9400 Holly Avenue NE | Bldg 3, Suite 300 | Albuquerque, NM 87122 | P (505) 266-6611 | F (505) 266-7738
trinityconsultants.com

Trinity Consultants

December 12, 2013

Mr. Ted Schooley
NMED Air Quality Bureau
525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816

RE: Application for Significant Revision of NSR Permit 0039-M6-R1
DCP Midstream, LP – Linam Ranch Gas Plant

Dear Mr. Schooley:

On behalf of DCP Midstream, LP (DCP), we are submitting this application for significant revision of NSR Permit 0039M6 for Linam Ranch Gas Plant.

On August 15, 2013 DCP Midstream Services, LP (DCP) received a letter from the New Mexico Environmental Department Air Quality Bureau (NMED) requesting the quantification of routine or predictable emission during startup, shutdown, and scheduled maintenance (SSM) at Linam and submit the necessary SSM permit application no later than 120 days after the request. This application is being submitted in response to the NMED's request. DCP is submitting this application pursuant to 20.2.72.219 (D) NMAC, which is required for any modification to a source, and for revisions to any term or condition of such permit, including but not limited to emissions limitations, control technology operating conditions, and monitoring requirements. In addition, DCP is also making updates to the steady state emissions at this facility.

Enclosed are two hard copies of the application (the original and a photocopy), a permit application fee check for $500, and two disks containing the electronic files. Please feel free to contact me at (505) 266-6611 or Jennifer Corser from DCP at (432) 249-2702 if you have any questions regarding this application.

Sincerely,

Adam Erenstein
Senior Consultant

Cc: Jennifer Corser (DCP Midstream, LP)
Trinity Project File 133201.0163

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER WITH VISIBLE FIBERS AND A TRUE WATERMARK ON THE REVERSE SIDE.

DCP Midstream, LP
370 17th Street, Suite 2500
Denver, CO 80202

JPMORGAN CHASE BANK, N.A. 50-937/213
Syracuse, NY

Vendor No.	Check Date	Check Number
0000078217	12/4/2013	0000388881

Pay *Five hundred and xx / 100 Dollars*

NOT NEGOTIABLE AFTER 120 DAYS

Check Amount
***$500.00

To The Order Of

STATE OF NEW MEXICO GENERAL FUND
NEW MEXICO ENVIRONMENTAL DEPARTMENT
AIR OUALITY BUREAU C/O COMPLIANCE
AND ENFORCEMENT MANAGER
525 CAMINO DE LOS MARQUEZ STE1
SANTA FE, NM 87505

Authorized Signature

HOLD BETWEEN THUMB AND FOREFINGER, OR BREATHE ON COLORED BOX, COLOR WILL DISAPPEAR, THEN REAPPEAR.

⑈0000388881⑈ ⑆021309379⑆ 601895196⑈

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.nmenv.state.nm.us/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. For NOI applications, submit the entire UA1, UA2, and UA3 applications on a single CD (no copies are needed). For NOIs, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required.

This application is being 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/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 ☐ NPR (no fee)
☑ $500 NSR Permit Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).
☑ Check No.:0000388881 in the amount of $500 (Fee not required for Title V) ☐ This facility meets the applicable requirements to register as a Small Business and a check for 50% of the normal fee is enclosed (only applicable **provided** that NMED has a Small Business Certification Form from your company on file found at: http://www.nmenv.state.nm.us/aqb/permit/app_form.html).

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

Synthetic Minor Source Information: A source is synthetic minor if its uncontrolled emissions are above major source applicability thresholds, but the facility is minor because it has federally enforceable requirements (federal requirements or permit conditions) that limit controlled emissions below major source thresholds. Facilities can be synthetic minor for either Title V (20.2.70 NMAC) or PSD (20.2.74 NMAC) or both. The Department tracks synthetic minor sources that are within 20% of either TV or PSD major source thresholds, referring to these as Synthetic Minor 80 Sources (abbreviated SM80). Please check all that apply:
Prior to this permitting action this source is a ☑ TV major source, ☐ a TV synthetic minor source, ☐ a TV SM80 source.
Prior to this permitting action this source is a ☑ PSD major source, ☐ a PSD synthetic minor source, ☐ a PSD SM80 source.
This permitting action results in a ☐ TV synthetic minor source and/or ☐ PSD synthetic minor source.

Section 1 – Facility Information

Section 1-A: Company Information		AI # (if known): 589	Updating permit #: 0039-M6R1
1	Facility Name: Linam Ranch Gas Plant	Plant primary SIC Code (4 digits): 1321	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From Hobbs, NM travel 7 miles west on Hwy 62/180. Plant is adjacent to highway on the south.		
2	Plant Operator Company Name: DCP Midstream, LP	Phone/Fax: (432) 249-2702 / (432) 620-4143	
a	Plant Operator Address: 10 Desta Drive, Suite 400 West, Midland, TX 79705		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 036785		
3	Plant Owner(s) name(s): DCP Midstream, LP	Phone/Fax: (432) 249-2702 / (432) 620-4143	
a	Plant Owner(s) Mailing Address(s): 10 Desta Drive, Suite 400 West, Midland, TX 79705		

4	Bill To (Company): DCP Midstream, LP	Phone/Fax: (432) 249-2702 / (432) 620-4143
a	Mailing Address: 10 Desta Drive, Suite 400 West, Midland, TX 79705	E-mail: JCorser@dcpmidstream.com
5	☑ Preparer: ☑ Consultant: Adam Erenstein	Phone/Fax: (505) 266-6611/ (505) 266-7738
a	Mailing Address: 9400 Holly Blvd NE, Building 3, Suite 300 Albuquerque, NM 87122	E-mail: aerenstein@trinityconsultants.com
6	Plant Operator Contact: Steven Boatenhamer	Phone/Fax: 575-802-5215 / 575-391-5781
a	Address: 139 W US Highway 62-180, Hobbs, NM 88240	E-mail: SDBoatenhamer@dcpmidstream.com
7	Air Permit Contact: Jennifer Corser	Title: Senior Environmental Specialist
a	E-mail: JCorser@dcpmidstream.com	Phone/Fax: (432) 249-2702 / (432) 620-4143
b	Mailing Address: 10 Desta Drive, Suite 400 West, Midland, TX 79705	

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 ☑ N/A	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 ☑ N/A
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: P094R1M1
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 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: 0039-M6R1
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑No	If yes, the registr. No. is: N/A

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 9.44 MMscf (actual)	Daily: 225 MMscf (approximate)	Annually: 82,125 MMscf (approximate)
b	Proposed	Hourly: *	Daily: *	Annually: *
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 9.44 MMscf (actual)	Daily: 225 MMscf (approximate)	Annually: 82,125 MMscf (approximate)
b	Proposed	Hourly: *	Daily: *	Annually: *

"*" = There is not an increase in facility capacity or productions with this application. This application is to quantify existing SSM/M Emissions.

Section 1-D: Facility Location Information

1	Section: 6	Range: 37E	Township: 19S	County: Lea	Elevation (ft): 3710
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	

a	UTM E (in meters, to nearest 10 meters): 660,738	UTM N (in meters, to nearest 10 meters): 3,618,810
b	**AND** Latitude (deg., min., sec.): 32°41'43"	Longitude (deg., min., sec.): -103°17'7"
3	Name and zip code of nearest New Mexico town: Hobbs, NM 88240	
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Hobbs, NM, travel 7 miles west on Hwy 62/180. Plant is adjacent to highway on the south.	
5	The facility is 7 miles West of Hobbs.	
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: Monument, NM (4.6 miles); Hobbs, NM (7.6 miles); Lea County, NM; Indian Tribes-None	
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.nmenv.state.nm.us/aqb/modeling/class1areas.html)? ☑ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: 20.6 kilometers from Texas.	
9	Name nearest Class I area: Carlsbad Caverns National Park.	
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 117 km	
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 220 m	
12	Method(s) used to delineate the Restricted Area: Fence and locking gates "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be indentified with signage only. Public roads cannot be part of a Restricted Area.	
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.	
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☑ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?	

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

1	Facility **maximum** operating ($\frac{hours}{day}$): 24	($\frac{days}{week}$): 7	($\frac{weeks}{year}$): 52	($\frac{hours}{year}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{hours}{day}$)? Start: N/A	☐AM ☐PM	End: N/A	☐AM ☐PM		
3	Month and year of anticipated start of construction: N/A – No construction is proposed					
4	Month and year of anticipated construction completion: N/A – No construction is proposed					
5	Month and year of anticipated startup of new or modified facility: N/A – No construction is proposed					
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: N/A		
c	Document 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 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)
b	If 4.a is Yes, indentify the subparts in 40 CFR 61 & 40 CFR 63 that apply to this facility (If no subparts apply, enter "N/A."): 40 CFR 63 Subpart A, 40 CFR 63 Subpart HH; 40 CFR 63 Subpart YYYY; 40 CFR 63 Subpart ZZZZ

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: Title V Specific Information

(Fill this section out only if this is a Title V application.)

1	Responsible Official (20.2.70.300.D.2 NMAC): This is not a Title V Application	Phone:
a	R.O. Title:	R.O. e-mail:
b	R. O. Address:	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):	Phone:
a	A. R.O. Title:	A. R.O. e-mail:
b	A. R. O. Address:	
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):	
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.):	
a	Address of Parent Company:	
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations:	
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:	

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. If 'head-to-toe printing' is not possible, print single sided. 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.

2) If the application is for a NSR or Title V permitting action, include one working hard **copy** for Department use. This copy does not need to be 2-hole punched. Technical revisions only need to fill out Section 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical revision. TV Minor Modifications need only fill out Section 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 on compact disk(s) (CD). For 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.

4) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver OR** one additional electronic copy of the air dispersion modeling including the input and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau. The complete dispersion modeling study, including all input/output files, should be submitted electronically as part of the electronic submittal.

5) If subject to PSD review under 20.2.74 NMAC (PSD) include,
   a. one additional hard copy and one additional CD copy for US EPA,
   b. one additional hard copy and one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional hard copy and one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

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

1) All required electronic documents shall be submitted in duplicate (2 separate CDs). 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 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 with the number of additional hard copies corresponding to the number of CD copies required. 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 3 electronic files (2 MSWord docs: Universal Application section 1 and Universal Application section 3-19) and 1 Excel file of the tables (Universal Application section 2) on the CD(s). 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 # (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. 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	Manufacturer	Model #	Serial #	Maximum or Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture or Reconstruction[2] / Date of Installation /Construction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	Applicable State & Federal Regulation(s) (i.e. 20.2.X, JJJJ, …)	Replacing Unit No.
2	Amine Plant Flare East	N/A	N/A	N/A	0.9 MMBtu/hr	0.9 MMBtu/hr	2005 / 2005	N/A / 2	3100 0205	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	40 CFR 60.18	N/A
4A	ESD Flare	John Zink	N/A	N/A	0.9 MMBtu/hr	0.9 MMBtu/hr	2006 / 2008	N/A / 4A	3100 0209	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	40 CFR 60.18	N/A
6	RICE	Clark	TLA-6	73779	2000 HP	2000 HP	1974 or before / 1974	N/A / 6	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
7	RICE	Clark	TLA-6	73780	2000 HP	2000 HP	1974 or before / 1974	N/A / 7	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
8	RICE	Clark	HBA-6	36288	1267 HP	1267 HP	1951 / 1954	N/A / 8	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
9	RICE	Clark	HBA-6	736290	1267 HP	1267 HP	1951 / 1954	N/A / 9	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
10	RICE	Clark	HBA-6	36289	1267 HP	1267 HP	1951 / 1954	N/A / 10	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
11	RICE	Clark	HBA-6	36303	1267 HP	1267 HP	1951 / 1954	N/A / 11	2020 0252	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.61 NMAC, MACT ZZZZ	N/A
Note regarding Units 6-11: These units will be dual-service (inlet / residue compression). Under Scenario A, two (2) TLAs and one (1) HBA may operate at any given time and under Scenario B two (2) HBAs and one TLA (1) may operate at any given time. The current permit allows five of the six units to operate at any given time. This application a proposes net reduction of three operating units under												
28	Turbine	Solar	T-60	TBD	63.43 MMBtu/hr	63.43 MMBtu/hr	2011 / 2012	N/A / 28	2020 0201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS KKKK, NSPS YYYY	N/A
29	Turbine	Solar	T-70	TC95592	77.63 MMBtu/hr	77.63 MMBtu/hr	1995 / 1995	N/A / 29	2020 0201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS GG	N/A
30	Turbine	Solar	T-70	TC95593	73.95 MMBtu/hr	73.95 MMBtu/hr	1995 / 1995	N/A / 30	2020 0201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS GG	N/A
31	Turbine	Solar	T-4700	3000724	48.1 MMBtu/hr	48.1 MMBtu/hr	1995 / 1995	N/A / 31	2020 0201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS GG	N/A
32B	Turbine	Solar	T-4000	CM79453	36.2 MMBtu/hr	36.2 MMBtu/hr	1979 / 1995	N/A / 32B	2020 0201	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS GG	N/A
34	Regenerator Heater	N/A	N/A	91-2348	15 MMBtu/hr	15 MMBtu/hr	1991 / 1995	N/A / 34	3100 0404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS Dc, MACT DDDDD	N/A

Unit Number[1]	Source Description	Manufacturer	Model #	Serial #	Maximum or Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture or Reconstruction[2] / Date of Installation /Construction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	Applicable State & Federal Regulation(s) (i.e. 20.2.X, JJJJ, …)	Replacing Unit No.
36	Boiler	Rentech	N/A	2005-145	99 MMBtu/hr	99 MMBtu/hr	2005 2006	N/A 36	3100 0404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS Dc, MACT DDDDD	N/A
37	Boiler	Rentech	N/A	2005-147	99 MMBtu/hr	99 MMBtu/hr	2012 2010	N/A 37	3100 0404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS Dc, MACT DDDDD	N/A
FUG	Fugitive Equipment Leak Emissions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A FUG	3100 0306	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS KKK	N/A
TK-2	Storage Tank - Gasoline	N/A	N/A	N/A	11.9 bbl	11.9 bbl	1/1/1985 2005	N/A TK-2	4060 0061	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AGI Flare	AGI Flare	TBD	TBD	TBD	5 MMscf/d	5 MMscf/d	2009 2009	N/A 50	3100 0209	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	40 CFR 60.18	N/A
AM-10	Amine Unit	N/A	N/A	N/A	225 MMscf/d	225 MMscf/d	N/A N/A	2, AGI 2, AGI Flare	3100 0305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS OOOO	N/A
DH-10	Glycol Dehydrator	TBD	TBD	TBD	27 MMscf/d	27 MMscf/d	2012 6/1/2012	N/A 2 or 4a	3100 0303	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	MACT HH	N/A
CT-1	South Cooling Tower	Unknown	Unknown	Unknown	3,200 gpm	3,200 gpm	Unknown	N/A CT-1	3850 0101	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CT-2	North Cooling Tower	Unknown	Unknown	Unknown	2,045 gpm	2,045 gpm	Unknown	N/A CT-2	3850 0101	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK-VRU[4]	Seven Condensate Tanks controlled by common VRU	N/A	N/A	N/A	750 bbl x 5 (1-5), 400 bbl (6), 210 bbl (7)	750 bbl x 5 (1-5), 400 bbl (6), 210 bbl (7)	2012 TBD	VRU TK-VRU	4040 0321	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS Kb	N/A
TK-VRUTMP	Two Condensate Tanks controlled by common VRU. (Previously listed as TK39 and 40)	N/A	N/A	N/A	1500 bbl x 2	1500 bbl x 2	1954 1996	VRU-TMP TK-VRUTMP	4040 0321	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	20.2.77, NSPS Kb	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] The TK-VRU units are currently permitted but have not been installed at the time of application.

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.nmenv.state.nm.us/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.nmenv.state.nm.us/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) / Exempt Activity citation (e.g. Exemption List Item #5)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-1	Diesel	Unknown	N/A	500	20.2.72.202.B.2.a NMAC	1/1/1985	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-3	Diesel	Unknown	N/A	250	20.2.72.202.B.2.a NMAC	1/1/1994	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-7	Detergent	Unknown	N/A	300	Not a source of regulated pollutants	1955	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-8	Solvent	Unknown	N/A	560	20.2.72.202.B.2.a NMAC	1955	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-9	Boiler Treatment	Unknown	N/A	500	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-10	Boiler Treatment	Optisperse	APO200	500	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-11	Boiler Treatment	Unknown	NA2460	560	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-13	Clark Engine Lube Oil	Unknown	V-505	9590	20.2.72.202.B.2.a NMAC	1/1/1968	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-14	Ethylene Glycol	Thor Steel	V-511a	1368	20.2.72.202.B.2.a NMAC	1981	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			687-1	gal	List Item #2.a	Unknown	
TK-15	Ethylene Glycol	Unknown	V-511b	1368	20.2.72.202.B.2.a NMAC	1981	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			10/28/3022	gal	List Item #2.a	Unknown	
TK-16	Clark Engine Lube Oil	Unknown	V-504a	410	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-17	Clark Engine Lube Oil	Unknown	V-504b	410	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-19	Lube Oil Make-up	Unknown	N9406	500	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			95-108	gal	List Item #2.a	Unknown	

[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.

[3] GlyCalc tanks run performed to prove they are exempt units provided in Section 7.

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) / Exempt Activity citation (e.g. Exemption List Item #5)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-20	Methanol Tank [3]	Unknown	N/A	1130	20.2.72.202.B.5 NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #5	Unknown	
TK-21	Methanol Tank [3]	Unknown	N/A	660	20.2.72.202.B.5 NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #5	Unknown	
TK-22	Corrosion Inhibitor	Spectrus	BD1501	500	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-23	Corrosion Inhibitor	Dianodic	DN2478	2000	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-27	Methanol Tank [3]	API	Birmingham	168	20.2.72.202.B.5 NMAC	1961	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TS-8540	bbl	List Item #5	Unknown	
TK-30	Lube Oil Make-up	Unknown	N9406	500	20.2.72.202.B.2.a NMAC	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			95-107	gal	List Item #2.a	Unknown	
TK-32	Amine DGA	Wyatt	95-V106a	5000	20.2.72.202.B.2.a NMAC	1953	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			53-412	gal	List Item #2.a	Unknown	
TK-33	DGA	Unknown	N/A	5000	20.2.72.202.B.2.a NMAC	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-41	Stabilized Crude	Unknown	N/A	66960	20.2.72.202.B.2.a NMAC	1954	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-42	Produced Water	Wyatt	N/A	49980	Pressurized Vessel: Not a source of regulated pollutants	1954	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			53-567	gal	Not a source of regulated pollutants	Unknown	
TK-43	Produced Water	Wyatt	N/A	49980	Pressurized Vessel: Not a source of regulated pollutants	1957	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			53-566	gal	Not a source of regulated pollutants	Unknown	
TK-44	Condensate	Unknown	N/A	42000	Pressurized Vessel: Not a source of regulated pollutants	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-45	Condensate	Unknown	N/A	42000	Pressurized Vessel: Not a source of regulated pollutants	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-46	Condensate	Unknown	N/A	42000	Pressurized Vessel: Not a source of regulated pollutants	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-47	Condensate	Unknown	N/A	42000	Pressurized Vessel: Not a source of regulated pollutants	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	

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

[3] GlyCalc tanks run performed to prove they are exempt units provided in Section 7.

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) / Exempt Activity citation (e.g. Exemption List Item #5)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-48	Condensate	N/A	N/A	42000	Pressurized Vessel: Not a source of regulated pollutants	1954	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-53	Propane	Unknown	N/A	77820	Pressurized Vessel: Not a source of regulated pollutants	1993	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-54	NGL	Unknown	N/A	67200	Pressurized Vessel: Not a source of regulated pollutants	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Pressurized Vessel: Not a source of regulated pollutants	Unknown	
TK-55	Firewater	J&J Steel	N/A	9065	Not a source of regulated pollutants	1995	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			11-481	bbl	Not a source of regulated pollutants	Unknown	
TK-56	Firewater	Unknown	N/A	3500	Not a source of regulated pollutants	6/1/1981	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			W6537	bbl	Not a source of regulated pollutants	Unknown	
TK-57	Firewater	Unknown	N/A	147000	Not a source of regulated pollutants	6/1/1981	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			FW-318	gal	Not a source of regulated pollutants	Unknown	
TK-58	Softened Water	Unknown	N/A	21000	Not a source of regulated pollutants	1967	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-59	Water	Unknown	95-V700	500	Not a source of regulated pollutants	9/2003	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	bbl	Not a source of regulated pollutants	Unknown	
TK-GBW1	Gunbarrel Water Tank	Unknown	TBD	500	Not a source of regulated pollutants	TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	bbl	Not a source of regulated pollutants	Unknown	
TK-GBW2	Gunbarrel Water Tank	Unknown	TBD	500	Not a source of regulated pollutants	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	bbl	Not a source of regulated pollutants	Unknown	
TK-9A	Antifreeze (Ethylene glycol)	Unknown	N/A	1000	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-25A	Sulfuric Acid	Unknown	N/A	2000	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-26A	Corrosion Inhibitor (Sodium Hypochlorite)	Unknown	N/A	300	Not a source of regulated pollutants	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-31A	Lube Oil	Unknown	N/A	500	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			95-109	gal	List Item #2.a	Unknown	
TK-34A	Lube Oil	Unknown	N-99406	500	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			95-206	gal	List Item #2.a	Unknown	
TK-72	Skimmer Water (10% oil)	Unknown	N/A	19000	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	

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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) / Exempt Activity citation (e.g. Exemption List Item #5)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-73	Solvent	Stoddard	N/A	500	20.2.72.202.B.2.a NMAC	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	List Item #2.a	Unknown	
TK-74	Soap	Unknown	N/A	305	Not a source of regulated pollutants	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-75	Soap	Unknown	N/A	305	Not a source of regulated pollutants	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-76	Slop Water	Unknown	N/A	8820	Not a source of regulated pollutants	Unknown	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	gal	Not a source of regulated pollutants	Unknown	
TK-77	Methanol Tank [3]	TBD	TBD	500	20.2.72.202.B.5 NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #5	TBD	
TK-78	Cylinder Oil Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-79	Crankcase Oil Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-80	Waste lube Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-1325	Cylinder Oil Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-1327	Crankcase Oil Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-1329	Waste lube Tank	TBD	TBD	1000	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	
TK-1370	Methanol Tank [3]	TBD	TBD	500	20.2.72.202.B.5 NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #5	TBD	
TK-2801	Turbine lube Tank	TBD	TBD	500	20.2.72.202.B.2.a NMAC	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	gal	List Item #2.a	TBD	

[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.

[3] GlyCalc tanks run performed to prove they are exempt units provided in Section 7.

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
2	Amine Plant Flare East	2005	H_2S, VOC	Amine Treating , DH-10	~ 98%	Eng. Judgement
4A	ESD Flare	2008	H_2S, VOC	All Units	~ 98%	Eng. Judgement
AGI	Acid Gas Injection (AGI) Well	Dec-09	H_2S, VOC	Amine Treating	100%	Eng. Judgement
AGI Flare	AGI Flare	Dec-09	H_2S, VOC	AGI	~ 98%	Eng. Judgement
VRU	Vapor Recovery Unit (VRU)	TBD	VOC	TK-VRU	95%	Eng. Judgement
VRU-TMP	Vapor Recovery Unit (VRU)	May-11	VOC	TK-VRUTMP	95%	Eng. Judgement

[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. For each unit with flashing, list tank-flashing emissions estimates as a separate line item (20.2.70.300.D.5 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.B.6, & 20.2.74.301 NMAC). Fill all cells in this tablewith the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed with a minimum of two significant figures[1]. If there are any significant figures to the left of a decimal point, there shall be no more than one significant figure to the right of the decimal point.

Unit No.	NOx		CO		VOC		SOx		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals																		

[1] **Significant Figures Examples:** One significant figure – 0.03, 3, 0.3. Two significant figures – 0.34, 34, 3400, 3.4

[2] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations.

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. For each unit with flashing, list tank-flashing emissions estimates as a separate line item (20.2.70.300.D.5 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.B.6, & 20.2.74.301 NMAC). 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 with a minimum of two significant figures[1]. If there are any significant figures to the left of a decimal point, there shall be no more than one significant figure to the right of the decimal point. Please do not change the column widths on this table.

Unit No.	NOx		CO		VOC		SOx		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
2	0.079	0.35	0.43	1.9	0.16	0.72	0.028	0.12	-	-	-	-	-	-	-	-	-	-
4A	0.21	0.94	1.2	5.1	0.44	1.9	0.028	0.12	-	-	-	-	-	-	-	-	-	-
6	39		20		3.1		0.010		0.86		0.86		0.86		-	-	-	-
7	39	566	20	283	3.1	61	0.010	0.12	0.86	10	0.86	10	0.86	10	-	-	-	-
8,9,10, or 11	47		24		6.5		0.0070		0.57		0.57		0.57		-	-	-	-
28	3.5	15	3.5	15	2.0	8.8	0.91	4.0	1.3	5.8	1.3	5.8	1.3	5.8	-	-	-	-
29	12	52	9.5	41	0.33	1.4	0.26	1.2	0.51	2.2	0.51	2.2	0.51	2.2	-	-	-	-
30	11	49	9.0	40	0.31	1.4	0.25	1.1	0.49	2.1	0.49	2.1	0.49	2.1	-	-	-	-
31	26	114	5.0	22	0.35	1.5	0.13	0.55	0.24	1.1	0.24	1.1	0.24	1.1	-	-	-	-
32B	24	104	4.4	19	2.5	11	0.12	0.54	0.24	1.0	0.24	1.0	0.24	1.0	-	-	-	-
34	1.7	7	1.4	6.1	0.092	0.40	0.010	0.044	0.13	0.044	0.13	0.04	0.13	0.04	-	-	-	-
36	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-	-	-
37	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-	-	-
TK-2	-	-	-	-	0.16	0.70	-	-	-	-	-	-	-	-	-	-	-	-
AGI Flare	0.079	0.35	0.43	1.9	0.16	0.72	0.028	0.12	-	-	-	-	-	-	-	-	-	-
AM-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	-	-	-	-	0.0055	0.024	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRU	-	-	-	-	28	6.0	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	-	-	-	-	25	5.4	-	-	-	-	-	-	-	-	-	-	-	-
CT-1	-	-	-	-	-	-	-	-	0.47	2.05	0.15	0.66	-	-	-	-	-	-
CT-2	-	-	-	-	-	-	-	-	0.30	1.31	0.10	0.42	-	-	-	-	-	-
FUG	-	-	-	-	18	77	-	-	-	-	-	-	-	-	0.11	0.48	-	-
Totals	215	958	117	517	66	178	1.9	8.5	7.7	33	7.2	31	6.9	30	0.11	0.48	-	-

[1] **Significant Figures Examples**: One significant figure – 0.03, 3, 0.3. Two significant figures – 0.34, 34, 3400, 3.4

[2] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations.

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

☐ This table is intentionally left blank as all SSM emissions at this facility do not require an increase in Requested Allowables greater than those listed in Table 2-E. If you are required to report GHG emissions as described in Section 21, include any GHG emissions due Startup, Shutdown, and/or Scheduled Maintenance in Table 2-P. Provide explanation in Section 6.

All applications, including NOI applications, must fill out this table, reporting Maximum Emissions during Startup, Shutdown and Scheduled Maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). Only report SSM emissions greater than the cooresponding Table 2-E emissions[1]. Not providing emissions for a unit indicates that SSM emissions for this unit are less than the Requested Allowables for that unit in Table 2-E. In Section 6, provide emissions calculations for any emissions listed in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.nmenv.state.nm.us/aqb/permit/app_form.html) for more detailed instructions. For each unit with flashing, list tank-flashing emissions estimates as a separate line item (20.2.72.203.A.3 and 20.2.70.300.D.5 NMAC). List all units and SSM fugitives, except GHGs, in this table. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Unit No.	NOx		CO		VOC		SOx		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
SSM	320	6	1,742	73	6,021	44	19,201	69	-	-	-	-	-	-	271	1.0	-	-
Malfunction	288	10	1,565	10	3,029	10	9,301	10	-	-	-	-	-	-	101	10	-	-
Totals	320	16	1,742	83	6,021	54	19,201	79	-	-	-	-	-	-	271	11	-	-

[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 the table below. 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] **Condensables**: Include condensable particulate matter emissions in particulate matter calculations.

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. List tank-flashing emissions estimates as a separate line item. 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		TSP		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package.

