August 7, 2026

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

RE: New Source Review (NSR) Construction Permit Application - Update
Alamo Compressor Station, Lea County, New Mexico
ONEOK, INC.

Dear Air Quality Bureau,

ONEOK, INC (ONEOK) submits the enclosed update to the application for issuance of a New Source Review (NSR) Construction Permit to allow for the addition of sweetening units at the existing Alamo Compressor Station.

The Alamo Compressor Station currently operates under Oil and Gas General Construction Permit No. 8176M3.

A permit filing fee of $500 is enclosed with the application. An orginal Section 22 wet ink signature page was mailed to the department for the application under separate cover. Electronic files will be transferred via secure electronic transfer initiated by the assigned permit writer.

Any clarification questions or requests for additional information can be directed to myself via email to jj@resolutecompliance.com or by phone at 903-241-2055 or Mr. Lance Green via email to Lance.Green@oneok.com or by phone at 225-692-6947.

Kind Regards,

Jeff A. Jackson

Vice President EHSR

Encl: Initial NSR Permit via the Universal Application Form - Update

Cc: Mr. Lance Green – ONEOK
Ms. Daria Underwood – ONEOK

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.: 1684 in the amount of $500

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

☒ 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: **20.2.70.200.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: 38827	Updating Permit/NOI #: 8176
1	Facility Name: Alamo Compressor Station	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 21112	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From Jal NM, go west on NM-128 for 29.8 mi, turn L on J-1/Orla Road for 5.7 mi, turn L on Cotton Draw Road for 5.7 mi to facility.		
2	Plant Operator Company Name: ONEOK, Inc.	Phone/Fax: 225-692-6947	

a	Plant Operator Address: 100 W 5th Street Tulsa, OK 74103	
b	Plant Operator's New Mexico Corporate ID or Tax ID:	
3	Plant Owner(s) name(s): ONEOK, Inc.	Phone/Fax: 225-692-6947
a	Plant Owner(s) Mailing Address(s): 100 W 5th Street Tulsa, OK 74103	
4	Bill To (Company): ONEOK, Inc.	Phone/Fax: 225-692-6947
a	Mailing Address: 100 W 5th Street Tulsa, OK 74103	E-mail: lance.green@oneok.com
5	☐ Preparer: ☒ Consultant: Jeff Jackson, Resolute Compliance. LLC	Phone/Fax: 903-707-8614
a	Mailing Address: PO Box 970 Royse City, TX 75189	E-mail: jj@resolutecompliance.com
6	Plant Operator Contact: Lance Green	Phone/Fax: 225-692-6947
a	Address: 100 W 5th Street Tulsa, OK 74103	E-mail: lance.green@oneok.com
7	Air Permit Contact: Lance Green	Title: Environmental Supervisor
a	E-mail: lance.green@oneok.com	Phone/Fax: 225-692-6947
b	Mailing Address: 100 W 5th Street Tulsa, OK 74103	
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):
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: P-
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☒ No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☒ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☐ Yes ☒ No	If yes, the permit No. is:
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☒ Yes ☐ No	If yes, the register No. is: GCP O&G 8176M3

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: Oil: 24 bbl Natural Gas: 4.17 MMSCF Produced Water: 12.50 bbl	Daily: Oil: 600 bbl Natural Gas: 100 MMSCF Produced Water: 300 bbl	Annually: Oil: 219,000 bbl Natural Gas: 36,500 MMSCF Produced Water: 109,500 bbl
b	Proposed	Hourly: Oil: 24 bbl Natural Gas: 4.17 MMSCF Produced Water: 12.50 bbl	Daily: Oil: 600 bbl Natural Gas: 100 MMSCF Produced Water: 300 bbl	Annually: Oil: 219,000 bbl Natural Gas: 36,500 MMSCF Produced Water: 109,500 bbl
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: Oil: 24 bbl Natural Gas: 4.17 MMSCF Produced Water: 12.50 bbl	Daily: Oil: 600 bbl Natural Gas: 100 MMSCF Produced Water: 300 bbl	Annually: Oil: 219,000 bbl Natural Gas: 36,500 MMSCF Produced Water: 109,500 bbl

b	Proposed	Hourly: Oil: 24 bbl Natural Gas: 4.17 MMSCF Produced Water: 12.50 bbl	Daily: Oil: 600 bbl Natural Gas: 100 MMSCF Produced Water: 300 bbl	Annually: Oil: 219,000 bbl Natural Gas: 36,500 MMSCF Produced Water: 109,500 bbl

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.114519	Longitude (decimal degrees): -103.586975	County: Lea	Elevation (ft): 3405
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☒ NAD 83 ☐ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 633307	UTM N (in meters, to nearest 10 meters): 3554003		
3	Name and zip code of nearest New Mexico town: Jal, 88252			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Jal NM, go west on NM-128 for 29.8 mi, turn L on J-1/Orla Road for 5.7 mi, turn L on Cotton Draw Road for 5.7 mi to facility.			
5	The facility is 23.3 (distance) miles W (direction) of Jal (nearest town).			
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: Lea County, Eddy County, Loving (TX) County			
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: State of Texas: 12.83 km.			
9	Name nearest Class I area: Carlsbad Caverns National Park			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 74.2 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: >8,000 m			
12	Method(s) used to delineate the Restricted Area: Continuous Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:	☐AM ☐PM	End:	☐AM ☐PM		
3	Month and year of anticipated start of construction: Upon Permit Issuance					
4	Month and year of anticipated construction completion: Upon Permit Issuance					
5	Month and year of anticipated startup of new or modified facility: Upon Permit Issuance					
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: The facility is subject to the New Mexico New Owner Audit Program entered between the New Mexico Environmental Department and ONEOK, Inc. effectively July 16, 2025.		
a	If yes, NOV date or description of issue: N/A		NOV Tracking No:
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☒ Yes ☐ No If Yes, provide the 1c & 1d info below:		
c	Document Title: New Owner Monthly Reports	Effective Date: 9/15/25	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit: Updates to equipment representations to accurately reflect site.		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☒ Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☒ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☒ Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☒ **Minor** (☒ <10 tpy of any single HAP **AND** ☒ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☒ Yes ☐ No		
a	If yes, include the name of company providing commercial electric power to the facility: _____Excel_____ 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): Sypy Thomas		Phone: 720-468-3635
a	R.O. Title: Senior Vice President	R.O. e-mail: sypy.thomas@oneok.com	
b	R. O. Address: 100 W 5th Street Tulsa, OK 74103		
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.): ONEOK, Inc.		
a	Address of Parent Company: 100 W 5th Street Tulsa, OK 74103		
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.): ONEOK Delaware Gathering, LLC.		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Lance Green 225-692-6947; Daria Underwood 940-683-1337		

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: State of Texas: 12.83 km

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☒ Secure electronic transfer. Air Permit Contact Name Kayla Curtis, Email kc@resolutecompliance.com Phone number 817-821-6526

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.

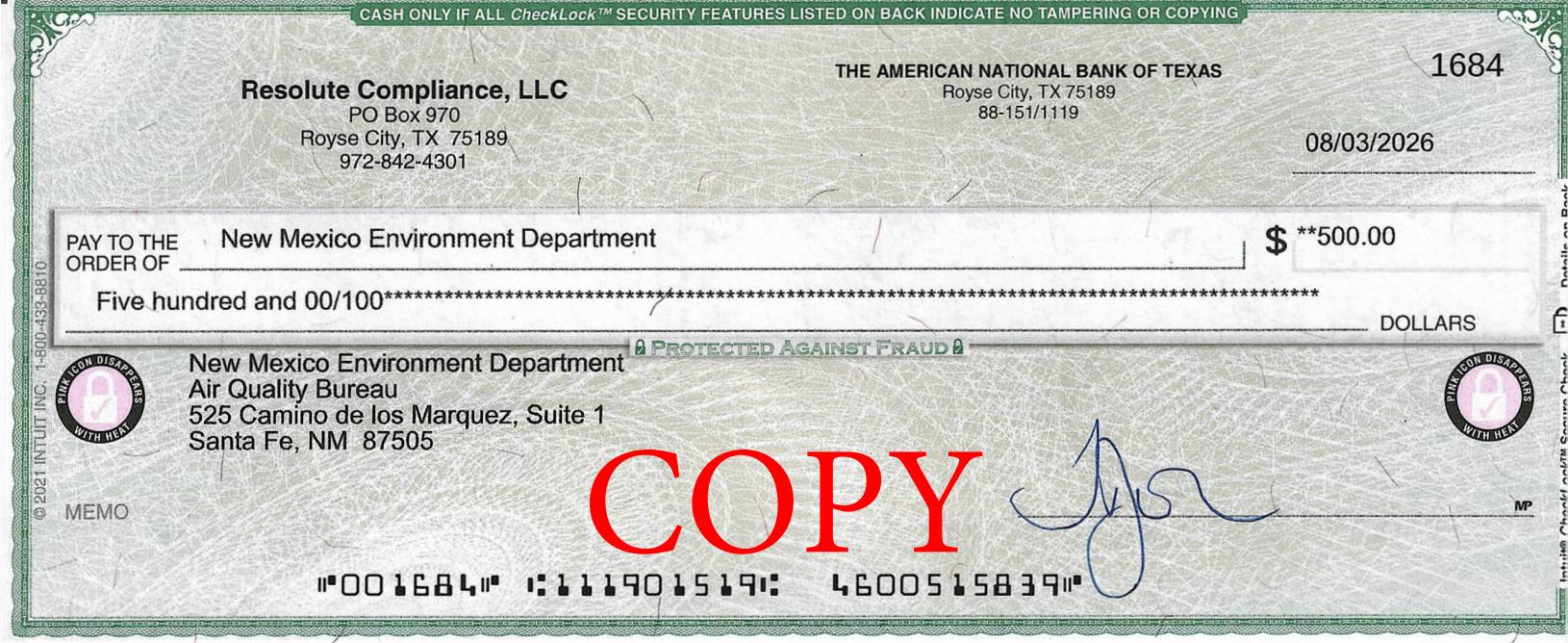
3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). 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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CASH ONLY IF ALL CheckLock™ SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

Resolute Compliance, LLC
PO Box 970
Royse City, TX 75189
972-842-4301

THE AMERICAN NATIONAL BANK OF TEXAS
Royse City, TX 75189
88-151/1119

1684

08/03/2026

PAY TO THE ORDER OF New Mexico Environment Department

$ **500.00

Five hundred and 00/100********** DOLLARS

PROTECTED AGAINST FRAUD

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

MEMO

COPY

⑈001684⑈ ⑆111901519⑆ 460051583 9⑈

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Resolute Compliance, LLC 1684

08/03/2026 **New Mexico Environment Department**

NM NSR App Fee - Alamo CS	500.00

ANB Op Acct 500.00

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.
E-1	Compressor Engine 1	Caterpillar	G3608 A4	XH701017	2500 hp	2500 hp	8/1/2018 5/24/2019	CAT-1 E-1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-2	Compressor Engine 2	Caterpillar	G3608 A4	XH700981	2500 hp	2500 hp	7/1/2018 5/24/2019	CAT-2 E-2	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-3	Compressor Engine 3	Caterpillar	G3612 A4	BB200839	3750 hp	3750 hp	11/1/2018 7/9/2019	CAT-3 E-3	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-4	Compressor Engine 4	Caterpillar	G3612 A4	BB200840	3750 hp	3750 hp	11/1/2018 7/11/2019	CAT-4 E-4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-5	Compressor Engine 5	GM	4.3L	GM6043070400074	76 hp	76 hp	1/1/2018 9/2/2019	CAT-5 E-5	20200253	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
E-6	Compressor Engine 6	Caterpillar	G3608 A4	XH701383	2500 hp	2500 hp	9/1/2019 7/22/2021	CAT-6 E-6	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-7	Compressor Engine 7	Caterpillar	G3608 A4	XH701565	2500 hp	2500 hp	3/30/2021 2/26/2022	CAT-7 E-7	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	
E-8	Compressor Engine 8	Caterpillar	G3612 TALE	BB200829	3750 hp	3750 hp	10/12/2018 6/18/2022	CAT-8 E-8	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	
E-9	Fin Fan Engine 1	Arrow	VRG330	P-4500C	68 hp	68 hp	8/23/2008 TBD	CAT-9 E-9	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
E-10	Fin Fan Engine 2	Arrow	VRG330	P-5564C	68 hp	68 hp	7/24/2010 TBD	CAT-10 E-10	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
E-11	Fin Fan Engine 3	Arrow	VRG330	BLA54S015	68 hp	68 hp	12/15/2014 TBD	CAT-11 E-11	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
GEN-1	Generator Engine 1	NGE	D146L	EEZ0G401391	402 hp	402 hp	1/1/2018 1/1/2019	N/A GEN-1	20200253	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
GEN-2	Generator Engine 2	NGE	D146L	EEZ0G501448	402 hp	402 hp	1/1/2018 1/1/2019	N/A GEN-2	20200253	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
GEN-3	Generator Engine 3	Caterpillar	G3412 TA	7DB01095	539 hp	539 hp	6/16/1995 TBD	GENCAT-3 GEN-3	20200253	☐ Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
GEN-4	Generator Engine 4	Caterpillar	G3412 TA	7DB01274	539 hp	539 hp	2/17/1997 TBD	GENCAT-4 GEN-4	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	
GEN-5	Generator Engine 5	Caterpillar	G3412 TA	CTP03255	539 hp	539 hp	5/20/2014 TBD	GENCAT-5 GEN-5	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
H-2	Glycol Reboiler	Valerus	211409	VS5190-9	1.50 MMBtu/hr	1.50 MMBtu/hr	Unknown / 1/1/2025	N/A / H-2	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
H-3a	Amine Heater	Flameco	N/A	N/A	9.87 MMBtu/hr	9.87 MMBtu/hr	TBD / TBD	N/A / H-3a	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-4a	Amine Heater	Flameco	N/A	N/A	9.87 MMBtu/hr	9.87 MMBtu/hr	TBD / TBD	N/A / H-4a	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-5a	Amine Heater	Flameco	N/A	N/A	9.87 MMBtu/hr	9.87 MMBtu/hr	TBD / TBD	N/A / H-5a	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
DEHY-1	Glycol Dehydrator	Unknown	N/A	N/A	100 MMSCFD	100 MMSCFD	N/A / 1/1/2019	H-2 / DEHY-1	31000227	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
AU-1	Amine Unit 1	Unknown	N/A	N/A	32.2 MMSCFD	32.2 MMSCFD	TBD / TBD	VCU-1 / AU-1	31000201	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AU-2	Amine Unit 2	Unknown	N/A	N/A	32.2 MMSCFD	32.2 MMSCFD	TBD / TBD	VCU-1 / AU-2	31000201	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
AU-3	Amine Unit 3	Unknown	N/A	N/A	32.2 MMSCFD	32.2 MMSCFD	TBD / TBD	VCU-1 / AU-3	31000201	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
VCU-1	Vapor Combustion Unit	Zeeco	VCU-5-40-FG	N/A	17.69 MMBtu/hr	17.69 MMBtu/hr	TBD / TBD	N/A / VCU-1	31000215	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GBS-1	500 bbl Gunbarrel Separator	Permian Tank	N/A	TRY8002	500 bbl	500 bbl	1/1/2018 / 2/1/2019	VRU-1 /ECD-1 / GBS-1	31000129	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-1	400 bbl Condensate Tank	Heavybilt Mfg Inc	N/A	1400-1723	400 bbl	400 bbl	1/1/2018 / 2/1/2019	VRU-1 /ECD-1 / TK-1	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-2	400 bbl Condensate Tank	Heavybilt Mfg Inc	N/A	T400-1709	400 bbl	400 bbl	1/1/2018 / 2/1/2019	VRU-1 /ECD-1 / TK-2	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-3	400 bbl Condensate Tank	Heavybilt Mfg Inc	N/A	T400-1714	400 bbl	400 bbl	1/1/2018 / 2/1/2019	VRU-1 /ECD-1 / TK-3	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-4	400 bbl Produced Water Tank	Pitts	N/A	N/A	400 bbl	400 bbl	1/1/2018 / 10/1/2022	VRU-1 /ECD-1 / TK-4	40400315	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
TK-9	400 bbl Condensate Tank	Heavybilt Mfg Inc	N/A	T400-1724	400 bbl	400 bbl	1/1/2018 2/1/2019	VRU-1 /ECD-1 TK-9	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
TK-13	1,000 gal Amine Tank	Coastal Chemical	N/A	N/A	1,000 gal	1,000 gal	TBD TBD	N/A TK-13	40400414	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-14	1,000 gal Amine Tank	Coastal Chemical	N/A	N/A	1,000 gal	1,000 gal	TBD TBD	N/A TK-14	40400414	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-15	1,000 gal Amine Tank	Coastal Chemical	N/A	N/A	1,000 gal	1,000 gal	TBD TBD	N/A TK-15	40400414	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-25	210 bbl Methanol Tank	Heavybilt Mfg Inc	N/A	T210-100	210 bbl	210 bbl	02/1/2019 TBD	N/A TK-25	40400414	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
LOAD	Condensate Truck Loading	N/A	N/A	N/A	9198 Mgal/yr	9198 Mgal/yr	N/A 2/1/2019	VRU-1/ ECD-1/ VAP-BAL LOAD	40600132	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced ☑		
LOAD-PW	Produced Water Truck Loading	N/A	N/A	N/A	4599 Mgal/yr	4599 Mgal/yr	N/A 2/1/2019	N/A LOAD-PW	40600132	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced ☐		
ECD-1	Enclosed Combustion Device	Cimmaron	SL COMSTD ECD84 HV-001	25467E-002	3.17 MMBtu/hr	3.17 MMBtu/hr	1/1/2025 TBD	N/A ECD-1	31000215	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
ECD-2	Enclosed Combustion Device 2	SpiralX	S6E0V0002D	26021046	2.4 MMBtu/hr	2.4 MMBtu/hr	TBD TBD	N/A ECD-2	31000215	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FUG	Site Fugitives	N/A	N/A	N/A	N/A	N/A	N/A 2/1/2019	N/A FUG	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
AU-FUG	Amine Site Fugitives	N/A	N/A	N/A	N/A	N/A	N/A TBD	N/A AU-FUG	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
UR-01	Unpaved Haul Roads	N/A	N/A	N/A	N/A	N/A	N/A 2/1/2019	N/A UR-01	31088811	☑ Existing (unchanged) To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
PNEU	Pneumatic Devices	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A PNUE	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-1 FUG	Compressor 1 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-1 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-2 FUG	Compressor 2 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-2 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-3 FUG	Compressor 3 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-3 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-4 FUG	Compressor 4 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-4 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-6 FUG	Compressor 6 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-6 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-7 FUG	Compressor 7 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-7 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
COMP-8 FUG	Compressor 8 Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A COMP-8 FUG	31088811	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
SSM	Startup, Shutdown, & Maintenance Activities	N/A	N/A	N/A	N/A	N/A	N/A 2/1/2019	N/A SSM	31088811	Existing (unchanged) To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced		
M	Malfuncion Emissions	N/A	N/A	N/A	N/A	N/A	N/A TBD	N/A M		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

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

[2] Specify dates required to determine regulatory applicability.

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

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

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

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at 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
TK-5	210 bbl Compressor Oil Tank	Unknown	N/A Unknown	210 bbl	20.2.72.B.5 N/A	Unkown 1/1/2019	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-6	210 bbl Compressor Oil Tank	Unknown	N/A Unknown	210 bbl	20.2.72.B.5 N/A	Unkown 1/1/2019	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-7	210 bbl Antifreeze Tank	Unknown	N/A Unknown	210 bbl	20.2.72.202.B.5 N/A	Unkown 1/1/2019	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-8	1,000 gal Methanol Tank	Unknown	N/A Unknown	1,000 gal	20.2.72.202.B.5 N/A	Unkown 1/1/2019	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-10	210 bbl Water Tank	TBD	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-11	210 bbl Water Tank	TBD	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-12	210 bbl Water Tank	TBD	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-16	520 gal Engine Oil Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-17	520 gal Engine Oil Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-18	520 gal Antifreeze Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-19	520 gal Antifreeze Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-20	1,000 gal Engine Oil Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-21	1,000 gal Antifreeze Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-22	1,000 gal TEG Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-23	1,000 gal Antifreeze Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-24	1,000 gal Antifreeze Tank	Unknown	N/A TBD	210 bbl	20.2.72.202.B.5 N/A	TBD TBD	☐ 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
CAT-1	Catalytic Oxidation		VOC, CO, HCHO	E-1	VOC: 36% CO: 86% HCHO: 50%	Catalyst Spec
CAT-2	Catalytic Oxidation		VOC, CO, HCHO	E-2	VOC: 40% CO: 86% HCHO: 50%	Catalyst Spec
CAT-3	Catalytic Oxidation		VOC, CO, HCHO	E-3	VOC: 29% CO: 84% HCHO: 50%	Catalyst Spec
CAT-4	Catalytic Oxidation		VOC, CO, HCHO	E-4		Catalyst Spec
CAT-6	Catalytic Oxidation		VOC, CO, HCHO	E-6	VOC: 36% CO: 86% HCHO: 50%	Catalyst Spec
CAT-7	Catalytic Oxidation		VOC, CO, HCHO	E-7		Catalyst Spec
CAT-8	Catalytic Oxidation		VOC, CO, HCHO	E-8	VOC: 29% CO: 84% HCHO: 50%	Catalyst Spec
GENCAT-3	NSCR (Non-Selective Catalytic Reduction)		VOC, CO, NOx	GEN-3	VOC: 61% CO: 96% NOx: 97%	Catalyst Spec
GENCAT-4	NSCR (Non-Selective Catalytic Reduction)		VOC, CO, NOx	GEN-4	VOC: 61% CO: 96% NOx: 97%	Catalyst Spec
GENCAT-5	NSCR (Non-Selective Catalytic Reduction)		VOC, CO, NOx	GEN-5	VOC: 61% CO: 96% NOx: 97%	Catalyst Spec
VAP-BAL	Vapor Balance		VOC, HAPs	LOAD		
VRU-1	Vapor Recovery Unit		VOC, HAPs	TK-1, TK-2, TK-3, TK-4, TK-9, LOAD	95%	Design Calculation
ECD-1	Enclosed Combustion Device		VOC, HAPs	TK-1, TK-2, TK-3, TK-4, TK-9, LOAD during VRU downtime	98%	Design Calculation
VCU-1	Vapor Combustion Unit		VOC, HAPs, H2S	AU-1, AU-2, AU-3	98%	Design Calculation
CAT-9	NSCR (Non-Selective Catalytic Reduction)		NOx, CO	E-9	NOx: 86% CO: 71%	Catalyst Spec
CAT-10	NSCR (Non-Selective Catalytic Reduction)		NOx, CO	E-10		Catalyst Spec
CAT-11	NSCR (Non-Selective Catalytic Reduction)		NOx, CO	E-11		Catalyst Spec
ECD-2	Enclosed Combustion Device 2		VOC, HAPs	DEHY-1	98%	Design Calculation

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
E-1	2.20	9.66	13.78	60.35	2.76	12.07	0.01	0.043	0.17	0.73	0.17	0.73	0.17	0.73	-	-	-	-
E-2	2.20	9.66	13.78	60.35	2.76	12.07	0.01	0.043	0.17	0.73	0.17	0.73	0.17	0.73	-	-	-	-
E-3	3.31	14.48	20.59	90.17	2.89	12.67	0.01	0.043	0.25	1.09	0.25	1.09	0.25	1.09	-	-	-	-
E-4	3.31	14.48	20.59	90.17	2.89	12.67	0.01	0.064	0.25	1.09	0.25	1.09	0.25	1.09	-	-	-	-
E-6	2.20	9.66	13.78	60.35	2.76	12.07	0.01	0.043	0.17	0.73	0.17	0.73	0.17	0.73	-	-	-	-
E-7	2.20	9.66	13.78	60.35	2.76	12.07	0.01	0.043	0.17	0.73	0.17	0.73	0.17	0.73	-	-	-	-
E-8	4.13	18.11	22.74	99.58	9.34	40.92	0.02	0.066	0.26	1.13	0.26	1.13	0.26	1.13	-	-	-	-
E-9	1.94	8.50	0.16	0.72	0.01	0.03	0.0001	0.0004	0.002	0.007	0.002	0.007	0.002	0.007	-	-	-	-
E-10	1.94	8.50	0.16	0.72	0.01	0.03	0.0001	0.0004	0.002	0.007	0.002	0.007	0.002	0.007	-	-	-	-
E-11	1.94	8.50	0.16	0.72	0.01	0.03	0.0001	0.0004	0.002	0.007	0.002	0.007	0.002	0.007	-	-	-	-
GEN-3	17.11	74.95	17.11	74.95	0.39	1.72	0.002	0.01	0.04	0.18	0.04	0.18	0.04	0.18	-	-	-	-
GEN-4	17.11	74.95	17.11	74.95	0.39	1.72	0.002	0.01	0.04	0.18	0.04	0.18	0.04	0.18	-	-	-	-
GEN-5	17.11	74.95	17.11	74.95	0.39	1.72	0.002	0.01	0.04	0.18	0.04	0.18	0.04	0.18	-	-	-	-
H-2	0.12	0.52	0.10	0.44	0.01	0.03	0.001	0.003	0.009	0.04	0.009	0.04	0.009	0.04	-	-	-	-
H-3a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.020	0.06	0.26	0.06	0.26	0.06	0.26	-	-	-	-
H-4a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.020	0.06	0.26	0.06	0.26	0.06	0.26	-	-	-	-
H-5a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.020	0.06	0.26	0.06	0.26	0.06	0.26	-	-	-	-
DEHY-1	-	-	-	-	91.92	402.61	-	-	-	-	-	-	-	-	0	0	-	-
AU-1	-	-	-	-	13.24	57.98	-	-	-	-	-	-	-	-	0.47	2.04	-	-
AU-2	-	-	-	-	13.24	57.98	-	-	-	-	-	-	-	-	0.47	2.04	-	-
AU-3	-	-	-	-	13.24	57.98	-	-	-	-	-	-	-	-	0.47	2.04	-	-
VCU-1	0.01	0.04	0.01	0.03	1.49	6.54	0.0001	0.0002	0.0007	0.0030	0.0007	0.0030	0.0007	0.0030	-	-	-	-
GBS-1	-	-	-	-	90.91	398.19	-	-	-	-	-	-	-	-	-	-	-	-
TK-1	-	-	-	-	23.50	102.91	-	-	-	-	-	-	-	-	-	-	-	-
TK-2	-	-	-	-	23.50	102.91	-	-	-	-	-	-	-	-	-	-	-	-
TK-3	-	-	-	-	23.50	102.91	-	-	-	-	-	-	-	-	-	-	-	-
TK-4	-	-	-	-	0.23	1.01	-	-	-	-	-	-	-	-	-	-	-	-
TK-9	-	-	-	-	23.50	102.91	-	-	-	-	-	-	-	-	-	-	-	-
TK-13	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-14	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-15	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-25	-	-	-	-	0.56	0.15	-	-	-	-	-	-	-	-	-	-	-	-
LOAD	-	-	-	-	5.76	25.22	-	-	-	-	-	-	-	-	-	-	-	-
LOAD-PW	-	-	-	-	0.02	0.11	-	-	-	-	-	-	-	-	-	-	-	-
ECD-1	0.003	0.01	0.003	0.01	0.50	2.18	1.80E-05	0.0001	0.0002	0.001	0.0002	0.001	0.0002	0.001	-	-	-	-
ECD-2	0.003	0.01	0.003	0.01	0.50	2.18	1.80E-05	0.0001	0.0002	0.001	0.0002	0.001	0.0002	0.001	-	-	-	-
FUG	-	-	-	-	2.42	10.60	-	-	-	-	-	-	-	-	-	-	-	-
AU-FUG	-	-	-	-	0.48	2.10	-	-	-	-	-	-	-	-	-	-	-	-
UR-01	-	-	-	-	-	-	-	-	0.10	0.07	0.10	0.07	0.10	0.07	-	-	-	-
PNEU	-	-	-	-	0.95	4.15	-	-	-	-	-	-	-	-	-	-	-	-
COMP-1 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-2 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-3 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-4 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-6 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-7 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-8 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
Totals	79.20	346.9	172.93	757.43	358.17	1,572.90	0.10	0.44	1.83	7.68	1.83	7.68	1.83	7.68	1.40	6.12	0	0

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but 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
E-1	2.20	9.66	1.93	8.45	2.07	9.05	0.010	0.043	0.005	0.02	0.005	0.02	0.005	0.02	-	-	-	-
E-2	2.20	9.66	1.93	8.45	2.10	9.20	0.010	0.043	0.005	0.02	0.005	0.02	0.005	0.02	-	-	-	-
E-3	3.31	14.48	3.31	14.48	2.33	10.21	0.015	0.064	0.008	0.03	0.008	0.03	0.008	0.03	-	-	-	-
E-4	3.31	14.48	3.31	14.48	2.29	10.03	0.015	0.064	0.008	0.03	0.008	0.03	0.008	0.03	-	-	-	-
E-6	2.20	9.66	1.93	8.45	1.82	7.97	0.010	0.043	0.005	0.02	0.005	0.02	0.005	0.02	-	-	-	-
E-7	2.20	9.66	1.93	8.45	1.81	7.94	0.010	0.043	0.005	0.02	0.005	0.02	0.005	0.02	-	-	-	-
E-8	3.31	14.48	3.31	14.48	2.12	9.27	0.015	0.066	0.008	0.03	0.008	0.03	0.008	0.03	-	-	-	-
E-9	0.30	1.31	0.72	3.15	0.01	0.03	0.0001	0.0004	0.002	0.01	0.002	0.01	0.002	0.01	-	-	-	-
E-10	0.30	1.31	0.72	3.15	0.01	0.03	0.0001	0.0004	0.002	0.01	0.002	0.01	0.002	0.01	-	-	-	-
E-11	0.30	1.31	0.72	3.15	0.01	0.03	0.0001	0.0004	0.002	0.01	0.002	0.01	0.002	0.01	-	-	-	-
GEN-3	0.59	2.60	0.71	3.12	0.83	3.64	0.002	0.01	0.001	0.01	0.001	0.01	0.001	0.01	-	-	-	-
GEN-4	0.59	2.60	0.71	3.12	0.83	3.64	0.002	0.01	0.001	0.01	0.001	0.01	0.001	0.01	-	-	-	-
GEN-5	0.59	2.60	0.71	3.12	0.83	3.64	0.002	0.01	0.001	0.01	0.001	0.01	0.001	0.01	-	-	-	-
H-2	0.12	0.52	0.10	0.44	0.01	0.03	0.001	0.00	0.009	0.04	0.009	0.04	0.009	0.04	-	-	-	-
H-3a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.02	0.059	0.26	0.06	0.26	0.06	0.26	-	-	-	-
H-4a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.02	0.059	0.26	0.06	0.26	0.06	0.26	-	-	-	-
H-5a	0.78	3.41	0.65	2.87	0.04	0.19	0.005	0.02	0.059	0.26	0.06	0.26	0.06	0.26	-	-	-	-
DEHY-1	-	-	-	-	0.30	1.27	-	-	-	-	-	-	-	-	0.00	0.00	-	-
AU-1	-	-	-	-	0.26	1.16	-	-	-	-	-	-	-	-	0.01	0.04	-	-
AU-2	-	-	-	-	0.26	1.16	-	-	-	-	-	-	-	-	0.009	0.04	-	-
AU-3	-	-	-	-	0.26	1.16	-	-	-	-	-	-	-	-	0.01	0.04	-	-
VCU-1	1.14	5.01	4.88	21.38	1.49	6.54	2.80	12.28	0.0007	0.003	0.0007	0.003	0.0007	0.003	-	-	-	-
GBS-1	-	-	-	-	0.09	0.40	-	-	-	-	-	-	-	-	-	-	-	-
TK-1	-	-	-	-	0.02	0.10	-	-	-	-	-	-	-	-	-	-	-	-
TK-2	-	-	-	-	0.02	0.10	-	-	-	-	-	-	-	-	-	-	-	-
TK-3	-	-	-	-	0.02	0.10	-	-	-	-	-	-	-	-	-	-	-	-
TK-4	-	-	-	-	0.0002	0.001	-	-	-	-	-	-	-	-	-	-	-	-
TK-9	-	-	-	-	0.02	0.10	-	-	-	-	-	-	-	-	-	-	-	-
TK-13	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-14	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-15	-	-	-	-	0.31	0.17	-	-	-	-	-	-	-	-	-	-	-	-
TK-25	-	-	-	-	0.56	0.15	-	-	-	-	-	-	-	-	-	-	-	-
LOAD	-	-	-	-	0.01	0.03	-	-	-	-	-	-	-	-	-	-	-	-

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
LOAD-PW	-	-	-	-	0.02	0.11	-	-	-	-	-	-	-	-	-	-	-	-
ECD-1	0.62	0.15	1.23	0.29	0.50	2.18	0.00	7.9E-05	0.0002	0.001	0.0002	0.001	0.0002	0.001	-	-	-	-
ECD-2	0.05	0.22	0.10	0.43	0.50	2.18	1E-05	4.5E-05	0.0001	0.0006	0.0001	0.0006	0.0001	0.0006	-	-	-	-
FUG	-	-	-	-	2.42	10.60	-	-	-	-	-	-	-	-	-	-	-	-
AU-FUG	-	-	-	-	0.48	2.10	-	-	-	-	-	-	-	-	-	-	-	-
UR-01	-	-	-	-	-	-	-	-	0.10	0.07	0.10	0.07	0.01	0.0072	-	-	-	-
PNEU	-	-	-	-	0.95	4.15	-	-	-	-	-	-	-	-	-	-	-	-
COMP-1 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-2 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-3 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-4 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-6 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-7 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
COMP-8 FUG	-	-	-	-	0.05	0.20	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Totals	25.69	109.96	30.20	127.20	26.65	120.79	2.91	12.75	0.34	1.13	0.34	1.13	0.25	1.06	0.03	0.12	0	0

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		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	-	-	-	-	3,912.74	15.35	-	-	-	-	-	-	-	-	-	-	-	-
Totals	0	0	0	0	3,912.74	15.35	0	0	0	0	0	0	0	0	0	0	0	0

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

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

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

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

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

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

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
E-1	E-1	V	No	24.7	827	279.68			89.03	2.00
E-2	E-2	V	No	24.7	827	279.68			89.03	2.00
E-3	E-3	V	No	30.0	845	414.83			97.29	2.33
E-4	E-4	V	No	30.0	845	414.83			97.29	2.33
E-6	E-6	V	No	24.7	827	279.68			89.09	2.00
E-7	E-7	V	No	24.7	827	279.68			89.09	2.00
E-8	E-8	V	No	30.0	845	414.83			97.29	2.33
E-9	E-9	V	No	15.0	1238	6.77			137.85	0.25
E-10	E-10	V	No	15.0	1238	6.77			137.85	0.25
E-11	E-11	V	No	15.0	1238	6.77			137.85	0.25
GEN-3	GEN-3	V	No	23.0	993	42.88			122.85	0.67
GEN-4	GEN-4	V	No	23.0	993	42.88			122.85	0.67
GEN-5	GEN-5	V	No	23.0	993	42.88			122.85	0.67
H-2	H-2	V	No	22.5	1400	13.90			10.01	1.33
H-3a	H-3a	V	No	28.4	310	6.75			10.00	2.00
H-4a	H-4a	V	No	28.4	310	6.75			10.00	2.00
H-5a	H-5a	V	No	28.4	310	6.75			10.00	2.00
VCU-1	VCU-1	V	No	40.0	1400	395.00			23.50	4.63
ECD-1	ECD-1	V	No	32.0	1400	1075.37			27.94	7.00
ECD-2	ECD-2	V	No	20.0	1200	309.86			24.67	4.00

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		Benzene ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
E-1	E-1	0.34	1.51	0.08	0.36	-	-	0.14	0.61	0.09	0.38	-	0.08	-	-				
E-2	E-2	0.38	1.65	0.12	0.51	-	-	0.14	0.61	0.09	0.38	-	0.08	-	-				
E-3	E-3	0.65	2.87	0.26	1.16	-	0.05	0.21	0.91	0.13	0.56	-	0.12	-	-				
E-4	E-4	0.61	2.69	0.22	0.98	-	0.05	0.21	0.91	0.13	0.56	-	0.12	-	-				
E-6	E-6	0.32	1.39	0.06	0.24	-	-	0.14	0.61	0.09	0.38	-	0.08	-	-				
E-7	E-7	0.31	1.36	0.05	0.22	-	-	0.14	0.61	0.09	0.38	-	0.08	-	-				
E-8	E-8	0.45	1.98	0.05	0.22	0.01	0.05	0.22	0.94	0.13	0.58	-	0.12	-	-				
E-9	E-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
E-10	E-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
E-11	E-11	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
GEN-3	GEN-3	0.11	0.50	0.08	0.36	-	-	-	-	-	-	-	-	-	-				
GEN-4	GEN-4	0.11	0.50	0.08	0.36	-	-	-	-	-	-	-	-	-	-				
GEN-5	GEN-5	0.11	0.50	0.08	0.36	-	-	-	-	-	-	-	-	-	-				
ECD-2	DEHY-1	0.06	0.23	-	-	0.04	0.16	-	-	-	-	-	-	-	-				
VCU-1	AU-1	0.07	0.29	-	-	0.05	0.21	-	-	-	-	-	-	-	-				
VCU-1	AU-2	0.07	0.29	-	-	0.05	0.21	-	-	-	-	-	-	-	-				
VCU-1	AU-3	0.07	0.29	-	-	0.05	0.21	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	GBS-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	TK-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	TK-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	TK-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	TK-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	TK-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
VRU-1/ ECD-1	LOAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
FUG	FUG	-	0.11	-	-	-	0.07	-	-	-	-	-	-	-	-				
SSM	SSM	60.00	0.24	-	-	9.06	-	-	-	-	-	-	-	-	-				
PNEU	PNUE	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TK-25	TK-25	0.56	0.15	-	-	-	-	-	-	-	-	-	-	0.56	0.15				
LOAD-PW	LOAD-PW	0.02	0.11	-	-	-	-	-	-	-	-	-	-	0.02	0.11				
COMP-1 FUG	COMP-1 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-2 FUG	COMP-2 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-3 FUG	COMP-3 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-4 FUG	COMP-4 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-6 FUG	COMP-6 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-7 FUG	COMP-7 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
COMP-8 FUG	COMP-8 FUG	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Totals:		64.26	16.65	1.09	4.77	9.25	1.01	1.19	5.21	0.73	3.21	0.00	0.69						

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
E-1	Natural Gas	Process Gas	1266	13201	scf/hr	115.64	MMscf/yr	2 gr S/100 scf	-
E-2	Natural Gas	Process Gas	1266	13201	scf/hr	115.64	MMscf/yr	2 gr S/100 scf	-
E-3	Natural Gas	Process Gas	1266	19662	scf/hr	172.24	MMscf/yr	2 gr S/100 scf	-
E-4	Natural Gas	Process Gas	1266	19662	scf/hr	172.24	MMscf/yr	2 gr S/100 scf	-
E-6	Natural Gas	Process Gas	1266	13201	scf/hr	115.64	MMscf/yr	2 gr S/100 scf	-
E-7	Natural Gas	Process Gas	1266	13201	scf/hr	115.64	MMscf/yr	2 gr S/100 scf	-
E-8	Natural Gas	Process Gas	1266	20326	scf/hr	178.05	MMscf/yr	2 gr S/100 scf	-
E-9	Natural Gas	Process Gas	1266	133	scf/hr	1.17	MMscf/yr	2 gr S/100 scf	-
E-10	Natural Gas	Process Gas	1266	133	scf/hr	1.17	MMscf/yr	2 gr S/100 scf	-
E-11	Natural Gas	Process Gas	1266	133	scf/hr	1.17	MMscf/yr	2 gr S/100 scf	-
GEN-3	Natural Gas	Process Gas	1266	3206	scf/hr	28.09	MMscf/yr	2 gr S/100 scf	-
GEN-4	Natural Gas	Process Gas	1266	3206	scf/hr	28.09	MMscf/yr	2 gr S/100 scf	-
GEN-5	Natural Gas	Process Gas	1266	3206	scf/hr	28.09	MMscf/yr	2 gr S/100 scf	-
H-2	Natural Gas	Process Gas	1266	1185	scf/hr	10.38	MMscf/yr	2 gr S/100 scf	-
H-3a	Natural Gas	Process Gas	1266	7796	scf/hr	68.29	MMscf/yr	2 gr S/100 scf	-
H-4a	Natural Gas	Process Gas	1266	7796	scf/hr	68.29	MMscf/yr	2 gr S/100 scf	-
H-5a	Natural Gas	Process Gas	1266	7796	scf/hr	68.29	MMscf/yr	2 gr S/100 scf	-
VCU-1	Natural Gas	Process Gas	1266	90	scf/hr	0.79	MMscf/yr	2 gr S/100 scf	-
ECD-1	Natural Gas	Process Gas	1266	30	scf/hr	0.26	MMscf/yr	2 gr S/100 scf	-
ECD-2	Natural Gas	Process Gas	1266	17	scf/hr	0.15	MMscf/yr	2 gr S/100 scf	-

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)
TK-1	40400311	Condensate	Mixed Hydrocarbons	5.79	47.64	61.37	13.8642	79.12	15.257
TK-2	40400311	Condensate	Mixed Hydrocarbons	5.79	47.64	61.37	13.8642	79.12	15.257
TK-3	40400311	Condensate	Mixed Hydrocarbons	5.79	47.64	61.37	13.8642	79.12	15.257
TK-4	40400315	Produced Water	Water and Mixed Hydrocarbons	8.32	33.58	61.37	1.0279	79.12	1.0316
TK-9	40400311	Condensate	Mixed Hydrocarbons	5.79	47.64	61.37	13.8642	79.12	15.257
TK-13	40400414	Amine	Diethylamine	5.90	73.14	61.37	3.89	79.12	6.05
TK-14	40400414	Amine	Diethylamine	5.90	73.14218841	61.37	3.89	79.12	6.05
TK-15	40400414	Amine	Diethylamine	5.90	73.14218841	61.37	3.89	79.12	6.05
TK-25	40400414	Methanol	Methanol	6.6	32.04	61.37	1.86	79.12	1.86

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			
TK-1	2/24/2025	Condensate	N/A	FX	400	63.6	3.7	3.7	Dark Green	Dark Green	Good	2,299,500	169.48
TK-2	2/24/2025	Condensate	N/A	FX	400	63.6	3.7	3.7	Dark Green	Dark Green	Good	2,299,500	169.48
TK-3	2/24/2025	Condensate	N/A	FX	400	63.6	3.7	3.7	Dark Green	Dark Green	Good	2,299,500	169.48
TK-4	2/24/2025	Produced Water	N/A	FX	400	63.6	3.7	3.7	Dark Green	Dark Green	Good	4,599,000	339.95
TK-9	2/24/2025	Condensate	N/A	FX	400	63.6	3.7	3.7	Dark Green	Dark Green	Good	2,299,500	169.48
TK-13	TBD	Amine	N/A	FX	24	3.8	1.2	1.2	OT (Tan)	OT (Tan)	Good	8,000	8.00
TK-14	TBD	Amine	N/A	FX	24	3.8	1.2	1.2	OT (Tan)	OT (Tan)	Good	8,000	8.00
TK-15	TBD	Amine	N/A	FX	24	3.8	1.2	1.2	OT (Tan)	OT (Tan)	Good	8,000	8.00
TK-25	TBD	Methanol	N/A	FX	210	33.4	10.2	10.2	OT (Tan)	OT (Tan)	Good	8,820	8.82

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)**
Oil	Mixed Hydrocarbons	Liquid	219000 bbl/yr				
Produced Water	Mixed Hydrocarbons	Liquid	109500 bbl/yr				
Gas	Mixed Hydrocarbons	Gas	100 MMSCFD				

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

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

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**										
E-1	**mass GHG**	8,562.74	0.02	0.16											8,562.91	
	CO_2e	8,562.74	4.28	4.52												8,571.53
E-2	**mass GHG**	8,562.74	0.02	0.16											8,562.91	
	CO_2e	8,562.74	4.28	4.52												8,571.53
E-3	**mass GHG**	12,753.80	0.02	0.24											12,754.07	
	CO_2e	12,753.80	6.37	6.73												12,766.90
E-4	**mass GHG**	12,753.80	0.02	0.24											12,754.07	
	CO_2e	12,753.80	6.37	6.73												12,766.90
E-6	**mass GHG**	8,562.74	0.02	0.16											8,562.91	
	CO_2e	8,562.74	4.28	4.52												8,571.53
E-7	**mass GHG**	8,562.74	0.02	0.16											8,562.91	
	CO_2e	8,562.74	4.28	4.52												8,571.53
E-8	**mass GHG**	13,184.18	0.02	0.25											13,184.45	
	CO_2e	13,184.18	6.58	6.96												13,197.72
E-9	**mass GHG**	86.48	0.0002	0.00											86.49	
	CO_2e	86.48	0.04	0.05												86.57
E-10	**mass GHG**	86.48	0.0002	0.002											86.49	
	CO_2e	86.48	0.04	0.05												86.57
E-11	**mass GHG**	86.48	0.0002	0.002											86.49	
	CO_2e	86.48	0.04	0.05												86.57
GEN-3	**mass GHG**	2,079.76	0.004	0.04											2,079.80	
	CO_2e	2,079.76	1.04	1.10												2,081.89
GEN-4	**mass GHG**	2,079.76	0.004	0.04											2,079.80	
	CO_2e	2,079.76	1.04	1.10												2,081.89
GEN-5	**mass GHG**	2,079.76	0.004	0.04											2,079.80	
	CO_2e	2,079.76	1.04	1.10												2,081.89
H-2	**mass GHG**	768.53	0.001	0.01											768.55	
	CO_2e	768.53	0.38	0.41												769.32
H-3	**mass GHG**	5,056.95	0.01	0.10											5,057.05	
	CO_2e	5,056.95	2.53	2.67												5,062.14
H-4	**mass GHG**	5,056.95	0.01	0.10											5,057.05	
	CO_2e	5,056.95	2.53	2.67												5,062.14
H-5	**mass GHG**	5,056.95	0.01	0.10											5,057.05	
	CO_2e	5,056.95	2.53	2.67												5,062.14
VCU-1	**mass GHG**	58.38	0.0001	0.001											58.38	
	CO_2e	58.38	0.03	0.03												58.44
ECD-1	**mass GHG**	2,274.31	0.004	0.04											2,274.36	
	CO_2e	2,274.31	1.14	1.20												2,276.64

ECD-2	**mass GHG**	178.01	0.0003	0.003											178.01	
	CO_2e	178.01	0.09	0.09												178.19
DEHY-1	**mass GHG**	246.31	-	0.17											246.48	
	CO_2e	246.31	-	4.76												251.07
AU-1	**mass GHG**	18,492.09	-	2.41											18,494.49	
	CO_2e	18,492.09	-	67.35												18,559.44
AU-2	**mass GHG**	18,492.09	-	2.41											18,494.49	
	CO_2e	18,492.09	-	67.35												18,559.44
AU-3	**mass GHG**	18,492.09	-	2.41											18,494.49	
	CO_2e	18,492.09	-	67.35												18,559.44
GBS-1	**mass GHG**	0.02	-	0.02											0.04	
	CO_2e	0.02	-	0.57												0.59
TK-1	**mass GHG**	0.005	-	0.003											0.01	
	CO_2e	0.005	-	0.09												0.10
TK-2	**mass GHG**	0.005	-	0.003											0.01	
	CO_2e	0.005	-	0.09												0.10
TK-3	**mass GHG**	0.005	-	0.003											0.01	
	CO_2e	0.005	-	0.09												0.10
TK-4	**mass GHG**	0.003	-	0.0002											0.003	
	CO_2e	0.003	-	0.01												0.01
TK-9	**mass GHG**	0.005	-	0.003											0.01	
	CO_2e	0.005	-	0.09												0.10
LOAD	**mass GHG**	0.00	-	0.001											0.001	
	CO_2e	0.00	-	0.02												0.02
SSM	**mass GHG**	2.06	-	15.88											17.94	
	CO_2e	2.06	-	444.54												446.60
Total	**mass GHG**	153,616.20	0.18	25.14											153,641.49	
	CO_2e	153,616.20	48.89	703.98												154,369.07

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

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

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

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

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

Section 3

Application Summary

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

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

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

ONEOK Inc. (ONEOK) is submitting an initial New Source Review (NSR) Permit under 20.2.72 NMAC to replace GCP Permit 8176M3 to authorize the removal of two (2) generator engines (GEN-1 GEN-2), the replacement of one (1) VRU compressor engine (E-5) with an electric VRU, addition of three (3) fin fan engines (Source IDs E-9 through E-11), three (3) generator engines (Source IDs GEN-3, GEN-4, and GEN-5), three (3) 100 gpm amine units (Source IDs AU-1, AU-2, AU-3) and associated reboilers (Source IDs H-3a, H-4a, H-5a), three (3) 210 bbl Water Tanks (Source IDs TK-10 through TK-12), three (3) 1,000 gal Amine Tanks (Source IDs TK-13 through TK-15), one (1) Vapor combustor unit (Source ID VCU-1), one (1) enclosed combustion device (ECD, Source ID ECD-1) and route VRU downtime vapors to the ECD, one (1) enclosed combustion device (ECD, Source ID ECD-2 to control DEHY-1), pneumatics (Source ID PNEU), compressor fugitive components (Source IDs COMP-1 FUG, COMP-2 FUG, COMP-3 FUG, COMP-4 FUG, COMP-6 FUG, COMP-7 FUG, COMP-8 FUG), update fugitive component counts, and update Facility emissions associated with recent extended gas and liquid analyses at the Alamo Compressor Station (Facility) located near Jal in Lea County, New Mexico. The Facility is a natural gas compressor station that receives natural gas from wells located in Lea County through a network of gathering pipelines.

The Facility will consist of the following equipment and operations:

- Seven (7) Compressor Engines (Source IDs E-1 through E-4, E-6 through E-8)
- Three (3) Fin Fan Engines (Source IDs E-9 through E-11)
- Three (3) Generator Engines (Source IDs GEN-3 through GEN-5)
- One (1) Dehydrator Unit (Source ID DEHY-1)
- One (1) Glycol Reboiler (Source ID H-2)
- Three (3) Amine Units (Source IDs AU-1, AU-2, AU-3)
- Three (3) Amine Process Heaters (Source IDs H-3a, H-4a, H-5a)
- One (1) Vapor Combustor Unit (Source ID VCU-1)
- One (1) 500 barrel (bbl) Gun Barrel Separator (Source ID GBS-1)
- Four (4) 400 bbl Condensate Storage Tanks (Source IDs TK-1, TK-2, TK-3, TK-9)
- One (1) 400 bbl Produced Water Storage Tank (Source ID TK-4)
- Truck Loading (Source ID LOAD)
- One (1) electric vapor recovery unit
- One (1) enclosed combustion device (Source ID ECD-1)
- One (1) enclosed combustion device (Source ID ECD-2)
- Two (2) 210 bbl Compressor Oil Tanks (Source IDs TK-5, TK-6)
- One (1) 210 bbl Antifreeze Tank (Source ID TK-7)
- One (1) 1000 gallon (gal) Methanol Tank (Source ID TK-8)
- Three (3) 210 bbl Water Tanks (Source IDs TK-10 through TK-12)
- Three (3) 1,000 gal Amine Tanks (Source IDs TK-13 through TK-15)

- Fugitive equipment components and pneumatics (Source IDs FUG, COMP-1 FUG, COMP-2 FUG, COMP-3 FUG, COMP-4 FUG, COMP-6 FUG, COMP-7 FUG, COMP-8 FUG, PNEU)
- Amine fugitive equipment components (Source ID AU-FUG)
- Unpaved Road Dust (Source ID UR-01)
- Startup, Shutdown & Maintenance (SSM) activities (Source ID SSM)
- Malfunction emissions (Source ID M)

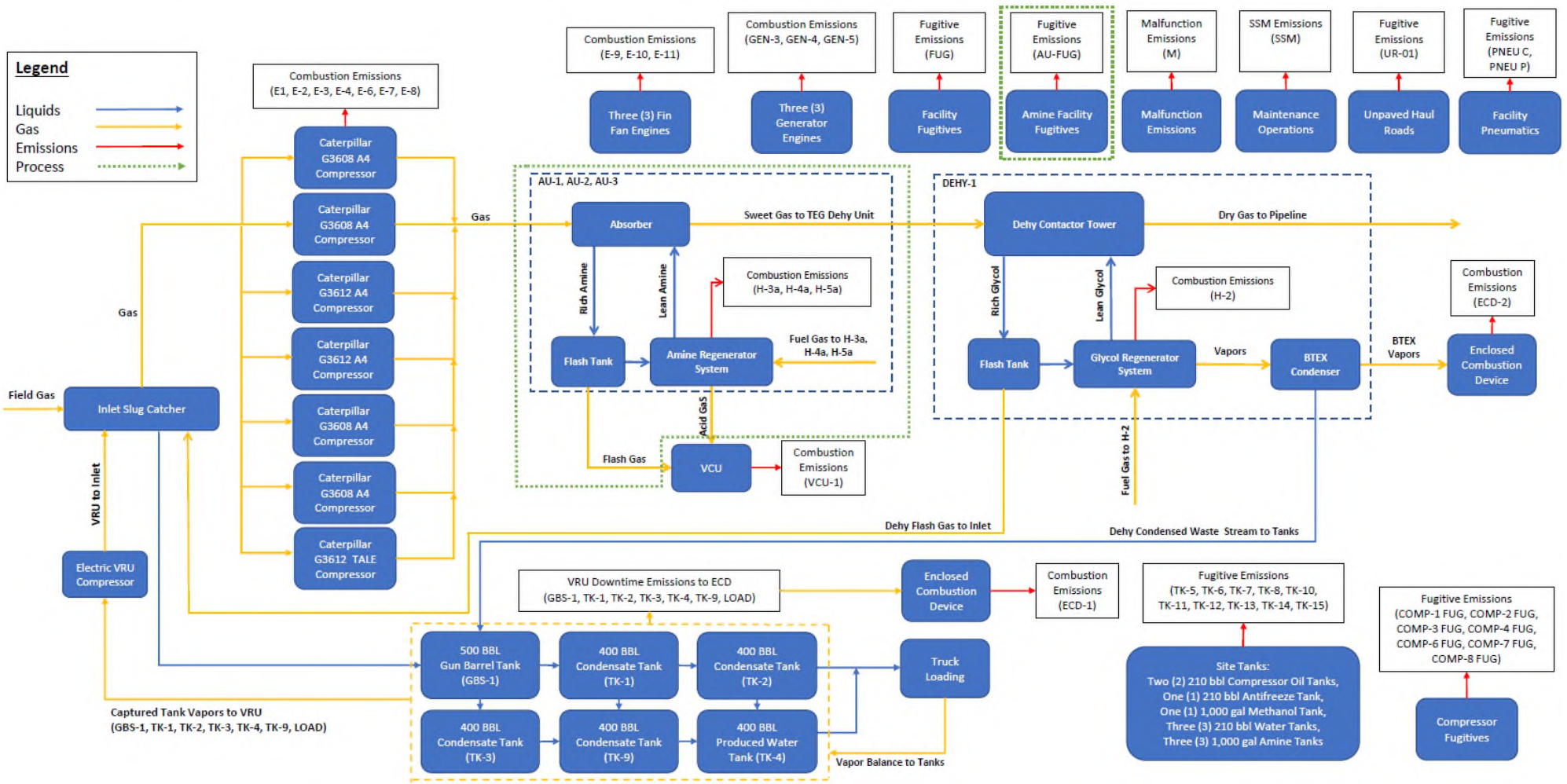
Site-Specific SSM emissions are estimated for compressor blowdowns, starter vents, pigging activities, dehydrator and amine blowdowns, filter coalescer blowdowns, scrubber blowdowns, pump blowdowns, reboiler maintenance, pipeline maintenance, and tank maintenance.

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 to this section.



RESOLUTE COMPLIANCE, LLC
Purposeful Solutions. Unwavering Service.

Alamo Compressor Station
ONEOK, INC.
Lea County, NM

Project No. Env-EnLink-0430
Report No. Alamo-Initial NSR
Date: August 2026

Process Flow Diagram

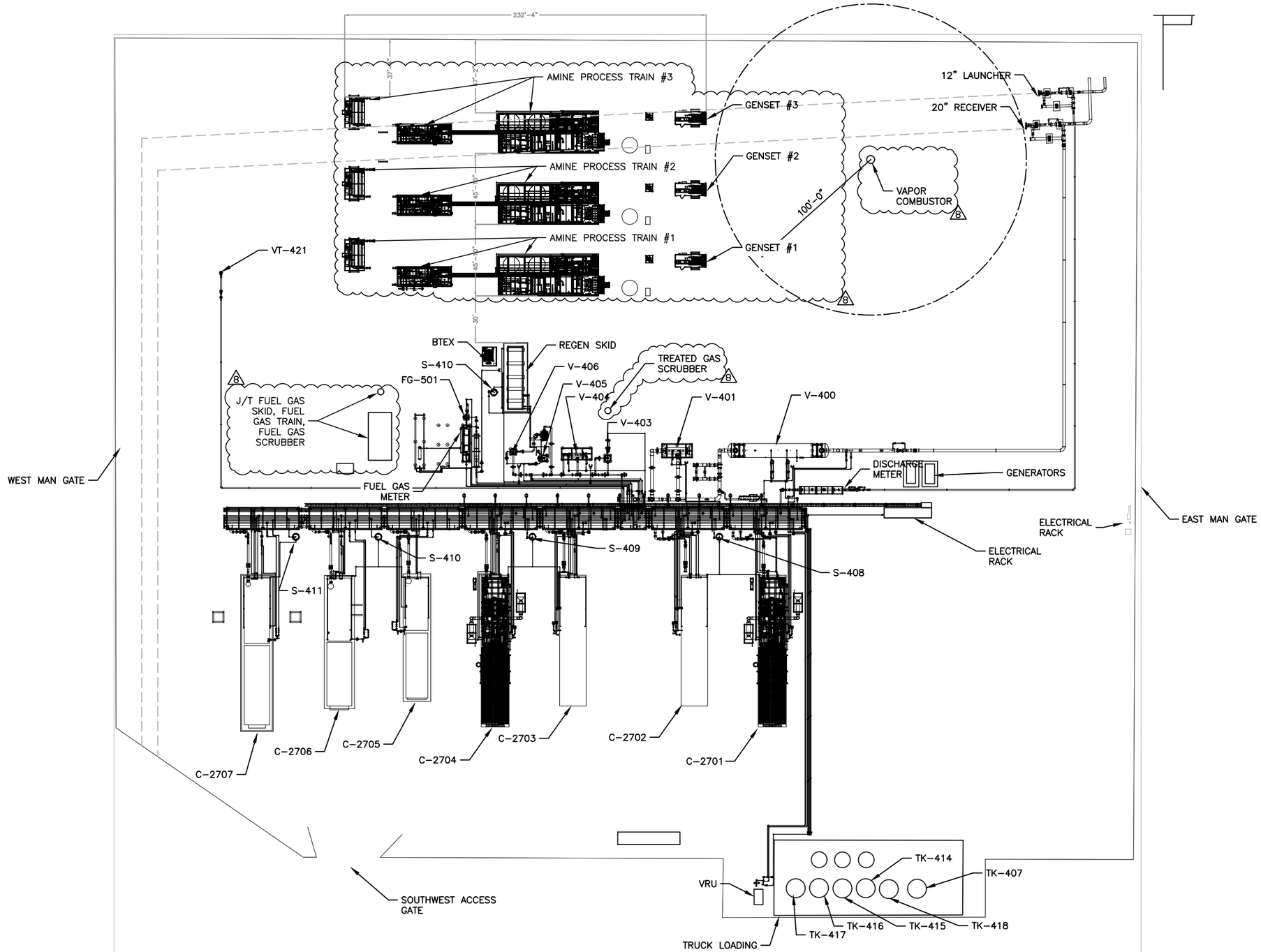
FIGURE 2

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 to this section.



ISSUED FOR REVIEW
NOT FOR CONSTRUCTION
08/28/25

REFERENCE DRAWINGS	
DWG. NO.	TITLE

REVISIONS		
NO.	DATE	DESCRIPTION
1	12/12/18	ISSUED FOR BID
2	03/01/19	ISSUED FOR CONSTRUCTION
3	08/28/19	AS BUILT
4	10/12/21	UPDATED PER 30012597
5	11/16/23	UPDATED PER REDMARKS
6	09/13/24	REVISED PER REDLINES
7	08/26/25	ISSUED FOR REVIEW – RENTAL AMINE TREATER ADDITIONS
8	08/28/25	ISSUED FOR REVIEW – AMINE ADDITIONS REVISED

CONFIDENTIAL

This drawing is the property and responsibility of Enlink Midstream. Any reproduction, copying or unauthorized use of this drawing or any part thereof without the expressed written consent of Enlink Midstream is prohibited.

DRAWING RECORD	
DRAWN: RAB	DATE: 11/26/18
CHECKED: TTI	DATE: 11/26/18
APPROVED: TTI	DATE: 11/26/18
AFE:	
SCALE: 1/32" = 1'0"	

ENLINK MIDSTREAM

TITLE
ALAMO COMPRESSOR STATION
SITE PLAN
OVERALL LAYOUT

LEA CO. NM

DWG. NO. D-9782-EP-130.01

REV. 8

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.

Caterpillar 3608 A4 Engines (Unit IDs: E-1, E-2, E-6, and E-7)
NOX, CO, and VOC emission rates were calculated using manufacturer specifications. VOC emission rates for units E-1 and E-2 were calculated using stack test results and applying a 6% safety factor. Formaldehyde emission rates were calculated using stack test results and applying a 20% safety factor. SO2, and other HAP emissions were calculated using AP-42 Table 3.2-2. Particulate (PM2.5, PM10, and PM) was calculated using EPA updated factors for NG (Roy Huntley EPA). Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Caterpillar 3612 A4 Engines (Unit IDs: E-3, E-4, and E-8)
NOX, CO, and VOC emission rates were calculated using manufacturer specifications. Formaldehyde emission rates were calculated using stack test results and applying a 20% safety factor. SO2, and other HAP emissions were calculated using AP-42 Table 3.2-2. Particulate (PM2.5, PM10, and PM) was calculated using EPA updated factors for NG (Roy Huntley EPA). Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Arrow VRG 330 Engines (Unit IDs: E-9 through E-11)
NOX, CO, and VOC emission rates were calculated using manufacturer specifications. Particulate (PM2.5, PM10, and PM), SO2, and HAP emissions were calculated using AP-42 Table 3.2-3. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Caterpillar 3412 TA Engines (Unit IDs: GEN-3, GEN-4, and GEN-5)
NOX, CO, and VOC emission rates were calculated using manufacturer specifications. SO2, and other HAP emissions were calculated using AP-42 Table 3.2-2. Particulate (PM2.5, PM10, and PM) was calculated using EPA updated factors for NG (Roy Huntley EPA). Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Glycol Dehydrator (Unit ID: DEHY-1)
Glycol dehydrator emissions were calculated using GRI-GLYCalc 4.0 and the extended inlet gas analysis, sampled 05/15/2025. Flash tank emissions are recycled to the inlet. Still column emissions are routed to a BTEX condenser; BTEX non-condensable vapor is sent to the ECD-2.

Gunbarrel Separator (Unit ID: GBS-1)
Gunbarrel emissions were estimated using BR&E ProMax and the extended liquid analysis, sampled 10/17/2024. Flash, working and standing emissions are controlled by a VRU with 5% downtime. Downtime is sent to the ECD with 98% DRE.

Storage Tanks (Unit IDs: TK-1 through TK-4, TK-9)
Condensate storage tanks (Unit IDs: TK-1,2,3 and TK-9) and the produced water tank (Unit ID: TK-4) emissions were estimated using BR&E ProMax and the extended liquid analysis, sampled 10/17/2024. Flash, working and standing emissions from these tanks are controlled by a VRU with 5% downtime. Downtime is sent to the ECD with 98% DRE.

Storage Tanks (Unit IDs: TK-5 through TK-8, TK-10 through TK-15)
Compressor oil tanks (Unit IDs: TK-5 and TK-6), the antifreeze tank (Unit ID: TK-7), the methanol tank (Unit ID: TK-8), the water tanks (Unit IDs: TK-10 through TK-12) and the amine tanks (Unit IDs TK-13 through TK-15) emissions were estimated using Emission Master Tanks (EMT).

Amine Units (Unit IDs: AU-1 through AU-3)
Amine flash gas and acid gas vent emissions were estimated using BR&E ProMax and the extended inlet gas analysis, sampled 05/15/2025. Flash gas and acid gas emissions are routed to a VCU with 98% DRE.

Enclosed Combustor Device (Unit ID: ECD-1)
NOX and CO emissions were calculated using TNRCC RG-109. VOCs and HAPs emissions were estimated based on the gas analysis and with manufacturer specification of 98% combustion efficiency. Pilot Nox, CO, PM, SO2, and benzene emissions were calculated using AP-42 Tables 1.4-1, 1.4-2, and 1.4-3. Pilot VOC emissions were estimated based on the volume provided by manufacturer specs (Cimarron) and the extended inlet gas analysis, sampled 05/15/2025. Process emissions were calculated using Promax and assuming 98% combustion efficiency. Greenhouse gas emissions are estimated using emission factors from 40 CFR Part 98 Subpart C Table C-01 and C-02.

Enclosed Combustor Device (Unit ID: ECD-2)
NOX and CO emissions were calculated using TNRCC RG-109. VOCs and HAPs emissions were estimated based on the gas analysis and with manufacturer specification of 98% combustion efficiency. Pilot Nox, CO, PM, SO2, and benzene emissions were calculated using AP-42 Tables 1.4-1, 1.4-2, and 1.4-3. Pilot VOC emissions were estimated based on the volume provided by manufacturer specs (Cimarron) and the extended inlet gas analysis, sampled 05/15/2025. Process emissions were calculated using Promax and assuming 98% combustion efficiency. Greenhouse gas emissions are estimated using emission factors from 40 CFR Part 98 Subpart C Table C-01 and C-02.

Vapor Combustor Unit (Unit ID: VCU-1)
NOX and CO emissions were calculated using TNRCC RG-109. VOCs and HAPs emissions were estimated based on the gas analysis and with manufacturer specification of 98% combustion efficiency. Pilot NOX, CO, PM, SO2, and benzene emissions were calculated using AP-42 Tables 1.4-1, 1.4-2, and 1.4-3. Pilot VOC emissions were estimated based on the volume provided by manufacturer specs (Zeeco) and the extended inlet gas analysis, sampled 05/15/2025. Process emissions were calculated using Promax and assuming 98% combustion efficiency. Greenhouse gas emissions are estimated using emission factors from 40 CFR Part 98 Subpart C Table C-01 and C-02.

Fugitive Emissions (Unit IDs: FUG, COMP-1 FUG, COMP-2 FUG, COMP-3 FUG, COMP-4 FUG, COMP-6 FUG, COMP-7 FUG, COMP-8 FUG, AU-FUG, PNEU)
Fugitive emission calculations were completed using emission factors from Table 2-4 of EPA Protocol for Equipment Leak Emission Estimates, 1995, and weight percent of gas and liquid components from extended inlet gas (sampled 05/15/2025) and liquid (sampled 10/17/2024) analyses. Subcomponent counts for each subcomponent are based on estimated average component counts for each piece of equipment.

Loading Emissions (Unit ID: LOAD)
ProMax was used to perform the loading emission estimates for condensate and produced water. Loading vapors are vapor balanced back to the tanks and routed to the VRU with 5% downtime. Downtime is sent to the ECD with 98% DRE.

Glycol Reboiler (Unit ID: H-2)
NOX, CO, VOCs, PM, and SO2 were estimated using AP-42 Table 1.4-1 & 1.4-2. Greenhouse gas emissions are estimated using emission factors from 40 CFR Part 98 Subpart C Table C-01 and C-02.

Amine Process Heaters (Unit IDs: H-3a through H-5a)
NOX, CO, VOCs, PM, and SO2 were estimated using AP-42 Table 1.4-1 & 1.4-2. Greenhouse gas emissions are estimated using emission factors from 40 CFR Part 98 Subpart C Table C-01 and C-02.

Unpaved Haul Road (Unit ID: UR-01)
PM, PM10 and PM2.5 emissions were estimated based on the condensate loadout design basis and using equations 1a & 2 from AP-42 Section 13.2.2. Emissions factors were used from AP-42 Table 13.2.2-2.

Compressor Blowdowns, Starter Vents, and Pigging Activities (Unit ID: SSM)
VOCs, CO_2, Methane, and HAP emissions were estimated using the extended inlet gas analysis, sampled 05/15/2025.

SITE-WIDE ALLOWABLE EMISSION RATES

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Description	VOC		NO_X		CO		$PM/PM_{10}/PM_{2.5}$		SO_2		Total HAPs		CH_2O		Benzene		H2S	
		Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)
E-1	Compressor Engine 1	2.07	9.05	2.20	9.66	1.93	8.45	0.0052	0.02	0.01	0.04	0.34	1.51	0.08	0.36	0.0074	0.03	--	--
E-2	Compressor Engine 2	2.10	9.20	2.20	9.66	1.93	8.45	0.0052	0.02	0.01	0.04	0.38	1.65	0.12	0.51	0.0074	0.03	--	--
E-3	Compressor Engine 3	2.33	10.21	3.31	14.48	3.31	14.48	0.0077	0.03	0.01	0.06	0.65	2.87	0.26	1.16	0.0110	0.05	--	--
E-4	Compressor Engine 4	2.29	10.03	3.31	14.48	3.31	14.48	0.0077	0.03	0.01	0.06	0.61	2.69	0.22	0.98	0.0110	0.05	--	--
E-6	Compressor Engine 6	1.82	7.97	2.20	9.66	1.93	8.45	0.0052	0.02	0.01	0.04	0.32	1.39	0.06	0.24	0.0074	0.03	--	--
E-7	Compressor Engine 7	1.81	7.94	2.20	9.66	1.93	8.45	0.0052	0.02	0.01	0.04	0.31	1.36	0.05	0.22	0.0074	0.03	--	--
E-8	Compressor Engine 8	2.12	9.27	3.31	14.48	3.31	14.48	0.0080	0.0349	0.02	0.07	0.45	1.98	0.05	0.22	0.0113	0.05	--	--
E-9	Fin Fan Engine 1	0.01	0.03	0.30	1.31	0.72	3.15	0.0017	0.01	0.0001	0.0004	0.0165	0.0723	0.0152	0.0665	0.0003	0.0012	--	--
E-10	Fin Fan Engine 2	0.01	0.03	0.30	1.31	0.72	3.15	0.0017	0.01	0.0001	0.0004	0.0165	0.0723	0.0152	0.0665	0.0003	0.0012	--	--
E-11	Fin Fan Engine 3	0.01	0.03	0.30	1.31	0.72	3.15	0.0017	0.01	0.0001	0.0004	0.0165	0.0723	0.0152	0.0665	0.0003	0.0012	--	--
GEN-3	Generator Engine 3	0.83	3.64	0.59	2.60	0.71	3.12	0.0013	0.006	0.002	0.010	0.11	0.50	0.08	0.36	0.0064	0.0281	--	--
GEN-4	Generator Engine 4	0.83	3.64	0.59	2.60	0.71	3.12	0.0013	0.006	0.002	0.010	0.11	0.50	0.08	0.36	0.0064	0.0281	--	--
GEN-5	Generator Engine 5	0.83	3.64	0.59	2.60	0.71	3.12	0.0013	0.006	0.002	0.010	0.11	0.50	0.08	0.36	0.0064	0.0281	--	--
H-2	Glycol Reboiler	0.01	0.03	0.12	0.52	0.10	0.44	0.0090	0.04	0.001	0.003	--	--	--	--	--	--	--	--
H-3a	Amine Heater	0.04	0.19	0.78	3.41	0.65	2.87	0.0593	0.26	0.005	0.02	--	--	--	--	--	--	--	--
H-4a	Amine Heater	0.04	0.19	0.78	3.41	0.65	2.87	0.0593	0.26	0.005	0.02	--	--	--	--	--	--	--	--
H-5a	Amine Heater	0.04	0.19	0.78	3.41	0.65	2.87	0.0593	0.26	0.005	0.02	--	--	--	--	--	--	--	--
DEHY-1	Glycol Dehydrator	0.30	1.27	--	--	--	--	--	--	--	--	0.06	0.23	--	--	0.04	0.16	0.000	0.000
AU-1	Amine Unit 1	0.26	1.16	--	--	--	--	--	--	--	--	0.07	0.29	--	--	0.05	0.21	0.01	0.04
AU-2	Amine Unit 2	0.26	1.16	--	--	--	--	--	--	--	--	0.07	0.29	--	--	0.05	0.21	0.01	0.04
AU-3	Amine Unit 3	0.26	1.16	--	--	--	--	--	--	--	--	0.07	0.29	--	--	0.05	0.21	0.01	0.04
VCU-1	Vapor Combustion Unit	1.49	6.54	1.14	5.01	4.88	21.38	0.0007	0.0030	2.80	12.28	--	--	--	--	--	--	--	--
GBS-1	500 bbl Gunbarrel Separator	0.09	0.40	--	--	--	--	--	--	--	--	0.00	0.02	--	--	0.0005	0.0023	--	--
TK-1	400 bbl Condensate Tank	0.02	0.10	--	--	--	--	--	--	--	--	0.001	0.00	--	--	0.0001	0.0006	--	--
TK-2	400 bbl Condensate Tank	0.02	0.10	--	--	--	--	--	--	--	--	0.001	0.00	--	--	0.0001	0.0006	--	--
TK-3	400 bbl Condensate Tank	0.02	0.10	--	--	--	--	--	--	--	--	0.001	0.00	--	--	0.0001	0.0006	--	--
TK-4	400 bbl Produced Water Tank	0.0002	0.0010	--	--	--	--	--	--	--	--	0.0001	0.0003	--	--	0.0000	0.0001	--	--
TK-5	210 bbl Compressor Oil Tank	0.0059	0.0016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	210 bbl Compressor Oil Tank	0.0059	0.0016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-7	210 bbl Antifreeze Tank	0.0012	0.0004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-8	1,000 gal Methanol Tank	0.0660	0.0404	--	--	--	--	--	--	--	--	0.07	0.04	--	--	--	--	--	--
TK-9	400 bbl Condensate Tank	0.02	0.10	--	--	--	--	--	--	--	--	0.001	0.00	--	--	0.0001	0.0006	--	--
TK-10	210 bbl Water Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-11	210 bbl Water Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-12	210 bbl Water Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-13	1,000 gal Amine Tank	0.31	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-14	1,000 gal Amine Tank	0.31	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-15	1,000 gal Amine Tank	0.31	0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-16	520 gal Engine Oil Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-17	520 gal Engine Oil Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-18	520 gal Antifreeze Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-19	520 gal Antifreeze Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-20	1,000 gal Engine Oil Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-21	1,000 gal Antifreeze Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-22	1,000 gal TEG Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-23	1,000 gal Antifreeze Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-24	1,000 gal Antifreeze Tank	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-25	210 bbl Methanol Tank	0.56	0.15	--	--	--	--	--	--	--	--	0.564	0.150	--	--	--	--	--	--
LOAD	Condensate Truck Loading	0.01	0.03	--	--	--	--	--	--	--	--	0.0002	0.0010	--	--	0.0000	0.0001	--	--
LOAD-PW	Produced Water Truck Loading	0.02	0.11	--	--	--	--	--	--	--	--	0.0248	0.1086	--	--	0.0123	0.0540	--	--
ECD-1	Enclosed Combustion Device	0.50	2.18	0.62	0.15	1.23	0.29	0.0002	0.0010	1.80E-05	7.88E-05	--	--	--	--	0.00	0.00	--	--
ECD-2	Enclosed Combustion Device 2	0.50	2.18	0.05	0.22	0.10	0.43	0.0001	0.0006	1.02E-05	4.47E-05	0.00	0.00	--	--	0.00	0.00	--	--
PNEU	Pneumatic Devices	0.95	4.15	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-1 FUG	Compressor 1 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-2 FUG	Compressor 2 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-3 FUG	Compressor 3 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-4 FUG	Compressor 4 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-6 FUG	Compressor 6 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-7 FUG	Compressor 7 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
COMP-8 FUG	Compressor 8 Fugitives	0.05	0.20	--	--	--	--	--	--	--	--	0.00	0.00	--	--	0.00	0.00	--	--
FUG	Site Fugitives	2.42	10.60	--	--	--	--	--	--	--	--	0.02	0.11	--	--	0.02	0.07	--	--
AU-FUG	Amine Site Fugitives	0.48	2.10	--	--	--	--	--	--	--	--	0.005	0.02	--	--	0.003	0.01	--	--
UR-01	Unpaved Haul Roads	--	--	--	--	--	--	0.10	0.07	--	--	--	--	--	--	--	--	--	--
SSM	Startup, Shutdown, & Maintenance Activities	3912.74	15.35	--	--	--	--	--	--	--	--	60.00	0.24	--	--	9.06	0.03	--	--
M	Malfunction Emissions	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Site Total Emissions:	**3,939.46**	**136.19**	**25.69**	**109.96**	**30.20**	**127.20**	**0.34**	**1.13**	**2.91**	**12.75**	**64.42**	**16.99**	**1.14**	**4.97**	**9.36**	**1.33**	**0.03**	**0.12**
	Previous Total Emissions:	152.39	102.68	19.09	83.30	21.34	78.77	3.11	7.42	0.240	0.280	8.88	17.95	1.07	3.79	0.65	0.83	0.00	0.00
	Project Delta:	**3,787.07**	**33.51**	**6.60**	**26.66**	**8.86**	**48.43**	**-2.77**	**-6.29**	**2.67**	**12.47**	**55.54**	**-0.96**	**0.07**	**1.18**	**8.71**	**0.51**	**0.03**	**0.12**
	Project Total Emissions:	**3,939.46**	**136.19**	**25.69**	**109.96**	**30.20**	**127.20**	**0.34**	**1.13**	**2.91**	**12.75**	**64.42**	**16.99**	**1.14**	**4.97**	**9.36**	**1.33**	**0.03**	**0.12**
	Project Total without Fugitives:	**--**	**123.49**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**16.86**	**--**	**--**	**--**	**1.25**	**--**	**--**

Notes

1) Per manufacturer guidance, engine VOC emission factor does not include formaldehyde; therefore, it has been added to the VOC PTE in lb/hr and tpy to calculate total VOC for each engine.

CALCULATION OF SITE FUGITIVES (SOURCE ID FUG) POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Component	Number of Components	Emission Factors [a] (lb/hr-component)	Annual Operating Hours (hr/yr)	Maximum VOC (wt%)	Maximum Benzene (wt%)	Maximum HAPs (wt%)	Potential To Emit VOC Hourly [b] (lb/hr)	VOC Annual [c] (T/yr)	Benzene Hourly [b] (lb/hr)	Benzene Annual [c] (T/yr)	HAPs Annual [c] (T/yr)
Valves											
Gas Stream (Inlet Gas)	396	0.0099207	8,760	26.0257%	0.0604%	0.44%	1.0224	4.4783	0.0024	0.0104	0.0755
Water/Light Liquid	0	0.000216	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	148	0.0055115	8,760	100.0000%	1.3025%	0.00%	0.8157	3.5728	0.0106	0.0465	0.0000
Heavy Liquid	95	0.00001852	8,760	100.0000%	0.0100%	0.00%	0.0018	0.0077	0.0000	0.0000	0.0000
Pump Seals											
Gas Stream (Inlet Gas)	0	0.00529	8,760	26.0257%	0.0604%	0.4386%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	2	0.02866	8,760	100.0000%	1.3025%	0.00%	0.0573	0.2511	0.0007	0.0033	0.0000
Heavy Liquid	2	0.00113	8,760	100.0000%	0.0100%	0.00%	0.0023	0.0099	0.0000	0.0000	0.0000
Flanges											
Gas Stream (Inlet Gas)	879	0.00086	8,760	26.0257%	0.0604%	0.4386%	0.1967	0.8617	0.0005	0.0020	0.0145
Water/Light Liquid	0	0.000006	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	335	0.000243	8,760	100.0000%	1.3025%	0.00%	0.0814	0.3566	0.0011	0.0046	0.0000
Heavy Liquid	194	0.00000086	8,760	100.0000%	0.0100%	0.00%	0.0002	0.0007	0.0000	0.0000	0.0000
Connectors											
Gas Stream (Inlet Gas)	151	0.0004409	8,760	26.0257%	0.0604%	0.4386%	0.0173	0.0759	0.0000	0.0002	0.0013
Water/Light Liquid	0	0.000243	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	64	0.000463	8,760	100.0000%	1.3025%	0.00%	0.0296	0.1298	0.0004	0.0017	0.0000
Heavy Liquid	20	0.00001653	8,760	100.0000%	0.0100%	0.00%	0.0003	0.0014	0.0000	0.0000	0.0000
Open Ended Lines											
Gas Stream (Inlet Gas)	0	0.00441	8,760	26.0257%	0.0604%	0.4386%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	1	0.00309	8,760	100.0000%	0.0100%	0.00%	0.0031	0.0135	0.0000	0.0000	0.0000
Heavy Liquid	0	0.000309	8,760	100.0000%	1.3025%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Other											
Gas Stream (Inlet Gas)	38	0.0194	8,760	26.0257%	0.0604%	0.4386%	0.1919	0.8404	0.0004	0.0020	0.0142
Light Liquid	0	0.0165	8,760	100%	0.01%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy Liquid	0	0.0000683	8,760	100%	0.01%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
						Gas Streams Total:	1.4284	6.2563	0.0033	0.0145	0.1054
						Water/Light Liquid:	0.0000	0.0000	0.0000	0.0000	0.0000
						Light Liquid Streams Total:	0.9871	4.3237	0.0128	0.0561	0.0000
						Heavy Streams Total:	0.0045	0.0198	0.0000	0.0000	0.0000
						Total:	2.4200	10.5998	0.0161	0.0707	0.1054

[a] Fugitive Emission Factors and Reduction Credits are per TCEQ Technical Guidance Document for Equipment Leak Fugitives, dated June 2018. The emission factors are for total hydrocarbon.

[b] Hourly VOC emission rates are calculated as follows:
(396 components) * (0.00992 lb/hr-component) * (26.03 % VOC) * (100% - 0.0 % reduction credit) = 1.0224 lb/hr

[c] Annual VOC emission rates are calculated as follows:
(396 components) * (0.00992 lb/hr-component) * (8,760 hr/yr) * (26.03 % VOC) * (100% - 0.0 % reduction credit) / (2,000 lb/T) = 4.4783 T/yr

CALCULATION OF AMINE SITE FUGITIVES (SOURCE ID AU-FUG) POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Component	Number of Components	Emission Factors [a] (lb/hr-component)	Annual Operating Hours (hr/yr)	Maximum VOC (wt%)	Maximum Benzene (wt%)	Maximum HAPs (wt%)	Potential To Emit VOC Hourly [b] (lb/hr)	VOC Annual [c] (T/yr)	Benzene Hourly [b] (lb/hr)	Benzene Annual [c] (T/yr)	HAPs Annual [c] (T/yr)
Valves											
Gas Stream (Inlet Gas)	79	0.0099207	8,760	26.0257%	0.0604%	0.44%	0.2040	0.8934	0.0005	0.0021	0.0151
Water/Light Liquid	0	0.000216	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	30	0.0055115	8,760	100.0000%	1.3025%	0.00%	0.1653	0.7242	0.0022	0.0094	0.0000
Heavy Liquid	19	0.00001852	8,760	100.0000%	0.0100%	0.00%	0.0004	0.0015	0.0000	0.0000	0.0000
Pump Seals											
Gas Stream (Inlet Gas)	0	0.00529	8,760	26.0257%	0.0604%	0.4386%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	0	0.02866	8,760	100.0000%	1.3025%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy Liquid	0	0.00113	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Flanges											
Gas Stream (Inlet Gas)	176	0.00086	8,760	26.0257%	0.0604%	0.4386%	0.0394	0.1725	0.0001	0.0004	0.0029
Water/Light Liquid	0	0.000006	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	67	0.000243	8,760	100.0000%	1.3025%	0.00%	0.0163	0.0713	0.0002	0.0009	0.0000
Heavy Liquid	39	0.00000086	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0001	0.0000	0.0000	0.0000
Connectors											
Gas Stream (Inlet Gas)	30	0.0004409	8,760	26.0257%	0.0604%	0.4386%	0.0034	0.0151	0.0000	0.0000	0.0003
Water/Light Liquid	0	0.000243	8,760	100.0000%	0.0100%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	13	0.000463	8,760	100.0000%	1.3025%	0.00%	0.0060	0.0264	0.0001	0.0003	0.0000
Heavy Liquid	4	0.00001653	8,760	100.0000%	0.0100%	0.00%	0.0001	0.0003	0.0000	0.0000	0.0000
Open Ended Lines											
Gas Stream (Inlet Gas)	0	0.00441	8,760	26.0257%	0.0604%	0.4386%	0.0000	0.0000	0.0000	0.0000	0.0000
Light Liquid	1	0.00309	8,760	100.0000%	0.0100%	0.00%	0.0031	0.0135	0.0000	0.0000	0.0000
Heavy Liquid	0	0.000309	8,760	100.0000%	1.3025%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Other											
Gas Stream (Inlet Gas)	8	0.0194	8,760	26.0257%	0.0604%	0.4386%	0.0404	0.1769	0.0001	0.0004	0.0030
Light Liquid	0	0.0165	8,760	100%	0.01%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy Liquid	0	0.0000683	8,760	100%	0.01%	0.00%	0.0000	0.0000	0.0000	0.0000	0.0000
						Gas Streams Total:	0.2872	1.2579	0.0007	0.0029	0.0212
						Water/Light Liquid:	0.0000	0.0000	0.0000	0.0000	0.0000
						Light Liquid Streams Total:	0.1907	0.8354	0.0024	0.0107	0.0000
						Heavy Streams Total:	0.0005	0.0020	0.0000	0.0000	0.0000
						Total:	0.4784	2.0953	0.0031	0.0136	0.0212

[a] Fugitive Emission Factors and Reduction Credits are per TCEQ Technical Guidance Document for Equipment Leak Fugitives, dated June 2018. The emission factors are for total hydrocarbon.

[b] Hourly VOC emission rates are calculated as follows:
(79 components) * (0.00992 lb/hr-component) * (26.03 % VOC) * (100% - 0.0 % reduction credit) = 0.2040 lb/hr

[c] Annual VOC emission rates are calculated as follows:
(79 components) * (0.00992 lb/hr-component) * (8,760 hr/yr) * (26.03 % VOC) * (100% - 0.0 % reduction credit) / (2,000 lb/T) = 0.8934 T/yr

CALCULATION OF UNIT SPECIFIC COMPRESSOR EMISSIONS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Component	Number of Components[d]	Emission Factors [a] (lb/hr-component)	Annual Operating Hours (hr/yr)	Maximum VOC (wt%)	Maximum Benzene (wt%)	Maximum HAPs (wt%)	Potential To Emit VOC Hourly [b] (lb/hr)	Potential To Emit VOC Annual [c] (T/yr)	Potential To Emit Benzene Hourly [b] (lb/hr)	Potential To Emit Benzene Annual [c] (T/yr)	Potential To Emit HAPs Annual [c] (T/yr)
Relief Valves											
Gas Stream (Inlet Gas)	42	0.0194	8,760	26.0257%	0.0604%	0.44%	0.2121	0.9288	0.0005	0.0022	0.0157
Compressor Seals											
Gas Stream (Inlet Gas)	21	0.0194	8,760	26.0257%	0.0604%	0.44%	0.1060	0.4644	0.0002	0.0011	0.0078
						Gas Streams Total:	0.3181	1.3932	0.0007	0.0032	0.0235
						COMP-1 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-2 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-3 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-4 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-6 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-7 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034
						COMP-8 FUG Total:	0.0454	0.1990	0.0001	0.0005	0.0034

[a] Fugitive Emission Factors and Reduction Credits are per TCEQ Technical Guidance Document for Equipment Leak Fugitives, dated June 2018. The emission factors are for total hydrocarbon.

