November 10, 2020

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

Re: Application to Renew Title V Operating Permit P019-R3
Harvest Four Corners, LLC - Dogie Canyon Compressor Station

Dear Ms. Bisbey-Kuehn,

On behalf of Harvest Four Corners, LLC (HFC), Cirrus Consulting, LLC submits the enclosed Title V operating permit renewal application for the Dogie Canyon Compressor Station.

Thank you for your help with this application. 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

Dogie Canyon Compressor Station Title V Operating Permit Renewal Application (2 Copies)

c: Monica Smith, HFC

Cirrus Consulting, LLC
11139 Crisp Air Drive
Colorado Springs, Colorado 80908

Phone: (801) 294-3024
jnewby@cirrusllc.com

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APPLICATION (20.2.70 NMAC) TO RENEW TITLE V OPERATING PERMIT P019-R3

DOGIE CANYON COMPRESSOR STATION

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

November 2020

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Introduction

The Harvest Four Corners, LLC (HFC) Dogie Canyon Compressor Station currently operates under a construction permit, 0762-M6, dated September 4, 2015 and a Title V operating permit, P019-R3, dated November 17, 2016.

Under P019-R3, the station is permitted to operate the following equipment/sources:

- Two Solar Centaur T-4002 natural gas-fired turbines (Units 1 & 2);
- One Solar Saturn T-1200 natural gas-fired turbine (Unit 3);
- One Solar Centaur CS-3000 natural gas-fired turbine (Unit 4);
- One Enertek 80 million standard cubic feet per day (MMSCFD) triethylene glycol (TEG) dehydrator (Unit 6a);
- One Enertek 1.0 million British thermal units per hour (MMBtu/hr) dehydrator reboiler (Unit 6b);
- One Caterpillar C15 emergency generator (Unit 7);
- One 4 MMBtu/hr Zeeco flare (Unit 8);
- One Solar Centaur 40-4702S natural gas-fired turbine (Unit 13);
- Startup, shutdown and maintenance (SSM) emissions from the turbines, compressors and piping associated with the station (Unit SSM);
- Equipment leak (Unit F1) emissions;
- Malfunction (Unit M1) emissions;
- Truck loading (Unit TL) emissions;
- Two 500 barrel (bbl) condensate storage tanks (Units T3 & T4);
- One 120 bbl produced water storage tank (Unit T6); and
- One 70 bbl produced water storage tank (Unit T13).

The station is also equipped with six exempt heaters and miscellaneous exempt liquid storage tanks and gas transmission equipment.

This application is being submitted to renew the Title V operating permit. It includes a turbine replacement submitted as an administrative revision to the construction permit.

- Replace a Solar Centaur T-4002 natural gas-fired compressor turbine (Unit 1) with an identical unit (see Administrative Permit Revision dated May 18, 2018);

This application also includes modifications requested in a recent construction permit application, submitted in October 2020.

- Increase the permitted flare (Unit 8) nitrogen oxides (NO_X) emission rates from 0.2 to 0.7 pounds per hour (pph) and from 0.7 to 3.1 tons per year (tpy);

- Increase permitted equipment leaks (Unit F1) volatile organic compounds (VOC) emissions from 2.1 to 2.4 pph and from 9.0 to 10.5 tpy;

- Reduce permitted condensate storage- tank (Units T3 & T4) VOC emissions from 380.4 to 138.6 tpy;

- Increase permitted produced water storage tank (Units T6 & T13) VOC emissions from 3.2 to 7.7 tpy;

- Change the Unit TL source description from "Truck Loading" to "Condensate Truck Loading". Also change the unit number from "TL" to "L1";

- Reduce permitted condensate truck loading (Unit L1) VOC emissions from 6.4 to 3.6 tpy;

- Add produced water truck loading (Unit L2) to the permit. It is an exempt source in accordance with 20.2.72.202.B(5) of the New Mexico Administrative Code (NMAC) and a Title V insignificant source in accordance with Insignificant Activity List Items #1.a and #1.b; and

- Add two pig receivers (Units PR1 & PR2) to the permit. They are exempt sources in accordance with 20.2.72.202.B(5) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Items #1.a and #1.b.

Finally, so permitted SSM emissions in the new Title V permit are consistent with those in the NSR permit, the following correction is requested:

- Reduce permitted SSM VOC emissions from 38.2 to 37.7 tpy.

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

Universal Air Quality Permit Application

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

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

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

Acknowledgements:

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

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

☐ Check No.: **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.): **990**	Updating Permit/NOI #: **P019-R3**
1	Facility Name: **Dogie Canyon Compressor Station**	Plant primary SIC Code (4 digits): **1389**	
		Plant NAIC code (6 digits): **213112**	
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	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **P019-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: **0762-M6**
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: **3.3 MMCF[(a)]**	Daily: **80 MMCF[(a)]**	Annually: **29,200 MMCF[(a)]**
b	Proposed	Hourly: **3.3 MMCF[(a)]**	Daily: **80 MMCF[(a)]**	Annually: **29,200 MMCF[(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: **3.3 MMCF[(a)]**	Daily: **80 MMCF[(a)]**	Annually: **29,200 MMCF[(a)]**
b	Proposed	Hourly: **3.3 MMCF[(a)]**	Daily: **80 MMCF[(a)]**	Annually: **29,200 MMCF[(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: **4**	Range: **6W**	Township: **25N**	County: **Rio Arriba**	Elevation (ft): **6,235**
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **277,655**			UTM N (in meters, to nearest 10 meters): **4,034,965**	
b	**AND** Latitude (deg., min., sec.): **36° 26' 03"**			Longitude (deg., min., sec.): **-107° 28' 50"**	
3	Name and zip code of nearest New Mexico town: **Counselor, New Mexico 87018**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From Bloomfield, NM drive approximately 54 miles south on US 550 to Counselors Trading Post, turn left and drive 8.1 miles to the fork, turn left and drive 9.4 miles to the site.**				
5	The facility is **approximately 15** miles **north** of **Counselor, 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: **No municipalities, Jicarilla Apache Reservation (4 miles), Rio Arriba County New Mexico, San Juan County New Mexico (8 miles)**				
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: **San Pedro Parks Wilderness Area**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **61.23**				
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: **≈1,650**				
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 ($\frac{\text{hours}}{\text{day}}$): **24**	($\frac{\text{days}}{\text{week}}$): **7**	($\frac{\text{weeks}}{\text{year}}$): **52**	($\frac{\text{hours}}{\text{year}}$): **8,760**		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? 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** (☑ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☐ **Minor** (☐ <10 tpy of any single HAP **AND** ☐ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☑ Yes ☐ No		
a	If yes, include the name of company providing commercial electric power to the facility: **Jemez Electric Coop** 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: **Colorado (≈61.2 km), Jicarilla Apache Tribe (≈6.4 km), Navajo Tribe (≈72.5 km), Southern Ute Tribe (≈64.4 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 #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Turbine (Field Unit 3)	Solar	Centaur T-4002	OHB18-C7610 (Skid Package # 3020477)	3,830 hp	3,031 hp	07/01/1995 07/01/1995	N/A 1	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
2	Turbine (Field Unit 2)	Solar	Centaur T-4002	OHE15-C5499 (Skid Package # 3020021)	3,830 hp	3,031 hp	01/01/1977 01/01/1977	N/A 2	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
3	Turbine (Field Unit 2a)	Solar	Saturn T-1200	30050 (Skid Package # S426609)	1,200 hp	950 hp	Before 1973 Before 1973	N/A 3	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
4	Turbine (Field Unit 1)	Solar	Centaur CS-3000	OHE15-C6594 (Skid Package # S3020125)	3,550 hp	2,810 hp	01/01/1974 01/01/1974	N/A 4	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
6a	Dehydrator	Enertek		43641	80 MMscfd	80 MMscfd	Before 1972 Before 1972	8 8	31000227	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
6b	Dehydrator Reboiler	Enertek		43641	1.0 MMBtu/hr	1.0 MMBtu/hr	Before 1972 Before 1972	N/A 6b	31000228	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
7	Diesel Generator	Caterpillar	C15		864 hp	741 hp	2014 2014	N/A 7	20200102	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
8	Flare	Zeeco	T2B15F	13143	4.0 MMBtu/hr	4.0 MMBtu/hr	06/2002 06/2002	N/A 8	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
13	Turbine	Solar	Centaur 40-4702S	TBD	4,680 hp	3,867 hp	TBD TBD	N/A 13	20200201	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSM	Starups, Shutdowns & Maintenance	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
F1	Equipment Leaks	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
M1	Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
L1	Condensate Truck Loading	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T3	Condensate Storage Tank				21,000 gal	21,000 gal	1957 1957	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T4	Condensate Storage Tank				21,000 gal	21,000 gal	1964 1964	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T6	Produced Water Storage Tank				5,040 gal	5,040 gal		N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T13	Produced Water Storage Tank				2,940 gal	2,940 gal		N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A

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

[2] Specify dates required to determine regulatory applicability.

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

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

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
5	Fuel Gas Heater			0.5 MMBtu/hr	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
9	Office Heater			0.08 MMBtu/hr	20.2.72.202.B.1 IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
10	Office Water Heater			0.034 MMBtu/hr	20.2.72.202.B.1 IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
12	Shop Heater			0.08 MMBtu/hr	20.2.72.202.B.1 IA List Item #3		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
14	Inlet Liquids Boot Heater			0.25 MMBtu/hr	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
15	Inlet Liquids Boot Heater			0.25 MMBtu/hr	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
L2	Produced Water Truck Loading				20.2.72.202.B.5 IA List Item #1.a & #1.b		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
PR1	Pig Receiver				20.2.72.202.B.5 IA List Item #1.a & #1.b		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
PR2	Pig Receiver				20.2.72.202.B.5 IA List Item #1.a & #1.b		☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T1	Diesel Storage Tank			1,034 gal	20.2.72.202.B.2 IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T5	Lubrication Oil Storage Tank			1,028 gal	20.2.72.202.B.2 IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T10	Glycol Storage Tank			1,029 gal	20.2.72.202.B.2 IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T11	Glycol Slop Storage Tank			4,200 gal	20.2.72.202.B.2 IA List Item #5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T12	Used Oil Storage Tank			4,200 gal	20.2.72.202.B.2 IA List Item #5		☑ 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
T14	Methanol Storage Tank			500 gal	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T15	Methanol Storage Tank			500 gal	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T16	Methanol Storage Tank			300 gal	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T17	Methanol Storage Tank			4,200 gal	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T18	Corrosion Inhibitor Storage Tank			150 gal	20.2.72.202.B.5 IA List Item #1.a & #1.b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Table 2-C: Emissions Control Equipment

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

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
8	Flare (controlling dehydrator still vent and flash tank emissions)	02/2006	VOC & HAP	6a	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	18.00	78.84	14.71	64.44	5.36E-01	2.35	9.72E-02	4.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	-	-	2.28E-05	1.00E-04
2	18.00	78.84	14.71	64.44	5.36E-01	2.35	9.72E-02	4.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	-	-	2.28E-05	1.00E-04
3	2.20	9.64	2.00	8.76	2.51E-01	1.10	3.58E-02	1.57E-01	6.96E-02	3.05E-01	6.96E-02	3.05E-01	6.96E-02	3.05E-01	-	-	-	-
4	12.90	56.50	14.71	64.44	5.36E-01	2.35	9.01E-02	3.95E-01	1.75E-01	7.66E-01	1.75E-01	7.66E-01	1.75E-01	7.66E-01	-	-	2.28E-05	1.00E-04
6a	-	-	-	-	87.92	385.07	-	-	-	-	-	-	-	-	-	-	-	-
6b	1.11E-01	4.87E-01	9.33E-02	4.09E-01	6.11E-03	2.68E-02	6.67E-04	2.92E-03	8.44E-03	3.70E-02	8.44E-03	3.70E-02	8.44E-03	3.70E-02	-	-	5.56E-07	2.43E-06
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	4.46	19.55	5.44	23.81	1.59E-01	6.95E-01	1.32E-01	5.78E-01	2.56E-01	1.12	2.56E-01	1.12	2.56E-01	1.12	-	-	2.28E-05	1.00E-04
SSM	-	-	-	-	unspecified	37.70	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.40	10.50	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	45.59	3.60	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	unspecified	138.56	-	-	-	-	-	-	-	-	-	-	-	-
T4	-	-	-	-	unspecified	w/T3	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	unspecified	7.65	-	-	-	-	-	-	-	-	-	-	-	-
T13	-	-	-	-	unspecified	w/T6	-	-	-	-	-	-	-	-	-	-	-	-
Unit 8 emissions are not included because the flare is a control device. Instructions above state maximum emissions are prior to (in the absence of) pollution control.																		
Totals	55.68	243.86	51.67	226.30	137.93	601.94	4.53E-01	1.98	8.86E-01	3.88	8.86E-01	3.88	8.86E-01	3.88	-	-	9.19E-05	4.02E-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	18.00	78.84	14.71	64.44	5.36E-01	2.35	9.72E-02	4.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	-	-	2.28E-05	1.00E-04
2	18.00	78.84	14.71	64.44	5.36E-01	2.35	9.72E-02	4.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	1.89E-01	8.26E-01	-	-	2.28E-05	1.00E-04
3	2.20	9.64	2.00	8.76	2.51E-01	1.10	3.58E-02	1.57E-01	6.96E-02	3.05E-01	6.96E-02	3.05E-01	6.96E-02	3.05E-01	-	-	-	-
4	12.90	56.50	14.71	64.44	5.36E-01	2.35	9.01E-02	3.95E-01	1.75E-01	7.66E-01	1.75E-01	7.66E-01	1.75E-01	7.66E-01	-	-	2.28E-05	1.00E-04
6a	-	-	-	-	2.70	11.80	-	-	-	-	-	-	-	-	-	-	-	-
6b	1.11E-01	4.87E-01	9.33E-02	4.09E-01	6.11E-03	2.68E-02	6.67E-04	2.92E-03	8.44E-03	3.70E-02	8.44E-03	3.70E-02	8.44E-03	3.70E-02	-	-	5.56E-07	2.43E-06
8	7.00E-01	3.10	1.40	6.10	1.50E-03	6.70E-03	2.20E-03	9.50E-03	-	-	-	-	-	-	-	-	3.25E-07	1.42E-06
13	4.46	19.55	5.44	23.81	1.59E-01	6.95E-01	1.32E-01	5.78E-01	2.56E-01	1.12	2.56E-01	1.12	2.56E-01	1.12	-	-	2.28E-05	1.00E-04
SSM	-	-	-	-	unspecified	37.70	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.40	10.50	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	45.59	3.60	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	unspecified	138.56	-	-	-	-	-	-	-	-	-	-	-	-
T4	-	-	-	-	unspecified	w/T3	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	unspecified	7.65	-	-	-	-	-	-	-	-	-	-	-	-
T13	-	-	-	-	unspecified	w/T6	-	-	-	-	-	-	-	-	-	-	-	-
Totals	56.38	246.96	53.07	232.40	52.71	228.68	4.55E-01	1.99	8.86E-01	3.88	8.86E-01	3.88	8.86E-01	3.88	-	-	9.22E-05	4.04E-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	unspecified	37.70	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals	-	-	-	-	unspecified	47.70	-	-	-	-	-	-	-	-	-	-	-	-

[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
8	6a & 8	7.00E-01	3.10	1.40	6.10	2.70	11.81	2.20E-03	9.50E-03	-	-	-	-	-	-	3.25E-07	1.42E-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	24.5	818	1264			291	2.35
2	2	V	No	22.2	818	1264			291	2.35
3	3	V	No	22.2	801	567			321	1.50
4	4	V	No	24.0	776	1222			249	2.50
6b	6b	V	No	20.0	600	3			6	0.83
8	8	V	No	32.0	1832	1581			66	0.79
13	13	V	No	35.95	786	1189			113	3.67

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		Formaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	1	0.3	1.2	0.1	0.5	0.1	0.5	-	-	-	-								
2	2	0.3	1.2	0.1	0.5	0.1	0.5	-	-	-	-								
3	3	0.1	0.4	-	0.2	0.0	0.2	-	-	-	-								
4	4	0.3	1.1	0.1	0.5	0.1	0.5	-	-	-	-								
6a	6a	-	0.1	-	-	-	-	-	-	-	-								
6b	6b	-	-	-	-	-	-	-	-	-	-								
7	7	-	-	-	-	-	-	-	-	-	-								
8	8	-	-	-	-	-	-	-	-	-	-								
13	13	0.4	1.6	0.1	0.6	0.1	0.6	-	0.1	-	-								
SSM	SSM	unspecified	0.7	-	-	-	-	unspecified	0.5	unspecified	0.1								
F1	F1	-	0.2	-	-	-	-	-	0.1	-	-								
M1	M1	unspecified	0.2	-	-	-	-	unspecified	0.1	-	-								
L1	L1	-	0.4	-	-	-	-	4.0	0.3	0.2	-								
T3	T3	unspecified	12.2	-	-	-	-	unspecified	10.6	unspecified	0.7								
T4	T4	unspecified	w/T3	-	-	-	-	unspecified	w/T3	unspecified	w/T3								
T6	T6	unspecified	1.3	-	-	-	-	unspecified	0.6	unspecified	0.3								
T13	T13	unspecified	w/T6	-	-	-	-	unspecified	w/T6	unspecified	w/T6								
Note that Unit 7 is an exempt source. It is included because the instructions above state to "report the Potential to Emit for each HAP from each regulated emissions unit listed in Table 2-A".																			
Totals:		1.3	20.4	0.5	2.3	0.5	2.2	4.1	12.6	0.2	1.1								

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	Raw/Field Natural Gas	900 Btu/scf	31.76 Mscf	278.20 MMscf	N/A	N/A
2	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	31.76 Mscf	278.20 MMscf	N/A	N/A
3	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	11.71 Mscf	102.59 MMscf	N/A	N/A
4	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	29.44 Mscf	257.86 MMscf	N/A	N/A
6b	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	1.11 Mscf	9.73 MMscf	N/A	N/A
8	Natural Gas	Raw/Field Natural Gas	1,763 Btu/scf	649 scf	5.69 MMscf	N/A	N/A
13	Natural Gas	Raw/Field Natural Gas	900 Btu/scf	43.14 Mscf	377.89 MMscf	N/A	N/A

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)
T1	31000299	Diesel	Diesel	NSR exempt and Title V insignificant source					
T3	31000299	Condensate	Condensate	5.97	64.68	67.36	4.66	80.79	5.78
T4	31000299	Condensate	Condensate	5.97	64.68	67.36	4.66	80.79	5.78
T5	31000299	Lubrication Oil	Lubrication Oil	NSR exempt and Title V insignificant source					
T6	31000299	Produced Water	H2O & Mixed Hydrocarbons	Not available					
T10	31000299	Glycol	Glycol	NSR exempt and Title V insignificant source					
T11	31000299	Glycol Slop	Glycol Slop	NSR exempt and Title V insignificant source					
T12	31000299	Used Oil	Used Oil	NSR exempt and Title V insignificant source					
T13	31000299	Produced Water	H2O & Mixed Hydrocarbons	Not available					
T14	31000299	Methanol	Methanol	NSR exempt and Title V insignificant source					
T15	31000299	Methanol	Methanol	NSR exempt and Title V insignificant source					
T16	31000299	Methanol	Methanol	NSR exempt and Title V insignificant source					
T17	31000299	Methanol	Methanol	NSR exempt and Title V insignificant source					
T18	31000299	Corrosion Inhibitor	10-30% Methanol & Misc Other	NSR exempt and Title V insignificant source					

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			
T1		Diesel		FX	24		NSR exempt and Title V insignificant source						
T3		Condensate		FX	500		4.6	2.9	LG	LG	G	841,617	42.44
T4		Condensate		FX	500		4.6	2.9	LG	LG	G	841,617	42.44
T5		Lubrication Oil		FX	24		NSR exempt and Title V insignificant source						
T6		Produced Water		Open Top	120		Not available					1,549,128	307.37
T10		Glycol		FX	24		NSR exempt and Title V insignificant source						
T11		Glycol Slop		FX	100		NSR exempt and Title V insignificant source						
T12		Used Oil		FX	100		NSR exempt and Title V insignificant source						
T13		Produced Water		Open Top	70		Not available					903,672	307.37
T14		Methanol		FX	12		NSR exempt and Title V insignificant source						
T15		Methanol		FX	12		NSR exempt and Title V insignificant source						
T16		Methanol		FX	7		NSR exempt and Title V insignificant source						
T17		Methanol		FX	100		NSR exempt and Title V insignificant source						
T18		Corrosion Inhibitor		FX	4		NSR exempt and Title V insignificant source						

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Natural gas	C1-C6+	Gas	80 MMCF/day	Natural gas	C1-C6+	Gas	80 MMCF/day
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							
will 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
8	Temperature	Flare Tip	°F	200 - 2,150	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**	16,237.58	3.06E-02	3.06E-01											16,237.91	-
	CO_2e	16,237.58	9.12	7.65											-	16,254.35
2	**mass GHG**	16,237.58	3.06E-02	3.06E-01											16,237.91	-
	CO_2e	16,237.58	9.12	7.65											-	16,254.35
3	**mass GHG**	5,988.01	1.13E-02	1.13E-01											5,988.14	-
	CO_2e	5,988.01	3.36	2.82											-	5,994.20
4	**mass GHG**	15,050.50	2.84E-02	2.84E-01											15,050.81	-
	CO_2e	15,050.50	8.45	7.09											-	15,066.04
5	**mass GHG**	284.05	5.35E-04	5.35E-03											284.05	-
	CO_2e	284.05	1.60E-01	1.34E-01											-	284.34
6a	**mass GHG**	N/A	N/A	7.74E-01											0.77	-
	CO_2e	N/A	N/A	19.35											-	19.35
6b	**mass GHG**	568.10	1.07E-03	1.07E-02											568.11	-
	CO_2e	568.10	3.19E-01	2.68E-01											-	568.68
7	**mass GHG**	228.28	1.85E-03	9.26E-03											228.30	-
	CO_2e	228.28	5.52E-01	2.31E-01											-	229.07
8	**mass GHG**	645.97	1.10E-03	N/A											645.97	-
	CO_2e	645.97	3.29E-01	N/A											-	646.30
9	**mass GHG**	45.45	8.57E-05	8.57E-04											45.45	-
	CO_2e	45.45	2.55E-02	2.14E-02											-	45.49
10	**mass GHG**	19.32	3.64E-05	3.64E-04											19.32	-
	CO_2e	19.32	1.08E-02	9.10E-03											-	19.34
12	**mass GHG**	45.45	8.57E-05	8.57E-04											45.45	-
	CO_2e	45.45	2.55E-02	2.14E-02											-	45.49
13	**mass GHG**	22,056.14	4.16E-02	4.16E-01											22,056.59	-
	CO_2e	22,056.14	12.39	10.39											-	22,078.91
14	**mass GHG**	142.02	2.68E-04	2.68E-03											142.03	-
	CO_2e	142.02	7.98E-02	6.69E-02											-	142.17

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**										
15	**mass GHG**	142.02	2.68E-04	2.68E-03											142.03	-
	CO_2e	142.02	7.98E-02	6.69E-02											-	142.17
SSM	**mass GHG**	1.10	N/A	65.27											66.37	-
	CO_2e	1.10	N/A	1,631.73											-	1,632.83
F1	**mass GHG**	11.11	N/A	660.58	F1 includes equipment leaks, centrifugal compressor, pneumatic										671.70	-
	CO_2e	11.11	N/A	16,514.55	device venting, and pneumatic pump venting emissions.										-	16,525.67
M1	**mass GHG**	0.30	N/A	17.53											17.82	-
	CO_2e	0.30	N/A	438.19											-	438.48
L1	**mass GHG**	N/A	N/A	N/A											0.00	-
	CO_2e	N/A	N/A	N/A											-	0.00
L2	**mass GHG**	N/A	N/A	N/A											0.00	-
	CO_2e	N/A	N/A	N/A											-	0.00
PR1	**mass GHG**	1.50E-03	N/A	8.91E-02											0.09	-
	CO_2e	1.50E-03	N/A	2.23											-	2.23
PR2	**mass GHG**	9.60E-04	N/A	5.70E-02											0.06	-
	CO_2e	9.60E-04	N/A	1.42											-	1.43
T3	**mass GHG**	0.34	N/A	7.46											7.80	-
	CO_2e	0.34	N/A	186.39											-	186.74
T4	**mass GHG**	0.34	N/A	7.46											7.80	-
	CO_2e	0.34	N/A	186.39											-	186.74
T6	**mass GHG**	N/A	N/A	N/A											0.00	-
	CO_2e	N/A	N/A	N/A											-	0.00
T13	**mass GHG**	N/A	N/A	N/A											0.00	-
	CO_2e	N/A	N/A	N/A											-	0.00
Totals	**mass GHG**	77,703.66	1.48E-01	760.67											78,464.48	-
	CO_2e	77,703.66	44.02	19,016.68											-	96,764.37

[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.

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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.

Summary

The HFC Dogie Canyon Compressor Station currently operates under a construction permit, 0762-M6, dated September 4, 2015 and a Title V operating permit, P019-R3, dated November 17, 2016.

Under P019-R3, the station is permitted to operate the following equipment/sources:

- Two Solar Centaur T-4002 natural gas-fired turbines (Units 1 & 2);
- One Solar Saturn T-1200 natural gas-fired turbine (Unit 3);
- One Solar Centaur CS-3000 natural gas-fired turbine (Unit 4);
- One Enertek 80 MMSCFD TEG dehydrator (Unit 6a);
- One Enertek 1.0 MMBtu/hr dehydrator reboiler (Unit 6b);
- One Caterpillar C15 emergency generator (Unit 7);
- One 4 MMBtu/hr Zeeco flare (Unit 8);
- One Solar Centaur 40-4702S natural gas-fired turbine (Unit 13);
- SSM emissions from the turbines, compressors and piping associated with the station (Unit SSM);
- Equipment leak (Unit F1) emissions;
- Malfunction (Unit M1) emissions;
- Truck loading (Unit TL) emissions;
- Two 500 bbl condensate storage tanks (Units T3 & T4);

- One 120 bbl produced water storage tank (Unit T6); and

- One 70 bbl produced water storage tank (Unit T13).

The station is also equipped with six exempt heaters and miscellaneous exempt liquid storage tanks and gas transmission equipment.

This application is being submitted to renew the Title V operating permit. It includes a turbine replacement submitted as an administrative revision to the construction permit.

- Replace a Solar Centaur T-4002 natural gas-fired compressor turbine (Unit 1) with an identical unit (see Administrative Permit Revision dated May 18, 2018);

This application also includes the modifications requested in a recent construction permit application, submitted in October 2020.

- Increase the permitted flare (Unit 8) nitrogen oxides (NO_X) emission rates from 0.2 to 0.7 pph and from 0.7 to 3.1 tpy. The 2015 NSR application requested an increase in both the NO_X and CO emission rates, but there was a typographical error in the new permit. While it updated the CO emission rates, the NO_X emission rates were erroneously identified as 0.2 pph and 0.7 tpy. Note that modeling was submitted with the 2015 application and the flare was modeled at 0.7 pph and 3.1 tpy NO_X.

- Increase permitted equipment leak (Unit F1) VOC emissions from 2.1 to 2.4 pph and from 9.0 to 10.5 tpy. This increase is due to an increase in the richness of the gas;

- Reduce permitted condensate storage tank (Units T3 & T4) VOC emissions from 380.4 to 138.6 tons per year (tpy). The new emission rates were calculated using a recent liquids analysis and ProMax 5.0. Note that the condensate tank throughputs are unchanged;

- Increase permitted produced water storage tank (Units T6 & T13) VOC emissions from 3.2 to 7.7 tpy. The model predicts a significant increase in produced water throughput. The new emission rate includes both evaporation and flash losses;

- Change the Unit TL source description from “Truck Loading” to “Condensate Truck Loading”. Also change the unit number from “TL” to “L1”;

- Reduce permitted condensate truck loading (Unit L1) VOC emissions from 6.4 to 3.6 tpy. This reduction is due to a change in the flashed condensate composition;

- Add produced water truck loading (Unit L2) to the permit. It is an exempt source in accordance with 20.2.72.202.B(5) NMAC and a Title V insignificant source in accordance with Insignificant Activity List Items #1.a and #1.b; and

- Add two pig receivers (Units PR1 & PR2) to the permit. They are exempt sources in accordance with 20.2.72.202.B(5) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Items #1.a and #1.b.

Finally, so permitted SSM emissions in the new Title V permit are consistent with those in the NSR permit, the following correction is requested:

- Reduce permitted SSM VOC emissions from 38.2 to 37.7 tpy.

Note that though the emergency generator (Unit 7) is an exempt source under 20.2.72.202.B(3) NMAC (it operates less than 500 hours per year and only during the loss of commercial utility power), it is a significant source for the purpose of the Title V permit (there are applicable NMAC and Subpart ZZZZ requirements). Therefore, in this

Title V application, Unit 7 is included in Table 2-A, rather than Table 2-B. Consistent with previous Title V applications, since there are no emission limits for the emergency generator in the NSR permit, Unit 7 emissions are not included in Tables 2-D or 2-E of this application. NO_X emissions are provided in Section 6 only to demonstrate that the generator qualifies as an insignificant source on the basis of emissions (see Insignificant Activity List Item #6). Unit 7 hazardous air pollutant (HAP) emissions are included in Table 2-I, since the table specifically states to include all sources listed in Table 2-A.

Consistent with previous applications and permits, HFC requests a combined facility total emissions limit (cap) of 138.6 tpy for the two condensate storage tanks. HFC also requests a combined facility total emissions limit (cap) of 8.1 tpy for the two produced water storage tanks.

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.

The requested modifications will change the facilities major/minor source status with respect to prevention of significant deterioration (PSD). Since VOC emissions will drop below 250 tpy, the facility will no longer be a PSD major source.

The facility will continue to be a Title V major source.

Startup, Shutdown and Maintenance Emissions

For the turbines, dehydrator (still vent and reboiler), flare, equipment leaks (valves, connectors, seals, etc.), truck loading, malfunctions, 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 blowdowns of the turbines, compressors and piping associated with the facility are 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 are estimated based on historical operations. A safety factor is included.

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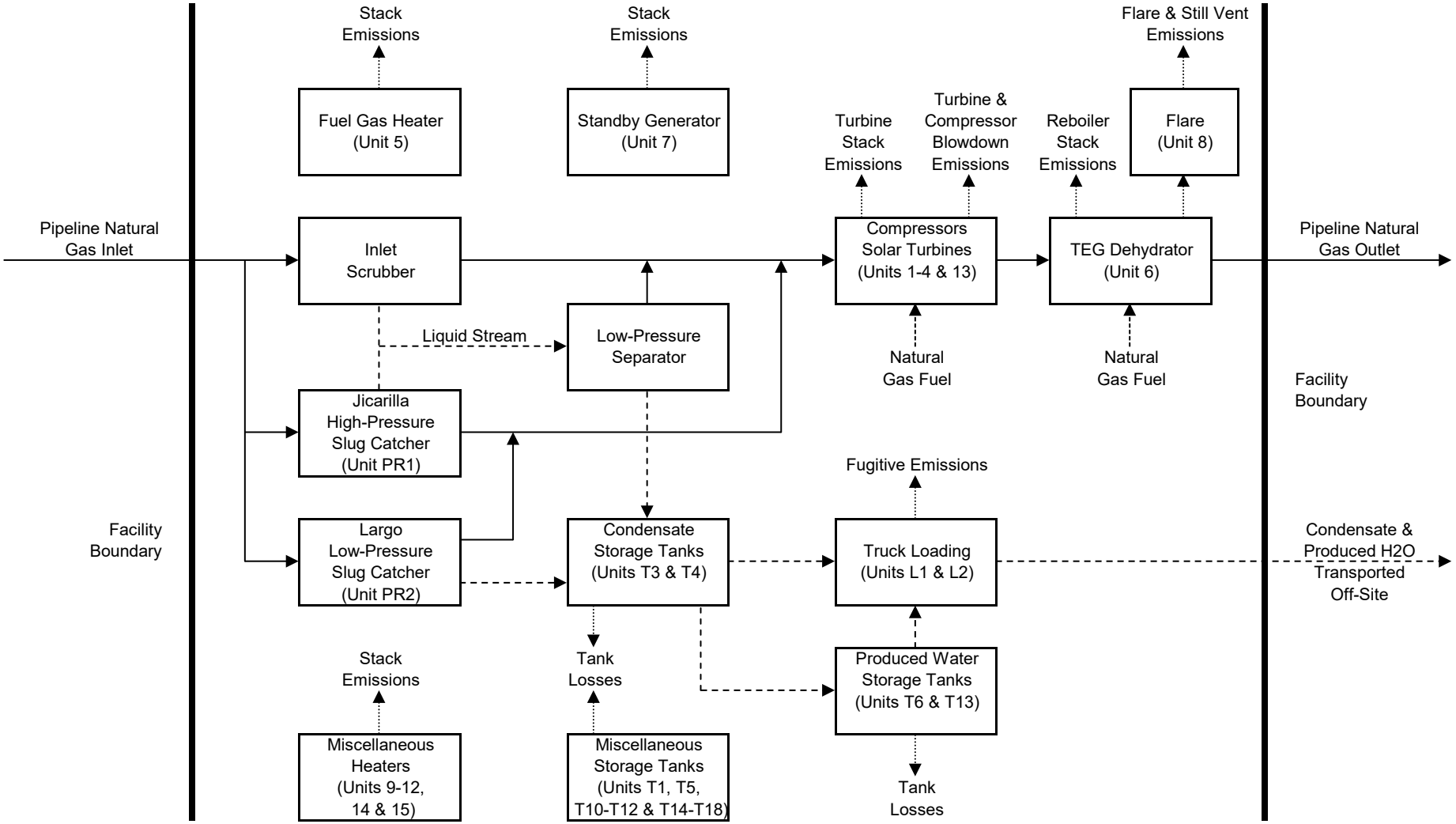
Section 4

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.

