidance for Chemical Sources:

Flares and Vapor Oxidizers

printed on recycled paper

Air Permits Division

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION



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Technical Disclaimer

This document is intended as guidance to explain the specific requirements for new source review permitting of flares and vapor oxidizers; it does not supersede or replace any state or federal law, regulation, or rule. References to abatement equipment technologies are not intended to represent minimum or maximum levels of Best Available Control Technology (BACT). Determinations of BACT are made on a case-by-case basis as part of the New Source Review of permit applications. BACT determinations are always subject to adjustment in consideration of specific process requirements, air quality concerns, and recent developments in abatement technology. Additionally, specific health effects concerns may indicate stricter abatement than required by the BACT determination.

The represented calculation methods are intended as an aid in the completion of acceptable submittals; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data.

These guidelines are applicable as of this document's publication date but are subject to revision during the permit application preparation and review period. It is the responsibility of the applicants to remain abreast of any guideline or regulation developments that may affect their industries.

The electronic version of this document may not contain attachments or forms (such as the PI-1, Standard Exemptions, or tables) that can be obtained electronically elsewhere on the TNRCC Web site.

The special conditions included with these guidelines are for purposes of example only. Special conditions included in an actual permit are written by the reviewing engineer to address specific permit requirements and operating conditions.

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Chapter 2—Types of Flare and Oxidizer Systems

This document provides guidance for two classes of vapor combustion control devices: flares and vapor oxidizers. While there may be some overlap between the two, flares have generally been treated separately by the EPA and the TNRCC, in large part because flares have an open flame and often cannot be sampled, so emissions are estimated based on the results of flare testing performed in the early 1980s. Each of the two classes will be dealt with separately in each of the chapters of this document.

Combustion Control Devices NOT Discussed. This document will not cover permitting of RCRA or BIF units because the requirements for these units often go beyond the requirements for state air permitting. Incinerators used to treat solid wastes are covered in another technical guidance document, *Incinerators*. Guidance for combustion control devices associated with spray paint booths, coatings operations, and semiconductor facilities should be obtained by calling the TNRCC New Source Review Permits Division at (512) 239-1250.

Flares

Flare systems generally are open-flame control devices used for disposing of waste gas streams during both routine process and emergency or upset conditions. In addition to simple, unassisted flares, typical smokeless flare systems include, but are not limited to, the following:

- ***Enclosed Flares/Vapor Combustors.*** Enclosed flares are used in disposing of waste gas streams in instances where a visible flame is unacceptable. Applications include chemical processing, petroleum refining and production, and municipal waste gas treatment. These may be referred to as vapor combustors and can have more than one burner in the stack.

- ***Steam-Assisted Flares***. Steam-assisted flares are used in disposing of low-pressure waste gas streams when steam is available and practical to minimize smoking from the flare. Applications are similar to those of enclosed flares. Flares might also be assisted with natural gas if readily available on site; these flares would undergo a case-by-case review.

- ***Air-Assisted Flares.*** Air-assisted flares are used in disposing of low-pressure waste gas streams when practical or when steam utilities are not available to minimize smoking from the flare. Applications include chemical processing, petroleum refining and production, and pipeline transportation.

- ***Sonic Flares.*** Sonic flares are used in disposing of high-pressure waste gas streams. Applications include gas production, pipeline transportation, and treatment plants.

- ***Multipoint Flare Systems.*** Multipoint flare systems are used in disposing of both high- and low-pressure waste gas streams. Multiple burner tips in conjunction with a staged control system provide for controlled combustion. Applications are similar to those of air-assisted flares.

Vapor Oxidizers

These devices generally do not have an open flame but have an exhaust stack which allows for sampling and monitoring of exhaust emissions. The most common type, thermal, relies on the combustion heat of the waste gas and assist fuel (if required) to oxidize the waste gas air contaminants. Other types include:

- ***Recuperative.*** In this case, the waste gas is directed to a heat exchanger to be preheated by the exhaust gas, to minimize the need for additional assist fuel. Recuperative oxidizers are considered a subset of thermal oxidizers in this document.

- ***Regenerative***. Combustion takes place in a chamber with a heat sink, such as ceramic saddles, which retains the heat of combustion, allowing for combustion of more dilute vapor streams (which have a low heat of combustion) at a lower cost. These units generally have multiple chambers, which allow for the preheat of one chamber by exhaust gases while combustion takes place in another chamber.

- ***Catalytic.*** Combustion takes place over a catalyst that allows for combustion at a lower temperature (in the range of 600 to 800°F as opposed to greater than 1400°F for many thermal oxidizers). Catalytic oxidizers function best with a waste stream with constant flow and composition.

This chapter provides detailed instructions for the calculations necessary to verify BACT and estimate emissions from flares and vapor oxidizers. Flares must be checked to determine whether they will satisfy the flow and thermal requirements of 40 CFR § 60.18, and their emissions are determined by the use of emission factors. Example calculations are provided for these flare calculations.

Oxidizer emissions are determined by using previous sampling results or emission factors from the manufacturer or AP-42. These calculations are very similar to the flare calculations and are only discussed in general terms.

Flares: Introduction

Although emissions from emergency flares are not included in a permit when it is issued, emissions should be estimated for both routine process flares and emergency flares. Sometimes, emissions of routine pilot gas combustion may be included in an issued permit for emergency flares (although not required).

In this section, the *flare* emission factors and destruction efficiencies are presented first. This information is followed by sample *calculations* that demonstrate how to ensure that the requirements of 40 CFR § 60.18 are satisfied and how to estimate emissions from a flare. Flare data in Attachment B (typical refinery flare) will be used as a basis in most of the following calculations. Flare data in Attachment C (acid gas flare) will be used as a basis in the example calculations for SO_2 emissions.

Flare Emission Factors

The usual flare destruction efficiencies and emission factors are provided in Table 4. The high-Btu waste streams referred to in the table have a heating value greater than 1,000 Btu/scf.

Flare Destruction Efficiencies

Claims for destruction efficiencies greater than those listed in Table 4 will be considered on a case-by-case basis. The applicant may make one of the three following demonstrations to justify the higher destruction efficiency: (1) general method, (2) 99.5 percent justification, or (3) flare stack sampling.

Table 4. Flare Factors

Waste Stream	Destruction/Removal Efficiency (DRE)		
VOC	98 percent (generic) 99 percent for compounds containing no more than 3 carbons that contain no elements other than carbon and hydrogen in addition to the following compounds: methanol, ethanol, propanol, ethylene oxide and propylene oxide		
H_2S	98 percent		
NH_3	case by case		
CO	case by case		
Air Contaminants	**Emission Factors**		
thermal NO_x	steam-assist:	high Btu	0.0485 lb/MMBtu
		low Btu	0.068 lb/MMBtu
	other:	high Btu	0.138 lb/MMBtu
		low Btu	0.0641 lb/MMBtu
fuel NO_x	NO_x is 0.5 wt percent of inlet NH_3, other fuels case by case		
CO	steam-assist:	high Btu	0.3503 lb/MMBtu
		low Btu	0.3465 lb/MMBtu
	other:	high Btu	0.2755 lb/MMBtu
		low Btu	0.5496 lb/MMBtu
PM	none, required to be smokeless		
SO_2	100 percent S in fuel to SO_2		

*The only exeption ot this is if inorganics might be emitted from the flare. In the case of landfills, the AP-42 PM factor may be used. In other cases, the emissions should be based on the composition of the waste stream routed to the flare.

MANLEY GAS TESTING, INC.
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OFFICE(432)367-3024 FAX(432)367-1166 E-MAIL: MANLEYGAST@AOL.COM

CHARGE..... 151 - 0
REC. NO. 3
TEST NUMBER.. 12736

DATE SAMPLED..... 03-16-15
DATE RUN..... 03-18-15
EFFEC. DATE..... 03-01-15

STATION NO. ... 633001

PRODUCER ..... FRONTIER FIELD SERVICES

SAMPLE NAME.... #2 INLET TYPE: COMPOSITE

RECEIVED FROM.. FRONTIER FIELD SERVICES LLC - ABO

FLOWING PRESSURE ..... 32.4 PSIA FLOWING TEMPERATURE ..... 62 F

SAMPLED BY: F CYLINDER NO. ...

FRACTIONAL ANALYSIS
CALCULATED @ 14.650 PSIA AND 60F

	MOL%	GPM (REAL)
HYDROGEN SULFIDE...	1.487	
NITROGEN.....	2.167	
CARBON DIOXIDE.....	2.381	
METHANE.....	66.433	
ETHANE.....	14.674	3.920
PROPANE.....	7.552	2.079
ISO-BUTANE.....	0.935	0.305
NOR-BUTANE.....	2.317	0.729
ISO-PENTANE.....	0.586	0.214
NOR-PENTANE.....	0.576	0.209
HEXANES +.....	0.892	0.389
TOTALS	100.000	7.845

H2S PPMV = 14870

'Z' FACTOR (DRY) = 0.9954
'Z' FACTOR (WET) = 0.9950

26 LB. R.V.P. = 1.232

..CALCULATED SPECIFIC GRAVITIES..

REAL, DRY 0.8363

REAL, WET 0.8329

..CALCULATED GROSS HEATING VALUES..