[b] Hourly VOC emission rates are calculated as follows:
(21 components) * (0.01940 lb/hr-component) * (26.03 % VOC) * (100% - 0.0 % reduction credit) = 0.1060 lb/hr

[c] Annual VOC emission rates are calculated as follows:
(21 components) * (0.01940 lb/hr-component) * (8,760 hr/yr) * (26.03 % VOC) * (100% - 0.0 % reduction credit) / (2,000 lb/T) = 0.4644 T/yr

[d] Emissions based on three (3) seals and six (6) relief vents per compressor.

CALCULATION OF COMPRESSOR ENGINES POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Engine Ratings			Fuel Gas Lower Heating Value	Annual Operating Hours				Uncontrolled Potential to Emit (PTE)				Controlled Potential to Emit (PTE)			
			Rated Horsepower	Fuel Consumption				Emission		Hourly [a]	Annual [b]		Emission		Hourly [a]	Annual [b]
Unit No.	Description	Type	(hp)	(Btu/hp-hr)	(Btu/scf)	(hr/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)
E-1	Compressor Engine 1	**Caterpillar G3608 A4**	2,500	6,685	1,266	8,760	CO	2.50	g/hp-hr	13.7790	60.3519	CO	0.35	g/hp-hr	1.9291	8.4493
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	2.2046	9.6563	NO_X	0.40	g/hp-hr	2.2046	9.6563
		SN: XH701017					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.1669	0.7311	PM_{10}	0.0003100	lb/MMBtu	0.0052	0.0227
		DOM: 08/01/2018										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0032	0.0139
		NSPS JJJ					SO_2	0.000588	lb/MMBtu	0.0098	0.0430	SO_2	0.000588	lb/MMBtu	0.0098	0.0430
					CH2O included in VOC: No		VOC	0.50	g/hp-hr	2.7558	12.0704	VOC[c]	0.36	g/hp-hr	2.0668	9.0528
							CH_2O	0.1600	g/hp-hr	0.8819	3.8625	CH_2O	0.0150	g/hp-hr	0.0827	0.3621
		Daily Fuel Usage:	316825	scf/day			Benzene	0.00040	lb/MMBtu	0.0067	0.0293	Benzene	0.00044	lb/MMBtu	0.0074	0.0322
		Hourly Fuel Usage:	13201	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029	Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029
		Annual Fuel Usage:	115.64	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299	Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299
							Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135	Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135
							Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120	Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120
							Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763	Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763
							n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805	n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805
							Total HAPs	N/A	N/A	1.1431	5.0068	Total HAPs	N/A	N/A	0.3446	1.5093
E-2	Compressor Engine 2	**Caterpillar G3608 A4**	2,500	6,685	1,266	8,760	CO	2.50	g/hp-hr	13.7790	60.3519	CO	0.35	g/hp-hr	1.9291	8.4493
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	2.2046	9.6563	NO_X	0.40	g/hp-hr	2.2046	9.6563
		SN: XH700981					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.1669	0.7311	PM_{10}	0.0003100	lb/MMBtu	0.0052	0.0227
		DOM: 07/01/2018										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0032	0.0139
		NSPS JJJ					SO_2	0.000588	lb/MMBtu	0.0098	0.0430	SO_2	0.000588	lb/MMBtu	0.0098	0.0430
					CH2O included in VOC: No		VOC	0.50	g/hp-hr	2.7558	12.0704	VOC[c]	0.36	g/hp-hr	2.0999	9.1976
							CH_2O	0.1600	g/hp-hr	0.8819	3.8625	CH_2O	0.0210	g/hp-hr	0.1157	0.5070
		Daily Fuel Usage:	316825	scf/day			Benzene	0.00040	lb/MMBtu	0.0067	0.0293	Benzene	0.00044	lb/MMBtu	0.0074	0.0322
		Hourly Fuel Usage:	13201	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029	Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029
		Annual Fuel Usage:	115.64	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299	Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299
							Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135	Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135
							Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120	Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120
							Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763	Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763
							n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805	n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805
							Total HAPs	N/A	N/A	1.1431	5.0068	Total HAPs	N/A	N/A	0.3777	1.6541
E-3	Compressor Engine 3	**Caterpillar G3612 A4**	3,750	6,638	1,266	8,760	CO	2.49	g/hp-hr	20.5858	90.1657	CO	0.40	g/hp-hr	3.3070	14.4844
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	3.3070	14.4844	NO_X	0.40	g/hp-hr	3.3070	14.4844
		SN: BB200839					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.2486	1.0889	PM_{10}	0.0003100	lb/MMBtu	0.0077	0.0338
		NSPS JJJ										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0047	0.0207
							SO_2	0.000588	lb/MMBtu	0.0146	0.0641	SO_2	0.000588	lb/MMBtu	0.0146	0.0641
					CH2O included in VOC: No		VOC	0.35	g/hp-hr	2.8936	12.6739	VOC[c]	0.25	g/hp-hr	2.3314	10.2115
							CH_2O	0.1800	g/hp-hr	1.4881	6.5180	CH_2O	0.0320	g/hp-hr	0.2646	1.1588
		Daily Fuel Usage:	471896	scf/day			Benzene	0.00044	lb/MMBtu	0.0110	0.0480	Benzene	0.00044	lb/MMBtu	0.0110	0.0480
		Hourly Fuel Usage:	19662	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0043	Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0043
		Annual Fuel Usage:	172.24	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0102	0.0445	Toluene	4.080E-04	lb/MMBtu	0.0102	0.0445
							Xylene	1.840E-04	lb/MMBtu	0.0046	0.0201	Xylene	1.840E-04	lb/MMBtu	0.0046	0.0201
							Acetaldehyde	8.360E-03	lb/MMBtu	0.2081	0.9115	Acetaldehyde	8.360E-03	lb/MMBtu	0.2081	0.9115
							Acrolein	5.140E-03	lb/MMBtu	0.1279	0.5604	Acrolein	5.140E-03	lb/MMBtu	0.1279	0.5604
							n-Hexane	1.100E-03	lb/MMBtu	0.0274	0.1199	n-Hexane	1.100E-03	lb/MMBtu	0.0274	0.1199
							Total HAPs	N/A	N/A	1.8782	8.2267	Total HAPs	N/A	N/A	0.6547	2.8674

CALCULATION OF COMPRESSOR ENGINES POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Engine Ratings			Fuel Gas Lower Heating Value	Annual Operating Hours				Uncontrolled Potential to Emit (PTE)					Controlled Potential to Emit (PTE)		
			Rated Horsepower	Fuel Consumption				Emission		Hourly [a]	Annual [b]			Emission		Hourly [a]	Annual [b]
Unit No.	Description	Type	(hp)	(Btu/hp-hr)	(Btu/scf)	(hr/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)
E-4	Compressor Engine 4	**Caterpillar G3612 A4**	3,750	6,638	1,266	8,760	CO	2.49	g/hp-hr	20.5858	90.1657	CO	0.40	g/hp-hr	3.3070	14.4844
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	3.3070	14.4844	NO_X	0.40	g/hp-hr	3.3070	14.4844
		SN: BB200840					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.2486	1.0889	PM_{10}	0.0003100	lb/MMBtu	0.0077	0.0338
		DOM: 11/01/2018										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0047	0.0207
		NSPS JJJJ					SO_2	0.000588	lb/MMBtu	0.0146	0.0641	SO_2	0.000588	lb/MMBtu	0.0146	0.0641
					CH2O included in VOC: No		VOC	0.35	g/hp-hr	2.8936	12.6739	VOC[c]	0.25	g/hp-hr	2.2901	10.0305
							CH_2O	0.1800	g/hp-hr	1.4881	6.5180	CH_2O	0.0270	g/hp-hr	0.2232	0.9777
		Daily Fuel Usage:	471896	scf/day			Benzene	0.00044	lb/MMBtu	0.0110	0.0480	Benzene	0.00044	lb/MMBtu	0.0110	0.0480
		Hourly Fuel Usage:	19662	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0043	Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0043
		Annual Fuel Usage:	172.24	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0102	0.0445	Toluene	4.080E-04	lb/MMBtu	0.0102	0.0445
							Xylene	1.840E-04	lb/MMBtu	0.0046	0.0201	Xylene	1.840E-04	lb/MMBtu	0.0046	0.0201
							Acetaldehyde	8.360E-03	lb/MMBtu	0.2081	0.9115	Acetaldehyde	8.360E-03	lb/MMBtu	0.2081	0.9115
							Acrolein	5.140E-03	lb/MMBtu	0.1279	0.5604	Acrolein	5.140E-03	lb/MMBtu	0.1279	0.5604
							n-Hexane	1.100E-03	lb/MMBtu	0.0274	0.1199	n-Hexane	1.100E-03	lb/MMBtu	0.0274	0.1199
							Total HAPs	N/A	N/A	1.8782	8.2267	Total HAPs	N/A	N/A	0.6133	2.6864
E-6	Compressor Engine 6	**Caterpillar G3608 A4**	2,500	6,685	1,266	8,760	CO	2.50	g/hp-hr	13.7790	60.3519	CO	0.35	g/hp-hr	1.9291	8.4493
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	2.2046	9.6563	NO_X	0.40	g/hp-hr	2.2046	9.6563
		SN: XH701383					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.1669	0.7311	PM_{10}	0.0003100	lb/MMBtu	0.0052	0.0227
		DOM: 09/01/2019										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0032	0.0139
		NSPS JJJJ					SO_2	0.000588	lb/MMBtu	0.0098	0.0430	SO_2	0.000588	lb/MMBtu	0.0098	0.0430
					CH2O included in VOC: No		VOC	0.50	g/hp-hr	2.7558	12.0704	VOC[c]	0.32	g/hp-hr	1.8188	7.9664
							CH_2O	0.1600	g/hp-hr	0.8819	3.8625	CH_2O	0.0100	g/hp-hr	0.0551	0.2414
		Daily Fuel Usage:	316825	scf/day			Benzene	0.00040	lb/MMBtu	0.0067	0.0293	Benzene	0.00044	lb/MMBtu	0.0074	0.0322
		Hourly Fuel Usage:	13201	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029	Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029
		Annual Fuel Usage:	115.64	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299	Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299
							Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135	Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135
							Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120	Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120
							Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763	Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763
							n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805	n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805
							Total HAPs	N/A	N/A	1.1431	5.0068	Total HAPs	N/A	N/A	0.3170	1.3886
E-7	Compressor Engine 7	**Caterpillar G3608 A4**	2,500	6,685	1,266	8,760	CO	2.50	g/hp-hr	13.7790	60.3519	CO	0.35	g/hp-hr	1.9291	8.4493
		4SLB, Oxidation Catalyst					NO_X	0.40	g/hp-hr	2.2046	9.6563	NO_X	0.40	g/hp-hr	2.2046	9.6563
		SN: XH701565					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.1669	0.7311	PM_{10}	0.0003100	lb/MMBtu	0.0052	0.0227
		DOM: 03/30/2021										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0032	0.0139
		NSPS JJJJ					SO_2	0.000588	lb/MMBtu	0.0098	0.0430	SO_2	0.000588	lb/MMBtu	0.0098	0.0430
					CH2O included in VOC: No		VOC	0.50	g/hp-hr	2.7558	12.0704	VOC[c]	0.32	g/hp-hr	1.8133	7.9423
							CH_2O	0.1600	g/hp-hr	0.8819	3.8625	CH_2O	0.0090	g/hp-hr	0.0496	0.2173
		Daily Fuel Usage:	316825	scf/day			Benzene	0.00044	lb/MMBtu	0.0074	0.0322	Benzene	0.00044	lb/MMBtu	0.0074	0.0322
		Hourly Fuel Usage:	13201	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029	Ethylbenzene	3.970E-05	lb/MMBtu	0.0007	0.0029
		Annual Fuel Usage:	115.64	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299	Toluene	4.080E-04	lb/MMBtu	0.0068	0.0299
							Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135	Xylene	1.840E-04	lb/MMBtu	0.0031	0.0135
							Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120	Acetaldehyde	8.360E-03	lb/MMBtu	0.1397	0.6120
							Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763	Acrolein	5.140E-03	lb/MMBtu	0.0859	0.3763
							n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805	n-Hexane	1.100E-03	lb/MMBtu	0.0184	0.0805
							Total HAPs	N/A	N/A	1.1438	5.0097	Total HAPs	N/A	N/A	0.3115	1.3644

CALCULATION OF COMPRESSOR ENGINES POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Engine Ratings			Fuel Gas Lower Heating Value	Annual Operating Hours				Uncontrolled Potential to Emit (PTE)					Controlled Potential to Emit (PTE)		
			Rated Horsepower	Fuel Consumption				Emission		Hourly [a]	Annual [b]			Emission		Hourly [a]	Annual [b]
Unit No.	Description	Type	(hp)	(Btu/hp-hr)	(Btu/scf)	(hr/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)
E-8	Compressor Engine 8	**Caterpillar G3612 TALE**	3,750	6,862	1,266	8,760	CO	2.75	g/hp-hr	22.7353	99.5806	CO	0.40	g/hp-hr	3.3070	14.4844
		4SLB, Oxidation Catalyst					NO_X	0.50	g/hp-hr	4.1337	18.1056	NO_X	0.40	g/hp-hr	3.3070	14.4844
		SN: BB200829					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.2570	1.1256	PM_{10}	0.0003100	lb/MMBtu	0.0080	0.0349
		DOM: 10/12/2018										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0049	0.0214
		NSPS JJJ					SO_2	0.000588	lb/MMBtu	0.0151	0.0663	SO_2	0.000588	lb/MMBtu	0.0151	0.0663
					CH2O included in VOC: No		VOC	1.13	g/hp-hr	9.3421	40.9186	VOC[c]	0.25	g/hp-hr	2.1164	9.2700
							CH_2O	0.2600	g/hp-hr	2.1495	9.4149	CH_2O	0.0060	g/hp-hr	0.0496	0.2173
		Daily Fuel Usage:	487820	scf/day			Benzene	0.00044	lb/MMBtu	0.0113	0.0496	Benzene	0.00044	lb/MMBtu	0.0113	0.0496
		Hourly Fuel Usage:	20326	scf/hr			Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0045	Ethylbenzene	3.970E-05	lb/MMBtu	0.0010	0.0045
		Annual Fuel Usage:	178.05	MMscf/yr			Toluene	4.080E-04	lb/MMBtu	0.0105	0.0460	Toluene	4.080E-04	lb/MMBtu	0.0105	0.0460
							Xylene	1.840E-04	lb/MMBtu	0.0047	0.0207	Xylene	1.840E-04	lb/MMBtu	0.0047	0.0207
							Acetaldehyde	8.360E-03	lb/MMBtu	0.2151	0.9422	Acetaldehyde	8.360E-03	lb/MMBtu	0.2151	0.9422
							Acrolein	5.140E-03	lb/MMBtu	0.1323	0.5793	Acrolein	5.140E-03	lb/MMBtu	0.1323	0.5793
							n-Hexane	1.100E-03	lb/MMBtu	0.0283	0.1240	n-Hexane	1.100E-03	lb/MMBtu	0.0283	0.1240
							Total HAPs	N/A	N/A	2.5528	11.1812	Total HAPs	N/A	N/A	0.4529	1.9836
E-9	Fin Fan Engine 1	**Arrow VRG 330**	68	2,482	1,266	8,760	CO	1.10	g/hp-hr	0.1649	0.7223	CO	4.80	g/hp-hr	0.7196	3.1518
		4SRB					NO_X	12.95	g/hp-hr	1.9414	8.5033	NO_X	2.00	g/hp-hr	0.2998	1.3133
		SN: P-4500C					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074	$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074
		DOM: 08/23/2008					SO_2	0.000588	lb/MMBtu	0.0001	0.0004	SO_2	0.000588	lb/MMBtu	0.0001	0.0004
		NSPS JJJ			CH2O included in VOC: Yes		VOC	0.05	g/hp-hr	0.0075	0.0328	VOC[c]	0.05	g/hp-hr	0.0075	0.0328
							CH_2O	0.0205	lb/MMBtu	0.0035	0.0152	CH_2O	0.0900	lb/MMBtu	0.0152	0.0665
		Daily Fuel Usage:	3200	scf/day			Benzene	0.00158	lb/MMBtu	0.0003	0.0012	Benzene	0.00158	lb/MMBtu	0.0003	0.0012
		Hourly Fuel Usage:	133	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000	Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000
		Annual Fuel Usage:	1.17	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004	Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004
							Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001	Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021	Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021
							Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019	Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.0048	0.0209	Total HAPs	N/A	N/A	0.0165	0.0723
E-10	Fin Fan Engine 2	**Arrow VRG 330**	68	2,482	1,266	8,760	CO	1.10	g/hp-hr	0.1649	0.7223	CO	4.80	g/hp-hr	0.7196	3.1518
		4SRB					NO_X	12.95	g/hp-hr	1.9414	8.5033	NO_X	2.00	g/hp-hr	0.2998	1.3133
		SN: P-5564C					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074	$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074
		DOM: 07/24/2010					SO_2	0.000588	lb/MMBtu	0.0001	0.0004	SO_2	0.000588	lb/MMBtu	0.0001	0.0004
		NSPS JJJ			CH2O included in VOC: Yes		VOC	0.05	g/hp-hr	0.0075	0.0328	VOC[c]	0.05	g/hp-hr	0.0075	0.0328
							CH_2O	0.0205	lb/MMBtu	0.0035	0.0152	CH_2O	0.0900	lb/MMBtu	0.0152	0.0665
		Daily Fuel Usage:	3200	scf/day			Benzene	0.00158	lb/MMBtu	0.0003	0.0012	Benzene	0.00158	lb/MMBtu	0.0003	0.0012
		Hourly Fuel Usage:	133	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000	Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000
		Annual Fuel Usage:	1.17	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004	Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004
							Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001	Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021	Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021
							Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019	Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.0048	0.0209	Total HAPs	N/A	N/A	0.0165	0.0723

CALCULATION OF COMPRESSOR ENGINES POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Engine Ratings								Uncontrolled Potential to Emit (PTE)				Controlled Potential to Emit (PTE)			
			Rated	Fuel	Fuel Gas Lower Heating	Annual Operating				Hourly [a]	Annual [b]			Hourly [a]	Annual [b]		
Unit No.	Description	Type	Horsepower (hp)	Consumption (Btu/hp-hr)	Value (Btu/scf)	Hours (hr/yr)	Pollutant	Emission Factors [a]	Units	(lb/hr)	(T/yr)	Pollutant	Emission Factors [a]	Units	(lb/hr)	(T/yr)
E-11	Fin Fan Engine 3	**Arrow VRG 330**	68	2,482	1,266	8,760	CO	1.10	g/hp-hr	0.1649	0.7223	CO	4.80	g/hp-hr	0.7196	3.1518
		4SRB					NO_X	12.95	g/hp-hr	1.9414	8.5033	NO_X	2.00	g/hp-hr	0.2998	1.3133
		SN: BLA54S015					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074	$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0017	0.0074
		DOM: 12/15/2014					SO_2	0.000588	lb/MMBtu	0.0001	0.0004	SO_2	0.000588	lb/MMBtu	0.0001	0.0004
		NSPS JJJJ			CH2O included in VOC: Yes		VOC	0.05	g/hp-hr	0.0075	0.0328	VOC[c]	0.05	g/hp-hr	0.0075	0.0328
							CH_2O	0.0205	lb/MMBtu	0.0035	0.0152	CH_2O	0.0900	lb/MMBtu	0.0152	0.0665
		Daily Fuel Usage:	3200	scf/day			Benzene	0.00158	lb/MMBtu	0.0003	0.0012	Benzene	0.00158	lb/MMBtu	0.0003	0.0012
		Hourly Fuel Usage:	133	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000	Ethylbenzene	2.480E-05	lb/MMBtu	0.0000	0.0000
		Annual Fuel Usage:	1.17	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004	Toluene	5.580E-04	lb/MMBtu	0.0001	0.0004
							Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001	Xylene	1.950E-04	lb/MMBtu	0.0000	0.0001
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021	Acetaldehyde	2.790E-03	lb/MMBtu	0.0005	0.0021
							Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019	Acrolein	2.630E-03	lb/MMBtu	0.0004	0.0019
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.0048	0.0209	Total HAPs	N/A	N/A	0.0165	0.0723
GEN-3	Generator Engine 3	**CAT G3412 TA**	539	7,531	1,266	8,760	CO	14.40	g/hp-hr	17.1115	74.9483	CO	0.60	g/hp-hr	0.7130	3.1228
		4SRB, Three-Way NSCR					NO_X	14.40	g/hp-hr	17.1115	74.9483	NO_X	0.50	g/hp-hr	0.5941	2.6024
		SN: 7DB01095					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0405	0.1776	PM_{10}	0.0003100	lb/MMBtu	0.0013	0.0055
		DOM: 6/16/1995										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0008	0.0034
		MACT ZZZZ					SO_2	0.000588	lb/MMBtu	0.0024	0.0105	SO_2	0.000588	lb/MMBtu	0.0024	0.0105
					CH2O included in VOC: Yes		VOC	0.33	g/hp-hr	0.3921	1.7176	VOC[c]	0.70	g/hp-hr	0.8318	3.6433
							CH_2O	0.0205	lb/MMBtu	0.0832	0.3645	CH_2O	0.0205	lb/MMBtu	0.0832	0.3645
		Daily Fuel Usage:	76952	scf/day			Benzene	0.00158	lb/MMBtu	0.0064	0.0281	Benzene	0.00158	lb/MMBtu	0.0064	0.0281
		Hourly Fuel Usage:	3206	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004	Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004
		Annual Fuel Usage:	28.09	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099	Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099
							Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035	Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496	Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496
							Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468	Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.1148	0.5028	Total HAPs	N/A	N/A	0.1148	0.5028
GEN-4	Generator Engine 4	**CAT G3412 TA**	539	7,531	1,266	8,760	CO	14.40	g/hp-hr	17.1115	74.9483	CO	0.60	g/hp-hr	0.7130	3.1228
		4SRB, Three-Way NSCR					NO_X	14.40	g/hp-hr	17.1115	74.9483	NO_X	0.50	g/hp-hr	0.5941	2.6024
		SN: 7DB01274					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0405	0.1776	PM_{10}	0.0003100	lb/MMBtu	0.0013	0.0055
		DOM: 02/17/1997										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0008	0.0034
		MACT ZZZZ					SO_2	0.000588	lb/MMBtu	0.0024	0.0105	SO_2	0.000588	lb/MMBtu	0.0024	0.0105
					CH2O included in VOC: Yes		VOC	0.33	g/hp-hr	0.3921	1.7176	VOC[c]	0.70	g/hp-hr	0.8318	3.6433
							CH_2O	0.0205	lb/MMBtu	0.0832	0.3645	CH_2O	0.0205	lb/MMBtu	0.0832	0.3645
		Daily Fuel Usage:	76952	scf/day			Benzene	0.00158	lb/MMBtu	0.0064	0.0281	Benzene	0.00158	lb/MMBtu	0.0064	0.0281
		Hourly Fuel Usage:	3206	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004	Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004
		Annual Fuel Usage:	28.09	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099	Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099
							Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035	Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496	Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496
							Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468	Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.1148	0.5028	Total HAPs	N/A	N/A	0.1148	0.5028

CALCULATION OF COMPRESSOR ENGINES POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Engine Ratings			Fuel Gas Lower Heating Value	Annual Operating Hours			Uncontrolled Potential to Emit (PTE)					Controlled Potential to Emit (PTE)	
			Rated Horsepower	Fuel Consumption				Emission	Hourly [a]	Annual [b]		Emission		Hourly [a]	Annual [b]
Unit No.	Description	Type	(hp)	(Btu/hp-hr)	(Btu/scf)	(hr/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)	Pollutant	Factors [a]	Units	(lb/hr)	(T/yr)
GEN-5	Generator Engine 5	**CAT G3412 TA**	539	7,531	1,266	8,760	CO	14.40	g/hp-hr	17.1115	74.9483	CO	0.60	g/hp-hr	0.7130	3.1228
		4SRB, Three-Way NSCR					NO_X	14.40	g/hp-hr	17.1115	74.9483	NO_X	0.50	g/hp-hr	0.5941	2.6024
		SN: CTP03255					$PM/PM_{10}/PM_{2.5}$	0.0099871	lb/MMBtu	0.0405	0.1776	PM_{10}	0.0003100	lb/MMBtu	0.0013	0.0055
		DOM: 05/20/2014										$PM_{2.5}$	0.0001900	lb/MMBtu	0.0008	0.0034
		NSPS JJJ					SO_2	0.000588	lb/MMBtu	0.0024	0.0105	SO_2	0.000588	lb/MMBtu	0.0024	0.0105
					CH2O included in VOC: Yes		VOC	0.33	g/hp-hr	0.3921	1.7176	VOC[c]	0.70	g/hp-hr	0.8318	3.6433
							CH_2O	0.0205	lb/MMBtu	0.0832	0.3645	CH_2O	0.0205	lb/MMBtu	0.0832	0.3645
		Daily Fuel Usage:	76952	scf/day			Benzene	0.00158	lb/MMBtu	0.0064	0.0281	Benzene	0.00158	lb/MMBtu	0.0064	0.0281
		Hourly Fuel Usage:	3206	scf/hr			Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004	Ethylbenzene	2.480E-05	lb/MMBtu	0.0001	0.0004
		Annual Fuel Usage:	28.09	MMscf/yr			Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099	Toluene	5.580E-04	lb/MMBtu	0.0023	0.0099
							Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035	Xylene	1.950E-04	lb/MMBtu	0.0008	0.0035
							Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496	Acetaldehyde	2.790E-03	lb/MMBtu	0.0113	0.0496
							Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468	Acrolein	2.630E-03	lb/MMBtu	0.0107	0.0468
							n-Hexane		lb/MMBtu	0.0000	0.0000	n-Hexane		lb/MMBtu	0.0000	0.0000
							Total HAPs	N/A	N/A	0.1148	0.5028	Total HAPs	N/A	N/A	0.1148	0.5028

[a] The Emission Factors for CO, NOX, VOC and CH2O are from vendor specification sheets with credit from catalyst control applied when applicable. The VOC controlled Emission Factors for E-1 and E-2 are based on stack test results with a 6% safety factor. The CH2O controlled Emission Factors for E-1 through E-4 and E-6 through E-8 are based on stack test results with a 20% safety factor. An example calculation for hourly CO emissions for Unit No. E-1 follows:

CO (lb/hr) = (Rated Horsepower, hp)*(Emission Factor, g/hp-hr)*(1 lb/453.59 g)

CO (lb/hr) = (2,500 hp)*(0.35 g/hp-hr)*(1 lb/453.59 g)

= 1.93 lb/hr CO

The PM/PM10/PM2.5 and benzene emission factors are from AP-42 Table 3.2-2 for Four-Stroke Lean Burn Engines (dated 7/00). An example calculation for hourly PM emissions for Unit No. E-1 follows:

PM (lb/hr) = (Fuel Consumption, Btu/hp-hr)*(Rated Horsepower, hp)*(1 MMBtu/10^6 Btu)*(Emission Factor, lb/MMBtu)

PM (lb/hr) = (6,685 Btu/hp-hr)*(2,500 hp)*(1 MMBtu/10^6 Btu)*(0.0003100 lb/MMBtu)

= 0.01 lb/hr PM

A material balance approach was used to estimate the SO2 emission rates using the maximum sulfur concentration in the natural gas. An example calculation for hourly SO2 emissions for Unit No. E1 follows:

SO_2 (lb/hr) = (Sulfur Content, lbmol S/ 10^6 lbmol gas) / (379 scf/lbmol) / (Fuel LHV, Btu/scf)*(Rated Horsepower, hp)*(Fuel Consumption, Btu/hp-hr)*(1-lbmol SO2/lbmol S)*(64.06 lb SO2 / lbmol SO2)

SO_2 (lb/hr) = (0 lbmol S / 10^6 lbmol gas) / (379 scf/lbmol) / (1,266 Btu/scf)*(2,500 hp)*(6,685 Btu/hp-hr)*(1-lbmol SO2/lbmol S)*(64.06 lb SO2/lbmol SO2)

= 0.01 lb/hr SO_2

[b] An example calculation for annual CO emissions for Unit No. E-1 follows:

CO (T/yr) = (Hourly PTE, lb/hr)*(Annual Operating Hours, hr/yr)*(1 T/2,000 lb)

CO (T/yr) = (1.93 lb/hr)*(8,760 hr/yr)*(1 T/2,000 lb)

= 8.45 T/yr CO

[c] Per manufacturer guidance, engine controlled VOC emission factor does not include formaldehyde; therefore, it has been added to the VOC PTE to calculate total VOC per engine.

CALCULATION OF HEATERS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Unit No.	Description	Rated Duty (MMBtu/hr)	Fuel Lower Heating Value (Btu/scf)	Annual Operating Hours (hr/yr)	Correction Factor	Pollutant		Emission Factor [a]	Unit	Potential to Emit (PTE) Hourly[b] (lb/hr)	Potential to Emit (PTE) Annual[c] (T/yr)
H-2	H-2	Glycol Reboiler	1.50	1,266.0	8,760	1.00	CO		84	lb/MMscf	0.0995	0.4359
							NO_X		100	lb/MMscf	0.1185	0.5190
							PM	[d]	7.6	lb/MMscf	0.0090	0.0394
							SO_2	[e]	0.6	lb/MMscf	0.0007	0.0031
							VOC		5.5	lb/MMscf	0.0065	0.0285
H-3a	H-3a	Amine Heater (Single Heater with (3) burners)	9.87	1,266.0	8,760	1.00	CO		84	lb/MMscf	0.6549	2.8684
							NO_X		100	lb/MMscf	0.7796	3.4147
							PM	[d]	7.6	lb/MMscf	0.0593	0.2595
							SO_2	[e]	0.6	lb/MMscf	0.0047	0.0205
							VOC		5.5	lb/MMscf	0.0429	0.1878
H-4a	H-4a	Amine Heater (Single Heater with (3) burners)	9.87	1,266.0	8,760	1.00	CO		84	lb/MMscf	0.6549	2.8684
							NO_X		100	lb/MMscf	0.7796	3.4147
							PM	[d]	7.6	lb/MMscf	0.0593	0.2595
							SO_2	[e]	0.6	lb/MMscf	0.0047	0.0205
							VOC		5.5	lb/MMscf	0.0429	0.1878
H-5a	H-5a	Amine Heater (Single Heater with (3) burners)	9.87	1,266.0	8,760	1.00	CO		84	lb/MMscf	0.6549	2.8684
							NO_X		100	lb/MMscf	0.7796	3.4147
							PM	[d]	7.6	lb/MMscf	0.0593	0.2595
							SO_2	[e]	0.6	lb/MMscf	0.0047	0.0205
							VOC		5.5	lb/MMscf	0.0429	0.1878

[a] Unless otherwise noted, emission factors are from AP-42 Tables 1.4-1, 1.4-2, and 1.4-3 (dated 7/98).

[b] An example calculation for hourly emissions of CO and SO2 for Unit No. H-2 follows:

CO (lb/hr) = (Rated Duty, MMBtu/hr)*(Correction Factor)/(Fuel Heating Value, Btu/scf)*(Emission Factor, lb/MMscf)

CO (lb/hr) = (1.50 MMBtu/hr)*(1.00)/(1,266.0 Btu/scf)*(84 lb/MMscf)

= 0.10 lb/hr CO

SO_2 (lb/hr) = (Rated Duty, MMBtu/hr)/(Fuel Heating Value, Btu/scf)*(Sulfur Content, scf S/10^6 scf gas)*(1 lb-mol/379 scf)*(32.06 lb S/lb-mol)*(64.06 lb SO_2/32.06 lb S)

SO_2 (lb/hr) = (1.50 MMBtu/hr)/(1,266.0 Btu/scf)*(0.6 scf S/10^6 scf gas)*(1 lb-mol/379 scf)*(32.06 lb S/lb-mol)*(64.06 lb SO2/32.06 lb S)

= 0.0007 lb/hr SO_2

[c] An example calculation for annual emissions of CO for Unit No. H-2 follows:

CO (T/yr) = (Hourly Emissions, lb/hr)*(Annual Operating Hours, hr/yr)/(2,000 lb/T)

CO (T/yr) = (0.10 lb/hr)*(8,760 hr/yr)/(2,000 lb/T)

= 0.44 T/yr CO

[d] All PM is assumed to be less than 2.5 microns in diameter per footnote "c" of AP-42 Table 1.4-2.

[e] A material balance approach was used to estimate the SO_2 emission rates using the maximum sulfur concentration in the natural gas.

GLYCOL DEHYDRATOR STILL VENT POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

DEHYDRATION UNIT ID: DEHY-1
100 MMSCFD

Combustor DRE: 98%

Component	Uncontrolled Flash Tank Emissions		Controlled Flash Tank Emissions		Uncontrolled Regenerator Emissions		Controlled Regenerator Emissions		Total Emissions	
	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)
Carbon Dioxide	24.4600	107.1348	0.0000	0.0000	2.6200	11.4756	56.2400	246.3100	56.2400	246.3100
Hydrogen Sulfide	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	4.3600	19.0968	0.0000	0.0000	0.0300	0.1314	561.4800	2459.2600	561.4800	2459.2600
Methane	98.4400	431.1672	0.0000	0.0000	1.9400	8.4972	0.0400	0.1700	0.0400	0.1700
Ethane	33.2200	145.5036	0.0000	0.0000	1.5200	6.6576	0.0300	0.1300	0.0300	0.1300
Propane	30.2300	132.4074	0.0000	0.0000	2.1900	9.5922	0.0400	0.1900	0.0400	0.1900
i-Butane	5.5400	24.2652	0.0000	0.0000	0.4700	2.0586	0.0100	0.0400	0.0100	0.0400
n-Butane	15.9700	69.9486	0.0000	0.0000	1.9500	8.5410	0.0400	0.1700	0.0400	0.1700
i-Pentane	4.8400	21.1992	0.0000	0.0000	0.7800	3.4164	0.0200	0.0700	0.0200	0.0700
n-Pentane	5.5300	24.2214	0.0000	0.0000	1.0200	4.4676	0.0200	0.0900	0.0200	0.0900
n-Hexane	1.2000	5.2560	0.0000	0.0000	0.4200	1.8396	0.0100	0.0300	0.0100	0.0300
Cyclohexane	7.9900	34.9962	0.0000	0.0000	5.7900	25.3602	0.1000	0.4200	0.1000	0.4200
n-Heptane	2.4200	10.5996	0.0000	0.0000	0.9700	4.2486	0.0100	0.0600	0.0100	0.0600
Benzene	0.9600	4.2048	0.0000	0.0000	2.4100	10.5558	0.0400	0.1600	0.0400	0.1600
Toluene	0.1900	0.8322	0.0000	0.0000	0.7400	3.2412	0.0100	0.0400	0.0100	0.0400
Ethylbenzene	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
o-Xylene	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
m-Xylene	0.0100	0.0438	0.0000	0.0000	0.0700	0.3066	0.0000	0.0000	0.0000	0.0000
p-Xylene	0.0100	0.0438	0.0000	0.0000	0.0400	0.1752	0.0000	0.0000	0.0000	0.0000
Triethylene Glycol	0.1400	0.6132	0.0000	0.0000	0.0400	0.1752	0.0000	0.0000	0.0000	0.0000
Ethylene Glycol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total VOC	75.03	328.63	0.00	0.00	16.89	73.98	0.30	1.27	0.30	1.27
Total HAP	2.37	10.38	0.00	0.00	3.68	16.12	0.06	0.23	0.06	0.23

Dehydration unit emissions calculated using Promax. The still vent emissions are routed to a condenser, where non-condensable vapors are routed to the combustor for 98% control efficiency. Flash tank emissions are recycled to the inlet.

CALCULATION OF AMINE UNIT (PRODUCT TREATER) POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

			Unit No.: AU-1										Unit No.: VCU-1	
			Amine Unit Flash Tank		Amine Unit Still Vent		Total Emissions to Flare		Flare Feed Rates		Volumetric Feed Rate		Amine Unit Controlled Emissions	
	Heating	Molecular											Control Efficiency:	98%
Component	Value (Btu/lb)	Weight (lb/lb-mol)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (MMBtu/hr)	Annual (MMBtu/yr)	Hourly (scf/hr)	Annual (scf/yr)	Hourly (lb/hr)	Annual (T/yr)
Carbon Dioxide	--	44.010	4.6382	20.3153	4217.3000	18471.7740	4221.9382	18492.0893	--	--	36,536.4161	320,059,004.73	4221.9382	18492.0893
Nitrogen	--	28.013	0.4822	2.1120	0.0242	0.1060	0.5064	2.2180	--	--	6.8849	60,311.99	0.5064	2.2180
Hydrogen Sulfide	--	34.081	0.0005	0.0022	0.4650	2.0367	0.4655	2.0389	--	--	5.2020	45,569.78	0.0093	0.0408
Methane	23,861	16.043	23.5907	103.3273	3.8666	16.9357	27.4573	120.2630	0.6552	5739.1896	651.8350	5,710,074.73	0.5491	2.4053
Ethane	22,304	30.070	8.3050	36.3759	2.4762	10.8458	10.7812	47.2217	0.2405	2,106.46	136.5523	1,196,198.41	0.2156	0.9444
Propane	21,646	44.097	4.7142	20.6482	1.1634	5.0957	5.8776	25.7439	0.1272	1,114.50	50.7641	444,693.24	0.1176	0.5149
Isobutane	21,242	58.123	0.5657	2.4778	0.1072	0.4695	0.6729	2.9473	0.0143	125.2132	4.4093	38,625.32	0.0135	0.0589
n-Butane	21,293	58.123	1.9106	8.3684	0.5366	2.3503	2.4472	10.7187	0.0521	456.4681	16.0357	140,472.40	0.0489	0.2144
Isopentane	21,025	72.150	0.3284	1.4384	0.0633	0.2773	0.3917	1.7156	0.0082	72.1429	2.0677	18,112.85	0.0078	0.0343
n-Pentane	21,072	72.150	0.4270	1.8703	0.1002	0.4389	0.5272	2.3091	0.0111	97.3162	2.7829	24,378.59	0.0105	0.0462
Hexane	20,928	86.172	0.2833	1.2409	0.0550	0.2409	0.3383	1.4818	0.0071	62.0203	1.4952	13,098.01	0.0068	0.0296
Heptane	20,195	86.172	0.0501	0.2194	0.0056	0.0245	0.0557	0.2440	0.0011	9.8538	0.2462	2,156.55	0.0011	0.0049
Octane	20,160	114.224	0.0011	0.0048	0.0001	0.0004	0.0012	0.0053	0.0000	0.2119	0.0040	35.05	0.0000	0.0001
Nonane	19,067	128.200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Decane	19,023	142.290	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Benzene	17,460	78.110	0.0704	0.3084	2.3341	10.2234	2.4045	10.5317	0.0420	367.7673	11.7242	102,704.08	0.0481	0.2106
Toluene	17,430	92.140	0.0113	0.0495	0.4434	1.9421	0.4547	1.9916	0.0079	69.4267	1.8795	16,464.41	0.0091	0.0398
Ethylbenzene	17,780	106.167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
m-Xylene	17,558	106.160	0.0007	0.0031	0.0433	0.1897	0.0440	0.1927	0.00077	6.7676	0.1579	1,382.81	0.00088	0.0039
p-Xylene	17,558	106.160	0.0003	0.0013	0.0219	0.0959	0.0222	0.0972	0.0004	3.4145	0.0796	697.69	0.0004	0.0019
o-Xylene	17,558	106.160	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	0.0000	0.0000	0.00	0.00000	0.0000
Total			45.38	198.76	4229.01	18523.05	4274.3858	18721.8098	1.1679	10,230.76	37,428.54	327,873,980.63	4223.48	18498.86
Total VOC			8.36	36.63	4.87	21.35	13.2372	57.9789	0.2723	2,385.11	91.65	802,820.99	0.26	1.16

[a] Flash gas and acid gas vent emissions taken from ProMax report.

CALCULATION OF AMINE UNIT (PRODUCT TREATER) POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

			Unit No.: AU-2										Unit No.: VCU-1	
			Amine Unit Flash Tank		Amine Unit Still Vent		Total Emissions to Flare		Flare Feed Rates		Volumetric Feed Rate		Amine Unit Controlled Emissions	
	Heating	Molecular											Control Efficiency:	98%
Component	Value (Btu/lb)	Weight (lb/lb-mol)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (MMBtu/hr)	Annual (MMBtu/yr)	Hourly (scf/hr)	Annual (scf/yr)	Hourly (lb/hr)	Annual (T/yr)
Carbon Dioxide	--	44.010	4.6382	20.3153	4217.3000	18471.7740	4221.9382	18492.0893	--	--	36,536.4161	320,059,004.73	4221.9382	18492.0893
Nitrogen	--	28.013	0.4822	2.1120	0.0242	0.1060	0.5064	2.2180	--	--	6.8849	60,311.99	0.5064	2.2180
Hydrogen Sulfide	--	34.081	0.0005	0.0022	0.4650	2.0367	0.4655	2.0389	--	--	5.2020	45,569.78	0.0093	0.0408
Methane	23,861	16.043	23.5907	103.3273	3.8666	16.9357	27.4573	120.2630	0.6552	5739.1896	651.8350	5,710,074.73	0.5491	2.4053
Ethane	22,304	30.070	8.3050	36.3759	2.4762	10.8458	10.7812	47.2217	0.2405	2,106.46	136.5523	1,196,198.41	0.2156	0.9444
Propane	21,646	44.097	4.7142	20.6482	1.1634	5.0957	5.8776	25.7439	0.1272	1,114.50	50.7641	444,693.24	0.1176	0.5149
Isobutane	21,242	58.123	0.5657	2.4778	0.1072	0.4695	0.6729	2.9473	0.0143	125.2132	4.4093	38,625.32	0.0135	0.0589
n-Butane	21,293	58.123	1.9106	8.3684	0.5366	2.3503	2.4472	10.7187	0.0521	456.4681	16.0357	140,472.40	0.0489	0.2144
Isopentane	21,025	72.150	0.3284	1.4384	0.0633	0.2773	0.3917	1.7156	0.0082	72.1429	2.0677	18,112.85	0.0078	0.0343
n-Pentane	21,072	72.150	0.4270	1.8703	0.1002	0.4389	0.5272	2.3091	0.0111	97.3162	2.7829	24,378.59	0.0105	0.0462
Hexane	20,928	86.172	0.2833	1.2409	0.0550	0.2409	0.3383	1.4818	0.0071	62.0203	1.4952	13,098.01	0.0068	0.0296
Octane	20,160	114.224	0.0011	0.0048	0.0001	0.0004	0.0012	0.0053	0.0000	0.2119	0.0040	35.05	0.0000	0.0001
Nonane	19,067	128.200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Decane	19,023	142.290	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Benzene	17,460	78.110	0.0704	0.3084	2.3341	10.2234	2.4045	10.5317	0.0420	367.7673	11.7242	102,704.08	0.0481	0.2106
Toluene	17,430	92.140	0.0113	0.0495	0.4434	1.9421	0.4547	1.9916	0.0079	69.4267	1.8795	16,464.41	0.0091	0.0398
Ethylbenzene	17,780	106.167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
m-Xylene	17,558	106.160	0.0007	0.0031	0.0433	0.1897	0.0440	0.1927	0.00077	6.7676	0.1579	1,382.81	0.00088	0.0039
p-Xylene	17,558	106.160	0.0003	0.0013	0.0219	0.0959	0.0222	0.0972	0.0004	3.4145	0.0796	697.69	0.0004	0.0019
o-Xylene	17,558	106.160	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	0.0000	0.0000	0.00	0.00000	0.0000
Total			45.38	198.76	4229.01	18523.05	4274.3858	18721.8098	1.1679	10,230.76	37,428.54	327,873,980.63	4223.48	18498.86
Total VOC			8.36	36.63	4.87	21.35	13.2372	57.9789	0.2723	2,385.11	91.65	802,820.99	0.26	1.16

[a] Flash gas and acid gas vent emissions taken from ProMax report.

CALCULATION OF AMINE UNIT (PRODUCT TREATER) POTENTIAL TO EMIT
NEW SOURCE REVIEW PERMIT
ALAMO COMPRESSOR STATION
ONEOK, INC.

			Unit No.: AU-3										Unit No.: VCU-1	
			Amine Unit Flash Tank		Amine Unit Still Vent		Total Emissions to Flare		Flare Feed Rates		Volumetric Feed Rate		Amine Unit Controlled Emissions	
	Heating	Molecular											Control Efficiency:	98%
Component	Value (Btu/lb)	Weight (lb/lb-mol)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual [a] (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (MMBtu/hr)	Annual (MMBtu/yr)	Hourly (scf/hr)	Annual (scf/yr)	Hourly (lb/hr)	Annual (T/yr)
Carbon Dioxide	--	44.010	4.6382	20.3153	4217.3000	18471.7740	4221.9382	18492.0893	--	--	36,536.4161	320,059,004.73	4221.9382	18492.0893
Nitrogen	--	28.013	0.4822	2.1120	0.0242	0.1060	0.5064	2.2180	--	--	6.8849	60,311.99	0.5064	2.2180
Hydrogen Sulfide	--	34.081	0.0005	0.0022	0.4650	2.0367	0.4655	2.0389	--	--	5.2020	45,569.78	0.0093	0.0408
Methane	23,861	16.043	23.5907	103.3273	3.8666	16.9357	27.4573	120.2630	0.6552	5739.1896	651.8350	5,710,074.73	0.5491	2.4053
Ethane	22,304	30.070	8.3050	36.3759	2.4762	10.8458	10.7812	47.2217	0.2405	2,106.46	136.5523	1,196,198.41	0.2156	0.9444
Propane	21,646	44.097	4.7142	20.6482	1.1634	5.0957	5.8776	25.7439	0.1272	1,114.50	50.7641	444,693.24	0.1176	0.5149
Isobutane	21,242	58.123	0.5657	2.4778	0.1072	0.4695	0.6729	2.9473	0.0143	125.2132	4.4093	38,625.32	0.0135	0.0589
n-Butane	21,293	58.123	1.9106	8.3684	0.5366	2.3503	2.4472	10.7187	0.0521	456.4681	16.0357	140,472.40	0.0489	0.2144
Isopentane	21,025	72.150	0.3284	1.4384	0.0633	0.2773	0.3917	1.7156	0.0082	72.1429	2.0677	18,112.85	0.0078	0.0343
n-Pentane	21,072	72.150	0.4270	1.8703	0.1002	0.4389	0.5272	2.3091	0.0111	97.3162	2.7829	24,378.59	0.0105	0.0462
Hexane	20,928	86.172	0.2833	1.2409	0.0550	0.2409	0.3383	1.4818	0.0071	62.0203	1.4952	13,098.01	0.0068	0.0296
Octane	20,160	114.224	0.0011	0.0048	0.0001	0.0004	0.0012	0.0053	0.0000	0.2119	0.0040	35.05	0.0000	0.0001
Nonane	19,067	128.200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Decane	19,023	142.290	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
Benzene	17,460	78.110	0.0704	0.3084	2.3341	10.2234	2.4045	10.5317	0.0420	367.7673	11.7242	102,704.08	0.0481	0.2106
Toluene	17,430	92.140	0.0113	0.0495	0.4434	1.9421	0.4547	1.9916	0.0079	69.4267	1.8795	16,464.41	0.0091	0.0398
Ethylbenzene	17,780	106.167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
m-Xylene	17,558	106.160	0.0007	0.0031	0.0433	0.1897	0.0440	0.1927	0.00077	6.7676	0.1579	1,382.81	0.00088	0.0039
p-Xylene	17,558	106.160	0.0003	0.0013	0.0219	0.0959	0.0222	0.0972	0.0004	3.4145	0.0796	697.69	0.0004	0.0019
o-Xylene	17,558	106.160	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	0.0000	0.0000	0.00	0.00000	0.0000
Total			45.38	198.76	4229.01	18523.05	4274.3858	18721.8098	1.1679	10,230.76	37,428.54	327,873,980.63	4223.48	18498.86
Total VOC			8.36	36.63	4.87	21.35	13.2372	57.9789	0.2723	2,385.11	91.65	802,820.99	0.26	1.16

[a] Flash gas and acid gas vent emissions taken from ProMax report.

TANK AND LOADING LOSSES
NEW SOURCE REVIEW PERMIT
ALAMO COMPRESSOR STATION
ONEOK, INC.

Uncontrolled Emissions

	Condensate Tanks Flashing		Gunbarrel Flashing		PW Tanks Flashing		Condensate Tanks Working/Breathing		Gunbarrel Working/Breathing		PW Tanks Working/Breathing		Condensate Loading		Produced Water Loading	
Component	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Water	0.40247	1.76284	1.38929	6.08511	0.00478	0.02092	0.06937	0.30384	0.13906	0.60908	0.08919	0.39064	0.02130	0.09330	0.04317	0.18908
CO2	3.87349	16.96589	4.94724	21.66890	0.04174	0.18281	0.66670	2.92017	0.61809	2.70724	0.64714	2.83449	0.17673	0.77407	0.00000	0.00000
Nitrogen	0.01098	0.04809	0.03093	0.13548	0.00027	0.00117	0.00041	0.00181	0.00108	0.00475	0.00010	0.00045	0.00000	0.00000	0.00000	0.00000
Methane	2.71881	11.90838	4.11527	18.02490	0.03112	0.13631	0.36505	1.59893	0.52043	2.27950	0.02470	0.10819	0.00000	0.00000	0.00000	0.00000
Ethane	10.40598	45.57819	11.44731	50.13921	0.03729	0.16335	1.75568	7.68987	1.41588	6.20154	0.04286	0.18774	0.68931	3.01917	0.00000	0.00000
Propane	25.77340	112.88751	26.77042	117.25446	0.04622	0.20244	4.15276	18.18909	3.20267	14.02770	0.03730	0.16335	1.89773	8.31204	0.00000	0.00000
i-Butane	6.68412	29.27646	6.76218	29.61833	0.00809	0.03544	1.03870	4.54948	0.78797	3.45131	0.00438	0.01917	0.48624	2.12974	0.00000	0.00000
n-Butane	18.20412	79.73406	18.25698	79.96559	0.02429	0.10638	2.79119	12.22539	2.10705	9.22886	0.01800	0.07882	1.30948	5.73551	0.00000	0.00000
i-Pentane	6.57885	28.81534	6.47093	28.34269	0.00668	0.02924	0.97630	4.27618	0.72932	3.19444	0.00340	0.01490	0.45673	2.00049	0.00000	0.00000
n-Pentane	7.58186	33.20856	7.40352	32.42741	0.00371	0.01624	1.11038	4.86345	0.82646	3.61990	0.00080	0.00350	0.51777	2.26785	0.00000	0.00000
n-Hexane	2.55860	11.20665	2.43262	10.65488	0.00086	0.00377	0.35654	1.56164	0.26193	1.14725	0.00012	0.00055	0.16384	0.71762	0.00000	0.00000
Benzene	0.50565	2.21476	0.48312	2.11608	0.00148	0.00648	0.07120	0.31185	0.05243	0.22963	0.03177	0.13915	0.03283	0.14382	0.01232	0.05398
i-Hexane	8.44659	36.99605	8.11777	35.55584	0.00175	0.00767	1.20170	5.26343	0.88741	3.88685	0.00015	0.00066	0.55602	2.43535	0.00000	0.00000
Toluene	0.44263	1.93872	0.41257	1.80704	0.00124	0.00542	0.05941	0.26022	0.04324	0.18940	0.02673	0.11709	0.02695	0.11806	0.00937	0.04105
Heptane	3.54994	15.54872	3.30174	14.46163	0.00089	0.00389	0.47418	2.07691	0.34478	1.51013	0.00009	0.00040	0.21476	0.94066	0.00000	0.00000
Ethylbenzene	0.02390	0.10466	0.02176	0.09532	0.00007	0.00029	0.00306	0.01342	0.00221	0.00967	0.00137	0.00600	0.00137	0.00599	0.00045	0.00198
m-Xylene	0.09271	0.40605	0.08435	0.36943	0.00025	0.00108	0.01187	0.05197	0.00854	0.03741	0.00537	0.02353	0.00529	0.02319	0.00130	0.00571
p-Xylene	0.05288	0.23164	0.04820	0.21111	0.00014	0.00062	0.00679	0.02975	0.00489	0.02143	0.00306	0.01342	0.00303	0.01329	0.00082	0.00358
o-Xylene	0.02373	0.10394	0.02154	0.09435	0.00007	0.00029	0.00302	0.01325	0.00217	0.00952	0.00137	0.00599	0.00135	0.00590	0.00052	0.00228
Octane	0.78365	3.43239	0.71247	3.12063	0.00008	0.00037	0.10010	0.43846	0.07203	0.31548	0.00000	0.00002	0.04463	0.19548	0.00000	0.00000
Nonane	0.21170	0.92723	0.18803	0.82356	0.00002	0.00010	0.02584	0.11316	0.01839	0.08055	0.00000	0.00000	0.01134	0.04967	0.00000	0.00000
Decane	0.07484	0.32782	0.06510	0.28512	0.00000	0.00001	0.00876	0.03837	0.00618	0.02705	0.00000	0.00000	0.00379	0.01658	0.00000	0.00000
Total VOC	**81.59**	**357.36**	**81.55**	**357.20**	**0.10**	**0.42**	**12.39**	**54.28**	**9.36**	**40.99**	**0.1339**	**0.5865**	**5.73**	**25.11**	**0.024790**	**0.108581**
Total HAP	**3.70**	**16.21**	**3.50**	**15.35**	**0.0041**	**0.018**	**0.51**	**2.24**	**0.38**	**1.64**	**0.06980**	**0.30572**	**0.23**	**1.03**	**0.024790**	**0.108581**

VRU Downtime **5%** **438 hrs/yr**
VRU Uptime **95%**
ECD DRE **98%**

Number of Condensate Tanks **4** Condensate Tanks - Vapors routed to VRU at 98% capture and 5% downtime. Vapors routed to ECD during VRU downtime.
Number of Water Tanks **1** PW Tanks - Vapors routed to VRU at 98% capture and 5% downtime. Vapors routed to ECD during VRU downtime.
Number of Gunbarrels **1** Gunbarrel - Vapors routed to VRU at 98% capture and 5% downtime. Vapors routed to ECD during VRU downtime.

	VOC Emissions									
Storage Tanks	Flashing Emissions		W/B Emissions		Total Uncontrolled Emissions		5% VRU Downtime routed to ECD		**Controlled Emissions**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	**lb/hr**	**tpy**
TK-1: Condensate Tank 1	20.3973	89.3401	3.0979	13.5690	23.4952	102.9092	1.1748	5.1455	**0.0235**	**0.1029**
TK-2: Condensate Tank 2	20.3973	89.3401	3.0979	13.5690	23.4952	102.9092	1.1748	5.1455	**0.0235**	**0.1029**
TK-3: Condensate Tank 3	20.3973	89.3401	3.0979	13.5690	23.4952	102.9092	1.1748	5.1455	**0.0235**	**0.1029**
TK-4: Produced Water Tank 4	0.0958	0.4197	0.1339	0.5865	0.2297	1.0063	0.0115	0.0503	**0.0002**	**0.0010**
TK-9: Condensate Tank 9	20.3973	89.3401	3.0979	13.5690	23.4952	102.9092	1.1748	5.1455	**0.0235**	**0.1029**
GBS-1: Gunbarrel Tank	81.5533	357.2035	9.3577	40.9866	90.9110	398.1901	4.5455	19.9095	**0.0909**	**0.3982**
LOAD (Condensate)	-	-	-	-	5.7332	25.1112	0.2867	1.2556	**0.0057**	**0.0251**
LOAD-PW (Produced Water)	-	-	-	-	0.0248	0.1086	0.0000	0.0000	**0.0248**	**0.1086**

	MSCFH	**MMSCFY**
Condensate Std. Vapor Flow	0.6902	0.3023
Produced Water Std. Vapor Flow	0.0122	0.0053
GB Std. Vapor Flow	0.7882	0.3452

TANK AND LOADING LOSSES
NEW SOURCE REVIEW PERMIT
ALAMO COMPRESSOR STATION
ONEOK, INC.

Storage Tanks	Total HAP Emissions									
	Flashing Emissions		W/B Emissions		Total Uncontrolled Emissions		5% VRU Downtime routed to ECD		**Controlled Emissions at the Tanks**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	**lb/hr**	**tpy**
TK-1: Condensate Tank 1	0.9250	4.0516	0.1280	0.5605	1.0530	4.6121	0.0526	0.2306	**0.0011**	**0.0046**
TK-2: Condensate Tank 2	0.9250	4.0516	0.1280	0.5605	1.0530	4.6121	0.0526	0.2306	**0.0011**	**0.0046**
TK-3: Condensate Tank 3	0.9250	4.0516	0.1280	0.5605	1.0530	4.6121	0.0526	0.2306	**0.0011**	**0.0046**
TK-4: Produced Water Tank 4	0.0041	0.0180	0.0698	0.3057	0.0739	0.3237	0.0037	0.0162	**0.0001**	**0.0003**
TK-9: Condensate Tank 9	0.9250	4.0516	0.1280	0.5605	1.0530	4.6121	0.0526	0.2306	**0.0011**	**0.0046**
GBS-1: Gunbarrel Tank	3.5042	15.3482	0.3754	1.6443	3.8796	16.9925	0.1940	0.8496	**0.0039**	**0.0170**
LOAD (Condensate)					0.2347	1.0279	0.0117	0.0514	**0.0002**	**0.0010**
LOAD-PW (Produced Water)					0.0248	0.1086	0.0000	0.0000	**0.0248**	**0.1086**

Storage Tanks	n-Hexane Emissions									
	Flashing Emissions		W/B Emissions		Total Uncontrolled Emissions		5% VRU Downtime routed to ECD		**Controlled Emissions at the Tanks**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	**lb/hr**	**tpy**
TK-1: Condensate Tank 1	0.6396	2.8017	0.0891	0.3904	0.7288	3.1921	0.0364	0.1596	**0.0007**	**0.0032**
TK-2: Condensate Tank 2	0.6396	2.8017	0.0891	0.3904	0.7288	3.1921	0.0364	0.1596	**0.0007**	**0.0032**
TK-3: Condensate Tank 3	0.6396	2.8017	0.0891	0.3904	0.7288	3.1921	0.0364	0.1596	**0.0007**	**0.0032**
TK-4: Produced Water Tank 4	0.0009	0.0038	0.0001	0.0005	0.0010	0.0043	0.0000	0.0002	**0.0000**	**0.0000**
TK-9: Condensate Tank 9	0.6396	2.8017	0.0891	0.3904	0.7288	3.1921	0.0364	0.1596	**0.0007**	**0.0032**
GBS-1: Gunbarrel Tank	2.4326	#REF!	0.2619	1.1473	2.6946	#REF!	0.1347	#REF!	**0.0027**	**#REF!**
LOAD (Condensate)					0.1638	0.7176	0.0082	0.0359	**0.0002**	**0.0007**
LOAD-PW (Produced Water)					0.0000	0.0000	0.0000	0.0000	**0.0000**	**0.0000**

Storage Tanks	Benzene Emissions									
	Flashing Emissions		W/B Emissions		Total Uncontrolled Emissions		5% VRU Downtime routed to ECD		**Controlled Emissions at the Tanks**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	**lb/hr**	**tpy**
TK-1: Condensate Tank 1	0.1264	0.5537	0.0178	0.0780	0.1442	0.6317	0.0072	0.0316	**0.0001**	**0.0006**
TK-2: Condensate Tank 2	0.1264	0.5537	0.0178	0.0780	0.1442	0.6317	0.0072	0.0316	**0.0001**	**0.0006**
TK-3: Condensate Tank 3	0.1264	0.5537	0.0178	0.0780	0.1442	0.6317	0.0072	0.0316	**0.0001**	**0.0006**
TK-4: Produced Water Tank 4	0.0015	0.0065	0.0318	0.1391	0.0332	0.1456	0.0017	0.0073	**0.0000**	**0.0001**
TK-9: Condensate Tank 9	0.1264	0.5537	0.0178	0.0780	0.1442	0.6317	0.0072	0.0316	**0.0001**	**0.0006**
GBS-1: Gunbarrel Tank	0.4831	2.1161	0.0524	0.2296	0.5356	2.3457	0.0268	0.1173	**0.0005**	**0.0023**
LOAD (Condensate)					0.0328	0.1438	0.0016	0.0072	**0.0000**	**0.0001**
LOAD-PW (Produced Water)					**0.0123**	**0.0540**	0.0000	0.0000	**0.0123**	**0.0540**

Storage Tanks	GHG Emissions									
	Flashing Emissions		W/B Emissions		Total Uncontrolled Emissions		5% VRU Downtime routed to ECD		**Controlled Emissions at the Tanks**	
	CH_4 tpy	CO_2etpy	CH_4 tpy	CO_2etpy	CH_4 tpy	CO_2etpy	CH_4 tpy	CO_2etpy	**CH_4 tpy**	**CO_2etpy**
TK-1: Condensate Tank 1	2.9771	4.2415	0.3997	0.7300	3.3768	4.9715	0.1688	0.2486	**0.0034**	**0.0050**
TK-2: Condensate Tank 2	2.9771	4.2415	0.3997	0.7300	3.3768	4.9715	0.1688	0.2486	**0.0034**	**0.0050**
TK-3: Condensate Tank 3	2.9771	4.2415	0.3997	0.7300	3.3768	4.9715	0.1688	0.2486	**0.0034**	**0.0050**
TK-4: Produced Water Tank 4	0.1363	0.1828	0.1082	2.8345	0.2445	3.0173	0.0122	0.1509	**0.0002**	**0.0030**
TK-9: Condensate Tank 9	2.9771	4.2415	0.3997	0.7300	3.3768	4.9715	0.1688	0.2486	**0.0034**	**0.0050**
GBS-1: Gunbarrel Tank	18.0249	21.6689	2.2795	2.7072	20.3044	24.3761	1.0152	1.2188	**0.0203**	**0.0244**
LOAD (Condensate)					0.7741	0.0000	0.0387	0.0000	**0.0008**	**0.0000**
LOAD-PW (Produced Water)					0.0000	0.0000	0.0000	0.0000	**0.0000**	**0.0000**

SUMMARY OF MISCELLANEOUS STORAGE TANK POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

		Uncontrolled Working & Breathing Losses[a]		Uncontrolled Flash Emissions[a]		Annual	Minimum	Potential To Emit					
								VOC		Total HAPs		Benzene	
Unit No.	Tank Description	Working Loss (lb/yr)	Breathing Loss (lb/yr)	Hourly Rate (lb/hr)	Annual Rate (T/yr)	Turnovers (turnovers/yr)	Turnover Time (hr/turnover)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)
TK-5	210 bbl Compressor Oil Tank	1.5163	1.6300	--	--	11	24	0.0059	0.0016	--	--	--	--
TK-6	210 bbl Compressor Oil Tank	1.5163	1.6300	--	--	11	24	0.0059	0.0016	--	--	--	--
TK-7	210 bbl Antifreeze Tank	0.4027	0.3400	--	--	15	24	0.0012	0.0004	--	--	--	--
TK-8	1,000 gal Methanol Tank	36.5360	44.3600	--	--	25	24	0.0660	0.0404	0.0660	0.0404	--	--
TK-10	210 bbl Water Tank	0.0000	0.0000	--	--	6	24	0.0000	0.0000	--	--	--	--
TK-11	210 bbl Water Tank	0.0000	0.0000	--	--	6	24	0.0000	0.0000	--	--	--	--
TK-12	210 bbl Water Tank	0.0000	0.0000	--	--	6	24	0.0000	0.0000	--	--	--	--
TK-13	1,000 gal Amine Tank	53.0572	286.1400	--	--	8	24	0.3090	0.1696	--	--	--	--
TK-14	1,000 gal Amine Tank	53.0572	286.1400	--	--	8	24	0.3090	0.1696	--	--	--	--
TK-15	1,000 gal Amine Tank	53.0572	286.1400	--	--	8	24	0.3090	0.1696	--	--	--	--
TK-16	520 gal Engine Oil Tank	0.0022	0.0000	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-17	520 gal Engine Oil Tank	0.0022	0.0000	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-18	520 gal Antifreeze Tank	0.0000	0.0100	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-19	520 gal Antifreeze Tank	0.0000	0.0100	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-20	1,000 gal Engine Oil Tank	0.0043	0.0252	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-21	1,000 gal Antifreeze Tank	0.0000	0.0000	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-22	1,000 gal TEG Tank	0.0000	0.0332	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-23	1,000 gal Antifreeze Tank	0.0000	0.0000	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-24	1,000 gal Antifreeze Tank	0.0000	0.0349	--	--	10	24	0.0000	0.0000	--	--	--	--
TK-25	210 bbl Methanol Tank	64.4506	234.7074	--	--	5	24	0.5639	0.1496	0.5639	0.1496	--	--

[a] Tank working and breathing emissions are based on the equations found in EPA AP-42 Chapter 7 and Emission Master Tanks. The tanks vent to atmosphere. Hourly and annual emissions were calculated as shown below.

Example calculation of the hourly emissions for Unit No. TK-5 follows:

VOC (lb/hr) = (((Breathing Loss, lb/yr)/(8,760 hr/yr))+((Working Loss, lb/yr)/(Number of turnovers/yr)/(Number of hrs/turnover)))+(Hourly Flash Emissions, lb/hr))

VOC (lb/hr) = (((00.00 lb/yr)/(8,760 hr/yr))+((0.00 lb/yr)/(6 turnovers/yr)/(24 hr/turnover)))+(-- lb/hr))

= 0.01 lb/hr

Example calculation of the annual emissions for Unit No. TK-5 follows:

VOC (T/yr) = (((Working Loss, lb/yr)+(Breathing Loss, lb/yr))/(2000 lb/T)))+(Flash Emissions, T/yr))

VOC (T/yr) = (((00.00 lb/yr)+(000.00 lb/yr))/(2,000 lb/T))+(-- T/yr))

= 0.002 T/yr

See following pages for working and breathing emission calculations.

FLARE AND THERMAL OXIDIZER EMISSIONS SUMMARY

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Unit No.	Description	Pollutant	Pilot Gas Potential to Emit [a] Hourly (lb/hr)	Pilot Gas Potential to Emit [a] Annual (T/yr)	Waste Gas Potential to Emit [b] Hourly (lb/hr)	Waste Gas Potential to Emit [b] Annual (T/yr)	Total Potential to Emit Hourly (lb/hr)	Total Potential to Emit Annual (T/yr)
VCU-1	VCU-1	Vapor Combustor Unit	CO	0.0076	0.0331	4.8727	21.3424	4.8802	21.3755
	AU-1		NO_X	0.0090	0.0394	1.1337	4.9657	1.1427	5.0051
	AU-2		PM	0.0007	0.0030	--	--	0.0007	0.0030
	AU-3		SO_2	0.0001	0.0002	2.8044	12.2832	2.8044	12.2834
			VOC (Pilot)	1.4939	6.5432	--	--	1.4939	6.5432
			Benzene (Pilot)	0.000000	0.00000	--	--	0.000000	0.00000
ECD-1	ECD-1	Enclosed Combustion Device	CO	0.0025	0.0110	1.2229	0.2761	1.2254	0.2871
	TK-1, TK-2, TK-3, TK-4, TK-9, LOAD		NO_X	0.0030	0.0131	0.6126	0.1383	0.6156	0.1514
			PM	0.0002	0.0010	--	--	0.0002	0.0010
			SO_2	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001
			VOC (Pilot)	0.4980	2.1811	--	--	0.4980	2.1811
			Benzene (Pilot)	0.000000	0.00000	--	--	0.000000	0.00000
ECD-2	ECD-2	Enclosed Combustion Device 2	CO	0.0014	0.0063	0.0957	0.4192	0.0971	0.4255
	DEHY-1 (SV)		NO_X	0.0017	0.0074	0.0479	0.2100	0.0496	0.2174
			PM	0.0001	0.0006	--	--	0.0001	0.0006
			SO_2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			VOC (Pilot)	0.4980	2.1811	--	--	0.4980	2.1811
			Benzene (Pilot)	0.000000	0.00000	--	--	0.000000	0.00000

[a] The Pilot Gas Potential to Emit emissions are from the Flare Pilot Gas Combustion Potential to Emit worksheet.

[b] The Waste Gas Potential to Emit CO, NO_X, and SO_2 emissions are from the Flare Waste Gas Combustion Potential to Emit worksheet. VOC and benzene emissions from the storage tanks, loading, amine units, dehydration unit and blowdown waste gas are reported at their respective emission paths.

FLARE AND THERMAL OXIDIZER PILOT GAS COMBUSTION POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Description	Fuel Gas Flow Rate (scf/hr)	Fuel Higher Heating Value (Btu/scf)	Annual Operating Hours (hr/yr)	Pollutant	Emission Factors [a]	Units	Potential to Emit Hourly [a] (lb/hr)	Potential to Emit Annual [b] (T/yr)
VCU-1	Vapor Combustion Unit	90	1,266	8,760	CO	84	lb/MMscf	0.0076	0.0331
					NO_X	100	lb/MMscf	0.0090	0.0394
					PM	7.6	lb/MMscf	0.0007	0.0030
					SO_2	0.6	lb/MMscf	0.0001	0.0002
					VOC	--	--	1.4939	6.5432
					Benzene	0.0021	lb/MMscf	0.000000	0.00000
ECD-1	Enclosed Combustion Device	30	1,266	8,760	CO	84	lb/MMscf	0.0025	0.0110
					NO_X	100	lb/MMscf	0.0030	0.0131
					PM	7.6	lb/MMscf	0.0002	0.0010
					SO_2	0.6	lb/MMscf	0.0000	0.0001
					VOC	--	--	0.4980	2.1811
					Benzene	0.0021	lb/MMscf	0.000000	0.00000
ECD-2	Enclosed Combustion Device 2	17	1,266	8,760	CO	84	lb/MMscf	0.0014	0.0063
					NO_X	100	lb/MMscf	0.0017	0.0074
					PM	7.6	lb/MMscf	0.0001	0.0006
					SO_2	0.6	lb/MMscf	0.0000	0.0000
					VOC	--	--	0.4980	2.1811
					Benzene	0.0021	lb/MMscf	0.000000	0.00000

[a] Flare emission factors for CO and NOX are based upon the Draft TNRCC Guidance Document for Flares and Vapor Oxidizers (dated 10/00) for non-assisted high-Btu and low-Btu flares. Thermal oxidizer emission factors for CO, NOX and PM are based on AP-42 Table 1.4-1 and 1.4-2 (dated 7/98) and converted assuming a natural gas heating value of 1,020 Btu/scf. An example calculation for hourly CO emissions for Unit No. VCU-1 follows:

CO (lb/hr) = (Fuel Flow Rate, scf/hr) * (Fuel Heating Value, Btu/scf) * (MM/106) * (Emission Factor, lb/MMBtu)

CO (lb/hr) = (90 scf/hr) * (1,266 Btu/scf)*(MM/10^6) * (84.0000 lb/MMBtu)

= 0.01 lb/hr CO

[b] An example calculation for annual CO emissions for Unit No. VCU-1 follows:

CO (T/yr) = (Hourly Emissions, lb/hr) * (Annual Operating Hours, hr/yr) * (1 T/2,000 lb)

CO (T/yr) = (0.01 lb/hr) * (8,760 hr/yr) * (1 T/2,000 lb)

= 0.03 T/yr CO

[c] The process flares are smokeless per 40 CFR §60.18 requirements; therefore, PM emissions are negligible.

FLARE AND THERMAL OXIDIZER WASTE GAS COMBUSTION POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Unit No.	Description		WG Flow Rate [a] (scf/hr)	WG Higher Heating Value (Btu/scf)	Flare Feed Rate Hourly (MMBtu/hr)	Flare Feed Rate Annual (MMBtu/yr)	Annual Hours Hours (hr/yr)	Pollutant	Emission Factors [b]	Units	Potential to Emit [e] Hourly [b] (lb/hr)	Potential to Emit [e] Annual [c] (T/yr)
VCU-1	AU-1	Amine Unit 1 Still Vent & Flash Tank (AU-1), Amine Unit 2 Still Vent & Flash Tank (AU-2), Amine Unit 3 Still Vent & Flash Tank (AU-3), Assist Gas	AU-1:	38,653.33	87.45	3.38	29,610.85	8,760	CO	0.2755	lb/MMBtu	4.8727	21.3424
	AU-2		AU-2:	38,653.33	87.45	3.38	29,610.85	8,760	NO_X	0.0641	lb/MMBtu	1.1337	4.9657
	AU-3		AU-3:	38,653.33	87.45	3.38	29,610.85	8,760	PM	-- [d]	--	--	--
			Assist Gas	7,000	1,078.00	7.55	66,102.96	8,760	SO_2	0.014	lbmol H2S/lb-mol	2.8044	12.2832
			Total:	**122,960.00**		**17.69**	**154,935.51**						
ECD-1	TK-1 to TK-8	One (1) 400 bbl Produced Water Tank (TK-4), VRU Downtime for One (1) 500 bbl Gunbarrel Separator (GBS-1), Four (4) 400 bbl Condensate Tanks (TK-1, TK-2, TK-3, TK-9), and Condensate Loading (LOAD)	GBS-1	947.88	2,264.69	2.15	940.23	8,760	CO	0.2755	lb/MMBtu	1.2229	0.2761
			TK-1, TK-2, TK-3, TK-9	886.25	2,435.46	2.16	945.40	8,760	NO_X	0.1380	lb/MMBtu	0.6126	0.1383
			TK-4	11.74	614.48	0.01	63.22	8,760	PM	-- [d]	--	--	--
	LOAD		LOAD:	48.34	2,619.39	0.13	55.46	8,760	SO_2	0.0000	lbmol H2S/lb-mol	0.0000	0.0000
			Total:	**1,894.22**		**4.44**	**2,004.31**		H_2S				
ECD-2	DEHY-1	Dehydrator Still Vent (DEHY-1)	DEHY-1	179.20	1,938.80	0.35	3,043.51	8,760	CO	0.2755	lb/MMBtu	0.0957	0.4192
			Total:	**179.20**		**0.35**	**3,043.51**	8,760	NO_X	0.1380	lb/MMBtu	0.0479	0.2100
								8,760	PM	-- [d]	--	--	--
								8,760	SO_2	0.0000	lbmol H2S/lb-mol	0.0000	0.0000
									H_2S				

[a] The WG flow rate, heating value (weighted), and feed rates taken from the following sources:
- VCU-1: from the Amine Promax simulation.
- ECD-1: from the Tanks Promax simulation. The Annual Flare Feed Rate represents 5% volume fromVRU downtime to the ECD.

[b] Emission factors for CO and NOX are based upon the Draft TNRCC Guidance Document for Flares and Vapor Oxidizers (dated 10/00) for non-assisted high or low Btu flares, as appropriate. Thermal oxidizer emission factors for CO, NOX and PM are based on AP-42 Table 1.4-2 (dated 7/98) and converted assuming a natural gas heating value of 1,020 Btu/scf. An example calculation for hourly CO emissions for Unit No. VCU-1 follows:

CO (lb/hr) = (Flare Feed Rate, MMBtu/hr) * (Emission Factor, lb/MMBtu)

CO (lb/hr) = (3.38 MMBtu/hr) * (0.2755 lb/MMBtu)

= 4.87 lb/hr CO

SO2 emission rates for Unit No.s VCU-1 and ECD-1 are estimated by assuming 98% (flare control efficiency) conversion of H2S into SO2. SO2 emissions based on mass balance. An example calculation for hourly SO2 emissions for Unit No. VCU-1 follows:

SO_2 (lb/hr) = (Hourly Gas Stream to Flare, scf/hr) * (Emission Factor, mol H2S/lb-mol) / 100 / (Universal Gas Constant, 385 scf/lb-mol) * (H2S to SO2 Conversion Rate, 0.98) * (Molecular Weight SO2, 64 lb SO2/lb-mol SO2)

SO_2 (lb/hr) = (122,960.00 scf/hr) * (0.0140 lbmol H2S/lbmol) / 100 / (385 scf/lbmole) * (0.98) * (64 lbSO2/lb-molSO2))

= 2.80 lb/hr SO_2

[c] An example calculation for annual CO emissions for Unit No. FLARE-1 follows:

CO (T/yr) = (Flare Feed Rate, MMBtu/yr) * (Emission Factor, lb/MMBtu) / (2,000 lb/T)

CO (T/yr) = (29,610.85 MMBtu/yr) * (0.2755 lb/MMBtu) / (2,000 lb/T)

= 21.34 T/yr CO

[d] The process flares are smokeless per 40 CFR §60.18 requirements; therefore, PM emissions are negligible.

[e] Waste gas emissions of VOC and benzene are represented at the Unit No. that generates the emissions.

Calculation of VCU Pilot Gas VOC Emissions

Vent Emissions	
Emissions	Lbs
H_2S	0.2993
Propane	6,134.4978
ISO Butane	1,122.8574
N-Butane	2,855.6305
ISO-Pentane	845.8048
N-Pentane	928.1678
Hexanes +	1,199.4228
VOC Total	13,086.3812
For uncontrolled pph and tpy VOC, toggle F18 to "NO"	

Emission Calculation Information Flare	
Volume mmscf	0.7884
Btu/scf (LHV)	1261.0000
Total mmbtu	994.1724
Lbs NOx/mmbtu*	0.0000
Fuel Bound NOx*	.5 wt % NH3 in fuel
Lbs CO/mmbtu*	0.0000
Lbs H_2S DRE**	0.0%
Lbs VOC DRE***	0.0%
gm-mols/scf	1.2630
gm/lbs	453.5924

Flare Emissions	
Emissions	Lbs
NOx	0.0000
NO	6.2050
CO	0.0000
SO_2	0.5620
Propane	6134.4978
ISO Butane	1122.8574
N-Butane	2855.6305
ISO-Pentane	845.8048
N-Pentane	928.1678
Hexanes +	1199.4228
VOC Total	13,086.3812

Flared? (Yes/No)	yes
Flare DRE (%)	0%
Non Combusted (%)	1.00

0 0

#VALUE! #VALUE!

Convert From (ppm to Mol %)		0	
H_2S (ppm)	H_2S Mol %	H_2S Mol %	H_2S (ppm)
4	0.0004	0.0004	4

Reportable Event Determination			Emission Rates	
Emissions	Amount	Reportable	TPY	lb/hr
NOx	0.0000	No	0.000	0.00
NO		No	0.00	0.00
CO	0.0000	No	0.00	0.00
SO_2 or H_2S	0.5620	No	0.00	0.00
Propane	6,134.4978	Yes	3.07	0.70
ISO Butane	1,122.8574	No	0.56	0.13
N-Butane	2,855.6305	No	1.43	0.33
ISO-Pentane	845.8048	No	0.42	0.10
N-Pentane	928.1678	No	0.46	0.11
Hexanes +	1,199.4228	No	0.60	0.14
			0.00	0.00
VOC Total	13,086.3812	Yes	6.5432	1.4939
Flare Reportable	Yes		TPY	pph
Vent Reportable	Not Applicable		Emissions from Flare	

Reportable Event*	Yes

*If Reportable Event is greater than 0 then the event is reportable.

**H_2S emissions calculated from weight of gas sent to the flare and multiplied by the flares destruction efficiency of 98%, assuming 100% H_2S by weight is converted to SO_2.

***Speciated VOC emissions calculated from weight of gas sent to flare multiplied by the flares destruction efficiency of 98%.

Gas Component Data								
Component	Mol %	Mol Wt. (g/mol)*	Component	Weight %	Pounds	Tons	Pure	Component
Nitrogen	2.018	28.01340	0.56531	2.4617%	1,240.9983	0.6205	N/A	N/A
H_2S	0.0004	34.08200	0.00014	0.0006%	0.2993	0.0001	586.8000	0.0023
Methane	72.233	16.04303	11.58836	50.4635%	25,439.3637	12.7197	909.4	656.8869
Carbon Dio.	3.419	44.00995	1.50470	6.5525%	3,303.1947	1.6516	N/A	N/A
Ethane	11.121	30.07012	3.34410	14.5625%	7,341.1348	3.6706	1,618.7	180.0156
Propane	6.337	44.09721	2.79444	12.1689%	6,134.4978	3.0672	2,314.9	146.6952
ISO Butane	0.88	58.12430	0.51149	2.2274%	1,122.8574	0.5614	3,000.4	26.4035
N-Butane	2.238	58.12430	1.30082	5.6647%	2,855.6305	1.4278	3,010.8	67.3817
ISO-Pentane	0.534	72.15139	0.38529	1.6778%	845.8048	0.4229	3,699.0	19.7527
N-Pentane	0.586	72.15139	0.42281	1.8412%	928.1678	0.4641	3,706.9	21.7224
Hexanes +***	0.634	86.17848	0.54637	2.3793%	1,199.4228	0.5997	4,403.8	27.9201
Total Components	100.0004%		22.9638	100.0000%	50,411.3720	25.2057		
Total C3+	11.2090%		5.9612	0.2596	13,086.3812	6.5432		

* Data from the GPSA - Engineering Data Book 11th Edition, Figure 23-2; page 23-4 "FPS Volumes I & II ver. 2000"

*** Hexanes +, calculated on mole weight of Hexane

Number	Pipe ID (inches)	Length (feet)	Pressure (PSIA)	*Calculated MCF
1				
2				0
3				0
4				0
5				0
6				0
7				0
8				0
9				0
10				0
11				0
12				0
13				0
14				0
15				0
			Sub Total	0.0000

* Calculation based on STP (70° F - Amb. & gas temp., 14.7 PSIA Atmospheric)

Number	Known MCF	Stream to Flare (MSCFD)
1	788.400	
2		
3		
4		
5		
6		
7		365 duration (days)
8		
9		
10		
11		
12		
13		
14		
Sub Total	788.4000	
Total	**788.4000**	

NMED
Stream to Flare
Mscf/hr
0.09
MMscf/yr
0.7884

Calculation of VCU Pilot Gas VOC Emissions

Vent Emissions	
Emissions	Lbs
H_2S	0.0998
Propane	2,044.8326
ISO Butane	374.2858
N-Butane	951.8768
ISO-Pentane	281.9349
N-Pentane	309.3893
Hexanes +	399.8076
VOC Total	4,362.1271
For uncontrolled pph and tpy VOC, toggle F18 to "NO"	

Emission Calculation Information Flare	
Volume mmscf	0.2628
Btu/scf (LHV)	1261.0000
Total mmbtu	331.3908
Lbs NOx/mmbtu*	0.0000
Fuel Bound NOx*	.5 wt % NH3 in fuel
Lbs CO/mmbtu*	0.0000
Lbs H_2S DRE**	0.0%
Lbs VOC DRE***	0.0%
gm-mols/scf	1.2630
gm/lbs	453.5924

Flare Emissions	
Emissions	Lbs
NOx	0.0000
NO	2.0683
CO	0.0000
SO_2	0.1873
Propane	2044.8326
ISO Butane	374.2858
N-Butane	951.8768
ISO-Pentane	281.9349
N-Pentane	309.3893
Hexanes +	399.8076
VOC Total	4,362.1271

Flared? (Yes/No)	yes
Flare DRE (%)	0%
Non Combusted (%)	1.00

Reportable Event Determination			Emission Rates	
Emissions	Amount	Reportable	TPY	lb/hr
NOx	0.0000	No	0.000	0.00
NO		No	0.00	0.00
CO	0.0000	No	0.00	0.00
SO_2 or H_2S	0.1873	No	0.00	0.00
Propane	2,044.8326	No	1.02	0.23
ISO Butane	374.2858	No	0.19	0.04
N-Butane	951.8768	No	0.48	0.11
ISO-Pentane	281.9349	No	0.14	0.03
N-Pentane	309.3893	No	0.15	0.04
Hexanes +	399.8076	No	0.20	0.05
			0.00	0.00
VOC Total	4,362.1271	No	2.1811	0.4980
Flare Reportable	No		TPY	pph
Vent Reportable	Not Applicable		Emissions from Flare	

Reportable Event*	No

*If Reportable Event is greater than 0 then the event is reportable.

Convert From (ppm to Mol %)		Convert From (Mol % to ppm)	
H_2S (ppm)	H_2S Mol %	H_2S Mol %	H_2S (ppm)
4	0.0004	0.0004	4

**H_2S emissions calculated from weight of gas sent to the flare and multiplied by the flares destruction efficiency of 98%, assuming 100% H_2S by weight is converted to SO_2.

***Speciated VOC emissions calculated from weight of gas sent to flare multiplied by the flares destruction efficiency of 98%.

