April 30, 2021

Elizabeth Bisbey-Kuehn
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Re: Application to Modify Title V Operating Permit Number P097-R3
Harvest Four Corners, LLC – Kutz Canyon Processing Plant

Dear Ms. Bisbey-Kuehn,

On behalf of Harvest Four Corners, LLC (HFC), Cirrus Consulting, LLC submits the enclosed application to modify the Title V operating permit for the Kutz Canyon Processing Plant.

Thank you for your help. If you have questions or need any additional information, please contact Monica Smith of HFC at (505) 632-4625.

Sincerely,

CIRRUS CONSULTING, LLC

James W. Newby

James W. Newby

Enclosures
Kutz Canyon Processing Plant Title V Operating Permit Applications

c: Monica Smith, HFC

RECEIVED
MAY 3 2021
Air Quality Bureau

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NEW MEXICO 20.2.70 NMAC APPLICATION TO MODIFY PERMIT NUMBER P097-R3

KUTZ CANYON PROCESSING PLANT

Submitted By:

HARVEST FOUR CORNERS, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 87413

Prepared By:

CIRRUS CONSULTING, LLC
951 Diestel Road
Salt Lake City, Utah 84105
(801) 484-4412

April 2021

Table of Contents

Introduction

The Harvest Four Corners, LLC (HFC) Kutz Canyon Processing Plant currently operates under a construction permit issued by the New Mexico Air Quality Bureau (NMAQB), 0301-M11-R1, dated March 31, 2020 and a Title V operating permit, P097-R3, dated August 3, 2018.

The facility is currently approved by the Title V operating permit to operate the following equipment/sources:

- Six Solar Centaur 40 turbines (Units 1-6);
- Three Solar Saturn 1200 turbines (Units 7, 8 & 29);
- Three Clark HRA-8 reciprocating engines (Units 16-18);
- Two Solar Centaur 3016 turbines (Units 19 & 20);
- One Wheco heater (Unit 22);
- One Alcorn heater (Unit 23);
- One ethylene glycol (EG) dehydrator (Units 24a & 24b);
- One Born glycol heater (Unit 25);
- One Born hot oil heater (Unit 27);
- One plant flare (Unit 28);
- One Pesco fuel gas heater (Unit 30);
- One Cummins 6BTA 208-2100 reciprocating fire pump engine (Unit 32);
- One Ford 428 reciprocating standby fire pump engine (Unit 33);
- One Caterpillar D343 reciprocating standby generator engine (Unit 34)
- One triethylene glycol (TEG) dehydrator (Units 35a & 35b);
- One Zeeco flare (Unit 36);
- One Waukesha L5794LT or L7042GL reciprocating engine (Unit 37a or 37b);
- Truck loading (Unit 38);
- Three cooling towers (Units 39-41);
- One amine contactor (Unit 75);
- One Kohler 8.5RES reciprocating standby generator (Unit 76)

- Six liquid storage tanks (Units T3, T30, T31, T6438, T6528 & T6529);
- Equipment leaks (Unit F1);
- Startup, shutdown and maintenance (SSM) emissions (Unit SSM); and
- Malfunction emissions (Unit M1).

Note that the facility is also equipped with a number of other miscellaneous heaters and liquid storage tanks, for which emissions are insignificant.

This application is being submitted to modify the Title V operating permit. The following equipment is being added to the permit:

- One Infab TEG mole sieve regeneration dehydrator (Units 77a & 77b)

The Kutz I portion of the plant is being retired. The following equipment is being removed from the permit:

- Three Clark HRA-8 reciprocating engines (Units 16-18);
- One Wheco heater (Unit 22);
- One Alcorn heater (Unit 23);
- One EG dehydrator (Units 24a & 24b);
- One Solar Saturn 1200 turbine (Unit 29);
- One Waukesha L5794LT or L7042GL reciprocating engine (Unit 37a or 37b);
- One cooling tower (Unit 39); and
- One condensate storage tank (Unit T6438) with its associated ejector vapor recovery unit EVRU and EVRU heater (Unit 74).

The following equipment is not part of the facility (it is located more than 0.25 miles away). It is being removed from the permit:

- One Pesco fuel gas heater (Unit 30).

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	NEW MEXICO ENVIRONMENT DEPARTMENT	RECEIVED MAY 3 2021 Air Quality Bureau AIRS No.:

Universal Air Quality Permit Application

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

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

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

Acknowledgements:
☑ I acknowledge that a pre-application meeting is available to me upon request. ☑ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.
☐ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).
☐ Check No.: **XXXX** in the amount of **XXXX**
☑ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.70.300.B(2) NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): **1158**	Updating Permit/NOI #: **P097-R3**
1	Facility Name: **Kutz Canyon Processing Plant**	Plant primary SIC Code (4 digits): **1321**	
		Plant NAIC code (6 digits): **211130**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **See directions in Section 1-D4**		
2	Plant Operator Company Name: **Harvest Four Corners, LLC**	Phone/Fax: **(505) 632-4600 / (505) 632-4782**	
a	Plant Operator Address: **1755 Arroyo Drive, Bloomfield, New Mexico 87413**		

b	Plant Operator's New Mexico Corporate ID or Tax ID: **76-0451075**	
3	Plant Owner(s) name(s): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Plant Owner(s) Mailing Address(s): **Same as #2a above**	
4	Bill To (Company): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Mailing Address: **Same as #2a above**	E-mail: **N/A**
5	☐ Preparer: ☑ Consultant: **James Newby, Cirrus Consulting, LLC**	Phone/Fax: **(801) 294-3024**
a	Mailing Address: **11139 Crisp Air Drive, Colorado Springs, CO 80908**	E-mail: **jnewby@cirrusllc.com**
6	Plant Operator Contact: **Monica Smith**	Phone/Fax: **(505) 632-4625 / (505) 632-4782**
a	Address: **Same as #2a above**	E-mail: **msmith@harvestmidstream.com**
7	Air Permit Contact: **Same as #6 above**	Title: **Environmental Specialist**
a	E-mail: **Same as #6a above**	Phone/Fax: **Same as #6 above**
b	Mailing Address: **Same as #2a above**	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☑ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☑ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☑ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☑ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☑ No	If yes, give month and year of shut down (MM/YY): **N/A**
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☑ Yes ☐ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☑ Yes ☐ No ☐ N/A **It is assumed this question refers to question 4 rather than question 3.**	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **P097-R3**
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☑ No	If yes, the NPR No. is: **N/A**
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☑ No	If yes, the NOI No. is: **N/A**
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **301-M11**
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑ No	If yes, the register No. is: **N/A**

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **9.2 MMCF & 388 bbl[(a)]**	Daily: **220 MMCF & 9,318 bbl[(a)]**	Annually: **80,300 MMCF & 3.4 MMbbl[(a)]**
b	Proposed	Hourly: **5 MMCF & 467 bbl[(a)]**	Daily: **120 MMCF & 11,215 bbl[(a)]**	Annually: **43,800 MMCF & 4.1 MMbbl[(a)]**
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **9.2 MMCF & 388 bbl[(a)]**	Daily: **220 MMCF & 9,318 bbl[(a)]**	Annually: **80,300 MMCF & 3.4 MMbbl[(a)]**

b	Proposed	Hourly: **5 MMCF & 467 bbl[a]**	Daily: **120 MMCF & 11,215 bbl[a]**	Annually: **43,800 MMCF & 4.1 MMbbl[a]**

[a] The station capacity is a direct function of available horsepower. The throughput is therefore dependent on atmospheric temperature and pressure, gas temperature and pressure, relative humidity and gas quality, was well as other factors. The "throughput" expressed above is a nominal quantity (with a 15 percent safety factor), neither an absolute maximum, nor an average. Actual throughput will vary from the nominal amount.

Section 1-D: Facility Location Information

1	Section: **11-14**	Range: **11W**	Township: **28N**	County: **San Juan**	Elevation (ft): **5,800**
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **235,315**			UTM N (in meters, to nearest 10 meters): **4,062,140**	
b	**AND** Latitude (deg., min., sec.): **36° 40' 10.8"**			Longitude (deg., min., sec.): **-107° 57' 41.9"**	
3	Name and zip code of nearest New Mexico town: **Bloomfield, New Mexico 87413**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From Bloomfield, drive south on Highway 550 for approximately 0.5 miles, turn east on County Road 4980 and drive 2.1 miles to the plant at the end of the road.**				
5	The facility is **approximately 3.5** miles **south** of **Bloomfield, New Mexico**.				
6	Status of land at facility (check one): ☐ Private ☐ Indian/Pueblo ☑ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **Aztec, Bloomfield, Farmington, Navajo Tribe & San Juan County New Mexico**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☐ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **N/A**				
9	Name nearest Class I area: **Mesa Verde National Park**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **69.54 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: **≈3,200 m**				
12	Method(s) used to delineate the Restricted Area: **Fence** "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☑ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility? **N/A**				

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

1	Facility **maximum** operating ($\frac{hours}{day}$): **24**	($\frac{days}{week}$): **7**	($\frac{weeks}{year}$): **52**		($\frac{hours}{year}$): **8,760**	
2	Facility's maximum daily operating schedule (if less than 24 $\frac{hours}{day}$)? Start: **N/A**			☐AM ☐PM	End: **N/A**	☐AM ☐PM
3	Month and year of anticipated start of construction: **N/A**					
4	Month and year of anticipated construction completion: **N/A**					
5	Month and year of anticipated startup of new or modified facility: **N/A**					

6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☑ No If yes, specify: **N/A**		
a	If yes, NOV date or description of issue: **N/A**		NOV Tracking No: **N/A**
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☑ No If Yes, provide the 1c & 1d info below:		
c	Document Title: **N/A**	Date: **N/A**	Requirement # (or page # and paragraph #): **N/A**
d	Provide the required text to be inserted in this permit: **N/A**		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☐ Yes ☑ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☑ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☑ Yes ☐ No		
a	If Yes, what type of source? ☑ **Major** (☐ $\geq$10 tpy of any single HAP **OR** ☑ $\geq$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: **N/A** Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application (This section applies to 20.2.72.300 NMAC Streamline applications only)

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): **Travis Jones**		Phone: **(713) 289-2630**
a	R.O. Title: **EH&S Manager**	R.O. e-mail: **trjones@harvestmidstream.com**	
b	R. O. Address: **1111 Travis Street, Houston, Texas 77002**		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): **TBD**		Phone: **TBD**
a	A. R.O. Title: **TBD**	A. R.O. e-mail: **TBD**	
b	A. R. O. Address: **TBD**		
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.): **Hilcorp Energy Company**		
a	Address of Parent Company: **Same as #1b above**		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): **N/A**		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: **N/A**		
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: **Yes, Colorado (≈37.0 km), Jicarilla Apache Tribe (≈49.9 km), Mountain Ute Reservation (≈16.1 km), Navajo Tribe (≈1.6 km) & Southern Ute Tribe (≈37.0 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____________________________

Email____________________________

Phone number_____________________

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

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

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

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

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

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

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

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide

Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

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

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

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Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1 (Y1)	Turbine (Compressor)	Solar	Centaur 40	OHD09-C1224 (Skid Package # S3020297)	3,830 hp	3,692 hp	07/01/1975 07/01/1975	N/A 1	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
2 (Y2)	Turbine (Compressor)	Solar	Centaur 40	OHB13-C0325 (Skid Package # S3020300)	3,830 hp	3,692 hp	07/01/1975 07/01/1975	N/A 2	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
3 (Y3)	Turbine (Compressor)	Solar	Centaur 40	OHJ11-C3296 (Skid Package # S3020298)	3,830 hp	3,692 hp	07/01/1975 07/01/1975	N/A 3	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
4 (Y4)	Turbine (Compressor)	Solar	Centaur 40	OHI11-C8297 (Skid Package # S3020291)	3,830 hp	3,692 hp	07/01/1975 07/01/1975	N/A 4	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
5 (K4)	Turbine (Compressor)	Solar	Centaur 40	OHE10-C8845 (Skid Package # 3020451)	3,830 hp	3,692 hp	10/01/1975 10/01/1975	N/A 5	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
6 (K5)	Turbine (Compressor)	Solar	Centaur 40	OHF12-C4675 (Skid Package # 3020450)	3,830 hp	3,692 hp	10/01/1975 10/01/1975	N/A 6	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
7 (K6)	Turbine (Compressor)	Solar	Saturn 1200	OHE10-S4226 (Skid Package # S430870)	1,200 hp	1,157 hp	10/01/1976 10/01/1976	N/A 7	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
8 (K7)	Turbine (Compressor)	Solar	Saturn 1200	OHF10-S2522 (Skid Package # S430869)	1,200 hp	1,157 hp	10/01/1976 10/01/1976	N/A 8	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
16 (R4)	Reciprocating Engine (Compressor)	Clark	HRA-8	22369	830 hp	723 hp	Pre-1973 Pre-1973	N/A 16	20200253	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	NA
17 (R5)	Reciprocating Engine (Compressor)	Clark	HRA-8	20643	830 hp	723 hp	Pre-1973 Pre-1973	N/A 17	20200253	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	NA
18 (R6)	Reciprocating Engine (Compressor)	Clark	HRA-8	22370	830 hp	723 hp	Pre-1973 Pre-1973	N/A 18	20200253	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	2SLB	NA
19 (Gen A)	Turbine (Generator)	Solar	Centaur 40	OHD06-C0045 (Skid Package # CG81584)	3,016 hp	2,907 hp	06/01/1981 06/01/1981	N/A 19	20100201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
20 (Gen B)	Turbine (Generator)	Solar	Centaur 40	OHB12-C8510 (Skid Package # CG81583)	3,016 hp	2,907 hp	07/01/1981 07/01/1981	N/A 20	20100201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
22 (H1)	Heater	Wheco			23.1 MMBtu/hr	23.1 MMBtu/hr	Pre-1973 Pre-1973	N/A 22	31000404	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
23 (H2)	Heater	Alcorn			9.57 MMBtu/hr	9.57 MMBtu/hr	Pre-1973 Pre-1973	N/A 23	31000404	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA

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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
24a	Kutz I Ethylene Glycol Dehydrator				110 MMSCFD	110 MMSCFD	Pre-1973 / Pre-1973	28 / 24a	31000304	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
24b (H3)	Kutz I Ethylene Glycol Dehydrator Reboiler	Parksburg			1.53 MMBtu/hr	1.53 MMBtu/hr	Pre-1973 / Pre-1973	N/A / 24b	31000304	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
25 (H4)	Mole Sieve Regen Gas Heater	Born			8.15 MMBtu/hr	8.15 MMBtu/hr	1975 / 1975	N/A / 25	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
27 (H6)	Hot Oil Heater	Born			8.35 MMBtu/hr	8.35 MMBtu/hr	1975 / 1975	N/A / 27	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
28	Plant Flare				1.4 MMBtu/hr	1.4 MMBtu/hr	1996 / 1996	N/A / 28	31000205	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
29 (N1)	Turbine	Solar	Saturn T-1200	OHF10-S2795 (Skid Package # SC78947)	1,200 hp	1,157 hp	11/01/1978 / 11/01/1978	N/A / 29	20200201	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
30	Fuel Gas heater	Pesco			0.21 MMBtu/hr	0.21 MMBtu/hr	1999 / 1999	N/A / 30	31000404	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
32	Main Water Pump Engine	Cummins	6BTA 208-2100	60259963	208 hp	208 hp	1988 / 2011	N/A / 32	20200202	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	NA
33	Auxiliary Water Pump Engine	Ford	428	441412	335 hp	335 hp	01/01/1970 / 08/25/1972	N/A / 33	20200202	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	NA
34	Standby Generator Engine	Caterpillar	D343	62B15287	390 hp	390 hp	1995 / 1995	N/A / 34	20100102	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	NA
35a	Kutz Chaco Dehydrator	Pesco			140 MMSCFD	140 MMSCFD	1984 / 1984	36 / 35a	31000301	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
35b	Kutz Chaco Dehydrator Reboiler	Pesco			1.75 MMBtu/hr	1.75 MMBtu/hr	1984 / 1984	N/A / 35b	31000302	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
36	Flare	Zeeco			4 MMBtu/hr	4 MMBtu/hr	2002 / 2002	N/A / 36	31000205	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
37a	Reciprocating Engine (Compressor)	Waukesha	L5794LT	C-13732/1 (Skid Package # 77572)	1,445 hp	1,416 hp	09/2002 / 09/2002	N/A / 37	20200254	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	NA
or 37b	Reciprocating Engine (Compressor)	Waukesha	L7042GL	TBD - not installed	1,478 hp	1,351 hp	TBD / TBD	N/A / 37	20200254	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	NA

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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
38	Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	40400250	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
39	Cooling Tower							N/A N/A	31000299	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
40	Cooling Tower							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
41	Cooling Tower							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
75	Amine Contactor				350 gal/min	350 gal/min	1975 1975	N/A 75	31000305	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
76	Standby Generator	Kohler	8.5RES	3032042	13.4 hp	12.7 hp	05/2012 05/2012	N/A N/A	20100102	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	NA
77a	Mole Sieve Regen Dehydrator	TBD - not installed	TBD - not installed	TBD - not installed	20 MMSCFD	20 MMSCFD	TBD TBD	28 77a	31000301	☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
77b	Mole Sieve Regen Dehydrator Reboiler	TBD - not installed	TBD - not installed	TBD - not installed	1.48 MMBtu/hr	1.48 MMBtu/hr	TBD TBD	N/A 77b	31000302	☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
SSM	SSM							N/A N/A	31000203	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
F1	Fugitive Equipment Leaks							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
M1	Malfunctions							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
T3	Flare Separator Liquid Atmospheric Bullet Tank				19,900 gal	19,900 gal		N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
T31	Flare Separator Liquid Storage Tank				4,200 gal	4,200 gal		N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
T109	Flare Separator Liquid Storage Tank				21,000 gal	21,000 gal		N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
T6438	Blanco-Hare Condensate Storage Tank				21,000 gal	21,000 gal		N/A N/A	31000299	☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA

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 #	Manufact-urer'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 Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T6528	Kutz-Dakota Condensate Storage Tank				21,000 gal	21,000 gal		N/A / N/A	31000299	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
T6529	Kutz-Dakota Condensate Storage Tank				21,000 gal	21,000 gal		N/A / N/A	31000299	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA
SEP-1	Kutz-Dakota Slug Receiver Separator				N/A	N/A		N/A / N/A	31000303	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	NA	NA

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

[2] Specify dates required to determine regulatory applicability.

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

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

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
43	Kutz I Control Heater			0.1 MMBtu/hr	20.2.72.202.B(1) Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
44	Kutz I Control Heater			0.115 MMBtu/hr	20.2.72.202.B(1) Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
45	Maintenance Building Heater			0.045 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
46	Generator Building Heater			0.24 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
47	Generator Building Heater			0.125 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
48	Chemical Shed Heater			0.005 MMBtu/hr	20.2.72.202.B(5) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
49	Auxilliary Pump Heater			0.06 MMBtu/hr	20.2.72.202.B(5) Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
50	Auxilliary Pump Heater			0.076 MMBtu/hr	20.2.72.202.B(5) Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
51	Instrumentation Building Heater			0.012 MMBtu/hr	20.2.72.202.B(5) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
52	Instrumentation Building Heater			0.005 MMBtu/hr	20.2.72.202.B(5) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
53	Office Building Heater			0.05 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
54	Office Building Heater			0.03 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
55	Office Building Heater			0.345 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
56	Maintenance Building Heater			0.032 MMBtu/hr	20.2.72.202.B(1) Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
57	Generator Building Heater			0.07 / MMBtu/hr	20.2.72.202.B(5) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
58	South Building Heater			0.137 / MMBtu/hr	20.2.72.202.B(5) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
59	Fire Pump Heater			0.06 / MMBtu/hr	20.2.72.202.B(5) / Trivial #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
60	Air Building Heater			0.08 / MMBtu/hr	20.2.72.202.B(5) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
61	Tech Shop Heater			0.012 / MMBtu/hr	20.2.72.202.B(1) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
62	Tech Shop Heater			0.145 / MMBtu/hr	20.2.72.202.B(1) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
63	Office Heater			0.205 / MMBtu/hr	20.2.72.202.B(1) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
64	PGI Sampler Heater			0.001 / MMBtu/hr	20.2.72.202.B(5) / Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
65	Kutz II Analyzer Heater			0.012 / MMBtu/hr	20.2.72.202.B(5) / Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
66	Kutz I Meter Heater			0.012 / MMBtu/hr	20.2.72.202.B(5) / Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
67	Kutz I Meter Heater			0.012 / MMBtu/hr	20.2.72.202.B(5) / Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
68	API Separator Heater			0.75 / MMBtu/hr	20.2.72.202.B(5) / Item #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
69	Water Heater (propane)			0.2 / MMBtu/hr	20.2.72.202.B(1) / Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
70	HVAC (propane)			0.0675 / MMBtu/hr	20.2.72.202.B(1) / Trivial #17		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
71	HVAC (propane)			0.115 MMBtu/hr	20.2.72.202.B(1) Trivial #17		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
72	HVAC (propane)			0.115 MMBtu/hr	20.2.72.202.B(1) Trivial #17		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
73	HVAC (propane)			0.115 MMBtu/hr	20.2.72.202.B(1) Trivial #17		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
74	EVRU Heater			0.51 MMBtu/hr	20.2.72.202.B(5) Item #1a & #1b		☐ Existing (unchanged) ☑ **To be Removed** ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T5	Propane Storage Tank			20,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T13	Y-Grade Storage Tank			80,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T14	Y-Grade Storage Tank			80,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T15	Propane Storage Tank			80,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T16	Out-of-Service Storage Tank			40,000 gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T17	Out-of-Service Storage Tank			40,000 gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T18	Out-of-Service Storage Tank			40,000 gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T21	Methanol Storage Tank			90,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T22	Methanol Storage Tank			90,000 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T30	Dehydrator Separator Liquids Storage Tank			4,200 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T32	Oil/Water Storage Tank			10,500 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T40	Used Oil Storage Tank			2,000 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T41	Gasoline Storage Tank			300 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T42	Petroleum Solvent Storage Tank			300 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T50a	Diesel Storage Tank			1,000 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T50b	Diesel Storage Tank			200 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T51	Lubrication Oil Storage Tank			3,000 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T52a	Glycol Storage Tank			1,000 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T52b	Condensate Storage Tank			2,000 gal	20.2.72.202.B(5) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T53a	Glycol Storage Tank			8,820 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T53b	Glycol Surge Tank			1,050 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T57	Lubrication Oil Storage Tank			4,420 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T58b	Used Oil Storage Tank			2,940 gal	20.2.72.202.B(2) Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T59	Methanol Storage Tank			4,200 gal	20.2.72.202.B(5) #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T60	Diesel Storage Tank			1,000 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T61	Out-of-Service Storage Tank			705 / gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T62a	Amine Mix Storage Tank			10,750 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T62b	Amine Mix Storage Tank			4,200 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T62c	Water Storage Tank			21,000 / gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T62d	Defoamer Storage Tank			300 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T63	Amine Slop Tank			7,980 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T64	Lubrication Oil Storage Tank			2,920 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T65	Lubrication Oil Storage Tank			2,940 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T81	Methanol Storage Tank			100 / gal	20.2.72.202.B(5) / #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T102	Filter Draining Storage Tank			2,016 / gal	20.2.72.202.B(5) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T104	Used Oil Storage Tank			170 / gal	20.2.72.202.B(2) / Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T105	Water Storage Tank			126,000 / gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T106	Water Storage Tank			229,000 / gal	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T107	Water Storage Tank			229,000	No VOC or HAP emissions		☑ Existing (unchanged) ☐ To be Removed
				gal			☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T108	Ambitrol Storage Tank			1,050	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				gal	Item #5		☐ 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
28	Flare	Pre-1971	VOC & HAP	77a	98	TCEQ
36	Flare	2002	VOC & HAP	35a	98	TCEQ

[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
1	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
2	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
3	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
4	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
5	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
6	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
7	4.32	18.90	6.47	28.40	2.50E-01	1.10	1.10E-02	4.60E-02	8.47E-02	3.71E-01	8.47E-02	3.71E-01	8.47E-02	3.71E-01	-	-	-	-
8	4.32	18.90	6.47	28.40	2.50E-01	1.10	1.10E-02	4.60E-02	8.47E-02	3.71E-01	8.47E-02	3.71E-01	8.47E-02	3.71E-01	-	-	-	-
19	15.50	67.90	14.70	64.40	4.47	19.60	2.30E-02	1.00E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	-	-	2.28E-05	1.00E-04
20	15.50	67.90	14.70	64.40	4.47	19.60	2.30E-02	1.00E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	-	-	2.28E-05	1.00E-04
25	1.09	4.76	2.30E-01	1.00	4.20E-02	1.80E-01	6.00E-03	2.60E-02	6.88E-02	3.01E-01	6.88E-02	3.01E-01	6.88E-02	3.01E-01	-	-	4.53E-06	1.98E-05
27	1.11	4.88	2.30E-01	1.00	4.30E-02	1.90E-01	6.00E-03	2.70E-02	7.05E-02	3.09E-01	7.05E-02	3.09E-01	7.05E-02	3.09E-01	-	-	4.64E-06	2.03E-05
28	-	-	-	-	453.58	773.26	-	-	-	-	-	-	-	-	-	-	4.38E-05	7.48E-05
34	11.75	2.94	2.53	6.33E-01	9.59E-01	2.40E-01	7.72E-01	1.93E-01	8.26E-01	2.06E-01	8.26E-01	2.06E-01	8.26E-01	2.06E-01	-	-	-	-
35a	-	-	-	-	149.74	655.86	-	-	-	-	-	-	-	-	-	-	-	-
35b	1.94E-01	8.52E-01	1.63E-01	7.15E-01	1.07E-02	4.68E-02	1.17E-03	5.11E-03	1.48E-02	6.47E-02	1.48E-02	6.47E-02	1.48E-02	6.47E-02	-	-	9.72E-07	4.26E-06
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	4.42	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	1.21E-01	5.30E-01	7.62E-02	3.34E-01	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	8.41E-02	3.68E-01	5.55E-02	2.43E-01	-	-	-	-	-	-
75	-	-	-	-	5.80	25.60	-	-	-	-	-	-	-	-	-	-	-	-
76	3.00E-01	7.49E-02	4.91E-01	1.23E-01	3.91E-03	9.77E-04	7.76E-05	1.94E-05	2.56E-03	6.41E-04	2.56E-03	6.41E-04	2.56E-03	6.41E-04	-	-	-	-
77a	-	-	-	-	56.76	248.62	-	-	-	-	-	-	-	-	-	-	-	-
77b	4.29E-02	1.88E-01	4.46E-02	1.95E-01	6.46E-03	2.83E-02	8.33E-04	3.65E-03	1.25E-02	5.49E-02	1.25E-02	5.49E-02	1.25E-02	5.49E-02	-	-	8.24E-07	3.61E-06
SSM	-	-	-	-	-	28.60	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	3.51	15.37	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	1.37	6.00	-	-	-	-	-	-	-	-	-	-	-	-
T31	-	-	-	-	3.20E-01	1.40	-	-	-	-	-	-	-	-	-	-	-	-
T109	-	-	-	-	1.30	5.70	-	-	-	-	-	-	-	-	-	-	-	-

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
T6528	-	-	-	-	-	164.00	-	-	-	-	-	-	-	-	-	-	-	-
T6529	-	-	-	-	-	w/T6528	-	-	-	-	-	-	-	-	-	-	-	-
SEP-1	-	-	-	-	-	w/T6528	-	-	-	-	-	-	-	-	-	-	-	-
In the absence of controls, the flares (Units 28 & 36) are not in operation.																		
Uncontrolled VOC emissions from plant (in the absence of the plant flare) are accounted for at the plant flare (Unit 28).																		
Totals	147.12	594.69	134.23	575.67	709.71	2098.51	1.03	1.33	3.11	10.20	3.04	9.88	2.90	9.30	-	-	2.37E-04	9.23E-04

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

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
2	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
3	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
4	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
5	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
6	15.50	67.90	14.70	64.40	4.47	19.60	2.90E-02	1.30E-01	2.30E-01	1.01	2.30E-01	1.01	2.30E-01	1.01	-	-	2.28E-05	1.00E-04
7	4.32	18.90	6.47	28.40	2.50E-01	1.10	1.10E-02	4.60E-02	8.47E-02	3.71E-01	8.47E-02	3.71E-01	8.47E-02	3.71E-01	-	-	-	-
8	4.32	18.90	6.47	28.40	2.50E-01	1.10	1.10E-02	4.60E-02	8.47E-02	3.71E-01	8.47E-02	3.71E-01	8.47E-02	3.71E-01	-	-	-	-
19	15.50	67.90	14.70	64.40	4.47	19.60	2.30E-02	1.00E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	-	-	2.28E-05	1.00E-04
20	15.50	67.90	14.70	64.40	4.47	19.60	2.30E-02	1.00E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	1.81E-01	7.92E-01	-	-	2.28E-05	1.00E-04
25	1.09	4.76	2.30E-01	1.00	4.20E-02	1.80E-01	6.00E-03	2.60E-02	6.88E-02	3.01E-01	6.88E-02	3.01E-01	6.88E-02	3.01E-01	-	-	4.53E-06	1.98E-05
27	1.11	4.88	2.30E-01	1.00	4.30E-02	1.90E-01	6.00E-03	2.70E-02	7.05E-02	3.09E-01	7.05E-02	3.09E-01	7.05E-02	3.09E-01	-	-	4.64E-06	2.03E-05
28	4.66	7.95	33.69	57.44	9.07	15.47	5.26E-02	8.97E-02	-	-	-	-	-	-	-	-	4.38E-05	7.48E-05
34	11.75	2.94	2.53	6.33E-01	9.59E-01	2.40E-01	7.72E-01	1.93E-01	8.26E-01	2.06E-01	8.26E-01	2.06E-01	8.26E-01	2.06E-01	-	-	-	-
35a	-	-	-	-	2.00	8.80	-	-	-	-	-	-	-	-	-	-	-	-
35b	1.94E-01	8.52E-01	1.63E-01	7.15E-01	1.07E-02	4.68E-02	1.17E-03	5.11E-03	1.48E-02	6.47E-02	1.48E-02	6.47E-02	1.48E-02	6.47E-02	-	-	9.72E-07	4.26E-06
36	1.40E-01	6.15E-01	2.80E-01	1.23	5.50E-04	2.41E-03	4.66E-04	2.04E-03	-	-	-	-	-	-	-	-	3.89E-07	1.70E-06
38	-	-	-	-	-	4.42	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	1.21E-01	5.30E-01	7.62E-02	3.34E-01	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	8.41E-02	3.68E-01	5.55E-02	2.43E-01	-	-	-	-	-	-
75	-	-	-	-	5.80	25.60	-	-	-	-	-	-	-	-	-	-	-	-
76	3.00E-01	7.49E-02	4.91E-01	1.23E-01	3.91E-03	9.77E-04	7.76E-05	1.94E-05	2.56E-03	6.41E-04	2.56E-03	6.41E-04	2.56E-03	6.41E-04	-	-	-	-
77a	-	-	-	-	1.00	4.40	-	-	-	-	-	-	-	-	-	-	-	-
77b	4.29E-02	1.88E-01	4.46E-02	1.95E-01	6.46E-03	2.83E-02	8.33E-04	3.65E-03	1.25E-02	5.49E-02	1.25E-02	5.49E-02	1.25E-02	5.49E-02	-	-	8.24E-07	3.61E-06
SSM	-	-	-	-	-	28.60	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	3.51	15.37	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	1.37	6.00	-	-	-	-	-	-	-	-	-	-	-	-
T31	-	-	-	-	3.20E-01	1.40	-	-	-	-	-	-	-	-	-	-	-	-
T109	-	-	-	-	1.30	5.70	-	-	-	-	-	-	-	-	-	-	-	-
T6528	-	-	-	-	-	164.00	-	-	-	-	-	-	-	-	-	-	-	-
T6529	-	-	-	-	-	w/T6528	-	-	-	-	-	-	-	-	-	-	-	-

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
SEP-1	-	-	-	-	-	w/T6528	-	-	-	-	-	-	-	-	-	-	-	-
Totals	151.93	603.26	168.20	634.33	61.70	449.44	1.08	1.42	3.11	10.20	3.04	9.88	2.90	9.30	-	-	2.38E-04	9.24E-04

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but 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
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	-	28.60	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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
T6528	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T6529	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEP-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	-	-	-	-	-	38.60	-	-	-	-	-	-	-	-	-	-	-	-

[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
28	28 & 77a	4.66	7.95	33.69	57.44	10.07	19.87	5.26E-02	8.97E-02	-	-	-	-	-	-	4.38E-05	7.48E-05
36	35a & 36	1.40E-01	6.15E-01	2.80E-01	1.23	2.00	8.80	4.66E-04	2.04E-03	-	-	-	-	-	-	3.89E-07	1.70E-06
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)			
1	1	V	No	22	798	1271			267	2.46
2	2	V	No	22	798	1271			267	2.46
3	3	V	No	22	798	1271			267	2.46
4	4	V	No	22	798	1271			267	2.46
5	5	V	No	35	798	1271			267	2.46
6	6	V	No	35	798	1271			267	2.46
7	7	V	No	35	840	477			152	2.00
8	8	V	No	35	840	477			152	2.00
19	19	V	No	22	798	1271			267	2.46
20	20	V	No	22	798	1271			267	2.46
25	25	V	No	60	600	67			9	3.00
27	27	V	No	78.4	600	69			4	4.50
28	28	V	No	55	1832	1462			66	7.58
34	34	V	No	14.4	750	13			66	0.50
35b	35b	V	No	16	600	14			6	1.70
36	36	V	No	26	1832	13			66	0.76
76	76	V	No	1	1400	2			NA	NA
77b	77b	V	No	10	600	5			6	1.00

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		Acetaldehyde ☒ HAP or ☐ TAP		Benzene ☒ HAP or ☐ TAP		Ethylbenzene ☒ HAP or ☐ TAP		Formaldehyde ☒ HAP or ☐ TAP		n-Hexane ☒ HAP or ☐ TAP		Toluene ☒ HAP or ☐ TAP		Xylenes ☒ 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
1	1	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
2	2	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
3	3	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
4	4	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
5	5	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
6	6	0.3	1.5	0.1	0.6	-	-	-	-	0.1	0.6	-	0.1	-	-	-	-		
7	7	0.1	0.5	-	0.2	-	-	-	-	-	0.2	-	-	-	-	-	-		
8	8	0.1	0.5	-	0.2	-	-	-	-	-	0.2	-	-	-	-	-	-		
19	19	0.3	1.2	0.1	0.5	-	-	-	-	0.1	0.5	-	-	-	-	-	-		
20	20	0.3	1.2	0.1	0.5	-	-	-	-	0.1	0.5	-	-	-	-	-	-		
25	25	0.1	0.4	-	-	-	-	-	0.1	-	-	-	0.1	-	-	-	-		
27	27	0.1	0.4	-	-	-	-	-	0.1	-	-	-	0.1	-	-	-	-		
28	28	0.7	3.1	-	-	0.1	0.3	-	-	-	0.1	0.4	2.0	0.1	0.4	-	0.1		
34	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
35a	35a	0.1	0.3	-	-	-	-	-	-	-	-	-	0.1	-	0.2	-	-		
35b	35b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
36	36	0.1	0.3	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-		
38	38	-	0.3	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-		
40	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
41	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
75	75	3.3	14.4	-	-	1.3	5.8	0.3	1.2	-	-	-	-	1.3	5.9	0.3	1.5		
76	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
77a	77a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
77b	77b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SSM	SSM	-	1.2	-	-	-	0.1	-	-	-	-	-	0.5	-	0.5	-	0.2		
F1	F1	0.2	0.7	-	-	-	-	-	-	-	-	0.1	0.3	0.1	0.3	-	0.1		
M1	M1	-	0.4	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	0.1		
T3	T3	-	0.1	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-		

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		Acetaldehyde ☒ HAP or ☐ TAP		Benzene ☒ HAP or ☐ TAP		Ethylbenzene ☒ HAP or ☐ TAP		Formaldehyde ☒ HAP or ☐ TAP		n-Hexane ☒ HAP or ☐ TAP		Toluene ☒ HAP or ☐ TAP		Xylenes ☒ 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
T31	T31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
T109	T109	-	0.1	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-		
T6528	T6528	-	1.0	-	-	-	0.1	-	-	-	-	-	0.6	-	0.2	-	0.1		
T6529	T6529	-	w/T6528	-	-	-	w/T6528	-	-	-	-	-	w/T6528	-	w/T6528	-	w/T6528		
SEP-1	SEP-1	-	w/T6528	-	-	-	w/T6528	-	-	-	-	-	w/T6528	-	w/T6528	-	w/T6528		
Totals		7.3	35.0	1.2	5.1	1.5	6.7	0.3	1.4	1.2	5.1	0.7	4.6	1.6	7.9	0.5	2.5		

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
1	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
2	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
3	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
4	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
5	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
6	Natural Gas	Residue Gas	900 Btu/scf	38.7 Mcf	338.8 MMcf	Negl.	Negl.
7	Natural Gas	Residue Gas	900 Btu/scf	14.3 Mcf	125.0 MMcf	Negl.	Negl.
8	Natural Gas	Residue Gas	900 Btu/scf	14.3 Mcf	125.0 MMcf	Negl.	Negl.
19	Natural Gas	Residue Gas	900 Btu/scf	30.5 Mcf	266.8 MMcf	Negl.	Negl.
20	Natural Gas	Residue Gas	900 Btu/scf	30.5 Mcf	266.8 MMcf	Negl.	Negl.
25	Natural Gas	Residue Gas	900 Btu/scf	9.1 Mcf	79.3 MMcf	Negl.	Negl.
27	Natural Gas	Residue Gas	900 Btu/scf	9.3 Mcf	81.3 MMcf	Negl.	Negl.
28	Natural Gas	Residue Gas	1,097 Btu/scf	87.7 Mcf	299.0 MMcf	Negl.	Negl.
34	Diesel	Diesel	138,000 Btu/gal	19.3 gal	9,650 gal	Negl.	Negl.
35b	Natural Gas	Residue Gas	900 Btu/scf	1.9 Mcf	17.0 MMcf	Negl.	Negl.
36	Natural Gas	Residue Gas	1,308 Btu/scf	0.8 Mcf	6.8 MMcf	Negl.	Negl.
76	Natural Gas	Residue Gas	900 Btu/scf	0.13 Mcf	0.07 MMcf	Negl.	Negl.
77b	Natural Gas	Residue Gas	900 Btu/scf	1.6 Mcf	14.4 MMcf	Negl.	Negl.

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)
T2	31000299	Lean Oil	Lean Oil	Exempt source					
T3	31000299	Flare Separator Liquids	Flare Separator Liquids	5.75	66.54	58.54	1.97	65.66	2.28
T5	31000299	Propane	Propane	Exempt source					
T13	31000299	Y-Grade	Y-Grade	Exempt source					
T14	31000299	Y-Grade	Y-Grade	Exempt source					
T15	31000299	Propane	Propane	Exempt source					
T16	31000299	Out-of-Service	Out-of-Service	For Information Only					
T17	31000299	Out-of-Service	Out-of-Service	For Information Only					
T18	31000299	Out-of-Service	Out-of-Service	For Information Only					
T21	31000299	Methanol	Methanol	Exempt source					
T22	31000299	Methanol	Methanol	Exempt source					
T30	31000299	Separator Liquids	Separator Liquids	Exempt source					
T31	31000299	Flare Separator Liquids	Flare Separator Liquids	5.75	66.95	67.36	2.36	80.79	3.06
T32	31000299	Oil/Water Separator Liquid	Waste Water	Exempt source					
T40	31000299	Used Oil	Used Oil	Exempt source					
T41	31000299	Gasoline	Gasoline	Exempt source					
T42	31000299	Solvent	Solvent	Exempt source					
T50a	31000299	Diesel	Diesel	Exempt source					
T50b	31000299	Diesel	Diesel	Exempt source					
T51	31000299	Lubrication Oil	Lubrication Oil	Exempt source					
T52a	31000299	Glycol	Glycol	Exempt source					
T52b	31000299	Condensate	Glycol	Exempt source					
T53a	31000299	Glycol Storage	Glycol	Exempt source					
T53b	31000299	Glycol Surge	Glycol	Exempt source					
T54	31000299	Ambitrol	Ambitrol	Exempt source					
T56	31000299	Ambitrol	Ambitrol	Exempt source					
T57	31000299	Lubrication Oil	Lubrication Oil	Exempt source					
T58a	31000299	Lean Oil	Lean Oil	Exempt source					
T58b	31000299	Used Oil	Used Oil	Exempt source					

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)
T59	31000299	Methanol	Methanol	Exempt source					
T60	31000299	Diesel	Diesel	Exempt source					
T61	31000299	Out-of-Service	Out-of-Service	For Information Only					
T62a	31000299	Amine Mix	50% Amine & 50% H2O	Exempt source					
T62b	31000299	Amine Mix	50% Amine & 50% H2O	Exempt source					
T62c	31000299	Water	Water	Not an emissions source					
T62d	31000299	Defoamer	Defoamer	Exempt source					
T63	31000299	Amine Slop	Amine	Exempt source					
T64	31000299	Lubrication Oil	Lubrication Oil	Exempt source					
T65	31000299	Lubrication Oil	Lubrication Oil	Exempt source					
T81	31000299	Methanol	Methanol	Exempt source					
T102	31000299	Filter Draining	Condensate	Exempt source					
T104	31000299	Used Oil	Used Oil	Exempt source					
T105	31000299	Water	Water	Not an emissions source					
T106	31000299	Water	Water	Not an emissions source					
T107	31000299	Water	Water	Not an emissions source					
T108	31000299	Ambitrol	Ambitrol	Exempt source					
T109	31000299	Flare Separator Liquids	Flare Separator Liquids	5.75	67.64	67.36	2.36	80.79	3.06
T6528	31000299	Condensate	Condensate	5.94	66.13	67.36	2.60	80.79	3.26
T6529	31000299	Condensate	Condensate	5.94	66.13	67.36	2.60	80.79	3.26

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			
T2		Lean Oil		P	474		Exempt source						
T3		Flare Separator Liquids		P	474		2.44	1.22	WH	WH	Good	1,179,360	59.27
T5		Propane		P	476		Exempt source						
T13		Y-Grade		P	1,905		Exempt source						
T14		Y-Grade		P	1,905		Exempt source						
T15		Propane		P	1,905		Exempt source						
T16		Out-of-Service		P	952		For Information Only						
T17		Out-of-Service		P	952		For Information Only						
T18		Out-of-Service		P	952		For Information Only						
T21		Methanol		P	2,143		Exempt source						
T22		Methanol		P	2,143		Exempt source						
T30		Separator Liquids		FX	210		Exempt source						
T31		Flare Separator Liquids		FX	100		2.44	1.85	MG	MG	Good	117,936	31.37
T32		Oil/Water Separator Liquid		FX	250		Exempt source						
T40		Used Oil		FX	48		Exempt source						
T41		Gasoline		FX	7		Exempt source						
T42		Solvent		FX	7		Exempt source						
T50a		Diesel		FX	24		Exempt source						
T50b		Diesel		FX	5		Exempt source						
T51		Lubrication Oil		FX	71		Exempt source						
T52a		Glycol		FX	24		Exempt source						
T52b		Condensate		FX	47		Exempt source						
T53a		Glycol Storage		FX	210		Exempt source						
T53b		Glycol Surge		FX	25		Exempt source						
T54		Ambitrol		FX	79		Exempt source						
T56		Ambitrol		FX	70		Exempt source						
T57		Lubrication Oil		FX	105		Exempt source						
T58a		Lean Oil		FX	252		Exempt source						
T58b		Used Oil		FX	70		Exempt source						
T59		Methanol		FX	100		Exempt source						
T60		Diesel		FX	24		Exempt source						
T61		Out-of-Service		FX	17		For Information Only						

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			
T62a		Amine Mix		FX	256		Exempt source						
T62b		Amine Mix		FX	100		Exempt source						
T62c		Water		FX	500		Not an emissions source						
T62d		Defoamer		FX	7		Exempt source						
T63		Amine Slop		FX	190		Exempt source						
T64		Lubrication Oil		FX	70		Exempt source						
T65		Lubrication Oil		FX	70		Exempt source						
T81		Methanol		FX	2		Exempt source						
T102		Filter Draining		FX	48		Exempt source						
T104		Used Oil		FX	4		Exempt source						
T105		Water		FX	3,000		Not an emissions source						
T106		Water		FX	5,452		Not an emissions source						
T107		Water		FX	5,452		Not an emissions source						
T108		Ambitrol		FX	25		Exempt source						
T109		Flare Separator Liquids		FX	500		4.05	3.24	MG	MG	Good	1,179,360	59.73
T6528		Condensate		FX	500		4.72	2.76	MG	MG	Good	279,742	14.16
T6529		Condensate		FX	500		4.72	2.76	MG	MG	Good	279,742	14.16

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
	Mechanical Shoe Seal	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**		
FX: Fixed Roof					**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)**
Field Natural Gas			80,300 MMcf/yr	Residue Gas		G	Up to 120 MMcf/day
				Y-grade		L	11,215 bbl
The station capacity is a direct function of available horsepower. The throughput is therefore dependant on atmospheric temperature and pressure, gas temperature and pressure, relative humidity and gas quality, was well as other factors. The “throughput” expressed above is a nominal quantity (with a 15 percent safety factor), neither an absolute maximum, nor an average. Actual throughput l vary from the nominal amount.							

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
N/A									

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
28	Presence of pilot flame	At pilot flame		N/A	As Required	As Required	Thermocouple	N/A
36	Presence of pilot flame	At pilot flame		N/A	As Required	As Required	Thermocouple	N/A

Table 2-P: Greenhouse Gas Emissions

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
1	**mass GHG**	20,508.26	3.87E-02	3.87E-01											20,508.68	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
2	**mass GHG**	20,508.26	3.87E-02	3.87E-01											20,508.68	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
3	**mass GHG**	20,508.26	3.87E-02	3.87E-01											20,508.68	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
4	**mass GHG**	20,508.26	3.87E-02	3.87E-01											20,508.68	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
5	**mass GHG**	20,508.26	3.87E-02	3.87E-01											20,508.68	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
6	**mass GHG**	20,508.26	3.87E-02	3.87E-01											2.05E+04	-
	CO_2e	20,508.26	11.52	9.66											-	20,529.44
7	**mass GHG**	7,555.67	1.42E-02	1.42E-01											7,555.83	-
	CO_2e	7,555.67	4.24	3.56											-	7,563.48
8	**mass GHG**	7,555.67	1.42E-02	1.42E-01											7,555.83	-
	CO_2e	7,555.67	4.24	3.56											-	7,563.48
19	**mass GHG**	16,133.92	3.04E-02	3.04E-01											16,134.25	-
	CO_2e	16,133.92	9.06	7.60											-	16,150.58
20	**mass GHG**	16,133.92	3.04E-02	3.04E-01											16,134.25	-
	CO_2e	16,133.92	9.06	7.60											-	16,150.58
25	**mass GHG**	4,629.98	8.73E-03	8.73E-02											4,630.08	-
	CO_2e	4,629.98	2.60	2.18											-	4,634.76
27	**mass GHG**	4,743.60	8.94E-03	8.94E-02											4,743.70	-
	CO_2e	4,743.60	2.66	2.24											-	4,748.50
28	**mass GHG**	20,357.91	3.61E-02	108.01											20,465.96	-
	CO_2e	20,357.91	10.75	2,700.30											-	23,068.96
34	**mass GHG**	108.34	8.79E-04	4.39E-03											108.35	-
	CO_2e	108.34	2.62E-01	1.10E-01											-	108.71

Table 2-P: Greenhouse Gas Emissions

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
35a	**mass GHG**	417.37	--	3.39											420.76	-
	CO_2e	417.37	--	84.67											-	502.04
35b	**mass GHG**	994.17	1.87E-03	1.87E-02											994.19	-
	CO_2e	994.17	5.58E-01	4.68E-01											-	995.19
36	**mass GHG**	548.45	9.25E-04	--											548.45	-
	CO_2e	548.45	2.76E-01	--											-	548.73
38	**mass GHG**	--	--	--											0.00	-
	CO_2e	--	--	--											-	0.00
40	**mass GHG**	--	--	--											0.00	-
	CO_2e	--	--	--											-	0.00
41	**mass GHG**	--	--	--											0.00	-
	CO_2e	--	--	--											-	0.00
75	**mass GHG**	17,991.65	--	37.15											18,028.80	-
	CO_2e	17,991.65	--	928.63											-	18,920.28
76	**mass GHG**	4.28	8.07E-06	8.07E-05											4.28	-
	CO_2e	4.28	2.40E-03	2.02E-03											-	4.28
77a	**mass GHG**	51.33	--	4.41E-01											51.77	-
	CO_2e	51.33	--	11.02											-	62.35
77b	**mass GHG**	842.60	1.59E-03	1.59E-02											842.62	-
	CO2e	842.60	4.73E-01	3.97E-01											-	843.47
SSM	**mass GHG**	8.35	--	142.67											151.02	-
	CO2e	8.35	--	3,566.67											-	3,575.03
F1	**mass GHG**	86.18	--	1,473.60	Equipment leaks includes compressor venting, pneumatic devices, and non-routine emissions.										1,559.78	-
	CO2e	86.18	--	36,839.89											-	36,926.07
M1	**mass GHG**	2.92	--	49.88											52.80	-
	CO2e	2.92	--	1,247.03											-	1,249.95
T3	**mass GHG**	--	--	--											0.00	-
	CO2e	--	--	--											-	0.00

Table 2-P: Greenhouse Gas Emissions

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
T31	**mass GHG**	--	--	--											0.00	-
	CO2e	--	--	--											-	0.00
T109	**mass GHG**	--	--	--											0.00	-
	CO2e	--	--	--											-	0.00
T6528	**mass GHG**	1.38	--	14.83											16.21	-
	CO2e	1.38	--	370.68											-	372.06
T6529	**mass GHG**	w/T6528	--	w/T6528											0.00	-
	CO2e	w/T6528	--	w/T6528											-	0.00
SEP-1	**mass GHG**	w/T6528	--	w/T6528											0.00	-
	CO2e	w/T6528	--	w/T6528											-	0.00
	mass GHG															
	CO2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
Totals	**mass GHG**	221,217.24	3.80E-01	1,833.38											223,051.01	-
	CO_2e	221,217.24	113.30	45,834.58											-	267,165.13

[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.

Application Summary

The HFC Kutz Canyon Processing Plant currently operates under a construction permit issued by the New Mexico Air Quality Bureau (NMAQB), 0301-M8-R3, dated February 20, 2015 and a Title V operating permit, P097-R2, dated December 19, 2012.

The facility is currently approved by the Title V operating permit to operate the following equipment/sources:

- Six Solar Centaur 40 turbines (Units 1-6);
- Three Solar Saturn 1200 turbines (Units 7, 8 & 29);
- Three Clark HRA-8 reciprocating engines (Units 16-18);
- Two Solar Centaur 3016 turbines (Units 19 & 20);
- One Wheco heater (Unit 22);
- One Alcorn heater (Unit 23);
- One EG dehydrator (Units 24a & 24b);
- One Born glycol heater (Unit 25);
- One Born hot oil heater (Unit 27);
- One plant flare (Unit 28);
- One Pesco fuel gas heater (Unit 30);
- One Cummins 6BTA 208-2100 reciprocating fire pump engine (Unit 32);
- One Ford 428 reciprocating standby fire pump engine (Unit 33);

- One Caterpillar D343 reciprocating standby generator engine (Unit 34)
- One TEG dehydrator (Units 35a & 35b);
- One Zeeco flare (Unit 36);
- One Waukesha L5794LT or L7042GL reciprocating engine (Unit 37a or 37b);
- Truck loading (Unit 38);
- Three cooling towers (Units 39-41);
- One amine contactor (Unit 75);
- One Kohler 8.5RES reciprocating standby generator (Unit 76)
- Six liquid storage tanks (Units T3, T30, T31, T6438, T6528 & T6529);
- Equipment leaks (Unit F1);
- SSM emissions (Unit SSM); and
- Malfunction emissions (Unit M1).

Note that the facility is also equipped with a number of other miscellaneous heaters and liquid storage tanks, for which emissions are insignificant.

This application is being submitted to modify the Title V operating permit. The following equipment is being added to the permit:

- One Infab TEG mole sieve regeneration dehydrator (Units 77a & 77b)

The Kutz I portion of the plant is being retired. The following equipment is being removed from the permit:

- Three Clark HRA-8 reciprocating engines (Units 16-18);
- One Wheco heater (Unit 22);
- One Alcorn heater (Unit 23);
- One EG dehydrator (Units 24a & 24b);
- One Solar Saturn 1200 turbine (Unit 29);
- One Waukesha L5794LT or L7042GL reciprocating engine (Unit 37a or 37b);
- One cooling tower (Unit 39); and
- One condensate storage tank (Unit T6438) with its associated EVRU and EVRU heater (Unit 74).