BTU/CF - REAL, DRY 1321

BTU/CF - REAL, WET 1298

DISTRIBUTION AND REMARKS:

N

ANALYZED BY: AW
** R **

APPROVED: MC

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA, TEXAS-432-367-3024

A SAMPLE OF 633001 FFS - INLET #2 (3/16/15)

CAPILLARY EXTENDED
C-6+ ANALYSIS
(NORMALIZED TO 100%)

COMPONENT	MOL%	WT%
NEOHEXANE	0.411	0.377
2,3DMC4+CYC5	4.731	3.781
2MPENTANE	10.911	10.021
3MPENTANE	6.170	5.666
N-HEXANE	12.051	11.070
2,2 DMPENTANE	0.122	0.131
MCYCLOPENTANE	7.524	6.749
2,4 DMPENTANE	0.000	0.000
2,2,3 TMBUTANE	0.025	0.027
BENZENE	8.177	6.807
3,3 DMPENTANE	0.042	0.045
CYCLOHEXANE	9.035	8.104
2MHEXANE	1.498	1.600
2,3 DMPENTANE	1.036	1.106
3MHEXANE	1.793	1.915
DIMCYCPENTANES(GROUPED)	3.588	3.755
N-HEPTANE	3.342	3.569
MCYCLOHEXANE	5.774	6.042
2,2DMHEXANE	0.664	0.808
2,3,3TMPENTANE	0.020	0.025
TOLUENE	6.191	6.079
2,3DMHEXANE	0.140	0.171
2M3EPENTANE	0.052	0.063
2MHEPTANE	1.442	1.755
4MHEPTANE	0.244	0.297
3,4DMHEXANE	0.087	0.106
3MHEPTANE	0.779	0.948
TRIMCYCPENTANES(GROUPED)	0.126	0.151
DIMCYCHEXANES(GROUPED)	1.313	1.572
N-OCTANE	1.115	1.357
2,3,5TRIMHEXANE	0.049	0.067
2,2,4TRIMHEXANE	0.119	0.162
2,2DIMHEPTANE	0.024	0.033
2,2,3TRIMHEXANE	0.037	0.050
2,5DIMHEPTANE	0.044	0.060
I-NONANE	0.000	0.000
2,4DIMHEPTANE	0.042	0.057
E-CYCHEXANE	0.598	0.716
3,3DIMHEPTANE	0.211	0.289
2,6DIMHEPTANE	0.059	0.080
E-BENZENE	0.113	0.128
2,3DIMHEPTANE	0.055	0.075
M-XYLENE	0.967	1.094
P-XYLENE	0.271	0.306
3,4DIMHEPTANE	0.221	0.302
3EHEPTANE	0.051	0.070

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA, TEXAS-432-367-3024

A SAMPLE OF 633001 FFS - INLET #2 (3/16/15)

CAPILLARY EXTENDED
C-6+ ANALYSIS
(NORMALIZED TO 100%)

COMPONENT	MOL%	WT%
4MOCTANE	0.254	0.347
3MOCTANE	0.126	0.172
O-XYLENE	0.170	0.192
IC4CYCPENTANE	0.076	0.103
N-NONANE	0.569	0.778
I-DECANE	0.100	0.152
1E1MCYC6	0.114	0.153
IC3BENZENE	0.274	0.351
2,3DMOCTANE	0.711	1.079
3EOCTANE	1.632	2.474
NC4CYCC6	0.268	0.400
NC3BENZENE	0.338	0.434
M+P E-TOLUENE	0.739	0.946
O-E-TOLUENE	0.522	0.668
2,2DMOCTANE	0.390	0.592
TERTBUTYLBENZENE	0.119	0.170
1,3,5TMBENZENE	0.074	0.095
3,6DMOCTANE	0.175	0.265
IC4BENZENE	0.583	0.835
N-DECANE	0.440	0.667
UNKNOWN C-6'S	0.000	0.000
UNKNOWN C-7'S	0.000	0.000
UNKNOWN C-8'S	0.022	0.027
UNKNOWN C-9'S	0.834	1.140
UNK C10'S THRU C14'S	0.206	0.374
UNK C15'S THRU C16'S	0.000	0.000
UNK C17'S THRU C20'S	0.000	0.000
TOTAL	100.000	100.000

COMPONENT GROUPINGS (PARAFFINS-NAPTHENES-AROMATICS)

	MOL%	WT%
TOTAL C-6'S	59.010	52.575
TOTAL C-7'S	23.411	24.269
TOTAL C-8'S	8.123	9.716
TOTAL C-9'S	4.832	6.432
TOTAL C-10'S	4.418	6.634
TOTAL C-11 THRU C-14	0.206	0.374
TOTAL C-15 THRU C-16	0.000	0.000
TOTAL C-17 THRU C-20	0.000	0.000
TOTAL	100.000	100.000

* C6+ CHARACTERIZATION

MOL.WEIGHT = 93.830
SP.GRAVITY = 3.2397
BTU/FT3(DRY) = 4984.962
BTU/FT3(WET) = 4899.101
CU.FT./GAL = 25.048
GAL/CU.FT. = 0.039923
MOL% C6+ AROMATICS = 18.538

Original sample used in prior applications.

September 3, 2019

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Frontier Field Services, LLC
2002 Timberloch Place, Suite 110
The Woodlands, Texas 77380

Sample: Empire Abo Compressor Station
Gas Liberated from Separator Water
From 22 psig & 91 °F to 0 psig & 70 °F

Date Sampled: 08/21/2019 Job Number: 192952.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	2.800	
Nitrogen	6.876	
Carbon Dioxide	34.608	
Methane	29.650	
Ethane	6.959	1.916
Propane	4.064	1.153
Isobutane	1.427	0.481
n-Butane	2.430	0.789
2-2 Dimethylpropane	0.759	0.298
Isopentane	2.370	0.892
n-Pentane	2.628	0.981
Hexanes	0.444	0.188
Heptanes Plus	4.985	1.981
Totals	100.000	8.678

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.378	(Air=1)
Molecular Weight	96.91	
Gross Heating Value	5017	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.337	(Air=1)
Compressibility (Z)	0.9905	
Molecular Weight	38.36	
Gross Heating Value		
Dry Basis	1202	BTU/CF
Saturated Basis	1182	BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stain Tube Method (GPA 2377)
Results: 1761.0 Gr/100 CF, 28000 PPMV or 2.800 Mol %

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) NV
Analyst: NG
Processor: KV
Cylinder ID: WF-3S

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

FESCO, Ltd. Job Number: 192952.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	2.800		2.488
Nitrogen	6.876		5.021
Carbon Dioxide	34.608		39.704
Methane	29.650		12.398
Ethane	6.959	1.916	5.455
Propane	4.064	1.153	4.672
Isobutane	1.427	0.481	2.162
n-Butane	2.430	0.789	3.682
2,2 Dimethylpropane	0.759	0.298	1.428
Isopentane	2.370	0.892	4.457
n-Pentane	2.628	0.981	4.943
2,2 Dimethylbutane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.068	0.029	0.153
2 Methylpentane	0.094	0.040	0.211
3 Methylpentane	0.074	0.031	0.166
n-Hexane	0.208	0.088	0.467
Methylcyclopentane	0.108	0.038	0.237
Benzene	1.377	0.397	2.804
Cyclohexane	0.220	0.077	0.482
2-Methylhexane	0.074	0.035	0.193
3-Methylhexane	0.104	0.049	0.272
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.179	0.080	0.463
n-Heptane	0.245	0.116	0.640
Methylcyclohexane	0.263	0.109	0.673
Toluene	0.777	0.268	1.866
Other C8's	0.562	0.269	1.615
n-Octane	0.243	0.128	0.724
Ethylbenzene	0.085	0.034	0.235
M & P Xylenes	0.201	0.080	0.556
O-Xylene	0.051	0.020	0.141
Other C9's	0.231	0.121	0.760
n-Nonane	0.157	0.091	0.525
Other C10's	0.000	0.000	0.000
n-Decane	0.058	0.037	0.215
Undecanes (11)	0.050	0.032	0.192
Totals	100.000	8.678	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.337	(Air=1)
Compressibility (Z)	0.9905	
Molecular Weight	38.36	
Gross Heating Value		
Dry Basis	1202	BTU/CF
Saturated Basis	1182	BTU/CF

MANLEY GAS TESTING, INC.

P.O. DRAWER 193 ODESSA, TEXAS 79760
OFFICE(432)367-3024 FAX(432)367-1166 E-MAIL: MANLEYGAST@AOL.COM

CHARGE..... 150 - 0
REC. NO. 4
TEST NUMBER.. 52385

DATE SAMPLED..... 07-18-23
DATE RUN..... 07-19-23
EFFEC. DATE..... 08-01-23

STATION NO. ... 633000

PRODUCER ..... DURANGO MIDSTREAM

H2S sample data used for annual D-2302 SSM flaring.

SAMPLE NAME.... ABO #1 PLANT INLET TYPE: SPOT

RECEIVED FROM.. FRONTIER FIELD SERVICES LLC - MALJAMAR

FLOWING PRESSURE ..... 35.0 PSIA FLOWING TEMPERATURE ..... 80 F

SAMPLED BY: DD CYLINDER NO. ...