Gas Component Data								
Component	Mol %	Mol Wt. (g/mol)*	Component	Weight %	Pounds	Tons	Pure	Component
Nitrogen	2.018	28.01340	0.56531	2.4617%	413.6661	0.2068	N/A	N/A
H_2S	0.0004	34.08200	0.00014	0.0006%	0.0998	0.0000	586.8000	0.0023
Methane	72.233	16.04303	11.58836	50.4635%	8,479.7879	4.2399	909.4	656.8869
Carbon Dio.	3.419	44.00995	1.50470	6.5525%	1,101.0649	0.5505	N/A	N/A
Ethane	11.121	30.07012	3.34410	14.5625%	2,447.0449	1.2235	1,618.7	180.0156
Propane	6.337	44.09721	2.79444	12.1689%	2,044.8326	1.0224	2,314.9	146.6952
ISO Butane	0.88	58.12430	0.51149	2.2274%	374.2858	0.1871	3,000.4	26.4035
N-Butane	2.238	58.12430	1.30082	5.6647%	951.8768	0.4759	3,010.8	67.3817
ISO-Pentane	0.534	72.15139	0.38529	1.6778%	281.9349	0.1410	3,699.0	19.7527
N-Pentane	0.586	72.15139	0.42281	1.8412%	309.3893	0.1547	3,706.9	21.7224
Hexanes +***	0.634	86.17848	0.54637	2.3793%	399.8076	0.1999	4,403.8	27.9201
Total Components	100.0004%		22.9638	100.0000%	16,803.7907	8.4019		
Total C3+	11.2090%		5.9612	0.2596	4,362.1271	2.1811		

* Data from the GPSA - Engineering Data Book 11th Edition, Figure 23-2; page 23-4 "FPS Volumes I & II ver. 2000"

*** Hexanes +, calculated on mole weight of Hexane

Number	Pipe ID (inches)	Length (feet)	Pressure (PSIA)	*Calculated MCF
1				
2				0
3				0
4				0
5				0
6				0
7				0
8				0
9				0
10				0
11				0
12				0
13				0
14				0
15				0
			Sub Total	0.0000

* Calculation based on STP (70° F - Amb. & gas temp., 14.7 PSIA Atmospheric)

Number	Known MCF	Stream to Flare (MSCFD)
1	262.800	
2		
3		
4		
5		
6		
7		365 duration (days)
8		
9		
10		
11		
12		
13		
14		
Sub Total	262.8000	
Total	**262.8000**	

NMED
Stream to Flare
Mscf/hr
0.03
MMscf/yr
0.2628

UNPAVED HAUL ROAD EMISSIONS SUMMARY

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Unit No.	Unit No.	% Silt	Mean Vehicle Weight (tons)	Rain Days	Road Distance Round-trip	Number of Haul Road Round-trips		Vehicle Miles Traveled (VMT)		Hourly Size-Specific Emission Factor lbs/VMT		Annual Size-Specific Emission Factor lbs/VMT		Percent Reduction	Emission Rates			
						Per Hour	Year	(VMT/hour)	(VMT/year)	PM-10	PM-2.5	PM-10	PM-2.5		PM-10 (lb/hr)	PM-10 (Tons)	PM-2.5 (lb/hr)	PM-2.5 (Tons)
UR-01	UR-01	4.8	26.5	70	0.10	1	1,825	0.10	182.50	1.7527	0.1753	1.4165	0.1417	44%	0.0981	0.0724	0.0098	0.0072

Notes:

1. Calculation method and factors are from AP-42, Section 13.2 (11/2006).

2. The entries for % Silt and Rain Days are the NMED accepted default values.

3. The Haul Road Distance only includes the round-trip distance within the facility boundaries per NMED protocol.

Sample Calculations: (based on PM-10)

Emission Factors:

Hourly Size-Specific Emission Factor = k * [(surface material silt content, %)/12]^a * [(mean vehicle weight, tons)/3]^b where k, a, and b are empirical constants from AP-42 Table 13.2.2-2 for industrial roads.
= 1.5 lb/VMT * [(4.8 %) / 12]^0.9 * [(26.5 tons) / 3]^0.45
= 1.75 lb/VMT where VMT = vehicle miles traveled

Annual Size-Specific Emission Factor = Hourly Size-Specific Emission Factor * [(365 - Rain Days) / 365] where Rain Days = # of days in a year with at least 0.01 inches of precipitation.
= 1.75 lbs/VMT * [(365 - 70 days / 365 days]
= 1.42 lb/VMT where VMT = vehicle miles traveled

Emissions:

Hourly Emissions = Hourly Size-Specific Emission Factor * Vehicle Miles Traveled per Hour
= 1.75 lbs/VMT * 0.10 VMT/hour
= 0.10 lb/hr

Annual Emissions = Annual Size-Specific Emission Factor * Vehicle Miles Traveled per Year
= 1.42 lbs/VMT * 182.50 VMT/year
= 0.07 Tons

Table 13.2.2-2. CONSTANTS FOR EQUATION 1a

Constant	Industrial Roads (Equation 1a)		
	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45
Quality Rating	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)

CALCULATION OF COMPRESSOR ENGINE BLOWDOWNS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Number of Events per Year:	416
Number of Events per Hour:	1
Volume per Event, scf:	1,365
Gas Stream Specific Gravity:	0.7944
Gas Stream MW, lb/lbmol:	22.98
Gas Stream Density, lb/scf[a] :	0.061
Max VOC in Gas Stream, wt%:	28.6%
Max Carbon Dioxide in Gas Stream, wt%:	6.55%
Max Methane in Gas Stream, wt%:	50.42%
Benzene in Gas Stream, wt%:	0.06%
Toluene in Gas Stream, wt%:	0.01%
Ethylbenzene in Gas Stream, wt%:	0.00%
Xylene in Gas Stream, wt%:	0.00%
n-Hexane in Gas Stream, wt%:	0.36%

Emission Rates		
Pollutant	**Hourly lb/hr[b]**	**Annual T/yr[c]**
VOC	23.6761	4.9246
Carbon Dioxide	5.4185	1.1271
Methane	41.7366	8.6812
Benzene	0.0500	0.0104
Toluene	0.0100	0.0021
Ethylbenzene	0.0000	0.0000
Xylene	0.0011	0.0002
n-Hexane	0.3020	0.0628
Total HAPs	0.3631	0.0755

[a] Gas stream density is calculated as follows:
(22.98 lb/lbmole) * (379 scf/mole) = 0.061 lb/scf

[b] Hourly blowdown VOC emission rates are calculated as follows:
(1 blowdowns/hr) * (1,365 scf/blowdown) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) = 23.68 lb/hr

[c] Annual blowdown VOC emission rates are calculated as follows:
(416 blowdowns/yr) * (1,365 scf/blowdown) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) / (2,000 lb/ton) = 4.92 T/yr

CALCULATION OF COMPRESSOR ENGINE STARTER VENTS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Number of Events per Year:	182
Number of Events per Hour:	1
Volume per Event, scf:	900
Gas Stream Specific Gravity:	0.7944
Gas Stream MW, lb/lbmol:	22.98
Gas Stream Density, lb/scf[a] :	0.061
Max VOC in Gas Stream, wt%:	28.6%
Max Carbon Dioxide in Gas Stream, wt%:	6.55%
Max Methane in Gas Stream, wt%:	50.42%
Benzene in Gas Stream, wt%:	0.06%
Toluene in Gas Stream, wt%:	0.01%
Ethylbenzene in Gas Stream, wt%:	0.00%
Xylene in Gas Stream, wt%:	0.00%
n-Hexane in Gas Stream, wt%:	0.36%

Emission Rates		
Pollutant	**Hourly lb/hr[b]**	**Annual T/yr[c]**
VOC	15.6106	1.4206
Carbon Dioxide	3.5726	0.3251
Methane	27.5186	2.5042
Benzene	0.0330	0.0030
Toluene	0.0066	0.0006
Ethylbenzene	0.0000	0.0000
Xylene	0.0008	0.0001
n-Hexane	0.1991	0.0181
Total HAPs	0.2394	0.0218

[a] Gas stream density is calculated as follows:
(22.98 lb/lbmole) * (379 scf/mole) = 0.061 lb/scf

[b] Hourly blowdown VOC emission rates are calculated as follows:
(1 blowdowns/hr) * (900 scf/blowdown) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) = 15.61 lb/hr

[c] Annual blowdown VOC emission rates are calculated as follows:
(182 blowdowns/yr) * (900 scf/blowdown) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) / (2,000 lb/ton) = 1.42 T/yr

CALCULATION OF PIGGING OPERATIONS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Number of Events per Year:	26
Number of Events per Hour:	1
Volume per Event, scf:	2,592
Gas Stream Specific Gravity:	0.7944
Gas Stream MW, lb/lbmol:	22.98
Gas Stream Density, lb/scf[a] :	0.061
Max VOC in Gas Stream, wt%:	28.6%
Max Carbon Dioxide in Gas Stream, wt%:	6.55%
Max Methane in Gas Stream, wt%:	50.42%
Benzene in Gas Stream, wt%:	0.06%
Toluene in Gas Stream, wt%:	0.01%
Ethylbenzene in Gas Stream, wt%:	0.00%
Xylene in Gas Stream, wt%:	0.00%
n-Hexane in Gas Stream, wt%:	0.36%

Emission Rates		
Pollutant	**Hourly lb/hr[b]**	**Annual T/yr[c]**
VOC	44.9558	0.5844
Carbon Dioxide	10.2886	0.1338
Methane	79.2487	1.0302
Benzene	0.0949	0.0012
Toluene	0.0189	0.0002
Ethylbenzene	0.0000	0.0000
Xylene	0.0022	0.0000
n-Hexane	0.5734	0.0075

[a] Gas stream density is calculated as follows:
(22.98 lb/lbmole) * (379 scf/mole) = 0.061 lb/scf

[b] Hourly VOC emission rates are calculated as follows:
(1 event/hr) * (2,592 scf/event) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) = 44.96 lb/hr

[c] Annual VOC emission rates are calculated as follows:
(26 events/yr) * (2,592 scf/event) * (0.061 lb/scf) * (0.29 lb VOC/lb gas) / (2,000 lb/ton) = 0.58 T/yr

Miscellaneous SSM
New Source Review Permit
ALAMO COMPRESSOR STATION
ONEOK, INC.

Description	Total PTE	Dehy/Amine 42" Contactor	Dehy/Amine 30" Contactor	Filter Coalescer	Scrubbers	Pumps	Reboiler Maintenance	Pipeline Maintenance	Tank Degassing
Number of Blowdowns per Year		1	1	1	5	8	1	1	3
Simultaneous blowdowns per hour		1	1	1	5	2	1	1	1
Volume of Gas Per Blowdown, scf		21,870.00	9,025.00	6,900	33,800	16	65	54,874	4,323
Gas Stream Specific Gravity		0.7944	0.7944	0.7944	0.7944	0.7944	0.7944	0.7944	0.7944
Air MW, lb/mole		22.99	22.99	22.99	22.99	22.99	22.99	22.99	70.00
Gas Stream Density, lb/scf [a]		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.15
Flare Control Efficiency, %		0%	0%	0%	0%	0%	0%	0%	0%
Max VOC Percentage in Gas Stream, wt%		28.60%	28.60%	28.60%	28.60%	28.60%	28.60%	28.60%	28.60%
Max HAP Percentage in Gas Stream, wt%		0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%	0.44%
Max Methane Percentage in Gas Stream, wt%		50.42%	50.42%	50.42%	50.42%	50.42%	50.42%	50.42%	50.42%
Max CO_2 Percentage in Gas Stream, wt%		6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%
Max Benzene Percentage in Gas Stream, wt%		0.07%	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Hourly VOC Emission Rates (lb/hr): [b]	**3789.21**	301.42	124.39	95.10	2329.24	0.44	0.90	756.30	181.41
Annual VOC Emission Rates (T/yr): [c]	**2.08**	0.15	0.06	0.05	1.16	0.00	0.00	0.38	0.27
Hourly HAP Emission Rates (lb/hr):[b]	**58.11**	4.62	1.91	1.46	35.72	0.01	0.01	11.60	2.78
Annual HAP Emission Rates (T/yr): [c]	**0.03**	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00
Annual Methane Emission Rates (T/yr): [c]	**3.66**	0.27	0.11	0.08	2.05	0.00	0.00	0.67	0.48
Annual CO_2 Emission Rates (T/yr): [c]	**0.48**	0.034	0.01	0.01	0.27	0.00	0.00	0.09	0.06
Hourly Benzene Emission Rates (lb/hr):[b]	**8.79**	0.700	0.289	0.221	5.406	0.001	0.002	1.755	0.421
Annual Benzene Emission Rates (T/yr): [c]	**0.005**	0.0003	0.0001	0.0001	0.0027	0.0000	0.0000	0.0009	0.0006

[a] Gas stream density is calculated as follows:

(22.99 lb/mole) / (379 scf/mole) * (0.7944) = 0.05 lb/scf

[b] Hourly starter vent VOC emission rates are calculated as follows:

(1 starts/hr) * (21870 scf/start) * (0.048 lb/scf) * (28.60% VOC) = 301.42 lb/hr

[c] Annual starter vent VOC emission rates are calculated as follows:

(1 starts/yr) * (21870 scf/start) * (0.048 lb/scf) * (28.60% VOC) / (2,000 lb/T) = 0.15 T/yr

CALCULATION OF PNEUMATIC OPERATIONS POTENTIAL TO EMIT

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Gas Stream Specific Gravity:	0.7944
Gas Stream MW, lb/lbmol:	22.98
Gas Stream Density, lb/scf[a] :	0.061
Max VOC in Gas Stream, wt%:	3.8%
Max Carbon Dioxide in Gas Stream, wt%:	2.90%
Max Methane in Gas Stream, wt%:	80.68%
Benzene in Gas Stream, wt%:	0.00%
Toluene in Gas Stream, wt%:	0.00%
Ethylbenzene in Gas Stream, wt%:	0.00%
Xylene in Gas Stream, wt%:	0.00%
n-Hexane in Gas Stream, wt%:	0.00%

Component Type and Service	Count	(Q) Emission Factor[b] (scf/hr/component)
Low Bleed	15	1.39
Intermittent	26	13.5
High Bleed	0	37.3
Pump	3	13.3

Emission Rates		
Pollutant	**Hourly lb/hr[c]**	**Annual T/yr[d]**
VOC	0.9482	4.1533
Carbon Dioxide	0.7249	3.1749
Methane	20.1462	88.2402
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylene	0.0000	0.0000
n-Hexane	0.0000	0.0000

[a] Gas stream density is calculated as follows:
(22.98 lb/lbmole) * (379 scf/mole) = 0.061 lb/scf

[b] Emission factors from 40 CF Part 98 Subpart W table W-1A (Western US)

[c] Hourly lb/hr = (SCF)*(1 lb-mole/379.3 SCF)*(MW of gas lb/lb-mole)

[d] Annual TPY = (lb/hr)*8760/2000

CALCULATION OF GREENHOUSE GAS POTENTIAL TO EMIT FOR COMBUSTION SOURCES

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Combustion-Related Green House Gas Emissions

Combustion Source Unit ID	HP	Btu/hp-hr	MMBtu/hr	Annual Operating Hours	Fuel Usage MMBtu/Term	CO_2 Mass short T/yr	N_2O Mass short T/yr	CH_4 Mass short T/yr	CO_2 CO_{2e} T/yr	N_2O CO2e T/yr	CH_4 CO2e T/yr	CO_2e[a] metric T/yr	CO_2e[a] short T/yr	GHG Mass[a] short T/yr
E-1	2,500	6,685	16.71	8,760	146,402	8,562.74	0.02	0.16	8,562.74	4.28	4.52	7,776.04	8,571.53	8,562.91
E-2	2,500	6,685	16.71	8,760	146,402	8,562.74	0.02	0.16	8,562.74	4.28	4.52	7,776.04	8,571.53	8,562.91
E-3	3,750	6,638	24.89	8,760	218,058	12,753.80	0.02	0.24	12,753.80	6.37	6.73	11,582.06	12,766.90	12,754.07
E-4	3,750	6,638	24.89	8,760	218,058	12,753.80	0.02	0.24	12,753.80	6.37	6.73	11,582.06	12,766.90	12,754.07
E-6	2,500	6,685	16.71	8,760	146,402	8,562.74	0.02	0.16	8,562.74	4.28	4.52	7,776.04	8,571.53	8,562.91
E-7	2,500	6,685	16.71	8,760	146,402	8,562.74	0.02	0.16	8,562.74	4.28	4.52	7,776.04	8,571.53	8,562.91
E-8	3,750	6,862	25.73	8,760	225,417	13,184.18	0.02	0.25	13,184.18	6.58	6.96	11,972.90	13,197.72	13,184.45
E-9	68	2,482	0.17	8,760	1,479	86.48	0.0002	0.002	86.48	0.04	0.05	78.54	86.57	86.49
E-10	68	2,482	0.17	8,760	1,479	86.48	0.0002	0.002	86.48	0.04	0.05	78.54	86.57	86.49
E-11	68	2,482	0.17	8,760	1,479	86.48	0.0002	0.002	86.48	0.04	0.05	78.54	86.57	86.49
GEN-3	539	7,531	4.06	8,760	35,559	2,079.76	0.004	0.04	2,079.76	1.04	1.10	1,888.68	2,081.89	2,079.80
GEN-4	539	7,531	4.06	8,760	35,559	2,079.76	0.004	0.04	2,079.76	1.04	1.10	1,888.68	2,081.89	2,079.80
GEN-5	539	7,531	4.06	8,760	35,559	2,079.76	0.004	0.04	2,079.76	1.04	1.10	1,888.68	2,081.89	2,079.80
H-2	--	--	1.50	8760.00	13,140	768.53	0.001	0.01	768.53	0.38	0.41	697.92	769.32	768.55
H-3a	--	--	9.87	8,760	86,461	5,056.95	0.01	0.10	5,056.95	2.53	2.67	4,592.34	5,062.14	5,057.05
H-4a	--	--	9.87	8,760	86,461	5,056.95	0.01	0.10	5,056.95	2.53	2.67	4,592.34	5,062.14	5,057.05
H-5a	--	--	9.87	8,760	86,461	5,056.95	0.01	0.10	5,056.95	2.53	2.67	4,592.34	5,062.14	5,057.05
VCU-1	--	--	0.11	8,760	998	58.38	0.0001	0.001	58.38	0.03	0.03	53.01	58.44	58.38
ECD-1	--	--	4.44	8,760	38,885	2,274.31	0.004	0.04	2,274.31	1.14	1.20	2,065.36	2,276.64	2,274.36
ECD-2	--	--	0.35	8,760	3,044	178.01	0.000	0.00	178.01	0.09	0.09	161.65	178.19	178.01
SITE TOTAL			**191.06**	**--**	**1,673,701.50**	**97,891.52**	**0.18**	**1.84**	**97,891.52**	**48.89**	**51.66**	**88,897.82**	**97,992.07**	**97,893.55**

[a]Sample calculations:

Greenhouse Gas (GHG) Emission Factors are from 40 CFR 98, Subpart C Tables C-1 and C-2.

	Natural Gas
Carbon Dioxide Emission Factor (CO_2EF) =	53.06 kg/MMBtu
Methane Emission Factor (CH_4EF) =	0.001 kg/MMBtu
Nitrous Oxide Emission Factor (N_2OEF) =	0.0001 kg/MMBtu

An example calculation for carbon dioxide equivalent CO2e in metric T/yr for Unit No. E-1
CO_2e (metric T/yr) = (0.001 metric T/kg)*(Fuel usage, MMBtu/yr))*[(CO_2EF + 28*CH_4EF + 265*N_2OEF), kg/MMBtu]

CO2e (metric T/yr) = (0.001 metric T/kg) * (146,402 MMBtu/yr) * [(53.06 kg/MMBtu) + (25*0.001 kg/MMBtu) + (298*0.0001 kg/MMBtu)] = 7,776.04 metric T/yr

An example calculation for CO2e in short T/yr for Unit No. E-1 follows:
CO_2e (short T/yr) = (0.001 metric T/kg) * (Fuel usage, MMBtu/yr)) * [(CO_2EF + 28*CH_4EF + 265*N_2OEF), kg/MMBtu] * (2,204.6 lb/metric T) / (2,000 lb/short T)

CO2e (short T/yr) = (0.001 metric T/kg) * (146,402 MMBtu/yr) * [(53.06 kg/MMBtu) + (25*0.001 kg/MMBtu) + (298*0.0001 kg/MMBtu)] * (2,204.6 lb/metric T) / (2,000 lb/short T) = 8,571.53 short T/yr

An example calculation for GHG Mass in short T/yr for Unit No. E-1 follows:
GHG Mass (short T/yr) = (0.001 metric T/kg) * (Fuel usage, MMBtu/yr) * (CO_2EF+CH_4EF+N_2OEF) * (2,204.6 lb/metric T) / (2,000 lb/short T)

GHG Mass (short T/yr) = (0.001 metric T/kg) * (146,402 MMBtu/yr) * [(53.06 kg/MMBtu) + (0.001 kg/MMBtu) + (0.0001 kg/MMBtu)] * (2,204.6 lb/metric T) / (2,000 lb/short T) = 8,562.91 short T/yr

SITE DATA

NEW SOURCE REVIEW PERMIT

ALAMO COMPRESSOR STATION

ONEOK, INC.

Stream Compositions:

	Stream 1		Stream 2		Stream 3	
	Fuel[a]		Inlet Gas[a]		Condensate[b]	
Component	mole %	wgt. %	mole %	wgt. %	mole %	wgt %
Water	--	--	--	--	--	--
Nitrogen	2.2000%	2.2022%	2.0180%	2.4595%	0.0947%	0.031%
Carbon Dioxide	2.9000%	2.9029%	3.4185%	6.5457%	1.3453%	0.687%
Oxygen	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.000%
Hydrogen Sulfide	0.0000%	0.0000%	0.0004%	0.0006%	0.0000%	0.000%
Methane	80.6000%	80.6807%	72.2334%	50.4191%	6.9169%	1.288%
Ethane	10.6000%	10.6106%	11.1208%	14.5493%	3.3649%	1.174%
Propane	3.1000%	3.1031%	6.3368%	12.1577%	5.3969%	2.762%
I-Butane	0.2000%	0.2002%	0.8802%	2.2259%	1.6452%	1.110%
N-Butane	0.3000%	0.3003%	2.2380%	5.6595%	5.7780%	3.897%
I-Pentane	0.0000%	0.0000%	0.5341%	1.6766%	3.5002%	2.931%
N-Pentane	0.0000%	0.0000%	0.5859%	1.8392%	5.1849%	4.341%
Cyclopentane	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.000%
n-Hexane	0.0000%	0.0000%	0.0973%	0.3648%	4.7406%	4.741%
Cyclohexane	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.000%
Other Hexanes	0.0000%	0.0000%	0.3629%	1.3606%	11.0101%	11.011%
Heptanes	0.0000%	0.0000%	0.1485%	0.6474%	17.4386%	20.278%
Octanes	0.0000%	0.0000%	0.0034%	0.0169%	10.8412%	14.371%
Nonanes Plus	0.0000%	0.0000%	0.0006%	0.0033%	15.9408%	23.726%
Benzene	0.0000%	0.0000%	0.0178%	0.0604%	0.9880%	0.894%
Toluene	0.0000%	0.0000%	0.0030%	0.0120%	2.4911%	2.663%
Ethylbenzene	0.0000%	0.0000%	0.0000%	0.0000%	0.3726%	0.459%
Xylene	0.0000%	0.0000%	0.0003%	0.0014%	2.9499%	3.635%
Totals	99.90%	100.00%	100.00%	100.00%	100.00%	100.00%
Totals (C3+)		3.60%		26.03%		96.82%
Max VOC%		3.80%		28.60%		100.00%
Max Methane %		80.68%		50.42%		1.29%
Max CO_2 %		2.90%		6.55%		0.69%
Max HAP		0.00%		0.44%		12.39%
Max Benzene %		0.00%		0.07%		0.90%
Specific Gravity	0.7944		0.7944			

Fuel Gas Higher Heating Value[a]	1266	1,266 Btu/scf
Fuel Gas Lower Heating Value[a]	1261	1,261 Btu/scf

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)

Section 7

Information Used to Determine Emissions

Information Used to Determine Emissions shall include the following:

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

Supporting documentation is attached to this section.

Table of Location Information for Alamo Compressor Station, Facility ID 38827. Lat/long: 32.114519, -103.586975 UTM=633307.5, 3554003.4, Zone=13

Topic	Distance (km)	Distance (mi)	Direction	Name	ID	Notes	Pollutant	Latitude	Longitude
Facility (First closest)	.0	.0	none of	Alamo Compressor Station	38827	Delaware G & P, LLC		32.11452	-103.58698
Facility (Second closest)	.9	.6	northeast of	Cimarex - Cascade 29 Federal 3H, 4H and 7H	34227	Coterra Energy Operating Co		32.10791	-103.59319
Facility (Third closest)	1.1	.7	west of	EOG - Green Drake 21 Fed Com CTB	39631	EOG Resources Inc - Midland Division		32.1139	-103.5754
Facility (Fourth closest)	1.2	.8	east-northeast of	Vaca Draw 20-17 Federal 1H-13H, 29H-31H, 43H-45H, 5	38050	Coterra Energy Operating Co		32.11182	-103.5995
Facility (Fifth closest)	1.4	.9	south-southwest of	Green Drake 16 CTB	38864	EOG Resources Inc - Midland Division		32.1263	-103.58278
Facility emitting over 25T/y NOX (First closest)	.0	.0	none of	Alamo Compressor Station	38827	83.9	NO2	32.11452	-103.58698
Facility emitting over 25T/y NOX (Second closest)	2.5	1.5	southwest of	EOG - Streetcar Compressor Station	40084	66.5	NO2	32.1284	-103.5662
Facility emitting over 25T/y NOX (Third closest)	3.5	2.2	north of	Horned Frog Compressor Station	38473	82.2	NO2	32.08309	-103.58806
Facility emitting over 250T/y NOX (First closest)	12.2	7.6	south-southwest of	Red Hills Gas Processing Plant	29885	292.2	NO2	32.21056	-103.52389
Facility emitting over 250T/y NOX (Second closest)	41.1	25.5	east of	Pecos River Compressor Station	194	697.7	NO2	32.06361	-104.01833
Facility emitting over 250T/y NOX (Third closest)	48.0	29.8	south of	3 Bear Libby Gas Plant	38067	345.0	NO2	32.54236	-103.52573
State Park (First closest)	73.7	45.8	east-southeast of	Living Desert Zoo & Gardens				32.43623	-104.27175
State Park (Second closest)	88.6	55.0	east-southeast of	Brantley Lake				32.53743	-104.38458
State Park (Third closest)	150.3	93.4	south-southeast of	Bottomless Lakes				33.314	-104.32398
Class I area (First closest)	74.2	46.1	east of	Carlsbad Caverns National Park				32.17927	-104.37034
Class I area (Second closest)	107.8	67.0	east of	Guadalupe Mountains National Park				31.93872	-104.71072
Class I area (Third closest)	177.6	110.4	south-southeast of	Salt Creek				33.56768	-104.37132
City (First closest)	37.5	23.3	west of	Jal				32.1155	-103.18922
City (Second closest)	46.7	29.0	east-southeast of	Malaga				32.22091	-104.06597
City (Third closest)	51.7	32.1	east-southeast of	Loving				32.28653	-104.09679
NO2 Monitor (First closest)	70.4	43.8	east-southeast of	Carlsbad	5ZR	1-hour: 54.5 ug/m3 annual: 9.3 ug/m3	NO2	32.38396	-104.26403
SO2 Monitor (First closest)	385.5	239.5	south-southwest of	Amarillo	483751025	1-hour: 23.1 ug/m3 annual: .8 ug/m3	SO2	35.2367	-101.787
CO Monitor (First closest)	273.7	170.1	east of	El Paso Chamizal	481410044	1-hour: 4904 ug/m3 8-hour: 3335 ug/m3	CO	31.76569	-106.455
PM10 Monitor (First closest)	80.9	50.3	south-southwest of	Hobbs Jefferson	5ZS	24-hour: 37.3 ug/m3 annual: 24 ug/m3	PM10	32.72683	-103.12298
PM2.5 Monitor (First closest)	80.9	50.3	south-southwest of	Hobbs Jefferson	5ZS	24-hour: 16.5 ug/m3 annual: 7.1 ug/m3	PM2.5	32.72683	-103.12298
O3 Monitor (First closest)	70.4	43.8	east-southeast of	Carlsbad	5ZR	1-hour: 215.6 ug/m3	O3	32.38396	-104.26403

County: Lea (025). AQCR: 155. Minor source baseline dates: NO2=03/16/1988, SO2=03/16/1988, PM10=02/20/1979, PM2.5=11/13/2013

Evaluation Date: 06-AUG-25

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-1
Date: 8/17/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	4.09	10.69
Bias Adjusted Result (PPM dry)	4.09	11.01
Test Result Correct to 15% O_2 (PPM dry):	2.44	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.07	NA
Test Result TPY:	0.32	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	4.05	10.71
Bias Adjusted Result (PPM dry)	4.05	11.03
Test Result Correct to 15% O_2 (PPM dry):	2.42	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.07	NA
Test Result TPY:	0.31	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	3.99	10.72
Bias Adjusted Result (PPM dry)	3.99	11.05
Test Result Correct to 15% O_2 (PPM dry):	2.39	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.07	NA
Test Result TPY:	0.31	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	4.05	10.71
Bias Adjusted Result (PPM dry)	4.05	11.03
Test Result Correct to 15% O_2 (PPM dry):	2.42	15.00
Test Result TPY:	0.31	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-1, Caterpillar G3608 A4, SI 4SLB, Serial No.: XH701017

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St., Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
August 13, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

August 13, 2024

Attendees:

Name	Title	Company	Phone Number
Dean Smyers	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

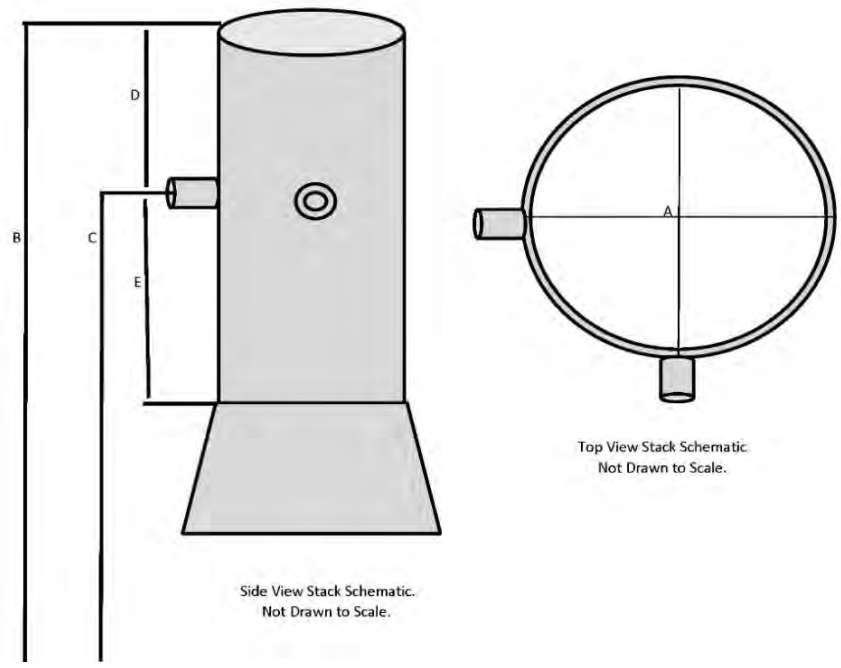
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-1
Model #:	Caterpillar G3608 A4
Source Type:	SI 4SLB
BHP:	2500
Serial #:	XH701017
Date Mfg:	8/1/2018
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	8/13/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
Dean Smyers

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	22	inches
Stack Height (B):	30	feet
Sampling Port Height (C):	29.08	feet
Distance from port to downstream disturbance (D):	11	inches
Distance from port to upstream disturbance (E):	55	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-1
Date: 8/13/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	103.52	41.42	69.94	11.37
Bias Adjusted Result (PPM dry)	103.48	41.32	69.94	11.38
Test Result Correct to 15% O_2 (PPM dry):	64.15	25.61	43.36	15.00
Test Result g/hp-hr:	0.34	0.22	0.36	NA
Test Result lb/hr:	1.39	0.91	1.48	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	121.94	33.37	77.90	11.59
Bias Adjusted Result (PPM dry)	121.90	33.27	77.90	11.59
Test Result Correct to 15% O_2 (PPM dry):	77.28	21.09	49.38	15.00
Test Result g/hp-hr:	0.40	0.18	0.40	NA
Test Result lb/hr:	1.67	0.75	1.68	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	92.92	49.26	56.44	11.35
Bias Adjusted Result (PPM dry)	92.88	49.15	56.44	11.34
Test Result Correct to 15% O_2 (PPM dry):	57.32	30.34	34.83	15.00
Test Result g/hp-hr:	0.28	0.24	0.26	NA
Test Result lb/hr:	1.27	1.11	1.22	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	106.13	41.35	68.09	11.44
Bias Adjusted Result (PPM dry)	106.08	41.25	68.09	11.44
Test Result Correct to 15% O_2 (PPM dry):	66.25	25.68	42.52	15.00
Test Result lb/hr:	1.45	0.92	1.46	NA
Permitted Limit lb/hr:	1.92	2.20	1.76	NA
Test Result g/hp-hr:	0.34	0.21	0.34	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-2
Date: 8/16/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	4.48	10.98
Bias Adjusted Result (PPM dry)	4.48	11.31
Test Result Correct to 15% O_2 (PPM dry):	2.76	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.11	NA
Test Result TPY:	0.49	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	3.43	10.74
Bias Adjusted Result (PPM dry)	3.43	11.10
Test Result Correct to 15% O_2 (PPM dry):	2.07	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.09	NA
Test Result TPY:	0.38	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	3.82	10.81
Bias Adjusted Result (PPM dry)	3.82	11.18
Test Result Correct to 15% O_2 (PPM dry):	2.32	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.10	NA
Test Result TPY:	0.42	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	3.91	10.84
Bias Adjusted Result (PPM dry)	3.91	11.20
Test Result Correct to 15% O_2 (PPM dry):	2.38	15.00
Test Result TPY:	0.43	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-2, Caterpillar G3608 A4, SI 4SLB, Serial No.: XH700981

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St., Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
August 12, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

August 12, 2024

Attendees:

Name	Title	Company	Phone Number
Dean Smyers	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

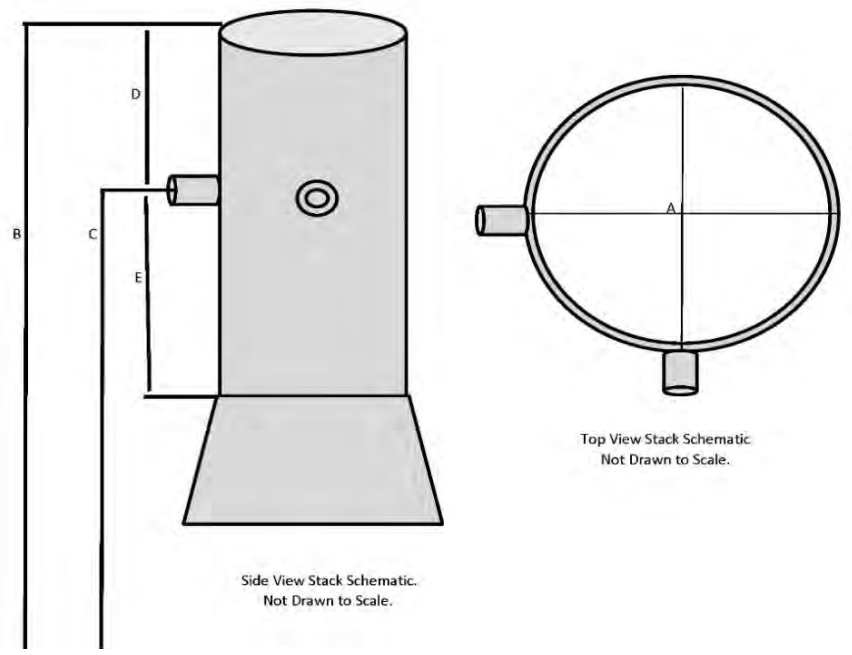
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-2
Model #:	Caterpillar G3608 A4
Source Type:	SI 4SLB
BHP:	2500
Serial #:	XH700981
Date Mfg:	7/1/2018
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	8/12/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
Dean Smyers

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	22	inches
Stack Height (B):	30	feet
Sampling Port Height (C):	29.08	feet
Distance from port to downstream disturbance (D):	11	inches
Distance from port to upstream disturbance (E):	55	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-2
Date: 8/12/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	14.39	35.82	58.44	11.37
Bias Adjusted Result (PPM dry)	14.26	35.71	58.44	11.37
Test Result Correct to 15% O_2 (PPM dry):	8.83	22.10	36.17	15.00
Test Result g/hp-hr:	0.05	0.21	0.34	NA
Test Result lb/hr:	0.25	1.04	1.63	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	14.58	32.88	58.73	11.40
Bias Adjusted Result (PPM dry)	14.45	32.77	58.73	11.38
Test Result Correct to 15% O_2 (PPM dry):	8.96	20.32	36.41	15.00
Test Result g/hp-hr:	0.05	0.20	0.34	NA
Test Result lb/hr:	0.26	0.96	1.65	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	14.21	34.63	58.60	11.41
Bias Adjusted Result (PPM dry)	14.08	34.53	58.60	11.42
Test Result Correct to 15% O_2 (PPM dry):	8.76	21.49	36.48	15.00
Test Result g/hp-hr:	0.05	0.21	0.34	NA
Test Result lb/hr:	0.25	1.01	1.65	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	14.40	34.44	58.59	11.39
Bias Adjusted Result (PPM dry)	14.26	34.34	58.59	11.39
Test Result Correct to 15% O_2 (PPM dry):	8.85	21.30	36.35	15.00
Test Result lb/hr:	0.25	1.00	1.64	NA
Permitted Limit lb/hr:	1.92	2.20	1.76	NA
Test Result g/hp-hr:	0.05	0.21	0.34	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Alamo Compressor Station
E-3
8/16/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	6.09	10.71
Bias Adjusted Result (PPM dry)	6.09	11.08
Test Result Correct to 15% O_2 (PPM dry):	3.66	15.00
Test Result g/hp-hr:	0.03	NA
Test Result lb/hr:	0.21	NA
Test Result TPY:	0.92	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	6.17	10.73
Bias Adjusted Result (PPM dry)	6.17	11.06
Test Result Correct to 15% O_2 (PPM dry):	3.70	15.00
Test Result g/hp-hr:	0.03	NA
Test Result lb/hr:	0.22	NA
Test Result TPY:	0.94	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	6.70	10.81
Bias Adjusted Result (PPM dry)	6.70	11.15
Test Result Correct to 15% O_2 (PPM dry):	4.05	15.00
Test Result g/hp-hr:	0.03	NA
Test Result lb/hr:	0.23	NA
Test Result TPY:	1.02	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	6.32	10.75
Bias Adjusted Result (PPM dry)	6.32	11.10
Test Result Correct to 15% O_2 (PPM dry):	3.80	15.00
Test Result TPY:	0.96	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-3, Caterpillar G3612 A4, SI 4SLB, Serial No.: BB200839

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St., Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
October 1, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

October 1, 2024

Attendees:

Name	Title	Company	Phone Number
John Jobe	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

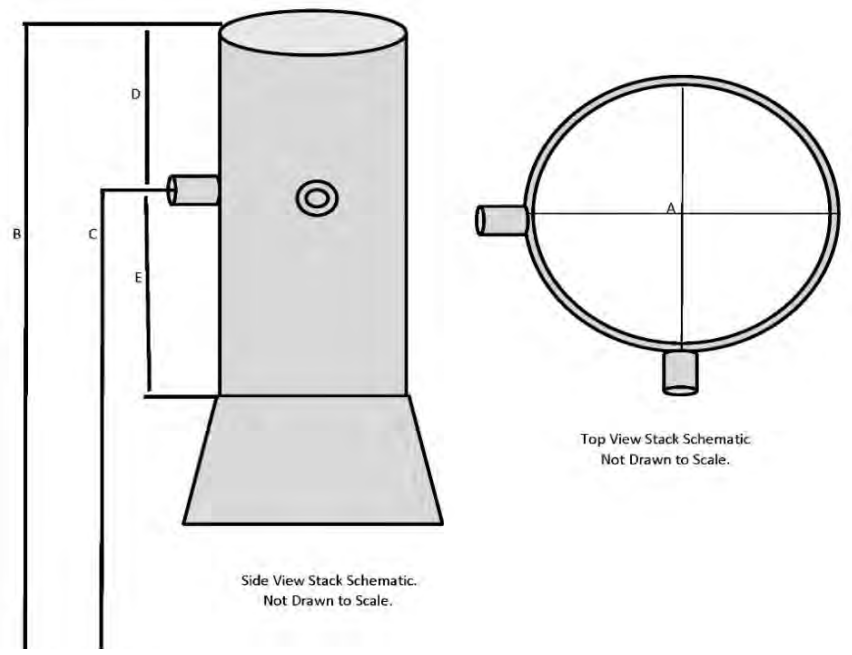
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-3
Model #:	Caterpillar G3612 A4
Source Type:	SI 4SLB
BHP:	3750
Serial #:	BB200839
Date Mfg:	11/1/2018
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	10/1/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
John Jobe

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	30	inches
Stack Height (B):	33	feet
Sampling Port Height (C):	31.75	feet
Distance from port to downstream disturbance (D):	15	inches
Distance from port to upstream disturbance (E):	60	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-3
Date: 10/1/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	20.66	52.20	32.76	10.99
Bias Adjusted Result (PPM dry)	20.60	52.08	32.76	11.38
Test Result Correct to 15% O_2 (PPM dry):	12.77	32.29	20.31	15.00
Test Result g/hp-hr:	0.08	0.34	0.20	NA
Test Result lb/hr:	0.65	2.69	1.62	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	19.37	53.63	31.14	11.01
Bias Adjusted Result (PPM dry)	19.30	53.52	31.14	11.34
Test Result Correct to 15% O_2 (PPM dry):	11.91	33.03	19.22	15.00
Test Result g/hp-hr:	0.08	0.38	0.21	NA
Test Result lb/hr:	0.66	3.02	1.68	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	19.52	52.68	31.91	11.18
Bias Adjusted Result (PPM dry)	19.46	52.57	31.91	11.43
Test Result Correct to 15% O_2 (PPM dry):	12.13	32.77	19.89	15.00
Test Result g/hp-hr:	0.08	0.37	0.22	NA
Test Result lb/hr:	0.66	2.91	1.69	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	19.85	52.84	31.94	11.06
Bias Adjusted Result (PPM dry)	19.79	52.72	31.94	11.39
Test Result Correct to 15% O_2 (PPM dry):	12.27	32.69	19.80	15.00
Test Result lb/hr:	0.66	2.87	1.67	NA
Permitted Limit lb/hr:	3.30	3.30	2.06	NA
Test Result g/hp-hr:	0.08	0.36	0.21	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-4
Date: 8/17/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	5.67	10.59
Bias Adjusted Result (PPM dry)	5.67	10.92
Test Result Correct to 15% O_2 (PPM dry):	3.35	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.18	NA
Test Result TPY:	0.78	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	5.85	10.64
Bias Adjusted Result (PPM dry)	5.85	10.96
Test Result Correct to 15% O_2 (PPM dry):	3.47	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.19	NA
Test Result TPY:	0.81	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	5.60	10.66
Bias Adjusted Result (PPM dry)	5.60	10.98
Test Result Correct to 15% O_2 (PPM dry):	3.33	15.00
Test Result g/hp-hr:	0.02	NA
Test Result lb/hr:	0.18	NA
Test Result TPY:	0.78	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	5.71	10.63
Bias Adjusted Result (PPM dry)	5.71	10.96
Test Result Correct to 15% O_2 (PPM dry):	3.39	15.00
Test Result TPY:	0.79	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-4, Caterpillar G3612 A4, SI 4SLB, Serial No.: BB200840

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St., Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
October 1, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

October 1, 2024

Attendees:

Name	Title	Company	Phone Number
John Jobe	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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6.9 Analyzer Raw Data Logs

1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

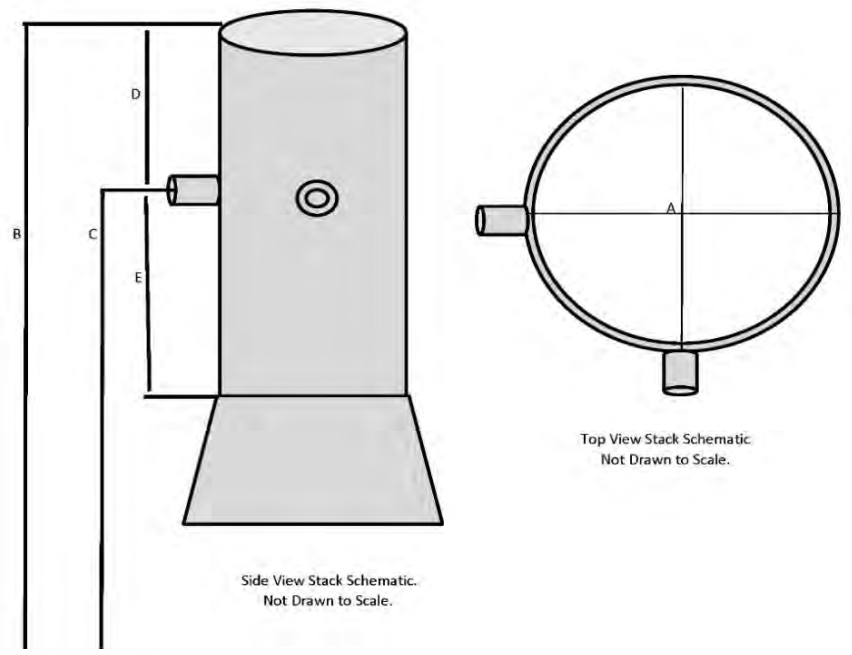
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-4
Model #:	Caterpillar G3612 A4
Source Type:	SI 4SLB
BHP:	3750
Serial #:	BB200840
Date Mfg:	11/1/2018
Date Rebuilt:	8/17/2022
County/Parish:	Lea
State:	NM
Date of Test:	10/1/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
John Jobe

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	30	inches
Stack Height (B):	33	feet
Sampling Port Height (C):	31.75	feet
Distance from port to downstream disturbance (D):	15	inches
Distance from port to upstream disturbance (E):	60	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-4
Date: 10/1/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	3.79	50.10	35.19	11.41
Bias Adjusted Result (PPM dry)	3.73	49.99	35.19	11.80
Test Result Correct to 15% O_2 (PPM dry):	2.42	32.41	22.82	15.00
Test Result g/hp-hr:	0.01	0.30	0.21	NA
Test Result lb/hr:	0.11	2.31	1.56	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.13	48.36	38.36	11.24
Bias Adjusted Result (PPM dry)	4.07	48.25	38.36	11.60
Test Result Correct to 15% O_2 (PPM dry):	2.58	30.61	24.33	15.00
Test Result g/hp-hr:	0.02	0.29	0.22	NA
Test Result lb/hr:	0.11	2.23	1.70	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.19	47.40	40.38	11.21
Bias Adjusted Result (PPM dry)	4.13	47.28	40.38	11.61
Test Result Correct to 15% O_2 (PPM dry):	2.62	30.02	25.64	15.00
Test Result g/hp-hr:	0.02	0.29	0.24	NA
Test Result lb/hr:	0.12	2.20	1.80	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.04	48.62	37.98	11.29
Bias Adjusted Result (PPM dry)	3.98	48.51	37.98	11.67
Test Result Correct to 15% O_2 (PPM dry):	2.54	31.01	24.26	15.00
Test Result lb/hr:	0.11	2.25	1.69	NA
Permitted Limit lb/hr:	3.30	3.30	2.06	NA
Test Result g/hp-hr:	0.01	0.30	0.22	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-6
Date: 9/20/2021

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.87	11.55
Bias Adjusted Result (PPM dry)	1.87	11.50
Test Result Correct to 15% O_2 (PPM dry):	1.18	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.05	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.79	11.49
Bias Adjusted Result (PPM dry)	1.79	11.52
Test Result Correct to 15% O_2 (PPM dry):	1.12	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.05	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.84	11.50
Bias Adjusted Result (PPM dry)	1.84	11.48
Test Result Correct to 15% O_2 (PPM dry):	1.15	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.05	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.83	11.51
Bias Adjusted Result (PPM dry)	1.83	11.50
Test Result Correct to 15% O_2 (PPM dry):	1.15	15.00
Test Result TPY:	0.21	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-6, Caterpillar G3608 A4, SI 4SLB, Serial No.: XH701383

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St, Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
September 18, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

September 18, 2024

Attendees:

Name	Title	Company	Phone Number
John Jobe	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

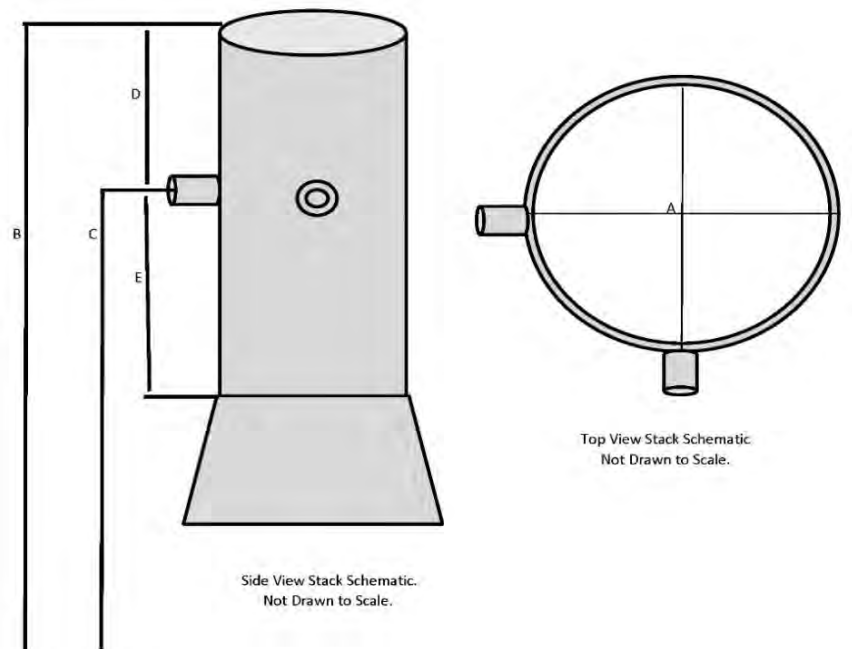
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-6
Model #:	Caterpillar G3608 A4
Source Type:	SI 4SLB
BHP:	2500
Serial #:	XH701383
Date Mfg:	9/1/2019
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	9/18/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
John Jobe

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	22	inches
Stack Height (B):	32	feet
Sampling Port Height (C):	31.08	feet
Distance from port to downstream disturbance (D):	11	inches
Distance from port to upstream disturbance (E):	61	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-6
Date: 9/18/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.27	50.54	32.30	11.42
Bias Adjusted Result (PPM dry)	4.23	50.43	32.30	11.74
Test Result Correct to 15% O_2 (PPM dry):	2.73	32.47	20.80	15.00
Test Result g/hp-hr:	0.02	0.34	0.21	NA
Test Result lb/hr:	0.09	1.79	1.10	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.28	49.20	33.25	11.46
Bias Adjusted Result (PPM dry)	4.24	49.09	33.25	11.72
Test Result Correct to 15% O_2 (PPM dry):	2.72	31.56	21.38	15.00
Test Result g/hp-hr:	0.02	0.33	0.22	NA
Test Result lb/hr:	0.09	1.75	1.14	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.37	48.85	33.67	11.52
Bias Adjusted Result (PPM dry)	4.33	48.74	33.67	11.78
Test Result Correct to 15% O_2 (PPM dry):	2.80	31.52	21.77	15.00
Test Result g/hp-hr:	0.02	0.31	0.21	NA
Test Result lb/hr:	0.09	1.67	1.11	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.31	49.53	33.07	11.46
Bias Adjusted Result (PPM dry)	4.27	49.42	33.07	11.74
Test Result Correct to 15% O_2 (PPM dry):	2.75	31.85	21.31	15.00
Test Result lb/hr:	0.09	1.74	1.12	NA
Permitted Limit lb/hr:	1.92	2.20	1.76	NA
Test Result g/hp-hr:	0.02	0.33	0.21	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-7
Date: 4/21/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.67	11.49
Bias Adjusted Result (PPM dry)	1.67	11.52
Test Result Correct to 15% O_2 (PPM dry):	1.05	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.18	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.77	11.74
Bias Adjusted Result (PPM dry)	1.77	11.77
Test Result Correct to 15% O_2 (PPM dry):	1.15	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.19	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.72	11.74
Bias Adjusted Result (PPM dry)	1.72	11.76
Test Result Correct to 15% O_2 (PPM dry):	1.11	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.18	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.72	11.66
Bias Adjusted Result (PPM dry)	1.72	11.68
Test Result Correct to 15% O_2 (PPM dry):	1.10	15.00
Test Result TPY:	0.19	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-7, Caterpillar G3608 A4, SI 4SLB, Serial No.: XH701565

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St., Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
April 16, 2024

AI #30793
2661 Midway Rd, #200-31
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

April 16, 2024

Attendees:

Name	Title	Company	Phone Number
Devin Blair	Emissions Analyst	BAIR	(817) 439-4767

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.



Test Analyst

Ross McCurdy

Quality Assurance Officer

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6.2.b Pitot Cerficate

6.3 Equations with Example Calculations from Test Data

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1. Introduction

1.1 Test Purpose and Objectives

The purpose of the emissions test is to document levels of selected pollutants at a maximum level of source operation. The information is used to confirm compliance with the state air quality requirements and/or federal requirements. Testing confirms that emissions are less than all applicable emissions limitations.

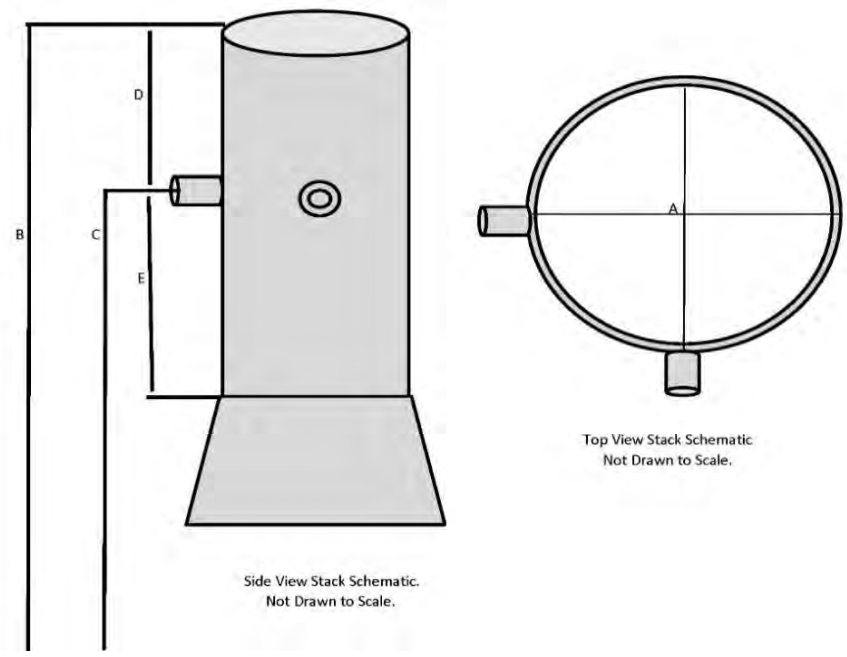
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-7
Model #:	Caterpillar G3608 A4
Source Type:	SI 4SLB
BHP:	2500
Serial #:	XH701565
Date Mfg:	3/30/2021
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	4/16/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-31
Carrollton, TX 75006

Attendees:
Devin Blair

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

NOTE: Sampling and pitot readings were taken at two different points due to inadequate ports on the exhaust stack, the sampling disturbances are reflected below, while the pitot disturbances are reflected in section 4.4.

Stack Information		
Inside Stack Diameter (A):	23.5	inches
Stack Height (B):	26.5	feet
Sampling Port Height (C):	24.83	feet
Distance from port to downstream disturbance (D):	20	inches
Distance from port to upstream disturbance (E):	41	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	No	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-7
Date: 4/16/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.86	47.26	35.06	11.62
Bias Adjusted Result (PPM dry)	4.68	47.06	35.06	11.52
Test Result Correct to 15% O_2 (PPM dry):	2.95	29.62	22.06	15.00
Test Result g/hp-hr:	0.02	0.28	0.20	NA
Test Result lb/hr:	0.09	1.41	1.01	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.73	48.58	35.77	11.62
Bias Adjusted Result (PPM dry)	4.55	48.38	35.77	11.42
Test Result Correct to 15% O_2 (PPM dry):	2.83	30.10	22.25	15.00
Test Result g/hp-hr:	0.02	0.28	0.20	NA
Test Result lb/hr:	0.08	1.45	1.03	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.69	46.53	36.42	11.64
Bias Adjusted Result (PPM dry)	4.51	46.34	36.42	11.42
Test Result Correct to 15% O_2 (PPM dry):	2.81	28.84	22.67	15.00
Test Result g/hp-hr:	0.02	0.28	0.21	NA
Test Result lb/hr:	0.08	1.42	1.07	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	4.76	47.46	35.75	11.62
Bias Adjusted Result (PPM dry)	4.58	47.26	35.75	11.45
Test Result Correct to 15% O_2 (PPM dry):	2.86	29.52	22.33	15.00
Test Result lb/hr:	0.08	1.42	1.03	NA
Permitted Limit lb/hr:	1.920	2.200	1.760	NA
Test Result g/hp-hr:	0.02	0.28	0.20	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-8
Date: 8/18/2022

Run 1

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	0.97	10.93
Bias Adjusted Result (PPM dry)	0.97	11.29
Test Result Correct to 15% O_2 (PPM dry):	0.59	15.00
Test Result g/hp-hr:	0.00	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.16	NA

Run 2

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.06	10.96
Bias Adjusted Result (PPM dry)	1.06	11.35
Test Result Correct to 15% O_2 (PPM dry):	0.66	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.18	NA

Run 3

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.05	11.00
Bias Adjusted Result (PPM dry)	1.05	11.39
Test Result Correct to 15% O_2 (PPM dry):	0.65	15.00
Test Result g/hp-hr:	0.01	NA
Test Result lb/hr:	0.04	NA
Test Result TPY:	0.18	NA

Average

Results/Limits	CH2O	Oxygen (%)
Raw Result (PPM dry):	1.02	10.96
Bias Adjusted Result (PPM dry)	1.02	11.34
Test Result Correct to 15% O_2 (PPM dry):	0.63	15.00
Test Result TPY:	0.17	NA

Performance Test Report

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Source: E-8, Caterpillar G3612 TALE, SI 4SLB, Serial No.: BB200829

Location: Alamo Compressor Station

Prepared For:
Delaware G&P, LLC
1722 Routh St, Suite 1300, Dallas, TX, 75201
AI 38827

Test Date:
September 18, 2024

AI #30793
2661 Midway Rd, #200-30
Carrollton, TX 75006
817-439-4767-Phone
817-439-4149-Fax

Certification and Attendees

Applicable Compliance Tests

40 CFR 60 Subpart JJJJ Annual Compliance Test

Delaware G&P, LLC

Location: Alamo Compressor Station

Lea County, NM

Permit Number: GCP-8176M2

Test Date:

September 18, 2024

Attendees:

Name	Title	Company	Phone Number
John Jobe	Emissions Analyst	BAIR	(817) 439-4767

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6.4 Nomenclature

6.5 Engine Data - Manufacturer's Ratings and Specifications

6.6 Site Specific Photographs

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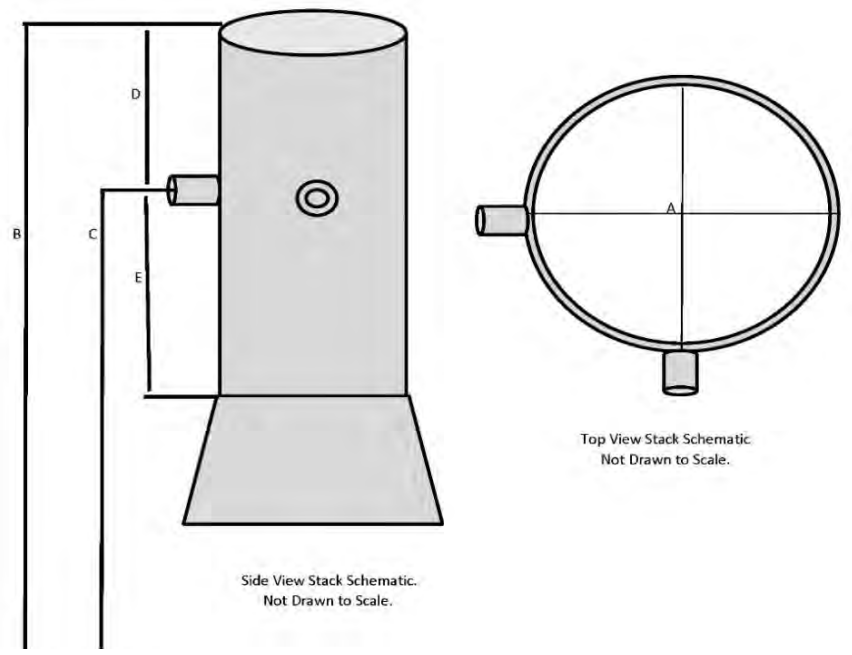
Owner/Operator:	
Company:	Delaware G&P, LLC
Location Name:	Alamo Compressor Station
Source #:	E-8
Model #:	Caterpillar G3612 TALE
Source Type:	SI 4SLB
BHP:	3750
Serial #:	BB200829
Date Mfg:	10/12/2018
Date Rebuilt:	NA
County/Parish:	Lea
State:	NM
Date of Test:	9/18/2024

Testing Organization:
BAIR
2661 Midway Rd, #200-30
Carrollton, TX 75006

Attendees:
John Jobe

Included in this emissions survey report are details outlining the process description of the source stack that was tested, results of the test, methodologies of sampling and analysis, and any other background information pertaining to the test.

1.2 Stack Schematic



(Figure 1)

Stack Information		
Inside Stack Diameter (A):	30	inches
Stack Height (B):	28.5	feet
Sampling Port Height (C):	27.25	feet
Distance from port to downstream disturbance (D):	15	inches
Distance from port to upstream disturbance (E):	60	inches
Distance "D" must be ≥ 1/2 x Stack ID (Criteria Met):	Yes	
Distance "E" must be ≥ 2 x Stack ID (Criteria Met):	Yes	
Single or Dual Exhaust:	Single	

1.3 Process Description

This is an oil and gas compressor station where condensate and natural gas are brought to this facility from nearby wells. Upon entering the facility the stream is routed to a separator, from the separator, liquids are sent to stock tanks and the gas is routed to the compressor(s) where the pressure is boosted and the gas is transported from the facility via pipeline. The engine being tested is the driver for one of the compressors.

1.4 Physical Location

Coordinates: 32.114519 (Latitude) , -103.586975 (Longitude)

2. Summary

2.1 Test Results and Emission Calculations

Location: Alamo Compressor Station
Source: E-8
Date: 9/18/2024

Run 1

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	1.50	51.83	24.27	10.50
Bias Adjusted Result (PPM dry)	1.46	51.72	24.27	10.81
Test Result Correct to 15% O_2 (PPM dry):	0.85	30.26	14.20	15.00
Test Result g/hp-hr:	0.01	0.32	0.14	NA
Test Result lb/hr:	0.04	2.56	1.15	NA

Run 2

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	0.62	55.53	23.92	10.50
Bias Adjusted Result (PPM dry)	0.58	55.41	23.92	10.77
Test Result Correct to 15% O_2 (PPM dry):	0.34	32.28	13.93	15.00
Test Result g/hp-hr:	0.00	0.32	0.13	NA
Test Result lb/hr:	0.02	2.62	1.08	NA

Run 3

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	0.58	55.69	26.47	10.65
Bias Adjusted Result (PPM dry)	0.54	55.58	26.47	10.86
Test Result Correct to 15% O_2 (PPM dry):	0.32	32.67	15.56	15.00
Test Result g/hp-hr:	0.002	0.34	0.16	NA
Test Result lb/hr:	0.02	2.79	1.28	NA

Average

Results/Limits	CO	NOx	VOC*	Oxygen (%)
Raw Result (PPM dry):	0.90	54.35	24.89	10.55
Bias Adjusted Result (PPM dry)	0.86	54.24	24.89	10.82
Test Result Correct to 15% O_2 (PPM dry):	0.50	31.74	14.56	15.00
Test Result lb/hr:	0.03	2.66	1.17	NA
Permitted Limit lb/hr:	3.30	3.30	2.06	NA
Test Result g/hp-hr:	0.003	0.33	0.14	NA
40 CFR 60 Subpart JJJJ Regulatory Limit g/hp-hr:	2.00	1.00	0.70	NA

*VOC results do not include Formaldehyde.

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-1	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3608 G3608 - 2500bhp - 1000RPM							
Engine Power	2500.0	BHP	ACFM	16781.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	31031.0	LBS/HR	ACFH	1006860	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	827.0	F	SCFM	6790.9	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	407455	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0308	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 4	
X	15.440	IN	Y	24.750	IN			
Open Area	9.526	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1762	FT/MIN	Total Volume	2.779	FT^3	Total Weight	183	LBS
Pressure Drop	1.8	IN WC	Space Velocity	146,644	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.40	2.20	9.66	45.32	51.27	25.52
CO	2.50	13.78	60.39	465.21	526.26	262.02
VOC[2]	0.50	2.76	12.08	59.10	66.85	33.28
H_2CO	0.16	0.88	3.87	27.77	31.41	15.64

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<2.20	<9.66	<45.32	<51.27	<25.52
CO	86.00	<0.35	<1.93	<8.46	<65.13	<73.68	<36.68
VOC	36.00	<0.32	<1.76	<7.73	<37.82	<42.78	<21.30
H_2CO	50.00	<0.08	<0.44	<1.93	<13.88	<15.71	<7.82

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	2.20	9.66	45.32	51.27	25.52
CO	86.00	0.35	1.93	8.46	65.13	73.68	36.68
VOC	36.00	0.32	1.76	7.73	37.82	42.78	21.30
H_2CO	50.00	0.08	0.44	1.93	13.88	15.71	7.82

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-2	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3608 G3608 - 2500bhp - 1000RPM							
Engine Power	2500.0	BHP	ACFM	16781.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	31031.0	LBS/HR	ACFH	1006860	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	827.0	F	SCFM	6790.9	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	407455	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0308	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 4	
X	15.440	IN	Y	24.750	IN			
Open Area	9.526	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1762	FT/MIN	Total Volume	2.779	FT^3	Total Weight	183	LBS
Pressure Drop	1.8	IN WC	Space Velocity	146,644	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.40	2.20	9.66	45.32	51.27	25.52
CO	2.50	13.78	60.39	465.21	526.26	262.02
VOC[2]	0.50	2.76	12.08	59.10	66.85	33.28
H_2CO	0.16	0.88	3.87	27.77	31.41	15.64

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<2.20	<9.66	<45.32	<51.27	<25.52
CO	86.00	<0.35	<1.93	<8.46	<65.13	<73.68	<36.68
VOC	40.00	<0.30	<1.65	<7.25	<35.46	<40.11	<19.97
H_2CO	50.00	<0.08	<0.44	<1.93	<13.88	<15.71	<7.82

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	2.20	9.66	45.32	51.27	25.52
CO	86.00	0.35	1.93	8.46	65.13	73.68	36.68
VOC	40.00	0.30	1.65	7.25	35.46	40.11	19.97
H_2CO	50.00	0.08	0.44	1.93	13.88	15.71	7.82

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-3	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3612 A4 Caterpillar G3612 A4 4000 BHP @ 1000 RPM							
Engine Power	4000.0	BHP	ACFM	24890.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	45391.0	LBS/HR	ACFH	1493400	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	845.0	F	SCFM	9933.5	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	596010	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0304	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 6	
X	15.440	IN	Y	24.750	IN			
Open Area	14.290	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1742	FT/MIN	Total Volume	4.168	FT^3	Total Weight	275	LBS
Pressure Drop	1.8	IN WC	Space Velocity	143,004	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.30	2.65	11.60	37.18	42.06	20.94
CO	2.49	21.96	96.24	506.82	573.33	285.46
VOC[2]	0.35	3.09	13.53	45.25	51.19	25.48
H_2CO	0.18	1.59	6.96	34.17	38.66	19.25

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<3.53	<15.46	<49.57	<56.07	<27.92
CO	83.94	<0.40	<3.53	<15.46	<81.42	<92.10	<45.86
VOC	28.57	<0.25	<2.20	<9.66	<32.32	<36.56	<18.20
H_2CO	50.00	<0.09	<0.79	<3.48	<17.09	<19.33	<9.62

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	3.53	15.46	49.57	56.07	27.92
CO	83.94	0.40	3.53	15.46	81.42	92.10	45.86
VOC	28.57	0.25	2.20	9.66	32.32	36.56	18.20
H_2CO	50.00	0.09	0.79	3.48	17.09	19.33	9.62

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-4	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3612 A4 Caterpillar G3612 A4 4000 BHP @ 1000 RPM							
Engine Power	4000.0	BHP	ACFM	24890.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	45391.0	LBS/HR	ACFH	1493400	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	845.0	F	SCFM	9933.5	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	596010	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0304	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 6	
X	15.440	IN	Y	24.750	IN			
Open Area	14.290	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1742	FT/MIN	Total Volume	4.168	FT^3	Total Weight	275	LBS
Pressure Drop	1.8	IN WC	Space Velocity	143,004	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.30	2.65	11.60	37.18	42.06	20.94
CO	2.49	21.96	96.24	506.82	573.33	285.46
VOC[2]	0.35	3.09	13.53	45.25	51.19	25.48
H_2CO	0.18	1.59	6.96	34.17	38.66	19.25

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<3.53	<15.46	<49.57	<56.07	<27.92
CO	83.94	<0.40	<3.53	<15.46	<81.42	<92.10	<45.86
VOC	28.57	<0.25	<2.20	<9.66	<32.32	<36.56	<18.20
H_2CO	50.00	<0.09	<0.79	<3.48	<17.09	<19.33	<9.62

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	3.53	15.46	49.57	56.07	27.92
CO	83.94	0.40	3.53	15.46	81.42	92.10	45.86
VOC	28.57	0.25	2.20	9.66	32.32	36.56	18.20
H_2CO	50.00	0.09	0.79	3.48	17.09	19.33	9.62

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-6	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3608 G3608 - 2500bhp - 1000RPM							
Engine Power	2500.0	BHP	ACFM	16781.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	31031.0	LBS/HR	ACFH	1006860	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	827.0	F	SCFM	6790.9	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	407455	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0308	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 4	
X	15.440	IN	Y	24.750	IN			
Open Area	9.526	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1762	FT/MIN	Total Volume	2.779	FT^3	Total Weight	183	LBS
Pressure Drop	1.8	IN WC	Space Velocity	146,644	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.40	2.20	9.66	45.32	51.27	25.52
CO	2.50	13.78	60.39	465.21	526.26	262.02
VOC[2]	0.50	2.76	12.08	59.10	66.85	33.28
H_2CO	0.16	0.88	3.87	27.77	31.41	15.64

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<2.20	<9.66	<45.32	<51.27	<25.52
CO	86.00	<0.35	<1.93	<8.46	<65.13	<73.68	<36.68
VOC	36.00	<0.32	<1.76	<7.73	<37.82	<42.78	<21.30
H_2CO	50.00	<0.08	<0.44	<1.93	<13.88	<15.71	<7.82

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	2.20	9.66	45.32	51.27	25.52
CO	86.00	0.35	1.93	8.46	65.13	73.68	36.68
VOC	36.00	0.32	1.76	7.73	37.82	42.78	21.30
H_2CO	50.00	0.08	0.44	1.93	13.88	15.71	7.82

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-7	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3608 G3608 - 2500bhp - 1000RPM							
Engine Power	2500.0	BHP	ACFM	16781.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	31031.0	LBS/HR	ACFH	1006860	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	827.0	F	SCFM	6790.9	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	407455	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0308	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 4	
X	15.440	IN	Y	24.750	IN			
Open Area	9.526	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1762	FT/MIN	Total Volume	2.779	FT^3	Total Weight	183	LBS
Pressure Drop	1.8	IN WC	Space Velocity	146,644	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.40	2.20	9.66	45.32	51.27	25.52
CO	2.50	13.78	60.39	465.21	526.26	262.02
VOC[2]	0.50	2.76	12.08	59.10	66.85	33.28
H_2CO	0.16	0.88	3.87	27.77	31.41	15.64

targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<2.20	<9.66	<45.32	<51.27	<25.52
CO	86.00	<0.35	<1.93	<8.46	<65.13	<73.68	<36.68
VOC	36.00	<0.32	<1.76	<7.73	<37.82	<42.78	<21.30
H_2CO	50.00	<0.08	<0.44	<1.93	<13.88	<15.71	<7.82

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	2.20	9.66	45.32	51.27	25.52
CO	86.00	0.35	1.93	8.46	65.13	73.68	36.68
VOC	36.00	0.32	1.76	7.73	37.82	42.78	21.30
H_2CO	50.00	0.08	0.44	1.93	13.88	15.71	7.82

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

ICE CATALYST SIZING PROGRAM

REV 2.0.24

REPORT DATE: 10/8/2021

POWERTHERM MAXIM SILENCERS

Customer	Enlink Midstream	Sales Person	KW	Element	MCC-7140-2
Housing		Project	Alamo E-8	Contact	Travis Burke

PROCESS DETAILS

Engine Name	Caterpillar G3612 A4 Caterpillar G3612 A4 4000 BHP @ 1000 RPM							
Engine Power	4000.0	BHP	ACFM	24890.0	CU. FT/MIN	Exhaust O_2	8.0	%
Exhaust Mass Flow	45391.0	LBS/HR	ACFH	1493400	CU. FT/HR	Exhaust CO_2	6.4	%
Process Temperature	845.0	F	SCFM	9933.5	CU. FT/MIN	Exhaust H_2O	11.6	%
Exhaust Pressure	14.5	PSI	SCFH	596010	CU. FT/HR	Exhaust N_2	74.0	%
Exhaust Density	0.0304	LBS/FT^3	Standard Temperature	68.0	F	Max Pressure Drop	12.0	IN WC
Molecular Weight	29.35	AMU	Standard Pressure	14.6959	PSI	Propane in Fuel	0.00	%

CATALYST SELECTIONS

ACS Part Name	RN15.440X24.750X3.500-300		OEM Part Name	MCC-7140-2				
Type	NG/Diesel (Lean)		Geometry	Rectangular		Guard Bed	☐	
Cell Count	300	CPSI	Depth	3.500	IN	Layers 1	Modules/Layer 6	
X	15.440	IN	Y	24.750	IN			
Open Area	14.290	FT^2	Part Volume	0.695	FT^3	Part Weight	46	LBS
Linear Velocity	1742	FT/MIN	Total Volume	4.168	FT^3	Total Weight	275	LBS
Pressure Drop	1.8	IN WC	Space Velocity	143,004	(GHSV)			

EMISSIONS

inlet	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2[3]
NO_X	0.30	2.65	11.60	37.18	42.06	20.94
CO	2.49	21.96	96.24	506.82	573.33	285.46
VOC[2]	0.35	3.09	13.53	45.25	51.19	25.48
H_2CO	0.18	1.59	6.96	34.17	38.66	19.25

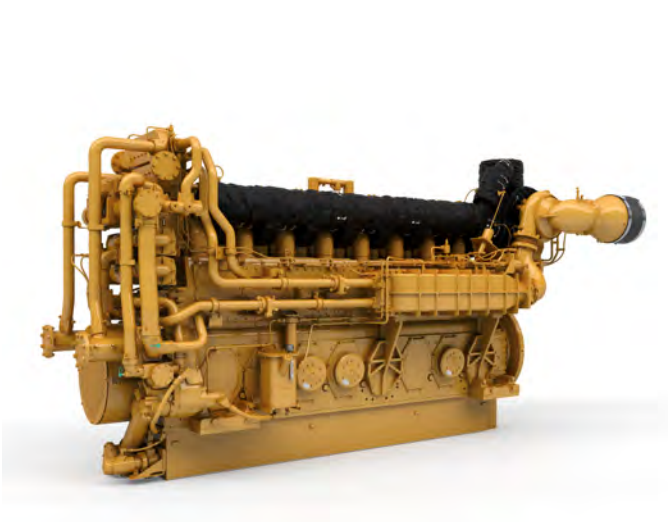
targets	min % destruction	max g/bhp-hr	max lb/hr	max tons/year	max ppmv	max ppmvd	max ppmvd%O2
NO_X	0.00	<0.40	<3.53	<15.46	<49.57	<56.07	<27.92
CO	83.94	<0.40	<3.53	<15.46	<81.42	<92.10	<45.86
VOC	28.57	<0.25	<2.20	<9.66	<32.32	<36.56	<18.20
H_2CO	50.00	<0.09	<0.79	<3.48	<17.09	<19.33	<9.62

outlet	% destruction[1]	g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd	ppmvd%O2
NO_X	0.00	0.40	3.53	15.46	49.57	56.07	27.92
CO	83.94	0.40	3.53	15.46	81.42	92.10	45.86
VOC	28.57	0.25	2.20	9.66	32.32	36.56	18.20
H_2CO	50.00	0.09	0.79	3.48	17.09	19.33	9.62

[1]Safety Value: 2 [2]VOC Molecular Weight: 44.1 [3]O_2 Reference Value: 15

G3608 with ADEM™ A4 Gas Engine

1864-1995 bkW (2500-2675 bhp) @ 1000 rpm
0.3 g/bhp-hr NOx (NTE)



Shown with optional equipment

Cat® Engine Specifications

In-Line 8, 4-Stroke-Cycle

Bore
300 mm (11.8 in)

Stroke
300 mm (11.8 in)

Displacement
169.6 L (10,350 cu. in)

Aspiration
Turbocharged-Aftercooled

Digital Engine Management Governor and Protection
Electronic (ADEM™ A4)

Combustion
Low Emission (Lean Burn)

Cooling System Capacity
Total..... 503 L (133 Gal)
JW..... 413 L (109 Gal)
SCAC..... 90 L (24 Gal)

Lube Oil System (refill)
912 L (241 gal)

Oil Change Interval
5000 hours

Rotation (from flywheel end)
Counterclockwise

Flywheel Teeth
255

FEATURES AND BENEFITS

Engine Design
- Industry-leading power with ambient-based rating capability
- ADEM A4 engine control system provides complete engine control, monitoring, and protection while maintaining emissions.
- Widest fuel tolerance in the industry for application flexibility
- Proven reliability and durability with the lowest owning and operating costs
- Factory-installed thermostats

Emissions
Meets U.S. EPA Spark Ignited Stationary NSPS Emissions for 2010 with the use of an oxidation catalyst

Lean Burn Engine Technology
Lean-burn engines operate with large amounts of excess air. The excess air absorbs heat during combustion reducing the combustion temperature and pressure, greatly reducing levels of NOx. Lean-burn design also provides longer component life and excellent fuel consumption.

Ease of Operation
Side covers on block allow for inspection of internal components

Advanced Digital Engine Management
ADEM A4 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A4 has improved: user interface, display system, shutdown controls, and system diagnostics.

Full Range of Attachments
Large variety of factory-installed attachments reduces packaging time.

Testing
Every engine is full-load tested to ensure proper engine performance.

Gas Engine Rating Pro (GERP)
GERP is a PC-based program designed to provide site performance capabilities for Cat natural gas engines for the gas compression industry. GERP provides engine data for your site's altitude, ambient temperature, fuel, engine coolant heat rejection, performance data, installation drawings, spec sheets, and pump curves.

Product Support Offered Through Global Cat Dealer Network
- More than 2,200 dealer outlets
- Cat factory-trained dealer technicians service every aspect of your Oil & Gas Engine
- Caterpillar parts and labor warranty
- Preventive maintenance agreements available for repair-before-failure options
- S•O•S program matches your oil and coolant samples against Caterpillar set standards to determine:
  - Internal engine component condition
  - Presence of unwanted fluids
  - Presence of combustion by-products
  - Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience
Over 60 years of natural gas engine production. Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.
- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

Web Site
For all your Oil & Gas power requirements, visit www.cat.com

BUILT FOR IT.™

CAT®

STANDARD EQUIPMENT

G3608 with ADEM A4 Gas Engine

Air Inlet System
- Air cleaner — standard duty
- Inlet air adapter

Control System
- ADEM A4 control system — provides electronic governing integrated with air/fuel ratio control and individual cylinder ignition timing control
- Electrical system and instrumentation certified for Class I, Division 2, Group D hazardous location. Includes entire ADEM A4 system and optional control panel

Cooling System
- Compressor oil cooler connections
- Jacket water pump
- Aftercooler/oil cooler pump
- Jacket water thermostats and housing
- Aftercooler/oil cooler thermostats and housing
- Two-stage aftercooler
- Jacket water heater connections
- Standard ANSI connections

Exhaust System
- Dry exhaust manifolds
- Single vertical outlet adapter
- Form fitted soft wrap insulation

Flywheels & Flywheel Housings
- SAE standard rotation

Fuel System
- Gas admission valves — electronically controlled fuel supply pressure

Ignition System
- A4 control system — senses individual cylinder detonation and controls individual cylinder timing

Lube System
- Crankcase breather —top mounted
- Oil cooler
- Oil filter
- Oil pan drain valve - front and rear

Mounting System
- Engine mounting feet (four total)

Protection System
- Electronic shutoff system with purge cycle
- Crankcase explosion relief valves
- Gas shutoff valve

Starting System
- Air starting system

General
- Paint, Caterpillar yellow
- Single vibration damper with guard

OPTIONAL EQUIPMENT

Air Inlet System
- Heavy-duty air cleaner with precleaners

Charging System
- 35 Amp & 65 Amp charging alternators - CSA Approved

Exhaust System
- Flexible bellows adapters
- Exhaust expander
- Weld flanges

Fuel System
- Fuel filter
- Gas pressure regulator
- Flexible connection

Instrumentation
- LCD display panel
- Color HMI display
- Remote data monitoring and speed control
- Compatible with Cat Electronic Technician (ET) and Data View
- Modbus and Ethernet capable

Lube System
- Air or electric motor-driven prelube
- Duplex oil filter
- RH service
- Lube oil makeup system

Mounting System
- Mounting plates (set of four)
- Extra mounting feet (set of two)
- Extra mounting plates (set of two)

Power Take-offs
- Front stub shafts

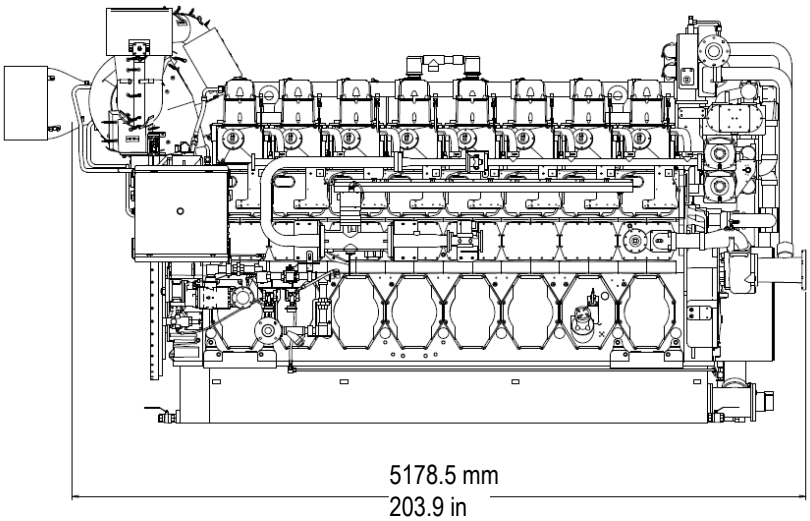
Starting System
- Air pressure reducing valve

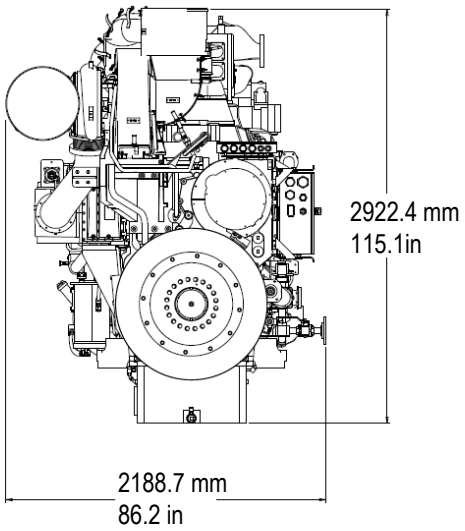
General
- Engine barring device
- Damper guard

Performance Number		EM1410-04	EM1409-04	EM1408-04
Rating	°C (°F)	54 (130)	43 (110)	32 (90)
Engine Power	bkW (bhp)	1864 (2500)	1931 (2590)	1995 (2675)
Engine Speed	rpm	1000	1000	1000
Max Altitude @ Rated Torque and 38°C (100°F)	m (ft)	1434.5 (4711)	1301.4 (4274)	1168.2 (3837)
Speed Turndown @ Max Altitude, Rated Torque, and 38°C (100°F)	%	25	25	25
Aftercooler Temperature				
Stage 1 (JW)	°C (°F)	88 (190)	88 (190)	88 (190)
Stage 2 (SCAC)	°C (°F)	54 (130)	43 (110)	32 (90)
Emissions (NTE)*				
NOx	g/bkW-hr (g/bhp-hr)	0.4 (0.3)	0.4 (0.3)	0.4 (0.3)
CO	g/bkW-hr (g/bhp-hr)	3.35 (2.5)	3.35 (2.5)	3.35 (2.5)
CO_2	g/bkW-hr (g/bhp-hr)	571 (426)	572 (427)	573 (428)
VOC**	g/bkW-hr (g/bhp-hr)	0.37 (0.28)	0.36 (0.27)	0.35 (0.26)
Fuel Consumption ***	MJ/bkW-hr (Btu/bhp-hr)	9.45 (6685)	9.44 (6672)	9.42 (6661)
Heat Balance				
Heat Rejection to Jacket Water	bkW (Btu/min)	487 (27698)	491 (27950)	495 (28176)
Heat Rejection to Oil Cooler	bkW (Btu/min)	221 (12553)	239 (13570)	257 (14603)
Heat Rejection to Aftercooler				
Stage 1 (JW)	bkW (Btu/min)	344 (19561)	357 (20318)	370 (21042)
Stage 2 (SCAC)	bkW (Btu/min)	135 (7683)	176 (10014)	217 (12323)
Heat Rejection to Exhaust LHV To 25°C (77°F)	bkW (Btu/min)	1721 (97849)	1744 (99188)	1766 (100408)
Heat Rejection to Atmosphere	bkW (Btu/min)	193 (10994)	197 (11188)	198 (11233)
Exhaust System				
Exhaust Gas Flow Rate	m^3/min (scfm)	455.56 (16088)	463.6 (16372)	471.08 (16636)
Exhaust Stack Temperature	°C (°F)	445 (833)	441 (826)	437 (819)
Intake System				
Air Inlet Flow Rate	m^3/min (scfm)	177.04 (6252)	181.06 (6394)	184.85 (6528)
Gas Pressure	kPag (psig)	400 - 485 (58 - 70)	400 - 485 (58 - 70)	400 - 485 (58 - 70)

All technical data is based on 100% load and speed
* listed as not to exceed
** Volatile organic compounds as defined in U.S. EPA 40 CFR 60, subpart JJJ
*** ISO 3046/1

G3608 with ADEM A4 Gas Engine





Note: General configuration not to be used for installation

Dimensions		
Length	5178.5 mm	203.9 in
Width	2188.7 mm	86.2 in
Height	2922.4 mm	115.1 in
Weight	21,092 kg	46,500

Rating Definitions and Conditions

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

Conditions: Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in Hg) and 15°C (59°F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in Hg) and 15.6°C (60.1°F). Air flow is based on a cubic foot at 100 kPa (29.61 in Hg) and 25°C (77°F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in Hg) and stack temperature.