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 or L x W (ft)
						(acfs)	(dscfs)			
2	2	V	No	222	1832	131	-		65.6	2.0
4A	4A	V	No	175	1832	131	-	-	65.6	2.0
6	6	V	No	74	750	318	-	-	132.3	1.8
7	7	V	No	74	750	318	-	-	132.3	1.8
8	8	V	No	75	650	217			122.6	1.5
9	9	V	No	75	650	217			122.6	1.5
10	10	V	No	74	650	216	-	-	122.1	1.5
11	11	V	No	74	650	216	-	-	122.1	1.5
28	28	V	No	36	890	1787	-	-	154.9	3.8
29	29	V	No	44	858	1964	-	-	156.3	4.0
30	30	V	No	44	826	1916	-	-	67.8	6.0
31	31	V	No	44	817	1300	-	-	103.5	4.0
32B	32B	V	No	32	817	1308	-	-	104.1	4.0
34	34	V	No	45	600	114	-	-	36.3	2.0
36	36	V	No	50	300	552	-	-	50.0	3.8
37	37	V	No	50	300	552	-	-	50.0	3.8
AGI Flare	AGI Flare	V	No	210	1832	15	-	-	65.6	2.0

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

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

Stack No.	Unit No.(s)	Total HAPs		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Methanaol ☑ 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		
2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4A	4A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	6	1.4	6.0	0.034	0.15	0.017	0.075	0.0019	0.0084	0.0048	0.021	0.98	4.3	0.14	0.60	0.0079	0.035	0.14	0.60	0.044	0.19
7	7	1.4	6.0	0.034	0.15	0.017	0.075	0.0019	0.0084	0.0048	0.021	0.98	4.3	0.14	0.60	0.0079	0.035	0.14	0.60	0.044	0.19
8,9,10, or 11	8,9,10, or 11	0.91	4.0	0.023	0.10	0.011	0.050	0.0013	0.0056	0.0032	0.014	0.65	2.9	0.092	0.40	0.0053	0.023	0.092	0.40	0.029	0.13
28	28	0.17	0.75	0.00076	0.0033	0.0082	0.036	0.0020	0.0089	0.0041	0.018	0.15	0.67	0.0025	0.011	-	-	0.00041	0.0018	-	-
29	29	0.077	0.34	0.00093	0.0041	0.010	0.044	0.0025	0.011	0.0050	0.022	0.055	0.24	0.0031	0.014	-	-	0.00050	0.0022	-	-
30	30	0.074	0.32	0.00089	0.0039	0.010	0.042	0.0024	0.010	0.0047	0.021	0.053	0.23	0.0030	0.013	-	-	0.00047	0.0021	-	-
31	31	0.037	0.16	0.00044	0.0019	0.0048	0.021	0.0012	0.0052	0.0024	0.010	0.026	0.11	0.0015	0.0064	-	-	0.00024	0.0010	-	-
32B	32B	0.036	0.16	0.00043	0.0019	0.0047	0.021	0.0012	0.0051	0.0023	0.010	0.026	0.11	0.0014	0.0063	-	-	0.00023	0.0010	-	-
34	34	0.031	0.14	3.5E-05	0.00015	5.7E-05	0.00025	-	-	-	-	0.0013	0.0055	-	-	0.030	0.13	-	-	-	-
36	36	0.21	0.91	0.00023	0.0010	0.00038	0.0016	-	-	-	-	0.0083	0.036	-	-	0.20	0.87	-	-	-	-
37	37	0.21	0.91	0.00023	0.0010	0.00038	0.0016	-	-	-	-	0.0083	0.036	-	-	0.20	0.87	-	-	-	-
TK-2	TK-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AM-10	AM-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	DH-10	0.14	0.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRU	TK-VRU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AGI flare	AGI flare	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	TK-VRUTMP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT-1	CT-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT-2	CT-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N/A	FUG	5.2	23	0.013	0.055	0.0064	0.028	0.00027	0.0012	0.0012	0.0052	-	-	-	-	5.1	23	-	-	-	-
N/A	SSM	71	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Totals:		81	48	0.11	0.47	0.090	0.40	0.015	0.064	0.032	0.14	2.9	13	0.38	1.7	5.6	24	0.37	1.6	0.12	0.51

Table 2-J: Fuel

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

Unit No.	Fuel Type (No. 2 Diesel, Natural Gas, Coal, …)	Specify Units				
		Lower Heating Value (Btu/scf)	Hourly Usage (Mscf/hr)	Annual Usage (MMscf/yr)	% Sulfur (gr/100scf)	% Ash
2	Natural Gas	900	1.6	14.2	5	-
4A	Natural Gas	900	1.6	14.2	5	-
6	Natural Gas	900	19.7	172.6	5	-
7	Natural Gas	900	19.7	172.6	5	-
8,9,10, or 11	Natural Gas	900	13.2	115.4	5	-
28	Natural Gas	900	64.1	561.2	5	-
29	Natural Gas	900	82.7	724.2	5	-
30	Natural Gas	900	78.7	689.8	5	-
31	Natural Gas	900	40.9	358.2	5	-
32B	Natural Gas	900	40.2	352.4	5	-
34	Natural Gas	900	16.7	146.0	5	-
36	Natural Gas	900	110.6	968.5	5	-
37	Natural Gas	900	110.6	968.5	5	-
*AGI Flare	Natural Gas	900	0.10	0.88	5	-

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-2	40600061	Gasoline (fuel)	Mixed C8+ hydrocarbons	5.6	62	76	9.34	93	12.5
TK-VRU1	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU2	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU3	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU4	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU5	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRUTMP1	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRUTMP2	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU6	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4
TK-VRU7	40400321	Gasoline (RVP 10)	Mixed C8+ hydrocarbons	5.6	66	63	5.52	71	6.4

Table 2-L: Tank Data

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

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-2	2005	Gasoline fuel	N/A	N/A	11.9	1.9	1.2	0.01	WH	WH	Good	3,000	6.00
TK-VRU1	TBD	Gasoline (RVP 10)	N/A	N/A	750	119.2	4.7	3.7	WH	WH	Good	27,594,000	876
TK-VRU2	TBD	Gasoline (RVP 10)	N/A	N/A	750	119.2	4.7	3.7	WH	WH	Good		
TK-VRU3	TBD	Gasoline (RVP 10)	N/A	N/A	750	119.2	4.7	3.7	WH	WH	Good		
TK-VRU4	TBD	Gasoline (RVP 10)	N/A	N/A	750	119.2	4.7	3.7	WH	WH	Good		
TK-VRU5	TBD	Gasoline (RVP 10)	N/A	N/A	750	119.2	4.7	3.7	WH	WH	Good		
TK-VRUTMP1	1996	Gasoline (RVP 10)	N/A	N/A	1,500	363	3.7	0.25	WH	WH	Good	27,594,000	438
TK-VRUTMP2	1996	Gasoline (RVP 10)	N/A	N/A	1,500	363	3.7	0.25	WH	WH	Good		
TK-VRU6	TBD	Gasoline (RVP 10)	N/A	N/A	400	64	3.7	1.8	WH	WH	Good	15,768,000	931.88
TK-VRU7	TBD	Gasoline (RVP 10)	N/A	N/A	210	33	3.0	1.5	WH	WH	Good	6,832,800	775.33

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	mixed hydrocarbons	gas	225 MMscf/day	Natural gas	mixed hydrocarbons	Gas	225 MMscf/day
				Condesate	mixed hydrocarbons and water	Liquid	1800 bbl/day

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
No CEMS at this facility.									

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
No PEM at this facility.								

Table 2-P: Green House Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC that are Major for GHGs as determined in Section 22 of this application are required to complete this Table if so directed in Section 22 or are major for GHGs and have an existing GHG BACT. Applicants must report potential emission rates in short tons per year. Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table.

		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**	**23,900**	**footnote 3**										
2	**mass GHG**	596	1.7E-05	0.98	-	-									597	
	CO_2e	596	0.0050	25	-	-										621
4A	**mass GHG**	1,614	4.6E-05	2.7	-	-									1,616	
	CO_2e	1,614	0.014	67	-	-										1,680
6	**mass GHG**	10,370	2.0E-02	0.20	-	-									10,370	
	CO_2e	10,370	5.8	4.9	-	-										10,381
7	**mass GHG**	10,370	2.0E-02	0.20	-	-									10,370	
	CO_2e	10,370	5.8	4.9	-	-										10,381
8, 9, 10, or 11	**mass GHG**	6,933	1.3E-02	0.13	-	-									6,933	
	CO_2e	6,933	3.9	3.3	-	-										6,941
28	**mass GHG**	33,719	6.4E-02	0.64	-	-									33,720	
	CO_2e	33,719	19	16	-	-										33,754
29	**mass GHG**	43,513	0.082	0.82	-	-									43,514	
	CO_2e	43,513	24	21	-	-										43,558
30	**mass GHG**	41,447	0.078	0.78	-	-									41,448	
	CO_2e	41,447	23	20	-	-										41,490
31	**mass GHG**	21,521	0.041	0.41	-	-									21,521	
	CO_2e	21,521	12	10.1	-	-										21,543
32B	**mass GHG**	21,175	0.040	0.40	-	-									21,175	
	CO_2e	21,175	12	10.0	-	-										21,197
34	**mass GHG**	8,772	0.017	0.17	-	-									8,772	
	CO_2e	8,772	4.9	4.1	-	-										8,781
36	**mass GHG**	58,187	0.11	1.1	-	-									58,188	
	CO_2e	58,187	33	27	-	-										58,247
37	**mass GHG**	58,187	0.11	1.1	-	-									58,188	
	CO_2e	58,187	33	27	-	-										58,247
AGI Flare	**mass GHG**	596	1.7E-05	0.98	-	-									597	
	CO_2e	596	0.0050	25	-	-										621
Fug	**mass GHG**	-	-	12	-	-									12	
	CO2e	-	-	292	-	-										292
SSM	**mass GHG**	4,526	1.0E-04	31	-	-									4,557	
	CO_2e	4,526	0.030	787	-	-										5,313
Total		321,525	0.59	54	-	-									321,579	
		321,525	177	1343	-	-										323,044

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

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

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

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

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

Section 3

Application Summary

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

Routine or predictable emissions during Startup, Shutdown, and Maintenance (SSM): 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.nmenv.state.nm.us/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

3.1 APPLICATION SUMMARY

Linam Ranch Gas Plant (Linam) is a natural gas processing plant that removes hydrogen sulfide, water and carbon dioxide from field natural gas and separates natural gas liquids from the field natural gas stream. The facility is currently permitted under NSR permit 0039-M6R1 and Title V permit P094-R1M1.

On August 15, 2013 DCP Midstream Services, LP (DCP) received a letter from the New Mexico Environmental Department Air Quality Bureau (NMED) requesting the quantification of routine or predictable emission during startup, shutdown, and scheduled maintenance (SSM) at Linam and submit the necessary SSM permit application no later than 120 days after the request. This application is being submitted in response to the NMED's request. DCP is submitting this application pursuant to 20.2.72.219 (D) NMAC, which is required for any modification to a source, and for revisions to any term or condition of such permit, including but not limited to emissions limitations, control technology operating conditions, and monitoring requirements. In addition, DCP is also making updates to the steady state emissions at this facility. These updates are explain in Table 1, below.

Finally, new emissions calculations were performed to address Start-up, Shutdown, Maintenance (SSM) and Malfunction emissions calculations for all the sources and operations that are performed at this site. This emissions calculations were performed using the most recent gas analysis reports that have been previously mentioned in the above paragraphs.

The Linam Ranch Gas Plant is a major source under the Prevention of Significant Deterioration (PSD) rules as currently permitted, and will remain a major source after the proposed significant revision. This facility will also remain a major source for operating permit purposes under Title V (20.2.70 NMAC).

No other information is changed in the permit and no additional information is required.

Table 1 – List of Regulated Emission Sources

Emission Source	Description	Corrections/Updates
2	Amine Plant Flare East; Installed in 2005	**Updated** ◆ New calculations were done using new residue-fuel and acid gas analysis results. These reports are dated on 10/21/13 and on 11/01/2013, respectively. ◆ Also, purged gas emissions calculations were determined and included for this unit.
4A	ESD Flare; Installed in 2008	**Updated** ◆ New calculations were done using new residue-fuel and inlet gas analysis results. These reports are dated on 10/21/13 and on 11/11/2013, respectively. ◆ Also, purged gas emissions calculations were determined and included for this unit.

Table 1 – List of Regulated Emission Sources

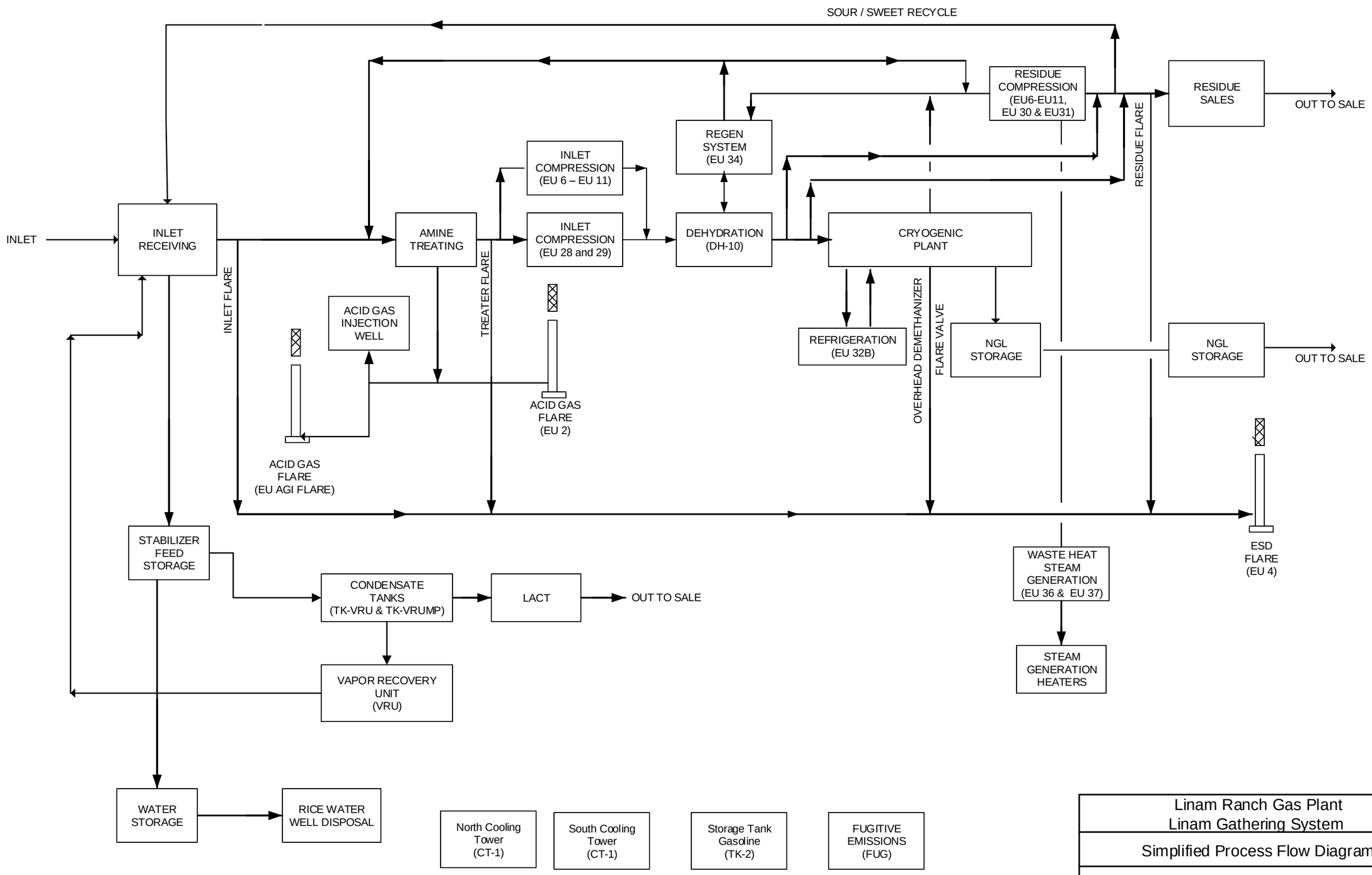
Emission Source	Description	Corrections/Updates
6	Clark TLA-6; 2SLB; 2000 hp RICE with an installation date on or before 1974	Emissions from these units have been previously reviewed and approved. No changes are being made. .
7	Clark TLA-6; 2SLB; 1267 hp RICE with an installation date on or before 1974	
8	Clark HBA-6; 2SLB; 800 hp RICE with an installation date of 1954	
9	Clark HBA-6; 2SLB; 800 hp RICE with an installation date of 1954	
10	Clark HBA-6; 2SLB; 800 hp RICE with an installation date of 1954	
11	Clark HBA-6; 2SLB; 800 hp RICE with an installation date of 1954	
28	Solar Saturn Turbine; 63.43 MMBtu/hr Turbine; Install date TBD	
29	Solar Saturn Turbine; 77.63 MMBtu/hr Turbine; Installed in 1995	
30	Solar Saturn Turbine; 73.95 MMBtu/hr Turbine; Installed in 1995	
31	Solar Saturn Turbine; 48.1 MMBtu/hr Turbine; Installed in 1995	
32B	Solar Saturn Turbine; 36.2 MMBtu/hr Turbine; Installed in 1995	
34	Regeneration Gas Heater; 15 MMBtu/hr	
36	Boiler; 99 MMBtu/hr	
37	Boiler; 99 MMBtu/hr	
TK-2	Storage Tank – Gasoline; 11.9 bbl; Installed in 2005	
AGI Flare	Acid Gas Flare; Installed in 2009	**Updated** ◆ New calculations were done using new residue-fuel and acid gas analysis results. These reports are dated on 10/21/13 and on 11/01/2013, respectively. ◆ Also, purged gas emissions calculations were determined and included for this unit.
AM-10	Amine Unit; 225 MMscf/d	Emissions from these units have been previously reviewed and approved. No changes are being made.
DH-10	Glycol Dehydrator; 27 MMscf/d	
TK-VRU	Seven Condensate Tanks controlled by a common VRU; Five (1-5) 750 bbl tanks, one (6) 400 bbl tank, and one (7) 210 bbl tank; **Tanks have not been installed.**	
TK-VRUTMP	Two Condensate Tanks controlled by a common VRU (previously listed as TK39 and TK40); Both tanks are 1,500 bbl tanks; Tanks were installed in 1996.	
CT-1	South Cooling Tower; 3,200 gpm	
CT-2	North Cooling Tower; 2,045 gpm	
FUG	Facility-wide Fugitives	**Updated** ◆ New calculations were done using new acid gas, residue-fuel gas and inlet gas analysis results.

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 sheet is provided on the following page.



Linam Ranch Gas Plant
Linam Gathering System

Simplified Process Flow Diagram

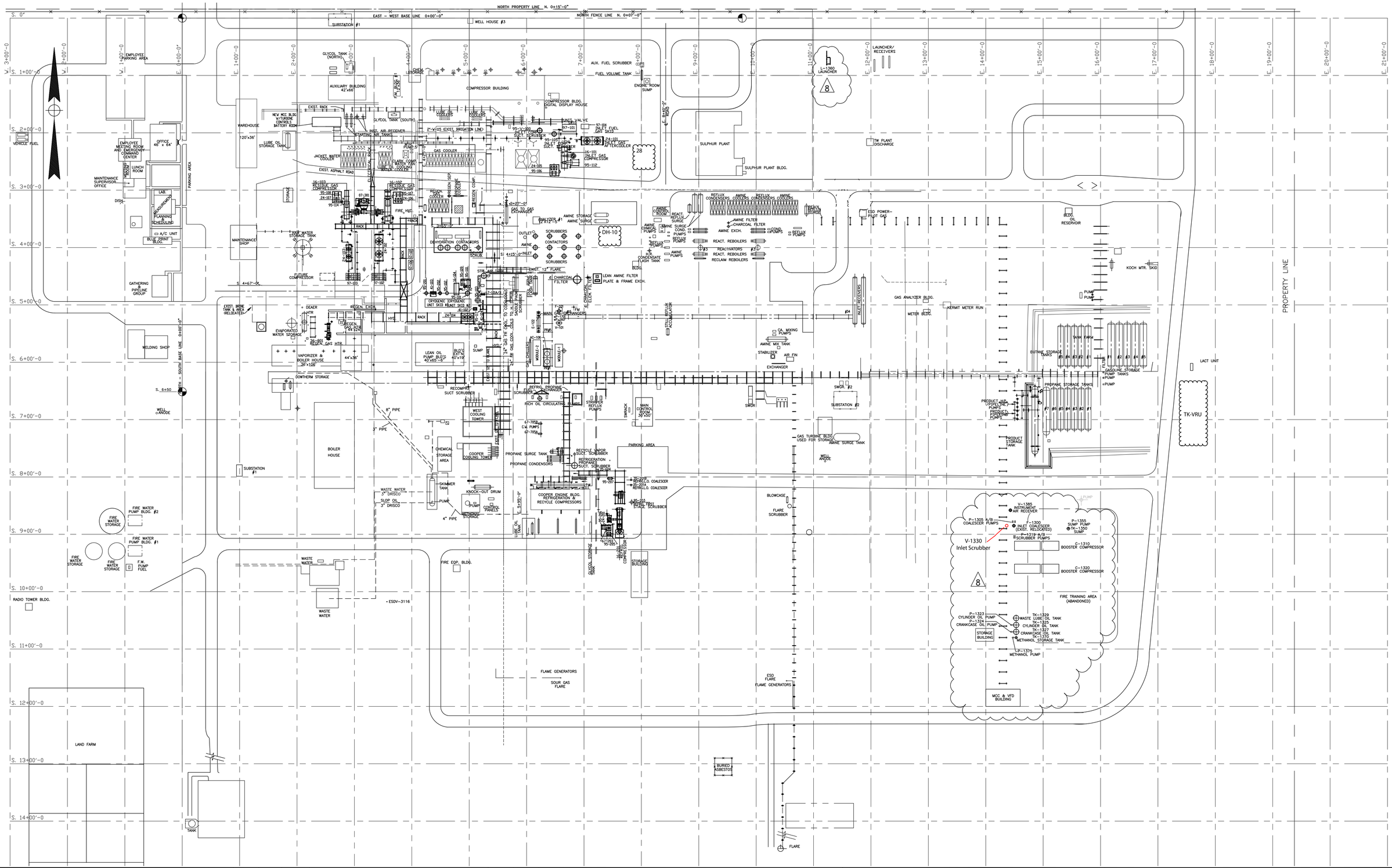
December 2013

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 process flow sheet is provided on the following page.



REV.	DATE	REVISION	BY	CHK'D	ENGR.	REV.	DATE	REVISION	BY	CHK'D	ENGR.
0	4/11/95	ISSUED FOR CONSTRUCTION	E.A. M.	D.C.		5	12/05/05	UPDATED PLOT PLAN	P.L.		
1	522/95	REVOSED MPTES 16, 19 & 27	E.A. M.	D.C.		6	07/26/06	ADDED WATER WASH EQP.	P.L.		
2	7/20/95	ADDED INLET REC.'S, REGEN COMP., PROPANE COOL	JAM			7	8/23/06	REMOVED EQUIPMENT PER FIELD MARKS	wr-t		
3	11/7/95	REMOVED GENERAL NOTES AND LEGEND	JAM			8	IN PROG	ADD AGI EQUIPMENT	MAC		
4	3/30/99	UPDATED DRAWING	JC								

NOTES:

dcp Midstream

PLOT PLAN
LINAM RANCH
GAS PLANT

LINAM RANCH PLANT — WEST PERMIAN BASIN

DRAWN: E.A. MOWERS — DATE: 9/6/94

JA NO.	FILE NAME 07307MP002
AFE NO.	SCALE 1"=80'
BASE NO.	07-3-07
DWG. NO.	MP-002 8

PLOT TIME: January 18 2008 - 12:17 pm

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.nmenv.state.nm.us/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.

Below is a detail description of the updates included in this significant revision. For a summary of these updated refer to Section 3, Table 1.

Existing Unchanged Steady State Calculations

All existing permitted emission rates for the facility which were not updated with NSR permit 0039-M6R1 are shown in this section for convenience purposes.

Engines (Units 6, 7, 8, 9, 10, and 11)
Engines emissions were calculated using manufacture data for NOx, CO, and VOC. Formaldehyde, SO_2, and PM were calculated using EPA AP-42 emission factors from Table 3.2-1. Units 8 and 9 used manufacture data for SO_2.

Turbine (Units 29, 30, 31, and 32B)
Turbine emission factors are based on manufactures data for NOx, CO, and VOC. Formaldehyde, SO_2, and PM were calculated using EPA AP-42 emission factors from Tables 3.1-2a and 3.1-3.

Heaters/Boilers (Units 34, 36, and 37)
Heater/boiler emission factors are based on EPA AP-42 Tables 1.4-1, 1.4-2, and 1.4-3.

Tank (Unit TK-2)
Tank emissions were calculated using Tanks 4.09d. No flashing losses are associated with this tank (The tank is at atmospheric conditions).

HAPs (Engines and Turbines)
HAPs emissions for engines and turbines were calculated using EPA AP-42 Tables 3.2-1 and 3.1-3.

HAPs (Heaters and Boilers)
HAPs emissions for heaters and boilers were calculated using EPA AP-42 Table 1.4-3.

Dehydrator (Unit DH-10)
A process simulation model (ProMax) was used to calculate emissions for the dehydrator. The simulation shows flow rates and compositions of the vapor streams routed to the flare, LP gathering system, or atmosphere from the dehydrator.

Tanks (Units TK-VRU and TK-VRUTMP)
Tanks 4.09d was used to calculate working and breathing emissions from the tanks. ProMax analysis was used to calculate flash emissions from the tanks. All the tanks are controlled by a VRU. The VRU is 100% efficient as a control system for the tanks but a 95% annual control was used in the calculations to account for a 5% annual downtime for the VRU. The VRU is designed to minimize vapor losses and is inherent to the process at Linam Ranch. All recovered vapors are returned back into the low pressure gathering system.

Cooling Towers (Units CT-1 and CT-2)
The particulate emissions were calculated using the procedure described in AP-42 Section 13.4 – Wet Cooling Towers. A Frisbee table was created to determine the particle distribution and subsequently PM_{10}, $PM_{2.5}$, and TSP emissions.

Turbine (Unit 28)
Turbine emission factors are based on manufactures data for NOx, CO, and VOC. A manufacture recommended emission factor was used for PM. PM_{10} and $PM_{2.5}$ emissions are set equal to PM emissions as a conservative measure. SO_2 emissions are based on fuel sulfur content of 50 gr S/Mscf.

Existing Updated Steady State Calculations

Unit 2 Gas Flare
Emissions associated to this unit were calculated using new residue-fuel and acid gas analysis results in order to provide a conservative estimate for sulfur dioxide and heat release estimate. These reports are dated on 10/21/13 and on 11/01/2013, respectively. With these analysis, the specific heat value/per volume for each of the gases detected was obtained using the Physical Properties of Hydrocarbon information as shown in the API Research Project 44, Fig. 16-1, Rev. 1981. Then, Assist Gas heating value was calculated based on the Flare Pilot and the Purge Gas activities, which was based on engineering judgment and technical information provided by DCP Midstream officials. With this information and the use of AP-42 Tables 13.5-1 (9/91) (Reformatted 1/95) criteria contaminants and HAPs were calculated. Greenhouse Gases were also calculated using from the API Compendium document equations 4-15 to 4-17.

AGI Flare
Emissions associated to this unit were calculated using new residue-fuel and inlet gas analysis results in order to provide a conservative estimate for sulfur dioxide and heat release estimate. These reports are dated on 10/21/13 and on 11/11/2013, respectively. With these analysis, the specific heat value/per volume for each of the gases detected was obtained using the Physical Properties of Hydrocarbon information as shown in the API Research Project 44, Fig. 16-1, Rev. 1981. Then, Assist Gas heating value was calculated based on the Flare Pilot and the Purge Gas activities, which was based on engineering judgment and technical information provided by DCP Midstream officials. With this information and the use of AP-42 Tables 13.5-1 (9/91) (Reformatted 1/95) criteria contaminants and HAPs were calculated. Greenhouse Gases were also calculated using from the API Compendium document equations 4-15 to 4-17.

Unit 4A ESD Flare
These emissions were calculated in a similar form to those performed for the Unit 2 Gas Flare and AGI Flare. New calculations were done using new residue-fuel and acid gas analysis results. These reports are dated on 10/21/13 and on 11/01/2013, respectively. The rest of the calculations was performed in the same form as the two other flares.

Methanol Tanks (TK-20, TK-21, TK-27, TK-77, TK-1370)
Emissions for the methanol tanks are calculated using Tanks 4.09 d. No flashing losses are associated with these tanks (The tanks are at atmospheric conditions). These tanks are exempt units per 20.2.72.202.B.5 NMAC.

New Calculations for Existing Routine or Predictable Emissions during Startup, Shutdown, and Scheduled Maintenance (SSM)

Emissions from Startup, Shutdown, and Maintenance (SSM) were estimated for plant turnaround, plant startup (post turnaround), condensate tank degassing during VRU downtime, gas piping degassing, pig launcher degassing, vacuum trucks, engine startup, turbine blowdown, compressor blowdown, Unit 2 Gas Flare, AGI Flare, Unit 4A ESD Flare, and Condensate Loadout (Unit Load). Malfunction emissions are also being accounted for.

Plant Turnaround
Multiple steps comprise a plant turnaround. Step 1 - For the natural gas system, emissions to the atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure. Step 2 - For systems in liquid service clingage emissions degassing emissions occur after the system is de-inventoried. Degassing emissions are calculated using the Ideal Gas Law. Step 3 - After systems are degassed and opened, residual materials (clingage) may be emitted to the atmosphere. Clingage emissions are estimated using system volumes and an assumed clingage amount.

Total lb/hr emissions from each liquid system turnaround step (degassing, clingage) assume that any liquid system may undergo turnaround at any time. Maximum lb/hr emissions from all turnaround steps are calculated as the maximum lb/hr emission rate from any step.

Plant Startup (post turnaround)
For the natural gas system, emissions to the atmosphere occur from a three step pressure test and purge prior to plant startup. These emissions are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at each purge step pressure.

Gas Piping Degassing & Pig Launcher Degassing
Emissions to the atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure.

Vacuum Trucks
Emissions from vacuum trucks are estimated using the loading loss method of AP-42, Chapter 5.2: Transportation and Marketing of Petroleum Liquids, 1995. Calculations are performed based on the concentrations of the individual organic species since the wastes contain significant non-volatile content (i.e. solids). A truck can be loaded in one hour; therefore the emissions per loading activity reflect the lb/hr emission rate.

Engine Startup & Compressor Blowdown
Emissions are calculated based on an estimated volume of gas released from each unit for engine startup and compressor blowdown multiplied by the number of activities throughout the year. This volume is then multiplied by the gas analysis mol% divided by the flow rate in scf/mol then multiplied by Molecular Weight to arrive at a lb/event.

Turbine Blowdown
Emissions to the atmosphere are from two types of turbine blowdowns: maintenance and washing related blowdowns. During a turbine wash blowdown occurs in three steps: a pre-wash blowdown to take the turbine out of service, a starter run (used to move turbine during washing) and finally a blowdown associated with turbine startup at completion of the wash. During a maintenance event blowdown occurs from an initial blowdown and starter blowdown. Emissions are calculated using a mass balance and are based on the volume vented to the atmosphere.

Compressor Blowdown
Emissions to the atmosphere are the result of a compressor blowdown activity and are calculated using a mass balance analysis and are based on the volume vented to the atmosphere. Setting the Compressor Blowdown volume to 2,500 scf per activity and using the chemical analysis of the inlet gas a unitary value, per each event, is obtained. Knowing that this installation has six (6) compressors and that the frequency of blowdowns per turbine per year is 20 the total amount of blowdowns equals 120. Thus, we multiple the yearly total amount of blowdown per unitary values previously obtained provide the emissions of regulated contaminants associated to this activity.

Condensate Loadout (Unit Load)
Emissions associated to this process, also known as Truck Loading of Petroleum Liquids, were obtained employing AP=42 Section 5.2, Transportation and Marketing of Petroleum Liquids Eq. 1. This formula accounts for the truck capacity in gallons and the estimate truck's loading time, which was set for 80 minutes. The controlled emissions are subjected to a vapor balancing analysis and then to a VRU Control, with an efficiency if 95%, for a controlled vapor balancing and VRU emissions. Then, working and breathing emissions from tanks TK-3A, TK-86 and TK-87 are calculated.

Fugitive Emissions (Unit FUG)
The EPA Protocol for Equipment Leak Emissions Estimates Table 2-4 (VOC fugitive emissions) and Table 2-10 (H_2S fugitive emissions) were used to calculate fugitive emissions. A conservative screening value of 35 ppmv was used for the H_2S fugitive emissions.

GHG Emissions
GHG emissions were calculated using 40 CFR 98 Subpart W. These emissions are shown on Table 2-P and the actual calculations are shown in Section 22 of this application.