FRACTIONAL ANALYSIS
CALCULATED @ 14.650 PSIA AND 60F

	MOL%	GPM (REAL)
HYDROGEN SULFIDE...	0.600	
NITROGEN.....	2.019	
CARBON DIOXIDE.....	0.779	
METHANE.....	71.720	
ETHANE.....	13.419	3.583
PROPANE.....	6.631	1.824
ISO-BUTANE.....	0.859	0.281
NOR-BUTANE.....	2.009	0.633
ISO-PENTANE.....	0.502	0.184
NOR-PENTANE.....	0.493	0.179
HEXANES +.....	0.969	0.422
TOTALS	100.000	7.106

H2S PPMV = 6000

'Z' FACTOR (DRY) = 0.9958
'Z' FACTOR (WET) = 0.9954

CALC. MOL. WT. = 22.86

..CALCULATED SPECIFIC GRAVITIES..

REAL, DRY 0.7925

REAL, WET 0.7899

..CALCULATED GROSS HEATING VALUES..

BTU/CF - REAL, DRY 1314

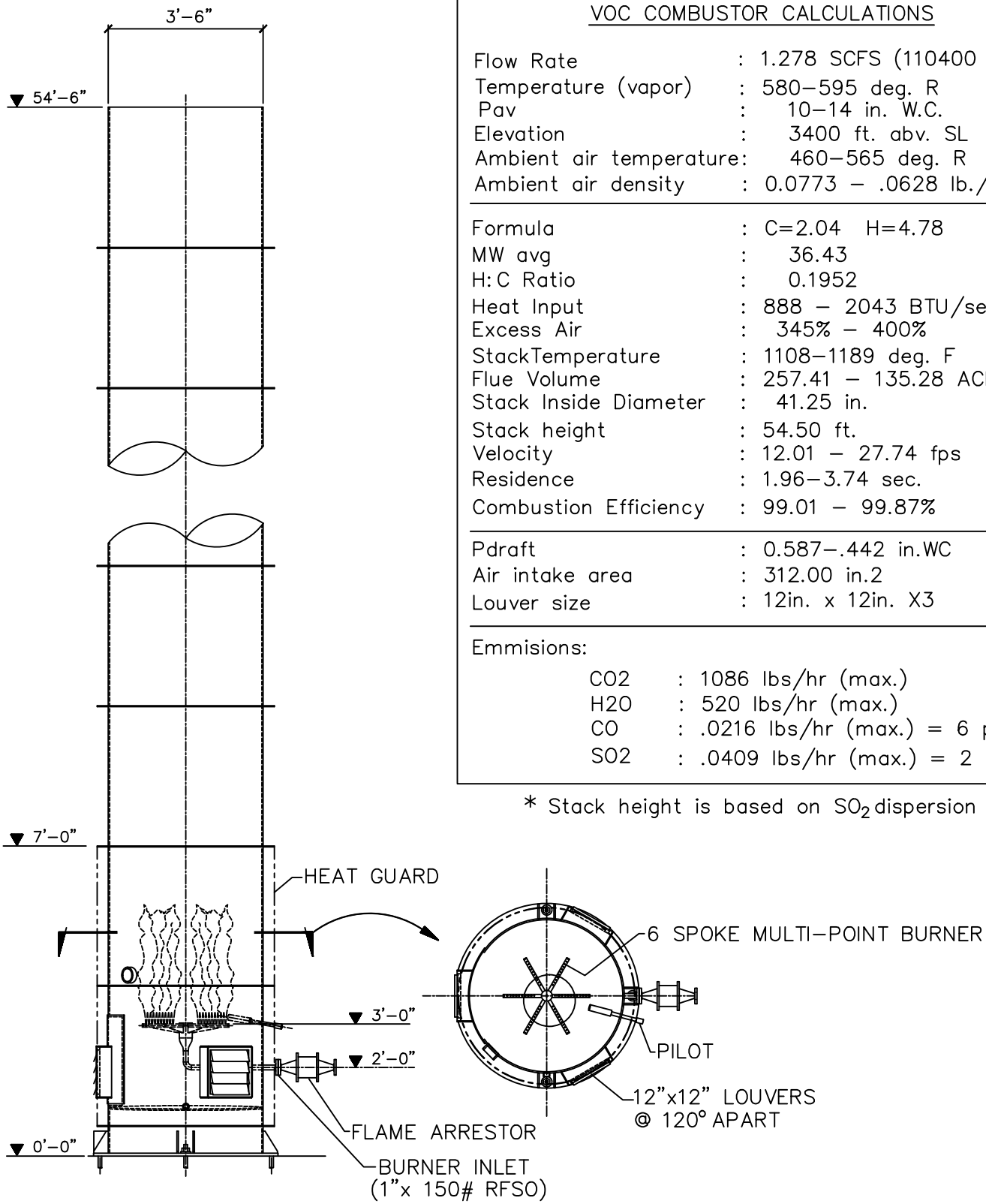
BTU/CF - REAL, WET 1291

DISTRIBUTION AND REMARKS:

N

ANALYZED BY: JT
** R **

APPROVED: mc



ELEVATION

VOC COMBUSTOR CALCULATIONS

Flow Rate	:	1.278 SCFS (110400 SCFD)
Temperature (vapor)	:	580–595 deg. R
Pav	:	10–14 in. W.C.
Elevation	:	3400 ft. abv. SL
Ambient air temperature	:	460–565 deg. R
Ambient air density	:	0.0773 – .0628 lb./cf
Formula	:	C=2.04 H=4.78
MW avg	:	36.43
H:C Ratio	:	0.1952
Heat Input	:	888 – 2043 BTU/sec.
Excess Air	:	345% – 400%
StackTemperature	:	1108–1189 deg. F
Flue Volume	:	257.41 – 135.28 ACFS
Stack Inside Diameter	:	41.25 in.
Stack height	:	54.50 ft.
Velocity	:	12.01 – 27.74 fps
Residence	:	1.96–3.74 sec.
Combustion Efficiency	:	99.01 – 99.87%
Pdraft	:	0.587–.442 in.WC
Air intake area	:	312.00 in.2
Louver size	:	12in. x 12in. X3

Emmisions:

CO2	:	1086 lbs/hr (max.)
H2O	:	520 lbs/hr (max.)
CO	:	.0216 lbs/hr (max.) = 6 ppm
SO2	:	.0409 lbs/hr (max.) = 2 ppm

* Stack height is based on SO_2 dispersion

REV.	DESCRIPTION	DATE

42x54.5' COMBUSTOR

DATA SHEET

13.2.2 Unpaved Roads

13.2.2.1 General

When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

The particulate emission factors presented in the previous draft version of this section of AP-42, dated October 2001, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material[25]. EPA included these sources in the emission factor equation for unpaved public roads (equation 1b in this section) since the field testing data used to develop the equation included both the direct emissions from vehicles and emissions from resuspension of road dust.

This version of the unpaved public road emission factor equation only estimates particulate emissions from resuspended road surface material [23, 26]. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOBILE6.2 [24]. This approach eliminates the possibility of double counting emissions. Double counting results when employing the previous version of the emission factor equation in this section and MOBILE6.2 to estimate particulate emissions from vehicle traffic on unpaved public roads. It also incorporates the decrease in exhaust emissions that has occurred since the unpaved public road emission factor equation was developed. The previous version of the unpaved public road emission factor equation includes estimates of emissions from exhaust, brake wear, and tire wear based on emission rates for vehicles in the 1980 calendar year fleet. The amount of PM released from vehicle exhaust has decreased since 1980 due to lower new vehicle emission standards and changes in fuel characteristics.

13.2.2.2 Emissions Calculation And Correction Parameters[1-6]

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Field investigations also have shown that emissions depend on source parameters that characterize the condition of a particular road and the associated vehicle traffic. Characterization of these source parameters allow for "correction" of emission estimates to specific road and traffic conditions present on public and industrial roadways.

Dust emissions from unpaved roads have been found to vary directly with the fraction of silt (particles smaller than 75 micrometers [μm] in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200-mesh screen, using the ASTM-C-136 method. A summary of this method is contained in Appendix C of AP-42. Table 13.2.2-1 summarizes measured silt values for industrial unpaved roads. Table 13.2.2-2 summarizes measured silt values for public unpaved roads. It should be noted that the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is strongly discouraged when it is feasible to obtain locally gathered data.

Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions. As a conservative approximation, the silt content of the parent soil in the area can be used. Tests, however, show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Other variables are important in addition to the silt content of the road surface material. For example, at industrial sites, where haul trucks and other heavy equipment are common, emissions are highly correlated with vehicle weight. On the other hand, there is far less variability in the weights of cars and pickup trucks that commonly travel publicly accessible unpaved roads throughout the United States. For those roads, the moisture content of the road surface material may be more dominant in determining differences in emission levels between, for example a hot, desert environment and a cool, moist location.