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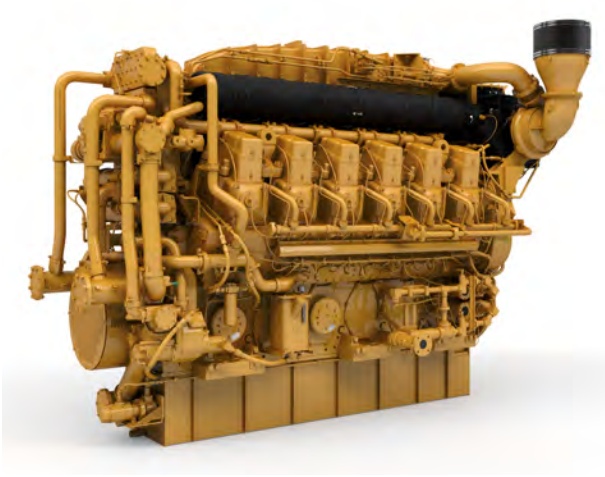
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G3612 with ADEM™ A4 Gas Engine

2796-2983 bkW (3750-4000 bhp) @ 1000 rpm
0.3 g/bhp-hr NOx (NTE)



Shown with optional equipment

Cat® Engine Specifications

V-12, 4-Stroke-Cycle

Bore
300 mm (11.8 in)

Stroke
300 mm (11.8 in)

Displacement
254.4 L (15,528 cu. in)

Aspiration
Turbocharged-Aftercooled

Digital Engine Management Governor and Protection
Electronic (ADEM™ A4)

Combustion
Low Emission (Lean Burn)

Cooling System Capacity
Total..... 675 L (178.3 Gal)
JW..... 570 L (150.6 Gal)
SCAC.....105 L (28 Gal)

Lube Oil System (refill)
1030 L (272 gal)

Oil Change Interval
5000 hours

Rotation (from flywheel end)
Counterclockwise

Flywheel Teeth
255

FEATURES AND BENEFITS

Engine Design

- Industry-leading power with ambient-based rating capability
- ADEM A4 engine control system provides complete engine control, monitoring, and protection while maintaining emissions.
- Widest fuel tolerance in the industry for application flexibility
- Proven reliability and durability with the lowest owning and operating costs
- Factory-installed thermostats

Emissions
Meets U.S. EPA Spark Ignited Stationary NSPS Emissions for 2010 with the use of an oxidation catalyst

Lean Burn Engine Technology
Lean-burn engines operate with large amounts of excess air. The excess air absorbs heat during combustion reducing the combustion temperature and pressure, greatly reducing levels of NOx. Lean-burn design also provides longer component life and excellent fuel consumption.

Ease of Operation
Side covers on block allow for inspection of internal components

Advanced Digital Engine Management
ADEM A4 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A4 has improved: user interface, display system, shutdown controls, and system diagnostics.

Full Range of Attachments
Large variety of factory-installed attachments reduces packaging time.

Testing
Every engine is full-load tested to ensure proper engine performance.

Gas Engine Rating Pro (GERP)
GERP is a PC-based program designed to provide site performance capabilities for Cat natural gas engines for the gas compression industry. GERP provides engine data for your site's altitude, ambient temperature, fuel, engine coolant heat rejection, performance data, installation drawings, spec sheets, and pump curves.

Product Support Offered Through Global Cat Dealer Network

- More than 2,200 dealer outlets
- Cat factory-trained dealer technicians service every aspect of your Oil & Gas Engine
- Caterpillar parts and labor warranty
- Preventive maintenance agreements available for repair-before-failure options
- S•O•S℠ program matches your oil and coolant samples against Caterpillar set standards to determine:
  - Internal engine component condition
  - Presence of unwanted fluids
  - Presence of combustion by-products
  - Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience
Over 60 years of natural gas engine production. Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.

- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

Web Site
For all your Oil & Gas power requirements, visit www.cat.com

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STANDARD EQUIPMENT

G3612 with ADEM A4 Gas Engine

Air Inlet System
- Air cleaner — standard duty
- Inlet air adapter

Control System
- ADEM A4 control system — provides electronic governing integrated with air/fuel ratio control and individual cylinder ignition timing control
- Electrical system and instrumentation certified for Class I, Division 2, Group D hazardous location. Includes entire ADEM A4 system and optional control panel

Cooling System
- Compressor oil cooler connections
- Jacket water pump
- Jacket water thermostats and housing
- Aftercooler/oil cooler pump
- Aftercooler/oil cooler thermostats and housing
- Two-stage aftercooler
- Jacket water heater connections
- Standard ANSI connections

Exhaust System
- Dry exhaust manifolds
- Single vertical outlet adapter
- Form fitted soft wrap insulation

Flywheels & Flywheel Housings
- SAE standard rotation

Fuel System
- Gas admission valves — electronically controlled fuel supply pressure

Ignition System
- A4 control system — senses individual cylinder detonation and controls individual cylinder timing

Lube System
- Crankcase breather —top mounted
- Oil cooler
- Oil filter
- Oil pan drain valve - front and rear

Mounting System
- Engine mounting feet (six total)

Protection System
- Electronic shutoff system with purge cycle
- Crankcase explosion relief valves
- Gas shutoff valve

Starting System
- Air starting system

General
- Paint, Caterpillar yellow
- Single vibration damper with guard

OPTIONAL EQUIPMENT

Air Inlet System
- Heavy-duty air cleaner with precleaners

Charging System
- 35 Amp & 65 Amp charging alternators - CSA Approved

Exhaust System
- Flexible bellows adapters
- Exhaust expander
- Weld flanges

Fuel System
- Fuel filter
- Gas pressure regulator
- Flexible connection

Instrumentation
- LCD display panel
- Color HMI display
- Remote data monitoring and speed control
- Compatible with Cat Electronic Technician (ET) and Data View
- Modbus and Ethernet capable

Lube System
- Air or electric motor-driven prelube
- Duplex oil filter
- RH service
- Lube oil makeup system

Mounting System
- Mounting plates (set of six)
- Extra mounting feet (set of two)
- Extra mounting plates (set of two)

Power Take-offs
- Front stub shafts

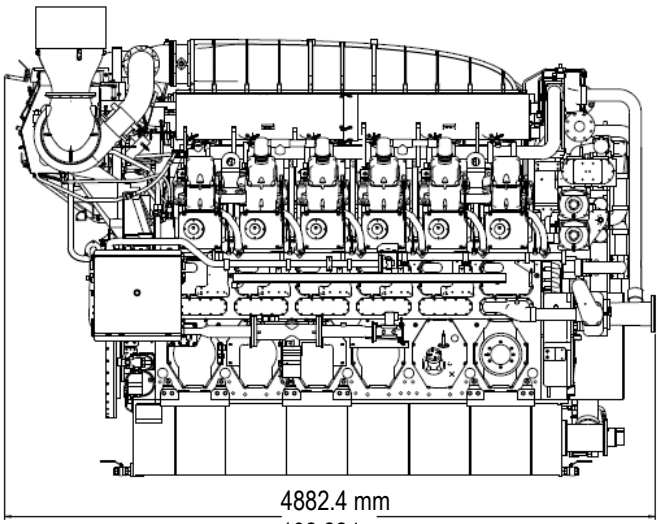
Starting System
- Air pressure reducing valve

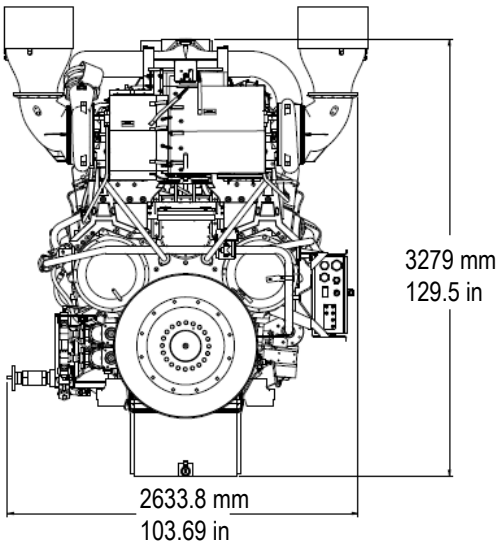
General
- Engine barring device
- Dual vibration damper with guard

Performance Number		EM1418-05	EM1417-05	EM1416-05
Rating	°C (°F)	54 (130)	43 (110)	32 (90)
Engine Power	bkW (bhp)	2796 (3750)	2890 (3875)	2983 (4000)
Engine Speed	rpm	1000	1000	1000
Max Altitude @ Rated Torque and 38°C (100°F)	m (ft)	2446.1 (8033)	2299 (7550)	2150 (7061)
Speed Turndown @ Max Altitude, Rated Torque, and 38°C (100°F)	%	25	25	25
Aftercooler Temperature				
Stage 1 (JW)	°C (°F)	88 (190)	88 (190)	88 (190)
Stage 2 (SCAC)	°C (°F)	54 (130)	43 (110)	32 (90)
Emissions (NTE)*				
NOx	g/bkW-hr (g/bhp-hr)	0.4 (0.3)	0.4 (0.3)	0.4 (0.3)
CO	g/bkW-hr (g/bhp-hr)	3.35 (2.5)	3.35 (2.5)	3.35 (2.5)
CO_2	g/bkW-hr (g/bhp-hr)	567 (423)	567 (423)	567 (423)
VOC**	g/bkW-hr (g/bhp-hr)	0.37 (0.28)	0.36 (0.27)	0.35 (0.26)
Fuel Consumption ***	MJ/bkW-hr (Btu/bhp-hr)	9.39 (6638)	9.37 (6628)	9.36 (6619)
Heat Balance				
Heat Rejection to Jacket Water	bkW (Btu/min)	719 (40888)	729 (41450)	738 (41997)
Heat Rejection to Oil Cooler	bkW (Btu/min)	329 (18701)	355 (20171)	381 (21694)
Heat Rejection to Aftercooler				
Stage 1 (JW)	bkW (Btu/min)	535 (30422)	552 (31370)	569 (32331)
Stage 2 (SCAC)	bkW (Btu/min)	129 (7351)	183 (10431)	239 (13614)
Heat Rejection to Exhaust LHV To 25°C (77°F)	bkW (Btu/min)	2602 (147987)	2657 (151089)	2711 (154197)
Heat Rejection to Atmosphere	bkW (Btu/min)	311 (17674)	294 (16717)	274 (15557)
Exhaust System				
Exhaust Gas Flow Rate	m^3/min (scfm)	677.79 (23936)	691.83 (24432)	705.91 (24929)
Exhaust Stack Temperature	°C (°F)	449 (840)	450 (843)	451 (845)
Intake System				
Air Inlet Flow Rate	m^3/min (scfm)	261.96 (9251)	266.77 (9421)	271.58 (9591)
Gas Pressure	kPag (psig)	400 - 485 (58 - 70)	400 - 485 (58 - 70)	400 - 485 (58 - 70)

All technical data is based on 100% load and speed
* listed as not to exceed
** Volatile organic compounds as defined in U.S. EPA 40 CFR 60, subpart JJJ
*** ISO 3046/1

G3612 with ADEM A4 Gas Engine





Note: General configuration not to be used for installation

Dimensions		
Length	4882.4 mm	192.22 in
Width	2633.8 mm	103.69 in
Height	3279 mm	129.5 in
Weight	26,535 kg	58,500

Rating Definitions and Conditions

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

Conditions: Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in Hg) and 15°C (59°F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in Hg) and 15.6°C (60.1°F). Air flow is based on a cubic foot at 100 kPa (29.61 in Hg) and 25°C (77°F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in Hg) and stack temperature.

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G3612

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED (rpm):	1000	FUEL SYSTEM:	GAV
COMPRESSION RATIO:	9:1		WITH AIR FUEL RATIO CONTROL
AFTERCOOLER WATER INLET (°F):	130	**SITE CONDITIONS:**	
JACKET WATER OUTLET (°F):	190	FUEL:	Nat Gas
COOLING SYSTEM:	JW , OC+AC	FUEL PRESSURE RANGE(psig):	42.8-47.0
IGNITION SYSTEM:	CIS/ADEM3	FUEL METHANE NUMBER:	84.8
EXHAUST MANIFOLD:	DRY	FUEL LHV (Btu/scf):	905
COMBUSTION:	Low Emission	ALTITUDE(ft):	500
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5	MAXIMUM INLET AIR TEMPERATURE(°F):	77
		NAMEPLATE RATING:	3550 bhp@1000rpm

			MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING	**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(1)	bhp	3550	3550	2663	1775
INLET AIR TEMPERATURE		°F	77	77	77	77
ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	6791	6791	7082	7684
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	7533	7533	7856	8523
AIR FLOW	(3)	lb/hr	41496	41496	31841	21779
AIR FLOW WET (77°F, 14.7 psia)	(3)	scfm	9358	9358	7181	4912
INLET MANIFOLD PRESSURE	(4)	in Hg(abs)	73.4	73.4	57.0	39.1
EXHAUST STACK TEMPERATURE	(5)	°F	838	838	876	925
EXHAUST GAS FLOW (@ stack temp, 14.5 psia)	(6)	ft3/min	24090	24090	19033	13540
EXHAUST GAS MASS FLOW	(6)	lb/hr	42713	42713	32793	22468
EMISSIONS DATA						
NOx (as NO2)	(7)	g/bhp-hr	0.50	0.50	0.50	0.50
CO	(7)	g/bhp-hr	2.75	2.75	2.75	2.75
THC (molecular wt. of 15.84)	(7)	g/bhp-hr	6.46	6.46	6.63	6.83
NMHC (molecular wt. of 15.84)	(7)	g/bhp-hr	0.97	0.97	0.99	1.02
NMNEHC (molecular wt. of 15.84)	(7)	g/bhp-hr	0.65	0.65	0.66	0.68
HCHO (Formaldehyde)	(7)	g/bhp-hr	0.40	0.40	0.44	0.48
CO2	(7)	g/bhp-hr	441	441	460	499
EXHAUST OXYGEN	(8)	% DRY	12.8	12.8	12.1	11.0
HEAT REJECTION						
HEAT REJ. TO JACKET WATER	(9)	Btu/min	36360	36360	31192	29535
HEAT REJ. TO ATMOSPHERE	(9)	Btu/min	14063	14063	13200	12503
HEAT REJ. TO LUBE OIL	(9)	Btu/min	18081	18081	17285	17049
HEAT REJ. TO AFTERCOOLER	(9)(10)	Btu/min	27783	27783	15016	2175

HEAT EXCHANGER SIZING CRITERIA			
HEAT REJ. TO JACKET WATER	(10)	Btu/min	39996
HEAT REJ. TO AFTERCOOLER/LUBE OIL CIRCUIT	(10)(11)	Btu/min	50869
A cooling system safety factor of 0% has been added to the heat exchanger sizing criteria.			

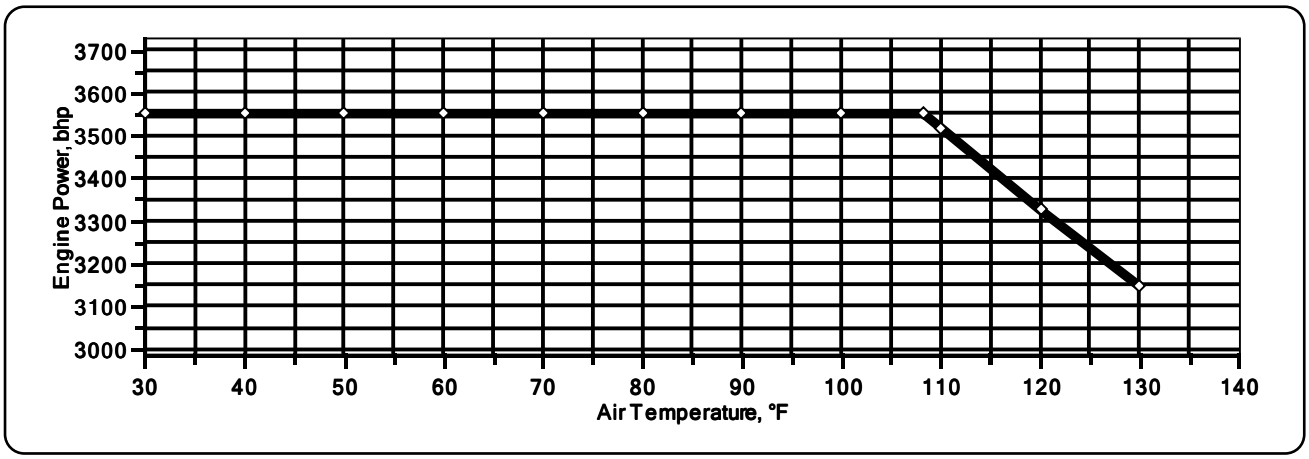
CONDITIONS AND DEFINITIONS

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.

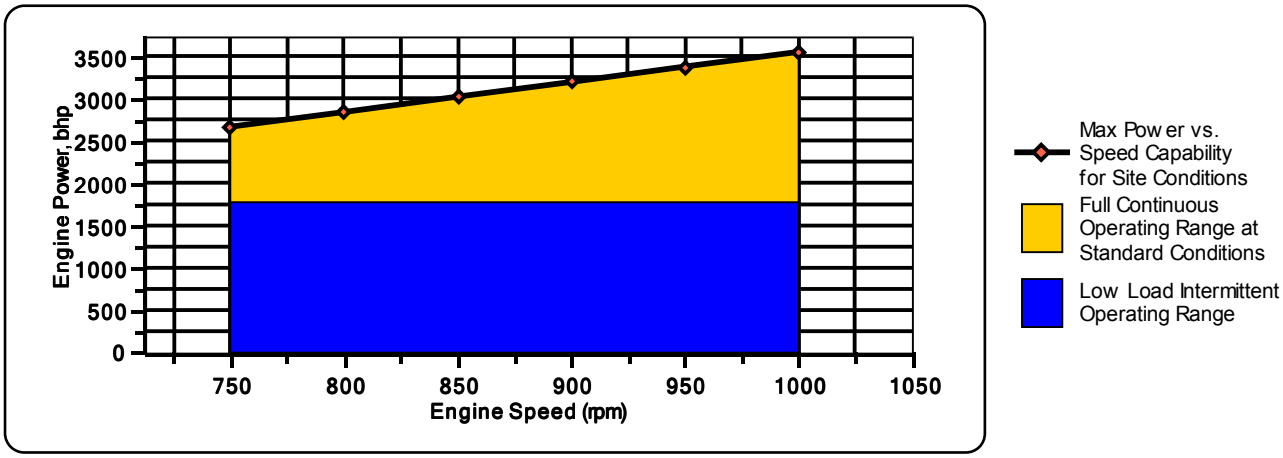
For notes information consult page three.

PREPARED BY:
Data generated by Gas Engine Rating Pro Version 3.01.00
Ref. Data Set DM8607-00-001, Printed 14May2008

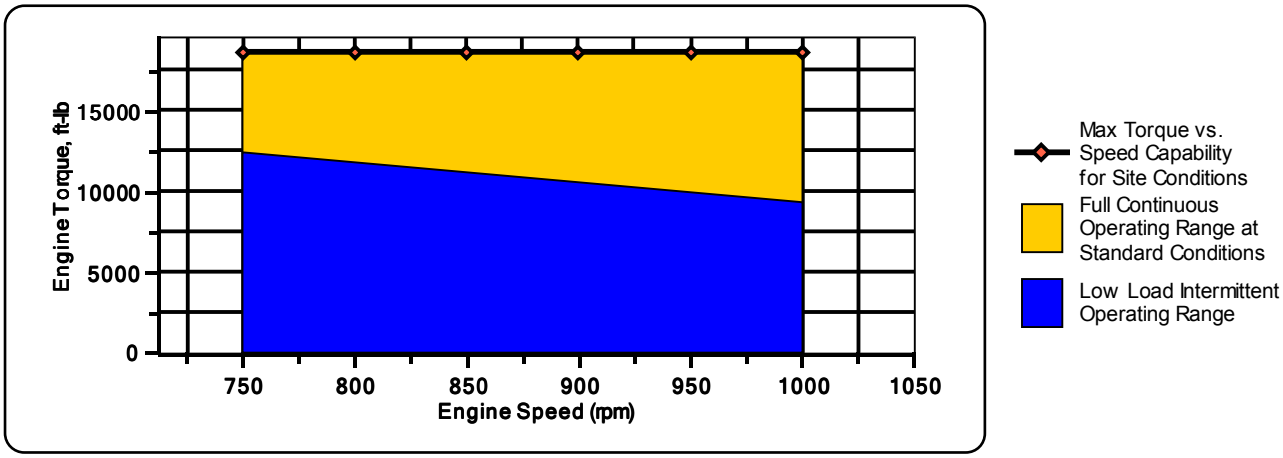
Engine Power vs. Inlet Air Temperature



Engine Power vs. Engine Speed



Engine Torque vs. Engine Speed



Note: At site conditions of 500 ft and 77°F inlet air temp., constant torque can be maintained down to 750 rpm.

NOTES

1. Engine rating is with two engine driven water pumps. Tolerance is ± 3% of full load.

2. Fuel consumption tolerance is ± 2.5% of full load data.

3. Undried air. Flow is a nominal value with a tolerance of ± 5 %.

4. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.

5. Exhaust stack temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.

6. Exhaust flow value is on a "wet" basis. Flow is a nominal value for total flow rate with a tolerance of ±6%. Exhaust gas vented through the wastegate flows only to the right exhaust outlet. The total flow through the wastegate may be as great as 15% of the total value for conditions under which the wastegate is open. For installations that use dual exhaust runs this difference must be taken into account when specifying any items to be connected to the exhaust outlets. The flow in the right exhaust outlet must be sized for at least 65% of the total flow to allow for the wastegate full open condition, while the left outlet must be sized for 50% of the total flow for the wastegate closed condition. Both runs must meet the allowable backpressure requirement as described in the Exhaust Systems A&I Guide.

7. Emission levels are at engine exhaust flange prior to any after treatment. Values are based on engine operating at steady state conditions, adjusted to the specified NOx level at 100% load. Fuel methane number cannot vary more than ± 3. Values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate "not to exceed" values.

8. Exhaust Oxygen level is the result of adjusting the engine to operate at the specified NOx level. Tolerance is ± 0.5.

9. Heat rejection values are nominal. Tolerances, based on treated water, are ± 10% for jacket water circuit, ± 50% for radiation, ± 20% for lube oil circuit, and ± 5% for aftercooler circuit.

10. Aftercooler heat rejection includes an aftercooler heat rejection factor for the site elevation and inlet air temperature specified. Aftercooler heat rejection values at part load are for reference only. Do not use part load data for heat exchanger sizing.

11. Heat exchanger sizing criteria are maximum heat rejection for the site, with applied tolerances.

G3612

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA

CATERPILLAR®

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	92.2700	92.2700
Ethane	C2H6	2.5000	2.5000
Propane	C3H8	0.5000	0.5000
Isobutane	iso-C4H1O	0.0000	0.0000
Norbutane	nor-C4H1O	0.2000	0.2000
Isopentane	iso-C5H12	0.0000	0.0000
Norpentane	nor-C5H12	0.1000	0.1000
Hexane	C6H14	0.0500	0.0500
Heptane	C7H16	0.0000	0.0000
Nitrogen	N2	3.4800	3.4800
Carbon Dioxide	CO2	0.9000	0.9000
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0000	0.0000
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0000	100.0000

Fuel Makeup:	Nat Gas
Unit of Measure:	English

Calculated Fuel Properties

Caterpillar Methane Number:	84.8
Lower Heating Value (Btu/scf):	905
Higher Heating Value (Btu/scf):	1004
WOBBE Index (Btu/scf):	1168
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.998
Stoich A/F Ratio (Vol/Vol):	9.45
Stoich A/F Ratio (Mass/Mass):	15.75
Specific Gravity (Relative to Air):	0.600
Specific Heat Constant (K):	1.313

CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia.

Caterpillar shall have no liability in law or equity, for damages, consequently or otherwise, arising from use of program and related material or any part thereof.

FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.

Arrow Engine Company is pleased to confirm the observed emission levels for the Arrow VRG 220 and VRG 330 spark ignited engines as follows:

Model	VRG 330TA	VRG 330HC	VRG 330/220
NO_x	10.084	12.077	12.951
CO	1.587	1.314	1.104
NMHC	.022	.053	.050

Rated HP

VRG 330TA rated at 100 Bhp at 1800 RPM.
VRG 330HC rated at 68 Bhp at 1800 RPM.
VRG 330 rated at 68 Bhp at 1800 RPM.
VRG 220 rated at 45 Bhp at 1800 RPM.

Brake HP Specific Fuel Rates

VRG 330TA rated at 7307 (Btu/Hp-hr).
VRG 330HC rated at 7312 (Btu/Hp-hr).
VRG 330 rated at 8038 (Btu/Hp-hr).

- Units for all values, grams/HP-hr.
- Values represent emissions at 100% loads.
- All tests based on pipeline quality Natural Gas of 900 Btu/ft^3 (LHV).
- Actual readings may vary based on site conditions and fuel consumption.
- Engines tested tuned for best economy.

ARROW ENGINE COMPANY - 2301 EAST INDEPENDENCE - TULSA, OKLAHOMA, USA 74110
TELEPHONE: 918-388-3236 - FAX: 918-388-3203 - EMAIL: rtrainor@arrowengine.com

Emission Statement

Date: 02/26/2026

Project Name	USAC: Unit 11966
Engine Model	Arrow 330
Engine Mechanical Power	68 hp
Fuel	NG High BTU
Exhaust Flowrate	465 lb/h
Exhaust Temperature	1238 deg. F
Catalyst Housing Model	EAS-800T-0303F-20CEE
Catalyst Model / Part Number	DC0Y6 / A70YC-0126-0G63-01
Number of Elements	1
Housing Capacity	2
Catalyst Code	26 NSCR, 3-Way / 300 cpsi
Dimensions	8” x 3.5”

Exhaust Gas Component	Engine Output (g/bhp-hr)	Converter Output (g/bhp-hr)
NOx	14.40	2.00
CO	16.30	4.80
VOC (NMNEHC)	0.04	<0.04
HCHO	0.09	<0.09

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

Emission Statement

Date: 02/26/2026

Project Name	USAC: Unit 11962
Engine Model	Arrow 330
Engine Mechanical Power	68 hp
Fuel	NG High BTU
Exhaust Flowrate	465 lb/h
Exhaust Temperature	1238 deg. F
Catalyst Housing Model	EAS-800T-0303F-20CEE
Catalyst Model / Part Number	DC0Y6 / A70YC-0126-0G63-01
Number of Elements	1
Housing Capacity	2
Catalyst Code	26 NSCR, 3-Way / 300 cpsi
Dimensions	8” x 3.5”

Exhaust Gas Component	Engine Output (g/bhp-hr)	Converter Output (g/bhp-hr)
NOx	14.40	2.00
CO	16.30	4.80
VOC (NMNEHC)	0.04	<0.04
HCHO	0.09	<0.09

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

Emission Statement

Date: 02/26/2026

Project Name	USAC: Unit 14024
Engine Model	Arrow 330
Engine Mechanical Power	68 hp
Fuel	NG High BTU
Exhaust Flowrate	465 lb/h
Exhaust Temperature	1238 deg. F
Catalyst Housing Model	EAS-800T-0303F-20CEE
Catalyst Model / Part Number	DC0Y6 / A70YC-0126-0G63-01
Number of Elements	1
Housing Capacity	2
Catalyst Code	26 NSCR, 3-Way / 300 cpsi
Dimensions	8” x 3.5”

Exhaust Gas Component	Engine Output (g/bhp-hr)	Converter Output (g/bhp-hr)
NOx	14.40	2.00
CO	16.30	4.80
VOC (NMNEHC)	0.05	<0.05
HCHO	0.09	<0.09

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

Catalyst Performance

Driver

Make:	CAT
Model:	G3412 TA
Horsepower:	539
RPM:	1800
Compression Ratio:	9.7:1
Exhaust Flow Rate:	2231
Exhaust Temperature:	993
Reference:	GERP
Fuel:	Natural Gas
Annual Operating Hours:	876

Uncontrolled Emissions Data

	g/bhp-hr	lb/hr	Tons/Year
NOx:	14.41	17.12	75.00
CO:	14.41	17.12	75.00
THC:	2.17	2.58	11.29
NMHC:	0.33	0.39	1.72
Oxygen %:	0.30%		

Catalyst Element

Model:	RE-1950-T
Catalyst Type:	NSCR
Substrate Type:	Brazed
Element Size:	Round, 19.5"
Element Quantity:	2

Post Catalyst Emissions Data

	g/bhp-hr	lb/hr	Tons/Year
NOx:	0.50	0.59	2.60
CO:	0.60	0.71	3.12
VOC:	0.70	0.83	3.64

Catalyst Temperature:	930* F

G3412 TA

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED:	1800	FUEL:	NAT GAS
COMPRESSION RATIO:	9.7:1	FUEL SYSTEM:	LPG IMPCO
AFTERCOOLER - MAX. INLET (°F):	90	WITH CUSTOMER SUPPLIED AIR FUEL RATIO CONTROL	
JACKET WATER - MAX. OUTLET (°F):	210	FUEL PRESS. RANGE (PSIG):	1.5 - 5.0
COOLING SYSTEM:	JW+OC, AC	MIN. METHANE NUMBER:	80
IGNITION SYSTEM:	CDIS	RATED ALTITUDE (FT):	5000
EXHAUST MANIFOLD:	WC	AT AIR TO TURBO. TEMP. (°F):	77
COMBUSTION:	CATALYST	EXHAUST O2 EMISSION LEVEL:	0.3 %O2
		FUEL LHV (BTU/SCF):	905
		APPLICATION:	60 Hz GENSET

RATING AND EFFICIENCY		NOTES	LOAD	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	BHP	539	404	270
GENERATOR POWER	(WITHOUT FAN)	(2)	EKW	375	281	187
ENGINE EFFICIENCY	**(ISO 3046/1)**	**(3)**	**%**	**33.8**	**31.7**	**28.6**
ENGINE EFFICIENCY	(NOMINAL)	(3)	%	33.8	31.8	28.6
THERMAL EFFICIENCY	(NOMINAL)	(4)	%	53.8	55.9	59.2
TOTAL EFFICIENCY	(NOMINAL)	(5)	%	87.6	87.7	87.8

ENGINE DATA						
FUEL CONSUMPTION	**(ISO 3046/1)**	**(6)**	**BTU/bhp-hr**	**7531**	**8016**	**8911**
FUEL CONSUMPTION	(NOMINAL)	(6)	BTU/bhp-hr	7531	8016	8911
AIR FLOW (77 °F, 14.7 psi)		(7)	SCFM	735	587	433
AIR FLOW		(7)	lb/hr	3258	2603	1922.00
COMPRESSOR OUT PRESSURE			in. HG (abs)	37.2	36.2	34.9
COMPRESSOR OUT TEMPERATURE			°F	148	135	124
AFTERCOOLER AIR OUT TEMPERATURE			°F	96	93	92
INLET MAN. PRESSURE		(8)	in. HG (abs)	34.8	27.9	20.9
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(9)	°F	98	95	94
TIMING		(10)	°BTDC	27	27	27
EXHAUST STACK TEMPERATURE		(11)	°F	993	946	885
EXHAUST GAS FLOW (@ stack temp.)		(12)	CFM	2231	1725	1219
EXHAUST MASS FLOW		(12)	lb/hr	3462	2766	2043

EMISSIONS DATA					
NOx (as NO2)	(13)	g/bhp-hr	14.41	15.6	16.55
CO	(14)	g/bhp-hr	14.41	15.6	16.55
THC (molecular weight of 15.84)	(14)	g/bhp-hr	2.17	2.62	3.29
NMHC (molecular weight of 15.84)	(14)	g/bhp-hr	0.33	0.39	0.49
EXHAUST O2	(15)	% DRY	0.3	0.3	0.3
LAMBDA			1.00	1.00	1.00

HEAT BALANCE DATA					
LHV INPUT	(16)	BTU/min	67661	54015	40031
HEAT REJECTION TO JACKET (JW)	(17) (22)	BTU/min	22426	19432	16075
HEAT REJECTION TO ATMOSPHERE	(18)	BTU/min	2706	2161	1601
HEAT REJECTION TO LUBE OIL (OC)	(19) (22)	BTU/min	3546	3073	2542
HEAT REJECTION TO EXHAUST (LHV to 77°F)	(20)	BTU/min	15327	11692	8095
HEAT REJECTION TO EXHAUST (LHV to 350°F)	(20)	BTU/min	10404	7688	5078
HEAT REJECTION TO A/C (AC)	(21) (23)	BTU/min	774	497	277

CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1STD. REF. CONDITIONS OF 77°F, 29.6 IN HG BAROMETRIC PRESSURE, 500 FT ALTITUDE). NO OVERLOAD PERMITTED AT RATING SHOWN. CONSULT ALTITUDE CHARTS FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE.

EMISSION LEVELS ARE BASED ON THE ENGINE OPERATING AT STEADY STATE CONDITIONS. EMISSION TOLERANCES SPECIFIED ARE DEPENDANT UPON FUEL QUALITY. METHANE NUMBER CANNOT VARY MORE THAN ± 3. PUBLISHED PART LOAD DATA REQUIRES CUSTOMER SUPPLIED AIR FUEL RATIO CONTROL.

ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS.

FOR NOTES INFORMATION CONSULT PAGE THREE.

FUEL USAGE GUIDE

CAT METHANE NUMBER	30	35	40	45	50	55	60	65	70	75	80	85-100
IGNITION TIMING	-	-	-	-	-	-	-	-	25	26	27	27
DERATION FACTOR	0	0	0	0	0	0	0	0	1.00	1.00	1.00	1.00

ALTITUDE DERATION FACTORS

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.00	1.00	1.00	0.98	0.95	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.69
120	1.00	1.00	1.00	1.00	0.96	0.93	0.89	0.86	0.82	0.79	0.76	0.73	0.70
110	1.00	1.00	1.00	1.00	0.98	0.94	0.91	0.87	0.84	0.80	0.77	0.74	0.71
100	1.00	1.00	1.00	1.00	1.00	0.96	0.92	0.89	0.85	0.82	0.79	0.75	0.72
90	1.00	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.87	0.83	0.80	0.77	0.74
80	1.00	1.00	1.00	1.00	1.00	0.99	0.96	0.92	0.88	0.85	0.81	0.78	0.75
70	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.90	0.86	0.83	0.80	0.76
60	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.81	0.78
50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.90	0.86	0.83	0.79

ALTITUDE (FEET ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS (ACHRF)

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	2.01	2.23	2.45	2.68	2.90	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
120	1.80	2.02	2.23	2.45	2.68	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91
110	1.59	1.80	2.02	2.23	2.46	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68
100	1.38	1.59	1.80	2.01	2.23	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
90	1.17	1.38	1.58	1.79	2.01	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
80	1.00	1.16	1.36	1.57	1.78	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
70	1.00	1.00	1.15	1.35	1.56	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
60	1.00	1.00	1.00	1.13	1.33	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
50	1.00	1.00	1.00	1.00	1.11	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31

ALTITUDE (FEET ABOVE SEA LEVEL)

FREE FIELD MECHANICAL & EXHAUST NOISE

100% Load Data			dB(A)	(dB)							
			Overal SPL	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 khz
Free Field Mechanical	DISTANCE FROM THE ENGINE (FEET)	3.2	97.7	87.2	91.2	92.2	94.2	93.2	92.2	76.2	69.2
		22.9	87.7	80.8	79.8	80.8	81.8	82.8	82.8	75.8	65.8
		49.2	81.7	77.3	76.3	79.3	78.3	76.3	75.3	70.3	58.3
Free Field Exhaust	DISTANCE FROM THE ENGINE (FEET)	4.9	113.0	102.5	112.5	113.2	112.5	105.5	103.2	101.9	92.1
		22.9	99.7	93.2	102.8	97.8	97.5	92.2	91.2	91.2	83.3
		49.2	93.0	86.6	96.2	91.2	90.9	85.6	84.6	84.6	76.6

Octave Band Center Frequency (OBCF)

FUEL USAGE GUIDE:

This table shows the derate factor required for a given fuel. Note that deration occurs as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar Methane Number Calculation program.

ALTITUDE DERATION FACTORS:

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

ACTUAL ENGINE RATING:

It is important to note that the Altitude/Temperature deration and the Fuel Usage Guide deration are not cumulative. They are not to be added together. The same is true for the Low Energy Fuel deration (reference the Caterpillar Methane Number Program) and the Fuel Usage Guide deration. However, the Altitude/Temperature deration and Low Energy Fuel deration are cumulative; and they must be added together in the method shown below. To determine the actual power available, take the lowest rating between 1) and 2).

1) (Altitude/Temperature Deration) + (Low Energy Fuel Deration)
2) Fuel Usage Guide Deration

Note: For NA's always add the Low Energy Fuel deration to the Altitude/Temperature deration. For TA engines only add the Low Energy Fuel deration to the Altitude/Temperature deration whenever the Altitude/Temperature deration is less than 1.0 (100%). This will give the actual rating for the engine at the conditions specified.

AFTERCOOLER HEAT REJECTION FACTORS (ACHRF):

Aftercooler heat rejection is given for standard conditions of 77°F and 500 ft altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor (ACHRF) to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail.

SOUND DATA:

Data determined by methods similar to ISO Standard DIS-8528-10. Accuracy Grade 3. SPL = Sound Pressure Level.

NOTES

1 ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. TOLERANCE IS ± 3% OF FULL LOAD.

2 GENERATOR POWER DETERMINED WITH AN ASSUMED GENERATOR EFFICIENCY OF 93.2% AND POWER FACTOR OF 0.8 [GENERATOR POWER = ENGINE POWER x GENERATOR EFFICIENCY].

3 ISO 3046/1 ENGINE EFFICIENCY TOLERANCE IS (+)0, (-)5% OF FULL LOAD % EFFICIENCY VALUE. NOMINAL ENGINE EFFICIENCY TOLERANCE IS ± 5% OF FULL LOAD % EFFICIENCY VALUE.

4 THERMAL EFFICIENCY: JACKET HEAT + LUBE OIL HEAT + EXH. HEAT TO 350°F.

5 TOTAL EFFICIENCY = ENGINE EFF. + THERMAL EFF. TOLERANCE IS ± 10% OF FULL LOAD DATA.

6 ISO 3046/1 FUEL CONSUMPTION TOLERANCE IS (+)5, (-)0% OF FULL LOAD DATA. NOMINAL FUEL CONSUMPTION TOLERANCE IS ± 5 % OF FULL LOAD DATA.

7 UNDRIED AIR. FLOW TOLERANCE IS ± 5 %

8 INLET MANIFOLD PRESSURE TOLERANCE IS ± 5 %

9 INLET MANIFOLD TEMPERATURE TOLERANCE IS ± 9°F.

10 TIMING INDICATED IS FOR USE WITH THE MINIMUM FUEL METHANE NUMBER SPECIFIED. CONSULT THE APPROPRIATE FUEL USAGE GUIDE FOR TIMING AT OTHER METHANE NUMBERS.

11 EXHAUST STACK TEMPERATURE TOLERANCE IS (+)63°F, (-)54°F.

12 WET EXHAUST. FLOW TOLERANCE IS ± 6 %

13 NOX VALUES ARE "NOT TO EXCEED".

14 CO, CO2, THC, and NMHC VALUES ARE "NOT TO EXCEED".

15 O2% TOLERANCE IS ± 0.2.

16 LHV INPUT TOLERANCE IS ± 5%.

17 HEAT REJECTION TO JACKET TOLERANCE IS ± 10 % OF FULL LOAD DATA, BASED ON TREATED WATER.

18 HEAT REJECTION TO ATMOSPHERE TOLERANCE IS ± 50% OF FULL LOAD DATA, BASED ON TREATED WATER.

19 HEAT REJECTION OF LUBE OIL TOLERANCE IS ± 20% OF FULL LOAD DATA, BASED ON TREATED WATER.

20 HEAT REJECTION TO EXHAUST TOLERANCE IS ± 10% OF FULL LOAD DATA, BASED ON TREATED WATER.

21 HEAT REJECTION TO A/C TOLERANCE IS ± 5 % OF FULL LOAD DATA, BASED ON TREATED WATER.

SITE SPECIFIC COOLING SYSTEM SIZING EQUATIONS (WITH TOLERANCES)

22 TOTAL JACKET CIRCUIT (JW+OC) = (JW x 1.1) + (OC x 1.2).

23 TOTAL AFTERCOOLER CIRCUIT (AC) = AC x ACHRF x 1.05.

2.Technical

ECD - High Volume - 84" x 32' x 53 MMBTU/HR	SL COMSTDECD84HV-001

Data	Parameter
Size	84" OD x 32'
Capacity (Third Party Verified)	500 MSCFD @ 10 oz/in using SG 1.52/2500 BTU/SCF
Heat Duty Rating	53 MMBTU/HR Max
Burner Size	Staged combustion with Removable Trays
Stack	Insulated
Inlet Temp	-20-120°F
Pressure Rating	Atmospheric
Electrical Classification	Non-Hazardous
Wind Load	90 mph 3sec Wind Gust (see note below)
Estimated Weight (No Concrete Block):	14,900 lbs

Connection Schedule	QTY	Size	Type
Maintenance Access	1	8"	Pipe
Waste Gas Inlet 'A'	1	3"	NPT
Waste Gas Inlet 'B'	1	3"	NPT
Burner Ignition Gas Inlet	1	1"	NPT
Pilot Inlet 'A'	1	1"	NPT
Pilot Inlet 'B'	1	1'	NPT
Spare	2	1"	NPT
Pilot	1	1"	NPT
Sight Glass	2	3"	NPT

Paint	
External	Cimarron Combustion Standard See Clarifications

Standard Accessories - Included

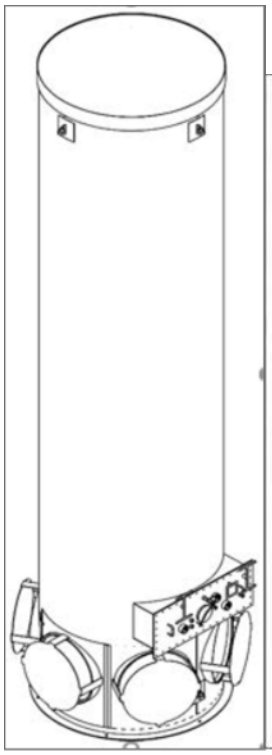
Description	OEM	OEM Model #	QTY
Flamecell	Flameco	N/A	6
Pilot Regulator, 1/4"	Fisher	67CR-206	1
Pilot Isolation Ball Valve 1/4 STL 2000# FP	Chemoil	2027WC-02	1

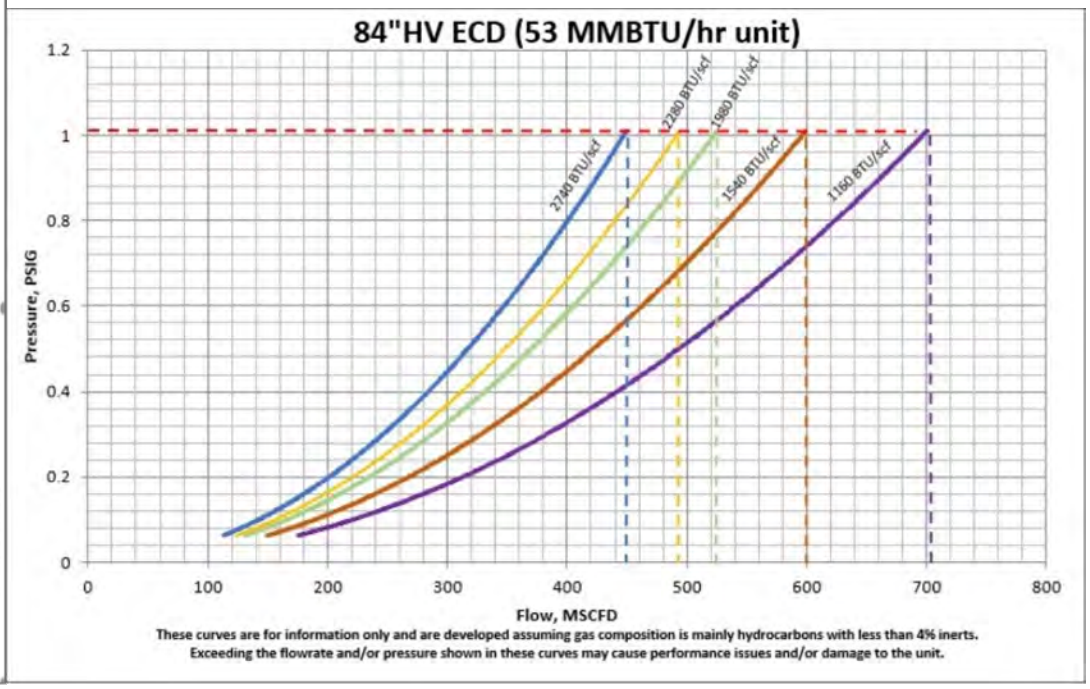
Accessories - Optional

Description	OEM	OEM Model #	QTY
ECD72/84HV: Inlet Piping with Low DP SDV	Cimarron	SL 1404401	1
144"x144"x10" Concrete Block No Anchors	Generic	SL 146698	1

Notes
Pilot Consumption: Propane: 15 SCFH @ 4 psig, Natural Gas: 30 SCFH @ 8 - 10 psig
Cimarron Energy guarantees the combustor proposed in this bid will meet a minimum Destruction Removal Efficiency (DRE) of 98% if all the below conditions are met: Max water vapor content in the waste stream: 4% vol. Min temperature in the combustion chamber: 1400 F Min Lower Heating Value (LHV) of the gas: 800 BTU/scf Max Thermal Duty: Per Technical Section of this Proposal Please note that Cimarron may still be able to guarantee 98% DRE for applications where some of the above conditions are not met. For these applications, please contact the Application Engineering Team. Guarantee applies only to new units purchased after 1Dec2021.
Structure designed per ASCE 7-16 and IBC 2021/2018 specifications/standards. Pre-cast concrete foundations designed in accordance with the ACI 318-19 specification. Note that the unit may not meet all structural requirements, including wind and seismic criteria, of the end user. Customer to inform Cimarron if any specific structural requirements shall be considered.

Unit Illustrations (For information only, actual drawings to be provided upon purchase)





Contact Information:

Customer:	Stephen Pena	945.225.2535	Stephen.Pena@ONEOK.com
Zeeco Local Contact:	Dillon Smith	918.630.0649	Dillon_Smith@zeeco.com
Zeeco Applications Engineer:	Taos McIntyre	918.893.8672	taos_mcintyre@zeeco.com

Design Information (Estimated):

Source	Design (Max)
Gas MW	42.1
Gas LHV (Btu/Scf)	41
Max Flow Rate (MMScfd)	3.5
Available Pressure (psig)	8
Temperature (°F)	100
Heat Release (MMBtu/hr)	6

Scope of Supply:

Qty	Equipment
	Vapor Combustor Unit - 5’ Dia. x 40’ OAH, 16.8MMBtu/hr Heat Capacity
1	- Self-Supported Purchase System - Skid-Mounted, Guy Supported Rental System
1	Utility Tip (UF)
1	HSLF Pilot w/ Flame Scanner
1	Automatic Ignition/Monitoring Panel
1	Shutdown Monitoring & Controls (VCU-FG)
1	Shutdown Valve (Electric)
	Optional Equipment:
1	*4” Group D Deflagration Arrester with Burnback Thermocouple*

Required Utilities:

Consumer	Utility Type	Consumption	Supply
EGF Pilot Gas	Fuel Gas	90 Scfh	10 psig
Assist Gas (Preheat)	Fuel Gas	3,400 Scfh	30 psig
Assist Gas (Max)	Fuel Gas	7,000 Scfh	30 psig
Control Panel (VCU)	Electricity	20 A	120 VAC / 1 Ph / 60 Hz

Customer Connections (Estimated, TBC by customer):

Service	Size	Type	Rating
Waste Gas	4"	RF	150#
Fuel Gas	1"	NPT	3000#

Equipment Description:

Self-Supported Enclosure	The enclosure prevents flame from being seen by personnel while also increasing residence time to ensure high destruction efficiencies. The stack is mounted on a customer supplied foundation to secure the system and prevent it from blowing over in high winds.
Skid Mounted Enclosure	The enclosure prevents flame from being seen by personnel while also increasing residence time to ensure high destruction efficiencies. The stack is mounted on a carbon steel skid and provided with stakes to secure the system and prevent it from blowing over in high winds. The skid mounting will help minimize field installation and foundation costs.
Utility Tip (UF)	The UF style tip provides high stability combustion while also ensuring reliability of the flame from purge all the way to max flow rates. Components located in the high heat zone will be made of 310SS or equivalent casting material. The tip will provide a VOC destruction efficiency of at least 98wt%.
HSLF Pilot w/ Flame Scanner	The premix pilot is proven to stay lit in hurricane force weather conditions. Testing has shown that a stable flame is present even in wind speeds greater than 150 mph in addition to rainfall of over 10 inches per hour. The pilot is paired with UV flame scanner for continuous monitoring of the pilot status. The pilot also meets or exceeds API 537 design requirements.
Automatic Ignition/Monitoring Panel	The automatic pilot ignition and monitoring panel will continuously monitor the pilot and attempt to relight if a pilot failure signal is received. The control panel will require customer supplied electricity and also be skid mounted.
Shutdown Monitoring & Controls (VCU-FG)	The burner management and high temperature shutdown systems ensure that the unit will operate in a safe manner to protect both personnel and equipment while controlling emissions efficiently. Operating temperature is controlled via a fuel gas burner and automated damper to control the amount of heat required in the combustion chamber. A shutdown will be initiated when either a high temperature or pilot failure is detected. All gas sources should be shut in indefinitely until personnel can check the system to ensure that there is not a build-up of combustible vapors or damage to the equipment.
Shutdown Valve (Electric)	A butterfly valve is installed upstream of the system to shutdown in the event of an unsafe condition.

Optional Equipment:

Group D Deflagration Arrester	*If a potential for having combustible levels of oxygen in the waste exists, an arrester is recommended to ensure that any flashback from the tip is stopped before it can enter into the upstream piping system.*
Burnback Thermocouple	*A thermocouple is installed on the downstream side of the arrester to alarm if a sustained flame flashback is achieved at the arrester element.*

Table II: Facility/Compound Specific Fugitive Emission Factors

Equipment/Service	Compound Specific See Section I for more information			Facility Specific[1]					
	Ethylene Oxide[2] w/LDAR	Phosgene[3] w/LDAR	Butadiene w/LDAR[4]	Petroleum Marketing Terminal[5, 6] w/28PET	Oil and Gas ProductionOperation[6]				Refinery[6]
					Gas	Heavy Oil < 20 API	Light Oil	Water/ Light Oil	
Valves					0.00992	0.0000185	0.0055	0.000216	
Gas/Vapor	0.000444	0.00000216	0.001105	0.0000287					0.059
Light Liquid	0.00055	0.00000199	0.00314	0.0000948					0.024
Heavy Liquid				0.0000948					0.00051
Pumps	0.042651	0.0000201	0.05634		0.00529	0.00113[7]	0.02866	0.000052	
Light Liquid				0.00119					0.251
Heavy Liquid				0.00119					0.046
Flanges/Connectors[11]	0.000555	0.00000011	0.000307		0.00086	0.00000086	0.000243	0.000006	0.00055
					0.00044	0.0000165	0.000463	0.000243	
Gas/Vapor				0.000092604					
Light Liquid				0.00001762					
Heavy Liquid				0.0000176					
Compressors	0.000767		0.000004		0.0194	0.0000683	0.0165	0.0309	1.399
Relief Valve	0.000165	0.0000162	0.02996		0.0194	0.0000683	0.0165	0.0309	0.35
Open-ended Lines[8]	0.001078	0.00000007	0.00012		0.00441	0.000309	0.00309	0.00055	0.0051
Sampling[9]	0.000088		0.00012						0.033
Other[10]					0.0194	0.0000683	0.0165	0.0309	
Gas/Vapor				0.000265					
Light/Heavy Liquid				0.000287					
Process Drains					0.0194	0.0000683	0.0165	0.0309	0.07

Endnotes Table II

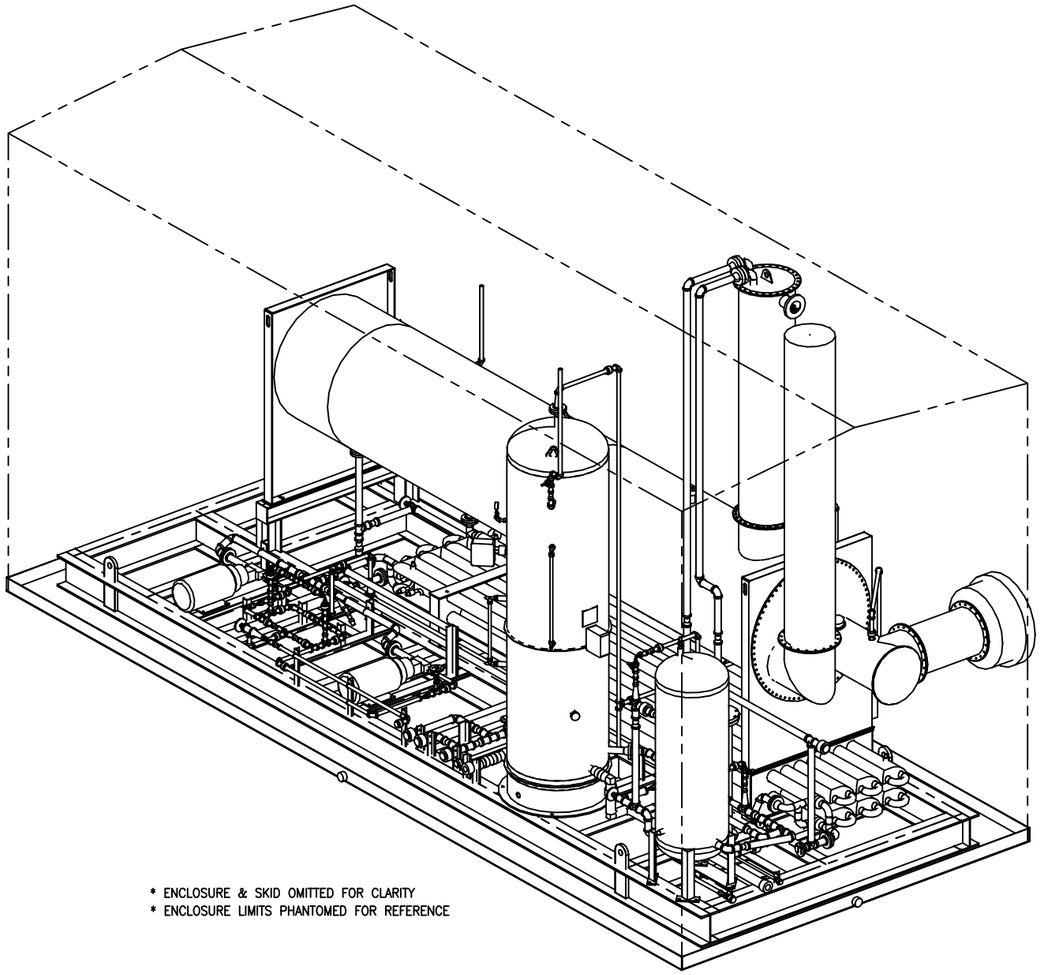
1. **Factors give the total organic compound emission rate. Multiply by the weight percent of non-methane, non-ethane organics to get the VOC emission rate.**
2. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 500 ppmv. No additional control credit can be applied to these factors except 28CNTQ and 28CNTA. Emission factors are from EOIC Fugitive Emission Study, summer 1988.**
3. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 50 ppmv. No additional control credit can be applied to these factors. Emission factors are from Phosgene Panel Study, summer 1988.**
4. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 100 ppmv. No additional control credit can be applied to these factors. Emission factors are from Randall, J. L., et al., Radian Corporation. Fugitive Emissions from the 1,3-butadiene Production Industry: A Field Study. Final Report. Prepared for the 1,3-Butadiene Panel for the Chemical Manufacturers Association. April 1989.**
5. **Control credit is included in the factor; no additional control credit can be applied to these factors. Monthly 28 PET inspection is required.**
6. **Factors are taken from EPA Document EPA-453/R-95-017, November 1995, pages 2-13, 2-14, and 2-15.**
7. **Heavy liquid oil – Pump factor was not derived during the API study. The factor is the SOCMI without C_2 Heavy Liquid – Pump factor with a 93% reduction credit for the physical inspection.**

[8] **The 28 Series quarterly LDAR programs require open-ended lines to be equipped with a cap, blind flange, plug, or a second valve. If so equipped, open-ended lines may be given a 100% control credit.**

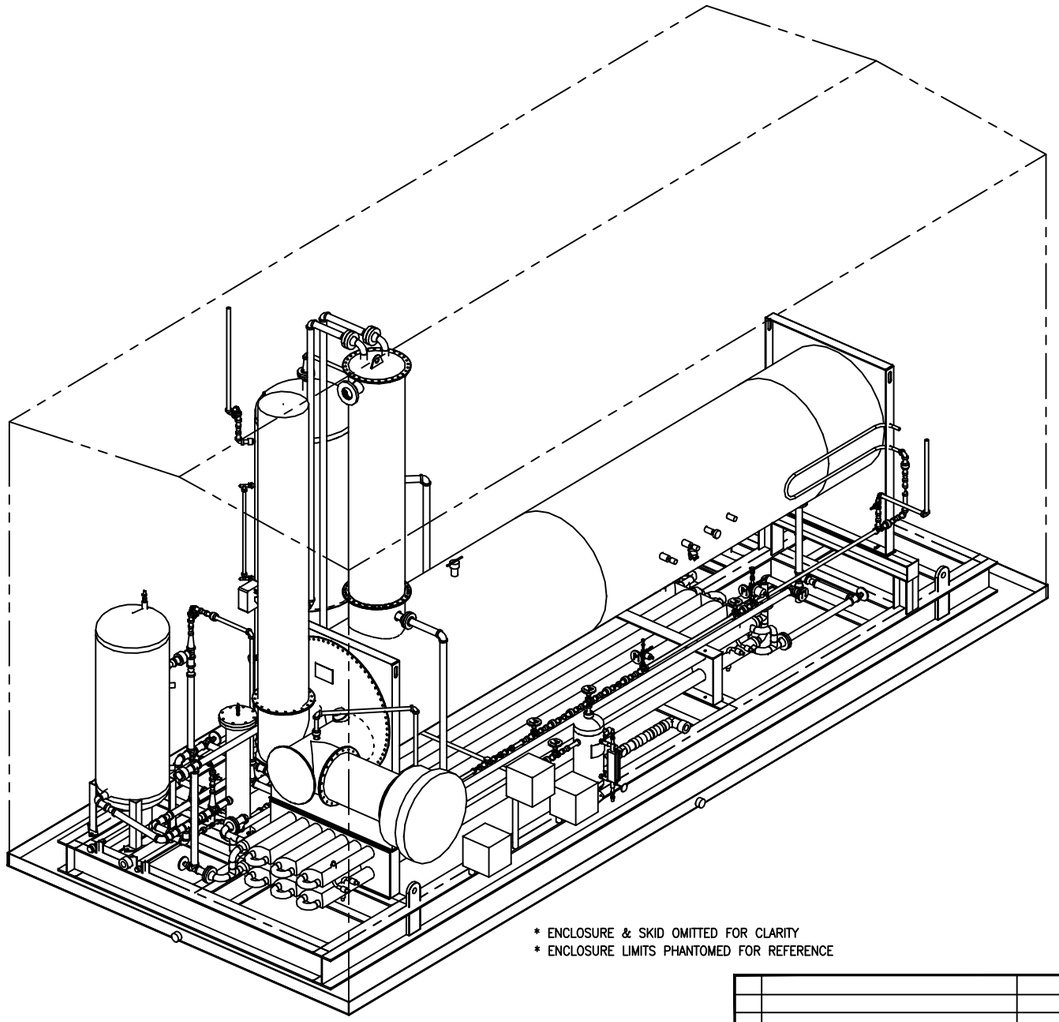
[9] **Emission factor for sampling connections is in terms of pounds per hour per sample taken.**

[10] **For Petroleum Marketing Terminals, "Other" includes any component excluding fittings, pumps, and valves. For Oil and Gas Production Operations, "Other" includes diaphragms, dump arms, hatches, instruments, meters, polished rods, and vents.**

[11] **For Oil and Gas Production Operations, separate factors are given for "Flanges" and "Connectors." The factor for "flanges" is shown on the top line, and the factor for "connectors" is on the line below**



* ENCLOSURE & SKID OMITTED FOR CLARITY
* ENCLOSURE LIMITS PHANTOMED FOR REFERENCE



* ENCLOSURE & SKID OMITTED FOR CLARITY
* ENCLOSURE LIMITS PHANTOMED FOR REFERENCE

REV	DESCRIPTION	DATE	BY	CHK
0	ISSUED FOR CONSTRUCTION	7/31/14	GG	CM

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DATE	DRAWN	CHECKED	APPROVED
7/1/14	GG	GG	CM

CLIENT

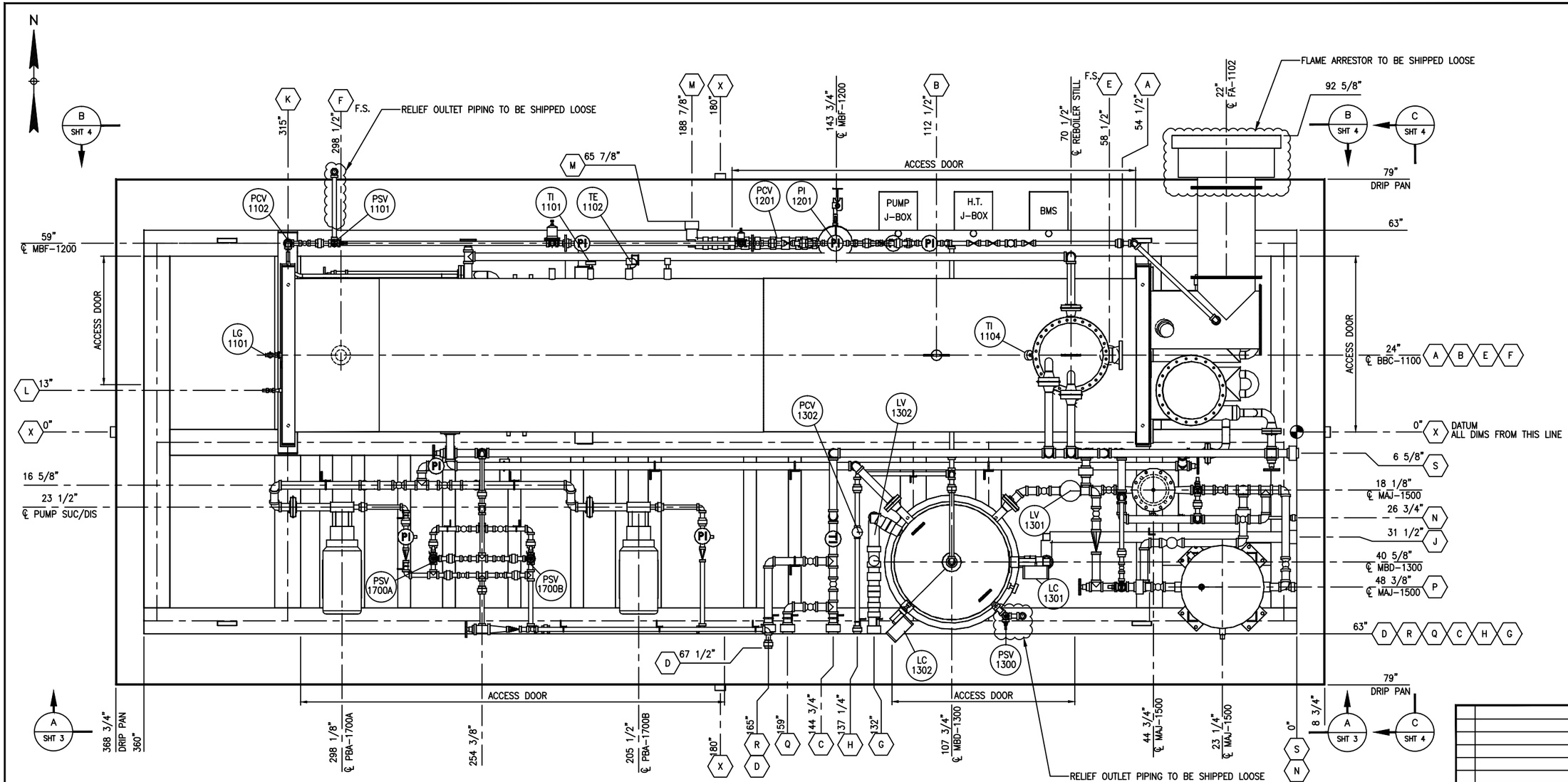
ONEOK
PEGT26

TITLE

1.5MM REGENERATION UNIT GENERAL ARRANGEMENT ISO VIEWS

SCALE: N/A

DRAWING NUMBER	SHEETS	REV
FGC211409-200	SHT# 1 OF 4	0



PLAN
SCALE AS NOTED
* ENCLOSURE & SKID OMITTED FOR CLARITY

MK	QTY	SIZE	RATING	TYPE	SERVICE
S	1	2"	3000#	NPT	BTEX PSV OUTLET
R	1	2"	3000#	NPT	GLYCOL FROM BTEX
Q	1	2"	3000#	NPT	GLYCOL TO BTEX
P	1	1"	2000#	NPT	CHARCOAL FILTER DRAIN
N	2	1/2"	2000#	NPT	GLYCOL SOCK FILTER DRAINS
M	1	1"	2000#	NPT	FUEL GAS SCRUBBER DRAIN
L	1	1/2"	2000#	NPT	REBOILER SKIMMER
K	1	3/4"	3000#	NPT	SUPPLY GAS INLET
J	1	1"	3000#	NPT	PUMP GAS SEPARATOR DRAIN
H	1	1"	3000#	NPT	PUMP GAS SEPARATOR BACK PRESSURE OUTLET
G	1	1"	3000#	NPT	PUMP GAS SEPARATOR CONDENSATE OUTLET
F	1	2"	2000#	NPT	GLYCOL DRAIN
E	1	2"	2000#	NPT	REBOILER DRAIN
D	1	1"	2000#	NPT	GLYCOL OUTLET TO ABSORBER
C	1	2"	3000#	NPT	GLYCOL INLET FROM ABSORBER
B	1	2"	S/80	NPT	REBOILER FILL
A	1	4"	150#	RF	VAPOR OUTLET

CONNECTION SCHEDULE

MK	QTY	SIZE	RATING	TYPE	SERVICE	
Z	1	3/8"	–	TUBING	INST GAS	NOT SHOWN
Y	1	3/8"	–	TUBING	INST AIR	NOT SHOWN
X	4	2"	–	NPT	SKID DRAIN	NOT SHOWN
W	1	3/8"	–	TUBING	GAS TO PILOT	NOT SHOWN
V	1	3/8"	–	TUBING	INSTRUMENT GAS TO BTEX	NOT SHOWN
U	1	3/8"	–	TUBING	FUEL GAS TO SENSING LINE	NOT SHOWN
T	3	3/8"	–	TUBING	INSTRUMENT GAS OR AIR TO BTEX	NOT SHOWN

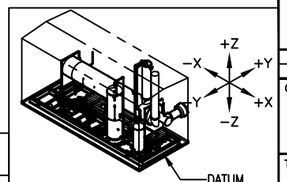
CONNECTION SCHEDULE

NOTES:
1. PAN TOLERANCE TO BE WITHIN 1/4" SQUARE

PAINT NOTES:
1. PAINT CODE = CARLSBAD CANYON TAN SPEC.
2. EPOXY BASED PAINT USING 2 TOP COATS, STACK IN HIGH TEMP. BLACK. 2 MIL DFT FOR EACH COAT REQUIRED.

WEIGHT NOTES:
1. ENCLOSURE WEIGHT = 8,000 LBS
2. UNIT WEIGHT OF 22,000 LBS IS DRY WEIGHT, WITHOUT ENCLOSURE

TOLERANCES
PROCESS CONNECTIONS...±1/4"
UTILITY CONNECTIONS.....±1/4"
STRUCTURAL.....±1/4"
EXCEPT WHERE NOTED



CENTER OF GRAVITY (X,Y,Z):
X= -150"
Y= -6"
Z= 44"

OVERALL DIMENSIONS (WxLxH):
368 3/4" X 171 5/8" X 217 1/4"

WEIGHT: SEE NOTES

REV	DESCRIPTION	DATE	BY	CHK
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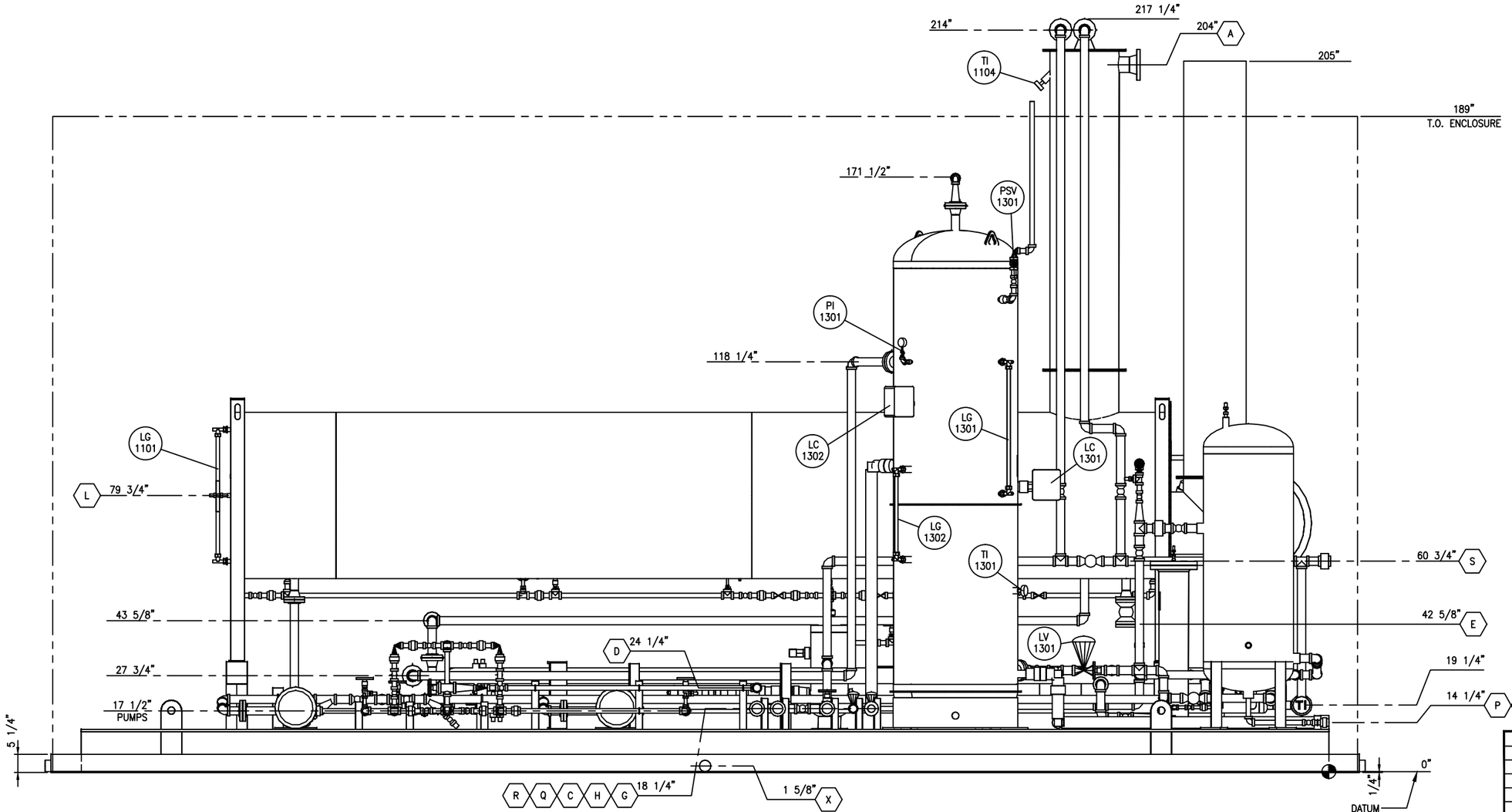
DATE	DRAWN	CHECKED	APPROVED
7/1/14	GG	GG	CM

CLIENT
ONEOK
PEGT26

TITLE
1.5MM REGENERATION UNIT
GENERAL ARRANGEMENT
ISO VIEWS

SCALE: 3/4" = 1'-0"

DRAWING NUMBER	SHEETS	REV
FGC211409-200	SHT# 2 OF 4	0



ELEVATION (A) SHT. 2
SCALE AS NOTED

* ENCLOSURE LIMITS PHANTOMED FOR REFERENCE

NOTE:
1. SEE SHEET 2 FOR CONNECTION SCHEDULE.

REV	DESCRIPTION	DATE	BY	CHK
0	ISSUED FOR CONSTRUCTION	7/31/14	GG	CM

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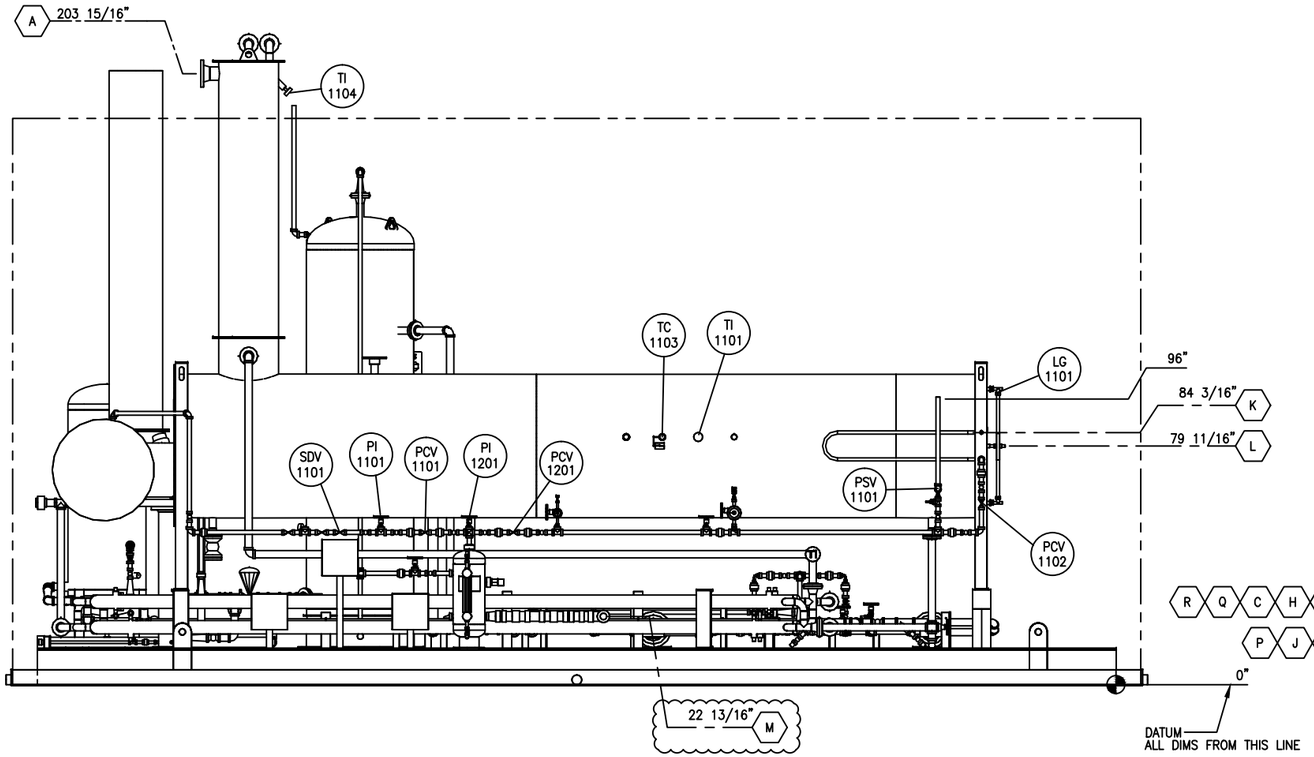
DATE	DRAWN	CHECKED	APPROVED
7/1/14	GG	GG	CM

CLIENT
ONEOK
PEGT26

TITLE
1.5MM REGENERATION UNIT
GENERAL ARRANGEMENT
ELEVATION VIEW

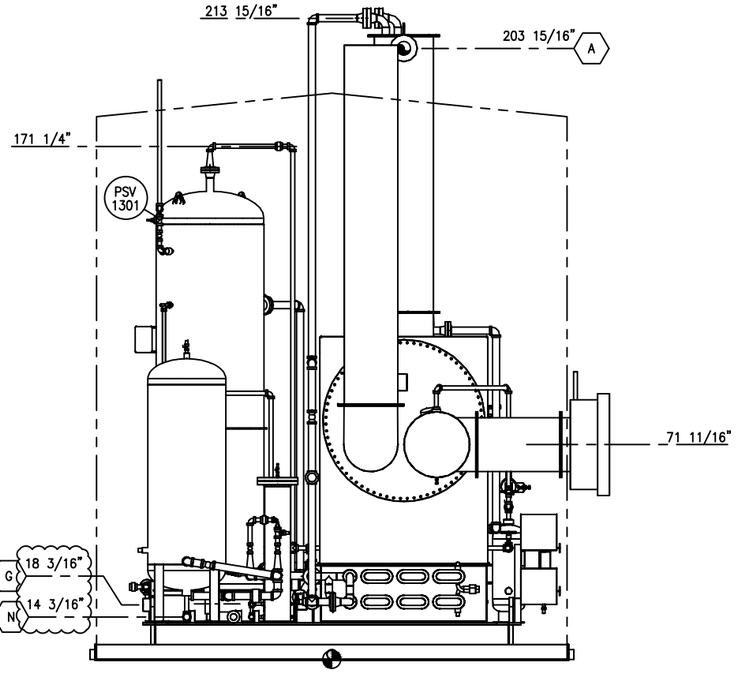
SCALE: 3/4" = 1'-0"

DRAWING NUMBER	SHEETS	REV
FGC211409-200	SHT# 3 OF 4	0



ELEVATION B
SCALE AS NOTED SHT. 2

* ENCLOSURE LIMITS PHANTOMED FOR REFERENCE



ELEVATION C
SCALE AS NOTED SHT. 2

* ENCLOSURE LIMITS PHANTOMED FOR REFERENCE

NOTE:
1. SEE SHEET 2 FOR CONNECTION SCHEDULE.

REV	DESCRIPTION	DATE	BY	CHK
0	ISSUED FOR CONSTRUCTION	7/31/14	GG	CM

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VALERUS
919 MILAM, STE 1000, HOUSTON, TX 77002

DATE	DRAWN	CHECKED	APPROVED
7/1/14	GG	GG	CM

CLIENT
ONEOK
PEGT26

TITLE
1.5MM REGENERATION UNIT
GENERAL ARRANGEMENT
ELEVATION VIEWS

SCALE: 1/2" = 1'-0"

DRAWING NUMBER	SHEETS	REV
FGC211409-200	SHT# 4 OF 4	0

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..... 23 - 5319

REC. NO. 0
TEST NUMBER.. 62064
SAMPLE TYPE.. SPOT

DATE SAMPLED..... 05-15-25
TIME SAMPLED..... 10:30
DATE RUN..... 05-19-25

STATION NO. ...
PRODUCER ..... ENLINK
SAMPLE NAME.... ALAMO DISCHARGE UPSTREAM OF CONTACTOR
RECEIVED FROM.. ENLINK MIDSTREAM
LOCATION ..... MIDLAND TEXAS

FLOWING PRESSURE ..... 1174 PSIG

FLOWING TEMPERATURE ..... 110 F

SAMPLED BY: 199

CYLINDER NO. .. ENL-204

* FRACTIONAL ANALYSIS
CALCULATED @ 14.650 PSIA AND 60F

	MOL%	GPM (REAL)
HYDROGEN SULFIDE...	0.0004	
NITROGEN.....	2.0180	
CARBON DIOXIDE.....	3.4185	
METHANE.....	72.2334	
ETHANE.....	11.1208	2.969
PROPANE.....	6.3368	1.743
ISO-BUTANE.....	0.8802	0.287
NOR-BUTANE.....	2.2380	0.705
ISO-PENTANE.....	0.5341	0.195
NOR-PENTANE.....	0.5859	0.212
HEXANES	0.4780	0.208
HEPTANES + ...	0.1559	0.068
TOTALS	100.0000	6.387

H2S PPMV = 4

'Z' FACTOR (DRY) = 0.9959
'Z' FACTOR (WET) = 0.9955

..CALCULATED SPECIFIC GRAVITIES..

IDEAL, DRY..... 0.7944
IDEAL, WET 0.7914
REAL, DRY 0.7974
REAL, WET 0.7946

..CALCULATED GROSS HEATING VALUES..