Flow Diagram

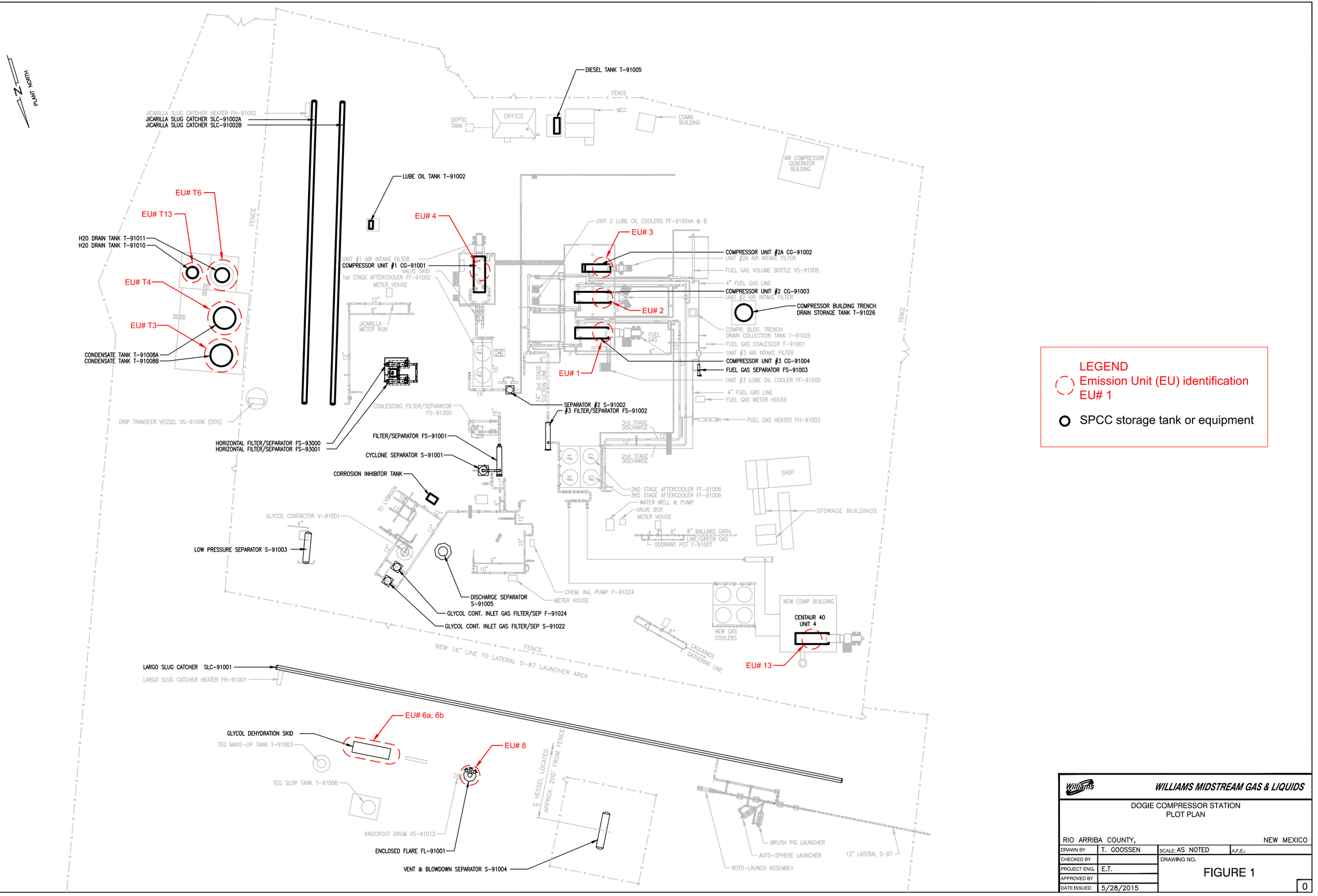


Section 5

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.



LEGEND

Emission Unit (EU) identification
EU# 1

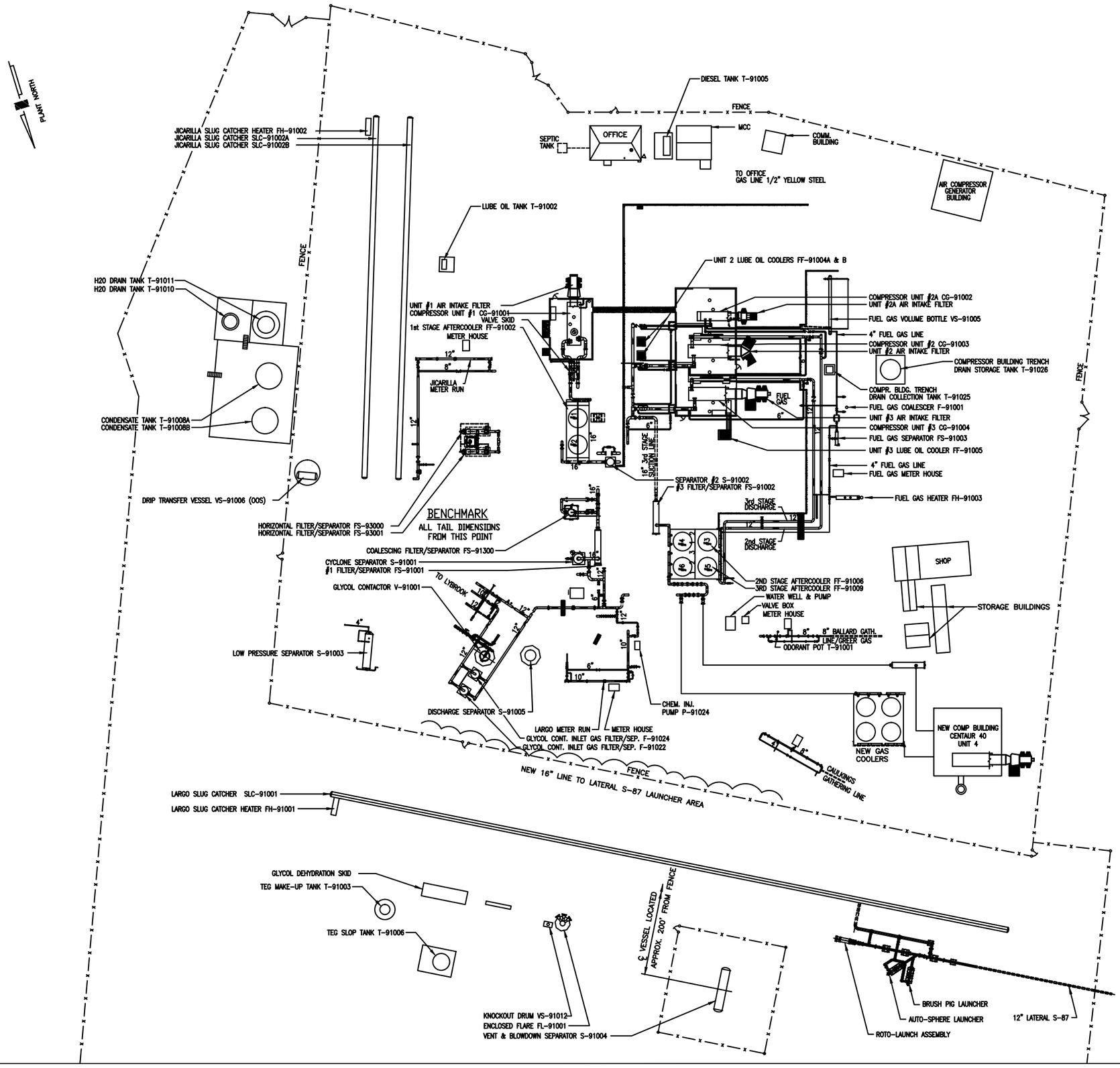
SPCC storage tank or equipment

WILLIAMS MIDSTREAM GAS & LIQUIDS

DOGIE COMPRESSOR STATION
PLOT PLAN

RIO ARRIBA COUNTY, NEW MEXICO

DRAWN BY	T. GOOSSEN	SCALE: AS NOTED	A.F.E.:
CHECKED BY		DRAWING NO.	
PROJECT ENG.	E.T.	FIGURE 1	
APPROVED BY			
DATE ISSUED	5/28/2015		0



WILLIAMS MIDSTREAM GAS & LIQUIDS

DOGIE COMPRESSOR STATION
PLOT PLAN

RIO ARRIBA COUNTY, NEW MEXICO

DRAWN BY	T. GOOSSEN	SCALE: AS NOTED	A.F.E.:
CHECKED BY		DRAWING NO.	
PROJECT ENG.	E.T.	FIGURE 2	
APPROVED BY			
DATE ISSUED	5/26/2015		B

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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 NO_X, carbon monoxide (CO), and VOC emissions from the turbines (Units 1-4 & 13) were calculated from stack test and manufacturer's data. The sulfur dioxide (SO_2) and particulate emissions were calculated using AP-42 emission factors from Table 3.1-2a. HAP emissions were calculated using GRI-HAPCalc 3.0. All emissions were calculated assuming the turbines operate 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.

Permitted criteria pollutant emissions for the turbines are carried forward and not revised.

Heaters

The criteria pollutant emissions from the heaters at the station (Units 5, 9, 10, 12, 14 & 15) were calculated using AP-42 emission factors from Tables 1.4-1 & 1.4-2. Units 5, 14 & 15 are NSR exempt sources in accordance with 20.2.72.202.B(5) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Items #1.a and #1.b. Units 9, 10 & 12 are NSR exempt sources in accordance with 20.2.72.202.B(1) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Item #3.

Dehydrator Still Vent

The VOC and HAP emissions from the dehydrator (Unit 6a) were calculated using a recent extended gas analysis and GRI-GLYCalc 4.0. Emissions were calculated assuming the dehydrator operates at full capacity for 8,760 hours per year. The dehydrator still vent and flash tank emissions are controlled by a flare (Unit 8). The still vent emissions pass through a condenser before being routed to the flare. To allow for variability in the composition of the inlet gas stream, the dehydrator still vent VOC emission rates identified on the application forms are higher than the calculated emission rates.

During startup, the dehydrator reboiler is brought up to temperature before allowing glycol into the absorber. 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. During shutdowns, the reboiler is 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. Emissions due to scheduled maintenance are negligible; either the unit will not be in operation during maintenance or maintenance is limited to tasks for which there are no excess emissions. Also, dehydrator still vent emissions are controlled by the flare. The flare is on-line prior to dehydrator startup and the flare is not shut down until after the dehydrator is shut down.

Permitted VOC emissions for the dehydrator are carried forward and not revised.

Dehydrator Reboiler

The criteria pollutant emissions from the dehydrator reboiler (Unit 6b) were calculated using AP-42 emission factors from Tables 1.4-1 & 1.4-2. HAP emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming the reboiler operates 8,760 hours per year.

The dehydrator reboiler starts up 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 unit is not in operation.

Permitted criteria pollutant emissions from the dehydrator reboiler are carried forward and not revised.

Generator

The NO_X emissions from the generator engine (Unit 7) were calculated using manufacturer's data. HAP emissions were calculated using AP-42 emission factors from Table 3.3-2. All emissions were calculated assuming the engine operates at full capacity for 500 hours per year.

The generator engine is an exempt source in accordance with 20.2.72.202.B(3) NMAC. NO_X emissions were calculated only to demonstrate the generator qualifies as a Title V insignificant source on the basis of emissions (see Insignificant Activity List Item #6). HAP emissions were calculated for inclusion in Table 2-I.

Flare

The NO_X, and CO emissions from the Zeeco flare (Unit 8) were calculated using TCEQ emission factors. VOC, SO_2 and lead emissions were calculated using AP-42 emissions factors from Table 1.4-2. The flow rates were identified from the GRI-GLYCalc 4.0 output file. The heat contents were calculated from data in the GRI-GLYCalc 4.0 output file. HAP emissions were calculated using GRI-HAPCalc 3.0. Note that a safety factor is included in the emissions identified in Table 2-E, to allow for variations in the composition of the gas. Also 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 flare. The flare does not require a warm-up period. The dehydrator is not turned on unless the flare is in operation and the flare is not shut down while dehydrator is in operation. No maintenance is conducted on the flare while it is in operation.

SSM (Turbines, Compressors & Piping)

Motive gas is used to drive turbine components during startups and shutdowns. This motive gas is vented to atmosphere. High pressure gas is used to purge air from the compressors and associated piping prior to startups. This gas is also vented to atmosphere. Finally, after shutdowns, high pressure gas in the compressors and associated piping is released to atmosphere as a safety precaution.

Blowdown VOC and HAP emissions from the turbines, compressors and piping at the station 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 a recent extended gas analysis. For each unit, the annual number of blowdown events were estimated based on historical operations. A safety factor was added because 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. 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.

The SSM emissions identified in this application are routine or predictable startup/shutdown and scheduled maintenance and do not include malfunctions or upsets.

Equipment Leak Emissions

VOC and HAP emissions from equipment leaks (Unit F1) were calculated using emission factors from Table 2.4 of the 1995 Protocol for Equipment Leak Emission Estimates published by the Environmental Protection Agency (EPA) and the gas stream composition obtained from a recent extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

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

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 annual VOC emission rate, HAP emissions are calculated using a recent extended gas analysis. Note that these malfunction emissions include the venting of gas only, not combustion emissions.

Permitted VOC emissions from malfunctions are carried forward and not revised.

Pig Receivers

VOC and HAP emissions from the pig receivers (Units PR1 & PR2) 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 a recent extended gas analysis. For each unit, the annual number of blowdown events were estimated based on historical operations. A safety factor was added because 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.

The pig receivers are exempt sources in accordance with 20.2.72.202.B(5) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Items #1.a and #1.b.

Truck Loading

The VOC emissions from condensate truck loading (Unit L1) were identified using the AP-42 emission factor identified in Section 5.2-1; calculated using data from the TANKS 4.0.9.d output file for condensate storage. HAP emissions were identified as percentages of the VOC emission rate, based on the HAP percentages predicted by TANKS 4.0.9.d.

The VOC emissions from produced water truck loading (Unit L2) were calculated using the AP-42 emission factor identified in Section 5.2-1; calculated using the molecular weight and vapor pressure of water. Note that the produced water is estimated to be 99% water and 1% hydrocarbons. HAP emissions were identified as percentages of the VOC emission rate; calculated from the produced water HAP mass fractions identified by the Colorado Department of Public Health and Environment (CDPHE) and Texas Commission on Environmental Quality (TCEQ). Unit L2 is an NSR exempt source in accordance with 20.2.72.202.B(5) NMAC and a Title V insignificant source in accordance with Insignificant Activity List Items #1.a and #1.b.

Due to the nature of the source, it is estimated that SSM emissions from condensate truck loading are accounted for in the calculations.

Storage Tanks

Emissions from the condensate storage tanks (Units T3 & T4) were calculated using TANKS 4.0.9.d for working-breathing losses and ProMax 5.0 for flash emissions. Emissions were calculated using a condensate (post-flash)

throughput of 40,077 barrels per year. Note that a majority of the condensate is received at the facility during pigging operations.

The produced water storage tanks (Units T6 & T13) receive water from the condensate tanks (after the water has been separated from the condensate). VOC and HAP emissions were calculated using estimated throughputs and emission factors from the CDPHE and TCEQ.

The following assumptions are made regarding the remaining storage tanks:

- As the vapor pressure of diesel is less than 0.2 pounds per square inch absolute (psia), the tank containing diesel (Unit T1) is an NSR exempt source under 20.2.72.202.B(2) NMAC and a Title V insignificant source in accordance with Insignificant Activity List Item #5;

- Residual oil #6 is used as an estimate for lubrication oil. As the vapor pressure of residual oil #6 is less than 0.2 psia, the tanks containing lubrication oil (Units T5 & T12) are NSR exempt sources under 20.2.72.202.B(2) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Item #5; and

- As the vapor pressure of TEG is less than 0.2 psia, the tanks containing glycol and glycol slop (Units T10 & T11) are NSR exempt sources under 20.2.72.202.B(2) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Item #5.

TANKS 4.0.9.d was used to calculate emissions from the methanol storage tanks (Units T14-T17). The combined total emission rate from the four tanks is 387.7 pounds per year. As such, they NSR exempt sources under 20.2.72.202.B(2) NMAC and Title V insignificant sources in accordance with Insignificant Activity List Items #1.a & 1.b. Note that the 300 gallon methanol storage tank (Unit T16) is considered to have an emission rate equal to that of the 500 gallon methanol storage tanks (Units T14 & T15).

The corrosion inhibitor storage tank (Unit T18) has a capacity of 150 gallons. The inhibitor contains as much as 30 percent methanol. It contains no other VOC or HAP. Emissions were estimated using the TANK 4.0.9.d calculations for Unit T14. As such, it is an NSR exempt source under 20.2.72.202.B(2) NMAC and a Title V insignificant source in accordance with Insignificant Activity List Items #1.a & 1.b.

Due to the nature of operations, startup and shutdown emissions from the storage tanks are assumed to be accounted for in the calculations as discussed above. Emissions due to maintenance are negligible as the units are not in operation during maintenance.

Turbine Exhaust Emissions Calculations

Unit Number: 1 & 2 (Field Units 3 & 2, respectively)
Description: Solar Centaur T-4002

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

Horsepower Calculations

6,235	ft above MSL	Elevation	
3,830	hp	Nameplate hp	Mfg. data
3,031	hp	Site-rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)

Fuel Consumption

9,429	Btu/hp-hr	Brake specific fuel consumption	Mfg. data (based on T-4000 @ 5,571 ft MSL) obtained from previous applications
28.58	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
31,758	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
250,382	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
278.20	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	18.00	78.84
CO	14.71	64.44
VOC	5.36E-01	2.35

NOX emission rate (pph) taken from 01/26/00 emission test results [15.0 pph] with a 20% safety factor
CO emission rate (tpy) taken from manufacturer's data [16.11 tpy] with a 300% safety factor
VOC emission rate (tpy) taken as 12% of the manufacturer's UHC emission rate [0.12 * 3.26 tpy] with a 500% safety factor
Uncontrolled CO & VOC Emission Rates (pph) = Uncontrolled Emission Rates (tpy) x 2,000 lb/ton / hr/yr
Uncontrolled NOX Emission Rate (tpy) = Uncontrolled Emission Rate (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	3.40E-03	9.72E-02	4.26E-01
PM	6.60E-03	1.89E-01	8.26E-01
PM10	6.60E-03	1.89E-01	8.26E-01
PM2.5	6.60E-03	1.89E-01	8.26E-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

818.0	°F	Exhaust temperature	Taken from 2000 stack test results
75,839	cfm	Stack flowrate	Taken from 2000 stack test results
2.35	ft	Stack diameter	Harvest Four Corners, LLC
4.34	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
291.42	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
24.50	ft	Stack height (Unit 1)	Harvest Four Corners, LLC
22.20	ft	Stack height (Unit 2)	Harvest Four Corners, LLC

Turbine Exhaust Emissions Calculations

Unit Number: 3 (Field Unit 2A)
Description: Solar Saturn T-1200

Horsepower Calculations

6,235	ft above MSL	Elevation	
1,200	hp	Nameplate hp	Mfg. data
950	hp	Site-rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)

Fuel Consumption

11,098	Btu/hp-hr	Brake specific fuel consumption	Mfg. data (based on T-1200 @ 5,571 ft MSL) obtained from previous applications
10.54	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
11,712	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
92,335	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
102.59	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	2.20	9.64
CO	2.00	8.76
VOC	2.51E-01	1.10

NOX & CO emission rates (pph) are the average of test results from identical units at Los Mestenios
VOC emission rate (tpy) taken as 12% of the manufacturer's UHC emission rate [0.12 * 1.83 tpy] with a 400% safety factor
Uncontrolled VOC Emission Rates (pph) = Uncontrolled Emission Rates (tpy) x 2,000 lb/ton / hr/yr
Uncontrolled NOX & CO Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	3.40E-03	3.58E-02	1.57E-01
PM	6.60E-03	6.96E-02	3.05E-01
PM10	6.60E-03	6.96E-02	3.05E-01
PM2.5	6.60E-03	6.96E-02	3.05E-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

800.6	°F	Exhaust temperature	1992 testing of identical turbines @ Los Mestenios
34,034	cfm	Stack flowrate	1992 testing of identical turbines @ Los Mestenios
1.50	ft	Stack diameter	Harvest Four Corners, LLC
1.77	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
320.99	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
22.20	ft	Stack height	Harvest Four Corners, LLC

Turbine Exhaust Emissions Calculations

Unit Number: 4 (Field Unit 1)
Description: Solar Centaur CS-3000

Horsepower Calculations

6,235	ft above MSL	Elevation	
3,550	hp	Nameplate hp	Mfg. data
2,810	hp	Site-rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)

Fuel Consumption

9,429	Btu/hp-hr	Brake specific fuel consumption	Mfg. data (based on T-4000 @ 5,571 ft MSL) obtained from previous applications
26.49	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content
29,437	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
232,078	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
257.86	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	12.90	56.50
CO	14.71	64.44
VOC	5.36E-01	2.35

NOX emission rate (pph) taken from current permit
CO emission rate (tpy) taken from manufacturer's data [16.11 tpy] with a 300% safety factor
VOC emission rate (tpy) taken as 12% of the manufacturer's UHC emission rate [0.12 * 3.26 tpy] with a 500% safety factor
Uncontrolled CO & VOC Emission Rates (pph) = Uncontrolled Emission Rates (tpy) x 2,000 lb/ton / hr/yr
Uncontrolled NOX Emission Rate (tpy) = Uncontrolled Emission Rate (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	3.40E-03	9.01E-02	3.95E-01
PM	6.60E-03	1.75E-01	7.66E-01
PM10	6.60E-03	1.75E-01	7.66E-01
PM2.5	6.60E-03	1.75E-01	7.66E-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

776.1	°F	Exhaust temperature	Taken from 2000 stack test results
73,319	cfm	Stack flowrate	Stack velocity * stack area * 60
2.50	ft	Stack diameter	Harvest Four Corners, LLC
4.91	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
248.94	fps	Stack exit velocity	Taken from 2000 stack test results
24.00	ft	Stack height	Harvest Four Corners, LLC

Turbine Exhaust Emissions Calculations

Unit Number: 13
Description: Solar Centaur 40-4702S

Horsepower Calculations

6,235	ft above MSL	Elevation	
4,680	hp	Nameplate hp	Mfg. data
3,867	hp	Site rated hp	Mfg. data
3,704	hp	Site rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)

Fuel Consumption

10,040	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
38.82	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
43,139	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
340,104	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
377.89	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	tpy
NOX	4.46	19.55
CO	5.44	23.81
VOC	1.59E-01	6.95E-01

Emission rates (pph) taken from the Solar Data Sheet (with a 20% safety factor)
VOC emissions are assumed to be 10.25% of the total hydrocarbon emissions, in accordance with AP-42, Table 3.1-2a
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	3.40E-03	1.32E-01	5.78E-01
PM	6.60E-03	2.56E-01	1.12
PM10	6.60E-03	2.56E-01	1.12
PM2.5	6.60E-03	2.56E-01	1.12

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

786	°F	Exhaust temperature	Mfg. data
71,368	cfm	Stack flowrate	Calculated from mfg. data
3.67	ft	Stack diameter	Harvest Four Corners, LLC
10.56	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
112.65	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
35.95	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Turbine Report

Facility ID:	**DOGIE**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**DOGIE CANYON COMPRESSOR**	
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: 40-4702S

Hours of Operation: 8,760 Yearly

Rate Power: 3867 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	0.6319	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.6467	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0023	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0097	0.00026000 g/bhp-hr	GRI Field
Propional	0.0323	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0047	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0201	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0153	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0039	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0464	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0599	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0562	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0041	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	0.0123	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	0.0024	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	0.0007	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	1.5502		

Criteria Pollutants

PM	1.1881	0.03184680 g/bhp-hr	EPA
CO	78.6541	2.10828420 g/bhp-hr	GRI Field
NMHC	7.2330	0.19387800 g/bhp-hr	GRI Field
NMEHC	0.4496	0.01205010 g/bhp-hr	EPA
NOx	46.7147	1.25216290 g/bhp-hr	GRI Field
SO2	0.0383	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	36.8294	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.2673	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.5206	0.01395450 g/bhp-hr	GRI Field
Ethane	5.5992	0.15008370 g/bhp-hr	GRI Field
Propane	0.5969	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.1791	0.00480000 g/bhp-hr	GRI Field
Butane	0.1940	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0616	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0500	0.00134000 g/bhp-hr	GRI Field
n-Pentane	3.0275	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.2285	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.3295	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.1190	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.1119	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0199	0.00053260 g/bhp-hr	GRI Field
CO2	17,661.1490	473.39811550 g/bhp-hr	EPA
Vanadium	0.0000	0.00000070 g/bhp-hr	GRI Field
Copper	0.0008	0.00002050 g/bhp-hr	GRI Field
Molybdenum	0.0008	0.00002030 g/bhp-hr	GRI Field
Barium	0.0009	0.00002290 g/bhp-hr	GRI Field

Unit Name: CS-3000

Hours of Operation: 8,760 Yearly

Rate Power: 2810 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	0.4592	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.4700	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0017	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0070	0.00026000 g/bhp-hr	GRI Field
Propional	0.0234	0.00086500 g/bhp-hr	GRI Field

Propylene Oxide	0.0034	0.00012480	g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100	g/bhp-hr	EPA
Benzene	0.0146	0.00053840	g/bhp-hr	GRI Field
Toluene	0.0111	0.00041100	g/bhp-hr	GRI Field
Ethylbenzene	0.0028	0.00010330	g/bhp-hr	EPA
Xylenes(m,p,o)	0.0337	0.00124410	g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0435	0.00160530	g/bhp-hr	GRI Field
n-Hexane	0.0408	0.00150580	g/bhp-hr	GRI Field
Phenol	0.0030	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	0.0090	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	1.1265			

Criteria Pollutants

PM	0.8634	0.03184680	g/bhp-hr	EPA
CO	57.1549	2.10828420	g/bhp-hr	GRI Field
NMHC	5.2560	0.19387800	g/bhp-hr	GRI Field
NMEHC	0.3267	0.01205010	g/bhp-hr	EPA
NOx	33.9458	1.25216290	g/bhp-hr	GRI Field
SO2	0.0278	0.00102720	g/bhp-hr	GRI Field

Other Pollutants

Methane	26.7625	0.98719230	g/bhp-hr	GRI Field
Acetylene	0.1943	0.00716540	g/bhp-hr	GRI Field
Ethylene	0.3783	0.01395450	g/bhp-hr	GRI Field
Ethane	4.0687	0.15008370	g/bhp-hr	GRI Field
Propane	0.4338	0.01600000	g/bhp-hr	GRI Field
Isobutane	0.1301	0.00480000	g/bhp-hr	GRI Field
Butane	0.1410	0.00520000	g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070	g/bhp-hr	EPA
Cyclopentane	0.0448	0.00165110	g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0363	0.00134000	g/bhp-hr	GRI Field
n-Pentane	2.2000	0.08115000	g/bhp-hr	GRI Field
Cyclohexane	0.1660	0.00612400	g/bhp-hr	GRI Field
Methylcyclohexane	0.2394	0.00883120	g/bhp-hr	GRI Field
n-Octane	0.0865	0.00318890	g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.0813	0.00300000	g/bhp-hr	GRI Field
n-Nonane	0.0144	0.00053260	g/bhp-hr	GRI Field
CO2	12,833.6769	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: T-1200

Hours of Operation: 8,760 Yearly

Rate Power: 950 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	0.1552	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.1589	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0006	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0024	0.00026000 g/bhp-hr	GRI Field
Propional	0.0079	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0011	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0049	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0038	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0009	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0114	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0147	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0138	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0010	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	0.0030	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	0.0006	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	0.3808		
Criteria Pollutants			
PM	0.2919	0.03184680 g/bhp-hr	EPA
CO	19.3228	2.10828420 g/bhp-hr	GRI Field
NMHC	1.7769	0.19387800 g/bhp-hr	GRI Field

NMEHC	0.1104	0.01205010 g/bhp-hr	EPA
NOx	11.4763	1.25216290 g/bhp-hr	GRI Field
SO2	0.0094	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	9.0478	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.0657	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.1279	0.01395450 g/bhp-hr	GRI Field
Ethane	1.3755	0.15008370 g/bhp-hr	GRI Field
Propane	0.1466	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.0440	0.00480000 g/bhp-hr	GRI Field
Butane	0.0477	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0151	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0123	0.00134000 g/bhp-hr	GRI Field
n-Pentane	0.7438	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.0561	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.0809	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.0292	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.0275	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0049	0.00053260 g/bhp-hr	GRI Field
CO2	4,338.7876	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	0.0002	0.00002290 g/bhp-hr	GRI Field

Unit Name: T-4002

Hours of Operation: 8,760 Yearly

Rate Power: 3031 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	0.4953	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	0.5069	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0018	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0076	0.00026000 g/bhp-hr	GRI Field
Propional	0.0253	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0036	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0000	0.00000100 g/bhp-hr	EPA
Benzene	0.0157	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0120	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0030	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0364	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.0469	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.0440	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0032	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	0.0097	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	0.0019	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	1.2148		

Criteria Pollutants

PM	0.9313	0.03184680 g/bhp-hr	EPA
CO	61.6500	2.10828420 g/bhp-hr	GRI Field
NMHC	5.6693	0.19387800 g/bhp-hr	GRI Field
NMEHC	0.3524	0.01205010 g/bhp-hr	EPA
NOx	36.6155	1.25216290 g/bhp-hr	GRI Field
SO2	0.0300	0.00102720 g/bhp-hr	GRI Field

Other Pollutants

Methane	28.8673	0.98719230 g/bhp-hr	GRI Field
Acetylene	0.2095	0.00716540 g/bhp-hr	GRI Field
Ethylene	0.4081	0.01395450 g/bhp-hr	GRI Field
Ethane	4.3887	0.15008370 g/bhp-hr	GRI Field
Propane	0.4679	0.01600000 g/bhp-hr	GRI Field
Isobutane	0.1404	0.00480000 g/bhp-hr	GRI Field
Butane	0.1521	0.00520000 g/bhp-hr	GRI Field
Trimethylamine	0.0000	0.00000070 g/bhp-hr	EPA
Cyclopentane	0.0483	0.00165110 g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.0392	0.00134000 g/bhp-hr	GRI Field
n-Pentane	2.3730	0.08115000 g/bhp-hr	GRI Field
Cyclohexane	0.1791	0.00612400 g/bhp-hr	GRI Field
Methylcyclohexane	0.2582	0.00883120 g/bhp-hr	GRI Field
n-Octane	0.0932	0.00318890 g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.0877	0.00300000 g/bhp-hr	GRI Field
n-Nonane	0.0156	0.00053260 g/bhp-hr	GRI Field
CO2	13,843.0159	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	0.0007	0.00002290 g/bhp-hr	GRI Field

Heater Exhaust Emissions Calculations

Unit Number: 5
Description: Fuel Gas Heater

Fuel Consumption

0.50	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
556	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
4,380	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
4.87	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	5.56E-02	2.43E-01
CO	84	4.67E-02	2.04E-01
VOC	5.5	3.06E-03	1.34E-02
SO2	0.6	3.33E-04	1.46E-03
PM	7.6	4.22E-03	1.85E-02
PM10	7.6	4.22E-03	1.85E-02
PM2.5	7.6	4.22E-03	1.85E-02
Lead	5.00E-04	2.78E-07	1.22E-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

Heater Exhaust Emissions Calculations

Unit Number: 9, 10 & 12
Description: Office Heater (0.08 MMBtu/hr), Office Water Heater (0.034 MMBtu/hr) & Shop Heater (0.08 MMBtu/hr)

Fuel Consumption

0.194	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
216	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
1,699	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
1.89	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	2.16E-02	9.44E-02
CO	84	1.81E-02	7.93E-02
VOC	5.5	1.19E-03	5.19E-03
SO2	0.6	1.29E-04	5.66E-04
PM	7.6	1.64E-03	7.18E-03
PM10	7.6	1.64E-03	7.18E-03
PM2.5	7.6	1.64E-03	7.18E-03
Lead	5.00E-04	1.08E-07	4.72E-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: 14 & 15
Description: Inlet Liquids Boot Heaters

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

Fuel Consumption

0.25	MMBtu/hr	Capacity	Mfg. data
900	Btu/scf	Field gas heating value	Nominal heat content
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
2,190	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
2.43	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	2.78E-02	1.22E-01
CO	84	2.33E-02	1.02E-01
VOC	5.5	1.53E-03	6.69E-03
SO2	0.6	1.67E-04	7.30E-04
PM	7.6	2.11E-03	9.25E-03
PM10	7.6	2.11E-03	9.25E-03
PM2.5	7.6	2.11E-03	9.25E-03
Lead	5.00E-04	1.39E-07	6.08E-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

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Dogie TEG Dehydrator
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Dogie\1 - Application\Dogie - GRI-GLYCalc - 80 MMSCFD.ddf
Date: August 27, 2020

DESCRIPTION:

Description: Capacity: 80 MMSCFD
Extended gas analysis dated 08/10/2020

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 90.00 deg. F
Pressure: 580.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.4483
Nitrogen	2.4905
Methane	73.0014
Ethane	11.1680
Propane	7.8972
Isobutane	1.0599
n-Butane	2.4509
Isopentane	0.5223
n-Pentane	0.4460
Cyclopentane	0.0180
n-Hexane	0.1049
Cyclohexane	0.0201
Other Hexanes	0.2444
Heptanes	0.0397
Methylcyclohexane	0.0324
2,2,4-Trimethylpentane	0.0017
Benzene	0.0050
Toluene	0.0127
Ethylbenzene	0.0006
Xylenes	0.0079
C8+ Heavies	0.0283

DRY GAS:

Flow Rate: 80.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 9.8 gpm

PUMP:

Glycol Pump Type: Electric/Pneumatic

FLASH TANK:

Flash Control:	Combustion device
Flash Control Efficiency:	98.00 %
Temperature:	88.0 deg. F
Pressure:	57.0 psig

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device:	Condenser
Temperature:	75.0 deg. F
Pressure:	22.4 psia

Control Device:	Combustion Device
Destruction Efficiency:	98.0 %
Excess Oxygen:	5.0 %
Ambient Air Temperature:	70.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Dogie TEG Dehydrator
File Name: C:\1 - Office\1 - Cirrus\1-Projects\1 - Harvest\1 - Permiting\4 - Title V\2 - Dogie\1 - Application\Dogie - GRI-GLYCalc - 80 MMSCFD.ddf
Date: August 27, 2020

DESCRIPTION:

Description: Capacity: 80 MMSCFD
Extended gas analysis dated 08/10/2020

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0141	0.339	0.0619
Ethane	0.0395	0.948	0.1731
Propane	0.1043	2.504	0.4570
Isobutane	0.0251	0.601	0.1097
n-Butane	0.0724	1.737	0.3170
Isopentane	0.0105	0.252	0.0459
n-Pentane	0.0113	0.272	0.0497
Cyclopentane	0.0015	0.036	0.0066
n-Hexane	0.0020	0.049	0.0089
Cyclohexane	0.0014	0.034	0.0062
Other Hexanes	0.0052	0.125	0.0228
Heptanes	0.0006	0.014	0.0025
Methylcyclohexane	0.0014	0.034	0.0063
2,2,4-Trimethylpentane	<0.0001	<0.001	0.0001
Benzene	0.0025	0.061	0.0111
Toluene	0.0035	0.084	0.0153
Ethylbenzene	0.0001	0.002	0.0004
Xylenes	0.0012	0.029	0.0053
C8+ Heavies	<0.0001	<0.001	0.0001
Total Emissions	0.2968	7.123	1.2999
Total Hydrocarbon Emissions	0.2968	7.123	1.2999
Total VOC Emissions	0.2431	5.835	1.0650
Total HAP Emissions	0.0094	0.225	0.0411
Total BTEX Emissions	0.0073	0.176	0.0321

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.7146	17.149	3.1297
Ethane	2.0956	50.294	9.1786
Propane	7.0146	168.351	30.7240
Isobutane	2.2373	53.694	9.7992
n-Butane	7.7719	186.527	34.0411
Isopentane	2.3038	55.292	10.0908
n-Pentane	2.7024	64.858	11.8365

Cyclopentane	0.5439	13.054	2.3823
n-Hexane	1.4403	34.568	6.3087
Cyclohexane	1.3185	31.644	5.7750
Other Hexanes	2.4183	58.040	10.5923
Heptanes	1.3039	31.293	5.7110
Methylcyclohexane	2.8747	68.992	12.5911
2,2,4-Trimethylpentane	0.0258	0.620	0.1132
Benzene	2.8360	68.064	12.4217
Toluene	12.1958	292.698	53.4174
Ethylbenzene	0.9412	22.588	4.1223
Xylenes	17.1366	411.279	75.0584
C8+ Heavies	5.9807	143.537	26.1954
Total Emissions	73.8559	1772.542	323.4889
Total Hydrocarbon Emissions	73.8559	1772.542	323.4889
Total VOC Emissions	71.0458	1705.099	311.1805
Total HAP Emissions	34.5757	829.817	151.4417
Total BTEX Emissions	33.1095	794.629	145.0198

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.1626	3.903	0.7122
Ethane	0.1226	2.942	0.5369
Propane	0.1642	3.942	0.7194
Isobutane	0.0319	0.765	0.1396
n-Butane	0.0806	1.933	0.3528
Isopentane	0.0194	0.465	0.0848
n-Pentane	0.0176	0.423	0.0772
Cyclopentane	0.0009	0.022	0.0041
n-Hexane	0.0047	0.114	0.0208
Cyclohexane	0.0011	0.027	0.0049
Other Hexanes	0.0109	0.262	0.0477
Heptanes	0.0019	0.046	0.0084
Methylcyclohexane	0.0018	0.043	0.0078
2,2,4-Trimethylpentane	0.0001	0.002	0.0004
Benzene	0.0003	0.006	0.0011
Toluene	0.0007	0.016	0.0029
Ethylbenzene	<0.0001	0.001	0.0001
Xylenes	0.0003	0.008	0.0014
C8+ Heavies	0.0010	0.025	0.0045
Total Emissions	0.6226	14.942	2.7270
Total Hydrocarbon Emissions	0.6226	14.942	2.7270
Total VOC Emissions	0.3374	8.098	1.4778
Total HAP Emissions	0.0061	0.146	0.0267
Total BTEX Emissions	0.0013	0.031	0.0056

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	8.1304	195.130	35.6112
Ethane	6.1294	147.106	26.8468
Propane	8.2118	197.084	35.9679
Isobutane	1.5934	38.241	6.9790
n-Butane	4.0275	96.661	17.6406

Isopentane	0.9677	23.225	4.2386
n-Pentane	0.8809	21.141	3.8582
Cyclopentane	0.0468	1.123	0.2050
n-Hexane	0.2372	5.693	1.0390
Cyclohexane	0.0562	1.349	0.2462
Other Hexanes	0.5450	13.080	2.3871
Heptanes	0.0960	2.303	0.4203
Methylcyclohexane	0.0888	2.130	0.3888
2,2,4-Trimethylpentane	0.0040	0.096	0.0175
Benzene	0.0131	0.314	0.0573
Toluene	0.0331	0.795	0.1451
Ethylbenzene	0.0013	0.032	0.0059
Xylenes	0.0160	0.384	0.0700
C8+ Heavies	0.0512	1.228	0.2242
Total Emissions	31.1298	747.116	136.3487
Total Hydrocarbon Emissions	31.1298	747.116	136.3487
Total VOC Emissions	16.8700	404.880	73.8907
Total HAP Emissions	0.3048	7.315	1.3349
Total BTEX Emissions	0.0636	1.525	0.2784

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.1767	4.242	0.7741
Ethane	0.1621	3.890	0.7100
Propane	0.2686	6.446	1.1763
Isobutane	0.0569	1.366	0.2493
n-Butane	0.1529	3.670	0.6698
Isopentane	0.0298	0.716	0.1307
n-Pentane	0.0290	0.695	0.1269
Cyclopentane	0.0024	0.059	0.0107
n-Hexane	0.0068	0.163	0.0297
Cyclohexane	0.0025	0.061	0.0112
Other Hexanes	0.0161	0.387	0.0706
Heptanes	0.0025	0.060	0.0109
Methylcyclohexane	0.0032	0.077	0.0140
2,2,4-Trimethylpentane	0.0001	0.002	0.0004
Benzene	0.0028	0.067	0.0123
Toluene	0.0042	0.100	0.0182
Ethylbenzene	0.0001	0.003	0.0005
Xylenes	0.0015	0.037	0.0067
C8+ Heavies	0.0010	0.025	0.0045
Total Emissions	0.9194	22.065	4.0269
Total Hydrocarbon Emissions	0.9194	22.065	4.0269
Total VOC Emissions	0.5805	13.933	2.5428
Total HAP Emissions	0.0155	0.372	0.0678
Total BTEX Emissions	0.0086	0.206	0.0377

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	38.7409	0.7741	98.00

Ethane	36.0255	0.7100	98.03
Propane	66.6919	1.1763	98.24
Isobutane	16.7782	0.2493	98.51
n-Butane	51.6817	0.6698	98.70
Isopentane	14.3294	0.1307	99.09
n-Pentane	15.6947	0.1269	99.19
Cyclopentane	2.5873	0.0107	99.59
n-Hexane	7.3477	0.0297	99.60
Cyclohexane	6.0212	0.0112	99.81
Other Hexanes	12.9794	0.0706	99.46
Heptanes	6.1313	0.0109	99.82
Methylcyclohexane	12.9798	0.0140	99.89
2,2,4-Trimethylpentane	0.1307	0.0004	99.69
Benzene	12.4791	0.0123	99.90
Toluene	53.5626	0.0182	99.97
Ethylbenzene	4.1282	0.0005	99.99
Xylenes	75.1284	0.0067	99.99
C8+ Heavies	26.4196	0.0045	99.98
Total Emissions	459.8375	4.0269	99.12
Total Hydrocarbon Emissions	459.8375	4.0269	99.12
Total VOC Emissions	385.0712	2.5428	99.34
Total HAP Emissions	152.7766	0.0678	99.96
Total BTEX Emissions	145.2982	0.0377	99.97

EQUIPMENT REPORTS:

CONDENSER AND COMBUSTION DEVICE

Condenser Outlet Temperature:	75.00	deg. F
Condenser Pressure:	22.40	psia
Condenser Duty:	6.47e-002	MM BTU/hr
Hydrocarbon Recovery:	4.76	bbls/day
Produced Water:	14.00	bbls/day
Ambient Temperature:	70.00	deg. F
Excess Oxygen:	5.00	%
Combustion Efficiency:	98.00	%
Supplemental Fuel Requirement:	6.47e-002	MM BTU/hr

Component	Emitted	Destroyed
Methane	1.98%	98.02%
Ethane	1.89%	98.11%
Propane	1.49%	98.51%
Isobutane	1.12%	98.88%
n-Butane	0.93%	99.07%
Isopentane	0.45%	99.55%
n-Pentane	0.42%	99.58%
Cyclopentane	0.28%	99.72%
n-Hexane	0.14%	99.86%
Cyclohexane	0.11%	99.89%
Other Hexanes	0.22%	99.78%
Heptanes	0.04%	99.96%
Methylcyclohexane	0.05%	99.95%
2,2,4-Trimethylpentane	0.05%	99.95%
Benzene	0.09%	99.91%

Toluene	0.03%	99.97%
Ethylbenzene	0.01%	99.99%
Xylenes	0.01%	99.99%
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:	4.90 lbs. H2O/MMSCF
Temperature:	90.0 deg. F
Pressure:	580.0 psig
Dry Gas Flow Rate:	80.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.5240 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	66.10 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	2.88 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.40%	92.60%
Carbon Dioxide	99.88%	0.12%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.97%	0.03%
Propane	99.95%	0.05%
Isobutane	99.93%	0.07%
n-Butane	99.91%	0.09%
Isopentane	99.90%	0.10%
n-Pentane	99.87%	0.13%
Cyclopentane	99.47%	0.53%
n-Hexane	99.79%	0.21%
Cyclohexane	99.08%	0.92%
Other Hexanes	99.84%	0.16%
Heptanes	99.60%	0.40%
Methylcyclohexane	98.94%	1.06%
2,2,4-Trimethylpentane	99.83%	0.17%
Benzene	91.70%	8.30%
Toluene	88.11%	11.89%
Ethylbenzene	83.16%	16.84%
Xylenes	76.72%	23.28%
C8+ Heavies	98.58%	1.42%

FLASH TANK

Flash Control:	Combustion device
Flash Control Efficiency:	98.00 %
Flash Temperature:	88.0 deg. F
Flash Pressure:	57.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%

Carbon Dioxide	58.38%	41.62%
Nitrogen	7.66%	92.34%
Methane	8.08%	91.92%
Ethane	25.48%	74.52%
Propane	46.07%	53.93%
Isobutane	58.40%	41.60%
n-Butane	65.87%	34.13%
Isopentane	70.57%	29.43%
n-Pentane	75.54%	24.46%
Cyclopentane	92.12%	7.88%
n-Hexane	85.93%	14.07%
Cyclohexane	96.04%	3.96%
Other Hexanes	81.79%	18.21%
Heptanes	93.18%	6.82%
Methylcyclohexane	97.12%	2.88%
2,2,4-Trimethylpentane	86.79%	13.21%
Benzene	99.56%	0.44%
Toluene	99.75%	0.25%
Ethylbenzene	99.87%	0.13%
Xylenes	99.92%	0.08%
C8+ Heavies	99.25%	0.75%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	28.82%	71.18%
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	0.71%	99.29%
n-Pentane	0.66%	99.34%
Cyclopentane	0.54%	99.46%
n-Hexane	0.58%	99.42%
Cyclohexane	3.33%	96.67%
Other Hexanes	1.22%	98.78%
Heptanes	0.54%	99.46%
Methylcyclohexane	4.12%	95.88%
2,2,4-Trimethylpentane	1.73%	98.27%
Benzene	5.02%	94.98%
Toluene	7.93%	92.07%
Ethylbenzene	10.43%	89.57%
Xylenes	12.94%	87.06%
C8+ Heavies	12.14%	87.86%

STREAM REPORTS:

WET GAS STREAM

Temperature: 90.00 deg. F
Pressure: 594.70 psia
Flow Rate: 3.34e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.39e-001	2.21e+002
Carbon Dioxide	4.48e-001	1.73e+003
Nitrogen	2.49e+000	6.13e+003
Methane	7.29e+001	1.03e+005
Ethane	1.12e+001	2.95e+004
Propane	7.89e+000	3.06e+004
Isobutane	1.06e+000	5.41e+003
n-Butane	2.45e+000	1.25e+004
Isopentane	5.22e-001	3.31e+003
n-Pentane	4.45e-001	2.83e+003
Cyclopentane	1.80e-002	1.11e+002
n-Hexane	1.05e-001	7.94e+002
Cyclohexane	2.01e-002	1.49e+002
Other Hexanes	2.44e-001	1.85e+003
Heptanes	3.96e-002	3.50e+002
Methylcyclohexane	3.24e-002	2.80e+002
2,2,4-Trimethylpentane	1.70e-003	1.71e+001
Benzene	4.99e-003	3.43e+001
Toluene	1.27e-002	1.03e+002
Ethylbenzene	5.99e-004	5.60e+000
Xylenes	7.89e-003	7.37e+001
C8+ Heavies	2.83e-002	4.24e+002
Total Components	100.00	1.99e+005

DRY GAS STREAM

Temperature: 90.00 deg. F
Pressure: 594.70 psia
Flow Rate: 3.33e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.03e-002	1.63e+001
Carbon Dioxide	4.48e-001	1.73e+003
Nitrogen	2.49e+000	6.13e+003
Methane	7.30e+001	1.03e+005
Ethane	1.12e+001	2.95e+004
Propane	7.89e+000	3.06e+004
Isobutane	1.06e+000	5.41e+003
n-Butane	2.45e+000	1.25e+004
Isopentane	5.22e-001	3.31e+003
n-Pentane	4.45e-001	2.82e+003
Cyclopentane	1.79e-002	1.10e+002
n-Hexane	1.05e-001	7.93e+002
Cyclohexane	1.99e-002	1.47e+002
Other Hexanes	2.44e-001	1.85e+003
Heptanes	3.95e-002	3.48e+002
Methylcyclohexane	3.21e-002	2.77e+002
2,2,4-Trimethylpentane	1.70e-003	1.70e+001

Benzene	4.59e-003	3.15e+001
Toluene	1.12e-002	9.06e+001
Ethylbenzene	4.99e-004	4.65e+000
Xylenes	6.06e-003	5.65e+001
C8+ Heavies	2.79e-002	4.18e+002
Total Components	100.00	1.99e+005

LEAN GLYCOL STREAM

Temperature: 90.00 deg. F
Flow Rate: 9.80e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.84e+001	5.43e+003
Water	1.50e+000	8.28e+001
Carbon Dioxide	3.83e-012	2.11e-010
Nitrogen	1.04e-012	5.72e-011
Methane	5.39e-018	2.97e-016
Ethane	7.04e-008	3.88e-006
Propane	1.12e-008	6.20e-007
Isobutane	2.08e-009	1.15e-007
n-Butane	5.31e-009	2.93e-007
Isopentane	2.98e-004	1.64e-002
n-Pentane	3.27e-004	1.80e-002
Cyclopentane	5.38e-005	2.97e-003
n-Hexane	1.53e-004	8.43e-003
Cyclohexane	8.24e-004	4.54e-002
Other Hexanes	5.43e-004	2.99e-002
Heptanes	1.28e-004	7.04e-003
Methylcyclohexane	2.24e-003	1.23e-001
2,2,4-Trimethylpentane	8.24e-006	4.55e-004
Benzene	2.72e-003	1.50e-001
Toluene	1.90e-002	1.05e+000
Ethylbenzene	1.99e-003	1.10e-001
Xylenes	4.62e-002	2.55e+000
C8+ Heavies	1.50e-002	8.26e-001
Total Components	100.00	5.51e+003

RICH GLYCOL STREAM

Temperature: 90.00 deg. F
Pressure: 594.70 psia
Flow Rate: 1.04e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.31e+001	5.42e+003
Water	4.93e+000	2.87e+002
Carbon Dioxide	3.63e-002	2.11e+000
Nitrogen	9.78e-003	5.70e-001
Methane	1.52e-001	8.84e+000
Ethane	1.41e-001	8.22e+000
Propane	2.61e-001	1.52e+001
Isobutane	6.58e-002	3.83e+000

n-Butane	2.03e-001	1.18e+001
Isopentane	5.65e-002	3.29e+000
n-Pentane	6.18e-002	3.60e+000
Cyclopentane	1.02e-002	5.94e-001
n-Hexane	2.89e-002	1.69e+000
Cyclohexane	2.44e-002	1.42e+000
Other Hexanes	5.14e-002	2.99e+000
Heptanes	2.42e-002	1.41e+000
Methylcyclohexane	5.30e-002	3.09e+000
2,2,4-Trimethylpentane	5.20e-004	3.03e-002
Benzene	5.15e-002	3.00e+000
Toluene	2.28e-001	1.33e+001
Ethylbenzene	1.81e-002	1.05e+000
Xylenes	3.38e-001	1.97e+001
C8+ Heavies	1.18e-001	6.86e+000
Total Components	100.00	5.82e+003

FLASH TANK OFF GAS STREAM

Temperature: 88.00 deg. F
Pressure: 71.70 psia
Flow Rate: 4.07e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.06e-001	2.06e-002
Carbon Dioxide	1.86e+000	8.79e-001
Nitrogen	1.75e+000	5.26e-001
Methane	4.73e+001	8.13e+000
Ethane	1.90e+001	6.13e+000
Propane	1.74e+001	8.21e+000
Isobutane	2.56e+000	1.59e+000
n-Butane	6.46e+000	4.03e+000
Isopentane	1.25e+000	9.68e-001
n-Pentane	1.14e+000	8.81e-001
Cyclopentane	6.22e-002	4.68e-002
n-Hexane	2.57e-001	2.37e-001
Cyclohexane	6.23e-002	5.62e-002
Other Hexanes	5.90e-001	5.45e-001
Heptanes	8.93e-002	9.60e-002
Methylcyclohexane	8.43e-002	8.88e-002
2,2,4-Trimethylpentane	3.27e-003	4.00e-003
Benzene	1.56e-002	1.31e-002
Toluene	3.35e-002	3.31e-002
Ethylbenzene	1.18e-003	1.35e-003
Xylenes	1.40e-002	1.60e-002
C8+ Heavies	2.80e-002	5.12e-002
Total Components	100.00	3.26e+001

FLASH TANK GLYCOL STREAM

Temperature: 88.00 deg. F
Flow Rate: 1.04e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.37e+001	5.42e+003
Water	4.96e+000	2.87e+002
Carbon Dioxide	2.13e-002	1.23e+000
Nitrogen	7.53e-004	4.36e-002
Methane	1.23e-002	7.15e-001
Ethane	3.62e-002	2.10e+000
Propane	1.21e-001	7.01e+000
Isobutane	3.86e-002	2.24e+000
n-Butane	1.34e-001	7.77e+000
Isopentane	4.01e-002	2.32e+000
n-Pentane	4.70e-002	2.72e+000
Cyclopentane	9.44e-003	5.47e-001
n-Hexane	2.50e-002	1.45e+000
Cyclohexane	2.35e-002	1.36e+000
Other Hexanes	4.23e-002	2.45e+000
Heptanes	2.26e-002	1.31e+000
Methylcyclohexane	5.18e-002	3.00e+000
2,2,4-Trimethylpentane	4.54e-004	2.63e-002
Benzene	5.16e-002	2.99e+000
Toluene	2.29e-001	1.32e+001
Ethylbenzene	1.81e-002	1.05e+000
Xylenes	3.40e-001	1.97e+001
C8+ Heavies	1.18e-001	6.81e+000
Total Components	100.00	5.79e+003

FLASH GAS EMISSIONS

Flow Rate: 1.95e+003 scfh
Control Method: Combustion Device
Control Efficiency: 98.00

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.93e+001	5.47e+001
Carbon Dioxide	4.00e+001	9.02e+001
Nitrogen	3.66e-001	5.26e-001
Methane	1.98e-001	1.63e-001
Ethane	7.95e-002	1.23e-001
Propane	7.26e-002	1.64e-001
Isobutane	1.07e-002	3.19e-002
n-Butane	2.70e-002	8.06e-002
Isopentane	5.23e-003	1.94e-002
n-Pentane	4.76e-003	1.76e-002
Cyclopentane	2.60e-004	9.36e-004
n-Hexane	1.07e-003	4.74e-003
Cyclohexane	2.61e-004	1.12e-003
Other Hexanes	2.47e-003	1.09e-002
Heptanes	3.73e-004	1.92e-003
Methylcyclohexane	3.53e-004	1.78e-003
2,2,4-Trimethylpentane	1.37e-005	8.01e-005
Benzene	6.54e-005	2.62e-004
Toluene	1.40e-004	6.63e-004
Ethylbenzene	4.95e-006	2.69e-005
Xylenes	5.87e-005	3.20e-004
C8+ Heavies	1.17e-004	1.02e-003
Total Components	100.00	1.46e+002

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 4.70e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.17e+001	2.04e+002
Carbon Dioxide	2.26e-001	1.23e+000
Nitrogen	1.26e-002	4.36e-002
Methane	3.60e-001	7.15e-001
Ethane	5.63e-001	2.10e+000
Propane	1.29e+000	7.01e+000
Isobutane	3.11e-001	2.24e+000
n-Butane	1.08e+000	7.77e+000
Isopentane	2.58e-001	2.30e+000
n-Pentane	3.03e-001	2.70e+000
Cyclopentane	6.27e-002	5.44e-001
n-Hexane	1.35e-001	1.44e+000
Cyclohexane	1.27e-001	1.32e+000
Other Hexanes	2.27e-001	2.42e+000
Heptanes	1.05e-001	1.30e+000
Methylcyclohexane	2.37e-001	2.87e+000
2,2,4-Trimethylpentane	1.83e-003	2.58e-002
Benzene	2.93e-001	2.84e+000
Toluene	1.07e+000	1.22e+001
Ethylbenzene	7.16e-002	9.41e-001
Xylenes	1.30e+000	1.71e+001
C8+ Heavies	2.84e-001	5.98e+000
Total Components	100.00	2.79e+002

CONDENSER PRODUCED WATER STREAM

Temperature: 75.00 deg. F
Flow Rate: 4.08e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	1.00e+002	2.04e+002	999503.
Carbon Dioxide	1.66e-002	3.39e-002	166.
Nitrogen	1.18e-005	2.42e-005	0.
Methane	4.15e-004	8.48e-004	4.
Ethane	1.53e-003	3.12e-003	15.
Propane	2.62e-003	5.36e-003	26.
Isobutane	3.61e-004	7.37e-004	4.
n-Butane	1.46e-003	2.99e-003	15.
Isopentane	1.59e-004	3.25e-004	2.
n-Pentane	1.92e-004	3.91e-004	2.
Cyclopentane	2.12e-004	4.34e-004	2.
n-Hexane	3.13e-005	6.39e-005	0.
Cyclohexane	1.45e-004	2.96e-004	1.
Other Hexanes	6.19e-005	1.26e-004	1.
Heptanes	5.08e-006	1.04e-005	0.
Methylcyclohexane	7.21e-005	1.47e-004	1.

2,2,4-Trimethylpentane	7.84e-008	1.60e-007	0.
Benzene	9.39e-003	1.92e-002	94.
Toluene	1.15e-002	2.34e-002	115.
Ethylbenzene	2.14e-004	4.36e-004	2.
Xylenes	4.76e-003	9.72e-003	48.
C8+ Heavies	3.35e-008	6.85e-008	0.
Total Components	100.00	2.04e+002	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 75.00 deg. F
Flow Rate: 1.39e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	3.05e-002	1.80e-002
Carbon Dioxide	6.09e-002	3.60e-002
Nitrogen	7.84e-004	4.62e-004
Methane	1.29e-002	7.63e-003
Ethane	1.98e-001	1.17e-001
Propane	3.04e+000	1.79e+000
Isobutane	1.67e+000	9.84e-001
n-Butane	7.03e+000	4.15e+000
Isopentane	3.02e+000	1.78e+000
n-Pentane	3.62e+000	2.13e+000
Cyclopentane	7.93e-001	4.68e-001
n-Hexane	2.27e+000	1.34e+000
Cyclohexane	2.11e+000	1.25e+000
Other Hexanes	3.66e+000	2.16e+000
Heptanes	2.16e+000	1.28e+000
Methylcyclohexane	4.75e+000	2.80e+000
2,2,4-Trimethylpentane	4.26e-002	2.52e-002
Benzene	4.56e+000	2.69e+000
Toluene	2.03e+001	1.20e+001
Ethylbenzene	1.59e+000	9.37e-001
Xylenes	2.89e+001	1.71e+001
C8+ Heavies	1.01e+001	5.98e+000
Total Components	100.00	5.90e+001

CONDENSER VENT STREAM

Temperature: 75.00 deg. F
Pressure: 22.40 psia
Flow Rate: 1.42e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.95e+000	1.31e-001
Carbon Dioxide	7.08e+000	1.16e+000
Nitrogen	4.12e-001	4.31e-002
Methane	1.18e+001	7.06e-001
Ethane	1.76e+001	1.98e+000
Propane	3.17e+001	5.22e+000
Isobutane	5.77e+000	1.25e+000
n-Butane	1.67e+001	3.62e+000
Isopentane	1.94e+000	5.24e-001

n-Pentane	2.11e+000	5.67e-001
Cyclopentane	2.89e-001	7.57e-002
n-Hexane	3.17e-001	1.02e-001
Cyclohexane	2.27e-001	7.12e-002
Other Hexanes	8.10e-001	2.61e-001
Heptanes	7.54e-002	2.82e-002
Methylcyclohexane	1.95e-001	7.15e-002
2,2,4-Trimethylpentane	1.59e-003	6.80e-004
Benzene	4.35e-001	1.27e-001
Toluene	5.08e-001	1.75e-001
Ethylbenzene	1.01e-002	4.02e-003
Xylenes	1.54e-001	6.10e-002
C8+ Heavies	9.01e-004	5.73e-004
Total Components	100.00	1.62e+001

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 2.57e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	1.30e+001	1.41e-002
Ethane	1.94e+001	3.95e-002
Propane	3.50e+001	1.04e-001
Isobutane	6.37e+000	2.51e-002
n-Butane	1.84e+001	7.24e-002
Isopentane	2.15e+000	1.05e-002
n-Pentane	2.33e+000	1.13e-002
Cyclopentane	3.19e-001	1.51e-003
n-Hexane	3.50e-001	2.04e-003
Cyclohexane	2.50e-001	1.42e-003
Other Hexanes	8.94e-001	5.21e-003
Heptanes	8.33e-002	5.65e-004
Methylcyclohexane	2.15e-001	1.43e-003
2,2,4-Trimethylpentane	1.76e-003	1.36e-005
Benzene	4.80e-001	2.54e-003
Toluene	5.61e-001	3.50e-003
Ethylbenzene	1.12e-002	8.04e-005
Xylenes	1.70e-001	1.22e-003
C8+ Heavies	9.95e-004	1.15e-005
Total Components	100.00	2.97e-001

Reboiler Exhaust Emissions Calculations

Unit Number: 6b
Description: Dehydrator Reboiler (80 MMSCFD)

Fuel Consumption

1.00	MMBtu/hr	Capacity	Taken from current permit
900	Btu/scf	Field gas heating value	Nominal heat content
1,111	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
8,760	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
9.73	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	1.11E-01	4.87E-01
CO	84	9.33E-02	4.09E-01
VOC	5.5	6.11E-03	2.68E-02
SO2	0.6	6.67E-04	2.92E-03
PM	7.6	8.44E-03	3.70E-02
PM10	7.6	8.44E-03	3.70E-02
PM2.5	7.6	8.44E-03	3.70E-02
Lead	5.00E-04	5.56E-07	2.43E-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

600	°F	Exhaust temperature	Mfg. data (Enertek & InFab)
199.62	acfm	Stack flowrate	Stack velocity * stack area * 60
0.83	ft	Stack exit diameter	Harvest Four Corners, LLC
0.55	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.1	fps	Stack exit velocity	Mfg. data (Enertek & InFab)
20.0	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
External Combustion Devices Report

Facility ID:	**DOGIE**
Operation Type:	**COMPRESSOR STATION**
Facility Name:	**DOGIE CANYON COMPRESSOR**
User Name:	**Harvest Four Corners, LLC**
Units of Measure:	**U.S. STANDARD**

Notes:

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: REBOILER

Hours of Operation:	8,760	Yearly
Heat Input:	1.00	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	0.0015	0.0003522500 lb/MMBtu	GRI Field
Methanol	0.0019	0.0004333330 lb/MMBtu	GRI Field
Acetaldehyde	0.0013	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	0.0001	0.0000323000 lb/MMBtu	GRI Field
n-Hexane	0.0014	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	0.0062			

Criteria Pollutants

VOC	0.0236	0.0053921569	lb/MMBtu	EPA
PM	0.0326	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0245	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0082	0.0018627451	lb/MMBtu	EPA
CO	0.1346	0.0307275000	lb/MMBtu	GRI Field
NMHC	0.0374	0.0085294118	lb/MMBtu	EPA
NOx	0.3866	0.0882553330	lb/MMBtu	GRI Field
SO2	0.0026	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0258	0.0058790650	lb/MMBtu	GRI Field
Acetylene	0.0234	0.0053314000	lb/MMBtu	GRI Field
Ethylene	0.0023	0.0005264000	lb/MMBtu	GRI Field
Ethane	0.0074	0.0016804650	lb/MMBtu	GRI Field
Propylene	0.0041	0.0009333330	lb/MMBtu	GRI Field
Propane	0.0053	0.0012019050	lb/MMBtu	GRI Field
Butane	0.0061	0.0013866350	lb/MMBtu	GRI Field
Cyclopentane	0.0002	0.0000405000	lb/MMBtu	GRI Field
Pentane	0.0090	0.0020656400	lb/MMBtu	GRI Field
n-Pentane	0.0088	0.0020000000	lb/MMBtu	GRI Field
Cyclohexane	0.0002	0.0000451000	lb/MMBtu	GRI Field
Methylcyclohexane	0.0007	0.0001691000	lb/MMBtu	GRI Field
n-Octane	0.0002	0.0000506000	lb/MMBtu	GRI Field
n-Nonane	0.0000	0.0000050000	lb/MMBtu	GRI Field
CO2	515.2941	117.6470588235	lb/MMBtu	EPA

Engine Exhaust Emissions Calculations

Unit Number: 7
Description: Caterpillar Standby Generator

Horsepower Calculations

6,235	ft above MSL	Elevation	
864	hp	Nameplate hp	Mfg. data
741	hp	Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 1,500 ft)

Operating Time

36.6	gal/hr	Hourly fuel consumption	Mfg. data
138,000	Btu/gal	Heat content	Nominal heat content
5.05	MMBtu/hr	Hourly fuel consumption	gal/hr x Btu/gal / 1,000,000
500	hr/yr	Annual operating time	Harvest Four Corners, LLC
18,300	gal/yr	Annual fuel consumption	gal/hr x hr/yr
2,525.40	MMBtu/yr	Annual fuel consumption	gal/yr x Btu/gal / 1,000,000

Steady-State Emission Rates

Pollutants	Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy
NOX	5.74	10.93	2.73

Emission factor (g/hp-hr) taken from manufacturer's data
Uncontrolled Emission Rates (pph) = g/hp-hr x Nameplate hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
Acetaldehyde	7.67E-04	3.87E-03	9.68E-04
Benzene	9.33E-04	4.71E-03	1.18E-03
Formaldehyde	1.18E-03	5.96E-03	1.49E-03
Naphthalene	8.48E-05	4.28E-04	1.07E-04
Toluene	4.09E-04	2.07E-03	5.16E-04
Xylene	2.85E-04	1.44E-03	3.60E-04

Emission factors taken from AP-42, Table 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

Dehydrator Flare Emissions Calculations

Unit Number: 8
Description: Dehydrator Flare

Operating Time

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

Flash Tank Off Gas Stream

407 scf/hr	Hourly flowrate	GRI-GLYCalc
1,701 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see flash tank off gas stream composition table below)
0.69 MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
3.57 MMscf/yr	Annual flowrate	scf/hr x hr/yr / 1,000,000
6,063.34 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr

Condenser Vent Stream

142 scf/hr	Hourly flowrate	GRI-GLYCalc
2,260 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see condenser vent stream composition table below)
0.32 MMBtu/hr	Hourly heat rate	scf/hr x Btu/scf / 1,000,000
1.24 MMscf/yr	Annual flowrate	scf/hr x hr/yr / 1,000,000
2,810.84 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr

Pilot Gas Stream

100 scf/hr	Hourly flowrate	Estimated
1,312 Btu/scf	Calculated heat content	Calculated from GRI-GLYCalc results (see dry gas stream composition table below)
0.13 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
1,148.92 MMBtu/yr	Annual heat rate	MMBtu/hr x hr/yr

Combined Stream

649 scf/hr	Hourly Flowrate	Sum of flash, condenser, and pilot streams
1.14 MMBtu/hr	Hourly Flowrate	Sum of flash, condenser, and pilot streams
5.69 MMscf/yr	Annual Flowrate	Sum of flash, condenser, and pilot streams
10,023.09 MMBtu/yr	Annual Flowrate	Sum of flash, condenser, and pilot streams
1,763 Btu/scf	Heat content	Throughput weighted average of flash, condenser, and pilot streams

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
NOX	0.1380	1.58E-01	6.92E-01
CO	0.2755	3.15E-01	1.38

Emission factors (lb/MMBtu) from the Texas Commission on Environmental Quality (TCEQ) January 2010 document "Technical Supplement 4: Flares" for air assisted units combusting high-Btu waste streams (> 1000 Btu/scf)
Emissions are calculated using the combined stream flowrates
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	tpy
VOC	5.5	5.50E-04	2.41E-03
SO2	0.6	3.89E-04	1.71E-03
Lead	5.00E-04	3.25E-07	1.42E-06

TSP, PM10 and PM2.5 emissions are assumed to be negligible, as the flare is smokeless
Emission factors taken from AP-42, Table 1.4-2
VOC emissions are calculated using only the pilot gas stream flowrates. VOC emissions from the condenser vent and flash tank off-gas streams are included with the dehydrator emissions
SO2 and lead emissions are calculated using the combined stream flowrates
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

Dehydrator Flare Emissions Calculations

Unit Number: 8
Description: Dehydrator Flare

Flare Effective Diameter

32.01	lb/lb-mole	Molecular weight	Throughput weighted average calculated from GRI-GLYCalc results (see tables below)
10.82	scfm	Flowrate	scf/hr / 60 min/hr
80,093	cal/sec	Gross heat release	scfm x Btu/scf x 252 cal/Btu / 60 sec/min
58,342	cal/sec	Effective heat release (q_n)	cal/sec x (1-(0.048 x (MW^0.5)))
0.24	meters	Effective stack diameter	(0.000001 x cal/sec[q_n])^0.5