The PM-10 and TSP emission factors presented below are the outcomes from stepwise linear regressions of field emission test results of vehicles traveling over unpaved surfaces. Due to a limited amount of information available for PM-2.5, the expression for that particle size range has been scaled against the result for PM-10. Consequently, the quality rating for the PM-2.5 factor is lower than that for the PM-10 expression.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\,(s/12)^a (W/3)^b \quad (1a)$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C \quad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

as shown in Table 13.2.2-4

Table 13.2.2-4. EMISSION FACTOR FOR 1980'S VEHICLE FLEET EXHAUST, BRAKE WEAR AND TIRE WEAR

Particle Size Range[a]	*C*, Emission Factor for Exhaust, Brake Wear and Tire Wear[b] lb/VMT
$PM_{2.5}$	0.00036
PM_{10}	0.00047
PM_{30}[c]	0.00047

[a] Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x micrometers.
[b] Units shown are pounds per vehicle mile traveled (lb/VMT).
[c] PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

It is important to note that the vehicle-related source conditions refer to the average weight, speed, and number of wheels for all vehicles traveling the road. For example, if 98 percent of traffic on the road are 2-ton cars and trucks while the remaining 2 percent consists of 20-ton trucks, then the mean weight is 2.4 tons. More specifically, Equations 1a and 1b are *not* intended to be used to calculate a separate emission factor for each vehicle class within a mix of traffic on a given unpaved road. That is, in the example, one should *not* determine one factor for the 2-ton vehicles and a second factor for the 20-ton trucks. Instead, only one emission factor should be calculated that represents the "fleet" average of 2.4 tons for all vehicles traveling the road.

Moreover, to retain the quality ratings when addressing a group of unpaved roads, it is necessary that reliable correction parameter values be determined for the road in question. The field and laboratory procedures for determining road surface silt and moisture contents are given in AP-42 Appendices C.1 and C.2. Vehicle-related parameters should be developed by recording visual observations of traffic. In some cases, vehicle parameters for industrial unpaved roads can be determined by reviewing maintenance records or other information sources at the facility.

In the event that site-specific values for correction parameters cannot be obtained, then default values may be used.In the absence of site-specific silt content information, an appropriate mean value from Table 13.2.2-1 may be used as a default value, but the quality rating of the equation is reduced by two letters. Because of significant differences found between different types of road surfaces and between different areas of the country, use of the default moisture content value of 0.5 percent in Equation 1b is discouraged. The quality rating should be downgraded two letters when the default moisture content value is used. (It is assumed that readers addressing industrial roads have access to the information needed to develop average vehicle information in Equation 1a for their facility.)

The effect of routine watering to control emissions from unpaved roads is discussed below in Section 13.2.2.3, “Controls”. However, all roads are subject to some natural mitigation because of rainfall and other precipitation. The Equation 1a and 1b emission factors can be extrapolated to annual

average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual average emissions are inversely proportional to the number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation:

$$E_{ext} = E\ [(365 - P)/365] \quad (2)$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation (see below)

Figure 13.2.2-1 gives the geographical distribution for the mean annual number of "wet" days for the United States.

Equation 2 provides an estimate that accounts for precipitation on an annual average basis for the purpose of inventorying emissions. It should be noted that Equation 2 does not account for differences in the temporal distributions of the rain events, the quantity of rain during any event, or the potential for the rain to evaporate from the road surface. In the event that a finer temporal and spatial resolution is desired for inventories of public unpaved roads, estimates can be based on a more complex set of assumptions. These assumptions include:

1. The moisture content of the road surface material is increased in proportion to the quantity of water added;
2. The moisture content of the road surface material is reduced in proportion to the Class A pan evaporation rate;
3. The moisture content of the road surface material is reduced in proportion to the traffic volume; and
4. The moisture content of the road surface material varies between the extremes observed in the area. The CHIEF Web site (http://www.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html) has a file which contains a spreadsheet program for calculating emission factors which are temporally and spatially resolved. Information required for use of the spreadsheet program includes monthly Class A pan evaporation values, hourly meteorological data for precipitation, humidity and snow cover, vehicle traffic information, and road surface material information.

It is emphasized that the simple assumption underlying Equation 2 and the more complex set of assumptions underlying the use of the procedure which produces a finer temporal and spatial resolution have not been verified in any rigorous manner. For this reason, the quality ratings for either approach should be downgraded one letter from the rating that would be applied to Equation 1.

13.2.2.3 Controls[18-22]

A wide variety of options exist to control emissions from unpaved roads. Options fall into the following three groupings:

1. Vehicle restrictions that limit the speed, weight or number of vehicles on the road;

2. Surface improvement, by measures such as (a) paving or (b) adding gravel or slag to a dirt road; and
3. Surface treatment, such as watering or treatment with chemical dust suppressants.

Available control options span broad ranges in terms of cost, efficiency, and applicability. For example, traffic controls provide moderate emission reductions (often at little cost) but are difficult to enforce. Although paving is highly effective, its high initial cost is often prohibitive. Furthermore, paving is not feasible for industrial roads subject to very heavy vehicles and/or spillage of material in transport. Watering and chemical suppressants, on the other hand, are potentially applicable to most industrial roads at moderate to low costs. However, these require frequent reapplication to maintain an acceptable level of control. Chemical suppressants are generally more cost-effective than water but not in cases of temporary roads (which are common at mines, landfills, and construction sites). In summary, then, one needs to consider not only the type and volume of traffic on the road but also how long the road will be in service when developing control plans.

Vehicle restrictions. These measures seek to limit the amount and type of traffic present on the road or to lower the mean vehicle speed. For example, many industrial plants have restricted employees from driving on plant property and have instead instituted bussing programs. This eliminates emissions due to employees traveling to/from their worksites. Although the heavier average vehicle weight of the busses increases the base emission factor, the decrease in vehicle-miles-traveled results in a lower overall emission rate.