BTU/CF - IDEAL, DRY 1260.8
BTU/CF - IDEAL, WET 1238.7
BTU/CF - REAL, DRY 1266.0
BTU/CF - REAL, WET 1244.3

* BASED ON GPA STANDARDS 2261-20 / 2145-16 / 2172-19
DISTRIBUTION AND REMARKS:

B. BROWN / A. ORTIZ / L. GUELKER

ANALYZED BY: JT

APPROVED:



MANLEY GAS TESTING INC.
120 DOCK ROAD - ODESSA, TEXAS-432-367-3024

A SAMPLE OF ENLINK - alamo disch/upstream of contactor 5-15-25

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

COMPONENT	MOL%	WT%
NEOHEXANE	0.612	0.594
2,3DMC4+CYC5	5.529	4.672
2MPENTANE	18.142	17.614
3MPENTANE	9.222	8.953
N-HEXANE	20.349	19.758
2,2 DMPENTANE	0.149	0.168
MCYCLOPENTANE	8.773	8.318
2,4 DMPENTANE	0.000	0.000
2,2,3 TMBUTANE	0.023	0.025
BENZENE	3.722	3.276
3,3 DMPENTANE	0.051	0.057
CYCLOHEXANE	8.977	8.512
2MHEXANE	1.715	1.936
2,3 DMPENTANE	1.074	1.212
3MHEXANE	2.025	2.287
DIMCYCPENTANES(GROUPED)	4.249	4.700
N-HEPTANE	3.760	4.244
MCYCLOHEXANE	4.958	5.485
2,2DMHEXANE	0.488	0.628
2,3,3TMPENTANE	0.014	0.018
TOLUENE	1.926	2.000
2,3DMHEXANE	0.073	0.094
2M3EPENTANE	0.012	0.016
2MHEPTANE	0.939	1.208
4MHEPTANE	0.173	0.222
3,4DMHEXANE	0.042	0.055
3MHEPTANE	0.477	0.614
TRIMCYCPENTANES(GROUPED)	0.091	0.114
DIMCYCHEXANES(GROUPED)	0.865	1.095
N-OCTANE	0.596	0.767
2,3,5TRIMHEXANE	0.017	0.025
2,2,4TRIMHEXANE	0.041	0.059
2,2DIMHEPTANE	0.007	0.010
2,2,3TRIMHEXANE	0.006	0.009
2,5DIMHEPTANE	0.009	0.012
I-NONANE	0.000	0.000
2,4DIMHEPTANE	0.008	0.012
E-CYCHEXANE	0.096	0.121
3,3DIMHEPTANE	0.044	0.064
2,6DIMHEPTANE	0.012	0.018
E-BENZENE	0.018	0.022
2,3DIMHEPTANE	0.010	0.014
M-XYLENE	0.156	0.187
P-XYLENE	0.037	0.044
3,4DIMHEPTANE	0.028	0.040
3EHEPTANE	0.007	0.010

MANLEY GAS TESTING INC.
120 DOCK ROAD - ODESSA, TEXAS-432-367-3024

A SAMPLE OF ENLINK - alamo disch/upstream of contactor 5-15-25

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

COMPONENT	MOL%	WT%
4MOCTANE	0.031	0.045
3MOCTANE	0.015	0.021
O-XYLENE	0.021	0.025
IC4CYCPENTANE	0.010	0.014
N-NONANE	0.070	0.101
I-DECANE	0.010	0.016
1E1MCYC6	0.008	0.011
IC3BENZENE	0.008	0.011
2,3DMOCTANE	0.041	0.065
3EOCTANE	0.076	0.122
NC4CYCC6	0.005	0.008
NC3BENZENE	0.006	0.008
M+P E-TOLUENE	0.008	0.011
O-E-TOLUENE	0.019	0.025
2,2DMOCTANE	0.049	0.079
TERTBUTYLBENZENE	0.009	0.013
1,3,5TMBENZENE	0.004	0.005
3,6DMOCTANE	0.007	0.011
IC4BENZENE	0.003	0.004
N-DECANE	0.002	0.003
UNKNOWN C-6'S	0.000	0.000
UNKNOWN C-7'S	0.000	0.000
UNKNOWN C-8'S	0.017	0.021
UNKNOWN C-9'S	0.046	0.066
UNK C10'S THRU C14'S	0.013	0.026
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	75.326	71.697
TOTAL C-7'S	19.930	22.114
TOTAL C-8'S	4.115	5.251
TOTAL C-9'S	0.414	0.591
TOTAL C-10'S	0.202	0.321
TOTAL C-11 THRU C-14	0.013	0.026
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 = 88.764
SP.GRAVITY = 3.0648
BTU/FT3(DRY) = 4788.294
BTU/FT3(WET) = 4705.855
CU.FT./GAL = 25.467
GAL/CU.FT. = 0.039266
MOL% C6+ AROMATICS = 5.937

ProMax Dehydration Emissions Report

Case Name:	Alamo Compressor Station
File Name:	C:\Users\Admin\Resolute Compliance, LLC\Environmental Compliance - General\Env\Projects\Env-EnLink-0430\5.0 Alamo - Initial NSR\5.2 Modeling\5.2.2 BRE ProMax-Other Simulation\ProMax_Dehydration_Tool.pmx
Date:	
Description:	

Dry Gas Flow Rate	99.67	MMSCFD
Dry Gas Water Content	41.49	lb/MMSCF
Glycol Circulation Rate	7.00	sgpm
Glycol Circulation Ratio	0.51	gal/lb
Annual Operating Hours	8760	hrs

INPUT SUMMARY:

Feed Stream Specifications

Fraction of Water Saturaton (%)	100.00
Water Content (lbm/MMSCF)	197.24
Temperature (°F)	146.90
Pressure (psig)	1012.00
Flow Rate (MMSCFD)	100.00

Lean Glycol Specifications

Glycol Circulation Rate (sgpm)	7.00

Regenerator Specifications

Reboiler Temperature (°F)	400.000
Overhead Vapors	To Control Device
Is Reflux Coil Present?	Yes

Flash Tank Specifications

Is Flash Tank Present?	Flash Tank Present
Temperature (°F)	250.00
Pressure (psig)	125.00
Flash Gas	FALSE

Stripping Gas Specifications

Nitrogen (scfm)	Not In Use
Dry gas (scfm)	Not In Use

Kimray Pump Specifications

Type	Gas Injection
Gas Injection Volume Ratio (acfm/gpm)	0.080

Methanol Specifications

Is Methanol Present?	Not Present in Feed
MeOH Feed Mass Fraction (ppm)	0.00

BTEX Condenser Specifications	
Temperature (°F)	100.00
Pressure (psig)	-0.30
BTEX Emissions	To Flare

General Specifications	
Atmospheric Pressure (psia)	14.700
Flash Gas Flare Destruction Efficiency (%)	95.000
Regenerator Flare Destruction Efficiency (%)	95.000

Feed Composition Data (mol %)	
Carbon Dioxide	3.42
Hydrogen Sulfide	0.00
Nitrogen	2.02
Methane	72.23
Ethane	11.12
Propane	6.34
i-Butane	0.88
n-Butane	2.24
i-Pentane	0.53
n-Pentane	0.59
Cyclopentane	0.00
n-Hexane	0.10
Cyclohexane	0.36
n-Heptane	0.15
Methylcyclohexane	0.00
2,2,4-Trimethylpentane	0.00
Benzene	0.02
Toluene	0.00
Ethylbenzene	0.00
o-Xylene	0.00
m-Xylene	0.00
p-Xylene	0.00
Triethylene Glycol	0.00
Ethylene Glycol	0.00
Water	0.00
Methanol	0.00
O2	0.00
SO2	0.00
Total	100.00

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Carbon Dioxide	54.5921	1310.2108	239.1135
Hydrogen Sulfide	0.0001	0.0021	0.0004
Nitrogen	561.4753	13475.4074	2459.2619
Methane	0.0967	2.3217	0.4237
Ethane	0.0756	1.8145	0.3311
Propane	0.1092	2.6206	0.4783
i-Butane	0.0235	0.5636	0.1029
n-Butane	0.0963	2.3105	0.4217
i-Pentane	0.0378	0.9074	0.1656
n-Pentane	0.0490	1.1759	0.2146
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0186	0.4461	0.0814
Cyclohexane	0.2383	5.7202	1.0439
n-Heptane	0.0346	0.8309	0.1516
Methylcyclohexane	0.0000	0.0000	0.0000
2,2,4-Trimethylpentane	0.0000	0.0000	0.0000
Benzene	0.0908	2.1783	0.3975
Toluene	0.0222	0.5335	0.0974
Ethylbenzene	0.0000	0.0000	0.0000
o-Xylene	0.0000	0.0000	0.0000
m-Xylene	0.0012	0.0279	0.0051
p-Xylene	0.0006	0.0137	0.0025
Triethylene Glycol	0.0000	0.0000	0.0000
Ethylene Glycol	0.0000	0.0000	0.0000
Water	25.4912	611.7896	111.6516
Methanol	0.0000	0.0000	0.0000
O2	110.4943	2651.8630	483.9650
SO2	0.0032	0.0762	0.0139
Total Emissions	752.9506	18070.8141	3297.9236
Total HC Emissions	0.8944	21.4650	3.9174
Total VOC Emissions	0.7220	17.3287	3.1625
Total HAP Emissions	0.1333	3.1996	0.5839
Total GHG Emissions	54.6889	1312.5326	239.5372

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Carbon Dioxide	2.6181	62.8340	11.4672
Hydrogen Sulfide	0.0019	0.0463	0.0084
Nitrogen	0.0326	0.7821	0.1427
Methane	1.9381	46.5142	8.4889
Ethane	1.5169	36.4058	6.6441
Propane	2.1947	52.6726	9.6127
i-Butane	0.4741	11.3786	2.0766
n-Butane	1.9524	46.8588	8.5517
i-Pentane	0.7812	18.7478	3.4215
n-Pentane	1.0218	24.5230	4.4755
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.4206	10.0944	1.8422
Cyclohexane	5.7947	139.0729	25.3808
n-Heptane	0.9695	23.2670	4.2462
Methylcyclohexane	0.0000	0.0000	0.0000
2,2,4-Trimethylpentane	0.0000	0.0000	0.0000
Benzene	2.4128	57.9079	10.5682
Toluene	0.7436	17.8474	3.2571
Ethylbenzene	0.0000	0.0000	0.0000
o-Xylene	0.0000	0.0000	0.0000
m-Xylene	0.0735	1.7636	0.3219
p-Xylene	0.0353	0.8483	0.1548
Triethylene Glycol	0.0426	1.0221	0.1865
Ethylene Glycol	0.0000	0.0000	0.0000
Water	622.5502	14941.2054	2726.7700
Methanol	0.0000	0.0000	0.0000
O2	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000
Total Emissions	645.5747	15493.7921	2827.6171
Total HC Emissions	20.3718	488.9243	89.2287
Total VOC Emissions	16.9168	406.0043	74.0958
Total HAP Emissions	3.6859	88.4616	16.1442
Total GHG Emissions	4.5562	109.3483	19.9561

CONTROLLED FLASH TANK EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Carbon Dioxide	0.00	0.00	0.00
Hydrogen Sulfide	0.00	0.00	0.00
Nitrogen	0.00	0.00	0.00
Methane	0.00	0.00	0.00
Ethane	0.00	0.00	0.00
Propane	0.00	0.00	0.00
i-Butane	0.00	0.00	0.00
n-Butane	0.00	0.00	0.00
i-Pentane	0.00	0.00	0.00
n-Pentane	0.00	0.00	0.00
Cyclopentane	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00
Cyclohexane	0.00	0.00	0.00
n-Heptane	0.00	0.00	0.00
Methylcyclohexane	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
o-Xylene	0.00	0.00	0.00
m-Xylene	0.00	0.00	0.00
p-Xylene	0.00	0.00	0.00
Triethylene Glycol	0.00	0.00	0.00
Ethylene Glycol	0.00	0.00	0.00
Water	0.00	0.00	0.00
Methanol	0.00	0.00	0.00
O2	0.00	0.00	0.00
SO2	0.00	0.00	0.00
Total Emissions	0.00	0.00	0.00
Total HC Emissions	0.00	0.00	0.00
Total VOC Emissions	0.00	0.00	0.00
Total HAP Emissions	0.00	0.00	0.00
Total GHG Emissions	0.00	0.00	0.00

UNCONTROLLED FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Carbon Dioxide	24.4616	587.0785	107.1418
Hydrogen Sulfide	0.0047	0.1121	0.0205
Nitrogen	4.3641	104.7379	19.1147
Methane	98.4442	2362.6620	431.1858
Ethane	33.2224	797.3380	145.5142
Propane	30.2304	725.5292	132.4091
i-Butane	5.5444	133.0660	24.2846
n-Butane	15.9747	383.3929	69.9692
i-Pentane	4.8411	116.1862	21.2040
n-Pentane	5.5255	132.6117	24.2016
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	1.1966	28.7185	5.2411
Cyclohexane	7.9944	191.8665	35.0156
n-Heptane	2.4156	57.9732	10.5801
Methylcyclohexane	0.0000	0.0000	0.0000
2,2,4-Trimethylpentane	0.0000	0.0000	0.0000
Benzene	0.9564	22.9543	4.1892
Toluene	0.1887	4.5287	0.8265
Ethylbenzene	0.0000	0.0000	0.0000
o-Xylene	0.0000	0.0000	0.0000
m-Xylene	0.0128	0.3061	0.0559
p-Xylene	0.0063	0.1523	0.0278
Triethylene Glycol	0.1394	3.3466	0.6108
Ethylene Glycol	0.0000	0.0000	0.0000
Water	23.9612	575.0680	104.9499
Methanol	0.0000	0.0000	0.0000
O2	0.0000	0.0000	0.0000
SO2	0.0000	0.0000	0.0000
Total Emissions	259.4845	6227.6287	1136.5422
Total HC Emissions	206.6930	4960.6322	905.3154
Total VOC Emissions	75.0263	1800.6323	328.6154
Total HAP Emissions	2.3608	56.6599	10.3404
Total GHG Emissions	122.9059	2949.7404	538.3276

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Carbon Dioxide	54.59	1310.21	239.11
Hydrogen Sulfide	0.00	0.00	0.00
Nitrogen	561.48	13475.41	2459.26
Methane	0.10	2.32	0.42
Ethane	0.08	1.81	0.33
Propane	0.11	2.62	0.48
i-Butane	0.02	0.56	0.10
n-Butane	0.10	2.31	0.42
i-Pentane	0.04	0.91	0.17
n-Pentane	0.05	1.18	0.21
Cyclopentane	0.00	0.00	0.00
n-Hexane	0.02	0.45	0.08
Cyclohexane	0.24	5.72	1.04
n-Heptane	0.03	0.83	0.15
Methylcyclohexane	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00
Benzene	0.09	2.18	0.40
Toluene	0.02	0.53	0.10
Ethylbenzene	0.00	0.00	0.00
o-Xylene	0.00	0.00	0.00
m-Xylene	0.00	0.03	0.01
p-Xylene	0.00	0.01	0.00
Triethylene Glycol	0.00	0.00	0.00
Ethylene Glycol	0.00	0.00	0.00
Water	25.49	611.79	111.65
Methanol	0.00	0.00	0.00
O2	110.49	2651.86	483.96
SO2	0.00	0.08	0.01
Total Emissions	752.95	18070.81	3297.92
Total HC Emissions	0.89	21.46	3.92
Total VOC Emissions	0.72	17.33	3.16
Total HAP Emissions	0.13	3.20	0.58
Total GHG Emissions	54.69	1312.53	239.54

EQUIPMENT REPORTS:

BTEX CONDENSER

Condenser Outlet Temperature:	100.00	deg. F
Condenser Pressure:	14.40	psia
Condenser Duty:	-0.68	MMBTU/hr
Hydrocarbon Recovery:	0.18	bbls/day
Produced Water:	42.67	bbls/day
VOC Control Efficiency:	14.42	%
HAP Control Efficiency:	27.65	%
BTEX Control Efficiency:	29.73	%
Dissolved Hydrocarbons in Water:	560.89	mg/L

Component	Emitted (wt. %)	Condensed (wt. %)
Carbon Dioxide	97.29	2.71
Hydrogen Sulfide	92.18	7.82
Nitrogen	99.92	0.08
Methane	99.83	0.17
Ethane	99.68	0.32
Propane	99.51	0.49
i-Butane	99.07	0.93
n-Butane	98.62	1.38
i-Pentane	96.80	3.20
n-Pentane	95.90	4.10
Cyclopentane	0.00	0.00
n-Hexane	88.38	11.62
Cyclohexane	82.26	17.74
n-Heptane	71.42	28.58
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	75.23	24.77
Toluene	59.79	40.21
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	31.60	68.40
p-Xylene	32.41	67.59
Triethylene Glycol	0.00	100.00
Ethylene Glycol	0.00	0.00
Water	0.09	99.91
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00

ABSORBER

Absorber Stages:	3.00	
Dry Gas Dew Point:	41.49	lb H2O/MMSCF
Temperature:	156.90	deg. F
Pressure:	1031.70	psia
Dry Gas Flow Rate:	99.67	MMSCFD
TEG Losses with Dry Gas:	6.16	lb/hr
Wet Gas Water Content:	197.24	lb H2O/MMSCF
Lean Glycol Recirc. Ratio:	0.51	gal/lb H2O

Component	In Dry Gas (%)	Absorbed in Glycol (%)
Carbon Dioxide	99.90	0.10
Hydrogen Sulfide	99.63	0.37
Nitrogen	100.00	0.00
Methane	99.99	0.01
Ethane	99.97	0.03
Propane	99.96	0.04
i-Butane	99.96	0.04
n-Butane	99.94	0.06
i-Pentane	99.93	0.07
n-Pentane	99.93	0.07
Cyclopentane	-	-
n-Hexane	99.89	0.11
Cyclohexane	99.65	0.35
n-Heptane	99.86	0.14
Methylcyclohexane	-	-
2,2,4-Trimethylpentane	-	-
Benzene	97.86	2.14
Toluene	97.00	3.00
Ethylbenzene	-	-
o-Xylene	-	-
m-Xylene	96.37	3.63
p-Xylene	96.49	3.51
Triethylene Glycol	0.16	99.84
Ethylene Glycol	-	-
Water	20.18	79.82
Methanol	-	-
O2	-	-
SO2	-	-

FLASH TANK

Flash Temperature:	250	deg. F
Flash Pressure:	125	psig

Component	Flashed (wt. %)	Left in Glycol (wt. %)
Carbon Dioxide	90.33	9.67
Hydrogen Sulfide	70.79	29.21
Nitrogen	99.26	0.74
Methane	98.07	1.93
Ethane	95.63	4.37
Propane	93.23	6.77
i-Butane	92.12	7.88
n-Butane	89.11	10.89
i-Pentane	86.11	13.89
n-Pentane	84.39	15.61
Cyclopentane	0.00	0.00
n-Hexane	73.99	26.01
Cyclohexane	57.98	42.02
n-Heptane	71.36	28.64
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	28.39	71.61
Toluene	20.24	79.76
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	14.78	85.22
p-Xylene	15.21	84.79
Triethylene Glycol	0.00	100.00
Ethylene Glycol	0.00	0.00
Water	3.52	96.48
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00

REGENERATOR

Component	Recovered in Glycol (%)	Distilled Overhead (%)
Carbon Dioxide	0.00	100.00
Hydrogen Sulfide	0.00	100.00
Nitrogen	0.00	100.00
Methane	0.00	100.00
Ethane	0.00	100.00
Propane	0.00	100.00
i-Butane	0.00	100.00
n-Butane	0.00	100.00
i-Pentane	0.00	100.00
n-Pentane	0.00	100.00
Cyclopentane	-	-
n-Hexane	0.00	100.00
Cyclohexane	0.00	100.00
n-Heptane	0.00	100.00
Methylcyclohexane	-	-
2,2,4-Trimethylpentane	-	-
Benzene	0.00	100.00
Toluene	0.02	99.98
Ethylbenzene	-	-
o-Xylene	-	-
m-Xylene	0.07	99.93
p-Xylene	0.06	99.94
Triethylene Glycol	100.00	0.00
Ethylene Glycol	-	-
Water	5.34	94.66
Methanol	-	-
O2	-	-
SO2	-	-

STREAM REPORTS:

WET GAS STREAM

Temperature:	146.90	deg F
Pressure:	1026.70	psia
Flow Rate:	100.02	MMSCFD

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	3.41	16463.83
Hydrogen Sulfide	0.00	1.49
Nitrogen	2.01	6181.56
Methane	71.93	126721.60
Ethane	11.08	36572.48
Propane	6.31	30563.23
i-Butane	0.88	5595.75
n-Butane	2.23	14229.64
i-Pentane	0.53	4215.55
n-Pentane	0.58	4624.62
Cyclopentane	0.00	0.00
n-Hexane	0.10	917.42
Cyclohexane	0.36	3345.28
n-Heptane	0.15	1672.16
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.02	152.88
Toluene	0.00	30.39
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	2.33
p-Xylene	0.00	1.17
Triethylene Glycol	0.00	0.01
Ethylene Glycol	0.00	0.00
Water	0.41	818.10
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	252109.50

DRY GAS STREAM

Temperature:	151.17	deg F
Pressure:	1021.70	psia
Flow Rate:	99.67	MMSCFD

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	3.42	16447.76
Hydrogen Sulfide	0.00	1.49
Nitrogen	2.02	6181.29
Methane	72.17	126705.95
Ethane	11.11	36562.19
Propane	6.33	30551.25
i-Butane	0.88	5593.47
n-Butane	2.24	14221.23
i-Pentane	0.53	4212.75
n-Pentane	0.59	4621.16
Cyclopentane	0.00	0.00
n-Hexane	0.10	916.41
Cyclohexane	0.36	3333.73
n-Heptane	0.15	1669.89
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.02	149.62
Toluene	0.00	29.48
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	2.25
p-Xylene	0.00	1.13
Triethylene Glycol	0.00	6.16
Ethylene Glycol	0.00	0.00
Water	0.09	172.15
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	251379.36

LEAN GLYCOL STREAM

Temperature:	156.90	deg F
Pressure:	1031.70	psia
Flow Rate:	7.00	sgpm

Component	Conc. (wt%)	Mass Flow (lb/h)
Carbon Dioxide	0.00	0.00
Hydrogen Sulfide	0.00	0.00
Nitrogen	0.00	0.00
Methane	0.00	0.00
Ethane	0.00	0.00
Propane	0.00	0.00
i-Butane	0.00	0.00
n-Butane	0.00	0.00
i-Pentane	0.00	0.00
n-Pentane	0.00	0.00
Cyclopentane	0.00	0.00
n-Hexane	0.00	0.00
Cyclohexane	0.00	0.00
n-Heptane	0.00	0.00
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.00
p-Xylene	0.00	0.00
Triethylene Glycol	99.11	3915.69
Ethylene Glycol	0.00	0.00
Water	0.89	35.16
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	3950.86

RICH GLYCOL STREAM

Temperature:	149.34	deg F
Pressure:	1026.70	psia
Flow Rate:	9.53	sgpm

Component	Conc. (wt%)	Mass Flow (lb/h)
Carbon Dioxide	0.56	27.08
Hydrogen Sulfide	0.00	0.01
Nitrogen	0.09	4.40
Methane	2.07	100.38
Ethane	0.72	34.74
Propane	0.67	32.43
i-Butane	0.12	6.02
n-Butane	0.37	17.93
i-Pentane	0.12	5.62
n-Pentane	0.14	6.55
Cyclopentane	0.00	0.00
n-Hexane	0.03	1.62
Cyclohexane	0.28	13.79
n-Heptane	0.07	3.39
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.07	3.37
Toluene	0.02	0.93
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.09
p-Xylene	0.00	0.04
Triethylene Glycol	80.62	3909.54
Ethylene Glycol	0.00	0.00
Water	14.06	681.66
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	4849.57

FLASH TANK OFF GAS STREAM

Temperature:	250.00	deg F
Pressure:	139.70	psia
Flow Rate:	4034.30	scfh

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	5.23	24.46
Hydrogen Sulfide	0.00	0.00
Nitrogen	1.47	4.36
Methane	57.72	98.44
Ethane	10.39	33.22
Propane	6.45	30.23
i-Butane	0.90	5.54
n-Butane	2.59	15.97
i-Pentane	0.63	4.84
n-Pentane	0.72	5.53
Cyclopentane	0.00	0.00
n-Hexane	0.13	1.20
Cyclohexane	0.89	7.99
n-Heptane	0.23	2.42
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.12	0.96
Toluene	0.02	0.19
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.01
p-Xylene	0.00	0.01
Triethylene Glycol	0.01	0.14
Ethylene Glycol	0.00	0.00
Water	12.51	23.96
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	259.48

FLASH TANK GLYCOL STREAM

Temperature:	250.00	deg F
Pressure:	139.70	psia
Flow Rate:	8.31	sgpm

Component	Conc. (wt%)	Mass Flow (lb/h)
Carbon Dioxide	0.06	2.62
Hydrogen Sulfide	0.00	0.00
Nitrogen	0.00	0.03
Methane	0.04	1.94
Ethane	0.03	1.52
Propane	0.05	2.19
i-Butane	0.01	0.47
n-Butane	0.04	1.95
i-Pentane	0.02	0.78
n-Pentane	0.02	1.02
Cyclopentane	0.00	0.00
n-Hexane	0.01	0.42
Cyclohexane	0.13	5.79
n-Heptane	0.02	0.97
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.05	2.41
Toluene	0.02	0.74
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.07
p-Xylene	0.00	0.04
Triethylene Glycol	85.17	3909.40
Ethylene Glycol	0.00	0.00
Water	14.33	657.70
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	4590.08

REGENERATOR OVERHEADS STREAM

Temperature:	210.64	deg F
Pressure:	14.40	psia
Flow Rate:	13292.93	scfh

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	0.17	2.62
Hydrogen Sulfide	0.00	0.00
Nitrogen	0.00	0.03
Methane	0.34	1.94
Ethane	0.14	1.52
Propane	0.14	2.19
i-Butane	0.02	0.47
n-Butane	0.10	1.95
i-Pentane	0.03	0.78
n-Pentane	0.04	1.02
Cyclopentane	0.00	0.00
n-Hexane	0.01	0.42
Cyclohexane	0.20	5.79
n-Heptane	0.03	0.97
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.09	2.41
Toluene	0.02	0.74
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.07
p-Xylene	0.00	0.04
Triethylene Glycol	0.00	0.04
Ethylene Glycol	0.00	0.00
Water	98.65	622.55
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	645.57

BTEX CONDENSER VENT GAS STREAM

Temperature:	100.00	deg F
Pressure:	14.40	psia
Flow Rate:	179.20	scfh

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	12.26	2.55
Hydrogen Sulfide	0.01	0.00
Nitrogen	0.25	0.03
Methane	25.54	1.93
Ethane	10.65	1.51
Propane	10.49	2.18
i-Butane	1.71	0.47
n-Butane	7.02	1.93
i-Pentane	2.22	0.76
n-Pentane	2.88	0.98
Cyclopentane	0.00	0.00
n-Hexane	0.91	0.37
Cyclohexane	11.99	4.77
n-Heptane	1.46	0.69
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	4.92	1.82
Toluene	1.02	0.44
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.05	0.02
p-Xylene	0.02	0.01
Triethylene Glycol	0.00	0.00
Ethylene Glycol	0.00	0.00
Water	6.61	0.56
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	21.03

BTEX CONDENSER RECOVERED OIL STREAM

Temperature:	100.00	deg F
Pressure:	14.40	psia
Flow Rate:	0.01	sgpm

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	0.13	0.00
Hydrogen Sulfide	0.00	0.00
Nitrogen	0.00	0.00
Methane	0.09	0.00
Ethane	0.23	0.00
Propane	0.71	0.01
i-Butane	0.28	0.00
n-Butane	1.71	0.02
i-Pentane	1.37	0.02
n-Pentane	2.33	0.04
Cyclopentane	0.00	0.00
n-Hexane	2.29	0.05
Cyclohexane	48.53	1.01
n-Heptane	11.20	0.28
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	17.28	0.33
Toluene	10.98	0.25
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	1.86	0.05
p-Xylene	0.88	0.02
Triethylene Glycol	0.00	0.00
Ethylene Glycol	0.00	0.00
Water	0.13	0.00
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	2.09

BTEX CONDENSER PRODUCED WATER STREAM

Temperature:	100.00	deg F
Pressure:	14.40	psia
Flow Rate:	1.24	sgpm

Component	Conc. (mol%)	Mass Flow (lb/h)
Carbon Dioxide	0.00	0.07
Hydrogen Sulfide	0.00	0.00
Nitrogen	0.00	0.00
Methane	0.00	0.00
Ethane	0.00	0.00
Propane	0.00	0.00
i-Butane	0.00	0.00
n-Butane	0.00	0.00
i-Pentane	0.00	0.00
n-Pentane	0.00	0.00
Cyclopentane	0.00	0.00
n-Hexane	0.00	0.00
Cyclohexane	0.00	0.02
n-Heptane	0.00	0.00
Methylcyclohexane	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00
Benzene	0.01	0.26
Toluene	0.00	0.05
Ethylbenzene	0.00	0.00
o-Xylene	0.00	0.00
m-Xylene	0.00	0.00
p-Xylene	0.00	0.00
Triethylene Glycol	0.00	0.04
Ethylene Glycol	0.00	0.00
Water	99.98	621.99
Methanol	0.00	0.00
O2	0.00	0.00
SO2	0.00	0.00
Total Components	100.00	622.45

Bryan Research & Engineering, LLC

ProMax® 6.0

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Simulation Report

Project: Alamo Amine.pmx

Licensed to Resolute Compliance, LLC and Affiliates

Client Name: Delaware G&P, LLC
Location: Alamo Compressor Station
Job: Amine

ProMax Filename: C:\Users\Admin\Resolute Compliance, LLC\Environmental Compliance - General\Env\Projects\Env-EnLink-0430\5.0 Alamo - GCP Mod 3\5.2 Modeling\5.2.2 BRE ProMax-Other Simulation\Alamo Amine.pmx
ProMax Version: 6.0.24302.0
Simulation Initiated: 8/11/2025 11:17:54 AM

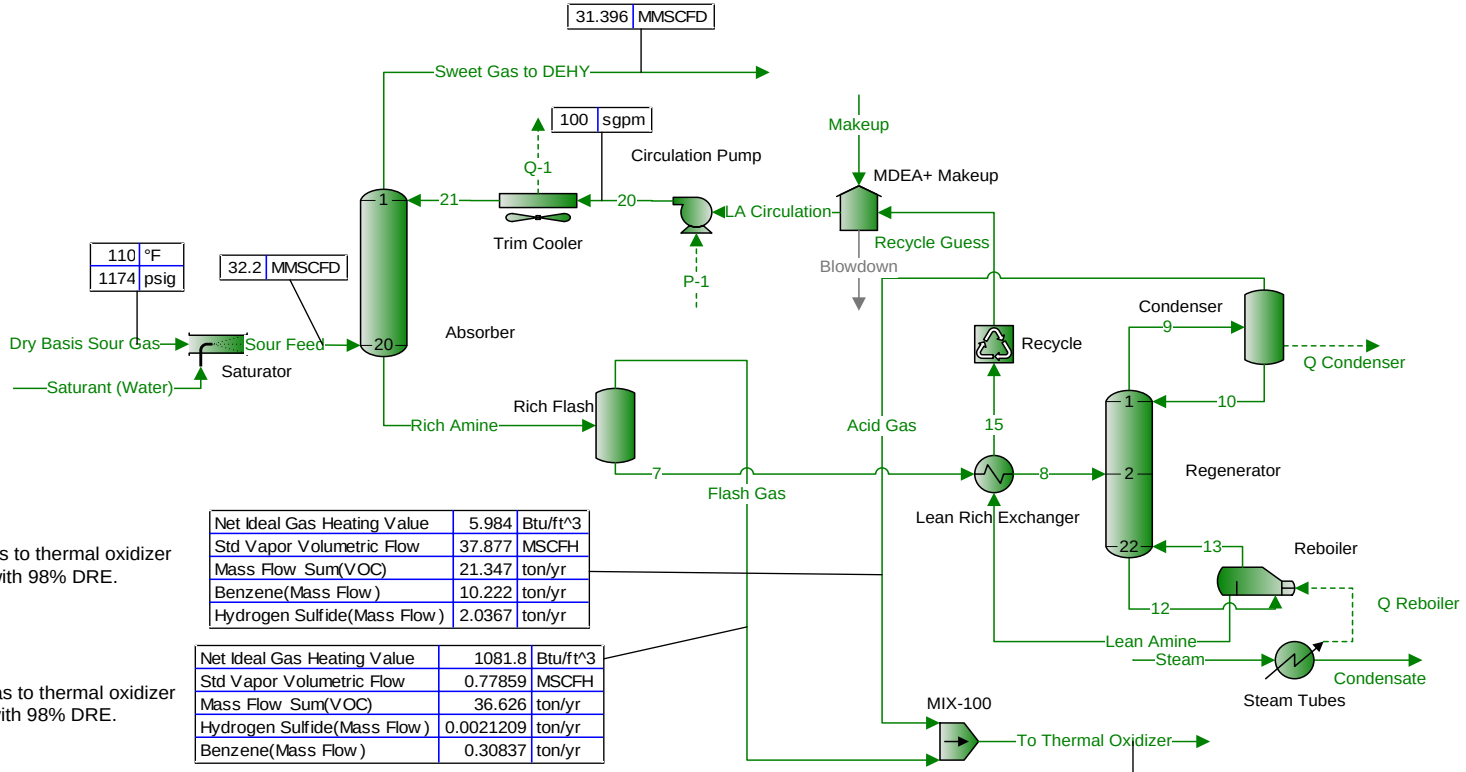
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Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Alamo Compressor Station Amine (AU-1)
Emissions Based on Alamo Discharge (Sampled 05/15/25)

Gas Throughput: 32.2 MMSCFD

MDEA Sweetening with 1 wt% Piperazine



Acid gas to thermal oxidizer with 98% DRE.

Net Ideal Gas Heating Value	5.984	Btu/ft^3
Std Vapor Volumetric Flow	37.877	MSCFH
Mass Flow Sum(VOC)	21.347	ton/yr
Benzene(Mass Flow)	10.222	ton/yr
Hydrogen Sulfide(Mass Flow)	2.0367	ton/yr

Flash gas to thermal oxidizer with 98% DRE.

Net Ideal Gas Heating Value	1081.8	Btu/ft^3
Std Vapor Volumetric Flow	0.77859	MSCFH
Mass Flow Sum(VOC)	36.626	ton/yr
Hydrogen Sulfide(Mass Flow)	0.0021209	ton/yr
Benzene(Mass Flow)	0.30837	ton/yr

Temperature	99.916	°F
Pressure	27	psia
Std Vapor Volumetric Flow	38.655	MSCFH
Net Ideal Gas Heating Value	27.652	Btu/ft^3
Mass Fraction Sum(VOCs)	0.30504	%
Hydrogen Sulfide(Molar Flow)	0.013658	lbmol/h

Process Streams		Acid Gas	Blowdown	Condensate	Dry Basis Sour Gas	Flash Gas	LA Circulation	Lean Amine	Makeup
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	Condenser	MDEA+ Makeup	Steam Tubes	--	Rich Flash	MDEA+ Makeup	Reboiler	--
	To Block:	MIX-100	--	--	Saturator	MIX-100	Circulation Pump	Lean Rich Exchanger	MDEA+ Makeup
Mole Fraction		%	%	%	%	%	%	%	%
Hydrogen Sulfide		0.0136697	0.000112825	0	0.000400000*	0.000692502	0.000111867	0.000112850	0
N2		0.000865772	0	0	2.01800*	0.821455	0	0	0
Carbon Dioxide		96.0101	0.00942381	0	3.41850*	5.13600	0.00934380	0.00942634	0
Methane		0.241475	0	0	72.2335*	71.6648	0	0	0
Ethane		0.0825013	0	0	11.1208*	13.4598	0	0	0
Propane		0.0264328	0	0	6.33681*	5.20996	0	0	0
Isobutane		0.00184823	0	0	0.880201*	0.474272	0	0	0
n-Butane		0.00924890	0	0	2.23800*	1.60193	0	0	0
Isopentane		0.000879611	0	0	0.534101*	0.221826	0	0	0
n-Pentane		0.00139136	0	0	0.585901*	0.288435	0	0	0
n-Hexane		0.000128370	0	0	0.0973001*	0.0323583	0	0	0
Benzene		0.0299353	0	0	0.0178000*	0.0439298	0	0	0
i-Hexane		0.000510574	0	0	0.362900*	0.127866	0	0	0
Heptane		5.58463E-05	0	0	0.148500*	0.0243580	0	0	0
Toluene		0.00482037	0	0	0.00300000*	0.00599101	0	0	0
m-Xylene		0.000408433	0	0	0.000200000*	0.000307720	0	0	0
p-Xylene		0.000206579	0	0	0.000100000*	0.000155451	0	0	0
o-Xylene		0	0	0	0*	0	0	0	0
Ethylbenzene		0	0	0	0*	0	0	0	0
Octane		1.07499E-06	0	0	0.00340000*	0.000451392	0	0	0
Nonane		1.98605E-08	0	0	0.000300000*	1.64809E-05	0	0	0
Decane		5.34084E-09	0	0	0.000300000*	7.82162E-06	0	0	0
Water		3.57556	86.1879	100	0*	0.885315	86.3045	86.1880	99.9207
MDEA		4.47836E-15	13.4310	0	0*	4.39881E-05	13.3176	13.4309	0.0764067
Piperazine		3.53457E-17	0.371609	0	0*	1.26323E-07	0.368478	0.371606	0.00289027
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Hydrogen Sulfide		0.0136439	0	0	0.0141221*	1.42081E-05	0.00179309	0.00179350	0
N2		0.000864141	0	0	71.2460*	0.0168539	0	0	0
Carbon Dioxide		95.8291	0	0	120.691*	0.105376	0.149770	0.149811	0
Methane		0.241020	0	0	2550.22*	1.47035	0	0	0
Ethane		0.0823458	0	0	392.622*	0.276157	0	0	0
Propane		0.0263830	0	0	223.722*	0.106893	0	0	0
Isobutane		0.00184474	0	0	31.0757*	0.00973070	0	0	0
n-Butane		0.00923147	0	0	79.0131*	0.0328669	0	0	0
Isopentane		0.000877954	0	0	18.8565*	0.00455122	0	0	0
n-Pentane		0.00138874	0	0	20.6853*	0.00591785	0	0	0
n-Hexane		0.000128128	0	0	3.43520*	0.000663900	0	0	0
Benzene		0.0298789	0	0	0.628433*	0.000901312	0	0	0
i-Hexane		0.000509612	0	0	12.8123*	0.00262343	0	0	0
Heptane		5.57411E-05	0	0	5.24283*	0.000499755	0	0	0
Toluene		0.00481129	0	0	0.105916*	0.000122918	0	0	0
m-Xylene		0.000407663	0	0	0.00706105*	6.31353E-06	0	0	0
p-Xylene		0.000206190	0	0	0.00353052*	3.18941E-06	0	0	0
o-Xylene		0	0	0	0*	0	0	0	0
Ethylbenzene		0	0	0	0*	0	0	0	0
Octane		1.07296E-06	0	0	0.120038*	9.26127E-06	0	0	0
Nonane		1.98230E-08	0	0	0.0105916*	3.38141E-07	0	0	0
Decane		5.33077E-09	0	0	0.0105916*	1.60477E-07	0	0	0
Water		3.56883	0	299.746	0*	0.0181641	1383.36	1369.77	13.5987
MDEA		4.46992E-15	0	0	0*	9.02508E-07	213.465	213.455	0.0103985
Piperazine		3.52791E-17	0	0	0*	2.59178E-09	5.90626	5.90587	0.000393350

Process Streams		Recycle Guess	Rich Amine	Saturant (Water)	Sour Feed	Steam	Sweet Gas to DEHY	To Thermal Oxidizer	7	8
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	Recycle	Absorber	--	Saturator	--	Absorber	MIX-100	Rich Flash	Lean Rich Exchanger
	To Block:	MDEA+ Makeup	Rich Flash	Saturator	Absorber	Steam Tubes	--	--	Lean Rich Exchanger	Regenerator
Mole Fraction		%	%	%	%	%	%	%	%	%
Hydrogen Sulfide		0.000112825	0.000913679	0*	0.000399437	0*	1.34468E-05	0.0134083	0.000913948	0.000913948
N2		0	0.00104769	0*	2.01516	0*	2.06624	0.0173939	5.11601E-05	5.11601E-05
Carbon Dioxide		0.00942381	5.68161	0*	3.41369	0*	0.718151	94.1797	5.68228	5.68228
Methane		0	0.101196	0*	72.1317	0*	73.9289	1.68007	0.0142692	0.0142692
Ethane		0	0.0211988	0*	11.1051	0*	11.3791	0.351945	0.00487515	0.00487515
Propane		0	0.00788084	0*	6.32788	0*	6.48603	0.130839	0.00156196	0.00156196
Isobutane		0	0.000684474	0*	0.878960	0*	0.901130	0.0113637	0.000109215	0.000109215
n-Butane		0	0.00248934	0*	2.23485	0*	2.29085	0.0413283	0.000546534	0.000546534
Isopentane		0	0.000321035	0*	0.533348	0*	0.546846	0.00532986	5.19778E-05	5.19778E-05
n-Pentane		0	0.000432050	0*	0.585075	0*	0.599843	0.00717293	8.22180E-05	8.22180E-05
n-Hexane		0	4.68338E-05	0*	0.0971630	0*	0.0996278	0.000777540	7.58564E-06	7.58564E-06
Benzene		0	0.00182008	0*	0.0177749	0*	0.0173371	0.0302172	0.00176893	0.00176893
i-Hexane		0	0.000185262	0*	0.362389	0*	0.371577	0.00307574	3.01707E-05	3.01707E-05
Heptane		0	3.28474E-05	0*	0.148291	0*	0.152072	0.000545335	3.30006E-06	3.30006E-06
Toluene		0	0.000291767	0*	0.00299578	0*	0.00292934	0.00484395	0.000284844	0.000284844
m-Xylene		0	2.44791E-05	0*	0.000199718	0*	0.000192823	0.000406404	2.41350E-05	2.41350E-05
p-Xylene		0	1.23809E-05	0*	9.98592E-05	0*	9.63421E-05	0.000205549	1.22071E-05	1.22071E-05
o-Xylene		0	0	0*	0	0*	0	0	0	0
Ethylbenzene		0	0	0*	0	0*	0	0	0	0
Octane		0	6.11079E-07	0*	0.00339521	0*	0.00348184	1.01452E-05	6.35230E-08	6.35230E-08
Nonane		0	2.11669E-08	0*	0.000299578	0*	0.000307238	3.51416E-07	1.17359E-09	1.17359E-09
Decane		0	9.80448E-09	0*	0.000299578	0*	0.000307243	1.62775E-07	3.15600E-10	3.15600E-10
Water		86.1879	81.2087	100*	0.140929	100*	0.434684	3.52138	81.3062	81.3062
MDEA		13.4310	12.6219	0*	0	0*	0.000301119	8.86000E-07	12.6372	12.6372
Piperazine		0.371609	0.349223	0*	0	0*	1.14081E-05	2.54437E-09	0.349647	0.349647
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Hydrogen Sulfide		0.00179309	0.0154516	0*	0.0141221	0*	0.000463542	0.0136581	0.0154374	0.0154374
N2		0	0.0177180	0*	71.2460	0*	71.2282	0.0177180	0.000864141	0.000864141
Carbon Dioxide		0.149770	96.0843	0*	120.691	0*	24.7564	95.9345	95.9790	95.9790
Methane		0	1.71137	0*	2550.22	0*	2548.51	1.71137	0.241020	0.241020
Ethane		0	0.358503	0*	392.622	0*	392.264	0.358503	0.0823458	0.0823458
Propane		0	0.133276	0*	223.722	0*	223.589	0.133276	0.0263830	0.0263830
Isobutane		0	0.0115754	0*	31.0757	0*	31.0641	0.0115754	0.00184474	0.00184474
n-Butane		0	0.0420984	0*	79.0131	0*	78.9710	0.0420984	0.00923147	0.00923147
Isopentane		0	0.00542917	0*	18.8565	0*	18.8511	0.00542917	0.000877954	0.000877954
n-Pentane		0	0.00730659	0*	20.6853	0*	20.6780	0.00730659	0.00138874	0.00138874
n-Hexane		0	0.000792028	0*	3.43520	0*	3.43441	0.000792028	0.000128128	0.000128128
Benzene		0	0.0307802	0*	0.628433	0*	0.597653	0.0307802	0.0298789	0.0298789
i-Hexane		0	0.00313305	0*	12.8123	0*	12.8091	0.00313305	0.000509612	0.000509612
Heptane		0	0.000555497	0*	5.24283	0*	5.24227	0.000555497	5.57411E-05	5.57411E-05
Toluene		0	0.00493421	0*	0.105916	0*	0.100981	0.00493421	0.00481129	0.00481129
m-Xylene		0	0.000413977	0*	0.00706105	0*	0.00664707	0.000413977	0.000407663	0.000407663
p-Xylene		0	0.000209379	0*	0.00353052	0*	0.00332114	0.000209379	0.000206190	0.000206190
o-Xylene		0	0	0*	0	0*	0	0	0	0
Ethylbenzene		0	0	0*	0	0*	0	0	0	0
Octane		0	1.03342E-05	0*	0.120038	0*	0.120027	1.03342E-05	1.07296E-06	1.07296E-06
Nonane		0	3.57964E-07	0*	0.0105916	0*	0.0105912	3.57964E-07	1.98230E-08	1.98230E-08
Decane		0	1.65808E-07	0*	0.0105916	0*	0.0105914	1.65808E-07	5.33077E-09	5.33077E-09
Water		1369.76	1373.36	4.98253*	4.98253	299.746*	14.9846	3.58699	1373.34	1373.34
MDEA		213.455	213.455	0*	0	0*	0.0103803	9.02508E-07	213.455	213.455
Piperazine		5.90587	5.90587	0*	0	0*	0.000393264	2.59178E-09	5.90587	5.90587

Process Streams		9	10	12	13	15	20	21
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	Regenerator	Condenser	Regenerator	Reboiler	Lean Rich Exchanger	Circulation Pump	Trim Cooler
	To Block:	Condenser	Regenerator	Reboiler	Regenerator	Recycle	Trim Cooler	Absorber
Mole Fraction		%	%	%	%	%	%	%
Hydrogen Sulfide		0.0100543	3.44124E-05	0.000110730	9.89854E-05	0.000112850	0.000111867	0.000111867
N2		0.000636217	1.62446E-08	0	0	0	0	0
Carbon Dioxide		70.5734	0.0773541	0.0183058	0.0675095	0.00942634	0.00934380	0.00934380
Methane		0.177450	9.09006E-06	0	0	0	0	0
Ethane		0.0606270	3.70524E-06	0	0	0	0	0
Propane		0.0194244	9.38007E-07	0	0	0	0	0
Isobutane		0.00135818	3.98073E-08	0	0	0	0	0
n-Butane		0.00679662	2.94446E-07	0	0	0	0	0
Isopentane		0.000646386	1.53943E-08	0	0	0	0	0
n-Pentane		0.00102245	2.94930E-08	0	0	0	0	0
n-Hexane		9.43333E-05	1.71016E-09	0	0	0	0	0
Benzene		0.0220268	0.000108616	0	0	0	0	0
i-Hexane		0.000375197	6.81454E-09	0	0	0	0	0
Heptane		4.10387E-05	4.31474E-10	0	0	0	0	0
Toluene		0.00354602	1.42228E-05	0	0	0	0	0
m-Xylene		0.000300548	1.55069E-06	0	0	0	0	0
p-Xylene		0.000152013	7.84332E-07	0	0	0	0	0
o-Xylene		0	0	0	0	0	0	0
Ethylbenzene		0	0	0	0	0	0	0
Octane		7.89956E-07	6.40379E-12	0	0	0	0	0
Nonane		1.45945E-08	5.59957E-14	0	0	0	0	0
Decane		3.92471E-09	7.43046E-15	0	0	0	0	0
Water		29.1220	99.9225	88.2726	99.8242	86.1880	86.3045	86.3045
MDEA		1.69296E-06	6.38491E-06	11.3913	0.0893855	13.4309	13.3176	13.3176
Piperazine		7.17534E-08	2.70614E-07	0.317677	0.0188365	0.371606	0.368478	0.368478
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Hydrogen Sulfide		0.0136563	1.23934E-05	0.00207740	0.000283896	0.00179350	0.00179309	0.00179309
N2		0.000864147	5.85039E-09	0	0	0	0	0
Carbon Dioxide		95.8570	0.0278585	0.343432	0.193621	0.149811	0.149770	0.149770
Methane		0.241023	3.27372E-06	0	0	0	0	0
Ethane		0.0823472	1.33442E-06	0	0	0	0	0
Propane		0.0263833	3.37817E-07	0	0	0	0	0
Isobutane		0.00184476	1.43363E-08	0	0	0	0	0
n-Butane		0.00923158	1.06043E-07	0	0	0	0	0
Isopentane		0.000877959	5.54414E-09	0	0	0	0	0
n-Pentane		0.00138875	1.06217E-08	0	0	0	0	0
n-Hexane		0.000128129	6.15903E-10	0	0	0	0	0
Benzene		0.0299181	3.91174E-05	0	0	0	0	0
i-Hexane		0.000509615	2.45421E-09	0	0	0	0	0
Heptane		5.57412E-05	1.55392E-10	0	0	0	0	0
Toluene		0.00481641	5.12224E-06	0	0	0	0	0
m-Xylene		0.000408222	5.58470E-07	0	0	0	0	0
p-Xylene		0.000206472	2.82472E-07	0	0	0	0	0
o-Xylene		0	0	0	0	0	0	0
Ethylbenzene		0	0	0	0	0	0	0
Octane		1.07296E-06	2.30628E-12	0	0	0	0	0
Nonane		1.98230E-08	2.01665E-14	0	0	0	0	0
Decane		5.33078E-09	2.67603E-15	0	0	0	0	0
Water		39.5552	35.9864	1656.07	286.302	1369.77	1383.36	1383.36
MDEA		2.29948E-06	2.29948E-06	213.711	0.256363	213.455	213.465	213.465
Piperazine		9.74597E-08	9.74597E-08	5.95990	0.0540241	5.90587	5.90626	5.90626

Mass Fraction	%	%	%	%	%	%	%	%
Hydrogen Sulfide	0.0108305	0.000120705	0	0.000593134*	0.00105978	0.000120121	0.000120732	0
N2	0.000563832	0	0	2.45963*	1.03331	0	0	0
Carbon Dioxide	98.2299	0.0130192	0	6.54582*	10.1497	0.0129561	0.0130227	0
Methane	0.0900582	0	0	50.4186*	51.6249	0	0	0
Ethane	0.0576714	0	0	14.5492*	18.1736	0	0	0
Propane	0.0270969	0	0	12.1576*	10.3160	0	0	0
Isobutane	0.00249734	0	0	2.22590*	1.23781	0	0	0
n-Butane	0.0124972	0	0	5.65958*	4.18087	0	0	0
Isopentane	0.00147537	0	0	1.67662*	0.718659	0	0	0
n-Pentane	0.00233372	0	0	1.83922*	0.934456	0	0	0
n-Hexane	0.000257175	0	0	0.364820*	0.125214	0	0	0
Benzene	0.0543603	0	0	0.0604949*	0.154084	0	0	0
i-Hexane	0.00102287	0	0	1.36067*	0.494788	0	0	0
Heptane	0.000130092	0	0	0.647418*	0.109597	0	0	0
Toluene	0.0103253	0	0	0.0120266*	0.0247869	0	0	0
m-Xylene	0.00100805	0	0	0.000923833*	0.00146697	0	0	0
p-Xylene	0.000509857	0	0	0.000461917*	0.000741067	0	0	0
o-Xylene	0	0	0	0*	0	0	0	0
Ethylbenzene	0	0	0	0*	0	0	0	0
Octane	2.85469E-06	0	0	0.0168980*	0.00231532	0	0	0
Nonane	5.92167E-08	0	0	0.00167409*	9.49157E-05	0	0	0
Decane	1.76660E-08	0	0	0.00185717*	4.99722E-05	0	0	0
Water	1.49750	48.7413	100	0*	0.716179	48.9869	48.7415	99.4831
MDEA	1.24062E-14	50.2408	0	0*	0.000235373	50	50.2406	0.503179
Piperazine	7.07782E-17	1.00480	0	0*	4.88593E-07	1	1.00479	0.0137586
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Hydrogen Sulfide	0.464997	0	0	0.481293*	0.000484226	0.0611102	0.0611240	0
N2	0.0242075	0	0	1995.84*	0.472135	0	0	0
Carbon Dioxide	4217.39	0	0	5311.55*	4.63754	6.59130	6.59311	0
Methane	3.86655	0	0	40911.7*	23.5881	0	0	0
Ethane	2.47606	0	0	11805.8*	8.30378	0	0	0
Propane	1.16338	0	0	9865.17*	4.71353	0	0	0
Isobutane	0.107221	0	0	1806.19*	0.565570	0	0	0
n-Butane	0.536553	0	0	4592.42*	1.91030	0	0	0
Isopentane	0.0633433	0	0	1360.48*	0.328365	0	0	0
n-Pentane	0.100196	0	0	1492.42*	0.426965	0	0	0
n-Hexane	0.0110415	0	0	296.029*	0.0572118	0	0	0
Benzene	2.33390	0	0	49.0881*	0.0704031	0	0	0
i-Hexane	0.0439160	0	0	1104.10*	0.226075	0	0	0
Heptane	0.00558536	0	0	525.341*	0.0500765	0	0	0
Toluene	0.443304	0	0	9.75890*	0.0113255	0	0	0
m-Xylene	0.0432796	0	0	0.749636*	0.000670276	0	0	0
p-Xylene	0.0218902	0	0	0.374818*	0.000338604	0	0	0
o-Xylene	0	0	0	0*	0	0	0	0
Ethylbenzene	0	0	0	0*	0	0	0	0
Octane	0.000122563	0	0	13.7117*	0.00105790	0	0	0
Nonane	2.54240E-06	0	0	1.35842*	4.33683E-05	0	0	0
Decane	7.58472E-07	0	0	1.50699*	2.28330E-05	0	0	0
Water	64.2934	0	5400	0*	0.327232	24921.6	24676.8	244.984
MDEA	5.32645E-13	0	0	0*	0.000107545	25437.0	25435.7	1.23911
Piperazine	3.03879E-15	0	0	0*	2.23245E-07	508.740	508.706	0.0338814

Mass Fraction	%	%	%	%	%	%	%	%	%
Hydrogen Sulfide	0.000120705	0.000958040	0*	0.000592479	0*	2.04793E-05	0.0107276	0.000957955	0.000957955
N2	0	0.000902983	0*	2.45691	0*	2.58663	0.0114389	4.40768E-05	4.40768E-05
Carbon Dioxide	0.0130192	7.69303	0*	6.53859	0*	1.41237	97.3024	7.69098	7.69098
Methane	0	0.0499476	0*	50.3629	0*	52.9995	0.632730	0.00704017	0.00704017
Ethane	0	0.0196115	0*	14.5331	0*	15.2902	0.248436	0.00450838	0.00450838
Propane	0	0.0106917	0*	12.1442	0*	12.7809	0.135441	0.00211826	0.00211826
Isobutane	0	0.00122399	0*	2.22344	0*	2.34054	0.0155054	0.000195226	0.000195226
n-Butane	0	0.00445149	0*	5.65333	0*	5.95011	0.0563909	0.000976950	0.000976950
Isopentane	0	0.000712625	0*	1.67476	0*	1.76312	0.00902744	0.000115335	0.000115335
n-Pentane	0	0.000959051	0*	1.83719	0*	1.93399	0.0121491	0.000182435	0.000182435
n-Hexane	0	0.000124172	0*	0.364416	0*	0.383663	0.00157299	2.01043E-05	2.01043E-05
Benzene	0	0.00437408	0*	0.0604281	0*	0.0605176	0.0554104	0.00424953	0.00424953
i-Hexane	0	0.000491188	0*	1.35916	0*	1.43093	0.00622231	7.99617E-05	7.99617E-05
Heptane	0	0.000101264	0*	0.646703	0*	0.680944	0.00128280	1.01698E-05	1.01698E-05
Toluene	0	0.000827097	0*	0.0120133	0*	0.0120614	0.0104776	0.000807163	0.000807163
m-Xylene	0	7.99568E-05	0*	0.000922812	0*	0.000914802	0.00101288	7.88029E-05	7.88029E-05
p-Xylene	0	4.04402E-05	0*	0.000461406	0*	0.000457072	0.000512292	3.98573E-05	3.98573E-05
o-Xylene	0	0	0*	0	0*	0	0	0	0
Ethylbenzene	0	0	0*	0	0*	0	0	0	0
Octane	0	2.14759E-06	0*	0.0168793	0*	0.0177734	2.72054E-05	2.23161E-07	2.23161E-07
Nonane	0	8.35241E-08	0*	0.00167224	0*	0.00176090	1.05807E-06	4.62918E-09	4.62918E-09
Decane	0	4.29193E-08	0*	0.00185512	0*	0.00195352	5.43696E-07	1.38102E-09	1.38102E-09
Water	48.7413	45.0114	100*	0.110498	100*	0.349946	1.48927	45.0482	45.0482
MDEA	50.2408	46.2746	0*	0	0*	0.00160348	2.47852E-06	46.3131	46.3131
Piperazine	1.00480	0.925475	0*	0	0*	4.39120E-05	5.14497E-09	0.926245	0.926245
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Hydrogen Sulfide	0.0611102	0.526606	0*	0.481293	0*	0.0157979	0.465482	0.526121	0.526121
N2	0	0.496342	0*	1995.84	0*	1995.34	0.496342	0.0242075	0.0242075
Carbon Dioxide	6.59130	4228.62	0*	5311.55	0*	1089.52	4222.03	4223.99	4223.99
Methane	0	27.4547	0*	40911.7	0*	40884.3	27.4547	3.86655	3.86655
Ethane	0	10.7798	0*	11805.8	0*	11795.0	10.7798	2.47606	2.47606
Propane	0	5.87690	0*	9865.17	0*	9859.29	5.87690	1.16338	1.16338
Isobutane	0	0.672790	0*	1806.19	0*	1805.51	0.672790	0.107221	0.107221
n-Butane	0	2.44685	0*	4592.42	0*	4589.97	2.44685	0.536553	0.536553
Isopentane	0	0.391708	0*	1360.48	0*	1360.08	0.391708	0.0633433	0.0633433
n-Pentane	0	0.527161	0*	1492.42	0*	1491.89	0.527161	0.100196	0.100196
n-Hexane	0	0.0682533	0*	296.029	0*	295.961	0.0682533	0.0110415	0.0110415
Benzene	0	2.40430	0*	49.0881	0*	46.6838	2.40430	2.33390	2.33390
i-Hexane	0	0.269991	0*	1104.10	0*	1103.83	0.269991	0.0439160	0.0439160
Heptane	0	0.0556618	0*	525.341	0*	525.286	0.0556618	0.00558536	0.00558536
Toluene	0	0.454630	0*	9.75890	0*	9.30427	0.454630	0.443304	0.443304
m-Xylene	0	0.0439498	0*	0.749636	0*	0.705686	0.0439498	0.0432796	0.0432796
p-Xylene	0	0.0222288	0*	0.374818	0*	0.352589	0.0222288	0.0218902	0.0218902
o-Xylene	0	0	0*	0	0*	0	0	0	0
Ethylbenzene	0	0	0*	0	0*	0	0	0	0
Octane	0	0.00118046	0*	13.7117	0*	13.7106	0.00118046	0.000122563	0.000122563
Nonane	0	4.59107E-05	0*	1.35842	0*	1.35838	4.59107E-05	2.54240E-06	2.54240E-06
Decane	0	2.35914E-05	0*	1.50699	0*	1.50696	2.35914E-05	7.58472E-07	7.58472E-07
Water	24676.6	24741.4	89.7618*	89.7618	5400*	269.952	64.6207	24741.1	24741.1
MDEA	25435.7	25435.7	0*	0	0*	1.23694	0.000107545	25435.7	25435.7
Piperazine	508.706	508.706	0*	0	0*	0.0338741	2.23245E-07	508.706	508.706

Mass Fraction	%	%	%	%	%	%	%
Hydrogen Sulfide	0.00941587	6.50276E-05	0.000126814	0.000186011	0.000120732	0.000120121	0.000120121
N2	0.000489744	2.52317E-08	0	0	0	0	0
Carbon Dioxide	85.3466	0.188756	0.0270723	0.163820	0.0130227	0.0129561	0.0129561
Methane	0.0782250	8.08556E-06	0	0	0	0	0
Ethane	0.0500938	6.17744E-06	0	0	0	0	0
Propane	0.0235365	2.29337E-06	0	0	0	0	0
Isobutane	0.00216919	1.28285E-07	0	0	0	0	0
n-Butane	0.0108551	9.48900E-07	0	0	0	0	0
Isopentane	0.00128150	6.15829E-08	0	0	0	0	0
n-Pentane	0.00202707	1.17983E-07	0	0	0	0	0
n-Hexane	0.000223381	8.17133E-09	0	0	0	0	0
Benzene	0.0472787	0.000470418	0	0	0	0	0
i-Hexane	0.000888466	3.25606E-08	0	0	0	0	0
Heptane	0.000112997	2.39719E-09	0	0	0	0	0
Toluene	0.00897801	7.26604E-05	0	0	0	0	0
m-Xylene	0.000876785	9.12806E-06	0	0	0	0	0
p-Xylene	0.000443465	4.61694E-06	0	0	0	0	0
o-Xylene	0	0	0	0	0	0	0
Ethylbenzene	0	0	0	0	0	0	0
Octane	2.47957E-06	4.05587E-11	0	0	0	0	0
Nonane	5.14353E-08	3.98200E-13	0	0	0	0	0
Decane	1.53446E-08	5.86188E-14	0	0	0	0	0
Water	14.4165	99.8106	53.4388	99.1592	48.7415	48.9869	48.9869
MDEA	5.54350E-06	4.21857E-05	45.6145	0.587303	50.2406	50	50
Piperazine	1.69834E-07	1.29242E-06	0.919514	0.0894620	1.00479	1	1
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Hydrogen Sulfide	0.465420	0.000422378	0.0707995	0.00967543	0.0611240	0.0611102	0.0611102
N2	0.0242077	1.63889E-07	0	0	0	0	0
Carbon Dioxide	4218.62	1.22604	15.1143	8.52117	6.59311	6.59130	6.59130
Methane	3.86660	5.25186E-05	0	0	0	0	0
Ethane	2.47610	4.01247E-05	0	0	0	0	0
Propane	1.16339	1.48962E-05	0	0	0	0	0
Isobutane	0.107221	8.33260E-07	0	0	0	0	0
n-Butane	0.536559	6.16345E-06	0	0	0	0	0
Isopentane	0.0633437	4.00003E-07	0	0	0	0	0
n-Pentane	0.100197	7.66344E-07	0	0	0	0	0
n-Hexane	0.0110416	5.30757E-08	0	0	0	0	0
Benzene	2.33695	0.00305553	0	0	0	0	0
i-Hexane	0.0439162	2.11492E-07	0	0	0	0	0
Heptane	0.00558538	1.55706E-08	0	0	0	0	0
Toluene	0.443776	0.000471955	0	0	0	0	0
m-Xylene	0.0433388	5.92900E-05	0	0	0	0	0
p-Xylene	0.0219201	2.99886E-05	0	0	0	0	0
o-Xylene	0	0	0	0	0	0	0
Ethylbenzene	0	0	0	0	0	0	0
Octane	0.000122563	2.63443E-10	0	0	0	0	0
Nonane	2.54241E-06	2.58645E-12	0	0	0	0	0
Decane	7.58472E-07	3.80750E-13	0	0	0	0	0
Water	712.599	648.305	29834.6	5157.81	24676.8	24921.6	24921.6
MDEA	0.000274011	0.000274011	25466.3	30.5488	25435.7	25437.0	25437.0
Piperazine	8.39475E-06	8.39475E-06	513.359	4.65340	508.706	508.740	508.740

Process Streams		Acid Gas	Blowdown	Condensate	Dry Basis Sour Gas	Flash Gas	LA Circulation	Lean Amine	Makeup
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	**From Block:**	Condenser	MDEA+ Makeup	Steam Tubes	--	Rich Flash	MDEA+ Makeup	Reboiler	--
	To Block:	MIX-100	--	--	Saturator	MIX-100	Circulation Pump	Lean Rich Exchanger	MDEA+ Makeup
Property	**Units**								
Temperature	°F	99.9999		297.792	110*	102.794	143.158	258.965	80*
Pressure	psig	12.3041	10.3041	50	1174*	85.3041*	10.3041	15.3041	25.3041*
Mole Fraction Vapor	%	100		0*	100	100	0	0	0
Mole Fraction Light Liquid	%	0		100	0	0	100	100	100
Mole Fraction Heavy Liquid	%	0		0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	43.0150	31.8559	18.0153	22.9836	22.2699	31.7391	31.8558	18.0945
Mass Density	lb/ft^3	0.195168		57.4089	5.83502	0.377216	63.7397	60.3213	62.2173
Molar Flow	lbmol/h	99.8116	0	299.746	3530.52	2.05171	1602.88	1589.28	13.6095
Mass Flow	lb/h	4293.39	0	5400	81144.1	45.6913	50874.0	50627.9	246.257
Vapor Volumetric Flow	ft^3/h	21998.5	0	94.0620	13906.4	121.128	798.152	839.303	3.95801
Liquid Volumetric Flow	gpm	2742.67	0	11.7272	1733.79	15.1017	99.5098	104.640	0.493466
Std Vapor Volumetric Flow	MMSCFD	0.909046	0	2.72997	32.1546	0.0186862	14.5984	14.4746	0.123950
Std Liquid Volumetric Flow	sgpm	10.5005	0	10.7950	432.975	0.247739	100*	99.5081	0.492209
Compressibility		0.990786		0.00249755	0.765879	0.978069	0.00192427	0.00205432	0.00200865
Specific Gravity		1.48520		0.920476	0.793564	0.768921	1.02198	0.967172	0.997572
API Gravity				9.99219			3.55619	3.53363	9.91734
Enthalpy	Btu/h	-1.65776E+07	0	-3.56091E+07	-1.39314E+08	-84557.8	-2.09051E+08	-2.02180E+08	-1.67127E+06
Mass Enthalpy	Btu/lb	-3861.19	-4096.17	-6594.28	-1716.87	-1850.63	-4109.20	-3993.45	-6786.68
Mass Cp	Btu/(lb*°F)	0.210908		1.02823	0.670508	0.469744	0.843426	0.938120	0.996927
Ideal Gas CpCv Ratio		1.28380		1.31815	1.22811	1.24100	1.14459	1.11929	1.32696
Dynamic Viscosity	cP	0.0156718		0.182512	0.0145963	0.0114427	2.44119	0.703568	0.893759
Kinematic Viscosity	cSt	5.01292		0.198468	0.156164	1.89373	2.39095	0.728139	0.896784
Thermal Conductivity	Btu/(h*ft*°F)	0.0101384		0.396111	0.0235288	0.0181244	0.201307	0.193597	0.349858
Surface Tension	lbf/ft			0.00334473			0.00367276	0.00298497	0.00494926
Net Ideal Gas Heating Value	Btu/ft^3	5.98397	492.540	0	1147.73	1081.78	488.382	492.537	2.82668
Net Liquid Heating Value	Btu/lb	-36.9169	5176.44	-1059.76	18881.6	18361.5	5146.56	5176.42	-996.754
Gross Ideal Gas Heating Value	Btu/ft^3	8.30377	580.713	50.3100	1263.39	1192.59	576.235	580.710	53.3536
Gross Liquid Heating Value	Btu/lb	-16.4499	6226.80	0	20791.7	20250.1	6196.96	6226.78	62.9133

Process Streams		Recycle Guess	Rich Amine	Saturant (Water)	Sour Feed	Steam	Sweet Gas to DEHY	To Thermal Oxidizer	7	8
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	**From Block:**	Recycle	Absorber	--	Saturator	--	Absorber	MIX-100	Rich Flash	Lean Rich Exchanger
	To Block:	MDEA+ Makeup	Rich Flash	Saturator	Absorber	Steam Tubes	--	--	Lean Rich Exchanger	Regenerator
Property	**Units**									
Temperature	°F	143.520	100.377	565.968	110	297.792	146.897	99.9163	102.794	210*
Pressure	psig	10.3041	795.304	1174	1174	50*	790.304	12.3041	85.3041	80.3041
Mole Fraction Vapor	%	0	0	75.8882	100	100*	100	100	0	2.18761
Mole Fraction Light Liquid	%	100	100	24.1118	0	0	0	0	100	97.8124
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	31.8559	32.5028	18.0153	22.9766	18.0153	22.3776	42.5971	32.5152	32.5152
Mass Density	lb/ft^3	63.7383	69.6189	3.38122	5.83317	0.147516	3.18838	0.193281	69.6152	15.4882
Molar Flow	lbmol/h	1589.27	1691.14	4.98253	3535.50	299.746	3447.24	101.863	1689.09	1689.09
Mass Flow	lb/h	50627.7	54967.0	89.7618	81233.8	5400*	77140.8	4339.08	54921.3	54921.3
Vapor Volumetric Flow	ft^3/h	794.306	789.541	26.5472	13926.2	36606.3	24194.4	22449.6	788.926	3546.00
Liquid Volumetric Flow	gpm	99.0304	98.4363	3.30978	1736.25	4563.90	3016.44	2798.92	98.3596	442.099
Std Vapor Volumetric Flow	MMSCFD	14.4745	15.4023	0.0453790	32.2*	2.72997	31.3961	0.927732	15.3836	15.3836
Std Liquid Volumetric Flow	sgpm	99.5078	110.256	0.179440	433.155	10.7950	422.898	10.7483	110.009	110.009
Compressibility		0.00193024	0.0629204	0.575415	0.765888	0.971977	0.867953	0.990888	0.00773792	0.0277514
Specific Gravity		1.02196	1.11625		0.793323	0.622021	0.772640	1.47077	1.11619	
API Gravity		3.53450	-5.41579						-5.46005	
Enthalpy	Btu/h	-2.07380E+08	-2.28225E+08	-520387	-1.39835E+08	-3.06607E+07	-1.21552E+08	-1.66622E+07	-2.28141E+08	-2.22938E+08
Mass Enthalpy	Btu/lb	-4096.17	-4152.04	-5797.43	-1721.38	-5677.92	-1575.72	-3840.02	-4153.96	-4059.23
Mass Cp	Btu/(lb*°F)	0.842964	0.662279	0.844215	0.670432	0.469175	0.593006	0.213521	0.664364	0.793965
Ideal Gas CpCv Ratio		1.14382	1.16002	1.30070	1.22821	1.31815	1.21786	1.28283	1.15924	1.13260
Dynamic Viscosity	cP	2.45518	7.32449		0.0146013	0.0143563	0.0132385	0.0155998	7.01216	
Kinematic Viscosity	cSt	2.40471	6.56795		0.156267	6.07553	0.259209	5.03858	6.28821	
Thermal Conductivity	Btu/(h*ft*°F)	0.200641	0.183334		0.0235300	0.0183372	0.0227325	0.0103015	0.183117	
Surface Tension	lbf/ft	0.00366584	0.00352199?						0.00475884?	
Net Ideal Gas Heating Value	Btu/ft^3	492.540	464.536	0	1146.11	0	1174.65	27.6525	463.786	463.786
Net Liquid Heating Value	Btu/lb	5176.44	4780.18	-1059.76	18859.6	-1059.76	19848.2	156.822	4768.88	4768.88
Gross Ideal Gas Heating Value	Btu/ft^3	580.713	547.668	50.3100	1261.69	50.3100	1293.25	32.1574	546.885	546.885
Gross Liquid Heating Value	Btu/lb	6226.80	5750.79	0	20768.7	0	21859.8	196.961	5738.72	5738.72

Process Streams		9	10	12	13	15	20	21
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	**From Block:**	Regenerator	Condenser	Regenerator	Reboiler	Lean Rich Exchanger	Circulation Pump	Trim Cooler
	To Block:	Condenser	Regenerator	Reboiler	Regenerator	Recycle	Trim Cooler	Absorber
Property	**Units**							
Temperature	°F	181.677	99.9999	257.569	258.965	143.489	145.254	120*
Pressure	psig	12.3041	12.3041	15.3041	15.3041	10.3041	795.304*	790.304
Mole Fraction Vapor	%	100	0	0	100	0	0	0
Mole Fraction Light Liquid	%	0	100	100	0	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	36.3916	18.0355	29.7584	18.1361	31.8558	31.7391	31.7391
Mass Density	lb/ft^3	0.143869	61.9753	60.3063	0.0716135	63.7390	63.7701	64.3366
Molar Flow	lbmol/h	135.826	36.0143	1876.09	286.806	1589.28	1602.88	1602.88
Mass Flow	lb/h	4942.93	649.536	55829.4	5201.54	50627.9	50874.0	50874.0
Vapor Volumetric Flow	ft^3/h	34357.2	10.4806	925.765	72633.5	794.300	797.771	790.747
Liquid Volumetric Flow	gpm	4283.49	1.30667	115.420	9055.60	99.0296	99.4624	98.5866
Std Vapor Volumetric Flow	MMSCFD	1.23705	0.328005	17.0867	2.61212	14.4746	14.5984	14.5984
Std Liquid Volumetric Flow	sgpm	11.7996	1.29902	109.911	10.4032	99.5081	100	100
Compressibility		0.992297	0.00130821	0.00192327	0.985141	0.00193032	0.0621009	0.0638392
Specific Gravity		1.25651	0.993692	0.966931	0.626192	1.02197	1.02247	1.03155
API Gravity			9.93724	3.95237		3.53451	3.41981	3.42067
Enthalpy	Btu/h	-2.02192E+07	-4.40929E+06	-2.36559E+08	-2.94302E+07	-2.07382E+08	-2.08873E+08	-2.09943E+08
Mass Enthalpy	Btu/lb	-4090.53	-6788.38	-4237.17	-5657.98	-4096.21	-4105.69	-4126.73
Mass Cp	Btu/(lb*°F)	0.251747	0.997794	0.943995	0.461907	0.842940	0.842224	0.823115
Ideal Gas CpCv Ratio		1.27976	1.32812	1.13211	1.31631	1.14383	1.14406	1.15075
Dynamic Viscosity	cP	0.0171162	0.698360	0.619471	0.0135451	2.45625	2.40624	3.53792
Kinematic Viscosity	cSt	7.42712	0.703460	0.641265	11.8078	2.40573	2.35559	3.43296
Thermal Conductivity	Btu/(h*ft*°F)	0.0126353	0.359019	0.207982	0.0169917	0.200642	0.201282	0.201650
Surface Tension	lbf/ft		0.00480586	0.00306916		0.00366601	0.00366598	0.00379785
Net Ideal Gas Heating Value	Btu/ft^3	4.39871	0.00523824	417.822	3.79915	492.537	488.382	488.382
Net Liquid Heating Value	Btu/lb	-171.066	-1057.78	4603.42	-973.710	5176.42	5146.56	5146.56
Gross Ideal Gas Heating Value	Btu/ft^3	19.4329	50.2765	500.244	54.3601	580.710	576.235	576.235
Gross Liquid Heating Value	Btu/lb	-14.2918	-0.0270508	5654.49	84.2399	6226.78	6196.96	6196.96

NattyGas Lab

10700 FM 307
Midland, TX 79706
432-686-2719
www.nattygaslab.com

NGL Analysis Report

Method	GPA 2186	**Analyzed On**	10/21/2024
Analysis #	2806		
Cylinder #	-	**Analyzed By**	Stefan Carrasco

Customer Information

Attn: Chris Sanchez
303 W Wall St #202
Midland, TX 79701

Sample Information

Producer:	Enlink	**Sampled By:**	Chris Sanchez
Location:	Alamo Station	**Sample Date:**	10/17/2024
Station #:	Condensate	**Sample Pressure:**	30 psig
County:	-	**Sample Temp:**	77 F
Sample Type:	Spot	**Sample Method:**	Constant Pressure
Remarks:		**Cylinder Pressure:**	psig

Base Condition: 14.65 psia and 60° F

Physical Constants per GPA 2145-16

Component	Mol %	Wt %	L.V. %
Nitrogen	0.0947	0.0306	0.0262
Carbon Dioxide	1.3453	0.6825	0.5772
Methane	6.9169	1.2791	2.9480
Ethane	3.3649	1.1663	2.2623
Propane	5.3969	2.7433	3.7379
Iso-Butane	1.6452	1.1023	1.3535
N-Butane	5.7780	3.8713	4.5793
Iso-Pentane	3.5002	2.9111	3.2181
N-Pentane	5.1849	4.3122	4.7250
2,2-Dimethylbutane	0.0672	0.0667	0.0705
2,3-Dimethylbutane & Cyclopentane	0.6092	0.6052	0.6280
2-Methylpentane	2.6603	2.6427	2.7761
3-Methylpentane	1.6151	1.6045	1.6571
N-Hexane	4.7406	4.7093	4.9008
2,2-Dimethylpentane	0.0655	0.0757	0.0771
Methylcyclopentane	2.3438	2.2739	2.0851
2,4-Dimethylpentane	0.0159	0.0184	0.0187
Benzene	0.9880	0.8896	0.6951
3,3-Dimethylpentane	0.0521	0.0602	0.0596
Cyclohexane	3.5810	3.4741	3.0639
2-Methylhexane	1.3575	1.5680	1.5859
2,3-Dimethylpentane	0.4761	0.5500	0.5434
1,1-Dimethylcyclopentane	0.5043	0.5708	0.5196
3-Methylhexane	1.7003	1.9640	1.9628
1,t-3-Dimethylcyclopentane	0.7434	0.8415	0.7718

1,c-3-Dimethylcyclopentane	0.8123	0.9194	0.8478
2,2,4-Trimethylpentane	1.0412	1.3711	1.3607
N-Heptane	4.4527	5.1432	5.1645
Methylcyclohexane	6.3508	7.1881	6.4178
1,1,3-Trimethylcyclopentane	0.0987	0.1276	0.1172
2,5-Dimethylhexane	0.1861	0.2451	0.2425
2,4-Dimethylhexane & Ethylcyclopentane	0.4753	0.6259	0.6147
3,3-Dimethylhexane	0.5564	0.7326	0.7091
1,t-2,c-3-Trimethylcyclopentane	0.4610	0.5963	0.5435
2,3,4-Trimethylpentane	0.0422	0.0555	0.0531
Toluene	2.4911	2.6458	2.0973
2,3-Dimethylhexane	0.2479	0.2633	0.3148
1,1,2-Trimethylcyclopentane	0.0564	0.0730	0.0650
2-Methylheptane	1.8494	2.4352	2.3975
4-Methylheptane	0.3851	0.5072	0.4944
3,4-Dimethylhexane	0.1242	0.1636	0.1563
3-Methylheptane	0.8226	1.0832	1.0546
3-Ethylhexane	0.1179	0.1553	0.1496
1,c-3-Dimethylcyclohexane	1.3966	1.8065	1.6191
1,t-4-Dimethylcyclohexane	0.4858	0.6284	0.5660
1,1-Dimethylcyclohexane	0.3087	0.3993	0.3514
2,2,4-Trimethylhexane	0.0703	0.1040	0.0998
Cycloheptane	0.2831	0.3204	0.2714
N-Octane	2.8735	3.7837	3.7008
1,t-3-Dimethylcyclohexane	0.5391	0.6974	0.6116
2,2-Dimethylheptane	0.1441	0.2130	0.2060
2,4-Dimethylheptane	0.3065	0.4531	0.4356
2,6-Dimethylheptane	0.5699	0.8425	0.8152
2,5-Dimethylheptane	0.2112	0.3123	0.2995
Ethylcyclohexane	1.3337	1.7252	1.5041
3,3-Dimethylheptane	0.5562	0.8224	0.7783
2,3,4-Trimethylhexane	0.0954	0.1410	0.1313
Ethylbenzene	0.3726	0.4560	0.3616
2,3-Dimethylheptane	0.4237	0.6264	0.5935
M-Xylene	1.6057	1.9651	1.5630
P-Xylene	0.8802	1.0771	0.8598
3,4-Dimethylheptane	0.0123	0.0182	0.0171
2-Methyloctane	0.5377	0.7949	0.7658
4-Methyloctane	0.0560	0.0828	0.0788
3-Methyloctane	0.1582	0.2338	0.2230
O-Xylene	0.4640	0.5679	0.4435
1,1,2-Trimethylcyclohexane	0.1826	0.2658	0.2287
Unidentified Nonanes	1.2829	1.8968	1.8149
N-Nonane	1.6483	2.4370	2.3319
Isopropylbenzene	0.1960	0.2715	0.2165
Isopropylhexane	0.3871	0.5633	0.4828
n-Butylcyclopentane	0.8264	1.2026	1.0537

n-Propylbenzene	0.2078	0.2879	0.2296
M-Ethyltoluene	0.2742	0.3799	0.3021
P-Ethyltoluene	0.3455	0.4787	0.3820
4-Methylnonane	0.1610	0.2640	0.2479
2-Methylnonane	0.1869	0.3066	0.2900
t-Butylbenzene	0.4956	0.7668	0.6085
t-Butylcyclohexane	0.0490	0.0792	0.0670
Unidentified Decanes	1.2750	2.0911	1.9673
N-Decane	0.7314	1.1996	1.1286
Undecanes	2.0262	3.6508	3.3892
Dodecanes	0.5567	1.0932	1.0026
Tridecanes+	0.1642	0.3489	0.3171
Total	**100.0000**	**100.0000**	**100.0000**

Sample Calculations

Absolute Density (lb/gal) =	**5.77**
Ft^3 vapor/gallon @ 14.696 =	**25.30**
API Gravity @ 60°F =	**73.1**
Molecular Weight =	**86.75**
SG @ 60°F (H2O=1) =	**0.6915**
Gas BTU/gallon liquid =	**117336**
Gas BTU/lb liquid =	**20353**

Sample C6+ Calculations

Absolute Density (lb/gal) =	**6.17**
Ft^3 vapor/gallon @ 14.696 =	**22.06**
API Gravity @ 60°F =	**59.8**
Molecular Weight =	**106.40**
SG @ 60°F (H2O=1) =	**0.7397**
Gas BTU/gallon liquid =	**125481**
Gas BTU/lb liquid =	**20347**
C6+ Mole % =	**66.7732**
C6+ WT % =	**81.9013**
C6+ LV % =	**76.5725**

Bryan Research & Engineering, LLC

ProMax® 7.0

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Simulation Report

Project: Alamo CS Tanks - 8.7.26.pmx

Licensed to Resolute Compliance, LLC and Affiliates

Client Name: ONEOK Inc.
Location: Alamo Compressor Station
Job: GCP Mod - Tanks_August

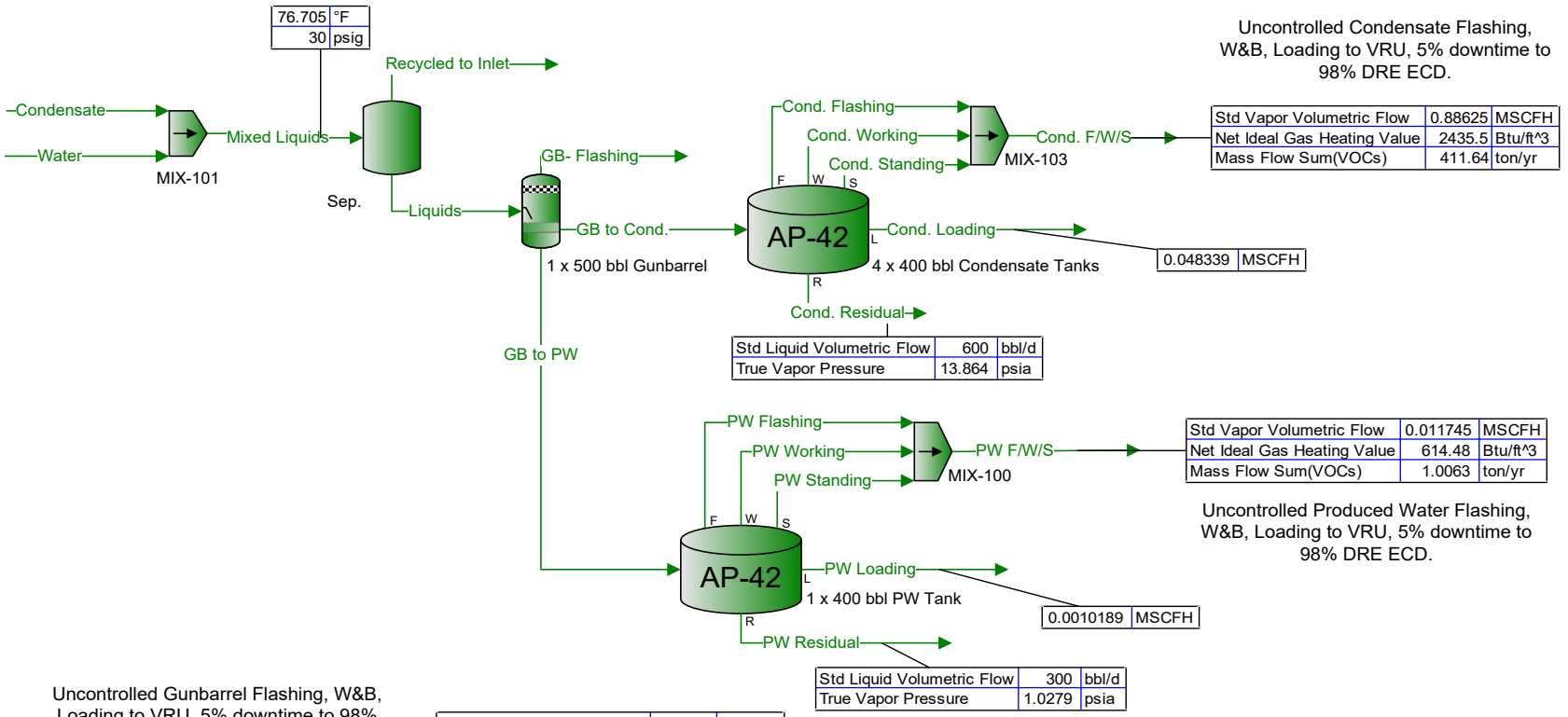
ProMax Filename: C:\Users\Admin\Resolute Compliance, LLC\Environmental Compliance - General\Env\Projects\Env-EnLink-0430\5.0 Alamo - Initial NSR\5.2 Modeling\5.2.2 BRE ProMax-Other Simulation\Alamo CS Tanks - 8.7.26.pmx
ProMax Version: 7.0.26169.0
Simulation Initiated: 8/7/2026 8:09:09 AM

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Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Alamo Compressor Station
Tank Emissions Based On –
Alamo Condensate Analysis – 10/17/2024

Cond. TP: 600 bbl/d
PW TP: 300 bbl/d



Process Streams		Cond. F/W/S	Cond. Flashing	Cond. Loading	Cond. Residual	Cond. Standing	Cond. Working	Condensate	GB B	GB F	GB F/W/B
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	MIX-103	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	--	--	--	MIX-102
	To Block:	--	MIX-103	--	--	MIX-103	MIX-103	MIX-101	MIX-102	MIX-102	--
Mole Fraction		%	%	%	%	%	%	%	%	%	%
Water		1.12148	1.10569	0.928274	0.0101679	1.22283	1.22283	0*	2.92123*	3.45264*	3.39643
CO2		4.41736	4.35604	3.15252	0.0282293	4.81088	4.81088	1.3453*	5.31511*	5.03286*	5.06272
N2		0.0174144	0.0193983	0	0	0.00468496	0.00468496	0.0947*	0.0146400*	0.0494343*	0.0457535
C1		8.23112	8.38770	0	0	7.22641	7.22641	6.9169*	12.2772*	11.4849*	11.5687
C2		17.3184	17.1277	17.9966	0.372164	18.5423	18.5423	3.3649*	17.8202*	17.0444*	17.1265
C3		29.0597	28.9275	33.7858	2.52659	29.9074	29.9074	5.3969*	27.4867*	27.1806*	27.2129
iC4		5.68943	5.69164	6.56761	1.32270	5.67522	5.67522	1.6453*	5.13067*	5.20886*	5.20059
nC4		15.4673	15.5011	17.6869	5.25419	15.2505	15.2505	5.778*	13.7195*	14.0632*	14.0269
iC5		4.48382	4.51290	4.96969	3.78553	4.29724	4.29724	3.5002*	3.82558*	4.01547*	3.99538
nC5		5.15867	5.20094	5.63388	5.78158	4.88741	4.88741	5.1849*	4.33511*	4.59418*	4.56677
nC6		1.44847	1.46945	1.49257	5.65705	1.31390	1.31390	4.7406*	1.15029*	1.26383*	1.25182
Benzene		0.316215	0.320384	0.330000	1.17428	0.289466	0.289466	0.988*	0.254008*	0.276911*	0.274488
iC6		4.79404	4.85102	5.06524	12.9781	4.42842	4.42842	11.0101*	3.89714*	4.21747*	4.18358
Toluene		0.233310	0.237758	0.229654	3.02904	0.204770	0.204770	2.4911*	0.177613*	0.200471*	0.198053
C7		1.71961	1.75339	1.68259	21.2067	1.50281	1.50281	17.4386*	1.30218*	1.47525*	1.45694
Ethylbenzene		0.0108737	0.0111397	0.0101157	0.455848	0.00916682	0.00916682	0.3726*	0.00786636*	0.00917728*	0.00903860
m-Xylene		0.0421763	0.0432175	0.0391425	1.96508	0.0354954	0.0354954	1.6057*	0.0304474*	0.0355695*	0.0350277
p-Xylene		0.0240692	0.0246538	0.0224333	1.07708	0.0203181	0.0203181	0.8802*	0.0174428*	0.0203262*	0.0200212
o-Xylene		0.0107906	0.0110625	0.00995971	0.567949	0.00904587	0.00904587	0.464*	0.00775136*	0.00908433*	0.00894332
C8		0.331278	0.339534	0.306721	13.2638	0.278300	0.278300	10.8412*	0.238632*	0.279249*	0.274952
C9		0.0793019	0.0816910	0.0694088	9.87632	0.0639720	0.0639720	8.0578*	0.0542620*	0.0656366*	0.0644333
C10		0.0251604	0.0260344	0.0208884	9.66761	0.0195525	0.0195525	7.883*	0.0164283*	0.0204838*	0.0200548
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.0261914	0.0223408	0.00118244	0.00625846	0.000633160	0.00321745	0*	0.00170695*	0.0771175*	0.0848365
CO2		0.103164	0.0880149	0.00401570	0.0173754	0.00249099	0.0126581	1.01578*	0.00310576*	0.112413*	0.126457
N2		0.000406700	0.000391947	0	0	2.42579E-06	1.23268E-05	0.0715041*	8.55450E-06*	0.00110415*	0.00114284
C1		0.192231	0.169476	0	0	0.00374170	0.0190137	5.22267*	0.00717390*	0.256524*	0.288965
C2		0.404458	0.346070	0.0229242	0.229071	0.00960085	0.0487874	2.54070*	0.0104128*	0.380701*	0.427788
C3		0.678665	0.584489	0.0430366	1.55514	0.0154855	0.0786907	4.07498*	0.0160612*	0.607099*	0.679730
iC4		0.132872	0.115001	0.00836587	0.814133	0.00293853	0.0149324	1.24230*	0.00299798*	0.116344*	0.129901
nC4		0.361227	0.313204	0.0225297	3.23400	0.00789643	0.0401263	4.36273*	0.00801664*	0.314114*	0.350366
iC5		0.104716	0.0911844	0.00633043	2.33003	0.00222504	0.0113067	2.64286*	0.00223538*	0.0896888*	0.0997974
nC5		0.120477	0.105086	0.00717648	3.55862	0.00253061	0.0128595	3.91491*	0.00253311*	0.102615*	0.114070
nC6		0.0338279	0.0296906	0.00190125	3.48197	0.000680313	0.00345706	3.57943*	0.000672143*	0.0282287*	0.0312682
Benzene		0.00738496	0.00647345	0.000420357	0.722783	0.000149880	0.000761628	0.745998*	0.000148423*	0.00618503*	0.00685621
iC6		0.111961	0.0980163	0.00645213	7.98814	0.00229295	0.0116518	8.31327*	0.00227720*	0.0942006*	0.104498
Toluene		0.00544878	0.00480397	0.000292535	1.86441	0.000106026	0.000538781	1.88093*	0.000103784*	0.00447767*	0.00494699
C7		0.0401601	0.0354278	0.00214330	13.0529	0.000778130	0.00395413	13.1672*	0.000760896*	0.0329509*	0.0363917
Ethylbenzene		0.000253946	0.000225080	1.28854E-05	0.280579	4.74641E-06	2.41193E-05	0.281335*	4.59651E-06*	0.000204982*	0.000225768
m-Xylene		0.000984994	0.000873221	4.98600E-05	1.20952	1.83789E-05	9.33935E-05	1.21240*	1.77912E-05*	0.000794474*	0.000874927
p-Xylene		0.000562118	0.000498137	2.85757E-05	0.662955	1.05204E-05	5.34600E-05	0.664603*	1.01923E-05*	0.000454003*	0.000500093
o-Xylene		0.000252007	0.000223522	1.26868E-05	0.349579	4.68379E-06	2.38010E-05	0.350347*	4.52932E-06*	0.000202906*	0.000223388
C8		0.00773673	0.00686038	0.000390703	8.16399	0.000144099	0.000732249	8.18574*	0.000139439*	0.00623726*	0.00686781
C9		0.00185203	0.00165059	8.84134E-05	6.07898	3.31235E-05	0.000168320	6.08411*	3.17067E-05*	0.00146605*	0.00160943
C10		0.000587601	0.000526032	2.66078E-05	5.95051	1.01239E-05	5.14454E-05	5.95213*	9.59949E-06*	0.000457522*	0.000500931
Mass Fraction		%	%	%	%	%	%	%	%	%	%
Water		0.412994	0.406537	0.321759	0.00185268	0.454913	0.454913	0*	1.15381	1.34253	1.32284
CO2		3.97392	3.91258	2.66942	0.0125653	4.37212	4.37212	0.678374*	5.12845	4.78071	4.81698
N2		0.00997204	0.0110906	0	0	0.00271015	0.00271015	0.0303962*	0.00899152	0.0298900	0.0277099
C1		2.69923	2.74625	0	0	2.39395	2.39395	1.27141*	4.31816	3.97675	4.01236
C2		10.6448	10.5110	10.4117	0.113183	11.5134	11.5134	1.15930*	11.7479	11.0620	11.1335
C3		26.1936	26.0335	28.6644	1.12683	27.2330	27.2330	2.72674*	26.5733	25.8693	25.9427
iC4		6.75958	6.75158	7.34450	0.777552	6.81156	6.81156	1.09570*	6.53797	6.53456	6.53491
nC4		18.3767	18.3878	19.7791	3.08869	18.3040	18.3040	3.84789*	17.4826	17.6424	17.6258
iC5		6.61282	6.64524	6.89877	2.76238	6.40236	6.40236	2.89351*	6.05136	6.25312	6.23207
nC5		7.60809	7.65838	7.82077	4.21894	7.28164	7.28164	4.28621*	6.85734	7.15431	7.12333
nC6		2.55154	2.58442	2.47475	4.93061	2.33812	2.33812	4.68080*	2.17329	2.35074	2.33223
Benzene		0.504904	0.510756	0.495958	0.927721	0.466913	0.466913	0.884255*	0.435003	0.466862	0.463538
iC6		8.44489	8.53183	8.39839	11.3115	7.88049	7.88049	10.8712*	7.36303	7.84452	7.79429
Toluene		0.439424	0.447097	0.407126	2.82276	0.389609	0.389609	2.62988*	0.358793	0.398678	0.394517
C7		3.52221	3.58576	3.24391	21.4920	3.10959	3.10959	20.0213*	2.86071	3.19060	3.15619
Ethylbenzene		0.0235976	0.0241368	0.0206628	0.489473	0.0200965	0.0200965	0.453240*	0.0183097	0.0210294	0.0207457
m-Xylene		0.0915290	0.0936411	0.0799546	2.11003	0.0778170	0.0778170	1.95321*	0.0708695	0.0815062	0.0803966
p-Xylene		0.0522339	0.0534185	0.0458235	1.15653	0.0445437	0.0445437	1.07070*	0.0405999	0.0465767	0.0459533
o-Xylene		0.0234173	0.0239697	0.0203442	0.609843	0.0198314	0.0198314	0.564421*	0.0180421	0.0208164	0.0205270
C8		0.773528	0.791559	0.674110	15.3239	0.656462	0.656462	14.1891*	0.597627	0.688490	0.679012
C9		0.207906	0.213833	0.171278	12.8114	0.169428	0.169428	11.8412*	0.152580	0.181699	0.178661
C10		0.0731772	0.0756000	0.0571831	13.9122	0.0574476	0.0574476	12.8512*	0.0512471	0.0629057	0.0616895

Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.471845	0.402475	0.0213020	0.112748	0.0114066	0.0579632	0*	0.0307512*	1.38929*	1.52835
CO2	4.54020	3.87349	0.176729	0.764682	0.109627	0.557078	44.7040*	0.136683*	4.94724*	5.56533
N2	0.0113930	0.0109798	0	0	6.79545E-05	0.000345316	2.00307*	0.000239641*	0.0309311*	0.0320148
C1	3.08386	2.71881	0	0	0.0600261	0.305027	83.7844*	0.115087*	4.11527*	4.63571
C2	12.1617	10.4060	0.689309	6.88794	0.288688	1.46699	76.3963*	0.313102*	11.4473*	12.8632
C3	29.9262	25.7734	1.89773	68.5751	0.682843	3.46992	179.689*	0.708228*	26.7704*	29.9731
iC4	7.72282	6.68412	0.486243	47.3192	0.170794	0.867901	72.2051*	0.174249*	6.76218*	7.55015
nC4	20.9953	18.2041	1.30948	187.967	0.458958	2.33223	253.571*	0.465945*	18.2570*	20.3640
iC5	7.55514	6.57885	0.456733	168.109	0.160534	0.815763	190.679*	0.161280*	6.47093*	7.20026
nC5	8.69224	7.58186	0.517774	256.750	0.182581	0.927797	282.456*	0.182761*	7.40352*	8.22998
nC6	2.91514	2.55860	0.163841	300.060	0.0586262	0.297914	308.459*	0.0579221*	2.43262*	2.69455
Benzene	0.576852	0.505653	0.0328348	56.4579	0.0117074	0.0594921	58.2713*	0.0115936*	0.483124*	0.535552
iC6	9.64828	8.44659	0.556015	688.381	0.197596	1.00410	716.399*	0.196239*	8.11777*	9.00518
Toluene	0.502042	0.442631	0.0269538	171.783	0.00976911	0.0496424	173.306*	0.00956250*	0.412565*	0.455808
C7	4.02412	3.54994	0.214763	1307.93	0.0779702	0.396211	1319.38*	0.0762432*	3.30174*	3.64652
Ethylbenzene	0.0269602	0.0238957	0.00136798	29.7877	0.000503903	0.00256062	29.8679*	0.000487989*	0.0217619*	0.0239686
m-Xylene	0.104572	0.0927055	0.00529339	128.409	0.00195119	0.00991513	128.714*	0.00188880*	0.0843453*	0.0928866
p-Xylene	0.0596772	0.0528848	0.00303374	70.3826	0.00111689	0.00567558	70.5576*	0.00108206*	0.0481992*	0.0530924
o-Xylene	0.0267543	0.0237302	0.00134689	37.1130	0.000497254	0.00252684	37.1946*	0.000480855*	0.0215415*	0.0237160
C8	0.883755	0.783651	0.0446294	932.561	0.0164602	0.0836437	935.046*	0.0159279*	0.712473*	0.784500
C9	0.237533	0.211697	0.0113395	779.660	0.00424826	0.0215879	780.319*	0.00406654*	0.188028*	0.206417
C10	0.0836049	0.0748447	0.00378580	846.649	0.00144045	0.00731974	846.879*	0.00136583*	0.0650969*	0.0712734

Process Streams		Cond. F/W/S	Cond. Flashing	Cond. Loading	Cond. Residual	Cond. Standing	Cond. Working	Condensate	GB B	GB F	GB F/W/B
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	MIX-103	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	4 x 400 bbl Condensate Tanks	--	--	--	MIX-102
	To Block:	--	MIX-103	--	--	MIX-103	MIX-103	MIX-101	MIX-102	MIX-102	--
Property	**Units**										
Temperature	°F	82.2743	82.2743	82.2743	82.2743	82.2743	82.2743	77*	76.0449	76.0449	76.0124
Pressure	psig	-1.81595	-1.81595	-1.81595	-1.81595	-1.81595	-1.81595	30*	-0.116694	-1.81595	-1.81595
Mole Fraction Vapor	%	100	100	100	0	100	100	12.4603	100	100	100
Mole Fraction Light Liquid	%	0	0	0	100	0	0	87.5397	0	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	48.9205	48.9976	51.9741	98.8718	48.4260	48.4260	87.2763	45.6113	46.3307	46.2546
Mass Density	lb/ft^3	0.110118	0.110298	0.117271	43.0075	0.108967	0.108967	4.94027	0.117586	0.105365	0.105193
Molar Flow	lbmol/h	2.33542	2.02053	0.127381	61.5510	0.0517782	0.263115	75.5059	0.0584325	2.23358	2.49782
Mass Flow	lb/h	114.250	99.0009	6.62050	6085.66	2.50741	12.7416	6589.88	2.66519	103.483	115.536
Vapor Volumetric Flow	ft^3/h	1037.52	897.577	56.4548	141.502	23.0108	116.931	1333.91	22.6659	982.142	1098.32
Liquid Volumetric Flow	gpm	129.353	111.906	7.03852	17.6418	2.86888	14.5784	166.306	2.82587	122.449	136.933
Std Vapor Volumetric Flow	MMSCFD	0.0212701	0.0184022	0.00116014	0.560583	0.000471576	0.00239635	0.687679	0.000532181	0.0203426	0.0227492
Std Liquid Volumetric Flow	sgpm	0.425937	0.368797	0.0242680	17.5000	0.00939560	0.0477444	19.6275*	0.0101296	0.389523	0.435331
Compressibility		0.983849	0.983795	0.981510	0.00509126	0.984197	0.984197	0.137102	0.983684	0.985125	0.985174
Specific Gravity		1.68910	1.69176	1.79453	0.689569	1.67202	1.67202		1.57484	1.59968	1.59705
API Gravity					70.4961						
Enthalpy	Btu/h	-127743	-110439	-6953.20	-5.40581E+06	-2845.37	-14459.0	-6.15961E+06	-3240.07	-124787	-139439
Mass Enthalpy	Btu/lb	-1118.10	-1115.53	-1050.25	-888.287	-1134.78	-1134.78	-934.708	-1215.70	-1205.86	-1206.89
Mass Cp	Btu/(lb*°F)	0.400689	0.400814	0.400064	0.515115	0.399877	0.399877	0.510234	0.398195	0.397859	0.397839
Ideal Gas CpCv Ratio		1.11359	1.11335	1.10645	1.05471	1.11514	1.11514	1.06269	1.12380	1.12165	1.12188
Dynamic Viscosity	cP	0.00838802	0.00838084	0.00811697	0.385150	0.00843432	0.00843432		0.00858610	0.00852564	0.00853100
Kinematic Viscosity	cSt	4.75531	4.74350	4.32099	0.559068	4.83209	4.83209		4.55848	5.05138	5.06281
Thermal Conductivity	Btu/(h*ft*°F)	0.0104624	0.0104640	0.00985391	0.0701502	0.0104521	0.0104521		0.0106872	0.0105703	0.0105808
Surface Tension	lbf/ft				0.00135185?						
Net Ideal Gas Heating Value	Btu/ft^3	2435.46	2440.76	2619.39	4994.60	2401.46	2401.46	4393.10	2232.42	2268.50	2264.69
Net Liquid Heating Value	Btu/lb	18737.3	18748.7	18965.6	19010.2	18663.3	18663.3	18944.4	18415.6	18420.2	18419.7
Gross Ideal Gas Heating Value	Btu/ft^3	2643.27	2648.95	2840.81	5378.04	2606.78	2606.78	4734.67	2425.77	2464.55	2460.45
Gross Liquid Heating Value	Btu/lb	20349.6	20361.4	20582.6	20482.0	20272.5	20272.5	20429.8	20024.6	20026.3	20026.1

Process Streams		GB to Cond.	GB to PW	GB W	GB- Flashing	Liquids	Mixed Liquids	PW F/W/S	PW Flashing	PW Loading
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	1 x 500 bbl Gunbarrel	1 x 500 bbl Gunbarrel	--	1 x 500 bbl Gunbarrel	Sep.	MIX-101	MIX-100	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank
	To Block:	4 x 400 bbl Condensate Tanks	1 x 400 bbl PW Tank	MIX-102	--	1 x 500 bbl Gunbarrel	Sep.	--	MIX-100	--
Mole Fraction		%	%	%	%	%	%	%	%	%
Water		0.0507930	99.9885	2.92123*	1.72013	79.1153	76.3055	16.8527	4.25555	89.2495
CO2		0.188678	0.00644202	5.31511*	7.77305	0.0510990	0.318762	50.5767	15.2238	0
N2		0.000636598	5.42381E-06	0.0146400*	0.270810	0.000372095	0.0224387	0.0425827	0.152595	0
C1		0.300895	0.00143205	12.2772*	34.9315	0.0940836	1.63893	11.2431	31.1391	0
C2		0.991648	0.00109711	17.8202*	17.9887	0.222773	0.797296	8.61346	19.9092	0
C3		3.49653	0.000779457	27.4867*	18.2212	0.743756	1.27877	6.11957	16.8253	0
iC4		1.48233	8.82729E-05	5.13067*	2.95574	0.310972	0.389846	0.693036	2.23445	0
nC4		5.62754	0.000299392	13.7195*	7.69541	1.17749	1.36907	2.35055	6.70754	0
iC5		3.81105	5.74867E-05	3.82558*	2.09010	0.794587	0.829355	0.451332	1.48529	0
nC5		5.75881	2.56982E-05	4.33511*	2.36963	1.19995	1.22854	0.201758	0.824748	0
nC6		5.50320	4.70953E-06	1.15029*	0.638784	1.14526	1.12326	0.0369748	0.160492	0
Benzene		1.14292	0.000770629	0.254008*	0.140259	0.238466	0.234102	1.37536	0.304098	5.87649
iC6		12.6789	9.07807E-06	3.89714*	2.14121	2.63917	2.60879	0.0712726	0.326084	0
Toluene		2.92684	0.000413803	0.177613*	0.100949	0.609218	0.590254	0.980865	0.215542	3.78858
C7		20.4943	4.02765E-06	1.30218*	0.742111	4.26361	4.13199	0.0316214	0.142305	0
Ethylbenzene		0.439582	1.68847E-05	0.00786636*	0.00461305	0.0914533	0.0882857	0.0437431	0.0100569	0.158692
m-Xylene		1.89478	4.19071E-05	0.0304474*	0.0178837	0.394176	0.380463	0.171003	0.0373142	0.457433
p-Xylene		1.03859	2.64926E-05	0.0174428*	0.0102214	0.216063	0.208559	0.0975629	0.0215366	0.286589
o-Xylene		0.547582	2.47922E-05	0.00775136*	0.00456674	0.113924	0.109942	0.0435946	0.00994024	0.182739
C8		12.7910	3.19076E-07	0.238632*	0.140144	2.66074	2.56877	0.00250509	0.0119065	0
C9		9.51819	7.70935E-08	0.0542620*	0.0327845	1.97987	1.90926	0.000605266	0.00288477	0
C10		9.31512	6.98361E-09	0.0164283*	0.0102532	1.93762	1.86784	5.48288E-05	0.000268972	0
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.0324498	242.955	0.00601204*	0.00459209	242.992	243.158	0.00521575	0.000265108	0.00239621
CO2		0.120539	0.0156530	0.0109388*	0.0207511	0.156944	1.01578	0.0156530	0.000948395	0
N2		0.000406700	1.31789E-05	3.01297E-05*	0.000722960	0.00114284	0.0715041	1.31789E-05	9.50622E-06	0
C1		0.192231	0.00347964	0.0252671*	0.0932540	0.288965	5.22267	0.00347964	0.00193987	0
C2		0.633529	0.00266578	0.0366748*	0.0480230	0.684217	2.54070	0.00266578	0.00124029	0
C3		2.23381	0.00189395	0.0565690*	0.0486436	2.28435	4.07498	0.00189395	0.00104816	0
iC4		0.947005	0.000214488	0.0105592*	0.00789071	0.955110	1.24230	0.000214488	0.000139200	0
nC4		3.59523	0.000727473	0.0282354*	0.0205438	3.61650	4.36273	0.000727473	0.000417859	0
iC5		2.43475	0.000139683	0.00787322*	0.00557977	2.44047	2.64286	0.000139683	9.25292E-05	0
nC5		3.67910	6.24422E-05	0.00892186*	0.00632601	3.68549	3.91491	6.24422E-05	5.13793E-05	0
nC6		3.51580	1.14434E-05	0.00236735*	0.00170531	3.51752	3.57943	1.14434E-05	9.99819E-06	0
Benzene		0.730168	0.00187250	0.000522761*	0.000374437	0.732415	0.745998	0.000425660	1.89444E-05	0.000157775
iC6		8.10010	2.20582E-05	0.00802051*	0.00571621	8.10584	8.31327	2.20582E-05	2.03140E-05	0
Toluene		1.86986	0.00100547	0.000365537*	0.000269496	1.87113	1.88093	0.000303568	1.34276E-05	0.000101718
C7		13.0931	9.78651E-06	0.00267994*	0.00198116	13.0951	13.1672	9.78651E-06	8.86519E-06	0
Ethylbenzene		0.280833	4.10270E-05	1.61893E-05*	1.23151E-05	0.280886	0.281335	1.35381E-05	6.26512E-07	4.26064E-06
m-Xylene		1.21051	0.000101827	6.26623E-05*	4.77428E-05	1.21066	1.21240	5.29237E-05	2.32456E-06	1.22814E-05
p-Xylene		0.663517	6.43725E-05	3.58981E-05*	2.72872E-05	0.663609	0.664603	3.01948E-05	1.34166E-06	7.69447E-06
o-Xylene		0.349831	6.02409E-05	1.59527E-05*	1.21915E-05	0.349903	0.350347	1.34921E-05	6.19247E-07	4.90627E-06
C8		8.17173	7.75301E-07	0.000491115*	0.000374131	8.17210	8.18574	7.75301E-07	7.41741E-07	0
C9		6.08083	1.87324E-07	0.000111674*	8.75223E-05	6.08092	6.08411	1.87324E-07	1.79712E-07	0
C10		5.95110	1.69690E-08	3.38103E-05*	2.73721E-05	5.95113	5.95213	1.69690E-08	1.67561E-08	0
Mass Fraction		%	%	%	%	%	%	%	%	%
Water		0.00942905	99.9715	1.15381	0.864137	41.3461	39.9306	8.17828	2.26324	63.5217
CO2		0.0855638	0.0157345	5.12845	9.53934	0.0652365	0.407495	59.9582	19.7790	0
N2		0.000183761	8.43248E-06	0.00899152	0.211549	0.000302379	0.0182588	0.0321329	0.126195	0
C1		0.0497404	0.00127501	4.31816	15.6268	0.0437842	0.763729	4.85858	14.7473	0
C2		0.307256	0.00183085	11.7479	15.0834	0.194319	0.696384	6.97668	17.6730	0
C3		1.58875	0.00190754	26.5733	22.4054	0.951390	1.63793	7.26889	21.9024	0
iC4		0.887787	0.000284744	6.53797	4.79059	0.524320	0.658179	1.08505	3.83396	0
nC4		3.37042	0.000965757	17.4826	12.4725	1.98533	2.31141	3.68013	11.5091	0
iC5		2.83333	0.000230187	6.05136	4.20510	1.66304	1.73812	0.877155	3.16356	0
nC5		4.28139	0.000102900	6.85734	4.76749	2.51145	2.57470	0.392113	1.75665	0
nC6		4.88677	2.25240E-05	2.17329	1.53503	2.86299	2.81173	0.0858303	0.408294	0
Benzene		0.919929	0.00334078	0.435003	0.305511	0.540350	0.531166	2.89390	0.701237	18.1347
iC6		11.2587	4.34172E-05	7.36303	5.14544	6.59754	6.53027	0.165446	0.829559	0
Toluene		2.77884	0.00211602	0.358793	0.259373	1.62834	1.57975	2.43445	0.586283	13.7909
C7		21.1609	2.23982E-05	2.86071	2.07361	12.3933	12.0266	0.0853509	0.420952	0
Ethylbenzene		0.480888	9.94855E-05	0.0183097	0.0136568	0.281652	0.272258	0.125096	0.0315195	0.665598
m-Xylene		2.07283	0.000246919	0.0708695	0.0529444	1.21396	1.17328	0.489031	0.116947	1.91860
p-Xylene		1.13618	0.000156096	0.0405999	0.0302602	0.665418	0.643161	0.279009	0.0674983	1.20203
o-Xylene		0.599037	0.000146077	0.0180421	0.0135197	0.350857	0.339044	0.124671	0.0311540	0.766459
C8		15.0558	2.02280E-06	0.597627	0.446405	8.81677	8.52332	0.00770813	0.0401509	0
C9		12.5792	5.48754E-07	0.152580	0.117253	7.36622	7.11292	0.00209109	0.0109225	0
C10		13.6572	5.51460E-08	0.0512471	0.0406806	7.99741	7.71964	0.000210140	0.00112977	0

Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.584593	4376.90	0.108309*	0.0827278	4377.57	4380.56	0.0939632	0.00477599	0.0431684
CO2	5.30488	0.688881	0.481409*	0.913245	6.90701	44.7040	0.688881	0.0417384	0
N2	0.0113930	0.000369187	0.000844036*	0.0202526	0.0320148	2.00307	0.000369187	0.000266302	0
C1	3.08386	0.0558220	0.405347*	1.49602	4.63571	83.7844	0.0558220	0.0311203	0
C2	19.0496	0.0801576	1.10277*	1.44401	20.5738	76.3963	0.0801576	0.0372942	0
C3	98.5012	0.0835148	2.49444*	2.14497	100.730	179.689	0.0835148	0.0462194	0
iC4	55.0420	0.0124665	0.613721*	0.458625	55.5131	72.2051	0.0124665	0.00809058	0
nC4	208.963	0.0422823	1.64110*	1.19405	210.199	253.571	0.0422823	0.0242869	0
iC5	175.664	0.0100780	0.568043*	0.402573	176.077	190.679	0.0100780	0.00667587	0
nC5	265.442	0.00450513	0.643701*	0.456414	265.903	282.456	0.00450513	0.00370695	0
nC6	302.975	0.000986135	0.204007*	0.146956	303.123	308.459	0.000986135	0.000861597	0
Benzene	57.0348	0.146264	0.0408338*	0.0292480	57.2103	58.2713	0.0332491	0.00147978	0.0123241
iC6	698.029	0.00190087	0.691170*	0.492597	698.524	716.399	0.00190087	0.00175057	0
Toluene	172.286	0.0926425	0.0336800*	0.0248310	172.403	173.306	0.0279703	0.00123720	0.00937210
C7	1311.95	0.000980627	0.268536*	0.198516	1312.15	1319.38	0.000980627	0.000888309	0
Ethylbenzene	29.8146	0.00435563	0.00171874*	0.00130743	29.8203	29.8679	0.00143727	6.65137E-05	0.000452330
m-Xylene	128.514	0.0108105	0.00665254*	0.00506861	128.530	128.714	0.00561865	0.000246787	0.00130385
p-Xylene	70.4423	0.00683410	0.00381112*	0.00289695	70.4520	70.5576	0.00320563	0.000142438	0.000816884
o-Xylene	37.1398	0.00639547	0.00169362*	0.00129431	37.1474	37.1946	0.00143239	6.57423E-05	0.000520874
C8	933.444	8.85615E-05	0.0560994*	0.0427364	933.487	935.046	8.85615E-05	8.47280E-05	0
C9	779.897	2.40253E-05	0.0143227*	0.0112252	779.909	780.319	2.40253E-05	2.30490E-05	0
C10	846.732	2.41438E-06	0.00481059*	0.00389455	846.736	846.879	2.41438E-06	2.38409E-06	0

Process Streams		GB to Cond.	GB to PW	GB W	GB- Flashing	Liquids	Mixed Liquids	PW F/W/S	PW Flashing	PW Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	1 x 500 bbl Gunbarrel	1 x 500 bbl Gunbarrel	--	1 x 500 bbl Gunbarrel	Sep.	MIX-101	MIX-100	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank
	To Block:	4 x 400 bbl Condensate Tanks	1 x 400 bbl PW Tank	MIX-102	--	1 x 500 bbl Gunbarrel	Sep.	--	MIX-100	--
Property	**Units**									
Temperature	°F	74.5176	74.5176	76.0449	74.5176	74.6940	76.7049	82.2625	82.2743	82.2743
Pressure	psig	10	10	-0.116694	10	15	30	-1.81595	-1.81595	-1.81595
Mole Fraction Vapor	%	0	0	100	100	0	2.97694	86.8496	100	0
Mole Fraction Light Liquid	%	100	100	0	0	20.8848	20.7442	13.1504	0	10.7596
Mole Fraction Heavy Liquid	%	0	0	0	0	79.1152	76.2788	0	0	89.2404
Phase Mole Fraction	%	100	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	97.0458	18.0183	45.6113	35.8607	34.4721	34.4263	37.1235	33.8739	25.3119
Mass Density	lb/ft^3	43.1046	62.2386	0.117586	0.157103	49.3654	7.76112	0.0952162	0.0755306	58.9348
Molar Flow	lbmol/h	63.8864	242.983	0.205805	0.266962	307.136	318.664	0.0309490	0.00622970	0.00268485
Mass Flow	lb/h	6199.91	4378.15	9.38703	9.57346	10587.6	10970.4	1.14894	0.211024	0.0679585
Vapor Volumetric Flow	ft^3/h	143.834	70.3447	79.8312	60.9374	214.475	1413.51	12.0666	2.79389	0.00115311
Liquid Volumetric Flow	gpm	17.9326	8.77025	9.95299	7.59739	26.7397	176.230	1.50441	0.348329	0.000143765
Std Vapor Volumetric Flow	MMSCFD	0.581853	2.21300	0.00187439	0.00243139	2.79728	2.90227	0.000281872	5.67377E-05	2.44526E-05
Std Liquid Volumetric Flow	sgpm	17.9259	8.75344	0.0356775	0.0402544	26.7196	28.3846	0.00343860	0.000874334	0.000142741
Compressibility		0.00969888	0.00124716	0.983684	0.983337	0.00361611	0.0344431	0.863466	0.993206	0.000951154
Specific Gravity		0.691125	0.997913	1.57484	1.23818	0.791508			1.16958	0.944941
API Gravity		71.1318	9.99749			45.8938				17.1423
Enthalpy	Btu/h	-5.57557E+06	-2.98695E+07	-11411.8	-13998.6	-3.54591E+07	-3.60401E+07	-3604.83	-383.968	-290.591
Mass Enthalpy	Btu/lb	-899.299	-6822.41	-1215.70	-1462.23	-3349.10	-3285.20	-3137.54	-1819.55	-4276.01
Mass Cp	Btu/(lb*°F)	0.511605	0.978239	0.398195	0.405360	0.704725	0.696926	0.320131	0.385764	0.763059
Ideal Gas CpCv Ratio		1.05646	1.32906	1.12380	1.16008	1.16408	1.16402	1.23119	1.18018	1.26025
Dynamic Viscosity	cP	0.390401	0.940555	0.00858610	0.00953770	0.568756			0.0103447	0.743312
Kinematic Viscosity	cSt	0.565414	0.943417	4.55848	3.78999	0.719254			8.55017	0.787369
Thermal Conductivity	Btu/(h*ft*°F)	0.0705976	0.348990	0.0106872	0.0128236	0.161899			0.0130403	0.243557
Surface Tension	lbf/ft	0.00134170?	0.00499749?			0.00253722?				0.00373817
Net Ideal Gas Heating Value	Btu/ft^3	4901.05	0.115186	2232.42	1698.52	1021.02	1040.92	614.478	1403.09	426.357
Net Liquid Heating Value	Btu/lb	19005.1	-1057.06	18415.6	17840.9	10708.1	10956.6	6105.63	15579.7	5651.99
Gross Ideal Gas Heating Value	Btu/ft^3	5278.06	50.4276	2425.77	1852.67	1139.38	1160.25	674.650	1533.30	490.493
Gross Liquid Heating Value	Btu/lb	20479.6	2.56768	20024.6	19472.5	12011.1	12272.1	6720.87	17038.9	6613.37

Process Streams		PW Residual	PW Standing	PW Working	Recycled to Inlet	Water
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank	Sep.	--
	To Block:	--	MIX-100	MIX-100	--	MIX-101
Mole Fraction		%	%	%	%	%
Water		99.9991	20.0274	20.0274	1.44189	100*
CO2		0	59.4863	59.4863	7.45018	0*
N2		0	0.0148577	0.0148577	0.610365	0*
C1		0	6.22900	6.22900	42.7986	0*
C2		0	5.76674	5.76674	16.1045	0*
C3		0	3.42155	3.42155	15.5332	0*
iC4		0	0.304574	0.304574	2.49128	0*
nC4		0	1.25252	1.25252	6.47333	0*
iC5		0	0.190756	0.190756	1.75570	0*
nC5		0	0.0447539	0.0447539	1.99015	0*
nC6		0	0.00584630	0.00584630	0.537110	0*
Benzene		0.000595524	1.64533	1.64533	0.117830	0*
iC6		0	0.00705586	0.00705586	1.79942	0*
Toluene		0.000288906	1.17374	1.17374	0.0849838	0*
C7		0	0.00372710	0.00372710	0.625239	0*
Ethylbenzene		1.13145E-05	0.0522325	0.0522325	0.00389201	0*
m-Xylene		2.01288E-05	0.204695	0.204695	0.0150932	0*
p-Xylene		1.40677E-05	0.116723	0.116723	0.00862556	0*
o-Xylene		1.92420E-05	0.0520761	0.0520761	0.00385488	0*
C8		0	0.000135763	0.000135763	0.118340	0*
C9		0	3.07932E-05	3.07932E-05	0.0277390	0*
C10		0	8.61017E-07	8.61017E-07	0.00869755	0*
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		242.950	0.000433986	0.00451666	0.166218	243.158*
CO2		0	0.00128904	0.0134156	0.858837	0*
N2		0	3.21959E-07	3.35076E-06	0.0703612	0*
C1		0	0.000134980	0.00140479	4.93370	0*
C2		0	0.000124963	0.00130054	1.85648	0*
C3		0	7.41437E-05	0.000771642	1.79063	0*
iC4		0	6.59999E-06	6.86886E-05	0.287189	0*
nC4		0	2.71415E-05	0.000282472	0.746228	0*
iC5		0	4.13362E-06	4.30201E-05	0.202392	0*
nC5		0	9.69799E-07	1.00931E-05	0.229419	0*
nC6		0	1.26687E-07	1.31848E-06	0.0619166	0*
Benzene		0.00144684	3.56537E-05	0.000371062	0.0135831	0*
iC6		0	1.52898E-07	1.59126E-06	0.207432	0*
Toluene		0.000701902	2.54345E-05	0.000264706	0.00979670	0*
C7		0	8.07648E-08	8.40550E-07	0.0720759	0*
Ethylbenzene		2.74889E-05	1.13186E-06	1.17797E-05	0.000448660	0*
m-Xylene		4.89034E-05	4.43565E-06	4.61635E-05	0.00173990	0*
p-Xylene		3.41777E-05	2.52934E-06	2.63238E-05	0.000994331	0*
o-Xylene		4.67488E-05	1.12847E-06	1.17444E-05	0.000444381	0*
C8		0	2.94194E-09	3.06179E-08	0.0136419	0*
C9		0	6.67276E-10	6.94460E-09	0.00319768	0*
C10		0	1.86579E-11	1.94180E-10	0.00100263	0*
Mass Fraction		%	%	%	%	%
Water		99.9956	9.50913	9.50913	0.782241	100*
CO2		0	68.9982	68.9982	9.87369	0*
N2		0	0.0109696	0.0109696	0.514899	0*
C1		0	2.63369	2.63369	20.6760	0*
C2		0	4.57009	4.57009	14.5825	0*
C3		0	3.97643	3.97643	20.6264	0*
iC4		0	0.466562	0.466562	4.36045	0*
nC4		0	1.91867	1.91867	11.3302	0*
iC5		0	0.362730	0.362730	3.81457	0*
nC5		0	0.0851010	0.0851010	4.32396	0*
nC6		0	0.0132782	0.0132782	1.39384	0*
Benzene		0.00258202	3.38724	3.38724	0.277164	0*
iC6		0	0.0160254	0.0160254	4.66961	0*
Toluene		0.00147754	2.85028	2.85028	0.235800	0*
C7		0	0.00984288	0.00984288	1.88664	0*
Ethylbenzene		6.66748E-05	0.146150	0.146150	0.0124429	0*
m-Xylene		0.000118616	0.572747	0.572747	0.0482534	0*
p-Xylene		8.28985E-05	0.326597	0.326597	0.0275762	0*
o-Xylene		0.000113390	0.145712	0.145712	0.0123242	0*
C8		0	0.000408726	0.000408726	0.407074	0*
C9		0	0.000104089	0.000104089	0.107135	0*
C10		0	3.22876E-06	3.22876E-06	0.0372660	0*

Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	4376.81	0.00781838	0.0813688	2.99446	4380.56*
CO2	0	0.0567302	0.590413	37.7970	0*
N2	0	9.01918E-06	9.38661E-05	1.97106	0*
C1	0	0.00216541	0.0225363	79.1487	0*
C2	0	0.00375751	0.0391059	55.8226	0*
C3	0	0.00326941	0.0340260	78.9590	0*
iC4	0	0.000383606	0.00399233	16.6920	0*
nC4	0	0.00157752	0.0164179	43.3724	0*
iC5	0	0.000298235	0.00310385	14.6023	0*
nC5	0	6.99698E-05	0.000728202	16.5523	0*
nC6	0	1.09173E-05	0.000113620	5.33568	0*
Benzene	0.113015	0.00278498	0.0289843	1.06100	0*
iC6	0	1.31760E-05	0.000137128	17.8755	0*
Toluene	0.0646721	0.00234349	0.0243896	0.902653	0*
C7	0	8.09279E-06	8.42248E-05	7.22215	0*
Ethylbenzene	0.00291836	0.000120164	0.00125059	0.0476320	0*
m-Xylene	0.00519183	0.000470911	0.00490095	0.184716	0*
p-Xylene	0.00362847	0.000268527	0.00279467	0.105563	0*
o-Xylene	0.00496308	0.000119804	0.00124684	0.0471777	0*
C8	0	3.36053E-07	3.49743E-06	1.55830	0*
C9	0	8.55815E-08	8.90680E-07	0.410119	0*
C10	0	2.65468E-09	2.76282E-08	0.142656	0*

Process Streams		PW Residual	PW Standing	PW Working	Recycled to Inlet	Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank	1 x 400 bbl PW Tank	Sep.	--
	To Block:	--	MIX-100	MIX-100	--	MIX-101
Property	**Units**					
Temperature	°F	82.2743	82.2743	82.2743	74.6940	77*
Pressure	psig	-1.81595	-1.81595	-1.81595	15	30*
Mole Fraction Vapor	%	0	83.5356	83.5356	100	0
Mole Fraction Light Liquid	%	100	16.4644	16.4644	0	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	18.0159	37.9424	37.9424	33.2073	18.0153
Mass Density	lb/ft^3	62.1585	0.101159	0.101159	0.174947	62.2152
Molar Flow	lbmol/h	242.952	0.00216696	0.0225524	11.5277	243.158
Mass Flow	lb/h	4377.00	0.0822197	0.855692	382.805	4380.56
Vapor Volumetric Flow	ft^3/h	70.4168	0.812777	8.45888	2188.13	70.4099
Liquid Volumetric Flow	gpm	8.77923	0.101333	1.05461	272.805	8.77838
Std Vapor Volumetric Flow	MMSCFD	2.21272	1.97358E-05	0.000205399	0.104990	2.21459
Std Liquid Volumetric Flow	sgpm	8.75000	0.000224790	0.00233948	1.66493	8.75707*
Compressibility		0.000641879	0.830650	0.830650	0.982935	0.00224720
Specific Gravity		0.996630			1.14656	0.997538
API Gravity		9.99800				9.99462
Enthalpy	Btu/h	-2.98327E+07	-282.349	-2938.52	-581031	-2.98805E+07
Mass Enthalpy	Btu/lb	-6815.78	-3434.08	-3434.08	-1517.82	-6821.16
Mass Cp	Btu/(lb*°F)	0.977717	0.305395	0.305395	0.411520	0.978029
Ideal Gas CpCv Ratio		1.32881	1.24895	1.24895	1.17227	1.32900
Dynamic Viscosity	cP	0.856476			0.00980710	0.913095
Kinematic Viscosity	cSt	0.860188			3.49957	0.916218
Thermal Conductivity	Btu/(h*ft*°F)	0.352638			0.0135876	0.350314
Surface Tension	lbf/ft	0.00494067				0.00497995
Net Ideal Gas Heating Value	Btu/ft^3	0.0369241	415.735	415.735	1571.23	0
Net Liquid Heating Value	Btu/lb	-1058.94	3974.02	3974.02	17832.0	-1059.76
Gross Ideal Gas Heating Value	Btu/ft^3	50.3481	458.255	458.255	1716.26	50.3100
Gross Liquid Heating Value	Btu/lb	0.804172	4399.37	4399.37	19489.8	0

Tank Losses Report
1 x 400 bbl PW Tank

Client Name:	ONEOK Inc.	**Job:**	GCP Mod - Tanks_August
Location:	Alamo Compressor Station	**Modified:**	8/7/2026 8:05
Flowsheet:	Compressor Station	**Status:**	**Solved** 8:05 AM, 8/7/2026

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
GB to PW	Inlet	1 x 500 bbl Gunbarrel	PW Flashing	Flashing Losses Stream	MIX-100
PW Working	Working Losses Stream	MIX-100	PW Standing	Standing Losses Stream	MIX-100
PW Loading	Loading Losses Stream		PW Residual	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	20*	ft	Slope of Coned Roof	0.0625	
Shell Diameter	12*	ft	Breather Vent Pressure	0.03	psi
Number of Storage Tanks	1		Breather Vacuum Pressure	-0.03	psi
Maximum Fraction Fill of Tank	90	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50	%	Time Frame	Year*	
Minimum Fraction Fill of Tank	10	%	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	82.2743	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperature	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperature	47.6	°F
Sum of Increases in Liquid Level	5444.13	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	FALSE	
Roof Paint Condition	Average		Shell Height	20	ft

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
Water	FALSE
CO2	FALSE
N2	FALSE
C1	FALSE
C2	FALSE
C3	TRUE
iC4	TRUE
nC4	TRUE
iC5	TRUE
nC5	TRUE
nC6	TRUE
Benzene	TRUE
iC6	TRUE
Toluene	TRUE
C7	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
p-Xylene	TRUE
o-Xylene	TRUE
C8	TRUE
C9	TRUE
C10	TRUE

Tank Losses Report
1 x 400 bbl PW Tank

Client Name:	ONEOK Inc.	**Job:**	GCP Mod - Tanks_August
Location:	Alamo Compressor Station	**Modified:**	8/7/2026 8:05
Flowsheet:	Compressor Station	**Status:**	**Solved** 8:05 AM, 8/7/2026

Details Properties : Scalar Data

Vapor Space Volume	1145.11	ft^3	Tank Roof Height	0.375	ft
Vapor Density	0.0662403	lb/ft^3	Tank Shell Radius	6	ft
Vapor Space Expansion Factor	1	1/day	Vapor Molecular Weight	33.5825	lb/lbmol
Vented Vapor Saturation Factor	0.141547		Average Vapor Temperature	533.917	°R
Vapor Space Outage	10.125	ft	Average Daily Ambient Temperature	521.37	°R
Average Daily Vapor Temperature Range	47.9047	°R	Net Working Loss Throughput	615717	ft^3/yr
Average Daily Vapor Pressure Range	3.06198	psi	Working Loss Turnover (Saturation) Factor	1	
Breather Vent Pressure Setting Range	0.06	psi	Number of Turnovers per Year	340.258	
Vapor Pressure at Average Daily Liquid Surface Temperature	11.3018	psia	Annual Net Throughput	109675	bbl/yr
Average Daily Liquid Surface Temperature	529.968	°R	Maximum Liquid Height	18	ft
Average Daily Ambient Temperature Range	28.2	°R	Minimum Liquid Height	2	ft
Tank Roof Surface Solar Absorptance	0.9		Working Loss Product Factor	1	
Tank Shell Surface Solar Absorptance	0.9		Vent Setting Correction Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	12.8800	psia	Saturation Factor	0.6	
Vapor Pressure at Minimum Liquid Surface Temperature	9.81802	psia	Vapor Pressure of Liquid Loaded	0.359251	psia
Maximum Liquid Surface Temperature	541.944	°R	Collection Efficiency	70	%
Minimum Liquid Surface Temperature	517.992	°R	Annual Net Throughput Per Tank	109675	bbl/yr
Liquid Height	10	ft	Loading Vapor Molecular Weight	25.3119	lb/lbmol
Roof Outage	0.125	ft			

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: Dedicated Normal Service*		Overall Reduction Efficiency	0	%
Control Efficiency	0*	%			

Results Properties : Scalar Data

Flashing Losses	0.419730	ton/yr	Standing Losses per Tank	0.0514179	ton/yr
Working Losses	0.535125	ton/yr	Flashing Losses per Tank	0.419730	ton/yr
Standing Losses	0.0514179	ton/yr	Working and Standing Losses	0.586543	ton/yr
Loading Losses	0.108581	ton/yr	Working and Standing Losses per Tank	0.586543	ton/yr
Working Losses per Tank	0.535125	ton/yr	Loading Losses per Tank	0.108581	ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
C3	0.202441	0.149034	0.0143200	0	0.163354
iC4	0.0354367	0.0174864	0.00168019	0	0.0191666
nC4	0.106377	0.0719104	0.00690955	0	0.0788199
iC5	0.0292403	0.0135949	0.00130627	0	0.0149011
nC5	0.0162365	0.00318953	0.000306468	0	0.00349599
nC6	0.00377380	0.000497658	4.78177E-05	0	0.000545475
Benzene	0.00648143	0.126951	0.0121982	0.0539794	0.139150
iC6	0.00766749	0.000600620	5.77109E-05	0	0.000658331
Toluene	0.00541893	0.106827	0.0102645	0.0410498	0.117091
C7	0.00389080	0.000368905	3.54464E-05	0	0.000404351
Ethylbenzene	0.000291330	0.00547759	0.000526317	0.00198121	0.00600390
m-Xylene	0.00108093	0.0214662	0.00206259	0.00571087	0.0235288
p-Xylene	0.000623877	0.0122406	0.00117615	0.00357795	0.0134168
o-Xylene	0.000287951	0.00546118	0.000524741	0.00228143	0.00598592
C8	0.000371109	1.53188E-05	1.47191E-06	0	1.67907E-05
C9	0.000100955	3.90118E-06	3.74847E-07	0	4.27602E-06
C10	1.04423E-05	1.21012E-07	1.16275E-08	0	1.32639E-07

Tank Losses Report
4 x 400 bbl Condensate Tanks

Client Name:	ONEOK Inc.	**Job:**	GCP Mod - Tanks_August
Location:	Alamo Compressor Station	**Modified:**	8/7/2026 8:05
Flowsheet:	Compressor Station	**Status:**	**Solved** 8:05 AM, 8/7/2026

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
GB to Cond.	Inlet	1 x 500 bbl Gunbarrel	Cond. Flashing	Flashing Losses Stream	MIX-103
Cond. Working	Working Losses Stream	MIX-103	Cond. Standing	Standing Losses Stream	MIX-103
Cond. Loading	Loading Losses Stream		Cond. Residual	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	20*	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	90	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50	%	Time Frame	Year*	
Minimum Fraction Fill of Tank	10	%	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	82.2743	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperature	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperature	47.6	°F
Sum of Increases in Liquid Level	2724.52	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	FALSE	
Roof Paint Condition	Average		Shell Height	20	ft

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
Water	FALSE
CO2	FALSE
N2	FALSE
C1	FALSE
C2	FALSE
C3	TRUE
iC4	TRUE
nC4	TRUE
iC5	TRUE
nC5	TRUE
nC6	TRUE
Benzene	TRUE
iC6	TRUE
Toluene	TRUE
C7	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
p-Xylene	TRUE
o-Xylene	TRUE
C8	TRUE
C9	TRUE
C10	TRUE

Tank Losses Report
4 x 400 bbl Condensate Tanks

Client Name:	ONEOK Inc.	**Job:**	GCP Mod - Tanks_August
Location:	Alamo Compressor Station	**Modified:**	8/7/2026 8:05
Flowsheet:	Compressor Station	**Status:**	**Solved** 8:05 AM, 8/7/2026

Details Properties : Scalar Data

Vapor Space Volume	1145.11	ft^3	Tank Roof Height	0.375	ft
Vapor Density	0.0913079	lb/ft^3	Tank Shell Radius	6	ft
Vapor Space Expansion Factor	1	1/day	Vapor Molecular Weight	47.6425	lb/lbmol
Vented Vapor Saturation Factor	0.145079		Average Vapor Temperature	533.917	°R
Vapor Space Outage	10.125	ft	Average Daily Ambient Temperature	521.37	°R
Average Daily Vapor Temperature Range	47.9047	°R	Net Working Loss Throughput	308136	ft^3/yr
Average Daily Vapor Pressure Range	3.55991	psi	Working Loss Turnover (Saturation) Factor	1	
Breather Vent Pressure Setting Range	0.06	psi	Number of Turnovers per Year	170.283	
Vapor Pressure at Average Daily Liquid Surface Temperature	10.9812	psia	Annual Net Throughput	219548	bbl/yr
Average Daily Liquid Surface Temperature	529.968	°R	Maximum Liquid Height	18	ft
Average Daily Ambient Temperature Range	28.2	°R	Minimum Liquid Height	2	ft
Tank Roof Surface Solar Absorptance	0.9		Working Loss Product Factor	1	
Tank Shell Surface Solar Absorptance	0.9		Vent Setting Correction Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	12.8800	psia	Saturation Factor	0.6	
Vapor Pressure at Minimum Liquid Surface Temperature	9.32009	psia	Vapor Pressure of Liquid Loaded	8.51453	psia
Maximum Liquid Surface Temperature	541.944	°R	Collection Efficiency	70	%
Minimum Liquid Surface Temperature	517.992	°R	Annual Net Throughput Per Tank	54887.1	bbl/yr
Liquid Height	10	ft	Loading Vapor Molecular Weight	51.9741	lb/lbmol
Roof Outage	0.125	ft			

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: Dedicated Normal Service*	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	357.361	ton/yr	Standing Losses per Tank	2.23117	ton/yr
Working Losses	45.3514	ton/yr	Flashing Losses per Tank	89.3401	ton/yr
Standing Losses	8.92467	ton/yr	Working and Standing Losses	54.2760	ton/yr
Loading Losses	25.1112	ton/yr	Working and Standing Losses per Tank	13.5690	ton/yr
Working Losses per Tank	11.3378	ton/yr	Loading Losses per Tank	6.27781	ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
C3	112.888	15.1982	2.99085	8.31204	18.1891
iC4	29.2765	3.80141	0.748077	2.12974	4.54948
nC4	79.7341	10.2152	2.01023	5.73551	12.2254
iC5	28.8153	3.57304	0.703137	2.00049	4.27618
nC5	33.2086	4.06375	0.799703	2.26785	4.86345
nC6	11.2066	1.30486	0.256783	0.717623	1.56164
Benzene	2.21476	0.260576	0.0512785	0.143817	0.311854
iC6	36.9960	4.39796	0.865471	2.43535	5.26343
Toluene	1.93872	0.217434	0.0427887	0.118057	0.260223
C7	15.5487	1.73540	0.341509	0.940660	2.07691
Ethylbenzene	0.104663	0.0112155	0.00220710	0.00599176	0.0134226
m-Xylene	0.406050	0.0434283	0.00854622	0.0231851	0.0519745
p-Xylene	0.231635	0.0248590	0.00489199	0.0132878	0.0297510
o-Xylene	0.103938	0.0110675	0.00217797	0.00589937	0.0132455
C8	3.43239	0.366360	0.0720957	0.195477	0.438455
C9	0.927231	0.0945548	0.0186074	0.0496669	0.113162
C10	0.327820	0.0320604	0.00630916	0.0165818	0.0383696

Activity Title	TK-5
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.49
Roof Color / Condition	tan / average
Shell Color / Condition	tan / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	4436.940 gal	20.000 °C	24882.843 lb	497.657 lb-M
Mixture Name:	Mixture			

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
RVP5	0.6542	24882.8425	1	497.6569	1	1	0.6542

Kp (product factor)	1
Hl	7.5521 ft

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	8493.151	7671.2329	8493.151	8219.1781	8493.151	8219.178	8493.151	8493.151	8219.178	8493.151	8219.178	8493.151	100000	(sum)
Vq	(ft^3)	1135.369	1025.4947	1135.369	1098.7443	1135.369	1098.744	1135.369	1135.369	1098.744	1135.369	1098.744	1135.369	13368.06	(sum)
N (period)	(number)	0.9629	0.8698	0.9629	0.9319	0.9629	0.9319	0.9629	0.9629	0.9319	0.9629	0.9319	0.9629	11.3377	(sum)
N (scaled to annual)	(number)	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
RVP5	(Mv)	50	50	50	50	50	50	50	50	50	50	50	50	50	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
RVP5	(mmHg)	0.4075	0.4654	0.5489	0.6624	0.8081	0.9435	0.9726	0.9295	0.8066	0.6387	0.4858	0.4035	0.672708	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (average)
pNc	(psia)	12.8721	12.871	12.8694	12.8672	12.8644	12.8618	12.8612	12.862	12.8644	12.8676	12.8706	12.8722	12.86699 (average)
pVa	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (average)
vq	(ft^3)	1135.369	1025.4947	1135.369	1098.7443	1135.369	1098.744	1135.369	1135.369	1098.744	1135.369	1098.744	1135.369	1114.005 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0688	0.068	0.0669	0.0657	0.0645	0.0635	0.0633	0.0636	0.0645	0.066	0.0677	0.0689	0.06595 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.9629	0.8698	0.9629	0.9319	0.9629	0.9319	0.9629	0.9629	0.9319	0.9629	0.9319	0.9629	11.3377 (sum)
Compound Vapor Density (vW(i))														
RVP5	(lb/ft^3)	7.25E-05	8.17E-05	9.48E-05	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.50E-05	7.19E-05	1.17E-04 (avg)
Working Losses (Lw)														
Air	(lb)	78.1466	69.717	75.9942	72.2262	73.1922	69.7429	71.8464	72.1764	70.844	74.8976	74.3964	78.2163	881.3962 (sum)
RVP5	(lb)	0.0823	0.0838	0.1076	0.1234	0.1525	0.1696	0.1802	0.1731	0.1475	0.1236	0.0934	0.0816	1.5186 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (avg)
pNc	(psia)	12.8721	12.871	12.8694	12.8672	12.8644	12.8618	12.8612	12.862	12.8644	12.8676	12.8706	12.8722	12.86699 (avg)
pVa	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (avg)
dPv	(psia)	0.0025	0.0031	0.0041	0.0054	0.0064	0.0075	0.007	0.0063	0.0054	0.0042	0.0031	0.0024	0.004783 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9969	0.9964	0.9958	0.9949	0.9938	0.9927	0.9925	0.9929	0.9938	0.9951	0.9963	0.9969	0.994833 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0688	0.068	0.0669	0.0657	0.0645	0.0635	0.0633	0.0636	0.0645	0.066	0.0677	0.0689	0.06595 (avg)
kE	(number)	0.0538	0.0604	0.0689	0.0761	0.0763	0.0769	0.0694	0.0652	0.0634	0.0601	0.0564	0.0521	0.064917 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	0.0092	0.0107	0.0128	0.0157	0.0191	0.0223	0.0225	0.0213	0.0185	0.0146	0.011	0.0091	0.015567 (avg)
pln	(psia)	0.0067	0.0075	0.0087	0.0103	0.0127	0.0148	0.0156	0.0151	0.0131	0.0104	0.008	0.0067	0.0108 (avg)
Compound Vapor Density (wV(i))														
RVP5	(lb/ft^3)	7.25E-05	8.17E-05	9.48E-05	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.50E-05	7.19E-05	1.17E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	68.0316	68.2067	84.8299	89.0327	90.4486	86.8648	80.7677	76.1669	72.6961	72.8411	67.9546	65.9752	923.8159 (sum)
RVP5	(lb)	0.0714	0.0817	0.1197	0.1513	0.1873	0.2098	0.2011	0.1814	0.1505	0.1196	0.085	0.0686	1.6274 (sum)
Total Losses (Lt)														
Air	(lb)	146.1782	137.9236	160.8241	161.2588	163.6409	156.6077	152.614	148.3433	143.5401	147.7386	142.3511	144.1914	1805.212 (sum)
RVP5	(lb)	0.1538	0.1655	0.2273	0.2747	0.3398	0.3794	0.3813	0.3545	0.298	0.2432	0.1785	0.1503	3.1463 (sum)

Activity Title	TK-6
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.49
Roof Color / Condition	tan / average
Shell Color / Condition	tan / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	4436.940 gal	20.000 °C	24882.843 lb	497.657 lb-M
Mixture Name:	Mixture			

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
RVP5	0.6542	24882.8425	1	497.6569	1	1	0.6542

Kp (product factor)	1
Hl	7.5521 ft

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	8493.151	7671.2329	8493.151	8219.1781	8493.151	8219.178	8493.151	8493.151	8219.178	8493.151	8219.178	8493.151	100000	(sum)
Vq	(ft^3)	1135.369	1025.4947	1135.369	1098.7443	1135.369	1098.744	1135.369	1135.369	1098.744	1135.369	1098.744	1135.369	13368.06	(sum)
N (period)	(number)	0.9629	0.8698	0.9629	0.9319	0.9629	0.9319	0.9629	0.9629	0.9319	0.9629	0.9319	0.9629	11.3377	(sum)
N (scaled to annual)	(number)	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379	11.3379		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
RVP5	(Mv)	50	50	50	50	50	50	50	50	50	50	50	50	50	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
RVP5	(mmHg)	0.4075	0.4654	0.5489	0.6624	0.8081	0.9435	0.9726	0.9295	0.8066	0.6387	0.4858	0.4035	0.672708	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (average)
pNc	(psia)	12.8721	12.871	12.8694	12.8672	12.8644	12.8618	12.8612	12.862	12.8644	12.8676	12.8706	12.8722	12.86699 (average)
pVa	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (average)
vq	(ft^3)	1135.369	1025.4947	1135.369	1098.7443	1135.369	1098.744	1135.369	1135.369	1098.744	1135.369	1098.744	1135.369	1114.005 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0688	0.068	0.0669	0.0657	0.0645	0.0635	0.0633	0.0636	0.0645	0.066	0.0677	0.0689	0.06595 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.9629	0.8698	0.9629	0.9319	0.9629	0.9319	0.9629	0.9629	0.9319	0.9629	0.9319	0.9629	11.3377 (sum)
Compound Vapor Density (vW(i))														
RVP5	(lb/ft^3)	7.25E-05	8.17E-05	9.48E-05	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.50E-05	7.19E-05	1.17E-04 (avg)
Working Losses (Lw)														
Air	(lb)	78.1466	69.717	75.9942	72.2262	73.1922	69.7429	71.8464	72.1764	70.844	74.8976	74.3964	78.2163	881.3962 (sum)
RVP5	(lb)	0.0823	0.0838	0.1076	0.1234	0.1525	0.1696	0.1802	0.1731	0.1475	0.1236	0.0934	0.0816	1.5186 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (avg)
pNc	(psia)	12.8721	12.871	12.8694	12.8672	12.8644	12.8618	12.8612	12.862	12.8644	12.8676	12.8706	12.8722	12.86699 (avg)
pVa	(psia)	0.0079	0.009	0.0106	0.0128	0.0156	0.0182	0.0188	0.018	0.0156	0.0124	0.0094	0.0078	0.013008 (avg)
dPv	(psia)	0.0025	0.0031	0.0041	0.0054	0.0064	0.0075	0.007	0.0063	0.0054	0.0042	0.0031	0.0024	0.004783 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9969	0.9964	0.9958	0.9949	0.9938	0.9927	0.9925	0.9929	0.9938	0.9951	0.9963	0.9969	0.994833 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0688	0.068	0.0669	0.0657	0.0645	0.0635	0.0633	0.0636	0.0645	0.066	0.0677	0.0689	0.06595 (avg)
kE	(number)	0.0538	0.0604	0.0689	0.0761	0.0763	0.0769	0.0694	0.0652	0.0634	0.0601	0.0564	0.0521	0.064917 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	0.0092	0.0107	0.0128	0.0157	0.0191	0.0223	0.0225	0.0213	0.0185	0.0146	0.011	0.0091	0.015567 (avg)
pln	(psia)	0.0067	0.0075	0.0087	0.0103	0.0127	0.0148	0.0156	0.0151	0.0131	0.0104	0.008	0.0067	0.0108 (avg)
Compound Vapor Density (wV(i))														
RVP5	(lb/ft^3)	7.25E-05	8.17E-05	9.48E-05	1.00E-04	1.00E-04	2.00E-04	2.00E-04	2.00E-04	1.00E-04	1.00E-04	8.50E-05	7.19E-05	1.17E-04 (avg)
Breathing Losses (Ls)														
Air	(lb)	68.0316	68.2067	84.8299	89.0327	90.4486	86.8648	80.7677	76.1669	72.6961	72.8411	67.9546	65.9752	923.8159 (sum)
RVP5	(lb)	0.0714	0.0817	0.1197	0.1513	0.1873	0.2098	0.2011	0.1814	0.1505	0.1196	0.085	0.0686	1.6274 (sum)
Total Losses (Lt)														
Air	(lb)	146.1782	137.9236	160.8241	161.2588	163.6409	156.6077	152.614	148.3433	143.5401	147.7386	142.3511	144.1914	1805.212 (sum)
RVP5	(lb)	0.1538	0.1655	0.2273	0.2747	0.3398	0.3794	0.3813	0.3545	0.298	0.2432	0.1785	0.1503	3.1463 (sum)

Activity Title	TK-7
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.49
Roof Color / Condition	tan / average
Shell Color / Condition	tan / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents	4436.940 gal	20.000 °C	41230.722 lb	664.262 lb-M	
Mixture Name:	Mixture				
	[Liquid]	mmHg	lb	W[i]	lb-M
	Ethylene Glycol	0.0925	41230.7219	1	664.2617
Kp (product factor)	1				
Hl	7.5521 ft				

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	11041.1	9972.6027	11041.1	10684.9315	11041.1	10684.93	11041.1	11041.1	10684.93	11041.1	10684.93	11041.1	130000	(sum)
Vq	(ft^3)	1475.98	1333.1431	1475.98	1428.3676	1475.98	1428.368	1475.98	1475.98	1428.368	1475.98	1428.368	1475.98	17378.47	(sum)
N (period)	(number)	1.2518	1.1307	1.2518	1.2114	1.2518	1.2114	1.2518	1.2518	1.2114	1.2518	1.2114	1.2518	14.7389	(sum)
N (scaled to annual)	(number)	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392	14.7392		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Ethylene Glycol	(Mv)	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	62.07	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Ethylene Glycol	(mmHg)	0.032	0.0431	0.0624	0.0951	0.1486	0.2106	0.2256	0.2037	0.148	0.0876	0.0475	0.0314	0.1113	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	6.00E-04	8.00E-04	0.0012	0.0018	0.0029	0.0041	0.0044	0.0039	0.0029	0.0017	9.00E-04	6.00E-04	2.15E-03 (average)
pNc	(psia)	12.8794	12.8792	12.8788	12.8782	12.8771	12.8759	12.8756	12.8761	12.8771	12.8783	12.8791	12.8794	12.87785 (average)
pVa	(psia)	6.00E-04	8.00E-04	0.0012	0.0018	0.0029	0.0041	0.0044	0.0039	0.0029	0.0017	9.00E-04	6.00E-04	2.15E-03 (average)
vq	(ft^3)	1475.98	1333.1431	1475.98	1428.3676	1475.98	1428.368	1475.98	1475.98	1428.368	1475.98	1428.368	1475.98	1448.206 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0689	0.068	0.067	0.0658	0.0645	0.0635	0.0634	0.0636	0.0645	0.066	0.0678	0.0689	0.065992 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	1.2518	1.1307	1.2518	1.2114	1.2518	1.2114	1.2518	1.2518	1.2114	1.2518	1.2114	1.2518	14.7389 (sum)
Compound Vapor Density (vW(i))														
Ethylene Glycol	(lb/ft^3)	7.08E-06	9.40E-06	1.34E-05	2.00E-05	3.07E-05	4.28E-05	4.57E-05	4.15E-05	3.06E-05	1.85E-05	1.03E-05	6.94E-06	2.31E-05 (avg)
Working Losses (Lw)														
Air	(lb)	101.6479	90.6896	98.8647	93.9741	95.2443	90.7657	93.5052	93.9318	92.1884	97.4475	96.7791	101.738	1146.776 (sum)
Ethylene Glycol	(lb)	0.0104	0.0125	0.0197	0.0286	0.0453	0.0611	0.0675	0.0612	0.0437	0.0274	0.0147	0.0102	0.4023 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	6.00E-04	8.00E-04	0.0012	0.0018	0.0029	0.0041	0.0044	0.0039	0.0029	0.0017	9.00E-04	6.00E-04	2.15E-03 (avg)
pNc	(psia)	12.8794	12.8792	12.8788	12.8782	12.8771	12.8759	12.8756	12.8761	12.8771	12.8783	12.8791	12.8794	12.87785 (avg)
pVa	(psia)	6.00E-04	8.00E-04	0.0012	0.0018	0.0029	0.0041	0.0044	0.0039	0.0029	0.0017	9.00E-04	6.00E-04	2.15E-03 (avg)
dPv	(psia)	4.00E-04	7.00E-04	0.0011	0.0018	0.0027	0.0038	0.0037	0.0032	0.0023	0.0013	7.00E-04	4.00E-04	1.84E-03 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9998	0.9997	0.9995	0.9993	0.9989	0.9984	0.9983	0.9984	0.9989	0.9993	0.9996	0.9998	0.999158 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0689	0.068	0.067	0.0658	0.0645	0.0635	0.0634	0.0636	0.0645	0.066	0.0678	0.0689	0.065992 (avg)
kE	(number)	0.0536	0.0602	0.0687	0.0758	0.076	0.0766	0.0692	0.0649	0.0631	0.0598	0.0562	0.0519	0.064667 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	9.00E-04	0.0012	0.0018	0.0029	0.0045	0.0064	0.0066	0.0058	0.0042	0.0025	0.0013	9.00E-04	3.25E-03 (avg)
pln	(psia)	4.00E-04	6.00E-04	8.00E-04	0.0011	0.0018	0.0026	0.0029	0.0026	0.0019	0.0012	6.00E-04	4.00E-04	1.41E-03 (avg)
Compound Vapor Density (wV(i))														
Ethylene Glycol	(lb/ft^3)	7.08E-06	9.40E-06	1.34E-05	2.00E-05	3.07E-05	4.28E-05	4.57E-05	4.15E-05	3.06E-05	1.85E-05	1.03E-05	6.94E-06	2.31E-05 (avg)
Breathing Losses (Ls)														
Air	(lb)	67.8707	68.0351	84.6031	88.7853	90.201	86.648	80.5699	75.9707	72.4935	72.6359	67.7792	65.8196	921.412 (sum)
Ethylene Glycol	(lb)	0.007	0.0094	0.0169	0.027	0.0428	0.0583	0.058	0.0494	0.0343	0.0204	0.0103	0.0066	0.3404 (sum)
Total Losses (Lt)														
Air	(lb)	169.5185	158.7247	183.4678	182.7594	185.4453	177.4137	174.0751	169.9024	164.6819	170.0834	164.5583	167.5576	2068.188 (sum)
Ethylene Glycol	(lb)	0.0174	0.0219	0.0366	0.0556	0.0881	0.1194	0.1255	0.1106	0.078	0.0477	0.025	0.0169	0.7427 (sum)

Activity Title	TK-8														
Climate:	New Mexico, Roswell														
pa	12.88 psia														
Equipment Tag	1000 gal Tank - NM														
Storage Vessel Style	Horizontal Storage														
Calculation Type	Normal Storage Tank (11/2019 Rev.)														
	Working and Breathing Loss Calculation														
Void Space Volume	1013.24 gal														
Working Volume	1000 gal														
Working Volume	133.6806 ft^3														
Shell Diameter	3.791 ft														
Straight Side Height	12 ft														
Paint Solar Absorptance	0.49														
Roof Color / Condition	tan / average														
Shell Color / Condition	tan / average														
pbp	0.03														
pbv	-0.03														
Equipment Comment															
Activity Comment															
Pi (constant)	3.1416														
R (constant)	998.9														

Vessel Contents	15.139 gal	20.000 °C	100.000 lb	3.121 lb-M		
Mixture Name:	Mixture					
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Methanol	93.743	100	1	3.1211	1	1	93.743
Kp (product factor)	1							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	2123.288	1917.8082	2123.288	2054.7945	2123.288	2054.795	2123.288	2123.288	2054.795	2123.288	2054.795	2123.288	25000	(sum)
Vq	(ft^3)	283.8423	256.3737	283.8423	274.6861	283.8423	274.6861	283.8423	283.8423	274.6861	283.8423	274.6861	283.8423	3342.014	(sum)
N (period)	(number)	2.1233	1.9178	2.1233	2.0548	2.1233	2.0548	2.1233	2.1233	2.0548	2.1233	2.0548	2.1233	25.0001	(sum)
N (scaled to annual)	(number)	25	25	25	25	25	25	25	25	25	25	25	25		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Methanol	(Mv)	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Methanol	(mmHg)	45.6112	55.8418	71.7769	95.5331	129.2478	163.5332	171.2714	159.8562	128.8906	90.384	59.6142	44.9459	101.3755	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	0.8822	1.0801	1.3883	1.8478	2.4999	3.1631	3.3127	3.092	2.493	1.7482	1.1531	0.8693	1.960808 (average)
pNc	(psia)	11.9978	11.7999	11.4917	11.0322	10.3801	9.7169	9.5673	9.788	10.387	11.1318	11.7269	12.0107	10.91919 (average)
pVa	(psia)	0.8822	1.0801	1.3883	1.8478	2.4999	3.1631	3.3127	3.092	2.493	1.7482	1.1531	0.8693	1.960808 (average)
vq	(ft^3)	283.8423	256.3737	283.8423	274.6861	283.8423	274.6861	283.8423	283.8423	274.6861	283.8423	274.6861	283.8423	278.5012 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0642	0.0623	0.0598	0.0564	0.052	0.048	0.0471	0.0484	0.0521	0.0571	0.0617	0.0643	0.056117 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	2.1233	1.9178	2.1233	2.0548	2.1233	2.0548	2.1233	2.1233	2.0548	2.1233	2.0548	2.1233	25.0001 (sum)
Compound Vapor Density (vW(i))														
Methanol	(lb/ft^3)	0.0052	0.0063	0.0079	0.0104	0.0138	0.0171	0.0179	0.0168	0.0137	0.0099	0.0067	0.0051	0.0109 (avg)
Working Losses (Lw)														
Air	(lb)	18.2096	15.9788	16.9647	15.4815	14.7644	13.1725	13.3614	13.7316	14.3002	16.1984	16.9464	18.2453	187.3548 (sum)
Methanol	(lb)	1.4764	1.6113	2.2552	2.8504	3.9073	4.7105	5.0844	4.7697	3.7766	2.8018	1.8367	1.4565	36.5368 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	0.8822	1.0801	1.3883	1.8478	2.4999	3.1631	3.3127	3.092	2.493	1.7482	1.1531	0.8693	1.960808 (avg)
pNc	(psia)	11.9978	11.7999	11.4917	11.0322	10.3801	9.7169	9.5673	9.788	10.387	11.1318	11.7269	12.0107	10.91919 (avg)
pVa	(psia)	0.8822	1.0801	1.3883	1.8478	2.4999	3.1631	3.3127	3.092	2.493	1.7482	1.1531	0.8693	1.960808 (avg)
dPv	(psia)	0.4289	0.578	0.8279	1.1881	1.577	1.9764	1.8702	1.6522	1.3176	0.9005	0.576	0.4108	1.108633 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887 (avg)
ks	(number)	0.9349	0.9215	0.9013	0.8728	0.8352	0.8003	0.7928	0.8039	0.8356	0.8788	0.9166	0.9358	0.869125 (avg)
Vv	(ft^3)	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665 (avg)
wVnc	(number)	0.0642	0.0623	0.0598	0.0564	0.052	0.048	0.0471	0.0484	0.0521	0.0571	0.0617	0.0643	0.056117 (avg)
kE	(number)	0.089	0.1087	0.1401	0.1826	0.2266	0.2782	0.2628	0.232	0.1887	0.1399	0.1048	0.0858	0.169933 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	1.1193	1.4026	1.8553	2.5236	3.3947	4.2829	4.3607	4.0126	3.2266	2.2485	1.4722	1.0958	2.5829 (avg)
pln	(psia)	0.6904	0.8245	1.0275	1.3355	1.8177	2.3065	2.4905	2.3604	1.909	1.3479	0.8962	0.685	1.474258 (avg)
Compound Vapor Density (wV(i))														
Methanol	(lb/ft^3)	0.0052	0.0063	0.0079	0.0104	0.0138	0.0171	0.0179	0.0168	0.0137	0.0099	0.0067	0.0051	0.0109 (avg)
Breathing Losses (Ls)														
Air	(lb)	11.9904	12.8584	17.5891	20.924	24.7635	27.1241	25.9835	23.5784	19.9695	16.7719	13.1478	11.5812	226.2818 (sum)
Methanol	(lb)	0.9089	1.1948	2.1074	3.3623	5.4738	7.7623	7.8386	6.5838	4.4069	2.5493	1.3062	0.8651	44.3594 (sum)
Total Losses (Lt)														
Air	(lb)	30.2001	28.8372	34.5538	36.4055	39.528	40.2966	39.3449	37.3101	34.2697	32.9703	30.0942	29.8265	413.6369 (sum)
Methanol	(lb)	2.3853	2.8061	4.3625	6.2127	9.3811	12.4728	12.9229	11.3535	8.1835	5.3511	3.1429	2.3216	80.896 (sum)

Activity Title	TK-10
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM - Green
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.9
Roof Color / Condition	green-dark / average
Shell Color / Condition	green-dark / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents 4436.940 gal 20.000 °C 37028.039 lb 2055.362 lb-M

Mixture Name: Mixture

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Water	17.3515	37028.0394	1	2055.3617	1	1	17.3515

Kp (product factor) 1

Hl 7.5521 ft

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	4494.575	4059.6164	4494.575	4349.589	4494.575	4349.589	4494.575	4494.575	4349.589	4494.575	4349.589	4494.575	52920	(sum)
Vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	7074.375	(sum)
N (period)	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003	(sum)
N (scaled to annual)	(number)	6	6	6	6	6	6	6	6	6	6	6	6		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Water	(mmHg)	8.3492	10.8943	15.1468	21.7179	30.9795	40.7346	42.3955	38.5316	29.5802	19.1366	11.5118	8.1437	23.09348	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (average)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (average)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	589.5312 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (average)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003 (sum)
Compound Vapor Density (vW(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Working Losses (Lw)														
Air	(lb)	40.6343	36.0557	38.9687	36.6019	36.541	34.2741	35.2402	35.6564	35.5335	38.2397	38.4825	40.6993	446.9273 (sum)
Water	(lb)	0.3191	0.3703	0.5588	0.7589	1.0958	1.3719	1.473	1.3476	1.0177	0.6983	0.4184	0.3117	9.7415 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	38.4761	44.0033	51.0428	59.585	69.7801	77.9331	80.4842	78.4702	71.0641	59.3847	46.3857	38.1912	59.56671 (avg)
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (avg)
tLx	(°F)	57.3231	65.9903	77.2038	89.525	100.8841	110.0591	110.0922	105.9502	96.7371	82.2877	66.6087	56.3022	84.91363 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (avg)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (avg)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
dPv	(psia)	0.1176	0.1739	0.2772	0.4358	0.6156	0.8051	0.765	0.6522	0.4843	0.2956	0.1673	0.1105	0.408342 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	37.694	43.974	52.322	59.88	62.208	64.252	59.216	54.96	51.346	45.806	40.446	36.222	50.69383 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9393	0.9222	0.895	0.8561	0.8066	0.7602	0.7529	0.7702	0.8137	0.871	0.9182	0.9407	0.853842 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (avg)
kE	(number)	0.0788	0.0944	0.1171	0.1423	0.1594	0.1777	0.1652	0.1484	0.1289	0.1052	0.0868	0.0754	0.1233 (avg)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (avg)
plx	(psia)	0.2295	0.3129	0.4591	0.685	0.9725	1.2755	1.2767	1.1311	0.8574	0.5429	0.3197	0.2211	0.690283 (avg)
pln	(psia)	0.1118	0.139	0.1819	0.2491	0.3569	0.4704	0.5118	0.4789	0.373	0.2473	0.1524	0.1106	0.281925 (avg)
Compound Vapor Density (wV(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Breathing Losses (Ls)														
Air	(lb)	97.9832	104.1926	139.7034	159.3373	178.2303	186.3522	178.1126	161.9203	140.2081	123.0813	102.2648	93.9413	1665.327 (sum)
Water	(lb)	0.7227	0.9868	1.7932	2.8283	4.311	5.6709	5.6053	4.7136	3.2673	1.9575	1.021	0.6769	33.5545 (sum)
Total Losses (Lt)														
Air	(lb)	138.6175	140.2483	178.6721	195.9392	214.7713	220.6263	213.3528	197.5767	175.7417	161.3209	140.7474	134.6406	2112.255 (sum)
Water	(lb)	1.0418	1.357	2.3521	3.5873	5.4068	7.0428	7.0783	6.0612	4.285	2.6558	1.4394	0.9886	43.2961 (sum)

Activity Title	TK-11
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM - Green
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.9
Roof Color / Condition	green-dark / average
Shell Color / Condition	green-dark / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents 4436.940 gal 20.000 °C 37028.039 lb 2055.362 lb-M

Mixture Name: Mixture

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Water	17.3515	37028.0394	1	2055.3617	1	1	17.3515

Kp (product factor) 1

Hl 7.5521 ft

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	4494.575	4059.6164	4494.575	4349.589	4494.575	4349.589	4494.575	4494.575	4349.589	4494.575	4349.589	4494.575	52920	(sum)
Vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	7074.375	(sum)
N (period)	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003	(sum)
N (scaled to annual)	(number)	6	6	6	6	6	6	6	6	6	6	6	6		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Water	(mmHg)	8.3492	10.8943	15.1468	21.7179	30.9795	40.7346	42.3955	38.5316	29.5802	19.1366	11.5118	8.1437	23.09348	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (average)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (average)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	589.5312 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (average)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003 (sum)
Compound Vapor Density (vW(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Working Losses (Lw)														
Air	(lb)	40.6343	36.0557	38.9687	36.6019	36.541	34.2741	35.2402	35.6564	35.5335	38.2397	38.4825	40.6993	446.9273 (sum)
Water	(lb)	0.3191	0.3703	0.5588	0.7589	1.0958	1.3719	1.473	1.3476	1.0177	0.6983	0.4184	0.3117	9.7415 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	38.4761	44.0033	51.0428	59.585	69.7801	77.9331	80.4842	78.4702	71.0641	59.3847	46.3857	38.1912	59.56671 (avg)
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (avg)
tLx	(°F)	57.3231	65.9903	77.2038	89.525	100.8841	110.0591	110.0922	105.9502	96.7371	82.2877	66.6087	56.3022	84.91363 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (avg)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (avg)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
dPv	(psia)	0.1176	0.1739	0.2772	0.4358	0.6156	0.8051	0.765	0.6522	0.4843	0.2956	0.1673	0.1105	0.408342 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	37.694	43.974	52.322	59.88	62.208	64.252	59.216	54.96	51.346	45.806	40.446	36.222	50.69383 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9393	0.9222	0.895	0.8561	0.8066	0.7602	0.7529	0.7702	0.8137	0.871	0.9182	0.9407	0.853842 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (avg)
kE	(number)	0.0788	0.0944	0.1171	0.1423	0.1594	0.1777	0.1652	0.1484	0.1289	0.1052	0.0868	0.0754	0.1233 (avg)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (avg)
plx	(psia)	0.2295	0.3129	0.4591	0.685	0.9725	1.2755	1.2767	1.1311	0.8574	0.5429	0.3197	0.2211	0.690283 (avg)
pln	(psia)	0.1118	0.139	0.1819	0.2491	0.3569	0.4704	0.5118	0.4789	0.373	0.2473	0.1524	0.1106	0.281925 (avg)
Compound Vapor Density (wV(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Breathing Losses (Ls)														
Air	(lb)	97.9832	104.1926	139.7034	159.3373	178.2303	186.3522	178.1126	161.9203	140.2081	123.0813	102.2648	93.9413	1665.327 (sum)
Water	(lb)	0.7227	0.9868	1.7932	2.8283	4.311	5.6709	5.6053	4.7136	3.2673	1.9575	1.021	0.6769	33.5545 (sum)
Total Losses (Lt)														
Air	(lb)	138.6175	140.2483	178.6721	195.9392	214.7713	220.6263	213.3528	197.5767	175.7417	161.3209	140.7474	134.6406	2112.255 (sum)
Water	(lb)	1.0418	1.357	2.3521	3.5873	5.4068	7.0428	7.0783	6.0612	4.285	2.6558	1.4394	0.9886	43.2961 (sum)

Activity Title	TK-12
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	210 bbl Tank - NM - Green
Storage Vessel Style	Cone Roof Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	8873.88 gal
Working Volume	8820 gal
Working Volume	1179.0625 ft^3
Shell Diameter	10 ft
Straight Side Height	15 ft
Hro	0.104 ft
Paint Solar Absorptance	0.9
Roof Color / Condition	green-dark / average
Shell Color / Condition	green-dark / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents 4436.940 gal 20.000 °C 37028.039 lb 2055.362 lb-M

Mixture Name: Mixture

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Water	17.3515	37028.0394	1	2055.3617	1	1	17.3515

Kp (product factor) 1

Hl 7.5521 ft

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	4494.575	4059.6164	4494.575	4349.589	4494.575	4349.589	4494.575	4494.575	4349.589	4494.575	4349.589	4494.575	52920	(sum)
Vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	7074.375	(sum)
N (period)	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003	(sum)
N (scaled to annual)	(number)	6	6	6	6	6	6	6	6	6	6	6	6		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)
Compound Molecular Weights (lb/lb-M)															
Water	(Mv)	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	18.0153	(lb/lb-mole)
Compound Vapor Pressures (Pva)															
Water	(mmHg)	8.3492	10.8943	15.1468	21.7179	30.9795	40.7346	42.3955	38.5316	29.5802	19.1366	11.5118	8.1437	23.09348	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (average)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (average)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (average)
vq	(ft^3)	600.8373	542.6918	600.8373	581.4555	600.8373	581.4555	600.8373	600.8373	581.4555	600.8373	581.4555	600.8373	589.5312 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (average)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.5096	0.4603	0.5096	0.4932	0.5096	0.4932	0.5096	0.5096	0.4932	0.5096	0.4932	0.5096	6.0003 (sum)
Compound Vapor Density (vW(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Working Losses (Lw)														
Air	(lb)	40.6343	36.0557	38.9687	36.6019	36.541	34.2741	35.2402	35.6564	35.5335	38.2397	38.4825	40.6993	446.9273 (sum)
Water	(lb)	0.3191	0.3703	0.5588	0.7589	1.0958	1.3719	1.473	1.3476	1.0177	0.6983	0.4184	0.3117	9.7415 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	38.4761	44.0033	51.0428	59.585	69.7801	77.9331	80.4842	78.4702	71.0641	59.3847	46.3857	38.1912	59.56671 (avg)
tLa	(°F)	47.8996	54.9968	64.1233	74.555	85.3321	93.9961	95.2882	92.2102	83.9006	70.8362	56.4972	47.2467	72.24017 (avg)
tLx	(°F)	57.3231	65.9903	77.2038	89.525	100.8841	110.0591	110.0922	105.9502	96.7371	82.2877	66.6087	56.3022	84.91363 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	504.1051	510.1421	517.8288	526.9575	537.1327	545.3418	547.0854	544.7495	537.3394	525.5404	512.3129	503.7053	526.0201 (avg)
pC	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
pNc	(psia)	12.7185	12.6693	12.587	12.4599	12.2808	12.0921	12.06	12.1347	12.3079	12.5099	12.6573	12.7225	12.43333 (avg)
pVa	(psia)	0.1615	0.2107	0.293	0.4201	0.5992	0.7879	0.82	0.7453	0.5721	0.3701	0.2227	0.1575	0.446675 (avg)
dPv	(psia)	0.1176	0.1739	0.2772	0.4358	0.6156	0.8051	0.765	0.6522	0.4843	0.2956	0.1673	0.1105	0.408342 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	37.694	43.974	52.322	59.88	62.208	64.252	59.216	54.96	51.346	45.806	40.446	36.222	50.69383 (avg)
hVo	(ft)	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521	7.5521 (avg)
ks	(number)	0.9393	0.9222	0.895	0.8561	0.8066	0.7602	0.7529	0.7702	0.8137	0.871	0.9182	0.9407	0.853842 (avg)
Vv	(ft^3)	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326	593.1326 (avg)
wVnc	(number)	0.0676	0.0664	0.0649	0.0629	0.0608	0.0589	0.0587	0.0593	0.0611	0.0636	0.0662	0.0677	0.063175 (avg)
kE	(number)	0.0788	0.0944	0.1171	0.1423	0.1594	0.1777	0.1652	0.1484	0.1289	0.1052	0.0868	0.0754	0.1233 (avg)
tv	(°R)	510.3958	518.3579	528.659	540.1537	551.4219	560.4569	561.3808	557.6973	548.654	534.5573	519.3116	509.5365	536.7152 (avg)
plx	(psia)	0.2295	0.3129	0.4591	0.685	0.9725	1.2755	1.2767	1.1311	0.8574	0.5429	0.3197	0.2211	0.690283 (avg)
pln	(psia)	0.1118	0.139	0.1819	0.2491	0.3569	0.4704	0.5118	0.4789	0.373	0.2473	0.1524	0.1106	0.281925 (avg)
Compound Vapor Density (wV(i))														
Water	(lb/ft^3)	5.00E-04	7.00E-04	9.00E-04	0.0013	0.0018	0.0024	0.0025	0.0022	0.0018	0.0012	7.00E-04	5.00E-04	1.38E-03 (avg)
Breathing Losses (Ls)														
Air	(lb)	97.9832	104.1926	139.7034	159.3373	178.2303	186.3522	178.1126	161.9203	140.2081	123.0813	102.2648	93.9413	1665.327 (sum)
Water	(lb)	0.7227	0.9868	1.7932	2.8283	4.311	5.6709	5.6053	4.7136	3.2673	1.9575	1.021	0.6769	33.5545 (sum)
Total Losses (Lt)														
Air	(lb)	138.6175	140.2483	178.6721	195.9392	214.7713	220.6263	213.3528	197.5767	175.7417	161.3209	140.7474	134.6406	2112.255 (sum)
Water	(lb)	1.0418	1.357	2.3521	3.5873	5.4068	7.0428	7.0783	6.0612	4.285	2.6558	1.4394	0.9886	43.2961 (sum)

Activity Title	TK-13													
Climate:	New Mexico, Roswell													
pa	12.88 psia													
Equipment Tag	1000 gal Tank - NM													
Storage Vessel Style	Horizontal Storage													
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation													
Void Space Volume	1013.24 gal													
Working Volume	1000 gal													
Working Volume	133.6806 ft^3													
Shell Diameter	3.791 ft													
Straight Side Height	12 ft													
Paint Solar Absorptance	0.49													
Roof Color / Condition	tan / average													
Shell Color / Condition	tan / average													
pbp	0.03													
pbv	-0.03													
Equipment Comment														
Activity Comment														
Pi (constant)	3.1416													
R (constant)	998.9													

Vessel Contents	16.939 gal	20.000 °C	100.000 lb	1.367 lb-M			
Mixture Name:	Mixture						
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Diethylamine	191.9529	100	1	1.3672	1	1	191.9529
Kp (product factor)	1							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	679.4521	613.6986	679.4521	657.5342	679.4521	657.5342	679.4521	679.4521	657.5342	679.4521	657.5342	679.4521	8000 (sum)
Vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	1069.444 (sum)
N (period)	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002 (sum)
N (scaled to annual)	(number)	8	8	8	8	8	8	8	8	8	8	8	8	
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Diethylamine	(Mv)	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Diethylamine	(mmHg)	106.3872	125.6486	154.3524	194.9346	249.2353	301.5528	313.0342	296.0582	248.6764	186.3272	132.5735	105.1075	201.1573 (avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (average)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	89.12034 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002 (sum)
Compound Vapor Density (vW(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Working Losses (Lw)														
Air	(lb)	5.2561	4.5281	4.6742	4.0907	3.6683	3.0571	3.0502	3.2115	3.5553	4.3194	4.7703	5.2728	49.454 (sum)
Diethylamine	(lb)	2.5155	2.6484	3.5426	4.2487	5.504	6.3451	6.7882	6.4529	5.3226	4.2192	2.9838	2.488	53.059 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (avg)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
dPv	(psia)	0.8215	1.0643	1.4503	1.9654	2.4552	2.9327	2.7511	2.4661	2.0553	1.5089	1.0477	0.7891	1.775633 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887 (avg)
ks	(number)	0.8603	0.8391	0.8093	0.7707	0.7244	0.6848	0.6767	0.6888	0.7249	0.7786	0.8317	0.8618	0.770925 (avg)
Vv	(ft^3)	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665 (avg)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (avg)
kE	(number)	0.1286	0.1609	0.2138	0.2895	0.3777	0.4886	0.4678	0.4057	0.3149	0.2206	0.1566	0.1238	0.279042 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	2.5025	3.0105	3.783	4.8577	6.1754	7.4484	7.557	7.0673	5.9271	4.4232	3.1323	2.4593	4.861975 (avg)
pln	(psia)	1.681	1.9462	2.3326	2.8923	3.7202	4.5157	4.8059	4.6012	3.8718	2.9143	2.0846	1.6702	3.086333 (avg)
Compound Vapor Density (wV(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Breathing Losses (Ls)														
Air	(lb)	15.6317	16.8545	23.1116	27.3932	32.0423	34.5488	33.0041	30.1328	25.8905	22.0372	17.2744	15.0952	293.0163 (sum)
Diethylamine	(lb)	6.4361	8.2716	14.177	21.9277	34.8293	49.1066	49.7044	41.7038	28.0967	16.7601	8.9867	6.1381	286.1381 (sum)
Total Losses (Lt)														
Air	(lb)	20.8879	21.3827	27.7858	31.4839	35.7106	37.6059	36.0543	33.3443	29.4459	26.3566	22.0447	20.3681	342.4707 (sum)
Diethylamine	(lb)	8.9517	10.92	17.7196	26.1764	40.3333	55.4517	56.4926	48.1567	33.4193	20.9793	11.9705	8.6261	339.1972 (sum)

Activity Title	TK-14
Climate:	New Mexico, Roswell
pa	12.88 psia
Equipment Tag	1000 gal Tank - NM
Storage Vessel Style	Horizontal Storage
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation
Void Space Volume	1013.24 gal
Working Volume	1000 gal
Working Volume	133.6806 ft^3
Shell Diameter	3.791 ft
Straight Side Height	12 ft
Paint Solar Absorptance	0.49
Roof Color / Condition	tan / average
Shell Color / Condition	tan / average
pbp	0.03
pbv	-0.03
Equipment Comment	
Activity Comment	
Pi (constant)	3.1416
R (constant)	998.9

Vessel Contents 16.939 gal 20.000 °C 100.000 lb 1.367 lb-M

Mixture Name: Mixture

[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
Diethylamine	191.9529	100	1	1.3672	1	1	191.9529

Kp (product factor) 1

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Q	(gal)	679.4521	613.6986	679.4521	657.5342	679.4521	657.5342	679.4521	679.4521	657.5342	679.4521	657.5342	679.4521	8000	(sum)
Vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	1069.444	(sum)
N (period)	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002	(sum)
N (scaled to annual)	(number)	8	8	8	8	8	8	8	8	8	8	8	8		
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1	(avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365	(sum)

Compound Molecular Weights (lb/lb-M)

Diethylamine	(Mv)	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	(lb/lb-mole)

Compound Vapor Pressures (Pva)