The following equipment is not part of the facility (it is located more than 0.25 miles away). It is being removed from the permit:

- One Pesco fuel gas heater (Unit 30).

The applicable regulation is 20.2.70 New Mexico Administrative Code (NMAC). The lowest level regulatory citation is 20.2.70.300.B(2) NMAC.

There are no modifications in this application to de-bottleneck impacts or change the facility's major/minor status (both prevention of significant deterioration [PSD] & Title V).

Process Description

The Kutz Canyon Processing Plant is a natural gas processing facility designed to remove ethane and heavier hydrocarbons from natural gas. The Kutz I Plant, which is being retired (and removed from the permit), has been used to remove the heavier hydrocarbons using a refrigerated lean oil absorption process. The Kutz II Plant removes the heavier hydrocarbons using a cryogenic process. A process flow diagram is provided in Section 4.

Note that with the continuing decline in natural gas production in the San Juan Basin, it is no longer economically viable to operate all equipment at the Kutz Canyon Processing Plant. Thus, HFC will discontinue operation of the Kutz I lean oil plant portion of the facility.

Startup, Shutdown and Maintenance Emissions

For the reciprocating engines, heaters, dehydrators (still vents and reboilers), flares, truck loading, cooling towers, amine contactor, equipment leaks (valves, connectors, seals, etc.), and storage tanks, it is concluded there are no SSM emissions in excess of those identified for steady-state operation as seen in Section 2, Table 2-E. Discussions justifying this conclusion are provided in Section 6.

SSM emissions from turbines, compressors, and piping associated with the facility were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The number of blowdowns events were estimated based on historical operations. A safety factor was included.

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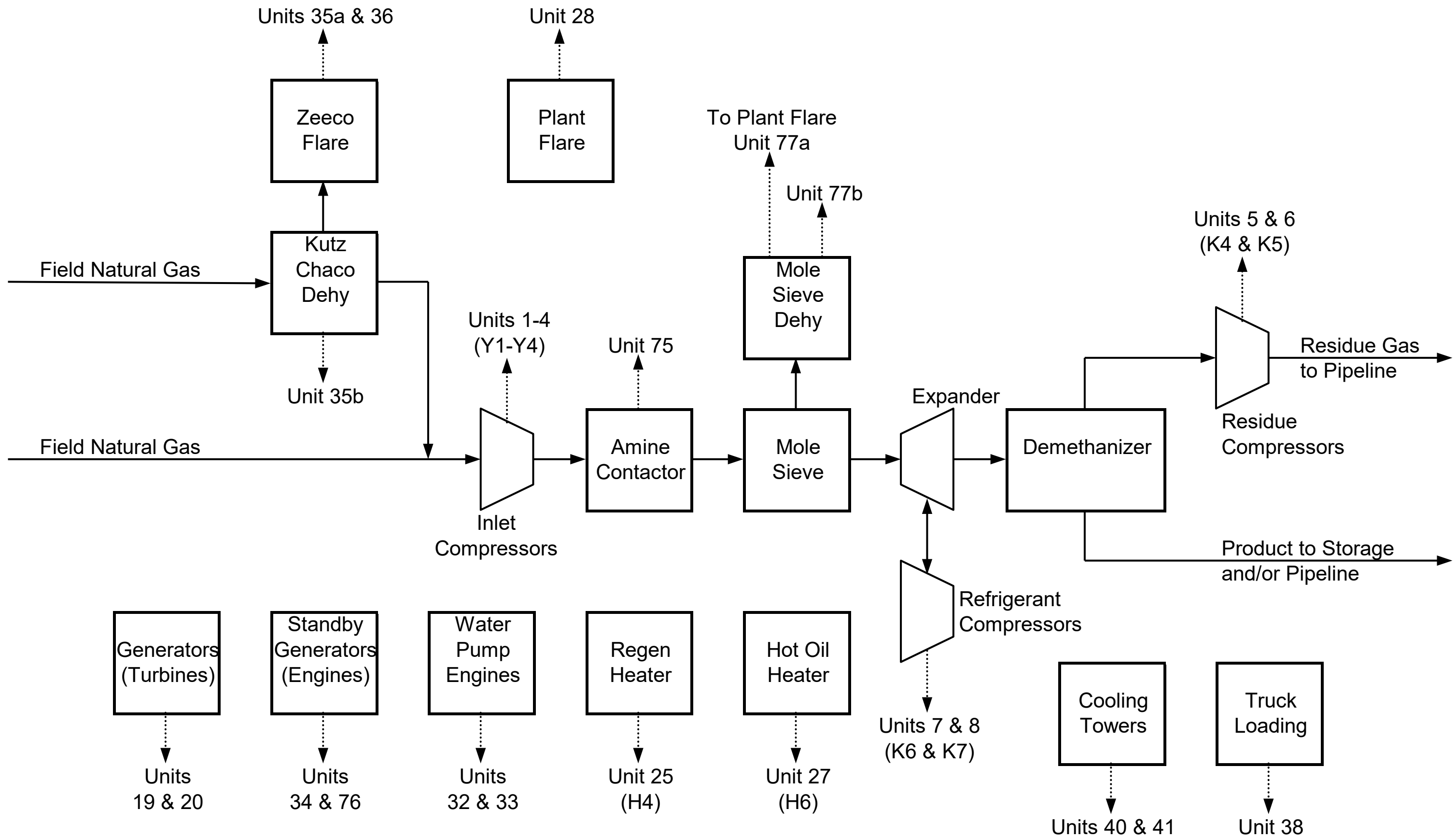
Section 4

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 provided in this section. Please see the following page.

Kutz Canyon Processing Plant
Process Flow Diagram



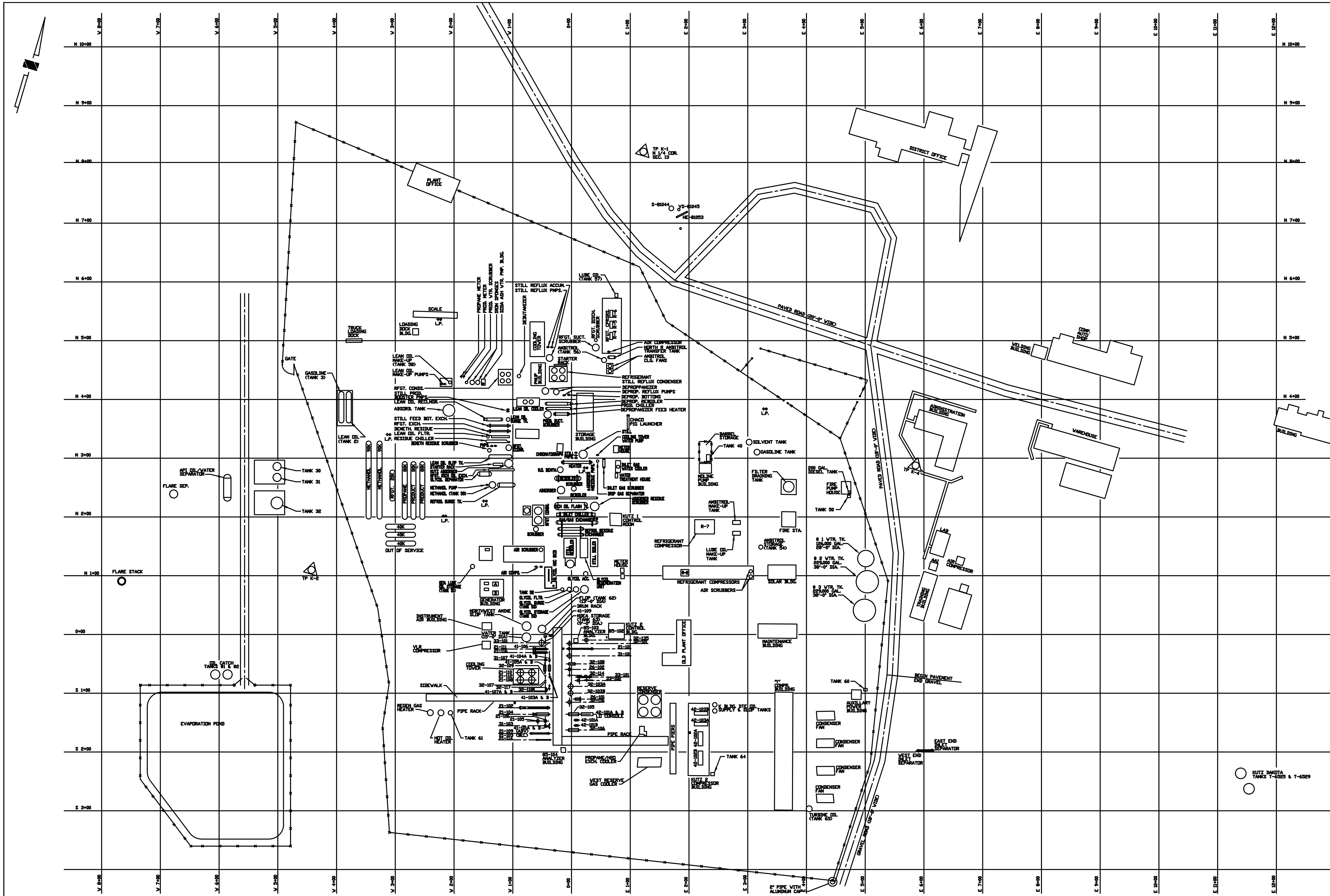
Cirrus Consulting, LLC

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 provided in this section. Please see the following page.



EQUIPMENT KEY LIST

41-109 ANTI FOAM FEED PUMP
33-101 LUBE OIL TANK
41-106 DEA MAKEUP PUMP
21-111 LEAN/RICH EXCHANGER
21-116 DEA STRIPPER REBOILER
41-104 A&B DEA STRIPPER BOTTOMS PUMPS
31-107 DEA STRIPPER
41-105 A&B LEAN DEA BOOSTER PUMP
32-109 DEA STRIPPER OVERHEAD ACCUMULATOR
21-110 LEAN DEA COOLER
21-112 DEA STRIPPER OVERHEAD CONDENSER
21-108 REGENERATION GAS COOLER
32-107 REGEN GAS SCRUBBER
32-117 INSTRUMENT AIR SCRUBBER
32-118 HOT OIL SURGE TANK
41-107 A&B HOT OIL PUMPS
41-103 A&B DEA STRIPPER REFLUX PUMPS
21-102 RICH DEA FILTER
21-104 GAS CHILLER
21-106 COLD GAS/GAS LIQUID EXCHANGER
21-105 COLD GAS/GAS LIQUID EXCHANGER
31-103 DEMETHANIZER
41-101 A&B DEMETHANIZER BOTTOMS PUMPS
21-109(ABOVE) DEMETHANIZER TRIM REBOILER
21-103(BELOW) DEMETHANIZER REBOILER
21-114 DEMETHANIZER PRODUCT CHILLER
85-104 ANALYZER BUILDING
85-102 CONTROL BUILDING
32-135 CONTACTOR OVERHEAD SCRUBBER
32-101 INLET GAS FILTER SEPARATOR
21-101 DEA CONTACTOR INLET GAS EXCHANGER
31-101 DEA CONTACTOR
32-108 RICH DEA FLASH TANK
26-102 RICH DEA FILTER
32-114 LOW PRESSURE FUEL GAS SCRUBBER
33-101 LUBE OIL TANK
33-102 TREATED GAS FILTER SEPARATOR
32-103A INLET GAS DEHYDRATOR
32-103B INLET GAS DEHYDRATOR
26-101 DEHYDRATOR OUTLET FILTER
32-116 EXPANDER COMPRESSOR SUCTION SCRUBBER
32-105 HIGH PRESSURE SEPERATOR
42-101A FIRST STAGE EXPANDER/COMPRESSOR
42-101B SECOND STAGE EXPANDER/COMPRESSOR
42-102A K4
42-102B K5
42-103A K6
42-103B K7
21-113 REFRIGERANT CONDENSER

NOTES:

REVISED
7/18/2019
DESTROY ALL PREVIOUS REVS.

DRAWING NO.	TITLE
..	..
..	..
..	..
..	..
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..	..
..	..
..	..
..	..

REFERENCE DRAWINGS

REV	DRAWN BY	DATE REVISED	CHECKED BY	PROJECT ENG.	APPROVED BY
8	MERGED IN X-REF TO CLEAN UP FILE ASSOCIATIONS				
	T. GOOSSEN	7/18/2019			
7	REVISED TANK TAGS PER ENVIRONMENTAL MARK UPS				
	CMT	03/08/2012			MW
6	REMOVED OLD EQUIP. ADDED NEW EQUIP, RENAMED & MOVED ITEMS.				
	ABB	2/2/12	PH		ES
5	ADDED FS-25401 PER AS-BUILT				
	CMT	9/12/2011		BB	
4	ADDED GLYCOL RECOVERY TANK, AMINE VENT TRAP SLOP TANK & CONT. SOIL CONTAINERS				
	P.HENDERSON	8/26/2010			

REVISIONS

HARVEST MIDSTREAM
San Juan Basin
1755 Arroyo Drive
Bloomfield, NM 87413

KUTZ GAS PLANT
OVERALL PLOT PLAN
SPCC - TANK LOCATIONS

SAN JUAN COUNTY NEW MEXICO

DRAWN BY	BES
CHECKED BY	
PROJECT ENG.	
APPROVED BY	
DATE ISSUED	6/11/97

SCALE: 1"= 80'-0" A.F.E.:

KTZ-1-P7

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.

Note that the hydrogen sulfide (H_2S) content of the natural gas at the station is non-detect. Therefore, it was assumed there are no H_2S emissions associated with any of the equipment. Also note that even if H_2S was present, H_2S emissions from the combustion of natural gas would be negligible. H_2S is converted to SO_2 during combustion.

Turbines

The nitrogen oxides (NO_X), carbon monoxide (CO), volatile organic compounds (VOC), and sulfur dioxide (SO_2) emissions from the turbines (Units 1-8, 19 & 20) were calculated using stack test and manufacturer's data as identified in previous applications. Particulate emissions were calculated using the AP-42 emission factor from Table 3.1-2a. Hazardous air pollutant (HAP) emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each turbine operates at full site capacity for 8,760 hours per year.

The turbines at the station startup with no load and a rich fuel mixture. As a result, emissions are minimized. Because the turbines take only minutes to reach operating temperature, emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, emissions during shutdown do not exceed the steady-state allowable limits, because fuel and air flow cease within seconds of shutdown. Emissions due to scheduled maintenance are negligible as the turbines are not in operation during maintenance.

No modifications are being made to the turbines or their operation. Emissions from the turbines are carried forward and not revised.

Turbine, Compressor and Piping SSM

SSM emissions from the Solar Centaur 40 turbines (Units 1a-6a), Solar Centaur 3016 turbines (Units 7a, 8a, 19a & 20a), compressors, and associated piping are vented to the atmosphere. Note that the compressors associated with Units 7 & 8 are not purged, so there are no SSM emissions from these compressors. Units 19 & 20 are generators, so there are no associated compressors.

SSM emissions from the turbines result from the blowdown of motive gas used to drive turbine components during startups and shutdowns. SSM emissions from the compressors occur when high pressure gas is used to purge air from the compressors and associated piping prior to startups. This gas is then vented to atmosphere. Also, after shutdowns, high pressure gas in the compressors and associated piping is released to atmosphere as a safety precaution.

SSM emissions from blowdown of the turbines, compressors and piping associated with the plant were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by HFC engineering. The composition of the gas was determined from extended gas analyses. For each unit, the annual number of blowdown events were estimated based on historical operations. A safety factor was added because VOC and HAP emissions from each blowdown event are dependent on the composition of the gas in the pipeline and because the number of blowdowns in a year may vary. Experience indicates the composition of the gas is likely to vary. The use of the safety factor is also designed to ensure an adequate emissions limit, which includes emissions from other miscellaneous startup, shutdown and maintenance activities.

Consistent with other facilities, it is requested SSM emissions from the turbines, compressors and associated piping be permitted under a single facility-wide emissions limit.

SSM emissions are carried forward and not revised.

Reciprocating Engines

All emissions from the Caterpillar D343 standby generator engine were calculated using AP-42 emission factors from Tables 3.3-1 and 3.3-2. Criteria pollutant emissions from the Kolher 8.5RES standby generator engine were calculated used AP-42 emission factors from Table 3.2-3. HAP emissions from the Kohler generator were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming the engines operates at full site capacity for 500 hours per year.

The engine starts up with no load and a rich fuel mixture. As a result, emissions are minimized. Because the engine takes only minutes to reach operating temperature, emissions during startup do not exceed the steady-state allowable limits. Similarly, emissions during shutdown do not exceed the steady-state allowable limits, because fuel and air flow cease within seconds of shutdown. Emissions due to scheduled maintenance are negligible as the engines are not in operation during maintenance.

No modifications are being made to the engine or its operation. Emissions from the engine are carried forward and not revised.

Heaters

The criteria pollutant emissions from the natural gas-fired heaters (Units 25, 27, 43, 44, 49, 50, 60 & 64-68) were calculated using AP-42 emission factors from Section 1.4. HAP emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each heater and reboiler operates at full site capacity for 8,760 hours per year. Note that Units 43, 44, 49, 50, 60 & 64-68 are exempt sources in accordance with 20.2.72.202(B) NMAC and insignificant sources in accordance with Insignificant Activity Citation #'s 1a & 1b. Combined emissions from each heater type for each pollutant are less than 0.5 tons per year.

The heaters and reboilers (uncontrolled) startup with less fuel input than during steady-state operation, so emissions are lower than during steady-state operation. During shutdown, the fuel supply stops quickly, but air flow may not, causing the continued formation of NO_X. Even so, with no fuel, NO_X formation should be less than during steady-state operation. Emissions due to scheduled maintenance are negligible as the units are not in operation.

No modifications are being made to the heaters or their operation. Emissions from the heaters are carried forward and not revised.

Dehydrators

Unit 35a still vent emissions are controlled by the Zeeco flare (Unit 36). Unit 77a still vent emissions are controlled by the plant flare (Unit 28). VOC and HAP emissions from the dehydrators were calculated using GRI-GLYCalc 4.0. The control efficiencies of the flares were estimated to be 95 percent. It is assumed the dehydrators operate at design capacity for 8,760 hours per year. To allow for variations in dehydrator inlet gas compositions, the emissions identified in the Section 2 tables include a safety factor.

During startup, the dehydrator reboilers are brought up to temperature before allowing glycol into the absorbers. This prevents excess VOC and HAP from collecting in the glycol stream and there are no excess startup emissions above those expected during steady-state operation. Also, the dehydrators are not turned on until the flares are in operation. During shutdown, the reboilers are shut down in conjunction with the gas flow and glycol circulation. Again, this prevents excess VOC and HAP from collecting in the glycol stream and there are no excess shutdown emissions above those expected during steady-state operation. Also, the flares are not shut down while dehydrators are in operation. Emissions due to scheduled maintenance are negligible; either the units are not in operation during maintenance or maintenance is limited to tasks for which there are no excess emissions.

No modifications are being made to the dehydrators or their operation. Emissions from the dehydrators are carried forward and not revised.

Dehydrator Reboilers

Criteria pollutant emissions from Unit 35b were calculated using AP-42 emission factors from Section 1.4. HAP emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming the reboiler operates at full site capacity for 8,760 hours per year.

The NO_X and CO emission factors for Unit 77b were identified from an Enertek letter dated August 19, 1994. The VOC and SO_2 emission factors were identified from an InFab letter dated July 22, 1998. The particulate and lead emissions were calculated using AP-42 emission factors from Table 1.4-2. HAP emissions were calculated using GRI-HAPCalc 3.0. All emissions were calculated assuming the reboiler operates 8,760 hours per year.

The reboilers (uncontrolled) startup with less fuel input than during steady-state operation, so emissions are lower than during steady-state operation. During shutdown, the fuel supply stops quickly, but air flow may not, causing the continued formation of NO_X. Even so, with no fuel, NO_X formation should be less than during steady-state operation. Emissions due to scheduled maintenance are negligible as the units are not in operation.

No modifications are being made to the reboiler or their operation. Emissions from the reboilers are carried forward and not revised.

Flares

Emissions from the plant flare (Unit 28) were calculated based on historical pilot gas throughput and actual flare throughput volumes. The NO_X, and CO emissions from the flare were calculated using Texas Commission on Environmental Quality (TCEQ) emission factors. SO_2 and lead emissions were calculated using the AP-42 emissions factors from Table 1.4-2. VOC emissions were calculated from the gas composition and throughput. HAP emissions were calculated using GRI-HAPCalc 3.0. To allow for variations in inlet gas composition, a safety factor was applied to the historic average flow rates used to calculate emissions.

The NO_X, and CO emissions from the Zeeco flare (Unit 36) were calculated using TCEQ emission factors. SO_2, VOC, and lead emissions were calculated using AP-42 emissions factors from Table 1.4-2. The flow rates were identified from manufacturer's data and the GRI-GLYCalc 4.0 output file. The heat contents were calculated from data in the GRI-GLYCalc 4.0 output file. Note that VOC and HAP emissions from the dehydrator are accounted for in the dehydrator emissions calculations, rather than the flare emissions calculations.

There are no excess SSM emissions associated with operation of the flares. The flares do not require warm-up periods. Equipment is not turned on unless the flares are in operation and the flares are not shut down while equipment is in operation. No maintenance is conducted on the flares while they are in operation.

No modifications are being made to the flares or their operation. Emissions from the flares are carried forward and not revised.

Truck Loading

VOC emissions from truck loading (Unit 38) were calculated using the AP-42 emission factor from Section 5.2 and data provided by HFC. HAP emissions were calculated from the composition of the condensate as determined from the TANKS 4.0 results.

Due to the nature of the source, it is estimated there are no startup or shutdown emissions associated with truck loading. No maintenance is conducted during truck loading operations.

Emissions from truck loading are carried forward and not revised.

Cooling Towers

TSP emissions from the cooling towers (Units 40 & 41) were calculated using AP-42 emission factors from Section 13.4 and data provided by HFC. The PM_{10} emissions factors were calculated from the TSP emission factors using the "Frisbie" paper equation.

Due to the nature of the source, it is estimated there are no startup or shutdown emissions associated with the cooling towers. No maintenance is conducted while the cooling towers are in operation.

No modifications are being made to the cooling tower equipment or operations. Emissions from the cooling towers are carried forward and not revised.

Amine Contactor

Amine contactor (Unit 75) VOC and HAP emissions were calculated using AMINECalc 1.0. The emissions calculations were based on an amine circulation rate of 350 gpm. To allow for variations in inlet gas composition, the emissions identified in the Section 2 tables include a safety factor.

It is estimated there are no additional SSM emissions.

No modifications are being made to the amine contactor or its operation. Emissions from the amine contactor are carried forward and not revised.

Equipment Leaks

Fugitive emissions from equipment leaks (F1), valves, flanges, seals, etc., were calculated using emission factors from the 1995 Protocol for Equipment Leak Emission Estimates published by the Environmental Protection Agency (EPA). Note that propane loading rack emissions are included as fugitive emissions.

Due to the nature of the source, it is estimated that SSM emissions from valves, connectors, seals, etc. are accounted for in the calculations.

Emissions from equipment leaks are carried forward and not revised.

Malfunctions

Malfunction (Unit M1) emissions were set at 10.0 tons of VOC per year to account for emissions that may occur during upsets and malfunctions (including, but not limited to, unscheduled blowdowns and relief valve release). Based on the gas release rate associated with the set emission rate, HAP emissions were determined from the gas composition. Note that these malfunction emissions include the venting of gas only, not combustion emissions.

Malfunction emissions are carried forward and not revised.

Storage Tanks

Emissions from the condensate storage tanks (Units T6528 & T6529) were calculated using TANKS 4.0.9d for working-breathing losses and Promax 3.2 for flash emissions. Emissions were calculated using the condensate (post-flash) throughput of 13,321 barrels per year. The ProMax model run includes flash gas emissions from the slug receiver inlet separator, as have the previous tank flash model runs.

Where necessary, the working/breathing losses for the remaining tanks were calculated using TANKS 4.0.d.9. The following assumptions were made:

- Residual oil #6 was used to estimate lean, oil/water, used oil and lubrication oil emissions. As the vapor pressure of residual oil is less than 0.2 pounds per square inch absolute (psia), the tanks containing lean oil, oil/water, used oil, and lubrication oil were assumed to be exempt and insignificant;

- The flashed condensate composition as identified from the ProMax output files was used to estimate flare separator liquids emissions;

- As propane and y-grade are stored in pressure vessels, there are no VOC or HAP emissions from these units;

- As Units T21 & T22 are pressure vessels, there are no VOC emissions from the methane stored in these tanks;

- Gasoline (RVP 13) was used to estimate gasoline tank emissions;

- Distillate fuel oil #2 was used to estimate diesel fuel emissions. As the vapor pressure of distillate fuel oil #2 is less than 0.2 pounds per square inch absolute (psia), the tanks containing diesel fuel were assumed to be exempt and insignificant.

- Jet kerosene was used to estimate petroleum solvent emissions. As the vapor pressure of jet kerosene is less than 0.2 psia, the tank containing petroleum solvent was assumed to be exempt and insignificant;

- As the vapor pressures of EG and TEG are less than 0.2 psia, the tanks containing EG and TEG are exempt and insignificant;

- As the vapor pressures of ethylene glycol and propylene glycol are less than 0.2 psia, the tanks containing Ambitrol are exempt and insignificant. Note that Ambitrol is an inhibited ethylene or propylene glycol coolant containing ethylene or propylene glycol, water and less than 5% dipotassium hydrogen phosphate;

- As the vapor pressure of methyldiethanolamine (MDEA) is less than 0.2 psia, the tanks containing amine, amine/water, or defoamer are exempt and insignificant; and

- The natural gasoline liquid composition identified in HAPCalc 3.0 was used to estimate hydrocarbon emissions from the tank containing dehydrator separator liquids (the tank is estimated to contain 99 percent water and one percent hydrocarbons).

The VOC emission rate from the gasoline storage tank (Unit T41) is 647.56 pounds per year. As such, it is an exempt and insignificant source.

The combined VOC emission rate from the methanol storage tanks (Units T59 & T81) are 209.9 pounds per year. As such, they are exempt and insignificant sources.

Due to the nature of operations, startup and shutdown emissions (working/breathing losses) from the storage tanks are assumed to be accounted for in the TANKS 4.0.9d program used to calculate emissions. Due to the nature of the source, it is assumed there are no excess startup or shutdown emissions associated with flashing of the condensate. Emissions due to maintenance are negligible as the units are not in operation.

No changes are being made to these tanks or their operation. Emissions from the tanks are carried forward and not revised.

Turbine Exhaust Emissions Calculations

Unit Number: 1-6 (Y1-Y4, K4 & K5)
Description: Solar Centaur 40

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

5,800	ft above MSL	Elevation	
3,830	hp	Nameplate hp	Mfg. data
3,692	hp	Mfg. Site-rated hp	Previous Application

Fuel Consumption

9,429	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
34.81	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
38,680	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
304,952	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
338.84	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	15.50	67.90
CO	14.70	64.40
VOC	4.47	19.60
SO2	2.90E-02	1.30E-01

NOX emissions taken from previous applications (based on Kutz stack test data [10% safety factor added])
CO emissions taken from previous applications (based on manufacturers data [300% safety factor added])
VOC emissions taken from previous applications (based on manufacturers data [500% safety factor added])
SO2 emissions taken from previous applications (derived from pipeline standard sulfur concentration [0.25 gr H2S/100 scf] and fuel consumption [10% safety factor added])

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
PM	6.60E-03	2.30E-01	1.01E+00
PM10	6.60E-03	2.30E-01	1.01E+00
PM2.5	6.60E-03	2.30E-01	1.01E+00

Emission factors taken from AP-42, Table 3.1-2a
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

798	°F	Exhaust temperature	Previous application
76253	cfm	Stack flowrate	Previous application
2.46	ft	Stack diameter	Harvest Four Corners, LLC
4.75	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
267.4	fps	Stack velocity	acfm / ft^2 / 60 sec/min
22.0	ft	Stack height (Units 1-4)	Harvest Four Corners, LLC
35.0	ft	Stack height (Units 5 & 6)	Harvest Four Corners, LLC

Turbine Exhaust Emissions Calculations

Unit Number: 7 & 8 (K6 & K7)
Description: Solar Saturn T1200

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

5,800	ft above MSL	Elevation	
1,200	hp	Nameplate hp	Mfg. data
1,157	hp	Mfg. Site-rated hp	Previous Application

Fuel Consumption

11,098	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
12.84	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
14,267	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
112,482	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
124.98	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	4.32	18.90
CO	6.47	28.40
VOC	2.50E-01	1.10
SO2	1.10E-02	4.60E-02

NOX emissions taken from previous applications (based on Lybrook RC-6 stack test data [10% safety factor added])
CO emissions taken from previous applications (based on manufacturers data [300% safety factor added])
VOC emissions taken from previous applications (based on manufacturers data [400% safety factor added])
SO2 emissions taken from previous applications (derived from pipeline standard sulfur concentration
[0.25 gr H2S/100 scf] and fuel consumption [10% safety factor added])

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
PM	6.60E-03	8.47E-02	3.71E-01
PM10	6.60E-03	8.47E-02	3.71E-01
PM2.5	6.60E-03	8.47E-02	3.71E-01

Emission factors taken from AP-42, Table 3.1-2a
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

840	°F	Exhaust temperature	Previous application
28599	cfm	Stack flowrate	Previous application
2.00	ft	Stack diameter	Harvest Four Corners, LLC
3.14	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
151.7	fps	Stack velocity	acfm / ft^2 / 60 sec/min
35.0	ft	Stack height	Harvest Four Corners, LLC

Turbine Exhaust Emissions Calculations

Unit Number: 19 & 20 (Gen A & Gen B)
Description: Solar Centaur 40

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

5,800	ft above MSL	Elevation	
3,016	hp	Nameplate hp	Mfg. data
2,907	hp	Mfg. Site-rated hp	Previous Application

Fuel Consumption

9,429	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
27.41	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
30,456	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
240,113	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
266.79	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	15.50	67.90
CO	14.70	64.40
VOC	4.47	19.60
SO2	2.30E-02	1.00E-01

NOX emissions taken from previous applications (based on Kutz Y4 stack test data [10% safety factor added])
CO emissions taken from previous applications (based on manufacturers data [300% safety factor added])
VOC emissions taken from previous applications (based on manufacturers data [500% safety factor added])
SO2 emissions taken from previous applications (derived from pipeline standard sulfur concentration [0.25 gr H2S/100 scf] and fuel consumption [10% safety factor added])

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
PM	6.60E-03	1.81E-01	7.92E-01
PM10	6.60E-03	1.81E-01	7.92E-01
PM2.5	6.60E-03	1.81E-01	7.92E-01

Emission factors taken from AP-42, Table 3.1-2a
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

798	°F	Exhaust temperature	Previous application
76253	cfm	Stack flowrate	Previous application
2.46	ft	Stack diameter	Harvest Four Corners, LLC
4.75	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
267.4	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
22.0	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Turbine Report

Facility ID:	**KUTZ**	**Notes:**
Operation Type:	**GAS PLANT**	
Facility Name:	**KUTZ CANYON PROCESSING PLANT**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

***Note:** Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.*
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Turbine Unit

Unit Name: UNITS1-6

Hours of Operation:	8,760	Yearly
Rate Power:	3692	hp
Fuel Type:	NATURAL GAS	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	0.6033	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.6175	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0022	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0093	0.00026000 g/bhp-hr	GRI Field
Propional	0.0308	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0044	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0192	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0146	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0037	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0443	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0572	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0536	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0039	0.00011010 g/bhp-hr	GRI Field
n-Nitrosomorpholine	0.0000	0.00000100 g/bhp-hr	EPA
Naphthalene	0.0003	0.00000760 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0000	0.00000130 g/bhp-hr	GRI Field
Biphenyl	0.0118	0.00033050 g/bhp-hr	GRI Field
Phenanthrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000100 g/bhp-hr	GRI Field
Beryllium	0.0000	0.00000010 g/bhp-hr	GRI Field
Phosphorous	0.0023	0.00006520 g/bhp-hr	GRI Field
Chromium	0.0003	0.00000820 g/bhp-hr	GRI Field
Chromium	0.0002	0.00000560 g/bhp-hr	EPA
Manganese	0.0006	0.00001750 g/bhp-hr	GRI Field
Nickel	0.0002	0.00000610 g/bhp-hr	GRI Field
Cobalt	0.0001	0.00000160 g/bhp-hr	GRI Field

Arsenic	0.0000	0.00000060 g/bhp-hr	GRI Field
Selenium	0.0000	0.00000030 g/bhp-hr	GRI Field
Cadmium	0.0000	0.00000020 g/bhp-hr	GRI Field
Mercury	0.0001	0.00000270 g/bhp-hr	GRI Field
Lead	0.0001	0.00000340 g/bhp-hr	GRI Field
Total	1.4800		

Criteria Pollutants

PM	1.1343	0.03184680 g/bhp-hr	EPA
CO	75.0947	2.10828420 g/bhp-hr	GRI Field
NMHC	6.9057	0.19387800 g/bhp-hr	GRI Field
NMEHC	0.4292	0.01205010 g/bhp-hr	EPA
NOx	44.6006	1.25216290 g/bhp-hr	GRI Field
SO2	0.0366	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	35.1627	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.2552	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.4970	0.01395450 g/bhp-hr	GRI Field
Ethane	5.3458	0.15008370 g/bhp-hr	GRI Field
Propane	0.5699	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.1710	0.00480000 g/bhp-hr	GRI Field
Butane	0.1852	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0588	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0477	0.00134000 g/bhp-hr	GRI Field
n-Pentane	2.8905	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.2181	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.3146	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.1136	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.1069	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0190	0.00053260 g/bhp-hr	GRI Field
CO2	16,861.8987	473.39811550 g/bhp-hr	EPA
Vanadium	0.0000	0.00000070 g/bhp-hr	GRI Field
Copper	0.0007	0.00002050 g/bhp-hr	GRI Field
Molybdenum	0.0007	0.00002030 g/bhp-hr	GRI Field
Barium	0.0008	0.00002290 g/bhp-hr	GRI Field

Unit Name: UNITS19&20

Hours of Operation: 8,760 Yearly

Rate Power: 2907 hp

Fuel Type: NATURAL GAS

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	0.4750	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.4862	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0017	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0073	0.00026000 g/bhp-hr	GRI Field
Propional	0.0243	0.00086500 g/bhp-hr	GRI Field

Propylene Oxide	0.0035	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0151	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0115	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0029	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0349	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0450	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0422	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0031	0.00011010 g/bhp-hr	GRI Field
n-Nitrosomorpholine	0.0000	0.00000100 g/bhp-hr	EPA
Naphthalene	0.0002	0.00000760 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0000	0.00000130 g/bhp-hr	GRI Field
Biphenyl	0.0093	0.00033050 g/bhp-hr	GRI Field
Phenanthrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000100 g/bhp-hr	GRI Field
Beryllium	0.0000	0.00000010 g/bhp-hr	GRI Field
Phosphorous	0.0018	0.00006520 g/bhp-hr	GRI Field
Chromium	0.0002	0.00000820 g/bhp-hr	GRI Field
Chromium	0.0002	0.00000560 g/bhp-hr	EPA
Manganese	0.0005	0.00001750 g/bhp-hr	GRI Field
Nickel	0.0002	0.00000610 g/bhp-hr	GRI Field
Cobalt	0.0000	0.00000160 g/bhp-hr	GRI Field
Arsenic	0.0000	0.00000060 g/bhp-hr	GRI Field
Selenium	0.0000	0.00000030 g/bhp-hr	GRI Field
Cadmium	0.0000	0.00000020 g/bhp-hr	GRI Field
Mercury	0.0001	0.00000270 g/bhp-hr	GRI Field
Lead	0.0001	0.00000340 g/bhp-hr	GRI Field
Total	1.1653		

Criteria Pollutants

PM	0.8932	0.03184680 g/bhp-hr	EPA
CO	59.1279	2.10828420 g/bhp-hr	GRI Field
NMHC	5.4374	0.19387800 g/bhp-hr	GRI Field
NMEHC	0.3380	0.01205010 g/bhp-hr	EPA
NOx	35.1175	1.25216290 g/bhp-hr	GRI Field
SO2	0.0288	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	27.6863	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.2010	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.3914	0.01395450 g/bhp-hr	GRI Field
Ethane	4.2092	0.15008370 g/bhp-hr	GRI Field
Propane	0.4487	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.1346	0.00480000 g/bhp-hr	GRI Field
Butane	0.1458	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0463	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0376	0.00134000 g/bhp-hr	GRI Field
n-Pentane	2.2759	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.1718	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.2477	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.0894	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.0841	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0149	0.00053260 g/bhp-hr	GRI Field
CO2	13,276.6900	473.39811550 g/bhp-hr	EPA

Vanadium	0.0000	0.00000070 g/bhp-hr	GRI Field
Copper	0.0006	0.00002050 g/bhp-hr	GRI Field
Molybdenum	0.0006	0.00002030 g/bhp-hr	GRI Field
Barium	0.0006	0.00002290 g/bhp-hr	GRI Field

Unit Name: UNITS7&8

Hours of Operation: 8,760 Yearly

Rate Power: 1157 hp

Fuel Type: NATURAL GAS

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	0.1891	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.1935	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0007	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0029	0.00026000 g/bhp-hr	GRI Field
Propional	0.0097	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0014	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0060	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0046	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0012	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0139	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0179	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0168	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0012	0.00011010 g/bhp-hr	GRI Field
n-Nitrosomorpholine	0.0000	0.00000100 g/bhp-hr	EPA
Naphthalene	0.0001	0.00000760 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0000	0.00000130 g/bhp-hr	GRI Field
Biphenyl	0.0037	0.00033050 g/bhp-hr	GRI Field
Phenanthrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000100 g/bhp-hr	GRI Field
Beryllium	0.0000	0.00000010 g/bhp-hr	GRI Field
Phosphorous	0.0007	0.00006520 g/bhp-hr	GRI Field
Chromium	0.0001	0.00000820 g/bhp-hr	GRI Field
Chromium	0.0001	0.00000560 g/bhp-hr	EPA
Manganese	0.0002	0.00001750 g/bhp-hr	GRI Field
Nickel	0.0001	0.00000610 g/bhp-hr	GRI Field
Cobalt	0.0000	0.00000160 g/bhp-hr	GRI Field
Arsenic	0.0000	0.00000060 g/bhp-hr	GRI Field
Selenium	0.0000	0.00000030 g/bhp-hr	GRI Field
Cadmium	0.0000	0.00000020 g/bhp-hr	GRI Field
Mercury	0.0000	0.00000270 g/bhp-hr	GRI Field
Lead	0.0000	0.00000340 g/bhp-hr	GRI Field
Total	0.4639		
Criteria Pollutants			
PM	0.3555	0.03184680 g/bhp-hr	EPA
CO	23.5332	2.10828420 g/bhp-hr	GRI Field
NMHC	2.1641	0.19387800 g/bhp-hr	GRI Field

NMEHC	0.1345	0.01205010 g/bhp-hr	EPA
NOx	13.9770	1.25216290 g/bhp-hr	GRI Field
SO2	0.0115	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	11.0193	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.0800	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.1558	0.01395450 g/bhp-hr	GRI Field
Ethane	1.6753	0.15008370 g/bhp-hr	GRI Field
Propane	0.1786	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.0536	0.00480000 g/bhp-hr	GRI Field
Butane	0.0580	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0184	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0150	0.00134000 g/bhp-hr	GRI Field
n-Pentane	0.9058	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.0684	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.0986	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.0356	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.0335	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0059	0.00053260 g/bhp-hr	GRI Field
CO2	5,284.1866	473.39811550 g/bhp-hr	EPA
Vanadium	0.0000	0.00000070 g/bhp-hr	GRI Field
Copper	0.0002	0.00002050 g/bhp-hr	GRI Field
Molybdenum	0.0002	0.00002030 g/bhp-hr	GRI Field
Barium	0.0003	0.00002290 g/bhp-hr	GRI Field

Engine Exhaust Emissions Calculations

Unit Number: 34
Description: Caterpillar D343 Standby Generator (Diesel)

Horsepower Calculations

5,800	ft above MSL	Elevation	
390	hp	Nameplate hp	Mfg. data

Fuel Consumption

19.30	gal/hr	Hourly fuel consumption	Mfg. data
138,000	Btu/gal	Field gas heating value	Nominal heat content
2.66	MMBtu/hr	Hourly fuel consumption	gal/hr x Btu/gal / 1,000,000 Btu/MMBtu
500	hr/yr	Annual operating time	Harvest Four Corners, LLC
9,650	gal/yr	Hourly fuel consumption	gal/hr x hr/yr
1,332	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NO2	4.41	11.75	2.94
CO	9.50E-01	2.53	6.33E-01
VOC	3.60E-01	9.59E-01	2.40E-01
SO2	2.90E-01	7.72E-01	1.93E-01
PM	3.10E-01	8.26E-01	2.06E-01
PM10	3.10E-01	8.26E-01	2.06E-01
PM2.5	3.10E-01	8.26E-01	2.06E-01
Acetaldehyde	7.67E-04	2.04E-03	5.11E-04
Benzene	9.33E-04	2.48E-03	6.21E-04
Formaldehyde	1.18E-03	3.14E-03	7.86E-04
Naphthalene	8.48E-05	2.26E-04	5.65E-05
Toluene	4.09E-04	1.09E-03	2.72E-04
Xylene	2.85E-04	7.59E-04	1.90E-04

Emission factors taken from AP-42, Tables 3.3-1 & 3.3-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

750	°F	Stack exit temperature	Estimated from Shell Offshore Inc. application submitted to EPA Region 10
777	acfm	Stack flowrate	fps x ft^2 x 60 sec/min
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
65.94	fps	Stack exit velocity	Estimated from Shell Offshore Inc. application submitted to EPA Region 10
14.40	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 76
Description: Kohler 8.5RES Standby Generator

Horsepower Calculations

5,800	ft above MSL	Elevation	
13.4	hp	Nameplate hp	Mfg. data
12.7	hp	Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
11.3	hp	Site-rated hp	Mfg. data (loss of 3% for every 1,000 ft over 500 ft)

Fuel Consumption

0.132	MMBtu/hr	Hourly fuel consumption	Mfg. data
1,000	Btu/scf	Field gas heating value	Nominal heat content
132	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
500	hr/yr	Annual operating time	Harvest Four Corners, LLC
66.00	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.07	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
NO2	2.27	3.00E-01	7.49E-02
CO	3.72	4.91E-01	1.23E-01
VOC	2.96E-02	3.91E-03	9.77E-04
SO2	5.88E-04	7.76E-05	1.94E-05
PM	1.94E-02	2.56E-03	6.41E-04
PM10	1.94E-02	2.56E-03	6.41E-04
PM2.5	1.94E-02	2.56E-03	6.41E-04

Emission factors taken from AP-42, Table 3.2-3
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1400	°F	Stack exit temperature	Mfg. data
115	acfm	Stack flowrate	Mfg. data
NA	ft	Stack exit diameter	Mfg. data
NA	fps	Stack exit velocity	Mfg. data
1.00	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Engines Report

Facility ID:	**KUTZ**	**Notes:**
Operation Type:	**GAS PLANT**	
Facility Name:	**KUTZ CANYON PROCESSING PLANT**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero. These emissions are indicated on the report with a "0". Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Engine Unit

Unit Name: 8.5RES

Hours of Operation:	500	Yearly
Rate Power:	13	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
Formaldehyde	0.0003	0.04188340	g/bhp-hr	GRI Field
Methanol	0.0000	0.00666670	g/bhp-hr	GRI Field
Benzene	0.0002	0.02210000	g/bhp-hr	GRI Field
Toluene	0.0001	0.00710000	g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0000	0.00170000	g/bhp-hr	GRI Field
Naphthalene	0.0000	0.00027540	g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0000	0.00005050	g/bhp-hr	GRI Field
Acenaphthylene	0.0000	0.00001890	g/bhp-hr	GRI Field
Acenaphthene	0.0000	0.00001090	g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570	g/bhp-hr	GRI Field
Fluorene	0.0000	0.00001720	g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400	g/bhp-hr	GRI Field
Phenanthrene	0.0000	0.00003210	g/bhp-hr	GRI Field
Fluoranthene	0.0000	0.00001260	g/bhp-hr	GRI Field
Pyrene	0.0000	0.00000860	g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180	g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Total	0.0006			
Criteria Pollutants				
CO	0.0650	9.08349210	g/bhp-hr	GRI Field
NMEHC	0.0019	0.26396820	g/bhp-hr	GRI Field
NOx	0.0539	7.52654670	g/bhp-hr	GRI Field

Other Pollutants

Methane	0.0070	0.98000000 g/bhp-hr	GRI Field
Ethylene	0.0009	0.12666670 g/bhp-hr	GRI Field
Ethane	0.0022	0.30666670 g/bhp-hr	GRI Field
Propylene	0.0002	0.02400000 g/bhp-hr	GRI Field
Propane	0.0007	0.09600000 g/bhp-hr	GRI Field

Heater Exhaust Emissions Calculations

Unit Number: 25 (H4)
Description: Born Regenerator Gas Mole Seive Heater

Fuel Consumption

8.15	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
9,056	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
71,394	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
79.33	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates,	
	pph	tpy
NOX	1.09	4.76
CO	2.30E-01	1.00
VOC	4.20E-02	1.80E-01
SO2	6.00E-03	2.60E-02

NOX emissions taken from previous applications (based on AP-42, Table 1.4-2 [100 lb NOX/MMcf] plus 20% safety factor)
CO emissions taken from previous applications (based on AP-42, Table 1.4-2 [21 lb CO/MMcf] plus 20% safety factor)
VOC emissions taken from previous applications (based on AP-42, Table 1.4-3 [5.8 lb TOC/MMcf] plus 20% safety factor [assumed 34% methane])
SO2 emissions taken from previous applications (based on AP-42, Table 1.4-2 [0.6 lb SO2/MMcf] plus 10% safety factor)

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates,	
		pph	tpy
PM	7.60	6.88E-02	3.01E-01
PM10	7.60	6.88E-02	3.01E-01
PM2.5	7.60	6.88E-02	3.01E-01
Lead	5.00E-04	4.53E-06	1.98E-05

Emission factors taken from AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
4,022	acfm	Stack flowrate	Mfg. data
3.0	ft	Stack exit diameter	Harvest Four Corners, LLC
7.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
9.48	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
60	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 27 (H6)
Description: Born Hot Oil Heater

Fuel Consumption

8.35	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
9,278	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
73,146	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
81.27	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	1.11	4.88
CO	2.30E-01	1.00
VOC	4.30E-02	1.90E-01
SO2	6.00E-03	2.70E-02

NOX emissions taken from previous applications (based on AP-42, Table 1.4-2 [100 lb NOX/MMcf] plus 20% safety factor)
CO emissions taken from previous applications (based on AP-42, Table 1.4-2 [21 lb CO/MMcf] plus 20% safety factor)
VOC emissions taken from previous applications (based on AP-42, Table 1.4-3 [5.8 lb TOC/MMcf] plus 20% safety factor [assumed 34% methane])
SO2 emissions taken from previous applications (based on AP-42, Table 1.4-2 [0.6 lb SO2/MMcf] plus 10% safety factor)

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
PM	7.60	7.05E-02	3.09E-01
PM10	7.60	7.05E-02	3.09E-01
PM2.5	7.60	7.05E-02	3.09E-01
Lead	5.00E-04	4.64E-06	2.03E-05

Emission factors taken from AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
4,121	acfm	Stack flowrate	Mfg. data
4.5	ft	Stack exit diameter	Harvest Four Corners, LLC
15.90	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
4.32	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
78.4	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 35b
Description: Chaco Dehy Reboiler - Pesco

Fuel Consumption

1.75	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
1,944	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
15,330	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
17.03	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	1.94E-01	8.52E-01
CO	84	1.63E-01	7.15E-01
VOC	5.5	1.07E-02	4.68E-02
SO2	0.6	1.17E-03	5.11E-03
PM	7.60	1.48E-02	6.47E-02
PM10	7.60	1.48E-02	6.47E-02
PM2.5	7.60	1.48E-02	6.47E-02
Lead	5.00E-04	9.72E-07	4.26E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
831	acfm	Stack flowrate	fps x ft^2 x 60 sec/min
1.7	ft	Stack exit diameter	Harvest Four Corners, LLC
2.27	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimated from Enertek & Infab reboiler data
16.0	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 77b
Description: Mole Sieve Dehy Reboiler

Fuel Consumption

1,648	scf/hr	Hourly fuel consumption	Mfg. data (Infab)
900	Btu/scf	Field gas heating value	Nominal heat content
1.48	MMBtu/hr	Capacity	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
12,993	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
14.44	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, lb/day	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	1.03	4.29E-02	1.88E-01
CO	1.07	4.46E-02	1.95E-01
VOC	0.16	6.46E-03	2.83E-02
SO2	0.02	8.33E-04	3.65E-03

NOX emission factor taken from August 1994 Enertek Letter
CO, TOC and SO2 emission factors taken from July 1998 InFab Letter
50% of TOC emissions are assumed to be VOC emissions, consistent with AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/day / 24 hr/day
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
PM	7.60	1.25E-02	5.49E-02
PM10	7.60	1.25E-02	5.49E-02
PM2.5	7.60	1.25E-02	5.49E-02
Lead	5.00E-04	8.24E-07	3.61E-06

Emission factors taken from AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data (Enertek & InFab)
287.46	cfm	Stack flowrate	fps x ft^2 x 60 sec/min
1.00	ft	Stack diameter	Mfg. data (InFab)
0.79	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.1	fps	Stack velocity	Mfg. data (Enertek & InFab)
10.0	ft	Stack height	Mfg. data (InFab)

GRI-HAPCalc® 3.0
External Combustion Devices Report

Facility ID:	**KUTZ**	**Notes:**
Operation Type:	**GAS PLANT**	
Facility Name:	**KUTZ CANYON PROCESSING PLANT**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

***Note:** Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.*
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

External Combustion Devices

Unit Name: BORN1

Hours of Operation:	8,760	Yearly
Heat Input:	8.15	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	HEATER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
3-Methylchloranthrene	0.0000	0.0000000018 lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157 lb/MMBtu	EPA
Formaldehyde	0.0301	0.0008440090 lb/MMBtu	GRI Field
Methanol	0.0344	0.0009636360 lb/MMBtu	GRI Field
Acetaldehyde	0.0263	0.0007375920 lb/MMBtu	GRI Field
1,3-Butadiene	0.0122	0.0003423350 lb/MMBtu	GRI Field
Benzene	0.0267	0.0007480470 lb/MMBtu	GRI Field
Toluene	0.0363	0.0010163310 lb/MMBtu	GRI Field
Ethylbenzene	0.0754	0.0021128220 lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0471	0.0013205140 lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.1014	0.0028417580 lb/MMBtu	GRI Field
n-Hexane	0.0502	0.0014070660 lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070 lb/MMBtu	GRI Field
Styrene	0.0742	0.0020788960 lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100 lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470 lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670 lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730 lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800 lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600 lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830 lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170 lb/MMBtu	GRI Field

Benzo(a)pyrene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.5143			

Criteria Pollutants

VOC	0.1925	0.0053921569	lb/MMBtu	EPA
PM	0.2660	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.1995	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0665	0.0018627451	lb/MMBtu	EPA
CO	1.1553	0.0323636360	lb/MMBtu	GRI Field
NMHC	0.3045	0.0085294118	lb/MMBtu	EPA
NOx	3.4632	0.0970167730	lb/MMBtu	GRI Field
SO2	0.0210	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.3756	0.0105212610	lb/MMBtu	GRI Field
Acetylene	0.4998	0.0140000000	lb/MMBtu	GRI Field
Ethylene	0.0338	0.0009476310	lb/MMBtu	GRI Field
Ethane	0.0939	0.0026312210	lb/MMBtu	GRI Field
Propylene	0.0837	0.0023454550	lb/MMBtu	GRI Field
Propane	0.0381	0.0010686280	lb/MMBtu	GRI Field
Isobutane	0.0523	0.0014640770	lb/MMBtu	GRI Field
Butane	0.0491	0.0013766990	lb/MMBtu	GRI Field
Cyclopentane	0.0404	0.0011304940	lb/MMBtu	GRI Field
Pentane	0.1238	0.0034671850	lb/MMBtu	GRI Field
n-Pentane	0.0508	0.0014221310	lb/MMBtu	GRI Field
Cyclohexane	0.0328	0.0009183830	lb/MMBtu	GRI Field
Methylcyclohexane	0.0786	0.0022011420	lb/MMBtu	GRI Field
n-Octane	0.1019	0.0028538830	lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.1222	0.0034224540	lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.1222	0.0034224540	lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.1222	0.0034224540	lb/MMBtu	GRI Field
n-Nonane	0.1307	0.0036604170	lb/MMBtu	GRI Field
CO2	4,199.6471	117.6470588235	lb/MMBtu	EPA