Exhaust Parameters

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

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	1.06E-01	18.02	0.02	0.00	0.00
Carbon dioxide	1.86E+00	44.01	0.82	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	1.75E+00	28.01	0.49	0.00	0.00
Methane	4.73E+01	16.04	7.59	1,009.70	477.59
Ethane	1.90E+01	30.07	5.71	1,768.70	336.05
Propane	1.74E+01	44.09	7.67	2,517.20	437.99
IsoButane	2.56E+00	58.12	1.49	3,252.60	83.27
n-Butane	6.46E+00	58.12	3.75	3,262.00	210.73
IsoPentane	1.25E+00	72.15	0.90	3,999.70	50.00
n-Pentane	1.14E+00	72.15	0.82	4,008.70	45.70
Cyclopentane	6.22E-02	70.14	0.04	3,763.70	2.34
n-Hexane	2.57E-01	86.17	0.22	4,756.10	12.22
Cyclohexane	6.23E-02	84.16	0.05	4,481.60	2.79
Other hexanes	5.90E-01	86.18	0.51	4,756.10	28.06
Heptanes	8.93E-02	100.20	0.09	5,502.80	4.91
Methylcyclohexane	8.43E-02	98.19	0.08	5,215.90	4.40
2,2,4-Trimethylpentane	3.27E-03	100.21	0.00	5,500.00	0.18
Benzene	1.56E-02	78.11	0.01	3,741.90	0.58
Toluene	3.35E-02	92.14	0.03	4,474.80	1.50
Ethylbenzene	1.18E-03	106.17	0.00	5,222.10	0.06
Xylenes	1.40E-02	106.17	0.01	5,208.00	0.73
C8+ heavies	2.80E-02	110.00	0.03	5,500.00	1.54
Total	100.0667		30.36		1,700.64

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: 8
Description: Dehydrator 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	1.95E+00	18.02	0.35	0.00	0.00
Carbon dioxide	7.08E+00	44.01	3.12	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	4.12E-01	28.01	0.12	0.00	0.00
Methane	1.18E+01	16.04	1.89	1,009.70	119.14
Ethane	1.76E+01	30.07	5.29	1,768.70	311.29
Propane	3.17E+01	44.09	13.98	2,517.20	797.95
IsoButane	5.77E+00	58.12	3.35	3,252.60	187.68
n-Butane	1.67E+01	58.12	9.71	3,262.00	544.75
IsoPentane	1.94E+00	72.15	1.40	3,999.70	77.59
n-Pentane	2.11E+00	72.15	1.52	4,008.70	84.58
Cyclopentane	2.89E-01	70.14	0.20	3,763.70	10.88
n-Hexane	3.17E-01	86.17	0.27	4,756.10	15.08
Cyclohexane	2.27E-01	84.16	0.19	4,481.60	10.17
Other hexanes	8.10E-01	86.18	0.70	4,756.10	38.52
Heptanes	7.54E-02	100.20	0.08	5,502.80	4.15
Methylcyclohexane	1.95E-01	98.19	0.19	5,215.90	10.17
2,2,4-Trimethylpentane	1.59E-03	100.21	0.00	5,500.00	0.09
Benzene	4.35E-01	78.11	0.34	3,741.90	16.28
Toluene	5.08E-01	92.14	0.47	4,474.80	22.73
Ethylbenzene	1.01E-02	106.17	0.01	5,222.10	0.53
Xylenes	1.54E-01	106.17	0.16	5,208.00	8.02
C8+ heavies	9.01E-04	110.00	0.00	5,500.00	0.05
Total	100.0850		43.34		2,259.66

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: 8
Description: Dehydrator 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	1.03E-02	18.02	0.00	0.00	0.00
Carbon dioxide	4.48E-01	44.01	0.20	0.00	0.00
Hydrogen sulfide	0.00E+00	34.07	0.00	637.02	0.00
Nitrogen	2.49E+00	28.01	0.70	0.00	0.00
Methane	7.30E+01	16.04	11.71	1,009.70	737.08
Ethane	1.12E+01	30.07	3.37	1,768.70	198.09
Propane	7.89E+00	44.09	3.48	2,517.20	198.61
IsoButane	1.06E+00	58.12	0.62	3,252.60	34.48
n-Butane	2.45E+00	58.12	1.42	3,262.00	79.92
IsoPentane	5.22E-01	72.15	0.38	3,999.70	20.88
n-Pentane	4.45E-01	72.15	0.32	4,008.70	17.84
Cyclopentane	1.79E-02	70.14	0.01	3,763.70	0.67
n-Hexane	1.05E-01	86.17	0.09	4,756.10	4.99
Cyclohexane	1.99E-02	84.16	0.02	4,481.60	0.89
Other hexanes	2.44E-01	86.18	0.21	4,756.10	11.60
Heptanes	3.95E-02	100.20	0.04	5,502.80	2.17
Methylcyclohexane	3.21E-02	98.19	0.03	5,215.90	1.67
2,2,4-Trimethylpentane	1.70E-03	100.21	0.00	5,500.00	0.09
Benzene	4.59E-03	78.11	0.00	3,741.90	0.17
Toluene	1.12E-02	92.14	0.01	4,474.80	0.50
Ethylbenzene	4.99E-04	106.17	0.00	5,222.10	0.03
Xylenes	6.06E-03	106.17	0.01	5,208.00	0.32
C8+ heavies	2.79E-02	110.00	0.03	5,500.00	1.53
Total	100.0256		22.64		1,311.55
NMHC	24.0773				
NMEHC	12.8773				

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:	**DOGIE**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**DOGIE CANYON COMPRESSOR**	
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: FLARE

Hours of Operation:	8,760 Yearly	**Efficiency:**	98.00 %
Volume:	100.00 scf/hr	**Volume Gas to Pilot:**	0.000 scf/hr
Gas Heat Value:	1,312.00 Btu/scf (HHV)	**Pilot Gas Sulfur Content:**	0.00 grains/100scf
Flare Design:	OTHER		

User Concentration Inputs

Chemical Name	Mole %
NMHC	24.0773
NMEHC	12.8773
Benzene	0.0046
Toluene	0.0112
Ethylbenzene	0.0005
Xylenes(m,p,o)	0.0061
n-Hexane	0.1050
2,2,4-Trimethylpentane	0.0017
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	0.0002
	Benzene	0.0001
	Toluene	0.0002
	Ethylbenzene	0.0000
	Xylenes(m,p,o)	0.0001
	2,2,4-Trimethylpentane	0.0000
	n-Hexane	0.0021
Total		0.0027

Criteria Pollutants

CO	0.1583
NMHC	0.1671
NMEHC	0.1311
NOx	0.0793

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Units 1, 2 & 4)
Description: Turbine, Compressor & Piping Associated With Station

Throughput

3	# of units	Number of units	Harvest Four Corners, LLC
50	events/yr/unit	Blowdowns per year	Harvest Four Corners, LLC
5,780	scf/event	Gas loss per blowdown (compressor)	Harvest Four Corners, LLC
5,800	scf/event	Gas loss per blowdown (turbine)	Harvest Four Corners, LLC
1,737,000	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	1.761E-02	15.30
Benzene	1.030E-05	8.94E-03
Ethylbenzene	1.679E-06	1.46E-03
n-Hexane	2.383E-04	2.07E-01
Isooctane	4.491E-06	3.90E-03
Toluene	3.085E-05	2.68E-02
Xylene	2.211E-05	1.92E-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	0.4483	44.01	5.202E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	2.4905	28.01	1.839E-03
Methane	73.0014	16.04	3.087E-02
Ethane	11.1680	30.07	8.854E-03
Propane	7.8972	44.09	9.180E-03
Isobutane	1.0599	58.12	1.624E-03
n-Butane	2.4509	58.12	3.756E-03
Isopentane	0.5223	72.15	9.935E-04
n-Pentane	0.4460	72.15	8.484E-04
Cyclopentane	0.0180	70.14	3.329E-05
n-Hexane	0.1049	86.17	2.383E-04
Cyclohexane	0.0201	84.16	4.460E-05
Other hexanes	0.2444	86.18	5.553E-04
Heptanes	0.0397	100.20	1.049E-04
Methylcyclohexane	0.0324	98.19	8.387E-05
Isooctane	0.0017	100.21	4.491E-06
Benzene	0.0050	78.11	1.030E-05
Toluene	0.0127	92.14	3.085E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0079	106.17	2.211E-05
C8+ Heavies	0.0283	110.00	8.207E-05
Total	100.0002		
Total VOC			1.761E-02

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.3 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Unit 3)
Description: Turbine, Compressor & Piping Associated With Station

Throughput

1	# of units	Number of units	Harvest Four Corners, LLC
50	events/yr/unit	Blowdowns per year	Harvest Four Corners, LLC
1,830	scf/event	Gas loss per blowdown (compressor)	Harvest Four Corners, LLC
12,800	scf/event	Gas loss per blowdown (turbine)	Harvest Four Corners, LLC
731,500	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	1.761E-02	6.44
Benzene	1.030E-05	3.77E-03
Ethylbenzene	1.679E-06	6.14E-04
n-Hexane	2.383E-04	8.72E-02
Isooctane	4.491E-06	1.64E-03
Toluene	3.085E-05	1.13E-02
Xylene	2.211E-05	8.09E-03

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	0.4483	44.01	5.202E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	2.4905	28.01	1.839E-03
Methane	73.0014	16.04	3.087E-02
Ethane	11.1680	30.07	8.854E-03
Propane	7.8972	44.09	9.180E-03
Isobutane	1.0599	58.12	1.624E-03
n-Butane	2.4509	58.12	3.756E-03
Isopentane	0.5223	72.15	9.935E-04
n-Pentane	0.4460	72.15	8.484E-04
Cyclopentane	0.0180	70.14	3.329E-05
n-Hexane	0.1049	86.17	2.383E-04
Cyclohexane	0.0201	84.16	4.460E-05
Other hexanes	0.2444	86.18	5.553E-04
Heptanes	0.0397	100.20	1.049E-04
Methylcyclohexane	0.0324	98.19	8.387E-05
Isooctane	0.0017	100.21	4.491E-06
Benzene	0.0050	78.11	1.030E-05
Toluene	0.0127	92.14	3.085E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0079	106.17	2.211E-05
C8+ Heavies	0.0283	110.00	8.207E-05
Total	100.0002		
Total VOC			1.761E-02

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.3 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (Unit 13)
Description: Turbine, Compressor & Piping Associated With Station

Throughput

1	# of units	Number of units	Harvest Four Corners, LLC
40	events/yr/unit	Blowdowns per year	Harvest Four Corners, LLC
30,000	scf/event	Gas loss per blowdown (compressor)	Harvest Four Corners, LLC
14,000	scf/event	Gas loss per blowdown (turbine)	Harvest Four Corners, LLC
1,760,000	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	1.761E-02	15.50
Benzene	1.030E-05	9.06E-03
Ethylbenzene	1.679E-06	1.48E-03
n-Hexane	2.383E-04	2.10E-01
Isooctane	4.491E-06	3.95E-03
Toluene	3.085E-05	2.71E-02
Xylene	2.211E-05	1.95E-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	0.4483	44.01	5.202E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	2.4905	28.01	1.839E-03
Methane	73.0014	16.04	3.087E-02
Ethane	11.1680	30.07	8.854E-03
Propane	7.8972	44.09	9.180E-03
Isobutane	1.0599	58.12	1.624E-03
n-Butane	2.4509	58.12	3.756E-03
Isopentane	0.5223	72.15	9.935E-04
n-Pentane	0.4460	72.15	8.484E-04
Cyclopentane	0.0180	70.14	3.329E-05
n-Hexane	0.1049	86.17	2.383E-04
Cyclohexane	0.0201	84.16	4.460E-05
Other hexanes	0.2444	86.18	5.553E-04
Heptanes	0.0397	100.20	1.049E-04
Methylcyclohexane	0.0324	98.19	8.387E-05
Isooctane	0.0017	100.21	4.491E-06
Benzene	0.0050	78.11	1.030E-05
Toluene	0.0127	92.14	3.085E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0079	106.17	2.211E-05
C8+ Heavies	0.0283	110.00	8.207E-05
Total	100.0002		
Total VOC			1.761E-02

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.3 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	tpy
Valves	522	0.0045	0.0099	5.17	22.63
Connectors	511	0.0002	0.0004	0.22	0.98
Pump Seals	2	0.0024	0.0053	0.01	0.05
Compressor Seals	44	0.0088	0.0194	0.85	3.73
Pressure Relief Valves	40	0.0088	0.0194	0.77	3.39
Open-Ended Lines	142	0.0020	0.0044	0.62	2.74
Total				**7.65**	**33.53**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
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	tpy
Carbon dioxide	0.4483	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	2.4905	28.013				
Methane	73.0014	16.043	11.712	53.840		
Ethane	11.1680	30.070	3.358	15.438		
Propane	7.8972	44.097	3.482	16.009	1.23	5.37
Isobutane	1.0599	58.123	0.616	2.832	2.17E-01	9.49E-01
n-Butane	2.4509	58.123	1.425	6.549	5.01E-01	2.20
Isopentane	0.5223	72.150	0.377	1.732	1.33E-01	5.81E-01
n-Pentane	0.4460	72.150	0.322	1.479	1.13E-01	4.96E-01
Cyclopentane	0.0180	70.134	0.013	0.058	4.44E-03	1.95E-02
n-Hexane	0.1049	86.177	0.090	0.416	3.18E-02	1.39E-01
Cyclohexane	0.0201	84.161	0.017	0.078	5.95E-03	2.61E-02
Other hexanes	0.2444	86.177	0.211	0.968	7.41E-02	3.25E-01
Heptanes	0.0397	100.204	0.040	0.183	1.40E-02	6.13E-02
Methylcyclohexane	0.0324	98.188	0.032	0.146	1.12E-02	4.90E-02
2,2,4-Trimethylpentane	0.0017	114.231	0.002	0.009	6.83E-04	2.99E-03
Benzene	0.0050	78.114	0.004	0.018	1.37E-03	6.02E-03
Toluene	0.0127	92.141	0.012	0.054	4.12E-03	1.80E-02
Ethylbenzene	0.0006	106.167	0.001	0.003	2.24E-04	9.82E-04
Xylenes	0.0079	106.167	0.008	0.039	2.95E-03	1.29E-02
C8+ Heavies	0.0283	114.231	0.032	0.149	1.14E-02	4.98E-02
Total	100.0002		21.753			
Total VOC				30.721	2.35	10.30

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
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)

Equipment Leaks Emissions Calculations

Unit Number: F1
Description: Valves, Connectors, Seals & Lines

Number of Compression Units at the Facility: 5
Number of Dehydrators at the Facility: 1

Process Equipment Description	Equipment Count						Instrument Count		
	Valves	Connectors	Pump Seals	Compressor Seals	Pressure Relief Valves	Open-end	Flow	Level	Pressure
Station inlet, meter run to pulsation dampener	17	14	0	0	1	13	3	0	3
Pulsation dampener	12	8	0	0	0	2	0	4	1
Compressor suction header	7	4	0	0	0	3	0	0	1
Suction header feed to instrument gas header	3	1	0	0	0	1	0	0	0
Compressor discharge header and bypass to station discharge	6	5	0	0	0	3	0	1	1
Compressor discharge header and suction header bypass lines	4	2	0	0	0	2	0	0	1
Fuel gas header	2	2	0	0	1	2	0	0	1
Instrument gas header	2	2	0	0	1	2	0	0	0
Station discharge header	9	5	0	0	1	6	0	0	2
Fuel gas recovery header	2	2	0	0	1	2	0	0	0
Fuel gas feed and filter loop	15	9	0	0	0	1	0	4	1
Instrument gas feed and filter loop	9	11	0	0	0	3	0	0	0
Produced water storage tank	1	0	0	0	0	1	0	1	0
ESD panel	12	0	0	0	0	0	0	0	0
Starting gas header	6	2	0	0	1	3	0	0	0
Hot gas header	2	2	0	0	0	2	0	0	0
Volume bottle lop	12	4	0	24	1	2	0	0	1
Components from Compressors	220	295	0	20	30	55	0	20	45
Components from dehydrators	6	10	2	0	3	6	0	3	4
Total	347	378	2	44	40	109	3	33	61
Adjusted Total	522	511	2	44	40	142			

The following additions are included in the Adjusted Total:

1 valve is added for each open end line
2 connectors are added for each flow meter
2 valves, 2 connectors and 1 open end line are added for each level gauge
1 connector is added for each pressure gauge

The component count is based on an evaluation of the Sim Mesa Compressor Station (two stage compression)

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
Benzene	5.846E-02	5.85E-03
Ethylbenzene	9.535E-03	9.54E-04
n-Hexane	1.353E+00	1.35E-01
Isooctane	2.550E-02	2.55E-03
Toluene	1.752E-01	1.75E-02
Xylene	1.255E-01	1.26E-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	0.4483	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	2.4905	28.01		
Methane	73.0014	16.04		
Ethane	11.1680	30.07		
Propane	7.8972	44.09	3.4819	5.212E+01
Isobutane	1.0599	58.12	0.6160	9.221E+00
n-Butane	2.4509	58.12	1.4245	2.132E+01
Isopentane	0.5223	72.15	0.3768	5.641E+00
n-Pentane	0.4460	72.15	0.3218	4.817E+00
Cyclopentane	0.0180	70.14	0.0126	1.890E-01
n-Hexane	0.1049	86.17	0.0904	1.353E+00
Cyclohexane	0.0201	84.16	0.0169	2.532E-01
Other hexanes	0.2444	86.18	0.2106	3.153E+00
Heptanes	0.0397	100.20	0.0398	5.954E-01
Methylcyclohexane	0.0324	98.19	0.0318	4.762E-01
Isooctane	0.0017	100.21	0.0017	2.550E-02
Benzene	0.0050	78.11	0.0039	5.846E-02
Toluene	0.0127	92.14	0.0117	1.752E-01
Ethylbenzene	0.0006	106.17	0.0006	9.535E-03
Xylenes	0.0079	106.17	0.0084	1.255E-01
C8+ Heavies	0.0283	110.00	0.0311	4.660E-01
Total	100.0002			
Total VOC			6.6806	

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
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)

Pig Receiver Emissions Calculations

Unit Number: PR1
Description: Pig Receiver (Dogie)

Throughput

52	events/yr	Blowdowns per year	Harvest Four Corners, LLC
111	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
5,772	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	1.761E-02	5.08E-02
Benzene	1.029E-05	2.97E-05
Ethylbenzene	1.679E-06	4.85E-06
n-Hexane	2.383E-04	6.88E-04
Isooctane	4.490E-06	1.30E-05
Toluene	3.084E-05	8.90E-05
Xylene	2.211E-05	6.38E-05

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	0.4483	44.01	5.200E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	2.4905	28.01	1.839E-03
Methane	73.0014	16.04	3.086E-02
Ethane	11.1680	30.07	8.851E-03
Propane	7.8972	44.09	9.177E-03
Isobutane	1.0599	58.12	1.624E-03
n-Butane	2.4509	58.12	3.755E-03
Isopentane	0.5223	72.15	9.933E-04
n-Pentane	0.4460	72.15	8.482E-04
Cyclopentane	0.0180	70.14	3.328E-05
n-Hexane	0.1049	86.17	2.383E-04
Cyclohexane	0.0201	84.16	4.459E-05
Other hexanes	0.2444	86.18	5.552E-04
Heptanes	0.0397	100.20	1.048E-04
Methylcyclohexane	0.0324	98.19	8.385E-05
Isooctane	0.0017	100.21	4.490E-06
Benzene	0.0050	78.11	1.029E-05
Toluene	0.0127	92.14	3.084E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0079	106.17	2.211E-05
C8+ Heavies	0.0283	110.00	8.205E-05
Total	100.0002		
Total VOC			1.761E-02

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations

Unit Number: PR2
Description: Pig Receiver (Trunk T to H-21 Crossover)

Throughput

52	events/yr	Blowdowns per year	Harvest Four Corners, LLC
71	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
3,692	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	1.761E-02	3.25E-02
Benzene	1.029E-05	1.90E-05
Ethylbenzene	1.679E-06	3.10E-06
n-Hexane	2.383E-04	4.40E-04
Isooctane	4.490E-06	8.29E-06
Toluene	3.084E-05	5.69E-05
Xylene	2.211E-05	4.08E-05

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	0.4483	44.01	5.200E-04
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	2.4905	28.01	1.839E-03
Methane	73.0014	16.04	3.086E-02
Ethane	11.1680	30.07	8.851E-03
Propane	7.8972	44.09	9.177E-03
Isobutane	1.0599	58.12	1.624E-03
n-Butane	2.4509	58.12	3.755E-03
Isopentane	0.5223	72.15	9.933E-04
n-Pentane	0.4460	72.15	8.482E-04
Cyclopentane	0.0180	70.14	3.328E-05
n-Hexane	0.1049	86.17	2.383E-04
Cyclohexane	0.0201	84.16	4.459E-05
Other hexanes	0.2444	86.18	5.552E-04
Heptanes	0.0397	100.20	1.048E-04
Methylcyclohexane	0.0324	98.19	8.385E-05
Isooctane	0.0017	100.21	4.490E-06
Benzene	0.0050	78.11	1.029E-05
Toluene	0.0127	92.14	3.084E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0079	106.17	2.211E-05
C8+ Heavies	0.0283	110.00	8.205E-05
Total	100.0002		
Total VOC			1.761E-02

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Truck Loading (Condensate) Emissions Calculations

Unit Number: L1
Description: Truck Loading

Emission Factor

0.6	Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
5.7773 psia (maximum)	True vapor pressure of liquid, P	TANKS 4.0 output file
4.6624 psia (average)	True vapor pressure of liquid, P	TANKS 4.0 output file
64.6789 lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
80.79 °F (maximum)	Temperature of liquid	TANKS 4.0 output file
67.36 °F (average)	Temperature of liquid	TANKS 4.0 output file
540.46 °R (maximum)	Temperature of liquid, T	°F + 459.67
527.03 °R (average)	Temperature of liquid, T	°F + 459.67
5.17 lb/10^3 gal (maximum)	Emission factor, L	AP-42, Section 5.2, Equation 1
4.28 lb/10^3 gal (average)	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

8.82 10^3 gal/hr	Maximum hourly production rate	Harvest Four Corners, LLC
1,683.23 10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	45.59	3.60

The short-term emission rates are calculated using the maximum true vapor pressure and maximum temperature of the liquid
The annual emission rates are calculated using the average true vapor pressure and average temperature of the liquid
Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Percent of VOC, %	Uncontrolled Emission Rates, pph	tpy
Benzene	0.20	9.06E-02	7.16E-03
Ethylbenzene	0.07	3.29E-02	2.60E-03
n-Hexane	8.74	3.98E+00	3.15E-01
Toluene	0.42	1.91E-01	1.51E-02
Xylenes	0.30	1.38E-01	1.09E-02

Percent of VOC calculated from the TANKS 4.0 results
Percent of VOC (%) = 100 x Pollutant Emission Rate (lb/yr) / Total VOC Emission Rate (lb/yr)
Uncontrolled Emission Rates (pph) = VOC Uncontrolled Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = VOC Uncontrolled Emission Rate (tpy) x (% / 100)

Truck Loading (Produced Water) Emissions Calculations

Unit Number: L2
Description: Truck Loading

Emission Factor

0.6	Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.5189 psia (maximum)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
0.3305 psia (average)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
18.02 lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 Database
80.79 °F (maximum)	Temperature of liquid	Estimated (see calculations below)
67.36 °F (average)	Temperature of liquid	Estimated (see calculations below)
540.46 °R (maximum)	Temperature of liquid, T	°F + 459.67
527.03 °R (average)	Temperature of liquid, T	°F + 459.67
0.13 lb/10^3 gal (maximum)	Emission factor, L	AP-42, Section 5.2, Equation 1
0.08 lb/10^3 gal (average)	Emission factor, L	AP-42, Section 5.2, Equation 1

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

Production Rate

3.36 10^3 gal/hr	Maximum hourly production rate	Harvest Four Corners, LLC
2,452.80 10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	4.35E-01	1.04E-01

The short-term emission rates are calculated using the maximum true vapor pressure and maximum temperature of the liquid
The annual emission rates are calculated using the average true vapor pressure and average temperature of the liquid
Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Mass Fraction	Uncontrolled Emission Rates, pph	tpy
Benzene	0.0267	1.16E-04	2.77E-05
Ethylbenzene	0.0027	1.16E-05	2.77E-06
n-Hexane	0.0840	3.65E-04	8.70E-05
Toluene	0.0344	1.49E-04	3.56E-05
m-Xylene	0.0229	9.95E-05	2.37E-05

HAP mass fractions are estimated from the produced water tank emission factors
HAP Mass Fraction = HAP Emission Factor (lb/bbl) / VOC Emission Factor (lb/bbl)
Uncontrolled Emission Rates (pph) = VOC Uncontrolled Emission Rate (pph) x HAP Mass Fraction
Uncontrolled Emission Rates (tpy) = VOC Uncontrolled Emission Rate (tpy) x HAP Mass Fraction

Truck Loading (Produced Water) Emissions Calculations

Unit Number: L2
Description: Truck Loading

Vapor Pressure of Produced Water:

It is estimated that the true vapor pressure of produced water is approximately equal to the true vapor pressure of pure water. An estimate of the true vapor pressure for water is calculated using Antoine's equation (see AP-42, Section 7.1, Equation 1-25).

Maximum:

Temperature = 80.79 °F

log P = A - (B / (C + T))

A = 8.07131
B = 1730.63
C = 233.426
T = 27.11 °C
P = mmHg

P = 10^(A - (B / (C + T))

P = 26.83 mmHg
P = 0.5189 psi

Average:

Temperature = 67.36 °F

log P = A - (B / (C + T))

A = 8.07131
B = 1730.63
C = 233.426
T = 19.64 °C
P = mmHg

P = 10^(A - (B / (C + T))

P = 17.09 mmHg
P = 0.3305 psi

Note: 760 mmHg = 14.7 psia

Storage Tank (Condensate) Emissions Calculations

Unit Number: T3 & T4
Description: Condensate Storage Tanks (with the potential for flash emissions)

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

Emission Rates

Pollutants	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Losses, tpy	Uncontrolled Emission Rates, tpy
VOC	9,071.23	4.54	64.74	69.28
Benzene	18.03	9.02E-03	1.88E-01	1.97E-01
Ethylbenzene	6.55	3.28E-03	4.11E-02	4.44E-02
n-Hexane	792.87	3.96E-01	4.91	5.31
Toluene	38.00	1.90E-02	3.21E-01	3.40E-01
Xylenes	27.47	1.37E-02	1.89E-01	2.02E-01

The condensate tanks are idenfical in both capacity and dimensions. It was assumed, on average, each tank would process 50 percent of the annual facility total condensate throughput.

Working/breathing losses were calculated using TANKS 4.0

TANKS 4.0 was set up to identify emissions from a single tank processing 841,617 gallons of condensate per year (half the annual facility total throughput). The working/breathing losses shown in the table are those emitted from each tank.

Flash emissions were calculated using ProMax 5.0 (see cells D247-D317 on the Flowsheet1 Pstreams tab).

ProMax 5.0 was set up to calculate emissions from two tanks processing 1,683,234 gallons of condensate per year (the annual facility total throughput). Since each tank will process 50 percent of the total throughput, flash losses shown in the table are 50 percent of the totals calculated by PromMax 5.0.

Storage Tank (Condensate) Emissions Calculations

Unit Number: T3 & T4
Description: Condensate Storage Tanks (with the potential for flash emissions)

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

Flashed Condensate Composition (for use with TANKS 4)

Pollutant	Flashed Condensate Composition (%)
Water	0.18832
Isobutane	1.61519
n-Butane	4.10107
Cyclopentane	0.16455
Isopentane	2.84315
n-pentane	3.44114
n-Hexane	11.63796
2,3-Dimethylbutane	0.01797
2-Methylpentane	0.19555
Methylcyclopentane	0.78433
Cyclohexane	2.38397
n-Heptane	4.83472
2,2-Dimethylpentane	0.00661
2,4-Dimethylpentane	0.04435
3,3-Dimethylpentane	0.00364
2-Methylhexane	1.04728
2,3-Dimethylpentane	0.13018
3-Methylhexane	1.59100
3-Ethylpentane	0.00043
1,1-Dimethylcyclopentane	0.01854
Methylcyclohexane	6.71299
Ethylcyclopentane	0.21306
1-Heptene	0.00012
n-Octane	22.73525
2,2,3-Trimethylpentane	0.27540
2,3,3-Trimethylpentane	0.00302
n-Nonane	18.14689
n-Decane	3.42036
Benzene	0.42838
Ethylbenzene	1.59090
Toluene	3.11545
m-Xylene	6.80141
o-Xylene	1.50681
Total	100.00000

The flashed condensate compositions were taken from the ProMax 5.0 output (see cells C163-C239 on the Flowsheet1 Pstreams tab)
Since nitrogen, carbon dioxide, methane, and ethane are not VOCs or HAPs, they were included with the water fraction
Since propane is a VOC, it was included with the isobutane and n-butane fractions (an even distribution)
The C6 constituents not included in the TANKS 4 database, were added to the cyclohexane fraction
The C7 constituents not included in the TANKS 4 database, were added to the n-heptane fraction
The C8 constituents not included in the TANKS 4 database, were added to the n-octane fraction

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

Identification

User Identification:	Dogie T3 & T4 (Condensate)
City:	Counselor
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):	16.00
Diameter (ft):	15.00
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	7.50
Volume (gallons):	19,829.00
Turnovers:	42.44
Net Throughput(gal/yr):	841,617.00
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)	15.00

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

Dogie T3 & T4 (Condensate) - Vertical Fixed Roof Tank
Counselor, 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	4.6624	3.5719	5.7773	64.6789			98.03	
1,1-Dimethylcyclopentane						1.1376	0.7855	1.6114	87.5000	0.0002	0.0001	87.50	Option 2: A=6.8172, B=1219.474, C=221.95
1-Heptene						0.8355	0.5652	1.2061	98.1900	0.0000	0.0000	98.19	Option 2: A=6.9018, B=1258.345, C=219.3
2,2,3-Trimethylpentane						0.4706	0.3138	0.6885	114.2300	0.0028	0.0004	114.23	Option 2: A=6.8254, B=1294.88, C=218.42
2,2-Dimethylpentane						1.5953	1.1159	2.2324	100.2000	0.0001	0.0000	100.20	Option 2: A=6.8148, B=1190.033, C=223.3
2,3,3-Trimethylpentane						0.3953	0.2627	0.5804	114.2300	0.0000	0.0000	114.23	Option 2: A=6.8435, B=1328.05, C=220.38
2,3-Dimethylbutane						3.6396	2.6346	4.9343	86.1800	0.0002	0.0002	86.18	Option 2: A=6.8098, B=1127.187, C=228.9
2,3-Dimethylpentane						1.0306	0.7073	1.4681	100.2000	0.0013	0.0004	100.20	Option 2: A=6.8538, B=1238.017, C=221.82
2,4-Dimethylpentane						1.7637	1.2404	2.4562	100.2000	0.0004	0.0003	100.20	Option 2: A=6.8262, B=1192.04, C=225.32
2-Methylhexane						0.9819	0.6694	1.4072	100.2100	0.0105	0.0033	100.21	Option 2: A=6.8731, B=1236.026, C=219.55
2-Methylpentane						3.2662	2.3439	4.4634	86.1800	0.0020	0.0021	86.18	Option 2: A=6.8391, B=1135.41, C=226.57
3,3-Dimethylpentane						1.2512	0.8705	1.7603	100.2000	0.0000	0.0000	100.20	Option 2: A=6.8266, B=1228.663, C=225.32
3-Ethylpentane						0.8628	0.5860	1.2410	100.2000	0.0000	0.0000	100.20	Option 2: A=6.8756, B=1251.827, C=219.89
3-Methylhexane						0.9161	0.6231	1.3159	100.2100	0.0159	0.0047	100.21	Option 2: A=6.8676, B=1240.196, C=219.22
Benzene						1.4274	0.9846	2.0237	78.1100	0.0043	0.0020	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	34.6684	58.1230	0.0410	0.3991	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.0238	0.0114	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0016	0.0027	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0342	0.0004	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0159	0.0007	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Ethylcyclopentane						0.5887	0.3952	0.8562	98.1900	0.0021	0.0004	98.19	Option 2: A=6.887, B=1298.599, C=220.68
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.0483	0.0119	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1164	0.0874	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Iso-Butane						43.3083	34.4026	53.8185	58.1230	0.0162	0.2274	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0284	0.1096	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.0671	0.0150	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Methylcyclopentane						2.0972	1.4806	2.9102	84.1600	0.0078	0.0053	84.16	Option 2: A=6.8628, B=1186.059, C=226.04
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.1815	0.0046	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.2274	0.0131	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0344	0.0898	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0312	0.0042	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Water						0.3402	0.2160	0.5229	18.0150	0.0019	0.0002	18.02	Option 1: VP60 = .263 VP70 = .3679
Xylene (-m)						0.1165	0.0728	0.1813	106.1700	0.0680	0.0026	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Xylene (-o)						0.0921	0.0570	0.1446	106.1700	0.0151	0.0005	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)

Dogie T3 & T4 (Condensate) - Vertical Fixed Roof Tank
Counselor, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	3,794.4551
Vapor Space Volume (cu ft):	1,683.8880
Vapor Density (lb/cu ft):	0.0533
Vapor Space Expansion Factor:	0.3884
Vented Vapor Saturation Factor:	0.2981
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,683.8880
Tank Diameter (ft):	15.0000
Vapor Space Outage (ft):	9.5289
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	7.5000
Roof Outage (ft):	1.0289
Roof Outage (Dome Roof)	
Roof Outage (ft):	1.0289
Dome Radius (ft):	15.0000
Shell Radius (ft):	7.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0533
Vapor Molecular Weight (lb/lb-mole):	64.6789
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.6624
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:	0.3884
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	2.2054
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.6624
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.5719
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.7773
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:	0.2981
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	4.6624
Vapor Space Outage (ft):	9.5289
Working Losses (lb):	5,278.6699

Vapor Molecular Weight (lb/lb-mole):	64.6789
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.6624
Annual Net Throughput (gal/yr.):	841,617.0000
Annual Turnovers:	42.4400
Turnover Factor:	0.8735
Maximum Liquid Volume (gal):	19,829.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	15.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	9,073.1250

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

Emissions Report for: Annual

Dogie T3 & T4 (Condensate) - Vertical Fixed Roof Tank
Counselor, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	5,278.67	3,794.46	9,073.12
Iso-Butane	1,200.29	862.80	2,063.09
Butane (-n)	2,106.58	1,514.27	3,620.84
Cyclopentane	14.00	10.07	24.07
Isopentane	578.79	416.05	994.84
Pentane (-n)	474.19	340.86	815.05
Hexane (-n)	461.29	331.59	792.87
2,3-Dimethylbutane	1.12	0.81	1.93
2-Methylpentane	10.96	7.88	18.84
Methylcyclopentane	28.22	20.29	48.51
Cyclohexane	60.29	43.34	103.63
Heptane (-n)	63.05	45.32	108.37
2,2-Dimethylpentane	0.18	0.13	0.31
2,4-Dimethylpentane	1.34	0.96	2.31
3,3-Dimethylpentane	0.08	0.06	0.13
2-Methylhexane	17.64	12.68	30.33
2,3-Dimethylpentane	2.30	1.65	3.96
3-Methylhexane	25.01	17.98	42.99
3-Ethylpentane	0.01	0.00	0.01
1,1-Dimethylcyclopentane	0.36	0.26	0.62
Methylcyclohexane	79.31	57.01	136.33
Ethylcyclopentane	2.15	1.55	3.70
1-Heptene	0.00	0.00	0.00
Octane (-n)	69.03	49.62	118.64
2,2,3-Trimethylpentane	2.22	1.60	3.82
2,3,3-Trimethylpentane	0.02	0.01	0.04
Nonane (-n)	24.41	17.55	41.96

Decane (-n)	2.32	1.67	3.99
Benzene	10.49	7.54	18.03
Ethylbenzene	3.81	2.74	6.55
Toluene	22.11	15.89	38.00
Xylene (-m)	13.60	9.78	23.38
Xylene (-o)	2.38	1.71	4.09
Water	1.10	0.79	1.89

Bryan Research & Engineering, LLC

ProMax® 5.0

Simulation Report

Project: Dogie Canyon - ProMax Run.pmx

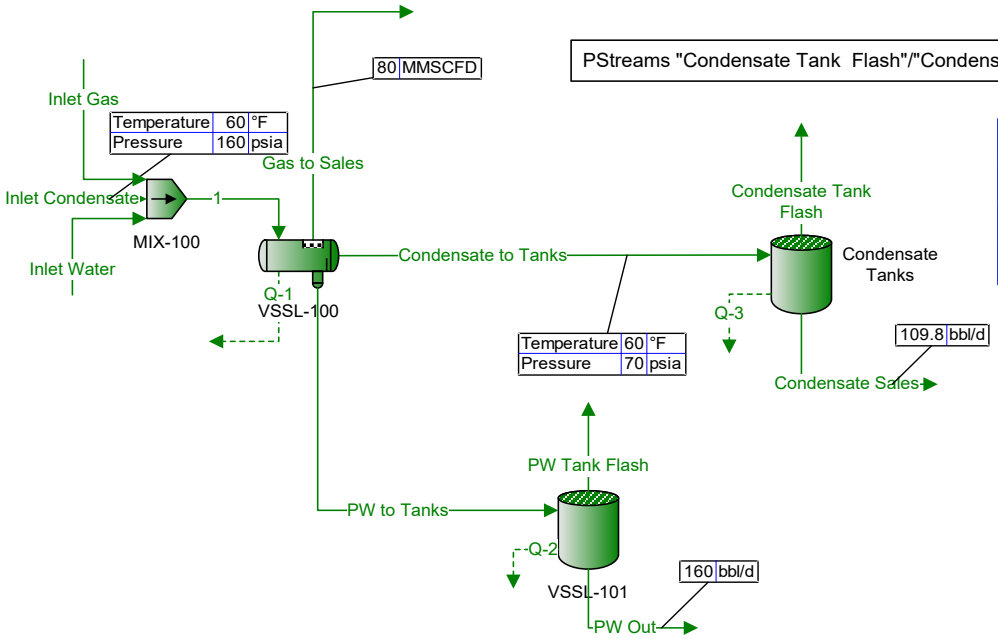
Licensed to Pegasus EHS, LLC and Affiliates

Client Name: Harvest Midstream
Location: Dogie Canyon Compressor Station
Job:

ProMax Filename: G:\Shared drives\Environmental\Harvest Midstream\Dogie Canyon CF\2020-09 Flash Emissions\Dogie Canyon - ProMax Run.pmx
ProMax Version: 5.0.20169.0
Simulation Initiated: 9/24/2020 4:12:00 PM

Bryan Research & Engineering, LLC
Chemical Engineering Consultants
P.O. Box 4747 Bryan, Texas 77805
Office: (979) 776-5220
FAX: (979) 776-4818
mailto:sales@bre.com
http://www.bre.com/

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.