Diethylamine	(mmHg)	106.3872	125.6486	154.3524	194.9346	249.2353	301.5528	313.0342	296.0582	248.6764	186.3272	132.5735	105.1075	201.1573	(avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (average)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	89.12034 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002 (sum)
Compound Vapor Density (vW(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Working Losses (Lw)														
Air	(lb)	5.2561	4.5281	4.6742	4.0907	3.6683	3.0571	3.0502	3.2115	3.5553	4.3194	4.7703	5.2728	49.454 (sum)
Diethylamine	(lb)	2.5155	2.6484	3.5426	4.2487	5.504	6.3451	6.7882	6.4529	5.3226	4.2192	2.9838	2.488	53.059 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (avg)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
dPv	(psia)	0.8215	1.0643	1.4503	1.9654	2.4552	2.9327	2.7511	2.4661	2.0553	1.5089	1.0477	0.7891	1.775633 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887 (avg)
ks	(number)	0.8603	0.8391	0.8093	0.7707	0.7244	0.6848	0.6767	0.6888	0.7249	0.7786	0.8317	0.8618	0.770925 (avg)
Vv	(ft^3)	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665 (avg)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (avg)
kE	(number)	0.1286	0.1609	0.2138	0.2895	0.3777	0.4886	0.4678	0.4057	0.3149	0.2206	0.1566	0.1238	0.279042 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	2.5025	3.0105	3.783	4.8577	6.1754	7.4484	7.557	7.0673	5.9271	4.4232	3.1323	2.4593	4.861975 (avg)
pln	(psia)	1.681	1.9462	2.3326	2.8923	3.7202	4.5157	4.8059	4.6012	3.8718	2.9143	2.0846	1.6702	3.086333 (avg)
Compound Vapor Density (wV(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Breathing Losses (Ls)														
Air	(lb)	15.6317	16.8545	23.1116	27.3932	32.0423	34.5488	33.0041	30.1328	25.8905	22.0372	17.2744	15.0952	293.0163 (sum)
Diethylamine	(lb)	6.4361	8.2716	14.177	21.9277	34.8293	49.1066	49.7044	41.7038	28.0967	16.7601	8.9867	6.1381	286.1381 (sum)
Total Losses (Lt)														
Air	(lb)	20.8879	21.3827	27.7858	31.4839	35.7106	37.6059	36.0543	33.3443	29.4459	26.3566	22.0447	20.3681	342.4707 (sum)
Diethylamine	(lb)	8.9517	10.92	17.7196	26.1764	40.3333	55.4517	56.4926	48.1567	33.4193	20.9793	11.9705	8.6261	339.1972 (sum)

Activity Title	TK-15													
Climate:	New Mexico, Roswell													
pa	12.88 psia													
Equipment Tag	1000 gal Tank - NM													
Storage Vessel Style	Horizontal Storage													
Calculation Type	Normal Storage Tank (11/2019 Rev.) Working and Breathing Loss Calculation													
Void Space Volume	1013.24 gal													
Working Volume	1000 gal													
Working Volume	133.6806 ft^3													
Shell Diameter	3.791 ft													
Straight Side Height	12 ft													
Paint Solar Absorptance	0.49													
Roof Color / Condition	tan / average													
Shell Color / Condition	tan / average													
pbp	0.03													
pbv	-0.03													
Equipment Comment														
Activity Comment														
Pi (constant)	3.1416													
R (constant)	998.9													

Vessel Contents	16.939 gal	20.000 °C	100.000 lb	1.367 lb-M		
Mixture Name:	Mixture					
	[Liquid]	mmHg	lb	W[i]	lb-M	X[i]	A[i]	X*Pi*Ai (mmHg)
	Diethylamine	191.9529	100	1	1.3672	1	1	191.9529
Kp (product factor)	1							

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Q	(gal)	679.4521	613.6986	679.4521	657.5342	679.4521	657.5342	679.4521	679.4521	657.5342	679.4521	657.5342	679.4521	8000 (sum)
Vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	1069.444 (sum)
N (period)	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002 (sum)
N (scaled to annual)	(number)	8	8	8	8	8	8	8	8	8	8	8	8	
Kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (avg)
Days	(number)	31	28	31	30	31	30	31	31	30	31	30	31	365 (sum)
Compound Molecular Weights (lb/lb-M)														
Diethylamine	(Mv)	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14	73.14 (lb/lb-mole)
Compound Vapor Pressures (Pva)														
Diethylamine	(mmHg)	106.3872	125.6486	154.3524	194.9346	249.2353	301.5528	313.0342	296.0582	248.6764	186.3272	132.5735	105.1075	201.1573 (avg)

Working Loss Calculations (Uncontrolled)														
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (average)
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (average)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (average)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (average)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (average)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (average)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (average)
vq	(ft^3)	90.8295	82.0396	90.8295	87.8995	90.8295	87.8995	90.8295	90.8295	87.8995	90.8295	87.8995	90.8295	89.12034 (average)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (average)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (average)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (average)
kb	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
kn	(number)	1	1	1	1	1	1	1	1	1	1	1	1	1 (average)
n	(number)	0.6795	0.6137	0.6795	0.6575	0.6795	0.6575	0.6795	0.6795	0.6575	0.6795	0.6575	0.6795	8.0002 (sum)
Compound Vapor Density (vW(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Working Losses (Lw)														
Air	(lb)	5.2561	4.5281	4.6742	4.0907	3.6683	3.0571	3.0502	3.2115	3.5553	4.3194	4.7703	5.2728	49.454 (sum)
Diethylamine	(lb)	2.5155	2.6484	3.5426	4.2487	5.504	6.3451	6.7882	6.4529	5.3226	4.2192	2.9838	2.488	53.059 (sum)
Breathing Loss Calculations (Uncontrolled)														
tan	(°R)	487.47	492.17	498.17	505.77	516.07	524.17	528.17	526.67	519.17	507.57	494.87	487.37	507.3033 (avg)
taa	(°R)	501.37	506.57	513.12	521.22	530.92	538.77	540.87	539.12	532.42	521.62	509.27	501.17	521.37 (avg)
tax	(°R)	515.27	520.97	528.07	536.67	545.77	553.37	553.57	551.57	545.67	535.67	523.67	514.97	535.4367 (avg)
tLn	(°F)	37.7285	43.0269	49.7557	58.0168	68.082	76.1368	78.7854	76.9315	69.7195	58.3132	45.554	37.4982	58.29571 (avg)
tLa	(°F)	45.0753	51.3082	59.261	68.6305	78.9169	87.2101	88.8703	86.3972	78.8209	66.7881	53.3552	44.6287	67.43853 (avg)
tLx	(°F)	52.4222	59.5896	68.7663	79.2443	89.7519	98.2834	98.9552	95.863	87.9223	75.263	61.1563	51.7593	76.5814 (avg)
i	(Btu/ft²day)	1013	1323	1744	2125	2301	2434	2302	2085	1822	1452	1127	939	1722.25 (avg)
tb	(°R)	502.8591	508.5148	515.6837	524.3437	534.3025	542.348	544.2539	542.1849	535.0983	523.7544	510.9267	502.5503	523.9017 (avg)
pC	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
pNc	(psia)	10.8222	10.4497	9.8945	9.1096	8.0593	7.0473	6.8253	7.1536	8.0701	9.276	10.3158	10.847	8.9892 (avg)
pVa	(psia)	2.0578	2.4303	2.9855	3.7704	4.8207	5.8327	6.0547	5.7264	4.8099	3.604	2.5642	2.033	3.8908 (avg)
dPv	(psia)	0.8215	1.0643	1.4503	1.9654	2.4552	2.9327	2.7511	2.4661	2.0553	1.5089	1.0477	0.7891	1.775633 (avg)
dPb	(psia)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06 (avg)
dTv	(°R)	29.3874	33.1254	38.0212	42.455	43.3398	44.2932	40.3396	37.863	36.4056	33.8996	31.2046	28.5222	36.57138 (avg)
hVo	(ft)	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887	1.4887 (avg)
ks	(number)	0.8603	0.8391	0.8093	0.7707	0.7244	0.6848	0.6767	0.6888	0.7249	0.7786	0.8317	0.8618	0.770925 (avg)
Vv	(ft^3)	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665	67.7665 (avg)
wVnc	(number)	0.0579	0.0552	0.0515	0.0465	0.0404	0.0348	0.0336	0.0354	0.0404	0.0476	0.0543	0.0581	0.046308 (avg)
kE	(number)	0.1286	0.1609	0.2138	0.2895	0.3777	0.4886	0.4678	0.4057	0.3149	0.2206	0.1566	0.1238	0.279042 (avg)
tv	(°R)	506.2841	512.9879	521.5801	531.5284	542.0822	550.5773	552.037	549.2343	541.2585	528.6637	514.7371	505.7251	529.7246 (avg)
plx	(psia)	2.5025	3.0105	3.783	4.8577	6.1754	7.4484	7.557	7.0673	5.9271	4.4232	3.1323	2.4593	4.861975 (avg)
pln	(psia)	1.681	1.9462	2.3326	2.8923	3.7202	4.5157	4.8059	4.6012	3.8718	2.9143	2.0846	1.6702	3.086333 (avg)
Compound Vapor Density (wV(i))														
Diethylamine	(lb/ft^3)	0.0277	0.0323	0.039	0.0483	0.0606	0.0722	0.0747	0.071	0.0606	0.0465	0.0339	0.0274	0.049517 (avg)
Breathing Losses (Ls)														
Air	(lb)	15.6317	16.8545	23.1116	27.3932	32.0423	34.5488	33.0041	30.1328	25.8905	22.0372	17.2744	15.0952	293.0163 (sum)
Diethylamine	(lb)	6.4361	8.2716	14.177	21.9277	34.8293	49.1066	49.7044	41.7038	28.0967	16.7601	8.9867	6.1381	286.1381 (sum)
Total Losses (Lt)														
Air	(lb)	20.8879	21.3827	27.7858	31.4839	35.7106	37.6059	36.0543	33.3443	29.4459	26.3566	22.0447	20.3681	342.4707 (sum)
Diethylamine	(lb)	8.9517	10.92	17.7196	26.1764	40.3333	55.4517	56.4926	48.1567	33.4193	20.9793	11.9705	8.6261	339.1972 (sum)

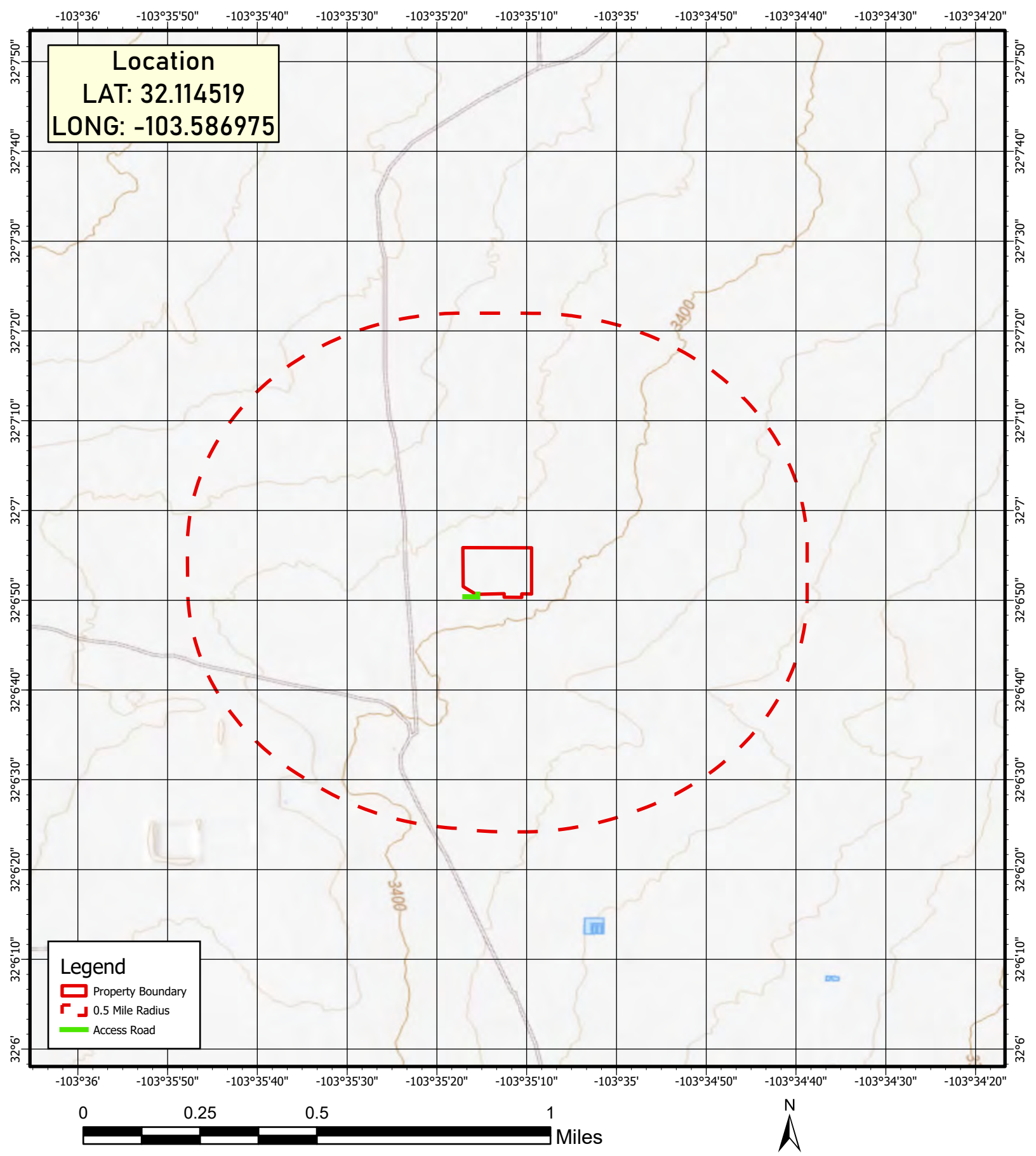
Section 8

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 topographical map is attached to this section.



RESOLUTE COMPLIANCE, LLC Purposeful Solutions. Unwavering Service.	**Alamo Compressor Station** **ONEOK, INC.** **Lea County, NM**	**Project No. Env-EnLink-0430** **Report No. Alamo-Initial NSR** **Date: August 2026**
	Site Location Map	**FIGURE 1**

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 **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.

Table of Notified Landowners, Counties, Municipalities, Indian Tribes
Alamo Compressor Station
ONEOK Delaware Gathering, LLC

Owners within ½ mile of the Property Boundary	
DBR LAND LLC	5555 San Felipe St. STE 1200 Houston, TX 77056 - 2736
Municipalities within 10 miles of the Property Boundary	
Lea County Clerk's Office	P.O. Box 1507 Lovington, NM 88260 - 1507
New Mexico State Land Office	P.O. Box 1148 Santa Fe, NM 87504 - 1148

Sample of Letter Sent to Owners, Counties, Municipalities, Indian Tribes

May 13th, 2026

CERTIFIED MAIL

Dear **Property Owner,**
ONEOK Delaware Gathering, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **compressor station** facility. The expected date of application submittal to the Air Quality Bureau is **May 2026.**

The exact location for the proposed facility known as, **Alamo Compressor Station**, is at **563 Cotton Draw Rd, Jal, NM 88252.** Also described as latitude **32.114519** dec deg North and longitude **103.586975** dec deg West. The approximate location of this facility is **23.3** miles **west** of **Jal** in **Lea** county.

The proposed **modification** consists of the addition of three fin fan engines, three generator engines, three amine units and associated reboilers, three water tanks, three amine tanks, ten miscellaneous support tanks, one VCU, two ECDs, and pneumatic devices; the removal of one VRU engine and two generators; the modification of the associated facility and compressor fugitive emissions; and the review of existing sources for accurate representation.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
PM_{10}	0.45	1.25
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Nitrogen Oxides (NO_x)	26.80	115.42
Carbon Monoxide (CO)	31.38	133.49
Volatile Organic Compounds (VOC)	4136.38	142.74
Total sum of all Hazardous Air Pollutants (HAPs)	67.63	17.79
Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emissions as Total CO_2e	n/a	153,777.91

The standard operating schedule of the facility will be **continuous**.
Owners and operators of the facility include: **Lance Green; ONEOK Delaware Gathering, LLC; 1722 Routh Street, Suite 1300, Dallas, TX 75201.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Sincerely,
ONEOK Delaware Gathering, LLC

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

9589 0710 5270 3231 2646 51

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Houston, TX 77056

OFFICIAL USE

Certified Mail Fee	$5.30	0189 11
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$0.00	
☐ Return Receipt (electronic)	$0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$0.00	
☐ Adult Signature Required	$0.00	
☐ Adult Signature Restricted Delivery	$	
Postage	$0.78	05/13/2026
Total Postage and Fees	$6.08	

Sent To: DBR Land LLC
Street and Apt. No., or PO Box No.: 5555 San Felipe St. Ste 1200
City, State, ZIP+4®: Houston, Tx 77056-2736

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3231 2646 68

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Lovington, NM 88260

OFFICIAL USE

Certified Mail Fee	$5.30	0189 11
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$0.00	
☐ Return Receipt (electronic)	$0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$0.00	
☐ Adult Signature Required	$0.00	
☐ Adult Signature Restricted Delivery	$	
Postage	$0.78	05/13/2026
Total Postage and Fees	$6.08	

Sent To: Lea County Clerk's Office
Street and Apt. No., or PO Box No.: PO Box 1507
City, State, ZIP+4®: Lovington, NM 88260-1507

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructio

9589 0710 5270 3231 2646 75

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Santa Fe, NM 87504

OFFICIAL USE

Certified Mail Fee	$5.30	0189 11
Extra Services & Fees (check box, add fee as appropriate)		
☐ Return Receipt (hardcopy)	$0.00	
☐ Return Receipt (electronic)	$0.00	Postmark Here
☐ Certified Mail Restricted Delivery	$0.00	
☐ Adult Signature Required	$0.00	
☐ Adult Signature Restricted Delivery	$	
Postage	$0.78	05/13/2026
Total Postage and Fees	$6.08	

Sent To: New Mexico State Land Office
Street and Apt. No., or PO Box No.: PO Box 1148
City, State, ZIP+4®: Santa Fe, NM 87504-1148

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Lea County, New Mexico GIS Web Map



10/28/2025, 9:45:08 AM

1:9,028

Sections

Lea County Boundary

Lea County Roads

Owner Parcels

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Lea County, New Mexico GIS Web Map



10/28/2025, 9:47:09 AM

Sections

Lea County Boundary

Lea County Roads

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Lea County Parcel Report

Area of Interest (AOI) Information

Area : 662.7 acres

Oct 13 2025 13:30:48 Central Daylight Time

Parcels

#	Owner #	Calculated Acres	Township	Range	Section
1		526.00	25	33	*N/A*
2		360.00	25	33	*N/A*
3		111.65	25	33	*N/A*
4		40.00	25	33	*N/A*
5	51659	160.00	25	33	29
6		400.00	25	33	*N/A*
7	51659	240.00	25	33	21
8	51659	240.00	25	33	20

#	Parcel Code	Year Built	Number of Stories	SQFT Basement	SQFT 1st Floor
1	*N/A*		*N/A*	*N/A*	*N/A*
2	*N/A*		*N/A*	*N/A*	*N/A*
3	*N/A*		*N/A*	*N/A*	*N/A*
4	*N/A*		*N/A*	*N/A*	*N/A*
5	4000516590003		*N/A*	*N/A*	*N/A*
6	*N/A*		*N/A*	*N/A*	*N/A*
7	4000516590002		*N/A*	*N/A*	*N/A*
8	4000516590001		*N/A*	*N/A*	*N/A*

#	SQFT 2nd Floor	Date Modified	Total SQFT	Inspection Year	Subdivision Name
1	*N/A*			*N/A*	*N/A*
2	*N/A*			*N/A*	*N/A*
3	*N/A*			*N/A*	*N/A*
4	*N/A*			*N/A*	*N/A*
5	*N/A*			*N/A*	*N/A*
6	*N/A*			*N/A*	*N/A*
7	*N/A*			*N/A*	*N/A*
8	*N/A*			*N/A*	*N/A*

#	Unit	Block	Lot/Tract	Description	NEQ
1	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
3	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
4	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
5	*N/A*	*N/A*	*N/A*	160.00 AC BEING NE4	Y
6	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
7	*N/A*	*N/A*	*N/A*	240.00 AC BEING S2NW4, SW4	*N/A*
8	*N/A*	*N/A*	*N/A*	240.00 AC BEING S2NE4, SE4	*N/A*

#	NWQ	SWQ	SEQ	Name	In Care of Name
1	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
3	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
4	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
5	*N/A*	*N/A*	*N/A*	DBR LAND LLC	*N/A*
6	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
7	*N/A*	Y	*N/A*	DBR LAND LLC	*N/A*
8	*N/A*	*N/A*	Y	DBR LAND LLC	*N/A*

#	Mailing Address 1	Mailing Address 2	Mailing City	Mailing State	Country Name
1	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
3	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
4	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
5	5555 SAN FELIPE ST STE 1200	*N/A*	HOUSTON	TX	*N/A*
6	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
7	5555 SAN FELIPE ST STE 1200	*N/A*	HOUSTON	TX	*N/A*
8	5555 SAN FELIPE ST STE 1200	*N/A*	HOUSTON	TX	*N/A*

#	Mailing Zipcode	Mailing Zipcode Extension	District	Type	Year
1	*N/A*	*N/A*	*N/A*	*N/A*	
2	*N/A*	*N/A*	*N/A*	*N/A*	
3	*N/A*	*N/A*	*N/A*	*N/A*	
4	*N/A*	*N/A*	*N/A*	*N/A*	
5	77056	2736	190	M	2025
6	*N/A*	*N/A*	*N/A*	*N/A*	
7	77056	2736	190	M	2025
8	77056	2736	190	M	2025

#	Reception Number	Recording Type	Book	Page	Recorded Date
1		*N/A*	*N/A*	*N/A*	
2		*N/A*	*N/A*	*N/A*	
3		*N/A*	*N/A*	*N/A*	
4		*N/A*	*N/A*	*N/A*	
5	58281	1	2232	689	11/22/2024
6		*N/A*	*N/A*	*N/A*	
7	58281	1	2232	689	11/22/2024
8	58281	1	2232	689	11/22/2024

#	Property Street Name	Property Street Number	Property Half Number	Property Street Direction	Total Value
1	*N/A*	*N/A*	*N/A*	*N/A*	0
2	*N/A*	*N/A*	*N/A*	*N/A*	0
3	*N/A*	*N/A*	*N/A*	*N/A*	0
4	*N/A*	*N/A*	*N/A*	*N/A*	0
5	*N/A*	*N/A*	*N/A*	*N/A*	0
6	*N/A*	*N/A*	*N/A*	*N/A*	0
7	*N/A*	*N/A*	*N/A*	*N/A*	0
8	*N/A*	*N/A*	*N/A*	*N/A*	0

#	Total Land Value	Land Value	Improved Value	Cent Value	Pers Value
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	18183	0	0	0
6	0	0	0	0	0
7	0	18183	0	0	0
8	0	18183	0	0	0

#	MFG H Value	Livestock Value	Full Value	Taxable Value	Exempt Value
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	18183	6061	0
6	0	0	0	0	0
7	0	0	18183	6061	0
8	0	0	18183	6061	0

#	Net Value	Recording Year	Most Current Tax	Value	Code
1	0	*N/A*	$	0	*N/A*
2	0	*N/A*	$	0	*N/A*
3	0	*N/A*	$	0	*N/A*
4	0	*N/A*	$	0	*N/A*
5	6061	*N/A*	$133.00	429	120
6	0	*N/A*	$	0	*N/A*
7	6061	*N/A*	$133.00	756	120
8	6061	2024	$133.00	624	120

#	ID	Category	Quantity	Location	Square Footage	Acres	Area(acres)
1	*N/A*	*N/A*	*N/A*	*N/A*	22,933,548.71	*N/A*	2.16
2	*N/A*	*N/A*	*N/A*	*N/A*	15,634,315.48	*N/A*	7.30
3	*N/A*	*N/A*	*N/A*	*N/A*	4,863,607.96	*N/A*	19.13
4	*N/A*	*N/A*	*N/A*	*N/A*	1,746,868.73	*N/A*	29.66
5	N	Land	136.50	*N/A*	6,974,723.13	640.00	36.27
6	*N/A*	*N/A*	*N/A*	*N/A*	17,449,120.22	*N/A*	110.29
7	N	Land	240.00	*N/A*	10,416,084.28	640.00	217.71
8	N	Land	198.00	*N/A*	10,461,985.87	640.00	240.19

Lea County, New Mexico Portico Disclaimer:

Information deeded reliable but not guaranteed. Copyright 2023.

MAP TO BE USED FOR TAX PURPOSES ONLY. NOT TO BE USED FOR CONVEYANCE.

Square Foot and Year Built listed only to be used for comparative purposes, NOT to be used for commerce.

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
May 14, 2026
and ending with the issue dated
May 14, 2026.

Publisher

Sworn and subscribed to before me this 14th day of May 2026.

Business Manager

My commission expires
January 29, 2027
(Seal)

STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/2027

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

NOTICE OF AIR QUALITY PERMIT APPLICATION

ONEOK Delaware Gathering, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **compressor station facility**. The expected date of application submittal to the Air Quality Bureau is **May 2026**.

The exact location for the proposed facility known as, **Alamo Compressor Station**, is at **563 Cotton Draw Rd, Jal, NM 88252**. Also described as latitude **32.114519** dec deg North and longitude **103.586975** dec deg West. The approximate location of this facility is **23.3 miles west of Jal in Lea county.**

The proposed **modification** consists of the addition of three fin fan engines, three generator engines, three amine units and associated reboilers, three water tanks, three amine tanks, ten miscellaneous support tanks, one VCU, two ECDs, and pneumatic devices; the removal of one VRU engine and two generators; the modification of the associated facility and compressor fugitive emissions; and the review of existing sources for accurate representation.

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Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emissions as Total CO_2e	n/a	153,777.91

The standard operating schedule of the facility will be **continuous.**

The owner and/or operator of the Facility is: **Lance Green; ONEOK Delaware Gathering, LLC; 1722 Routh Street, Suite 1300, Dallas, TX 75201.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations [illegible] Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination

67116752 00311204

JEFF JACKSON
RESOLUTE COMPLIANCE, LLC
PO BOX 970
ROYSE CITY, TX 75189

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COUNTY OF LEA

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LEGAL LEGAL LEGAL LEGAL

LEGAL NOTICE
May 14, 2026

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PM 10	0.45	1.25
PM 2.5	0.45	1.25
Sulfur Dioxide (SO2)	3.06	13.38
Nitrogen Oxides (NOx)	26.80	115.42
Carbon Monoxide (CO)	31.38	133.49
Volatile Organic Compounds (VOC)	4136.38	142.74
Total sum of all Hazardous Air Pollutants (HAPs)	67.63	17.79
Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emissions as Total CO2e	n/a	153,777.91

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General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Atención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint page/ to learn how and where to file a complaint of discrimination.
#00311128

67116752 00311128

JEFF JACKSON
RESOLUTE COMPLIANCE, LLC
PO BOX 970
ROYSE CITY, TX 75189

General Posting of Notices – Certification

I, Raygen Murray, the undersigned, certify that on **May 13th, 2026,** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the **Near the City of Jal** of **Lea** County, State of New Mexico on the following dates:

1. Facility entrance {5/13/2026}
2. Woolworth Community Library {5/13/2026}
3. Jal City Hall {5/13/2026}
4. Post Office in Jal, NM {5/13/2026}

Signed this 13th day of May, 2026.

Raygen Murray
Signature

5/13/2026
Date

Raygen Murray
Printed Name

Environmental Professional
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

General Posting Locations

Alamo Compressor Station

ONEOK Delaware Gathering, LLC

Facility Entrance – 32.114519, -103.586975

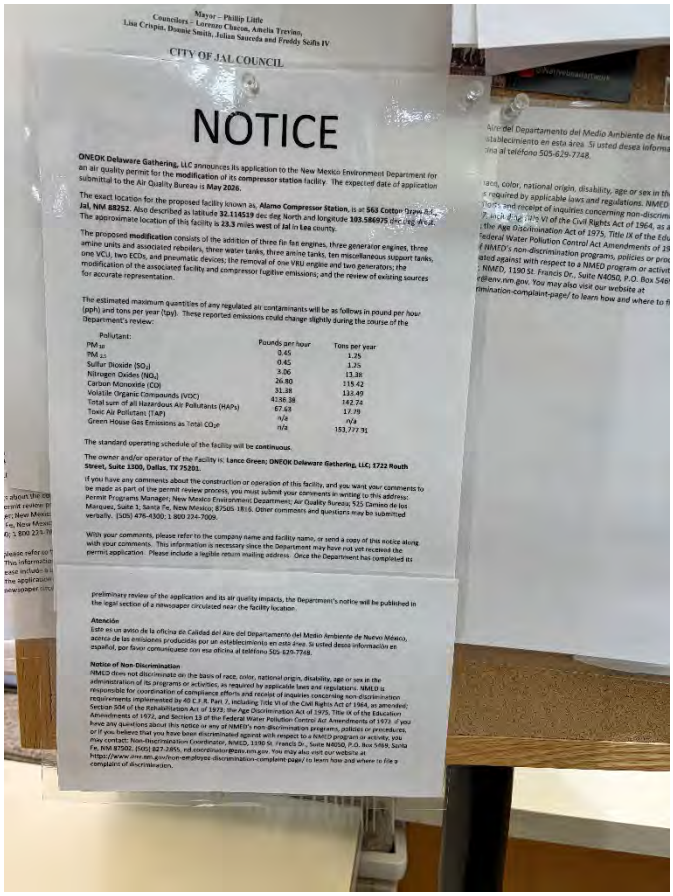
Woolworth Community Library – 100 E Utah Ave, Jal, NM 88252

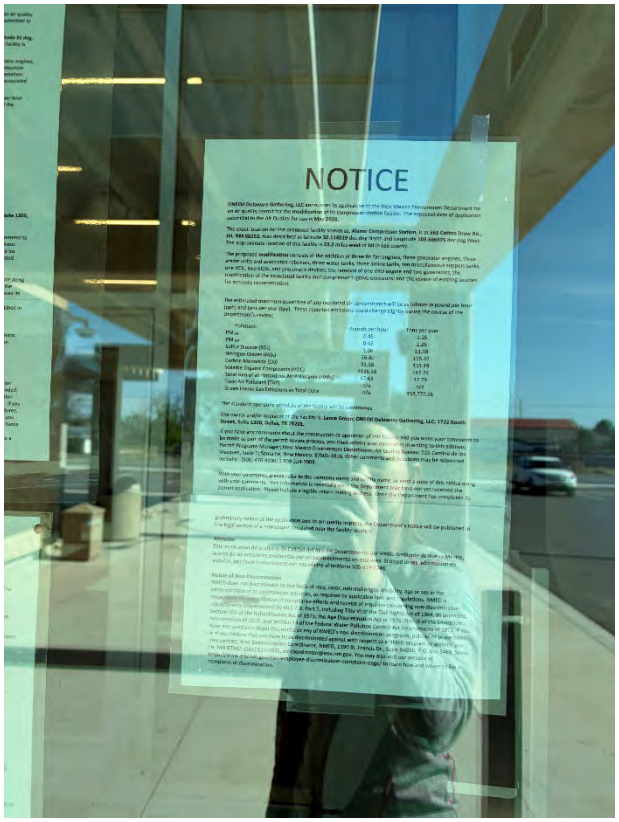
Jal City Hall – 710 W Wyoming Ave, Jal, NM 88252

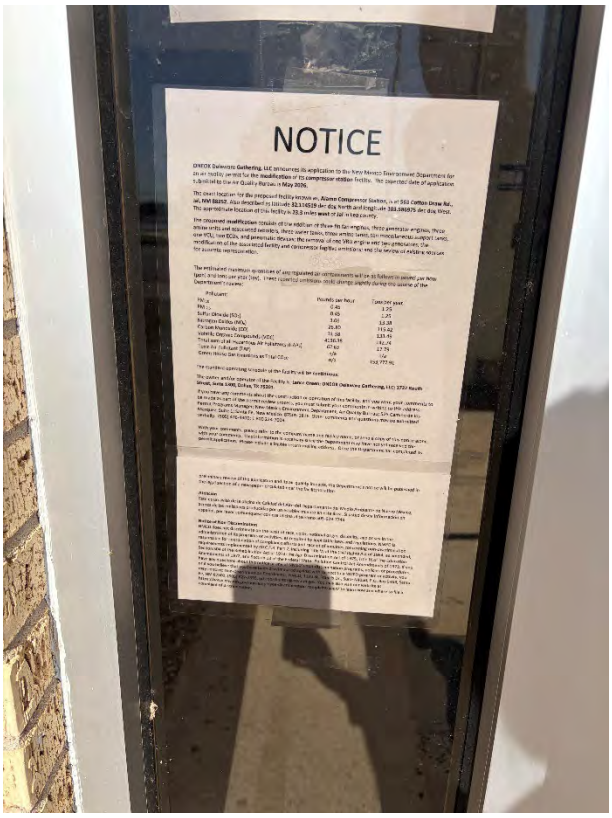
Post Office in Jal, NM – 111 S 4th St, Jal, NM 88252


NOTICE


ENLINK
MIDSTREAM
ALAMO COMPRESSOR STATION
IN CASE OF EMERGENCY CALL
1-877-593-0822
DANGER
NO SMOKING
DANGER
HIGH PRESSURE GAS
CAUTION
HEARING PROTECTION


Mayor – Phillip Little
Councilors – Lorraine Chavez, Amelia Trevino,
Lisa Crispin, Donnie Smith, Julian Saucedo and Freddy Soffa IV
CITY OF JAL COUNCIL
NOTICE
ONEOK Delaware Gathering, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its compressor station facility. The expected date of application submittal to the Air Quality Bureau is May 2026.
The exact location for the proposed facility known as, Alamo Compressor Station, is at 563 Cotton Draw Rd., Jal, NM 88252. Also described as latitude 32.114519 dec deg North and longitude 103.586975 dec deg West. The approximate location of this facility is 23.3 miles west of Jal in Lea county.
The proposed modification consists of the addition of three fir fat engines, three generator engines, three amine units and associated reboilers, three water tanks, three amine tanks, ten miscellaneous support tanks, one VCU, two ECDs, and pneumatic devices; the removal of one VRU engine and two generators; the modification of the associated facility and compressor fugitive emissions; and the review of existing sources for accurate representation.
The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review.
Pollutant: Pounds per hour Tons per year
PM 10 0.45 1.25
PM 2.5 0.45 1.25
Sulfur Dioxide (SO2) 3.06 13.38
Nitrogen Oxides (NOx) 26.80 115.42
Carbon Monoxide (CO) 31.28 137.49
Volatile Organic Compounds (VOC) 4138.38 142.74
Total sum of all Hazardous Air Pollutants (HAPs) 67.63 17.79
Toxic Air Pollutant (TAP) n/a n/a
Green House Gas Emissions as Total CO2e n/a 153,777.91
The standard operating schedule of the facility will be continuous.
The owner and/or operator of the Facility is: Lance Green; ONEOK Delaware Gathering, LLC; 1722 Routh Street, Suite 1300, Dallas, TX 75201.
If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1-800 224-7009.
With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.
Atención
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NOTICE


NOTICE


NOTICE
NOTICE
Full Service Hours:
Mon. - Fri. 8:30am - 4:30pm
Closed for Lunch 11:30am - 12:30pm
Saturday Closed
Sunday & Holidays Closed
P.O. Box Section Hours:
24 Hours A Day/7 Days A Week
Jal Post Office
Jal, New Mexico

Submittal of Public Service Announcement – Certification

I, KAYLA CURTIS, the undersigned, certify that on **May 11th, 2026**, submitted a public service announcement to **Carlsbad Radio\KATK-FM and KCDY-FM Stations** that serves the City\Town\Village of **Jal, Lea** County, New Mexico, in which the source is or is proposed to be located and that **Carlsbad Radio\KATK-FM and KCDY-FM Stations RESPONDED THAT IT WOULD AIR THE ANNOUNCEMENT.**

Signed this 18 day of MAY, 2026.

Kayla Curtis
Signature

5/18/2026
Date

KAYLA CURTIS
Printed Name

CONSULTANT TO ONEOK DELAWARE GATHERING, LLC
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Transaction receipt

14-May-2026 09:58:20 MDT

Carlsbad Radio Inc
1609 Radio Blvd., , Carlsbad, NM, US, 88220
Phone: (575) 887-7563

Order Information

Invoice Number : 3895
Order number :
Description : 06 Resolute Compliance

P.O. Number :
Customer ID :

Billing Information

Resolute Compliance
US
Email: accounting@resolute.compliance.com

Shipping Information

US

Order Details

Subtotal:	$0.00
Shipping:	$0.00
Duty:	$0.00
Tax:	$0.00
Total:	**$536.97**

Payment Information

ate/Time : 14-May-2026 09:58:18 MDT
ransaction ID : 121623244906
ransaction Type : Authorization w/ Auto Capture
ayment Method : Visa ending in 9145
vailable card alance:

Status: Captured/Pending Settlement
Authorization Code : 510673

ID:
/R:
D:
SI:

applied to order
5/14/26

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 Facility receives natural gas from natural gas wells located in Lea County and adjacent counties through a network of gathering pipelines. Natural gas enters the Facility through an inlet separator where entrained liquids are removed from the stream. Liquids removed from the inlet gas stream are routed to a 500 barrel (bbl) gun barrel separator (Source ID GBS-1), where the condensate removed is routed to four (4) 400 barrel (bbl) condensate tanks (Source IDs TK-1, TK-2, TK-3, TK-9). Produced water that separates from the condensate at the condensate storage tanks is transferred to a 400 bbl produced water tank (Source ID TK-4). The gun barrel, condensate, and produced water tank emissions are captured by an electric vapor recovery unit (VRU), which routes the emissions back to the Facility's inlet. Liquids collected in the tanks are periodically transported off-site via truck (Source ID LOAD). Vapors from truck loading are vapor balanced back to the tanks and subsequently routed to the VRU. During VRU downtime, tank and loading vapors are routed to one (1) enclosed combustion device (ECD-1) for 98% combustion control. From the inlet separator, the gas is routed to seven (7) compressor engines (Source IDs E-1, E-2, E-3, E-4, E-6, E-7, and E-8).

The compressed gas is routed to three (3) amine units (Source IDs AU-1, AU-2, AU-3) to remove trace amounts of hydrogen sulfide (H_2S) and primarily carbon dioxide (CO_2) from the gas. The rich amine solution (H_2S- and CO_2-saturated) passes through a flash tank, where light-end VOCs flash off from the solution. The flash tank emissions are sent to a vapor combustion unit (Source ID VCU-1) with a 98% combustion control. The rich amine solution is then heated in the amine regenerator to release the absorbed H_2S and CO_2. Acid gas emissions from the amine regenerator are routed to the VCU for 98% combustion control. Three (3) heaters (Source IDs HT-3a, H-4a, H-5a) provide process heat for the amine regenerator. The lean amine is cooled by three (3) engine-driven fin fans (Source IDs E-9, E-10, E-11).

The sweet gas is then routed to a glycol dehydration unit (Source ID DEHY-1), which removes water from the gas through contact with glycol. The rich glycol (water saturated) is routed to a flash tank, where flash-off vapors are recycled to the inlet. Subsequently, the rich glycol is routed to the reboiler (Source ID H-2), which heats the glycol and vaporizes water from the stream. The lean glycol is then recycled back to the dehydration unit. Still vent emissions are routed to a condenser, where condensable liquids are routed to the storage tanks and non-condensable vapors are routed to (Source ID ECD-2) with 98% destruction efficiency. The dry gas is transported off-site via pipeline.

Three (3) natural gas-fired generator engines (Source IDs GEN-3, GEN-4, and GEN-5) provide power to the amine system.

Additional sources of emissions include fugitive components and pneumatics (Source ID FUG, COMP-1 FUG, COMP-2 FUG, COMP-3 FUG, COMP-4 FUG, COMP-6 FUG, COMP-7 FUG, COMP-8 FUG, AU-FUG, PNEU), unpaved road dust (Source ID UR-01), miscellaneous storage tanks (Source IDs TK-5, TK-6, TK-7, TK-8, TK-10, TK-11, TK-12, TK-13, TK-14, and TK-15), maintenance operations (Source ID SSM), and malfunction emissions (Source ID M).

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)**:**
Alamo Compressor Station

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 20.2.72 NMAC and is not applying for a significant permit revision under 20.2.74 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/

Example of a Table for 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	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. The TSP NM ambient air quality standard was repealed by the EIB effective November 30, 2018.
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 emission per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This regulation does not apply because this application is not for a Notice of Intent.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This Facility does not have gas burning equipment having 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 having 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 does not meet the definition of 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	Yes	TK-1 through TK-4, TK-9	The storage tanks have a combined capacity of greater than 20,000 gallons; therefore, this rule applies.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This Facility does not meet the definition of a sulfur recovery plant; therefore, this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	E-1 through E-4, E-6 through E-8, GEN-3 through GEN-5, FUG, AU-FUG, PNEU, COMP 1-4 FUG, COMP 6-8 FUG,	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: E-1 through E-4 and E-6 through E-8 are existing and existing relocated >1775 hp; therefore, this regulation applies. E-9 through E-11 are new engines <500 hp; therefore, this regulation does not apply. GEN-3 through GEN-5 are new engines >500 hp; therefore, this regulation applies. ☒114 – Compressor Seals: Reciprocating compressors for E-1 through E-4 and E-6 though E-8 are existing compressors. ☒115 – Control Devices and Closed Vent Systems: VRU, ECD, VCU ☒116 – Equipment Leaks and Fugitive Emissions: FUG, AU-FUG, PNEU, COMP 1-4 FUG, COMP-6-8 FUG

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.)
			VRU, ECD-1, ECD-2, VCU-1, DEHY-1, LOAD, SSM, TK-1 through TK-4, TK-9	☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators: DEHY-1 is existing and controlled at least 95 % by the reboiler. ☐ 119 – Heaters: H-2, H-3a through H-5a are <20 MMBtu/hr ☒ 120 – Hydrocarbon Liquid Transfers: LOAD is existing and controlled with the use of vapor balance, the VRU, and the ECD. ☒121 – Pig Launching and Receiving: Pigging operations at this Facility have a PTE < 1 tpy and are therefore not subject to this subpart. ☒122 – Pneumatic Controllers and Pumps: There are existing natural gas driven pneumatic controllers and pumps at this Facility. ☒ 123 – Storage Vessels TK-1 through TK-4 are existing with a PTE >3tpy. TK-9 is new with a PTE >2tpy. ☐124 – Well Workovers ☐ 125 – Small Business Facilities ☐126 – Produced Water Management Unit ☐127 – Flowback Vessels and Preproduction Operations
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	E-1 through E-11, GEN-3 through GEN-5, H-2, H-3a through H-5a, ECD-1, ECD-2, VCU-1	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless your equipment is subject to another state regulation that limits particulate matter such as 20.2.19 NMAC (see 20.2.61.109 NMAC). **If equipment at your Facility was subject to the repealed regulation 20.2.37 NMAC it is now subject to 20.2.61 NMAC.**
20.2.70 NMAC	Operating Permits	Yes	Facility	The Facility has the potential to emit more than 100 tpy of carbon monoxide and oxides of nitrogen; therefore, it is subject to this regulation.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This Facility is subject to 20.2.70 NMAC; therefore, it is subject to this regulation.
20.2.72 NMAC	Construction Permits	Yes	Facility	This Facility is subject to 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	This regulation establishes emission inventory requirements. The Facility meets the applicability requirements of 20.2.73.300 NMAC. The Facility will meet all applicable reporting requirements under 20.2.73.300.B.1 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This Facility is not a PSD source; therefore, this regulation does not apply.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This Facility is subject to 20.2.72 NMAC; therefore, this regulation applies.
20.2.77 NMAC	New Source Performance	Yes	DEHY-1, E-1 through E-11, GEN-5, AU-1, AU-2,	This regulation establishes state authority to implement new source performance standards (NSPS) for stationary sources, as amended through January 15, 2017. Unit DEHY-1 is subject to recordkeeping requirements of MACT HH. Units E-1 through E-11, and GEN-5 are subject to NSPS JJJJ. Unit FUG is subject to NSPS OOOOa. Unit AU-FUG is subject to NSPS OOOOb. The compressors associated

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.)
			AU-3, FUG, AU-FUG COMP 1-4 FUG, COMP 6-8 FUG, PNEU	with Units E-1 through E-4 and E-6 through E-8 (Source IDs COMP 1-4 FUG, COMP 6-8 FUG) are subject to NSPS OOOOa. Units AU-1 through AU-3 are subject to recordkeeping and reporting requirements of NSPS OOOOb. Pneumatics (Source ID PNEU) are subject to NSPS OOOOa.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This regulation establishes state authority to implement emission standards for hazardous air pollutants subject to 40 CFR Part 61. This Facility does not emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61 and is therefore not subject to this regulation.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This regulation establishes the requirements for obtaining a nonattainment area permit. The Facility is not located in a non-attainment area and therefore is not subject to this regulation.
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	DEHY-1, E-1 through E-11, GEN-3 through GEN-5	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

Example of a Table for Applicable Federal Regulations (Note: This is not an exhaustive list):

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. This Facility is subject to 20.2.72 NMAC; therefore, this regulation applies. The Facility meets all applicable national ambient air quality standards for NOx, CO, SO2, H2S, PM10, and PM2.5 under this regulation.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	E-1 through E-11, GEN-5, AU-1, AU-2, AU-3, FUG, AU-FUG COMP 1-4 FUG, COMP 6-8 FUG, PNEU	This regulation defines general provisions for relevant standards that have been set under this part. The Facility is subject to this regulation because the following subparts apply: Units E-1 through E-11, and GEN-5 are subject to NSPS JJJJ. Unit FUG is subject to NSPS OOOOa. Unit AU-FUG is subject to NSPS OOOOb. The compressors associated with Units E-1 through E-4 and E-6 through E-8 (Source IDs COMP 1-4 FUG, COMP 6-8 FUG) are subject to NSPS OOOOa. Units AU-1 through AU-3 are subject to recordkeeping and reporting requirements of NSPS OOOOb. Pneumatics (Source ID PNEU) are subject to NSPS OOOOa.

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	There are no electric utility steam generating units located at this Facility; therefore, the Facility is not subject to this regulation.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	There are no electric utility steam generating units located at this Facility; therefore, the Facility is not subject to this regulation.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	There are no industrial commercial institutional steam generating units with a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr) located at this Facility; therefore, the Facility is not subject to this regulation.
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	Tanks TK-1 through TK-15 were constructed after July 23, 1984, therefore this rule does not apply.
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	Storage vessels TK-1 through TK-4 were constructed after July 23, 1984 but are not subject because they store "petroleum (other than crude oil) or condensate stored, processed, and/or treated prior to custody transfer" and have a combined capacity less than 420,000 gal (10,000 bbl) per §60.110b(d)(4). TK-5 through TK-8 were constructed after July 23, 1984 but are not subject because they have a capacity less than 75 m^3 (~20,000 gallons) capacity per §60.110b(a). Storage vessels TK-9 through TK-16 were constructed after October 4, 2023; therefore, this regulation does not apply.
NSPS 40 CFR 60, Subpart Kc	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for	No	N/A	Storage vessels TK-1 through TK-8 were constructed before October 4, 2023 and have not been modified in a way that meets the definition of "modification" in §60.110c(e)(1); therefore, this regulation does not apply. Storage vessel TK-9 was constructed after October 4, 2023 but is not subject because it stores "petroleum (other than crude oil) or condensate stored, processed, and/or treated prior to custody transfer" and has capacity less than 420,000 gal (10,000 bbl) per §60.110c(b)(4). Storage vessels TK-10 through TK-16 were constructed after

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Which Construction, Reconstruction, or Modification Commenced **After** October 4, 2023			October 4, 2023, but each has a capacity less than 75.7 m^3 (20,000 gallons) per §60.110c(a); therefore, this regulation does not apply.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	There are no turbines located at this Facility; therefore, this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This is not a natural gas processing plant; therefore, this regulation does not apply.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The sweetening units at the Facility were constructed after August 23, 2011; therefore, this regulation does not apply.
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	The Facility was constructed after September 18, 2015; therefore, this regulation does not apply.
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	COMP 1-4 FUG, COMP 6-8 FUG, PNEU, FUG	The Facility was constructed between September 18, 2015 and December 6, 2022; fugitives (FUG) are subject to this regulation. Storage vessels TK-1 through TK-4 have been modified after December 6, 2022; therefore, this regulation does not apply. Storage vessels TK-5 through TK-8 have not been modified but have less than 6 tpy VOC emissions per tank; therefore, this regulation does not apply. Storage vessels TK-9 through TK-15 were constructed after September 18, 2015; therefore, this regulation does not apply. Reciprocating compressors (Source IDs COMP 1-4 FUG, COMP 6-8 FUG) manufactured after September 18, 2015 will comply with this rule accordingly. Pneumatics (Source ID PNEU) will comply with this rule.
NSPS 40 CFR Part 60 Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for which	Yes	AU-FUG, AU-1, AU-2, AU-3	Fugitive components (AU-FUG) added as a result of this Project will be subject to this regulation. Storage vessels TK-1 through TK-4 have been modified after December 6, 2022 and storage vessel TK-9 was constructed after December 6, 2022; therefore, this

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Construction, Modification or Reconstruction Commenced **After** December 6, 2022			regulation potentially applies. Per §60.5365b(e)(2), this registration establishes a legally and practically enforceable limit on the storage vessels, which are manifolded together and equipped with a closed vent control system (VRU) and a backup control device (ECD), resulting in controlled VOC emissions by at least 95%. Total storage vessel VOC emissions are less than 6 tpy; therefore, the storage vessels in the tank battery are not subject to this Subpart. Storage vessels TK-5 through TK-8 have not been modified after December 6, 2022; therefore, this regulation does not apply. Storage vessels TK-10 through TK-15 were constructed after December 6, 2022 but have VOC emissions less than 6 tpy and methane emissions less than 20 tpy; therefore, this regulation does not apply per § 60.5365b(e)(1)(i)-(ii). Sweetening units AU-1, AU-2, and AU-3 added during this Project are subject to this regulation. However, they each have a design capacity less than two long tons per day of hydrogen sulfide; therefore they are only required to comply with recordkeeping and reporting requirements specified in § 60.5423b(e).
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	There are no compression ignition internal combustion engines on site; this regulation does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	E-1 through E-11, GEN-5	Engines E-1 through E-4 and E-6 through E-8 and generator engine GEN-5 were manufactured after June 12, 2006 and have a maximum horsepower greater than 500 hp; they will comply with this rule. Engines E-9 through E-11 and generator engines GEN-5 was manufactured after June 12, 2006 and have a maximum horsepower less than 500 hp; it will comply with this rule. Generator engines GEN-3 and GEN-4 were manufactured prior to June 12, 2006; this regulation does not apply.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This Facility does not operate any sources to which this regulation is applicable.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This Facility does not operate any sources to which this regulation is applicable.
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 and is therefore not subject to this regulation.
NESHAP	General Provisions	No	N/A	There are no sources at the Facility subject to 40 CFR 61.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 61 Subpart A				
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	This Facility does not operate any sources to which this regulation is applicable. The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	The Facility does not operate in VHAP service; this regulation does not apply. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	E-1 through E-11, GEN-3, through GEN-5, DEHY-1	Applies if any other Subpart in 40 CFR 63 applies.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY-1	Dehydrator DEHY-1 has no control requirements because the Facility is an area source of HAPs and the benzene emissions from the glycol dehydration unit are below 1 tpy (0.9 megagram per year), the unit is subject to operating and recordkeeping requirements of this rule per §63.764(e)(1)(ii).
MACT 40 CFR 63 Subpart HHH		No	N/A	This Facility is not a natural gas transmission or storage Facility; therefore, this subpart 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	H-2, H-3a through H-5a are process heaters that are located at a Facility that is not a major source of HAPs; therefore, this subpart does not apply.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	This Facility does not contain a coal or oil fire electric utility steam generating units; therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion	Yes	E-1 through E-11, GEN-3, through GEN-5	E-1 through E-11 and GEN-3 through GEN-5 are stationary internal combustion engines that are operated at an area source of HAPs; therefore, these engines are subject to this subpart.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Engines (**RICE MACT**)			
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	This Facility is submitting an application pursuant of 20.2.72.200A.(1) NMAC for an NSR permit. Thus, this regulation does not apply.
40 CFR 68	**Chemical Accident Prevention**	No	N/A	The Facility does not have a threshold quantity of a regulated substance in a process, as determined under §68.115; therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This Facility is not an acid rain source; therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	This Facility is not an acid rain source; 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 and is therefore not subject to this regulation.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	This Facility is not an acid rain source; therefore, this regulation does not apply.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	Yes	Facility	This Facility will have appliances containing CFCs. The owner will use only certified technicians for the maintenance, service, repair and disposal of appliances to comply with this regulation.

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 either based on manufacturer's recommendations or based on ONEOK's experience with specific equipment. These procedures are designed to proactively address the potential for malfunction to minimize emissions from the facility during events that result in shutdown and subsequent startup.

Equipment located at this facility is equipped with various safety devices and features that aid in the prevention of excess emissions in the event of an operational emergency. If an operational emergency does occur and excess emissions occur, ONEOK's will submit the required Excess Emissions Report as per 20.2.7 NMAC. Corrective action to eliminate the excess emissions and prevent recurrence in the future will be undertaken as quickly as safety allows.

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.	X
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.	
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.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Alamo Compressor Station
2	Name of company:	ONEOK, Inc.
3	Current Permit number:	8176M3
4	Name of applicant's modeler:	Mr. Dennis Hlinka, Sullivan Environmental Consulting, Inc. and Ms. Kayla Curtis Resolute Compliance
5	Phone number of modeler:	817-821-6526 (Resolute)
6	E-mail of modeler:	dhlinka@ix.netcom.com kc@resolutecompliance.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Adding New Equipment	
3	Describe the permit changes relevant to the modeling.		
	New NSR Permit. Facility currently operates under GCP-O&G-8176. Additional equipment and emission factor adjustments to existing equipment will increase emissions beyond GCP limits.		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	Permanent Facility	

6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	March 16, 1988	
	SO2	July 28, 1978	
	PM10	February 20, 1979	
	PM2.5	November 13, 2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	A Facility only impacts evaluated along the 50 km boundary ring (as a conservative surrogate for Carlsbad Caverns National Park) remain well below all Class I SILs.		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A		

16-C: Modeling History of Facility

Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

1	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO	8176M3	2/24/2025	GCP-O&G Permit modeling
	NO_2	8176M3	2/24/2025	GCP-O&G Permit modeling
	SO_2	8176M3	2/24/2025	GCP-O&G Permit modeling
	H_2S	N/A	N/A	N/A
	PM2.5	8176M3	2/24/2025	GCP-O&G Permit modeling
	PM10	8176M3	2/24/2025	GCP-O&G Permit modeling
	Lead	N/A	N/A	Facility has no permitted lead emissions.
	Ozone (PSD only)	N/A	N/A	Not a PSD Source
	NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	Facility does not require TAP modeling.

16-D: Modeling performed for this application

For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
1	CO	☒	☐	☐	☐	☐
	NO_2	☒	☒	☐	☐	☐
	SO_2	☒	☐	☐	☐	☐
	H_2S	☐	☐	☐	☐	☒
	PM2.5	☒	☒	☐	☐	☐
	PM10	☒	☒	☐	☐	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.
The facility does not emit any toxic air pollutants listed in Tables A and B in 20.2.72.502 NMAC.

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
N/A	N/A	N/A	N/A	N/A	N/A

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	Surrounding sources were downloaded from NMED on 06/28/2026 for SO_2, $PM_{2.5}$, PM_{10}, NO_2 and were used in cumulative modeling.
2	If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.	
	AQB Source ID	Description of Corrections
	N/A	N/A

16-H: Building and structure downwash

1	How many buildings are present at the facility?	N/A	
2	How many above ground storage tanks are present at the facility?	• One (1) x 500 bbl Gunbarrel Separator • Four (4) x 400 bbl Condensate Tanks • One (1) x 400 bbl Produced Water Tank • Three (3) x 1,000 gal Amine Tanks	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
4	Building comments	Structural wake interactions for all point sources were computed using BPIPPRM.	

16-I: Receptors and modeled property boundary

1	"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 a 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. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.		
	The Facility has installed a perimeter fence to restrict access to the site.		
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?	Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?	Yes☐	No☒

4 Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.

Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
Multi-Tier Nested	Square	50 meters	0 meters	0.4 km	
Multi-Tier Nested	Square	100 meters	0 meters	1.0 km	
Multi-Tier Nested	Square	250 meters	0 meters	2 km	
Multi-Tier Nested	Square	500 meters	0 meters	4 km	
Multi-Tier Nested	Square	1000 meter	0 meters	14.2 km	

5	Describe receptor spacing along the fence line.
	25 meter spacing along the ambient boundary.
6	Describe the PSD Class I area receptors.
	The closest Class I area is Carlsbad Caverns National Park, but it is 74.2 km from the facility, a Facility only impacts evaluated along the 50 km boundary ring (as a conservative surrogate for Carlsbad Caverns National Park) remain well below all Class I SILs.

16-J: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).
	The facility operates 24 hrs per day, 7 days per week and 52 weeks per year. This represents maximum operational hours (8,760).

2	Which scenario produces the highest concentrations? Why? Please reference the modeling report attached to UA4.		
	N/A		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

	If hourly, variable emission rates were used that were not described above, describe them below.		
6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒

16-K: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling. Please reference the attached modeling report.	
	The Ambient Ratio Method 2 (ARM2) technique was used in all NO_2 modeling. As indicated in AERMOD User's Guide Section 3.3.6.3, 0.5 was used for the minimum ambient ratio and 0.9 for the maximum ambient ratio.	

3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒	No☐
4	Describe the design value used for each averaging period modeled.		
	1-hour: High first high Annual Other (Describe): : Highest annual average of five years (2017 – 2021).		

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows. The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.		
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $$[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$$ =1.546 µg/m³, which is below the significance level of 1.96 µg/m³. Sources that produce ozone concentrations below the ozone SIL do not cause or contribute to air contaminant levels exceeding the ozone NAAQS.		
3	Does the facility emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs? Sources that emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs are covered by the analysis above and require an individual analysis.	Yes☐	No☒

5 For new PSD Major Sources or PSD major modifications, if MERPs were used to account for ozone fill out the information below. If another method was used describe below.

NO_X (ton/yr)	$MERP_{NOX}$	VOCs (ton/yr)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$
N/A	N/A	N/A	N/A	N/A

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	
	N/A	

3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of	Yes☒	No☐

	NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.				
4	Was secondary PM modeled for PM2.5?			Yes☐	No☒
5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below. Reference attached modeling report.				
	Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour } 16.5 \text{ ug/m3 (5 yr cumulative)}}$
	$MERP_{annual}$				
	$MERP_{24\text{-hour}}$				$[PM2.5]_{\text{annual } 7.1 \text{ ug/m3 (5 yr cumulative)}}$
	Emission rate (ton/yr)	109.93	12.75		

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐
	Unit Number in UA-2	Unit Number in Modeling Files	
2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☒	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☒	No☐

4	Which units consume increment for which pollutants?				
	Unit ID	NO_2	SO_2	PM10	PM2.5

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	The facility is located in AQCR 155 which has triggered the Minor Source Baseline Date for NO2 (March 16, 1988), SO2 (July 28, 1978), PM10 (February 20, 1979), and PM2.5 (November 13, 2013).		
6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.		Yes☒	No☐
	N/A			

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following. Facility does not have flares (listed for reference only). All sources modeled. See attached report.			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	VCU-1	N/A	N/A	0.74
	ECD-1	N/A	N/A	2.13
	ECD-2	N/A	N/A	1.22

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
	N/A		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	Particulate emissions from unpaved road traffic were modeled as a continuous series of 10 adjacent line-volume sources along the southern fenceline (Unit UR-01). Diurnal hourly emission scalars were applied to account for estimated traffic volume 54% of the time between the hours of 8 AM and 4 PM.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	UR-01 (Haul Road) is the one (1) line volume source in the model.		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		
	N/A		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Hobbs-Jefferson (350250008)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: N/A		
	Other:		
	Comments: See modeling report Appendix B.		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Hobbs	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		
	N/A		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
	Elevated terrain.		
2	What was the source of the terrain data?		
	USGS 1/3 arc-second National Elevation Dataset (NED) elevation profiles were processed using AERMAP (v24142) to compute source and receptor base elevations and hill height scale factors.		

16-U: Modeling Files

1	Describe the modeling files: Modeling files are sorted into their respective folders and will be provided once requested. Each respective plot file has been updated with a detailed name including pollutant, averaging period, and the associated standard that the model is used to demonstrate compliance with.

	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
	AERMOD-SIL-MODEL-FILES.ZIP	NO2, CO, SO2, PM10, PM2.5	Significance Impact Analyses
	AERMOD-NAAQS-MODEL-FILES.ZIP	NO2, PM2.5, PM10	Cumulative NAAQS Analyses
	AERMOD-CLASS-II-MODEL-FILES.ZIP	NO2, PM2.5, PM10	Class II Increment Analyses
	AERMOD-CLASS-I-MODEL-FILES.ZIP	NO2, SO2, PM2.5, PM10	Class I Modeling Analyses

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☒
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☒
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	Not a PSD Source		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	Not a PSD Source		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☒
	Secondary PM2.5 were calculated using Modeling Guideline MERPs.		

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☐	No☒
	For each model that exceeded the applicable standard(s) and is inclusive of surrounding sources, a separate plot file containing only the Facility group equipment was included within the AERMOD model. This allows two (2) data points for review and comparison for each pollutant / averaging period: the independent Facility contribution and the maximum concentration point within the receptor grid. The result of this analysis is to isolate the contribution of the Facility and determine if the standard exceedance was due to the addition of the subject facility or was the exceedance from other currently present background sources.		

2 Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.

- Please Refer to Tables 3, 5, 6 and 7 in the provided modeling report.

Pollutant	Averaging Time	NAAQS / Statistical Basis	Facility Only Modeled Conc ($\mu g/m^3$)	Class II SIL ($\mu g/m^3$)	Exceeds SIL?	Radius Of Impact (km)
CO	1-hour	Not to be exceeded > once per year	149.0	2,000	No	-
	8-hour	Not to be exceeded > once per year	77.0	500	No	-
NO_2	1-hour	98th percentile, averaged over 5 years	86.2	7.5	Yes	15.0 +
	Annual	Annual mean, averaged over 5 years	7.0	1.0	Yes	1.060
SO_2	1-hour	99th percentile, averaged over 5 years	5.1	7.8	No	-
$PM_{2.5}$	24-hour	98th percentile, averaged over 5 years	1.3	1.2	Yes	0.135
	Annual	Annual mean, averaged over 5 years	0.46	0.13	Yes	0.172
PM_{10}	24-hour	Not to be exceeded > once per year (or 6th highest over 5 years)	16.9	5.0	Yes	0.175

Pollutant	Averaging Time	NAAQS / Statistical Basis	Background ($\mu g/m^3$)	Facility + Background ($\mu g/m^3$)	Facility + Offsite Modeled Conc + Background ($\mu g/m^3$)	Federal NAAQS ($\mu g/m^3$)	New Mexico NMAAQS ($\mu g/m^3$)	Exceeds NAAQS / NMAAQS?
NO_2	1-hour	98th percentile, averaged over 5 years	65.8	152.0	-	188	-	No
	Annual	Annual mean, averaged over 5 years	9.3	16.3	-	100	94	No
$PM_{2.5}$	24-hour	98th percentile, averaged over 5 years	16.5	-	20.6	35	35	No
	Annual	Annual mean, averaged over 5 years	7.1	-	8.96	9	9	No
PM_{10}	24-hour	Not to be exceeded > once per year (or 6th highest over 5 years)	37.3	-	62.2	150	-	No

Pollutant	Averaging Time	Class II Increment / Statistical Basis	Facility Only Modeled Conc ($\mu g/m^3$)	Background ($\mu g/m^3$)	Model + Background ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)	Exceeds Increment?
NO_2	1-hour	Not to be exceeded > once per year	NA	NA	NA	NA	NA
	Annual	Highest Annual over 5-years	7.3	9.3	16.6	25	No

Pollutant	Averaging Time	Class II Increment / Statistical Basis	Facility + Offsite Modeled Conc ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)	Exceeds Increment?
$PM_{2.5}$	24-hour	Not to be exceeded > once per year	5.6	9	No
	Annual	Highest Annual over 5-years	1.9	4	No
PM_{10}	24-hour	Not to be exceeded > once per year	28.3	30	No
	Annual	Highest Annual over 5-years	8.3	17	No

		Pollutant	Averaging Time	Facility Only Modeled Conc (µg/m^3)	Class I SIL (µg/m^3)	Exceeds SIL?	
		NO_2	Annual	0.02	0.1	No	
		SO_2	3-hour	0.2	1.0	No	
			24-hour	0.05	0.2	No	
			Annual	0.002	0.1	No	
		$PM_{2.5}$	24-hour	0.003	0.3	No	
			Annual	0.0001	0.03	No	
		PM_{10}	24-hour	0.004	0.3	No	
			Annual	0.0002	0.2	No	

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	The comprehensive dispersion modeling analysis confirms that air quality impacts from the proposed modifications at the ONEOK Alamo Compressor Station will comply with all applicable Class I and Class II SILs, Class II PSD Increments, NMAAQS, and federal NAAQS.

Draft - Air Dispersion Modeling Report
Alamo Compressor Station (NMED # 38827)
Lea County, New Mexico

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August 5, 2026

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Executive Summary

An air dispersion modeling analysis was performed for ONEOK, Inc.'s (ONEOK) Alamo Compressor Station, located in Lea County, New Mexico. This modeling supports an Initial New Source Review (NSR) Permit application pursuant to 20.2.72.200.A NMAC. Air dispersion modeling was executed using the U.S. EPA AERMOD modeling system (v24142) following NMED Air Quality Bureau (AQB) Modeling Guidelines and U.S. EPA Appendix W (Guideline on Air Quality Models) recommendations. The results confirm that facility emissions following the proposed modifications will comply with all applicable National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and Prevention of Significant Deterioration (PSD) Class I and Class II Increments.

- **Class II SIL Analysis:** Modeled concentrations for CO and SO_2 are below their respective Class II SILs; thus, no further cumulative modeling was required for these pollutants.

- **Cumulative NAAQS Analysis:** Facility-only impacts for NO_2, $PM_{2.5}$, and PM_{10} exceeded Class II SILs. Refined cumulative modeling incorporating background concentrations and offsite permitted inventories demonstrate full compliance with all applicable 1-hour, 24-hour, and annual ambient standards.

- **Class II PSD Increment Analysis:** Modeled concentrations demonstrate compliance with Class II PSD Increment thresholds for NO_2, $PM_{2.5}$, and PM_{10}.

- **Class I Analysis:** Facility-only impacts evaluated along a 50 km boundary ring (as a conservative surrogate for Carlsbad Caverns National Park) remain well below all Class I SIL thresholds.

1.0 Introduction and Facility Overview

The Alamo Compressor Station (Facility) is a natural gas gathering and compression facility owned and operated by ONEOK, Inc. (ONEOK). Located in Lea County, New Mexico, approximately 23.3 miles west of Jal, the Alamo Compressor Station facilitates the transport of natural gas and manages associated byproducts. Specifically, the facility collects and stores condensate and produced water generated from inlet separation and compression activities, which are subsequently transported offsite via truck. The facility is situated at an elevation of approximately 3,518 feet above mean sea level, with approximate UTM coordinates of 633,308m E and 3,554,003m N (WGS84, Zone 13).

ONEOK is submitting this application pursuant to 20.2.72.200.A NMAC for an Initial NSR Permit. The facility currently operates under General Construction Permit (GCP) Oil and Gas

#8176, which authorizes a suite of equipment including seven Caterpillar compressor engines (models 3612 A4, 3612 TALE, and 3608 A4), a vapor recovery unit (VRU) engine, two emergency generators, a TEG dehydrator with a reboiler, and various storage tanks and separation units. Additional emission sources include fugitive leaks, malfunctions, loading operations, and startup, shutdown, and maintenance (SSM) activities.

1.1 Project Scope and Proposed Modifications

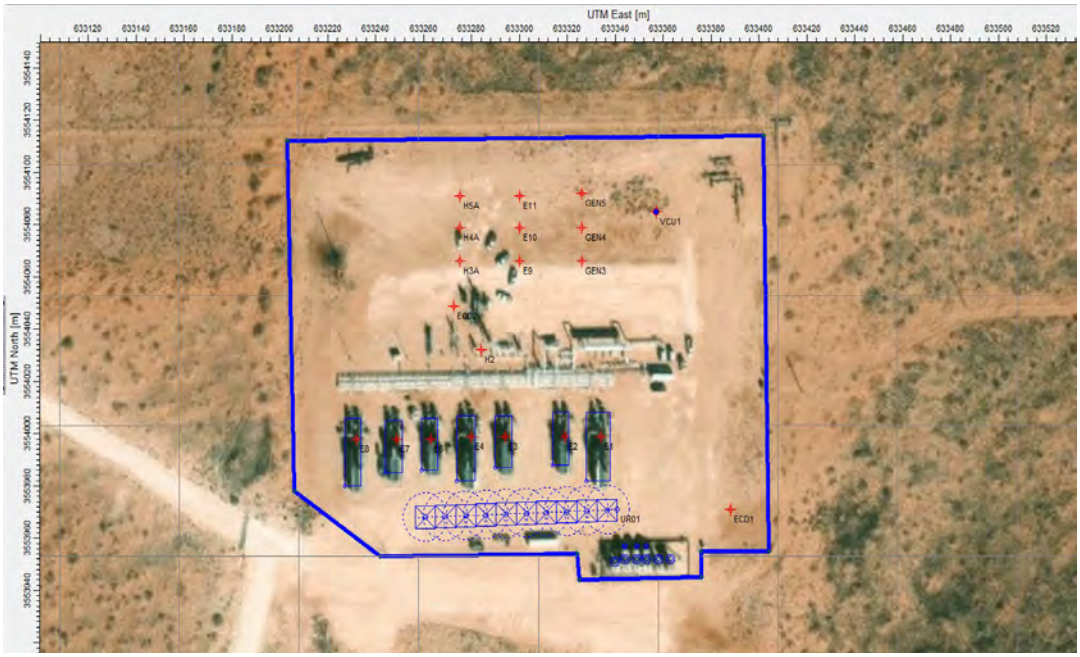
With this Initial NSR application, ONEOK proposes to expand the facility's operational capacity through the addition of the following equipment:

- Three (3) Arrow VRG 330 fin fan engines
- Three (3) Caterpillar G3412 TA natural gas generator engines
- Three (3) 100 gallons/minute Amine Units with associated reboilers
- One (1) Vapor Combustion Unit (VCU-1) and two (2) Enclosed Combustion Devices (ECD-1; ECD-2) to manage waste gas streams.

1.2 Facility Source Emissions and Parameters

A geographical layout of the remote, rural-dominated environment in the vicinity of the Alamo Compressor Station facility boundary along with the existing and proposed onsite emission sources, enclosures/structures, and associated storage tanks is presented in Figure 1.

Figure 1: Alamo Facility, Emission Sources, and Buildings/Structures



Emission units were modeled using standard dispersion characterization principles:

- **Point Sources:** Compressor engines, generator engines, fin fan engines, and reboilers were modeled as standard vertical point sources using manufacturer stack parameters. These point sources were conservatively evaluated operating at peak continuous throughput (8,760 hours/year).

- **Flares / Combustion Devices:** VCU-1 was modeled as a pseudo-point source utilizing EPA flare methodology (US EPA, 1992; US EPA, 2021) to calculate effective release heights and effective stack diameters based on net heat release (see Appendix A).

- **Fugitive / Haul Roads:** Particulate emissions from unpaved road traffic were modeled as a continuous series of 10 adjacent line-volume sources along the southern fenceline (Unit UR01). Diurnal hourly emission scalars were applied to account for estimated traffic volume 54% of the time between the hours of 8AM and 4 PM.

A complete summary of the facility sources, source types, release parameters, and potential-to-emit emission rates is provided in Table 1.

Table 1: Summary of Alamo Facility Sources and Emission Rates

Type	ID	Desc	UTM-X	UTM-Y	Base_Elev	Height	Diameter	Exit_Velocity	Exit_Temp	Release_Type	Emission_Rate (grams/sec)				
			(meters)	(meters)	(meters)	(meters)	(meters)	(m/sec)	(°K)		CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
POINT	E1	Comp. Engine 1 - CAT G3608 A4	633334	3553999	1037.26	7.53	0.61	27.14	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E2	Comp. Engine 2 - CAT G3608 A4	633319	3553999	1037.44	7.53	0.61	27.14	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E3	Comp. Engine 3 - CAT G3612 A4	633294	3553999	1037.44	9.14	0.71	29.65	724.82	VERTICAL	0.4171	0.4171	0.0006	0.0010	0.0013
POINT	E4	Comp. Engine 4 - CAT G3612 A4	633280	3553999	1037.67	9.14	0.71	29.65	724.82	VERTICAL	0.4171	0.4171	0.0006	0.0010	0.0013
POINT	E6	Comp. Engine 6 - CAT G3608 A4	633263	3553998	1037.98	7.53	0.61	27.15	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E7	Comp. Engine 7 - CAT G3608 A4	633249	3553998	1038.10	7.53	0.61	27.14	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E8	Comp. Engine 8 - CAT G3612 TALE	633232	3553998	1037.94	9.14	0.71	29.65	724.82	VERTICAL	0.4171	0.4171	0.0044	0.0010	0.0025
POINT	E9	Fln Fan Engine 1 - Arrow VRG330	633300	3554066	1038.23	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	E10	Fln Fan Engine 2 - Arrow VRG330	633300	3554079	1038.30	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	E11	Fln Fan Engine 3 - Arrow VRG330	633300	3554091	1038.50	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	GEN3	Gen. Engine 3 - CAT G3412 TA	633326	3554066	1038.15	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	GEN4	Gen. Engine 4 - CAT G3412 TA	633326	3554079	1038.30	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	GEN5	Gen. Engine 5 - CAT G3412 TA	633326	3554092	1038.51	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	H2	Glycol Reboiler	633284	3554032	1037.83	6.86	0.41	3.05	1033.15	VERTICAL	0.0126	0.0151	0.0013	0.0013	0.0001
POINT	H3A	Amine Reboiler 1A	633275	3554066	1038.26	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
POINT	H4A	Amine Reboiler 2A	633275	3554079	1038.24	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
POINT	H5A	Amine Reboiler 3A	633275	3554091	1038.45	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
FLARE [a]	VCU1	Vapor Combustor Unit	633357	3554085	1038.12	15.93	0.74	20.00	1273.00	VERTICAL	0.6149	0.1436	0.0000	0.0000	0.3528
POINT	ECD1	Enclosed Combustion Unit	633388	3553971	1037.13	9.75	2.13	8.52	1033.15	VERTICAL	0.1147	0.0580	0.0000	0.0000	0.0000
POINT	ECD2	Enclosed Combustion Unit	633273	3554049	1038.18	6.10	1.22	7.52	922.04	VERTICAL	0.0126	0.0063	0.0000	0.0000	0.0000

Type	ID	Desc	UTM-X	UTM-Y	Base_Elev	Release Height	Plume Width	Plume Height	Emission_Rate (grams/sec)				
			(meters)	(meters)	(meters)	(meters)	(meters)	(meters)	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
LINE_VOLUME	UR01	Haul Road - 10 Adjacent Segments	633341	3553968	1036.99	3.38	8.44	6.28	0.0000	0.0000	0.0023	0.0233	0.0000
			633257	3553961	1037.48								

1.3 Modeling Applicability and Emissions Thresholds

Per NMED AQB guidelines, dispersion modeling is required for any pollutant whose facility-wide potential to emit (PTE) hourly rate exceeds NMED modeling threshold levels. As shown in Table 2, sitewide potential emissions exceed the thresholds for CO, NO_2, SO_2, $PM_{2.5}$, and PM_{10}, necessitating formal air dispersion modeling.

Table 2: Modeling Applicability Comparison

Pollutant	Facility Potential (tpy)	Estimated Peak (lb/hr)	NMED Trigger (lb/hr)	Modeling Required?
CO	118	26.90	2.58	Yes
NO_2	105	23.95	0.024	Yes
SO_2	13	2.89	0.023	Yes
$PM_{2.5}$ (point sources)	0.59	0.13	0.009	Yes
$PM_{2.5}$ (volume sources)	0.08	0.02	0.003	Yes
PM_{10} (point sources)	0.54	0.12	0.039	Yes
PM_{10} (volume sources)	0.81	0.19	0.015	Yes

1.4 Modeling Requirements and Compliance Objectives

The primary objective of this modeling analysis is to demonstrate that the proposed modifications will comply with all applicable air quality standards. This includes the National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and PSD Increment standards. While the facility's current potential to emit classifies it as a minor source, the modeling will include a comparison of these pollutants against these standards where applicable. The analysis addresses the following pollutants and averaging times:

- **Carbon Monoxide (**CO**):** 1-hour and 8-hour
- **Nitrogen Dioxide (**NO_2**):** 1-hour, 24-hour, and annual
- **Sulfur Dioxide (**SO_2**):** 1-hour, 3-hour, 24-hour, and annual
- **Fine Particulate (**$PM_{2.5}$**):** 24-hour and annual (when applicable)
- **Coarse Particulate (**PM_{10}**):** 24-hour and annual (when applicable)

2.0 Model Selection and Setup

2.1 Model Selection

Dispersion modeling was executed using AERMOD (version 24142) in regulatory default mode. AERMOD is the EPA-preferred regulatory model for assessing impacts within 50 km of a source. The assessment was conducted using the latest regulatory version of the AMS/EPA Regulatory Model (AERMOD) along with its associated preprocessors (AERMET, AERMAP, and AERSURFACE).

2.2 NO_2 Chemical Transformation

The Tier 2 Ambient Ratio Method 2 (ARM2) was applied for NO_2 chemical transformation in accordance with EPA Appendix W guidance, utilizing default national min/max conversion ratios of 0.5 and 0.9.

2.3 Building Downwash & Terrain

- **Building Downwash:** Structural wake interactions for all point sources were computed using BPIPPRM (v04274).

- **Terrain Data:** USGS 1/3 arc-second National Elevation Dataset (NED) elevation profiles were processed using AERMAP (v24142) to compute source and receptor base elevations and hill height scale factors.

2.4 Receptor Grid

A multi-tier nested grid was deployed to capture maximum offsite ground-level impacts:

- **Fenceline:** 25-meter spacing along the ambient boundary.

- **Near-Field and Mid-Field Grid:** 50-meter spacing out to 0.4 km; 100-meter spacing out to 1.0 km; 250-meter spacing out to 2 km.

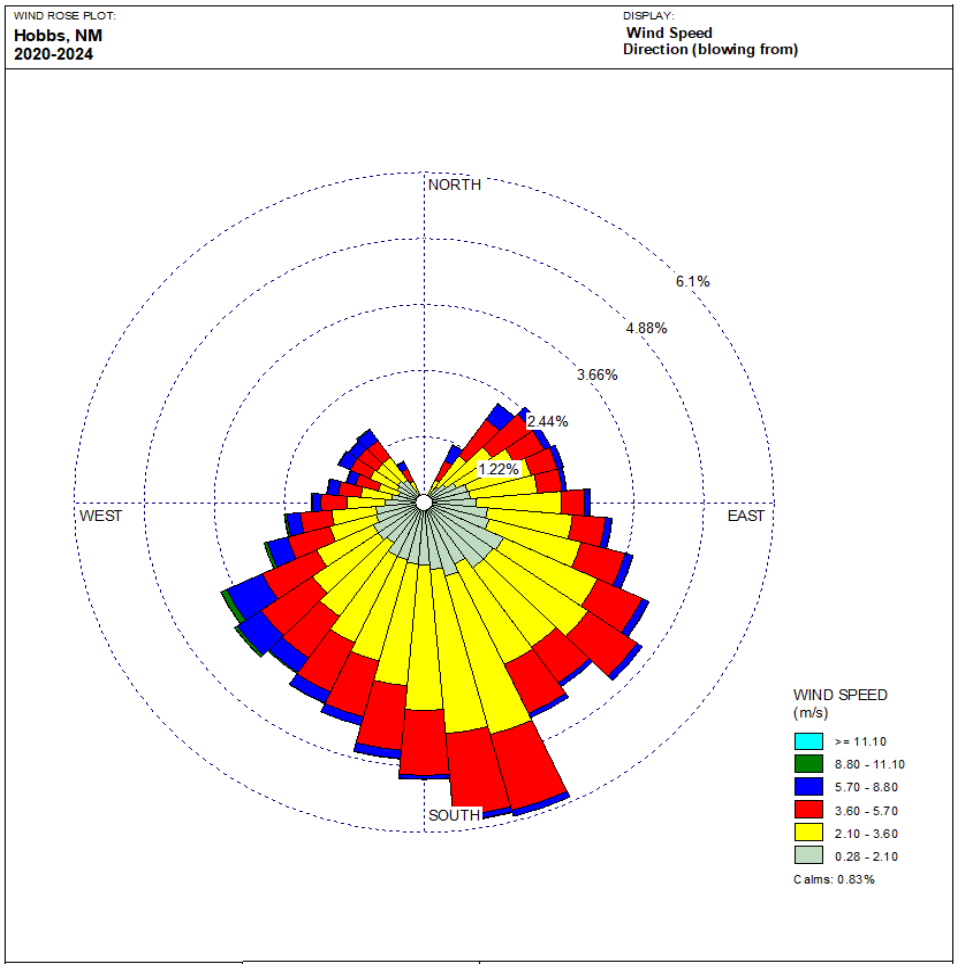
- **Far-Field Grid:** 500-meter spacing out to 4 km; 1000-meter spacing out to 14.2 km.

2.5 Meteorological Data

In accordance with the New Mexico Environment Department (NMED) Air Quality Bureau (AQB) Air Dispersion Modeling Guidelines (NMED, 2024), the meteorological dataset for this analysis was selected based primarily on terrain similarity, regional topographic influences, and local surface characteristics rather than simple geographic proximity.

Five years (2020–2024) of sequential hourly meteorological data were obtained from NMED cloud web site (https://cloud.env.nm.gov/resources/collection/411). Surface observations were obtained from the Hobbs/Lea County Regional Airport (KHOB, WBAN: 93034) paired with upper-air soundings from Midland, TX (KMAF, WBAN: 23023). The five-year wind-rose for Hobbs is presented in Figure 2 showing the prevailing wind flow pattern from the SE to SW sectors with minimal wind flow from the northern sectors.

Figure 2: Five-Year (2020-2024) Wind Rose for Hobbs, NM



3.0 NAAQS/NMAAQS Air Quality Impact Assessment Methodology

3.1 Class II Modeling Analyses

In accordance with the U.S. EPA *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) and New Mexico Environment Department (NMED) Air Quality Bureau modeling guidelines, air dispersion modeling was performed using a multi-tiered approach to demonstrate compliance with all applicable National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and Prevention of Significant Deterioration (PSD) Class II Increments.

Phase 1: Preliminary Analysis (Significant Impact Level Demonstration)

The modeling evaluation began with a facility-only Significant Impact Level (SIL) analysis to determine whether proposed emissions from the Alamo Compressor Station would result in ambient concentrations exceeding regulatory significance thresholds.

- **Emission Inventory:** Modeled source parameters and emission rates represented the maximum allowable potential-to-emit (PTE) or proposed maximum operational capacity for all project-impacted emission units (See Table 1).

- **Receptor Network:** A multi-tier nested receptor grid was deployed, anchored by a high-density 25-meter fenceline spacing and extending outward to capture maximum ground-level impacts across all surrounding terrain elevations (see Section 2.4).

- **Evaluation Criteria:** Maximum modeled facility-only concentrations for each criteria pollutant and averaging period were compared directly against U.S. EPA and NMED Class II SIL thresholds.

If the maximum facility-only concentration for a given pollutant and averaging time remained below its corresponding SIL across all modeled receptors, offsite impacts were deemed insignificant, concluding the compliance demonstration for that specific pollutant and averaging period. Pollutants exceeding Class II SILs defined a Radius of Impact (ROI) and advanced to a cumulative Full Impact Analysis.

Phase 2: Radius of Impact (ROI) & Cumulative Full Impact Analysis

For any pollutant and averaging time where the facility-only predicted concentration equaled or exceeded the applicable SIL, a full Cumulative Impact Analysis (CIA) was required. Pursuant to Section 7.1 of the *NMED Air Quality Bureau Air Dispersion Modeling Guidelines*, a Radius of Impact (ROI) analysis was conducted using facility-only modeling results.

- **Radius of Impact (ROI):** was established by measuring the maximum distance from the center of the facility to the furthest receptor where modeled impacts exceeded the applicable Significant Impact Level (SIL). The resulting ROI distance was established for each pollutant and averaging time.

- **Receptor Domain:** For the Cumulative Impact Analysis (CIA), the receptor grid was defined as the complete area circumscribed by the ROI around the facility. All receptors within this ROI boundary were retained for the multi-source modeling run to evaluate total ambient concentrations against the NMAAQS and NAAQS.

- **Offsite Permitted Sources:** To account for interactive plume impacts, a regional emission inventory of permitted off-site facilities was compiled. Off-site sources located within the ROI plus NMED's standard screening distance were retrieved from the NMED AQB modeling database and incorporated into the AERMOD multi-source runs.

- **Ambient Background Concentrations:** Representative multi-year ambient monitoring data obtained from NMED-approved regional monitoring stations (e.g., Hobbs Jefferson St. station) (see Appendix B) were added to the modeled cumulative concentrations. These background values account for natural background, unmodeled minor area sources, and long-range regional transport without double-counting modeled stationary sources.

Phase 3: Full Cumulative NAAQS Compliance Analysis

A refined, multi-source cumulative dispersion modeling analysis was executed for all pollutant and averaging period combinations that exceeded Class II SIL thresholds (NO_2, $PM_{2.5}$, and PM_{10}). Pursuant to NMED Air Quality Bureau modeling guidelines and EPA Appendix W, total cumulative concentrations were calculated using the following formulations:

- Cumulative NO_2 Concentration:

  Total Predicted NO_2 Design Concentration = Modeled Impact [Facility-only] + Monitored Ambient Background

- Cumulative Particulate ($PM_{2.5}$ / PM_{10}) Concentration:

  Total Predicted [$PM_{2.5}$; PM_{10}] Design Concentration = Modeled Impact [Facility + Offsite Sources] + Monitored Ambient Background

Design Concentrations and Regulatory Metrics: Modeled cumulative concentrations were post-processed in AERMOD to reflect the statistical form of each applicable ambient air quality standard:

- **1-Hour** NO_2 **NAAQS:** The 5-year average of the 98th percentile (8th-highest) daily maximum 1-hour concentration at each receptor.
- **Annual** NO_2 **NAAQS / NMAAQS:** The maximum annual arithmetic mean concentration across the 5-year meteorological period.
- **24-Hour** $PM_{2.5}$ **NAAQS / NMAAQS:** The 5-year average of the 98th percentile (8th-highest) 24-hour average concentration at each receptor.
- **Annual** $PM_{2.5}$ **NAAQS / NMAAQS:** The 5-year average of the annual mean concentrations.
- **24-Hour** PM_{10} **NAAQS:** The maximum 6th-highest (high-second-high over a 5-year period) 24-hour average concentration.