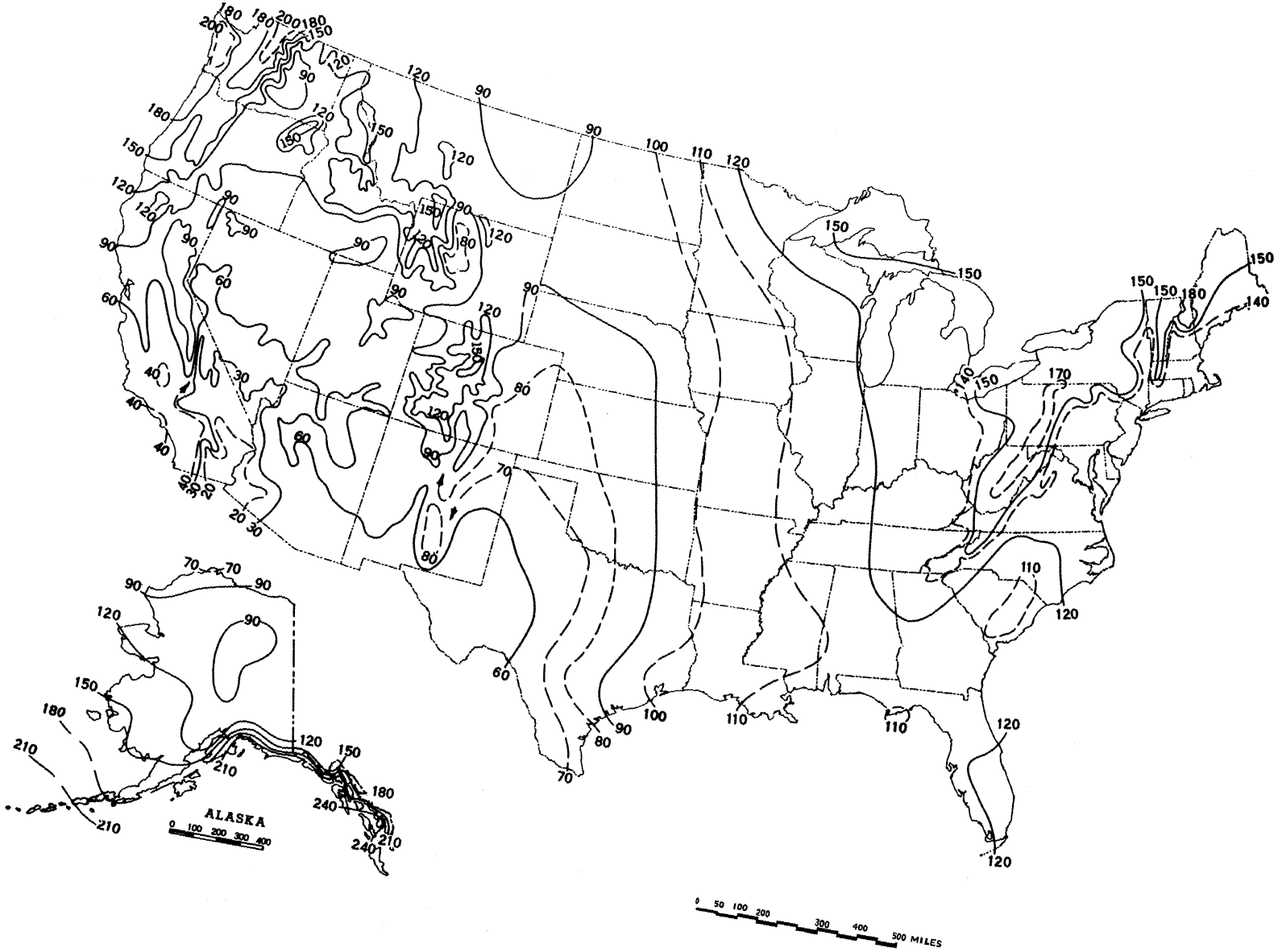


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

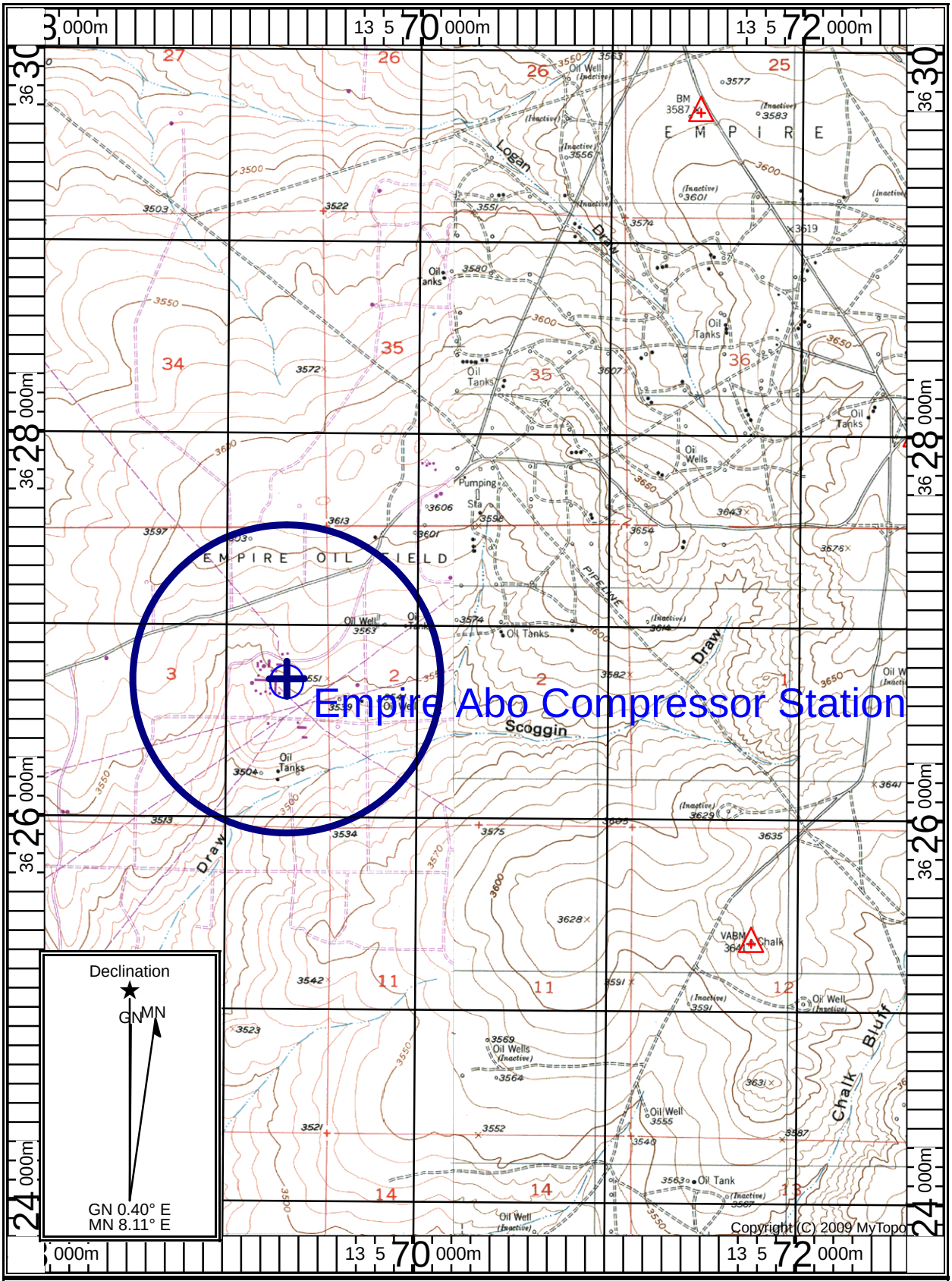
Section 8

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	

A topographic map is attached.



Map Name: RED LAKE (NM)
Print Date: 06/07/21
Scale: 1 inch = 2,500 ft.
Map Center: 13 0570303 E 3626925 N
Horizontal Datum: WGS84

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)

(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☒ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☐ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☐ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. ☐ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☐ A sample of the letters sent to the owners of record.
5. ☐ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☐ A sample of the public notice posted and a verification of the local postings.
7. ☐ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☐ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☐ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☐ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☐ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

N/A – Public Notice is not required for applications being submitted under 20.2.70 NMAC

Section 10

Written Description of the Routine Operations of the Facility

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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 Empire Abo Compressor Station accepts field gas which is compressed by six (6) compressor engines (E4-310, E4-311, E4-312, E4-313, E4-314, E4-315) to facilitate transfer to upstream facilities. Following compression, the gas is sent to a TEG dehydration unit (DEHY-1). Dehydrator flash tank overheads are recovered and recycled to the facility inlet. There is a dehydrator reboiler (REB1) that is an exempted unit per 20.2.72.202.B.5 NMAC. Dehydrator TEG regenerator emissions are controlled by a condenser. Condenser overheads are combusted by a thermal oxidizer (TO1). After being processed by the dehydrator, the compressed and treated gas then exits the facility.

Liquids that drop out at the inlet separator and during compression and dehydration are sent to condensate tanks (V2-1104-C, V2-1104-D, V2-1104-E, V2-1104-F). Produced water is separated and sent to produced water storage tanks (V2-1104-H, V2-1104-I). Condensate and produced water are transported off-site via truck (L1 for condensate loading, L2 for produced water loading). Emissions from the condensate and produced water storage tanks and condensate loading (L1) are controlled by a second thermal oxidizer (TO2). The produced water loading is not controlled and the emissions unit is exempt pursuant to 20.2.72.202.B.(5). A heater treater (H4) upstream of the condensate tanks is an exempted source per 20.2.72.202.B.5 NMAC.

The South Flare (D-2302) has a pilot and purge gas, and controls SSM and Malfunction (MALF) flaring events that consist of inlet gas.

Facility-wide fugitive emissions also exist at the site as FUG40.

Unpaved haul roads are present at the site (HAUL) and it is an exempted source per 20.2.72.202.B.5 NMAC.

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)**: See Table 2-A**

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 12

Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☒ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

N/A – This application is being submitted under 20.2.70.NMAC.

Section 13

Determination of State & Federal Air Quality Regulations

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/

STATE REGULATIONS:

State Regulation 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	This facility is authorized under NSR Permit No. 0126-M12 and Title V Permit P-0146-R4. The conditions of this part are applicable to all regulated equipment and facilities within the state of New Mexico. Therefore, this regulation applies.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. The facility meets the maximum allowable concentrations of TSP, SO_2, H_2S, NO_X and CO under this regulation.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation establishes requirements for the facility if operations at the facility result in any excess emissions. The owner or operator will operate the source at the facility having an excess emission, to the extent practicable, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. The facility will also notify the NMED of any excess emissions per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This regulation does not apply as this application is submitted under 20.2.70 NMAC and therefore exempt of this requirement. Sources exempt from 20.2.23 NMAC are activities and facilities subject to a permit issued pursuant to the NM Air Quality Control Act, the Mining Act, or the Surface Mining Act (20.2.23.108.B NMAC).
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This facility does not have gas burning equipment with a heat input of greater than 1,000,000 million British Thermal Units per year per unit. Therefore, this regulation does not apply.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility does not have oil burning equipment with a heat input of greater than 1,000,000 million British Thermal Units per year per unit. Therefore, this regulation does not apply.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This facility is not a natural gas processing plant. Therefore, this regulation does not apply.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This regulation seeks to minimize H_2S emissions from hydrocarbon storage facilities. For purposes of this regulation, this facility is a new hydrocarbon storage facility, constructed after Jan. 1, 1975. Standards of new tanks batteries are established in 20.2.38.112 NMAC. This facility does not have a crude oil or condensate storage capacity greater than 65,000 gallons (1547.6 bbl) and is therefore not subject to this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This facility is not a sulfur recovery plant. Therefore, this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	E4-310 to E4-315 existing, L1, FUG40	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NOx) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: Include the construction status of applicable units as “New”, “Existing”, “Relocation of Existing”, or “Reconstructed” as defined by this Part in your justification: Check the box for the subparts that are applicable: ☒113 – Engines and Turbines (20.2.50.113.B NMAC, Table 1) – Engines E4-310 through E4-314 are existing natural gas-fired spark ignition engines under this subpart. These units do not exceed the emission standards stated in this subpart and the facility will comply with this regulation. E4-315 is not yet installed, and