PStreams "Condensate Tank Flash"/"Condensate to Tanks" VOCs EF= 6.16 lb/bbl

"Condensate Tank Flash" Component Sums		
BTEX	1.276	ton/yr
HAPs	9.139	ton/yr
VOCs	129.5	ton/yr

Storage Tank (Produced Water) Emissions Calculations

Unit Number: T6
Description: Produced Water Storage Tank

Throughput

120	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
307	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
36,884	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Evaporation Losses, tpy
VOC	0.262	4.83
Benzene	0.007	1.29E-01
Ethylbenzene	0.0007	1.29E-02
n-Hexane	0.022	4.06E-01
Toluene	0.009	1.66E-01
Xylene	0.006	1.11E-01

VOC, Benzene, and n-Hexane emission factors are taken from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Ethylbenzene, toluene, and xylene emissions factors (Non-Texas) are taken from the TCEQ Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report
Evaporation Losses (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Storage Tank (Produced Water) Emissions Calculations

Unit Number: T13
Description: Produced Water Storage Tank

Throughput

70	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
307	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
21,516	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Evaporation Losses, tpy
VOC	0.262	2.82
Benzene	0.007	7.53E-02
Ethylbenzene	0.0007	7.53E-03
n-Hexane	0.022	2.37E-01
Toluene	0.009	9.68E-02
Xylene	0.006	6.45E-02

VOC, Benzene, and n-Hexane emission factors are taken from the CDPHE PS Memo 09-02 (Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Ethylbenzene, toluene, and xylene emissions factors (Non-Texas) are taken from the TCEQ Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report
Evaporation Losses (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

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

Identification

User Identification:	Dogie T14 (Methanol)
City:	Counselor
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Horizontal Tank
Description:	500 Gallon Methanol Storage Tank

Tank Dimensions

Shell Length (ft):	6.00
Diameter (ft):	4.00
Volume (gallons):	500.00
Turnovers:	12.00
Net Throughput(gal/yr):	6,000.00
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

Dogie T14 (Methanol) - Horizontal Tank
Counselor, 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)

Dogie T14 (Methanol) - Horizontal Tank
Counselor, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	36.5024
Vapor Space Volume (cu ft):	48.0243
Vapor Density (lb/cu ft):	0.0103
Vapor Space Expansion Factor:	0.2419
Vented Vapor Saturation Factor:	0.8389
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	48.0243
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.5293
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	6.0000
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:	0.8389
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.8115
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	8.2917
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.8115
Annual Net Throughput (gal/yr.):	6,000.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000

Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	44.7941

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

Emissions Report for: Annual

Dogie T14 (Methanol) - Horizontal Tank
Counselor, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	8.29	36.50	44.79

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

Identification

User Identification:	Dogie T17 (Methanol)
City:	Counselor
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	4,200 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):	4,200.00
Turnovers:	12.00
Net Throughput(gal/yr):	50,400.00
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:	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

Dogie T17 (Methanol) - Vertical Fixed Roof Tank
Counselor, 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)

Dogie T17 (Methanol) - Vertical Fixed Roof Tank
Counselor, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	183.7046
Vapor Space Volume (cu ft):	330.9144
Vapor Density (lb/cu ft):	0.0103
Vapor Space Expansion Factor:	0.2419
Vented Vapor Saturation Factor:	0.6127
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):	0.0103
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
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:	0.2419
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:	0.6127
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.8115
Vapor Space Outage (ft):	6.5833

Working Losses (lb):	69.6501
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.8115
Annual Net Throughput (gal/yr.):	50,400.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	4,200.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	253.3547

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

Emissions Report for: Annual

Dogie T17 (Methanol) - Vertical Fixed Roof Tank
Counselor, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	69.65	183.70	253.35

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. It was assumed the turbines, heaters and reboiler all operate at full capacity for 8,760 hours per year. It was assumed the engine operates at full capacity for 500 hours per year.

GHG emissions from SSM and pig receiver blowdowns 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 a recent extended gas analysis. For each unit, the annual number of blowdown events were estimated based on historical operations. A safety factor was added.

GHG emissions from centrifugal compressor venting (blowdown valve leakage, oil degassing vents, and isolation valve leakage) were calculated in accordance with the applicable Subpart W methodology using emission factors (scf/hr) calculated by Williams Four Corners LLC when they owned the facility. The facility CO_2 and CH_4 contents were taken from a recent extended gas analysis. Since the combined blowdown valve leakage and oil degassing vent emissions (when the compressors are in operation) were greater than the isolation valve leakage (when the compressors are not in operation), potential emissions were calculated assuming the compressors operate 8,760 hours per year (in other words, isolation valve leakage occurs 0 hours per year).

CO_2 and CH_4 emissions from the dehydrator still vent and flash tank were calculated using GRI-GLYCalc 4.0. It was assumed the dehydrator operates at full capacity for 8,760 hours per year.

CO_2, CH_4 and N_2O emissions from the flare are calculated using the Subpart W methodologies and equations.

CO_2 and CH_4 emissions from valves, connectors, open-ended lines and pressure relief valves were calculated using the Subpart W methodology applicable to these source types. The component count was determined from the number of compressors and dehydrators permitted to operate at the station. Emission factors were obtained from Table W-1A of Subpart W (Western U.S. – Gas Service). The facility CO_2 and CH_4 contents were taken from a recent extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

CO_2 and CH_4 emissions from natural gas pneumatic device and pump venting were calculated using the Subpart W methodologies applicable to these source types. The component count was identified by HFC. Emission factors were obtained from Table W-1A of Subpart W (Western U.S. – Gas Service). The facility CO_2 and CH_4 contents were taken from a recent extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

There are no GHG emissions associated with the 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.

GHG emissions from the condensate storage tanks are calculated from the ProMax modeling results. There are no GHG emissions associate with the other storage tanks.

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	75,798.09	1.43	1.44E-01	75,799.67	75,876.92
SSM Emissions	1.10	65.27	--	66.37	1,632.83
Centrifugal Compressor Venting Emissions	10.40	618.25	--	628.65	15,466.59
Heater & Boiler Exhaust Emissions	678.31	1.28E-02	1.28E-03	678.32	679.01
Dehydrator Emissions	0.00E+00	7.74E-01	--	0.77	19.35
Reboiler Exhaust Emissions	568.10	1.07E-02	1.07E-03	568.11	568.68
Dehydrator Flare Emissions	645.97	--	1.10E-03	645.97	646.30
Equipment Leak Emissions	1.91E-01	11.36	--	11.56	284.31
Natural Gas Pneumatic Device Venting Emissions	4.92E-01	29.17	--	29.67	729.82
Natural Gas Driven Pneumatic Pump Venting Emissions	3.03E-02	1.80	--	1.83	44.94
Malfunction Emissions	2.95E-01	17.53	--	17.82	438.48
Pig Receiver Emissions	2.46E-03	1.46E-01	--	0.15	3.65
Storage Tank Emissions	6.90E-01	14.91	--	15.60	373.47
Total	77,703.66	760.67	1.48E-01	78,464.48	96,764.37

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 T-4002	53.06	1.00E-03	1.00E-04	16,237.58	3.06E-01	3.06E-02
2	Solar Centaur T-4002	53.06	1.00E-03	1.00E-04	16,237.58	3.06E-01	3.06E-02
3	Solar Saturn T-1200	53.06	1.00E-03	1.00E-04	5,988.01	1.13E-01	1.13E-02
4	Solar Centaur CS-3000	53.06	1.00E-03	1.00E-04	15,050.50	2.84E-01	2.84E-02
7	Caterpillar Generator	73.96	3.00E-03	6.00E-04	228.28	9.26E-03	1.85E-03
13	Solar Centaur 40-4702S	53.06	1.00E-03	1.00E-04	22,056.14	4.16E-01	4.16E-02
	Total #2				75,798.09	1.43	1.44E-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 T-4002	Nat. Gas	8,760	28.58	31.76	278,203
2	Solar Centaur T-4002	Nat. Gas	8,760	28.58	31.76	278,203
3	Solar Saturn T-1200	Nat. Gas	8,760	10.54	11.71	102,594
4	Solar Centaur CS-3000	Nat. Gas	8,760	26.49	29.44	257,864
7	Caterpillar Generator	Diesel	500	5.05	5.61	2,806
13	Solar Centaur 40-4702S	Nat. Gas	8,760	38.82	43.14	377,894

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

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 Blowdowns	4,228,500	0.0005	0.0309	1.10	65.27

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

Green House Gas Emissions Data and Calculations

Centrifugal Compressor Venting Emissions

Unit Numbers	Description	CO2, tpy	CH4, tpy
NA	Blowdown Valve Leakage	1.91	113.28
NA	Oil Degassing Vents	8.50	504.97
NA	Isolation Valve Leakage	0.00	0.00
	Total	10.40	618.25

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	5	167.4	8,760	0.45	73.00	0.0526	0.0192
NA	Oil Degassing Vents	5	746.2	8,760	0.45	73.00	0.0526	0.0192
NA	Isolation Valve Leakage	5	10.8	0	0.45	73.00	0.0526	0.0192

The number of compressors are provided by Harvest
Emission factors are the three year rolling average (2012-2014) of all measurements in the compressor fleet located at natural gas processing plants (during the time Williams Four Corners LLC owned and operated the facility)
The operating times were selected so as to maximize potential GHG emissions
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
5	Fuel Gas Heater	53.06	1.00E-03	1.00E-04	284.05	5.35E-03	5.35E-04
9	Office Heater	53.06	1.00E-03	1.00E-04	45.45	8.57E-04	8.57E-05
10	Office Water Heater	53.06	1.00E-03	1.00E-04	19.32	3.64E-04	3.64E-05
12	Shop Heater	53.06	1.00E-03	1.00E-04	45.45	8.57E-04	8.57E-05
14	Inlet Liquids Boot Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
15	Inlet Liquids Boot Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
	Total				678.31	1.28E-02	1.28E-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 Design Heat Rates, MMBtu/hr	HHV	
					Design Heat Rates, MMBtu/hr	Fuel Usages, MMBtu/yr
5	Fuel Gas Heater	Nat. Gas	8,760	0.50	0.556	4,867
9	Office Heater	Nat. Gas	8,760	0.08	0.089	779
10	Office Water Heater	Nat. Gas	8,760	0.034	0.038	331
12	Shop Heater	Nat. Gas	8,760	0.08	0.089	779
13	Inlet Liquids Boot Heater	Nat. Gas	8,760	0.25	0.278	2,433
14	Inlet Liquids Boot Heater	Nat. Gas	8,760	0.25	0.278	2,433

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	
		CO2, tpy	CH4, tpy
6a	Dehydrator (80 MMSCFD)	0.00E+00	7.74E-01

The emission rates are taken from the GRI-GLYCalc output file

Reboiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
6b	Reboiler (10 MMSCFD)	53.06	1.00E-03	1.00E-04	568.10	1.07E-02	1.07E-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
6b	Reboiler (10 MMSCFD)	Nat. Gas	8,760	1,111	900	1.00	1.11	9,733

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

Dehydrator Flare Emissions

Unit Numbers	Description	N2O Emission Factors, kg/MMBtu	Emission Rates	
			CO2, tpy	N2O, tpy
8	Dehydrator Flare	1.00E-04	645.97	1.10E-03

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

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
8	Dehydrator Flare	5.69	1,763	10,023	98	11.16

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 %
8	Dehydrator Flare	2.78	43.49	17.49	19.06	11.11	4.05

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

Green House Gas Emissions Data and Calculations

	Flash Tank Off Gas	Regenerator Still Vent	Dry Gas	Total
Gas Throughputs (scf/hr)	407	142	100	649
Components	Mole Percents, %	Mole Percents, %	Mole Percents, %	Mole Percents, %
Water	1.06E-01	1.95E+00	1.03E-02	4.95E-01
Carbon dioxide	1.86E+00	7.08E+00	4.48E-01	2.78E+00
Hydrogen sulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	1.75E+00	4.12E-01	2.49E+00	1.57E+00
Methane	4.73E+01	1.18E+01	7.30E+01	4.35E+01
Ethane	1.90E+01	1.76E+01	1.12E+01	1.75E+01
Propane	1.74E+01	3.17E+01	7.89E+00	1.91E+01
IsoButane	2.56E+00	5.77E+00	1.06E+00	3.03E+00
n-Butane	6.46E+00	1.67E+01	2.45E+00	8.08E+00
IsoPentane	1.25E+00	1.94E+00	5.22E-01	1.29E+00
n-Pentane	1.14E+00	2.11E+00	4.45E-01	1.25E+00
Cyclopentane	6.22E-02	2.89E-01	1.79E-02	1.05E-01
n-Hexane	2.57E-01	3.17E-01	1.05E-01	2.47E-01
Cyclohexane	6.23E-02	2.27E-01	1.99E-02	9.18E-02
Other hexanes	5.90E-01	8.10E-01	2.44E-01	5.85E-01
Heptanes	8.93E-02	7.54E-02	3.95E-02	7.86E-02
Methylcyclohexane	8.43E-02	1.95E-01	3.21E-02	1.00E-01
2,2,4-Trimethylpentane	3.27E-03	1.59E-03	1.70E-03	2.66E-03
Benzene	1.56E-02	4.35E-01	4.59E-03	1.06E-01
Toluene	3.35E-02	5.08E-01	1.12E-02	1.34E-01
Ethylbenzene	1.18E-03	1.01E-02	4.99E-04	3.03E-03
Xylenes	1.40E-02	1.54E-01	6.06E-03	4.34E-02
C8+ heavies	2.80E-02	9.01E-04	2.79E-02	2.21E-02
Total	100.0667	100.0850	100.0256	100.0643

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

Equipment Leaks Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
NA	Valves	1.44E-01	8.55
NA	Connectors	1.98E-02	1.18
NA	Open-Ended Lines	1.00E-02	5.96E-01
NA	Pressure Relief Valves	1.76E-02	1.04
	Total	1.91E-01	11.36

A combination of equations W-31 & W-36 (Subpart W) is used to calculate uncombusted CO2 & CH4 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 Rate (tpy) = # x scf/hr/component x (CO2 Content (mole %) / 100) x hr/yr x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rate (tpy) = # x scf/hr/component x (CH4 Content (mole %) / 100) x hr/yr x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Components, #	Emission Factors, scf/hr /component	CO2 Contents, mole %	CH4 Contents, mole %	Operating Times, hr/yr	CO2 Density, kg/scf	CH4 Density, kg/scf
NA	Valves	522	0.121	0.45	73.00	8,760	0.0526	0.0192
NA	Connectors	511	0.017	0.45	73.00	8,760	0.0526	0.0192
NA	Open-Ended Lines	142	0.031	0.45	73.00	8,760	0.0526	0.0192
NA	Pressure Relief Valves	40	0.193	0.45	73.00	8,760	0.0526	0.0192

The number of sources are calculated based on the number of compressors and dehydrators at the station (see criteria pollutant and HAP equipment leaks calculations)
The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The operating times are provided by Harvest (default is the entire year)
The CO2 & CH4 densities are taken from Subpart W, Paragraph 98.233(v)

Green House Gas Emissions Data and Calculations

Natural Gas Pneumatic Device Venting Emissions

Unit Numbers	Description	Number of Devices, #	Emission Factors, scf/hr/device	Operating Times, hr/yr	Emission Rates	
					CO2, tpy	CH4, tpy
NA	Continuous High Bleed Pneumatic Devices	0	37.3	8,760	0.00E+00	0.00E+00
NA	Intermittent Bleed Pneumatic Devices	16	13.5	8,760	4.92E-01	29.17
NA	Continuous Low Bleed Pneumatic Devices	0	1.39	8,760	0.00E+00	0.00E+00
	Total				4.92E-01	29.17

The number of devices and operating times are provided by Harvest
The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
Equation W-1 (Subpart W) is used to calculate CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions in addition to CO2e emissions, it is necessary to divide by the global warming potentials
CO2 Emission Rates (tpy) = # x scf/hr/device x (CO2 Content (mole %) / 100) x CO2 Conversion Factors (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CO2 Global Warming Potentials (tonne CO2e/tonne CO2)
CH4 Emission Rates (tpy) = # x scf/hr/device x (CH4 Contents (mole %) / 100) x CH4 Conversion Factors (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CH4 Global Warming Potentials (tonne CO2e/tonne CH4)

Unit Numbers	Description	CO2 Contents, mole %	CH4 Contents, mole %	CO2 Conversion Factors, tonne CO2e /scf	CH4 Conversion Factors, tonne CO2e /scf	CO2 Global Warming Potentials, tonne CO2e /tonne CO2	CH4 Global Warming Potentials, tonne CO2e /tonne CH4
NA	Continuous High Bleed Pneumatic Devices	0.45	73.00	5.262E-05	4.790E-04	1	25
NA	Continuous Low Bleed Pneumatic Devices	0.45	73.00	5.262E-05	4.790E-04	1	25
NA	Intermittent Bleed Pneumatic Devices	0.45	73.00	5.262E-05	4.790E-04	1	25

The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The conversion factors are taken from Subpart W, Paragraph 98.233(a)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Natural Gas Driven Pneumatic Pump Venting Emissions

Emission Rates

Unit Number	Description	Number of Pumps, #	Emission Factor, scf/hr/pump	Operating Time, hr/yr	CO2, tpy	CH4, tpy
NA	Pneumatic Pump Venting	1	13.3	8,760	3.03E-02	1.80

The number of pumps and operating times are provided by Harvest
The emission factor is taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
Equation W-2 (Subpart W) is used to calculate CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions in addition to CO2e emissions, it is necessary to divide by the global warming potentials
CO2 Emission Rate (tpy) = # x scf/hr/pump x (CO2 Content (mole %) / 100) x CO2 Conversion Factor (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CO2 Global Warming Potentials (tonne CO2e/tonne CO2)
CH4 Emission Rate (tpy) = # x scf/hr/pump x (CH4 Content (mole %) / 100) x CH4 Conversion Factor (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CH4 Global Warming Potentials (tonne CO2e/tonne CH4)

Unit Number	Description	CO2 Content, mole %	CH4 Content, mole %	CO2 Conversion Factor, tonne CO2e /scf	CH4 Conversion Factor, tonne CO2e /scf	CO2 Global Warming Potential, tonne CO2e /tonne CO2	CH4 Global Warming Potential, tonne CO2e /tonne CH4
NA	Pneumatic Pump Venting	0.45	73.00	5.262E-05	4.790E-04	1	25

The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The conversion factors are taken from Subpart W, Paragraph 98.233(a)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Green House Gas Emissions Data and Calculations

Malfunction Emissions

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %	Emission Rates		
						VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	22.64	6.68	0.87	51.71	10.00	2.95E-01	17.53

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

Pig Receiver 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
PR1	Pig Receiver	5,772	0.0005	0.0309	1.50E-03	8.91E-02
PR2	Pig Receiver	3,692	0.0005	0.0309	9.60E-04	5.70E-02
	Total				2.46E-03	1.46E-01

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

Storage Tank Emissions

Unit Number	Description	Emission Rates	
		CO2, tpy	CH4, tpy
T3	Storage Tank	3.45E-01	7.46
T4	Storage Tank	3.45E-01	7.46
	Total	6.90E-01	14.91

Flash emissions taken from ProMax 5.0 results (see cells D244 & D245 on the Flowsheet1 Pstreams tab)
Emissions (pph) evenly distributed between the two condensate tanks
Flash Losses (tpy) = Flash Losses (pph) x 8760 hr/yr / 2,000 lb/ton

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	0.4483	44.01	0.20	0.8713	0.0005
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	2.4905	28.01	0.70	3.0808	0.0018
Methane	73.0014	16.04	11.71	51.7129	0.0309
Ethane	11.1680	30.07	3.36	14.8311	0.0089
Propane	7.8972	44.09	3.48	15.3772	0.0092
IsoButane	1.0599	58.12	0.62	2.7205	0.0016
Normal Butane	2.4509	58.12	1.42	6.2909	0.0038
IsoPentane	0.5223	72.15	0.38	1.6643	0.0010
Normal Pentane	0.4460	72.15	0.32	1.4211	0.0008
Cyclopentane	0.0180	70.14	0.01	0.0558	0.0000
n-Hexane	0.1049	86.17	0.09	0.3992	0.0002
Cyclohexane	0.0201	84.16	0.02	0.0747	0.0000
Other Hexanes	0.2444	86.18	0.21	0.9302	0.0006
Heptanes	0.0397	100.20	0.04	0.1757	0.0001
Methylcyclohexane	0.0324	98.19	0.03	0.1405	0.0001
2,2,4-Trimethylpentane	0.0017	100.21	0.00	0.0075	0.0000
Benzene	0.0050	78.11	0.00	0.0172	0.0000
Toluene	0.0127	92.14	0.01	0.0517	0.0000
Ethylbenzene	0.0006	106.17	0.00	0.0028	0.0000
Xylenes	0.0079	106.17	0.01	0.0370	0.0000
C8+ heavies	0.0283	110.00	0.03	0.1375	0.0001
Total	100.0002		22.64	100.0000	0.0597
VOC			6.68	--	0.0176

Gas stream composition obtained from Dogie extended gas analysis dated 08/10/2020
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) / 379.3 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.

Units 1, 2 & 4

Williams Field Services
Dogie Compressor Station
1-26-00
Solar Saturn T-4002 Turbine : High Load
40 CFR Part 60 Subpart GG Calculations

run #	1	2	3	Average
% Load	100	100	100	
start time	08:13 AM	08:42 AM	09:08 AM	
stop time	08:27 AM	08:56 AM	09:22 AM	
sample time (minutes)	15	15	15	
Field Reference Method Data				
Delta P ("H2O)	2.954	2.981	2.979	2.971
Pitot Coefficient (Cp)	0.84	0.84	0.84	0.84
stack temp. (oF)	816	817	821	818
baro. press. (mbar)	808	808	808	808
baro. press. (" Hg)	23.86	23.86	23.86	23.86
stack press. (" water)	2.0	2.4	2.6	2.3
meter Y factor (unitless)	1.009	1.009	1.009	1.009
meter temp. (oF)	83	83	83	83
sample volume (cubic feet)	38.781	38.781	38.781	38.781
delta H (" water)	1.0	1.0	1.0	1.0
moisture (grams)	36.4	36.4	36.4	36.4
O2 (vol. %)	16.4	16.5	16.5	16.5
CO2 (vol. %)	2.8	2.7	2.7	2.7
NOx (ppmvd)	86.1	87.5	87.5	87.1
CO (ppmvd)	7.5	10.0	9.9	9.1
ambient temp. (oC)	5.6	5.6	6.1	5.7
ambient humidity (g H2O/g air)	0.0071	0.0071	0.0068	0.0070
stack diameter (inches)	28.2	28.2	28.2	28.2
Calculations				
sample vol. (dscf)	30.435	30.435	30.435	30.435
moisture vol. (scf)	1.713	1.713	1.713	1.713
moisture content (%/100)	0.0533	0.0533	0.0533	0.0533
molecular weight dry	29.10	29.09	29.09	29.09
molecular weight wet	28.51	28.50	28.50	28.50
gas velocity (ft/sec)	289.6	292.2	292.4	291.4
gas flow (acfm)	75370	76052	76097	75839
gas flow (dscfm)	23699	23924	23878	23833
gas flow (lb/hr)	111119	112144	111927	111730
NOx (lb/hr)	**14.6**	**15.0**	**15.0**	14.9
NOx (tons/year)	64.1	65.7	65.6	65.1
CO (lb/hr)	**0.8**	**1.0**	**1.0**	1.0
CO (tons/year)	3.4	4.6	4.5	4.2
NOx (ppmvd @ 15% O2)	113.5	117.7	117.4	116.2
NOx (ppmvd @ 15% O2, ISO Cond.)	136.4	141.4	139.7	139.2
inlet air filter press. drop ("H2O)	3.0	2.9	2.9	2.9
dry bulb temp (deg F)	42	42	43	42
relative humidity (%)	100	100	92	97

Permit Limits
13.6
59.7
14.7
64.4
150

Max NOx source test → 15.0 lb/hr
Add 20% contingency
∴ 15.0 lb/hr (1.2) = 18.0 lb/hr

SOLAR TURBINES INCORPORATED
ENGINE PERFORMANCE DATA REV. 2.1
EXHAUST GAS AND EMISSION DATA REV. 2.0
TEXT CHANGES REV. 2.1
JOB ID : Gas Company of New Mexico

DATE RUN: 30-AUG-93

Units 1,2 & 4

NEW EQUIPMENT PREDICTED EMISSION PERFORMANCE
DATA FOR POINT NUMBER 1

Fuel: GAS Customer: GCNM

Water Injection: NO Inquiry Number:

Number of Engines Tested: 4
Model: CENTAUR T4000 CS/ND STANDARD

CRITICAL WARNINGS IN USE OF DATA FOR PERMITTING

1. It is recommended that permit values be based on full load gas turbine and ISO standard test conditions. ISO standard test condition should be referenced on the permit so that when site testing is performed, the necessary corrections can be made.

2. Nominal values are based on actual test results. The maximum expected values are obtained by applying the tolerance to the nominal values. Solar suggests using maximum expected values for permitting (for example, +200% multiply value submitted by 3 to use for permit value).

3. Upon written request, Solar will provide a single point guarantee for specific conditions submitted.

The following predicted emissions performance is based on the following specific single point: (see attached)

HP= 3120., %Full Load=100.0, ALTITUDE= 5571.0 FEET, %RH= 60.0, TEMP= 59.0 F

NOx	(+)	CO	(+)	UHC	(+)	
83.20	20%	51.68	300%	18.24	500%	PPMvd at 15% O2
42.64	20%	16.11	300%	3.26	500%	TON/YR ←
0.23	20%	0.13	300%	0.02529	500%	LBm/MMBTU (FUEL LHV)

VOC emissions = 12% (UHC) + 500%

OTHER IMPORTANT NOTES

1. If SoLoNOx is to be retrofitted in the future, use no less than 50 ppmV CO for permitting.
2. Ambient and load correction information will be submitted by Solar for CO prior to actual field test. NOx correction for ambient conditions will be based on ISO 40 CFR 60 subpart GG. Permit conditions should allow correction for load and ambient temperatures.
3. Solar does not provide maximum values for water-to-fuel ratio, SOx, particulates, or conditions outside those above without separate written approval.
4. Solar can optionally provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
5. Fuel must meet Solar standard fuel specification ES 9-98. Predicted emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
6. If the above information is being used regarding existing equipment, it should be verified by actual site testing.

DO YOU WANT HARDCOPY?
ENTER YES (Y OR 1) OR NO (N OR 0). > n

Table 2-1(b)
SUMMARY of PROCESS & EMISSION MEASUREMENT RESULTS
Dogie Canyon Compressor Station

Stack/Duct ID:	Unit #2	Unit #3[1]
Test Condition:	98.48 Solar Centaur 3830	98.59 Solar Centaur 3550
Oxides of Nitrogen (NO_x) Emission Results[2]		
ppm, (dry, v/v):	89.3	71.5
ppm, (wet, v/v):	77.3	63.1
gm./ HP-hr.:	2.064	1.711
lbs./hr.:	13.63	10.56
lbs./10^6BTU:	0.343	0.283
Tons/Year:	59.69	46.27
Carbon Monoxide (CO) Emission Results[2]		
ppm, (dry, v/v):	44.5	40.5
ppm, (wet, v/v):	38.5	35.8
gm./ HP-hr.:	0.626	0.587
lbs./hr.:	4.13	3.62
lbs./10^6BTU:	0.104	0.095
Tons/Year:	18.11	15.84
Parametric (Non-Pollutant) Flue Gas Results		
Pressure, Velocity, Delta P, (in. w.g.):	6.7987	6.0160
Moisture, (%, w/w):	13.08	11.83
CO_2, Inst., (%, dry, v/v):	1.57	1.66
O_2, Inst., (%, wet, v/v):	15.27	15.30
Temp. of Stack, (^{0}F):	835.3	776.1
Velocity, (fps):	270.99	248.94
Vol. Flow, (10^3 DSCFM):	21.279	21
Vol. Flow, (10^3 ACFM):	79.812	73
Mass Flow Rate of Flue Gas, (10^3 lbs./hr.):	90.791	89

[1] Average of all valid test runs, see Tables 3-6 and 3-7.
[2] Tons per year are based on hours per year, as specified in Table 1-1.

The Emission Measurement People, Inc.

Table 2-1(a)
SUMMARY of PROCESS & EMISSION MEASUREMENT RESULTS
Los Mestenios Site

Emission Unit No. 3

	Unit #1	Unit #2[1]
Stack/Duct ID:	96.81	96.15
Test Condition:	Saturn 1200	Cat 399 TA
Oxides of Nitrogen (NO_x) Emission Results[2]		
ppm, (dry, v/v):	32.0	176.0
ppm, (wet, v/v):	29.5	166.1
gm./ HP-hr.:	1.0903 ←	0.5675
lbs./hr.:	2.19	0.72
lbs./10^6BTU:	0.111	0.322
Tons/Year:	5.64	1.35
Carbon Monoxide (CO) Emission Results[2]		
ppm, (dry, v/v):	46.6	19965.0
ppm, (wet, v/v):	43.0	18836.4
gm./ HP-hr.:	0.9674	39.1889
lbs./hr.:	1.94 ←	49.68
lbs./10^6BTU:	0.098	22.233
Tons/Year:	5.01	93.00
Parametric (Non-Pollutant) Flue Gas Results		
Pressure, Velocity, Delta P, (in. w.g.):	9.7060	0.8800
Moisture, (%, w/w):	7.90	5.65
CO_2, Inst., (%, dry, v/v):	2.35	6.60
O_2, Inst., (%, wet, v/v):	14.60	9.00
Combustion Efficiency, (%):	95.92	76.78
Temp. of Stack, (^{0}F):	800.6 ←	840.0
Velocity, (fps):	320.99 ←	96.17
Vol. Flow, (10^3 DSCFM):	9.560	0.572
Vol. Flow, (10^3 ACFM):	34.034 ←	2.014
Mass Flow Rate of Flue Gas, (10^3 lbs./hr.):	41.757	2.557

1 Average of all valid test runs, see Tables 3-6 and 3-7.
2 Tons per year are based on hours per year, as specified in Table 1-1.