Existing Unchanged Steady State Calculations

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	6	Model:	Clark TLA-6
Name 2:	Clark T1	Serial Number:	73779
Name 3:	#5TLA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Horsepower (bhp):	2000
Status:	Active	Heat Rate (MMBtu/hr):	17.73
Service Type:	Other	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	8864
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	900
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	172.55
Operating Range (%):		Potential fuel usage (Mscf/hr):	19.70

Stack Parameters

Stack Name:	6	Height (ft):	74
Stack Number:	1	Diameter (ft):	1.75
Emission Percent:	100.00%	Temperature (^{o}F):	750
Stack Angle (^{o}):	0	Flow (ACFM):	19100
Raincap:	No	Velocity (ft/s):	132.3

Control Model

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	8.91	g/hp-hr	2000	8760	39.287	172.075	Other
Carbon Monoxide	4.50	g/hp-hr	2000	8760	19.842	86.907	Other
VOC	0.692	g/hp-hr	2000	8760	3.051	13.364	Other
Formaldehyde	0.0552	lb/mmBtu	2000	8760	0.979	4.286	AP42
Sulfur Dioxide	0.000588	lb/mmBtu	2000	8760	0.010	0.046	AP42
PM10	0.04831	lb/mmBtu	2000	8760	0.856	3.751	AP42

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	7	Model:	Clark TLA-6
Name 2:	Clark T2	Serial Number:	73780
Name 3:	#6TLA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Horsepower (bhp):	2000
Status:	Active	Heat Rate (MMBtu/hr):	17.73
Service Type:	Other	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	8864
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	900
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	172.55
Operating Range (%):		Potential fuel usage (Mscf/hr):	19.70

Stack Parameters

Stack Name:	7	Height (ft):	74
Stack Number:	1	Diameter (ft):	1.75
Emission Percent:	100.00%	Temperature (^{o}F):	750
Stack Angle (^{o}):	0	Flow (ACFM):	19100
Raincap:	No	Velocity (ft/s):	132.3

Control Model

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	8.91	g/hp-hr	2000	8760	39.29	172.08	Other
Carbon Monoxide	4.50	g/hp-hr	2000	8760	19.84	86.91	Other
VOC	0.692	g/hp-hr	2000	8760	3.05	13.36	Other
Formaldehyde	0.0552	lb/mmBtu	2000	8760	0.98	4.29	AP42
Sulfur Dioxide	0.000588	lb/mmBtu	2000	8760	0.01	0.05	AP42
PM10	0.04831	lb/mmBtu	2000	8760	0.86	3.75	AP42

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	8	Model:	Clark HBA-6
Name 2:	Clark H1	Serial Number:	36288
Name 3:	#1HBA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DCP owned	Horsepower (bhp):	1267
Status:	Active	Heat Rate (MMBtu/hr):	11.86
Service Type:	Inlet/Wet Gas	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	9357
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	900
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	115.39
Operating Range (%):			

Stack Parameters

Stack Name:	8	Height (ft):	75
Stack Number:	1	Diameter (ft):	1.5
Emission Percent:	100.00%	Temperature (^{o}F):	650
Stack Angle (^{o}):	0	Flow (ACFM):	13000
Raincap:	No	Velocity (ft/s):	122.6

Control Model

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	17	g/hp-hr	1267	8760	47.49	207.99	Manufacturer Data
Carbon Monoxide	8.42	g/hp-hr	1267	8760	23.52	103.01	Manufacturer Data
VOC	2.31	g/hp-hr	1267	8760	6.45	28.26	Manufacturer Data
Formaldehyde	0.0552	lb/mmBTU	1267	8760	0.65	2.87	AP42
PM10	0.0483	lb/mmBTU	1267	8760	0.57	2.51	AP42
Sulfur Dioxide	0.00059	lb/mmBTU	1267	8760	0.01	0.03	Manufacturer Data

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	9	Model:	Clark HBA-6
Name 2:	Clark H2	Serial Number:	736290
Name 3:	#2HBA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DCP owned	Horsepower (bhp):	1267
Status:	Active	Heat Rate (MMBtu/hr):	11.86
Service Type:	Inlet/Wet Gas	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	9357
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	1019
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	101.92
Operating Range (%):			

Stack Parameters

Stack Name:	9	Height (ft):	75
Stack Number:	1	Diameter (ft):	1.5
Emission Percent:	100.00%	Temperature (^{o}F):	650
Stack Angle (^{o}):	0	Flow (ACFM):	13000
Raincap:	No	Velocity (ft/s):	122.6

Emission Controls: **Control Model**

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	17	g/hp-hr	1267	8760	47.49	207.99	Manufacturer Data
Carbon Monoxide	8.42	g/hp-hr	1267	8760	23.52	103.01	Manufacturer Data
VOC	2.31	g/hp-hr	1267	8760	6.45	28.26	Manufacturer Data
Formaldehyde	0.0552	lb/mmBTU	1267	8760	0.65	2.87	AP42
PM10	0.0483	lb/mmBTU	1267	8760	0.57	2.51	AP42
Sulfur Dioxide	0.00059	lb/mmBTU	1267	8760	0.01	0.03	Manufacturer Data

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	10	Model:	Clark HBA-6
Name 2:	Clark H3	Serial Number:	36289
Name 3:	#3HBA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Horsepower (bhp):	1267
Status:	Active	Heat Rate (MMBtu/hr):	11.86
Service Type:	Other	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	9357
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	900
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	115.39
Operating Range (%):		Potential fuel usage (Mscf/hr):	13.17

Stack Parameters

Stack Name:	10	Height (ft):	74
Stack Number:	1	Diameter (ft):	1.5
Emission Percent:	100.00%	Temperature (^{o}F):	650
Stack Angle (^{o}):	0	Flow (ACFM):	12950
Raincap:	No	Velocity (ft/s):	122.1

Control Model

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	17	g/hp-hr	1267	8760	47.49	208.0	Other
Carbon Monoxide	8.42	g/hp-hr	1267	8760	23.52	103.00	Other
VOC	2.31	g/hp-hr	1267	8760	6.45	28.26	Other
Formaldehyde	0.0552	lb/mmBtu	1267	8760	0.65	2.8663	AP42
Sulfur Dioxide	0.000588	lb/mmBtu	1267	8760	0.01	0.03	AP42
PM10	0.04831	lb/mmBtu	1267	8760	0.57	2.51	AP42

Emissions Calculation: ENGINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	11	Model:	Clark HBA-6
Name 2:	Clark H4	Serial Number:	36303
Name 3:	#4HBA	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Horsepower (bhp):	1267
Status:	Active	Heat Rate (MMBtu/hr):	11.86
Service Type:	Other	Rotations per Minute (rpm):	300
Configuration:	2-Cycle, Lean Burn	Fuel Consumption (btu/hp-hr):	9357
Fuel Type:	Residue	Fuel Heat Value (btu/scf):	900
Oil Type:	Unknown	Oil Usage (gal/month):	30
Compression Ratio:		Cylinders:	
Ignition Timing:		Potential fuel usage (MMscf/yr):	115.39
Operating Range (%):		Potential fuel usage (Mscf/hr):	13.17

Stack Parameters

Stack Name:	11	Height (ft):	74
Stack Number:	1	Diameter (ft):	1.5
Emission Percent:	100.00%	Temperature (^{o}F):	650
Stack Angle (^{o}):	0	Flow (ACFM):	12950
Raincap:	No	Velocity (ft/s):	122.1

Control Model

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	17	g/hp-hr	1267	8760	47.49	207.99	Other
Carbon Monoxide	8.42	g/hp-hr	1267	8760	23.52	103.01	Other
VOC	2.31	g/hp-hr	1267	8760	6.45	28.26	Other
Formaldehyde	0.0552	lb/mmBtu	1267	8760	0.65	2.87	AP42
Sulfur Dioxide	0.000588	lb/mmBtu	1267	8760	0.01	0.03	AP42
PM10	0.04831	lb/mmBtu	1267	8760	0.57	2.51	AP42

Emissions Calculation: TURBINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	29	Model:	Solar Taurus 70-10302S
Name 2:	Turbine 1	Serial Number:	0021B
Name 3:	Inlet	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Turbine HP (hp):	10702
Status:	Active	Fuel Heat Value (btu/scf):	939
Fuel Type:	Other	Heat Rate (MMBtu/hr):	77.63
Service Type:	Other	Oil Usage (gal/month):	30
Cycle Type:	Other		
Oil Type:	Unknown	Potential fuel usage (MMscf/yr)	724.24
		Potential fuel usage (Mscf/hr):	82.68
		Heat Rate (BTU/bhp-hr)	7254

Stack Parameters

Stack Name:	29	Height (ft):	44
Stack Number:	1	Diameter (ft):	4
Emission Percent:	100.00%	Temperature (^{o}F):	858
Stack Angle (^{o}):	0	Flow (ACFM):	117844
Raincap:	No	Velocity (ft/s):	156.3
		Exh Flow (lbm/hr):	216169

Control Model 119609.8833 (ACFM=lb/hr*(T+460)/2382)

Emission Controls:

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	11.82	lb/hr	10702	8760	11.823	51.785	Manufacturer Data
Carbon Monoxide	9.47	lb/hr	10702	8760	9.470	41.479	Manufacturer Data
VOC	0.33	lb/hr	10702	8760	0.325	1.424	Manufacturer Data
Formaldehyde	0.00071	lb/mmBtu	10702	8760	0.055	0.241	AP42
Sulfur Dioxide	0.0034	lb/mmBtu	10702	8760	0.264	1.156	AP42
PM10	0.0066	lb/mmBtu	10702	8760	0.512	2.244	AP42

Emissions Calculation: TURBINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	30	Model:	Solar Taurus 70-9702S
Name 2:	Solar Taurus 70	Serial Number:	0146B
Name 3:	Residue	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Turbine HP (hp):	9990
Status:	Active	Fuel Heat Value (btu/scf):	939
Fuel Type:	Other	Heat Rate (MMBtu/hr):	73.95
Service Type:	Other	Oil Usage (gal/month):	30
Cycle Type:	Other		
Oil Type:	Unknown	Potential fuel usage (MMscf/yr)	689.85
		Potential fuel usage (Mscf/hr):	78.75
		Heat Rate (BTU/bhp-hr)	7402

Stack Parameters

Stack Name:	30	Height (ft):	44
Stack Number:	1	Diameter (ft):	6
Emission Percent:	100.00%	Temperature (^{o}F):	826
Stack Angle (^{o}):	0	Flow (ACFM):	114983
Raincap:	No	Velocity (ft/s):	67.8
		Exh Flow (lbm/hr):	216169

Emission Controls: **Control Model**

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	11.26	lb/hr	9990	8760	11.3	49.32	Manufacturer Data
Carbon Monoxide	9.02	lb/hr	9990	8760	9.02	39.51	Manufacturer Data
VOC	0.31	lb/hr	9990	8760	0.31	1.36	Manufacturer Data
Formaldehyde	0.00071	lb/mmBtu	9990	8760	0.05	0.23	AP42
Sulfur Dioxide	0.0034	lb/mmBtu	9990	8760	0.25	1.10	AP42
PM10	0.0066	lb/mmBtu	9990	8760	0.49	2.14	AP42

Emissions Calculation: TURBINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	31	Model:	Solar Centaur T-4700
Name 2:	Turbine 2	Serial Number:	OHK06-C0131
Name 3:	#2 Res	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Turbine HP (hp):	3915
Status:	Active	Fuel Heat Value (btu/scf):	900
Fuel Type:	Residue	Heat Rate (MMBtu/hr):	36.8
Service Type:	Residue	Oil Usage (gal/month):	30
Cycle Type:	Other		
Oil Type:	Unknown	Potential fuel usage (MMscf/yr)	358.2
		Potential fuel usage (Mscf/hr):	40.9
		Heat Rate (BTU/bhp-hr)	9400

Stack Parameters

Stack Name:	31	Height (ft):	44
Stack Number:	1	Diameter (ft):	4
Emission Percent:	100.00%	Temperature (^{o}F):	817
Stack Angle (^{o}):	0	Flow (ACFM):	78000
Raincap:	No	Velocity (ft/s):	103.5

	Control Model
Emission Controls:	

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	26.0	lb/hr	3915	8760	26.030	114.011	Manufacturer Data
Carbon Monoxide	5.0	lb/hr	3915	8760	4.950	21.600	Manufacturer Data
VOC	0.4	lb/hr	3915	8760	0.350	1.533	Manufacturer Data
Formaldehyde	0.00071	lb/mmBtu	3915	8760	0.026	0.114	AP42
Sulfur Dioxide	0.0034	lb/mmBtu	3915	8760	0.125	0.548	AP42
PM10	0.0066	lb/mmBtu	3915	8760	0.243	1.064	AP42

Emissions Calculation: TURBINE

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	32B	Model:	Solar Centaur T-4000
Name 2:	Turbine 4	Serial Number:	4678C
Name 3:	Refrig	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Turbine HP (hp):	3684
Status:	Active	Fuel Heat Value (btu/scf):	900
Fuel Type:	Other	Heat Rate (MMBtu/hr):	36.21
Service Type:	Other	Oil Usage (gal/month):	30
Cycle Type:	Other		
Oil Type:	Unknown	Potential fuel usage (MMscf/yr)	352.44
		Potential fuel usage (Mscf/hr):	40.23
		Heat Rate (BTU/bhp-hr)	9829

Stack Parameters

Stack Name:		Height (ft):	32
Stack Number:		Diameter (ft):	4
Emission Percent:		Temperature (^{o}F):	817
Stack Angle (^{o}):		Flow (ACFM):	78464
Raincap:		Velocity (ft/s):	104.1
		Exh Flow (lbm/hr):	116568

	Control Model
Emission Controls:	

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(hp)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	0.655	lb/mmBtu	3684	8760	23.718	103.883	Manufacturer Data
Carbon Monoxide	0.121	lb/mmBtu	3684	8760	4.381	19.191	Manufacturer Data
VOC	0.069	lb/mmBtu	3684	8760	2.498	10.943	Manufacturer Data
Formaldehyde	0.00071	lb/mmBtu	3684	8760	0.026	0.113	AP42
Sulfur Dioxide	0.0034	lb/mmBtu	3684	8760	0.123	0.539	AP42
PM10	0.0066	lb/mmBtu	3684	8760	0.239	1.047	AP42

Emissions Calculation: HEATER/BOILER/REBOILER

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	34	Model:	Other External Combustion Device
Name 2:	Furnace B	Serial Number:	91-2348
Name 3:	Regen	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Heat Input Fuel (mmbtu/hr):	15
Status:	Active	Fuel Heat Value (btu/scf):	900.00
Ext. Comb.Type:	Heaters	Heat Input Wste (mmbtu/hr):	
Fuel Type:	Residue	Waste heat Value (btu/scf):	
Equipment Usage:			
Configuration:			
		Potential fuel usage (MMscf/yr):	146.00
		Potential fuel usage (Mscf/hr):	16.67

Stack Parameters

Stack Name:	34	Height (ft):	45
Stack Number:	1	Diameter (ft):	2
Emission Percent:	100.00%	Temperature (^{o}F):	600
Stack Angle (^{o}):	0	Flow (ACFM):	6843
Raincap:	No	Velocity (ft/s):	36.3

Emission Controls: **Control Model**

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(MMBtu/hr)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	100	lb/MMscf	15	8760	1.667	7.300	AP42
Carbon Monoxide	84	lb/MMscf	15	8760	1.400	6.132	AP42
VOC	5.5	lb/MMscf	15	8760	0.092	0.402	AP42
PM10	7.6	lb/MMscf	15	8760	0.127	0.555	AP42
Sulfur Dioxide	0.6	lb/MMscf	15	8760	0.010	0.044	AP42

Emissions Calculation: HEATER/BOILER/REBOILER

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	36	Model:	Other External Combustion Device
Name 2:	Boiler 36	Serial Number:	
Name 3:	Boiler	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Heat Input Fuel (mmbtu/hr):	99.5
Status:	Active	Fuel Heat Value (btu/scf):	900.00
Ext. Comb.Type:	Heaters	Heat Input Wste (mmbtu/hr):	
Fuel Type:	Residue	Waste heat Value (btu/scf):	
Equipment Usage:			
Configuration:			
		Potential fuel usage (MMscf/yr):	968.47
		Potential fuel usage (Mscf/hr):	110.56

Stack Parameters

Stack Name:	36	Height (ft):	50
Stack Number:	36	Diameter (ft):	3.75
Emission Percent:	100.00%	Temperature (^{o}F):	300
Stack Angle (^{o}):	0	Velocity (ft/s):	50
Raincap:	No	Flow (ACFM):	33134.0

	Control Model
Emission Controls:	Low-NOx Burners: Other Control

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(MMBtu/hr)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	50	lb/MMscf	99.5	8760	5.528	24.212	AP42
Carbon Monoxide	84	lb/MMscf	99.5	8760	9.287	40.676	AP42
VOC	5.5	lb/MMscf	99.5	8760	0.608	2.663	AP42
PM10	7.6	lb/MMscf	99.5	8760	0.840	3.680	AP42
Sulfur Dioxide	0.6	lb/MMscf	99.5	8760	0.066	0.291	AP42

Emissions Calculation: HEATER/BOILER/REBOILER

Facility ID: 54 **Facility:** Linam Ranch Gas Plant

Equipment Information

Source ID Number:	37	Model:	Other External Combustion Device
Name 2:	Boiler 37	Serial Number:	
Name 3:	Boiler	Service Date:	
Coordinates:	Latitude/Longitude	Manufacture Date:	
Latitude:		Permit Status:	
Longitude:		SCC:	

Ownership:	DEFS owned	Heat Input Fuel (mmbtu/hr):	99.5
Status:	Active	Fuel Heat Value (btu/scf):	900.00
Ext. Comb.Type:	Heaters	Heat Input Wste (mmbtu/hr):	
Fuel Type:	Residue	Waste heat Value (btu/scf):	
Equipment Usage:			
Configuration:			
		Potential fuel usage (MMscf/yr):	968.47
		Potential fuel usage (Mscf/hr):	110.56

Stack Parameters

Stack Name:	37	Height (ft):	50
Stack Number:	37	Diameter (ft):	3.75
Emission Percent:	100.00%	Temperature (^{o}F):	300
Stack Angle (^{o}):	0	Velocity (ft/s):	50
Raincap:	No	Flow (ACFM):	33134.0

	Control Model
Emission Controls:	Low-NOx Burners: Other Control

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Emission Factor		Nominal Rating	Hrs of Operation	Estimated Emissions		Source of Emission Factor
	EF	Units	(MMBtu/hr)	(hrs/yr)	(lb/hr)	(tpy)	
Nitrogen Oxides	50	lb/MMscf	99.5	8760	5.53	24.21	AP42
Carbon Monoxide	84	lb/MMscf	99.5	8760	9.29	40.68	AP42
VOC	5.5	lb/MMscf	99.5	8760	0.61	2.66	AP42
PM10	7.6	lb/MMscf	99.5	8760	0.84	3.68	AP42
Sulfur Dioxide	0.6	lb/MMscf	99.5	8760	0.07	0.29	AP42

DCP Midstream LP's Linam Ranch Gas Plant

Gasoline Tank

Emission units:	TK-2
Source Description:	500 gallon horizontal gasoline tank

General Tank Information

Volume	500	gallon	
Length (shell)	5.25	ft	
Diameter	4	ft	
Throughput	250	gal/mo	
Throughput	3000	gal/yr	bbl/mo * 12 mo/yr
Turnovers	5.0	turnovers/yr	bbl/yr / Volume
Turnovers	6.0	maximum turnovers/yr	Turnovers x 1.2 (per 40 CFR 63.760 (subpart HH)
Throughput	8.2	maximum gal/day	Maximum turnovers * Volume / 365 days/year

VOC Emissions

	VOCs		
	1399.0	lb/yr	TANKS 4.09 d
	0.70	tpy	tpy = lb/hr x [(8760hr/yr) / (2000lb/ton)])
	N/A	tpy	No flashing losses from this tank at atmospheric conditions
Total VOCs	0.70	tpy	Working and Breathing + Flash
	0.16	lb/hr	tpy * 2000 lb/ton / 8760 hrs/yr

Linam Ranch Gas Plant: Engine and Turbine HAP Calculations

Emission Unit ID No.	Emission Unit Description	Horsepower Site Rating hp	Heat Input mmBtu/hr	Benzene EF lb/MMBtu	Benzene Emiss Rate TPY	Toluene EF lb/MMBtu	Toluene Emiss Rate TPY	Ethylbenzene EF lb/MMBtu	Ethylbenzene Emiss Rate TPY	Xylenes EF lb/MMBtu	Xylenes Emiss Rate TPY
6	Clark TLA-6	2000	17.73	1.94E-03	0.151	9.63E-04	0.075	1.08E-04	0.008	2.68E-04	0.021
7	Clark TLA-6	2000	17.73	1.94E-03	0.151	9.63E-04	0.075	1.08E-04	0.008	2.68E-04	0.021
10 or 11	Clark HBA-6	1267	11.86	1.94E-03	0.101	9.63E-04	0.050	1.08E-04	0.006	2.68E-04	0.014
28	Solar Taurus T-60-7800S	7340	63.43	1.20E-05	0.003	1.30E-04	0.036	3.20E-05	0.009	6.40E-05	0.018
29	Solar Taurus 70-10302S	10702	77.63	1.20E-05	0.004	1.30E-04	0.044	3.20E-05	0.011	6.40E-05	0.022
30	Solar Taurus 70-9702S	9990	73.95	1.20E-05	0.004	1.30E-04	0.042	3.20E-05	0.010	6.40E-05	0.021
31	Solar Centaur T-4700	3915	36.80	1.20E-05	0.002	1.30E-04	0.021	3.20E-05	0.005	6.40E-05	0.010
32B	Solar Centaur T-4000	3684	36.21	1.20E-05	0.002	1.30E-04	0.021	3.20E-05	0.005	6.40E-05	0.010
Total HAP					**0.42**		**0.36**		**0.06**		**0.14**

Emission Unit ID No.	Description	Formaldehyde EF lb/MMBtu	Formaldehyde Emiss Rate TPY	Acetaldehyde EF lb/MMBtu	Acetaldehyde Emiss Rate TPY	n-Hexane EF lb/MMBtu	n-Hexane Emiss Rate TPY	Acrolein EF lb/MMBtu	Acrolein Emiss Rate TPY	Methanol EF lb/MMBtu	Methanol Emiss Rate TPY
6	Clark TLA-6	0.05520	4.286	7.76E-03	0.603	4.45E-04	0.035	7.78E-03	0.604	2.48E-03	0.193
7	Clark TLA-6	0.05520	4.286	7.76E-03	0.603	4.45E-04	0.035	7.78E-03	0.604	2.48E-03	0.193
10 or 11	Clark HBA-6	0.05520	2.866	7.76E-03	0.403	4.45E-04	0.023	7.78E-03	0.404	2.48E-03	0.129
28	Solar Taurus T-60-7800S	0.00241	0.670	4.00E-05	0.011	0	0.000	6.40E-06	0.002	0	0.000
29	Solar Taurus 70-10302S	0.00071	0.241	4.00E-05	0.014	0	0.000	6.40E-06	0.002	0	0.000
30	Solar Taurus 70-9702S	0.00071	0.230	4.00E-05	0.013	0	0.000	6.40E-06	0.002	0	0.000
31	Solar Centaur T-4700	0.00071	0.114	4.00E-05	0.006	0	0.000	6.40E-06	0.001	0	0.000
32B	Solar Centaur T-4000	0.00071	0.113	4.00E-05	0.006	0	0.000	6.40E-06	0.001	0	0.000
Total HAP			**12.81**		**1.66**		**0.09**		**1.62**		**0.51**

EPA-AP42 Tables 3.2-1 (7/00) & 3.1-3 (4/00) emission factors were used for HAP calculations for all units except Unit 28 formaldehyde.
Manufacturer's emission factor (HHV basis) was used for Unit 28 formaldehyde. Unit 28 HAP emissions are based in HHV.

Linam Ranch Gas Plant: External Combustion Source HAP Calculations

Emission Unit ID No.	Emission Unit Description	Fuel Use MMscf/yr	Benzene EF lb/MMscf	Benzene Emiss Rate TPY	Toluene EF lb/MMscf	Toluene Emiss Rate TPY	Formaldehyde EF lb/MMscf	Formaldehyde Emiss Rate TPY	Hexane EF lb/MMscf	Hexane Emiss Rate TPY
2 **	Amine Plant Flare	14.2	0.00E+00	0.000	0.00E+00	0.000	0.00E+00	0.000	0	0.000
4 **	ESD (Plant) Flare	14.2	0.00E+00	0.000	0.00E+00	0.000	0.00E+00	0.000	0	0.000
34	Furnace B	146.0	2.10E-03	0.000	3.40E-03	0.000	7.50E-02	0.005	1.8	0.131
36	Boiler 36	968.5	2.10E-03	0.001	3.40E-03	0.002	7.50E-02	0.036	1.8	0.872
37	Boiler 37	968.5	2.10E-03	0.001	3.40E-03	0.002	7.50E-02	0.036	1.8	0.872
Total HAPs				**0.002**		**0.003**		**0.073**		**1.743**

EPA-AP42 Table 1.4-3 emission factors (7/98) were used for HAP calculations.
** Pilot only during normal operation

Dehy Emissions Summary

	Flash Tank to Gathering (lb/hr)	Regenerator Vent to Atm (lb/hr)	50% contingency Total Dehy to Atm (lb/hr)	50% contingency Total Dehy to Atm (tpy)
VOC (lb/hr)	0.002	0.184	0.28	1.21
GHG (lb/hr)	0.717	0.093	0.14	0.61
BTEX (lb/hr)	0.001	0.090	0.14	0.59
Total HAP (lb/hr)	0.001	0.090	0.14	0.59

Dehy Process Simulation Model Output

Linam Ranch Regeneration Gas TEG Dehydration Skid
Flow Rates and Compositions of Vapor Streams to the Flare, LP Gathering System or Atmosphere
Basis: Regeneration Gas Composition 7224 dated November 10, 2010

			Flash Drum to Gathering	Flash Drum to Gathering	Regenerator Vent to atm	Regenerator Vent to atm
Flow Rate, MMSCFD			0.0004922		0.000151	
Temperature, F			97 F		130 F	
Molecular Weight			18.03		30.64	
lbmoles/hr			0.05405		0.01658	
		Mwi		lb/hri		lb/hri
Nitrogen	N2	28.014	0.111457	0.168760351	0.300604	0.139619685
Hydrogen Sulfide	H2S	34.082	0	0	0	0
Carbon Dioxide	CO2	44.010	0	0	0	0
Methane	CH4	16.042	0.826561	0.716686329	0.350708	0.093280037
Ethane	C2H6	30.069	0.041655	0.067698933	0.051296	0.025573314
Propane	C3H8	44.096	0.000312	0.000743617	0.000617	0.000451096
iso-Butane	C4H10	58.122	0.000004	1.2566E-05	0.000004	3.85465E-06
normal-Butane	C4H10	58.122	0.000016	5.02639E-05	0.000016	1.54186E-05
iso-Pentane	C5H12	72.149	0.000004	1.55986E-05	0.000003	3.58869E-06
normal-Pentane	C5H12	72.149	0.000005	1.94983E-05	0.000004	4.78492E-06
Cyclopentane	C5H10	70.133	0.000003	1.13721E-05	0.000005	5.81403E-06
normal-Hexane	C6H14	86.175	0.000002	9.31552E-06	0.000001	1.42878E-06
2-Methylpentane	C6H14	86.175	0.000001	4.65776E-06	0.000001	1.42878E-06
3-Methylpentane	C6H14	86.175	0.000001	4.65776E-06	0.000001	1.42878E-06
Methylcyclopentane	C6H12	84.160	0.000004	1.81954E-05	0.000006	8.37224E-06
Benzene	C6H6	78.112	0.000013	5.48854E-05	0.004275	0.00553654
Cyclohexane	C6H12	84.160	0.000005	2.27442E-05	0.000009	1.25584E-05
2-Methylhexane	C7H16	100.202	0.000001	5.41592E-06	0	0
3-Methylhexane	C7H16	100.202	0.000001	5.41592E-06	0	0
Dimethylcyclopentane	C7H14	98.186	0.000002	1.06139E-05	0.000002	3.25585E-06
n-Heptane	C7H16	100.202	0.000001	5.41592E-06	0	0
Methylcyclohexane	C7H14	98.186	0.000003	1.59209E-05	0.000004	6.5117E-06
Toluene	C7H8	92.138	0.000044	0.000219123	0.017611	0.02690341
2-Methylheptane	C8H18	114.229	0.000001	6.17408E-06	0	0
3-Methylheptane	C8H18	114.229	0.000001	6.17408E-06	0	0
Dimethylcyclohexane	C8H16	112.213	0.000001	6.06511E-06	0.000001	1.86049E-06
n-Octane	C8H18	114.229	0.000001	6.17408E-06	0	0
Ethylbenzene	C8H10	106.165	0.000012	6.88586E-05	0.006090	0.010719714
m-Xylene	C8H10	106.165	0.000018	0.000103288	0.011090	0.019520792
p-Xylene	C8H10	106.165	0.000012	6.88586E-05	0.007242	0.012747482
o-Xylene	C8H10	106.165	0.000012	6.88586E-05	0.008425	0.014829817
1-Nonene	C9H18	126.239	0.000001	6.82322E-06	0	0
n-Nonane	C9H20	128.255	0.000001	6.93218E-06	0	0
n-Decane	C10H22	142.282	0	0	0	0
n-Undecane	C11H24	156.308	0.000004	3.37938E-05	0	0
Carbonyl Sulfide	COS	60.075	0.000001	3.24705E-06	0.000083	8.26716E-05
Methyl Mercaptan	CH4S	48.108	0.000045	0.000117011	0.007419	0.005917622
Ethyl Mercaptan	C2H6S	62.134	0.000027	9.06753E-05	0.014274	0.014704814
Dimethyl Sulfide	C2H6S	62.134	0.000005	1.67917E-05	0.002540	0.002616662
Carbon Disulfide	CS2	76.141	0.000009	3.70388E-05	0.001430	0.001805257
I-Propyl Mercaptan	C3H8S	76.161	0.000004	1.6466E-05	0.003737	0.004718894
N-Propyl Mercaptan	C3H8S	76.161	0.000001	4.1165E-06	0.001438	0.001815834
Methyl Ethyl Sulfide	C3H8S	76.161	0.000001	4.1165E-06	0.001183	0.001493833
Thiophene	C4H4S	84.140	0.000003	1.36433E-05	0.004355	0.006075404
Dimethyl Sulfide	C2H6S	62.134	0.000014	4.70168E-05	0.031471	0.032420849
Diethyl Disulfide	C4H10S2	122.252	0.000004	2.64309E-05	0.009368	0.018988357
Trimethyl Thiophene	C7H10S	126.219	0.000001	6.82214E-06	0.001109	0.002320817
Water	H2O	18.015	0.019727	0.019208712	0.163571	0.048857623
Tri-Ethylene Glycol	C6H14O4	150.173	0.000002	1.62337E-05	0.000006	1.49392E-05

TK-VRU Emissions

Source: TK-VRU: (RVP 10) Seven (7) condensate tanks routed to a common VRU.

VOC Emissions for Condensate Tanks

VOCs		
106,656	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
12,062	lb/yr	
27.54	**lb/hr**	
6.03	**tpy**	

GHG Emissions per tank

0.001	**lb/hr**
0.004	**tpy**

*Maximum throughput for all five 750-bbl tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by five. Total working losses for the 400-bbl and 210-bbl condensate tanks are also included here.