Unit Name: BORN2

Hours of Operation: 8,760 Yearly

Heat Input: 8.35 MMBtu/hr

Fuel Type: NATURAL GAS

Device Type: HEATER

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set

HAPs

3-Methylchloranthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0309	0.0008440090	lb/MMBtu	GRI Field
Methanol	0.0352	0.0009636360	lb/MMBtu	GRI Field
Acetaldehyde	0.0270	0.0007375920	lb/MMBtu	GRI Field
1,3-Butadiene	0.0125	0.0003423350	lb/MMBtu	GRI Field
Benzene	0.0274	0.0007480470	lb/MMBtu	GRI Field
Toluene	0.0372	0.0010163310	lb/MMBtu	GRI Field
Ethylbenzene	0.0773	0.0021128220	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0483	0.0013205140	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.1039	0.0028417580	lb/MMBtu	GRI Field
n-Hexane	0.0515	0.0014070660	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070	lb/MMBtu	GRI Field
Styrene	0.0760	0.0020788960	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.5272			

Criteria Pollutants

VOC	0.1972	0.0053921569	lb/MMBtu	EPA
PM	0.2725	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.2044	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0681	0.0018627451	lb/MMBtu	EPA
CO	1.1836	0.0323636360	lb/MMBtu	GRI Field
NMHC	0.3119	0.0085294118	lb/MMBtu	EPA
NOx	3.5482	0.0970167730	lb/MMBtu	GRI Field
SO2	0.0215	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.3848	0.0105212610	lb/MMBtu	GRI Field
Acetylene	0.5120	0.0140000000	lb/MMBtu	GRI Field
Ethylene	0.0347	0.0009476310	lb/MMBtu	GRI Field
Ethane	0.0962	0.0026312210	lb/MMBtu	GRI Field
Propylene	0.0858	0.0023454550	lb/MMBtu	GRI Field
Propane	0.0391	0.0010686280	lb/MMBtu	GRI Field

Isobutane	0.0535	0.0014640770	lb/MMBtu	GRI Field
Butane	0.0504	0.0013766990	lb/MMBtu	GRI Field
Cyclopentane	0.0413	0.0011304940	lb/MMBtu	GRI Field
Pentane	0.1268	0.0034671850	lb/MMBtu	GRI Field
n-Pentane	0.0520	0.0014221310	lb/MMBtu	GRI Field
Cyclohexane	0.0336	0.0009183830	lb/MMBtu	GRI Field
Methylcyclohexane	0.0805	0.0022011420	lb/MMBtu	GRI Field
n-Octane	0.1044	0.0028538830	lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.1252	0.0034224540	lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.1252	0.0034224540	lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.1252	0.0034224540	lb/MMBtu	GRI Field
n-Nonane	0.1339	0.0036604170	lb/MMBtu	GRI Field
CO2	4,302.7059	117.6470588235	lb/MMBtu	EPA

Unit Name: REBOILER#1

Hours of Operation: 8,760 Yearly

Heat Input: 1.75 MMBtu/hr

Fuel Type: NATURAL GAS

Device Type: BOILER

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
3-Methylchloranthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0027	0.0003522500	lb/MMBtu	GRI Field
Methanol	0.0033	0.0004333330	lb/MMBtu	GRI Field
Acetaldehyde	0.0022	0.0002909000	lb/MMBtu	GRI Field
1,3-Butadiene	0.0000	0.0000001830	lb/MMBtu	GRI Field
Benzene	0.0000	0.0000062550	lb/MMBtu	GRI Field
Toluene	0.0000	0.0000053870	lb/MMBtu	GRI Field
Ethylbenzene	0.0000	0.0000000720	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0000	0.0000010610	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0002	0.0000323000	lb/MMBtu	GRI Field
n-Hexane	0.0025	0.0003214790	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000000950	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000002950	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000011500	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000600	lb/MMBtu	GRI Field

Benzo(b)fluoranthene	0.0000	0.0000001350	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000004400	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000000950	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0109			

Criteria Pollutants

VOC	0.0413	0.0053921569	lb/MMBtu	EPA
PM	0.0571	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0428	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0143	0.0018627451	lb/MMBtu	EPA
CO	0.2355	0.0307275000	lb/MMBtu	GRI Field
NMHC	0.0654	0.0085294118	lb/MMBtu	EPA
NOx	0.6765	0.0882553330	lb/MMBtu	GRI Field
SO2	0.0045	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0451	0.0058790650	lb/MMBtu	GRI Field
Acetylene	0.0409	0.0053314000	lb/MMBtu	GRI Field
Ethylene	0.0040	0.0005264000	lb/MMBtu	GRI Field
Ethane	0.0129	0.0016804650	lb/MMBtu	GRI Field
Propylene	0.0072	0.0009333330	lb/MMBtu	GRI Field
Propane	0.0092	0.0012019050	lb/MMBtu	GRI Field
Butane	0.0106	0.0013866350	lb/MMBtu	GRI Field
Cyclopentane	0.0003	0.0000405000	lb/MMBtu	GRI Field
Pentane	0.0158	0.0020656400	lb/MMBtu	GRI Field
n-Pentane	0.0153	0.0020000000	lb/MMBtu	GRI Field
Cyclohexane	0.0003	0.0000451000	lb/MMBtu	GRI Field
Methylcyclohexane	0.0013	0.0001691000	lb/MMBtu	GRI Field
n-Octane	0.0004	0.0000506000	lb/MMBtu	GRI Field
n-Nonane	0.0000	0.0000050000	lb/MMBtu	GRI Field
CO2	901.7647	117.6470588235	lb/MMBtu	EPA

Unit Name: REBOILER#2

Hours of Operation:	8,760	Yearly
Heat Input:	1.48	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	BOILER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
3-Methylchloranthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0023	0.0003522500	lb/MMBtu	GRI Field
Methanol	0.0028	0.0004333330	lb/MMBtu	GRI Field

Acetaldehyde	0.0019	0.0002909000	lb/MMBtu	GRI Field
1,3-Butadiene	0.0000	0.0000001830	lb/MMBtu	GRI Field
Benzene	0.0000	0.0000062550	lb/MMBtu	GRI Field
Toluene	0.0000	0.0000053870	lb/MMBtu	GRI Field
Ethylbenzene	0.0000	0.0000000720	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0000	0.0000010610	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0002	0.0000323000	lb/MMBtu	GRI Field
n-Hexane	0.0021	0.0003214790	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000000950	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000002950	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000011500	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000550	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000750	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000600	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001350	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000004400	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001000	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000000950	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0093			

Criteria Pollutants

VOC	0.0350	0.0053921569	lb/MMBtu	EPA
PM	0.0483	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0362	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0121	0.0018627451	lb/MMBtu	EPA
CO	0.1992	0.0307275000	lb/MMBtu	GRI Field
NMHC	0.0553	0.0085294118	lb/MMBtu	EPA
NOx	0.5721	0.0882553330	lb/MMBtu	GRI Field
SO2	0.0038	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0381	0.0058790650	lb/MMBtu	GRI Field
Acetylene	0.0346	0.0053314000	lb/MMBtu	GRI Field
Ethylene	0.0034	0.0005264000	lb/MMBtu	GRI Field
Ethane	0.0109	0.0016804650	lb/MMBtu	GRI Field
Propylene	0.0061	0.0009333330	lb/MMBtu	GRI Field
Propane	0.0078	0.0012019050	lb/MMBtu	GRI Field
Butane	0.0090	0.0013866350	lb/MMBtu	GRI Field
Cyclopentane	0.0003	0.0000405000	lb/MMBtu	GRI Field
Pentane	0.0134	0.0020656400	lb/MMBtu	GRI Field
n-Pentane	0.0130	0.0020000000	lb/MMBtu	GRI Field
Cyclohexane	0.0003	0.0000451000	lb/MMBtu	GRI Field
Methylcyclohexane	0.0011	0.0001691000	lb/MMBtu	GRI Field

n-Octane	0.0003	0.0000506000	lb/MMBtu	GRI Field
n-Nonane	0.0000	0.0000050000	lb/MMBtu	GRI Field
CO_2	762.6353	117.6470588235	lb/MMBtu	EPA

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Kutz TEG Dehydrator (Unit 35)
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Kutz\1 - Application\Harvest - Kutz - GRI-GLYCalc (Unit 35).ddf
Date: April 14, 2021

DESCRIPTION:

Description: Unit 35
Capacity: 140 MMSCFD
Gas Sample Pulled 08/12/2020

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 125.00 deg. F
Pressure: 575.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	1.8251
Nitrogen	0.3113
Methane	85.5219
Ethane	7.2812
Propane	2.9445
Isobutane	0.5286
n-Butane	0.7552
Isopentane	0.2099
n-Pentane	0.1406
Cyclopentane	0.0085
n-Hexane	0.0552
Cyclohexane	0.0207
Other Hexanes	0.1212
Heptanes	0.0536
Methylcyclohexane	0.0752
2,2,4-Trimethylpentane	0.0037
Benzene	0.0074
Toluene	0.0494
Ethylbenzene	0.0012
Xylenes	0.0150

C8+ Heavies 0.0706

DRY GAS:

Flow Rate: 140.0 MMSCF/day
Water Content: 3.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 0.7 wt% H2O
Flow Rate: 16.9 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Combustion device
Flash Control Efficiency: 95.00 %
Temperature: 130.0 deg. F
Pressure: 60.0 psig

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Condenser
Temperature: 60.0 deg. F
Pressure: 12.4 psia

Control Device: Combustion Device
Destruction Efficiency: 95.0 %
Excess Oxygen: 5.0 %
Ambient Air Temperature: 70.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Kutz TEG Dehydrator (Unit 35)
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Kutz\1 - Application\Harvest - Kutz - GRI-GLYCalc (Unit 35).ddf
Date: April 14, 2021

DESCRIPTION:

Description: Unit 35
Capacity: 140 MMSCFD
Gas Sample Pulled 08/12/2020

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0742	1.782	0.3252
Ethane	0.0874	2.097	0.3827
Propane	0.1382	3.318	0.6055
Isobutane	0.0372	0.894	0.1631
n-Butane	0.0620	1.489	0.2718
Isopentane	0.0077	0.185	0.0338
n-Pentane	0.0113	0.270	0.0493
Cyclopentane	0.0015	0.035	0.0064
n-Hexane	0.0022	0.053	0.0096
Cyclohexane	0.0029	0.068	0.0125
Other Hexanes	0.0053	0.128	0.0233
Heptanes	0.0016	0.039	0.0072
Methylcyclohexane	0.0060	0.145	0.0264
2,2,4-Trimethylpentane	0.0001	0.001	0.0002
Benzene	0.0058	0.140	0.0255
Toluene	0.0200	0.480	0.0877
Ethylbenzene	0.0002	0.004	0.0008
Xylenes	0.0032	0.076	0.0139
C8+ Heavies	0.0001	0.003	0.0005

Total Emissions	0.4670	11.208	2.0454
Total Hydrocarbon Emissions	0.4670	11.208	2.0454
Total VOC Emissions	0.3054	7.329	1.3375
Total HAP Emissions	0.0315	0.755	0.1378
Total BTEX Emissions	0.0292	0.701	0.1279

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.5052	36.126	6.5929
Ethane	1.8676	44.823	8.1803
Propane	3.9606	95.056	17.3476
Isobutane	1.4955	35.893	6.5505
n-Butane	3.0848	74.035	13.5113
Isopentane	1.1310	27.143	4.9536
n-Pentane	1.0009	24.022	4.3840
Cyclopentane	0.2961	7.107	1.2970
n-Hexane	0.8547	20.513	3.7436
Cyclohexane	1.4936	35.847	6.5422
Other Hexanes	1.3694	32.865	5.9978
Heptanes	1.8842	45.220	8.2527
Methylcyclohexane	7.1434	171.441	31.2880
2,2,4-Trimethylpentane	0.0619	1.486	0.2711
Benzene	4.2958	103.099	18.8156
Toluene	47.8441	1148.258	209.5572
Ethylbenzene	1.8946	45.470	8.2982
Xylenes	34.3230	823.753	150.3349
C8+ Heavies	26.3561	632.547	115.4399
Total Emissions	141.8626	3404.703	621.3583
Total Hydrocarbon Emissions	141.8626	3404.703	621.3583
Total VOC Emissions	138.4897	3323.754	606.5851
Total HAP Emissions	89.2741	2142.578	391.0206
Total BTEX Emissions	88.3575	2120.580	387.0058

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.6987	16.769	3.0603

Ethane	0.2882	6.916	1.2622
Propane	0.2273	5.455	0.9955
Isobutane	0.0605	1.453	0.2652
n-Butane	0.0955	2.291	0.4182
Isopentane	0.0313	0.752	0.1372
n-Pentane	0.0228	0.547	0.0999
Cyclopentane	0.0021	0.049	0.0090
n-Hexane	0.0115	0.276	0.0505
Cyclohexane	0.0060	0.144	0.0263
Other Hexanes	0.0242	0.580	0.1058
Heptanes	0.0137	0.329	0.0600
Methylcyclohexane	0.0230	0.553	0.1009
2,2,4-Trimethylpentane	0.0009	0.021	0.0039
Benzene	0.0020	0.047	0.0085
Toluene	0.0149	0.358	0.0653
Ethylbenzene	0.0004	0.009	0.0016
Xylenes	0.0043	0.102	0.0186
C8+ Heavies	0.0222	0.533	0.0974
Total Emissions	1.5493	37.184	6.7861
Total Hydrocarbon Emissions	1.5493	37.184	6.7861
Total VOC Emissions	0.5625	13.500	2.4637
Total HAP Emissions	0.0339	0.813	0.1484
Total BTEX Emissions	0.0215	0.515	0.0941

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	13.9738	335.370	61.2050
Ethane	5.7633	138.320	25.2434
Propane	4.5457	109.097	19.9102
Isobutane	1.2108	29.060	5.3034
n-Butane	1.9095	45.828	8.3637
Isopentane	0.6264	15.033	2.7436
n-Pentane	0.4561	10.946	1.9977
Cyclopentane	0.0410	0.985	0.1797
n-Hexane	0.2304	5.529	1.0090
Cyclohexane	0.1200	2.879	0.5254
Other Hexanes	0.4832	11.597	2.1165
Heptanes	0.2741	6.579	1.2007
Methylcyclohexane	0.4607	11.056	2.0177

2,2,4-Trimethylpentane	0.0178	0.426	0.0778
Benzene	0.0390	0.937	0.1709
Toluene	0.2983	7.159	1.3065
Ethylbenzene	0.0072	0.173	0.0316
Xylenes	0.0851	2.042	0.3726
C8+ Heavies	0.4445	10.669	1.9471
Total Emissions	30.9869	743.685	135.7225
Total Hydrocarbon Emissions	30.9869	743.685	135.7225
Total VOC Emissions	11.2498	269.995	49.2740
Total HAP Emissions	0.6777	16.265	2.9683
Total BTEX Emissions	0.4296	10.310	1.8815

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.7729	18.550	3.3854
Ethane	0.3755	9.013	1.6449
Propane	0.3655	8.773	1.6010
Isobutane	0.0978	2.346	0.4282
n-Butane	0.1575	3.781	0.6900
Isopentane	0.0390	0.937	0.1710
n-Pentane	0.0341	0.818	0.1492
Cyclopentane	0.0035	0.084	0.0154
n-Hexane	0.0137	0.329	0.0601
Cyclohexane	0.0088	0.212	0.0388
Other Hexanes	0.0295	0.708	0.1291
Heptanes	0.0153	0.368	0.0672
Methylcyclohexane	0.0291	0.697	0.1273
2,2,4-Trimethylpentane	0.0009	0.023	0.0041
Benzene	0.0078	0.187	0.0340
Toluene	0.0349	0.838	0.1530
Ethylbenzene	0.0005	0.013	0.0024
Xylenes	0.0074	0.178	0.0325
C8+ Heavies	0.0223	0.536	0.0979
Total Emissions	2.0163	48.392	8.8316
Total Hydrocarbon Emissions	2.0163	48.392	8.8316
Total VOC Emissions	0.8679	20.829	3.8012
Total HAP Emissions	0.0653	1.568	0.2862
Total BTEX Emissions	0.0507	1.216	0.2220

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	67.7980	3.3854	95.01
Ethane	33.4237	1.6449	95.08
Propane	37.2579	1.6010	95.70
Isobutane	11.8538	0.4282	96.39
n-Butane	21.8750	0.6900	96.85
Isopentane	7.6972	0.1710	97.78
n-Pentane	6.3817	0.1492	97.66
Cyclopentane	1.4767	0.0154	98.96
n-Hexane	4.7527	0.0601	98.74
Cyclohexane	7.0676	0.0388	99.45
Other Hexanes	8.1143	0.1291	98.41
Heptanes	9.4534	0.0672	99.29
Methylcyclohexane	33.3057	0.1273	99.62
2,2,4-Trimethylpentane	0.3489	0.0041	98.82
Benzene	18.9865	0.0340	99.82
Toluene	210.8636	0.1530	99.93
Ethylbenzene	8.3297	0.0024	99.97
Xylenes	150.7074	0.0325	99.98
C8+ Heavies	117.3870	0.0979	99.92
Total Emissions	757.0808	8.8316	98.83
Total Hydrocarbon Emissions	757.0808	8.8316	98.83
Total VOC Emissions	655.8591	3.8012	99.42
Total HAP Emissions	393.9889	0.2862	99.93
Total BTEX Emissions	388.8873	0.2220	99.94

EQUIPMENT REPORTS:

CONDENSER AND COMBUSTION DEVICE

Condenser Outlet Temperature:	60.00 deg. F
Condenser Pressure:	12.40 psia
Condenser Duty:	4.12e-002 MM BTU/hr
Hydrocarbon Recovery:	10.67 bbls/day
Produced Water:	70.94 bbls/day
Ambient Temperature:	70.00 deg. F
Excess Oxygen:	5.00 %
Combustion Efficiency:	95.00 %
Supplemental Fuel Requirement:	4.12e-002 MM BTU/hr

Component	Emitted	Destroyed
Methane	4.93%	95.07%
Ethane	4.68%	95.32%
Propane	3.49%	96.51%
Isobutane	2.49%	97.51%
n-Butane	2.01%	97.99%
Isopentane	0.68%	99.32%
n-Pentane	1.13%	98.87%
Cyclopentane	0.49%	99.51%
n-Hexane	0.26%	99.74%
Cyclohexane	0.19%	99.81%
Other Hexanes	0.39%	99.61%
Heptanes	0.09%	99.91%
Methylcyclohexane	0.08%	99.92%
2,2,4-Trimethylpentane	0.09%	99.91%
Benzene	0.14%	99.86%
Toluene	0.04%	99.96%
Ethylbenzene	0.01%	99.99%
Xylenes	0.01%	99.99%
C8+ Heavies	0.00%	100.00%

ABSORBER

Calculated Absorber Stages:	4.94
Specified Dry Gas Dew Point:	3.00 lbs. H2O/MMSCF
Temperature:	125.0 deg. F
Pressure:	575.0 psig
Dry Gas Flow Rate:	140.0000 MMSCF/day
Glycol Losses with Dry Gas:	3.5686 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	179.66 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	0.98 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	1.66%	98.34%
Carbon Dioxide	99.91%	0.09%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.98%	0.02%
Propane	99.96%	0.04%
Isobutane	99.94%	0.06%
n-Butane	99.93%	0.07%
Isopentane	99.92%	0.08%
n-Pentane	99.91%	0.09%
Cyclopentane	99.63%	0.37%
n-Hexane	99.85%	0.15%
Cyclohexane	99.40%	0.60%
Other Hexanes	99.88%	0.12%
Heptanes	99.74%	0.26%
Methylcyclohexane	99.33%	0.67%
2,2,4-Trimethylpentane	99.88%	0.12%
Benzene	95.12%	4.88%
Toluene	93.12%	6.88%
Ethylbenzene	90.29%	9.71%
Xylenes	85.94%	14.06%
C8+ Heavies	98.55%	1.45%

FLASH TANK

Flash Control: Combustion device
Flash Control Efficiency: 95.00 %
Flash Temperature: 130.0 deg. F
Flash Pressure: 60.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.98%	0.02%
Carbon Dioxide	56.92%	43.08%
Nitrogen	8.85%	91.15%
Methane	9.72%	90.28%
Ethane	24.47%	75.53%

Propane	46.56%	53.44%
Isobutane	55.26%	44.74%
n-Butane	61.77%	38.23%
Isopentane	64.53%	35.47%
n-Pentane	68.85%	31.15%
Cyclopentane	87.89%	12.11%
n-Hexane	78.88%	21.12%
Cyclohexane	92.80%	7.20%
Other Hexanes	74.18%	25.82%
Heptanes	87.36%	12.64%
Methylcyclohexane	94.18%	5.82%
2,2,4-Trimethylpentane	78.04%	21.96%
Benzene	99.14%	0.86%
Toluene	99.43%	0.57%
Ethylbenzene	99.66%	0.34%
Xylenes	99.78%	0.22%
C8+ Heavies	98.54%	1.46%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	6.05%	93.95%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.77%	99.23%
n-Pentane	0.73%	99.27%
Cyclopentane	0.57%	99.43%
n-Hexane	0.63%	99.37%
Cyclohexane	3.45%	96.55%
Other Hexanes	1.35%	98.65%
Heptanes	0.57%	99.43%
Methylcyclohexane	4.25%	95.75%

2,2,4-Trimethylpentane	1.92%	98.08%
Benzene	5.04%	94.96%
Toluene	7.95%	92.05%
Ethylbenzene	10.45%	89.55%
Xylenes	12.97%	87.03%
C8+ Heavies	12.20%	87.80%

STREAM REPORTS:

WET GAS STREAM

Temperature: 125.00 deg. F
Pressure: 589.70 psia
Flow Rate: 5.86e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.79e-001	1.05e+003
Carbon Dioxide	1.82e+000	1.24e+004
Nitrogen	3.10e-001	1.34e+003
Methane	8.52e+001	2.11e+005
Ethane	7.25e+000	3.37e+004
Propane	2.93e+000	2.00e+004
Isobutane	5.27e-001	4.72e+003
n-Butane	7.52e-001	6.75e+003
Isopentane	2.09e-001	2.33e+003
n-Pentane	1.40e-001	1.56e+003
Cyclopentane	8.47e-003	9.17e+001
n-Hexane	5.50e-002	7.31e+002
Cyclohexane	2.06e-002	2.68e+002
Other Hexanes	1.21e-001	1.61e+003
Heptanes	5.34e-002	8.26e+002
Methylcyclohexane	7.49e-002	1.14e+003
2,2,4-Trimethylpentane	3.69e-003	6.50e+001
Benzene	7.37e-003	8.89e+001
Toluene	4.92e-002	7.00e+002
Ethylbenzene	1.20e-003	1.96e+001
Xylenes	1.49e-002	2.45e+002

C8+ Heavies	7.03e-002	1.85e+003
Total Components	100.00	3.02e+005

DRY GAS STREAM

Temperature: 125.00 deg. F
Pressure: 589.70 psia
Flow Rate: 5.83e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.32e-003	1.75e+001
Carbon Dioxide	1.82e+000	1.23e+004
Nitrogen	3.11e-001	1.34e+003
Methane	8.55e+001	2.11e+005
Ethane	7.28e+000	3.37e+004
Propane	2.94e+000	2.00e+004
Isobutane	5.28e-001	4.72e+003
n-Butane	7.55e-001	6.74e+003
Isopentane	2.10e-001	2.33e+003
n-Pentane	1.40e-001	1.56e+003
Cyclopentane	8.47e-003	9.13e+001
n-Hexane	5.51e-002	7.30e+002
Cyclohexane	2.06e-002	2.66e+002
Other Hexanes	1.21e-001	1.60e+003
Heptanes	5.35e-002	8.24e+002
Methylcyclohexane	7.47e-002	1.13e+003
2,2,4-Trimethylpentane	3.70e-003	6.49e+001
Benzene	7.04e-003	8.45e+001
Toluene	4.60e-002	6.52e+002
Ethylbenzene	1.08e-003	1.77e+001
Xylenes	1.29e-002	2.10e+002
C8+ Heavies	6.96e-002	1.82e+003
Total Components	100.00	3.01e+005

LEAN GLYCOL STREAM

Temperature: 125.00 deg. F
Flow Rate: 1.69e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.92e+001	9.43e+003
Water	7.00e-001	6.66e+001
Carbon Dioxide	1.17e-011	1.11e-009
Nitrogen	1.07e-013	1.02e-011
Methane	5.47e-018	5.20e-016
Ethane	3.79e-008	3.60e-006
Propane	3.64e-009	3.46e-007
Isobutane	8.54e-010	8.12e-008
n-Butane	1.30e-009	1.24e-007
Isopentane	9.29e-005	8.83e-003
n-Pentane	7.70e-005	7.32e-003
Cyclopentane	1.78e-005	1.69e-003
n-Hexane	5.74e-005	5.45e-003
Cyclohexane	5.61e-004	5.33e-002
Other Hexanes	1.97e-004	1.87e-002
Heptanes	1.14e-004	1.08e-002
Methylcyclohexane	3.33e-003	3.17e-001
2,2,4-Trimethylpentane	1.28e-005	1.21e-003
Benzene	2.40e-003	2.28e-001
Toluene	4.35e-002	4.13e+000
Ethylbenzene	2.33e-003	2.21e-001
Xylenes	5.38e-002	5.12e+000
C8+ Heavies	3.85e-002	3.66e+000
Total Components	100.00	9.51e+003

RICH GLYCOL STREAM

Temperature: 125.00 deg. F
Pressure: 589.70 psia
Flow Rate: 1.93e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	8.78e+001	9.39e+003
Water	1.03e+001	1.10e+003
Carbon Dioxide	1.04e-001	1.11e+001
Nitrogen	9.48e-004	1.01e-001

Methane	1.45e-001	1.55e+001
Ethane	7.14e-002	7.63e+000
Propane	7.96e-002	8.51e+000
Isobutane	2.53e-002	2.71e+000
n-Butane	4.67e-002	4.99e+000
Isopentane	1.65e-002	1.77e+000
n-Pentane	1.37e-002	1.46e+000
Cyclopentane	3.17e-003	3.39e-001
n-Hexane	1.02e-002	1.09e+000
Cyclohexane	1.56e-002	1.67e+000
Other Hexanes	1.75e-002	1.87e+000
Heptanes	2.03e-002	2.17e+000
Methylcyclohexane	7.41e-002	7.92e+000
2,2,4-Trimethylpentane	7.56e-004	8.09e-002
Benzene	4.27e-002	4.56e+000
Toluene	4.89e-001	5.23e+001
Ethylbenzene	1.99e-002	2.12e+000
Xylenes	3.70e-001	3.95e+001
C8+ Heavies	2.85e-001	3.05e+001
Total Components	100.00	1.07e+004

FLASH TANK OFF GAS STREAM

Temperature: 130.00 deg. F
Pressure: 74.70 psia
Flow Rate: 5.25e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	7.92e-001	1.97e-001
Carbon Dioxide	7.86e+000	4.78e+000
Nitrogen	2.39e-001	9.24e-002
Methane	6.30e+001	1.40e+001
Ethane	1.39e+001	5.76e+000
Propane	7.46e+000	4.55e+000
Isobutane	1.51e+000	1.21e+000
n-Butane	2.38e+000	1.91e+000
Isopentane	6.28e-001	6.26e-001
n-Pentane	4.57e-001	4.56e-001
Cyclopentane	4.23e-002	4.10e-002

n-Hexane	1.93e-001	2.30e-001
Cyclohexane	1.03e-001	1.20e-001
Other Hexanes	4.06e-001	4.83e-001
Heptanes	1.98e-001	2.74e-001
Methylcyclohexane	3.39e-001	4.61e-001
2,2,4-Trimethylpentane	1.12e-002	1.78e-002
Benzene	3.61e-002	3.90e-002
Toluene	2.34e-001	2.98e-001
Ethylbenzene	4.91e-003	7.20e-003
Xylenes	5.80e-002	8.51e-002
C8+ Heavies	1.89e-001	4.45e-001
Total Components	100.00	3.61e+001

FLASH TANK GLYCOL STREAM

Temperature: 130.00 deg. F
Flow Rate: 1.92e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	8.81e+001	9.39e+003
Water	1.03e+001	1.10e+003
Carbon Dioxide	5.93e-002	6.32e+000
Nitrogen	8.42e-005	8.97e-003
Methane	1.41e-002	1.51e+000
Ethane	1.75e-002	1.87e+000
Propane	3.72e-002	3.96e+000
Isobutane	1.40e-002	1.50e+000
n-Butane	2.90e-002	3.08e+000
Isopentane	1.07e-002	1.14e+000
n-Pentane	9.46e-003	1.01e+000
Cyclopentane	2.79e-003	2.98e-001
n-Hexane	8.07e-003	8.60e-001
Cyclohexane	1.45e-002	1.55e+000
Other Hexanes	1.30e-002	1.39e+000
Heptanes	1.78e-002	1.90e+000
Methylcyclohexane	7.00e-002	7.46e+000
2,2,4-Trimethylpentane	5.92e-004	6.31e-002
Benzene	4.25e-002	4.52e+000
Toluene	4.88e-001	5.20e+001

Ethylbenzene	1.99e-002	2.12e+000
Xylenes	3.70e-001	3.94e+001
C8+ Heavies	2.82e-001	3.00e+001
Total Components	100.00	1.07e+004

FLASH GAS EMISSIONS

Flow Rate: 1.98e+003 scfh
Control Method: Combustion Device
Control Efficiency: 95.00

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.97e+001	5.61e+001
Carbon Dioxide	3.91e+001	8.97e+001
Nitrogen	6.32e-002	9.24e-002
Methane	8.35e-001	6.99e-001
Ethane	1.84e-001	2.88e-001
Propane	9.87e-002	2.27e-001
Isobutane	2.00e-002	6.05e-002
n-Butane	3.15e-002	9.55e-002
Isopentane	8.32e-003	3.13e-002
n-Pentane	6.06e-003	2.28e-002
Cyclopentane	5.61e-004	2.05e-003
n-Hexane	2.56e-003	1.15e-002
Cyclohexane	1.37e-003	6.00e-003
Other Hexanes	5.37e-003	2.42e-002
Heptanes	2.62e-003	1.37e-002
Methylcyclohexane	4.49e-003	2.30e-002
2,2,4-Trimethylpentane	1.49e-004	8.88e-004
Benzene	4.79e-004	1.95e-003
Toluene	3.10e-003	1.49e-002
Ethylbenzene	6.50e-005	3.60e-004
Xylenes	7.68e-004	4.25e-003
C8+ Heavies	2.50e-003	2.22e-002
Total Components	100.00	1.47e+002

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 2.24e+004 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.71e+001	1.03e+003
Carbon Dioxide	2.43e-001	6.32e+000
Nitrogen	5.42e-004	8.97e-003
Methane	1.59e-001	1.51e+000
Ethane	1.05e-001	1.87e+000
Propane	1.52e-001	3.96e+000
Isobutane	4.35e-002	1.50e+000
n-Butane	8.97e-002	3.08e+000
Isopentane	2.65e-002	1.13e+000
n-Pentane	2.35e-002	1.00e+000
Cyclopentane	7.14e-003	2.96e-001
n-Hexane	1.68e-002	8.55e-001
Cyclohexane	3.00e-002	1.49e+000
Other Hexanes	2.69e-002	1.37e+000
Heptanes	3.18e-002	1.88e+000
Methylcyclohexane	1.23e-001	7.14e+000
2,2,4-Trimethylpentane	9.16e-004	6.19e-002
Benzene	9.30e-002	4.30e+000
Toluene	8.78e-001	4.78e+001
Ethylbenzene	3.02e-002	1.89e+000
Xylenes	5.47e-001	3.43e+001
C8+ Heavies	2.62e-001	2.64e+001
Total Components	100.00	1.18e+003

CONDENSER PRODUCED WATER STREAM

Temperature: 60.00 deg. F
Flow Rate: 2.07e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	9.99e+001	1.03e+003	999144.
Carbon Dioxide	5.23e-002	5.41e-001	523.
Nitrogen	1.42e-006	1.47e-005	0.
Methane	5.35e-004	5.54e-003	5.

Ethane	9.02e-004	9.34e-003	9.
Propane	7.58e-004	7.85e-003	8.
Isobutane	1.21e-004	1.25e-003	1.
n-Butane	2.88e-004	2.98e-003	3.
Isopentane	2.78e-005	2.88e-004	0.
n-Pentane	4.58e-005	4.74e-004	0.
Cyclopentane	5.24e-005	5.42e-004	1.
n-Hexane	8.52e-006	8.81e-005	0.
Cyclohexane	7.74e-005	8.01e-004	1.
Other Hexanes	1.57e-005	1.62e-004	0.
Heptanes	3.85e-006	3.99e-005	0.
Methylcyclohexane	8.30e-005	8.59e-004	1.
2,2,4-Trimethylpentane	8.11e-008	8.40e-007	0.
Benzene	6.26e-003	6.48e-002	63.
Toluene	1.99e-002	2.06e-001	199.
Ethylbenzene	1.56e-004	1.62e-003	2.
Xylenes	3.99e-003	4.13e-002	40.
C8+ Heavies	6.13e-008	6.34e-007	0.
Total Components	100.00	1.04e+003	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 60.00 deg. F
Flow Rate: 3.11e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	2.80e-002	3.71e-002
Carbon Dioxide	1.42e-001	1.88e-001
Nitrogen	1.19e-004	1.58e-004
Methane	1.13e-002	1.49e-002
Ethane	8.36e-002	1.11e-001
Propane	8.97e-001	1.19e+000
Isobutane	5.66e-001	7.50e-001
n-Butane	1.39e+000	1.84e+000
Isopentane	7.37e-001	9.76e-001
n-Pentane	5.85e-001	7.75e-001
Cyclopentane	2.01e-001	2.66e-001
n-Hexane	6.12e-001	8.11e-001
Cyclohexane	1.08e+000	1.44e+000

Other Hexanes	9.54e-001	1.26e+000
Heptanes	1.40e+000	1.85e+000
Methylcyclohexane	5.30e+000	7.02e+000
2,2,4-Trimethylpentane	4.59e-002	6.08e-002
Benzene	3.11e+000	4.11e+000
Toluene	3.57e+001	4.72e+001
Ethylbenzene	1.43e+000	1.89e+000
Xylenes	2.58e+001	3.42e+001
C8+ Heavies	1.99e+001	2.64e+001
Total Components	100.00	1.32e+002

CONDENSER VENT STREAM

Temperature: 60.00 deg. F
Pressure: 12.40 psia
Flow Rate: 1.52e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.11e+000	1.52e-001
Carbon Dioxide	3.18e+001	5.59e+000
Nitrogen	7.87e-002	8.80e-003
Methane	2.32e+001	1.48e+000
Ethane	1.46e+001	1.75e+000
Propane	1.57e+001	2.76e+000
Isobutane	3.21e+000	7.45e-001
n-Butane	5.35e+000	1.24e+000
Isopentane	5.35e-001	1.54e-001
n-Pentane	7.82e-001	2.25e-001
Cyclopentane	1.05e-001	2.93e-002
n-Hexane	1.28e-001	4.40e-002
Cyclohexane	1.70e-001	5.70e-002
Other Hexanes	3.09e-001	1.06e-001
Heptanes	8.20e-002	3.28e-002
Methylcyclohexane	3.07e-001	1.20e-001
2,2,4-Trimethylpentane	2.39e-003	1.09e-003
Benzene	3.73e-001	1.16e-001
Toluene	1.09e+000	4.00e-001
Ethylbenzene	8.80e-003	3.73e-003
Xylenes	1.50e-001	6.34e-002

Component	Conc.	Loading
C8+ Heavies	3.43e-003	2.33e-003
Total Components	100.00	1.51e+001

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 5.00e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	3.51e+001	7.42e-002
Ethane	2.20e+001	8.74e-002
Propane	2.38e+001	1.38e-001
Isobutane	4.86e+000	3.72e-002
n-Butane	8.10e+000	6.20e-002
Isopentane	8.11e-001	7.71e-003
n-Pentane	1.18e+000	1.13e-002
Cyclopentane	1.58e-001	1.46e-003
n-Hexane	1.94e-001	2.20e-003
Cyclohexane	2.57e-001	2.85e-003
Other Hexanes	4.69e-001	5.32e-003
Heptanes	1.24e-001	1.64e-003
Methylcyclohexane	4.65e-001	6.02e-003
2,2,4-Trimethylpentane	3.62e-003	5.45e-005
Benzene	5.65e-001	5.82e-003
Toluene	1.65e+000	2.00e-002
Ethylbenzene	1.33e-002	1.87e-004
Xylenes	2.27e-001	3.17e-003
C8+ Heavies	5.19e-003	1.17e-004
Total Components	100.00	4.67e-001

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Kutz TEG Dehydrator (Unit 77)
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Kutz\1 - Application\Harvest - Kutz - GRI-GLYCalc (Unit 77).ddf
Date: April 14, 2021

DESCRIPTION:

Description: Unit 77
Capacity: 20 MMSCFD
Gas Sample Pulled 08/12/2020

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 60.00 deg. F
Pressure: 460.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	1.8251
Nitrogen	0.3113
Methane	85.5219
Ethane	7.2812
Propane	2.9445
Isobutane	0.5286
n-Butane	0.7552
Isopentane	0.2099
n-Pentane	0.1406
Cyclopentane	0.0085
n-Hexane	0.0552
Cyclohexane	0.0207
Other Hexanes	0.1212
Heptanes	0.0536
Methylcyclohexane	0.0752
2,2,4-Trimethylpentane	0.0037
Benzene	0.0074
Toluene	0.0494
Ethylbenzene	0.0012
Xylenes	0.0150

C8+ Heavies 0.0706

DRY GAS:

Flow Rate: 20.0 MMSCF/day
Water Content: 2.1 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 2.0 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control: Combustion device
Flash Control Efficiency: 95.00 %
Temperature: 50.0 deg. F
Pressure: 52.0 psig

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Condenser
Temperature: 60.0 deg. F
Pressure: 12.4 psia

Control Device: Combustion Device
Destruction Efficiency: 95.0 %
Excess Oxygen: 5.0 %
Ambient Air Temperature: 70.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Kutz TEG Dehydrator (Unit 77)
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Kutz\1 - Application\Harvest - Kutz - GRI-GLYCalc (Unit 77).ddf
Date: April 14, 2021

DESCRIPTION:

Description: Unit 77
Capacity: 20 MMSCFD
Gas Sample Pulled 08/12/2020

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0114	0.274	0.0500
Ethane	0.0209	0.502	0.0915
Propane	0.0254	0.610	0.1113
Isobutane	0.0072	0.173	0.0315
n-Butane	0.0117	0.281	0.0513
Isopentane	0.0014	0.034	0.0062
n-Pentane	0.0024	0.057	0.0103
Cyclopentane	0.0003	0.006	0.0012
n-Hexane	0.0004	0.011	0.0019
Cyclohexane	0.0006	0.013	0.0025
Other Hexanes	0.0011	0.027	0.0049
Heptanes	0.0004	0.009	0.0017
Methylcyclohexane	0.0013	0.031	0.0057
2,2,4-Trimethylpentane	<0.0001	<0.001	0.0001
Benzene	0.0012	0.028	0.0051
Toluene	0.0047	0.112	0.0204
Ethylbenzene	<0.0001	0.001	0.0002
Xylenes	0.0007	0.016	0.0030
C8+ Heavies	<0.0001	<0.001	<0.0001

Total Emissions	0.0911	2.185	0.3988
Total Hydrocarbon Emissions	0.0911	2.185	0.3988
Total VOC Emissions	0.0587	1.410	0.2573
Total HAP Emissions	0.0070	0.168	0.0307
Total BTEX Emissions	0.0066	0.157	0.0287

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.2330	5.593	1.0207
Ethane	0.4696	11.271	2.0569
Propane	0.9423	22.616	4.1273
Isobutane	0.4330	10.393	1.8967
n-Butane	0.9292	22.302	4.0700
Isopentane	0.4116	9.878	1.8027
n-Pentane	0.3535	8.485	1.5485
Cyclopentane	0.1022	2.453	0.4477
n-Hexane	0.3532	8.477	1.5470
Cyclohexane	0.5904	14.170	2.5861
Other Hexanes	0.5572	13.374	2.4407
Heptanes	0.9025	21.660	3.9530
Methylcyclohexane	3.2007	76.816	14.0189
2,2,4-Trimethylpentane	0.0302	0.725	0.1324
Benzene	1.8326	43.983	8.0269
Toluene	23.1667	556.002	101.4703
Ethylbenzene	0.9779	23.469	4.2831
Xylenes	15.8561	380.548	69.4499
C8+ Heavies	5.0281	120.674	22.0230
Total Emissions	56.3703	1352.887	246.9018
Total Hydrocarbon Emissions	56.3703	1352.887	246.9018
Total VOC Emissions	55.6676	1336.023	243.8243
Total HAP Emissions	42.2168	1013.204	184.9097
Total BTEX Emissions	41.8334	1004.001	183.2303

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0892	2.140	0.3906

Ethane	0.0367	0.882	0.1609
Propane	0.0264	0.634	0.1158
Isobutane	0.0065	0.156	0.0285
n-Butane	0.0096	0.230	0.0420
Isopentane	0.0029	0.069	0.0125
n-Pentane	0.0021	0.049	0.0090
Cyclopentane	0.0001	0.003	0.0006
n-Hexane	0.0008	0.020	0.0037
Cyclohexane	0.0003	0.008	0.0015
Other Hexanes	0.0019	0.045	0.0082
Heptanes	0.0008	0.020	0.0036
Methylcyclohexane	0.0012	0.030	0.0054
2,2,4-Trimethylpentane	0.0001	0.001	0.0003
Benzene	0.0001	0.003	0.0005
Toluene	0.0007	0.017	0.0031
Ethylbenzene	<0.0001	<0.001	0.0001
Xylenes	0.0001	0.003	0.0006
C8+ Heavies	0.0010	0.025	0.0046
Total Emissions	0.1807	4.337	0.7915
Total Hydrocarbon Emissions	0.1807	4.337	0.7915
Total VOC Emissions	0.0548	1.314	0.2399
Total HAP Emissions	0.0019	0.045	0.0082
Total BTEX Emissions	0.0010	0.023	0.0042

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.7837	42.809	7.8126
Ethane	0.7349	17.638	3.2188
Propane	0.5287	12.688	2.3155
Isobutane	0.1299	3.118	0.5691
n-Butane	0.1917	4.602	0.8398
Isopentane	0.0572	1.372	0.2505
n-Pentane	0.0411	0.986	0.1799
Cyclopentane	0.0027	0.064	0.0117
n-Hexane	0.0169	0.406	0.0742
Cyclohexane	0.0070	0.167	0.0305
Other Hexanes	0.0376	0.902	0.1646
Heptanes	0.0165	0.397	0.0724
Methylcyclohexane	0.0248	0.596	0.1088

2,2,4-Trimethylpentane	0.0012	0.028	0.0051
Benzene	0.0022	0.053	0.0097
Toluene	0.0140	0.335	0.0612
Ethylbenzene	0.0003	0.006	0.0011
Xylenes	0.0028	0.066	0.0121
C8+ Heavies	0.0209	0.502	0.0916
Total Emissions	3.6140	86.735	15.8292
Total Hydrocarbon Emissions	3.6140	86.735	15.8292
Total VOC Emissions	1.0954	26.289	4.7977
Total HAP Emissions	0.0373	0.895	0.1634
Total BTEX Emissions	0.0192	0.461	0.0841

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.1006	2.415	0.4406
Ethane	0.0576	1.383	0.2525
Propane	0.0518	1.244	0.2271
Isobutane	0.0137	0.329	0.0600
n-Butane	0.0213	0.511	0.0933
Isopentane	0.0043	0.102	0.0187
n-Pentane	0.0044	0.106	0.0193
Cyclopentane	0.0004	0.010	0.0017
n-Hexane	0.0013	0.031	0.0056
Cyclohexane	0.0009	0.022	0.0040
Other Hexanes	0.0030	0.072	0.0131
Heptanes	0.0012	0.029	0.0053
Methylcyclohexane	0.0025	0.061	0.0112
2,2,4-Trimethylpentane	0.0001	0.002	0.0003
Benzene	0.0013	0.030	0.0056
Toluene	0.0054	0.129	0.0235
Ethylbenzene	0.0001	0.001	0.0003
Xylenes	0.0008	0.020	0.0036
C8+ Heavies	0.0011	0.025	0.0046
Total Emissions	0.2718	6.522	1.1903
Total Hydrocarbon Emissions	0.2718	6.522	1.1903
Total VOC Emissions	0.1135	2.724	0.4971
Total HAP Emissions	0.0089	0.213	0.0389
Total BTEX Emissions	0.0075	0.180	0.0329

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	8.8333	0.4406	95.01
Ethane	5.2757	0.2525	95.21
Propane	6.4428	0.2271	96.48
Isobutane	2.4658	0.0600	97.57
n-Butane	4.9099	0.0933	98.10
Isopentane	2.0531	0.0187	99.09
n-Pentane	1.7284	0.0193	98.88
Cyclopentane	0.4593	0.0017	99.62
n-Hexane	1.6212	0.0056	99.65
Cyclohexane	2.6166	0.0040	99.85
Other Hexanes	2.6053	0.0131	99.50
Heptanes	4.0254	0.0053	99.87
Methylcyclohexane	14.1277	0.0112	99.92
2,2,4-Trimethylpentane	0.1375	0.0003	99.77
Benzene	8.0366	0.0056	99.93
Toluene	101.5315	0.0235	99.98
Ethylbenzene	4.2842	0.0003	99.99
Xylenes	69.4620	0.0036	99.99
C8+ Heavies	22.1146	0.0046	99.98
Total Emissions	262.7310	1.1903	99.55
Total Hydrocarbon Emissions	262.7310	1.1903	99.55
Total VOC Emissions	248.6220	0.4971	99.80
Total HAP Emissions	185.0730	0.0389	99.98
Total BTEX Emissions	183.3143	0.0329	99.98

EQUIPMENT REPORTS:

CONDENSER AND COMBUSTION DEVICE

Condenser Outlet Temperature:	60.00 deg. F
Condenser Pressure:	12.40 psia
Condenser Duty:	8.06e-003 MM BTU/hr
Hydrocarbon Recovery:	4.40 bbls/day
Produced Water:	1.63 bbls/day
Ambient Temperature:	70.00 deg. F
Excess Oxygen:	5.00 %
Combustion Efficiency:	95.00 %
Supplemental Fuel Requirement:	8.06e-003 MM BTU/hr

Component	Emitted	Destroyed
Methane	4.90%	95.10%
Ethane	4.45%	95.55%
Propane	2.70%	97.30%
Isobutane	1.66%	98.34%
n-Butane	1.26%	98.74%
Isopentane	0.34%	99.66%
n-Pentane	0.67%	99.33%
Cyclopentane	0.26%	99.74%
n-Hexane	0.12%	99.88%
Cyclohexane	0.10%	99.90%
Other Hexanes	0.20%	99.80%
Heptanes	0.04%	99.96%
Methylcyclohexane	0.04%	99.96%
2,2,4-Trimethylpentane	0.04%	99.96%
Benzene	0.06%	99.94%
Toluene	0.02%	99.98%
Ethylbenzene	0.00%	100.00%
Xylenes	0.00%	100.00%
C8+ Heavies	0.00%	100.00%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25
Calculated Dry Gas Dew Point:	1.50 lbs. H2O/MMSCF
Temperature:	60.0 deg. F

Pressure:	460.0 psig
Dry Gas Flow Rate:	20.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.0157 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	30.03 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.02 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.98%	95.02%
Carbon Dioxide	99.89%	0.11%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.97%	0.03%
Propane	99.95%	0.05%
Isobutane	99.92%	0.08%
n-Butane	99.88%	0.12%
Isopentane	99.86%	0.14%
n-Pentane	99.82%	0.18%
Cyclopentane	99.20%	0.80%
n-Hexane	99.65%	0.35%
Cyclohexane	98.44%	1.56%
Other Hexanes	99.74%	0.26%
Heptanes	99.22%	0.78%
Methylcyclohexane	98.01%	1.99%
2,2,4-Trimethylpentane	99.66%	0.34%
Benzene	85.55%	14.45%
Toluene	76.82%	23.18%
Ethylbenzene	65.06%	34.94%
Xylenes	54.68%	45.32%
C8+ Heavies	98.09%	1.91%

FLASH TANK

Flash Control:	Combustion device
Flash Control Efficiency:	95.00 %
Flash Temperature:	50.0 deg. F
Flash Pressure:	52.0 psig

Component	Left in Glycol	Removed in Flash Gas

Water	100.00%	0.00%
Carbon Dioxide	72.85%	27.15%
Nitrogen	11.68%	88.32%
Methane	11.55%	88.45%
Ethane	38.99%	61.01%
Propane	64.06%	35.94%
Isobutane	76.92%	23.08%
n-Butane	82.89%	17.11%
Isopentane	87.86%	12.14%
n-Pentane	89.64%	10.36%
Cyclopentane	97.47%	2.53%
n-Hexane	95.45%	4.55%
Cyclohexane	98.87%	1.13%
Other Hexanes	93.75%	6.25%
Heptanes	98.21%	1.79%
Methylcyclohexane	99.26%	0.74%
2,2,4-Trimethylpentane	96.34%	3.66%
Benzene	99.89%	0.11%
Toluene	99.94%	0.06%
Ethylbenzene	99.98%	0.02%
Xylenes	99.98%	0.02%
C8+ Heavies	99.64%	0.36%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	41.39%	58.61%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.57%	99.43%
n-Pentane	0.56%	99.44%
Cyclopentane	0.51%	99.49%

n-Hexane	0.52%	99.48%
Cyclohexane	3.24%	96.76%
Other Hexanes	1.07%	98.93%
Heptanes	0.51%	99.49%
Methylcyclohexane	4.03%	95.97%
2,2,4-Trimethylpentane	1.56%	98.44%
Benzene	5.01%	94.99%
Toluene	7.90%	92.10%
Ethylbenzene	10.40%	89.60%
Xylenes	12.90%	87.10%
C8+ Heavies	12.05%	87.95%

STREAM REPORTS:

WET GAS STREAM

Temperature: 60.00 deg. F
Pressure: 474.70 psia
Flow Rate: 8.34e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.33e-002	2.51e+001
Carbon Dioxide	1.82e+000	1.76e+003
Nitrogen	3.11e-001	1.92e+002
Methane	8.55e+001	3.01e+004
Ethane	7.28e+000	4.81e+003
Propane	2.94e+000	2.85e+003
Isobutane	5.28e-001	6.75e+002
n-Butane	7.55e-001	9.64e+002
Isopentane	2.10e-001	3.33e+002
n-Pentane	1.41e-001	2.23e+002
Cyclopentane	8.49e-003	1.31e+001
n-Hexane	5.52e-002	1.05e+002
Cyclohexane	2.07e-002	3.83e+001
Other Hexanes	1.21e-001	2.29e+002
Heptanes	5.36e-002	1.18e+002
Methylcyclohexane	7.52e-002	1.62e+002

2,2,4-Trimethylpentane	3.70e-003	9.29e+000
Benzene	7.40e-003	1.27e+001
Toluene	4.94e-002	1.00e+002
Ethylbenzene	1.20e-003	2.80e+000
Xylenes	1.50e-002	3.50e+001
C8+ Heavies	7.06e-002	2.64e+002
Total Components	100.00	4.31e+004

DRY GAS STREAM

Temperature: 60.00 deg. F
Pressure: 474.70 psia
Flow Rate: 8.33e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.15e-003	1.25e+000
Carbon Dioxide	1.82e+000	1.76e+003
Nitrogen	3.11e-001	1.92e+002
Methane	8.55e+001	3.01e+004
Ethane	7.28e+000	4.81e+003
Propane	2.94e+000	2.85e+003
Isobutane	5.28e-001	6.74e+002
n-Butane	7.55e-001	9.63e+002
Isopentane	2.10e-001	3.32e+002
n-Pentane	1.40e-001	2.22e+002
Cyclopentane	8.43e-003	1.30e+001
n-Hexane	5.50e-002	1.04e+002
Cyclohexane	2.04e-002	3.77e+001
Other Hexanes	1.21e-001	2.29e+002
Heptanes	5.32e-002	1.17e+002
Methylcyclohexane	7.37e-002	1.59e+002
2,2,4-Trimethylpentane	3.69e-003	9.25e+000
Benzene	6.33e-003	1.09e+001
Toluene	3.80e-002	7.68e+001
Ethylbenzene	7.81e-004	1.82e+000
Xylenes	8.20e-003	1.91e+001
C8+ Heavies	6.93e-002	2.59e+002
Total Components	100.00	4.30e+004

LEAN GLYCOL STREAM

Temperature: 60.00 deg. F
Flow Rate: 1.99e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.80e+001	1.10e+003
Water	1.50e+000	1.68e+001
Carbon Dioxide	1.75e-011	1.96e-010
Nitrogen	1.24e-013	1.38e-012
Methane	6.06e-018	6.78e-017
Ethane	5.08e-008	5.68e-007
Propane	5.35e-009	5.99e-008
Isobutane	1.51e-009	1.69e-008
n-Butane	2.49e-009	2.78e-008
Isopentane	2.11e-004	2.36e-003
n-Pentane	1.77e-004	1.98e-003
Cyclopentane	4.71e-005	5.27e-004
n-Hexane	1.66e-004	1.86e-003
Cyclohexane	1.77e-003	1.97e-002
Other Hexanes	5.37e-004	6.01e-003
Heptanes	4.13e-004	4.62e-003
Methylcyclohexane	1.20e-002	1.34e-001
2,2,4-Trimethylpentane	4.27e-005	4.78e-004
Benzene	8.63e-003	9.66e-002
Toluene	1.78e-001	1.99e+000
Ethylbenzene	1.02e-002	1.14e-001
Xylenes	2.10e-001	2.35e+000
C8+ Heavies	6.16e-002	6.89e-001
Total Components	100.00	1.12e+003

RICH GLYCOL STREAM

Temperature: 60.00 deg. F
Pressure: 474.70 psia
Flow Rate: 2.17e+000 gpm
NOTE: Stream has more than one phase.