SOLAR TURBINES INCORPORATED DATE RUN: 13-May-15
ENGINE PERFORMANCE CODE REV. 4.15.1.17.10 RUN BY: David A Pocengal
JOB ID:

CENTAUR 40-4700S
CS/MD
59F MATCH
GAS
TCD-2S REV. 2.3
ES-2094
ES-2094

DATA FOR MINIMUM PERFORMANCE

Fuel Type		CHOICE GAS					
Elevation	feet	6240					
Inlet Loss	in H2O	4.0					
Exhaust Loss	in H2O	4.0					
Accessory on GP Shaft	HP	27.8					
Engine Inlet Temp.	deg F	0	20.0	40.0	59.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0	60.0
Elevation Loss	HP	1031	1007	978	922	813	698
Inlet Loss	HP	86	85	84	80	74	66
Exhaust Loss	HP	38	38	38	37	36	33
Off-Optimum NPT Loss	HP	4	5	5	3	0	0
Driven Equipment Speed	RPM	15500	15500	15500	15500	15500	14851
Optimum Equipment Speed	RPM	15997	16059	16108	15980	15522	14851
Gas Generator Speed	RPM	15000	15000	15000	14890	14669	14475
Specified Load	HP	FULL	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	3867	3771	3661	3450	3035	2605
Fuel Flow	mmBtu/hr	37.04	36.13	35.12	33.30	30.52	27.65
Heat Rate	Btu/HP-hr	9577	9580	9592	9651	10059	10613
Therm Eff	%	26.567	26.559	26.527	26.364	25.296	23.974
Inlet Air Flow	lbm/hr	128932	124905	120770	115508	107250	98344
Engine Exhaust Flow	lbm/hr	130810	126737	122552	117197	108798	99745
PCD	psiG	115.3	112.1	108.8	104.2	95.9	88.0
Compensated PTIT	deg F	1145	1158	1177	1190	1190	1190
PT Exit Temperature	deg F	786	805	826	843	859	878
Exhaust Temperature	deg F	786	805	826	843	859	878

FUEL GAS COMPOSITION (VOLUME PERCENT)
LHV (Btu/Scf) = 1130.4 SG = 0.7614 W.I. @60F (Btu/Scf) = 1295.5

Methane (CH4)	= 74.8032
Ethane (C2H6)	= 10.6645
Propane (C3H8)	= 5.4952
I-Butane (C4H10)	= 0.7829
N-Butane (C4H10)	= 1.4635
I-Pentane (C5H12)	= 0.4232
N-Pentane (C5H12)	= 0.3626
Hexane (C6H14)	= 0.3885
Heptane (C7H16)	= 0.1947
Octane (C8H18)	= 0.0646

Carbon Dioxide (CO2)	=	0.7620
Nitrogen (N2)	=	3.9473
Sulfur Dioxide (SO2)	=	0.0001
Benzene (C6H6)	=	0.6478

STANDARD CONDITIONS FOR GAS VOLUMES: Temperature: 60 deg F Pressure: 29.92 in Hg
NORMAL CONDITIONS FOR GAS VOLUMES: Temperature: 32 deg F Pressure: 29.92 in Hg

*** Methane content less than 80%. ***
** Please submit SER for this application. **

This performance was calculated with a basic inlet and exhaust system.
Special equipment such as low noise silencers, special filters, heat
recovery systems or cooling devices will affect engine performance.
Performance shown is "Expected" performance at the pressure drops
stated, not guaranteed.

Solar Turbines Emissions Estimates

Centaur 40-4700S (59F match)

100% load								
Temp, F	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)	Exhaust Temp (F)	Exhaust Flow (lb/hr)
0	25	3.72	50	4.53	25	1.29	786	130,810
20	25	3.62	50	4.41	25	1.26	805	126,737
40	25	3.51	50	4.27	25	1.22	826	122,552
59	25	3.33	50	4.05	25	1.16	843	117,197
80	25	3.01	50	3.66	25	1.05	859	108,798
100	25	2.66	50	3.24	25	0.93	878	99745

Assumptions: Site fuel, 6240' elevation, 4/4" inlet/outlet losses

FUEL GAS COMPOSITION (VOLUME PERCENT)
LHV (Btu/Scf) = 1130.4 SG = 0.7614 W.I. @60F (Btu/Scf) = 1295.5

Methane (CH4)	= 74.8032
Ethane (C2H6)	= 10.6645
Propane (C3H8)	= 5.4952
I-Butane (C4H10)	= 0.7829
N-Butane (C4H10)	= 1.4635
I-Pentane (C5H12)	= 0.4232
N-Pentane (C5H12)	= 0.3626
Hexane (C6H14)	= 0.3885
Heptane (C7H16)	= 0.1947
Octane (C8H18)	= 0.0646
Carbon Dioxide (CO2)	= 0.7620
Nitrogen (N2)	= 3.9473
Sulfur Dioxide (SO2)	= 0.0001
Benzene (C6H6)	= 0.6478

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

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

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

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

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

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

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

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

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

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

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

Table 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 (≥ 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°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 $lb/10^6$scf. 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 3.3-1. 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:

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

where:

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

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see 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)

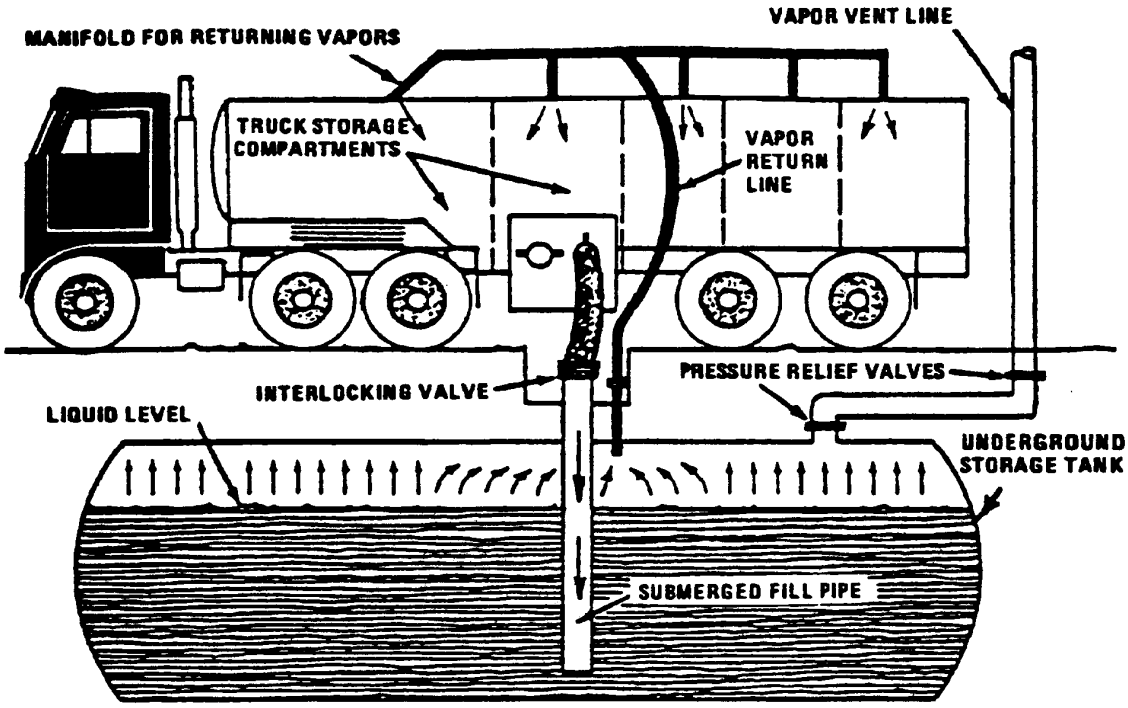


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

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.

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

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

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

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

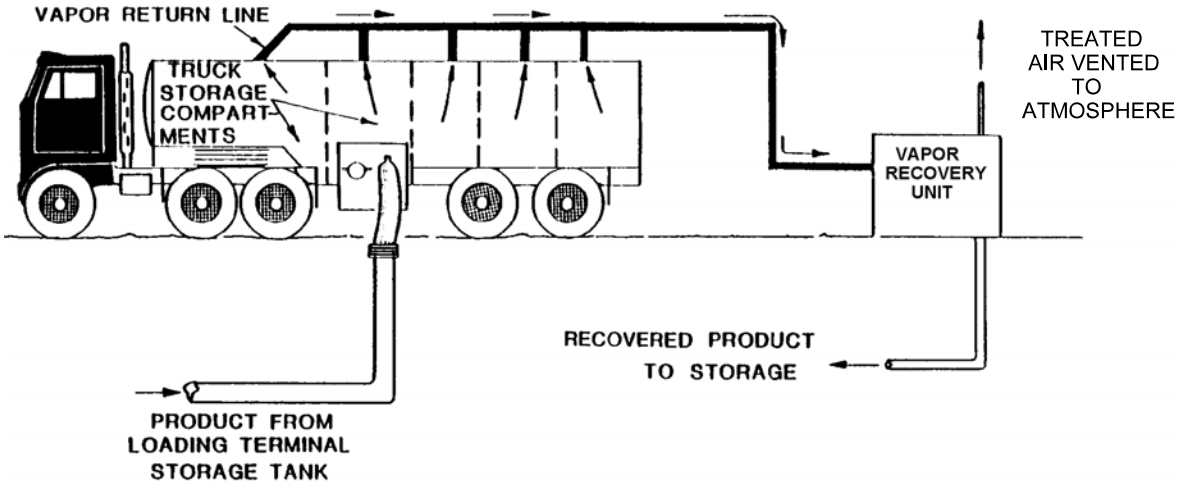


Figure 5.2-6. Tank truck loading with vapor recovery.

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

Analysis No: HM200070
Cust No: 33700-10520

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	METER RUN
Well Name:	DOGIE CDP / JICARILLA INLET	Well Flowing:	Y
County/State:	NM	Pressure:	161 PSIG
Location:		Flow Temp:	78 DEG. F
Lease/PA/CA:		Ambient Temp:	93 DEG. F
Formation:		Flow Rate:	43 MCF/D
Cust. Stn. No.:		Sample Method:	
		Sample Date:	08/10/2020
		Sample Time:	12.00 PM
		Sampled By:	CODY WILKINS
Heat Trace:	N	Sampled by (CO):	HARVEST MID.
Remarks:	Calculated Molecular Weight = 22.6861		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	2.4905	2.5048	0.2750	0.00	0.0241
CO2	0.4483	0.4509	0.0770	0.00	0.0068
Methane	73.0014	73.4218	12.4240	737.31	0.4044
Ethane	11.1680	11.2323	2.9980	197.64	0.1159
Propane	7.8972	7.9427	2.1840	198.70	0.1202
Iso-Butane	1.0599	1.0660	0.3480	34.47	0.0213
N-Butane	2.4479	2.4620	0.7750	79.86	0.0491
Neopentane 2,2 dmc3	0.0030	0.0030	0.0010	0.12	0.0001
I-Pentane	0.5223	0.5253	0.1920	20.90	0.0130
N-Pentane	0.4460	0.4486	0.1620	17.88	0.0111
Neohexane	0.0049	N/R	0.0020	0.23	0.0001
2-3-Dimethylbutane	0.0173	N/R	0.0070	0.82	0.0005
Cyclopentane	0.0180	N/R	0.0050	0.68	0.0004
2-Methylpentane	0.1164	N/R	0.0490	5.53	0.0035
3-Methylpentane	0.0435	N/R	0.0180	2.07	0.0013
C6	0.1049	0.5185	0.0430	4.99	0.0031
Methylcyclopentane	0.0623	N/R	0.0220	2.80	0.0018
Benzene	0.0050	N/R	0.0010	0.19	0.0001
Cyclohexane	0.0201	N/R	0.0070	0.90	0.0006
2-Methylhexane	0.0071	N/R	0.0030	0.39	0.0002
3-Methylhexane	0.0100	N/R	0.0050	0.55	0.0003
2-2-4-Trimethylpentane	0.0017	N/R	0.0010	0.11	0.0001
i-heptanes	0.0043	N/R	0.0020	0.23	0.0001
Heptane	0.0183	N/R	0.0080	1.01	0.0006

Methylcyclohexane	0.0324	N/R	0.0130	1.69	0.0011
Toluene	0.0127	N/R	0.0040	0.57	0.0004
2-Methylheptane	0.0069	N/R	0.0040	0.43	0.0003
4-Methylheptane	0.0030	N/R	0.0020	0.19	0.0001
i-Octanes	0.0047	N/R	0.0020	0.28	0.0002
Octane	0.0092	N/R	0.0050	0.57	0.0004
Ethylbenzene	0.0006	N/R	0.0000	0.03	0.0000
m, p Xylene	0.0072	N/R	0.0030	0.37	0.0003
o Xylene (& 2,2,4 tmc7)	0.0007	N/R	0.0000	0.04	0.0000
i-C9	0.0014	N/R	0.0010	0.09	0.0001
C9	0.0021	N/R	0.0010	0.15	0.0001
i-C10	0.0007	N/R	0.0000	0.05	0.0000
C10	0.0002	N/R	0.0000	0.02	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0001	N/R	0.0000	0.01	0.0000
Total	100.00	100.576	19.644	1311.83	0.7819

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

COMPRESSIBLITY FACTOR (1/Z):	1.0041	CYLINDER #:	9
BTU/CU.FT IDEAL:	1314.9	CYLINDER PRESSURE:	144 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1320.3	ANALYSIS DATE:	08/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1297.3	ANALYIS TIME:	09:19:14 AM
DRY BTU @ 15.025:	1346.7	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:	0.7848		

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

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: DOGIE CDP / JICARILLA INLET METER RUN 08/13/2020

Stn. No.: 33700-10520

Mtr. No.:

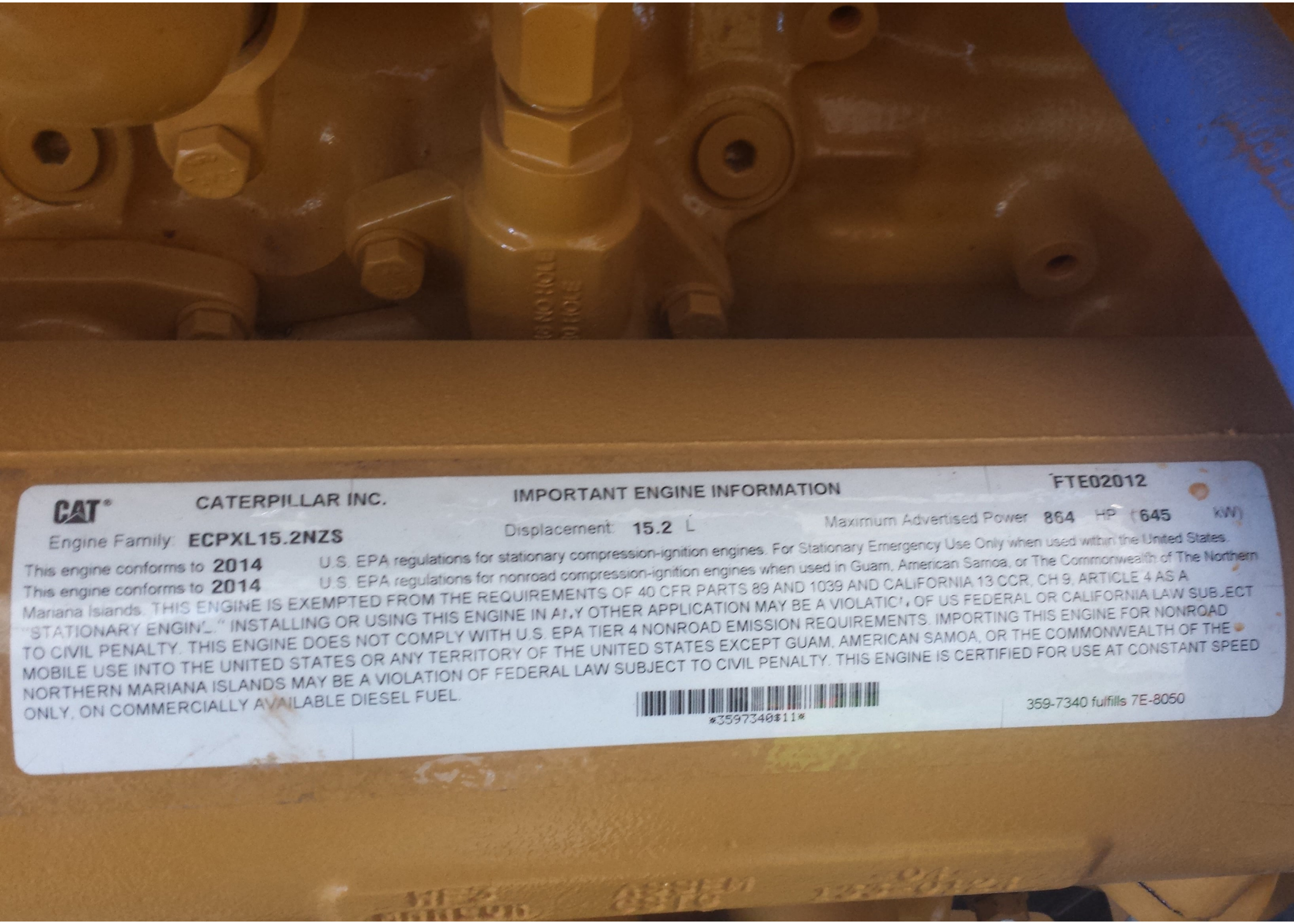
Smpl Date:	08/10/2020
Test Date:	08/12/2020
Run No:	HM200070
Nitrogen:	2.4905
CO2:	0.4483
Methane:	73.0014
Ethane:	11.1680
Propane:	7.8972
I-Butane:	1.0599
N-Butane:	2.4479
2,2 dmc3:	0.0030
I-Pentane:	0.5223
N-Pentane:	0.4460
Neohexane:	0.0049
2-3-Cyclopentane:	0.0173
2-Methylpentane:	0.0180
3-Methylpentane:	0.1164
C6:	0.0435
Methylcyclopentane:	0.1049
Benzene:	0.0623
Cyclohexane:	0.0050
2-Methylhexane:	0.0201
3-Methylhexane:	0.0071
2-2-4-i-heptanes:	0.0000
Heptane:	0.0017
Methylcyclohexane:	0.0043
Toluene:	0.0183
2-Methylheptane:	0.0324
4-Methylheptane:	0.0127
i-Octanes:	0.0069
Octane:	0.0030
Ethylbenzene:	0.0047
m, p Xylene:	0.0092
o Xylene (& 2,2,4	0.0006
i-C9:	0.0072
C9:	0.0007
i-C10:	0.0014
C10:	0.0021
i-C11:	0.0007
C11:	0.0002
C12P:	0.0000
	0.0000
	0.0001
BTU:	1320.3
GPM:	19.6660
SPG:	0.7848

Description:	DOGIE CDP / JICARILLA INLET		Company:	HARVEST MIDSTREAM
Field:			WorkOrder:	
Meter Number:			GPA Method:	GPA 2286
Analysis Date/Time:	8/12/2020	9:19:14	Sampled By:	CODY WILKINS
Date Sampled:	8/10/2020		Analyst Initials:	PK
Sample Temperature:	78		Instrument:	SRI 8610
Sample Pressure:	144			

GRI GlyCalc Information

Component	Mol%	Normalized Weight %
Carbon Dioxide	0.4483	0.8697
Hydrogen Sulfide	N/R	0.0000
Nitrogen	2.4905	3.0753
Methane	73.0014	51.6247
Ethane	11.1680	14.8030
Propane	7.8972	15.3505
Iso-Butane	1.0599	2.7155
n-Butane	2.4509	6.2793
Iso-Pentane	0.5223	1.6611
n-Pentane	0.4460	1.4184
Cyclopentane	0.0180	0.0556
n-Hexane	0.1049	0.4174
Cyclohexane	0.0201	0.0746
Other Hexanes	0.2444	1.0795
Heptanes	0.0397	0.1754
Methylcyclohexane	0.0324	0.1402
2 2 4 Trimethylpentane	0.0017	0.0086
Benzene	0.0050	0.0172
Toluene	0.0127	0.0516
Ethylbenzene	0.0006	0.0028
Xylenes	0.0079	0.0370
C8+ Heavies	0.0283	0.1425
Subtotal	100.0002	
Oxygen	N/R	
Subtotal	100.0002	100.0000

Calculated Molecular Weight	22.6861



CAT®

CATERPILLAR INC.

IMPORTANT ENGINE INFORMATION

FTE02012

Engine Family: ECPXL15.2NZS

Displacement: 15.2 L

Maximum Advertised Power 864 HP (645 kW)

This engine conforms to 2014 U.S. EPA regulations for stationary compression-ignition engines. For Stationary Emergency Use Only when used within the United States.

This engine conforms to 2014 U.S. EPA regulations for nonroad compression-ignition engines when used in Guam, American Samoa, or The Commonwealth of The Northern Mariana Islands. THIS ENGINE IS EXEMPTED FROM THE REQUIREMENTS OF 40 CFR PARTS 89 AND 1039 AND CALIFORNIA 13 CCR, CH 9, ARTICLE 4 AS A "STATIONARY ENGINE." INSTALLING OR USING THIS ENGINE IN ANY OTHER APPLICATION MAY BE A VIOLATION OF US FEDERAL OR CALIFORNIA LAW SUBJECT TO CIVIL PENALTY. THIS ENGINE DOES NOT COMPLY WITH U.S. EPA TIER 4 NONROAD EMISSION REQUIREMENTS. IMPORTING THIS ENGINE FOR NONROAD MOBILE USE INTO THE UNITED STATES OR ANY TERRITORY OF THE UNITED STATES EXCEPT GUAM, AMERICAN SAMOA, OR THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY. THIS ENGINE IS CERTIFIED FOR USE AT CONSTANT SPEED ONLY, ON COMMERCIALLY AVAILABLE DIESEL FUEL.

3597340$11

359-7340 fulfills 7E-8050

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2014 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT OF 1990

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: ECPXL15.2NYS-008

Effective Date: 06/20/2013

Expiration Date: 12/31/2014

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/20/2013

Revision Date: N/A

Model Year: 2014
Manufacturer Type: Original Engine Manufacturer
Engine Family: ECPXL15.2NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 450<=kW<=560
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

DIESEL GENERATOR SET

Image shown may not reflect actual package.

STANDBY
500 ekW 625 kVA
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)

DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response

UL 2200 / CSA – Optional

- UL 2200 Listed packages
- CSA Certified

Certain restrictions may apply.

Consult with your Cat® Dealer.

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat S•O•S℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT C15 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic controlled governor

CAT GENERATOR

- Matched to the performance and output characteristics of Cat engines
- UL 1446 Recognized Class H insulation
- CSA Certified

CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway
- Integrated Voltage Regulation

SEISMIC CERTIFICATION

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength.

  IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010

STANDBY 500 ekW 625 kVA
60 Hz 1800 rpm 480 Volts

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	• Disposable air filter	[ ] Canister type, dual element [ ] Heavy duty air cleaner
Cooling	• Package mounted radiator	
Exhaust	• Exhaust flange outlet	[ ] Industrial [ ] Residential / Critical
Fuel	• Primary fuel filter with integral water separator • Secondary fuel filters • Fuel priming pump	
Generator	• Matched to the performance and output characteristics of Cat engines • IP23 Protection	[ ] Permanent magnet excitation (PMG) [ ] Anti-condensation space heater [ ] Internal excitation (IE) [ ] Coastal insulation protection
Power Termination	• Power terminal strips	[ ] Circuit breakers – 100% rated assembly, UL Listed [ ] SUSE (Suitable for use as service equipment)
Control Panels	• EMCP 4.2	[ ] EMCP 4.3 [ ] EMCP 4.4 [ ] Local and remote annunciator modules [ ] Remote monitoring software
Mounting	• Rubber vibration isolators	
Starting/Charging	• 24 volt starting motor & charging alternator • Batteries	[ ] Battery chargers [ ] Oversize batteries [ ] Jacket water heater
General	• Paint - Caterpillar Yellow except rails and radiators gloss black • Narrow skid base	The following options are based on regional and product configuration: [ ] Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010 [ ] UL 2200 Listed package [ ] CSA Certified [ ] Wide skid base [ ] Sound attenuated enclosure [ ] Weather protective enclosure [ ] Integral dual wall UL Listed 8 hr fuel tank [ ] Sub-base dual wall UL Listed 24 hr fuel tank [ ] Sub-base dual wall UL Listed 48 hr fuel tank

STANDBY 500 ekW 625 kVA
60 Hz 1800 rpm 480 Volts

SPECIFICATIONS

STANDARD CAT GENERATOR	
Frame size	LC6114F
Excitation	Self Excitation
Pitch	0.6667
Number of poles	4
Number of bearings	Single bearing
Number of leads	12
Insulation	UL 1446 Recognized Class H with tropicalization and antiabrasion
IP Rating	IP23
Alignment	Pilot shaft
Overspeed capability (%)	125
Wave form deviation (%)	2
Voltage regulator	Three phase sensing
Voltage regulation	+/- 0.25% (steady state)
– Consult your Cat dealer for other available voltages	
CAT DIESEL ENGINE	
C15 ATAAC, I-6, 4-Stroke Water-cooled Diesel	
Bore	137.20 mm (5.4 in)
Stroke	171.40 mm (6.75 in)
Displacement	15.20 L (927.56 in^3)
Compression ratio	16.1:1
Aspiration	Air-to-air aftercooled
Fuel system	MEUI
Governor type	Caterpillar ADEM control system

CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:
- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

Warning/shutdown with common LED indication of:
- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:
- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

Communications:
- Four digital inputs (4.1)
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

Compatible with the following:
- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

STANDBY 500 ekW 625 kVA
60 Hz 1800 rpm 480 Volts

TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/480 Volts	DM8155	
EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)		
Generator Set Package Performance		
Genset power rating @ 0.8 pf	625.0 kVA	
Genset power rating with fan	500.0 ekW	
Fuel Consumption		
100% load with fan	138.5 L/hr	36.6 gal/hr
75% load with fan	106.1 L/hr	28.0 gal/hr
50% load with fan	88.1 L/hr	23.3 gal/hr
Cooling System[1]		
Air flow restriction (system)	0.12 kPa	0.48 in. water
Air flow (max @ rated speed for radiator arrangement)	788 m³/min	27828 cfm
Engine Coolant capacity with radiator/exp. tank	50.3L	13.3 gal
Engine coolant capacity	20.8 L	5.5 gal
Radiator coolant capacity	29.5 L	7.8 gal
Inlet Air		
Combustion air inlet flow rate	39.8 m³/min	1405.5 cfm
Exhaust System		
Exhaust stack gas temperature	505.6.0°C	942.1°F
Exhaust gas flow rate	108.8 m³/min	3842.2 cfm
Exhaust flange size (internal diameter)	152.4 mm	6.0 in
Exhaust system backpressure (maximum allowable)	10.0 kPa	40.2 in. water
Heat Rejection		
Heat rejection to coolant (total)	189 kW	10748 Btu/min
Heat rejection to exhaust (total)	505 kW	28719 Btu/min
Heat rejection to aftercooler	120 kW	6824 Btu/min
Heat rejection to atmosphere from engine	94.0 kW	5346 Btu/min
Heat rejection to atmosphere from generator	29.1 kW	1654.9 Btu/min
Alternator[2]		
Motor starting capability @ 30% voltage dip	1428 skVA	
Frame	LC6114F	
Temperature rise	130°C	234°F
Lubrication System		
Sump refill with filter	60.0 L	15.9 gal
Emissions (Nominal)[3]		
NOx g/hp-hr	5.74 g/hp-hr	
CO g/hp-hr	0.4 g/hp-hr	
HC g/hp-hr	0.01 g/hp-hr	
PM g/hp-hr	0.018 g/hp-hr	

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

[2] Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32. Some packages may have oversized generators with a different temperature rise and motor starting characteristics.

[3] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

RATING DEFINITIONS AND CONDITIONS

Applicable Codes and Standards:
AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22,NEMA MG1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

Standby – Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

Fuel Rates are based on fuel oil of 35° API (16°C or 60°F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

Additional Ratings may be available for specific customer requirements. Consult your Cat representative for details.

For flares subject to Chapter 115, Subchapter H, relating to highly reactive volatile organic compounds, flow rate and composition data required by 30 TAC 115.725–26 should be used to determine emissions for any portions of 2009 that HRVOC monitors were installed and operational.

In the absence of monitoring data, selection of the most accurate method may sometimes require exercising scientific judgment. For example, when using the results of a one-time performance test, the test conditions should be compared to the flare's actual operating conditions during the inventory year to determine whether the test accurately represents the flare's performance. If test conditions do not accurately model flare operation, then engineering determinations based on detailed process evaluation may provide the best data.

NO_x and CO Emissions

To calculate NO_x and CO emissions, the net heating value of the flared gas must be known. Using the actual short-term flared gas composition and flow rate data for the inventory year, calculate the net heating value of the flared gas and the total heat release for each short time period. Use these total heat release data, in conjunction with the appropriate emission factors from TCEQ Air Permits guidance, to determine NO_x and CO emissions for each time segment. Since the calculated net heating value of the gas and the assist gas type will determine the appropriate emission factors, carefully select the correct factors for each flare from Table A-6.

Calculate emissions using the most accurate data for the gas flow rate and composition available. (See "Flared Gas Flow Rate and Composition" earlier in this supplement for more information on preferred data.)

Table A-6. TCEQ Air Permits Flare Emission Factors

Contaminant	Assist Type	Waste Gas Stream Net Heating Value[a,b]	Emission Factor
NO_x	Steam	High Btu	0.0485 lb/MMBtu
		Low Btu	0.068 lb/MMBtu
	Air or Unassisted	High Btu	0.138 lb/MMBtu
		Low Btu	0.0641 lb/MMBtu
CO	Steam	High Btu	0.3503 lb/MMBtu
		Low Btu	0.3465 lb/MMBtu
	Air or Unassisted	High Btu	0.2755 lb/MMBtu
		Low Btu	0.5496 lb/MMBtu

[a] High Btu: > 1000 Btu/scf

[b] Low Btu: 192–1000 Btu/scf

Regardless of the data's source, the determination methodology for NO_x and CO emissions should be reported as "A" for 'TCEQ-approved factor.'

For flares subject to the HRVOC regulations in Chapter 115, Subchapter H, use the net heating value data required by 30 TAC 115.725 and 115.726 to determine NO_x and CO emissions for any portions of 2009 during which HRVOC monitors were installed and operational.

Uncombusted Flared Gas Emissions

Uncombusted flared gas emissions usually include VOCs, H_2S, or both. Emissions calculations for these contaminants are based on the flared gas flow rate and composition, and the appropriate destruction efficiency, which depends upon the actual flare operation.

Destruction Efficiencies

Flare destruction efficiency varies with flame stability, operating conditions, flare tip size and design, the specific compounds being combusted, and gas composition. The EPA has determined operating limits (see 40 CFR 60.18), that result in stable operation of flare flames. Therefore, emission determinations may vary depending on whether the criteria of 40 CFR 60.18 are satisfied. Chapter 115 HRVOC regulations address flare operational requirements in regard to 40 CFR 60.18. For flares subject to HRVOC regulations, use the appropriate destruction efficiencies specified in 30 TAC 115.725.

Otherwise, if the flare's operation is consistent with 40 CFR 60.18, then use the appropriate destruction efficiencies from TCEQ Air Permits guidance shown in Table A-7.

Table A-7. TCEQ Air Permits Flare Destruction or Removal Efficiencies for 40 CFR 60.18–Compliant Flares

Waste Stream Composition	Destruction or Removal Efficiency
VOC, C_1–C_3[a]	99%
VOC, > C_3	98%
H_2S	98%

[a] 99% reduction should only be applied for compounds containing no more than three carbons that contain no elements other than carbon and hydrogen in addition to the following compounds: methanol, ethanol, propanol, ethylene oxide, and propylene oxide.

Note that, for flare operation to be considered consistent with 40 CFR 60.18, it must:

- meet the flared gas heating value and flare exit tip velocity limitations;
- be equipped with proper liquid knockout and ignition systems; and
- operate smokelessly.

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.

ENERGYPTL, LLC
PRECISION TESTING AND LABORATORY

Client	Harvest Midstream	10536-2020070213.1	
Sample Id.	Dogie Comprror Station	Sample Pressure (psig)	45
Sample Source	Blow Case	Sample Temp. (°F)	77
Sample Type	Spot	Atm Temp. (°F)	65
Meter #	N/A	Sample Date	7/1/2020
Sampled By	C.L.	Report Date	7/14/2020
		Analysis By	A.K.