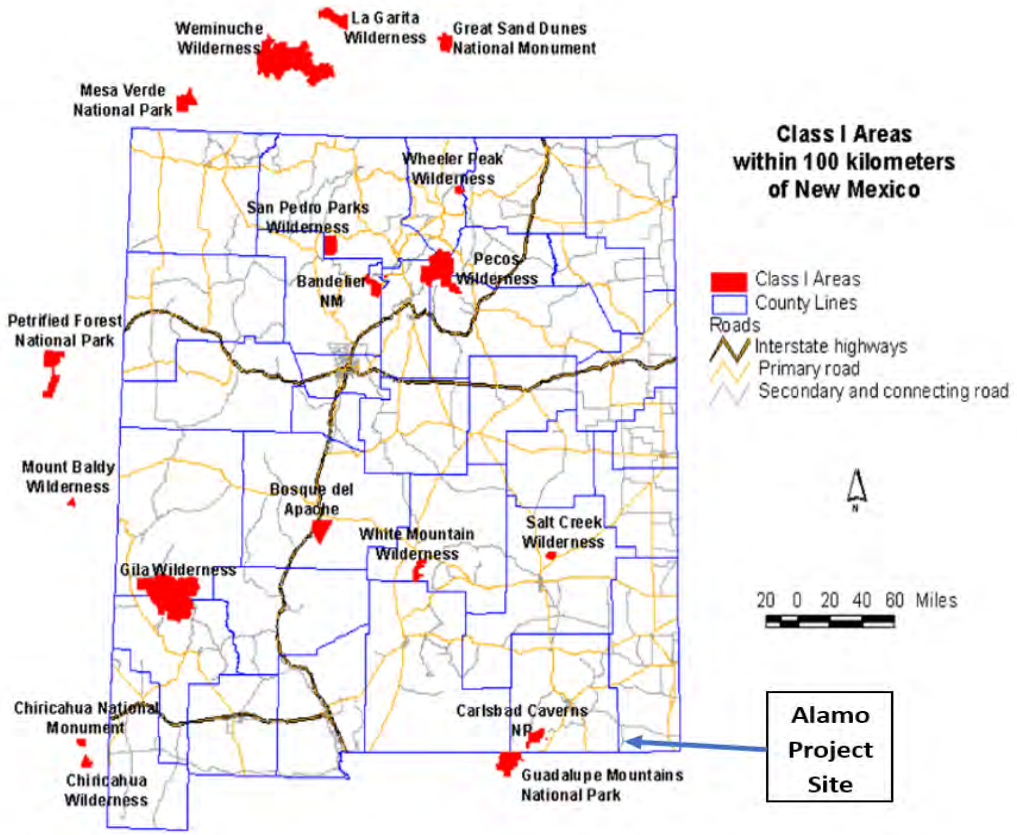
Demonstration of Compliance: Compliance with the NAAQS is demonstrated if the Total Predicted Design Concentration (modeled impacts plus representative background) does not exceed the National Ambient Air Quality Standard at any receptor within the modeling domain.

3.2 Class I Significance Modeling Analyses

Carlsbad Caverns National Park, the nearest federally mandated PSD Class I area, is located approximately 68 to 75 km (approx. 42-47 miles) west of the Alamo Compressor Station (see Figure 3). Because this Class I area lies beyond the standard 50 km regulatory domain of the AERMOD dispersion model, a formal long-range transport analysis was not required pursuant to NMED Air Quality Bureau guidelines and EPA Appendix W recommendations.

However, to provide a conservative screening evaluation of potential far-field impacts, a specialized AERMOD simulation was performed using a continuous polar ring of receptors placed at the 50 km domain boundary.

Figure 3: Relative Location of the Alamo Project to the Carlsbad Caverns National Park



4.0 Summary of Results

4.1 Significance Impact Analyses

As discussed in Section 3.1, Significance Analyses for Class II areas were conducted to determine the need for further pollutant modeling. Modeled facility emission points, parameters, and emission rates for the Significance Analyses were provided in Table 1. The results of the Class II Significance Analyses for each pollutant are provided in Table 3 and represent the maximum modeled concentrations from the significance runs. All digitized AERMOD model input and output files for the Significance Impact Analyses are provided in Appendix E.

Table 3: Model results for Significance Impact Analyses

Pollutant	Averaging Time	NAAQS / Statistical Basis	Facility Only Modeled Conc ($\mu g/m^3$)	Class II SIL ($\mu g/m^3$)	Exceeds SIL?	Radius Of Impact (km)
CO	1-hour	Not to be exceeded > once per year	149.0	2,000	No	-
	8-hour	Not to be exceeded > once per year	77.0	500	No	-
NO_2	1-hour	98th percentile, averaged over 5 years	86.2	7.5	Yes	15.0 +
	Annual	Annual mean, averaged over 5 years	7.0	1.0	Yes	1.060
SO_2	1-hour	99th percentile, averaged over 5 years	5.1	7.8	No	-
$PM_{2.5}$	24-hour	98th percentile, averaged over 5 years	1.3	1.2	Yes	0.135
	Annual	Annual mean, averaged over 5 years	0.46	0.13	Yes	0.172
PM_{10}	24-hour	Not to be exceeded > once per year (or 6th highest over 5 years)	16.9	5.0	Yes	0.175

As shown in Table 3, all CO and SO_2 modeled impacts for the project are less than the applicable Class II SILs. As such, by definition, the project does not cause or contribute to an exceedance of the NAAQS or Class II PSD Increment for CO or SO_2. However, the NO_2 1-hr and annual, the $PM_{2.5}$ 24-hour and annual, and the PM_{10} 24-hour modeled impacts for the project exceeded Class II SIL. The Radius of Impact (ROI) distances for each of the pollutants that exceeded their SILs are also provided in Table 3. As a result of the exceedance of the SILs, full cumulative and increment NAAQS analyses for NO_2, $PM_{2.5}$, and PM_{10} are required and are summarized in Section 4.2.

4.2 Cumulative and Increment NAAQS Analyses

A cumulative and Increment NAAQS modeling analysis was conducted for those pollutants and averaging periods for which the Significance Analysis results exceeded Class II SIL concentrations. As described in Section 4.1, the cumulative and Increment NAAQS analyses utilized the significant receptors contained within the corresponding ROI distances for use in the refined analysis. Plots of the ROI distances and receptors for each of the pollutants and averaging times are provided in Appendix C.

Table 4 provides a summary of the ambient background concentrations taken from the NMED-approved background concentration data (Hobbs Jefferson St. station) (see Appendix B).

Table 4: Summary of Ambient Background Concentrations

Pollutant	Averaging Period	Monitoring Source	Value ($\mu g/m^3$)	Rationale
NO_2	1-Hour	Hobbs (Jefferson St.)	65.8	3-yr Avg 98th Percentile
NO_2	Annual	Hobbs (Jefferson St.)	9.3	3-yr Annual Average
$PM_{2.5}$	24-Hour	Hobbs (Jefferson St.)	16.5	3-yr Avg 98th Percentile
$PM_{2.5}$	Annual	Hobbs (Jefferson St.)	7.1	3-yr Annual Average
PM_{10}	24-Hour	Hobbs (Jefferson St.)	37.3	3-yr Avg 98th Percentile
PM_{10}	Annual	Hobbs (Jefferson St.)	24.0	3-yr Annual Average

As shown in Table 5, total predicted design concentrations comply with all federal NAAQS and state NMAAQS standards.

Table 5: Cumulative NAAQS/NMAAQS Modeling Results

Pollutant	Averaging Time	NAAQS / Statistical Basis	Background ($\mu g/m^3$)	Facility + Background ($\mu g/m^3$)	Facility + Offsite Modeled Conc + Background ($\mu g/m^3$)	Federal NAAQS ($\mu g/m^3$)	New Mexico NMAAQS ($\mu g/m^3$)	Exceeds NAAQS / NMAAQS?
NO_2	1-hour	98th percentile, averaged over 5 years	65.8	152.0	-	188	-	No
	Annual	Annual mean, averaged over 5 years	9.3	16.3	-	100	94	No
$PM_{2.5}$	24-hour	98th percentile, averaged over 5 years	16.5	-	20.6	35	35	No
	Annual	Annual mean, averaged over 5 years	7.1	-	8.96	9	9	No
PM_{10}	24-hour	Not to be exceeded > once per year (or 6th highest over 5 years)	37.3	-	62.2	150	-	No

A Class II PSD Increment evaluation was conducted for NO2, $PM_{2.5}$, and PM_{10}. As shown in Table 6, no model impacts exceeded any of the Increment and as such, the proposed Alamo project is predicted to not cause or contribute to any exceedance of the PSD increment.

Table 6: Model Results of Class II PSD Increment Analyses

Pollutant	Averaging Time	Class II Increment / Statistical Basis	Facility Only Modeled Conc ($\mu g/m^3$)	Background ($\mu g/m^3$)	Model + Background ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)	Exceeds Increment?
NO_2	1-hour	Not to be exceeded > once per year	NA	NA	NA	NA	NA
	Annual	Highest Annual over 5-years	7.3	9.3	16.6	25	No

Pollutant	Averaging Time	Class II Increment / Statistical Basis	Facility + Offsite Modeled Conc ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)	Exceeds Increment?
$PM_{2.5}$	24-hour	Not to be exceeded > once per year	5.6	9	No
	Annual	Highest Annual over 5-years	1.9	4	No
PM_{10}	24-hour	Not to be exceeded > once per year	28.3	30	No
	Annual	Highest Annual over 5-years	8.3	17	No

All digitized AERMOD model input and output files for the Cumulative and Class II PSD Increment NAAQS Analyses are provided in Appendix E.

4.3 Class I Significance Analyses

For this Class I analyses, a conservative screening evaluation of potential far-field impacts, a specialized AERMOD simulation was performed using a continuous polar ring of receptors placed at the 50 km domain boundary (see Appendix D).

The model results for the Class I significance analyses for the 50 km ring distance are presented in Table 7. As shown, no model results exceeded Class I SIL concentrations.

Table 7: Model Results of Class I Significance Analyses

Pollutant	Averaging Time	Facility Only Modeled Conc (µg/m^3)	Class I SIL (µg/m^3)	Exceeds SIL?
NO_2	Annual	0.02	0.1	No
SO_2	3-hour	0.2	1.0	No
	24-hour	0.05	0.2	No
	Annual	0.002	0.1	No
$PM_{2.5}$	24-hour	0.003	0.3	No
	Annual	0.0001	0.03	No
PM_{10}	24-hour	0.004	0.3	No
	Annual	0.0002	0.2	No

All digitized AERMOD model input and output files for the Class I Significance Analyses are provided in Appendix E.

5.0 Conclusions

The comprehensive dispersion modeling analysis confirms that air quality impacts from the proposed modifications at the ONEOK Alamo Compressor Station will comply with all applicable Class I and Class II SILs, Class II PSD Increments, NMAAQS, and federal NAAQS.

6.0 References

New Mexico Environment Department (NMED), 2025. *Air Quality Bureau 2025 Annual Network Review.* July 1, 2025. Santa Fe, NM.

New Mexico Environment Department (NMED), 2024. *Air Dispersion Modeling Guidelines*. Air Quality Bureau. Revised July 11, 2024. Santa Fe, NM. [https://www.env.nm.gov/air-quality/wp-content/uploads/sites/2/2024/09/NM_AirDispersionModelingGuidelines_11July2024.pdf]

U.S. Environmental Protection Agency, 2025. *Guideline on Air Quality Models*. 40 CFR Part 51, Appendix W. U.S. Environmental Protection Agency. Revised January 2025.

U.S. Environmental Protection Agency, 2024. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. Publication No. EPA-454/B-24-001. Office of Air Quality Planning and Standards, Air Quality Assessment Division, Research Triangle Park, NC.

U.S. Environmental Protection Agency, 2021. User's Guide for the AERSCREEN Dispersion Modeling Program. Publication No. EPA-454/B-21-005. Office of Air Quality Planning and Standards, Research Triangle Park, NC. (Contains the primary formulas for the effective heights and diameters for the modeling of flares.)

U.S. Environmental Protection Agency, 1992. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised. Publication No. EPA-454/R-92-019. Office of Air Quality Planning and Standards, Research Triangle Park, NC. (Original methodology for flare buoyancy.)

Appendix A: Calculations of Effective Diameter and Heights for the Flares

In **EPA-454/B-21-005** (the AERSCREEN User's Guide), the equations for calculating the pseudo-parameters for a flare are found in the technical discussion regarding source types. These formulas allow AERMOD to simulate the massive buoyancy and plume rise created by the flare's heat.

1. Effective Stack Diameter (D_{eff})

This equation calculates the diameter required to maintain a fixed vertical velocity of 20 m/s based on the "net" heat release (total heat minus radiative losses).

$$D_{eff} = 9.88 \times 10^{-4} \times \sqrt{q_n \times (1 - f_r)}$$

Where:

- D_{eff}: Effective stack diameter (meters).
- q_n: Gross heat release of the flare (calories/second).
- f_r: Radiative heat loss fraction (The EPA default is **0.55**).

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2. Effective Release Height (H_{eff})

This equation accounts for the physical height of the flare tip plus the additional height gained from the flame's own length and buoyancy before the plume begins its standard dispersion.

$$H_{eff} = H_s + (4.56 \times 10^{-3} \times q_n^{0.478})$$

Where:

- H_{eff}: Effective release height (meters).
- H_s: Physical stack height of the flare (meters).
- q_n: Gross heat release of the flare (calories/second).

---

3. Required Modeling Parameters

To use these calculated values correctly in an AERMOD `SO SRCPARAM` card, the guidance (both in the AERSCREEN guide and the 1992 screening manual) requires you to use the following "fixed" values:

- **Exit Velocity (V_{eff}): 20.0 m/s**
- **Exit Temperature (T_{eff}): 1,273 K**

Appendix B: NMED Background Concentration Tables (copied from NMED, 2024)

4.4.5 NO_2 Background Concentration

Note: No 24-hour averages were calculated. Compliance with 1-hour NAAQS automatically demonstrates compliance with 24-hour NMAAQS.

Table 31: NO_2 Background Concentration

Region	ID	Location	1-hour Background ($\mu g/m^3$)	1-hour 98th %ile ($\mu g/m^3$)	Annual Background ($\mu g/m^3$)	Latitude	Longitude	Address
4-Corners	1ZB, 350450009	Bloomfield	75.8	61.4	18.5	36.74222	-107.977	162 Hwy 544, Bloomfield NM 87413
4-Corners	1NL, 350450018	Navajo Dam	52.6	43.9	10.8	36.80973	-107.652	423 Hwy 539, Navajo Dam, NM 87419
4-Corners	350450020	Chaco Culture National Historical Park	19.9	8.3	1.3	36.035	-107.9041	1808 County Road 7950, Nageezi, NM 87037
4-Corners	1H, 350451005	Shiprock Substation	100.3	45.7	5.9	36.7967	-108.4731	Usbr Shiprock Substation (Farmington)
Albu-querque	350010023	Del Norte High School	91.7	81.2	17.2	35.1343	-106.585	4700A San Mateo NE
Albu-querque	350010029	South Valley	82.5	70.3	15.6	35.0170	-106.657	201 Prosperity SE
South Central	6ZM, 350130021	Sunland Park	122.2	89.0	13.8	31.79611	-106.584	5935A Valle Vista, Sunland Park, NM
South Central	6ZN, 350130022	US-Mexico Border Crossing	94.6	80.2	10.1	31.78778	-106.683	104-2 Santa Teresa International Blvd, NM
Eastern NM	5ZR, 350151005	Outside Carlsbad	70.2	54.5	9.3	32.38	-104.262	Holland St, SE of Water Tank, Carlsbad, NM
Eastern NM	5ZS, 350250008	Hobbs-Jefferson	79.0	65.8	9.3	32.72666	-103.123	2320 N. Jefferson St, Hobbs, NM
South-western NM[a]	7E, 350290003	Deming	62.052	53.277	6.966	32.2558	-107.723	310 Airport Road, Deming, NM88030

Annual background is the average of three annual averages of monitoring data from 2018 to 2020. The maximum 1-hour NO_2 concentrations from each of three years were averaged to determine the 1-hour background concentration, using monitoring data from 2018 to 2020.
Refined 1-hour background profiles may be developed using the guidance described in "Refined Background Concentrations", above.
[a]Based on 2013 -2015 averages.

4.4.8 $PM_{2.5}$ Background Concentration

Table 33: $PM_{2.5}$ Background Concentration

Region	ID	Location	24-hour Background 100th%ile (µg/m³)	24-hour Background 98th%ile (µg/m³)	Annual Background (µg/m³)	Latitude	Longitude	Address
Albuquerque	350010023	Del Norte High School	23.8	15.7	5.8	35.1343	-106.5852	4700A San Mateo NE
Albuquerque	350010026	Jefferson	24.3	16.7	6.9	35.1443	-106.6047	3700 Singer
Albuquerque	350010029	South Valley	28.0	21.7	8.5	35.01708	-106.6574	201 Prosperity SE
Albuquerque	350011012	Foothills	25.6	12.2	4.4	35.1852	-106.508	8901 Lowell NE
Albuquerque	350011013	North Valley	28.0	19.7	7.7	35.1932	-106.6138	9819A Second Street NW
South Central	6CM, 350130016	Anthony	39.1	20.7	7.8	32.00361	-106.5992	SE Corner of Anthony Elem. School Yard
South Central[a]	6ZM, 350130021	Sunland Park	25.9	24.3	7.3	31.79611	-106.5839	5935A Valle Vista, Sunland Park
South Central	6ZN, 350130022	US-Mexico Border Crossing	49.7	15.0	6.2	31.78778	-106.683	104-2 Santa Teresa International Blvd, NM
South Central	6Q, 350130025	Las Cruces District Office of NMED	22.7	11.0	5.2	32.32194	-106.7678	2301 Entrada Del Sol, Las Cruces
Eastern NM	5ZS, 350250008	Hobbs-Jefferson	31.0	16.5	7.1	32.72666	-103.1229	2320 N. Jefferson St, Hobbs
4-Corners[b]	1FO, 350450019	Farmington Environment Department Office	14.13	11.77	4.19	36.77416	-108.165	3400 Messina Drive Suite 5000 Farmington
North Central	3ZD, 350550005	Taos	19.4	15.8	5.7	36.3833	-105.5839	123 Camino de Santiago Fire Station, Taos
North Central	3SFA, 350490021	Santa Fe	17.0	9.2	3.7	35.6197	-106.0796	2001 Aviation Drive

[a]Based on 2015-2017 averages.
[b]Based on 2013-2015 averages.

Concentrations are the average of three years of maximum data from 2018 to 2020. Some monitors may not represent background concentrations. Use the highest 98th percentile background concentration from the region in which the facility is located, unless another monitor is more representative of the local area. Refined 24-hour background profiles may be developed using the guidance described in "Refined Background Concentrations", above.

4.4.9 PM_{10} Background Concentration

Table 34: PM_{10} Background Concentration

Region	ID	Location	Annual Background (µg/m³)	24-hour Background Maximum (µg/m³)	24-hour Background Second High (µg/m³)	Latitude	Longitude	Address
Albuquerque	350010023	Del Norte High School	19.9	78.7	58.7	35.1343	-106.5852	4700A San Mateo NE
Albuquerque	350010026	Jefferson	30.0	122.3	100.0	35.1443	-106.6047	3700 Singer
Albuquerque	350010029	South Valley	40.5	216.0	207.7	35.01708	-106.6574	201 Prosperity SE
Albuquerque[a]	35011012	Foothills	15.5	61.5	56.0	35.1852	-106.508	8901 Lowell NE
Albuquerque[a]	350011013	North Valley	28.7	109.0	87.0	35.1932	-106.6138	9819A Second Street NW
4-Corners	1H, 350451005	Shiprock Substation	10.6	98.3	66.0	36.79667	-108.473	Usbr Shiprock Substation (Farmington)
South Central	6CM, 350130016	Anthony	35.8	126.0	117.3	32.003611	-106.5992	SE Corner of Anthony Elem. School Yard
South Central	6ZL, 350130019	Las Cruces City Well #41, Holman Road	24.6	139.3	121.7	32.4248	-106.6747	Las Cruces Well #41
South Central	6ZK, 350130020	Chaparral Middle School	25.3	138.0	133.3	32.041111	-106.4092	680 McCombs, Chaparral
South Central	6ZM, 350130021	Sunland Park	42.3	2435.3	135.7	31.796111	-106.5839	5935A Valle Vista, Sunland Park
South Central	6WM, 350130024	Las Cruces City Well #46	15.6	108.7	99.3	32.278056	-106.8644	South of I-10 at Las Cruces Well #46
Southwestern	7E, 350029003	Deming Airport	29.5	3414.7	123.3	32.2558	-107.7227	310 Airport Road, Deming
Eastern NM[b]	5ZS, 350250008	Hobbs-Jefferson	24.0	100.7	37.3	32.726656	-103.1229	2320 N. Jefferson St, Hobbs
North Central[c]	3HM, 350490020	Santa Fe	9.4	22.7	19.0	35.671111	-105.9536	Runnels Bldg. 1190 St. Francis Dr.
North Central[d]	3ZD, 350055005	Taos	14.2	52.0	40.5	36.383333	-105.5833	Fire Station Santiago Road

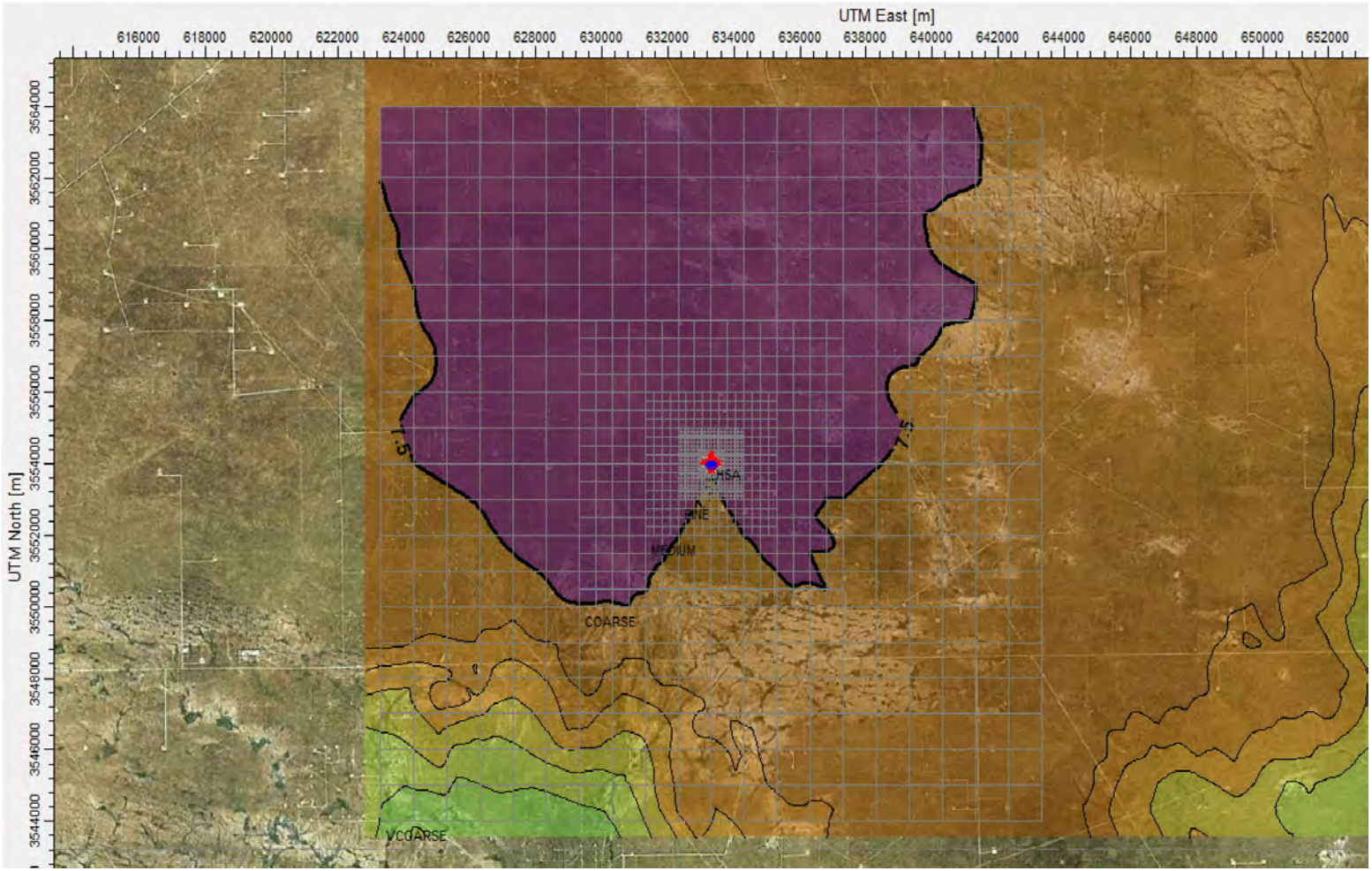
[a]Average of 2019 and 2020.
[b]Based on 2015-2017 averages.
[c]Based on 2012-2014 averages.
[d]Based on 2013-2015 averages.
Concentrations are averaged from 2018 to 2020. Some monitors, such as 350010026 and 350010029, are located near industrial sources or in disturbed areas and do not represent ambient background concentrations.

Refined 24-hour background profiles may be developed using the guidance described in "Refined Background Concentrations", above.

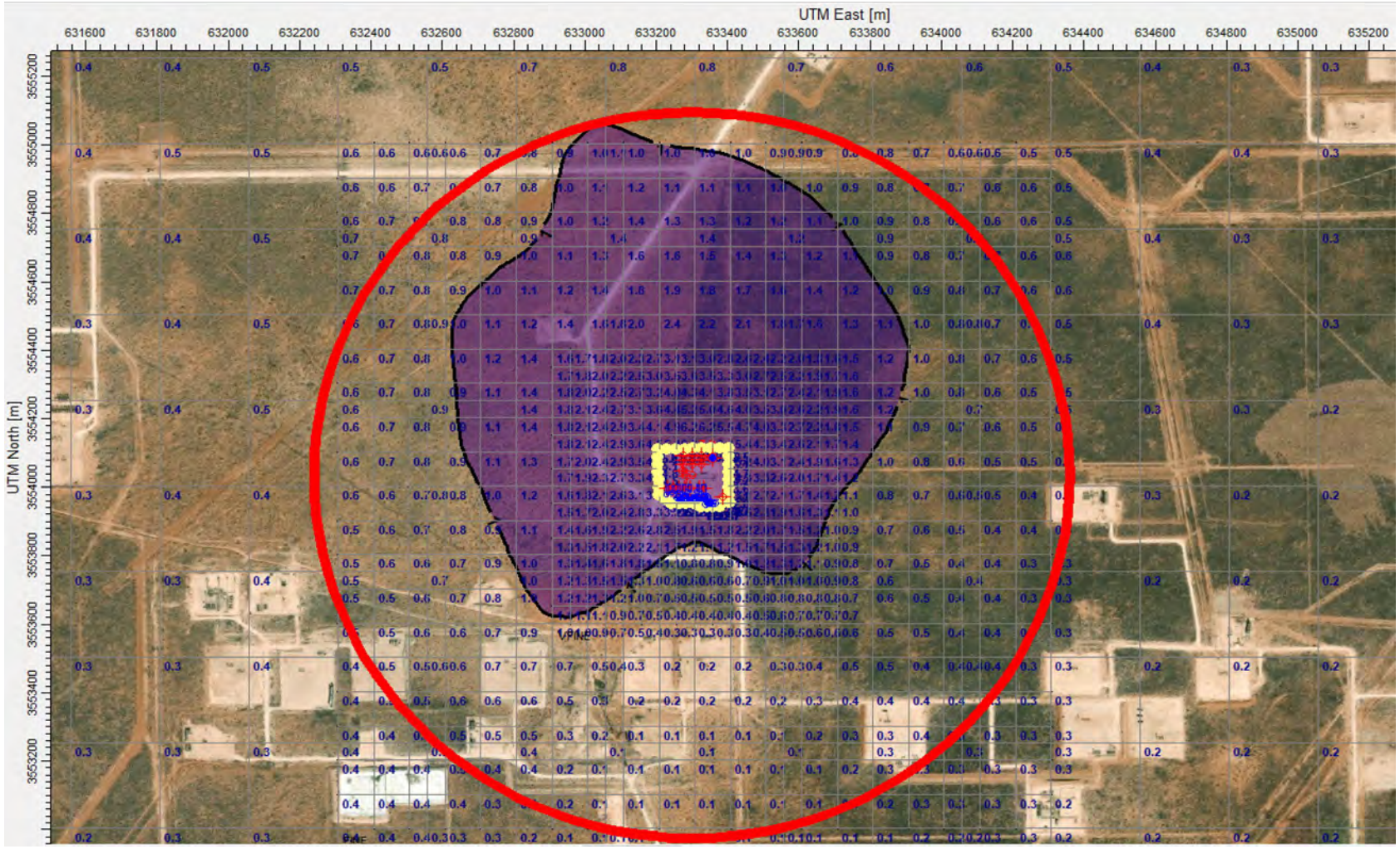
Anomalously high values were eliminated before calculating aggregate concentrations.

Appendix C: Radius of Impact (ROI) - Based on Facility-Only Modeling

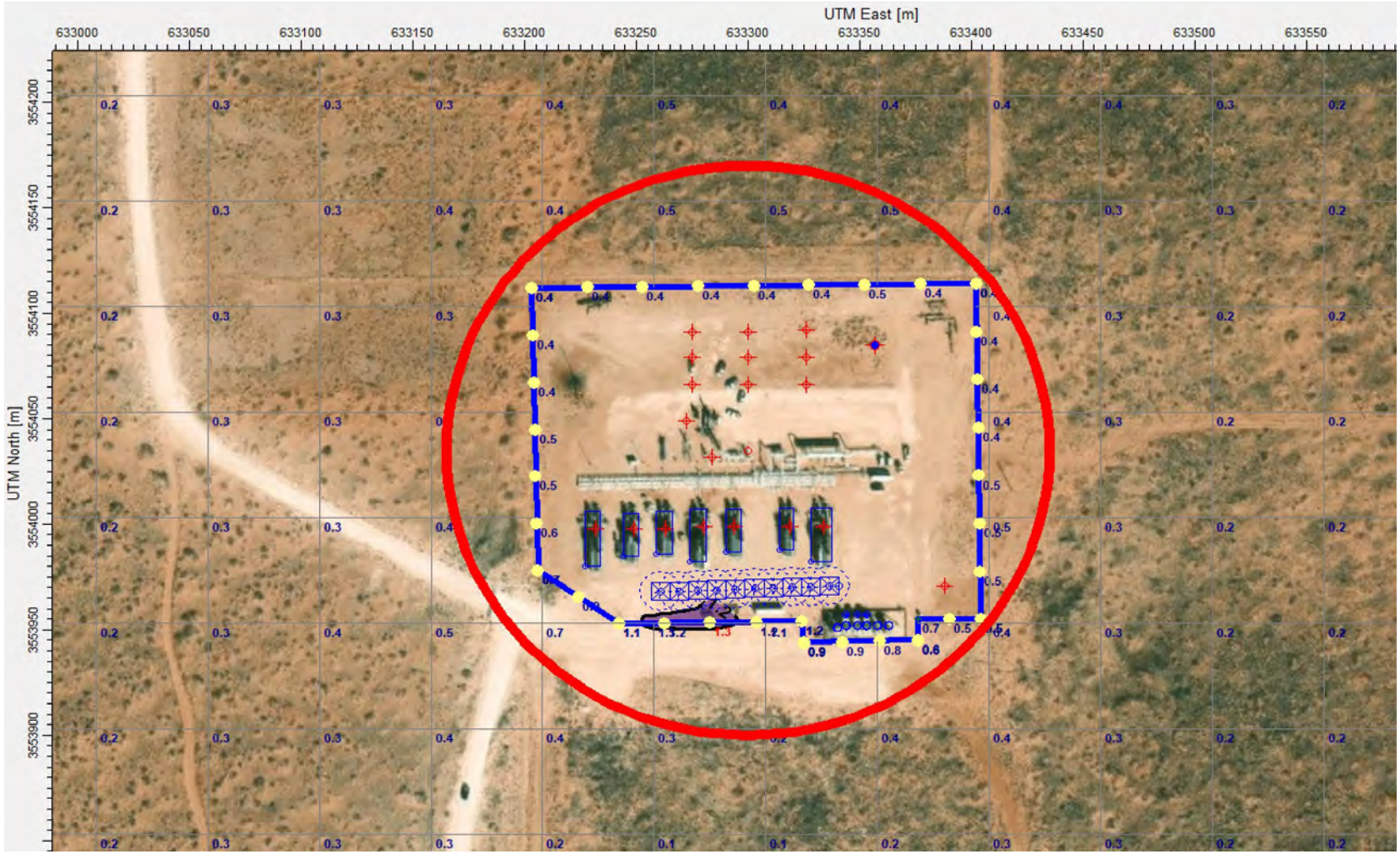
NO2-1HR (FULL GRID – 1,770 receptors)



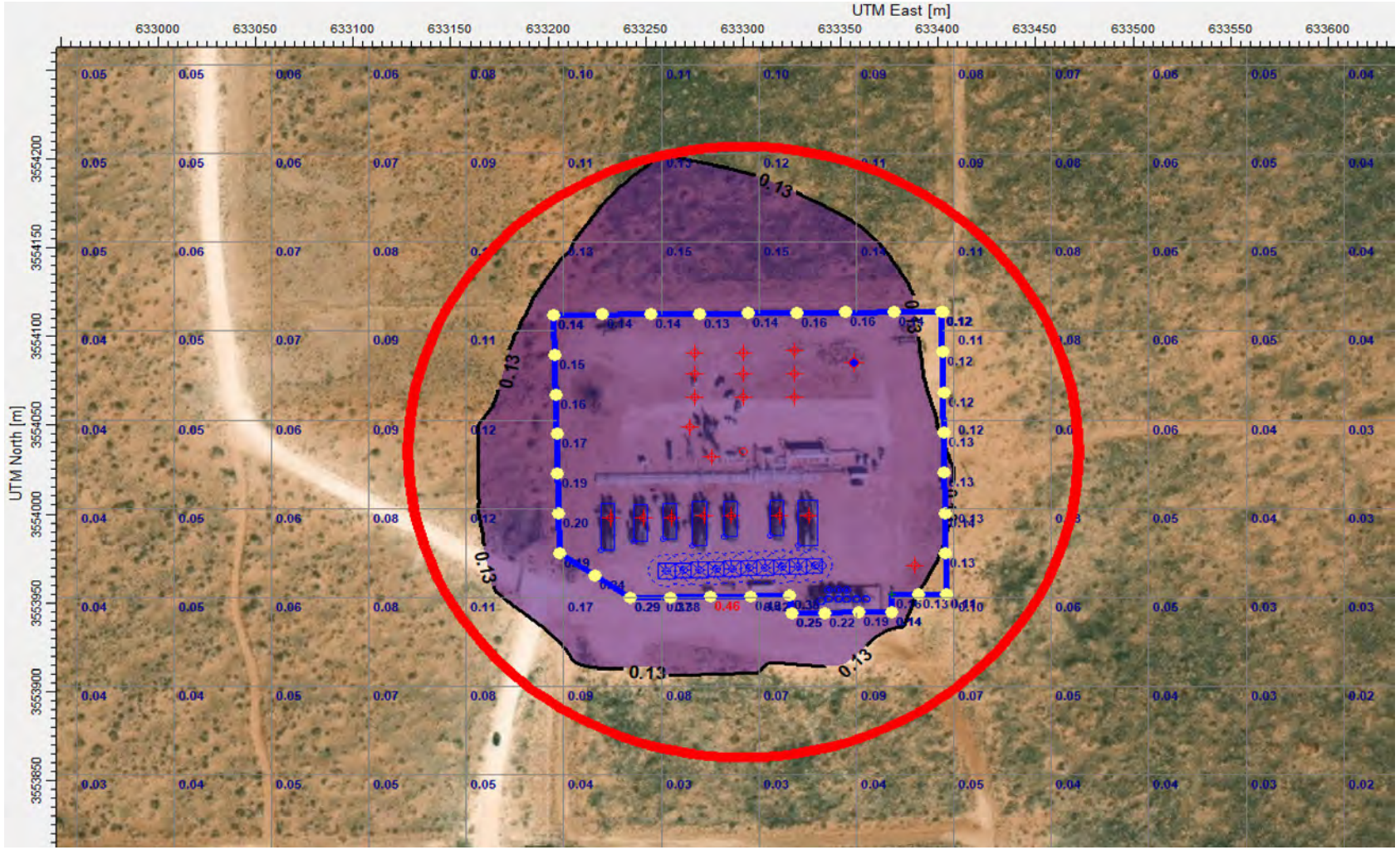
NO2-ANNUAL (1,060 meters – 748 receptors)



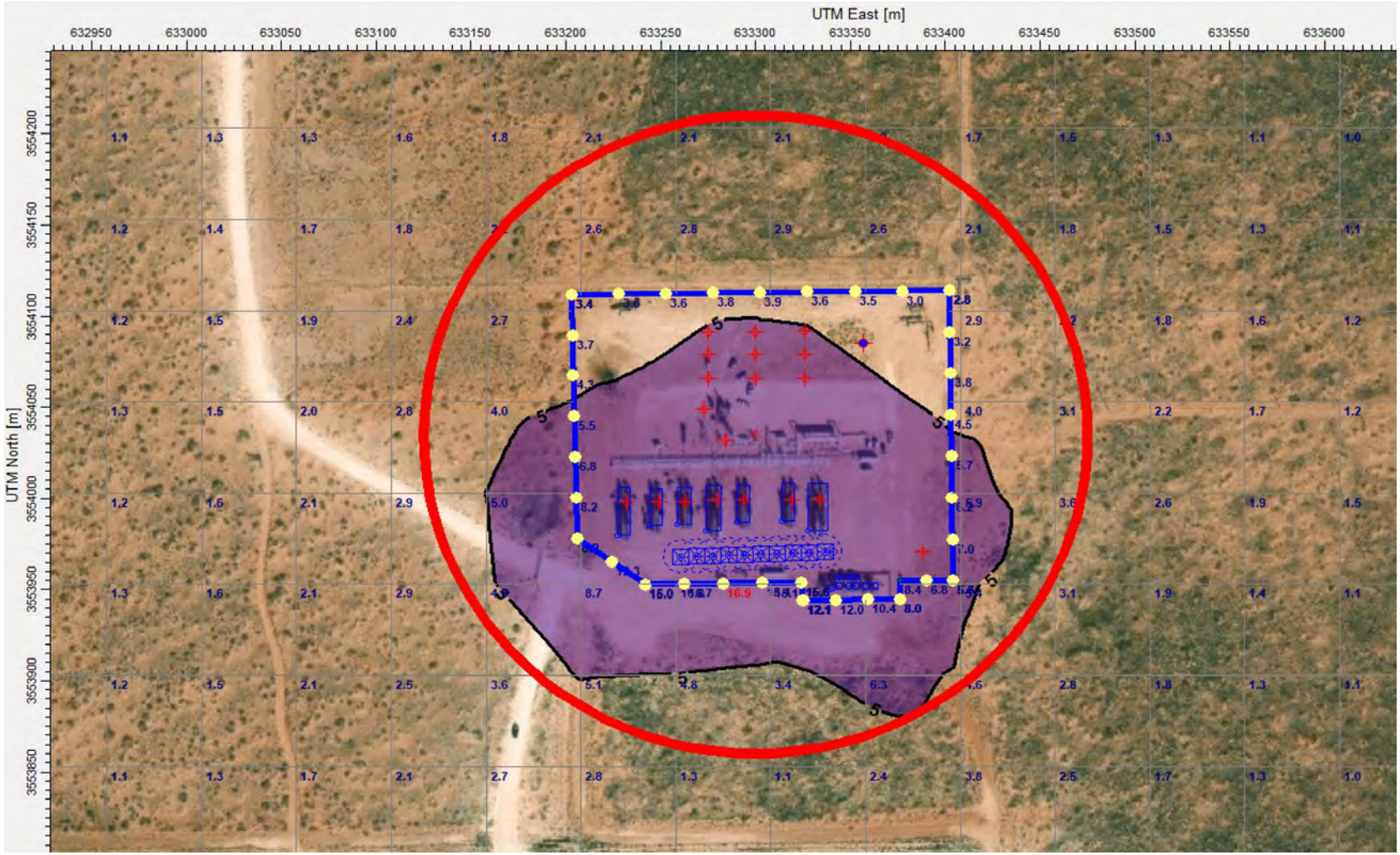
PM2.5-24HR (135 meters – 61 receptors)



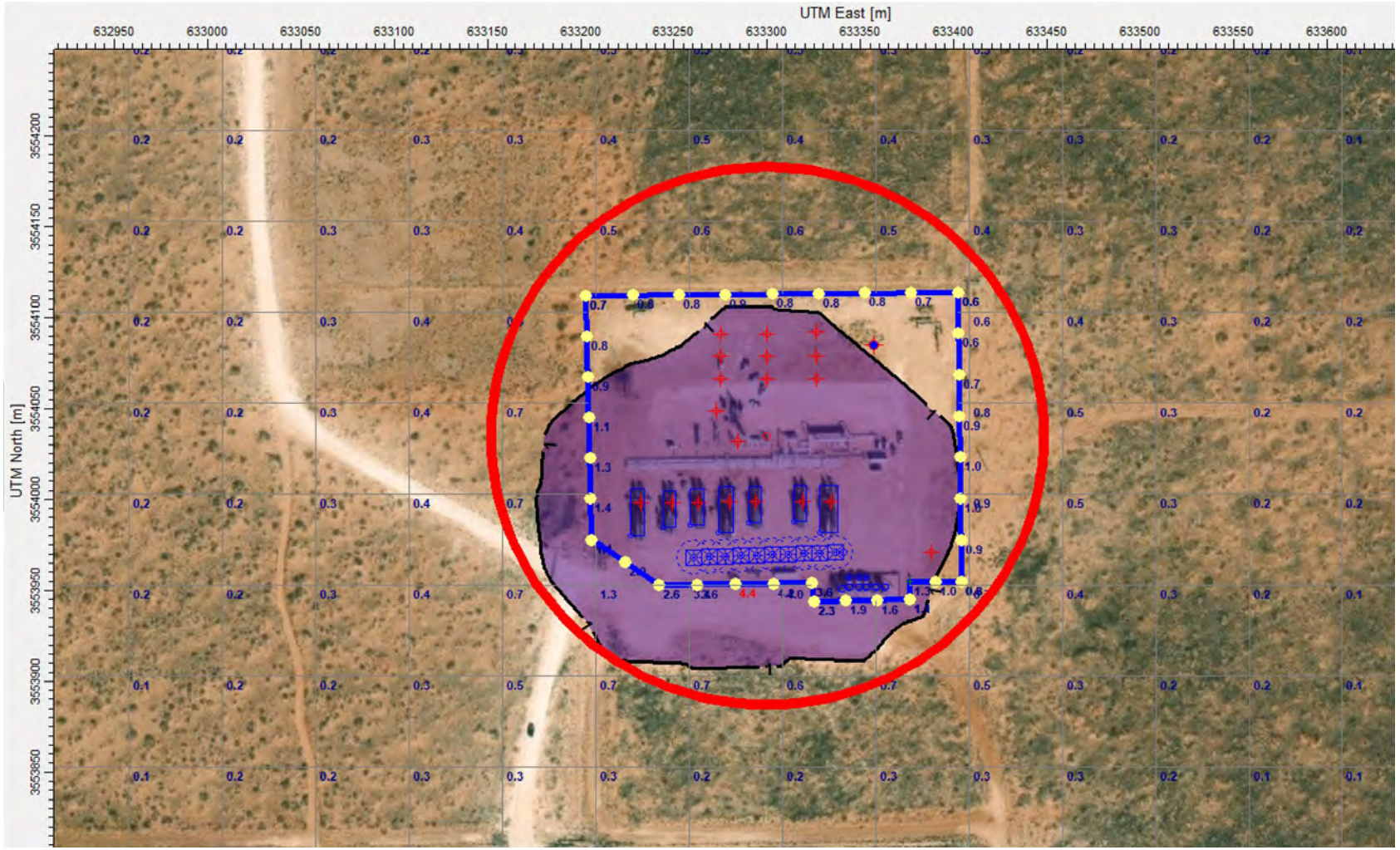
PM2.5-ANNUAL (172 meters – 79 receptors)



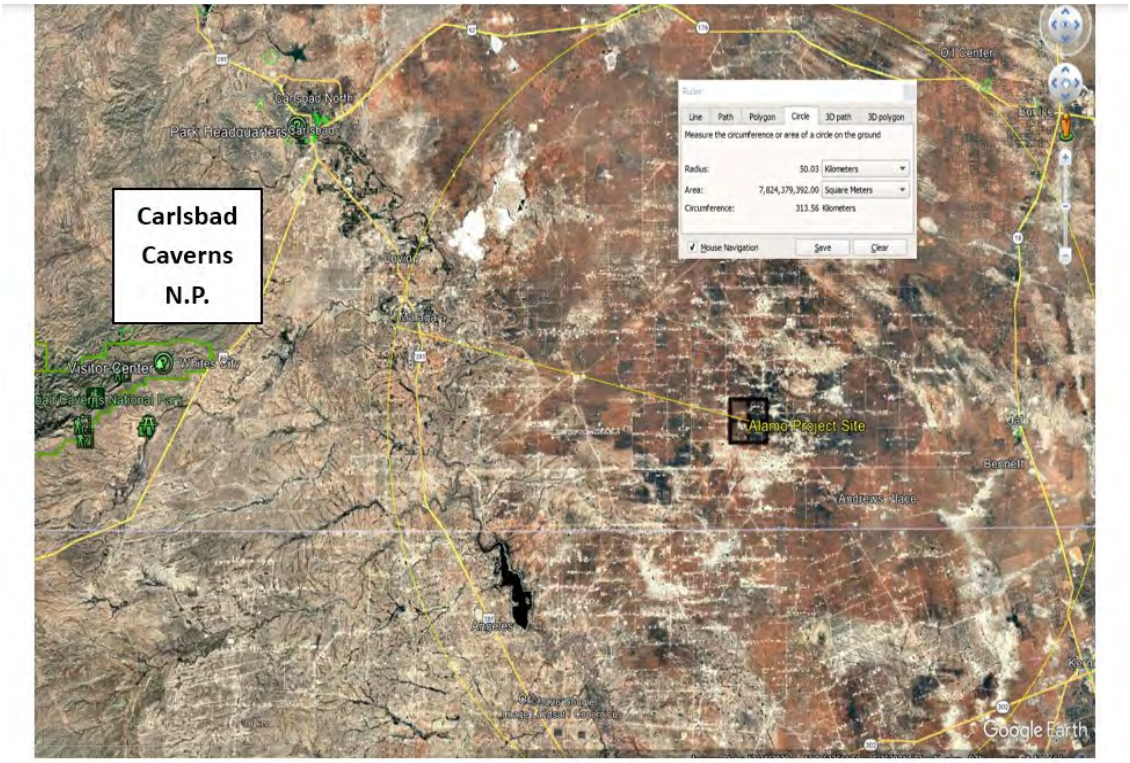
PM10-24HR (175 meters – 80 receptors)

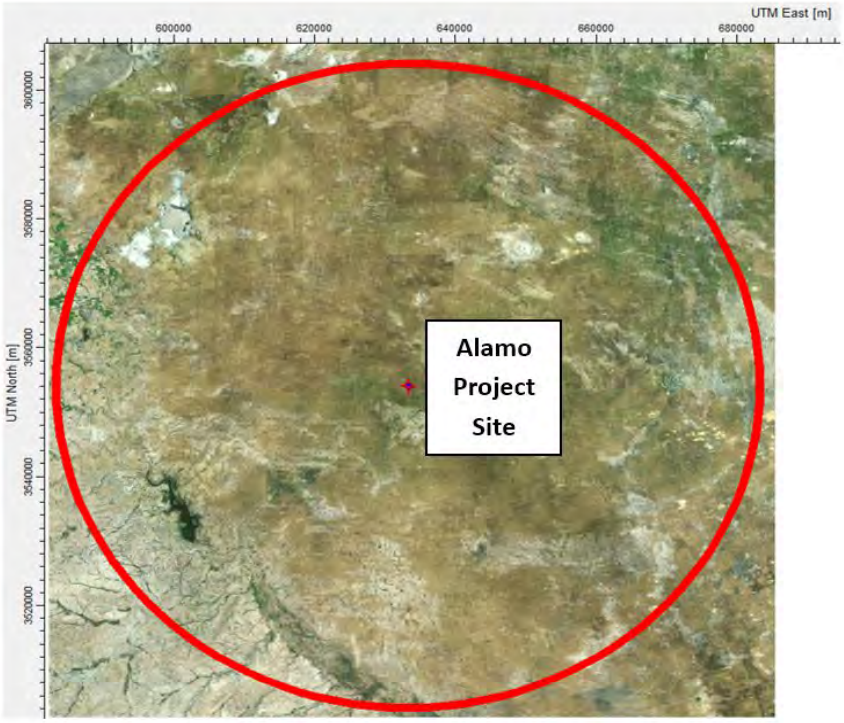


PM10-ANNUAL (148 meters – 66 receptors)



Appendix D: 50 km Distance Ring Used in Class I Modeling Analysis





Appendix E: Digitized AERMOD Model Input/Output Files

1) Significance Impact Analyses (AERMOD-SIL-MODEL-FILES.ZIP)
2) Cumulative NAAQS Analyses (AERMOD-NAAQS-MODEL-FILES.ZIP)
3) Class II Increment Analyses (AERMOD-CLASS-II-MODEL-FILES.ZIP)
4) Class I Modeling Analyses (AERMOD-CLASS-I-MODEL-FILES.ZIP)

Model Protocol for NAAQS/NMAAQS Analysis
Alamo Compressor Station (NMED # 38827)
Lea County, New Mexico

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May 6, 2026

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1.0 Introduction and Facility Overview

The Alamo Compressor Station (Facility) is a natural gas gathering and compression facility owned and operated by ONEOK, Inc (ONEOK). Located in Lea County, New Mexico, approximately 23.3 miles west of Jal, the Alamo Compressor Station facilitates the transport of natural gas and manages associated byproducts. Specifically, the facility collects and stores condensate and produced water generated from inlet separation and compression activities, which are subsequently transported offsite via truck. The facility is situated at an elevation of approximately 3,518 feet above mean sea level, with approximate UTM coordinates of 633,308m E and 3,554,003m N (WGS84, Zone 13).

ONEOK is submitting this application pursuant to 20.2.72.200.A NMAC for an Initial NSR Permit. The facility currently operates under General Construction Permit (GCP) Oil and Gas #8176, which authorizes a suite of equipment including seven Caterpillar compressor engines (models 3612A4, 3612 TALE, and 3608 A4), a vapor recovery unit (VRU) engine, two emergency generators, a TEG dehydrator with a reboiler, and various storage tanks and separation units. Additional emission sources include fugitive leaks, malfunctions, loading operations, and startup, shutdown, and maintenance (SSM) activities.

1.1 Project Scope and Proposed Modifications

With this Initial NSR application, ONEOK proposes to expand the facility's operational capacity through the addition of the following equipment:

- Three (3) Arrow VRG 330 fin fan engines;
- Three (3) Caterpillar G3412 TA natural gas-fired generators;
- Three (3) 100 gallons/minute Amine Units and associated reboilers; and
- One (1) Vapor Combustion Unit (VCU-1) and two (2) Enclosed Combustion Devices (ECD-1; ECD-2) to manage waste gas streams.

1.2 Modeling Requirements and Compliance Objectives

The primary objective of this modeling analysis is to demonstrate that the proposed modifications will comply with all applicable air quality standards. This includes the National Ambient Air Quality Standards (NAAQS), New Mexico Ambient Air Quality Standards (NMAAQS), and PSD Increment standards. While the facility's current potential to emit classifies it as a minor source, the modeling will include a comparison of these pollutants against these standards where applicable.

The analysis addresses the following pollutants and averaging times:

- Carbon Monoxide (CO) (1-hour and 8-hour)
- Nitrogen Dioxide (NO_2) (1-hour, 24-hour, annual)
- Sulfur Dioxide (SO_2) (1-hour, 3-hour, 24-hour, and annual)
- Fine Particulate ($PM_{2.5}$) (24-hour and annual) – when applicable
- Fine Particulate (PM_{10}) (24-hour and annual) – when applicable

In accordance with NMED guidelines, certain storage tanks (compressor oil, antifreeze, and methanol) are classified as insignificant sources as they only emit VOCs, which do not require dispersion modeling for this application.

2.0 Proposed Modeling

2.1 Model Selection and Application

To evaluate the potential air quality impacts of the existing and proposed generators, flares and haul roads, the AERMOD model (version 24142) will be utilized. In accordance with current EPA Air Quality Modeling Guidelines (USEPA, 2025), AERMOD is the "*preferred*" model for assessing impacts within 50 km of a source. Its selection is specifically justified by its ability to simulate the diverse emission profiles of this facility, which include high-buoyancy thermal plumes (flares), high-velocity mechanical exhausts (generators), and low-level ground releases (haul roads).

The model will be used to predict ground-level concentrations for CO, NO_2, SO_2, $PM_{2.5}$, and PM_{10} to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and PSD increment standards. AERMOD can handle "source-grouping," allowing the model to simultaneously calculate the cumulative impact of both existing and proposed units. This ensures that the proposed expansion not only meets the NAAQS (which protect public health) but also preserves the "*increment*" (the maximum allowable increase in concentration) to ensure long-term air quality stability in the region.

2.2 Facility Source Emissions and Parameters

A geographical layout of the very remote, rural dominated environment in the vicinity of the Alamo Compressor Station facility boundary along with the existing and proposed onsite emission sources, enclosures/structures, and associated storage tanks is presented in Figure 1.

Figure 1: Alamo Facility, Emission Sources and Buildings/Structures



Emission sources at the facility will be characterized based on their physical release dynamics. The electric generators will be modeled as standard point sources, utilizing stack parameters (height, diameter, exit temperature, and velocity) derived from manufacturer specifications. The two flares will be characterized using the pseudo-point source methodology outlined in EPA's screening model documentation (US EPA, 1992; US EPA, 2021). By calculating an effective stack diameter and effective release height based on the net heat release, the AERMOD model will accurately account for the significant thermal buoyancy and plume rise inherent to flare combustion. The fugitive particulate haul road emission source is represented by a continuous series of Line-Volume sources near the southern facility boundary.

A summary table of the facility sources, source type, source parameters and potential-to-emit emission rates is provided in Table 1. All sources are conservatively assumed to operate continuously throughout the full year (8760 hours/year) for this analysis, although the ECD-1 flare does operate intermittently around 5% of the time, which could be accounted for.

Table 1: Summary of Alamo Facility Sources and Emission Rates

Type	ID	Desc	UTM-X	UTM-Y	Base_Elev	Height	Diameter	Exit_Velocity	Exit_Temp	Release_Type	Emission_Rate (grams/sec)				
			(meters)	(meters)	(meters)	(meters)	(meters)	(m/sec)	(°K)		CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
POINT	E1	Comp. Engine 1 - CAT G3608 A4	633334	3553999	1037.26	7.53	0.30	169.59	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E2	Comp. Engine 2 - CAT G3608 A4	633319	3553999	1037.44	7.53	0.30	169.59	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E3	Comp. Engine 3 - CAT G3612 A4	633294	3553999	1037.44	9.14	0.51	251.55	724.82	VERTICAL	0.4171	0.4171	0.0006	0.0010	0.0013
POINT	E4	Comp. Engine 4 - CAT G3612 A4	633280	3553999	1037.67	9.14	0.51	251.55	724.82	VERTICAL	0.4171	0.4171	0.0006	0.0010	0.0013
POINT	E6	Comp. Engine 6 - CAT G3608 A4	633263	3553998	1037.98	7.53	0.30	169.59	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E7	Comp. Engine 7 - CAT G3608 A4	633249	3553998	1038.10	7.53	0.41	169.59	714.82	VERTICAL	0.2432	0.2772	0.0004	0.0007	0.0013
POINT	E8	Comp. Engine 8 - CAT G3612 TALE	633232	3553998	1037.94	9.14	0.51	243.47	720.93	VERTICAL	0.4171	0.4171	0.0044	0.0010	0.0025
POINT	E9	Fln Fan Engine 1 - Arrow VRG330	633300	3554066	1038.23	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	E10	Fln Fan Engine 2 - Arrow VRG330	633300	3554079	1038.30	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	E11	Fln Fan Engine 3 - Arrow VRG330	633300	3554091	1038.50	4.57	0.08	42.03	943.15	VERTICAL	0.0202	0.0378	0.0003	0.0003	0.0000
POINT	GEN3	Gen. Engine 3 - CAT G3412 TA	633326	3554066	1038.15	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	GEN4	Gen. Engine 4 - CAT G3412 TA	633326	3554079	1038.30	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	GEN5	Gen. Engine 5 - CAT G3412 TA	633326	3554092	1038.51	7.01	0.20	37.44	807.04	VERTICAL	0.0895	0.0743	0.0001	0.0002	0.0003
POINT	H2	Glycol Reboiler	633284	3554032	1037.83	6.86	0.41	3.05	1033.15	VERTICAL	0.0126	0.0151	0.0013	0.0013	0.0001
POINT	H3A	Amine Reboiler 1A	633275	3554066	1038.26	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
POINT	H4A	Amine Reboiler 2A	633275	3554079	1038.24	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
POINT	H5A	Amine Reboiler 3A	633275	3554091	1038.45	8.66	0.61	3.05	427.59	VERTICAL	0.0275	0.0328	0.0025	0.0025	0.0002
FLARE [a]	VCU1	Vapor Combustor Unit	633357	3554085	1038.12	15.93	0.74	20.00	1273.00	VERTICAL	0.6149	0.1436	0.0000	0.0000	0.3528
FLARE [a]	ECD1	Enclosed Combustion Unit	633388	3553971	1037.13	11.40	0.31	20.00	1273.00	VERTICAL	0.1147	0.0580	0.0000	0.0000	0.0000
FLARE [a]	ECD2	Enclosed Combustion Unit	633273	3554049	1038.18	6.68	0.11	20.00	1273.00	VERTICAL	0.0126	0.0063	0.0000	0.0000	0.0000

Type	ID	Desc	UTM-X	UTM-Y	Base_Elev	Height	Plume Width	Emission_Rate (grams/sec)				
			(meters)	(meters)	(meters)	(meters)	(meters)	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
LINE_VOLUME	UR01	Haul Road - 10 Adjacent Segments	633341	3553968	1036.99	6.22	8.44	0.0000	0.0000	0.0023	0.0233	0.0000
			633257	3553961	1037.48							

[a] The flare effective heights and diameters are calculated based on their total heat release in cal/sec (US EPA, 2016; US EPA, 1992).

2.3 Modeling Applicability and Emission Thresholds

In accordance with the New Mexico Environmental Department (NMED) Air Quality Bureau Modeling Guidelines (NMED, 2024), a dispersion modeling analysis is required for any regulated pollutant whose potential emission rate (PER) exceeds the department's established hourly modeling thresholds. For this stand-alone compressor facility, the applicability determination is based on the maximum potential hourly emission rates (lb/hour) for all site-wide sources, including engines, reboilers, and fugitive components.

As demonstrated in Table 2, the facility's potential emissions for NO_2, CO, SO2, PM2.5, and PM10 exceed the NMED hourly modeling triggers. Consequently, these pollutants will be included in the air dispersion modeling analysis to demonstrate compliance with applicable NAAQS and NMAAQS.

Table 2: Modeling Applicability Comparison

Pollutant	Facility Potential (tpy)	Estimated Peak (lb/hr)	NMED Trigger (lb/hr)	Modeling Required?
CO	118	26.90	2	Yes
NO_2	105	23.95	0.025	Yes
SO_2	13	2.89	0.025	Yes
$PM_{2.5}$	0.7	0.15	0.015	Yes
PM_{10}	1	0.31	0.05	Yes

2.4 Treatment of NO_2 Chemical Transformation

In accordance with the Guideline on Air Quality Models (US EPA, 2025), the facility will utilize a tiered approach for modeling. While a Tier 1 analysis assumes a 100% conversion of NO_x to NO_2, this is physically unrealistic and creates an "*over-prediction*" bias that can lead to unnecessary permitting delays. To provide a more representative assessment of air quality impacts, the facility will utilize the Ambient Ratio Method 2 (ARM2) as the primary Tier 2 regulatory option.

ARM2 provides a refined, non-linear conversion estimate while adhering to regulatory "*safety*" caps. Per EPA guidance, the model will be configured with national default ratios:

- Minimum NO_2/NO_x Ratio: 0.5 (the regulatory default floor).
- Maximum NO_2/NO_x Ratio: 0.9 (the regulatory default ceiling).

2.5 Building Downwash and Aerodynamic Effects

To account for the potential "*grounding*" of plumes caused by aerodynamic turbulence, the project will incorporate Building Downwash effects. All significant onsite structures, including generator enclosures, auxiliary buildings, and storage tanks will be processed through the BPIPPRM (version 04274) (Building Profile Input Program - Plume Rise Model Enhancements). This analysis generates direction-specific building dimensions that AERMOD uses to simulate the downward force exerted on plumes as they pass through the wake of a structure. This ensures that the model provides a conservative estimate of localized concentrations near the facility fence line.

2.6 Terrain Processing and Receptor Grid

The complex interaction between the plume and the surrounding geography will be managed through AERMAP (version 24142) terrain processing. Base elevations for all sources and receptors, as well as critical hill height scales, will be determined using high-resolution data from the USGS National Elevation Dataset (NED) data (typically 1/3 arc-second or ~10-meter resolution).

To ensure the Maximum Predicted Impact (MPI) is captured with high precision, a nested, multi-tier receptor grid will be employed. This strategy acknowledges that pollutant concentrations typically exhibit a steep gradient near the source, requiring finer resolution to pinpoint the exact location of the highest concentration.

- Fenceline and Near-Field (out to 800 meters): The most critical area—the facility boundary—will be modeled with a 25-meter spacing. This high-density "*very fine*" resolution is designed to capture the localized grounding of plumes caused by building downwash and the initial dispersion of low-level sources like haul roads. The 50-meter spaced grid will then extend out to 800 m.
- Mid-Field (800 meters out to 6 km): As the grid extends out from 800 m to 6 km, the grid resolution will transition from 100-meters out to 3 km distance and 250-meters out to 6 km distance to capture the maximum impacts from the taller generator stacks and high-buoyancy flares, which often reach the ground further downwind than fugitive sources.
- Far-Field (6 km out to 15 km): The grid extends to a 15 km radius with a 500-meter spacing. This ensures that even in highly stable atmospheric conditions where a plume might travel long distances without minimal dispersion, compliance with the NAAQS is verified across the entire modeling domain.

3.0 Meteorological Data Preparation

The dispersion modeling analysis will utilize five years of sequential meteorological data (e.g., 2020–2024) to characterize the atmospheric transport and diffusion at the Alamo Compressor Station. Surface observations will be sourced from the Hobbs/Lea County Regional Airport (KHOB, WBAN: 23051), while concurrent upper air data will be retrieved from the Midland, TX (KMAF, WBAN: 23023) NWS station. These stations are representative of the Lea County region's semi-arid, high-plains climatology.

The latest available meteorological data will be downloaded from the NMED modeling web page: https://www.env.nm.gov/air-quality/modeling-publications/. If it is determined that this NMED meteorological data has not been process with the latest version of AERMET (version 24142), we request the option to process the data using that most recent AERMET version.

A primary focus of using this latest version of AERMET is to incorporate the latest model updates regarding the refined handling of stable, low wind speed conditions, which often yield the highest predicted concentrations in rural New Mexico. The analysis will incorporate the ADJ_U* beta option in Stage 3. This adjustment addresses the tendency of the AERMOD model to over-predict concentrations during stable conditions with light winds by adjusting the friction velocity (u_*) based on the surface roughness length (z_0). Given the lack of site-specific turbulence measurements (e.g., sigma-theta), the ADJ_U* option provides a scientifically robust method to prevent the underestimation of horizontal plume spread under low-wind conditions.

3.1 Determination of Surface Characteristics via AERSURFACE

Surface parameters—Albedo, Bowen Ratio, and Surface Roughness (z_0)—will be determined using AERSURFACE (version 24142). These parameters are critical for the calculation of the planetary boundary layer (PBL) parameters used by AERMOD.

- **Surface Roughness (z_0)**: Calculated within a 1-km radius centered on the Hobbs NWS anemometer. The site will be evaluated for "*temporal*" consistency and potential land-cover changes over the five-year period.
- **Albedo and Bowen Ratio**: Calculated over a larger 10km by 10km area. The Bowen Ratio will be adjusted seasonally based on precipitation data for Hobbs to characterize the "*moisture regime*" (Average, Dry, or Wet) relative to the 30-year climatological norm.
- **Sectoring**: To account for variations in land use, will be determined using 12 equal 30-degree sectors, ensuring that the influence of any nearby airport infrastructure versus open scrubland is accurately weighted.

4.0 Multi-Tiered Modeling Approach

4.1 Significant Impact Analysis (SIA) Tiering

The modeling will be conducted using a tiered approach to determine the depth of the required analysis. Initially, a Project-Only Significant Impact Analysis will be performed for CO, NO_2, SO_2. The maximum predicted concentrations from the existing and proposed sources will be compared against the EPA-recommended Significant Impact Levels (SILs).

- Tier 1 (Screening): If the maximum impact for a specific pollutant and averaging period is below the applicable SIL (see Table 3), the project will be considered to have a *de minimis* impact, and no further modeling (i.e., cumulative analysis) will be required for that pollutant.
- Tier 2 (Refined Cumulative Analysis): Should the project-only impacts exceed the SIL, a Significant Impact Area (SIA) will be defined for each affected pollutant. A cumulative increment/NAAQS analysis will then be performed within the SIA, incorporating an inventory of nearby competing sources and representative ambient background concentrations to demonstrate that the total concentration remains within the NAAQS/NMNAAQS (see Table 4). The yellow highlighted concentrations and averaging periods in that table will be modeled, as suggested by the NMED surrogate summary.

Table 3: Federal and New Mexico Significant Impact Levels (SILs)

Pollutant	Averaging Time	Federal/NM SIL Value ($\mu g/m^3$)
CO	1-hour	2,000
	8-hour	500
NO_2	1-hour	7.5
	Annual	1
SO_2	1-hour	7.8
	3-hour	25
	24-hour	5
	Annual	1

Table 4: National and New Mexico Ambient Air Quality Standards (NAAQS & NMAAQS)

Pollutant	Averaging Time	Federal NAAQS	New Mexico NMAAQS	Form / Statistical Basis
CO	1-hour	40,000	15,000	Not to be exceeded > once per year
	8-hour	10,000	9,960	Not to be exceeded > once per year
NO_2	1-hour	188	—	98th percentile of 1-hour daily max
	24-hour	—	188	Not to be exceeded > once per year
	Annual	100	94	Annual Mean
SO_2	1-hour	1,300	—	99th percentile of 1-hour daily max
	24-hour	—	262	Not to be exceeded > once per year
	Annual	196	52	Annual Mean

Standard not Modeled	Surrogate that Demonstrates Compliance
CO 8-hour NAAQS	CO 8-hour NMAAQS
CO 1-hour NAAQS	CO 1-hour NMAAQS
NO_2 annual NAAQS	NO_2 annual NMAAQS
NO_2 24-hour NMAAQS	NO_2 1-hour NAAQS
O_3 8-hour	Regional modeling
SO_2 annual NMAAQS	SO_2 1-hour NAAQS
SO_2 24-hour NMAAQS	SO_2 1-hour NAAQS
SO_2 3-hour NAAQS	SO_2 1-hour NAAQS

Note, based on the surrogate table shown above (copied from Table 19 of the NMED 2024 modeling guidelines (NMED, 2024)), the State utilizes a surrogacy approach to streamline compliance for SO_2 and NO_2, based on the principle that the 1-hour primary standards are the most stringent and "*controlling*" limits. For SO_2, a demonstration of compliance with the 1-hour primary NAAQS (1,300 $\mu g/m^3$) is accepted as a surrogate to show compliance with the new secondary annual NAAQS (196 $\mu g/m^3$); the EPA's technical justification is that any emission profile clean enough to pass the high-intensity 1-hour test will mathematically ensure the much lower annual average is protected. Similarly, for NO_2, while the annual standard remains in effect, the 1-hour primary standard (188 $\mu g/m^3$) is the more restrictive "*driver*" of the analysis.

5.0 Background Air Quality Monitoring Site Selection and Analysis

For this analysis, data from the most recent three-year period (2023–2025) of quality-assured monitoring will be utilized. In accordance with the NMED Air Dispersion Modeling Guidelines (NMED, 2024) and EPA Appendix W, a comprehensive review of the current NMED Air Quality Bureau and EPA AQS monitoring networks for CO, NO_2, and SO_2. This review confirms that there are no active monitoring stations for CO or SO_2 currently located within the Southeastern New Mexico region (AQCR-5; EPA region 155).

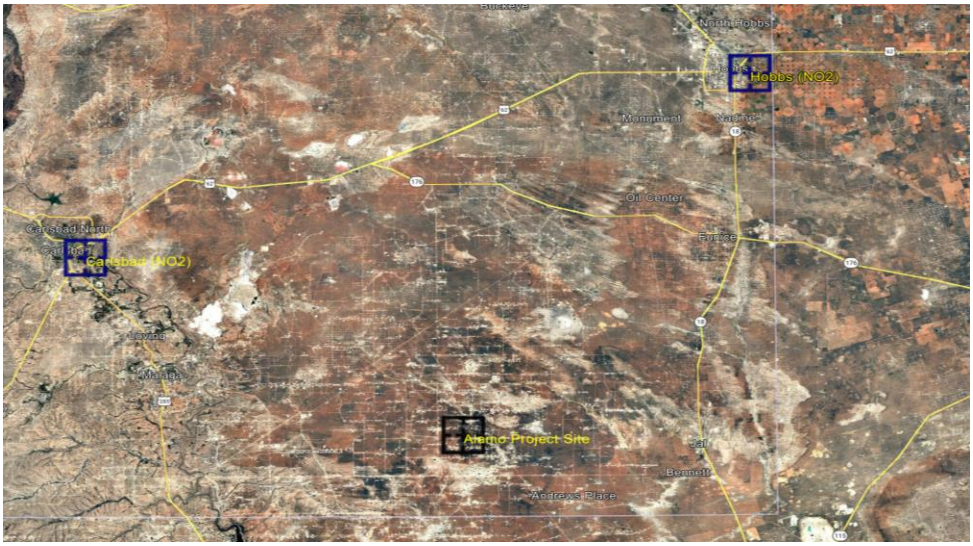
Only NO_2 is being monitored within the SE New Mexico region at these two monitoring sites:

- The Hobbs "*Jefferson*" Monitor (AQS Site ID: 35-025-0008) is situated to the Northeast of the primary oil and gas activity in the lower ONEOK Basin. It captures the urban-influenced background of Hobbs as well as the transport from the surrounding oil fields.
- Carlsbad "*Priest Canyon*" or "*Solmar*" Monitors (AQS Site ID: 35-015-0005) are located to the Northwest of the project site in Eddy County. They are critical because they represent the upwind or cross-wind regional background for the basin.

Given that the project site is located in a rural area dominated by natural gas compression and production, the two monitors located in Hobbs (Jefferson St.) and Carlsbad are considered the most representative NO_2 background sites for this facility, as they capture the regional atmospheric chemistry and emission influences characteristic of the ONEOK Basin oil and gas production activities.

The relative locations of these two NO_2 monitors to the Alamo project site are presented in Figure 2.

Figure 2: Background NO_2 Monitoring Sites Locations Relative to Project Site



The Hobbs (Jefferson St.) monitor (AQS Site ID: 35-025-0008) is the most geographically and operationally representative site for the project for NO_2. For the 1-hour NAAQS, the background value is derived from the 3-year average of the 98th percentile of the daily maximum 1-hour concentrations for the period 2023–2025 (see Appendix B). The calculated value of 70.30 $\mu g/m^3$ from the Hobb monitoring site conservatively reflects the influence of regional oil and gas combustion sources and provides a realistic baseline for the cumulative analysis. Similarly, the annual average of 10.55 $\mu g/m^3$ will be used to demonstrate compliance with the annual NAAQS, which remains significantly below the regulatory limit of 100 $\mu g/m^3$ (approximately 53 ppb). Table 5 present the complete summary of the proposed background NO_2 concentrations to be used in this modeling analysis.

Table 5: Summary of Proposed Background Concentrations for NO_2

Pollutant	Averaging Period	Monitoring Source	Value ($\mu g/m^3$)	Rationale
NO_2	1-Hour	Hobbs (Jefferson St.)	70.30	3-yr Avg 98th Percentile
NO_2	Annual	Hobbs (Jefferson St.)	10.55	3-yr Annual Average

Should the initial cumulative analysis, that would include these proposed background concentrations, indicate potential exceedances, a refined background approach may be employed. This refinement would involve using temporally varied background arrays (e.g., month-by-hour or season-by-hour) to more accurately reflect the diurnal and seasonal fluctuations in regional emissions and atmospheric stability, ensuring a more realistic compliance demonstration.

5.1 Proposed Background Values and Refinement Methodology

As stated earlier, a comprehensive review of the current NMED Air Quality Bureau and EPA AQS monitoring networks confirms that there are no active monitoring stations for CO or SO_2 located within the Southeastern New Mexico region (AQCR-5; EPA 155). Due to this regional data gap, localized design values for these two pollutants cannot be calculated for the project area in Lea County. To address this deficiency for CO or SO_2, the applicant proposes the following surrogate methodologies in accordance with historical NMED preferences for the Permian Basin.

In accordance with the latest New Mexico Modeling Guidelines (NMED, 2024), we will submit a request for offsite source retrieval from the NMED Modeling Section. We will provide the facility's UTM coordinates and the pollutants of interest (e.g., CO and SO_2). Each of these offsite sources within this set will be reviewed for the determination of inclusion or exclusion based on the following suggested screening criteria:

- For each offsite source, we will calculate the distances (in km) from the center of the Alamo Project Facility.
- The emission rates will be converted to tons/year if not already given in those units by assuming constant emissions throughout the year.
- A source will be eliminated from the cumulative analysis if the emission rate (tons/year) is less than 20 times the distance (in km).
- Exceptions to this will be any offsite sources that are “up-valley” of the Alamo Facility if they marginally exceed this 20D test.
- Source parameters for those sources determined to be included in the cumulative analysis we be reviewed for meeting established criteria for exit velocities and temperatures and either modified or flagged for further review or elimination.
- Any of these offsite sources chosen for inclusion with known buildings associated with them will also be added to the modeling using BPIPPRM.

6.0 Class I Areas Analysis

Since the nearest Class I area is Carlsbad Caverns National Park, at 74.2 km from the facility, the Class I Area Analysis is not applicable since it is beyond 50 km distance. However, special runs using a ring of receptors set at 50 km could be performed, if required, as a surrogate for the determination of potential Class I impact.

7.0 Summary and Approval of Modeling Protocol

ONEOK, Inc (ONEOK) provides this preliminary protocol to facilitate a collaborative review with NMED. We look forward to NMED's formal concurrence on these methodologies to ensure the subsequent analysis meets all regulatory expectations. To maintain the project's construction schedule, ONEOK respectfully requests a written response within 30 days. All modeling input/output files, meteorological/terrain processing data, and the final report will be submitted to the NMED.

8.0 References

New Mexico Environment Department (NMED), 2025. *Air Quality Bureau 2025 Annual Network Review.* July 1, 2025. Santa Fe, NM.

New Mexico Environment Department (NMED), 2024. *Air Dispersion Modeling Guidelines*. Air Quality Bureau. Revised July 11, 2024. Santa Fe, NM. [https://www.env.nm.gov/air-quality/wp-content/uploads/sites/2/2024/09/NM_AirDispersionModelingGuidelines_11July2024.pdf]

U.S. Environmental Protection Agency, 2025. *Guideline on Air Quality Models*. 40 CFR Part 51, Appendix W. U.S. Environmental Protection Agency. Revised January 2025.

U.S. Environmental Protection Agency, 2024. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. Publication No. EPA-454/B-24-001. Office of Air Quality Planning and Standards, Air Quality Assessment Division, Research Triangle Park, NC.

U.S. Environmental Protection Agency, 2021. User's Guide for the AERSCREEN Dispersion Modeling Program. Publication No. EPA-454/B-21-005. Office of Air Quality Planning and Standards, Research Triangle Park, NC. (Contains the primary formulas for the effective heights and diameters for the modeling of flares.)

U.S. Environmental Protection Agency, 1992. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised. Publication No. EPA-454/R-92-019. Office of Air Quality Planning and Standards, Research Triangle Park, NC. (Original methodology for flare buoyancy.)

Appendix A: Calculations of Effective Diameter and Heights for the Flares

In **EPA-454/B-21-005** (the AERSCREEN User's Guide), the equations for calculating the pseudo-parameters for a flare are found in the technical discussion regarding source types. These formulas allow AERMOD to simulate the massive buoyancy and plume rise created by the flare's heat.

1. Effective Stack Diameter (D_{eff})

This equation calculates the diameter required to maintain a fixed vertical velocity of 20 m/s based on the "net" heat release (total heat minus radiative losses).

$$D_{eff} = 9.88 \times 10^{-4} \times \sqrt{q_n \times (1 - f_r)}$$

Where:

- D_{eff}: Effective stack diameter (meters).
- q_n: Gross heat release of the flare (calories/second).
- f_r: Radiative heat loss fraction (The EPA default is **0.55**).

---

2. Effective Release Height (H_{eff})

This equation accounts for the physical height of the flare tip plus the additional height gained from the flame's own length and buoyancy before the plume begins its standard dispersion.

$$H_{eff} = H_s + (4.56 \times 10^{-3} \times q_n^{0.478})$$

Where:

- H_{eff}: Effective release height (meters).
- H_s: Physical stack height of the flare (meters).
- q_n: Gross heat release of the flare (calories/second).

---

3. Required Modeling Parameters

To use these calculated values correctly in an AERMOD `SO SRCPARAM` card, the guidance (both in the AERSCREEN guide and the 1992 screening manual) requires you to use the following "fixed" values:

- **Exit Velocity (V_{eff}): 20.0 m/s**
- **Exit Temperature (T_{eff}): 1,273 K**

	VCU-1	ECD-1	ECD-2
BTU/Hour	17,800,000	3,210,000	372,000
QH (cal/sec)	1,246,813	224,847	26,057
Effective Height (m)	15.93	11.40	6.68
Effective Diameter (m)	0.74	0.31	0.11

Appendix B: Background Monitor Concentrations for 2023-2025

https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Year	Pollutant	Obs	1st Max 1hr	2nd Max 1hr	98th Percentile (ppb)	Annual Mean (ppb)	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
2023	NO_2	8073	41	41	31	5.25	None	1	350151005	2811 Holland St,Carlsbad,Nm 88220	Carlsbad	Eddy	NM	6
2024	NO_2	8414	40	39	34	5.31	None	1	350151005	2811 Holland St,Carlsbad,Nm 88220	Carlsbad	Eddy	NM	6
2025	NO_2	7991	40	39	35	6.22	None	1	350151005	2811 Holland St,Carlsbad,Nm 88220	Carlsbad	Eddy	NM	6
				AVG =>	33.3	5.59	ppb							
				AVG =>	62.7	10.53	$\mu g/m^3$							

Year	Pollutant	Obs	1st Max 1hr	2nd Max 1hr	98th Percentile (ppb)	Annual Mean (ppb)	Exc Events	Monitor Number	Site ID	Address	City	County	State	EPA Region
2023	NO_2	8253	37	36	33	5.37	None	1	350250008	2320 N. Jefferson St, Hobbs, Nm 88240	Hobbs	Lea	NM	6
2024	NO_2	8220	46	45	38	5.64	None	1	350250008	2320 N. Jefferson St, Hobbs, Nm 88240	Hobbs	Lea	NM	6
2025	NO_2	8528	61	49	41	5.81	None	1	350250008	2320 N. Jefferson St, Hobbs, Nm 88240	Hobbs	Lea	NM	6
				AVG =>	37.3	5.61	ppb							
				AVG =>	70.3	10.55	$\mu g/m^3$							



Figure 4

Carlsbad AQS #: 35-015-1005:

Carlsbad NO_2 Parameter 42602, Method 074, POC 1

The Bureau continues to operate the NO_2 monitor at the Carlsbad air monitoring site. No changes to instrumentation occurred in FY2025.

Hobbs Jefferson AQS #: 35-025-0008:

Hobbs NO_2 Parameter 42602, Method 074, POC 1

The Bureau continues to operate the NO_2 monitor at the Hobbs air monitoring site. No changes to instrumentation occurred in FY2025.

Jeff Jackson

From: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Sent: Tuesday, June 30, 2026 6:04 PM
To: Kayla Curtis
Cc: Jeff Jackson; Green, Lance; Dennis Hlinka; David Sullivan; Ryan Sullivan; jim.farrell@oneok.com
Subject: RE: [EXTERNAL] Modeling Protocol: Alamo Compressor Station

Follow Up Flag: Follow up
Flag Status: Flagged

Kayla
Your modeling protocol is acceptable.
The met data posted on our website is up to date.
You may retrieve surrounding sources using Merge Master on our website.
I believe the exit velocities for E1 to E8 are erroneous. Please check on them.
Thank you.

Sufi A. Mustafa, Ph.D.
Manager Air Dispersion Modeling and Emission Inventory Section
New Mexico Environment Department's Air Quality Bureau
Office: (505) 629 6186
sufi.mustafa@env.nm.gov
4359 Jager Drive NE,
Rio Rancho, New Mexico, 87144
https://www.env.nm.gov/air-quality/

"Innovation, Science, Collaboration, Compliance"

From: Kayla Curtis <kc@resolutecompliance.com>
Sent: Thursday, May 7, 2026 7:10 AM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: Jeff Jackson <jj@resolutecompliance.com>; Green, Lance <lance.green@oneok.com>; Dennis Hlinka <dhlinka@ix.netcom.com>; David Sullivan <sull_env@ix.netcom.com>; Ryan Sullivan <ryansullivanenvironmental@gmail.com>
Subject: [EXTERNAL] Modeling Protocol: Alamo Compressor Station

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning, Sufi!

The modeling protocol for the Alamo Compressor Station is attached for your review.

Please let us know if there are any questions.

Thank you!

Kayla Curtis
Manager, Environmental Compliance

RESOLUTE COMPLIANCE, LLC
Purposeful Solutions. Unwavering Service.

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Cell: 817.821.6526
Email: kc@resolutecompliance.com

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
E-1	Tested in accordance with NSPS JJJJ	08/16/2023
E-1	Tested in accordance with NSPS JJJJ	08/13/2024
E-1	Tested in accordance with NSPS JJJJ	11/26/2025
E-2	Tested in accordance with NSPS JJJJ	08/15/2023
E-2	Tested in accordance with NSPS JJJJ	08/12/2024
E-2	Tested in accordance with NSPS JJJJ	08/05/2025
E-3	Tested in accordance with NSPS JJJJ	08/15/2023
E-3	Tested in accordance with NSPS JJJJ	10/01/2024
E-3	Tested in accordance with NSPS JJJJ	Week of 9/22/2025
E-4	Tested in accordance with NSPS JJJJ	08/16/2023
E-4	Tested in accordance with NSPS JJJJ	10/01/2024
E-4	Tested in accordance with NSPS JJJJ	09/24/2025
E-6	Tested in accordance with NSPS JJJJ	09/14/2023
E-6	Tested in accordance with NSPS JJJJ	09/18/2024
E-6	Tested in accordance with NSPS JJJJ	08/06/2025
E-7	Tested in accordance with NSPS JJJJ	04/17/2023
E-7	Tested in accordance with NSPS JJJJ	04/16/2024
E-7	Tested in accordance with NSPS JJJJ	05/01/2025
E-8	Tested in accordance with NSPS JJJJ	09/18/2023
E-8	Tested in accordance with NSPS JJJJ	09/18/2024
E-8	Tested in accordance with NSPS JJJJ	08/06/2025

Air Permit Application
Compliance History Disclosure Form

Pursuant to Subsection 74-2-7(S) of the New Mexico Air Quality Control Act ("AQCA"), NMSA §§ 74-2-1 to -17, the New Mexico Environment Department ("Department") may deny any permit application or revoke any permit issued pursuant to the AQCA if, within ten years immediately preceding the date of submission of the permit application, the applicant met any one of the criteria outlined below. In order for the Department to deem an air permit application administratively complete, or issue an air permit for those permits without an administrative completeness determination process, the applicant must complete this Compliance History Disclosure Form as specified in Subsection 74-2-7(P). An existing permit holder (permit issued prior to June 18, 2021) shall provide this Compliance History Disclosure Form to the Department upon request.

Permittee/Applicant Company Name		**Expected Application Submittal Date**
ONEOK, Inc.		August 2026
Permittee/Company Contact	**Phone**	**Email**
Lance Green	225-692-6947	Lance.Green@oneok.com

Within the 10 years preceding the expected date of submittal of the application, has the permittee or applicant:		
1	Knowingly misrepresented a material fact in an application for a permit?	☐ Yes ☒ No
2	Refused to disclose information required by the provisions of the New Mexico Air Quality Control Act?	☐ Yes ☒ No
3	Been convicted of a felony related to environmental crime in any court of any state or the United States?	☐ Yes ☒ No
4	Been convicted of a crime defined by state or federal statute as involving or being in restraint of trade, price fixing, bribery, or fraud in any court of any state or the United States?	☐ Yes ☒ No
5a	Constructed or operated any facility for which a permit was sought, including the current facility, without the required air quality permit(s) under 20.2.70 NMAC, 20.2.72 NMAC, 20.2.74 NMAC, 20.2.79 NMAC, or 20.2.84 NMAC?	☐ Yes ☒ No
5b	If "No" to question 5a, go to question 6. If "Yes" to question 5a, state whether each facility that was constructed or operated without the required air quality permit met at least one of the following exceptions: a. The unpermitted facility was discovered after acquisition during a timely environmental audit that was authorized by the Department; or b. The operator of the facility estimated that the facility's emissions would not require an air permit, **and** the operator applied for an air permit within 30 calendar days of discovering that an air permit was required for the facility.	☐ Yes ☐ No
6	Had any permit revoked or permanently suspended for cause under the environmental laws of any state or the United States?	☐ Yes ☒ No
7	For each "yes" answer, please provide an explanation and documentation.	

Section 22: Certification

Company Name: ONEOK, Inc.

I, Sypy Thomas, 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 7 day of August, 2026 upon my oath or affirmation, before a notary of the State of Texas.

*Signature

8/7/2026
Date

SYPY THOMAS
Printed Name

Senior Vice President.
Title

Scribed and sworn before me on this 7 day of August, 2026

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

7 day of September 2029.

Notary's Signature

8/7/2026
Date

Michelle Leigh Word
Notary's Printed Name

MICHELLE LEIGH WORD
Notary ID #125401386
My Commission Expires
September 20, 2029

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