DCP Midstream

TK-VRU -Tanks Flashing Emissions

Source: TK-VRU: (RVP 10) Five (5) fixed-roof vertical tanks routed to VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks		
Average	0.335	0.490	0.825	Mscfd	$V_{corrected} = V_{raw} * (T_{STP}/T_{site})*(P_{site}/P_{STP})$
Max	1.005	1.002	2.007	Mscfd	

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

Total Tanks Flow Rate

	Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass
	55,280.0	134,575.5	VOC, lb/yr.	% NMNEHC / specific vol. vapor
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass
	4	9	(methane + CO2) lb/yr'	% GHG / specific vol. vapor

TK-VRUTMP Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

General Information for Each Tank

Volume	1,500	bbl
Diameter	12	ft
Throughput	1800	bpd
Throughput	27,594,000	gallons/yr
Turnovers	438	turnovers/yr

VOC Emissions for Condensate Tanks

VOCs		
80,594	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
10,758	lb/yr	
24.56	**lb/hr**	
5.38	**tpy**	

GHG Emissions per tank

0.001	**lb/hr**
0.004	**tpy**

*Maximum throughput for these two tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by two.

DCP Midstream

TK-VRUTMP -Tanks Flashing Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks		
Average	0.335	0.490	0.825	Mscfd	$V_{corrected} = V_{raw} * (T_{STP}/T_{site})*(P_{site}/P_{STP})$
Max	1.005	1.002	2.007	Mscfd	

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

Total Tanks Flow Rate

	Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass
	55,280.0	134,575.5	VOC, lb/yr.	% NMNEHC / specific vol. vapor
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass
	4	9	(methane + CO2) lb/yr'	% GHG / specific vol. vapor

Turbine

Emission Unit:	28
Source Description:	Natural gas fueled turbine
Manufacturer:	Solar
Model:	T60-7800S

Fuel heat value	900	Btu/scf	LHV heat content of fuel gas
Heat rate	57.66	MMbtu/hr	Manufacturer's data (LHV)
	63.43	MMbtu/hr	Manufacturer's data (HHV)
Fuel consumption:	64.1	Mscf/hr	Manufacturer's heat rate / fuel heat value
Annual fuel usage:	561.2	MMscf/yr	Manufacturer's heat rate / fuel heat value * 8760 hrs

Emission Calculations

Uncontrolled Emissions

NOx	CO	VOC[1]	SO_2[2]	PM		
3.47	3.52	2.01			lb/hr	Mfg Data; full load @ 0 degrees F
			0.915		lb/hr	Note 1
				0.021	lb/MMBtu	Mfg recommended emission factor (HHV basis)
3.470	3.520	2.014	0.915	1.332	lb/hr	Hourly emission rate
15.199	15.418	8.821	4.007	5.834	tpy	Annual emission rate (8760 hrs/yr)

Notes

[1] VOC emissions set equal to unburned hydrocarbon (UHC) emissions

[2] SO_2 emissions based on fuel sulfur content of 50 gr S/Mscf, or 0.00714 lb S/Mscf

0.007146 lb S/Mscf * fuel consumption (Mscf/hr) * 64 lb SO_2/32 lb S = lb/hr SO_2

Exhaust Parameters

Exhaust temp (Tstk):	890	°F	Manufacturer data
Stack height:	35.78	ft	Design
Stack diameter:	3.83	ft	Design
Exhaust flow:	163,305	lb/hr	Manufacturer data
	28.58	MW; nominal exhaust for natural gas combustion	
	3647	ft MSL	Site Elevation
	12.86	psia	Pressure at Elevation
	1787.4	acfs; Ideal gas law, nominal MW and stack	
Exhaust velocity:	154.9	ft/sec	Exhaust flow ÷ stack area

Linam Ranch Gas Plant
North Cooling Tower Emissions

	Cooling Water Recirculation Rate (gpm)	Drift Rate fraction of Circulating Flow %	Total Drift Mass lb/min	% Drift Mass escape from Facility Boundary %	Drift Mass Leaving Site lb/min	Circulating Water Total Dissolved Solids (mg/l)	Circulating Water Total Dissolved Solids (ppm_w)
Note	1	2	3	4	5	6	
Cooling Tower	2,045	0.02%	3	31.30%	1.1	5,000	5,000

	Hourly Uncontrolled Particulate Emissions (lb/hr)	Annual Uncontrolled Particulate Emissions (tpy)	Hourly Uncontrolled TSP Emissions (lb/hr)	Annual Uncontrolled TSP Emissions (tpy)	Hourly Uncontrolled PM_{10} Emissions (lb/hr)	Annual Uncontrolled PM_{10} Emissions (tpy)
Note	7	7	8	8	8	8
Cooling Tower	0.32	1.40	0.30	1.31	0.10	0.42

Notes

1 Cooling Tower Water Recirc rate based on site data
2 Uncontrolled circulating water flow percent drift estimated based on AP-42 factors for induced draft cooling towers (Table 13.4-1)
3 Total Drift Mass = Recirculation rate * Drift Rate Fraction * Drift Density (8.34 lb/gal)
4 Facility boundary located 689 ft from Cooling Tower; 68.7% of drift mass retained on site (Figure 8, "Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift, Volume 1. Technical Report," EPA)
5 Drift mass leaving site = Total Drift Mass * % Drift Mass escape from facility boundary
6 TDS measured at 5000 mg/l as a conservative measure.
7 Total particulate emission calculated using procedure described in Section 13.4 of AP-42 (01/95), Wet Cooling Towers.
PM = Water Circulation Rate * Drift Rate* Percent drift mass escape * TDS
Particulate Hourly Emissions:

$$\frac{2{,}045\ \text{gal}}{\text{min}} \cdot \frac{60\ \text{min}}{\text{hr}} \cdot \frac{0.0002\ \text{gal drift}}{\text{gal recirculation}} \cdot 31.30\% \cdot \frac{8.34\ \text{lb drift}}{\text{gal drift}} \cdot \frac{5000\ \text{lb PM}}{10^6\ \text{lb drift}} = \frac{0.32\ \text{lb}}{\text{hr}}$$

Particulate annual emissions = Hourly emissions (lb/hr) * 8760 (hrs/yr) / 2000 (lb/ton)

8 Particle size distribution based on the following distribution (from Frisbie data)

Particle Distribution

Particle	Mass % of Total Particulates	
TSP (PM 30)	93.5	Frisbie data
PM10	30.0	Frisbie data

Facility TDS 5000

EPRI Droplet			Particle Mass		Solid Particle		
Diameter (µm)	Droplet Volume (µm3)	Droplet Mass (µg)	(Solids) (µg)	Solid Particle Volume (µm3)	Diameter (µm)	EPRI % Mass Smaller	Interpolated Particulate Fraction based on facility TDS 5000
10	524	5.24E-04	4.03E-06	1.83	1.518	0	1.31476795
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196	2.62953589
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226	3.94430384
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514	5.25907179
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816	6.57383974
60	113097	1.13E-01	8.71E-04	395.84	9.11	5.702	7.88860768
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348	9.20337563
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812	11.8329115
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509	14.4624474
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023	17.0919833
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012	19.7215192
180	3053628	3.05E+00	2.35E-02	10687.7	27.329	91.032	23.665823
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468	27.6101269
240	7238229	7.24E+00	5.57E-02	25333.8	36.439	94.091	31.5544307
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689	35.4987346
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288	39.4430384
350	22449298	2.24E+01	1.73E-01	78572.54	53.14	97.011	46.0168782
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.34	52.5907179
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071	59.1645576
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071	65.7383974
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100	78.8860768
						2.5	0.17668934
						10	29.9712388
						30	93.4513837
						PM2.5/Total	
						PM10/Total	
						TSP/Total	

Linam Ranch Gas Plant
South Cooling Tower Emissions

	Cooling Water Recirculation Rate (gpm)	Drift Rate fraction of Circulating Flow %	Total Drift Mass lb/min	% Drift Mass escape from Facility Boundary %	Drift Mass Leaving Site lb/min	Circulating Water Total Dissolved Solids (mg/l)	Circulating Water Total Dissolved Solids (ppm_w)
Note	1	2	3	4	5	6	
Cooling Tower	3,200	0.02%	5	31.30%	1.7	5,000	5,000

	Hourly Uncontrolled Particulate Emissions (lb/hr)	Annual Uncontrolled Particulate Emissions (tpy)	Hourly Uncontrolled TSP Emissions (lb/hr)	Annual Uncontrolled TSP Emissions (tpy)	Hourly Uncontrolled PM_{10} Emissions (lb/hr)	Annual Uncontrolled PM_{10} Emissions (tpy)
Note	7	7	8	8	8	8
Cooling Tower	0.50	2.20	0.47	2.05	0.15	0.66

Notes

1 Cooling Tower Water Recirc rate based on site data
2 Uncontrolled circulating water flow percent drift estimated based on AP-42 factors for induced draft cooling towers (Table 13.4-1)
3 Total Drift Mass = Recirculation rate * Drift Rate Fraction * Drift Density (8.34 lb/gal)
4 Facility boundary located 737 ft from Cooling Tower; 68.7% of drift mass retained on site (Figure 8, "Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift, Volume 1. Technical Report," EPA)
5 Drift mass leaving site = Total Drift Mass * % Drift Mass escape from facility boundary
6 TDS measured at 5,000 ppm as a conservative measure. Actual snapshot of concentration indicates TDS level of ~2,500 ppm.
7 Total particulate emission calculated using procedure described in Section 13.4 of AP-42 (01/95), Wet Cooling Towers.
PM = Water Circulation Rate * Drift Rate* Percent drift mass escape * TDS
Particulate Hourly Emissions:

$$\frac{3{,}200\ \text{gal}}{\text{min}} \cdot \frac{60\ \text{min}}{\text{hr}} \cdot \frac{0.0002\ \text{gal drift}}{\text{gal recirculation}} \cdot 31.30\% \cdot \frac{8.34\ \text{lb drift}}{\text{gal drift}} \cdot \frac{5000\ \text{lb PM}}{10^6\ \text{lb drift}} = \frac{0.50\ \text{lb}}{\text{hr}}$$

Particulate annual emissions = Hourly emissions (lb/hr) * 8760 (hrs/yr) / 2000 (lb/ton)

8 Particle size distribution based on the following distribution (from Frisbie data)

Particle Distribution

Particle	Mass % of Total Particulates	
TSP (PM 30)	93.5	Frisbie data
PM10	30.0	Frisbie data

Facility TDS 5000

EPRI Droplet			Particle Mass		Solid Particle		
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20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196	2.62953589
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40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514	5.25907179
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816	6.57383974
60	113097	1.13E-01	8.71E-04	395.84	9.11	5.702	7.88860768
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348	9.20337563
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210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468	27.6101269
240	7238229	7.24E+00	5.57E-02	25333.8	36.439	94.091	31.5544307
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600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100	78.8860768
						2.5	0.17668934
						10	29.9712388
						30	93.4513837
						PM2.5/Total	
						PM10/Total	
						TSP/Total	

Methanol Tanks

Emission units: TK-20, TK-21, TK-27, TK-77, TK-1370
Source Description: 500 - 7050 gallon horizontal or vertical methanol tanks

General Tank Information

Tank	**TK-20**	**TK-21**	**TK-27**	**TK-77**	**TK-1370**		
Volume	1,130	660	7,050	500	500	gallon	
Length (shell)	6.5	5.5	12	5.25	5.25	ft	
Diameter	5.5	4.5	10	4	4	ft	
Throughput	13560	7920	29375	6000	6000	gal/mo	
Throughput	162720	95040	352500	72000	72000	gal/yr	bbl/mo * 12 mo/yr
Turnovers	144.0	144.0	50.0	144.0	144.0	turnovers/yr	bbl/yr / Volume
Turnovers	172.8	172.8	60.0	172.8	172.8	maximum turnovers/yr	Turnovers x 1.2 (per 40 CFR 63.760 (subpart HH)
Throughput	535.0	312.5	1158.9	236.7	236.7	maximum gal/day	Maximum turnovers * Volume / 365 days/year

VOC Emissions

	VOC	**VOC**	**VOC**	**VOC**	**VOC**		
	234.1	138.0	968.6	105.7	105.7	lb/yr	TANKS 4.09 d
	0.12	0.07	0.48	0.05	0.05	tpy	tpy = lb/hr x [(8760hr/yr) / (2000lb/ton)])
	N/A	N/A	N/A	N/A	N/A	tpy	No flashing losses from this tank at atmospheric conditions
Total VOCs	0.12	0.07	0.48	0.05	0.05	tpy	Working and Breathing + Flash
	0.03	0.02	0.11	0.01	0.01	lb/hr	tpy * 2000 lb/ton / 8760 hrs/yr

Existing Updated Steady State Calculations

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine Scenarios

Scenario A

2 TLA Engines (Units 6+7) and 1 HBA Engine (Unit 8, 9, 10, or 11) for 8760 hr/yr

Unit 6
Operating 8760 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	39.28658039	172.0752
Carbon Monoxide	8760	19.84170727	86.90668
VOC	8760	3.051213651	13.36432
Formaldehyde	8760	0.9785856	4.286205
Sulfur Dioxide	8760	0.010424064	0.045657
PM10	8760	0.85643968	3.751206

Unit 7
Operating 8760 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	39.28658	172.0752221
Carbon Monoxide	8760	19.84171	86.90667784
VOC	8760	3.051214	13.36431579
Formaldehyde	8760	0.978586	4.286204928
Sulfur Dioxide	8760	0.010424	0.0456574
PM10	8760	0.85644	3.751205798

Unit 8,9,10 or 11
Operating 8760 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	47.48561	207.987
Carbon Monoxide	8760	23.51935	103.0147
VOC	8760	6.452457	28.26176
Formaldehyde	8760	0.654414	2.866332
PM10	8760	0.572612	2.50804
Sulfur Dioxide	8760	0.006995	0.030637

Total Potential Emission Rates for Scenario A

Pollutant	(tpy)
Nitrogen Oxides	552.1374369
Carbon Monoxide	276.8280897
VOC	54.99039353
Formaldehyde	11.43874146
Sulfur Dioxide	0.121951316
PM10	10.01045175

Scenario B

1 TLA Engine (Unit 6 or 7) and 2 HBA Engines (Units 8, 9, 10, or 11) for 3400 hr/yr
2 TLA Engines (Unit 6 +7) and 1 HBA Engine (Unit 8, 9, 10, or 11) for 5360 hr/yr

Unit 6 or 7
Operating 3400 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	15.24821613	66.78719
Carbon Monoxide	8760	7.70111926	33.7309
VOC	8760	1.184261006	5.187063
Formaldehyde	8760	0.379816329	1.663596
Sulfur Dioxide	8760	0.00404587	0.017721
PM10	8760	0.332408095	1.455947

Unit 8,9,10 or 11
Operating 3400 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	18.43049	80.7255451
Carbon Monoxide	8760	9.128513	39.98288763
VOC	8760	2.504378	10.96917701
Formaldehyde	8760	0.253996	1.112503135
PM10	8760	0.222247	0.973440243
Sulfur Dioxide	8760	0.002715	0.011890885

Unit 8,9,10 or 11
Operating 3400 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	18.43049	80.72555
Carbon Monoxide	8760	9.128513	39.98289
VOC	8760	2.504378	10.96918
Formaldehyde	8760	0.253996	1.112503
PM10	8760	0.222247	0.97344
Sulfur Dioxide	8760	0.002715	0.011891

Unit 6
Operating 5360 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	24.03836426	105.288
Carbon Monoxide	8760	12.14058801	53.17578
VOC	8760	1.866952645	8.177253
Formaldehyde	8760	0.598769271	2.622609
Sulfur Dioxide	8760	0.006378194	0.027936
PM10	8760	0.524031585	2.295258

Unit 7
Operating 5360 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	24.03836	105.2880355
Carbon Monoxide	8760	12.14059	53.17577548
VOC	8760	1.866953	8.177252585
Formaldehyde	8760	0.598769	2.622609408
Sulfur Dioxide	8760	0.006378	0.027936492
PM10	8760	0.524032	2.295258342

Unit 8,9,10 or 11
Operating 5360 hr/yr

Pollutant	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)
Nitrogen Oxides	8760	29.05513	127.2614
Carbon Monoxide	8760	14.39083	63.03185
VOC	8760	3.948079	17.29258
Formaldehyde	8760	0.400417	1.753828
PM10	8760	0.350365	1.5346
Sulfur Dioxide	8760	0.00428	0.018746

Total Potential Emission Rates for Scenario B

Pollutant	(tpy)
Nitrogen Oxides	566.0757953
Carbon Monoxide	283.080075
VOC	60.77250733
Formaldehyde	10.88764908
Sulfur Dioxide	0.116121292
PM10	9.52794454

DCP Midstream Services, LP- Linam Ranch Gas Plant

Summary of Steady State Emissions

Uncontrolled Emissions

Unit #	Description	NO_x		CO		VOC		SO_2		TSP		PM_{10}		$PM_{2.5}$		H_2S	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
2	E. Amine Plnt Acid Gas Flare	0.079	0.35	0.43	1.9	0.16	0.72	0.0083	0.036	-	-	-	-	-	-	-	-
4A	ESD Flare	0.21	0.94	1.2	5.1	0.44	1.9	0.023	0.099	-	-	-	-	-	-	-	-
6	RICE, Clark TLA-6	39		20		3.1		0.010		0.86		0.86		0.86		-	
7	RICE Clark TLA-6	39	566	20	283	3.1	61	0.010	0.12	0.86	10	0.86	10	0.86	10	-	-
8,9,10, or 11	RICE, Clark HBA-6	47		24		6.5		0.0070		0.57		0.57		0.57		-	
28	Solar T-60	3.5	15	3.5	15	2.0	8.8	0.91	4.0	1.3	5.8	1.3	5.8	1.33	5.8	-	-
29	Solar T-70-10302	12	52	9.5	41	0.33	1.4	0.26	1.2	0.51	2.2	0.51	2.2	0.51	2.2	-	-
30	Solar T-70-9702S	11	49	9.0	40	0.31	1.4	0.25	1.1	0.49	2.1	0.49	2.1	0.49	2.1	-	-
31	Solar T-4700	26	114	5.0	22	0.35	1.5	0.13	0.55	0.24	1.1	0.24	1.1	0.24	1.1	-	-
32B	Solar T-4700	24	104	4.4	19	2.5	11	0.12	0.54	0.24	1.0	0.24	1.0	0.24	1.0	-	-
34	Regenerative Heater	1.7	7.3	1.4	6.1	0.092	0.40	0.010	0.04	0.13	0.044	0.13	0.044	0.13	0.0	-	-
36	Rentech Boiler	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-
37	Rentech Boiler	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-
TK-2	11.9 bbl gasoline tank	-	-	-	-	0.16	0.70	-	-	-	-	-	-	-	-	-	-
AGI Flare	AGI Flare	0.079	0.35	0.43	1.9	0.16	0.72	0.0083	0.036	-	-	-	-	-	-	-	-
AM-10	Amine Unit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	Glycol Contactor Dehy & Mol Sieve Dehy.	-	-	-	-	0.0055	0.024	-	-	-	-	-	-	-	-	-	-
TK-VRU	7 condensate tanks VRU controlled	-	-	-	-	28	6.0	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	7 condensate tanks VRUTMP controlled	-	-	-	-	25	5	-	-	-	-	-	-	-	-	-	-
CT-1	South Cooling Tower	-	-	-	-	-	-	-	-	0.47	2.1	0.15	0.66	-	-	-	-
CT-2	North Cooling Tower	-	-	-	-	-	-	-	-	0.30	1.3	0.10	0.42	-	-	-	-
FUG	Fugitive Leaks	-	-	-	-	18	77	-	-	-	-	-	-	-	-	0.11	0.48
TOTAL		**215**	**958**	**117**	**517**	**66**	**178**	**1.9**	**8.3**	**7.7**	**33**	**7.2**	**31**	**6.9**	**30**	**0.11**	**0.48**

"*" Denotes hourly emission limits are not applicable for this unit. Any hourly emissions shown for this unit are for informational purposes only.

"-" Denotes emissions of this pollutant are not expected.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Summary of Steady State Emissions

Uncontrolled Emissions

Unit #	Description	CO_2e		Formaldehyde		Acetaldehyde		Acrolein		Hexane		Total HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
2	E. Amine Plnt Acid Gas Flare	*	621	-	-	-	-	-	-	-	-	-	-
4A	ESD Flare	*	1,680	-	-	-	-	-	-	-	-	-	-
6	RICE, Clark TLA-6	*	10,381	0.98	4.3	0.14	0.60	0.14	0.60	0.0079	0.035	1.4	6.0
7	RICE Clark TLA-6	*	10,381	0.98	4.3	0.14	0.60	0.14	0.60	0.0079	0.035	1.4	6.0
8,9,10, or 11	RICE, Clark HBA-6	*	6,941	0.65	2.9	0.092	0.40	0.092	0.40	0.0053	0.023	0.91	4.0
28	Solar T-60	*	33,754	0.15	0.67	0.0025	0.011	0.00041	0.0018	0.00E+00	0.00E+00	0.17	0.75
29	Solar T-70-10302	*	43,558	0.055	0.24	0.0031	0.014	0.00050	0.0022	0.00E+00	0.00E+00	0.077	0.34
30	Solar T-70-9702S	*	41,490	0.053	0.23	0.0030	0.013	0.00047	0.0021	0.00E+00	0.00E+00	0.074	0.32
31	Solar T-4700	*	21,543	0.026	0.11	0.0015	0.0064	0.00024	0.0010	0.00E+00	0.00E+00	0.037	0.16
32B	Solar T-4700	*	21,197	0.026	0.11	0.0015	0.0064	0.00024	0.0010	0.00E+00	0.00E+00	0.037	0.16
34	Regenerative Heater	*	8,781	0.0013	0.0055	-	-	-	-	0.030	0.13	0.031	0.14
36	Rentech Boiler	*	58,247	0.0083	0.036	-	-	-	-	0.20	0.87	0.21	0.91
37	Rentech Boiler	*	58,247	0.0083	0.036	-	-	-	-	0.20	0.87	0.21	0.91
TK-2	11.9 bbl gasoline tank	-	-	-	-	-	-	-	-	-	-	-	-
AGI Flare	AGI Flare	*	621	-	-	-	-	-	-	-	-	-	-
AM-10	Amine Unit	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	Glycol Contactor Dehy & Mol Sieve Dehy.	-	-	-	-	-	-	-	-	-	-	0.14	0.59
TK-VRU	7 condensate tanks VRU controlled	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	7 condensate tanks VRUTMP controlled	-	-	-	-	-	-	-	-	-	-	-	-
CT-1	South Cooling Tower	-	-	-	-	-	-	-	-	-	-	-	-
CT-2	North Cooling Tower	-	-	-	-	-	-	-	-	-	-	-	-
FUG	Fugitive Leaks	-	292	-	-	-	-	-	-	5.1	23	5.2	23
TOTAL		**-**	**317,731**	**2.9**	**13**	**0.38**	**1.7**	**0.37**	**1.6**	**5.6**	**24**	**9.8**	**43**

"*" Denotes hourly emission limits are not applicable for this unit. Any hourly emissions shown for this unit are for informational purposes only.

"-" Denotes emissions of this pollutant are not expected.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Summary of Steady State Emissions

Controlled Emissions

Unit #	Description	NO_x		CO		VOC		SO_2		TSP		PM_{10}		$PM_{2.5}$		H_2S	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
2	E. Amine Plnt Acid Gas Flare	0.079	0.35	0.43	1.9	0.16	0.72	0.0083	0.036	-	-	-	-	-	-	-	-
4A	ESD Flare	0.21	0.94	1.2	5.1	0.44	1.9	0.023	0.099	-	-	-	-	-	-	-	-
6	RICE, Clark TLA-6	39		20		3.1		0.010		0.86		0.86		0.86		-	-
7	RICE Clark TLA-6	39	566	20	283.1	3.1	61	0.010	0.12	0.86	10	0.86	10	0.86	10	-	-
8,9,10, or 11	RICE, Clark HBA-6	47		24		6.5		0.0070		0.57		0.57		0.57		-	-
28	Solar T-60	3.5	15	3.5	15	2.0	8.8	0.91	4.0	1.3	5.8	1.3	5.8	1.3	5.8	-	-
29	Solar T-70-10302	12	52	9.5	41	0.33	1.4	0.26	1.2	0.51	2.2	0.51	2.2	0.51	2.2	-	-
30	Solar T-70-9702S	11	49	9.0	40	0.31	1.4	0.25	1.1	0.49	2.1	0.49	2.1	0.49	2.1	-	-
31	Solar T-4700	26	114	5.0	22	0.35	1.5	0.13	0.55	0.24	1.1	0.24	1.1	0.24	1.1	-	-
32B	Solar T-4700	24	104	4.4	19	2.5	11	0.12	0.54	0.24	1.0	0.24	1.0	0.24	1.0	-	-
34	Regenerative Heater	1.7	7.3	1.4	6	0.092	0.40	0.010	0.04	0.13	0.044	0.13	0.044	0.13	0.044	-	-
36	Rentech Boiler	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-
37	Rentech Boiler	5.5	24	9.3	41	0.61	2.7	0.066	0.29	0.84	3.7	0.84	3.7	0.84	3.7	-	-
TK-2	11.9 bbl gasoline tank	-	-	-	-	0.16	0.70	-	-	-	-	-	-	-	-	-	-
AGI Flare	AGI Flare	0.079	0.35	0.43	1.9	0.16	0.72	0.0083	0.04	-	-	-	-	-	-	-	-
AM-10	Amine Unit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	Glycol Contactor Dehy & Mol Sieve Dehy.	-	-	-	-	0.0055	0.024	-	-	-	-	-	-	-	-	-	-
TK-VRU	7 condensate tanks VRU controlled	-	-	-	-	28	6.0	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	7 condensate tanks VRUTMP controlled	-	-	-	-	25	5.4	-	-	-	-	-	-	-	-	-	-
CT-1	South Cooling Tower	-	-	-	-	-	-	-	-	0.47	2.1	0.15	0.66	-	-	-	-
CT-2	North Cooling Tower	-	-	-	-	-	-	-	-	0.30	1.3	0.096	0.42	-	-	-	-
FUG	Fugitive Leaks	-	-	-	-	18	77	-	-	-	-	-	-	-	-	0.11	0.48
TOTAL		**215**	**958**	**117**	**517**	**66**	**178**	**1.9**	**8.3**	**7.7**	**33**	**7.2**	**31**	**6.9**	**30**	**0.11**	**0.48**

"*" Denotes hourly emission limits are not applicable for this unit. Any hourly emissions shown for this unit are for informational purposes only.

"-" Denotes emissions of this pollutant are not expected.

1 warming potential of CH4 is 21 times greater than CO2

2 warming potential of N2O is 310 times greater than CO2

DCP Midstream Services, LP- Linam Ranch Gas Plant

Summary of Steady State Emissions

Controlled Emissions

Unit #	Description	CO_2e		Formaldehyde		Acetaldehyde		Acrolein		Hexane		Total HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
2	E. Amine Plnt Acid Gas Flare	*	621	-	-	-	-	-	-	-	-	-	-
4A	ESD Flare	*	1,680	-	-	-	-	-	-	-	-	-	-
6	RICE, Clark TLA-6	*	10,381	1.0	4.3	0.14	0.60	0.14	0.60	0.0079	0.035	1.4	6.0
7	RICE Clark TLA-6	*	10,381	1.0	4.3	0.14	0.60	0.14	0.60	0.0079	0.035	1.4	6.0
8,9,10, or 11	RICE, Clark HBA-6	*	6,941	0.65	2.9	0.092	0.40	0.092	0.40	0.0053	0.023	0.91	4.0
28	Solar T-60	*	33,754	0.15	0.67	0.0025	0.011	0.00041	0.0018	0.00E+00	0.00E+00	0.17	0.75
29	Solar T-70-10302	*	43,558	0.055	0.24	0.0031	0.014	0.00050	0.0022	0.00E+00	0.00E+00	0.077	0.34
30	Solar T-70-9702S	*	41,490	0.053	0.23	0.0030	0.013	0.00047	0.0021	0.00E+00	0.00E+00	0.074	0.32
31	Solar T-4700	*	21,543	0.026	0.11	0.0015	0.006	0.00024	0.0010	0.00E+00	0.00E+00	0.037	0.16
32B	Solar T-4700	*	21,197	0.026	0.11	0.0015	0.006	0.00024	0.0010	0.00E+00	0.00E+00	0.037	0.16
34	Regenerative Heater	*	8,781	0.0013	0.0055	-	-	-	-	0.030	0.1314	0.031	0.14
36	Rentech Boiler	*	58,247	0.0083	0.036	-	-	-	-	0.199	0.8716	0.21	0.91
37	Rentech Boiler	*	58,247	0.0083	0.036	-	-	-	-	0.199	0.8716	0.21	0.91
TK-2	11.9 bbl gasoline tank	-	-	-	-	-	-	-	-	-	-	-	-
AGI Flare	AGI Flare	*	621	-	-	-	-	-	-	-	-	-	-
AM-10	Amine Unit	-	-	-	-	-	-	-	-	-	-	-	-
DH-10	Glycol Contactor Dehy & Mol Sieve Dehy.	-	-	-	-	-	-	-	-	-	-	0.14	0.59
TK-VRU	7 condensate tanks VRU controlled	-	-	-	-	-	-	-	-	-	-	-	-
TK-VRUTMP	7 condensate tanks VRUTMP controlled	-	-	-	-	-	-	-	-	-	-	-	-
CT-1	South Cooling Tower	-	-	-	-	-	-	-	-	-	-	-	-
CT-2	North Cooling Tower	-	-	-	-	-	-	-	-	-	-	-	-
FUG	Fugitive Leaks	-	291.78	-	-	-	-	-	-	5.1	23	5.2	23
TOTAL		**-**	**317,731**	**2.9**	**13**	**0.38**	**1.7**	**0.37**	**1.6**	**5.6**	**24**	**9.8**	**43**

"*" Denotes hourly emission limits are not applicable for this unit. Any hourly emissions shown for this unit are for informational purposes only.

"-" Denotes emissions of this pollutant are not expected.