State Regulation 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.)
				applicability will be determined at a later date based on the specific engine and when it is installed. ☒114 – Compressor Seals (20.2.50.114 NMAC) – Compressors C-310 through C-314 are existing reciprocating compressors associated with – Engines E4-310 through E4-314. Thus this facility is subject to this subpart and will comply with the applicable requirements as stated in 20.2.50.114.B(2) NMAC and 20.2.50.114.B(4) NMAC. If a compressor C-315 is installed, it will comply with this subpart. ☐115 – Control Devices and Closed Vent Systems – N/A – There is no applicable equipment used to comply with the requirements of this rule; therefore, this subpart does not apply. ☒116 – Equipment Leaks and Fugitive Emissions (20.2.50.116 NMAC) – The facility has equipment leaks and fugitive emissions (FUG40). Thus, this facility will comply with this subpart as stated in 20.2.50.116.B NMAC. ☐ 117 – Natural Gas Well Liquid Unloading – N/A - There are no liquid unloading operations resulting in the venting of natural gas at natural gas wells at this facility; therefore, this subpart does not apply. ☐ 118 – Glycol Dehydrators – N/A – DEHY1 does not have a PTE equal to or greater than two tpy of VOC; therefore, this subpart does not apply. ☐ 119 – Heaters – N/A – There are no heaters at the facility with a rated heat input ≥ 20 MMBtu/hr; therefore, this subpart does not apply. ☒ 120 – Hydrocarbon Liquid Transfers (20.2.50.120 NMAC) This facility is a compressor station with hydrocarbon liquid transfers. Per the requirements of 20.2.50.120.B.(1) through (6) NMAC, the facility will comply with the requirements of this subpart. ☒121 – Pig Launching and Receiving – There are pig launchers and receivers at this facility. Records of pigging activities are kept that demonstrate the emissions are < 1 ton/year VOC; therefore, these activities are not subject to this subpart (20.2.50.121.A NMAC). ☐122 – Pneumatic Controllers and Pumps (20.2.50.122 NMAC) – All pneumatic devices at Empire Abo CS are air driven, non-emitting equipment; therefore, they are not subject to 20.2.50.122 NMAC. ☐ 123 – Storage Vessels – N/A – This facility has less than 2 tpy maximum allowable VOC emissions. Thus, the facility is not subject to this subpart. ☐124 – Well Workovers – N/A – There are no oil or natural gas wells at this facility; therefore, this subpart does not apply. ☐ 125 – Small Business Facilities – N/A – This facility does not qualify as a small business facility; therefore, this subpart does not apply. ☐126 – Produced Water Management Unit – N/A – There are no produced water management units located at this facility; therefore, this subpart does not apply. ☐127 – Flowback Vessels and Preproduction Operations – N/A – There are no wells at this facility; therefore, this subpart does not apply.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	E4-310 to E4-315, H4, TO1, TO2, D-2302	This facility operates combustion equipment that are subject to this regulation.
20.2.70 NMAC	Operating Permits	Yes	Facility	This facility operates under a permit issued under 20.2.70 NMAC and is therefore subject to this regulation.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This facility is subject to 20.2.70 NMAC and is therefore subject to this regulation.

State Regulation 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.)
20.2.72 NMAC	Construction Permits	Yes	Facility	This facility is permitted under 20.2.72 and is therefore subject to this regulation
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	This facility is required to submit an annual emission inventory report pursuant to 20.2.73.300.A(1) NMAC. This regulation applies.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	The facility is a minor source for PSD purposes therefore this regulation is not applicable. source and will therefore no longer be subject to this regulation.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This application is being submitted under 20.2.72 and is therefore subject to this regulation.
20.2.77 NMAC	New Source Performance	Yes	E4-310 to E4-315 FUG40	This facility is a stationary source with units that are subject to 40 CFR 60. Therefore, this regulation applies.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility does not include equipment subject to 40 CFR 61. Therefore, this regulation does not apply.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This facility is not located in a non-attainment area. Therefore, this regulation does not apply.
20.2.80 NMAC	Stack Heights	No	N/A	This regulation establishes requirements for the evaluation of stack heights and other dispersion techniques. This regulation does not apply as all stacks at the facility will follow good engineering practice.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	E4-310 to E4-315, DEHY1	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

FEDERAL REGULATIONS:

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	This regulation defines National Ambient Air Quality Standards (NAAQS). The facility meets all applicable NAAQS for NOx, CO, SO_2, H_2S, PM_{10}, and $PM_{2.5}$ under this regulation
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	E4-310 to E4-315 FUG40	This facility operates units which are subject to 40 CFR 60. Therefore, this regulation applies.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	This facility does not include any electric utility steam generating units. Therefore, this regulation does not apply.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	This facility does not include any electric utility steam generating units. Therefore, this regulation does not apply.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	Unit H4 does not have a throughput greater than 10 MMBtu/hr and therefore is not subject to this regulation. 40 CFR 60.40c(a).
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	No	N/A	This facility does not have any tanks with a volume of 420,000 gallons or larger. Therefore, this subpart does not apply. 40 CFR 60.110a(b).
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	No	N/A	This facility does not have any storage vessels with a volume of 75 cubic meters. Therefor this regulation does not apply. 40 CFR 60.110b(a).
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	This facility does not have any stationary turbines. Therefore, this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This facility is not an onshore gas plant. Therefore, this regulation does not apply.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural**	No	N/A	This facility is not an onshore gas plant. Therefore, this regulation does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Gas Processing: SO_2 Emissions			
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	N/A	This facility is a compressor station. Therefore, equipment leaks are not subject to this regulation. No compressors at the facility were manufactured after 8/23/2011 and before 9/19/2015. Therefore, no compressors are subject to this regulation. The storage tanks were manufactured in 2021 and are not subject to this regulation. 40 CFR 60.5365.
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	Yes	FUG40	The compressors (Units E4-310 to E4-314) were manufactured in 2009 and are therefore not subject to this regulation. 40 CFR 60.5365a. Compressor E4-315 is not yet installed, and applicability will be determined at a later date as necessary. The storage tanks at the facility each have a PTE less than 6 tpy and are therefore not subject to this regulation. 40 CFR 60.5365a(e)(2). Frontier has agreed to NMED's determination that fugitives are subject to OOOOa based on redesignation of the facility as a compressor station after September 18, 2015. 40 CFR 60.5365a(j), 40 CFR 60.5397(a)
NSPS 40 CFR Part 60 Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced **After** December 6, 2022	No	N/A	There are no facilities that were constructed, modified, or reconstructed after December 6, 2022 that are subject to the provisions of this rule.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	There are no compression ignition engines installed at this facility. Therefore, this regulation does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	E4-310 to E4-315	The engines at this facility were manufactured in 2009 after the NSPS JJJJ date of June 12, 2006. The units are therefore subject to this regulation. 40 CFR 60.4233(e), Table 1.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for	No	N/A	There are no electric generating units at this facility. Therefore, this regulation does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Electric Generating Units			
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	There are no electric generating units at this facility. Therefore, this regulation does not apply.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	This facility is not a Municipal Solid Waste Landfill. Therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	No units at this facility are subject to any of the subparts of 40 CFR 61. Therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	This facility does not process mercury. Therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	This facility is not a major source of HAPs. Therefore, this regulation does not apply.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	E4-310 to E4-315, DEHY1	The compressors and TEG dehydrators at this facility are subject to subparts of 40 CFR 63. Therefore, this regulation applies.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY1	This facility is Subject to the requirements of 40 CFR 63 Subpart HH TEG Dehydrator (Unit DEHY1) have no additional control requirements since benzene emissions for this unit are less than 0.9 megagrams per year. However, this unit is subject to HH recordkeeping and reporting. 40 CFR 63.764(e)(1)(ii), 40 CFR 63.772(b)(2)
MACT 40 CFR 63 Subpart HHH		No	N/A	This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user. This facility is not a natural gas transmission facility. Therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This facility does not operate major industrial, commercial, and institutional boilers & process heaters. Therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal &	No	N/A	This facility does not operate any coal & oil fire electric utility steam generating units. Therefore, this regulation does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Oil Fire Electric Utility Steam Generating Unit			
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	E4-310 to E4-315	The compressor engines at this facility are subject to MACT ZZZZ and will comply with this regulation by complying with the requirements of NSPS JJJJ. 40 CFR 63.6590(c)
40 CFR 64	**Compliance Assurance Monitoring**	Yes	DEHY1, TO1	A compliance assurance monitoring plan has been established in this facilities Title V permit for the existing dehydrator and thermal oxidizer.
40 CFR 68	**Chemical Accident Prevention**	No	Facility	The facility does not store chemicals in quantities that meet the applicability thresholds.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This facility does not generate commercial electric power or electric power for sale. Therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	This facility does not generate commercial electric power or electric power for sale. Therefore, this regulation does not apply.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	This facility does not generate commercial electric power or electric power for sale. Therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	This facility does not generate commercial electric power or electric power for sale. Therefore, this regulation does not apply.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	The facility does not service, maintain, or repair equipment containing refrigerants. Therefore, this regulation does not apply.

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.

Startup and shutdown procedures are performed according to guidelines, which dictate proper procedural sequence to minimize emissions from the facility during such activities. Frontier has all required documentation and it can be made available to the department upon request.

Equipment located at the plant is equipped with various safety devices that aid in preventing excess emissions to the atmosphere in the event of an operational emergency. In the event of a malfunction, startup, shutdown, or scheduled maintenance in which emission rates from the facility exceed permitted allowable emissions, Frontier will notify the AQB in accordance with 20.2.7 NMAC and the equipment responsible for the exceedance will be repaired as soon as possible.

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: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. 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.

There are no alternative operating scenarios.

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.

Modeling is not being submitted with the application pursuant to 20.2.70 NMAC.