ASTM D 6729 - Hydrocarbon PIANO

Oxygenates		**Mol %**	**Vol. %**	**Wt. %**
methanol	X	0.0000	0.0000	0.0000
ethanol	X	0.0000	0.0000	0.0000
Light Fractions (C1-C5)				
nitrogen		0.1334	0.0382	0.0456
carbon dioxide		0.0349	0.0159	0.0188
methane	P	1.0838	0.4782	0.2122
ethane	P	0.2697	0.1878	0.0990
propane	P	6.7183	4.8192	3.6151
iso-butane	I	4.6021	3.9215	3.2642
n-butane	p	11.6948	9.6002	8.2949
cyclopentane	N	0.0698	0.0540	0.0597
iso-pentane	I	9.1972	8.7588	8.0977
n-pentane	p	9.6484	9.1069	8.4949
Hexanes (C6's)				
n-hexane	P	6.4136	6.9205	6.7451
2,2-dimethylbutane	I	0.0465	0.0510	0.0489
2,3-dimethylbutane	I	0.1232	0.1324	0.1296
2-methylpentane	I	1.2371	1.3472	1.3011
3-methylpentane	I	3.1091	3.3296	3.2698
benzene	A	1.3023	0.9548	1.2413
methylcyclopentane	N	3.4998	3.2447	3.5944
cyclohexane	N	4.3184	3.8495	4.4351
1-hexene	O	0.0003	0.0003	0.0003
t-2-hexene	O	0.0000	0.0000	0.0000
2-methyl-2-pentene	O	0.0006	0.0006	0.0006
c-3-methyl-2-pentene	O	0.0005	0.0005	0.0005
c-2-hexene	O	0.0003	0.0003	0.0003
1-methylcyclopentene	O	0.0001	0.0001	0.0001

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

ASTM D 6729 - Hydrocarbon PIANO

Heptanes (C7's)		**Mol %**	**Vol. %**	**Wt. %**
n-heptane	P	5.9299	7.1697	7.2510
2,2-dimethylpentane	I	0.0186	0.0228	0.0227
2,4-dimethylpentane	I	0.1139	0.1400	0.1393
2,2,4-trimethylbutane	I	0.0558	0.0666	0.0682
2,2,3-trimethylbutane	I	0.0030	0.0036	0.0037
3,3-dimethylpentane	I	0.0079	0.0094	0.0097
2-methylhexane	I	1.8883	2.2958	2.3089
2,3-dimethylpentane	I	0.2372	0.2774	0.2900
3-methylhexane	I	2.5743	3.0980	3.1478
3-ethylpentane	I	0.0007	0.0008	0.0008
toluene	A	2.0976	1.8393	2.3585
1,1-dimethylcyclopentane	N	0.0412	0.0429	0.0493
1c,3-dimethylcyclopentane	N	0.1139	0.1154	0.1365
1t,3-dimethylcyclopentane	N	0.0605	0.0612	0.0724
1t,2-dimethylcyclopentane	N	0.1279	0.1295	0.1533
methylcyclohexane	N	8.9251	9.3908	10.6945
ethylcyclopentane	N	0.2767	0.2993	0.3316
1-heptene	O	0.0002	0.0002	0.0002
2,4-dimethyl-1-pentene	O	0.0005	0.0006	0.0006
t-3-heptene	O	0.0006	0.0007	0.0007
c-3-heptene	O	0.0007	0.0008	0.0009
t-2-heptene	O	0.0001	0.0001	0.0001
t-3-methyl-2-hexene	O	0.0006	0.0006	0.0007
c-2-heptene	O	0.0003	0.0004	0.0004
Octanes (C8's)				
n-octane	P	3.1231	4.1872	4.3536
3-methylheptane	I	1.2395	1.6571	1.7278
2,3,3-trimethylpentane	I	0.0021	0.0028	0.0029
3,3-dimethylhexane	I	0.0163	0.0213	0.0227
2,3-dimethylhexane	I	0.0930	0.1252	0.1297
2,2,3-trimethylpentane	I	0.0067	0.0092	0.0094
2,4-dimethylhexane & 2,5 dimethylhexane	I	0.0253	0.0341	0.0353

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

ASTM D 6729 - Hydrocarbon PIANO

C8's (Continued)		**Mol %**	**Vol. %**	**Wt. %**
2-methylheptane & 4-methylheptane	I	1.4720	1.9877	2.0520
3-methyl-3-ethylpentane & 3,4-dimethylhexane	I	0.1279	0.1677	0.1783
2,2,4-trimethylpentane (isooctane)	I	0.0372	0.0508	0.0519
ethylbenzene	A	0.5767	0.5827	0.7471
m+p-xylene	A	1.6278	1.6503	2.1089
o-xylene	A	0.5279	0.5254	0.6839
1c,3-dimethylcyclohexane	N	0.0442	0.0511	0.0605
1c,2t,4-trimethylcyclopentane	N	0.1023	0.1184	0.1401
1t,2c,3-trimethylcyclopentane	N	0.0860	0.0996	0.1178
1,1,3-trimethylcyclopentane	N	0.0021	0.0024	0.0029
1c,2t,3-trimethylcyclopentane	N	0.0837	0.0969	0.1146
1t,4-dimethylcyclohexane	N	0.0302	0.0357	0.0414
1,1-dimethylcyclohexane	N	0.0326	0.0388	0.0446
3c-ethylmethylcyclopentane	N	0.0884	0.1092	0.1210
2t-ethylmethylcyclopentane & 3t-ethylmethylcyclopentane	N	0.0095	0.0118	0.0131
1,1-methylethylcyclopentane	N	0.1307	0.1615	0.1790
1t,2-dimethylcyclohexane	N	0.1163	0.1352	0.1592
isopropylcyclopentane	N	0.0395	0.0471	0.0541
1c,2-dimethylcyclohexane	N	0.0140	0.0162	0.0191
n-propylcyclopentane	N	0.2209	0.2453	0.3025
2-methyl-3-ethylpentane	O	0.0010	0.0013	0.0014
2-ethylhexene-1	O	0.0000	0.0000	0.0000
1-octene	O	0.0007	0.0008	0.0009
Ungrouped C8's	U	0.0488	0.0611	0.0673

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

Nonanes (C9's)		**Mol %**	**Vol. %**	**Wt. %**
n-nonane	P	1.9208	2.7866	2.9591
2,2,3-trimethylhexane	I	0.0186	0.0275	0.0291
2,4-dimethylheptane	I	0.0488	0.0738	0.0764
4,4-dimethylheptane	I	0.1070	0.1617	0.1674
2,5-dimethylheptane	I	0.1837	0.2777	0.2875
3,5-dimethylheptane	I	0.0349	0.0527	0.0546
2,6-dimethylheptane	I	0.0033	0.0049	0.0051
2,3-dimethylheptane	I	0.0605	0.0914	0.0946
3,4-dimethylheptane	I	0.0070	0.0105	0.0109
2-methyloctane & 4-methyloctane	I	0.2395	0.3550	0.3749
3-methyloctane	I	0.4000	0.5928	0.6260
3-ethylheptane	I	0.0000	0.0000	0.0000
isopropylbenzene	A	0.0049	0.0056	0.0072
n-propylbenzene	A	0.0035	0.0040	0.0051
m-ethyltoluene	A	0.0026	0.0029	0.0038
p-ethyltoluene	A	0.0005	0.0005	0.0007
1,3,5-trimethylbenzene	A	0.0030	0.0035	0.0044
o-ethyltoluene	A	0.0012	0.0013	0.0017
1,2,4-trimethylbenzene	A	0.0009	0.0010	0.0014
1,2,3-trimethylbenzene	A	0.0006	0.0007	0.0009
2,3-dihydroindene	A	0.0002	0.0002	0.0002
1,1,2-trimethylcyclohexane	N	0.0130	0.0170	0.0201
isobutylcyclopentane	N	0.0256	0.0333	0.0394
1,1,4-trimethylcyclohexane	N	0.0056	0.0073	0.0086
isopropylcyclohexane	N	0.0221	0.0287	0.0340
n-butylcyclopentane	N	0.1163	0.1514	0.1791
1c,2t,3c-trimethylcyclohexane	N	0.1349	0.1756	0.2078
1,1,3-trimethylcyclohexane	N	0.0512	0.0666	0.0788
1c,2t,4t-trimethylcyclohexane	N	0.1279	0.1665	0.1970
1c,3c,5c-trimethylcyclohexane	N	0.0419	0.0545	0.0645
c-nonene-2 & t-nonene-2	O	0.0000	0.0000	0.0000
t-nonene-2	O	0.0001	0.0001	0.0001
t-3-nonene & c-3-nonene	O	0.0000	0.0000	0.0000
Ungrouped C9's	U	0.0437	0.0598	0.0672

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Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

ASTM D 6729 - Hydrocarbon PIANO

Decanes (C10's)		**Mol %**	**Vol. %**	**Wt. %**
n-decane	P	0.2721	0.4375	0.4724
2,4-dimethyloctane	I	0.0028	0.0047	0.0048
2,2-dimethyloctane	I	0.0186	0.0312	0.0323
2,5-dimethyloctane & 2,6-dimethyloctane	I	0.0581	0.0975	0.1009
3,3-dimethyloctane	I	0.0186	0.0312	0.0323
3,6-dimethyloctane	I	0.0016	0.0027	0.0028
3-methyl-5-ethylheptane	I	0.0006	0.0009	0.0010
4-methylnonane & 5-methylnonane	I	0.0058	0.0098	0.0101
2-methylnonane	I	0.0186	0.0312	0.0323
3-methylnonane	I	0.0302	0.0507	0.0525
3-ethyloctane	I	0.0008	0.0013	0.0014
tert-butylbenzene	A	0.0001	0.0001	0.0001
isobutylbenzene	A	0.0001	0.0001	0.0001
sec-butylbenzene	A	0.0005	0.0007	0.0008
1,3-methyl-i-propylbenzene	A	0.0004	0.0005	0.0006
1,2-methyl-i-propylbenzene	A	0.0008	0.0011	0.0014
1,3-diethylbenzene	A	0.0006	0.0007	0.0010
1,3-methyl-n-propylbenzene	A	0.0008	0.0010	0.0013
1,4-diethylbenzene	A	0.0010	0.0013	0.0016
1,4-methyl-n-propylbenzene	A	0.0010	0.0012	0.0016
1,3-dimethyl-5-ethylbenzene	A	0.0004	0.0005	0.0006
1,2-diethylbenzene & n-butylbenzene	A	0.0002	0.0003	0.0004
1,2-methyl-n-propylbenzene	A	0.0001	0.0001	0.0002
1,4-dimethyl-2-ethylbenzene	A	0.0005	0.0006	0.0008
1,2-dimethyl-3-ethylbenzene	A	0.0001	0.0001	0.0001
1,2,4,5-tetramethylbenzene	A	0.0002	0.0003	0.0004
1,2,3,5-tetramethylbenzene	A	0.0002	0.0002	0.0003
5-methylindan	A	0.0002	0.0002	0.0003
4-methylindan	A	0.0009	0.0011	0.0014
2-methyllindan	A	0.0008	0.0010	0.0013
tetrahydronaphthalene	A	0.0002	0.0002	0.0003

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

C10's Continued		**Mol %**	**Vol. %**	**Wt. %**
isobutylcyclohexane & t-butylcyclohexane	N	0.0014	0.0021	0.0024
1t-methyl-2-n-propylcyclohexane	N	0.0004	0.0005	0.0006
sec-butylcyclohexane	N	0.0002	0.0003	0.0003
n-butylcyclohexane	N	0.0004	0.0007	0.0008
2,3-dimethyloctene-2	O	0.0002	0.0003	0.0003
Ungrouped C10's	U	0.0008	0.0012	0.0014
Undecanes & Dodecanes (C11's & C12's)				
n-undecane	P	0.0009	0.0016	0.0017
1,4-methyl-t-butylbenzene	A	0.0003	0.0004	0.0005
1,2-ethyl-i-propylbenzene	A	0.0001	0.0001	0.0001
1,2-methyl-t-butylbenzene	A	0.0006	0.0008	0.0011
1,2-ethyl-n-propylbenzene	A	0.0001	0.0002	0.0002
1,3-methyl-n-butylbenzene	A	0.0003	0.0004	0.0005
sec-pentlybenzene	A	0.0003	0.0004	0.0005
n-pentylbenzene	A	0.0002	0.0003	0.0004
1,3-di-i-propylbenzene	A	0.0003	0.0005	0.0006
1,2-di-i-propylbenzene & 1,4-di-i-propylbenzene	A	0.0001	0.0002	0.0002
1,4-ethyl-t-butylbenzene & 1-t-butyl-3,5-dimethylbenzene	A	0.0006	0.0009	0.0012
1,3-di-n-propylbenzene	A	0.0001	0.0001	0.0002
dodecene-1	O	0.0005	0.0009	0.0010
C12+	U	0.0258	0.0507	0.0668
TOTAL		100.0000	100.0000	100.0000

SCF/Gal (C1-C5 Vapor)	11.3373
Specific Gravity	0.6761
Molecular Weight	81.9450
Vapor Pressure (psia)	82.62
Specific Gravity (C10+ Fraction)	0.7335
Molecular Weight (C10+ Fraction)	146.0529

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

PIANO

Whole Composition		**Mol %**	**Vol. %**	**Wt. %**
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	47.0754	45.6953	42.4990
Iso-Paraffins	I	27.4942	29.4200	28.3097
Aromatics	A	6.1613	5.5879	7.1850
Naphthenes	N	18.9745	19.0612	21.7303
Olefins	O	0.0071	0.0086	0.0090
Ungrouped	U	0.1192	0.1728	0.2027

PIANO

Less Unclassified Hydrocarbons				
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	47.2111	45.7993	42.6128
Iso-Paraffins	I	27.5735	29.4869	28.3855
Aromatics	A	6.1791	5.6006	7.2042
Naphthenes	N	19.0292	19.1046	21.7885
Olefins	O	0.0071	0.0086	0.0090

BTEX summary				
benzene	A	1.3023	0.9548	1.2413
toluene	A	2.0976	1.8393	2.3585
ethylbenzene	A	0.5767	0.5827	0.7471
m+p-xylene	A	1.6278	1.6503	2.1089
o-xylene	A	0.5279	0.5254	0.6839

Composition Summary			
Oxygenates	0.0000	0.0000	0.0000
Light Fractions (C1-C5)	43.4523	36.9807	32.2021
Hexanes (C6's)	20.0519	19.8313	20.7672
Heptanes (C7's)	22.4756	24.9661	27.0420
Octanes (C8's)	9.9265	12.2340	13.5428
Nonanes (C9's)	3.6234	5.2153	5.6077
Decanes (C10's)	0.4401	0.7151	0.7632
Undecanes & Dodecanes (C11's & C12's)	0.0302	0.0575	0.0750

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Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

Composition Summary Cont.	**Mol %**	**Vol. %**	**Wt. %**
Nitrogen (N2)	0.1334	0.0382	0.0456
Methane (CH4)	1.0838	0.4782	0.2122
Carbon Dioxide (CO2)	0.0349	0.0159	0.0188
Ethane (C2H6)	0.2697	0.1878	0.0990
Propane (C3H8)	6.7183	4.8192	3.6151
Iso Butane (C4H10)	4.6021	3.9215	3.2642
N Butane (C4H10)	11.6948	9.6002	8.2949
Iso Pentane (C5H12)	9.1972	8.7588	8.0977
N Pentane (C5H12)	9.6484	9.1069	8.4949
Hexanes	12.4057	12.0100	12.8404
n-hexane	6.4136	6.9205	6.7451
2,2,4 trimethylpentane	0.0372	0.0508	0.0519
benzene	1.3023	0.9548	1.2413
Heptanes	20.3780	23.1267	24.6835
toluene	2.0976	1.8393	2.3585
Octanes	7.1569	9.4249	9.9511
ethylbenzene	0.5767	0.5827	0.7471
xylenes	2.1557	2.1758	2.7927
Nonanes	3.6234	5.2153	5.6077
Decanes+	0.4703	0.7726	0.8382
TOTAL	100.0000	100.0000	100.0000

Physical Properties Calculated	**Sample**	**C10+ Fraction**
Specific Gravity (60°F)	0.6761	0.7335
API Gravity (60°F)	77.78	61.40
Molecular Weight	81.9450	146.0529
lbs/gal (vacuum)	5.6426	6.1216
lbs/gal (air)	5.6370	6.1155
SCF/gal (Vapor)	25.1214	15.8569

Pressure Base - 14.696

Color Visual	Standard White
Shrink Factor	0.9890
Flash Factor (cf/brl)	17.81

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PRECISION TESTING AND LABORATORY

Client	Harvest Midstream	10536-2020070213.1
Sample Id.	Dogie Comprror Station	

Emmision Report

	Uncontroll	Controlled
	Tons/yr	Tons/yr
H2S	0.0000	0.0000
CO2	13.9730	13.9730
N2	40.4120	40.4120
C1	177.5530	8.8777
C2	58.1370	2.9069
C3	1069.206	53.4603
iC4	463.2580	23.1629
nC4	845.8920	42.2946
iC5	316.4990	15.8250
NC5	246.4560	12.3228
C6	110.9950	5.5497
Benzene	8.9200	0.4460
Toluene	4.5760	0.2288
E-Benzene	0.4580	0.0229
Xylenes	1.3830	0.0692
N-C6	55.6380	2.7819
2,2,4 TMP	0.1460	0.0073
TOTAL VOCs	3359.12	167.9560
TOTAL	3413.50	222.3410

Calculated using E&P Tanks; based on sample conditions and properties
Uncontrolled assumes no control equipment and complete vent to atmosphere

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.

[78 FR 71950, Nov. 29, 2013]

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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."

Material Safety Data Sheet

Cortron® RN-531FB

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Cortron® RN-531FB
Product use	Corrosion Inhibitor
Manufacturer	Champion Technologies, Inc. P.O. Box 450499 Houston, TX, 77245 USA
Telephone	1-281-431-2561 (Champion)
In case of emergency	1-800-424-9300 (CHEMTREC) 1-703-527-3887 (CHEMTREC - International)

2. HAZARDS IDENTIFICATION

Physical state	liquid
Color	Clear. Amber.
Odor	pungent.
Emergency overview	WARNING! Flammable. Harmful. Irritant. Keep away from heat, sparks and flame. May cause sensitization by skin contact.

Potential health effects

Inhalation	Possible risk of irreversible effects.
Ingestion	Harmful if swallowed. Possible risk of irreversible effects. Irritating to mouth, throat and stomach.
Skin	Possible risk of irreversible effects. Irritating to skin. May cause sensitization by skin contact.
Eyes	Irritating to eyes.
Chronic effects	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

See toxicological information (section 11)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS no.	Weight %
Methanol	67-56-1	10 - 30
Fatty Amino Compound Acetate	Proprietary	5 - 10
Ionic Surfactants	Proprietary	5 - 10
2-Mercaptoethanol	60-24-2	1 - 5

4. FIRST AID MEASURES

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure.

Inhalation Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Ingestion Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention. Never give anything by mouth to an unconscious person.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE-FIGHTING MEASURES

Flash point 98 °F (36.7 °C), Pensky-Martens.

Flammability of the product Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable Use dry chemical, CO2, water spray (fog) or foam.

Not suitable Do not use water jet.

Special exposure hazards Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides, halogenated compounds

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards Not available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Methods for cleaning up

Small spill Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection

Hands Use chemical-resistant, impervious gloves.

Eyes Safety eyewear should be used when there is a likelihood of exposure.

Body Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Occupational exposure limits

Component	Source	Type	PPM	MG/M3	Notes
Methanol					
	OSHA PEL	TWA	200 ppm	260 mg/m3	
	NIOSH REL	TWA	200 ppm	260 mg/m3	SKIN
	NIOSH REL	STEL	250 ppm	325 mg/m3	SKIN
	ACGIH TLV	TWA	200 ppm	262 mg/m3	SKIN
	ACGIH TLV	STEL	250 ppm	328 mg/m3	SKIN
2-Mercaptoethanol					
	AIHA WEEL	TWA	0.2 ppm		

SKIN - Skin absorption can contribute significantly to overall exposure.

Engineering Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or

measures	other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	liquid
Color	Clear. Amber.
Odor	pungent.
Odor threshold	Not available.
Boiling/condensation point	Not available.
Pour point	Not available.
Flash point	98 °F (36.7 °C), Pensky-Martens.
Flammable limits	Lower: Not available. Upper: Not available.
Auto-ignition temperature	Not available.
pH	4.7 - 6.7, Method (neat)
Evaporation rate	Not available.
Solubility	Water
Vapor density	Not available.
Relative density	0.9518 - 0.9919 @ 68 °F (20.0 °C)
Vapor pressure	Not available.
Viscosity	Dynamic: 1 - 16 cPs
Octanol/water partition coefficient (LogPow)	Not available.

Note: Typical values only - not to be interpreted as sales specifications

10. STABILITY AND REACTIVITY

Stability	The product is stable.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Materials to avoid	oxidizing materials
Hazardous	Under normal conditions of storage and use, hazardous decomposition products should

decomposition products not be produced.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Substance	Test type	Species	Dose
Methanol			
	LD50 Oral	Rat	5,600 mg/kg
	LD50 Oral	Mouse	5,800 mg/kg
	LD50 Oral	Rabbit	14,200 mg/kg
	LC50 Inhalation	Mouse	41000 ppm
	LC50 Inhalation	Rat	64000 ppm
	LC50 Inhalation	Rabbit	81,000 mg/m3
	LD50 Dermal	Rabbit	15,800 mg/kg
Ionic Surfactants			
	LD50 Oral	Rat	426 mg/kg
	LD50 Oral	Mouse	919 mg/kg
2-Mercaptoethanol			
	LD50 Oral	Rat	98 - 162 mg/kg
	LC50 Inhalation	Rat	2 mg/l
	LD50 Dermal	Rabbit	112 - 224 mg/kg

Irritation/Corrosion

Not available.

Target organ effects Methanol: Ingestion may cause blindness.

Carcinogenicity

None of the components are listed.

12. ECOLOGICAL INFORMATION

Environmental effects Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

Substance	Test type	Species	Result
2-Mercaptoethanol			
	EC50, 48 h	Daphnia magna	0.89 mg/l
	EC50, 72 h	Green algae	12.4 mg/l

Other adverse effects None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

Refer to the bill of lading or container label for DOT or other transportation hazard classification. Additionally, be aware that shipping descriptions may vary based on mode of transport, shipment volume or weight, container size or type, and/or origin and destination. Consult your company's Hazardous Materials / Dangerous Goods expert or your legal counsel for information specific to your situation.

15. REGULATORY INFORMATION

HCS Classification

Component	Classification
Methanol	Irritant., Target organ effects, Occupational exposure limits
Fatty Amino Compound Acetate	Irritant.
Ionic Surfactants	Harmful., Corrosive
2-Mercaptoethanol	Toxic., Irritant., Sensitizer, Occupational exposure limits

U.S. Federal regulations

CERCLA: Hazardous substances - Reportable quantity:

Substance	Reportable quantity
Methanol	5000 lbs

Product Reportable quantity	Substance
22,449 lb, 2,774 gal US	Methanol

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355):
None of the components are listed.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Immediate (acute) health hazard. Delayed (chronic) health hazard. Fire hazard.

SARA 313 - Supplier notification

Component	CAS no.	Weight %
Methanol	67-56-1	10 - 30

Clean Water Act (CWA) 307:
None of the components are listed.

Clean Water Act (CWA) 311:
The following components are listed: Acetic acid.

Clean Air Act (CAA) 112 accidental release prevention:
None of the components are listed.

Clean Air Act (CAA) 112 regulated flammable substances:
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances:
None of the components are listed.

State regulations

Massachusetts Substances: The following components are listed: Methanol. 2-Mercaptoethanol.

New Jersey Hazardous Substances: The following components are listed: Methanol.

Pennsylvania RTK Hazardous Substances: The following components are listed: 2-Mercaptoethanol. Methanol.

California Prop. 65

Not available.

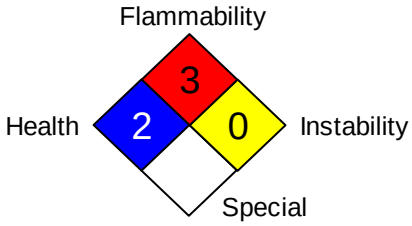
International regulations

United States inventory (TSCA 8b): All components are listed or exempted.

Canada inventory (DSL): At least one component is not listed in DSL but all such components are listed in NDSL.

16. OTHER INFORMATION

National Fire Protection Association (U.S.A.):



Prepared by	Product Stewardship (1-281-431-2561)
Date of issue	08/05/2010
Date of previous issue	00/00/0000
Version	3.0

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Section 8

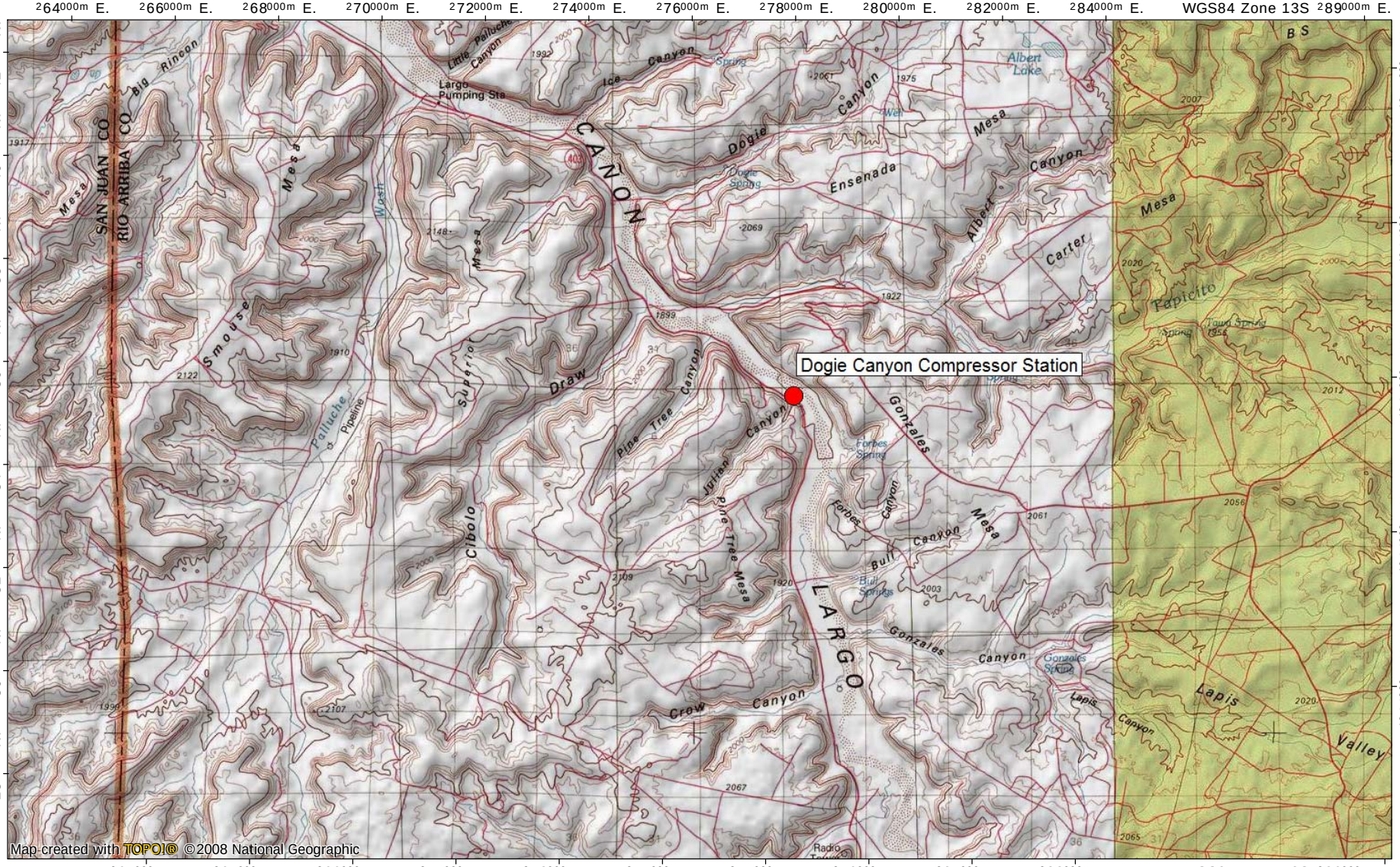
Map(s)

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.

HARVEST FOUR CORNERS, LLC - DOGIE CANYON COMPRESSOR STATION - Rio Arriba County, NM T 25 N, R 06 W, Section 4



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. Public notice is not required when submitting Title V operating permit applications.

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Section 10

Written Description of the Routine Operations of the Facility

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

The Dogie Canyon Compressor Station compresses and dehydrates pipeline quality natural gas.

The natural gas is received from independent producers and is metered as it enters the facility. As gas enters the facility, some water is separated from the stream via an inlet separator. The gas is then compressed for pipeline transmission using compressors driven by natural gas-fired turbines. The stream is then routed to a TEG dehydrator which further dehydrates the gas. The TEG solution comes into contact with the natural gas and removes the water and some hydrocarbons. The rich TEG solution is regenerated by boiling off the water and hydrocarbons and reclaiming the glycol. The resulting produced water is stored in above ground storage tanks. Dehydrator emissions are controlled by a flare.

Condensate from pigging operations is stored in tanks. The condensate is hauled off-site by truck.

The facility is also equipped with a fuel gas heater, a standby generator, heaters and miscellaneous liquid storage tanks.

The facility will operate up to 24 hours per day, seven days per week, 52 weeks per year, 8,760 hours per year.

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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)**:**

Dogie Canyon Compressor Station – natural gas compression and dehydration station

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

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

C. Make a determination:

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

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

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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. PSD applicability determinations are not required for Title V permit applications.

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. PSD applicability determinations are not required for Title V permit applications.

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

Applicable state requirements are embodied in the New Mexico SIP, the New Mexico Administrative Code (NMAC), and the terms and conditions of any preconstruction permits issued pursuant to regulations promulgated through rulemaking under Title I of the CAA.

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
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.
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 20.2.14.5 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 20.2.18.5 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 facility is not equipped with external gas burning equipment which have heat input rates exceeding 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 the facility is not a natural gas processing plant (see 20.2.35.6 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 20.2.38.112 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	1-4, 6b, 7, 8 & 13	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 NMAC).

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation is applicable because the facility is a major source of NO_2, CO, VOC & HAP emissions (see 20.2.70.200 NMAC).
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.70 NMAC (see 20.2.71.6 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 25 tpy for pollutants subject to a state or federal ambient air quality standards (does not include VOCs or HAPs).
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. 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)).
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	This regulation is not applicable because the facility is not a PSD major source. With this modification, emissions from each pollutant will be less than 250 tpy (see 20.2.74.200 NMAC).
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.72 NMAC and it establishes the fee schedule associated with the filing of construction permits (see 20.2.75.6 NMAC).
20.2.77 NMAC	New Source Performance	Yes	1	This regulation is not applicable because it adopts by reference the federal NSPS codified in 40 CFR 60 (see 20.2.77.6 NMAC). The facility is subject to 40 CFR 60, Subparts A and GG.
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 (see 20.2.78.6 NMAC). 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 20.2.79.6 NMAC).
20.2.80 NMAC	Stack Heights	Yes	1-4, 6b, 8 & 13	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	6a & 7	This regulation is applicable because it adopts by reference the federal MACT Standards for source categories codified in 40 CFR 63 (see 20.2.82.6 NMAC). The dehydrator at the facility is subject to 40 CFR 63, Subparts A & HH. The engine at the facility is subject to 40 CFR 63, Subparts A & ZZZZ.