Component	Conc.	Loading

	(wt%)	(lb/hr)
TEG	9.10e+001	1.10e+003
Water	3.37e+000	4.06e+001
Carbon Dioxide	1.63e-001	1.96e+000
Nitrogen	1.15e-003	1.39e-002
Methane	1.68e-001	2.02e+000
Ethane	1.00e-001	1.20e+000
Propane	1.22e-001	1.47e+000
Isobutane	4.68e-002	5.63e-001
n-Butane	9.31e-002	1.12e+000
Isopentane	3.91e-002	4.71e-001
n-Pentane	3.29e-002	3.97e-001
Cyclopentane	8.75e-003	1.05e-001
n-Hexane	3.09e-002	3.72e-001
Cyclohexane	5.13e-002	6.17e-001
Other Hexanes	4.99e-002	6.01e-001
Heptanes	7.67e-002	9.24e-001
Methylcyclohexane	2.79e-001	3.36e+000
2,2,4-Trimethylpentane	2.65e-003	3.19e-002
Benzene	1.60e-001	1.93e+000
Toluene	2.09e+000	2.52e+001
Ethylbenzene	9.07e-002	1.09e+000
Xylenes	1.51e+000	1.82e+001
C8+ Heavies	4.77e-001	5.74e+000
Total Components	100.00	1.20e+003

FLASH TANK OFF GAS STREAM

Temperature: 50.00 deg. F
Pressure: 66.70 psia
Flow Rate: 6.40e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.07e-002	6.28e-004
Carbon Dioxide	7.18e+000	5.32e-001
Nitrogen	2.60e-001	1.23e-002
Methane	6.60e+001	1.78e+000
Ethane	1.45e+001	7.35e-001
Propane	7.11e+000	5.29e-001

Isobutane	1.33e+000	1.30e-001
n-Butane	1.96e+000	1.92e-001
Isopentane	4.70e-001	5.72e-002
n-Pentane	3.38e-001	4.11e-002
Cyclopentane	2.25e-002	2.66e-003
n-Hexane	1.17e-001	1.69e-002
Cyclohexane	4.90e-002	6.95e-003
Other Hexanes	2.59e-001	3.76e-002
Heptanes	9.79e-002	1.65e-002
Methylcyclohexane	1.50e-001	2.48e-002
2,2,4-Trimethylpentane	6.05e-003	1.17e-003
Benzene	1.68e-002	2.21e-003
Toluene	8.99e-002	1.40e-002
Ethylbenzene	1.46e-003	2.62e-004
Xylenes	1.54e-002	2.76e-003
C8+ Heavies	7.28e-002	2.09e-002
Total Components	100.00	4.16e+000

FLASH TANK GLYCOL STREAM

Temperature: 50.00 deg. F
Flow Rate: 2.16e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.13e+001	1.10e+003
Water	3.39e+000	4.06e+001
Carbon Dioxide	1.19e-001	1.43e+000
Nitrogen	1.35e-004	1.62e-003
Methane	1.94e-002	2.33e-001
Ethane	3.91e-002	4.70e-001
Propane	7.85e-002	9.42e-001
Isobutane	3.61e-002	4.33e-001
n-Butane	7.74e-002	9.29e-001
Isopentane	3.45e-002	4.14e-001
n-Pentane	2.96e-002	3.56e-001
Cyclopentane	8.56e-003	1.03e-001
n-Hexane	2.96e-002	3.55e-001
Cyclohexane	5.09e-002	6.10e-001
Other Hexanes	4.69e-002	5.63e-001

Heptanes	7.56e-002	9.07e-001
Methylcyclohexane	2.78e-001	3.34e+000
2,2,4-Trimethylpentane	2.56e-003	3.07e-002
Benzene	1.61e-001	1.93e+000
Toluene	2.10e+000	2.52e+001
Ethylbenzene	9.10e-002	1.09e+000
Xylenes	1.52e+000	1.82e+001
C8+ Heavies	4.76e-001	5.72e+000
Total Components	100.00	1.20e+003

FLASH GAS EMISSIONS

Flow Rate: 2.33e+002 scfh
Control Method: Combustion Device
Control Efficiency: 95.00

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.03e+001	6.68e+000
Carbon Dioxide	3.83e+001	1.04e+001
Nitrogen	7.12e-002	1.23e-002
Methane	9.04e-001	8.92e-002
Ethane	1.99e-001	3.67e-002
Propane	9.75e-002	2.64e-002
Isobutane	1.82e-002	6.50e-003
n-Butane	2.68e-002	9.59e-003
Isopentane	6.45e-003	2.86e-003
n-Pentane	4.63e-003	2.05e-003
Cyclopentane	3.09e-004	1.33e-004
n-Hexane	1.60e-003	8.47e-004
Cyclohexane	6.72e-004	3.48e-004
Other Hexanes	3.55e-003	1.88e-003
Heptanes	1.34e-003	8.27e-004
Methylcyclohexane	2.06e-003	1.24e-003
2,2,4-Trimethylpentane	8.30e-005	5.83e-005
Benzene	2.30e-004	1.10e-004
Toluene	1.23e-003	6.99e-004
Ethylbenzene	2.01e-005	1.31e-005
Xylenes	2.11e-004	1.38e-004
C8+ Heavies	9.99e-004	1.05e-003

Total Components	100.00	1.72e+001

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.45e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.73e+001	2.38e+001
Carbon Dioxide	1.65e+000	1.43e+000
Nitrogen	2.95e-003	1.62e-003
Methane	7.40e-001	2.33e-001
Ethane	7.95e-001	4.70e-001
Propane	1.09e+000	9.42e-001
Isobutane	3.79e-001	4.33e-001
n-Butane	8.14e-001	9.29e-001
Isopentane	2.90e-001	4.12e-001
n-Pentane	2.50e-001	3.54e-001
Cyclopentane	7.42e-002	1.02e-001
n-Hexane	2.09e-001	3.53e-001
Cyclohexane	3.57e-001	5.90e-001
Other Hexanes	3.29e-001	5.57e-001
Heptanes	4.59e-001	9.03e-001
Methylcyclohexane	1.66e+000	3.20e+000
2,2,4-Trimethylpentane	1.35e-002	3.02e-002
Benzene	1.19e+000	1.83e+000
Toluene	1.28e+001	2.32e+001
Ethylbenzene	4.69e-001	9.78e-001
Xylenes	7.61e+000	1.59e+001
C8+ Heavies	1.50e+000	5.03e+000
Total Components	100.00	8.16e+001

CONDENSER PRODUCED WATER STREAM

Temperature: 60.00 deg. F
Flow Rate: 4.75e-002 gpm

Component	Conc.	Loading

	(wt%)	(lb/hr)	(ppm)
Water	9.99e+001	2.38e+001	999030.
Carbon Dioxide	6.07e-002	1.44e-002	607.
Nitrogen	1.22e-006	2.91e-007	0.
Methane	4.04e-004	9.60e-005	4.
Ethane	1.06e-003	2.52e-004	11.
Propane	6.85e-004	1.63e-004	7.
Isobutane	1.15e-004	2.72e-005	1.
n-Butane	2.67e-004	6.35e-005	3.
Isopentane	2.51e-005	5.96e-006	0.
n-Pentane	4.70e-005	1.12e-005	0.
Cyclopentane	4.64e-005	1.10e-005	0.
n-Hexane	8.36e-006	1.99e-006	0.
Cyclohexane	7.50e-005	1.78e-005	1.
Other Hexanes	1.62e-005	3.86e-006	0.
Heptanes	4.39e-006	1.04e-006	0.
Methylcyclohexane	8.84e-005	2.10e-005	1.
2,2,4-Trimethylpentane	9.55e-008	2.27e-008	0.
Benzene	6.12e-003	1.46e-003	61.
Toluene	2.28e-002	5.43e-003	228.
Ethylbenzene	1.86e-004	4.43e-005	2.
Xylenes	4.24e-003	1.01e-003	42.
C8+ Heavies	2.47e-008	5.88e-009	0.
Total Components	100.00	2.38e+001	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 60.00 deg. F
Flow Rate: 1.28e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	3.14e-002	1.71e-002
Carbon Dioxide	1.70e-001	9.28e-002
Nitrogen	1.35e-004	7.36e-005
Methane	8.29e-003	4.53e-003
Ethane	9.40e-002	5.14e-002
Propane	7.94e-001	4.34e-001
Isobutane	5.29e-001	2.89e-001
n-Butane	1.27e+000	6.95e-001

Isopentane	7.01e-001	3.83e-001
n-Pentane	5.61e-001	3.06e-001
Cyclopentane	1.77e-001	9.69e-002
n-Hexane	6.30e-001	3.44e-001
Cyclohexane	1.06e+000	5.79e-001
Other Hexanes	9.79e-001	5.35e-001
Heptanes	1.64e+000	8.95e-001
Methylcyclohexane	5.81e+000	3.17e+000
2,2,4-Trimethylpentane	5.48e-002	3.00e-002
Benzene	3.31e+000	1.81e+000
Toluene	4.22e+001	2.31e+001
Ethylbenzene	1.79e+000	9.77e-001
Xylenes	2.90e+001	1.58e+001
C8+ Heavies	9.20e+000	5.03e+000
Total Components	100.00	5.47e+001

CONDENSER VENT STREAM

Temperature: 60.00 deg. F
Pressure: 12.40 psia
Flow Rate: 3.09e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.11e+000	3.09e-002
Carbon Dioxide	3.69e+001	1.32e+000
Nitrogen	6.79e-002	1.55e-003
Methane	1.75e+001	2.28e-001
Ethane	1.71e+001	4.18e-001
Propane	1.42e+001	5.08e-001
Isobutane	3.04e+000	1.44e-001
n-Butane	4.95e+000	2.34e-001
Isopentane	4.81e-001	2.82e-002
n-Pentane	8.02e-001	4.71e-002
Cyclopentane	9.25e-002	5.28e-003
n-Hexane	1.25e-001	8.79e-003
Cyclohexane	1.64e-001	1.12e-002
Other Hexanes	3.20e-001	2.24e-002
Heptanes	9.32e-002	7.60e-003
Methylcyclohexane	3.26e-001	2.61e-002

2,2,4-Trimethylpentane	2.81e-003	2.61e-004
Benzene	3.65e-001	2.32e-002
Toluene	1.24e+000	9.33e-002
Ethylbenzene	1.05e-002	9.06e-004
Xylenes	1.59e-001	1.37e-002
C8+ Heavies	1.38e-003	1.91e-004
Total Components	100.00	3.18e+000

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 9.41e-001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	2.87e+001	1.14e-002
Ethane	2.80e+001	2.09e-002
Propane	2.32e+001	2.54e-002
Isobutane	4.99e+000	7.19e-003
n-Butane	8.13e+000	1.17e-002
Isopentane	7.89e-001	1.41e-003
n-Pentane	1.32e+000	2.35e-003
Cyclopentane	1.52e-001	2.64e-004
n-Hexane	2.06e-001	4.40e-004
Cyclohexane	2.70e-001	5.62e-004
Other Hexanes	5.25e-001	1.12e-003
Heptanes	1.53e-001	3.80e-004
Methylcyclohexane	5.36e-001	1.30e-003
2,2,4-Trimethylpentane	4.61e-003	1.31e-005
Benzene	5.99e-001	1.16e-003
Toluene	2.04e+000	4.67e-003
Ethylbenzene	1.72e-002	4.53e-005
Xylenes	2.61e-001	6.87e-004
C8+ Heavies	2.26e-003	9.55e-006
Total Components	100.00	9.11e-002

Plant Flare Emissions Calculations

Unit Number: 28
Description: Plant Flare

Blowdown Gas Stream

87,694	scf/hr	Hourly flowrate	Harvest Four Corners, LLC
1,097	Btu/scf	Heat content	Harvest Four Corners, LLC
96.19	MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
299.00	MMscf/yr	Annual flowrate	Harvest Four Corners, LLC
327,951	MMBtu/yr	Annual heat rate	MMscf/yr x Btu/scf

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	0.0485	4.66	7.95
CO	0.3503	33.69	57.44

Emission factors taken from Texas Commission on Environmental Quality (TCEQ) January 2010 document "Technical Supplement 4: Flares" for steam-assisted units combusting high-Btu waste streams (>1000 Btu/scf)
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = lb/MMBtu x MMBtu/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	0.6	5.26E-02	8.97E-02
Lead	5.00E-04	4.38E-05	7.48E-05

Emission factors taken from AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = lb/MMscf x MMscf/yr / 2,000 lb/ton
PM, PM10 and PM2.5 emissions are assumed to be negligible, as the flare is smokeless

Pollutants	Emission Factors, lb/scf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Control Efficiencies, %	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
VOC	5.17E-03	453.58	773.26	98	9.07	15.47

Emission factors are calculated from the gas composition (see table below)
Uncontrolled Emission Rates (pph) = g/hp-hr x Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton
Control efficiency taken from Texas Commission on Environmental Quality (TCEQ) January 2010 document "Technical Supplement 4: Flares"
Controlled Emission Rates (pph) = Uncontrolled Emission Rates (pph) x (1 - (% / 100))
Controlled Emission Rates (tpy) = Uncontrolled Emission Rates (tpy) x (1 - (% / 100))

Exhaust Parameters

1,832	°F	Exhaust temperature	NMAQB
7.58	ft	Effective stack diameter	Calculated per NMAQB guidelines
65.62	fps	Stack velocity	NMAQB
55.00	ft	Stack height	Harvest Four Corners, LLC

Flare Effective Diameter

18.74	lb/lb-mole	Molecular weight	Weighted average (see table below)
1461.57	scfm	Flowrate	scf/hr / 60 min/hr
6,732,956	cal/sec	Gross heat release	scfm x Btu/scf x 252 cal/Btu / 60 sec/min
5,334,048	cal/sec	Effective heat release (q_n)	cal/sec x (1-(0.048 x (MW^0.5)))
2.31	meters	Effective stack diameter	(0.000001 x cal/sec[q_n])^0.5

Plant Flare Emissions Calculations

Unit Number: 28
Description: Plant Flare

Gas Stream Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Emission Factors, lb/scf	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Carbon dioxide	2.0003	44.01	8.80E-01	2.32E-03	0.00	0.00E+00
Hydrogen sulfide	0.0000	34.07	0.00E+00	0.00E+00	637.02	0.00E+00
Nitrogen	0.4390	28.01	1.23E-01	3.24E-04	0.00	0.00E+00
Methane	88.8787	16.04	1.43E+01	3.76E-02	1,009.70	8.97E+02
Ethane	5.0367	30.07	1.51E+00	3.99E-03	1,768.70	8.91E+01
Propane	2.0945	44.09	9.23E-01	2.43E-03	2,517.20	5.27E+01
IsoButane	0.3862	58.12	2.24E-01	5.92E-04	3,252.60	1.26E+01
n-Butane	0.5501	58.12	3.20E-01	8.43E-04	3,262.00	1.79E+01
IsoPentane	0.2031	72.15	1.47E-01	3.86E-04	3,999.70	8.12E+00
n-Pentane	0.1444	72.15	1.04E-01	2.75E-04	4,008.70	5.79E+00
Cyclopentane	0.0000	70.14	0.00E+00	0.00E+00	3,763.70	0.00E+00
n-Hexane	0.0451	86.17	3.89E-02	1.02E-04	4,756.10	2.15E+00
Cyclohexane	0.0213	84.16	1.79E-02	4.72E-05	4,481.60	9.55E-01
Other hexanes	0.0855	86.18	7.37E-02	1.94E-04	4,756.10	4.07E+00
Heptanes	0.0590	100.20	5.91E-02	1.56E-04	5,502.80	3.25E+00
Methylcyclohexane	0.0229	98.19	2.25E-02	5.93E-05	5,215.90	1.19E+00
Isooctane	0.0034	100.21	3.41E-03	8.98E-06	5,500.00	1.87E-01
Benzene	0.0086	78.11	6.72E-03	1.77E-05	3,741.90	3.22E-01
Toluene	0.0082	92.14	7.56E-03	1.99E-05	4,474.80	3.67E-01
Ethylbenzene	0.0001	106.17	1.06E-04	2.80E-07	5,222.10	5.22E-03
Xylenes	0.0014	106.17	1.49E-03	3.92E-06	5,208.00	7.29E-02
C8+ heavies	0.0115	110.00	1.27E-02	3.33E-05	5,500.00	6.33E-01
Total	100.0000		18.74	4.94E-02		1,096.83
VOC				5.17E-03		

Gas stream composition obtained from Kutz I extended gas analysis dated 08/04/2011
Until the Kutz I Plant is shut down and a contemporary representative gas sample is available, previous calculations are brought forward
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Emission Factors (lb/scf) = (% / 100) * Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Dehydrator Flare Emissions Calculations

Unit Number: 36
Description: Chaco Dehy Flare

Note: The data on this worksheet applies to each individual emissions unit identified above.

Operating Time

8,760 hr/yr	Annual operating time	Harvest Four Corners, LLC

Flash Tank Off Gas Stream

525 scf/hr	Hourly flowrate	GRI-GLYCalc
0.70 MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
4.60 MMscf/yr	Annual flowrate	scf/hr x hr/yr / 1,000,000
6,113.52 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr
1,329 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see gas stream composition table below)

Condenser Vent Stream

152 scf/hr	Hourly flowrate	GRI-GLYCalc
0.20 MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
1.33 MMscf/yr	Annual flowrate	scf/hr x hr/yr / 1,000,000
1,788.97 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr
1,344 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see gas stream composition table below)

Pilot Gas Stream

100 scf/hr	Hourly flowrate	Estimated
0.11 MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
0.88 MMscf/yr	Annual flowrate	scf/hr x hr/yr / 1,000,000
1,003.38 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr
1,145 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see gas stream composition table below)

Supplemental Fuel Gas Stream

1332.5 Btu/scf	Heat content (B_{dehy})	Calculated from GLYCalc results
677.0 scf/hr	Hourly flowrate (Q_{dehy})	Calculated from GLYCalc results
1,145 Btu/scf	Heat content (B_{fuel})	Calculated from GLYCalc results
300 Btu/scf	Heat content (B_{mix})	Minimum required
0.0 scf/hr	Hourly flowrate (Q_{fuel})	$Q_{fuel} = Q_{dehy} * (B_{mix} - B_{dehy})/(B_{fuel} - B_{mix})$
0.00 MMBtu/hr	Hourly Flowrate	scf/hr x Btu/scf / 1,000,000
0.00 MMscf/yr	Annual Flowrate	scf/hr x hr/yr / 1,000,000
0.00 MMBtu/yr	Annual Flowrate	MMBtu/hr x hr/yr

Note: Supplemental fuel is only required if the heat content of the combined streams from the regenerator still vent, condenser vent and/or flash tank off-gas streams are less than 300 Btu/scf.

Combined Stream

777 scf/hr	Hourly Flowrate	Sum of all streams
1.02 MMBtu/hr	Hourly Flowrate	Sum of all streams
6.81 MMscf/yr	Annual Flowrate	Sum of all streams
8,905.88 MMBtu/yr	Annual Flowrate	Sum of all streams
1,308 Btu/scf	Heat content	Weighted average of all streams

Dehydrator Flare Emissions Calculations

Unit Number: 36
Description: Chaco Dehy Flare

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
NOX	0.1380	1.40E-01	6.15E-01
CO	0.2755	2.80E-01	1.23

Emissions are calculated using all the gas streams
Emission factors (lb/MMBtu) from the Texas Commission on Environmental Quality (TCEQ) January 2010 document "Technical Supplement 4: Flares" for unassisted units combusting high-Btu waste streams (>1000 Btu/scf)
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = lb/MMBtu x MMBtu/yr / 2,000 lb/ton
Allowable emissions are brought forward from previous permitting

Steady-State Emission Rates Continued

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
VOC	5.5	5.50E-04	2.41E-03
SO2	0.6	4.66E-04	2.04E-03
Lead	5.00E-04	3.89E-07	1.70E-06

Emission factors taken from AP-42, Table 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMscf x (scf/hr / 1,000,000)
Uncontrolled Emission Rates (tpy) = lb/MMscf x MMscf/yr / 2,000 lb/ton
VOC emissions are calculated using only the pilot and supplemental fuel gas streams. VOC emissions from the regenerator still vent, condenser vent, and/or flash tank off-gas streams are included with the dehydrator emissions
SO2 and lead emissions are calculated using all the gas streams
PM, PM10 and PM2.5 emissions are assumed to be negligible, as the flare is smokeless

Flare Effective Diameter

27.46	lb/lb-mole	Molecular weight	Weighted average
12.95	scfm	Flowrate	scf/hr / 60 min/hr
71,166	cal/sec	Gross heat release	scfm x Btu/scf x 252 cal/Btu / 60 sec/min
53,264	cal/sec	Effective heat release (q_n)	cal/sec x (1-(0.048 x (MW^0.5)))
0.23	meters	Effective stack diameter	(0.000001 x cal/sec[q_n])^0.5

Exhaust Parameters

1,832	°F	Exhaust temperature	NMAQB
0.76	ft	Effective stack diameter	Calculated per NMAQB guidelines
65.62	fps	Stack velocity	NMAQB
26.00	ft	Stack height	Harvest Four Corners, LLC

Dehydrator Flare Emissions Calculations

Unit Number: 36
Description: Chaco Dehy Flare

Gas Stream Compositions

Flash Tank Off Gas Stream Composition					
Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	7.92E-01	18.02	0.14	0.00	0.00
Carbon dioxide	7.86E+00	44.01	3.46	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	2.39E-01	28.01	0.07	0.00	0.00
Methane	6.30E+01	16.04	10.11	1,009.70	636.11
Ethane	1.39E+01	30.07	4.18	1,768.70	245.85
Propane	7.46E+00	44.09	3.29	2,517.20	187.78
IsoButane	1.51E+00	58.12	0.88	3,252.60	49.11
n-Butane	2.38E+00	58.12	1.38	3,262.00	77.64
IsoPentane	6.28E-01	72.15	0.45	3,999.70	25.12
n-Pentane	4.57E-01	72.15	0.33	4,008.70	18.32
Cyclopentane	4.23E-02	70.14	0.03	3,763.70	1.59
n-Hexane	1.93E-01	86.17	0.17	4,756.10	9.18
Cyclohexane	1.03E-01	84.16	0.09	4,481.60	4.62
Other hexanes	4.06E-01	86.18	0.35	4,756.10	19.31
Heptanes	1.98E-01	100.20	0.20	5,502.80	10.90
Methylcyclohexane	3.39E-01	98.19	0.33	5,215.90	17.68
Isooctane	1.12E-02	100.21	0.01	5,500.00	0.62
Benzene	3.61E-02	78.11	0.03	3,741.90	1.35
Toluene	2.34E-01	92.14	0.22	4,474.80	10.47
Ethylbenzene	4.91E-03	106.17	0.01	5,222.10	0.26
Xylenes	5.80E-02	106.17	0.06	5,208.00	3.02
C8+ heavies	1.89E-01	110.00	0.21	5,500.00	10.40
Total	100.0405		25.98		1,329.32

Gas stream compositions are obtained from GRI-GLYCalc 4.0
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Dehydrator Flare Emissions Calculations

Unit Number: 36
Description: Chaco Dehy Flare

Condenser Vent Stream Composition					
Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	2.11E+00	18.02	0.38	0.00	0.00
Carbon dioxide	3.18E+01	44.01	14.00	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	7.87E-02	28.01	0.02	0.00	0.00
Methane	2.32E+01	16.04	3.72	1,009.70	234.25
Ethane	1.46E+01	30.07	4.39	1,768.70	258.23
Propane	1.57E+01	44.09	6.92	2,517.20	395.20
IsoButane	3.21E+00	58.12	1.87	3,252.60	104.41
n-Butane	5.35E+00	58.12	3.11	3,262.00	174.52
IsoPentane	5.35E-01	72.15	0.39	3,999.70	21.40
n-Pentane	7.82E-01	72.15	0.56	4,008.70	31.35
Cyclopentane	1.05E-01	70.14	0.07	3,763.70	3.95
n-Hexane	1.28E-01	86.17	0.11	4,756.10	6.09
Cyclohexane	1.70E-01	84.16	0.14	4,481.60	7.62
Other hexanes	3.09E-01	86.18	0.27	4,756.10	14.70
Heptanes	8.20E-02	100.20	0.08	5,502.80	4.51
Methylcyclohexane	3.07E-01	98.19	0.30	5,215.90	16.01
Isooctane	2.39E-03	100.21	0.00	5,500.00	0.13
Benzene	3.73E-01	78.11	0.29	3,741.90	13.96
Toluene	1.09E+00	92.14	1.00	4,474.80	48.78
Ethylbenzene	8.80E-03	106.17	0.01	5,222.10	0.46
Xylenes	1.50E-01	106.17	0.16	5,208.00	7.81
C8+ heavies	3.43E-03	110.00	0.00	5,500.00	0.19
Total	100.0943		37.80		1,343.56

Gas stream compositions are obtained from GRI-GLYCalc 4.0
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

Dehydrator Flare Emissions Calculations

Unit Number: 36
Description: Chaco Dehy Flare

Dry Gas Stream Composition					
Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Heat Contents, Btu/scf	Calculated Heat Contents, Btu/scf
Water	6.32E-03	18.02	0.00	0.00	0.00
Carbon dioxide	1.82E+00	44.01	0.80	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	3.11E-01	28.01	0.09	0.00	0.00
Methane	8.55E+01	16.04	13.71	1,009.70	863.29
Ethane	7.28E+00	30.07	2.19	1,768.70	128.76
Propane	2.94E+00	44.09	1.30	2,517.20	74.01
IsoButane	5.28E-01	58.12	0.31	3,252.60	17.17
n-Butane	7.55E-01	58.12	0.44	3,262.00	24.63
IsoPentane	2.10E-01	72.15	0.15	3,999.70	8.40
n-Pentane	1.40E-01	72.15	0.10	4,008.70	5.61
Cyclopentane	8.47E-03	70.14	0.01	3,763.70	0.32
n-Hexane	5.51E-02	86.17	0.05	4,756.10	2.62
Cyclohexane	2.06E-02	84.16	0.02	4,481.60	0.92
Other hexanes	1.21E-01	86.18	0.10	4,756.10	5.75
Heptanes	5.35E-02	100.20	0.05	5,502.80	2.94
Methylcyclohexane	7.47E-02	98.19	0.07	5,215.90	3.90
Isooctane	3.70E-03	100.21	0.00	5,500.00	0.20
Benzene	7.04E-03	78.11	0.01	3,741.90	0.26
Toluene	4.60E-02	92.14	0.04	4,474.80	2.06
Ethylbenzene	1.08E-03	106.17	0.00	5,222.10	0.06
Xylenes	1.29E-02	106.17	0.01	5,208.00	0.67
C8+ heavies	6.96E-02	110.00	0.08	5,500.00	3.83
Total	99.9640		19.53		1,145.41

Gas stream compositions are obtained from GRI-GLYCalc 4.0
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Calculated Heat Contents (Btu/scf) = (% / 100) * Heat Contents (Btu/scf)

GRI-HAPCalc® 3.0
Flares Report

Facility ID:	**KUTZ**	**Notes:**
Operation Type:	**GAS PLANT**	
Facility Name:	**KUTZ CANYON PROCESSING PLANT**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".
Note: The molecular weights of ethane and propane were used to calculate emissions for NMHC and NMEHC, respectively.
Note: The value for total reduced sulfur (TRS) includes sulfur from all sulfur-containing species except SO2.

Flare Unit

Unit Name: DEHY

Hours of Operation:	8,760 Yearly	**Efficiency:**	95.00 %
Volume:	677.00 scf/hr	**Volume Gas to Pilot:**	100.000 scf/hr
Gas Heat Value:	1,308.00 Btu/scf (HHV)	**Pilot Gas Sulfur Content:**	0.00 grains/100scf
Flare Design:	OTHER		

User Concentration Inputs

Chemical Name	Mole %
NMHC	28.9998
NMEHC	15.8148
Benzene	0.0983
Toluene	0.3773
Ethylbenzene	0.0052
Xylenes(m,p,o)	0.0702
n-Hexane	0.1625
2,2,4-Trimethylpentane	0.0085
Total Reduced Sulfur	0.0000
Hydrogen Sulfide	0.0000
Carbon Disulfide	0.0000
Carbonyl Sulfide	0.0000

Calculated Emissions (ton/yr)

HAPs

Chemical Name	Emissions
Formaldehyde	0.0012
Benzene	0.0300
Toluene	0.1358
Ethylbenzene	0.0022
Xylenes(m,p,o)	0.0291
2,2,4-Trimethylpentane	0.0038
n-Hexane	0.0547
Total	0.2568

Criteria Pollutants

CO	1.0701
NMHC	3.4073
NMEHC	2.7250
NOx	0.5782

Unit Name: PLANT

Hours of Operation:	8,760 Yearly	**Efficiency:**	95.00 %
Volume:	87,694.00 scf/hr	**Volume Gas to Pilot:**	100.000 scf/hr
Gas Heat Value:	1,097.00 Btu/scf (HHV)	**Pilot Gas Sulfur Content:**	0.00 grains/100scf
Flare Design:	STEAM ASSISTED		

User Concentration Inputs

Chemical Name	Mole %
NMHC	8.6820
NMEHC	3.6453
Benzene	0.0086
Toluene	0.0082
Ethylbenzene	0.0001
Xylenes(m,p,o)	0.0014
n-Hexane	0.0451
2,2,4-Trimethylpentane	0.0034
Total Reduced Sulfur	0.0000
Hydrogen Sulfide	0.0000
Carbon Disulfide	0.0000
Carbonyl Sulfide	0.0000

Calculated Emissions (ton/yr)

Chemical Name	Emissions
HAPs	
Formaldehyde	0.1181
Benzene	0.3400
Toluene	0.3824
Ethylbenzene	0.0054
Xylenes(m,p,o)	0.0752
2,2,4-Trimethylpentane	0.1966
n-Hexane	1.9671
Total	3.0848
Criteria Pollutants	
CO	147.6030
NMHC	132.1290
NMEHC	81.3610
NOx	20.4788

Truck Loading Emissions Calculations

Unit Number: 38
Description: Truck Loading from T3, T31, T109, T-6528 & T-6529

Emission Factor

0.60		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
3.0628	psia	True vapor pressure of liquid, P	TANKS 4.0 output file
66.95	lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
67.36	°F	Temperature of liquid	TANKS 4.0 output file
527.03	°R	Temperature of liquid, T	°F + 459.67
2.91	$lb/10^3$ gal	Emission factor, L	AP-42, Section 5.2, Equation 1

$$L = 12.46 \frac{SPM}{T}$$

Production Rate

3,036.25	10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, tpy
VOC	4.42

Potential Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Percent of VOC, %	Uncontrolled Emission Rates, tpy
Benzene	0.5340	2.36E-02
Ethylbenzene	0.0537	2.37E-03
n-Hexane	3.9623	1.75E-01
Isooctane	0.0416	1.84E-03
Toluene	0.8413	3.72E-02
o-Xylene	0.3483	1.54E-02

Percent of VOC calculated from the T6528 & T6529 TANKS 4.0 results
Percent of VOC (%) = 100 x Pollutant Emission Rate (lb/yr) / Total VOC Emission Rate (lb/yr)
Short-term Emission Rate (lb/hr) not appropriate for emissions based on annual average throughputs

Cooling Tower Emissions Calculations

Unit Number: 40
Description: Cooling Tower

Note: The data on this worksheet applies to each individual emissions unit identified above.

Dissolved Solids

2,270	ppmw	Water solids content by wieght	Harvest Four Corners, LLC
533	gal/min	Water circulation rate	Harvest Four Corners, LLC
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutants	Drift, gal drift/gal	Flow Rates, gal/hr	TDS, lb/gal drift	Drift Solids Emitted, %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
TSP	2.00E-04	31,980	0.0189	100.00	1.21E-01	5.30E-01
PM10	2.00E-04	31,980	0.0189	62.96	7.62E-02	3.34E-01

Cooling tower is an induced draft, counter flow tower
Drift is taken from AP-42, Table 13.4-1
Flow Rate (gal/hr) = gal/min x 60 min/hr
Total dissolved solids (TDS) are calculated as follows:
TDS (lb/gal drift) = ppmw x density$_{H2O}$ / 1,000,000
TSP emissions are calculated assuming all dissolved solids in the drift are emitted as TSP (Drift Solids Emitted = 100)
PM10 emissions are calculated using the following equation (a curve fit for the results in Figure 1 of the "Frisbie" paper) to estimate the percentage of drift particulate matter that evaporates as PM10:
Drift Solids Emitted (%) = exp((TDS-16916) / -3535.5)
PM2.5 emissions are assumed to be negligable
Uncontrolled Emission Rates (pph) = gal drift/gal x gal/hr x lb/gal drift x (% / 100)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Cooling Tower Emissions Calculations

Unit Number: 41
Description: Cooling Tower

Note: The data on this worksheet applies to each individual emissions unit identified above.

Dissolved Solids

2,100	ppmw	Water solids content by wieght	Harvest Four Corners, LLC
400	gal/min	Water circulation rate	Harvest Four Corners, LLC
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutants	Drift, gal drift/gal	Flow Rates, gal/hr	TDS, lb/gal drift	Drift Solids Emitted, %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
TSP	2.00E-04	24,000	0.0175	100.00	8.41E-02	3.68E-01
PM10	2.00E-04	24,000	0.0175	66.06	5.55E-02	2.43E-01

Cooling tower is an induced draft tower
Drift is taken from AP-42, Table 13.4-1
Flow Rate (gal/hr) = gal/min x 60 min/hr
Total dissolved solids (TDS) are calculated as follows:
TDS (lb/gal drift) = ppmw x density$_{H2O}$ / 1,000,000
TSP emissions are calculated assuming all dissolved solids in the drift are emitted as TSP (Drift Solids Emitted = 100)
PM10 emissions are calculated using the following equation (a curve fit for the results in Figure 1 of the "Frisbie" paper) to estimate the percentage of drift particulate matter that evaporates as PM10:
Drift Solids Emitted (%) = exp((TDS-16916) / -3535.5)
PM2.5 emissions are assumed to be negligable
Uncontrolled Emission Rates (pph) = gal drift/gal x gal/hr x lb/gal drift x (% / 100)
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Project Name:	Kutz 2021 TV mod AmineCalc EU 75 Kutz amine unit EU 75 PTE Gas Sample Pulled 8/12/20	
Model:	Gas Model	
Amine:	MDEA	
Lean Amine Pressure:	559.000	[psia]
Lean Amine Temperature:	112.000	[F]
Lean Amine Flowrate:	350.000	[gal/min]
Lean Amine Weight:	49.100	[%]
H2S Loading:	0.000	[mol/mol]
CO2 Loading:	0.042	[mol/mol]
Emission Control Efficiency	100.000	
Operating Hours/Day:	24	[hours/day]
Operating Days/Year:	365	[days/year]
Gas Feed Pressure:	564.000	[psia]
Gas Feed Temperature:	81.200	[F]
Gas Feed Flowrate:	83.500	[MMSCFD]
Number of Trays in Column:	22	
Flash Tank Pressure:	74.000	[psia]
H2S	0.00000	[%]
CO2	1.82510	[%]
MDEA	0.00000	[%]
H2O	0.00000	[%]
N2	0.31130	[%]
O2	0.00000	[%]
C1	85.52190	[%]
C2	7.28120	[%]
C3	2.94450	[%]
i-C4	0.52860	[%]
n-C4	0.75520	[%]
i-C5	0.20990	[%]
n-C5	0.14060	[%]
Hexanes	0.15040	[%]
Heptanes	0.12880	[%]
Octanes	0.07060	[%]
Nonanes	0.00000	[%]
C10+	0.00000	[%]
MeSH	0.00000	[%]
EtSH	0.00000	[%]
Benzene	0.00740	[%]
Toluene	0.04940	[%]
Ethylbenzene	0.00120	[%]
Xylenes	0.01500	[%]
n-C6	0.05520	[%]
224Trimeth	0.00370	[%]

Stream 1 Gas Feed to Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.018250	7363.985	32253.710
MDEA	0.000000	0.000	0.000
H2O	0.000000	0.000	0.000
N2	0.003110	799.503	3501.761
C1	0.855220	125787.600	550940.300
C2	0.072810	20072.950	87918.050
C3	0.029450	11904.070	52138.950
i-C4	0.005290	2816.810	12337.420
n-C4	0.007550	4024.319	17626.220
i-C5	0.002100	1388.448	6081.301
n-C5	0.001410	930.042	4073.515
Hexanes	0.001500	1188.281	5204.582
Heptanes	0.001290	1183.260	5182.591
Octanes	0.000710	739.380	3238.427
Benzene	0.000070	52.995	232.114
Toluene	0.000490	417.306	1827.770
Ethylbenzene	0.000010	11.680	51.159
Xylenes	0.000150	146.002	639.480
n-C6	0.000550	436.124	1910.193
224Trimeth	0.000040	38.749	169.719
Total:	1.000000	179301.500	785327.200

Pressure 564.000 [psia]
Temperature 81.200 [F]

Stream 2 Rich Amine From Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.020720	5503.895	24106.650
MDEA	0.125040	89950.840	393978.000
H2O	0.853490	92834.560	406608.500
N2	0.000000	0.193	0.845
C1	0.000660	63.853	279.673
C2	0.000060	11.444	50.125

C3	0.000020	5.621	24.619
i-C4	0.000000	0.059	0.259
n-C4	0.000000	0.084	0.369
i-C5	0.000000	0.042	0.182
n-C5	0.000000	0.028	0.122
Hexanes	0.000000	0.195	0.853
Heptanes	0.000000	0.050	0.217
Octanes	0.000000	0.057	0.248
Benzene	0.000000	1.482	6.491
Toluene	0.000000	2.190	9.592
Ethylbenzene	0.000000	0.298	1.307
Xylenes	0.000000	0.613	2.684
n-C6	0.000000	0.114	0.500
224Trimeth	0.000000	0.002	0.007
Total:	1.000000	188375.600	825071.200

Pressure 564.000 [psia]
Temperature 104.757 [F]

Stream 3 Flash Gas Vent Flow from Flash Tank

	----- Controlled -----		----- Uncontrolled -----	
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]
H2S	0.000	0.000	0.000	0.000
CO2	0.930	4.074	0.930	4.074
MDEA	0.000	0.000	0.001	0.003
H2O	0.000	0.000	0.926	4.058
N2	0.000	0.000	0.180	0.788
C1	0.000	0.000	55.373	242.530
C2	0.000	0.000	9.765	42.771
C3	0.000	0.000	4.920	21.550
i-C4	0.000	0.000	0.059	0.257
n-C4	0.000	0.000	0.084	0.367
i-C5	0.000	0.000	0.041	0.181
n-C5	0.000	0.000	0.028	0.121
Hexanes	0.000	0.000	0.186	0.813
Heptanes	0.000	0.000	0.049	0.215
Octanes	0.000	0.000	0.055	0.243
Benzene	0.000	0.000	0.156	0.685
Toluene	0.000	0.000	0.847	3.710
Ethylbenzene	0.000	0.000	0.034	0.150
Xylenes	0.000	0.000	0.270	1.184
n-C6	0.000	0.000	0.106	0.464

224Trimeth	0.000	0.000	0.002	0.007
Total:	0.930	4.074	74.013	324.171

Pressure 74.000 [psia]
Temperature 104.757 [F]

Stream 4 Rich Amine Feed to Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.020730	5502.964	24102.570
MDEA	0.125120	89950.840	393978.000
H2O	0.854050	92833.630	406604.400
N2	0.000000	0.013	0.057
C1	0.000090	8.481	37.145
C2	0.000010	1.679	7.352
C3	0.000000	0.701	3.069
i-C4	0.000000	0.000	0.001
n-C4	0.000000	0.001	0.002
i-C5	0.000000	0.000	0.001
n-C5	0.000000	0.000	0.001
Hexanes	0.000000	0.009	0.040
Heptanes	0.000000	0.001	0.002
Octanes	0.000000	0.001	0.006
Benzene	0.000000	1.326	5.807
Toluene	0.000000	1.343	5.882
Ethylbenzene	0.000000	0.264	1.157
Xylenes	0.000000	0.343	1.501
n-C6	0.000000	0.008	0.036
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	188301.600	824747.000

Pressure 74.000 [psia]
Temperature 104.757 [F]

Stream 5 Acid Gas Flow from Regenerator

	----- Controlled -----		----- Uncontrolled -----		
Component	[lb/h]	[ton/yr]	[lb/h]	[ton/yr]	
H2S	0.000	0.000	0.000	0.000	
CO2	4107.752	17991.650	4107.752	17991.650	
MDEA	0.000	0.000	0.000	0.000	
H2O	0.000	0.000	0.000	0.000	
N2	0.000	0.000	0.013	0.057	
C1	0.000	0.000	8.481	37.145	
C2	0.000	0.000	1.679	7.352	
C3	0.000	0.000	0.701	3.069	--
i-C4	0.000	0.000	0.000	0.001	
n-C4	0.000	0.000	0.001	0.002	
i-C5	0.000	0.000	0.000	0.001	
n-C5	0.000	0.000	0.000	0.001	
Hexanes	0.000	0.000	0.009	0.040	
Heptanes	0.000	0.000	0.001	0.002	3.997 pph
Octanes	0.000	0.000	0.001	0.006	17.505 tpy
Benzene	0.000	0.000	1.326	5.807	
Toluene	0.000	0.000	1.343	5.882	
Ethylbenzene	0.000	0.000	0.264	1.157	
Xylenes	0.000	0.000	0.343	1.501	
n-C6	0.000	0.000	0.008	0.036	
224Trimeth	0.000	0.000	0.000	0.000	--
Total:	4107.752	17991.650	4121.922	18053.710	

Pressure N/A [psia]
Temperature N/A [F]

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Stream 6 Lean Amine from Regenerator

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.005320	1395.212	6110.926
MDEA	0.126610	89951.130	393979.300
H2O	0.868070	93248.730	408422.500
N2	0.000000	0.000	0.000
C1	0.000000	0.000	0.000
C2	0.000000	0.000	0.000
C3	0.000000	0.000	0.000
i-C4	0.000000	0.000	0.000
n-C4	0.000000	0.000	0.000
i-C5	0.000000	0.000	0.000

n-C5	0.000000	0.000	0.000
Hexanes	0.000000	0.000	0.000
Heptanes	0.000000	0.000	0.000
Octanes	0.000000	0.000	0.000
Benzene	0.000000	0.000	0.000
Toluene	0.000000	0.000	0.000
Ethylbenzene	0.000000	0.000	0.000
Xylenes	0.000000	0.000	0.000
n-C6	0.000000	0.000	0.000
224Trimeth	0.000000	0.000	0.000
Total:	1.000000	184595.100	808512.700

Pressure 559.000 [psia]
Temperature 112.000 [F]

Stream 7 Sweet Gas Flow from Absorber

Component	Mol Fraction	[lb/h]	[ton/yr]
H2S	0.000000	0.000	0.000
CO2	0.008130	3255.303	14257.980
MDEA	0.000000	0.288	1.263
H2O	0.002530	414.169	1814.028
N2	0.003140	799.309	3500.916
C1	0.861830	125723.700	550660.600
C2	0.073370	20061.510	87867.920
C3	0.029670	11898.450	52114.330
i-C4	0.005330	2816.751	12337.160
n-C4	0.007610	4024.235	17625.850
i-C5	0.002120	1388.407	6081.118
n-C5	0.001420	930.014	4073.393
Hexanes	0.001520	1188.086	5203.729
Heptanes	0.001300	1183.210	5182.373
Octanes	0.000710	739.323	3238.179
Benzene	0.000070	51.513	225.623
Toluene	0.000500	415.116	1818.178
Ethylbenzene	0.000010	11.382	49.851
Xylenes	0.000150	145.389	636.795
n-C6	0.000560	436.010	1909.691
224Trimeth	0.000040	38.748	169.712
Total:	1.000000	175521.000	768768.700

Pressure 559.000 [psia]

Temperature 113.969 [F]

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Units 1-4)
Description: Turbine & Compressor Blowdowns (SSM)

Throughput

4	# of units	Number of units	Williams Four Corners LLC
86	events/yr/unit	Blowdowns per year per unit	Williams Four Corners LLC
1,006	scf/event	Gas loss per blowdown (compressor)	Williams Four Corners LLC
11,600	scf/event	Gas loss per blowdown (turbine)	Williams Four Corners LLC
4,315,286	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	7.248E-03	15.64
Benzene	1.523E-05	3.29E-02
Ethylbenzene	3.358E-06	7.25E-03
n-Hexane	1.254E-04	2.71E-01
Isooctane	9.773E-06	2.11E-02
Toluene	1.200E-04	2.59E-01
Xylene	4.198E-05	9.06E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.8251	44.01	2.117E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.3113	28.01	2.298E-04
Methane	85.5219	16.04	3.616E-02
Ethane	7.2812	30.07	5.771E-03
Propane	2.9445	44.09	3.422E-03
Isobutane	0.5286	58.12	8.098E-04
n-Butane	0.7552	58.12	1.157E-03
Isopentane	0.2099	72.15	3.992E-04
n-Pentane	0.1406	72.15	2.674E-04
Cyclopentane	0.0085	70.14	1.571E-05
n-Hexane	0.0552	86.17	1.254E-04
Cyclohexane	0.0207	84.16	4.592E-05
Other hexanes	0.1212	86.18	2.753E-04
Heptanes	0.0536	100.20	1.416E-04
Methylcyclohexane	0.0752	98.19	1.946E-04
Isooctane	0.0037	100.21	9.773E-06
Benzene	0.0074	78.11	1.523E-05
Toluene	0.0494	92.14	1.200E-04
Ethylbenzene	0.0012	106.17	3.358E-06
Xylenes	0.0150	106.17	4.198E-05
C8+ Heavies	0.0706	110.00	2.047E-04
Total	100.0000		
Total VOC			7.248E-03

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Units 5 & 6)
Description: Turbine & Compressor Blowdowns (SSM)

Throughput

2	# of units	Number of units	Williams Four Corners LLC
85.58	events/yr/unit	Blowdowns per year per unit	Williams Four Corners LLC
895	scf/event	Gas loss per blowdown (compressor)	Williams Four Corners LLC
11,600	scf/event	Gas loss per blowdown (turbine)	Williams Four Corners LLC
2,138,644	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	7.248E-03	7.75
Benzene	1.523E-05	1.63E-02
Ethylbenzene	3.358E-06	3.59E-03
n-Hexane	1.254E-04	1.34E-01
Isooctane	9.773E-06	1.05E-02
Toluene	1.200E-04	1.28E-01
Xylene	4.198E-05	4.49E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.8251	44.01	2.117E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.3113	28.01	2.298E-04
Methane	85.5219	16.04	3.616E-02
Ethane	7.2812	30.07	5.771E-03
Propane	2.9445	44.09	3.422E-03
Isobutane	0.5286	58.12	8.098E-04
n-Butane	0.7552	58.12	1.157E-03
Isopentane	0.2099	72.15	3.992E-04
n-Pentane	0.1406	72.15	2.674E-04
Cyclopentane	0.0085	70.14	1.571E-05
n-Hexane	0.0552	86.17	1.254E-04
Cyclohexane	0.0207	84.16	4.592E-05
Other hexanes	0.1212	86.18	2.753E-04
Heptanes	0.0536	100.20	1.416E-04
Methylcyclohexane	0.0752	98.19	1.946E-04
Isooctane	0.0037	100.21	9.773E-06
Benzene	0.0074	78.11	1.523E-05
Toluene	0.0494	92.14	1.200E-04
Ethylbenzene	0.0012	106.17	3.358E-06
Xylenes	0.0150	106.17	4.198E-05
C8+ Heavies	0.0706	110.00	2.047E-04
Total	100.0000		
Total VOC			7.248E-03

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Units 7 & 8)
Description: Turbine Blowdowns (SSM)

Throughput

2	# of units	Number of units	Williams Four Corners LLC
85.58	events/yr/unit	Blowdowns per year per unit	Williams Four Corners LLC
0	scf/event	Gas loss per blowdown (compressor)	Williams Four Corners LLC
3,600	scf/event	Gas loss per blowdown (turbine)	Williams Four Corners LLC
616,176	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	7.248E-03	2.23
Benzene	1.523E-05	4.69E-03
Ethylbenzene	3.358E-06	1.03E-03
n-Hexane	1.254E-04	3.86E-02
Isooctane	9.773E-06	3.01E-03
Toluene	1.200E-04	3.70E-02
Xylene	4.198E-05	1.29E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.8251	44.01	2.117E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.3113	28.01	2.298E-04
Methane	85.5219	16.04	3.616E-02
Ethane	7.2812	30.07	5.771E-03
Propane	2.9445	44.09	3.422E-03
Isobutane	0.5286	58.12	8.098E-04
n-Butane	0.7552	58.12	1.157E-03
Isopentane	0.2099	72.15	3.992E-04
n-Pentane	0.1406	72.15	2.674E-04
Cyclopentane	0.0085	70.14	1.571E-05
n-Hexane	0.0552	86.17	1.254E-04
Cyclohexane	0.0207	84.16	4.592E-05
Other hexanes	0.1212	86.18	2.753E-04
Heptanes	0.0536	100.20	1.416E-04
Methylcyclohexane	0.0752	98.19	1.946E-04
Isooctane	0.0037	100.21	9.773E-06
Benzene	0.0074	78.11	1.523E-05
Toluene	0.0494	92.14	1.200E-04
Ethylbenzene	0.0012	106.17	3.358E-06
Xylenes	0.0150	106.17	4.198E-05
C8+ Heavies	0.0706	110.00	2.047E-04
Total	100.0000		
Total VOC			7.248E-03

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Units 19 & 20)
Description: Turbine Blowdowns (SSM)