GHG Summary Page

Facility: Linam Ranch Gas Plant

Emission Totals

Emission Unit #	Description	CH_4[1] TPY	CO_2 TPY	N_2O[2] TPY	CO_2e TPY
2	Fuel/Residue Gas Combustion	0.98	596	1.7E-05	621
4A	Fuel/Residue Gas Combustion	2.7	1,614	4.6E-05	1,680
6	Natural Gas Combustion	0.20	10,370	2.0E-02	10,381
7	Natural Gas Combustion	0.20	10,370	2.0E-02	10,381
8, 9, 10, or 11	Natural Gas Combustion	0.13	6,933	1.3E-02	6,941
28	Natural Gas Combustion	0.64	33,719	6.4E-02	33,754
29	Natural Gas Combustion	0.82	43,513	8.2E-02	43,558
30	Natural Gas Combustion	0.78	41,447	7.8E-02	41,490
31	Natural Gas Combustion	0.41	21,521	4.1E-02	21,543
32B	Natural Gas Combustion	0.40	21,175	4.0E-02	21,197
34	Natural Gas Combustion	0.17	8,772	1.7E-02	8,781
36	Natural Gas Combustion	1.1	58,187	1.1E-01	58,247
37	Natural Gas Combustion	1.1	58,187	1.1E-01	58,247
AGI Flare	Fuel/Residue Gas Combustion	0.98	596	1.7E-05	621
Total					**317,440**

1 warming potential of CH4 is 21 times greater than CO2

2 warming potential of N2O is 310 times greater than CO2

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): Units 6 and 7
Source description: 2000 HP RICE
Manufacturer: Clark
Maximum fuel usage: 172.6 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{172.60 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 9407 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{172.60 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 1.8E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{172.60 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 1.8E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$

2 $CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF$ (Eq. C-8)

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

Furnace GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 8, 9, 10, or 11
Source description: 1267 HP RICE
Manufacturer: Clark
Maximum fuel usage: 115.4 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{115.40 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 6290 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{115.40 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 1.2E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{115.40 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 1.2E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$

2 $CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF$ (Eq. C-8)

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Boiler GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 28
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 561.2 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{561.22 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 30589 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{561.22 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 5.8E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{561.22 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 5.8E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$

2 $CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF$ (Eq. C-8)

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 29
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 724.24 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{724.24 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 39474 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{724.24 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 7.4E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{724.24 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 7.4E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $$CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$$

2 $$CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF \quad \text{(Eq. C-8)}$$

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 30
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 689.85 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{689.85 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 37600 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{689.85 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 7.1E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{689.85 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 7.1E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $$CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$$

2 $$CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF \quad \text{(Eq. C-8)}$$

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 31
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 358.2 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{358.20 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 19524 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{358.20 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 3.7E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{358.20 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 3.7E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $$CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$$

2 $$CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF \quad \text{(Eq. C-8)}$$

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 32B
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 352.44 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{352.44 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 19210 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{352.44 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 3.6E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{352.44 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 3.6E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $$CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$$

2 $$CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF \quad \text{(Eq. C-8)}$$

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 34
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 146 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{146.00 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 7958 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{146.00 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 1.5E-01 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{146.00 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 1.5E-02 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$

2 $CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF$ (Eq. C-8)

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Engine GHG Calculation

40 CFR 98 Subpart C TIER 1

Emission unit(s): 36 and 37
Source description: Turbine
Manufacturer: Solar
Maximum fuel usage: 968.47 MMscf/yr

CO_2 Calculation[1] (Eq C-1)

Click here to view Table C-1 to Subpart C of Part 98.

$$CO_2 = 1 \times 10^{-3} \times \frac{968.47 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{53.02 \text{ kg CO2}}{\text{MMbtu}}$$

CO_2 = 52786 tonnes CO_2 / yr

Fuel usage carried forward from engine calculations in previous permit application.

CH_4 Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$CH_4 = 1 \times 10^{-3} \times \frac{968.47 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-3} \text{ kg } CH_4}{\text{MMbtu}}$$

CH_4 = 1.0E+00 tonnes CH_4 / yr

Fuel usage carried forward from engine calculations in previous permit application.

N_2O Calculation[2] (Eq C-8)

Click here to view Table C-1 to Subpart C of Part 98
Click here to view Table C-2 to Subpart C of Part 98

$$N_2O = 1 \times 10^{-3} \times \frac{968.47 \text{ MMscf}}{\text{yr}} \times \frac{1028 \text{ MMbtu}}{\text{MMscf}} \times \frac{1 \times 10^{-4} \text{ kg } N_2O}{\text{MMbtu}}$$

N_2O = 1.0E-01 tonnes N_2O / yr

Fuel usage carried forward from engine calculations in previous permit application.

Notes:

1 $$CO_2 = 1 \times 10^{-3} * Fuel * HHV * EF$$

2 $$CH_4 \text{ or } N_2O = 1 \times 10^{-3} * Fuel * HHV * EF \quad \text{(Eq. C-8)}$$

Where:
CH_4 or N_2O = Annual CH_4 or N_2O emissions from the combustion of a particular type of fuel (metric tons).
Fuel = Mass or volume of the fuel combusted, either from company records or directly measured by a fuel flow meter, as applicable (mass or volume per year).
HHV = Default high heat value of the fuel from Table C–1 of this subpart (mmBtu per mass or volume).
EF = Fuel-specific default emission factor for CH_4 or N_2O, from Table C–2 of this subpart (kg CH_4 or N_2O per mmBtu).
1×10^{-3} = Conversion factor from kilograms to metric tons.

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TABLE C–1 TO SUBPART C OF PART 98—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	103.54
Bituminous	24.93	93.40
Subbituminous	17.25	97.02
Lignite	14.21	96.36
Coke	24.80	102.04
Mixed (Commercial sector)	21.39	95.26
Mixed (Industrial coking)	26.28	93.65
Mixed (Industrial sector)	22.35	93.91
Mixed (Electric Power sector)	19.73	94.38
Natural gas	mmBtu/scf	kg CO_2/mmBtu
Pipeline (Weighted U.S. Average)	1.028×10^{-3}	53.02
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
Still Gas	0.143	66.72
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)	0.092	62.98
Propane	0.091	61.46
Propylene	0.091	65.95
Ethane	0.096	62.64
Ethylene	0.100	67.43
Isobutane	0.097	64.91
Isobutylene	0.103	67.74
Butane	0.101	65.15
Butylene	0.103	67.73
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.83
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02
Petrochemical Feedstocks	0.129	70.97

Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.49
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	74.49
Fossil fuel-derived fuels (solid)	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste [1]	9.95	90.7
Tires	26.87	85.97
Fossil fuel-derived 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
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals	15.38	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	25.83	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Biogas (Captured methane)	0.841×10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol (100%)	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1] Allowed only for units that do not generate steam and use Tier 1.

TABLE C–1 TO SUBPART C—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
* * * * *	*	*
(Weighted U.S. Average)	1.028×10^{-3}	53.02
* * * * *	*	*
Used Oil	0.135	74.00
* * * * *	*	*
Ethane	0.069	62.64
Ethanol	0.084	68.44
* * * * *	*	*
Other fuels (solid)	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95 [1]	90.7
* * * * *	*	*
Plastics	38.00	75.00
Petroleum Coke	30.00	102.41
Other fuels (gaseous)	mmBtu/scf	kg CO_2/mmBtu
* * * * *	*	*
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas [2]	1.388×10^{-3}	59.00
* * * * *	*	*
Ethanol	0.084	68.44
Biodiesel	0.128	73.84
* * * * *	*	*

[1] 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.

[2] 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.

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^{-2}	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}
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)	3.2×10^{-02}	4.2×10^{-03}
Biogas	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.

[1] Allowed only for units that do not generate steam and use Tier 1.

TABLE C–2 TO SUBPART C—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}
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)	3.2×10^{-02}	4.2×10^{-03}
Biogas	3.2×10^{-03}	6.3×10^{-04}

TABLE C–2 TO SUBPART C—DEFAULT CH_4 AND N_2O EMISSION FACTORS FOR VARIOUS TYPES OF FUEL—Continued

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
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.

DCP Midstream Services, LP- Linam Ranch Gas Plant

Flare

Emission Unit: 2
Source Description: Amine Flare

Fuel Data

Flare Pilot

	1000	Btu/scf	Field gas heating value	Pipeline gas HHV, nominal
	500	scf/hr	Fuel Usage Rate	Engineering judgement
	0.50	Mscf/hr	Fuel Usage Rate	scf/hr / 1e3
	0.00050	MMscf/hr	Fuel Usage Rate	scf/hr / 1e6
	0.50	MMBtu/hr	Flare Pilot Heat Input	Gas heat value * Fuel usage rate/1e6
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)	
	0.67	Mscf/hr	Mscf/d / 24 hr/day	
	0.00067	MMscf/hr	Mscf/hr / 1000	
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.	
	0.67	MMBtu/hr	MMscf/hr * Btu/scf	
Total	1.17	Mscf/hr	Fuel Usage Rate	pilot + purge
	1.2	MMBtu/hr	Total heat input	pilot + purge

Emission Rates

Flare Pilot & Purge	NOx	CO	VOC	SO2	Units	
	0.068	0.37	0.14		lb/MMBtu	AP-42 Table 13.5-1
				50	grains sulfur	per Mscf FERC limit
	0.079	0.43	0.16		lb/hr	pilot + purge Mmbtu/hr heat inputs * emiss. Factor
				0.0083	lb/hr	50gr S/Mscf *Mscf/hr*0.00014 lb/gr
	0.35	1.9	0.72	0.036	tpy	lb/hr *(8760/2000),

Stack Parameters

1000	˚C	Exhaust temperature	Per NMAQB guidelines
20	m/sec	Exhaust velocity	Per NMAQB guidelines
65.6	ft/s	Exhaust velocity	m/sec * 3.28ft/m
222.0	ft	Flare height	
17.23	lb/mol	Field gas molecular weight	See attached
81,667	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
65,397		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.26	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

DCP Midstream, LP - Linam Ranch Gas Plant

Acid Gas Flare Steady State GHG Emissions

Emission Unit: 2 Acid Gas Flare

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.00050	MMscf/hr	scf/hr / 1e6
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	0.67	Mscf/hr	Mscf/d / 24 hr/day
	0.00067	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.67	MMBtu/hr	MMscf/hr * Btu/scf

Combined Pilot & Purge Nat. Gas	0.001	MMscf/hr
	10.22	MMscf/yr

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	596	Eq 4-15	API Compendium
CH_4	9.8E-01	Eq 4-16	API Compendium
N_2O	1.7E-05	Eq 4-17	API Compendium
Total CO2e	**621**		

DCP Midstream Services, LP- Linam Ranch Gas Plant

Flare Gas Heating Value

Emission Unit: 2, 4A & AGI Flares
Source Description: Flares pilot and purge gas

Extended Gas Analysis
Linam Ranch Gas Plant Fuel/Residue Gas

Component	MW	Dry vol% [1]	MW * dry vol %	Btu/scf	Btu/scf * dry vol %
Water	18.02				
CO2	44.01	0.003%	0.00	0	0.00
H2S	34.08	0.000%	0.00	586.71	0.00
Nitrogen	28.01	3.136%	0.88	0	0.00
Methane	16.04	91.24%	14.64	909.1	829.49
Ethane	30.07	5.485%	1.65	1617.8	88.73
Propane	44.10	0.131%	0.06	2315.9	3.03
I-Butane	58.12	0.001%	0.00	3001	0.04
N-Butane	58.12	0.001%	0.00	3010.5	0.03
I-Pentane	72.15	0.000%	0.00	3697.9	0.00
N-Pentane	72.15	0.000%	0.00	3512.2	0.00
Hexane	86.18	0.000%	0.00	4403.9	0.00
Total (dry)		**100%**	**17.23**		**921.32**
			(mixture mol. wt)		(mixture heating value)

mols NMHC	5.6180%
mols NMEHC	0.133%
VOC Mol fraction	
VOC Mol %	0.13310%

[1] Based on DCP's recent 10/21/13 Linam Ranch Fuel/Residue Gas Analysis

DCP Midstream Services, LP- Linam Ranch Gas Plant

Flare

Emission Unit: 4A
Source Description: ESD Flare

Fuel Data

Flare Pilot

	1000	Btu/scf	Field gas heating value	Pipeline Natural Gas, nominal
	500	scf/hr	Fuel Usage Rate	Engineering judgement
	0.50	Mscf/hr	Fuel Usage Rate	scf/hr / 1e3
	0.00050	MMscf/hr	Fuel Usage Rate	scf/hr / 1e6
	0.50	MMBtu/hr	Flare Pilot Heat Input	Gas heat value * Fuel usage rate/1e6
Purge Gas	63.8	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)	
	2.7	Mscf/hr	Mscf/d / 24 hr/day	
	0.0027	MMscf/hr	Mscf/hr / 1000	
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.	
	2.7	MMBtu/hr	MMscf/hr * Btu/scf	
Total	3.2	Mscf/hr	Fuel Usage Rate	pilot + purge
	3.2	MMBtu/hr	Total heat input	pilot + purge

Emission Rates

Flare Pilot + Purge	NOx	CO	VOC	SO2	Units	
	0.068	0.37	0.14		lb/MMBtu	AP-42 Table 13.5-1
				50	grains sulfur	per Mscf FERC limit
	0.21	1.2	0.44		lb/hr	pilot + purge Mmbtu/hr * emiss. Factor
				0.023	lb/hr	50gr S/Mscf *Mscf/hr*0.00014 lb/gr
	0.94	5.1	1.9	0.099	tpy	lb/hr *(8760/2000),

Stack Parameters

1000	˚C	Exhaust temperature	Per NMAQB guidelines
20	m/sec	Exhaust velocity	Per NMAQB guidelines
66	ft/s	Exhaust velocity	m/sec * 3.28ft/m
175.0	ft	Flare height	
17.23	lb/mol	Field gas molecular weight	Attached
221,083	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
177,039		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.42	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

DCP Midstream, LP - Linam Ranch Gas Plant

ESD Flare Steady State GHG Emissions

Emission Unit: 4A ESD Flare

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.00050	MMscf/hr	scf/hr / 1e6
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	63.8	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	2.7	Mscf/hr	Mscf/d / 24 hr/day
	0.0027	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	2.7	MMBtu/hr	MMscf/hr * Btu/scf

Combined Pilot & Purge Nat. Gas	0.003	MMscf/hr
	27.667	MMscf/yr

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	1,614	Eq 4-15	API Compendium
CH_4	2.7	Eq 4-16	API Compendium
N_2O	4.6E-05	Eq 4-17	API Compendium
Total CO2e	**1,680**		

DCP Midstream Services, LP- Linam Ranch Gas Plant

Flare

Emission Unit: AGI Flare
Source Description: East Amine Flare

Fuel Data

Flare Pilot

	1000	Btu/scf	Field gas heating value	Pipeline gas HHV, nominal
	500	scf/hr	Fuel Usage Rate	Engineering judgement
	0.50	Mscf/hr	Fuel Usage Rate	scf/hr / 1e3
	0.00050	MMscf/hr	Fuel Usage Rate	scf/hr / 1e6
	0.50	MMBtu/hr	Flare Pilot Heat Input	Gas heat value * Fuel usage rate/1e6
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)	
	0.67	Mscf/hr	Mscf/d / 24 hr/day	
	0.00067	MMscf/hr	Mscf/hr / 1000	
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.	
	0.67	MMBtu/hr	MMscf/hr * Btu/scf	
Total	1.2	Mscf/hr	Fuel Usage Rate	pilot + purge
	1.2	MMBtu/hr	Total heat input	pilot + purge

Emission Rates

Flare Pilot & Purge	NOx	CO	VOC	SO2	Units	
	0.068	0.37	0.14		lb/MMBtu	AP-42 Table 13.5-1
				50	grains sulfur	per Mscf FERC limit
	0.079	0.43	0.16	0.028	lb/hr	pilot + purge Mmbtu/hr heat inputs * emiss. Factor
				0.0083	lb/hr	50gr S/Mscf *Mscf/hr*0.00014 lb/gr
	0.35	1.9	0.72	0.036	tpy	lb/hr *(8760/2000),

Stack Parameters

1000	˚C	Exhaust temperature	Per NMAQB guidelines
20	m/sec	Exhaust velocity	Per NMAQB guidelines
66	ft/s	Exhaust velocity	m/sec * 3.28ft/m
222.0	ft	Flare height	
17.23	lb/mol	Field gas molecular weight	See attached
81,667	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
65,397		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.26	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

DCP Midstream Services, LP - Linam Ranch Gas Plant

AGI Flare Steady State GHG Emissions

Emission L AGI Flare

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.00050	MMscf/hr	scf/hr / 1e6
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	0.67	Mscf/hr	Mscf/d / 24 hr/day
	0.00067	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.67	MMBtu/hr	MMscf/hr * Btu/scf

Combined Pilot & Purge Nat. Gas	0.001	MMscf/hr
	10.22	MMscf/yr

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	596	Eq 4-15	API Compendium
CH_4	0.98	Eq 4-16	API Compendium
N_2O	1.7E-05	Eq 4-17	API Compendium
Total CO2e	**621**		

Dehy Emissions Summary

	Flash Tank to Gathering (lb/hr)	Regenerator Vent to Atm (lb/hr)	50% contingency Total Dehy to Atm (lb/hr)	50% contingency Total Dehy to Atm (tpy)
VOC (lb/hr)	0.0020	0.184	0.28	1.21
GHG (lb/hr)	0.717	0.093	0.14	0.61
BTEX (lb/hr)	0.001	0.090	0.14	0.59
Total HAP (lb/hr)	0.001	0.090	0.14	0.59

Dehy Process Simulation Model Output

Linam Ranch Regeneration Gas TEG Dehydration Skid
Flow Rates and Compositions of Vapor Streams to the Flare, LP Gathering System or Atmosphere
Basis: Regeneration Gas Composition 7224 dated November 10, 2010

			Flash Drum to Gathering	Flash Drum to Gathering	Regenerator Vent to atm	Regenerator Vent to atm
Flow Rate, MMSCFD			0.0004922		0.000151	
Temperature, F			97 F		130 F	
Molecular Weight			18.03		30.64	
lbmoles/hr			0.05405		0.01658	
		Mwi		lb/hri		lb/hri
Nitrogen	N2	28.014	0.111457	0.168760351	0.300604	0.139619685
Hydrogen Sulfide	H2S	34.082	0	0	0	0
Carbon Dioxide	CO2	44.010	0	0	0	0
Methane	CH4	16.042	0.826561	0.716686329	0.350708	0.093280037
Ethane	C2H6	30.069	0.041655	0.067698933	0.051296	0.025573314
Propane	C3H8	44.096	0.000312	0.000743617	0.000617	0.000451096
iso-Butane	C4H10	58.122	0.000004	1.2566E-05	0.000004	3.85465E-06
normal-Butane	C4H10	58.122	0.000016	5.02639E-05	0.000016	1.54186E-05
iso-Pentane	C5H12	72.149	0.000004	1.55986E-05	0.000003	3.58869E-06
normal-Pentane	C5H12	72.149	0.000005	1.94983E-05	0.000004	4.78492E-06
Cyclopentane	C5H10	70.133	0.000003	1.13721E-05	0.000005	5.81403E-06
normal-Hexane	C6H14	86.175	0.000002	9.31552E-06	0.000001	1.42878E-06
2-Methylpentane	C6H14	86.175	0.000001	4.65776E-06	0.000001	1.42878E-06
3-Methylpentane	C6H14	86.175	0.000001	4.65776E-06	0.000001	1.42878E-06
Methylcyclopentane	C6H12	84.160	0.000004	1.81954E-05	0.000006	8.37224E-06
Benzene	C6H6	78.112	0.000013	5.48854E-05	0.004275	0.00553654
Cyclohexane	C6H12	84.160	0.000005	2.27442E-05	0.000009	1.25584E-05
2-Methylhexane	C7H16	100.202	0.000001	5.41592E-06	0	0
3-Methylhexane	C7H16	100.202	0.000001	5.41592E-06	0	0
Dimethylcyclopentane	C7H14	98.186	0.000002	1.06139E-05	0.000002	3.25585E-06
n-Heptane	C7H16	100.202	0.000001	5.41592E-06	0	0
Methylcyclohexane	C7H14	98.186	0.000003	1.59209E-05	0.000004	6.5117E-06
Toluene	C7H8	92.138	0.000044	0.000219123	0.017611	0.02690341
2-Methylheptane	C8H18	114.229	0.000001	6.17408E-06	0	0
3-Methylheptane	C8H18	114.229	0.000001	6.17408E-06	0	0
Dimethylcyclohexane	C8H16	112.213	0.000001	6.06511E-06	0.000001	1.86049E-06
n-Octane	C8H18	114.229	0.000001	6.17408E-06	0	0
Ethylbenzene	C8H10	106.165	0.000012	6.88586E-05	0.006090	0.010719714
m-Xylene	C8H10	106.165	0.000018	0.000103288	0.011090	0.019520792
p-Xylene	C8H10	106.165	0.000012	6.88586E-05	0.007242	0.012747482
o-Xylene	C8H10	106.165	0.000012	6.88586E-05	0.008425	0.014829817
1-Nonene	C9H18	126.239	0.000001	6.82322E-06	0	0
n-Nonane	C9H20	128.255	0.000001	6.93218E-06	0	0
n-Decane	C10H22	142.282	0	0	0	0
n-Undecane	C11H24	156.308	0.000004	3.37938E-05	0	0
Carbonyl Sulfide	COS	60.075	0.000001	3.24705E-06	0.000083	8.26716E-05
Methyl Mercaptan	CH4S	48.108	0.000045	0.000117011	0.007419	0.005917622
Ethyl Mercaptan	C2H6S	62.134	0.000027	9.06753E-05	0.014274	0.014704814
Dimethyl Sulfide	C2H6S	62.134	0.000005	1.67917E-05	0.002540	0.002616662
Carbon Disulfide	CS2	76.141	0.000009	3.70388E-05	0.001430	0.001805257
I-Propyl Mercaptan	C3H8S	76.161	0.000004	1.6466E-05	0.003737	0.004718894
N-Propyl Mercaptan	C3H8S	76.161	0.000001	4.1165E-06	0.001438	0.001815834
Methyl Ethyl Sulfide	C3H8S	76.161	0.000001	4.1165E-06	0.001183	0.001493833
Thiophene	C4H4S	84.140	0.000003	1.36433E-05	0.004355	0.006075404
Dimethyl Sulfide	C2H6S	62.134	0.000014	4.70168E-05	0.031471	0.032420849
Diethyl Disulfide	C4H10S2	122.252	0.000004	2.64309E-05	0.009368	0.018988357
Trimethyl Thiophene	C7H10S	126.219	0.000001	6.82214E-06	0.001109	0.002320817
Water	H2O	18.015	0.019727	0.019208712	0.163571	0.048857623
Tri-Ethylene Glycol	C6H14O4	150.173	0.000002	1.62337E-05	0.000006	1.49392E-05

TK-VRU Emissions

Source: TK-VRU: (RVP 10) Seven (7) condensate tanks routed to a common VRU.

VOC Emissions for Condensate Tanks

VOCs		
106,656	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
12,062	lb/yr	
27.54	**lb/hr**	
6.03	**tpy**	

*Maximum throughput for all five 750-bbl tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by five. Total working losses for the 400-bbl and 210-bbl condensate tanks are also included here.

DCP Midstream Services, LP- Linam Ranch Gas Plant

TK-VRU -Tanks Flashing Emissions

Source: TK-VRU: (RVP 10) Five (5) fixed-roof vertical tanks routed to VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks		
Average	0.335	0.490	0.825	Mscfd	$V_{corrected} = V_{raw} * (T_{STP}/T_{site})*(P_{site}/P_{STP})$
Max	1.005	1.002	2.007	Mscfd	

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

	Total Tanks Flow Rate Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass % NMNEHC / specific vol. vapor
	55,280.0	134,575.5	VOC, lb/yr.	
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass % GHG / specific vol. vapor
	4	9	(methane + CO2) lb/yr'	

TK-VRUTMP Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

General Information for Each Tank

Volume	1,500	bbl
Diameter	12	ft
Throughput	1800	bpd
Throughput	27,594,000	gallons/yr
Turnovers	438	turnovers/yr

VOC Emissions for Condensate Tanks

VOCs		
80,594	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
10,758	lb/yr	
24.56	**lb/hr**	
5.38	**tpy**	

*Maximum throughput for these two tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by two.

DCP Midstream Services, LP- Linam Ranch Gas Plant

TK-VRUTMP -Tanks Flashing Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks		
Average	0.335	0.490	0.825	Mscfd	$V_{corrected} = V_{raw} *$
Max	1.005	1.002	2.007	Mscfd	$(T_{STP}/T_{site})*(P_{site}/P_{STP})$

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

Total Tanks Flow Rate

	Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass
	55,280.0	134,575.5	VOC, lb/yr.	% NMNEHC / specific vol. vapor
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass
	4	9	(methane + CO2) lb/yr'	% GHG / specific vol. vapor

Linam Ranch Gas Plant: Engine and Turbine HAP Calculations

Emission Unit ID No.	Emission Unit Description	Horsepower Site Rating hp	Heat Input mmBtu/hr	Benzene EF lb/MMBtu	Benzene Emiss Rate TPY	Toluene EF lb/MMBtu	Toluene Emiss Rate TPY	Ethylbenzene EF lb/MMBtu	Ethylbenzene Emiss Rate TPY	Xylenes EF lb/MMBtu	Xylenes Emiss Rate TPY
6	Clark TLA-6	2000	17.73	1.94E-03	0.151	9.63E-04	0.075	1.08E-04	0.008	2.68E-04	0.021
7	Clark TLA-6	2000	17.73	1.94E-03	0.151	9.63E-04	0.075	1.08E-04	0.008	2.68E-04	0.021
10 or 11	Clark HBA-6	1267	11.86	1.94E-03	0.101	9.63E-04	0.050	1.08E-04	0.006	2.68E-04	0.014
28	Solar Taurus T-60-7800S	7340	63.43	1.20E-05	0.003	1.30E-04	0.036	3.20E-05	0.009	6.40E-05	0.018
29	Solar Taurus 70-10302S	10702	77.63	1.20E-05	0.004	1.30E-04	0.044	3.20E-05	0.011	6.40E-05	0.022
30	Solar Taurus 70-9702S	9990	73.95	1.20E-05	0.004	1.30E-04	0.042	3.20E-05	0.010	6.40E-05	0.021
31	Solar Centaur T-4700	3915	36.80	1.20E-05	0.002	1.30E-04	0.021	3.20E-05	0.005	6.40E-05	0.010
32B	Solar Centaur T-4000	3684	36.21	1.20E-05	0.002	1.30E-04	0.021	3.20E-05	0.005	6.40E-05	0.010
Total HAP					**0.42**		**0.36**		**0.06**		**0.14**

Emission Unit ID No.	Description	Formaldehyde EF lb/MMBtu	Formaldehyde Emiss Rate TPY	Acetaldehyde EF lb/MMBtu	Acetaldehyde Emiss Rate TPY	n-Hexane EF lb/MMBtu	n-Hexane Emiss Rate TPY	Acrolein EF lb/MMBtu	Acrolein Emiss Rate TPY	Methanol EF lb/MMBtu	Methanol Emiss Rate TPY
6	Clark TLA-6	0.05520	4.286	7.76E-03	0.603	4.45E-04	0.035	7.78E-03	0.604	2.48E-03	0.193
7	Clark TLA-6	0.05520	4.286	7.76E-03	0.603	4.45E-04	0.035	7.78E-03	0.604	2.48E-03	0.193
10 or 11	Clark HBA-6	0.05520	2.866	7.76E-03	0.403	4.45E-04	0.023	7.78E-03	0.404	2.48E-03	0.129
28	Solar Taurus T-60-7800S	0.00241	0.670	4.00E-05	0.011	0	0.000	6.40E-06	0.002	0	0.000
29	Solar Taurus 70-10302S	0.00071	0.241	4.00E-05	0.014	0	0.000	6.40E-06	0.002	0	0.000
30	Solar Taurus 70-9702S	0.00071	0.230	4.00E-05	0.013	0	0.000	6.40E-06	0.002	0	0.000
31	Solar Centaur T-4700	0.00071	0.114	4.00E-05	0.006	0	0.000	6.40E-06	0.001	0	0.000
32B	Solar Centaur T-4000	0.00071	0.113	4.00E-05	0.006	0	0.000	6.40E-06	0.001	0	0.000
Total HAP			**12.81**		**1.66**		**0.09**		**1.62**		**0.51**

EPA-AP42 Tables 3.2-1 (7/00) & 3.1-3 (4/00) emission factors were used for HAP calculations for all units except Unit 28 formaldehyde.
Manufacturer's emission factor (HHV basis) was used for Unit 28 formaldehyde. Unit 28 HAP emissions are based in HHV.