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 is applicable 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	No	N/A	40 CFR 52.21 *Prevention of Significant Deterioration of Air Quality* is not applicable because the facility is not 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	1, 7 & 13	This regulation is applicable because 40 CFR 60, Subparts GG & IIII are applicable (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 facility have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110(a)). For tank capacities and contents, see Tables 2-A & 2-B in Section 2 of this application.
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 facility have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110a(a)). For tank capacities and contents, see Tables 2-A & 2-B in Section 2 of this application.
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 all storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 75 cubic meters (19,812 gallons), and/or construction, modification or reconstruction commenced prior to July 23, 1984, and/or they contain condensate prior to custody transfer (see §60.110b(a) & §60.110b(d)(4)). For tank capacities and contents, see Tables 2-A & 2-B in Section 2 of this application. Note that the condensate tanks were installed prior to the applicability date and contain condensate prior to custody transfer. Commenced construction means a continuous program of fabrication, erection or installation (see §60.2). Modification means any physical change in or change in the method of operation of and existing facility which increases emissions or results in new emissions (see §60.2). The following, by themselves, are not modifications: routine maintenance, repair or replacement, production increase without capital expenditure, increase in hours of operation, addition of emission controls, or the relocation or change in ownership of an existing facility (see §60.14). Reconstruction means the replacement of components of an existing facility such that the fixed capital cost of the new components exceeds 50 % of the fixed capital cost required to construct a comparable entirely new facility. Fixed capital cost means the capital needed to provide all the depreciable components (see §60.15).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60 Subpart GG	Standards of Performance for Stationary Gas Turbines	Yes	1	This regulation applies to Unit 1 because it was constructed after the applicability date of October 3, 1977 and has a heat input at peak load greater than 10.15 MMBtu/hr (see §60.330). The exemptions in §60.332(e) & (j) do not apply. The regulation does not apply to the remaining turbines (Units 2, 3 & 4), as construction commenced prior to October 3, 1977. Nor have they been modified or reconstructed. See the definitions of construction, modification, and reconstruction referenced in Subpart Kb above. NO_X emissions from the Unit 1 cannot exceed 150 ppm at 15 % oxygen on a dry basis (see §60.333(a)(2) & (c)). Subpart GG limits the sulfur content of exhaust gas to no more than 0.015 % by volume at 15 % oxygen on a dry basis or HFC must demonstrate the fuel used in the affected turbines does not contain sulfur in excess of 0.8 % by weight (see §60.333). This subpart might apply to Unit 13 when it is installed. An applicability determination will be made at that time.
NSPS 40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Gas Plants	No	N/A	This regulation is not applicable because the facility is not an onshore natural gas processing plant as defined by the subpart (see §60.630(a)(1)). Natural gas processing plant (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both (see §60.631).
NSPS 40 CFR 60, Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant as defined by the subpart. It is not equipped with a sweetening unit (see §60.640(a)).
NSPS 40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Yes	7	This regulation applies because the facility is equipped with a stationary compression ignition (CI) internal combustion engine (ICE) that commenced construction after July 11, 2005 and was manufactured after April 1, 2006 (see §60.4200(a)(2)(i)). It is an emergency stationary ICE in accordance with §60.4211(f). For the purpose of this subpart, construction commences on the date the engine is ordered by the owner or operator (see §60.4200(a)). This engine was manufactured in model year 2014 and has a displacement of 15 liters. An EPA certification is provided in Section 7.
NSPS 40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	This regulation is not applicable because the facility is not equipped with spark ignition (SI) internal combustion engines (ICE).
NSPS 40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	Potentially Subject	N/A	This regulation is not applicable because the turbines at the station (Units 1-4) commenced construction prior to February 18, 2005 (see §60.4305(a)). They have not been modified or reconstructed. See the definitions of construction, modification, and reconstruction referenced in Subpart Kb above. This subpart might apply to Unit 13 when it is installed. An applicability determination will be made at that time.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
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 is not applicable because the facility is not equipped with "affected" sources that commenced construction, modification or reconstruction after August 23, 2011 and on or before September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, and storage vessels (see §60.5365). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430). See the definitions of construction, modification, and reconstruction referenced in Subpart Kb above.
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	Potentially Subject	N/A	This regulation is not applicable because the facility is not currently equipped with "affected" sources that commenced construction, modification or reconstruction after September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, sweetening units, pneumatic pumps, and equipment leaks (see §60.5365a). In general, this regulation may apply if existing affected equipment is replaced or new affected equipment is installed. See the definitions of construction, modification, and reconstruction referenced in Subpart Kb above. In particular, this regulation will apply to fugitive emissions components at the facility if Unit 13 (a turbine and compressor) is installed. Fugitive components monitoring is required if a compressor station is modified. For the purpose of fugitive components monitoring as required by this subpart, modification of a compressor station is the addition of a compressor or replacement of a compressor with a larger unit (greater total horsepower) (see §60.5365a(j)). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430a).
NESHAP 40 CFR 61, Subpart A	General Provisions	No	N/A	This regulation is not applicable because none of the other 40 CFR Part 61 subparts apply (see §61.01(c)).
NESHAP 40 CFR 61, Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	This regulation is not applicable because none of the listed equipment at the facility 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	6a & 7	This regulation is applicable because 40 CFR 63, Subparts HH & ZZZZ apply (see §63.1(b)).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart HH	National Emission Standards for Hazardous Air Pollutants For Oil and Natural Gas Production Facilities	Yes	6a	This regulation applies because the station is equipped with a dehydrator (Unit 6a). The facility is a major HAP source. Since it is a production field facility (located prior to the point of custody transfer), only HAP emissions from glycol dehydration units and storage vessels are aggregated for a major source determination. Storage vessels include crude oil tanks, condensate tanks, intermediate hydrocarbon liquid tanks, and produced water tanks (see §63.761). At major HAP facilities, the regulation is applicable to the following source types: dehydrators, storage vessels with the potential for flash emissions, and ancillary equipment and compressors in VHAP service located at natural gas processing plants (see §63.760(b)(1)). The condensate storage tanks at the facility are not storage vessels with the potential for flash emissions as defined by the subpart. Their actual annual average hydrocarbon throughput is less than 79,500 liters per day (500 barrels per day) (see §63.761). The regulation is not applicable to the ancillary equipment and compressors. They are not in VHAP service; the percent VHAP content can be reasonably expected never to exceed 10.0 percent by weight (see §63.772(a)(1)). They are not located at a natural gas processing plant; a processing site engaged in the extraction of natural gas liquids from field gas, or the fractionation of mixed NGL to natural gas products, or a combination of both (see §63.761). Since the facility was constructed or reconstructed prior to February 6, 1998, it has three years to comply with the regulation (see §63.760(f)(1)). The dehydrator meets the definition of a small glycol dehydration unit, since actual annual average benzene emissions are less than 0.90 megagrams per year (0.99 tpy) determined according to §63.772(b) (see §63.761). It must comply with the control requirements of §63.765, the monitoring requirements of §63.773, and the recordkeeping and reporting requirements of §63.774 and §63.775.
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 is not applicable because the facility is not a natural gas transmission and storage facility as defined by the subpart. A compressor station that transports natural gas prior to the point of custody transfer or to a natural gas processing plant (if present) are not considered a part of the natural gas transmission and storage source category (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 the station is not a major HAP source as defined by the Subpart (see §63.6080). Note that for production field facilities, only HAP emissions from engines, turbines, dehydrators, and storage vessels with the potential for flash emissions are aggregated for the HAP major source determination (see §63.6175). The condensate storage tanks at the facility are not storage vessels with the potential for flash emissions as defined by the subpart. Their actual annual average hydrocarbon throughput is less than 79,500 liters per day (500 barrels per day) (see §63.6175)

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	7	This regulation applies because the facility is equipped with a stationary RICE (Unit 7). The engine was manufactured in model year 2014. The station is an area HAP source as defined by the subpart and The station is an area HAP source as defined by the subpart. For production field facilities, only HAP emissions from engines, turbines, dehydrators, and storage vessels with the potential for flash emissions are aggregated for the HAP major source determination (see §63.6675). The condensate storage tanks at the facility are not storage vessels with the potential for flash emissions as defined by the subpart. Their actual annual average hydrocarbon throughput is less than 79,500 liters per day (500 barrels per day) (see §63.6675). The engine is a new (commenced construction on or after June 12, 2006) emergency generator as defined by the subpart (see §63.6590(a)(3)(iii)). The requirements of this subpart are met by complying with the requirements of 40 CFR 60, Subpart IIII. No other Subpart ZZZZ requirements apply (see §63.6590(c)(1)).
MACT 40 CFR 63, Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This regulation is not applicable because the facility is an area HAP source as defined by the subpart (see §63.7480). Since the facility is a natural gas production facility, only HAP emissions from dehydrators and storage vessels with the potential for flash emissions are aggregated for a major source determination (see §63.7575).
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. The dehydrator reboiler is not a boiler as defined by the Subpart (see §63.11237). Also, the reboiler burns natural gas. There is an exemption for boilers burning gas (see §63.11195(e) and §63.11237).
40 CFR 64	Compliance Assurance Monitoring	Yes	6a & 8	This regulation is applicable because the dehydrator at the station requires a control device to achieve compliance with emission limits or standards where pre control emissions equal or exceed the major source threshold (100 tons per year). (see §64.2(a)). A CAM plan is provided in Section 20.
40 CFR 68	Chemical Accident Prevention	No	N/A	This regulation is not applicable because the facility does not store any of the identified toxic and flammable substances in quantities exceeding the applicability thresholds (see §68.10(a), §68.115(a), and §68.130 Tables 1-4).
40 CFR 70	State Operating Permit Programs	No	N/A	This regulation is not applicable, as the requirements associated with Title V are delegated to the State of New Mexico and implemented under 20 NMAC 2.70.
40 CFR 82	Protection of Stratospheric Ozone	No	N/A	This regulation is not applicable because the facility does not produce, transform, destroy, import, or export ozone-depleting substances (see §82.1(b),); does not service motor vehicle air conditioning units (see §82.30(b)); and does not sell, distribute, or offer for sale or distribution any product that contains ozone-depleting substances (see §82.64).

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. There are no alternative operating scenarios associated with the station.

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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.	**X**

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 was last submitted in 2015 for NSR permit number 0762-M6.

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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	EPA reference method testing for NO_X and CO	10/01/2019
2	EPA reference method testing for NO_X and CO	10/01/2019
3	EPA reference method testing for NO_X and CO	Before 2011
4	EPA reference method testing for NO_X and CO	10/01/2019
13	EPA reference method testing for NO_X and CO	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

Who Must Use this Attachment:

* Any major source as defined in 20.2.70 NMAC.
* Any source, including an area source, subject to a standard or other requirement promulgated under Section 111 - Standards of Performance for New Stationary Sources, or Section 112 Hazardous Air Pollutants, of the 1990 federal Clean Air Act ("federal Act"). Non-major sources subject to Sections 111 or 112 of the federal Act are exempt from the obligation to obtain an 20.2.70 NMAC operating permit until such time that the EPA Administrator completes rulemakings that require such sources to obtain operating permits. In addition, sources that would be required to obtain an operating permit solely because they are subject to regulations or requirements under Section 112(r) of the federal Act are exempt from the requirement to obtain an Operating Permit.
* Any Acid Rain source as defined under title IV of the federal Act. The Acid Rain program has additional forms. See 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.

The station is subject to 40 CFR, Part 64, Compliance Assurance Monitoring (CAM); consequently, a monitoring protocol is provided in Section 20 of this application.

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 station is in compliance with all applicable requirements affecting the facility. A copy of Part 1 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 station 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 station 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 station 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 station is in compliance with all applicable requirements; consequently, a compliance plan, a compliance schedule, and a schedule of certified progress reports are not required.

The station 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 station 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 (~61.2 km)
Jicarilla Apache Tribe (~6.4 km)
Navajo Tribe (~72.5 km)
Southern Ute Tribe (~64.4 km)

19.9 - Responsible Official

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

The responsible official for the Dogie Canyon Compressor Station 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.

A CAM plan for the flare (Unit 8) is provided in this section. Also, a copy of Part 1 (Permit Requirements Certification Table) of the 2020 annual compliance certification is provided in this section.

Compliance Assurance Monitoring (CAM) Plan
Dogie Canyon Compressor Station
ZEECO Flare (Unit 8)

I. Introduction

This CAM plan applies to the ZEECO flare (Unit 8) located at the Dogie Canyon Compressor Station. The flare is used to control emissions from the 80 million standard cubic feet per day (mmscfd) triethylene glycol (TEG) dehydrator (Unit 6a) in operation at the station. This plan is designed to ensure the flare pilot flame is present whenever the dehydrator is in operation.

The flare controls volatile organic compounds (VOC) emissions from the dehydrator still vent and flash tank. Emissions pass through a condenser on the way to the flare. The still vent and flash tank emissions are continuous in nature when the dehydrator is in operation. The flare is required to be in operation whenever the dehydrator is in operation. It is estimated the flare provides 98 percent control efficiency.

II. Dehydrator Emissions

Pollutant	Uncontrolled		Controlled	
	pph	tpy	pph	tpy
VOC	87.9	385.1	2.7	11.8

III. Monitoring

Indicator	Presence of pilot flame
Measurement Approach	The flare will be equipped with a thermocouple and controller to monitor the presence of the pilot flame.
Indicator Range	200 °F – 2,150 °F
Performance Criteria	
Monitoring Frequency	Continuous when the dehydrator is in operation
Averaging Period	Not applicable
Data Collection Procedures	The flare will be equipped with a continuous recorder. The recorder will keep record of the on/off status of the pilot flame. Once a day, operators will manually record the flare temperature.
Data Representativeness	The presence of the pilot flame is necessary for the destruction of VOC in the gas stream. Ensuring the presence of the pilot flame will ensure the operation of the flare.
QA/QC Practices and Criteria	Operators will calibrate the thermocouple controller annually in accordance with Harvest procedures. Operators will record all maintenance and repair activities on the monitoring system (including date, time, and nature of the maintenance or repair).

Operators will record all maintenance and repair activities on the flare (including date, time, and nature of the maintenance or repair).

IV. Response to Excursion

The dehydrator and flare monitoring system are tied to the Harvest distributed control system (DCS). If the pilot flame is extinguished (i.e., the flare temperature drops below 200 °F) or if the flare temperature exceeds 2,150 °F, the DCS will automatically shut down the dehydrator glycol pump (stopping the flow of gas to the flare). The dehydrator will not be placed back into operation until the flare is repaired. Operators will test the DCS glycol pump shutdown function annually.

In the event the flare needs other maintenance or repair, personnel will perform the maintenance or repair as soon as practicable.

V. Monitoring Approach Justification

Rationale for Selection of Performance Indicator

As combustion is necessary for the destruction of VOC within the flare, the presence of the pilot flame is a good indicator for operation of the flare. The presence of the flame will ensure ignition of the gas stream in the flare.

Rationale for Selection of Indicator Range

The thermocouple has a functional range from -328 °F to 2,282 °F.

The lower level shutdown threshold (200 °F) was selected so as to be higher than ambient temperature during the warmest summer months but low enough to detect the presence of the pilot flame during the coldest winter months.

The upper level shutdown threshold (2,150 °F) was selected so as to protect the integrity of the flare.

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:** Dogie Canyon Compressor Station		
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:** 87413	**E.2 ® City:** Bloomfield	**E.3 ® State:** NM	**E.4 ® Zip:** 87413
C.1 ® Company Environmental Contact: Monica Smith	**C.2 ® Title:** Environmental Specialist		**F.1 ® Facility Contact:** Monica Smith	**F.2 ® Title:** Environmental Specialist	
C.3 ® Phone Number: 505-632-4625	**C.4 ® Fax Number:** 505-632-4782		**F.3 ® Phone Number:** 505-632-4625	**F.4 ® Fax Number:** 505-632-4782	
C.5 ® Email Address: msmith@harvestmidstream.com			**F.5 ® Email Address:** msmith@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:	**L. Title V Permit Number:**	**M. Title V Permit Issue Date:**	**N. NSR Permit Number:**	**O. NSR Permit Issue Date:**
990	P019-R3M1	12/19/18		

P. Reporting Period: From: 5/1/19 To: 4/30/20

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 Monica Smith **(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: Dogie Canyon Compressor Station		
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.: P019-R3M1	Date Permit Issued: 12/19/2018	
Report Due Date (as required by the permit): 5/30/2020	Permit AI number: 990	
Time period covered by this Report: From: 5/1/2019	To: 4/30/2020	

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 P019-R3 & P019-R3M1

Title (TV) Permit Administration Amendment

On **December 19, 2018** NMED AQB issued an Administrative Amendment to Operating Permit **P019-R3**.

The Administrative Amendment **P019-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 **(P019-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 **P019-R3M1** permit.

Annual Compliance Certification - Permit Requirements Certification Table

Annual Compliance Certification Data for Title V Permits No. P019-R3 & P019-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 at least twelve months prior to November 17, 2021 (the expiration date of this permit P019-R3) will demonstrate compliance with this requirement.

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 at least twelve months prior to November 17, 2021 (the expiration date of this permit P019-R3) will demonstrate compliance with this requirement.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A102 Facility: Description

B. This facility is located approximately 15 miles north of Counselor, New Mexico in Rio Arriba County. (20.2.70.302.A(7) NMAC)

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: The facility is a stationary source, and has not relocated.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A103 Facility: Applicable Regulations

A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.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?
Methods: Semi-annual reports and the annual emissions inventory are used to demonstrate compliance with the identified applicable requirements of Table 103.A.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A103 Facility: Applicable Regulations **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 762-M6.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Semi-annual reports and the annual emissions inventory are used to demonstrate compliance with the identified applicable requirements of this permit.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A104 Facility: Regulated Sources **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.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Semi-annual reports, dehydrator monitoring 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.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A105 Facility: Control Equipment **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.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Semi-annual reports, periodic monitoring, the annual emissions inventory and this ACC are used to determine that the source continues to comply with control equipment requirements.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A106 Facility: Allowable Emissions **A.** The following Section lists the emission units, and their allowable emission limits. (40 CFR 50; 40 CFR 60, Subparts A, GG, and IIII; 40 CFR 63, Subparts A, HH, and ZZZZ; 40 CFR 64; Paragraphs 1, 7, and 8 of 20.2.70.302.A NMAC; and NSR Permit 762-M6).				☒ **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: Semi-annual reports, periodic monitoring, the annual emissions inventory and this ACC are used to determine that the source continues to comply with allowable emissions.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A106 Facility: Allowable Emissions **B.** Units 1 and 13, nitrogen dioxide emissions shall not exceed 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) (NSR Permit No. 762-M6, Condition A106.B)				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Initial compliance testing of Unit 1, as required by GG, was completed in a previous monitoring period. CFMS monitoring in condition A205.B demonstrates compliance with GG fuel sulfur limits. These same requirements will be met when Unit 13 is installed.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A106 Facility: Allowable Emissions **C.** Unit 7 is subject to 40 CFR 60, Subpart IIII and the permittee shall comply with the applicable emissions standards in §60.4205(b). (NSR Permit No. 762-M6, Condition A106.C)				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Monitoring and recordkeeping as per 60.4211(f) & (60.4214(b), respectively, that the source continues to comply with NSPS IIII requirements.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions **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.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Records of SSM emissions are maintained to ensure compliance.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions **B.** The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions according to Conditions B101.C and B107.A.				☒ **Yes** ☐ **No** ☐ **N/A**
Methods: Records of SSM emissions are maintained to ensure compliance.				
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?

A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions

C. SSM VOC Emissions for Venting of Gas

Requirement: The permittee shall perform a facility inlet gas analysis once every 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 Permit No. 762-M6, Condition A107.C)

Monitoring: The permittee shall monitor the permitted routine and predictable startups and shutdowns and scheduled maintenance events.

Recordkeeping: To demonstrate compliance, each month records shall be kept of the cumulative total VOC emissions due to SSM events during the first 12 months due to SSM events and, thereafter of the monthly rolling 12-month total of VOC emissions due to SSM events.

☒ **Yes** ☐ **No**

☐ **N/A**

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.

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 SSM events shall not apply to the venting of known quantities of VOC.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Records of SSM emissions, including an annual gas analysis, are maintained to ensure compliance and are reported in the applicable semi-annual report. .

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions

D. Malfunction Emissions

Requirement: The permittee shall perform a facility inlet gas analysis once every year, between January 1 and December 31, and complete the following recordkeeping to demonstrate compliance with malfunction (M1) emission limits in Table 107.A. (NSR Permit No. 762-M6, Condition A107.D)

☒ **Yes** ☐ **No**

☐ **N/A**

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: To demonstrate compliance, each month records shall be kept of the cumulative total VOC emissions due to malfunction events during the first 12 months and, thereafter of the monthly rolling 12-month total of VOC emissions due to malfunction events.

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?

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 under 20.2.7 NMAC.

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: Malfunctions that occurred during the applicable monitoring periods were recorded and used toward the permitted allowable. The gas analysis is obtained as required. These are reported in the applicable semi-annual report.

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. Monitoring, recordkeeping, and reporting are not required to demonstrate compliance with continuous hours of operation.

A109 Facility: Reporting Schedules

A. 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 May 1st and November 1st of each year.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: The first semi-annual report associated with this ACC was submitted December 6, 2019, within 45 days of October 31. Submittal of the second semi-annual report by June 14 will demonstrate compliance with this requirement.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

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 May 1st of each year.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Submittal of this ACC by May 30 will demonstrate compliance with this requirement.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A109 Facility: Reporting Schedules

C. Any required quarterly reports shall be maintained on-site and summarized in the semi-annual reports.

☒ **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: Reporting is completed in accordance with A109.A.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A110 Facility: Fuel and Fuel Sulfur Requirements

A. Fuel and Fuel Sulfur Requirements

Requirement: All combustion emission units shall combust only natural gas containing no more than 1.2 grains of total sulfur per 100 dry standard cubic feet. (NSR Permit No. 762-M6, Condition A110.A)

Monitoring: Monitoring is achieved through recordkeeping as described below.

Recordkeeping: The permittee shall demonstrate compliance with the natural gas limit on total sulfur content by maintaining records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous or fuel gas analysis, specifying the allowable limit or less. If fuel gas analysis is used, the analysis shall not be older than one year.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No**

☐ **N/A**

Methods: Results of the CFMS demonstrating compliance with the fuel sulfur limits are maintained as required and included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A111 Facility: 20.2.61 NMAC Opacity

A. 20.2.61 NMAC Opacity Requirements (Units 1 through 4, 6b, 8, and 13)

Requirement: Visible emissions from all 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. (NSR Permit No. 762-M6, Condition A111.A)

Monitoring: 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?

• 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.

• 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: If no visible emissions were observed, none.

If any visible emissions observations were conducted, the permittee shall keep records in accordance with the requirements of Section B109 and as follows:

• 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.

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: Only natural gas is used for fuel for these units. No visible emissions were observed during the monitoring period.

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 for Emergency Generators (Unit 7)

Requirement: Visible emissions from all stationary combustion emission stacks of emergency combustion equipment (Unit 7) shall not equal or exceed an opacity of 20 percent.

☒ **Yes** ☐ **No**

☐ **N/A**

Monitoring: An opacity measurement shall be performed, at a minimum, at least once every five years, on each unit for a minimum of 10 minutes in accordance with the procedures of 40 CFR 60, Appendix A, Method 9 as required by 20.2.61.114 NMAC.

Recordkeeping: The permittee shall record the opacity measures with the corresponding opacity readings on the form referenced in EPA Method 9,

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?

Sections 2.2 and 2.4.

Reporting: The permittee shall report in accordance with Section B110.

Methods: When completed, the five-year opacity measurement records will be maintained as required and included in the applicable semi-annual report to demonstrate compliance with this requirement.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

EQUIPMENT SPECIFIC REQUIREMENTS:

OIL AND GAS INDUSTRY

A201 Engines

A. Hours of Operation (Emergency Generator Unit 7)

Requirement: In accordance with 20.2.72.202.B.3 NMAC and to maintain project (emissions increases approved in NSR permit 762-M5) potential emissions below PSD major modification levels defined in 20.2.74 NMAC, the Emergency Generator (Unit 7) shall only be operated during the unavoidable loss of commercial power or for necessary maintenance activities, and shall be operated less than 500 hours per year, based on a monthly rolling 12-month total basis. Any maintenance activities conducted on the standby generator are included in the 500 hours per year total. (NSR Permit No. 762-M6, Condition A201.A)

Monitoring: The permittee shall monitor the dates and hours of operation.

Recordkeeping: The permittee shall record the hours of operation by either manually timing and recording the hours of operation or by recording the hours from an installed non-resettable hour meter. To demonstrate compliance, each month records shall be kept of the cumulative total hours of operation during the first 12 months and thereafter of the monthly rolling 12-month total hours of operation. The permittee shall keep records in accordance with Section B109.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No**

☐ **N/A**

Methods: Records of hours of operation are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A201 Engines

B. 40 CFR 60, Subpart IIII, and 40 CFR 63, Subpart ZZZZ (Emergency Generator Unit 7)

☒ **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?

Requirement: The unit (Unit 7) is subject to 40 CFR 60, Subpart IIII and the permittee shall comply with the applicable emissions standards and fuel requirements in §60.4205(b), §60.4202(a)(2), §60.4206 and §60.4207(b). In addition, the permittee shall follow the compliance requirements stated in §60.4211(a, c and f) and the general provisions of 40 CFR 60 Subpart A as required in §60.4218. (NSR Permit No. 762-M6, Condition A201.B)

For units (Unit 7) that are also subject to 40 CFR 63, Subpart ZZZZ, the permittee shall comply with all applicable requirements of 40 CFR 63, Subpart ZZZZ, by complying with 40 CFR 60, Subpart IIII (40 CFR 63.6590(c)).

Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to §60.4211.

Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to §60.4214, and the permittee shall maintain records in accordance with Section B109.

Reporting: The permittee shall comply with all applicable reporting requirements of 40 CFR 60, Subpart A and Subpart IIII, including but not limited to §60.4214 and §60.4218, and in accordance with Section B110.

☐ **N/A**

Methods: Records of hours of and reasons for operation are maintained as required.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

A. Glycol Pump Circulation Rate (Unit 6a)

Requirement: Compliance with the allowable VOC emission limits in Table 106.A shall be demonstrated by monitoring the glycol pump circulation rate for the unit. The circulation rate shall not exceed 588 gallons per hour (9.8 gallons per minute). (NSR Permit No. 762-M6, Condition A202.A)

Monitoring: The permittee shall monitor the circulation rate quarterly, based on a calendar quarter (January 1st through March 31st, April 1 through June 30th, July 1st through September 30th, and October 1st through December 31st). Monitoring shall include a calibration or visual inspection of pump rate setting or other method previously approved by the Department.

☒ **Yes** ☐ **No**

☐ **N/A**

Recordkeeping: The permittee shall maintain records that include a description of the monitoring and are in accordance with Section B109.

Reporting: The permittee shall report in accordance with Section 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: Dehy glycol pump circulation rate records demonstrating compliance with the circulating rate limit are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

B. Control Device Inspection (Unit 6a and 8)

Requirement: To demonstrate compliance with the allowable VOC emission limits in Table 106.A, the dehydrator shall include a packaged control unit that consists of a knockout drum to collect condensed liquids from the still vent and additional equipment that direct non-condensable gases from the still vent to the enclosed flame flare (Unit 8). Flash tank emissions shall be recycled as fuel. At no time shall dehydrator off-gases be emitted directly to atmosphere.

1) No vapors from the dehydrator knockout shall be released to the atmosphere.

2) Condensed liquids from the dehydrator shall be recovered and stored in an enclosed tank.

3) All emissions from the dehydrator still vent shall be vented through the closed-vent system to the flare (Unit 8), which shall be operated at all times while the dehydrator is in operation, except during startup. (NSR Permit No. 762-M6, Condition A202.B, revised)

☒ **Yes** ☐ **No**

☐ **N/A**

Monitoring: The permittee shall inspect the glycol dehydrator and the control equipment quarterly to ensure it is operating properly. This shall be accomplished by verifying the proper operation and alignment of valves and proper operation of the pilot burner assembly of the flare such that the dehydrator still vent off-gases are continuously combusted by the enclosed flame flare. Proper operation shall be verified for both modes of operation: dehydrator re-boiler heater burner on and off.

Recordkeeping: 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.

Reporting: The permittee shall report in accordance with Section B110.

Methods: Dehy vent collection system and flare inspection records are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

C. Extended Gas Analysis and GRI-GLYCalc Calculation (Units 6a and 8)

☒ **Yes** ☐ **No**

☐ **N/A**

Requirement: Compliance with the allowable VOC emission limits in Table 106.A shall be demonstrated by conducting an annual extended gas analysis on the dehydrator inlet gas, by calculating VOC emissions using GRI-GLYCalc and by calculating the Flare (Unit 8) VOC emissions. (NSR Permit 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?

762-M6, Condition A202.C)

Monitoring: The permittee shall conduct an annual GRI-GLYCalc analysis using the most recent extended gas analysis, and verify the input data. The permittee may use a method of calculating dehydrator emissions other than the most current version of GRI-GLYCalc if approved by the Department. Changes in the calculated emissions due solely to a change in the calculation methodology shall not be deemed an exceedance of an emission limit. The permittee shall calculate the VOC emissions from the Flare (Unit 8) using the GRI-GLYCalc VOC emissions results, the gas flowrate sent to the flare and the flare combustion efficiency.

Recordkeeping: The permittee shall identify in a summary table all parameters that were used as inputs in the GRI-GLYCalc model. The permittee shall keep a record of the results, noting the VOC and HAP emission rates for the dehydrator obtained from estimates using GRI-GLYCalc. The permittee shall also keep records of the flare emissions calculations.

Reporting: The permittee shall report in accordance with Section B110.

Methods: The annual extended gas analysis and record of the annual GLYCalc analysis are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A202 Glycol Dehydrators

D. 40 CFR 63, Subpart HH (Unit 6a)

Requirement: The unit is subject to 40 CFR 63, Subpart HH and the permittee shall comply with all applicable requirements. (NSR Permit No. 762-M6, Condition A202.D)

Monitoring: The permittee shall monitor as required by 40 CFR 63.772(b)(2) to demonstrate facility is exempt from general standards.

Recordkeeping: The permittee shall generate and maintain the records required by 40 CFR 63.774(d)(1)(ii) to demonstrate compliance with the general standard exemptions found in 40 CFR 63.764(e).

Reporting: The permittee shall meet all applicable reporting in 40 CFR 63, Subparts A and HH and in Section B110.

☒ **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: All records required to demonstrate compliance with the general standard exemption found in 40 CFR 63.764(e) have been generated and are maintained as required by 40 CFR 63.774(d)(1)(ii).

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A203 Tanks

A. Tank Throughput and Separator Pressure (Tank Units T3, T4, T6 and T13) and Truck Loading (Unit TL)

Requirement: To demonstrate compliance with the allowable limits in Table 106.A, the total condensate throughput of Tanks T3 and T4 combined shall not exceed 1,683,066 gallons per year (40,073 barrels/year) and the 12-month average separator pressure shall not exceed 122 psia. Compliance with the throughput limit for T3 and T4 shall be deemed compliance with the emission limits for T6 and T13 and TL. (NSR Permit No. 762-M6, Condition A203.A)

Monitoring: The permittee shall monitor the monthly total throughput using truck loading tickets and once per month shall monitor the upstream separator pressure.

Recordkeeping: The permittee shall record 1) the monthly total throughput of liquids and 2) the monthly separator pressure. Each month the permittee shall use these values to calculate and record 1) a monthly rolling, 12-month total throughput and 2) a monthly rolling, 12-month average separator pressure.

Tank breathing and working emissions were calculated using the USEPA Tanks Program Version 4.0.9d and tank flashing emissions using HYSIS 2.4.1. 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 be maintained in accordance with Section B109.

Reporting: The permittee shall report in accordance with Section B110.

☒ **Yes** ☐ **No** ☐ **N/A**

Methods: Records of the condensate tank and truckloading throughput, and the separator pressures are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

A. Initial Compliance Test (Unit 13)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by performing initial compliance testing. (NSR Permit No. 762-M6, Condition A205.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 perform an initial compliance test in accordance with the General Testing Requirements of Section B111. Emission testing is required for NOx and CO.

The monitoring exemptions of Section B108 do not apply to this requirement.

Recordkeeping: The permittee shall maintain records in accordance with 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 13 had not been installed as of the end of this compliance period.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

B. Periodic Testing (Units 1 through 4, and 13)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by periodic emission tests. (NSR Permit No. 762-M6, Condition A205.B)

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. For periodic testing of NOx and CO emissions tests 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 test period shall be annual, based on a calendar year.

(2) The tests shall continue based on the existing testing schedule.

(3) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period.

(4) The permittee shall 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. 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.).

If a combustion analyzer is used to measure excess air in the exhaust gas, records shall be kept of the make and model of the instrument and instrument

☒ **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?

calibration data. If an ORSAT apparatus or other gas absorption analyzer is used, the permittee shall record all calibration results.

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: Test results are maintained as required and are included with the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A205 Turbines

C. 40 CFR 60, Subpart GG (Units 1 and 13)

Requirement: These units are 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. (NSR Permit No. 762-M6, Condition A205.C)

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.

Reporting: The permittee shall comply with the reporting requirements of 40 CFR 60.7.

☒ **Yes** ☐ **No**

☐ **N/A**

Methods: Results of the CFMS demonstrating compliance with the fuel sulfur limits are maintained as required and are included in the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A206 Flares

A. Operation (Unit 8)

Requirement: The unit shall be designed and operated with no visible emissions, as determined by the method specified in 40 CFR 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. The flare shall be equipped with a pilot flame or continuous ignition device. (NSR Permit No. 762-M6, Condition A206.A)

Monitoring: The permittee shall continuously monitor the presence of a flare pilot flame using a thermocouple equipped with a continuous recorder and

☒ **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?

alarm, to detect the presence of a flame or any other equivalent device approved by the Department. The permittee shall also perform a Method 22 annually to certify compliance with the visible emission requirements.

Recordkeeping: The permittee shall record all instances of alarm activation, including the date and cause of alarm activation, actions taken to bring the flare into normal operating conditions, and maintenance activities. The permittee shall record the results of the Method 22 test.

Reporting: The permittee shall report in accordance with Section B110.

Methods: A thermocouple has been installed to alarm via DCS to dispatch for call out in accordance with the CAM Plan. Results of the annual Method 22 test are included with the applicable semi-annual reports.

Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date

A211 Compliance Assurance Monitoring (CAM): 40 CFR 64

A. 40 CFR 64, Compliance Assurance Monitoring (CAM) Plan (Units 6a and 8)

Requirement: Compliance Assurance Monitoring (CAM) contained in 40 CFR 64 applies to the glycol dehydrator regenerator still vent (Unit 6a) and Unit 8 (flare) which is a control device for Unit 6a. The permittee shall meet the requirements of the Provisions in Subparts 64.3(a) and (b); 64.7; and 64.8, if applicable.

Monitoring: The permittee shall monitor the following indicators according to the approved CAM Plan in Section A801 and pursuant to 40 CFR 64.3(a) and (b): presence of a pilot flame that is constantly monitored with a thermocouple, and that both Unit 6a (dehydrator) and Unit 8 (flare) are tied to a control system that detects when the flare is out of temperature range. The permittee shall continue the monitoring pursuant to 40 CFR 64.7.

☒ **Yes** ☐ **No**

☐ **N/A**

The permittee shall comply with the measurement approach, performance criteria, and defined excursion for each indicator range or condition that is described in the approved CAM Plan (40 CFR 64.6(c)).

The frequency of data collection shall be at least once every 24 hours per 40 CFR 64.3(b)(4)(i) and (iii). The permittee shall respond to any excursion of indicator range or condition in accordance with the CAM Plan and 40 CFR 64.7(d).

Recordkeeping: The permittee shall meet the recordkeeping requirements of the CAM Plan and of 40 CFR 64.9(b).

Reporting: The permittee shall meet the reporting requirements in 40 CFR 64.9(a) and in Section B110.

Pursuant to 40 CFR 64.7(e), the permittee shall document and promptly notify the Department's Permit Section, and modify the permit as necessary, of

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 need for improved monitoring or the need to modify existing indicator ranges or designated conditions pursuant to 40 CFR 64.7(e).				
Methods: A flare CAM plan is maintained and followed to monitor flare operations.				
Deviations: Unit ID	Cause & Description of Deviation **or** Tracking number	Start Date	End Date	

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: The applicable semi-annual reports and ACC are used to demonstrate compliance with the terms and conditions of the Title V permit.	
B102 Authority	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: The applicable semi-annual reports and ACC are used to demonstrate compliance with the terms and conditions of the Title V permit.	
B103 Annual Fee	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: 2018 operating permit emission fees were paid on May 30, 2019. 2019 fees have not been paid as of the end of this compliance period.	
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: Stack test reports occurring during this compliance period were reported as noted in the applicable semiannual reports. No excess emissions occurred during the applicable period. Reports are sent to the noted addresses.	
B106 NSPS and/or MACT Startup, Shutdown, and Malfunction Operations	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: The affected equipment are operated in accordance with the requirements of the applicable NSPS or MACT.	
B107 Startup, Shutdown, and Maintenance Operations	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: The facility is operated in accordance with the permittee's SSM work practice plan	
B108 General Monitoring Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Records contained in the applicable monitoring reports demonstrate compliance with the facility's monitoring requirements.	
B109 General Recordkeeping Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Records contained in the applicable monitoring reports demonstrate compliance with the facility's monitoring requirements.	
B110 General Reporting Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Records contained in the applicable monitoring reports demonstrate compliance with the facility's monitoring requirements.	
B111 General Testing Requirements	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Reference method tests or portable analyzer tests completed during the applicable period was completed in accordance with the applicable test method and/or test protocol.	

PART B General Conditions

B112 Compliance	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Required records are maintained for a minimum of five years, contains the required information and are submitted on the Department's pre-populated forms. Department representatives were not denied access to the facility or permit-required records.	
B113 Permit Reopening and Revocation	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Harvest has not been notified of a permit reopening or revocation.	
B114 Emergencies	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: No emergencies occurred during the applicable period.	
B115 Stratospheric Ozone	☒ **Yes** ☐ **No** ☐ **N/A** – *Explain Below*
REMARKS: Any service work is completed in accordance with the requirements of 40CFR82 subpart F.	
B116 Acid Rain Sources	☐ **Yes** ☐ **No** ☒ **N/A** – *Explain Below*
REMARKS: This facility is not subject to 40 CFR 72 acid rain requirements.	
B117 Risk Management Plan	☐ **Yes** ☐ **No** ☒ **N/A** – *Explain Below*
REMARKS: This facility is not subject to the 40 CFR 68 RMP program.	

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 3 day of November, 2020, upon my oath or affirmation, before a notary of the State of New Mexico.

Travis Jones
*Signature

11/3/2020
Date

Travis Jones
Printed Name

GR Manager
Title

Scribed and sworn before me on this 3rd day of November, 2020.

My authorization as a notary of the State of New Mexico expires on the 31st day of August, 2021.

Jodi L. Bohannon
Notary's Signature

11/3/20
Date

Jodi L. Bohannon
Notary's Printed Name

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.