Throughput

2	# of units	Number of units	Williams Four Corners LLC
85.58	events/yr/unit	Blowdowns per year per unit	Williams Four Corners LLC
0	scf/event	Gas loss per blowdown (compressor)	Williams Four Corners LLC
4,800	scf/event	Gas loss per blowdown (turbine)	Williams Four Corners LLC
821,568	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	7.248E-03	2.98
Benzene	1.523E-05	6.26E-03
Ethylbenzene	3.358E-06	1.38E-03
n-Hexane	1.254E-04	5.15E-02
Isooctane	9.773E-06	4.01E-03
Toluene	1.200E-04	4.93E-02
Xylene	4.198E-05	1.72E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.8251	44.01	2.117E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.3113	28.01	2.298E-04
Methane	85.5219	16.04	3.616E-02
Ethane	7.2812	30.07	5.771E-03
Propane	2.9445	44.09	3.422E-03
Isobutane	0.5286	58.12	8.098E-04
n-Butane	0.7552	58.12	1.157E-03
Isopentane	0.2099	72.15	3.992E-04
n-Pentane	0.1406	72.15	2.674E-04
Cyclopentane	0.0085	70.14	1.571E-05
n-Hexane	0.0552	86.17	1.254E-04
Cyclohexane	0.0207	84.16	4.592E-05
Other hexanes	0.1212	86.18	2.753E-04
Heptanes	0.0536	100.20	1.416E-04
Methylcyclohexane	0.0752	98.19	1.946E-04
Isooctane	0.0037	100.21	9.773E-06
Benzene	0.0074	78.11	1.523E-05
Toluene	0.0494	92.14	1.200E-04
Ethylbenzene	0.0012	106.17	3.358E-06
Xylenes	0.0150	106.17	4.198E-05
C8+ Heavies	0.0706	110.00	2.047E-04
Total	100.0000		
Total VOC			7.248E-03

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Open-Ended Lines

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled TOC Emission Rates, pph	Uncontrolled TOC Emission Rates, tpy
Valves	1800	0.0045	0.0099	17.82	78.05
Connectors	5400	0.0002	0.0004	2.38	10.41
Pump Seals	11	0.0024	0.0053	0.06	0.25
Compressor Seals	36	0.0088	0.0194	0.70	3.05
Pressure Relief Valves	65	0.0088	0.0194	1.26	5.51
Open-Ended Lines	360	0.0020	0.0044	1.58	6.94
Total				**23.79**	**104.22**

Number of components based on TriHydro Kutz II component count for Sep. 2016 KKK/HH reporting
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 8,760 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of TOC, %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Carbon dioxide	1.8251	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.3113	28.013				
Methane	85.5219	16.043	1372.028	73.522		
Ethane	7.2812	30.070	218.946	11.732		
Propane	2.9445	44.097	129.844	6.958	1.66E+00	7.25E+00
Isobutane	0.5286	58.123	30.724	1.646	3.92E-01	1.72E+00
n-Butane	0.7552	58.123	43.894	2.352	5.60E-01	2.45E+00
Isopentane	0.2099	72.150	15.144	0.812	1.93E-01	8.46E-01
n-Pentane	0.1406	72.150	10.144	0.544	1.29E-01	5.67E-01
Cyclopentane	0.0085	70.134	0.596	0.032	7.60E-03	3.33E-02
n-Hexane	0.0552	86.177	4.757	0.255	6.07E-02	2.66E-01
Other hexanes	0.0207	86.177	1.784	0.096	2.27E-02	9.96E-02
Cyclohexane	0.1212	84.161	10.200	0.547	1.30E-01	5.70E-01
Heptanes	0.0536	100.204	5.371	0.288	6.85E-02	3.00E-01
Methylcyclohexane	0.0752	98.188	7.384	0.396	9.41E-02	4.12E-01
Isooctane	0.0037	114.231	0.423	0.023	5.39E-03	2.36E-02
Benzene	0.0074	78.114	0.578	0.031	7.37E-03	3.23E-02
Toluene	0.0494	92.141	4.552	0.244	5.80E-02	2.54E-01
Ethylbenzene	0.0012	106.167	0.127	0.007	1.62E-03	7.11E-03
Xylenes	0.0150	106.167	1.593	0.085	2.03E-02	8.89E-02
C8+ Heavies	0.0706	114.231	8.065	0.432	1.03E-01	4.50E-01
Total	100.0000		1866.153			
Total VOC				14.746	3.51	15.37

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
Benzene	2.102E-01	2.10E-02
Ethylbenzene	4.633E-02	4.63E-03
n-Hexane	1.730E+00	1.73E-01
Isooctane	1.348E-01	1.35E-02
Toluene	1.655E+00	1.66E-01
Xylene	5.791E-01	5.79E-02

Weight percents calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = VOC Emission Rate (tpy) x (% / 100)

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	1.8251	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.3113	28.01		
Methane	85.5219	16.04		
Ethane	7.2812	30.07		
Propane	2.9445	44.09	1.2982	4.721E+01
Isobutane	0.5286	58.12	0.3072	1.117E+01
n-Butane	0.7552	58.12	0.4389	1.596E+01
Isopentane	0.2099	72.15	0.1514	5.507E+00
n-Pentane	0.1406	72.15	0.1014	3.689E+00
Cyclopentane	0.0085	70.14	0.0060	2.168E-01
n-Hexane	0.0552	86.17	0.0476	1.730E+00
Cyclohexane	0.0207	84.16	0.0174	6.335E-01
Other hexanes	0.1212	86.18	0.1045	3.798E+00
Heptanes	0.0536	100.20	0.0537	1.953E+00
Methylcyclohexane	0.0752	98.19	0.0738	2.685E+00
Isooctane	0.0037	100.21	0.0037	1.348E-01
Benzene	0.0074	78.11	0.0058	2.102E-01
Toluene	0.0494	92.14	0.0455	1.655E+00
Ethylbenzene	0.0012	106.17	0.0013	4.633E-02
Xylenes	0.0150	106.17	0.0159	5.791E-01
C8+ Heavies	0.0706	110.00	0.0777	2.824E+00
Total	100.0000			
Total VOC			2.7501	

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Component Weights (lb/lb-mole) = (% / 100) x Molecular Weights (lb/lb-mole)
Weight Percents (%) = 100 x Component Weights (lb/lb-mole) / Total VOC Weight (lb/lb-mole)

Storage Tank Emissions Data and Calculations

Unit Number: T6528 & T6529
Description: Storage Tanks (with flash emissions)

Emission Rates NOTE: Emissions shown are combined emissions for both tanks

Source	Working/Breathing Losses, lb/yr	Working/Breathing Losses, tpy	Flash Losses, tpy	Total Losses, tpy
T6528 & T6529				
VOC	6,149.92	3.07	18.37	21.44
Benzene	32.84	1.64E-02	9.79E-02	1.14E-01
Ethylbenzene	3.30	1.65E-03	8.19E-03	9.84E-03
n-Hexane	243.68	1.22E-01	4.71E-01	5.93E-01
Isooctane	2.56	1.28E-03	5.35E-03	6.63E-03
Toluene	51.74	2.59E-02	1.46E-01	1.72E-01
Xylene	21.42	1.07E-02	4.73E-02	5.80E-02

Emissions based on an allowable condensate throughput of 13,321 bbl/yr
It is estimated each tank will hold half the condensate
Working/breathing losses are calculated using TANKS 4.0
Flash emissions are calculated using ProMax

Composition of Post Flash Condensate (for use in TANKS 4)

Component	Speciated Mass Fraction	Mass Percent, Of VOC, %
Nitrogen	3.15E-07	--
Carbon Dioxide	1.11E-04	--
Methane	2.30E-04	--
Ethane	2.10E-03	--
Propane	8.03E-03	--
Isobutane	5.59E-03	0.9625
n-Butane	1.29E-02	1.6934
Isopentane	1.61E-02	1.6115
n-Pentane	1.79E-02	1.7965
n-Hexane	2.66E-02	2.6688
Isohexane	3.28E-02	3.2892
Heptane	1.54E-01	15.3914
Octane	2.36E-01	23.6472
Nonane	1.81E-01	18.1327
Decane	2.17E-01	21.7241
Benzene	5.81E-03	0.5820
Ethylbenzene	5.95E-03	0.5964
2,2,4-Trimethylpentane	8.79E-04	0.0881
Toluene	3.16E-02	3.1650
o-Xylene	4.64E-02	4.6512
VOC Total	9.976E-01	100.0000

`
Speciated Mass Fraction is obtained from ProMax output, "Condensate Truck Loading" Mas Fraction
VOC Total = Sum of Propane Through C10 Mass Fractions
Mass Percent of VOC (%) = 100 x Component Mass Fraction / VOC Total Mass Fraction
Propane Mass Percent of VOC is included with the n-butane and isobutane (even distribution)

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET® & PROSIM®

Simulation Report

Project: 2018-03-13 Kutz Dakota PTE.pmx

Licensed to Williams Midstream Natural Gas Liquids, Inc. and Customer's Org.

Client Name: Williams
Location: Kutz Dakota
Job: Tank Flash PTE Model

ProMax Filename: S:\Environmental\Flash Emission Estimates\Kutz Dakota\2018-03-13 PTE\2018-03-13 Kutz Dakota PTE.pmx
ProMax Version: 3.2.13330.0
Simulation Initiated: 3/14/2018 1:31:09 PM

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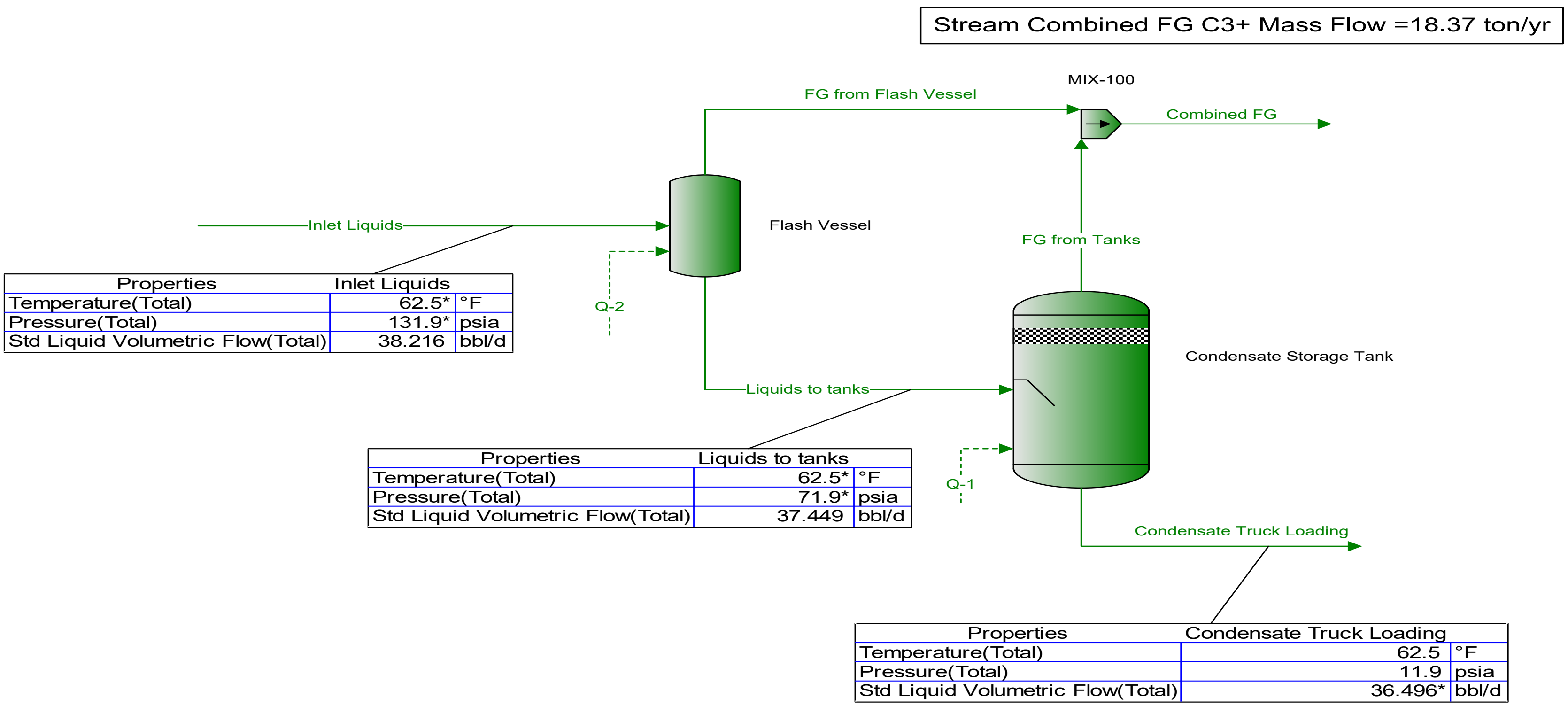
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Kutz Dakota Condensate Flash PTE



Properties	Inlet Liquids	
Temperature(Total)	62.5*	°F
Pressure(Total)	131.9*	psia
Std Liquid Volumetric Flow(Total)	38.216	bbl/d

Properties	Liquids to tanks	
Temperature(Total)	62.5*	°F
Pressure(Total)	71.9*	psia
Std Liquid Volumetric Flow(Total)	37.449	bbl/d

Properties	Condensate Truck Loading	
Temperature(Total)	62.5	°F
Pressure(Total)	11.9	psia
Std Liquid Volumetric Flow(Total)	36.496*	bbl/d

Process Streams		Combined FG	Condensate Truck Loading	Inlet Liquids	Liquids to tanks
Composition	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	MIX-100	Condensate Storage Tank	--	Flash Vessel
	To Block:	--	--	Flash Vessel	Condensate Storage Tank
Mass Fraction					
Nitrogen		0.00428063	3.14903E-07	0.000110910*	1.39130E-05
Methane		0.336631	0.000230307	0.00892225*	0.00300368
Carbon Dioxide		0.0313841	0.000111089	0.000919122*	0.000554429
Ethane		0.210717	0.00209782	0.00748815*	0.00580178
Propane		0.177301	0.00803043	0.0124041*	0.0115999
Isobutane		0.0445515	0.00558603	0.00659282*	0.00646209
n-Butane		0.0704597	0.0128772	0.0143650*	0.0142093
Isopentane		0.0317820	0.0160762	0.0164820*	0.0165193
n-Pentane		0.0257881	0.0179212	0.0181245*	0.0182039
Isohexane		0.0186699	0.0328119	0.0324465*	0.0327013
n-Hexane		0.0106921	0.0266230	0.0262114*	0.0264349
2,2,4-Trimethylpentane		0.000121454	0.000878845	0.000859276*	0.000867528
Benzene		0.00222334	0.00580612	0.00571355*	0.00576277
Heptane		0.0192047	0.153539	0.150068*	0.151517
Toluene		0.00331913	0.0315732	0.0308432*	0.0311438
Octane		0.00875445	0.235895	0.230026*	0.232332
Ethylbenzene		0.000185993	0.00594941	0.00580049*	0.00585880
o-Xylene		0.00107427	0.0463981	0.0452270*	0.0456832
Nonane		0.00208199	0.180884	0.176265*	0.178051
Decane		0.000776894	0.216711	0.211131*	0.213279
Mass Flow		lb/h	lb/h	lb/h	lb/h
Nitrogen		0.0430468	0.000119394	0.0431662*	0.00536034
Methane		3.38522	0.0873195	3.47254*	1.15724
Carbon Dioxide		0.315604	0.0421186	0.357723*	0.213608
Ethane		2.11901	0.795378	2.91439*	2.23529
Propane		1.78297	3.04469	4.82767*	4.46916
Isobutane		0.448018	2.11791	2.56593*	2.48969
n-Butane		0.708556	4.88230	5.59085*	5.47449
Isopentane		0.319606	6.09518	6.41479*	6.36449
n-Pentane		0.259330	6.79472	7.05404*	7.01353
Isohexane		0.187748	12.4404	12.6282*	12.5990
n-Hexane		0.107522	10.0940	10.2015*	10.1848
2,2,4-Trimethylpentane		0.00122136	0.333209	0.334430*	0.334238
Benzene		0.0223583	2.20136	2.22371*	2.22026
Heptane		0.193126	58.2134	58.4065*	58.3761
Toluene		0.0333777	11.9708	12.0042*	11.9989
Octane		0.0880363	89.4381	89.5261*	89.5120
Ethylbenzene		0.00187038	2.25568	2.25755*	2.25726
o-Xylene		0.0108031	17.5916	17.6024*	17.6006
Nonane		0.0209369	68.5813	68.6022*	68.5988
Decane		0.00781259	82.1646	82.1724*	82.1711
Mole Fraction					
Nitrogen		0.00420223	1.22240E-06	0.0004*	5.21825E-05
Methane		0.577061	0.00156113	0.05619*	0.0196722
Carbon Dioxide		0.0196111	0.000274489	0.00211*	0.00132364
Ethane		0.192717	0.00758667	0.02516*	0.0202727
Propane		0.110574	0.0198036	0.02842*	0.0276394
Isobutane		0.0210794	0.0104511	0.01146*	0.0116816
n-Butane		0.0333378	0.0240924	0.02497*	0.0256862
Isopentane		0.0121141	0.0242301	0.02308*	0.0240565
n-Pentane		0.00982944	0.0270109	0.02538*	0.0265098
Isohexane		0.00595795	0.0414048	0.03804*	0.0398705
n-Hexane		0.00341208	0.0335951	0.03073*	0.0322304
2,2,4-Trimethylpentane		2.92399E-05	0.000836642	0.00076*	0.000797955
Benzene		0.000782756	0.00808297	0.00739*	0.00775147
Heptane		0.00527072	0.166627	0.15131*	0.158875
Toluene		0.000990653	0.0372631	0.03382*	0.0355140
Octane		0.00210762	0.224567	0.20345*	0.213700
Ethylbenzene		4.81786E-05	0.00609388	0.00552*	0.00579826
o-Xylene		0.000278274	0.0475248	0.04304*	0.0452111
Nonane		0.000446420	0.153366	0.13885*	0.145861
Decane		0.000150159	0.165628	0.14992*	0.157496

Process Streams		Combined FG	Condensate Truck Loading	Inlet Liquids	Liquids to tanks
Properties	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	MIX-100	Condensate Storage Tank	--	Flash Vessel
	To Block:	--	--	Flash Vessel	Condensate Storage Tank
Property	**Units**				
Temperature	°F	60.1535	62.5	62.5*	62.5*
Pressure	psia	11.9	11.9	131.9*	71.9*
Molecular Weight	lb/lbmol	27.5004	108.743	101.031	105.068
Mass Density	lb/ft^3	0.0589881	44.6758	32.0712	44.4464
Molar Flow	lbmol/h	0.365675	3.48660	3.85228	3.66693
Mass Flow	lb/h	10.0562	379.144	389.200	385.276
Liquid Volumetric Flow	gpm	21.2544		1.51300	1.08073
Std Liquid Volumetric Flow	sgpm	0.0501666	1.06446*	1.11463	1.09226
Vapor Volumetric Flow	ft^3/h	170.478		12.1355	8.66833
Std Vapor Volumetric Flow	MMSCFD	0.00333043	0.0317547	0.0350851	0.0333970

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

Identification	
User Identification:	Kutz T6528 & T 6529 (Condensate)
City:	Bloomfield
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tanks
Tank Dimensions	
Shell Height (ft):	15.00
Diameter (ft):	15.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	19,761.25
Turnovers:	14.16
Net Throughput(gal/yr):	279,742.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Dome
Height (ft)	0.00
Radius (ft) (Dome Roof)	15.50
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz T6528 & T 6529 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	67.36	53.93	80.79	59.23	2.6041	1.9903	3.2569	66.1317			110.69	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0058	0.0053	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	34.6684	58.1230	0.0169	0.3258	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.2172	0.0055	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0060	0.0005	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.1868	0.0913	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.0267	0.0396	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Iso-Butane						43.3083	34.4026	53.8185	58.1230	0.0096	0.2679	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0161	0.1229	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.1813	0.0091	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.2365	0.0269	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0180	0.0927	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0317	0.0084	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0465	0.0035	106.17	Option 2: A=7.009, B=1462.266, C=215.11

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

Kutz T6528 & T 6529 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,927.9090
Vapor Space Volume (cu ft):	1,710.1435
Vapor Density (lb/cu ft):	0.0305
Vapor Space Expansion Factor:	0.2283
Vented Vapor Saturation Factor:	0.4443
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,710.1435
Tank Diameter (ft):	15.5000
Vapor Space Outage (ft):	9.0632
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	1.0632
Roof Outage (Dome Roof)	
Roof Outage (ft):	1.0632
Dome Radius (ft):	15.5000
Shell Radius (ft):	7.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0305
Vapor Molecular Weight (lb/lb-mole):	66.1317
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.6041
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2283
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.2666
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.6041
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.9903
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.2569
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4443
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.6041
Vapor Space Outage (ft):	9.0632
Working Losses (lb):	1,147.0469

Vapor Molecular Weight (lb/lb-mole):	66.1317
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.6041
Annual Net Throughput (gal/yr.):	279,742.0000
Annual Turnovers:	14.1600
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	19,761.2500
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	15.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3,074.9559

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

Emissions Report for: Annual

Kutz T6528 & T 6529 (Condensate) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	1,147.05	1,927.91	3,074.96
Iso-Butane	307.33	516.54	823.87
Butane (-n)	373.75	628.18	1,001.93
Isopentane	140.96	236.92	377.87
Pentane (-n)	106.37	178.78	285.15
Hexane (-n)	45.45	76.39	121.84
Heptane (-n)	104.68	175.93	280.61
Octane (-n)	30.85	51.85	82.70
Nonane (-n)	10.48	17.61	28.09
Decane (-n)	6.33	10.64	16.96
Benzene	6.13	10.29	16.42
Ethylbenzene	0.61	1.03	1.65
2,2,4-Trimethylpentane (isooctane)	0.48	0.80	1.28
Toluene	9.65	16.22	25.87
Xylenes (mixed isomers)	4.00	6.72	10.71

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

Identification

User Identification:	Kutz Tank T-3 flare separator liquids
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	19,900-gal flare separator liquids

Tank Dimensions

Shell Length (ft):	52.90
Diameter (ft):	8.00
Volume (gallons):	19,900.00
Turnovers:	59.27
Net Throughput(gal/yr):	1,179,473.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T-3 flare separator liquids - Horizontal Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Kutz condensate 12-07-17	All	58.54	51.41	65.66	56.17	1.9661	1.6914	2.2796	66.5407			110.69	
2,2,4-Trimethylpentane (isooctane)						0.5710	0.4627	0.6998	114.2300	0.0009	0.0004	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.1212	0.9158	1.3637	78.1100	0.0058	0.0055	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Decane (-n)						0.0322	0.0274	0.0381	142.2900	0.2172	0.0059	142.29	Option 1: VP50 = .026411 VP60 = .033211
Ethylbenzene						0.1031	0.0800	0.1318	106.1700	0.0060	0.0005	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.5852	0.4708	0.7232	100.2000	0.1868	0.0925	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						1.8417	1.5232	2.2130	86.1700	0.0267	0.0416	86.17	Option 2: A=6.876, B=1171.17, C=224.41
i-butane						25.4371	22.2191	29.0475	58.1300	0.0096	0.2072	58.13	Option 1: VP50 = 21.583 VP60 = 26.098
Isopentane						9.6953	8.1871	11.4350	72.1500	0.0161	0.1322	72.15	Option 1: VP50 = 7.889 VP60 = 10.005
n-butane						25.4371	22.2191	29.0475	58.1300	0.0169	0.3647	58.13	Option 1: VP50 = 21.583 VP60 = 26.098
Nonane (-n)						0.0632	0.0533	0.0754	128.2600	0.1813	0.0097	128.26	Option 1: VP50 = .051285 VP60 = .065278
Octane (-n)						0.1406	0.1170	0.1697	114.2300	0.2365	0.0281	114.23	Option 1: VP50 = .112388 VP60 = .145444
Pentane (-n)						6.6165	5.6308	7.7408	72.1500	0.0180	0.1006	72.15	Option 3: A=27691, B=7.558
Toluene						0.3154	0.2512	0.3929	92.1300	0.0316	0.0084	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylene (-o)						0.0674	0.0519	0.0868	106.1700	0.0465	0.0027	106.17	Option 2: A=6.998, B=1474.679, C=213.69

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

Kutz Tank T-3 flare separator liquids - Horizontal Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,097.1322
Vapor Space Volume (cu ft):	1,693.6586
Vapor Density (lb/cu ft):	0.0235
Vapor Space Expansion Factor:	0.1069
Vented Vapor Saturation Factor:	0.7058
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,693.6586
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	23.2187
Vapor Space Outage (ft):	4.0000
Tank Shell Length (ft):	52.9000
Vapor Density	
Vapor Density (lb/cu ft):	0.0235
Vapor Molecular Weight (lb/lb-mole):	66.5407
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9661
Daily Avg. Liquid Surface Temp. (deg. R):	518.2062
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	515.8442
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1069
Daily Vapor Temperature Range (deg. R):	28.5089
Daily Vapor Pressure Range (psia):	0.5883
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9661
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.6914
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.2796
Daily Avg. Liquid Surface Temp. (deg R):	518.2062
Daily Min. Liquid Surface Temp. (deg R):	511.0790
Daily Max. Liquid Surface Temp. (deg R):	525.3334
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7058
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.9661
Vapor Space Outage (ft):	4.0000
Working Losses (lb):	2,471.8602
Vapor Molecular Weight (lb/lb-mole):	66.5407
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.9661
Annual Net Throughput (gal/yr.):	1,179,473.0000
Annual Turnovers:	59.2700
Turnover Factor:	0.6728

Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3,568.9924

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

Emissions Report for: Annual

Kutz Tank T-3 flare separator liquids - Horizontal Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Kutz condensate 12-07-17	2,471.86	1,097.13	3,568.99
i-butane	512.06	227.28	739.34
2,2,4-Trimethylpentane (isooctane)	1.05	0.47	1.52
Benzene	13.65	6.06	19.71
Heptane (-n)	228.65	101.49	330.14
Toluene	20.88	9.27	30.14
Octane (-n)	69.54	30.87	100.41
Ethylbenzene	1.29	0.57	1.86
Xylene (-o)	6.56	2.91	9.47
Nonane (-n)	23.98	10.64	34.62
Decane (-n)	14.64	6.50	21.13
n-butane	901.39	400.08	1,301.47
Isopentane	326.77	145.04	471.81
Pentane (-n)	248.61	110.34	358.95
Hexane (-n)	102.80	45.63	148.43

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

Identification

User Identification:	Kutz Tank T-31 flare separator liquids
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	4200-gal flare separator liquids

Tank Dimensions

Shell Height (ft):	11.00
Diameter (ft):	8.00
Liquid Height (ft) :	10.00
Avg. Liquid Height (ft):	5.00
Volume (gallons):	3,760.00
Turnovers:	31.37
Net Throughput(gal/yr):	117,936.01
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T-31 flare separator liquids - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Kutz condensate 12-07-17	All	67.36	53.93	80.79	59.23	2.3580	1.7874	3.0634	66.9481			110.69	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0058	0.0058	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.2172	0.0060	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0060	0.0006	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.1868	0.0996	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.0267	0.0432	86.17	Option 2: A=6.876, B=1171.17, C=224.41
i-butane						29.9323	23.3587	37.8099	58.1300	0.0096	0.2020	58.13	Option 1: VP60 = 26.098 VP70 = 31.306
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0161	0.1341	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
n-butane						29.9323	23.3587	37.8099	58.1300	0.0169	0.3556	58.13	Option 1: VP60 = 26.098 VP70 = 31.306
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.1813	0.0100	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.2365	0.0293	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0180	0.1012	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0316	0.0092	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylene (-o)						0.0921	0.0570	0.1446	106.1700	0.0465	0.0030	106.17	Option 2: A=6.998, B=1474.679, C=213.69

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

Kutz Tank T-31 flare separator liquids - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	400.1384
Vapor Space Volume (cu ft):	305.7817
Vapor Density (lb/cu ft):	0.0279
Vapor Space Expansion Factor:	0.2261
Vented Vapor Saturation Factor:	0.5681
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	305.7817
Tank Diameter (ft):	8.0000
Vapor Space Outage (ft):	6.0833
Tank Shell Height (ft):	11.0000
Average Liquid Height (ft):	5.0000
Roof Outage (ft):	0.0833
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0833
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0279
Vapor Molecular Weight (lb/lb-mole):	66.9481
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3580
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2261
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.2760
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3580
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.7874
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.0634
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5681
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3580
Vapor Space Outage (ft):	6.0833
Working Losses (lb):	443.2720
Vapor Molecular Weight (lb/lb-mole):	66.9481
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3580
Annual Net Throughput (gal/yr.):	117,936.0096
Annual Turnovers:	31.3660
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	3,760.0000
Maximum Liquid Height (ft):	10.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	843.4104

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

Emissions Report for: Annual

Kutz Tank T-31 flare separator liquids - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Kutz condensate 12-07-17	443.27	400.14	843.41
i-butane	89.55	80.83	170.38
n-butane	157.63	142.29	299.92
Isopentane	59.43	53.64	113.07
Pentane (-n)	44.84	40.48	85.32
Hexane (-n)	19.16	17.30	36.46
2,2,4-Trimethylpentane (isooctane)	0.20	0.18	0.38
Benzene	2.58	2.33	4.91
Heptane (-n)	44.13	39.84	83.97
Toluene	4.07	3.67	7.74
Octane (-n)	13.01	11.74	24.74
Ethylbenzene	0.26	0.23	0.49
Xylene (-o)	1.33	1.20	2.53
Nonane (-n)	4.42	3.99	8.41
Decane (-n)	2.67	2.41	5.08

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

Identification

User Identification:	Kutz Tank T-109 (flare separator liquids)
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000-gal flare separator liquids tank

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	13.30
Liquid Height (ft) :	19.00
Avg. Liquid Height (ft):	9.50
Volume (gallons):	19,746.00
Turnovers:	59.73
Net Throughput(gal/yr):	1,179,360.06
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T-109 (flare separator liquids) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Kutz condensate 12-07-17	All	67.36	53.93	80.79	59.23	2.3575	1.7870	3.0628	66.9500			110.69	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0009	0.0005	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0058	0.0058	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.2172	0.0060	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0060	0.0006	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.1868	0.0996	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.0267	0.0432	86.17	Option 2: A=6.876, B=1171.17, C=224.41
i-butane						29.9323	23.3587	37.8099	58.1300	0.0096	0.2021	58.13	Option 1: VP60 = 26.098 VP70 = 31.306
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0161	0.1341	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
n-butane						29.9323	23.3587	37.8099	58.1300	0.0169	0.3555	58.13	Option 1: VP60 = 26.098 VP70 = 31.306
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.1813	0.0100	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.2365	0.0293	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0180	0.1012	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0316	0.0092	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylene (-o)						0.0921	0.0570	0.1446	106.1700	0.0465	0.0030	106.17	Option 2: A=6.998, B=1474.679, C=213.69

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

Kutz Tank T-109 (flare separator liquids) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,461.1697
Vapor Space Volume (cu ft):	1,478.0028
Vapor Density (lb/cu ft):	0.0279
Vapor Space Expansion Factor:	0.2261
Vented Vapor Saturation Factor:	0.4293
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,478.0028
Tank Diameter (ft):	13.3000
Vapor Space Outage (ft):	10.6385
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	9.5000
Roof Outage (ft):	0.1385
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1385
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.6500
Vapor Density	
Vapor Density (lb/cu ft):	0.0279
Vapor Molecular Weight (lb/lb-mole):	66.9500
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3575
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2261
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.2757
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3575
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.7870
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.0628
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4293
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3575
Vapor Space Outage (ft):	10.6385

Working Losses (lb):	2,964.7853
Vapor Molecular Weight (lb/lb-mole):	66.9500
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3575
Annual Net Throughput (gal/yr.):	1,179,360.0614
Annual Turnovers:	59.7265
Turnover Factor:	0.6690
Maximum Liquid Volume (gal):	19,746.0000
Maximum Liquid Height (ft):	19.0000
Tank Diameter (ft):	13.3000
Working Loss Product Factor:	1.0000
Total Losses (lb):	4,425.9549

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

Emissions Report for: Annual

Kutz Tank T-109 (flare separator liquids) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
n-butane	1,053.94	519.43	1,573.37
Isopentane	397.54	195.92	593.46
Pentane (-n)	299.99	147.85	447.84
Hexane (-n)	128.18	63.17	191.36
2,2,4-Trimethylpentane (isooctane)	1.34	0.66	2.01
Benzene	17.27	8.51	25.79
Heptane (-n)	295.21	145.49	440.71
Toluene	27.22	13.41	40.63
Octane (-n)	87.00	42.88	129.88
Ethylbenzene	1.73	0.85	2.58
Xylene (-o)	8.91	4.39	13.30
Nonane (-n)	29.56	14.57	44.12
Decane (-n)	17.85	8.79	26.64
Kutz condensate 12-07-17	2,964.79	1,461.17	4,425.95
i-butane	599.04	295.23	894.27

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

Identification	
User Identification:	Kutz Tank T41 (Gasoline)
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	300 Gallon Unleaded Gasoline Storage Tank
Tank Dimensions	
Shell Height (ft):	5.00
Diameter (ft):	3.50
Liquid Height (ft) :	4.00
Avg. Liquid Height (ft):	2.00
Volume (gallons):	300.00
Turnovers:	12.00
Net Throughput(gal/yr):	3,600.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Red/Primer
Shell Condition	Good
Roof Color/Shade:	Red/Primer
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T41 (Gasoline) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 13)	All	71.00	54.97	87.02	60.49	8.4947	6.3187	11.2237	62.0000			92.00	Option 4: RVP=13, ASTM Slope=3

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

Kutz Tank T41 (Gasoline) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	602.4199
Vapor Space Volume (cu ft):	29.2142
Vapor Density (lb/cu ft):	0.0925
Vapor Space Expansion Factor:	1.4459
Vented Vapor Saturation Factor:	0.4225
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	29.2142
Tank Diameter (ft):	3.5000
Vapor Space Outage (ft):	3.0365
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	2.0000
Roof Outage (ft):	0.0365
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0365
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	1.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0925
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.4947
Daily Avg. Liquid Surface Temp. (deg. R):	530.6665
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	520.1642
Tank Paint Solar Absorptance (Shell):	0.8900
Tank Paint Solar Absorptance (Roof):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	1.4459
Daily Vapor Temperature Range (deg. R):	64.0977
Daily Vapor Pressure Range (psia):	4.9050
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.4947
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.3187
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	11.2237
Daily Avg. Liquid Surface Temp. (deg R):	530.6665
Daily Min. Liquid Surface Temp. (deg R):	514.6421
Daily Max. Liquid Surface Temp. (deg R):	546.6909
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4225
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	8.4947

Vapor Space Outage (ft):	3.0365
Working Losses (lb):	45.1435
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.4947
Annual Net Throughput (gal/yr.):	3,600.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	300.0000
Maximum Liquid Height (ft):	4.0000
Tank Diameter (ft):	3.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	647.5634

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

Emissions Report for: Annual

Kutz Tank T41 (Gasoline) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	45.14	602.42	647.56

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

Identification	
User Identification:	Kutz Tank T59 (Methanol)
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	4,510 Gallon Methanol Storage Tank
Tank Dimensions	
Shell Height (ft):	12.00
Diameter (ft):	8.00
Liquid Height (ft) :	11.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	4,510.00
Turnovers:	5.00
Net Throughput(gal/yr):	22,550.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Aluminum/Diffuse
Shell Condition	Good
Roof Color/Shade:	Aluminum/Diffuse
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T59 (Methanol) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Methyl alcohol	All	65.98	53.54	78.42	58.75	1.7365	1.1730	2.5166	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

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

Kutz Tank T59 (Methanol) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	161.6741
Vapor Space Volume (cu ft):	330.9144
Vapor Density (lb/cu ft):	0.0099
Vapor Space Expansion Factor:	0.2179
Vented Vapor Saturation Factor:	0.6227
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	330.9144
Tank Diameter (ft):	8.0000
Vapor Space Outage (ft):	6.5833
Tank Shell Height (ft):	12.0000
Average Liquid Height (ft):	5.5000
Roof Outage (ft):	0.0833
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0833
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0099
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7365
Daily Avg. Liquid Surface Temp. (deg. R):	525.6478
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.4242
Tank Paint Solar Absorptance (Shell):	0.6000
Tank Paint Solar Absorptance (Roof):	0.6000
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2179
Daily Vapor Temperature Range (deg. R):	49.7633
Daily Vapor Pressure Range (psia):	1.3437
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7365
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1730
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.5166
Daily Avg. Liquid Surface Temp. (deg R):	525.6478
Daily Min. Liquid Surface Temp. (deg R):	513.2069
Daily Max. Liquid Surface Temp. (deg R):	538.0886
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.6227
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.7365

Vapor Space Outage (ft):	6.5833
Working Losses (lb):	29.8718
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.7365
Annual Net Throughput (gal/yr.):	22,550.0000
Annual Turnovers:	5.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	4,510.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	191.5459

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

Emissions Report for: Annual

Kutz Tank T59 (Methanol) - Vertical Fixed Roof Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	29.87	161.67	191.55

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

Identification	
User Identification:	Kutz Tank T81 (Methanol)
City:	Bloomfield
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	100 Gallon Methanol Storage Tank
Tank Dimensions	
Shell Length (ft):	5.00
Diameter (ft):	3.00
Volume (gallons):	100.00
Turnovers:	4.00
Net Throughput(gal/yr):	400.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

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

Kutz Tank T81 (Methanol) - Horizontal Tank
Bloomfield, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Methyl alcohol	All	67.36	53.93	80.79	59.23	1.8115	1.1881	2.6951	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

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

Kutz Tank T81 (Methanol) - Horizontal Tank
Bloomfield, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	17.8285
Vapor Space Volume (cu ft):	22.5114
Vapor Density (lb/cu ft):	0.0103
Vapor Space Expansion Factor:	0.2419
Vented Vapor Saturation Factor:	0.8741
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	22.5114
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.3713
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0103
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.8115
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2419
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	1.5070
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.8115
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1881
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.6951
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8741
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.8115
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	0.5528
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.8115
Annual Net Throughput (gal/yr.):	400.0000

Annual Turnovers:	4.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	18.3813

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

Emissions Report for: Annual

Kutz Tank T81 (Methanol) - Horizontal Tank
Bloomfield, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	0.55	17.83	18.38

Heater Exhaust Emissions Calculations

Unit Number: 43
Description: Kutz I Control Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.100	MMBtu/hr	Capacity	Mfg. data
111	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
876	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.97	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	1.11E-02	4.87E-02
CO	84	9.33E-03	4.09E-02
VOC	5.5	6.11E-04	2.68E-03
SO2	0.6	6.67E-05	2.92E-04
TSP	7.60	8.44E-04	3.70E-03
PM10	7.60	8.44E-04	3.70E-03
PM2.5	7.60	8.44E-04	3.70E-03
Lead	5.00E-04	5.56E-08	2.43E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 44
Description: Kutz I Control Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.115	MMBtu/hr	Capacity	Mfg. data
128	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
1,007	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
1.12	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	1.28E-02	5.60E-02
CO	84	1.07E-02	4.70E-02
VOC	5.5	7.03E-04	3.08E-03
SO2	0.6	7.67E-05	3.36E-04
TSP	7.60	9.71E-04	4.25E-03
PM10	7.60	9.71E-04	4.25E-03
PM2.5	7.60	9.71E-04	4.25E-03
Lead	5.00E-04	6.39E-08	2.80E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 49
Description: Auxilliary Pump Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.060	MMBtu/hr	Capacity	Mfg. data
67	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
526	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.58	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	6.67E-03	2.92E-02
CO	84	5.60E-03	2.45E-02
VOC	5.5	3.67E-04	1.61E-03
SO2	0.6	4.00E-05	1.75E-04
TSP	7.60	5.07E-04	2.22E-03
PM10	7.60	5.07E-04	2.22E-03
PM2.5	7.60	5.07E-04	2.22E-03
Lead	5.00E-04	3.33E-08	1.46E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 50
Description: Auxilliary Pump Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.076	MMBtu/hr	Capacity	Mfg. data
84	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
666	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.74	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	8.44E-03	3.70E-02
CO	84	7.09E-03	3.11E-02
VOC	5.5	4.64E-04	2.03E-03
SO2	0.6	5.07E-05	2.22E-04
TSP	7.60	6.42E-04	2.81E-03
PM10	7.60	6.42E-04	2.81E-03
PM2.5	7.60	6.42E-04	2.81E-03
Lead	5.00E-04	4.22E-08	1.85E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 60
Description: Air Building Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.080	MMBtu/hr	Capacity	Mfg. data
89	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
701	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.78	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	8.89E-03	3.89E-02
CO	84	7.47E-03	3.27E-02
VOC	5.5	4.89E-04	2.14E-03
SO2	0.6	5.33E-05	2.34E-04
TSP	7.60	6.76E-04	2.96E-03
PM10	7.60	6.76E-04	2.96E-03
PM2.5	7.60	6.76E-04	2.96E-03
Lead	5.00E-04	4.44E-08	1.95E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 64
Description: PGI Sampler Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.001	MMBtu/hr	Capacity	Mfg. data
1.11	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
8.76	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.01	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	1.11E-04	4.87E-04
CO	84	9.33E-05	4.09E-04
VOC	5.5	6.11E-06	2.68E-05
SO2	0.6	6.67E-07	2.92E-06
TSP	7.60	8.44E-06	3.70E-05
PM10	7.60	8.44E-06	3.70E-05
PM2.5	7.60	8.44E-06	3.70E-05
Lead	5.00E-04	5.56E-10	2.43E-09

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 65-67
Description: Kutz II Analyzer Heater & Kutz I Meter Heaters (Natural Gas) (Exempt & Insignificant)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.012	MMBtu/hr	Capacity	Mfg. data
13	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
105	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
0.12	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates,	
		pph	tpy
NOX	100	1.33E-03	5.84E-03
CO	84	1.12E-03	4.91E-03
VOC	5.5	7.33E-05	3.21E-04
SO2	0.6	8.00E-06	3.50E-05
TSP	7.60	1.01E-04	4.44E-04
PM10	7.60	1.01E-04	4.44E-04
PM2.5	7.60	1.01E-04	4.44E-04
Lead	5.00E-04	6.67E-09	2.92E-08

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 68
Description: API Separator Heater (Natural Gas) (Exempt & Insignificant)

Fuel Consumption

0.750	MMBtu/hr	Capacity	Mfg. data
833	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
6,570	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
7.30	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	8.33E-02	3.65E-01
CO	84	7.00E-02	3.07E-01
VOC	5.5	4.58E-03	2.01E-02
SO2	0.6	5.00E-04	2.19E-03
TSP	7.60	6.33E-03	2.77E-02
PM10	7.60	6.33E-03	2.77E-02
PM2.5	7.60	6.33E-03	2.77E-02
Lead	5.00E-04	4.17E-07	1.83E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

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)

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) exhaust emissions were calculated using emission factors from 40 Code of Federal Regulations (CFR), Part C, Tables C-1 & C-2 and the turbine, engine, heater, and reboiler higher heating value (HHV) design heat rates.

The SSM CO_2 and CH_4 emissions from the turbines, compressors and associate piping were calculated from the annual blowdown volumes and gas composition.

Centrifugal compressor CO_2 and CH_4 emissions were calculated using a combination of equations W-26 & W-36 (from Subpart W).

Dehydrator CO2 and CH4 emissions were calculated using GRI-GLYCalc.

Amine contactor CO2 and CH4 emissions were calculated using AMINECalc.

The plant and dehydrator flare GHG emissions were calculated using the Subpart W methodology.

CO_2 and CH_4 equipment leaks emissions were calculated using the TOC emission factors and gas stream composition. CH_4 gas-driven pneumatic device emissions and non-routine emissions were calculated from the facility CH_4 gas stream composition using the emission factors and baseline CH_4 content from the API Compendium, Section 5.6.1, Table 5-15. CO_2 gas-driven pneumatic device emissions and non-routine emissions were calculated from the CH_4 emissions and facility CO_2 gas stream composition.

There are no GHG emissions associated with the cooling tower and truck loading operations.

Malfunction (Unit M1) emissions were set at 10.0 tons of VOC per year to account for emissions that may occur during upsets and malfunctions. Based on the gas release rate associated with the set annual VOC emission rate, CO_2 and CH_4 emissions were calculated using a recent extended gas analysis.

Condensate tank CO_2 and CH_4 emissions were calculated from throughput and composition data in the ProMax output file.

Green House Gas Emissions Data and Calculations

Sources	Facility Total Emissions				
	CO2, tpy	CH4, tpy	N2O, tpy	GHG, tpy	CO2e, tpy
Engine & Turbine Exhaust Emissions (Total #2)	170,541.34	3.22	3.22E-01	170,544.88	170717.74
SSM Emissions	8.35	142.67	--	151.02	3575.03
Centrifugal Compressor Venting Emissions	67.75	1,158.85	--	1,226.61	29039.09
Heater & Boiler Exhaust Emissions	9,373.58	1.77E-01	1.77E-02	9,373.77	9383.26
Dehydrator Emissions	468.70	3.83	--	472.53	564.38
Reboiler Exhaust Emissions	1,836.77	3.46E-02	3.46E-03	1,836.81	1838.66
Acid Gas Removal Emissions	17,991.65	37.15	--	18,028.80	18920.28
Dehydrator Flare Emissions	548.45	--	9.25E-04	548.45	548.73
Facility Flare Emissions	20,357.91	108.01	3.61E-02	20,465.96	23068.96
Equipment Leak Emissions	4.28	73.13	--	77.42	1832.63
Natural Gas Pneumatic Device Venting Emissions	5.50E-01	9.39	--	9.94	235.30
Natural Gas Driven Pneumatic Pump Venting Emissions	13.60	232.22	--	245.82	5819.05
Malfunction Emissions	2.92	49.88	--	52.80	1249.95
Storage Tank Emissions	1.38	14.83	--	16.21	372.06
Total	221,217.24	1,833.38	3.80E-01	223,051.01	267,165.13

Engine & Turbine Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
1	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
2	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
3	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
4	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
5	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
6	Solar Centaur 3830	53.06	1.00E-03	1.00E-04	20,508.26	3.87E-01	3.87E-02
7	Solar Saturn T1200	53.06	1.00E-03	1.00E-04	7,555.67	1.42E-01	1.42E-02
8	Solar Saturn T1200	53.06	1.00E-03	1.00E-04	7,555.67	1.42E-01	1.42E-02
19	Solar Centaur 3016	53.06	1.00E-03	1.00E-04	16,133.92	3.04E-01	3.04E-02
20	Solar Centaur 3016	53.06	1.00E-03	1.00E-04	16,133.92	3.04E-01	3.04E-02
34	Caterpillar D343 Generator	73.96	3.00E-03	6.00E-04	108.34	4.39E-03	8.79E-04
76	Kohler 8.5RES Generator	53.06	1.00E-03	1.00E-04	4.28	8.07E-05	8.07E-06
	Total				170,541.34	3.22	3.22E-01

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
1	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
2	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
3	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
4	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
5	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
6	Solar Centaur 3830	Nat. Gas	8,760	36.10	40.11	351,373
7	Solar Saturn T1200	Nat. Gas	8,760	13.30	14.78	129,453
8	Solar Saturn T1200	Nat. Gas	8,760	13.30	14.78	129,453
19	Solar Centaur 3016	Nat. Gas	8,760	28.40	31.56	276,427
20	Solar Centaur 3016	Nat. Gas	8,760	28.40	31.56	276,427
34	Caterpillar D343 Generator	Diesel	500	--	2.66	1,332
76	Kohler 8.5RES Generator	Nat. Gas	500	0.13	0.15	73

The fuel types and operating times are provided by Harvest
The LHV design heat rates are taken from manufacturers data
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rates (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rates (MMBtu/hr) x hr/yr

Green House Gas Emissions Data and Calculations

SSM Emissions

Unit Numbers	Description	Total Gas Losses, scf/yr	CO2 Emission Factors, lb/scf	CH4 Emission Factors, lb/scf	Emission Rates	
					CO2, tpy	CH4, tpy
SSM	SSM	7,891,674	0.0021	0.0362	8.35	142.67

The annual blowdown volumes are calculated from data provided by Harvest
The CO2 and CH4 emission factors are calculated from the facility extended gas analysis
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Centrifugal Compressor Venting Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
NA	Blowdown Valve Leakage	12.41	212.34
NA	Oil Degassing Vents	55.34	946.52
NA	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	67.75	1,158.85

Operating mode - includes blowdown valve leakage (wet and dry seal) and the oil degassing vents (wet seal)
Non-operating depressurized mode - includes isolation valve leakage (wet & dry seal) through open blowdown vents (without blind flanges)
A combination of equations W-22 & W-36 (Subpart W) is used to calculate centrifugal compressor emissions
As the NMED requires CO2 & CH4 emissions rather than CO2e emissions, it is not necessary to include the global warming potential from equation W-36
CO2 Emission Rates (tpy) = # x scf/hr x hr/yr x (CO2 Mole Percent (%) / 100) x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rates (tpy) = # x scf/hr x hr/yr x (CH4 Mole Percent (%) / 100) x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Compressors #	Gas Emissions, scf/hr	Operating Times, hr/yr	CO2 Mole Percents, %	CH4 Mole Percents, %	CO2 Density, kg/scf	CH4 Density, kg/scf
NA	Blowdown Valve Leakage	8	167.4	8,760	1.83	85.52	0.0526	0.0192
NA	Oil Degassing Vents	8	746.2	8,760	1.83	85.52	0.0526	0.0192
NA	Isolation Valve Leakage	8	10.8	0	1.83	85.52	0.0526	0.0192

The number of compressors is provided by Harvest
Emission factors are the three year rolling average (2012-2014) of all measurements in the Williams compressor fleet located at natural gas processing plants
The operating times (the average operating times for all station compressors combined) is provided by Harvest
The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The CO2 & CH4 densities (kg/scf) are taken from Subpart W, Paragraph 98.233(v)

Heater & Boiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
25	Born Heater	53.06	1.00E-03	1.00E-04	4,629.98	8.73E-02	8.73E-03
27	Hot Oil Heater	53.06	1.00E-03	1.00E-04	4,743.60	8.94E-02	8.94E-03
	Total				9,373.58	1.77E-01	1.77E-02

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
25	Born Heater	Nat. Gas	8,760	8.150	9.06	79,327
27	Hot Oil Heater	Nat. Gas	8,760	8.350	9.28	81,273

The fuel type and operating time are provided by Harvest
The LHV design heat rates are taken from manufacturers data
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rate (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rate (MMBtu/hr) x hr/yr

Green House Gas Emissions Data and Calculations

Dehydrator Emissions

Unit Numbers	Description	Emission Rates	
		CO_2, tpy	CH_4, tpy
35a	Dehydrator (140 MMSCFD)	417.37	3.39
77a	Dehydrator (20 MMSCFD)	51.33	4.41E-01
	Total	468.70	3.83

Emission rates are taken from the GRI-GLYCalc output files

Reboiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO_2, kg/MMBtu	CH_4, kg/MMBtu	N_2O, kg/MMBtu	CO_2, tpy	CH_4, tpy	N_2O, tpy
35b	Reboiler (140 MMSCFD)	53.06	1.00E-03	1.00E-04	994.17	1.87E-02	1.87E-03
77b	Reboiler (20 MMSCFD)	53.06	1.00E-03	1.00E-04	842.60	1.59E-02	1.59E-03
	Total				1,836.77	3.46E-02	3.46E-03

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Numbers	Description	Fuel Types	Operating Times hr/yr	LHV			HHV	
				Fuel Usages, scf/hr	Fuel Heat Contents, Btu/scf	Fuel Usages, MMBtu/hr	Fuel Usages, MMBtu/hr	Fuel Usages, MMBtu/yr
35b	Reboiler (140 MMSCFD)	Nat. Gas	8,760	1,944	900	1.75	1.94	17,033
77b	Reboiler (20 MMSCFD)	Nat. Gas	8,760	1,648	900	1.48	1.65	14,436

The fuel types and operating times are provided by Harvest
The LHV fuel usages (scf/hr) are taken from manufacturer's data
The LHV fuel heat contents are estimated based on the value typically used by manufacturers
LHV Fuel Usages (MMBtu/hr) = LHV Fuel Usages (scf/hr) x Btu/scf / 1,000,000 Btu/MMBtu
HHV Fuel Usages (MMBtu/hr) = LHV Fuel Usages (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Fuel Usages (MMBtu/hr) x hr/yr

Acid Gas Removal Emissions

Unit Numbers	Description	Emission Rates	
		CO_2, tpy	CH_4, tpy
75	Amine Unit	17,991.65	37.15

The emission rates are taken from the AmineCalc output files

Dehydrator Flare Emissions

Unit Numbers	Description	N_2O Emission Factors, kg/MMBtu	Emission Rates	
			CO_2, tpy	N_2O, tpy
36	Dehydrator Flare	1.00E-04	548.45	9.25E-04
	Total		548.45	9.25E-04

The N2O emission factor is obtained from Subpart W (Paragraph 98.233(z)(2)(vi))
CO2 Emission Rates (tpy) = Combustion CO2 Emissions (MMscf/yr) x 1,000,000 scf/MMscf x 0.0526 kg/cu ft x 2.2 lb/kg / 2,000 lb/ton
N2O Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton
Noncombustion CO2 and CH4 emissions are accounted for in the dehydrator emissions

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Flare Through-puts, MMscf/yr	HHV Heat Contents, Btu/scf	Flare Through-puts, MMBtu/yr	Control Efficiencies, %	Combustion CO2 Emissions, MMscf/yr
36	Dehydrator Flare	6.81	1,235	8,406	98	9.48

The dehydrator flare throughputs are calculated from the GRI-GLYCalc output file (see criteria pollutant calculations)
The HHV heat contents are obtained from Subpart W (Paragraph 98.233(z)(2)(vi))
Flare Throughputs (MMBtu/yr) = MMscf/yr x 1,000,000 scf/MMscf x Btu/scf / 1,000,000 Btu/MMBtu
The control efficiencies are the default value identified by Subpart W (Paragraph 98.233(n)(4))
Combustion CO2 Emissions (MMscf/yr) = [(Control Efficiencies (%) / 100) x MMscf/yr x (CH4 Contents (mole %) / 100) x 1]
+ [(Control Efficiencies (%) / 100) x MMscf/yr x (Ethane Contents (mole %) / 100) x 2]
+ [(Control Efficiencies (%) / 100) x MMscf/yr x (Propane Contents (mole %) / 100) x 3]
+ [(Control Efficiencies (%) / 100) x MMscf/yr x (Butane Contents (mole %) / 100) x 4]
+ [(Control Efficiencies (%) / 100) x MMscf/yr x (Pentane+ Contents (mole %) / 100) x 5]
The numbers 1-5 in the above equation represent the number of carbon atoms found in methane through pentane, repectively.