Linam Ranch Gas Plant: External Combustion Source HAP Calculations

Emission Unit ID No.	Emission Unit Description	Fuel Use MMscf/yr	Benzene EF lb/MMscf	Benzene Emiss Rate TPY	Toluene EF lb/MMscf	Toluene Emiss Rate TPY	Formaldehyde EF lb/MMscf	Formaldehyde Emiss Rate TPY	Hexane EF lb/MMscf	Hexane Emiss Rate TPY
2 **	Amine Plant Flare	14.2	0.00E+00	0.000	0.00E+00	0.000	0.00E+00	0.000	0	0.000
4A **	ESD (Plant) Flare	14.2	0.00E+00	0.000	0.00E+00	0.000	0.00E+00	0.000	0	0.000
34	Furnace B	146.0	2.10E-03	0.000	3.40E-03	0.000	7.50E-02	0.005	1.8	0.131
36	Boiler 36	968.5	2.10E-03	0.001	3.40E-03	0.002	7.50E-02	0.036	1.8	0.872
37	Boiler 37	968.5	2.10E-03	0.001	3.40E-03	0.002	7.50E-02	0.036	1.8	0.872
Total HAPs				**0.002**		**0.003**		**0.073**		**1.743**

EPA-AP42 Table 1.4-3 emission factors (7/98) were used for HAP calculations.
** Pilot only during normal operation

DCP Midstream Services, LP- Linam Ranch Gas Plant

Gas Analysis: Meter #M0501-00 Linam total inlet West from PGAS dated 4/22/05

Gas Constituent	Mol. Wt. (lb/lbmole)	Mole % (Vol %)	**Weight (lb/lbmole Gas)**	Wt. % (Wt %)
Methane	16.0	78.957	12.63	60.83
Ethane	30.0	9.477	2.84	13.69
Hydrogen Sulfide	**34.1**	**0.661**	**0.23**	**1.08**
Propane	44.0	4.757	2.09	10.08
i-Butane	58.0	0.678	0.39	1.89
n-Butane	58.0	1.390	0.81	3.88
i-Pentane	72.0	0.301	0.22	1.04
n-Pentane	72.0	0.284	0.20	0.98
Hexanes+	86.0	0.270	0.23	1.12
n-Hexane	86.0	0.000	0.00	0.00
Carbon Dioxide	44.0	1.359	0.60	2.88
Helium	4.0	0.000	0.00	0.00
Nitrogen	28.0	1.866	0.52	2.52
Total		**100.00**	**20.77**	**100.0**

Gas Analysis: Meter #M0500-00 Linam total inlet East from PGAS dated 7/27/05

Gas Constituent	Mol. Wt. (lb/lbmole)	Mole % (Vol %)	**Weight (lb/lbmole Gas)**	Wt. % (Wt %)
Methane	16.0	79.337	12.69	61.12
Ethane	30.0	9.553	2.87	13.80
Hydrogen Sulfide	**34.1**	**0.300**	**0.10**	**0.49**
Propane	44.0	4.578	2.01	9.70
i-Butane	58.0	0.596	0.35	1.66
n-Butane	58.0	1.314	0.76	3.67
i-Pentane	72.0	0.363	0.26	1.26
n-Pentane	72.0	0.363	0.26	1.26
Hexanes+	86.0	0.549	0.47	2.27
n-Hexane	86.0	0.000	0.00	0.00
Carbon Dioxide	44.0	1.280	0.56	2.71
Helium	4.0	0.000	0.00	0.00
Nitrogen	28.0	1.767	0.49	2.38
Total		**100.00**	**20.84**	**100.3**

Averaged Gas Analysis

Gas Constituent	Mol. Wt. (lb/lbmole)	Mole % (Vol %)	**Weight b/lbmole Ga**	Wt. % (Wt %)
Methane	16.0	79.147	12.66	60.98
Ethane	30.0	9.515	2.85	13.74
Hydrogen Sulfide	**34.1**	0.481	**0.16**	**0.79**
Propane	44.0	4.668	2.05	9.89
i-Butane	58.0	0.637	0.37	1.78
n-Butane	58.0	1.352	0.78	3.78
i-Pentane	72.0	0.332	0.24	1.15
n-Pentane	72.0	0.324	0.23	1.12
Hexanes+	86.0	0.410	0.35	1.70
n-Hexane	86.0	0.000	0.00	0.00
Carbon Dioxide	44.0	1.320	0.58	2.80
Helium	4.0	0.000	0.00	0.00
Nitrogen	28.0	1.817	0.51	2.45
Total		**100.00**	**20.80**	**100.2**
Total VOC		7.722		

225	MMSCf/d	Pl throughput
380	scf/lb-mol	
20.80	lb/lb-mol gas	
12,317,225	lb/day gas	
0.0079	wt fraction H2S	
97,121	lb/day H2S	
4,047	lb/hr H2S	
3965.8	lb/hr H2S	98% to be converted
7416.0	lb/hr SO2	1.87 lb SO2/lb H2S
0.00481	mol fraction H2S	of inlet gas
1.1	MMSCF/d H2S	(Pl throughput*mol frac H2S)
4.5	MMSCF/d	Tail gas throughput
0.24025	mol fraction H2S	of Tail gas throughput
24.025	mol % H2S	
26.4	with 10% margin	

95	MMSCf/d	Worst case plant upset to flare
380	scf/lb-mol	
20.80	lb/lb-mol gas	
5,200,606	lb/day gas	
0.0079	wt fraction H2S	
41,007	lb/day H2S	
1,709	lb/hr H2S	
1674.4	lb/hr H2S	98% to be converted
3131.2	lb/hr SO2	1.87 lb SO2/lb H2S
0.00481	mol fraction H2S	of inlet gas
0.5	MMSCF/d H2S	(Pl throughput*mol frac H2S)
95.0	MMSCF/d	Tail gas throughput
0.004805	mol fraction H2S	of Tail gas throughput
0.4805	mol % H2S	
0.53	with 10% margin	

Methanol Tanks

Emission units: TK-20, TK-21, TK-27, TK-77, TK-1370
Source Description: 500 - 7050 gallon horizontal or vertical methanol tanks

General Tank Information

Tank	**TK-20**	**TK-21**	**TK-27**	**TK-77**	**TK-1370**		
Volume	1,130	660	7,050	500	500	gallon	
Length (shell)	6.5	5.5	12	5.25	5.25	ft	
Diameter	5.5	4.5	10	4	4	ft	
Throughput	13,560	7,920	29,375	6,000	6,000	gal/mo	
Throughput	162,720	95,040	352,500	72,000	72,000	gal/yr	bbl/mo * 12 mo/yr
Turnovers	144.0	144.0	50.0	144.0	144.0	turnovers/yr	bbl/yr / Volume
Turnovers	172.8	172.8	60.0	172.8	172.8	maximum turnovers/yr	Turnovers x 1.2 (per 40 CFR 63.760 (subpart HH)
Throughput	535.0	312.5	1158.9	236.7	236.7	maximum gal/day	Maximum turnovers * Volume / 365 days/year

VOC Emissions

	VOC	**VOC**	**VOC**	**VOC**	**VOC**		
	234.1	138.0	968.6	105.7	105.7	lb/yr	TANKS 4.09 d
	0.12	0.069	0.48	0.053	0.053	tpy	tpy = lb/hr x [(8760hr/yr) / (2000lb/ton)]
	N/A	N/A	N/A	N/A	N/A	tpy	No flashing losses from this tank at atmospheric conditions
Total VOCs	0.12	0.069	0.48	0.053	0.053	tpy	Working and Breathing + Flash
	0.027	0.016	0.11	0.012	0.012	lb/hr	tpy * 2000 lb/ton / 8760 hrs/yr

North Cooling Tower Emissions

	Cooling Water Recirculation Rate (gpm)	Drift Rate fraction of Circulating Flow %	Total Drift Mass lb/min	% Drift Mass escape from Facility Boundary %	Drift Mass Leaving Site lb/min	Circulating Water Total Dissolved Solids (mg/l)	Circulating Water Total Dissolved Solids (ppm_w)
Note	1	2	3	4	5	6	
Cooling Tower	2,045	0.02%	3	31.30%	1.1	5,000	5,000

	Hourly Uncontrolled Particulate Emissions (lb/hr)	Annual Uncontrolled Particulate Emissions (tpy)	Hourly Uncontrolled TSP Emissions (lb/hr)	Annual Uncontrolled TSP Emissions (tpy)	Hourly Uncontrolled PM_{10} Emissions (lb/hr)	Annual Uncontrolled PM_{10} Emissions (tpy)
Note	7	7	8	8	8	8
Cooling Tower	0.32	1.40	0.30	1.31	0.10	0.42

Notes

1 Cooling Tower Water Recirc rate based on site data
2 Uncontrolled circulating water flow percent drift estimated based on AP-42 factors for induced draft cooling towers (Table 13.4-1)
3 Total Drift Mass = Recirculation rate * Drift Rate Fraction * Drift Density (8.34 lb/gal)
4 Facility boundary located 689 ft from Cooling Tower; 68.7% of drift mass retained on site (Fig. 8, "Effects of Pathogenic and Toxic Materials
5 Drift mass leaving site = Total Drift Mass * % Drift Mass escape from facility boundary
6 TDS measured at 5000 mg/l as a conservative measure.
7 Total particulate emission calculated using procedure described in Section 13.4 of AP-42 (01/95), Wet Cooling Towers.
PM = Water Circulation Rate * Drift Rate* Percent drift mass escape * TDS
Particulate Hourly Emissions:

$$\frac{2{,}045\ \text{gal}}{\text{min}} \cdot \frac{60\ \text{min}}{\text{hr}} \cdot \frac{0.0002\ \text{gal drift}}{\text{gal recirculation}} \cdot 31.30\% \cdot \frac{8.34\ \text{lb drift}}{\text{gal drift}} \cdot \frac{5000\ \text{lb PM}}{10^6\ \text{lb drift}} = \frac{0.32\ \text{lb}}{\text{hr}}$$

Particulate annual emissions = Hourly emissions (lb/hr) * 8760 (hrs/yr) / 2000 (lb/ton)
8 Particle size distribution based on the following distribution (from Frisbie data)

Particle Distribution

Particle	Mass % of Total Particulates	
TSP (PM 30)	93.5	Frisbie data
PM10	30.0	Frisbie data

DCP Midstream Services, LP - Linam Ranch Gas Plant

North Cooling Tower Frisbee Table

Facility TDS 5000

EPRI Droplet			Particle Mass		Solid Particle		
Diameter (µm)	Droplet Volume (µm3)	Droplet Mass (µg)	(Solids) (µg)	Solid Particle Volume (µm3)	Diameter (µm)	EPRI % Mass Smaller	Interpolated Particulate Fraction based on facility TDS 5000
10	524	5.24E-04	4.03E-06	1.83	1.518	0	1.314767947
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196	2.629535894
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226	3.944303841
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514	5.259071789
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816	6.573839736
60	113097	1.13E-01	8.71E-04	395.84	9.11	5.702	7.888607683
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348	9.20337563
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812	11.83291152
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509	14.46244742
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023	17.09198331
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012	19.72151921
180	3053628	3.05E+00	2.35E-02	10687.7	27.329	91.032	23.66582305
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468	27.61012689
240	7238229	7.24E+00	5.57E-02	25333.8	36.439	94.091	31.55443073
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689	35.49873457
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288	39.44303841
350	22449298	2.24E+01	1.73E-01	78572.54	53.14	97.011	46.01687815
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.34	52.59071789
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071	59.16455762
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071	65.73839736
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100	78.88607683
						2.5	0.176689341
						10	29.97123884
						30	93.45138369
						PM2.5/Total	
						PM10/Total	
						TSP/Total	

South Cooling Tower Emissions

	Cooling Water Recirculation Rate (gpm)	Drift Rate fraction of Circulating Flow %	Total Drift Mass lb/min	% Drift Mass escape from Facility Boundary %	Drift Mass Leaving Site lb/min	Circulating Water Total Dissolved Solids (mg/l)	Circulating Water Total Dissolved Solids (ppm_w)
Note	1	2	3	4	5	6	
Cooling Tower	3,200	0.02%	5	31.30%	1.7	5,000	5,000

	Hourly Uncontrolled Particulate Emissions (lb/hr)	Annual Uncontrolled Particulate Emissions (tpy)	Hourly Uncontrolled TSP Emissions (lb/hr)	Annual Uncontrolled TSP Emissions (tpy)	Hourly Uncontrolled PM_{10} Emissions (lb/hr)	Annual Uncontrolled PM_{10} Emissions (tpy)
Note	7	7	8	8	8	8
Cooling Tower	0.50	2.20	0.47	2.05	0.15	0.66

Notes

1 Cooling Tower Water Recirc rate based on site data
2 Uncontrolled circulating water flow percent drift estimated based on AP-42 factors for induced draft cooling towers (Table 13.4-1)
3 Total Drift Mass = Recirculation rate * Drift Rate Fraction * Drift Density (8.34 lb/gal)
4 Facility boundary located 737 ft from Cooling Tower; 68.7% of drift mass retained on site (Figure 8, "Effects of Pathogenic and Toxic Materials
5 Drift mass leaving site = Total Drift Mass * % Drift Mass escape from facility boundary
6 TDS measured at 5,000 ppm as a conservative measure. Actual snapshot of concentration indicates TDS level of ~2,500 ppm.
7 Total particulate emission calculated using procedure described in Section 13.4 of AP-42 (01/95), Wet Cooling Towers.
PM = Water Circulation Rate * Drift Rate* Percent drift mass escape * TDS
Particulate Hourly Emissions:

$$\frac{3{,}200\ \text{gal}}{\text{min}} \cdot \frac{60\ \text{min}}{\text{hr}} \cdot \frac{0.0002\ \text{gal drift}}{\text{gal recirculation}} \cdot 31.30\% \cdot \frac{8.34\ \text{lb drift}}{\text{gal drift}} \cdot \frac{5000\ \text{lb PM}}{10^6\ \text{lb drift}} = \frac{0.50\ \text{lb}}{\text{hr}}$$

Particulate annual emissions = Hourly emissions (lb/hr) * 8760 (hrs/yr) / 2000 (lb/ton)
8 Particle size distribution based on the following distribution (from Frisbie data)

Particle Distribution

Particle	Mass % of Total Particulates	
TSP (PM 30)	93.5	Frisbie data
PM10	30.0	Frisbie data

DCP Midstream Services, LP - Linam Ranch Gas Plant

South Cooling Tower Frisbee Table

Facility TDS 5000

EPRI Droplet			Particle Mass		Solid Particle		
Diameter (µm)	Droplet Volume (µm3)	Droplet Mass (µg)	(Solids) (µg)	Solid Particle Volume (µm3)	Diameter (µm)	EPRI % Mass Smaller	Interpolated Particulate Fraction based on facility TDS 5000
10	524	5.24E-04	4.03E-06	1.83	1.518	0	1.314767947
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196	2.629535894
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226	3.944303841
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514	5.259071789
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816	6.573839736
60	113097	1.13E-01	8.71E-04	395.84	9.11	5.702	7.888607683
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348	9.20337563
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812	11.83291152
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509	14.46244742
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023	17.09198331
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012	19.72151921
180	3053628	3.05E+00	2.35E-02	10687.7	27.329	91.032	23.66582305
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468	27.61012689
240	7238229	7.24E+00	5.57E-02	25333.8	36.439	94.091	31.55443073
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689	35.49873457
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288	39.44303841
350	22449298	2.24E+01	1.73E-01	78572.54	53.14	97.011	46.01687815
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.34	52.59071789
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071	59.16455762
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071	65.73839736
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100	78.88607683
						2.5	0.176689341
						10	29.97123884
						30	93.45138369
						PM2.5/Total	
						PM10/Total	
						TSP/Total	

Total Fugitive Emissions

DCP Midstream Services, LP - Linam Ranch Gas Plant

Stream	VOC Fugitive Emissions (lb/hr)	VOC Fugitive Emissions (tpy)
Inlet Gas	1.9	8.5
Fuel Gas	0.019	0.084
Sweet Gas	0.45	1.3
Dry Gas	0.39	1.7
Residue Gas	0.010	0.044
Y-Grade Liquids	0.31	1.3
Natural Gas Liquids	2.6	11
Condensate	3.8	17
Refrigerant	3.9	17
Rich Amine	0	0
Project	4.3	19
TOTALS	**18**	**77**

DCP Midstream Services, LP - Linam Ranch Gas Plant

Short-Term VOC Fugitive HAPs						
Stream	**Hexane (lb/hr)**	**Benzene (lb/hr)**	**Toluene (lb/hr)**	**Ethylbenzene (lb/hr)**	**Xylenes (lb/hr)**	**Total VOC Fugitive HAPs (lb/hr)**
Inlet Gas	0.019	0.0087	2.1E-03	4.3E-05	8.6E-05	0.030
Fuel Gas	-	-	-	-	-	-
Sweet Gas	0.040	0.00042	7.1E-04	3.7E-05	1.8E-04	0.042
Dry Gas	0.034	0.00036	6.1E-04	3.1E-05	1.6E-04	0.035
Residue Gas	-	-	-	-	-	-
Y-Grade Liquids	0.027	0.00015	2.5E-04	1.3E-05	6.4E-05	0.027
Natural Gas Liquids	1.1	0.00060	1.0E-03	5.2E-05	2.6E-04	1.1
Condensate	2.7	0.00089	1.5E-03	7.7E-05	3.8E-04	2.7
Refrigerant	-	-	-	-	-	-
Rich Amine	-	-	-	-	-	-
Project	1.3	0.0013	2.0E-04	1.1E-05	5.0E-05	1.3
TOTALS	**5.1**	**0.012**	**0.006**	**0.000**	**0.001**	**5.2**

Long-term VOC Fugitive HAPs						
Stream	**Hexane (tpy)**	**Benzene (tpy)**	**Toluene (tpy)**	**Ethylbenzene (tpy)**	**Xylenes (tpy)**	**Total VOC Fugitive HAPs (tpy)**
Inlet Gas	0.083	0.038	0.0092	0.00019	0.00038	0.13
Fuel Gas	-	-	-	-	-	-
Sweet Gas	0.18	0.0018	0.0031	0.00016	0.00080	0.182
Dry Gas	0.15	0.0016	0.0027	0.00014	0.00068	0.155
Residue Gas	-	-	-	-	-	-
Y-Grade Liquids	0.12	0.00064	0.0011	0.00006	0.00028	0.119
Natural Gas Liquids	4.6	0.0026	0.0044	0.00023	0.0011	4.6
Condensate	12	0.0039	0.0066	0.00034	0.0017	12
Refrigerant	-	-	-	-	-	-
Rich Amine	-	-	-	-	-	-
Project	5.5	0.0057	0.00088	0.000047	0.00022	5.5
TOTALS	**23**	**0.054**	**0.028**	**0.0012**	**0.0052**	**23**

DCP Midstream Services, LP - Linam Ranch Gas Plant

Inlet Gas Fugitives

Inlet Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	680	0.0045	6.732	29.486
Flanges/Connectors	1771	0.00039	1.520	6.655
Relief Valves	31	0.0088	0.600	2.629
Sample Points	2	0.002	0.009	0.039
Pump Seals	1	0.0024	0.005	0.023
Compressor Seals	8	0.0088	0.155	0.678
TOTALS	**2493**		**9.021**	**39.510**

Inlet Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.735375	16	12	53	4.8	20.88
Ethane	0.125872	30	3.8	17	1.5	6.7
Propane	0.061477	44	2.7	12	1.1	4.8
Butanes	0.023154	58	1.3	6.0	0.54	2.4
Pentanes	0.006754	72	0.49	2.2	0.20	0.87
Hexanes+	0.0029	86	0.25	1.1	0.10	0.44
Hydrogen Sulfide	0.003803	34	0.13	0.58	0.053	0.23
Other (Non-HC)	0.040693	44	1.8	8.0	0.73	3.2
TOTALS	**1.0000**	**385**	**22**	**100**	**9.0**	**40**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate = **1.942 lb/hr**

Annual Emission Rate = **8.506 tpy**

Note: Based on DCP's recent 11/11/13 Linam Ranch inlet gas analysis from 11/6/13 sample

Inlet Gas Fugitive HAPs						
HAP Component	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	0.000541	86.178	0.047	0.21	0.019	0.083
Benzene	0.000276	78.11	0.022	0.10	0.0087	0.038
Toluene	0.000056	92.14	0.0052	0.023	0.0021	0.0092
Ethyl Benzene	0.000001	106.17	0.00011	0.00048	0.000043	0.00019
Xylenes	0.000002	106.17	0.00021	0.0010	0.000086	0.00038
TOTALS	0.000876	469	0.074	0.33	0.030	0.13

Note: Based on DCP's recent 11/11/13 Linam Ranch inlet gas analysis from 11/6/13 sample

DCP Midstream Services, LP - Linam Ranch Gas Plant

Fuel Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	377	0.0045	3.732	16.347
Flanges/Connectors	1256	0.00039	1.078	4.720
Relief Valves	38	0.0088	0.736	3.222
Sample Points	2	0.002	0.009	0.039
Pump Seals	0	0.0024	0.000	0.000
Compressor Seals	10	0.0088	0.194	0.848
TOTALS	**1683**		**5.748**	**25.176**

Fuel Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.912431	16	14.599	82.53	4.744	20.777
Ethane	0.054849	30.1	1.651	9.33	0.536	2.350
Propane	0.00131	44.1	0.058	0.33	0.019	0.082
Butanes	0.000021	58.1	0.001	0.01	0.000	0.002
Pentanes	-	72.2	-	-	-	-
Hexanes+	-	86.2	-	-	-	-
Hydrogen Sulfide	-	34.1	-	-	-	-
Other (Non-HC)	0.031389	44	1.381	7.81	0.449	1.966
TOTALS	**1.00**	**384.80**	**17.69**	**100**	**5.748**	**25.176**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate = **0.019 lb/hr**

Annual Emission Rate = **0.084 tpy**

Note: Based on DCP's recent 10/21/13 Linam Ranch fuel/residue gas analysis from 10/14/13 sample

Fuel Gas Fugitive HAPs			
HAP Component	**Mole % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	-	-	-
Benzene	-	-	-
Toluene	-	-	-
Ethyl Benzene	-	-	-
Xylenes	-	-	-
TOTALS	-	-	-

Note: Based on DCP's recent 10/21/13 Linam Ranch fuel/residue gas analysis from 10/14/13 sample

DCP Midstream Services, LP - Linam Ranch Gas Plant

Sweet Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	156	0.0045	1.544	6.764
Flanges/Connectors	318	0.00039	0.273	1.195
Relief Valves	0	0.0088	0.000	0.000
Sample Points	2	0.002	0.009	0.039
Pump Seals	0	0.0024	0.000	0.000
Compressor Seals	0	0.0088	0.000	0.000
TOTALS	**476**		**1.826**	**7.998**

Sweet Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.7	16	11.200	47.73	0.871	3.817
Ethane	0.12	30.1	3.612	15.39	0.281	1.231
Propane	0.067	44.1	2.955	12.59	0.230	1.007
Butanes	0.028	58.1	1.627	6.93	0.127	0.554
Pentanes	0.01	72.2	0.722	3.08	0.056	0.246
Hexanes+	0.006	86.2	0.517	2.20	0.040	0.176
Hydrogen Sulfide	0.007	34.1	0.239	1.02	0.019	0.081
Other (Non-HC)	0.059	44	2.596	11.06	0.202	0.885
TOTALS	**1.00**	**384.80**	**23.47**	**100**	**1.826**	**7.998**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate =1.826-(0.871+0.281+0.019+0.202) = **0.453 lb/hr**

Annual Emission Rate = 7.998-(3.817+1.231+0.081+0.885) = **1.255 tpy**

Sweet Gas Fugitive HAPs			
HAP Component	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	2.2	0.040	0.176
Benzene	0.023	0.000	0.002
Toluene	0.039	0.001	0.003
Ethyl Benzene	0.002	0.000	0.000
Xylenes	0.01	0.000	0.001
TOTALS	**2.274**	**0.042**	**0.182**

Note 1: Hexane content estimated from fugitive speciation in previous spreadsheet

Note 2: BTEX Content of inlet gas stream from Table 4-6 GRI-HAP Calc Manual for NG. Speciation based on API/GRI bag study

DCP Midstream Services, LP - Linam Ranch Gas Plant

Dry Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	135	0.0045	1.337	5.854
Flanges/Connectors	261	0.00039	0.224	0.981
Relief Valves	0	0.0088	0.000	0.000
Sample Points	0	0.002	0.000	0.000
Pump Seals	0	0.0024	0.000	0.000
Compressor Seals	0	0.0088	0.000	0.000
TOTALS	**396**		**1.560**	**6.835**

Dry Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.71	16	11.360	48.48	0.756	3.313
Ethane	0.12	30.1	3.612	15.41	0.241	1.054
Propane	0.068	44.1	2.999	12.80	0.200	0.875
Butanes	0.028	58.1	1.627	6.94	0.108	0.474
Pentanes	0.01	72.2	0.722	3.08	0.048	0.211
Hexanes+	0.006	86.2	0.517	2.21	0.034	0.151
Hydrogen Sulfide	0	34.1	0.000	0.00	0.000	0.000
Other (Non-HC)	0.059	44	2.596	11.08	0.173	0.757
TOTALS	**1.00**	**384.80**	**23.43**	**100**	**1.560**	**6.835**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate =1.56-(0.756+0.241+0+0.173) = **0.39 lb/hr**

Annual Emission Rate = 6.835-(3.313+1.054+0+0.757) = **1.711 tpy**

Dry Gas Fugitive HAPs			
HAP Component	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	2.2	0.034	0.150
Benzene	0.023	0.000	0.002
Toluene	0.039	0.001	0.003
Ethyl Benzene	0.002	0.000	0.000
Xylenes	0.01	0.000	0.001
TOTALS	**2.274**	**0.035**	**0.155**

Note 1: Hexane content estimated from fugitive speciation in previous spreadsheet

Note 2: BTEX Content of inlet gas stream from Table 4-6 GRI-HAP Calc Manual for NG. Speciation based on API/GRI bag study

DCP Midstream Services, LP - Linam Ranch Gas Plant

Residue Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	200	0.0045	1.980	8.672
Flanges/Connectors	694	0.00039	0.595	2.608
Relief Valves	18	0.0088	0.348	1.526
Sample Points	5	0.002	0.022	0.096
Pump Seals	0	0.0024	0.000	0.000
Compressor Seals	3	0.0088	0.058	0.254
TOTALS	**920**		**3.004**	**13.158**

Residue Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.912431	16	14.599	82.53	2.479	10.858
Ethane	0.054849	30.1	1.651	9.33	0.280	1.228
Propane	0.00131	44.1	0.058	0.33	0.010	0.043
Butanes	0.000021	58.1	0.001	0.01	0.000	0.001
Pentanes	-	72.2	-	-	-	-
Hexanes+	-	86.2	-	-	-	-
Hydrogen Sulfide	-	34.1	-	-	-	-
Other (Non-HC)	0.031389	44	1.381	7.81	0.235	1.027
TOTALS	**1.00**	**384.80**	**17.69**	**100**	**3.004**	**13.158**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate = **0.010 lb/hr**

Annual Emission Rate = **0.044 tpy**

Note: Based on DCP's recent 10/21/13 Linam Ranch fuel/residue gas analysis from 10/14/13 sample

Residue Gas Fugitive HAPs			
HAP Component	**Mole % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	-	-	-
Benzene	-	-	-
Toluene	-	-	-
Ethyl Benzene	-	-	-
Xylenes	-	-	-
TOTALS	-	-	-

Note: Based on DCP's recent 10/21/13 Linam Ranch fuel/residue gas analysis from 10/14/13 sample

DCP Midstream Services, LP - Linam Ranch Gas Plant

Y-Grade Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	95	0.0025	0.523	2.289
Flanges/Connectors	135	0.00021	0.062	0.273
Relief Valves	3	0.0075	0.050	0.217
Sample Points	6	0.00014	0.002	0.008
Pump Seals	0	0.013	0.000	0.000
Compressor Seals	0	0.0075	0.000	0.000
TOTALS	**239**		**0.636**	**2.787**

Y-Grade Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0	16	0.000	0.00	0.000	0.000
Ethane	0.41	30.1	12.341	29.89	0.190	0.833
Propane	0.23	44.1	10.143	24.56	0.156	0.685
Butanes	0.095	58.1	5.520	13.37	0.085	0.372
Pentanes	0.034	72.2	2.455	5.94	0.038	0.166
Hexanes+	0.02	86.2	1.724	4.18	0.027	0.116
Hydrogen Sulfide	0.022	34.1	0.750	1.82	0.012	0.051
Other (Non-HC)	0.19	44	8.360	20.25	0.129	0.564
TOTALS	**1.00**	**384.80**	**41.29**	**100**	**0.636**	**2.787**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate =0.636-(0+0.190+0.012+0.129) = **0.305 lb/hr**

Annual Emission Rate = 2.787-(0+0.833+0.051+0.564) = **1.339 tpy**

Y-Grade Fugitive HAPs			
HAP Component	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	4.18	0.027	0.116
Benzene	0.023	0.000	0.001
Toluene	0.039	0.000	0.001
Ethyl Benzene	0.002	0.000	0.000
Xylenes	0.01	0.000	0.000
TOTALS	**4.254**	**0.027**	**0.119**

Note 1: Hexane content estimated from fugitive speciation in previous spreadsheet

Note 2: BTEX Content of inlet gas stream from Table 4-6 GRI-HAP Calc Manual for NG. Speciation based on API/GRI bag study

DCP Midstream Services, LP - Linam Ranch Gas Plant

Natural Gas Liquids Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	340	0.0025	1.870	8.191
Flanges/Connectors	767	0.00021	0.354	1.552
Relief Valves	9	0.0075	0.149	0.650
Sample Points	4	0.00014	0.001	0.005
Pump Seals	8	0.013	0.229	1.002
Compressor Seals	0	0.0075	0.000	0.000
TOTALS	**1128**		**2.603**	**11.401**

Natural Gas Liquids Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0	16	0.000	0.00	0.000	0.000
Ethane	0.01	30.1	0.301	0.49	0.013	0.056
Propane	0.4	44.1	17.640	28.55	0.743	3.255
Butanes	0.2	58.1	11.620	18.81	0.490	2.144
Pentanes	0.1	72.2	7.220	11.69	0.304	1.332
Hexanes+	0.29	86.2	24.998	40.46	1.053	4.613
Hydrogen Sulfide	0	34.1	0.000	0.00	0.000	0.000
Other (Non-HC)	0	44	0.000	0.00	0.000	0.000
TOTALS	**1.00**	**384.80**	**61.78**	**100**	**2.603**	**11.401**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate = 2.603-(0+0.013+0+0) = **2.59 lb/hr**

Annual Emission Rate = 11.401-(0+0.056+0+0) = **11.345 tpy**

Natural Gas Liquids Fugitive HAPs			
HAP Component	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	40.5	1.054	4.617
Benzene	0.023	0.001	0.003
Toluene	0.039	0.001	0.004
Ethyl Benzene	0.002	0.000	0.000
Xylenes	0.01	0.000	0.001
TOTALS	**40.574**	**1.056**	**4.626**

Note 1: Hexane content estimated from fugitive speciation in previous spreadsheet

Note 2: BTEX Content of inlet gas stream from Table 4-6 GRI-HAP Calc Manual for NG. Speciation based on API/GRI bag study

DCP Midstream Services, LP - Linam Ranch Gas Plant

Condensate Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	419	0.0025	2.305	10.094
Flanges/Connectors	1172	0.00021	0.541	2.372
Relief Valves	12	0.0075	0.198	0.867
Sample Points	10	0.00014	0.003	0.013
Pump Seals	28	0.013	0.801	3.508
Compressor Seals		0.0075	0.000	0.000
TOTALS	**1641**		**3.848**	**16.854**

Condensate Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0	16	0.000	0.00	0.000	0.000
Ethane	0.007	30.1	0.211	0.27	0.010	0.045
Propane	0.031	44.1	1.367	1.75	0.067	0.294
Butanes	0.11	58.1	6.391	8.16	0.314	1.376
Pentanes	0.21	72.2	15.162	19.36	0.745	3.264
Hexanes+	0.64	86.2	55.168	70.46	2.711	11.875
Hydrogen Sulfide	0	34.1	0.000	0.00	0.000	0.000
Other (Non-HC)	0	44	0.000	0.00	0.000	0.000
TOTALS	**1.00**	**384.80**	**78.30**	**100**	**3.848**	**16.854**

VOC Emissions = Total Emissions-(Methane+Ethane+Hydrogen Sulfide+Other)

Hourly Emission Rate = 3.848-(0+0.010+0+0) = **3.838 lb/hr**

Annual Emission Rate = 16.854-(0+0.045+0+0) = **16.809 tpy**

Condensate Fugitive HAPs			
HAP Component	**Wt. % of Stream**	**HAP Fugitive Emissions (lb/hr)**	**HAP Fugitive Emissions (tpy)**
Hexane	70.3	2.705	11.848
Benzene	0.023	0.001	0.004
Toluene	0.039	0.002	0.007
Ethyl Benzene	0.002	0.000	0.000
Xylenes	0.01	0.000	0.002
TOTALS	**70.374**	**2.708**	**11.861**

Note 1: Hexane content estimated from fugitive speciation in previous spreadsheet

Note 2: BTEX Content of inlet gas stream from Table 4-6 GRI-HAP Calc Manual for NG. Speciation based on API/GRI bag study

DCP Midstream Services, LP - Linam Ranch Gas Plant

Amine Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	419	0.0025	2.305	10.094
Flanges/Connectors	1172	0.00021	0.541	2.372
Relief Valves	12	0.0075	0.198	0.867
Sample Points	10	0.0014	0.031	0.135
Pump Seals	28	0.013	0.801	3.508
Compressor Seals		0.0075	0.000	0.000
TOTALS	**1641**		**3.876**	**16.975**

Amine Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Propane	1	44.1	44.100	100.00	3.876	16.975
TOTALS	**1.00**	**44.10**	**44.10**	**100**	**3.876**	**16.975**

VOC Emissions = Total Emissions

Hourly Emission Rate = **3.876 lb/hr**

Annual Emission Rate = **16.975 tpy**

DCP Midstream Services, LP - Linam Ranch Gas Plant

Rich Amine Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	72	0.0025	0.396	1.734
Flanges/Connectors	2	0.00021	0.001	0.004
Relief Valves	0	0.0075	0.000	0.000
Open Ends	0	0.0014	0.000	0.000
Pump Seals	0	0.013	0.000	0.000
Compressor Seals	0	0.0075	0.000	0.000
TOTALS	**74**		**0.397**	**1.739**

Rich Amine Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Monoethanolamine	0.213	105.1	22.386	58.85	0.234	1.023
Hydrogen Sulfide	0.018	34.1	0.614	1.61	0.006	0.028
Carbon Dioxide	0.046	44.1	2.029	5.33	0.021	0.093
Water	0.723	18	13.014	34.21	0.136	0.595
TOTALS	**1.00**	**201.30**	**38.04**	**100**	**0.397**	**1.739**

Note 1: MEA is not a HAP; therefore, there are no HAP fugitives associated with the Rich Amine System.
Note 2: MEA is not significant (VP<10 mm Hg). Fugitives were calculated for rich amine only top obtain H2S
H2S is significant (VP>10 mm Hg).