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
E4-310	PEA test	11/11/2025
E4-311	PEA test	11/11/2025
E4-312	PEA test	11/11/2025
E4-313	PEA test	11/11/2025
E4-314	PEA test	11/11/2025
E4-310	JJJJ test	9/29/2025
E4-311	PEA test	7/29/2025
E4-312	PEA test	7/29/2025
E4-313	PEA test	7/29/2025
E4-314	PEA test	7/29/2025
E4-310	PEA test	5/1/2025
E4-311	PEA test	5/1/2025
E4-312	PEA test	5/1/2025
E4-313	PEA test	5/1/2025
E4-314	PEA test	5/1/2025
E4-310	JJJJ test	3/3/2025
E4-311	JJJJ test	3/3/2025
E4-312	JJJJ test	3/3/2025
E4-313	JJJJ test	3/3/2025
E4-314	JJJJ test	3/3/2025
Fug	Monthly LDAR - OGI	3/24/2025
Fug	Monthly LDAR - OGI	2/25/2025
Fug	Monthly LDAR - OGI	1/27/2025
E4-310	PEA test	11/21/2024
E4-311	PEA test	11/21/2024
E4-312	PEA test	11/21/2024
E4-313	PEA test	11/21/2024
E4-314	PEA test	11/21/2024
E4-310	PEA test	8/15/2024
E4-311	PEA test	8/15/2024
E4-312	PEA test	8/15/2024
E4-313	PEA test	8/15/2024
E4-314	PEA test	8/15/2024
E4-310	PEA test	6/12/2024
E4-311	PEA test	6/12/2024
E4-312	PEA test	6/12/2024
E4-313	PEA test	6/12/2024
E4-314	PEA test	6/12/2024
Fug	Monthly LDAR - OGI	12/30/2024

Fug	Monthly LDAR - OGI	11/25/2024
Fug	Monthly LDAR - OGI	10/29/2024
Fug	Monthly LDAR - OGI	9/24/2024
Fug	Monthly LDAR - OGI	8/27/2024
Fug	Monthly LDAR - OGI	7/30/2024
Fug	Monthly LDAR - OGI	6/24/2024
Fug	Monthly LDAR - OGI	5/28/2024
Fug	Monthly LDAR - OGI	4/29/2024
Fug	Monthly LDAR - OGI	3/26/2024
Fug	Monthly LDAR - OGI	2/27/2024
Fug	Monthly LDAR - OGI	1/23/2024
E4-310	JJJJ test	2/8/2024
E4-311	JJJJ test	2/8/2024
E4-312	JJJJ test	2/8/2024
E4-313	JJJJ test	2/8/2024
E4-314	JJJJ test	2/8/2024
D-2302	Annual flare gas analysis	7/18/2023
NA – Inlet	Annual inlet gas analysis	7/18/2023
NA – Fuel	Annual fuel analysis	4/11/2023
FUG	Monthly LDAR – OGI Camera	1/23/2023
FUG	Monthly LDAR – OGI Camera	2/21/2023
FUG	Monthly LDAR – OGI Camera	3/28/2023
FUG	Monthly LDAR – OGI Camera	4/29/2023
FUG	Monthly LDAR – OGI Camera	5/31/2023
FUG	Monthly LDAR – OGI Camera	6/24/2023
FUG	Monthly LDAR – OGI Camera	7/25/2023
FUG	Monthly LDAR – OGI Camera	8/29/2023
FUG	Monthly LDAR – OGI Camera	9/26/2023
FUG	Monthly LDAR – OGI Camera	10/19/2023
FUG	Monthly LDAR – OGI Camera	12/27/2023
E4-310	Annual Engine Test – JJJJ	3/6/2023
E4-311	Annual Engine Test – JJJJ	3/6/2023
E4-312	Annual Engine Test – JJJJ	3/6/2023
E4-313	Annual Engine Test – JJJJ	3/24/2023
E4-314	Annual Engine Test – JJJJ	3/6/2023
E4-310	2nd Quarter Engine Test - PEA	5/10/2023
E4-311	2nd Quarter Engine Test - PEA	5/10/2023
E4-312	2nd Quarter Engine Test - PEA	5/10/2023
E4-313	2nd Quarter Engine Test - PEA	5/10/2023
E4-314	2nd Quarter Engine Test - PEA	5/10/2023
E4-310	3rd Quarter Engine Test - PEA	8/17/2023
E4-311	3rd Quarter Engine Test - PEA	8/17/2023
E4-312	3rd Quarter Engine Test - PEA	8/17/2023
E4-313	3rd Quarter Engine Test - PEA	8/17/2023
E4-314	3rd Quarter Engine Test - PEA	8/17/2023
E4-310	4th Quarter Engine Test - PEA	11/17/2023
E4-311	4th Quarter Engine Test - PEA	11/17/2023
E4-312	4th Quarter Engine Test - PEA	11/17/2023
E4-313	4th Quarter Engine Test - PEA	11/17/2023
E4-314	4th Quarter Engine Test - PEA	11/17/2023
Dehy 1 and TO1	Semiannual Dehy System and TO Inspection – 1H	4/11/2023
Dehy 1 and TO1	Semiannual Dehy System and TO Inspection – 2H	10/18/2023
TO1	Semiannual Dehy System TO Method 22 – 1H	7/11/2023
TO1	Semiannual Dehy System TO Method 22 – 2H	10/18/2023

D-2302	Semiannual Flare Method 22 – 1H	7/12/2023
D-2302	Semiannual Flare Method 22 – 2H	11/14/2023
H4	Semiannual Heater Treater Inspection – 1H	4/11/2023
H4	Semiannual Heater Treater Inspection – 2H	11/14/2023
TO2	Semiannual Liquids System TO Method 22 – 1H	7/6/2023
TO2	Semiannual Liquids System TO Method 22 - 2H	11/15/2023
V2-1104-C,-D,-E,-F and TO2	Semiannual Tank System and TO Inspection - 1H	6/12/2023
V2-1104-C,-D,-E,-F and TO2	Semiannual Tank System and TO Inspection - 2H	11/16/2023
D-2302	Annual flare gas analysis	7/15/2022
NA - Inlet	Annual inlet gas analysis	7/15/2022
NA - Fuel	Annual fuel analysis	4/27/2022
FUG	Monthly LDAR - OGI Camera	8/30/2022
FUG	Monthly LDAR - OGI Camera	9/29/2022
FUG	Monthly LDAR - OGI Camera	10/25/2022
FUG	Monthly LDAR - OGI Camera	11/22/2022
FUG	Monthly LDAR - OGI Camera	12/20/2022
E4-310	Annual Engine Test - JJJJ	3/8/2022
E4-311	Annual Engine Test - JJJJ	3/9/2022
E4-312	Annual Engine Test - JJJJ	3/8/2022
E4-313	Annual Engine Test - JJJJ	3/9/2022
E4-314	Annual Engine Test - JJJJ	3/10/2022
E4-310	2nd Quarter Engine Test - PEA	6/1/2022
E4-311	2nd Quarter Engine Test - PEA	6/1/2022
E4-312	2nd Quarter Engine Test - PEA	6/1/2022
E4-313	2nd Quarter Engine Test - PEA	6/1/2022
E4-314	2nd Quarter Engine Test - PEA	6/2/2022
E4-310	3rd Quarter Engine Test - PEA	8/3/2022
E4-311	3rd Quarter Engine Test - PEA	8/3/2022
E4-312	3rd Quarter Engine Test - PEA	8/3/2022
E4-313	3rd Quarter Engine Test - PEA	8/3/2022
E4-314	3rd Quarter Engine Test - PEA	8/3/2022
E4-310	4th Quarter Engine Test - PEA	11/9/2022
E4-311	4th Quarter Engine Test - PEA	11/9/2022
E4-312	4th Quarter Engine Test - PEA	11/9/2022
E4-313	4th Quarter Engine Test - PEA	11/9/2022
E4-314	4th Quarter Engine Test - PEA	11/9/2022
Dehy 1 and TO1	Annual Dehy System and TO Inspection	11/15/2022
TO1	Annual Dehy System TO Method 22	8/30/2022
D-2302	Annual Flare Method 22	8/30/2022
H4	Annual Heater Treater Inspection	1/1/2022
TO2	Annual Liquids System TO Method 22 - 2H	9/9/2022
NA	Flare Testing (monitoring device test)	9/29/2022
D-2302	Annual flare gas analysis	4/20/2021
NA - Inlet	Annual inlet gas analysis	4/20/2021
NA - Fuel	Annual fuel analysis	1/12/2021
E4-310	Annual Engine Test - JJJJ	1/18/2021
E4-311	Annual Engine Test - JJJJ	1/19/2021
E4-312	Annual Engine Test - JJJJ	1/18/2021
E4-313	Annual Engine Test - JJJJ	1/19/2021
E4-314	Annual Engine Test - JJJJ	1/19/2021
E4-310	2nd Quarter Engine Test - PEA	4/13/2021
E4-311	2nd Quarter Engine Test - PEA	4/12/2021
E4-312	2nd Quarter Engine Test - PEA	4/12/2020