Unit Numbers	Description	CO2 Contents, mole %	CH4 Contents, mole %	Ethane Contents, mole %	Propane Contents, mole %	Butane Contents, mole %	Pentane+ Contents, mole %
36	Dehydrator Flare	11.77	58.11	13.18	8.49	4.47	2.86

The dehydrator flare mole % (by volume) are calculated from GRI-GLYCalc output files (see table below)

	Flash Tank Off Gas	Condenser Vent	Dry Gas	Total
Gas Throughputs (scf/hr)	525	152	100	777
Components	Mole Percents, %	Mole Percents, %	Mole Percents, %	Mole Percents, %
Water	7.92E-01	2.11E+00	6.32E-03	9.49E-01
Carbon dioxide	7.86E+00	3.18E+01	1.82E+00	1.18E+01
Hydrogen sulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	2.39E-01	7.87E-02	3.11E-01	2.17E-01
Methane	6.30E+01	2.32E+01	8.55E+01	5.81E+01
Ethane	1.39E+01	1.46E+01	7.28E+00	1.32E+01
Propane	7.46E+00	1.57E+01	2.94E+00	8.49E+00
IsoButane	1.51E+00	3.21E+00	5.28E-01	1.72E+00
n-Butane	2.38E+00	5.35E+00	7.55E-01	2.75E+00
IsoPentane	6.28E-01	5.35E-01	2.10E-01	5.56E-01
n-Pentane	4.57E-01	7.82E-01	1.40E-01	4.80E-01
Cyclopentane	4.23E-02	1.05E-01	8.47E-03	5.02E-02
n-Hexane	1.93E-01	1.28E-01	5.51E-02	1.63E-01
Cyclohexane	1.03E-01	1.70E-01	2.06E-02	1.06E-01
Other hexanes	4.06E-01	3.09E-01	1.21E-01	3.50E-01
Heptanes	1.98E-01	8.20E-02	5.35E-02	1.57E-01
Methylcyclohexane	3.39E-01	3.07E-01	7.47E-02	2.99E-01
2,2,4-Trimethylpentane	1.12E-02	2.39E-03	3.70E-03	8.51E-03
Benzene	3.61E-02	3.73E-01	7.04E-03	9.83E-02
Toluene	2.34E-01	1.09E+00	4.60E-02	3.77E-01
Ethylbenzene	4.91E-03	8.80E-03	1.08E-03	5.18E-03
Xylenes	5.80E-02	1.50E-01	1.29E-02	7.02E-02
C8+ heavies	1.89E-01	3.43E-03	6.96E-02	1.37E-01
Total	100.0405	100.094	99.96	100.04

The dehydrator flare gas throughputs and component mole % (volume %) are taken from the GRI-GLYCalc output file

Green House Gas Emissions Data and Calculations

Facility Flare Emissions

Unit Number	Description	N2O Emission Factor, kg/MMBtu	Emission Rates		
			CO2, tpy	CH4, tpy	N2O, tpy
28	Plant Flare	1.00E-04	20,357.91	108.01	3.61E-02

The N2O emission factor is obtained from Subpart W (Paragraph 98.233(z)(2)(vi))
CO2 Emission Rate (tpy) = (Noncombustion CO2 Emissions (MMscf/yr) + Combustion CO2 Emissions (MMscf/yr)) x 1,000,000 scf/MMscf x 0.0526 kg/cu ft x 2.2 lb/kg / 2,000 lb/ton
CH4 Emission Rate (tpy) = Noncombustion CH4 Emissions (MMscf/yr) x 1,000,000 scf/MMscf x 0.0192 kg/cu ft x 2.2 lb/kg / 2,000 lb/ton
N2O Emission Rate (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Number	Description	Facility Flare Through-put, MMscf/yr	HHV Heat Content, Btu/scf	Flare Through-put, MMBtu/yr	Control Efficiency, %	Non-combustion CO2 Emissions MMscf/yr	Combustion CO2 Emissions MMscf/yr	Non-combustion CH4 Emissions MMscf/yr
28	Plant Flare	299	1,097	327,951	98	5.46	346.39	5.11

The facility flare throughput is obtained from Harvest
The HHV heat content is obtained from Subpart W (Paragraph 98.233(z)(2)(vi))
Flare Throughput (MMBtu/yr) = MMscf/yr x 1,000,000 scf/MMscf x Btu/scf / 1,000,000 Btu/MMBtu
The control efficiency is the default value identified by Subpart W (Paragraph 98.233(n)(4))
Noncombustion CO2 Emissions (MMscf/yr) = MMscf/yr x (CO2 Content (mole %) / 100)
Combustion CO2 Emissions (MMscf/yr) = [(Control Efficiency (%) / 100) x MMscf/yr x (CH4 Content (mole %) / 100) x 1]
+ [(Control Efficiency (%) / 100) x MMscf/yr x (Ethane Content (mole %) / 100) x 2]
+ [(Control Efficiency (%) / 100) x MMscf/yr x (Propane Content (mole %) / 100) x 3]
+ [(Control Efficiency (%) / 100) x MMscf/yr x (Butane Content (mole %) / 100) x 4]
+ [(Control Efficiency (%) / 100) x MMscf/yr x (Pentane+ Content (mole %) / 100) x 5]
The numbers 1-5 in the above equation represent the number of carbon atoms found in methane through pentane, repectively.
Noncombustion CH4 Emissions (MMscf/yr) = MMscf/yr x (1 - (Control Efficiency (%) / 100)) x (CH4 Content (mole %) / 100)

Unit Number	Description	CO2 Content, mole %	CH4 Content, mole %	Ethane Content, mole %	Propane Content, mole %	Butane Content, mole %	Pentane+ Content, mole %
28	Plant Flare	1.83	85.52	7.28	2.94	1.28	0.83

The facility flare mole % is obtained from the facility extended gas analysis

Equipment Leaks Emissions

Unit Number	Description	TOC Emission Rate, tpy	Emission Rates	
			CO2, tpy	CH4, tpy
F1	Equipment Leaks	104.22	4.28	73.13

The TOC emission rate is taken from the fugitive emission calculations in this application
CO2 Emission Rate (tpy) = Total TOC Emission Rate (tpy) * (Weight Percent CO2 (%) / 100)
CH4 Emission Rate (tpy) = Total TOC Emission Rate (tpy) * (Weight Percent CH4 (%) / 100)

Green House Gas Emissions Data and Calculations

Gas Driven Pneumatic Devices and Non-Routine Emissions (Gas Plants Only)

Unit Number	Description	CH4 Molecular Weight, lb/lb-mole	CO2 Molecular Weight, lb/lb-mole	Emission Rates	
				CO2, tpy	CH4, tpy
NA	Gas Driven Devices	16.04	44.01	5.50E-01	9.39
NA	Non-Routine	16.04	44.01	13.60	232.22

CO2 Emission Rate (tpy) = Facility Production Rate (MMscf/yr) * CH4 Emission Factor (tonne/MMscf)
* [Facility CH4 Content (mole %) / Baseline CH4 Content (mole %)]
* [(Facility CO2 Content (mole %) / 100) * CO2 Molecular Weight (tonne/tonne-mole)]
/ [(Facility CH4 Content (mole %) / 100) * CH4 Molecular Weight (tonne/tonne-mole)]
* 2,204.6 lb/tonne / 2,000 lb/ton

CH4 Emission Rate (tpy) = Facility Production Rate (MMscf/yr) * CH4 Emission Factor (tonne/MMscf)
* [Facility CH4 Content (mole %) / Baseline CH4 Content (mole %)]
* 2,204.6 lb/tonne / 2,000 lb/ton

The CH4 and CO2 molecular weights are calculated from the periodic table

Unit Number	Description	Facility Production Rate, MMscf/yr	CH4 Emission Factor, tonne/MMscf	Baseline CH4 Content, mole %	Facility CH4 Content, mole %	Facility CO2 Content, mole %
NA	Gas Driven Devices	60,674	1.425E-04	86.8	85.5219	1.8251
NA	Non-Routine	60,674	3.524E-03	86.8	85.5219	1.8251

The production rates are provided by Harvest

The gas driven pneumatic devices CH4 emission factor and baseline CH4 content are taken from the API Compendium, Section 5.6.1, Table 5-15

The non-routine CH4 emission factor and baseline CH4 content are taken from the API Compendium, Section 5.7.3, Table 5-25

Facility CH4 and CO2 contents are obtained from the extended gas analysis

Malfunction Emissions

Unit Number	Description	Emission Rates		
		VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	10.00	2.92	49.88

The VOC emission rate is estimated (see calculations workbook)

CO2 Emission Rate (tpy) = VOC Emission Rate (tpy) x (Total Component Weight (lb/lb-mole) / VOC Component Weight (lb-lb-mole))
x (CO2 Weight % of Total (%) / 100)

CH4 Emission Rate (tpy) = VOC Emission Rate (tpy) x (Total Component Weight (lb/lb-mole) / VOC Component Weight (lb-lb-mole))
x (CH4 Weight % of Total (%) / 100)

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %
M1	Malfunctions	19.55	2.75	4.11	70.18

The total & VOC component weights and CO2 & CH4 weight % of totals are calculated from the facility extended gas analysis

Storage Tanks

Unit Number	Description	Emission Rates	
		CO2, tpy	CH4, tpy
T6528	Condensate Storage Tank	1.38	14.83
T6529	Condensate Storage Tank	w/T6528	w/T6528
SEP-1	Slug Receiver Separator	w/T6528	w/T6528
	Total	1.38	14.83

Emission rates obtained from ProMax results

Green House Gas Emissions Data and Calculations

Gas Stream Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	1.8251	44.01	0.80	4.1091	0.0021
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.3113	28.01	0.09	0.4461	0.0002
Methane	85.5219	16.04	13.72	70.1757	0.0362
Ethane	7.2812	30.07	2.19	11.2006	0.0058
Propane	2.9445	44.09	1.30	6.6414	0.0034
IsoButane	0.5286	58.12	0.31	1.5717	0.0008
Normal Butane	0.7552	58.12	0.44	2.2454	0.0012
IsoPentane	0.2099	72.15	0.15	0.7747	0.0004
Normal Pentane	0.1406	72.15	0.10	0.5190	0.0003
Cyclopentane	0.0085	70.14	0.01	0.0305	0.0000
n-Hexane	0.0552	86.17	0.05	0.2433	0.0001
Cyclohexane	0.0207	84.16	0.02	0.0891	0.0000
Other Hexanes	0.1212	86.18	0.10	0.5343	0.0003
Heptanes	0.0536	100.20	0.05	0.2748	0.0001
Methylcyclohexane	0.0752	98.19	0.07	0.3777	0.0002
2,2,4-Trimethylpentane	0.0037	100.21	0.00	0.0190	0.0000
Benzene	0.0074	78.11	0.01	0.0296	0.0000
Toluene	0.0494	92.14	0.05	0.2329	0.0001
Ethylbenzene	0.0012	106.17	0.00	0.0065	0.0000
Xylenes	0.0150	106.17	0.02	0.0815	0.0000
C8+ heavies	0.0706	110.00	0.08	0.3973	0.0002
Total	100.0000		19.55	100.0000	0.0515
VOC			2.75	--	0.0072

Gas stream composition from Kutz Inlet extended gas analysis sampled 08/12/2020
Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)
Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole

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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.

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

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

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

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

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

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

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

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

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6$ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

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

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

Table 3.1-2a. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM STATIONARY GAS TURBINES

Emission Factors[a] - Uncontrolled				
Pollutant	Natural Gas-Fired Turbines[b]		Distillate Oil-Fired Turbines[d]	
	(lb/MMBtu)[c] (Fuel Input)	Emission Factor Rating	(lb/MMBtu)[e] (Fuel Input)	Emission Factor Rating
CO_2[f]	110	A	157	A
N_2O	0.003[g]	E	ND	NA
Lead	ND	NA	1.4 E-05	C
SO_2	0.94S[h]	B	1.01S[h]	B
Methane	8.6 E-03	C	ND	NA
VOC	2.1 E-03	D	4.1 E-04[j]	E
TOC[k]	1.1 E-02	B	4.0 E-03[l]	C
PM (condensible)	4.7 E-03[l]	C	7.2 E-03[l]	C
PM (filterable)	1.9 E-03[l]	C	4.3 E-03[l]	C
PM (total)	6.6 E-03[l]	C	1.2 E-02[l]	C

[a] Factors are derived from units operating at high loads ($\geq$80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief". ND = No Data, NA = Not Applicable.

[b] SCCs for natural gas-fired turbines include 2-01-002-01, 2-02-002-01 & 03, and 2-03-002-02 & 03.

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60^{o}F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. Similarly, these emission factors can be converted to other natural gas heating values.

[d] SCCs for distillate oil-fired turbines are 2-01-001-01, 2-02-001-01, 2-02-001-03, and 2-03-001-02.

[e] Emission factors based on an average distillate oil heating value of 139 MMBtu/10^3 gallons. To convert from (lb/MMBtu) to (lb/10^3 gallons), multiply by 139.

[f] Based on 99.5% conversion of fuel carbon to CO_2 for natural gas and 99% conversion of fuel carbon to CO_2 for distillate oil. CO_2 (Natural Gas) [lb/MMBtu] = (0.0036 scf/Btu)(%CON)(C)(D), where %CON = weight percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight, and D = density of fuel. For natural gas, C is assumed at 75%, and D is assumed at 4.1 E+04 lb/10^6scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

[g] Emission factor is carried over from the previous revision to AP-42 (Supplement B, October 1996) and is based on limited source tests on a single turbine with water-steam injection (Reference 5).

[h] All sulfur in the fuel is assumed to be converted to SO_2. S = percent sulfur in fuel. Example, if sulfur content in the fuel is 3.4 percent, then S = 3.4. If S is not available, use 3.4 E-03 lb/MMBtu for natural gas turbines, and 3.3 E-02 lb/MMBtu for distillate oil turbines (the equations are more accurate).

[j] VOC emissions are assumed equal to the sum of organic emissions.

[k] Pollutant referenced as THC in the gathered emission tests. It is assumed as TOC, because it is based on EPA Test Method 25A.

[l] Emission factors are based on combustion turbines using water-steam injection.

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES[a]
(SCC 2-02-002-53)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	2.21 E+00	A
NO_x[c] <90% Load	2.27 E+00	C
CO[c] 90 - 105% Load	3.72 E+00	A
CO[c] <90% Load	3.51 E+00	C
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	3.58 E-01	C
Methane[g]	2.30 E-01	C
VOC[h]	2.96 E-02	C
PM10 (filterable)[i,j]	9.50 E-03	E
PM2.5 (filterable)[j]	9.50 E-03	E
PM Condensable[k]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[l]	2.53 E-05	C
1,1,2-Trichloroethane[l]	<1.53 E-05	E
1,1-Dichloroethane	<1.13 E-05	E
1,2-Dichloroethane	<1.13 E-05	E
1,2-Dichloropropane	<1.30 E-05	E
1,3-Butadiene[l]	6.63 E-04	D
1,3-Dichloropropene[l]	<1.27 E-05	E
Acetaldehyde[l,m]	2.79 E-03	C
Acrolein[l,m]	2.63 E-03	C
Benzene[l]	1.58 E-03	B
Butyr/isobutyraldehyde	4.86 E-05	D
Carbon Tetrachloride[l]	<1.77 E-05	E

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

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

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

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

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

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

Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene[b]	9.33 E-04
Toluene[b]	4.09 E-04
Xylenes[b]	2.85 E-04
Propylene	2.58 E-03
1,3-Butadiene[b,c]	<3.91 E-05
Formaldehyde[b]	1.18 E-03
Acetaldehyde[b]	7.67 E-04
Acrolein[b]	<9.25 E-05
Polycyclic aromatic hydrocarbons (PAH)	
Naphthalene[b]	8.48 E-05
Acenaphthylene	<5.06 E-06
Acenaphthene	<1.42 E-06
Fluorene	2.92 E-05
Phenanthrene	2.94 E-05
Anthracene	1.87 E-06
Fluoranthene	7.61 E-06
Pyrene	4.78 E-06
Benzo(a)anthracene	1.68 E-06
Chrysene	3.53 E-07
Benzo(b)fluoranthene	<9.91 E-08
Benzo(k)fluoranthene	<1.55 E-07
Benzo(a)pyrene	<1.88 E-07
Indeno(1,2,3-cd)pyrene	<3.75 E-07
Dibenz(a,h)anthracene	<5.83 E-07
Benzo(g,h,l)perylene	<4.89 E-07
TOTAL PAH	1.68 E-04

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.
[c] Based on data from 1 engine.

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

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

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

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

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

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

$$L_L = 12.46 \frac{SPM}{T} \tag{1}$$

where:

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

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see Figure 7.1-5, Figure 7.1-6, and Table 7.1-2)
M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) (see Table 7.1-2)
T = temperature of bulk liquid loaded, °R (°F + 460)

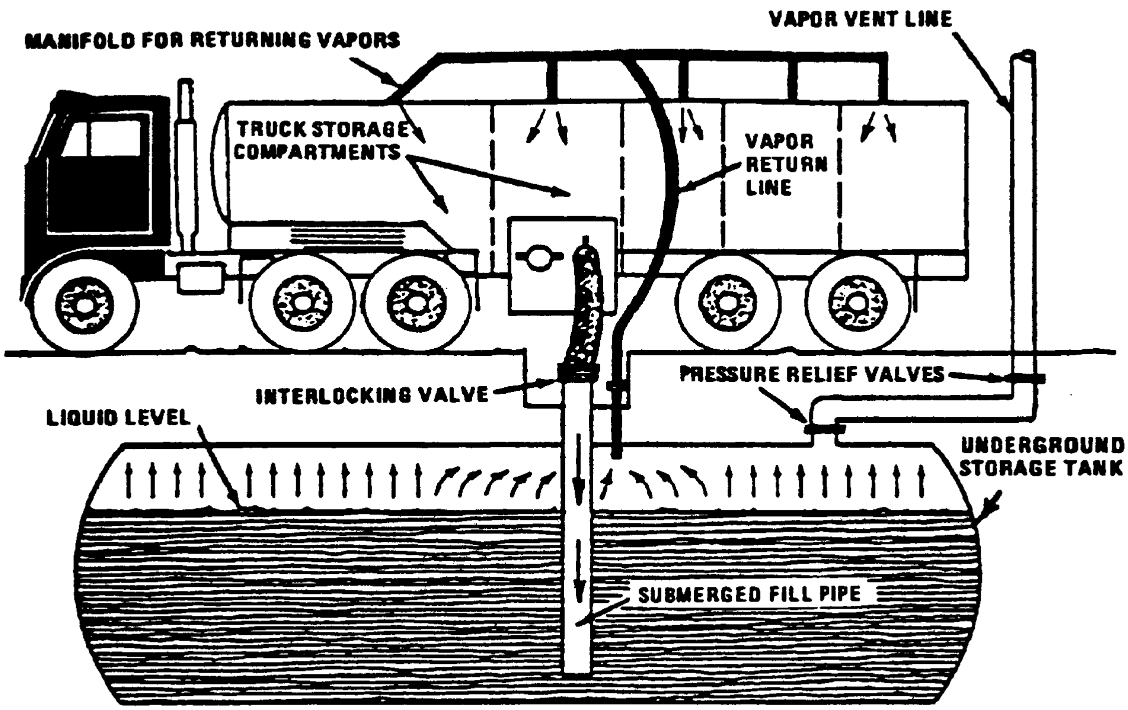


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

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

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

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

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

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

[a] References 1-17. Numbers are given to 2 significant digits. ND = no data. SCC = Source Classification Code.
[b] References 2,5-7,9-10,12-13,15-16. Total liquid drift is water droplets entrained in the cooling tower exit air stream. Factors are for % of circulating water flow (10^{-2} L drift/L [10^{-2} gal drift/gal] water flow) and g drift/daL (lb drift/10^3 gal) circulating water flow. 0.12 g/daL = 0.1 lb/10^3 gal; 1 daL = 10^1 L.
[c] See discussion in text on how to use the table to obtain PM-10 emission estimates. Values shown above are the arithmetic average of test results from References 2,4,8, and 11-14, and they imply an effective TDS content of approximately 12,000 parts per million (ppm) in the circulating water.
[d] See Figure 13.4-1 and Figure 13.4-2. Additional SCCs for wet cooling towers of unspecified draft type are 3-85-001-10 and 3-85-002-10.
[e] Expressed as g PM-10/daL (lb PM-10/10^3 gal) circulating water flow.

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

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

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

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: HM200073
Cust No: 33700-10530

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	
Well Name:	KUTZ 1 INLET	Well Flowing:	
County/State:		Pressure:	568 PSIG
Location:		Flow Temp:	75 DEG. F
Lease/PA/CA:		Ambient Temp:	DEG. F
Formation:		Flow Rate:	MCF/D
Cust. Stn. No.:		Sample Method:	
		Sample Date:	08/12/2020
		Sample Time:	8.30 AM
		Sampled By:	DANIEL MONCLOVA
Heat Trace:		Sampled by (CO):	HARVEST MID
Remarks:	Calculated Molecular Weight = 19.5732		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3113	0.3139	0.0340	0.00	0.0030
CO2	1.8251	1.8402	0.3120	0.00	0.0277
Methane	85.5219	86.2300	14.5380	863.77	0.4737
Ethane	7.2812	7.3415	1.9530	128.86	0.0756
Propane	2.9445	2.9689	0.8130	74.09	0.0448
Iso-Butane	0.5286	0.5330	0.1730	17.19	0.0106
N-Butane	0.7552	0.7615	0.2390	24.64	0.0152
Neopentane 2,2 dmc3	0.0000	0.0000	0.0000	0.00	0.0000
I-Pentane	0.2099	0.2116	0.0770	8.40	0.0052
N-Pentane	0.1406	0.1418	0.0510	5.64	0.0035
Neohexane	0.0012	N/R	0.0010	0.06	0.0000
2-3-Dimethylbutane	0.0082	N/R	0.0030	0.39	0.0002
Cyclopentane	0.0085	N/R	0.0030	0.32	0.0002
2-Methylpentane	0.0553	N/R	0.0230	2.63	0.0016
3-Methylpentane	0.0214	N/R	0.0090	1.02	0.0006
C6	0.0552	0.4856	0.0230	2.63	0.0016
Methylcyclopentane	0.0351	N/R	0.0120	1.58	0.0010
Benzene	0.0074	N/R	0.0020	0.28	0.0002
Cyclohexane	0.0207	N/R	0.0070	0.93	0.0006
2-Methylhexane	0.0077	N/R	0.0040	0.42	0.0003
3-Methylhexane	0.0095	N/R	0.0040	0.52	0.0003
2-2-4-Trimethylpentane	0.0037	N/R	0.0020	0.23	0.0001
i-heptanes	0.0053	N/R	0.0020	0.28	0.0002
Heptane	0.0311	N/R	0.0140	1.71	0.0011

Methylcyclohexane	0.0752	N/R	0.0300	3.92	0.0025
Toluene	0.0494	N/R	0.0170	2.21	0.0016
2-Methylheptane	0.0211	N/R	0.0110	1.31	0.0008
4-Methylheptane	0.0088	N/R	0.0050	0.55	0.0003
i-Octanes	0.0111	N/R	0.0050	0.67	0.0004
Octane	0.0243	N/R	0.0120	1.52	0.0010
Ethylbenzene	0.0012	N/R	0.0000	0.06	0.0000
m, p Xylene	0.0139	N/R	0.0050	0.72	0.0005
o Xylene (& 2,2,4 tmc7)	0.0011	N/R	0.0000	0.06	0.0000
i-C9	0.0014	N/R	0.0010	0.09	0.0001
C9	0.0026	N/R	0.0010	0.18	0.0001
i-C10	0.0008	N/R	0.0000	0.06	0.0000
C10	0.0003	N/R	0.0000	0.02	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0001	N/R	0.0000	0.01	0.0000
C12P	0.0001	N/R	0.0000	0.01	0.0000
Total	100.00	100.828	18.386	1146.93	0.6751

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY
**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBLITY FACTOR	(1/Z):	1.003	CYLINDER #:	6
BTU/CU.FT IDEAL:		1149.6	CYLINDER PRESSURE:	548 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		1153.0	ANALYSIS DATE:	08/13/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		1132.9	ANALYIS TIME:	09:24:07 AM
DRY BTU @ 15.025:		1176.1	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:		0.6769		

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.
GPA Standard: GPA 2286-14
GC: SRI Instruments 8610 **Last Cal/Verify: 08/13/2020**
GC Method: C12+BTEX Gas

Description:	KUTZ 1 INLET		Company:	HARVEST MIDSTREAM
Field:			WorkOrder:	
Meter Number:			GPA Method:	GPA 2286
Analysis Date/Time:	8/13/2020	9:24:07	Sampled By:	DANIEL MONCLOVA
Date Sampled:	8/12/2020		Analyst Initials:	PK
Sample Temperature:	75		Instrument:	SRI 8610
Sample Pressure:	548			

GRI GlyCalc Information

Component	Mol%	Normalized Weight %
Carbon Dioxide	1.8251	4.1037
Hydrogen Sulfide	N/R	0.0000
Nitrogen	0.3113	0.4455
Methane	85.5219	70.0971
Ethane	7.2812	11.1860
Propane	2.9445	6.6337
Iso-Butane	0.5286	1.5697
n-Butane	0.7552	2.2426
Iso-Pentane	0.2099	0.7737
n-Pentane	0.1406	0.5183
Cyclopentane	0.0085	0.0305
n-Hexane	0.0552	0.2546
Cyclohexane	0.0207	0.0890
Other Hexanes	0.1212	0.6205
Heptanes	0.0536	0.2744
Methylcyclohexane	0.0752	0.3772
2 2 4 Trimethylpentane	0.0037	0.0216
Benzene	0.0074	0.0295
Toluene	0.0494	0.2325
Ethylbenzene	0.0012	0.0065
Xylenes	0.0150	0.0814
C8+ Heavies	0.0706	0.4120
Subtotal	100.0000	
Oxygen	N/R	
Subtotal	100.0000	100.0000

Calculated Molecular Weight 19.5732

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901
(307) 352-7292

LIMS ID:	N/A		Description:	Kutz-I Inlet
Analysis Date/Time:	8/9/2011	7:00 AM	Field:	Farmington, NM
Analyst Initials:	AST		ML#:	1026305
Instrument ID:	Instrument 1		GC Method:	Quesbtex
Data File:	QPC80.D			
Date Sampled:	8/4/2011			

Component	Mol%	Wt%	LV%
Methane	88.8787	76.0957	84.0784
Ethane	5.0367	8.0827	7.5381
Propane	2.0945	4.9291	3.2230
Isobutane	0.3862	1.1979	0.7055
n-Butane	0.5501	1.7064	0.9685
Neopentane	0.0044	0.0169	0.0094
Isopentane	0.1987	0.7650	0.4061
n-Pentane	0.1444	0.5561	0.2921
2,2-Dimethylbutane	0.0048	0.0222	0.0113
2,3-Dimethylbutane	0.0150	0.0691	0.0344
2-Methylpentane	0.0422	0.1939	0.0977
3-Methylpentane	0.0235	0.1082	0.0536
n-Hexane	0.0451	0.2073	0.1035
Heptanes	0.1234	0.6141	0.2696
Octanes	0.0093	0.0567	0.0258
Nonanes	0.0031	0.0196	0.0084
Decanes plus	0.0006	0.0047	0.0021
Nitrogen	0.4390	0.6563	0.2688
Carbon Dioxide	2.0003	4.6981	1.9037
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Global Properties		Units
Gross BTU/Real CF	1102.6	BTU/SCF at 60°F and14.73 psia
Sat.Gross BTU/Real CF	1084.6	BTU/SCF at 60°F and14.73 psia
Gas Compressibility (Z)	0.9973	
Specific Gravity	0.6486	air=1
Avg Molecular Weight	18.738	gm/mole
Propane GPM	0.574024	gal/MCF
Butane GPM	0.299039	gal/MCF
Gasoline GPM	0.228108	gal/MCF
26# Gasoline GPM	0.40131	gal/MCF
Total GPM	1.101391	gal/MCF
Base Mol%	99.171	%v/v

Sample Temperature:	88	°F
Sample Pressure:	586	psig
H2SLength of Stain Tube	N/A	ppm

Component	Mol%	Wt%	LV%
Benzene	0.0086	0.0359	0.0135
Toluene	0.0082	0.0405	0.0154
Ethylbenzene	0.0001	0.0008	0.0003
M&P Xylene	0.0012	0.0067	0.0026
O-Xylene	0.0002	0.0010	0.0004
2,2,4-Trimethylpentane	0.0034	0.0208	0.0096
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0213	0.0958	0.0405
Methylcyclohexane	0.0229	0.1199	0.0514

Description: Kutz-I Inlet

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	2.0003	4.6981	1.9037
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.4390	0.6563	0.2688
Methane	88.8787	76.0957	84.0784
Ethane	5.0367	8.0827	7.5381
Propane	2.0945	4.9291	3.2230
Isobutane	0.3862	1.1979	0.7055
n-Butane	0.5501	1.7064	0.9685
Isopentane	0.2031	0.7819	0.4155
n-Pentane	0.1444	0.5561	0.2921
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0451	0.2073	0.1035
Cyclohexane	0.0213	0.0958	0.0405
Other Hexanes	0.0855	0.3934	0.1970
Heptanes	0.0590	0.3012	0.1392
Methylcyclohexane	0.0229	0.1199	0.0514
2,2,4 Trimethylpentane	0.0034	0.0208	0.0096
Benzene	0.0086	0.0359	0.0135
Toluene	0.0082	0.0405	0.0154
Ethylbenzene	0.0001	0.0008	0.0003
Xylenes	0.0014	0.0077	0.0030
C8+ Heavies	0.0115	0.0725	0.0330
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17120331-001A

Environmental Department
Williams
1755 Arroyo Drive
Bloomfield, NM 87402

Dec. 19, 2017

Station Name: Kutz Dakota Slug Receiver
Method: GPA 2103M
Cylinder No: CP14
Analyzed: 12/11/2017 10:43:15 by RR

Sampled By:
Sample Of: Liquid Spot
Sample Date: 12/07/2017 11:20
Sample Conditions: 80 psig
PO/Ref. No: 651377

Analytical Data

Components	Mol. %	MW	Wt. %	Sp. Gravity	L.V. %
Nitrogen	0.040	28.013	0.011	0.807	0.010
Methane	5.619	16.043	0.884	0.300	2.150
Carbon Dioxide	0.211	44.010	0.091	0.817	0.081
Ethane	2.516	30.069	0.742	0.356	1.520
Propane	2.842	44.096	1.229	0.507	1.768
Iso-Butane	1.146	58.122	0.653	0.563	0.846
n-Butane	2.497	58.122	1.423	0.584	1.777
Iso-Pentane	2.308	72.149	1.633	0.625	1.906
n-Pentane	2.538	72.149	1.796	0.631	2.078
i-Hexanes	3.804	84.564	3.155	0.669	3.442
n-Hexane	3.073	86.175	2.597	0.664	2.854
2,2,4-Trimethylpentane	0.076	114.229	0.085	0.696	0.089
Benzene	0.739	78.112	0.566	0.884	0.467
Heptanes	15.131	94.312	13.994	0.722	14.141
Toluene	3.382	92.138	3.056	0.872	2.558
Octanes	20.345	108.164	21.582	0.743	21.205
Ethylbenzene	0.552	106.165	0.575	0.872	0.481
Xylenes	4.304	106.165	4.480	0.871	3.754
Nonanes	13.885	125.924	17.147	0.745	16.797
Decanes Plus	14.992	165.284	24.301	0.803	22.076
	100.000		100.000		100.000

Calculated Physical Properties	**Total**	**C10+**
Specific Gravity at 60°F	0.7297	0.8034
API Gravity at 60°F	62.406	44.626
Molecular Weight	101.970	165.284
Pounds per Gallon (in Vacuum)	6.084	6.698
Pounds per Gallon (in Air)	6.077	6.691
Cu. Ft. Vapor per Gallon @ 14.696 psia	22.641	15.378

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-17120331-001A

Environmental Department
Williams
1755 Arroyo Drive
Bloomfield, NM 87402

Dec. 19, 2017

Station Name: Kutz Dakota Slug Receiver
PO/Ref. No: 651377
Cylinder No: CP14

Sampled By:
Sample Of: Liquid Spot
Sample Date: 12/07/2017 11:20
Sample Conditions: 80 psig

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Shrinkage Factor	Proprietary	0.9797			SM	12/13/2017
Flash Factor	Proprietary	43.6106	Cu.Ft./STBbl.		SM	12/13/2017
Color Visual	Proprietary	Straw			SM	12/13/2017
API Gravity @ 60° F	ASTM D-4052	56.68	°		JJH	12/14/2017

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Table 4. Flare Factors

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

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

Calculating Realistic PM_{10} Emissions from Cooling Towers

Abstract No. 216 Session No. AM-1b

Joel Reisman and Gordon Frisbie
Greystone Environmental Consultants, Inc., 650 University Avenue, Suite 100, Sacramento, California 95825

ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM_{10}) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42[1] , which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM_{10}. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM_{10} emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM_{10} modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM_{10} non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM_{10} emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fenceline. This paper presents a method for computing realistic PM_{10} emissions from cooling towers with medium to high TDS levels.

INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42[1] provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically expressed as a percentage of the cooling tower water circulation rate). AP-42 states that "a *conservatively high* PM_{10} emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM_{10} range." (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$PM = \text{Water Circulation Rate x Drift Rate x TDS} \qquad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$PM = 146{,}000 \text{ gpm x } 8.34 \text{ lb water/gal x } 0.0006/100 \text{ x } 7{,}700 \text{ lb solids}/10^6 \text{ lb water x } 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM_{10}, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM_{10}.

COMPUTING THE PM_{10} FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM_{10} can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull[2], 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore, this size distribution data can be assumed to be <u>conservative</u> for predicting the fraction of PM_{10} in the total cooling tower PM emissions.

In calculating PM_{10} emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density (ρ_w) of water; $1.0\ \text{g/cm}^3$ or $1.0 * 10^{-6}\ \mu g / \mu m^3$.
- The solid particles were assumed to have the same density (ρ_{TDS}) as sodium chloride, (i.e., 2.2 g/cm^3).

Using the formula for the volume of a sphere, $V = 4\pi r^3/3$, and the density of pure water, $\rho_w = 1.0\ \text{g/cm}^3$, the following equations can be used to derive the solid particulate diameter, D_p, as a function of the TDS, the density of the solids, and the initial drift droplet diameter, D_d :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \qquad [2]$$

$$\text{Mass of solids in drift droplet} = (\text{TDS})(\rho_w)(\text{Volume of drift droplet}) \qquad [3]$$

substituting,

$$\text{Mass of solids in drift} = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{TDS})\ (\text{solid particle volume}) = (\rho_{TDS})(4/3)\pi(D_p/2)^3 \qquad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{TDS})(4/3)\pi(D_p/2)^3 = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [6]$$

Solving for D_p:

$$D_p = D_d\ [(\text{TDS})(\rho_w / \rho_{TDS})]^{1/3} \qquad [7]$$

Where,

TDS is in units of ppmw
D_p = diameter of solid particle, micrometers (μm)
D_d = diameter of drift droplet, μm

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10 μm in diameter, we conclude that approximately <u>14.9 percent</u> of the mass emissions are equal to or smaller than PM_{10}. The balance of the solid particulate are particulate greater than 10 μm. Hence, PM_{10} emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall PM_{10} emissions are actually lower, because more of the solid particles are larger than 10 μm.

Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

[1] Bracketed numbers refer to equation number in text.

The percentage of PM_{10}/PM was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted PM_{10} emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the PM_{10} emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

CONCLUSION

The emission factors and methodology given in EPA's AP-42[1] Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than PM_{10} once the water has evaporated. Particles larger than PM_{10} are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift droplet size distribution, a method is now available for calculating realistic PM_{10} emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.61E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.69	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.96E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70685.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
600	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

Figure 1: Percentage of Drift PM that Evaporates to PM10

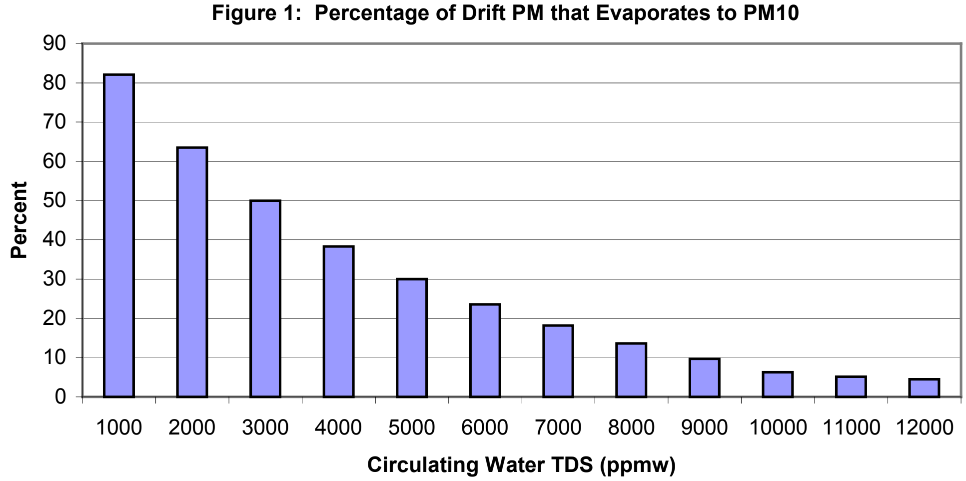
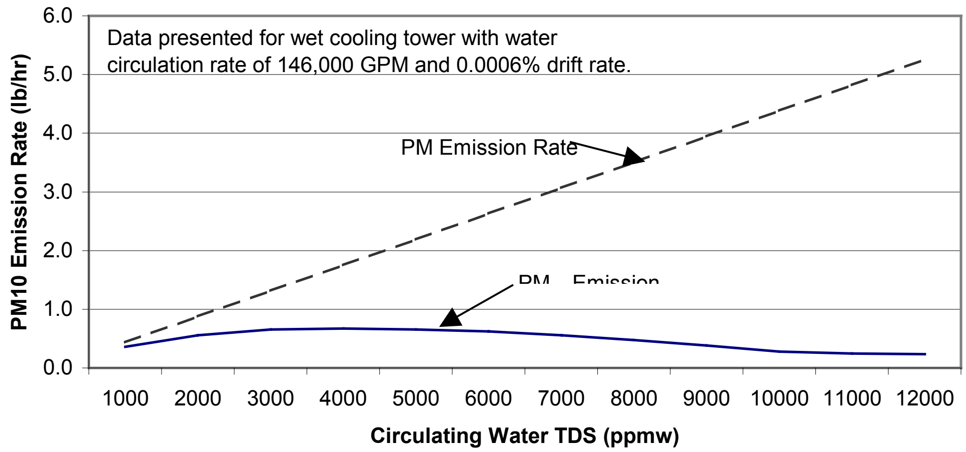


Figure 2: PM_{10} Emission Rate vs. TDS



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1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, http://www.epa.gov/ttn/chief/ap42/, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.

2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

KEY WORDS

Drift
Drift eliminators
Cooling tower
PM_{10} emissions
TDS

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

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

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

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

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

Table A-1 to Subpart A of Part 98—Global Warming Potentials

GLOBAL WARMING POTENTIALS

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Carbon dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	[a]25
Nitrous oxide	10024-97-2	N_2O	[a]298
HFC-23	75-46-7	CHF_3	[a]14,800
HFC-32	75-10-5	CH_2F_2	[a]675
HFC-41	593-53-3	CH_3F	[a]92
HFC-125	354-33-6	C_2HF_5	[a]3,500
HFC-134	359-35-3	$C_2H_2F_4$	[a]1,100
HFC-134a	811-97-2	CH_2FCF_3	[a]1,430
HFC-143	430-66-0	$C_2H_3F_3$	[a]353
HFC-143a	420-46-2	$C_2H_3F_3$	[a]4,470
HFC-152	624-72-6	CH_2FCH_2F	53
HFC-152a	75-37-6	CH_3CHF_2	[a]124
HFC-161	353-36-6	CH_3CH_2F	12
HFC-227ea	431-89-0	C_3HF_7	[a]3,220
HFC-236cb	677-56-5	$CH_2FCF_2CF_3$	1,340
HFC-236ea	431-63-0	CHF_2CHFCF_3	1,370
HFC-236fa	690-39-1	$C_3H_2F_6$	[a]9,810
HFC-245ca	679-86-7	$C_3H_3F_5$	[a]693
HFC-245fa	460-73-1	$CHF_2CH_2CF_3$	1,030
HFC-365mfc	406-58-6	$CH_3CF_2CH_2CF_3$	794
HFC-43-10mee	138495-42-8	$CF_3CFHCFHCF_2CF_3$	[a]1,640
Sulfur hexafluoride	2551-62-4	SF_6	[a]22,800
Trifluoromethyl sulphur pentafluoride	373-80-8	SF_5CF_3	17,700
Nitrogen trifluoride	7783-54-2	NF_3	17,200
PFC-14 (Perfluoromethane)	75-73-0	CF_4	[a]7,390
PFC-116 (Perfluoroethane)	76-16-4	C_2F_6	[a]12,200
PFC-218 (Perfluoropropane)	76-19-7	C_3F_8	[a]8,830
Perfluorocyclopropane	931-91-9	$C\text{-}C_3F_6$	17,340
PFC-3-1-10 (Perfluorobutane)	355-25-9	C_4F_{10}	[a]8,860
PFC-318 (Perfluorocyclobutane)	115-25-3	$C\text{-}C_4F_8$	[a]10,300
PFC-4-1-12 (Perfluoropentane)	678-26-2	C_5F_{12}	[a]9,160
PFC-5-1-14 (Perfluorohexane, FC-72)	355-42-0	C_6F_{14}	[a]9,300
PFC-9-1-18	306-94-5	$C_{10}F_{18}$	7,500
HCFE-235da2 (Isoflurane)	26675-46-7	$CHF_2OCHClCF_3$	350
HFE-43-10pccc (H-Galden 1040x, HG-11)	E1730133	$CHF_2OCF_2OC_2F_4OCHF_2$	1,870

HFE-125	3822-68-2	CHF_2OCF_3	14,900
HFE-134 (HG-00)	1691-17-4	CHF_2OCHF_2	6,320
HFE-143a	421-14-7	CH_3OCF_3	756
HFE-227ea	2356-62-9	$CF_3CHFOCF_3$	1,540
HFE-236ca12 (HG-10)	78522-47-1	$CHF_2OCF_2OCHF_2$	2,800
HFE-236ea2 (Desflurane)	57041-67-5	$CHF_2OCHFCF_3$	989
HFE-236fa	20193-67-3	$CF_3CH_2OCF_3$	487
HFE-245cb2	22410-44-2	$CH_3OCF_2CF_3$	708
HFE-245fa1	84011-15-4	$CHF_2CH_2OCF_3$	286
HFE-245fa2	1885-48-9	$CHF_2OCH_2CF_3$	659
HFE-254cb2	425-88-7	$CH_3OCF_2CHF_2$	359
HFE-263fb2	460-43-5	$CF_3CH_2OCH_3$	11
HFE-329mcc2	134769-21-4	$CF_3CF_2OCF_2CHF_2$	919
HFE-338mcf2	156053-88-2	$CF_3CF_2OCH_2CF_3$	552
HFE-338pcc13 (HG-01)	188690-78-0	$CHF_2OCF_2CF_2OCHF_2$	1,500
HFE-347mcc3 (HFE-7000)	375-03-1	$CH_3OCF_2CF_2CF_3$	575
HFE-347mcf2	171182-95-9	$CF_3CF_2OCH_2CHF_2$	374
HFE-347pcf2	406-78-0	$CHF_2CF_2OCH_2CF_3$	580
HFE-356mec3	382-34-3	$CH_3OCF_2CHFCF_3$	101
HFE-356pcc3	160620-20-2	$CH_3OCF_2CF_2CHF_2$	110
HFE-356pcf2	50807-77-7	$CHF_2CH_2OCF_2CHF_2$	265
HFE-356pcf3	35042-99-0	$CHF_2OCH_2CF_2CHF_2$	502
HFE-365mcf3	378-16-5	$CF_3CF_2CH_2OCH_3$	11
HFE-374pc2	512-51-6	$CH_3CH_2OCF_2CHF_2$	557
HFE-449s1 (HFE-7100)	163702-07-6	$C_4F_9OCH_3$	297
Chemical blend	163702-08-7	$(CF_3)_2CFCF_2OCH_3$	
HFE-569sf2 (HFE-7200)	163702-05-4	$C_4F_9OC_2H_5$	59
Chemical blend	163702-06-5	$(CF_3)_2CFCF_2OC_2H_5$	
Sevoflurane (HFE-347mmz1)	28523-86-6	$CH_2FOCH(CF_3)_2$	345
HFE-356mm1	13171-18-1	$(CF_3)_2CHOCH_3$	27
HFE-338mmz1	26103-08-2	$CHF_2OCH(CF_3)_2$	380
(Octafluorotetramethy-lene) hydroxymethyl group	NA	$X\text{-}(CF_2)_4CH(OH)\text{-}X$	73
HFE-347mmy1	22052-84-2	$CH_3OCF(CF_3)_2$	343
Bis(trifluoromethyl)-methanol	920-66-1	$(CF_3)_2CHOH$	195
2,2,3,3,3-pentafluoropropanol	422-05-9	$CF_3CF_2CH_2OH$	42
PFPMIE (HT-70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10,300

[a]The GWP for this compound is different than the GWP in the version of Table A-1 to subpart A of part 98 published on October 30, 2009.

Table C-1 to Subpart C of Part 98—Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel

DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	61.71
Propane[1]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[1]	0.068	59.60
Ethanol	0.084	68.44
Ethylene[2]	0.058	65.96
Isobutane[1]	0.099	64.94
Isobutylene[1]	0.103	68.86
Butane[1]	0.103	64.77
Butylene[1]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02

Petrochemical Feedstocks	0.125	71.02
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.54
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.54
Other fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95[3]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00
Petroleum Coke	30.00	102.41
Other fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32
Coke Oven Gas	0.599×10^{-3}	46.85
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas[4]	1.388×10^{-3}	59.00
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals (dry basis)[5]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	10.39	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655×10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1]The HHV for components of LPG determined at 60 °F and saturation pressure with the exception of ethylene.

[2]Ethylene HHV determined at 41 °F (5 °C) and saturation pressure.

[3]Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

[4]Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO_2 emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

[5]Use the following formula to calculate a wet basis HHV for use in Equation C-1: $HHV_w = ((100 - M)/100)*HHV_d$ where HHV_w = wet basis HHV, M = moisture content (percent) and HHV_d = dry basis HHV from Table C-1.

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Table C-2 to Subpart C of Part 98—Default CH_4 and N_2O Emission Factors for Various Types of Fuel

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum (All fuel types in Table C-1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Municipal Solid Waste	3.2×10^{-02}	4.2×10^{-03}
Tires	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels—Solid (All fuel types in Table C-1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-03}	3.6×10^{-03}
Biomass Fuels—Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C-1)	1.1×10^{-03}	1.1×10^{-04}

Note: Those employing this table are assumed to fall under the IPCC definitions of the “Energy Industry” or “Manufacturing Industries and Construction”. In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC “Energy Industry” category may employ a value of 1g of CH_4/mmBtu.

Table W-1A of Subpart W of Part 98—Default Whole Gas Emission Factors for Onshore Petroleum and Natural Gas Production

Onshore petroleum and natural gas production	Emission factor (scf/hour/ component)
Eastern U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.027
Connector	0.003
Open-ended Line	0.061
Pressure Relief Valve	0.040
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003
Connector	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003
Western U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.121
Connector	0.017
Open-ended Line	0.031
Pressure Relief Valve	0.193
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003

Connector (other)	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003

[1]For multi-phase flow that includes gas, use the gas service emissions factors.

[2]Emission Factor is in units of "scf/hour/device."

[3]Emission Factor is in units of "scf/hour/pump."

[4]Hydrocarbon liquids greater than or equal to 20°API are considered "light crude."

[5]"Others" category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.

[6]Hydrocarbon liquids less than 20°API are considered "heavy crude."

factors. The emission factors can be adjusted based on the CH_4 content of the site-specific gas used to drive the devices if the natural gas is significantly different from the default basis. Also, if the pneumatic devices are driven with gas that contains significant quantities of CO_2, the CH_4 emission factors can be adjusted based on the relative concentrations of CH_4 and CO_2 in the gas to estimate the CO_2 emissions.

In production, the continuous bleed, intermittent bleed, and average pneumatic device emission factors shown in Table 5-15 are taken from the 1996 GRI/EPA report (Volumes 2 and 12) (Harrison, 1996; Shires, 1996). The pneumatic device emission factors from the GRI/EPA reports were derived using vendor and/or measured data for both intermittent and continuous bleed devices. The instrument controller emission factor (pressure unspecified) is taken from a 2002 CAPP document and is based on data collected in Alberta, Canada (CAPP, 2002). Other pneumatic device emission factors such as transmitters and controllers are taken from a 2003 CAPP report (CAPP, 2003). The emission factors from the 2003 CAPP document are most appropriate for standard (high-bleed) components that were common prior to 1985 and are a function of the device operating pressure (factors are given at 140 kPa or 240 kPa, both gauge pressure).