DCP Midstream Services, LP - Linam Ranch Gas Plant

Acid Gas Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	548	0.0045	5.425	23.762
Flanges/Connectors	2083	0.00039	1.787	7.828
Relief Valves	18	0.0088	0.348	1.526
Sample Points	9	0.002	0.040	0.173
Pump Seals	0.0E+00	0.0024	0.0E+00	0.0E+00
Compressor Seals	10	0.0088	0.194	0.848
TOTALS	**2668**		**7.794**	**34.138**

ACID GAS	***TOTAL***
VALVES	548
FLANGES	788
SCREWED CONNECTIONS	1228
PRV'S	18
UNIONS	67
COMPRESSOR SEALS	10
SAMPLE POINTS	9

Acid Gas Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.0036	16	0.058	0.14	0.011	0.047
Ethane	0.0008	30.1	0.024	0.06	0.004	0.020
Hydrogen Sulfide	0.1871	34.1	6.380	15.14	1.18	5.17
Carbon Dioxide	0.8065	44.1	35.567	84.40	6.58	28.81
Propane	0.0003	44.1	0.013	0.03	0.002	0.011
Butanes	0.0008	58.1	0.046	0.11	0.009	0.038
Pentanes	0.00014	72.2	0.010	0.02	0.002	0.008
Hexanes+	0.0005	86.2	0.043	0.10	0.008	0.035
TOTALS	**1.00**	**124.30**	**42.03**	**100.00**	**7.79**	**34.14**

VOC Emissions = (Propane+Butanes+Pentanes+Hexanes)
Hourly Emission Rate = 0.021
Annual Emission Rate = 0.091

Based on DCP's recent 11/1/13 Linam Ranch Acid Gas Analysis

DCP Midstream Services, LP - Linam Ranch Gas Plant

Sour Water Fugitives				
Component	**No. of Components**	**EPA Component Emission Factor (kg/hr/source)**	**THC Fugitive Emissions (lb/hr)**	**THC Fugitive Emissions (tpy)**
Valves	45	0.0025	0.25	1.084
Flanges/Connectors	135	0.00021	0.062	0.273
Relief Valves	3	0.0075	0.050	0.217
Sample Points	2	0.0014	0.0062	0.027
Pump Seals	0.0E+00	0.013	0.0E+00	0.0E+00
Compressor Seals	0.0E+00	0.0075	0.0E+00	0.0E+00
TOTALS	**185**		**0.366**	**1.601**

SOUR WATER	***TOTAL***
VALVES	45
FLANGES	31
SCREWED CONNECTIONS	82
PRV'S	3
UNIONS	22
COMPRESSOR SEALS	0
SAMPLE POINTS	2

Sour Water Fugitives - Speciated						
Compound	**Mole Fraction**	**Molecular Weight**	**Weight Per Mole**	**Weight %**	**Fugitive Emissions (lb/hr)**	**Fugitive Emissions (tpy)**
Methane	0.0036	16	0.058	0.14	5.0E-04	0.002
Ethane	0.0008	30	0.024	0.057	2.1E-04	0.001
Hydrogen Sulfide	0.1871	34	6.4	15	5.5E-02	0.242
Carbon Dioxide	0.8065	44	36	84	3.1E-01	1.351
Propane	0.0003	44	0.013	0.031	1.1E-04	0.001
Butanes	0.0008	58	0.046	0.11	4.0E-04	0.002
Pentanes	0.00014	72	0.010	0.023	8.5E-05	0.000
Hexanes+	0.0005	86	0.043	0.10	3.7E-04	0.002
TOTALS	**1.00**	**124.30**	**42.03**	**100.00**	**0.366**	**1.601**

VOC Emissions = (Propane+Butanes+Pentanes+Hexanes)
Hourly Emission Rate = 0.001
Annual Emission Rate = 0.004

Based on DCP's recent 11/1/13 Linam Ranch Acid Gas Analysis

COMPONENTS AND NET VOC and GHG FUGITIVE EMISSIONS BY UNIT / SERVICE / COMPONENT
DCP Midstream, Linam Ranch Gas Plant

Number of Components

	Gas					Light Oil					Water / Oil				
Unit	Valves	Pumps	Others	Connectors	Flanges	Valves	Pumps	Others	Connectors	Flanges	Valves	Pumps	Others	Connectors	Flanges
Inlet System	29	0	34	0	95	0	0	0	0	0	0	0	0	0	0
Dual Service	16	0	24	0	40	0	0	0	0	0	0	0	0	0	0
Turbine	30	0	40	0	110	12	6	18	0	30	0	0	0	0	0
Amine System	0	0	0	0	0	0	0	0	0	0	17	4	28	0	42
VRU	22	1	29	0	70	47	2	30	0	130	0	0	0	0	0
Turboexpander	12	0	20	0	40	16	2	20	0	40	0	0	0	0	0
Totals	109	1	147	0	355	75	10	68	0	200	17	4	28	0	42
Emission Factor (lb/hr/component)	9.99E-03	5.29E-03	1.94E-02	4.41E-04	8.60E-04	5.51E-03	2.87E-02	1.65E-02	4.63E-04	2.43E-04	2.16E-04	5.29E-05	3.09E-02	2.43E-04	6.39E-06

Emission by Unit / Service / Component, lbs/hr

	Gas					Light Oil					Water / Oil				
Unit	Valves	Pumps	Others	Connectors	Flanges	Valves	Pumps	Others	Connectors	Flanges	Valves	Pumps	Others	Connectors	Flanges
Inlet System	0.2896		0.6596		0.0817										
Dual Service	0.1598		0.4656		0.0344										
Turbine	0.2996		0.7760		0.0946	0.0661	0.1720	0.2976		0.0073					
Amine System											0.0037	0.0002	0.8642		0.0003
VRU	0.2197	0.0053	0.5626		0.0602	0.2590	0.0573	0.4960		0.0315					
Turboexpander	0.1198		0.3880		0.0344	0.0882	0.0573	0.3307		0.0097					
Total Service / Component (lb/hr)	1.0886	0.0053	2.8519	0.0000	0.3052	0.4134	0.2866	1.1243	0	0.0485	0.0037	0.0002	0.8642	0.0000	0.0003

[1] Based on information provided by DCP Midstream personnel February 2011 ("Components" spreadsheet, REV-07)

	VOC		GHG		Hexane		Benzene		Toluene		Ethylbenzene		Xylenes	
Unit	**fraction**	**lb/hr**	**fraction**	**lb/hr**	**fraction**	**lb/hr**	**fraction**	**lb/hr**	**fraction**	**lb/hr**	**fraction**	**lb/hr**	**fraction**	**lb/hr**
Inlet System	0.25	**0.26**	0.75	**0.78**	0.022	**0.023**	0.00023	**2.37E-04**	0.00039	**4.02E-04**	0.00002	**2.06E-05**	0.00010	**1.03E-04**
Dual Service	0.25	**0.16**	0.75	**0.50**	0.022	**0.015**	0.00023	**1.52E-04**	0.00039	**2.57E-04**	0.00002	**1.32E-05**	0.00010	**6.60E-05**
Turbine	0.25	**0.29**	0.75	**0.88**	0.022	**0.038**	0.00023	**3.94E-04**	0.00039	**6.68E-04**	0.00002	**3.43E-05**	0.00010	**1.71E-04**
Turbine - Lube Oil	1.00	**0.54**												
Amine System	1.00	**0.87**												
VRU	1.00	**1.69**			0.703	**1.189**	0.00023	**3.89E-04**	0.00039	**6.60E-04**	0.00002	**3.38E-05**	0.00010	**1.69E-04**
Turboexpander - Lube Oil	1.00	**0.49**												
Turboexpander	0.05	**0.03**	0.95	**0.52**			0.00023	**1.25E-04**	0.00039	**2.11E-04**	0.00002	**1.08E-05**	0.00010	**5.42E-05**
Total Service / Component (lb/hr)		**4.32**		**2.66**		**1.26**		**1.30E-03**		**2.20E-03**		**1.13E-04**		**5.64E-04**

	VOC	GHG	
Total Net Change	**4.32**	**2.66**	**lb/hr**
	18.94	**11.67**	**tpy**

TOC EMISSION FACTORS
DCP Midstream, Linam Ranch Gas Plant

Component Type	Service[2]	Emission Factor[1] (kg/hr/source)	Emission Factor (lb/hr/source)
Valve	Gas	4.5E-03	9.99E-03
	Heavy Oil	8.4E-06	1.85E-05
	Light Oil	2.5E-03	5.51E-03
	Water/Oil	9.8E-05	2.16E-04
			0.00E+00
Pump Seals	Gas	2.4E-03	5.29E-03
	Heavy Oil	NA	
	Light Oil	1.3E-02	2.87E-02
	Water/Oil	2.4E-05	5.29E-05
			0.00E+00
Others[3]	Gas	8.8E-03	1.94E-02
	Heavy Oil	3.2E-05	7.05E-05
	Light Oil	7.5E-03	1.65E-02
	Water/Oil	1.4E-02	3.09E-02
Connectors	Gas	2.0E-04	4.41E-04
	Heavy Oil	7.5E-06	1.65E-05
	Light Oil	2.1E-04	4.63E-04
	Water/Oil	1.1E-04	2.43E-04
Flanges	Gas	3.9E-04	8.60E-04
	Heavy Oil	3.9E-07	8.60E-07
	Light Oil	1.1E-04	2.43E-04
	Water/Oil	2.9E-06	6.39E-06
Open-ended lines	Gas	2.0E-03	4.41E-03
	Heavy Oil	1.4E-04	3.09E-04
	Light Oil	1.4E-03	3.09E-03
	Water/Oil	2.5E-04	5.51E-04

Notes

[1] EPA Protocol For Equipment Leak Emission Estimates, Table 2-4

[2] Water/oil emission factors apply to water streams in oil service with water content between 50-90%.

[3] "Others" includes compressors, drains/vents, PSV and sample points. This follows the convention stated in Note "c" in Table 2-4 of EPA Protocol For Equipment Leak Emission Estimates.

H_2S FUGITIVE EMISSIONS using PETROLEUM INDUSTRY LEAK RATE/SCREENING VALUE CORRELATIONS
DCP Midstream, Linam Ranch Gas Plant

Number of Components

	Gas					Water / Oil				
Unit	Valves	Pumps	Others	Connectors	Flanges	Valves	Pumps	Others	Connectors	Flanges
Acid Gas	548	0	37	1295	788	0	0	0	0	0
Sour Water	0	0	0	0	0	45	0	5	104	31
Totals	593	0	42	1399	819					

SV (Screening Value)= 35 ppmv[1]
Components in simultaneous service. 50%

Component	Number of Components	Correlation Factor (kg/hr)	Exponent	EPA Component Emission Factor[2] (kg/hr/source)	H_2S Fugitive Emissions (lb/hr)	H_2S Fugitive Emissions (tpy)
Valves/all	593	2.29E-06	0.746	3.25E-05	0.021	0.093
Pump seals/a	0	5.03E-05	0.610	4.40E-04	0.000	0.000
Others	42	1.36E-05	0.589	1.10E-04	0.005	0.022
Connectors/a	1399	1.53E-06	0.735	2.09E-05	0.032	0.141
Flanges/all	819	4.61E-06	0.703	5.61E-05	0.051	0.222
Open-ended l	0	2.20E-06	0.704	2.69E-05	0.000	0.000
Totals					0.109	0.478

[1] In-plant monitors are set at 10 ppm. Therefore, DCP is conservatively estimating emissions by assuming a screening value (correlated to leakage rate) for each component is 35 ppmv. Some components may leak at higher rates, but most will leak at lower rates. concentration and represents a further conservative assumption.

[2]

EPA Protocol for Equipment Leak Emission Estimates (November, 1995, Publication No. EPA-453 /R-95-017), Table 2-10.

[3] Allocation of emissions to volume sources used in modeling.

	Frac. Total	Emission rate
AGI Compression	0.4	0.044
AGI well or AGI Flare	0.1	0.011
Plant Compression	0.4	0.044
Plant pipe	0.1	0.011

DCP Midstream Services, LP - Linam Ranch Gas Plant

ACID GAS	TOTAL
VALVES	548
FLANGES	788
SCREWED CONNECTIONS	1228
PRV'S	18
UNIONS	67
COMPRESSOR SEALS	10
SAMPLE POINTS	9

SOUR WATER	TOTAL
VALVES	45
FLANGES	31
SCREWED CONNECTIONS	82
PRV'S	3
UNIONS	22
COMPRESSOR SEALS	0
SAMPLE POINTS	2

TABLE 2-10. PETROLEUM INDUSTRY LEAK RATE/SCREENING VALUE CORRELATIONS[a]

Equipment type/service	Correlation[b,c]
Valves/all	Leak rate (kg/hr) = 2.29E-06 × $(SV)^{0.746}$
Pump seals/all	Leak rate (kg/hr) = 5.03E-05 × $(SV)^{0.610}$
Others[d]	Leak rate (kg/hr) = 1.36E-05 × $(SV)^{0.589}$
Connectors/all	Leak rate (kg/hr) = 1.53E-06 × $(SV)^{0.735}$
Flanges/all	Leak rate (kg/hr) = 4.61E-06 × $(SV)^{0.703}$
Open-ended lines/all	Leak rate (kg/hr) = 2.20E-06 × $(SV)^{0.704}$

[a]The correlations presented in this table are revised petroleum industry correlations.

[b]SV = Screening value in ppmv.

[c]These correlations predict total organic compound emission rates (including non-VOC's such as methane and ethane).

[d]The "other" equipment type was derived from instruments, loading arms, pressure relief valves, stuffing boxes, and vents. This "other" equipment type should be applied to any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

New Calculations for Existing Routine or Predictable Emissions during Startup, Shutdown, and Scheduled Maintenance (SSM)

DCP MIDSTREAM
Linam Ranch Gas Plant
SSM & M ACTIVITY EMISSIONS SUMMARY

Activity/Unit	NOx		CO		VOCs		SOx		TSP		PM10		PM2.5		H_2S		Total HAPs		CO_2e	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Plant turnaround	-	-	-	-	3,029	15	-	-	-	-	-	-	-	-	0.19	9.5E-05	0.11	5.4E-05	-	22
Plant Startup (post turnaround)	-	-	-	-	1,990	7.0	-	-	-	-	-	-	-	-	54	0.19	31	0.11	-	429
Condensate Tank Degassing (5% VRU Downtime)	-	-	-	-	28	6.0	-	-	-	-	-	-	-	-	-	-	10	2.3	-	-
Condensate Tank Degassing (5% VRUTMP Downtime)	-	-	-	-	25	5.4	-	-	-	-	-	-	-	-	-	-	9.4	2.0	-	-
Gas Piping Degassing (meter proving and line isolation)	-	-	-	-	7.6	0.14	-	-	-	-	-	-	-	-	0.20	3.7E-03	0.12	2.10E-03	-	8.4
Pigging	-	-	-	-	4.5	0.12	-	-	-	-	-	-	-	-	0.12	3.1E-03	0.069	1.78E-03	-	7.2
Vacuum Trucks (All Tank Cleanout)	-	-	-	-	72	0.093	-	-	-	-	-	-	-	-	1.9	0.0025	1.1	1.42E-03	-	5.7
Engine Startup[1]	-	-	-	-	0.034	0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Turbine Blowdown[1]	-	-	-	-	204	1.1	-	-	-	-	-	-	-	-	5.5	0.066	3.1	0.020	-	68
Compressor Blowdown[1]	-	-	-	-	32	1.9	-	-	-	-	-	-	-	-	0.85	0.051	0.49	0.029	-	117
Unit 2- E. Amine Acid Gas Flare	15	0.88	81	4.8	1.6	0.0090	7,751	46	-	-	-	-	-	-	84	0.48	0.6	0.0036	-	137
AGI Flare	18	0.71	97	44	1.9	0.00080	9,301	4.1	-	-	-	-	-	-	101	0.043	0.7	0.7	-	0.20
Unit 4A - ESD Flare	288	4.3	1,565	24	862	7.4	2,148	19	-	-	-	-	-	-	23	0.20	15	0.12	-	4,500
SSM Emission Totals	**320**	**6**	**1,742**	**73**	**6,021**	**44**	**19,201**	**69**	**-**	**-**	**-**	**-**	**-**	**-**	**271**	**1.0**	**71**	**5.4**	**-**	**5313**

[1] Hourly emission rate shown for informational purposes only; emissions were calculated assuming each activity lasts 1 hour.

Unit	NOx		CO		VOCs		SOx		TSP		PM10		PM2.5		H_2S	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Malfunction	288	10	1,565	10	3,029	10	9,301	10	-	-	-	-	-	-	101	10
Malfunction Total	**288**	**10**	**1,565**	**10**	**3,029**	**10**	**9,301**	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**101**	**10**

The highest hourly emission rates above are used for malfunction activities.

Unit	NOx		CO		VOCs		SOx		TSP		PM10		PM2.5		H_2S		Total HAPs		CO_2e	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
SSM & Malfunction Emisson Totals	**320**	**16**	**1,742**	**83**	**6,021**	**54**	**19,201**	**79**	**-**	**-**	**-**	**-**	**-**	**-**	**271**	**11**	**71**	**5**	**-**	**5,313**

Total annual SSM & Malfunction emissions includes annual SSM plus annual malfunction emissions. Hourly SSM & malfunction emissions are the highest of hourly SSM or malfunction emission rates.

DCP Midstream, LP - Linam Ranch Gas Plant

Inlet Gas Analysis

Inlet: M0500#

Component	MW	Mol%	MW * vol %	Mass Fraction
Water	18.02	0.00%	0.0000	0.00%
Nitrogen	28.01	2.46%	0.6894	3.15%
Argon/Oxygen	31.99	0.00%	0.0000	0.00%
Carbon Dioxide	44.01	1.61%	0.7079	3.23%
Hydrogen Sulfide	34.08	0.38%	0.1296	0.59%
Methane	16.04	73.54%	11.7976	53.85%
Ethane	30.07	12.59%	3.7850	17.28%
Propane	44.10	6.15%	2.7110	12.37%
i-Butane	58.12	0.70%	0.4046	1.85%
n-Butane	58.12	1.62%	0.9412	4.30%
i- & n-Pentane	72.15	0.65%	0.4670	2.13%
Cyclopentane	70.14	0.028%	0.0197	0.0900%
C6 HCs	86.18	0.15%	0.1281	0.58%
C7 HCs	100.21	0.04%	0.0445	0.20%
C8 HCs	114.23	0.01%	0.0059	0.03%
C9 HCs	128.26	0.001%	0.0017	0.01%
n-Hexane	86.18	0.05%	0.0466	0.21%
Benzene	78.11	0.028%	0.0216	0.10%
Toluene	92.14	0.006%	0.0052	0.02%
Ethyl Benzene	106.17	0.0001%	0.0001	0.0005%
Xylenes	106.17	0.0002%	0.0002	0.001%
Total		100%	21.91	100%

[1] *Compostion is based on Linam M0500# inlet gas analysis dated 11/11/13*

MW of Gas = 21.9068

Weight % VOCs = 22%

Universal Gas Content = 379.4 scf/lb-mol @ 60 F and 14.696 psia

Atmospheric Pressure

Site Elevation	3710	ft MSL	
Site Air Pressure	26.10	in Hg	Calculated based on elevation
Site Air Pressure	12.82	psia	Conversion factor

DCP Midstream, LP - Linam Ranch Gas Plant

Fuel Gas Analysis

Inlet: Residue/Fuel Gas Analysis

Component	MW	Mol%	MW * wet vol %	Mass Fraction (wet)
Water	18.02	0.0000%	0.0000	0.00%
Nitrogen	28.01	3.1359%	0.8785	5.10%
Argon/Oxygen	31.99	0.0000%	0.0000	0.00%
Carbon Dioxide	44.01	0.0030%	0.0013	0.01%
Hydrogen Sulfide	34.08	0.0000%	0.0000	0.00%
Methane	16.04	91.2431%	14.6381	84.98%
Ethane	30.07	5.4849%	1.6493	9.57%
Propane	44.10	0.1310%	0.0578	0.34%
i-Butane	58.12	0.0012%	0.0007	0.00%
n-Butane	58.12	0.0009%	0.0005	0.00%
i-Pentane	72.15	0.0000%	0.0000	0.00%
n-Pentane	72.15	0.0000%	0.0000	0.00%
Hexanes +	86.18	0.0000%	0.0000	0.00%
Total		100%	17.23	100%

[1] *Composition is based on the 10/21/13 Linam Ranch Fuel Gas extended analysis*

DCP MIDSTREAM
Linam Ranch Gas Plant
SAMPLE EMISSIONS CALCULATIONS -TURNAROUND EMISSIONS

Calculation Basis:

Multiple steps comprise a plant turnaround. Step 1 - For the natural gas system, emissions to the atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure. Step 2 - For systems in liquid service clingage emissions degassing emissions occur after the system is de-inventoried. Degassing emissions are calculated using the Ideal Gas Law. Step 3 - After systems are degassed and opened, residual materials (clingage) may be emitted to the atmosphere. Clingage emissions are estiamted using system volumes and an assumed clingage amount.

Total lb/hr emissions from each liquid system turnaround step (degassing, clingage) assume that any liquid system may undergo turnaround at any time. Maximum lb/hr emissions from all turnaround steps is calculated as the maximum lb/hr emission rate from any step.

Constants and Variables:

	System/Service Name									
	N.G. (gas)	Glycol	Lube oil	Amine	NGL Product	Propane (liq)	Methanol	Condensate		
fluid type (@ atm):	Gas	Liquid	Liquid	Liquid	Gas	Gas	Liquid	Liquid		
Volume:	3,549,116	3,997	220,925	14,150	107,397	6,280	4,807	2,203	scf (for N.G.), gal (for liquids)	
Process Temperature :	95.00								° F	
Ideal Gas Constant :	10.73								$(ft^3)(psi)/(lbmol)(°R)$	
Density:	0.0578	9.28	7.50	8.66	0.23	0.20	6.66	6.00	lb/scf (for gas), lb/gal (for liquid) - from DCP turnaround quantity calculations	
Vapor Pressure:	N/A	0.001	0.010	0.002	24.7	24.7	3.868	5.52	psi	MSDS, or Tanks 4.0d for condensate
Molecular Weight:	21.91	62.07	170	119.16	51	44	32	92	lb/lbmol	MSDS, or Tanks 4.0d for condensate
VOC Content :	21.9%	100	100	100	100	100	100	99.74	Wt. %	For N.G., from Residue Gas Analysis for Condensate from ProMax Gas Composition
Total HAPs Content:	0.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Wt. %	For N.G., from Gas Composition Sheet. Assumes all Hexanes+ are HAPs
H2S Content:	0.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Wt. %	For N.G., from Gas Composition Sheet
CO2 Content:	3.23%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Wt. %	from Gas Composition Sheet
CH4 Content:	53.85%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Wt. %	from Gas Composition Sheet

VOC Emissions, N.G. System Blowdown

Volume of system = 3,549,116 ft^3

Amount HC vented to atmosphere (lb) = (Volume x density)

= 3,549,116 ft^3 | 0.058 lb / ft^3

= 25,643 lbs N.G. (lb/hr) — 8 hours for plant blowdown

= 56 lbs VOC (lb/hr)

Maximum number of turnarounds = 1.00 activity/yr — from site data sheet

= 0.22 tpy VOC

= 0.11 lb/hr Total HAPs

= 5.39E-05 tpy Total HAPs

= 0.19 lb/hr H2S

= 9.48E-05 tpy H2S

= 103.6 lb/hr CO2

= 5.18E-02 tpy CO2

= 1726.2 lb/hr CH4

= 8.63E-01 tpy CH4

= 21.63 tpy CO2e

Liquid system opening loss (vapor space, atm liquid systems only)

Amount emitted (lbs) = P*V*MW / (R * T)

Glycol system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

= 3,997 gal | 1 | 0.13368 ft3 | 62.07 lb | 0.001 psi | 100 % VOC

10.73 ft^3 * psi / °R * lb-mol | 555 * R | gal | lb-mol

= 7.33E-03 lbs VOC/hr — assume degassing occurs in one hour

= 3.66E-06 tpy VOC

Lube Oil system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

= 220,925 gal | 1 | 0.13368 ft3 | 170.00 lb | 0.010 psi | 100 % VOC

10.73 ft^3 * psi / °R * lb-mol | 555 * R | gal | lb-mol

= 8.43 lbs VOC/hr — assume degassing occurs in one hour

= 4.21E-03 tpy VOC

Amine system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

= 14,150 gal | 1 | 0.13368 ft3 | 119.16 lb | 0.0025 psi | 100 % VOC

10.73 ft^3 * psi / °R * lb-mol | 555 * R | gal | lb-mol

= 0.094 lbs VOC/hr — assume degassing occurs in one hour

= 4.68E-05 tpy VOC

DCP MIDSTREAM
Linam Ranch Gas Plant
SAMPLE EMISSIONS CALCULATIONS -TURNAROUND EMISSIONS

Methanol system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

=	4,807	gal	1	0.13368	ft3	32.00	lb	3.87	psi	100	% VOC
	10.73	ft^3 * psi / °R * lb-mol	555	* R	gal		lb-mol				

= 13.35 lbs VOC/hr assume degassing occurs in one hour
= 6.68E-03 tpy VOC

Condensate system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

=	2,203	gal	1	0.13368	ft3	92.00	lb	5.52	psi	99.7	% VOC
	10.73	ft^3 * psi / °R * lb-mol	555	* R	gal		lb-mol				

= 25.06 lbs VOC/hr assume degassing occurs in one hour
= 1.25E-02 tpy VOC

NGL Product system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

=	107,397	scf	1	51.00	lb	24.70	psi	100.0	% VOC
	10.73	ft^3 * psi / °R * lb-mol	555	* R	lb-mol				

= 2839.31 lbs VOC/hr assume degassing occurs in 8 hours
= 11.36 tpy VOC

Propane (liq) system:

Amount VOC vented to atmosphere (lb) = (Volume x molecular weight x vapor pressure) / (Gas Constant x Temperature [°R]) * MW

=	6,280	scf	1	44.00	lb	24.70	psi	100.0	% VOC
	10.73	ft^3 * psi / °R * lb-mol	555	* R	lb-mol				

= 143.24 lbs VOC/hr assume degassing occurs in 8 hours
= 0.57 tpy VOC

Total degassing (all systems): 3029.5 lbs VOC/hr
11.95 tpy VOC

System clingage loss (vapor space)

Assume: 0.25 % of liquid volume remains as clingage and is emitted to atm.
Assume: 0.05 % of NGL and Propane liquid system volume remains as clingage and is emitted to atm.
Duration of clingage losses: 24 hrs

System:	Glycol	Lube oil	Amine	Methanol	Condensate		
fluid type (@ atm):	Liquid	Liquid	Liquid	Liquid	Liquid		
Clingage volume:	9.99	552	35.38	12.02	5.51	gal	
Density:	9.28	7.50	8.66	6.66	6.00	lb/gal - from DCP turnaround quantity calculations	
% VOC:	100	100	100	100	99.74	wt %	
	92.68	4,140.68	306.47	80.1	32.96	lb/activity	
VOC Emissions:	4	173	13	3.34	1.37	lb/hr	assumed that clingage losses occur over a 24 hour period
	0.046	2.07	0.153	0.040	0.016	tpy	

Total clingage (all systems): 193.9 lbs VOC/hr
2.33 tpy VOC

Example calculation: Glycol system

Amount VOC vented to atmosphere (lb) = (System volume x % clingage x density x % VOC)

=	3,997	gal	0.25	% clingage	9.28 lb	100 % VOC
					gal	

Total Turnaround Activity Emissions:

lb/hr VOC:	**3,029**	Maximum hourly emissions from blowdown, liquid system venting or clingage steps.
tpy VOC:	**14.50**	Sum of emissions from all turnaround steps.
lb/hr H2S:	**0.19**	
tpy H2S:	**9.48E-05**	
lb/hr Total HAPs:	**0.11**	
tpy Total HAPs:	**5.39E-05**	
tpy CO2e	**21.630**	

These example calculations are not intended to be representations under 116.116(a), but are an example of the emission calculation approach for a sub-category of SSM emissions activities. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific plant or activity condition under 116.116(a). Individual activities in this MSS sub-category are performed which may have slight variations in procedure or equipment configuration.

DCP Midstream
Linam Ranch Gas Plant
Engine Startup/Warmup Calculations

Example Calculations:

Per Activity Propane Emissions Calculation:

ER (lb propane/startup) = Gas released (scf/release) x mol % / 379 scf/mol * MW

$$= \frac{324 \text{ scf}}{\text{release}} \cdot \frac{0.13 \text{ mol \%}}{100} \cdot \frac{44.097 \text{ lb}}{\text{lb mol}} \cdot \frac{\text{lb-mol}}{379 \text{ scf}} = 0.05 \text{ lb propane/startup}$$

Annual VOC Emissions Calculation:

Annual ER (tpy) = Gas Released per activity (lb/startup) x No. of activities per year / 2000 lb

$$= \frac{\text{lb}}{\text{activity}} \cdot \frac{\text{\# of startups}}{\text{yr}} \cdot \frac{\text{ton}}{2000 \text{ lb}}$$

Startup Emissions Calculations:

Calculation of gas released for each unit:

Activity	Gas Released (scf/release)	Gas Released in lb mol/release
Engine Startup	324	0.85

Note: Gas Release based on input from Site Data sheet.

Calculation of gas emissions from engine startup events:

0/21/13 Residue Gas Analy Component	Molecular Weight	Mole %	Gas Weight per engine startup (lb/activity)
Carbon Dioxide	44	0.003	0.00
Hydrogen Sulfide	34	0.000	0.00
Nitrogen	28	3.136	0.75
Methane	16	91.243	12.51
ethane	30	5.485	1.41
propane	44	0.131	0.0494
i-butane	58	0.001	0.0006
N-butane	58	0.001	0.0004
i-Pentane	72	0.000	0.00
n-Pentane	72	0.000	0.00
Hexanes +	86	0.000	0.00
Total Gas Released		100.00	14.73
Total VOC Released		0.133	0.05

Engine startup summary of VOC, H_2S and Total HAP emissions:

Pollutant	Activity E.R (lb/activity)	Number of Annual Activities	ER (lb/year)	Annual ER (tpy)	Hourly ER* (lb/hr)
VOC	0.0504	120	6.05	**0.003**	0.034
Hydrogen Sulfide	0.0000		0.00	**0.000**	0.00
Total HAPs	0.0000		0.00	**0.000**	0.00

*Hourly emission rate shown for informational purposes only; emissions were calculated assuming each activity lasts 1 hour.

GHG Pollutant	Hourly ER (lb/activity)	Number of Annual Activities	Annual ER (tpy)
CO_2	0.0011	120	0.0001
CH_4	12.51		0.7508
CO_2e			18.77

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DCP Midstream, LP
Linam Ranch Gas Plant
SAMPLE EMISSIONS CALCULATIONS -STARTUP EMISSIONS, POST TURNAROUND

Calculation Basis:

For the natural gas system, emissions to the atmosphere occur from a three step pressure test and purge prior to plant startup. These emissions are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at each purge step pressure.