E4-313	2nd Quarter Engine Test - PEA	4/13/2021
E4-314	2nd Quarter Engine Test - PEA	4/20/2021
E4-310	3rd Quarter Engine Test - PEA	9/2/2021
E4-311	3rd Quarter Engine Test - PEA	9/2/2021
E4-312	3rd Quarter Engine Test - PEA	9/2/2021
E4-313	3rd Quarter Engine Test - PEA	9/2/2021
E4-314	3rd Quarter Engine Test - PEA	9/2/2021
E4-310	4th Quarter Engine Test - PEA	10/22/2021
E4-311	4th Quarter Engine Test - PEA	10/22/2021
E4-312	4th Quarter Engine Test - PEA	10/22/2021
E4-313	4th Quarter Engine Test - PEA	10/22/2021
E4-314	4th Quarter Engine Test - PEA	10/25/2021
Dehy 1 and TO1	Annual Dehy System and TO Inspection	2/24/2021
TO1	Annual Dehy System TO Method 22	12/13/2021
D-2302	Annual Flare Method 22	12/13/2021
H4	Annual Heater Treater Inspection	1/1/2021
TO2	Annual Liquids System TO Method 22	12/13/2022
NA	Flare Testing (monitoring device test)	4/29/2021

Section 19

Requirements for Title V Program

Who Must Use this Attachment:

* Any major source as defined in 20.2.70 NMAC.
* Any source, including an area source, subject to a standard or other requirement promulgated under Section 111 - Standards of Performance for New Stationary Sources, or Section 112 Hazardous Air Pollutants, of the 1990 federal Clean Air Act ("federal Act"). Non-major sources subject to Sections 111 or 112 of the federal Act are exempt from the obligation to obtain an 20.2.70 NMAC operating permit until such time that the EPA Administrator completes rulemakings that require such sources to obtain operating permits. In addition, sources that would be required to obtain an operating permit solely because they are subject to regulations or requirements under Section 112(r) of the federal Act are exempt from the requirement to obtain an Operating Permit.
* Any Acid Rain source as defined under title IV of the federal Act. The Acid Rain program has additional forms. See www.env.nm.gov/air-quality/air-quality-title-v-operating-permits-guidance-page/. Sources that are subject to both the Title V and Acid Rain regulations are encouraged to submit both applications simultaneously.
* Any source in a source category designated by the EPA Administrator ("Administrator"), in whole or in part, by regulation, after notice and comment.

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this item here.

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.

Applicable. Units DEHY1 and TO1 are subject to this part and have established monitoring conditions specified in Operating Permit P0146-R4. There is no change to CAM applicability as a result of this requested Title V modification.

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.

Based on information and belief formed after reasonable inquiry, Frontier Field Services believes that the Empire Abo Compressor Station is in compliance with each applicable requirement identified in Section 13. In the event that Frontier

Field Services should discover new information affecting the compliance status of the facility, Frontier Field Services will make appropriate notifications and/or take corrective actions. Pursuant to Condition A109.B of Permit P146-R4, Frontier Field Services has certified to compliance with the terms and conditions of that permit. The most recent such certification was submitted within 30 days of the end of every 12-month reporting period. The 12-month reporting period starts on February 1st of each year given in P0146-R4. Since that time, Frontier Field Services has continued to be in compliance with applicable requirements as described in Section 13.

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.

The facility will continue to be in compliance with requirements for which it is in compliance at the time of this permit application and will comply with other applicable requirements as they come into effect during the permit term.

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.

Compliance certification will be submitted annually, as required by Title V Permit P146-R4, Condition 6.1.

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).

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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.)

No 40 CFR 82 requirements apply to this facility.

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 www.env.nm.gov/air-quality/air-quality-title-v-operating-permits-guidance-page/. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

No compliance plan required.

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.

Since converting to a compressor station several years ago, the facility is no longer subject to RMP regulations.

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.)

No, the facility is not located within 80 km of any states, Bernalillo, Indian Tribes, or Pueblos.

19.9 - Responsible Official

Provide the Responsible Official as defined in 20.2.70.7.AD NMAC:

Bryan Graham
Vice President of Operations

Frontier Field Services, LLC
303 Veterans Airpark Ln, Suite 2000
Midland, Texas 79705

Direct: (832) 444-7239
Email: bgraham@kinetik.com

Frontier Field Services LLC /Empire Abo Compressor Station
CAM Plan for Dehydrator Vent (DEHY1) Controlled by Thermal Oxidizer (TO1)

I. Background

A. *Emissions Unit*

Description: Dehydrator Vent
Identification: DEHY1
Facility: Empire Abo Compressor Station

B. *Applicable Regulation, Emission Limit, and Pre-CAM Monitoring Requirements*

Regulation: Operation and reporting requirements created in NSR Permit No. 0126 to establish federally enforceable recognition of the Dehydrator Vent.

Uncontrolled Emissions:

VOC (tpy)	H2S (tpy)	HAPs (tpy)
105.68	55.50	34.14

Pre-CAM Monitoring Requirements: There are no pre-CAM monitoring requirements.

C. *Control Technology, Capture System, Bypass, PER*

Controls: Thermal Oxidizer (Unit TO1)
Capture System: N/A
Bypass: The thermal oxidizer is the primary control for the dehydrator non-condensable still vent overheads.

Potential pre-control device emissions: 105.68 tpy VOC, 34.14 tpy HAPs, 55.50 tpy H2S Under 40 CFR §64.2(a) this is a CAM affected unit.

Device potential emissions with control: 0 Tpy VOC, 0 tpy HAPs, 0 tpy H2S The thermal oxidizer destruction removal efficiency (DRE) is 98%.

II. Monitoring Approach

The key elements of the monitoring approach are presented in the attached table.

III. Response to Excursion

Per 40 CFR §64.1, excursion is defined as: a departure from an indicator range established for monitoring under this part, consistent with any averaging period specified for averaging the results of the monitoring. Excursions of the thermal oxidizer will trigger an inspection, corrective action, and reporting. Maintenance personnel will inspect the thermal oxidizer within 24 hours and make needed repairs as soon as practicable.

Monitoring Approach: Empire Abo Compressor Station Thermal Oxidizer (TO1)

	Indicator No. 1	**Indicator No. 2**
I. Indicator	Pilot Flame	Work Practices / Equipment Inspection
Measurement Approach	Pilot flame is constantly monitored using a thermocouple.	Inspection and maintenance of the burner and the vent ducting directing vapors to the TO1. The thermal oxidizer is inspected on a semi-annual basis to ensure that the process is properly controlled.
II. Indicator Range	The thermocouple and/or IR is linked to a programmable logic controller (PLC) which constantly monitors the pilot status for presence or absence of flame. Absence of flame causes spark igniter to relight pilot. After set time with no pilot flame, the pilot goes to alarm.	An excursion is defined as a failure to perform the semiannual inspection or Fail of the equipment inspection.
III. Performance Criteria A. Data Representativeness	Presence of a flame indicated by a pilot indicating light, PLC registration of pilot status, automatic spark igniter ignition.	Inspections and maintenance are being conducted on the thermal oxidizer.
B. QA/QC Practices and Criteria	Thermocouple visually checked quarterly, and the alarm tested annually.	The thermal oxidizer is inspected on a semi-annual basis to ensure that the process is properly controlled. The unit is inspected according to a Manufacturer's recommended procedure or company developed inspection protocol which includes at minimum the methods for inspecting and adjusting proper minimum combustion temperature, and proper air distribution.
C. Monitoring Frequency	Measured continuously	Semi-annual inspection
D. Data Collection Procedures	Presence or absence of flame will be recorded in a log.	Record results of each inspection. Any repairs or adjustments are documented.
E. Averaging Period	Not applicable.	Not applicable.

Justification

I. Background

The monitoring approach outlined here applies to the thermal oxidizer (TO1) which is a control device for vapors from the dehydrator non-condensable still vent overheads. The dehydrator vent is the CAM affected unit.

II. Rationale for Selection of Performance Indicators

The destruction and removal of VOC, HAPs, and H_2S is dependent upon combustion and on proper operation of the thermal oxidizer. Thus, the monitoring approach is based on two primary indicators: monitoring combustion temperature to confirm the presence of combustion, and inspecting the integrity of the operations of the thermal oxidizer.

III. Rationale for Selection of Indicator Ranges

In the case of ensuring proper operation of the thermal oxidizer, the presence of a flame to initiate or maintain combustion has only two states: a flame is present or a flame is not present. By design, a thermocouple-based alarm system will indicate the state of combustion and the combustion temperature will determine the design-specified combustion of VOC, HAPs and H_2S. An inspection of the ducting from the process equipment to thermal oxidizer and of the burner operation will ensure the proper operation of the thermal oxidizer.

The permit issued by the NMED requires the thermal oxidizer to achieve 98 percent or greater destruction efficiency.

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.

No other relevant information is being submitted with this application.

Section 22: Certification

Company Name: Frontier Field Services, LLC

I, Bryan Graham, 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 22nd day of April, ____, upon my oath or affirmation, before a notary of the State of

Texas.

Bryan Graham
*Signature

22 APR 2025
Date

Bryan Graham
Printed Name

Vice President of Operations
Title

Scribed and sworn before me on this 22nd day of April, ____.

My authorization as a notary of the State of Texas expires on the

19th day of January, 2027.

Megan Lopez
Notary's Signature

MEGAN LOPEZ NOTARY PUBLIC STATE OF TEXAS ID 131819424 EXP. 01-19-2027

4/22/2025
Date

Megan Lopez
Notary's Printed Name

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.