Table 5-15. Gas-Driven Pneumatic Device CH_4 Emission Factors

Device Type	Emission Factor [a], Original Units		Uncertainty [b] (±%)	Emission Factor [c], Converted to Tonnes Basis	
Production Segment				Based on 78.8 mole% CH_4[a]	
Continuous bleed [a]	654	scfd gas/device	40.3	3.608	tonnes/device-yr
Continuous bleed, low/no-bleed [d]	33.4	scfd gas/device	107	0.184	tonnes/device-yr
Continuous bleed, high-bleed [d]	896	scfd gas/device	33.1	4.941	tonnes/device-yr
Intermittent bleed [a]	323	scfd gas/device	41.2	1.782	tonnes/device-yr
Production average[a] *(if device type is unknown)*	*345*	*scfd CH_4/device*	*49.5*	*2.415*	*tonnes/device-yr*
Transmitter (140 kPag) [e]	0.12	m^3 gas/hr/device	Uncertainty not specified	0.56	tonnes/device-yr
Transmitter (240 kPag) [e]	0.2	m^3 gas/hr/device		0.94	tonnes/device-yr
Controller (140 kPag) [e]	0.6	m^3 gas/hr/device		2.8	tonnes/device-yr
Controller (240 kPag) [e]	0.8	m^3 gas/hr/device		3.7	tonnes/device-yr
Controller (pressure not specified) [f]	0.1996	m^3 gas/hr/device		0.9333	tonnes/device-yr
I/P Transducer (140 kPag) [e]	0.6	m^3 gas/hr/device		2.8	tonnes/device-yr
I/P Transducer (240 kPag) [e]	0.8	m^3 gas/hr/device		3.7	tonnes/device-yr
P/P Positioner (140 kPag) [e]	0.32	m^3 gas/hr/device		1.5	tonnes/device-yr

Table 5-15. Gas-Driven Pneumatic Device CH_4 Emission Factors, continued

Device Type	Emission Factor [a], Original Units		Uncertainty [b] (±%)	CH_4 Emission Factor [c], Converted to Tonnes Basis	
Production Segment, continued				Based on 78.8 mole% CH_4 [a]	
P/P Positioner (240 kPag) [e]	0.5	m^3 gas/hr/device		2.3	tonnes/device-yr
I/P Positioner (140 kPag) [e]	0.4	m^3 gas/hr/device		1.9	tonnes/device-yr
I/P Positioner (240 kPag) [e]	0.6	m^3 gas/hr/device		2.8	tonnes/device-yr
Processing				Based on 86.8 mole% CH_4 [a]	
Continuous bleed	497,584	scf gas/device-yr	35.5	8.304	tonnes/device-yr
Piston valve operator	48	scf gas/device-yr	60.9	8.010E-04	tonnes/device-yr
Pneumatic/hydraulic valve operator	5,627	scf gas/device-yr	134	0.0939	tonnes/device-yr
Turbine valve operator	67,599	scf gas/device-yr	407	1.128	tonnes/device-yr
Processing average (if device type is unknown)	*164,949*	*scf CH_4/plant-yr*	*170*	*3.164*	*tonnes/plant-yr*
	7.431 [g]	*scf CH_4/MMscf processed*		*1.425E-04* *5.034E-03*	*tonnes/10^6 scf processed* *tonnes/10^6 m^3 processed*
Transmission and Storage				Based on 93.4 mole% CH_4 [a]	
Continuous bleed	497,584	scf gas/device-yr	35.5	8.915	tonnes/device-yr
Pneumatic/hydraulic valve operator	5,627	scf gas/device-yr	134	0.1008	tonnes/device-yr
Turbine valve operator	67,599	scf gas/device-yr	407	1.211	tonnes/device-yr
Transmission or Storage average (if device type is unknown)	*162,197*	*scf CH_4/device-yr*	*96.3*	*3.111*	*tonnes/device-yr*
Distribution					
Pneumatic isolation valves [h] based on 93.4 mole% CH_4	0.366	tonnes CH_4/device-yr	Uncertainty not specified	0.366	tonnes/device-yr
Pneumatic control loops [h] based on 94.4 mole% CH_4	3.465	tonnes CH_4/device-yr		3.465	tonnes/device-yr
Distribution average (if device type is unknown) based on 94.9 mole% CH4 weighted avg.	*2.941*	*tonnes CH_4/device-yr*		*2.941*	*tonnes/device-yr*

Footnotes and Sources:

[a] Shires, T.M. and M.R. Harrison. *Methane Emissions from the Natural Gas Industry, Volume 12: Pneumatic Devices*, *Final Report,* GRI-94/0257.29 and EPA-600/R-96-080l, Gas Research Institute and U.S. Environmental Protection Agency, June 1996; and Harrison, M.R., L.M. Campbell, T.M. Shires, and R.M. Cowgill. *Methane Emissions from the Natural Gas Industry, Volume 2: Technical Report*, *Final Report*, GRI-94/0257.1 and EPA-600/R-96-080b, Gas Research Institute and U.S. Environmental Protection Agency, June 1996. The average CH_4 concentration associated with these emission factors is provided in Table E-4.

[b] Uncertainty based on 95% confidence interval converted from the 90% confidence intervals for the data used to develop the original emission factor.

[c] CH_4 emission factors converted from scf or m^3 are based on 60°F and 14.7 psia.

[d] High-bleed devices refer to devices with leak rates greater than 6 scf/hr while low-bleed devices are 6 scf/hr or lower. Developed from data used for Volume 12 of the GRI/EPA natural gas industry CH_4 emissions study (Shires, 1996). Refer to Appendix B for the development of these emission factors.

[e] Canadian Association of Petroleum Producers (CAPP), *Calculating Greenhouse Gas Emissions*, Table 1-12, Canadian Association of Petroleum Producers, Publication Number 2003-03, April 2003. Note that the emission factors provided by this source are for the total gas emitted and were converted to a CH_4 basis using the CH_4 content shown in the table. I/P refers to a device that converts electric current to pneumatic pressure. P/P refers to a device that converts pneumatic pressure to pneumatic pressure.

[f] Canadian Association of Petroleum Producers (CAPP), *Estimation of Flaring and Venting Volumes from Upstream Oil and Gas Facilities*, Table 3-4, Canadian Association of Petroleum Producers, Publication Number 2002-0009, May 2002. Factor shown is based on data collected in Alberta, and was converted from a total gas basis to a CH_4 basis using the CH_4 content shown in the table.

[g] Shires, T.M. and C.J. Loughran. *Updated Canadian National Greenhouse Gas Inventory for 1995, Emission Factor Documentation*, *Technical Memorandum*, August 23, 2001.

[h] Derived from estimated processing pneumatic devices vented CH_4 emissions (0.1196 ± 133% Bscf/YR) (Harrison, et al., Vol 2, 1996), and estimated annual gas processed (16,450.855 Bscf/YR (DOE, 1993)).

significantly different CH_4 content from the default basis. Also, if the facility gas contains significant quantities of CO_2, the CH_4 emission factor can be adjusted based on the relative concentrations of CH_4 and CO_2 in the gas to estimate the CO_2 emissions.

Table 5-25. Gas Processing Segment CH_4 Emission Factor for Non-Routine Activities

Source	CH_4 Emission Factor [a], Original Units	CH_4 Emission Factor [b], Converted to Tonnes Basis	CH_4 Content Basis of Factor	Uncertainty [c] (±%)
Gas processing non-routine emissions	184 scf/10^6 scf processed	3.524E-03 tonne/10^6 scf processed	86.8 mole %	Not available
		0.1244 tonnes/10^6 m^3 processed		

Footnotes and Sources:
[a] Derived from estimated processing blowdown vented methane emissions (2.9475 Bscf/yr, [Harrison et al., Vol. 2, 1996]) and estimated annual gas processed (16,045.855 Bscf/yr [DOE, 1993]).
[b] CH_4 emission factors converted from scf or m^3 are based on 60°F and 14.7 psia. The average CH_4 concentration associated with these emission factors is provided in Table E-4. The CH_4 emission factors can be adjusted based on the relative concentrations of CH_4 and CO_2 to estimate CO_2 emissions.
[c] Uncertainty based on 95% confidence interval converted from the 90% confidence intervals for the data used to develop the original emission factor.

Due to the hazards associated with H_2S, venting of sour gas is generally avoided/prohibited. Where the sour gas stream is routed to a combustion control device, the methodologies provided in Section 4.7 should be applied.

An example is provided in Exhibit 5.33.

EXHIBIT 5.33: Sample Calculation for Processing Non-Routine Related Emissions

INPUT DATA:
A natural gas processing facility treats 20×10^6 m^3 of gas per day. The facility gas has a typical CH_4 content and no CO_2. Estimate the blowdown emissions for this facility.

CALCULATION METHODOLOGY:
The processing plant throughput is multiplied by the emission factor presented in Table 5-25. The CH_4 emission factor is not corrected by the site CH_4 content because the composition is assumed to be consistent with the default emission factor CH_4 content.

Gas processing plant blowdowns:

$$CH_4: \frac{20\times10^6\ m^3}{day}\times\frac{365\ days}{yr}\times\frac{0.1244\ tonnes\ CH_4}{10^6\ m^3} = \underline{908\ tonnes\ CH_4/yr}$$

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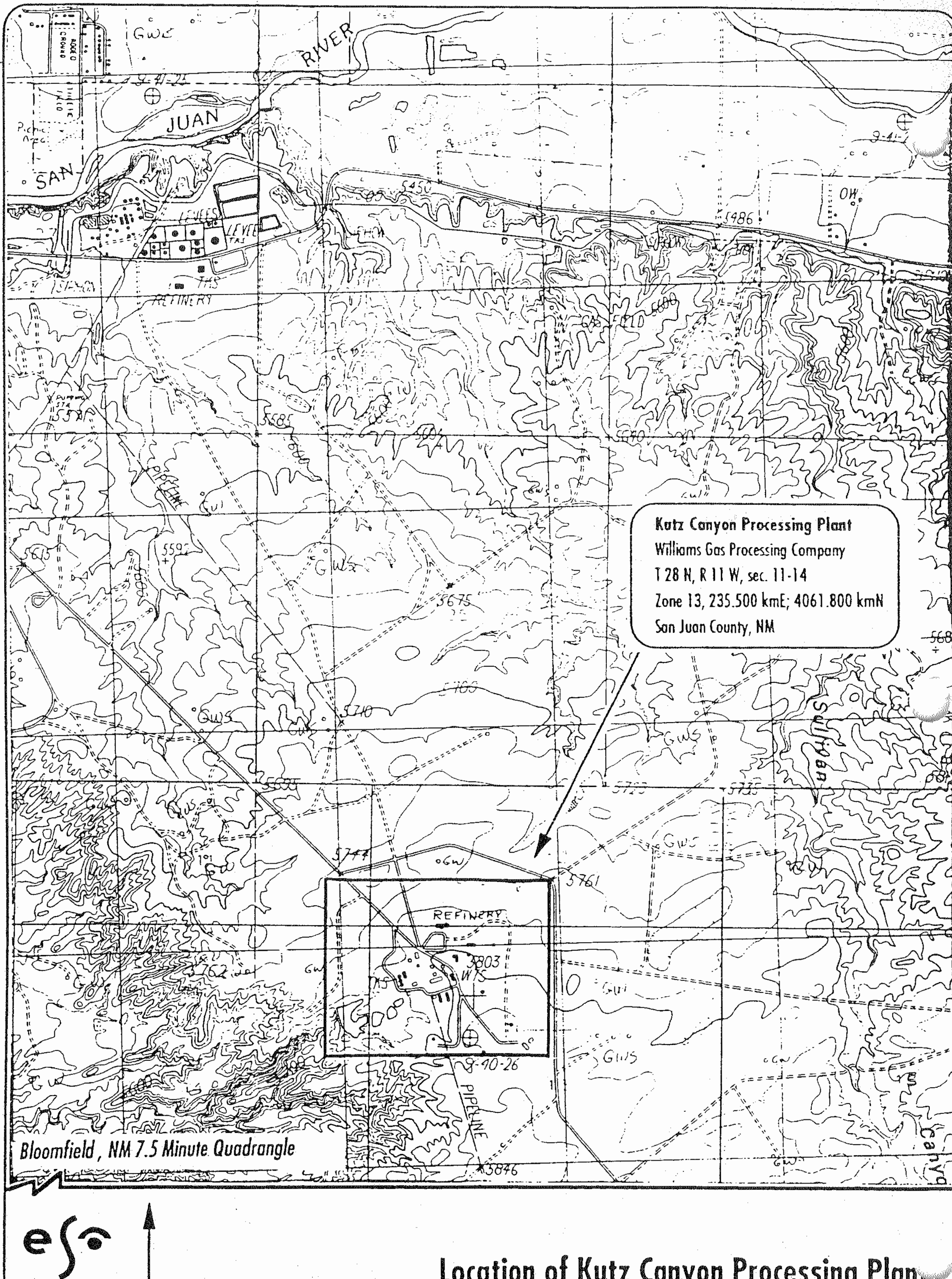
Section 8

Map(s)

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

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

A topographic map of the area around the facility is provided in this section. Please see the following page.



Location of Kutz Canyon Processing Plant

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

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

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

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

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

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

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

Not applicable, since this is a Title V application.

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Section 10

Written Description of the Routine Operations of the Facility

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

The Kutz Canyon Processing Plant is a natural gas processing facility designed to remove ethane and heavier hydrocarbons from natural gas. With this application, the Kutz I Plant (which removes the heavier hydrocarbons using a refrigerated lean oil absorption process) is being retired and removed from the permit. The Kutz II Plant removes the heavier hydrocarbons using a cryogenic process. A process flow diagram is provided in Section 4.

The plant typically operates 8,760 hours per year.

Kutz II

The Kutz II Plant is the cryogenic turboexpander plant installed in 1975 and is supplied with inlet natural gas from the Dakota Basin and San Juan Basin Fields. Compression of the gas is provided using four Solar Centaur 3830 compressor turbines (Units 1-4).

After compression, the inlet gas is cooled and routed through an amine contactor (Unit 75), where CO_2 is removed. Rich amine from the contactor is regenerated in a still, and the still overhead stream (acid gas) vents to atmosphere. A hot oil heater (Unit 27) provides heat for the still as well as heating oil for other plant operations.

The inlet natural gas then passes through one of two mole sieve dehydration towers (one tower processes natural gas while the other cools and regenerates). The towers are regenerated using a regeneration heater (Unit 25). A fan bay is used to cool the gas (allowing liquids to be dropped out).

After passing through the mole sieve, inlet gas is routed to the turboexpander where the heavier hydrocarbons are removed. Compressed refrigerant is provided using two Solar Saturn turbines (Units 7 & 8). Product streams from the expander are routed through the demethanizer, where methane is recompressed using two Solar Centaur turbines (Units 5 & 6) and sent to the residue gas pipeline. Up to ninety percent of the ethane is removed and sent to products storage. Heat for the demethanizer is provided by a hot oil heater (Unit 27).

Liquid product from the demethanizer is cooled and stored in the appropriate tanks.

The mole sieve is regenerated using a slipstream of residue gas to heat and extract the water collected in the regenerator towers. This wet residue gas is then dehydrated in a TEG dehydrator (Unit 77a/b) before being reinjected into the residue gas sales line.

Other Equipment

The Kutz Chaco dehydrator (Unit 35a) is controlled by a Zeeco flare (Unit 36). A loading rack is used to receive propane from trucks. Condensate is hauled off-site by truck (Unit 38). The plant is also equipped with three cooling towers (Units 39-41).

Electrical power for the plant is provided using two generators. Each generator is powered using a Solar Centaur 3016 turbine (Units 19 & 20). The generators typically operate a combined 8,760 hours per year. The plant will also be equipped with two standby generators: a Caterpillar D343 (Unit 34) and a Kohler 8.5RES (Unit 76). The

Caterpillar will provide general power to the facility in the event the main generators are off-line. The Kohler will provide power to the batteries in the backup UPS system in the event the main generators are off-line and the UPS system needs charging to remain functional.

The plant is equipped with a process flare (Unit 28). Safety relief valves located at various points around the plant vent to the flare. In the case of an emergency blowdown or over pressure situation, natural gas products are vented to the flare. The plant inlet gas scrubber dump valves are also vented to the flare.

There are two emergency fire pumps located at the plant. One pump is powered by a Cummins V-504-F2 engine (Unit 32), and one is powered by a Ford Industrial 428 engine (Unit 33). The pumps only operate during emergencies and periodic maintenance.

The plant is also equipped with miscellaneous heaters and liquid storage tanks.

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)**:**

Kutz Canyon Processing Plant – natural gas processing plant

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):

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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.

B. This facility [is or is not] one of the listed 20.2.74.501 Table I – PSD Source Categories. The “project” emissions for this modification are [significant or not significant]. [Discuss why.] The “project” emissions listed below [do or do not] only result from changes described in this permit application, thus no emissions from other [revisions or modifications, past or future] to this facility. Also, specifically discuss whether this project results in “de-bottlenecking”, or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:

a. NOx: XX.X TPY
b. CO: XX.X TPY
c. VOC: XX.X TPY
d. SOx: XX.X TPY
e. PM: XX.X TPY
f. PM10: XX.X TPY
g. PM2.5: XX.X TPY
h. Fluorides: XX.X TPY
i. Lead: XX.X TPY
j. Sulfur compounds (listed in Table 2): XX.X TPY
k. GHG: XX.X TPY

C. Netting [is required, and analysis is attached to this document.] OR [is not required (project is not significant)] OR [Applicant is submitting a PSD Major Modification and chooses not to net.]

D. BACT is [not required for this modification, as this application is a minor modification.] OR [required, as this application is a major modification. List pollutants subject to BACT review and provide a full top down BACT determination.]

E. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

Not applicable, since this is a Title V application.

Section 12.B

Special Requirements for a PSD Application

(Submitting under 20.2.74 NMAC)

Prior ***to Submitting a PSD application*****, the permittee shall:**

- ☐ Submit the BACT analysis for review prior to submittal of the application. No application will be ruled complete until the final determination regarding BACT is made, as this determination can ultimately affect information to be provided in the application. A pre-application meeting is recommended to discuss the requirements of the BACT analysis.
- ☐ Submit a modeling protocol prior to submitting the permit application. **[Except for GHG]**
- ☐ Submit the monitoring exemption analysis protocol prior to submitting the application. **[Except for GHG]**

For PSD applications, the permittee shall also include the following:

- ☐ Documentation containing an analysis on the impact on visibility. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on soil. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on vegetation, including state and federal threatened and endangered species. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on water consumption and quality. **[Except for GHG]**
- ☐ Documentation that the federal land manager of a Class I area within 100 km of the site has been notified and provided a copy of the application, including the BACT and modeling results. The name of any Class I Federal area located within one hundred (100) kilometers of the facility.

Not applicable, as this is not a PSD application.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants. Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:

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

Required Information for Regulations that Apply to the Entire Facility:

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

Regulatory Citations for Regulations That Do Not, but Could Apply:

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

Regulatory Citations for Emission Standards:

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

Federally Enforceable Conditions:

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

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

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

STATE REGULATIONS APPLICABILITY CHECKLIST

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	This regulation is applicable because it establishes procedures for protecting confidential information, procedures for seeking a variance, NMAQB's authority to require sampling equipment, severability, and the effective date for conformance with the NMACs, and prohibits the violation of other requirements in attempting to comply with the NMACs.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentrations of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. These requirements are not applicable under 20.2.70 NMAC (see 20.2.3.9 NMAC).
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation is applicable because it prohibits excess emissions unless proper notification procedures are followed.
20.2.8 NMAC	Emissions Leaving New Mexico	Yes	Facility	This regulation is applicable because it establishes prohibitions on the release of pollutants that cross New Mexico State boundaries.
20.2.14 NMAC	Particulate Emissions from Coal Burning Equipment	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.14.6 NMAC).
20.2.18 NMAC	Oil Burning Equipment - Particulate Matter	No	N/A	This regulation is not applicable because the facility does not burn oil (see 20.2.18.6 NMAC).
20.2.31 NMAC	Coal Burning Equipment – Sulfur Dioxide	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.31.6 NMAC).
20.2.32 NMAC	Coal Burning Equipment – Nitrogen Dioxide,	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.32.6 NMAC).
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This regulation is not applicable because the heat input to external gas burning equipment at the plant does not exceed the trigger level (one million MMBtu/year) established by the regulation (see 20.2.33.108 NMAC).
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This regulation is not applicable because the facility does not burn oil (see 20.2.34.6 NMAC).
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation is not applicable because sulfur emissions from the plant are below the applicability thresholds established in the regulation (see 20.2.35.109 & 110 NMAC).
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This regulation is not applicable because the facility does not store hydrocarbons containing hydrogen sulfide, nor is there a tank battery storing hydrocarbon liquids with a capacity greater than or equal to 65,000 gallons (see 20.2.38.109-112 NMAC).
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation is not applicable because the facility is not equipped with a sulfur recovery plant (see 20.2.39.6 NMAC).
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	1-8, 19-20, 25, 27, 34, 35b, 36, 76 & 77b	This regulation is applicable because the facility is equipped with stationary combustion sources. Emissions from these combustion sources are limited to less than 20% opacity (see 20.2.61.109 NMAC). The regulation is not applicable to the Title V insignificant heaters (see 20.2.61.111.D).
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation is applicable because the facility is a Title V major source of NOX, CO, VOC, and HAPs (see 20.2.70.200 NMAC).

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.70 NMAC (see 20.2.71.109 NMAC).
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation is applicable because the facility has potential emission rates (PER) greater than 10 pph or greater than 25 tpy for pollutants subject to a state or federal ambient air quality standards (see 20.2.72.200.A NMAC).
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The Notice of Intent portion of this regulation does not apply because the facility is subject to 20.2.72 NMAC (see 20.2.73.200.A(4) NMAC). The emissions inventory portion of this regulation is applicable since the facility is a Title V major source (see 20.2.73.300.B(1) & (2) NMAC).
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	Yes	Facility	This regulation is applicable because the facility is a PSD major source, the NOX, CO and VOC potential to emit are each greater than 250 tpy (see 20.2.74.200 NMAC). Note, however, that this application is not a PSD application (it is a Title V application).
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.72 NMAC (see 20.2.75.10 & 11 NMAC).
20.2.77 NMAC	New Source Performance	Yes	19, 20, 35a, 76 & 77a	This regulation is applicable because it adopts by reference the federal NSPS codified in 40 CFR 60. The facility is subject to 40 CFR 60, Subparts A, GG, KKK, JJJJ & OOOOa.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This regulation is not applicable because it incorporates by reference the NESHAPs codified under 40 CFR 61. The facility is not subject to 40 CFR 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This regulation is not applicable because the facility is neither located in nor has a significant impact on a nonattainment area (see 20.2.79.109 NMAC).
20.2.80 NMAC	Stack Heights	Yes	1-8, 19-20, 25, 27, 32-34, 35b, 36, 76 & 77b	This regulation is applicable because it establishes guidelines for the selection of an appropriate stack height for the purposes of atmospheric dispersion modeling (see 20.2.80.6 NMAC).
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	25, 27, 32-34, 35a, 76 & 77a	This regulation is applicable because it adopts by reference the federal MACT Standards for source categories codified in 40 CFR 63. The affected units at the facility are subject to 40 CFR 63, Subparts A, HH, ZZZZ & DDDDD.

Federal Regulations

Federal standards and requirements are embodied in Title 40 (Protection of the Environment), Subchapter C (Air Programs) of the CFR, Parts 50 through 99.

FEDERAL REGULATIONS APPLICABILITY CHECKLIST

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation applies because the facility is subject to 20.2.70, 20.2.72 and 20.2.74 NMAC.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 52	Approval and Promulgation of Implementation Plans	Yes	Facility	40 CFR 52.21 *Prevention of Significant Deterioration of Air Quality* is applicable because the plant is a major Prevention of Significant Deterioration source. The remainder of 40 CFR 52 is not applicable because it addresses approval and promulgation of implementation plans.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	19, 20, 35a, 76 & 77a	This regulation applies because Subparts A, GG, KKK, JJJJ & OOOOa apply. (see §60.1(a)).
NSPS 40 CFR 60, Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No	N/A	This regulation is not applicable because the petroleum liquids storage tanks at the plant have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110(a)). Note that the regulation does not apply to pressure vessels which are designed to operate in excess of 15 psig (see §60.111).
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	No	N/A	This regulation is not applicable because the storage tanks at the plant have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110a(a)). Note that the regulation does not apply to pressure vessels which are designed to operate in excess of 15 psig (see §60.111a).
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	N/A	This regulation is not applicable because the storage tanks at the plant have capacities less than the minimum applicability threshold capacity of 19,812 gallons, and/or were installed prior to the applicability date, and/or contain condensate prior to custody transfer (see §60.110b(a) & §60.110b(d)(4)). Note that T6528 & T6529 contain condensate prior to custody transfer. Also note that the regulation does not apply to pressure vessels which are designed to operate in excess of 15 psig (see §60.110b(d)(2)).
NSPS 40 CFR 60 Subpart GG	Standards of Performance for Stationary Gas Turbines	Yes	19 & 20	This regulation is applicable because Units 19 & 20 were constructed after the applicability date of October 3, 1977 and have a peak input load greater than the applicability threshold of 10.15 MMBtu/hr (see §60.330). They must comply with the NOX limits of §60.332 and SO2 limits of §60.333. The regulation does not apply to the remaining turbines (Units 1-8) as they were constructed before the applicability date.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart KKK	Standards of Performance for Leaks of VOC from Onshore Natural Gas Processing Plant for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011	Yes	35a	This regulation is applicable because Units 35a is in VOC service and was modified after the applicability date of January 20, 1984 and before August 23, 2011 (see §60.630).
NSPS 40 CFR 60, Subpart LLL	Standards of Performance for SO2 Emissions From Onshore Natural Gas Processing for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011	No	N/A	This regulation is not applicable because the facility is not equipped with a sweetening unit or sweetening unit followed by a sulfur recovery unit (see §60.640).
NSPS 40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	This regulation does not apply because the stationary CI ICE (Units 32-34) commenced construction prior to July 11, 2005 (see §60.4200(a)).
NSPS 40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	76	This regulation applies to Unit 76. The engine must comply with the standards in §60.4231(a).
NSPS 40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No	N/A	This regulation is not applicable because the turbines at the plant were not constructed, and have not been modified or reconstructed, after the applicability date of February 18, 2005 (see §60.4305(a)).
NSPS 40 CFR 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 on or before September 18, 2015	No	N/A	This regulation does not apply because the facility is not equipped with “affected” sources that are constructed, modified, or reconstructed after Aug 23, 2011 and on or before September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, and storage vessels (see §60.5365).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	No	77a	This regulation will apply to pneumatic controllers associated with Unit 77a since the unit was constructed after September 18, 2015 (see 60.5365a). Otherwise, this regulation does not apply because the remainder of the facility is not equipped with "affected" sources that were constructed, modified, or reconstructed after September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, pneumatic pumps, and equipment leaks (see §60.5365a).
NESHAP 40 CFR 61, Subpart A	General Provisions	No	N/A	This regulation does not apply, because none of the other 40 CFR Part 61 subparts apply (see §61.1(c)).
NESHAP 40 CFR 61, Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	This regulation does not apply as none of the equipment at the plant is in VHAP service. The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart (see §61.240(a)). 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 (see §61.241).
MACT 40 CFR 63, Subpart A	General Provisions	Yes	25, 27, 32-34, 35a, 76 & 77a	This regulation applies because 40 CFR 63, Subparts HH, ZZZZ & DDDDD apply (see §63.1(b)).
MACT 40 CFR 63, Subpart M	National Emission Standard for Asbestos	No	N/A	The subpart includes standards for minimizing asbestos emissions from several operations, including demolition and renovation activities. This regulation is not applicable because there are no existing or planned activities at this facility that trigger applicability.
MACT 40 CFR 63, Subpart HH	National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities	Yes	35a & 77a	This regulation is applicable because the plant is equipped with dehydrators (see §63.760(b)). The dehydrators must comply with the standards in §63.765. The plant does not contain storage vessels with the potential for flashing losses or compressors or ancillary equipment in volatile HAP service as defined by the subpart, thus these portions of the regulation are not applicable (see §63.761).
MACT 40 CFR 63, Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	N/A	This regulation does not apply as the facility is not a natural gas transmission and storage facility as defined by the subpart (see §63.1270(a)).
MACT 40 CFR 63, Subpart YYYY	National Emission Standards for Hazardous Air Pollutants From Stationary Combustion Turbines	No	N/A	This regulation is not applicable because none of the turbines at the plant were constructed after the applicability date of January 14, 2003 (see §63.6090(a)(1) & (b)(4)).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Yes	32-34 & 76	This regulation applies because the plant is a major HAP source equipped with stationary RICE. Units 32-34 must meet the requirements of 63.6640(f). Unit 76 must meet the requirements of this subpart by meeting the requirements of 40 CFR Part 60 Subpart JJJJ, no other Part 63 requirements apply (see §63.6590(c)(6)).
MACT 40 CFR 63, Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers & Process Heaters	Yes	25& 27	This regulation is applicable because the plant is a major HAP source equipped with process heaters as defined by the subpart (see §63.7485). The units must comply with the work practice standards in Table 3 (see §63.7500).
MACT 40 CFR 63, Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	No	N/A	This regulation is not applicable to the gasoline storage tank because the plant is a major HAP source (see §63.11111(a)).
MACT 40 CFR 63, Subpart JJJJJJ	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources	No	N/A	This regulation is not applicable because it does not apply to gas fired boilers (see §63.11195(e)).
40 CFR 64	Compliance Assurance Monitoring	No	N/A	This regulation is not applicable because Units 35a & 77a are the only units at the plant using control devices to achieve compliance with emission limits or standards where pre control emissions equal or exceed the major source threshold (see §64.2(a)). Units 35a and 77a are not subject to this regulation, as they must comply with the emission limits and standards of 40 CFR 63, Subpart HH (see 64.2(b)(1)(i)).
40 CFR 68	Chemical Accident Prevention	No	N/A	This regulation is not applicable because the facility does not store any of the affected chemicals in quantities exceeding the thresholds (see §68.10(a)).
40 CFR 72	Acid Rain	No	N/A	This regulation is not applicable because the facility is not an acid rain source.
40 CFR 82	Protection of Stratospheric Ozone	No	N/A	This regulation is not applicable because the facility does not produce, manufacture, transform, destroy, import, or export ozone-depleting substances; does not maintain or service motor vehicle air conditioning units or refrigeration equipment; and does not sell, distribute, or offer for sale or distribution any product that contains ozone-depleting substances.

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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.

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Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

Not applicable, as there are no alternative operating scenarios.

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Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	**X**
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☐ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☑ No modeling is required.

Modeling is not required, as this is a Title V permit application. NO_X, CO, SO_2 and particulate modeling was last conducted for construction permit 0301-M9.

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Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permit conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
1	Tested in accordance with operating permit for NOx, CO & VOC	09/29/2020
2	Tested in accordance with operating permit for NOx, CO & VOC	09/30/2020
3	Tested in accordance with operating permit for NOx, CO & VOC	09/29/2020
4	Tested in accordance with operating permit for NOx, CO & VOC	06/20/2018
5	Tested in accordance with operating permit for NOx, CO & VOC	09/29/2020
6	Tested in accordance with operating permit for NOx, CO & VOC	09/29/2020
7	Tested in accordance with operating permit for NOx, CO & VOC	09/30/2020
8	Tested in accordance with operating permit for NOx, CO & VOC	09/30/2020
19	Tested in accordance with operating permit for NOx, CO & VOC	12/10/2020
20	Tested in accordance with operating permit for NOx, CO & VOC	09/29/2020
34	N/A	N/A

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Section 18

Addendum for Streamline Applications

Streamline Applications do not require a complete application. Submit Sections 1-A, 1-B, 1-D, 1-F, 1-G, 2-A, 2-C thru L, Sections 3 thru 8, Section 13, Section 18, Section 22, and Section 23 (Certification). Other sections may be required at the discretion of the Department. 20.2.72.202 NMAC Exemptions do not apply to Streamline sources. 20.2.72.219 NMAC revisions and modifications do not apply to Streamline sources, thus 20.2.72.219 type actions require a complete new application submittal. Please do not print sections of a streamline application that are not required.

Not applicable, as this is not a streamline application.

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Section 19

Requirements for Title V Program

<u>Who Must Use this Attachment</u>:

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

19.1 - 40 CFR 64, Compliance Assurance Monitoring (CAM) (20.2.70.300.D.10.e NMAC)

Any source subject to 40CFR, Part 64 (Compliance Assurance Monitoring) must submit all the information required by section 64.7 with the operating permit application. The applicant must prepare a separate section of the application package for this purpose; if the information is already listed elsewhere in the application package, make reference to that location. Facilities not subject to Part 64 are invited to submit periodic monitoring protocols with the application to help the AQB to comply with 20.2.70 NMAC. Sources subject to 40 CFR Part 64, must submit a statement indicating your source's compliance status with any enhanced monitoring and compliance certification requirements of the federal Act.

There are no sources at the plant subject to 40 CFR, Part 64, Compliance Assurance Monitoring (CAM); consequently, a monitoring protocol is not required.

19.2 - Compliance Status (20.2.70.300.D.10.a & 10.b NMAC)

Describe the facility's compliance status with each applicable requirement at the time this permit application is submitted. This statement should include descriptions of or references to all methods used for determining compliance. This statement should include descriptions of monitoring, recordkeeping and reporting requirements and test methods used to determine compliance with all applicable requirements. Refer to Section 2, Tables 2-N and 2-O of the Application Form as necessary. (20.2.70.300.D.11 NMAC) For facilities with existing Title V permits, refer to most recent Compliance Certification for existing requirements. Address new requirements such as CAM, here, including steps being taken to achieve compliance.

The plant is in compliance with all applicable requirements affecting the facility. A copy of Part 1 (Permit Requirements Certification Table) of the 2020 annual compliance certification is provided in Section 20, Other Relevant Information. It identifies all the requirements of the current Title V operating permit and the methods and data used to determine compliance. It is assumed that compliance with the Title V operating permit ensures compliance with the construction permit and New Mexico regulations.

19.3 - Continued Compliance (20.2.70.300.D.10.c NMAC)

Provide a statement that your facility will continue to be in compliance with requirements for which it is in compliance at the time of permit application. This statement must also include a commitment to comply with other applicable requirements as they come into effect during the permit term. This compliance must occur in a timely manner or be consistent with such schedule expressly required by the applicable requirement.

The plant will continue to be in compliance with applicable requirements for which it is in compliance at the time of this permit application. In addition, the plant will, in a timely manner or consistent with such schedule expressly required by the applicable requirement, comply with other applicable requirements as they come into effect during the permit term.

19.4 - Schedule for Submission of Compliance (20.2.70.300.D.10.d NMAC)

You must provide a proposed schedule for submission to the department of compliance certifications during the permit term. This certification must be submitted annually unless the applicable requirement or the department specifies a more frequent period. A sample form for these certifications will be attached to the permit.

The submittal of compliance certifications during the five-year term of the operating permit will occur annually.

19.5 - Stratospheric Ozone and Climate Protection

In addition to completing the four (4) questions below, you must submit a statement indicating your source's compliance status with requirements of Title VI, Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioners).

---

1. Does your facility have any air conditioners or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances? ☐ **Yes** ☑ **No**

2. Does any air conditioner(s) or any piece(s) of refrigeration equipment contain a refrigeration charge greater than 50 lbs? ☐ **Yes** ☑ **No**

   (If the answer is yes, describe the type of equipment and how many units are at the facility.)

3. Do your facility personnel maintain, service, repair, or dispose of any motor vehicle air conditioners (MVACs) or appliances ("appliance" and "MVAC" as defined at 82. 152)? ☐ **Yes** ☑ **No**

4. Cite and describe which Title VI requirements are applicable to your facility (i.e. 40 CFR Part 82, Subpart A through G). **None**

The plant does not produce, manufacture, transform, destroy, import, or export any stratospheric ozone-depleting substances (CFCs, HCFCs); does not maintain or service motor vehicle air conditioning units or refrigeration equipment; and does not sell, distribute, or offer for sale any product that may contain stratospheric ozone-depleting substances.

HFC shall continue to maintain compliance with the conditions stipulated in 40 CFR 82, Subparts A-G of the Stratospheric Ozone Protection Program (Title VI of the Clean Air Act Amendments).

19.6 - Compliance Plan and Schedule

Applications for sources, which are not in compliance with all applicable requirements at the time the permit application is submitted to the department, must include a proposed compliance plan as part of the permit application package. This plan shall include the information requested below:

A. Description of Compliance Status: (20.2.70.300.D.11.a NMAC)
A narrative description of your facility's compliance status with respect to all applicable requirements (as defined in 20.2.70 NMAC) at the time this permit application is submitted to the department.

B. Compliance plan: (20.2.70.300.D.11.B NMAC)
A narrative description of the means by which your facility will achieve compliance with applicable requirements with which it is not in compliance at the time you submit your permit application package.

C. Compliance schedule: (20.2.70.300D.11.c NMAC)
A schedule of remedial measures that you plan to take, including an enforceable sequence of actions with milestones, which will lead to compliance with all applicable requirements for your source. This schedule of compliance must be at least as stringent as that contained in any consent decree or administrative order to which your source is subject. The obligations of any consent decree or administrative order are not in any way diminished by the schedule of compliance.

D. Schedule of Certified Progress Reports: (20.2.70.300.D.11.d NMAC)
A proposed schedule for submission to the department of certified progress reports must also be included in the compliance schedule. The proposed schedule must call for these reports to be submitted at least every six (6) months.

E. Acid Rain Sources: (20.2.70.300.D.11.e NMAC)
If your source is an acid rain source as defined by EPA, the following applies to you. For the portion of your acid rain source subject to the acid rain provisions of title IV of the federal Act, the compliance plan must also include any additional requirements under the acid rain provisions of title IV of the federal Act. Some requirements of title IV regarding the schedule and methods the source will use to achieve compliance with the acid rain emissions limitations may supersede the requirements of title V and 20.2.70 NMAC. You will need to consult with the Air Quality Bureau permitting staff concerning how to properly meet this requirement.

NOTE: The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

The plant is in compliance with all applicable requirements; consequently, a compliance plan, a compliance schedule, and a schedule of certified progress reports is not required.

The plant is not equipped with any acid rain sources; consequently, compliance with the acid rain provisions is not required as a part of this permit application.

19.7 - 112(r) Risk Management Plan (RMP)

Any major sources subject to section 112(r) of the Clean Air Act must list all substances that cause the source to be subject to section 112(r) in the application. The permittee must state when the RMP was submitted to and approved by EPA.

The plant is not subject to 40 CFR 68, Chemical Accident Prevention Provisions; consequently, a Risk Management Plan is not required.

19.8 - Distance to Other States, Bernalillo, Indian Tribes and Pueblos

Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B NMAC)?

(If the answer is yes, state which apply and provide the distances.)

The station is located within 80 kilometers (km) of the following states, local pollution control programs, Indian tribes and pueblos:

Colorado (~ 37.0 km)
Jicarilla Apache Tribe (~ 49.9 km)
Navajo Tribe (~ 1.6 km)
Southern Ute Tribe (~ 37.0 km)
Ute Mountain Tribe (~ 16.1 km)

19.9 - Responsible Official

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

The responsible official for the Kutz Canyon Processing Plant is Travis Jones.

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

This section contains Part 1 (Permit Requirements Certification Table) of the 2020 annual compliance certification. Please see the following pages.

New Mexico Environment Department
Air Quality Bureau
Compliance and Enforcement Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Phone (505) 476-4300

Version 07.20.18

NMED USE ONLY	
TEMPO	

REPORTING SUBMITTAL FORM

NMED USE ONLY	
Staff	
Admin	

PLEASE NOTE: ® - Indicates required field

SECTION I - GENERAL COMPANY AND FACILITY INFORMATION

A. ® Company Name: Harvest Four Corners, LLC			**D. ® Facility Name:** Kutz Canyon Processing Plant		
B.1 ® Company Address: 1755 Arroyo Drive			**E.1 ® Facility Address:** 1755 Arroyo Drive		
B.2 ® City: Bloomfield	**B.3 ® State:** NM	**B.4 ® Zip:** 8 7 4 1 3	**E.2 ® City:** Bloomfield	**E.3 ® State:** NM	**E.4 ® Zip:** 87413
C.1 ® Company Environmental Contact: Kijun Hong	**C.2 ® Title:** Environmental Specialist		**F.1 ® Facility Contact:** Kijun Hong	**F.2 ® Title:** Environmental Specialist	
C.3 ® Phone Number: 505-632-4475	**C.4 ® Fax Number:** 505-632-4782		**F.3 ® Phone Number:** 505-632-4475	**F.4 ® Fax Number:** 505-632-4782	
C.5 ® Email Address: khong@harvestmidstream.com			**F.5 ® Email Address:** khong@harvestmidstream.com		
G. Responsible Official: (Title V only): Travis Jones	**H. Title:** EH&S Manager		**I. Phone Number:** 713-289-2630	**J. Fax Number:**	

K. ® AI Number: 1158	**L. Title V Permit Number:** P097-R3-M1	**M. Title V Permit Issue Date:** 12/19/18	**N. NSR Permit Number:**	**O. NSR Permit Issue Date:**
P. Reporting Period: From: 11/1/19 To: 10/31/20				

Do NOT submit NSPS OOOO or OOOOa well completion or flowback notifications to the Air Quality Bureau. See https://www.env.nm.gov/air-quality/notices-and-faqs-for-compliance-and-enforcement/ for explanation.

SECTION II – TYPE OF SUBMITTAL (check one that applies)

A. ☒	Title V Annual Compliance Certification	**Permit Condition(s):** A109.B	**Description:** submittal of ACC	
B. ☐	Title V Semi-Annual Monitoring Report	**Permit Condition(s):**	**Description:**	
C. ☐	NSPS Requirement (40CFR60)	**Regulation:**	**Section(s):**	**Description:**
D. ☐	MACT Requirement (40CFR63)	**Regulation:**	**Section(s):**	**Description:**
E. ☐	NMAC Requirement (20.2.xx) or NESHAP Requirement (40CFR61)	**Regulation:**	**Section(s):**	**Description:**
F. ☐	Permit or Notice of Intent (NOI) Requirement	Permit No.☐: or NOI No.☐:	**Condition(s):**	**Description:**
G. ☐	Requirement of an Enforcement Action	NOV No. ☐: or SFO No. ☐: or CD No. ☐: or Other ☐:	**Section(s):**	**Description:**

SECTION III - CERTIFICATION

After reasonable inquiry, I Kijun Hong (Name of Certifier) certify that the information in this submittal is true, accurate and complete.

® Signature of Certifier:	**® Title:** Environmental Specialist	**® Date**	**® Responsible Official for Title V?** ☐ Yes ☒ No

Reviewed By: ______________________ Date Reviewed: ______________

Title V Report Certification Form

I. Report Type

☒ **Annual Compliance Certification**

☐ **Semi-Annual Monitoring Report**

☐ **Other Specify:**

II. Identifying Information

Facility Name: Kutz Canyon Processing Plant		
Facility Address: 1755 Arroyo Drive	State: NM	Zip: 87413
Responsible Official (RO): Travis Jones	Phone: 713-289-2630	Fax: 505-632-4782
RO Title: EH&S Manager	RO e-mail: trjones@harvestmidstream.co	
Permit No.: P097-R3-M1	Date Permit Issued: 12/19/2018	
Report Due Date (as required by the permit): 11/30/2020	Permit AI number: 1158	
Time period covered by this Report: From: 11/1/2019	To: 10/31/2020	

III. Certification of Truth, Accuracy, and Completeness

I am the Responsible Official indicated above. I, (Travis Jones) certify that I meet the requirements of 20.2.70.7.AD NMAC. I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in the attached Title V report are true, accurate, and complete.

Signature____ Date: ________.

Title V Annual Compliance Certification for Permits P097-R3 & P097-R3M1

Title (TV) Permit Administration Amendment

On **December 19, 2018** NMED AQB issued an Administrative Amendment to Operating Permit **P097-R3**.

The Administrative Amendment **P097-R3M1** corrected the following:

a. Permittee is changed to	**Harvest Four Corners LLC** **1755 Arroyo Dr** **Bloomfield, NM 87413**
b. Facility Owner is	**Harvest Four Corners LLC** **1755 Arroyo Dr** **Bloomfield, NM 87413**

For this Administrative Amendment **(P097-R3M1)**, the facility can use one Annual Compliance Certification (ACC) Form which will cover both TV Permits.

Although the facility is only required to submit one ACC Form, the facility shall submit **two (2)** separate TV Report Certification Forms. Each form shall list the corresponding TV Permit number, TV Permit Issue Date and Reporting Period.

Please note that this is a one-time authorization. Submittal forms for future Administrative Revisions will be evaluated on a case by case basis.

This form can also be used for future submittals that cover only the **P097-R3M1** permit.

Annual Compliance Certification Data for Title V Permits No. P097-R3 & P097-R3M1				
Was this facility *continuously* in compliance with *all conditions* of this *permit* during the reporting period? (Did you check either "Yes" or "N/A" for *every condition* in response to question 3?)				☐ **Yes** ☒ **No**
1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.				3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
FACILITY SPECIFIC REQUIREMENTS **A101 Permit Duration (expiration)** **A.** The term of this permit is five (5) years. It will expire five years from the date of issuance. Application for renewal of this permit is due twelve (12) months prior to the date of expiration. (20.2.70.300.B.2 and 302.B NMAC)				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Submittal of a renewal application 12 months prior to expiration of this permit will demonstrate compliance with this condition. Permit P097-R3 was issued August 3, 2018, so compliance will be demonstrated with submittal of an application at least twelve months before the permit's expiration date of August 13, 2023.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A101 Permit Duration (expiration) **B.** If a timely and complete application for a permit renewal is submitted, consistent with 20.2.70.300 NMAC, but the Department has failed to issue or disapprove the renewal permit before the end of the term of the previous permit, then the permit shall not expire and all the terms and conditions of the permit shall remain in effect until the renewal permit has been issued or disapproved. (20.2.70.400.D NMAC)				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Submittal of a renewal application 12 months prior to expiration of this permit will demonstrate compliance with this condition. Permit P097-R3 was issued August 3, 2018, so compliance will be demonstrated with submittal of an application at least twelve months before the permit's expiration date of August 13, 2023.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A102 Facility: Description **B.** This facility is located approximately 5.0 kilometers (3.1 miles) south of Bloomfield, New Mexico in San Juan County. (20.2.70.302.A(7) NMAC)				

<table>
<tr><td colspan="4">1. Provide Method(s) or other information or other facts used to determine the compliance status in the “Methods:” row beneath each permit condition.
2. If you answered No to question 3, list all deviations in the Deviations section.
For all Deviations that produced excess emissions, provide only a) the AQBCR EER Tracking Number.
For all Deviations that did not produce excess emissions, provide a) The Unit ID, b) The Cause of and a Description of the Deviation, and c) the Start & End Dates of the deviation.
Please indicate in b), your Description, whether each deviation has been previously reported to NMED.</td><td>3. Was this facility continuously in compliance with all requirements of this condition during the reporting period?</td></tr>
<tr><td colspan="4">Methods: The facility did not relocate during the applicable period.</td><td rowspan="3">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A103 Facility: Applicable Regulations</u>

A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.A.</td><td rowspan="4">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports and this ACC, along with applicable NSPS & NESHAP reports, are used to determine that the source continues to comply with applicable requirements.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A103 Facility: Applicable Regulations</u>

C. Compliance with the terms and conditions of this permit regarding source emissions and operation demonstrate compliance with national ambient air quality standards specified at 40 CFR 50, which were applicable at the time air dispersion modeling was performed for the facility’s NSR Permit 0301-M6 and 0301-M9.</td><td rowspan="4">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports and the annual emissions inventory, along with the Management of Change Request (MOCR) procedures, are used to determine that no unauthorized equipment has been added or operated during the applicable period.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A104 Facility: Regulated Sources</u>

A. Table 104.A lists the emission units authorized for this facility. Emission units identified as insignificant or trivial activities (as defined in 20.2.70.7 NMAC) and/or equipment not regulated pursuant to the Act are not included.</td><td rowspan="4">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports and the annual emissions inventory, along with the Management of Change Request (MOCR) procedures, are used to determine that no unauthorized equipment has been added or operated during the applicable period.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A105 Facility: Control Equipment</u>
A. Table 105.A lists all the pollution control equipment required for this facility. Each emission point is identified by the same number that was assigned to it in the permit application.</td><td>☒ Yes ☐ No
☐ N/A</td></tr>
</table>

<table>
<tr><td colspan="4">1. Provide Method(s) or other information or other facts used to determine the compliance status in the "Methods:" row beneath each permit condition.
2. If you answered No to question 3, list all deviations in the Deviations section.
For all Deviations that produced excess emissions, provide only a) the AQBCR EER Tracking Number.
For all Deviations that did not produce excess emissions, provide a) The Unit ID, b) The Cause of and a Description of the Deviation, and c) the Start & End Dates of the deviation.
Please indicate in b), your Description, whether each deviation has been previously reported to NMED.</td><td>3. Was this facility continuously in compliance with all requirements of this condition during the reporting period?</td></tr>
<tr><td colspan="4">Methods: Semiannual reports and the annual emissions inventory, along with the Management of Change Request (MOCR) procedures, are used to determine that affected equipment operated with pollution control equipment during the applicable period.</td><td rowspan="3"></td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A106 Facility: Allowable Emissions</u>
A. The following Section lists the emission units, and their allowable emission limits.
(40 CFR 50, 40 CFR 60, Subparts A and GG, KKK, 40 CFR 63, Subparts A, HH, DDDDD, and ZZZZ, 20.2.72.210.A and B.1 NMAC; and NSR Permit 0301M9).</td><td rowspan="4">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports, periodic testing and the annual emissions inventory are used to demonstrate compliance with the identified allowable emissions.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A106 Facility: Allowable Emissions</u>
B. For Units 37a and 37b, only one unit shall be operated at any given time. If Unit 37b is constructed, it shall be equipped with a catalytic convertor to control CO, VOC and HAP emissions. If Unit 37b is constructed, then records shall be maintained in accordance with B110 to show dates and times of operation of each unit. If Unit 37b is constructed then the permittee shall comply with Conditions A201.D and E of this permit.</td><td rowspan="4">☒ Yes ☐ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports, periodic testing and the annual emissions inventory are used to demonstrate compliance with the operation of Units 37a and 37b.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions</u>
A. The maximum allowable SSM and Malfunction emissions limits for this facility are listed in Table 107.A and were relied upon by the Department to determine compliance with applicable regulations.</td><td rowspan="4">☐ Yes ☒ No
☐ N/A</td></tr>
<tr><td colspan="4">Methods: Semiannual reports, SSM tracking, and the annual emissions inventory are used to demonstrate compliance with the identified allowable emissions. An October 6, 2020 Excess Emissions Report was submitted in accordance with 20.2.7 NMAC.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td>Malfunctions</td><td>001158-10072020-01</td><td>10/6/20</td><td>10/6/20</td></tr>
<tr><td colspan="4"><u>A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions</u>
B. The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions</td><td></td></tr>
</table>

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.				3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
according to Conditions B101.C and B107.A.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: The facility operates in accordance with its SSM Plan in order to minimize emissions.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions**</u> **C. SSM VOC Emissions for venting of gas** **Requirement:** The permittee shall perform a facility inlet gas analysis once every calendar year and complete the following recordkeeping to demonstrate compliance with routine and predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A. (NSR 0301M9, Condition A107.C and revised) **Monitoring:** The permittee shall monitor the permitted routine and predictable startups and shutdowns and scheduled maintenance events. **Recordkeeping:** (1) To demonstrate compliance, records shall be kept of the monthly sum of total VOC emissions due to SSM events during the first 12 months and, thereafter of the monthly rolling 12-month total of VOC emissions due to SSM events. (2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, and of the volume of total gas vented in MMscf used to calculate the VOC emissions due to SSM events. (3) The permittee shall record the calculated emissions and parameters used in calculations in accordance with Condition B109, except the requirement in B109.C(2) to record the start and end times of SSM events shall not apply to the venting of known quantities of VOC. **Reporting:** The permittee shall report in accordance with Section B110.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Semiannual reports, SSM tracking, and the annual emissions inventory are used to demonstrate compliance with the identified allowable emissions. SSM records are included in the applicable semiannual reports.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions**</u> **D. Malfunction VOC Emissions for venting of gas** **Requirement:** The permittee shall perform a facility inlet gas analysis once every calendar year and complete the following recordkeeping to demonstrate compliance with malfunction (M1) emission limits in Table 107.A. (NSR 0301M9, Condition A107.D and revised) **Monitoring:** The permittee shall monitor all malfunction events that result in VOC emissions including identification of the equipment or activity that is the source of emissions. **Recordkeeping:**				☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

(1) To demonstrate compliance, records shall be kept of the monthly sum of total VOC emissions during the first 12 months and, thereafter of the monthly rolling 12-month total of VOC emissions due to malfunction events.

(2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, of the volume of total gas vented in MMscf used to calculate the VOC emissions, a description of the event, and whether the emissions resulting from the event will be used toward the permitted malfunction emission limit or whether the event is reported as excess emissions of the pound per hour limits in Table 106.A (or the pound per hour limits in condition B110E, if applicable), under 20.2.7 NMAC.

(3) The permittee shall record the calculated emissions and parameters used in calculations in accordance with Condition B109, except the requirement in B109.E to record the start and end times of malfunction events shall not apply to the venting of known quantities of VOC.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Semiannual reports, malfunction tracking, and the annual emissions inventory are used to demonstrate compliance with the identified allowable emissions. Malfunction events occurring during this monitoring period that were not used toward the permitted malfunction emission limit were reported in accordance with 20.2.7 NMAC

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A108 Facility: Hours of Operation

A. This facility is authorized for continuous operation, except for Units 34 and 76.

Methods: Records of the operating hours of Units 34 and 76 are maintained and included in the applicable semiannual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

☒ **Yes** ☐ **No** ☐ **N/A**

A109 Facility: Reporting Schedules

A. Semi-Annual Report of monitoring activities is due within 45 days following the end of every 6-month reporting period. The six month reporting periods start on November 1st and May 1st of each year.

Methods: The initial semiannual report associated with this ACC was submitted June 12, 2020, not more than 45 days from the end of the monitoring period, April 30. The current semiannual report will be submitted by December 15.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

☒ **Yes** ☐ **No** ☐ **N/A**

A109 Facility: Reporting Schedules

B. The Annual Compliance Certification Report is due within 30 days of the end of every 12-month reporting period. The 12-month reporting period starts on November 1st of each year.

☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.				3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Methods: This ACC is being submitted within 30 days of Nov. 1.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A110 Facility: Fuel and Fuel Sulfur Requirements**</u> **A. Fuel and Fuel Sulfur Requirements (Units 1-8, 16-20, 22, 23, 24b, 25, 27-30, 35b, 37a or 37b & 76 use Field Gas, except Unit 34)** **Requirement:** All combustion emission units shall combust only natural gas containing no more than **0.25** grains of total sulfur per 100 dry standard cubic feet. For Unit 34, the sulfur content of the fuel oil shall not exceed 0.0015% sulfur by weight. **Monitoring:** None. Compliance is demonstrated through records. **Recordkeeping:** (1) The permittee shall demonstrate compliance with the natural gas or fuel oil limit on total sulfur content by maintaining records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous or liquid fuel, or fuel gas analysis, specifying the allowable limit or less. (2) If fuel gas analysis is used, the analysis shall not be older than **one year.** (3) Alternatively, compliance shall be demonstrated by keeping a receipt or invoice from a commercial fuel supplier, with each fuel delivery, which shall include the delivery date, the fuel type delivered, the amount of fuel delivered, and the maximum sulfur content of the fuel. **Reporting:** The permittee shall report in accordance with Section B110.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Except for the diesel-fired emergency equipment, only natural gas is used for fuel. Fuel sulfur test results are included with the applicable semiannual report.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A111 Facility: 20.2.61 NMAC Opacity**</u> **A. 20.2.61 NMAC Opacity Requirements (Units 1-8, 16-20, 22, 23, 24b, 25, 27-30, 33, 35b, 37a or 37b & 76)** **Requirement:** Visible emissions from each stationary combustion emission stacks shall not equal or exceed an opacity of 20 percent in accordance with the requirements at 20.2.61.109 NMAC. **Monitoring:** (1) Use of natural gas fuel constitutes compliance with 20.2.61 NMAC unless opacity equals or exceeds 20% averaged over a 10-minute period. When any visible emissions are observed during operation other than during startup mode, opacity shall be measured over a 10-minute period, in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 9 (EPA Method 9) as required by 20.2.61.114 NMAC, or the operator will be allowed to shut down the equipment to perform maintenance/repair to eliminate the visible emissions. Following completion of equipment maintenance/repair, the operator shall conduct visible emission observations following startup in accordance with the following procedures:				☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

(a) Visible emissions observations shall be conducted over a 10-minute period during operation after completion of startup mode in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 22 (EPA Method 22). If no visible emissions are observed, no further action is required.

(b) If any visible emissions are observed during completion of the EPA Method 22 observation, subsequent opacity observations shall be conducted over a 10-minute period, in accordance with the procedures at EPA Method 9 as required by 20.2.61.114 NMAC.

For the purposes of this condition, *Startup mode* is defined as the startup period that is described in the facility's startup plan.

Recordkeeping:

(1) If any visible emissions observations were conducted, the permittee shall keep records in accordance with the requirements of Section B109 and as follows:

(a) For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA Method 22, Section 11.2.

(b) For any opacity observations conducted in accordance with the requirements of EPA Method 9, record the information on the form referenced in EPA Method 9, Sections 2.2 and 2.4.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Except for the diesel-fired emergency equipment, only natural gas is used for fuel. No visible emissions were observed during the applicable monitoring periods.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A111 Facility: 20.2.61 NMAC Opacity

B. 20.2.61 NMAC Opacity Requirements (Units 32, 34)

Requirement: Visible emissions from all emission stacks of all **compression ignition** engines shall not equal or exceed an opacity of 20 percent in accordance with the requirements at 20.2.61.109 NMAC.

Monitoring: For emergency, standby, or limited use compression ignition engines that operate on a limited basis, the permittee shall, at least once during any year that the unit is operated and no less frequently than once every 5 years regardless of unit operation, measure opacity during steady state operation on each Unit for a minimum of 10 minutes in accordance with the procedures of 40 CFR 60, Appendix A, Method 9. The permittee shall also measure opacity on a Unit's emissions stack anytime when visible emissions are observed during steady state operation.

☒ **Yes** ☐ **No** ☐ **N/A**

Recordkeeping:

(1) If any visible emissions observations were conducted, the permittee shall keep records in accordance with the requirements of Section B109 and as follows:

(2) For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Method 22, Section 11.2. (3) For any opacity observations conducted in accordance with the requirements of EPA Method 9, record the information on the form referenced in EPA Method 9, Sections 2.2 and 2.4. **Reporting:** The permittee shall report in accordance with Section B110.	
Methods: Applicable monitoring requirements demonstrate compliance with the opacity limit. Results from the periodic tests are included in the applicable semiannual reports.	

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

EQUIPMENT SPECIFIC REQUIREMENTS:

Oil and Gas Industry

A201 Engines

A. Maintenance and Repair Monitoring (Units 16, 17, 18, and 37a/b)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by properly maintaining and repairing the units. (NSR 0301M9, Condition A201.A and revised)

Monitoring: Maintenance and repair shall meet the minimum manufacturer's or permittee's recommended maintenance schedule. Activities that involve maintenance, adjustment, replacement, or repair of functional components with the potential to affect the operation of an emission unit shall be documented as they occur for the following events:

(1) Routine maintenance that takes a unit out of service for more than two hours during any twenty-four hour period.

(2) Unscheduled repairs that require a unit to be taken out of service for more than two hours in any twenty-four hour period.

Recordkeeping: The permittee shall maintain records, including dates and maintenance activities conducted in accordance with Section B109. The permittee shall also maintain a copy of the manufacturer's or permittee's recommended maintenance schedule.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Maintenance and repair records for engines are are maintained as required and included with applicable semiannual monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A201 Engines

B. Periodic Emissions Test for Units 16, 17, 18 and 37a/b

Requirement: Compliance with allowable emission limits in Table 106.A shall be demonstrated by completing periodic emission tests during the monitoring period. (NSR 0301M9, Condition A201.B and revised)

☒ **Yes** ☐ **No** ☐ **N/A**

Monitoring: The permittee shall test using a portable analyzer or EPA Reference Methods subject to the requirements and limitations of Section B108,

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

General Monitoring Requirements. Emission testing is required for NOx and CO and shall be carried out as described below.

Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits.

(1) The testing shall be conducted as follows:

(a) Testing frequency for Units 16, 17, and 18 shall be once per year. For Unit 37b, the testing frequency shall be once a quarter.

(b) The monitoring period for Units 16, 17, and 18 is defined as a calendar year. For Unit 37b, the monitoring period is defined as quarterly.

(2) For new units, the first test shall occur within the first monitoring period occurring after permit issuance. For existing units, the tests shall continue based on the existing testing schedule.

(3) All subsequent monitoring shall occur in each succeeding monitoring period.

(a) No two monitoring events shall occur closer together in time than 25% of a monitoring period.

(4) Follow the General Testing Procedures of Section B111.

(5) Performance testing required by 40 CFR 60, Subpart JJJJ or IIII or 40 CFR 63, Subpart ZZZZ may be used to satisfy these periodic testing requirements if they meet the requirements of this condition and are completed during the specified monitoring period.

Recordkeeping: The permittee shall maintain periodic emissions test records in accordance with Section B109, B110, and B111.

Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

Methods: Periodic emissions tests were completed as required. Periodic emissions test results are maintained as required and included in the applicable semiannual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A201 Engines

C. 40 CFR 63, Subpart ZZZZ (Units 16-18, 32, 33, 34, & 37a)

Requirement: These Units are subject to 40 CFR 63, Subpart ZZZZ and the permittee shall comply with all applicable requirements of Subpart A and Subpart ZZZZ.

Per §63.6590(b)(3), Units 16-18 & 37a are not required to meet the requirements of Subparts A or ZZZZ, including initial notification requirements. Units 32 and 33 are existing emergency SI at a major HAP source and comply with ZZZZ by complying with 63.6625 and Table 2c, line 6.

Monitoring: The permittee shall comply with all applicable monitoring requirements of 40 CFR 63, Subpart A and Subpart ZZZZ.

Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements of 40 CFR 63, Subpart A and Subpart ZZZZ, including but not limited to 63.6655 and 63.10.

Reporting: The permittee shall comply with all applicable reporting requirements of 40 CFR 63, Subpart A and ZZZZ, including but not limited to 63.6645, 63.6650, 63.9, and 63.10.

☒ **Yes** ☐ **No**

☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.				3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Methods: Records are maintained demonstrating that although the Kutz Plant is a major HAP source, Unit16-18, 34 & 37a were constructed prior to the applicability date.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A201 Engines**</u> **D. 40 CFR 63, Subpart ZZZZ (Units 37b) [To be installed units]** **Requirement:** (1) The unit will be subject to 40 CFR 63, Subparts A and ZZZZ if they meet the applicability criteria in 40 CFR 63.6590. The permittee shall comply with any applicable notification requirements in Subpart A and any specific requirements of Subpart ZZZZ. (2) Unit 37b shall not be operated at any given time as Unit 37a. If Unit 37b is constructed, it shall be equipped with a catalytic convertor to control CO, VOC and HAP emissions. If Unit 37b is constructed, then records shall be maintained in accordance with B110 to show dates and times of operation of each unit. **Monitoring:** The permittee shall comply with all applicable monitoring requirements of 40 CFR 63, Subpart A and Subpart ZZZZ. **Recordkeeping:** The permittee shall comply with all applicable recordkeeping requirements of 40 CFR 63, Subpart A and Subpart ZZZZ, including but not limited to 63.6655 and 63.10. **Reporting:** The permittee shall comply with all applicable reporting requirements of 40 CFR 63, Subpart A and ZZZZ, including but not limited to 63.6645, 63.6650, 63.9, and 63.10.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Unit 37b has not been installed as of the end of the compliance period.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
<u>**A201 Engines**</u> **E. Initial Compliance Test (Unit 37b)** **Requirement:** Compliance with allowable emission limits in Table 106.A shall be demonstrated by an initial compliance test ensuring the engine is operating correctly and within desired parameters. (NSR 0301M9, Condition A201.E) **Monitoring:** The permittee shall perform an initial compliance test in accordance with the General Testing Requirements of Section B111. Emission testing is required for NOx and CO. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. The monitoring exemptions of Section B108 do not apply to this requirement.				☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

For units with g/hp-hr emission limits, the engine load shall be calculated by using the following equation:

$$\text{Load(Hp)} = \frac{\text{Fuel consumption (scfh) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$$

Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.

Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.

Methods: Unit 37b has not been installed as of the end of the compliance period.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A201 Engines

F. Requirements for Units 34 & 76

Requirement: The permittee shall limit the hours of operation of each unit to 500 hours per year or less. (NSR 0301M8, Condition A201.F, and revised)

Monitoring: The permittee shall monitor the operating hours of each unit.

Recordkeeping: The permittee shall record the monthly rolling 12-month total hours of operation of each unit, and shall meet the recordkeeping requirements in Section B109.

Reporting: In accordance with Section B110 of this permit.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Semiannual reports and the annual emissions inventory are used to demonstrate compliance with the limitations for units 34 and 76.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A201 Engines

G. 40 CFR 60, Subpart JJJJ (Unit 76)

Requirement: The unit is subject to 40 CFR 60, Subparts A and JJJJ and shall comply with the notification requirements in Subpart A and the specific requirements of Subpart JJJJ. The engine must comply with the standards in §60.4231(a).

Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4243.

Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.

Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.

☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

Methods: Records of maintenance are retained for unit 76 in accordance with 60.4245(a)(2), and engine certification as per 60.4245(a)(3).

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

A. 40 CFR 63, Subpart HH, Kutz I EG Dehydrator, Unit 24a

Requirement: The permittee shall comply with the applicable requirements for dehydrator(s) subject to 40 CFR 63.760, Subpart HH. Facility is major source of HAPs including a EG dehydrator. With the August 2012 revision of NESHAP HH, Unit 24a is now classified as an existing small dehydrator and must meet the EL_{BTEX} limit of 63.764(c)(1) by the October 15, 2015 compliance date of 63.760(f)(7). The dehydrator must comply with the standards in §63.765.

Monitoring: The permittee shall comply with the monitoring requirements of 40 CFR 63.773.

Recordkeeping: The permittee is subject to the recordkeeping requirements of 40 CFR 63.774. In accordance with Section B109 of this permit.

Reporting: In accordance with Section B110 of this permit.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Records of maintenance are retained for unit 76 in accordance with 60.4245(a)(2), and engine certification as per 60.4245(a)(3). Records of LDAR and flare pilot flame monitoring are maintained as required. Reports of LDAR and flare pilot flame monitoring are submitted as required, as are the NESHAP HH periodic reports. The Notification of Compliance Status Report was submitted April 7, 2016.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

B. 40 CFR 63, Subpart HH, Kutz Chaco Dehydrator, Unit 35a

Requirement: The permittee shall comply with the applicable requirements for dehydrator(s) subject to 40 CFR 63.760, Subpart HH. Facility is major source of HAPs including this TEG dehydrator. Unit 35a is classified as an existing large dehydrator and must meet the process vent standards of 63.764(c)(1). Emissions from the Chaco Dehydrator still vent, Unit 35a, shall be routed to the Zeeco flare, Unit 36. The flare's control efficiency shall meet the requirements of 40 CFR 63, Subparts A and HH. The dehydrator must comply with the standards in §63.765.

Monitoring: The permittee shall comply with the monitoring requirements of 40 CFR 63.773.

Recordkeeping: The permittee shall comply with the recordkeeping requirements of 40 CFR 63.774.b.10 and b.11 and with Section B109 of this permit.

Reporting: The permittee shall comply with the reporting requirements of 40 CFR 63.775 and with Section B110 of this permit.

☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Methods: Compliance with this requirement are met by complying with the monitoring, recordkeeping and reporting requirements identified below. Monitoring records demonstrating compliance with this requirement are maintained as required and are included in the applicable semiannual report, or in the NESHAP HH periodic report, as required. .	

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

C. Control Device Inspection (Units 24a, 35a)

Requirement: Compliance with allowable VOC emission limits in Table 106.A shall be demonstrated by: (NSR 0301M9, Condition A202.E and revised)

(1) Emissions from the Chaco Dehydrator, Unit 35a, dehydrator still vent shall be routed through a condenser to the Zeeco flare, Unit 36. The piping from the Chaco Dehydrator still vent to the Plant Process Flare shall be a closed-loop vent system with no bypass. The flare's control efficiency shall meet the requirements of 40 CFR 63, Subparts A and HH.

(2) Emissions from the Kutz I EG Dehydrator, Unit 24a, dehydrator still vent shall be routed to the flare, Unit 28. The piping from the Kutz I EG Dehydrator still vent to the Plant Process Flare shall be a closed-loop vent system with no bypass.

(3) Flash Tank vent VOC emissions from Units 24a and 35a shall be routed at all times to a process point that allows the off-gas to be sent to a control device, emission units 28 & 36, or recycled and recompressed.

Monitoring: At no time shall still vent and flash tank emissions be emitted to the atmosphere. The permittee shall inspect the glycol dehydrator and the control equipment semi-annually to ensure it is operating as initially designed or in accordance with the manufacturer's recommended procedures.

Recordkeeping:

(1) The permittee shall record the inspection and the results of all equipment and control device inspections chronologically, noting any maintenance or repairs needed to bring the dehydrator into compliance.

(2) The permittee shall maintain a copy of the manufacturer's maintenance recommendations.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Dehydrator control device inspection records and flash tank inspection records are included with the applicable semiannual monitoring reports. The Kutz I glycol recircuation rate records are included with the applicable semiannual monitoring reports. Dehydrtor control device inspection records and flash tank inspection records, as well as the Kutz I glycol circulation rate records, are all maintained as required and are included with the applicable semiannual monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
D. Flare Testing Requirements, 40 CFR 63, Subpart HH and 20.2.61 NMAC (For Units 28 and 36) (NSR 0301M9, Condition A202.F and revised) **Requirement:** In accordance with the requirements at 40 CFR §63.772, flares designed and operated in accordance with the requirements at 40 CFR §63.11(b) are exempt from the requirements to conduct a performance test to demonstrate compliance with flare gas heating value and exit velocity requirements. The flare shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Compliance with the visible emissions requirements shall be demonstrated by conducting a visible emissions observation as specified in the Monitoring section below. Compliance with the testing requirements in this condition demonstrates compliance with the opacity limits required in 20.2.61 NMAC. **Monitoring:** As required by 40 CFR §63.772, and the requirements at 40 CFR 63, Subpart A, §§63.7 (performance tests) and 63.11 (general control device requirements), the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60, Appendix B, Reference Method (RM) 22. The observation period is 2 hours. **Recordkeeping:** The permittee shall maintain records of the flare(s) performance test results in accordance with the requirements at 40 CFR §63.774 and Section B109. **Reporting:** The permittee shall report in accordance with the requirements at 40 CFR §63.775 and Sections B110 and B111.	☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Records are maintained as required, demonstrating that the Kutz Chaco flare meets the applicable NESHAP requirements. In accordance with 63.772(e)(2), Method 22 compliance determinations were completed in previous monitoring periods, and records are maintained as required. The Notification of Compliance Status Report was submitted April 7, 2016.	

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

<u>A202 Glycol Dehydrators</u> **E. 40 CFR 63, Subpart HH (Ancillary equipment)** **Requirement:** The plant ancillary equipment between the dehydrator and the flare as defined in 40 CFR 63.761 shall comply with all applicable requirements, including the general standards of 40 CFR 63.764. The ancillary equipment between the still vent and flare are exempt, as this stream is less than 10% VHAP. **Monitoring:** The plant ancillary equipment between the dehydrator and the flare as defined in 40 CFR 63.761 shall comply with the monitoring requirements of 40 CFR 63.769. **Recordkeeping:** The plant ancillary equipment as defined in 40 CFR 63.761 shall comply with the recordkeeping requirements of 40 CFR 63.774 and in accordance with Section B109 of this permit. **Reporting:** The plant ancillary equipment as defined in 40 CFR 63.761 shall comply with the reporting requirements of 40 CFR 63.775 and in	☒ **Yes** ☐ **No** ☐ **N/A**

<table>
<tr><td colspan="4">1. Provide Method(s) or other information or other facts used to determine the compliance status in the “Methods:” row beneath each permit condition.
2. If you answered No to question 3, list all deviations in the Deviations section.
For all Deviations that produced excess emissions, provide only a) the AQBCR EER Tracking Number.
For all Deviations that did not produce excess emissions, provide a) The Unit ID, b) The Cause of and a Description of the Deviation, and c) the Start & End Dates of the deviation.
Please indicate in b), your Description, whether each deviation has been previously reported to NMED.</td><td>3. Was this facility continuously in compliance with all requirements of this condition during the reporting period?</td></tr>
<tr><td colspan="4">accordance with Section B110 of this permit.</td><td rowspan="4"></td></tr>
<tr><td colspan="4">Methods: The semiannual LDAR reports were submitted in accordance with 40 CFR 63.775(b)(5).</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4"><u>A203 Tanks</u>
A. Tank Operations (Unit T-6438) [with flash emissions]
Requirement: (NSR 0301M9, Condition A203.A)
1) Compliance with the allowable emission limits for Unit T-6438 in Table 106.A shall be demonstrated by monthly monitoring of the actual total condensate throughput and separator pressure and by calculating emission rates as required.
2) For Unit T-6438, the permittee shall calculate the monthly rolling 12-month total, tpy VOC emission rates using actual measured condensate throughput, actual measured average separator pressure, and the most recent condensate VOC analysis.
Monitoring:
1) For Unit T-6438, the permittee shall monitor the monthly total condensate throughput, and at least once per month, the upstream separator pressure.
2) Annually the permittee shall complete a liquids analysis of the tank condensate to determine the VOC content.
Recordkeeping:
1) For Unit T-6438, the permittee shall record the monthly total condensate throughput of liquids and the monthly average separator pressure. Each month the permittee shall use these values to calculate and record a monthly rolling 12-month total condensate throughput and a monthly rolling 12-month average separator pressure.
2) For Unit T-6438, the permittee shall calculate the monthly rolling 12-month total VOC tpy emission rates using HYSYS or other previously approved thermodynamic model, such as VMGSim, etc and Tanks 4.09d; the number of hours that the EVRU control system is non-operational as defined in Condition A203.D; the actual measured condensate throughput; the actual measured average separator pressure; and the most recent condensate VOC analysis.
3) The permittee shall keep records of the parameters, calculations, and VOC emission rates summarized in a table or spreadsheet and shall meet the recordkeeping requirements in Section B109.
Reporting: The permittee shall report in accordance with Section B110.
All excess emissions and Title V deviations of allowable emission limits shall be reported according to 20.2.7 NMAC and 20.2.70.302.E(2) NMAC.</td><td>☒ Yes ☐ No
☐ N/A</td></tr>
</table>

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Methods: Records of monthly and 12-month rolling condensate throughput and separator pressure were included in the applicable monitoring reports. Records of monthly and 12-month rolling condensate throughput and separator pressure, as well as the monthly 12-month total emissions calculations, are included in the applicable monitoring reports. Liquids analyses are completed as required.	

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A203 Tanks

B. Tank Operations (Units T-6528, T-6529) [with flash emissions]

Requirement: (NSR 0301M9, Condition A203.B and revised)

1) Compliance with the allowable emission limits for Units T-6528, and T-6529 in Table 106.A shall be demonstrated by monthly monitoring of the actual total condensate throughputs and separator pressures and by calculating emission rates as required.

2) For Units T-6528 & T-6529, the values used to establish VOC emission limits in Table 106.A are 13,321 barrels of condensate throughput per year and 131.9 pounds per square inch absolute. If either the monthly rolling 12-month total condensate throughput or the monthly rolling 12-month average separator pressure value is ever exceeded, the permittee shall calculate the monthly rolling 12-month total VOC emissions in tpy using the actual measured condensate throughput, the actual measured average separator pressure, and the most recent condensate VOC analysis.

Monitoring:

1) For Units T-6528 and T-6529, the permittee shall monitor the monthly total condensate throughput, and at least once per month, the upstream separator pressure.

2) Annually the permittee shall complete a liquids analysis of the tank condensate to determine the VOC content.

Recordkeeping:

1) For Units T-6528 and T-6529, the permittee shall record the monthly total condensate throughput of liquids and the monthly average separator pressure. Each month the permittee shall use these values to calculate and record the monthly rolling 12-month total condensate throughput and the monthly rolling 12-month average separator pressure.

2) For Units T-6528 and T-6529, if either the rolling 12-month total condensate throughput or the monthly rolling 12-month average separator pressure values listed in the condition requirements are exceeded, within the 20.2.7 NMAC Excess Emissions initial notification deadline, the permittee shall calculate the monthly rolling 12-month total VOC tpy emissions totals using HYSYS and Tanks 4.09d; the actual measured condensate throughput; the actual measured average separator pressure; and the most recent condensate VOC analysis. Monthly calculations of actual emission totals shall continue for Units T-6528 and T-6529 until the condensate throughput and average separator pressure values in condition requirements are no longer exceeded and until the calculations demonstrate that the allowable emission limits are not exceeded.

3) The permittee shall keep records of the parameters, calculations, and VOC emission totals summarized in a table or spreadsheet and shall meet the recordkeeping requirements in Section B109.

☒ **Yes** ☐ **No**

☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

Reporting: The permittee shall report in accordance with Section B110.

All excess emissions and Title V deviations of allowable emission limits shall be reported according to 20.2.7 NMAC and 20.2.70.302.E(2) NMAC.

Methods: Records of monthly and 12-month rolling condensate throughput and separator pressure are maintained as required and are included in the applicable monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A203 Tanks

C. Tank Throughput (Units T-3 and T-109) [without flash emissions]

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by the total condensate throughput to the unit(s) not exceeding 1,297,296 gallons per year total (30,888 barrels/year). (NSR 0301M9, Condition A203.C and revised)

Monitoring: The permittee shall monitor the monthly total throughput once per month.

Recordkeeping: The permittee shall record the monthly total throughput of liquids for each tank and each month the permittee shall use this value to calculate and record a monthly rolling, 12-month total throughput. As represented in the application, annually the permittee shall calculate tank breathing and working losses using the USEPA Tanks program Version **4.0.9d**. Emission rates computed using the same parameters, but with a different Department approved algorithm that exceed these values will not be deemed non-compliance with this permit. Records shall also be maintained in accordance with Section B109.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No**

☐ **N/A**

Methods: Records of monthly and 12-month rolling condensate throughput and separator pressure were included in the applicable monitoring reports. The annual Tanks run was submitted with the annual emissions inventory.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A203 Tanks

D. EVRU Operations (Unit T-6438)

Requirement: To demonstrate compliance with allowable emission limits in Table 106.A, emissions from T-6438 shall be routed to and controlled by an Ejector Vapor Recovery Unit (EVRU), as required in Table 105.A (Control Equipment List). (SFO and Settlement Agreement # AQCA 09-00(CO) dated May 18, 2010)

1) The permittee shall operate and maintain the EVRU according to manufacturer's or supplier's recommendations.

2) The permittee shall install a system to continuously monitor the tank pressure. The tank Pressure Relief Valves (PRVs) shall open only to prevent damage to the system and shall be set to open at no less than 10.8 ounces per square inch of gauge pressure. Other than venting from PRVs to avoid system damage, T-6438 tank emissions shall at all times be routed to and controlled by the EVRU as a closed loop system that

☒ **Yes** ☐ **No**

☐ **N/A**

captures and routes tank emissions back to the process.

Monitoring: At least weekly, the permittee shall inspect the EVRU control system and tank PRVs for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. In the event that a leak or defect is detected, the permittee shall repair the leak or defect as soon as practicable and in a manner that minimizes VOC emissions to the atmosphere.

In addition, the permittee shall continuously monitor the following parameters:

1) Hours of non-operation of the EVRU, and

2) Tank pressure.

Recordkeeping:

1) For the purposes of calculating VOC emission rates, at any time a 100% capture efficiency is not achieved the EVRU control system shall be considered non-operational with a 0% control efficiency. EVRU control system non-operation includes any time PRVs open, any time leaks or defects are found during weekly EVRU control system inspections, and any other time when 100% of tank emissions are not captured.

2) The permittee shall record all dates and times that the EVRU control system was non-operational and the reason(s) that the EVRU control system is non-operational (e.g. PRVs open).

3) The permittee shall continuously record the tank pressure.

4) Each month, the permittee shall calculate and record the monthly rolling 12-month total number of hours that the EVRU is not meeting the 100% capture efficiency and is non-operational.

5) Each month, the permittee shall calculate and record the monthly rolling 12-month tpy VOC emission totals from the tank as required by Condition A203.A assuming 0% control when the EVRU control system is non-operational as defined in this condition.

6) The permittee shall record the results of the EVRU inspections noting any defects, the date a defect is found, and the dates and description of any repairs and/or maintenance performed.

7) The permittee shall meet the recordkeeping requirements in Section B109.

Reporting: The permittee shall report in accordance with Section B110.

Any emissions exceedance of the allowable emission limit in Table 106.A, shall be reported as excess emissions and Title V deviations according to 20.2.7 NMAC, 20.2.70.302.E(2) NMAC, and Condition B110.B and C.

Methods: Records of weekly EVRU and tank PRV inspections are maintained as required and are included in the applicable monitoring reports. Record of the continuous monitoring of tank pressure are also included in the applicable monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

A203 Tanks

E. Tank Vapor Recovery Unit (VRU) Control Device Inspection (Unit T-6438)

Requirement: If a standard compressor driven VRU replaces the EVRU, then compliance with the allowable emission limits in Table 106.A shall be demonstrated by operating the vapor recovery units at all times as a closed loop system that captures and routes VOCs from tank T-6438 back to the process stream and does not vent to the atmosphere.

(SFO and Settlement Agreement # AQCA 09-00(CO) dated May 18, 2010)

Monitoring: At least once per month, the permittee shall inspect the vapor recovery unit for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. In the event that a leak or defect is detected, the permittee shall repair the leak or defect as soon as practicable and in a manner that minimizes VOC and HAPs emissions to the atmosphere.

When the tank emissions are vented to the atmosphere (VRU is bypassed), the permittee shall monitor:

- The amount of time the VRU is bypassed,
- The actual operating parameters necessary to estimate emissions from the tank.

Recordkeeping: The permittee shall record the results of the vapor recovery unit inspections chronologically, noting any maintenance or repairs that are required.

The permittee shall keep records of when the tank is vented to the atmosphere (VRU is bypassed), the records shall include:

- the amount of time the VRU is bypassed,
- the actual operating parameters necessary to estimate emissions from the tank.

Within 15 days of venting the tank to the atmosphere (bypassing the VRU), the permittee shall calculate and record the tons of VOC emissions for each event from the tank and a monthly rolling 12-month total of VOC tpy emissions (calculated after each event). The monthly rolling 12-month VOC total shall be compared to the Tank T-6438 limit of Table A106.A.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No**
☐ **N/A**

Methods: The alternate tank VRU has not been installed, as documented by the continuing records for the tank EVRU operations monitoring.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A204 Heaters/Boilers

A. Heater Operational Inspection (Units 22, 23, 25, 27 and 30)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by proper annual inspections and maintenance of these units. (NSR 0301M9, Condition A204.A)

☒ **Yes** ☐ **No**
☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

Monitoring: The permittee shall conduct operational inspections of the heater(s)/boiler(s) annually by the following methods.

The permittee shall conduct operational inspections to determine that the heater(s)/boiler(s) are operating properly. The operational inspections shall include checks for indications of insufficient or excess combustion. These operational checks shall include observation of common physical indications of improper combustion, including indications specified by the heater/boiler manufacturer, and indications based on operational experience with these unit(s).

Recordkeeping: The permittee shall maintain records of the operational inspections, including a description of the visual and other sensory observations for insufficient or excessive combustion air in accordance with Section B109. The permittee shall append a contemporaneous fuel analysis if the gas is other than natural gas. The permittee shall summarize in chronological order the results of all operational inspections noting any adjustments needed to bring the heater(s)/boiler(s) into compliance with permit conditions.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Records of the annual heater inspections are maintained as required and are included in the applicable monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A204 Heaters/Boilers

B. MACT Subpart DDDDD, Industrial, Commercial, and Institutional Boilers and Process Heaters (Units 22, 23, 25, 27 & 30)

Requirement: The units are subject to 40 CFR 63, Subpart DDDDD and the permittee shall comply with the applicable requirements of 40 CFR 63, Subpart A and Subpart DDDDD. The units must comply with the work practice standards in Table 3 (see §63.7500).

Monitoring: The permittee shall comply with all applicable monitoring and testing requirements of 40 CFR 63, Subpart A and Subpart DDDDD.

Recordkeeping: The permittee shall comply with the applicable recordkeeping requirements of 40 CFR 63, Subpart A and Subpart DDDDD.

Reporting: The permittee shall comply with the applicable reporting requirements of 40 CFR 63, Subpart A and Subpart DDDDD.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Records of the DDDDD periodic heater tune-ups are maintained as required and are included in the applicable monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

A. Periodic Emissions Tests (Units 1-8, 19, 20, and 29)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by conducting periodic emission tests during the monitoring period. (NSR 0301M9, Condition A205.A and revised)

☒ **Yes** ☐ **No** ☐ **N/A**

Monitoring: The permittee shall test using a portable analyzer or EPA Reference Methods subject to the requirements and limitations of Section B108, General Monitoring Requirements. Emission testing is required for CO and NOx, and shall be carried out as described below.

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the volatile organic compound (VOC) emission limits.

(1) The testing shall be conducted as follows:

(a) Testing frequency shall be once per year.

(b) The monitoring period is defined as a calendar year.

(2) For new units, the first test shall occur within the first monitoring period occurring after permit issuance. For existing units, the tests shall continue based on the existing testing schedule.

(3) All subsequent monitoring shall occur in each succeeding monitoring period.

(a) No two monitoring events shall occur closer together in time than 25% of a monitoring period.

(4) Follow the General Testing Procedures of Section B111.

(5) Performance testing required by 40 CFR 60, Subpart GG or 40 CFR 60, Subpart KKKK may be used to satisfy these periodic testing requirements if they meet the requirements of this condition and are completed during the specified monitoring period.

Recordkeeping: The permittee shall maintain records in accordance with Section B109, B110 and B111. The permittee shall also record the results of the periodic emissions tests, including the turbine's fuel flow rate and horsepower at the time of the test, and the type of fuel fired (natural gas, field gas, etc.).

The permittee shall also keep records of all raw data used to determine exhaust gas flow and of all calculations used to determine flow rates and mass emissions rates.

Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

Methods: Records of periodic testing of the turbines are maintained as required and are included in the applicable monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

B. 40 CFR 60, Subpart GG (Units 19, 20, and 29)

Requirement: Units subject to 40 CFR 60, Subpart GG and the permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A and Subpart GG. These units shall comply with the NOX limits of §60.332 and SO2 limits of §60.333. Units 19, 20, and 29, nitrogen dioxide emissions shall not exceed (for Units 19 & 20, 161.91 ppmv; for Unit 29 150 ppmv) at 15 percent oxygen and on a dry basis, and the fuel burned shall not contain total sulfur in excess 0.8 percent by weight (8000 ppmw). (40 CFR 60, Subpart GG)

☐ **Yes** ☒ **No** ☐ **N/A**

Monitoring: The permittee shall comply with the monitoring and testing requirements of 40 CFR 60.334 and 60.335.

Recordkeeping: The permittee shall comply with the recordkeeping requirements of 40 CFR 60.334 and 40 CFR 60.7.

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?

Reporting: The permittee shall comply with the reporting requirements of 40 CFR 60.7.

Comment: In accordance with EPA document EMTIC—GD-009 (March 12, 1990), no daily monitoring for fuel bound nitrogen is required for the combustion turbine(s), as stated in 40 CFR 60 Subpart GG, Section 60.332.

Methods: Monitoring reports are maintained as required and include fuel sulfur monitoring records. The 1st and 3rd quarters 2020 sulfur monitoring had not occurred by the end of the respective quarters.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date
Units 19 & 20	1Q 2020 fuel sulfur sampling not completed by the end of the monitoring period.	3/31/20	4/1/20

A205 Turbines

C. Generators, Units 19 and 20 (Gen A and Gen B)

Requirement: The power output of each Generator (Gen A and Gen B) shall not exceed 2400 Kilowatts and only one unit shall operate at any given time with the other unit in a standby mode. (NSR 0301M9, Condition A205.C)

Monitoring: The permittee shall monitor and maintain a log showing the dates, start times and shut down times, of Unit 19 & 20 and the daily maximum power output for the operating Unit.

Recordkeeping: The dates, start times, shut down times, and daily maximum power outputs of Gen A and Gen B, each, shall be recorded to show compliance.

Reporting: In accordance with Section B110.

☒ **Yes** ☐ **No**

☐ **N/A**

Methods: Records of generator operations are maintained as required and included in the monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

D. Maintenance and Repair Monitoring (Units 1-8, 19, 20, and 29)

Requirement: Compliance with allowable emission limits in Table 106.A shall be demonstrated by following the minimum manufacturer's or permittee's recommended maintenance schedule. (NSR 0301M9, Condition A205.D)

Monitoring: Maintenance and repair shall meet the minimum manufacturer's or permittee's recommended maintenance schedule. Activities that involve maintenance, adjustment, replacement, or repair of functional components with the potential to affect the operation of an emission unit shall be documented as they occur for the following events:

(1) Routine maintenance that takes a unit out of service for more than two hours during any twenty-four hour period.

(2) Unscheduled repairs that require a unit to be taken out of service for more than two hours in any twenty-four hour period.

Recordkeeping: The permittee shall maintain records, including dates and maintenance activities conducted in accordance with Section B109. The

☒ **Yes** ☐ **No**

☐ **N/A**

permittee shall also maintain a copy of the manufacturer's or permittee's recommended maintenance schedule.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Maintenance and repair records for engines are maintained as required and are included with applicable semiannual monitoring reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A206 Flares

A. Flare Testing Requirements 40 CFR 63, Subpart HH and 20.2.61 NMAC (Units 28 & 36)

Requirement:

(1) In accordance with the requirements at 40 CFR §63.772, flares designed and operated in accordance with the requirements at 40 CFR §63.11(b) are exempt from the requirements to conduct a performance test to demonstrate compliance with flare gas heating value and exit velocity requirements.

(2) The flare shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Compliance with the visible emissions requirements shall be demonstrated by conducting a visible emissions observation as specified in the Monitoring section below.

(3) Compliance with the testing requirements in this condition demonstrates compliance with the opacity limits required in 20.2.61 NMAC.

Monitoring:

As required by 40 CFR §63.772, and the requirements at 40 CFR 63, Subpart A, §§63.7 (performance tests) and 63.11 (general control device requirements), the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60, Appendix B, Reference Method (RM) 22. The observation period is 2 hours.

Recordkeeping:

The permittee shall maintain records for the flare(s) performance test results, if applicable, in accordance with any applicable requirements at 40 CFR §63.774, and with the requirements of Section B109.

Reporting:

The permittee shall report in accordance with any applicable requirements at 40 CFR §63.775 and the requirements of Sections B110 and B111.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: The semiannual monitoring reports include records of pilot flame monitoring.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A206 Flares

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
B. Flare Operating Requirements, 40 CFR 63, Subpart HH and 20.2.61 NMAC (Units 28 & 36) **Requirement:** Flares(s) shall comply with the operational requirements (including but not limited to flame presence and no visible emissions) specified by the general control device requirements at 40 CFR §63.11. Compliance with the operating requirements at 40 CFR §63.11 demonstrates compliance with the opacity limits required by 20.2.61 NMAC. **Monitoring:** The permittee shall monitor flare operation in accordance with the applicable requirements at 40 CFR §63.11. **Recordkeeping:** The permittee shall maintain records of flare operation in accordance with the applicable requirements at 40 CFR §§63.11 and 63.774 and with the requirements of Section B109. **Reporting:** The permittee shall report in accordance with the requirements 40 CFR §63.775 and of Section B110.	☒ **Yes** ☐ **No** ☐ **N/A**
Methods: The NESHAP HH Periodic Reports include record of monitoring in accordance with 63.760 and 63.11.	

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

<u>**A206 Flares**</u> **C. Flare Emissions (Units 28 & 36)** **Requirement:** Compliance with the allowable emission limits in Table 106.A shall be demonstrated by calculating and summarizing emission rates as required in recordkeeping. For Unit 36, only facility dehydrator condenser gas outlet streams, flash tank, and flash tank relief valves shall be routed to the flares as described in Glycol Dehydrator Condition A202.C. The Plant Flare Unit 28 handles more than just the Kutz I dehydrator vent stream. Safety relief valves from plant pressure vessels and the plant inlet gas scrubber dump valves are vented to the flare. Also, the refrigerant compressors (Units 16, 17 and 18, plus Unit 37a/b) blow down to the flare during SSM events. Compliance with the allowable emission limits in Table 106.A for Unit 28 shall be demonstrated by limiting the flow to Flare 28 to 299.00 MMSCF/yr. **Monitoring:** A gas flowmeter and flow totalizer, equipped with a chart recorder or data logger (electronic storage), shall be installed at the inlet to each glycol dehydrator to measure and record the total standard cubic feet (scf) of gas entering the system per day (MMscf/day). The maximum flow rate into each of the following dehydrators shall be 110 and 140 MMscf/day for Units 24a and 35a.	☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
The flow meter, totalizer, and if used, the inline monitor shall be operated, calibrated, and maintained as specified by the manufacturer or equivalent and as necessary to ensure correct and accurate readings. **Recordkeeping:** (1) The following records shall be kept: • Annual facility inlet extended gas analysis • GRI-GLYCalc output • Flowmeter and flow totalizer measurements of gas entering the dehydrator in units of MMscf/day (2) Annually, the permittee shall record and summarize in a table format the following. • percent VOC content for the combined gas stream to the flare • gas heating value (Btu/scf) for the combined gas stream to the flare • the maximum hourly gas flow rate (scf/hr) calculated from GLYCalc using the maximum recorded daily volume of dehydrator inlet gas for the record year for each flare • the annual total of gas sent to each flare (MMscf/yr) calculated from GLYCalc using the average recorded daily volume of dehydrator inlet gas for the record year for each flare (3) Records of flowmeter, totalizer, and inline monitor certifications, calibrations, breakdowns, reasons for the breakdown, and corrective actions taken shall be maintained. (4) Annually, to demonstrate compliance with emission limits, the permittee shall calculate and summarize the maximum pph emission rate, any pph emission rate exceeding the permitted limits, and the ton per year emission rates of NOx, CO, and VOC using the following information: • VOC content and the gas heating value (Btu/scf) from the most recent extended gas analyses and GRI-GLYCalc output, adjusted to be representative of the combined gas stream to the flare (pilot, assist, flash tank, condenser vent, and regenerator) to ensure that the gas heating value of the combined stream is at least 300 Btu/scf. The assist gas flow rate shall be determined by calculating the necessary volume required to obtain this minimum heating value of the combined stream. • the emission factors used to calculate NOx and CO • the maximum hourly gas flow rate (scf/hr) to the flare calculated with GRI-GLYCalc under Condition A202.A, adjusted to be representative of the combined gas stream to the flare (pilot, assist, flash tank, condenser vent, and regenerator) • the annual total of gas sent to the flare (MMscf/yr) **Reporting:** The permittee shall report according to Condition B110.	

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.				3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
Methods: A flow meter, flow totalizer and data logger continuously record the gas flow into each affected dehydrator. Records of the annual dehydrator flare emissions, including gas analyses and GLYCalc model results, are maintained as required and are included in the applicable semiannual reports.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A208 Amine Unit **A. Amine Recirculation Rate Reporting (Unit 75, Amine Contactor Vent)** **Requirement:** Compliance with the allowable emission limits in Table 106.A and the pump rate capacity of 350 gallons per minute in Table 104.A shall be demonstrated by semi-annual measurement of the amine recirculation rate. (NSR 0301M9, Condition A208.A and revised) **Monitoring:** The permittee shall semiannually measure and record the amine recirculation rate in gallons per minute (gpm). **Recordkeeping:** The permittee shall keep records of the amine recirculation rate in gallons per minute (gpm) in accordance with Section B110. **Reporting:** The permittee shall report in accordance with Section B110.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: The applicable monitoring reports contains records of the amine circulation rate monitoring.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A209 Fugitives **A. 40 CFR 60, Subpart KKK for Units 35a & Propane Refrig. Loop** **Requirement:** Equipment and compressors in VOC or in wet gas service (as defined in 40 CFR §60.631) within process unit(s) 35a & Propane Refrig. Loop are subject to Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants, 40 CFR 60, Subpart KKK. The permittee shall comply with all applicable requirements in Subparts A and KKK. **Monitoring:** The permittee shall implement a leak detection and repair program and shall comply with the standards as specified at 40 CFR §60.632 except as provided in §60.633. **Recordkeeping:** The permittee shall comply with the recordkeeping requirements specified at 40 CFR §60.486 except as provided in §§60.633 and 60.635. **Reporting:** The permittee shall comply with the reporting requirements specified at 40 CFR §60.487 except as provided in §§60.633 and 60.636.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: The notifications and semiannual LDAR reports were submitted in accordance with KKK. The semiannual LDAR reports were monitored in accordance with 40 CFR 60.633, records kept in accordance with 60.635 and reported in accordance with 60.636.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A209 Fugitives				

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
B. Leak Detection and Repair Program for equipment in VOC service not subject to a Federal NSPS or MACT leak detection regulation (Unit F-1) (NSR 0301M9, Condition A209.B and revised) **Requirement:** The permittee shall demonstrate compliance with the allowable VOC emission limit in Section A106 by meeting the following requirements: (1) The permittee shall conduct an annual chemical analysis for VOC content of all equipment in the unit, and (2) shall conduct an annual count of all equipment in the unit; (3) If the results of the chemical analysis or the equipment count have changed from the information submitted in the permit application, the permittee shall re-calculate the ton per year VOC emissions using the appropriate emissions factors to ensure the allowable emission limits are met. (4) The permittee shall conduct yearly inspections of equipment in VOC service by using EPA Reference Method 21 (40 CFR 60, Appendix B) to determine the presence of leaking sources. Alternatively, the permittee may determine the presence of leaking sources by using optical gas imaging with infrared cameras. (a) For leaks determined using EPA Reference Method 21 (RM 21): i. The instrument shall be calibrated before each day of its use by the procedures specified in RM 21. ii. The instrument shall be calibrated with zero air (less than 10 ppm of hydrocarbon in air); and a mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane iii. If an instrument reading of 10,000 ppm or greater methane or n-hexane is measured, a leak is detected (b) For leaks determined using optical gas imaging with infrared cameras: i. The instrument shall comply with the specifications, the daily instrument checks and the leak survey requirements at 40 CFR §60.18(i)(1) – (3). ii. If any emissions are imaged by the optical gas instrument, a leak is detected. (5) Any leaks detected shall be repaired within 30 days of discovery. For the purpose of this condition *equipment* means each pump, pressure relief device, open-ended valve or line, valve, and flange or other connector. For the purpose of this condition *in VOC service* means equipment in contact with a gas or a liquid that has a VOC content greater than 10% by weight. **Monitoring:** Once per calendar year the permittee shall complete the following monitoring: (1) A chemical analysis for VOC content of all equipment in the unit. (2) A count of all equipment in the unit. (3) an inspection of equipment in VOC service to detect leaks.	☒ **Yes** ☐ **No** ☐ **N/A**

1. Provide *Method(s) or other information or other facts used to determine the compliance status* in the "Methods:" row beneath each permit condition. 2. If you answered *No* to question 3, list *all* deviations in the *Deviations* section. For *all* Deviations that *produced* excess emissions, provide *only* **a)** the AQBCR EER Tracking Number. For *all* Deviations that *did not produce* excess emissions, provide **a)** The Unit ID, **b)** The Cause of and a Description of the Deviation, and **c)** the Start & End Dates of the deviation. Please indicate in **b)**, your *Description*, whether each deviation has been previously reported to NMED.	3. Was this facility *continuously* in compliance with *all* requirements of this condition during the reporting period?
(a) If a leak is detected, the permittee shall place a visible tag on the leaking component until the component has been repaired. (b) If any leaks are detected, the equipment shall be re-monitored no later than 30 days after discovery of the leak to demonstrate that it has been repaired. (c) If the leak cannot be repaired within 30 days without a process unit shutdown, it may be designated "Repair delayed," and shall be repaired before the end of the next process unit shutdown. (4) An inspection of equipment in VOC service shall also be conducted within 15 days of any maintenance or repair that affects the equipment. **Recordkeeping:** The permittee shall maintain the following records: (1) equipment identification or description and location; (2) weight percent VOC for each piece of equipment. (3) emission factor for each piece of equipment. (4) total VOC emissions for each unit, tons per year (5) For any leaks detected the permittee shall record the: (a) date a leak is detected; (b) dates of attempts to repair; (c) designation of "Repair delayed"; i. reason for delay if the leak is not repaired within 30 days of leak discovery, and ii. signature of authorized representative whose decision it was that repair could not be affected without a process shutdown; and (d) The date of successful leak repair shall also be recorded. (6) For leaks determined using optical gas imaging with infrared cameras, the permittee shall keep the records of the specifications, the daily instrument checks and the leak survey requirements specified at 40 CFR §60.18(i)(1) – (3). **Reporting:** The permittee shall report the following in accordance with Section B110: (1) The number of leaking components discovered, (2) The number of leaking components not repaired within 30 days, (3) The duration of the leaks that exceeded 30 days, (4) Dates of process unit shutdowns; and	

<table>
<tr><td colspan="4">1. Provide Method(s) or other information or other facts used to determine the compliance status in the “Methods:” row beneath each permit condition.
2. If you answered No to question 3, list all deviations in the Deviations section.
For all Deviations that produced excess emissions, provide only a) the AQBCR EER Tracking Number.
For all Deviations that did not produce excess emissions, provide a) The Unit ID, b) The Cause of and a Description of the Deviation, and c) the Start & End Dates of the deviation.
Please indicate in b), your Description, whether each deviation has been previously reported to NMED.</td><td>3. Was this facility continuously in compliance with all requirements of this condition during the reporting period?</td></tr>
<tr><td colspan="4">(5) VOC emissions for each unit, tons per year.</td><td rowspan="4"></td></tr>
<tr><td colspan="4">Methods: Records of the annual chemical analysis and the component inspections are maintained as required and are included in the applicable monitoring reports.</td></tr>
<tr><td>Deviations: Unit ID</td><td>Cause & Description of Deviation or Tracking number</td><td>Start Date</td><td>End Date</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

PART B General Conditions

1. **Have these General Conditions been met during this reporting period?** ***Check only one box per subject heading.*** ***Explain answers in remarks row under subject heading.***	2. Was this facility *continuously* in compliance with this requirement during the reporting period?
B101 Legal	☐ **Yes** ☒ **No** ☐ **N/A** – *Explain Below*
REMARKS: Except as noted above (A107.A and A205.B), facility was in compliance with applicable requirements during the applicable period.	
B102 Authority	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Only the permitted owner operated the facility during the applicable period.	
B103 Annual Fee	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: 2019 operating permit emission fees were paid on May 27, 2020.	
B104 Appeal Procedures	☐ **Yes** ☐ **No** ☒ **N/A** – *Explain Below*
REMARKS: Department action	
B105 Submittal of Reports and Certifications	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: NSPS & NESHAP reports, semiannual reports and ACCs are submitted to the appropriate regulatory personnel.	
B106 NSPS and/or MACT Startup, Shutdown, and Malfunction Operations	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: NSPS KKK & NESHAP HH reports were submitted in accordance with the respective regulations.	
B107 Startup, Shutdown, and Maintenance Operations	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: The facility is operated in accordance with the facility's SSM Plan	
B108 General Monitoring Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Periodic test reports are included in the applicable semiannual reports.	
B109 General Recordkeeping Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Records are maintained in accordance with recordkeeping requirements.	
B110 General Reporting Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Reports are submitted in accordance with reporting requirements.	
B111 General Testing Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Testing that occurred during the applicable period was completed in accordance with the appropriate procedures.	
B112 Compliance	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Records and permits are maintained as required. Representatives have not been denied access to the facility and applicable files during the applicable period.	

PART B General Conditions

B113 Permit Reopening and Revocation	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: No communication has been received from the regulating agency to indicate that the permit has been reopened, revoked or revised.	
B114 Emergencies	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Emergencies occurring during this period were reported in accordance with 20.2.7 NMAC.	
B115 Stratospheric Ozone	☐ **Yes** ☐ **No** ☒ **N/A** – *Explain Below*
REMARKS: The facililty is not subject to 40CFR 82 subpart F.	
B116 Acid Rain Sources	☐ **Yes** ☐ **No** ☒ **N/A** – *Explain Below*
REMARKS: The facililty is not subject to 40CFR 72.	
B117 Risk Management Plan	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Certification of compliance with the facility's RMP is included with the annual compliance certification.	

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Section 21

Addendum for Landfill Applications

Landfill Applications are not required to complete Sections 1-C Input Capacity and Production Rate, 1-E Operating Schedule, 17 Compliance Test History, and 18 Streamline Applications. Section 12 – PSD Applicability is required only for Landfills with Gas Collection and Control Systems and/or landfills with other non-fugitive stationary sources of air emissions such as engines, turbines, boilers, heaters. All other Sections of the Universal Application Form are required.

EPA Background Information for MSW Landfill Air Quality Regulations:
https://www3.epa.gov/airtoxics/landfill/landflpg.html

NM Solid Waste Bureau Website: https://www.env.nm.gov/swb/

Not applicable, as this facility is not a landfill.

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Section 22

Certification

Company Name: Harvest Four Corners, LLC

I, Travis Jones, 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 22 day of April, 2021, upon my oath or affirmation, before a notary of the State of New Mexico.

*Signature: [signature] Date: 4/22/2021

Printed Name: Travis Jones Title: EHS Manager

Scribed and sworn before me on this 22 day of April, 2021.

My authorization as a notary of the State of New Mexico expires on the 31st day of August, 2021.

Notary's Signature: Jodi L. Bohannon Date: 4/22/21

Notary's Printed Name: Jodi L. Bohannon

Official Seal
JODI L BOHANNON
Notary Public
State of New Mexico
My Comm. Expires 8/31/21

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