Constants and Variables:

	N.G. (gas) System		
Plant startup duration:	7	hrs	From site data sheet
Annual startup frequency:	1	activity/yr (equivalent to turnaround frequency)	From site data sheet
Gas System Equipment Volume:	91,796	cu. Ft., from DCP turnaround quantity calculations	From site data sheet
Process Temperature :	95.0	° F	
Density:	0.0455	lb/scf (for gas)- from DCP turnaround quantity calculations	
VOC Content :	22%	Wt. %	From Gas Composition Sheet
Total HAP Content:	0.34%	Wt. %	From Gas Composition Sheet. Assumes all Hexanes+ are HAPs
H2S Content:	0.59%	Wt. %	From Gas Composition Sheet
CO2 Content:	3.23%	Wt. %	
CH4 Content:	53.85%	Wt. %	

VOC Emissions, N.G. System Blowdown:

Amount of gas vented to atmosphere (scf) = [Equipment volume x (system purge step pressure (psi) + 14.7)] / [554 deg R* 14.7 psi] * 520 deg R

System Purge Step #:	1	2	3	
System pressure prior to Purge:	30	50	100	psi
Amount of gas vented to atm:	279,136	404,029	716,261	scf @ 95 deg F [1]
	279.14	404.03	716.26	Mscf @ 95 deg F [1]
Total gas vented to atm (all steps):	1399.43			Mscf
	63.61			Mlbs
Hourly gas emission rate:	9087.18			lb/hr
Hourly VOC emission rate:	1990.00			lb/hr
Hourly Total HAP emission rate:	30.56			lb/hr
Hourly H2S emission rate:	53.77			lb/hr
Annual VOC Emission rate:	6.96			tpy
Annual Total HAP emission rate:	0.11			tpy
Annual H2S emission rate:	0.19			tpy

Note: [1] TCEQ guidance of final temperature for depressurizing to atmosphere, from chemical sector MSS permitting.

GHG Emissions	lb/hr	tpy
CO2	293.6	1.03
CH4	4893.8	17.1
Total CO2e		429.2

These example calculations are not intended to be representations under 116.116(a), but are an example of the emission calculation approach for a sub-category of MSS emissions activities. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific plant or activity condition under 116.116(a). Individual activities in this MSS sub-category are performed which may have slight variations in procedure or equipment configuration.

DCP Midstream
Linam Ranch Gas Plant
Compressor Blowdown Emission Calculations

Calculation Basis:

Emissions to the atmosphere from the blowdown of the compressors, attached to either engines or turbines. During a compressor blowdown gas will be released to the atmosphere.
Emissions are calculated using a mass balance and are based on the volume vented to the atmosphere.

Example Calculations:

Compressor Blowdown, Propane Emissions Calculation:

ER (lb propane/blowdown) = Gas released (scf/release) x mol % / 379 scf/mol * MW

$$= \frac{2500 \text{ scf}}{\text{release}} \cdot \frac{6.15 \text{ mol \%}}{100} \cdot \frac{44.097 \text{ lb}}{\text{lb mol}} \cdot \frac{\text{lb-mol}}{379 \text{ scf}} = 17.88 \text{ lb propane/Compressor blowdown}$$

Annual VOC Emissions Calculation:

Annual ER (tpy) = Gas Released per activity (lb/blowdown) x No. of activities per year / 2000 lb

$$= \frac{\text{lb}}{\text{activity}} \cdot \frac{\text{\# of blowdowns}}{\text{yr}} \cdot \frac{\text{ton}}{2000 \text{ lb}}$$

Blowdown Emissions Calculations:

Calculation of gas released for each compressor unit during a blowdown event:

Activity	Gas Released (scf/activity)	Gas Released in lb mol/activity
Blowdown Volume[1]	2,500	6.60

Notes:
[1] Blowdown based on site-specific blowdown volume (From site data sheet).

Calculation of gas emissions from compressor blowdown events:

Residue Gas Analysis Component	Molecular Weight	Mole %	Gas Weight per compressor (lb/activity)
Water	18.02	0.00	0.00
Nitrogen	28.01	2.46	4.55
Argon/Oxygen	31.99	0.00	0.00
Carbon Dioxide	44.01	1.61	4.67
Hydrogen Sulfide	34.08	0.38	0.85
Methane	16.04	73.54	77.82
Ethane	30.07	12.59	24.97
Propane	44.10	6.15	17.88
i-Butane	58.12	0.70	2.67
n-Butane	58.12	1.62	6.21
i- & n-Pentane	72.15	0.65	3.08
Cyclopentane	70.14	0.0281	0.13
C6 HCs	86.18	0.1487	0.85
C7 HCs	100.21	0.0444	0.293
C8 HCs	114.23	0.0052	0.0392
C9 HCs	128.26	0.0013	0.0110
n-Hexane	86.18	0.0541	0.3075
Benzene	78.11	0.0276	0.1422
Toluene	92.14	0.0056	0.0340
Ethyl Benzene	106.17	0.000100	0.00070
Xylenes	106.17	0.000200	0.00140
Total Gas Released		100	144.50
Total VOC Released		9.43	**31.64**

Number of Compressors =	6		
Frequency of Blowdowns =	20	releases/yr/compressor	
Total Number of Blowdowns =	120	releases/year	
Total Annual VOC Emissions =	**1.90**	**tpy**	
Total Annual H_2S Emissions =	**0.051**	**tpy**	
Total Annual HAP emissions =	**0.0292**	**tpy**	Conservatively assumes all Hexanes+ are HAPs
Hourly VOC Emissions =	**31.6**	**lb/hr**	
Hourly H2S Emissions =	**0.855**	**lb/hr**	
Hourly HAP Emissions =	**0.486**	**lb/hr**	

*Hourly emission rate shown for informational purposes only; emissions were calculated assuming each activity lasts 1 hour.

GHG Pollutant	Hourly ER (lb/activity)	Number of Annual Activities	Annual ER (tpy)
CO_2	4.6692	120.0	0.280
CH_4	77.8207		4.67
CO_2e			117.01

DCP Midstream
Linam Ranch Gas Plant
Turbine Blowdown Emission Calculations

Calculation Basis:

Emissions to the atmosphere from two types of turbine blowdowns: maintenance and washing related blowdowns. During a turbine wash blowdown occurs in three steps: a pre-wash blowdown to take the turbine out of service, a starter run (used to move turbine during washing) and finally a blowdown associated with turbine startup at completion of the wash. During a maintenance event blowdown occurs from an initial blowdown and starter blowdown. Emissions are calculated using a mass balance and are based on the volume vented to the atmosphere.

Example Calculations:

Turbine wash Blowdown, Propane Emissions Calculation:

ER (lb propane/blowdown) = Gas released (scf/release) x mol % / 379 scf/mol * MW

=	16100 scf	6.15 mol %	44.096 lb	lb-mol	=	115.16	lb propane/ turbine wash blowdown
	activity	100	lb mol	379 scf			

Annual VOC Emissions Calculation:

Annual ER (tpy) = Gas Released per activity (lb/blowdown) x No. of activities per year / 2000 lb

=	lb	# of blowdowns	ton
	activity	yr	2000 lb

Blowdown Emissions Calculations:

Calculation of gas released for each unit during a turbine wash:

Activity	Gas Released (scf/activity)	Gas Released in lb mol/activity
Pre-wash blowdown [1]	700	1.85
Blowdown during wash [2]	14,000	36.94
Starter blowdown [3]	1,400	3.69
Total (all steps) [4]	16,100	42.48

Notes:
[1] Pre-wash blowdown based on site-specific turbine blowdown volume (From site data sheet).
[2] Wash blowdown based on running 2 starters per turbine, with 1,400 scf/min, run for 5 minutes each
[3] Post-wash startup blowdown emissions from 3, 10-sec startups @ 1,400 scf/min for two starters.
[4] Maximum of one turbine wash per hour.

Calculation of gas released for each unit during a maintenance blowdown:

Activity	Gas Released (scf/activity)	Gas Released in lb mol/activity
Initial blowdown	700	1.85
Starter blowdown [3]	1,400	3.69
Total (both steps)	2,100	5.54

Calculation of gas emissions from turbine washing and non-wash blowdown events, using Residue Gas Analysis:

Residue Gas Analysis Component	Molecular Weight	Mole %	Gas Weight per turbine wash (lb/activity) [1]	Gas Weight per maintenance blowdown (lb/activity) [1]
Carbon Dioxide	44.01	1.608	30.07	0.72
Hydrogen Sulfide	34.08	0.38	5.51	3.82
Nitrogen	28.00	2.46	29.27	65.19
methane	16.00	73.54	499.82	20.97
ethane	30.07	12.59	160.79	15.02
propane	44.10	6.15	115.16	2.24
i-butane	58.12	0.70	17.19	5.21
N-butane	58.12	1.62	39.98	2.59
i- & n-Pentane	72.15	0.65	19.84	0.11
Cyclopentane	70.14	0.03	0.84	0.11
C6 HCs	86.18	0.15	5.44	0.71
C7 HCs	100.21	0.04	1.89	0.25
C8 HCs	114.23	0.01	0.25	0.03
C9 HCs	128.26	0.001	0.07	0.01
n-Hexane	86.18	0.05	1.98	0.26
Benzene	78.11	0.03	0.92	0.12
Toluene	92.14	0.01	0.22	0.03
Ethyl Benzene	106.17	0.00	0.00	0.00
Xylenes	106.17	0.00	0.01	0.00
Total Gas Released		100	929.24	117.39
Total VOC Released		9.43	**203.79**	**11.67**

Note: [1] The highest hourly emission rate is the maximum of either blowdown scenario: turbine washing or maintenance blowdown.

Frequency of Turbine Washing =	2	times/yr/turbine	
Frequency of Maintenance blowdowns=	4	times/yr/turbine	
Number of Turbines =	5	from site data sheet	
Annual VOC from Turbine Washing =	1.02	tpy	
Annual VOC from Maintenance Blowdowns =	0.1167	tpy	
Total Annual VOC Emissions =	1.14	tpy	
Total annual H2S from Turbine Washing =	0.028	tpy	
Total annual H2S from Maint blowdown =	0.038	tpy	
Total annual HAPs from Turbine Washing =	0.016	tpy	Calculated assuming all Hexane thru Xylenes are HAPs
Total annual HAPs from Maint blowdown =	0.004	tpy	Calculated assuming all Hexane thru Xylenes are HAPs
Total annual CO2 from Turbine Washing =	0.150	tpy	
Total annual CO2 from Maint blowdown =	0.007	tpy	
Total annual CH4 from Turbine Washing =	2.499	tpy	
Total annual CH4 from Maint blowdown =	0.210	tpy	
Total annual CO2e =	67.9	tpy	

Hours per activity each year, assuming each activity takes 1 hour:

Hours of Turbine Washing per year =	10	Five turbines are washed twice per year each
Hours of Maintenance Blowdowns per year =	20	Five turbines are blown down four times per year each.

Hourly VOC from Turbine Washing =	203.79	lb/hr
Hourly VOC from Maintenance Blowdowns =	11.67	lb/hr
Hourly H2S from Turbine Washing =	5.51	lb/hr
Hourly H2S from Maintenance Blowdowns =	3.82	lb/hr
Hourly HAPs from Turbine Washing =	3.13	lb/hr
Hourly HAPs from Maintenance Blowdowns =	0.41	lb/hr

Note: [1] The highest hourly emission rate is the maximum of either blowdown scenario: turbine washing or maintenance blowdown.
[2] Hourly emission rate shown for informational purposes only; emissions were calculated assuming each activity lasts 1 hour.

These example calculations are not intended to be representations under 116.116(a), but are an example of the emission calculation approach for a sub-category of MSS emission activities. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific plant or activity condition under 116.116(a). Individual activities in this MSS sub-category are performed which may have slight variations in procedure or equipment configuration.

DCP MIDSTREAM
Linam Ranch Gas Plant
SAMPLE EMISSIONS CALCULATIONS - PIPING OPENED TO ATMOSPHERE

Calculation Basis:

Emissions to the atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure.

Constants and Variables:

Venting Pressure :	1200	psia	Default
Piping Volume :	7.85	ft^3	Represents a 10ft. length of 12 in. diameter line
Process Temperature :	95.00	° F	
Ideal Gas Constant :	10.73	$(ft^3)(psi)/(lbmol)(°R)$	
Molecular Weight:	21.91	lb/lb mol	From Gas Composition Sheet
Activities per year :	36	count/year	Monthly meter proving and twice monthly line repair
VOC Content :	21.90	Wt. %	From Gas Composition Sheet
HAPs Content:	0.34	Wt. %	
H2S Content:	0.38	mol %	
CO_2 Concentration:	1.61	mol %	
CH_4 Concentration:	73.54	mol %	

Example Calculation - VOC Emissions

Volume of system = 7.85 ft^3

Amount HC vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	1200.00 psia	8 ft^3	21.91 lb	
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	lb-mol	

= 34.65 lbs HC/activity (lb/hr)
= 7.59 lbs VOC/activity (lb/hr)
= 0.14 tpy VOC
= 0.12 lbs HAPs
= 2.10E-03 tpy HAPs

Example Calculation - H2S Emissions

Volume of system = 7.85 ft^3

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	1200.00 psia	8 ft^3	0.38 lb-mol H2S	34.08 lb H2S
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol H2S

= 2.05E-01 lbs H2S/activity (lb/hr)
= 3.69E-03 tpy H2S

Example Calculation - CO2 Emissions

Volume of system = 7.85 ft^3

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	1200.00 psia	8 ft^3	1.61 lb-mol CO2	44.01 lb CO2
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol CO2

= 1.12E+00 lbs CO2/activity (lb/hr)
= 2.02E-02 tpy CO2

Example Calculation - CH4 Emissions

Volume of system = 7.85 ft^3

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	1200.00 psia	8 ft^3	73.54 lb-mol CH4	16.04 lb CH4
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol CH4

= 1.87E+01 lbs CH4/activity (lb/hr)
= 0.3 tpy CH4

Total CO_2e 8.4 tpy CO_2e

DCP MIDSTREAM
Linam Ranch Gas Plant
SAMPLE EMISSIONS CALCULATIONS - PIGGING

Calculation Basis:

Emissions to the atmosphere after opening pipelines are calculated using the Ideal Gas Law and are based on the entire pipe volume venting to the atmosphere at pipeline pressure.

Constants and Variables:

Venting Pressure :	400	psia	Default discharge pressure
Piping Volume :	13.9	ft^3	
Process Temperature :	95	° F	
Ideal Gas Constant :	10.73	$(ft^3)(psi)/(lbmol)(°R)$	
Molecular Weight:	21.91	lb/lb mol	From Gas Composition Sheet
Activities per year :	52	count/year	From MSS Activity Summary Sheet
VOC Content :	21.90	Wt. %	From Gas Composition Sheet
HAPs Content:	0.34	Wt. %	
H2S Content:	0.38	mol %	
CO_2 Concentration:	1.61	mol %	
CH_4 Concentration:	73.54	mol %	

Example Calculation - VOC Emissions

Amount HC vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	400.00 psia	14 ft^3	21.91 lb	
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	lb-mol	

= 20.41 lbs HC/activity (lb/hr)
= 4.47 lbs VOC/activity (lb/hr)
= 0.12 tpy VOC
= 6.86E-02 lbs HAPs/activity (lb/hr)
= 1.78E-03 tpy HAPs

Example Calculation - H2S Emissions

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	400.00 psia	14 ft^3	0.380 lb-mol H2S	34.08 lb H2S
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol H2S

= 1.21E-01 lbs H2S
= 3.14E-03 tpy H2S

Example Calculation - CO2 Emissions

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	400.00 psia	14 ft^3	1.608 lb-mol CO2	44.01 lb CO2
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol CO2

= 0.66 lbs CO_2
= 1.71E-02 tpy CO_2

Example Calculation - CH4 Emissions

Amount vented to atmosphere (lb) = (Pressure x Volume) / (Gas Constant x Temperature [°R]) * MW

=	400.00 psia	14 ft^3	73.538 lb-mol CH4	16.04 lb CH4
	10.73 ft^3 * psi / °R * lb-mol	555 ° R	100 lb-mol Gas	1 lb-mol CH4

= 11.0 lbs CH_4
= 0.29 tpy CH_4

Total CO_2e 7.2 tpy CO_2e

DCP MIDSTREAM
Linam Ranch Gas Plant
EMISSION CALCULATIONS - VACUUM TRUCKS (TANK CLEANING)

Calculation Basis:

Emissions from vacuum trucks are estimated using the loading loss method of AP-42, Chapter 5.2: Transportation and Marketing of Petroleum Liquids, 1995. Calculations are performed based on the concentrations of the individual organic species since the wastes contain significant non-volatile content (i.e. water, solids). A truck can be loaded in one hour, therefore the emissions per loading activity reflect the lb/hr emission rate.

L_L = 12.46 SPM/T *(SF)

where:

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

S = a saturation factor

P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia)

M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole)

T = temperature of bulk liquid loaded, ºR (ºF+460)

SF = safety factor due to vacuum loading

Example Calculation :

Volume of Constituent Loaded (gal) = 6300 gal

Loading Loss (lb/1000 gal) = L_L = 12.46 SPM/T * (SF) = (12.46) * (0.6) * (5.5219) * (92) / (95 + 460) * 2 = 13.6862 lb/1000 gal

VOC Emissions per Condensate Offload Cleanout (lb/hr) = (6300 gal) / (1000) * (13.686 lb/1000 gal) * (0.22 VOC wt. Fraction) = 18.88 lb/hr

Material Collected by Vacuum Truck	Organic Constituent	Tank Volume (gal)	Constituent Concentration (% volume)	Liquid Heel (% volume of tank)	Amount Loaded (gal)	S, Saturation Loss Factor	P, Vapor Pressure (psia)	M, Molecular Weight (lb/lb-mole)	T, Bulk Loading Temp (ºF)	VOC Wt. Fraction	SF, Safety Factor	L_L (lb/1000 gal)	Loss (lbs/activity) (lb/hr)
Product Tanks VRU1 - VRU5	Condensate	31500	100	20	6300	0.60	5.52	92.00	95	0.22	2	13.69	18.88
Gunbarrel Tank VRU6	Condensate	16800	100	20	3360	0.60	5.52	92.00	95	0.22	2	13.69	10.07
Oil Tank VRU7	Condensate	8820	100	20	1764	0.60	5.52	92.00	95	0.22	2	13.69	5.29
Tanks VRUTMP1 VRUTMP2	Condensate	63000	100	20	12600	0.60	5.52	92.00	95	0.22	2	13.69	37.76

Number of Vacuum Trucks per year, per tank: 1 From Site Data Sheet

	Product Tanks VRU1 - VRU5	Gunbarrel Tank VRU6	Oil Tank VRU7	Tanks VRUTMP1 VRUTMP2	Total	
Number of Tanks:	5	1	1	2	9	From Site Data Sheet
H2S Concentration (wt frac):	0.0059	0.0059	0.0059	0.0059	-	From Tank & Flash Calculations tab
Total Haps (wt frac):	0.0034	0.0034	0.0034	0.0034	-	From Tank & Flash Calculations tab
CO2 Concentration (wt frac):	0.0323	0.0323	0.0323	0.0323	-	
CH4 Concentration (wt frac):	0.5385	0.5385	0.5385	0.5385	-	
VOC Emissions per Cleanout (lb/hr) =	18.88	10.07	5.29	37.76	72.00	
H2S Emissions per Cleanout (lb/hr) =	0.51	0.27	0.14	1.02	1.95	
Total HAPs Emissions per Cleanout (lb/hr) =	0.29	0.15	0.08	0.58	1.11	
CO2 Emissions per Cleanout (lb/hr) =	2.79	1.49	0.78	5.57	10.62	
CH4 Emissions per Cleanout (lb/hr) =	46.43	24.76	13.00	92.87	177.07	
Cleanout VOC Annual Emissions (tpy) =	4.72E-02	5.04E-03	2.64E-03	3.78E-02	0.09	
Cleanout H2S Annual Emissions (tpy) =	1.28E-03	1.36E-04	7.14E-05	1.02E-03	0.003	
Cleanout Total HAPS Annual Emissions (tpy) =	7.25E-04	7.73E-05	4.06E-05	5.80E-04	0.001	
Cleanout CO2 Annual Emissions (tpy) =	6.97E-03	7.43E-04	3.90E-04	5.57E-03	0.014	
Cleanout CH4 Annual Emissions (tpy) =	1.16E-01	1.24E-02	6.50E-03	9.29E-02	0.228	
Cleanout CO2e Annual Emissions (tpy) =	2.91E+00	3.10E-01	1.63E-01	2.33E+00	5.710	

These example calculations are not intended to be representations under 116.116(a), but are an example of the emission calculation approach for a sub-category of MSS emissions activities. The basis of the example emission calculation (such as volume, concentration, pressure) are example conditions and should not be interpreted as representations of a specific plant or activity condition under 116.116(a). Individual activities in this MSS category are performed which may have slight variations in procedure or equipment configuration.

TK-VRU Emissions

Source: TK-VRU: (RVP 10) Seven (7) condensate tanks routed to a common VRU.

VOC Emissions for Condensate Tanks

VOCs		
106,656	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
12,062	lb/yr	
27.54	**lb/hr**	
6.03	**tpy**	

GHG Emissions per tank

0.001	**lb/hr**
0.004	**tpy**

HAP Emissions for Condensate Tanks

40,623	lb/yr	HAPs Work & Breathing by mass fract'n ratio of n-Hexane/VOCs in cond. vapor analysis
10.489	**lb/hr**	Mass fraction ratio of n-Hexane to VOCs per condensate vapor analysis
2.297	**tpy**	

*Maximum throughput for all five 750-bbl tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by five. Total working losses for the 400-bbl and 210-bbl condensate tanks are also included here.

DCP Midstream, LP - Linam Ranch Gas Plant

TK-VRU -Tanks Flashing Emissions

Source: TK-VRU: (RVP 10) Five (5) fixed-roof vertical tanks routed to VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks	
Average	0.335	0.490	0.825	Mscfd
Max	1.005	1.002	2.007	Mscfd

$V_{corrected} = V_{raw} * (T_{STP}/T_{site})*(P_{site}/P_{STP})$

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

	Total Tanks Flow Rate Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass % NMNEHC / specific vol. vapor
	55,280.0	134,575.5	VOC, lb/yr	
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass % GHG / specific vol. vapor
	3.7	9.0	(methane + CO2) lb/yr	
			5	
HAP Emissions	58	140	HAP, lb/day	Mass fraction ratio of n-Hexane to VOCs per gas analysis above
	21055	51257	HAP, lb/yr	

TK-VRUTMP Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

General Information for Each Tank

Volume	1,500	bbl
Diameter	12	ft
Throughput	1800	bpd
Throughput	27,594,000	gallons/yr
Turnovers	438	turnovers/yr

VOC Emissions for Condensate Tanks

VOCs		
80,594	lb/yr	VOC Working & Breathing Emissions: TANKS 4.09 d*
134,575	lb/yr	Flashing emissions; Promax and max. flow meter data
5%	%	VRU downtime
100%	%	VRU recovery (emissions are routed to process, only uncontrolled emissions are during VRU downtime)
10,758	lb/yr	
24.56	**lb/hr**	
5.38	**tpy**	

GHG Emissions per tank

0.001	**lb/hr**
0.004	**tpy**

HAP Emissions for Condensate Tanks

30,697	lb/yr	HAPs Work & Breathing by mass fract'n ratio of n-Hexane/VOCs in cond. vapor analysis
9.355	**lb/hr**	HAPS from mass fraction ratio of n-Hexane to VOCs per condensate vapor analysis
2.049	**tpy**	

*Maximum throughput for these two tanks combined is 1,800 bbl/day. Since each bbl of throughput will be routed through only one tank, working losses are counted only once. However, since each tank may contain condensate, the breathing losses from the TANKS 4.09 output are multiplied by two.

DCP Midstream, LP - Linam Ranch Gas Plant

TK-VRUTMP -Tanks Flashing Emissions

Source: TK-TMP: (RVP 10) Two (2) horizontal bullet tanks routed to a common VRU.

ProMax Condensate Vapor Analysis

Component	MW	Mol %	MW * Mol %	Mass Fraction	Specific Volume scf/lb	Specific Volume Vapor scf/lb
Nitrogen	28.01	0.00%	0.0000	0.00%	13.547	0.0000
Oxygen	32.00	0.00%	0.0000	0.00%	13.5	0.0000
CO_2	44.01	0.01%	0.0023	0.00%	8.623	0.0003
H_2S	34.08	0.02%	0.0081	0.01%	11.136	0.0013
Methane	16.04	0.01%	0.0023	0.00%	23.65	0.0008
Ethane	30.07	0.57%	0.1716	0.25%	12.62	0.0310
Propane	44.10	7.38%	3.2550	4.66%	8.606	0.4008
I-Butane	58.12	5.86%	3.4046	4.87%	6.529	0.3181
N-Butane	58.12	24.46%	14.2169	20.34%	6.529	1.3281
I-Pentane	72.15	13.94%	10.0588	14.39%	5.26	0.7570
N-Pentane	72.15	16.94%	12.2207	17.49%	5.26	0.9197
n-Hexane	86.18	30.81%	26.5496	37.99%	4.404	1.6730
Heptanes	100.21	0.00%	0.0000	0.00%	3.787	0.0000
Benzene	78.11	0.00%	0.0000	0.00%	4.858	0.0000
Toluene	92.14	0.00%	0.0000	0.00%	4.119	0.0000
Ethylbenzene	106.17	0.00%	0.0000	0.00%	3.574	0.0000
Xylenes	106.17	0.00%	0.0000	0.00%	3.574	0.0000
C8+	114.23	0.00%	0.0000	0.00%	3.322	0.0000
Total		100%		100%		
Wtd. Average			69.89			5.430
NMEHC (VOC)		99.39%		99.74%		
GHG Component		0.02%		0.01%		

Flow Rate Summary: September - October, 2010

Raw Data

	E G-Tank	W G-Tank	Total Tanks	
Average	0.331	0.485	0.816	Mcfd
Max	0.995	0.992	1.987	Mcfd

Corrected to STP

	E G-Tank	W G-Tank	Total Tanks		
Average	0.335	0.490	0.825	Mscfd	$V_{corrected} = V_{raw} * (T_{STP}/T_{site})*(P_{site}/P_{STP})$
Max	1.005	1.002	2.007	Mscfd	

Site Pressure	29.9	in. Hg	Sept-Oct. 2010 Climate Data, NWS Midland International.
Site Temperature	71.2	ºF	

Emission Calculations

	Total Tanks Flow Rate Average	Maximum		
Flashing losses	151.5	368.7	VOC, lb/day	mass flow = corrected flow * mass %
	55,280.0	134,575.5	VOC, lb/yr.	NMNEHC / specific vol. vapor
GHG Emissions	0.01	0.02	(methane + CO2) lb/day	mass flow = corrected flow * mass %
	4	9	(methane + CO2) lb/yr'	GHG / specific vol. vapor
HAP Emissions	57.69	140.43	HAP, lb/day	Mass fraction ratio of n-Hexane to VOCs per gas analysis
	21,055.2	51,257.4	HAP, lb/yr	above

DCP Midstream, LP - Linam Ranch Gas Plant

Acid Gas Flare- Measured Gas Analysis (per 11/4/13 DCP email)

Emission Unit: Acid Gas Flare

Meter #	Name	Date	rbon Dioxi	Nitrogen	Methane	Ethane	Propane	iso-Butane	n-Butane	iso-Pentane	n-Pentane	Hexane	Heptane	Octane	Nonane	Decane	Water	drogen Sulfide
M0489-00	Linam Acid Gas	11/1/2013 0:00	80.65%	0.01%	0.36%	0.08%	0.03%	0.06%	0.02%	5.2E-05	8.3E-05	0.055%	-	-	-	-	1.1%	18.71%
	Average		**80.653%**	**0.011%**	**0.360%**	**0.081%**	**0.034%**	**0.056%**	**0.024%**	**5.2E-05**	**8.3E-05**	**0.055%**	**-**	**-**	**-**	**-**	**1.1%**	**18.714%**

E. Amine Unit Acid Gas Flare- Acid Gas Analysis (per 11/4/13 DCP Email)

Emission Unit: Acid Gas Flare

Estimated Flared Gas Composition Used for Calculations

Component	MW	Flared Gas[1] Mol%	MW * wet vol %	HHV Btu/scf[2]	Btu/scf * wet vol %	Mass Fraction (wet)	Spec. Volume[2] ft^3/lb	Spec. Volume VOC ft^3/lb
Water	18.02	1.13%	0.20	0.0	0.0	0.00	21.06	
Hydrogen Sulfide	34.08	18.71%	6.38	637.02	119.2	0.15	11.136	
Carbon Dioxide	44.01	80.65%	35.50	0.0	0.0	0.84	8.623	
Nitrogen	28.01	0.01%	0.00	0.0	0.0	0.00	13.547	
Oxygen	32.00	0.00%	0.00	0.0	0.0	0.00	11.859	
Methane	16.04	0.36%	0.06	1009.7	3.6	0.00	23.65	
Ethane	30.07	0.08%	0.02	1768.7	1.4	0.00	12.62	
Propane	44.10	0.03%	0.02	2517.2	0.9	0.00	8.606	1.094
i-Butane	58.12	0.06%	0.03	3252.6	1.8	0.00	6.529	1.790
n-Butane	58.12	0.02%	0.01	3262	0.8	0.00	6.529	0.764
i-Pentane	72.15	0.01%	0.00	3999.7	0.2	0.00	5.26	0.167
n-Pentane	72.15	0.01%	0.01	4008.7	0.3	0.00	5.26	0.266
Hexanes	86.18	0.05%	0.05	4756.1	2.6	0.00	4.404	1.759
		101%	42.28		130.9	1.00		5.840
NMNEHC (VOC)		0.2%				0.3%		

[1] *Based on DCP's recent 11/1/13 Linam Ranch Acid Gas Flare Gas Analysis to provide conservative estimates for sulfur dioxide and heat release estimate.*

[2] *Component HHVs and specific volumes obtained from Physical Properties of Hydrocarbons, API Research Project 44, Fig. 16-1, Rev. 1981.*

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.00050	MMscf/hr	
	1000	Btu/scf	Pipeline Gas, HHV, nominal
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	0.67	Mscf/hr	Mscf/d / 24 hr/day
	0.001	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.
	0.67	MMBtu/hr	MMscf/hr * Btu/scf
Assist Gas			
	135	Btu/scf	Heating value of Pilot + Purge gas + Flared gas
	500	Btu/scf	target heat content
	1000	Btu/scf	Assist gas-assumed sweet
	0.18	MMscf/hr	Assist gas volume
	182.5	MMBtu/hr	Assist gas heat input
Assist gas - Annual*	5.0	MMscf/yr	Estimated Maximum annual SSM flow rate. Not a requested limit; for calculation only.

Note: Flared gas annual/ ratio of assist gas: flared gas hourly usage) ex: 10.5 MMscf/yr / (1-.8054)

Flared Gas - Short Term	0.25	MMscf/hr	High end representative SSM hourly flowrate taken from 2010 - 2013 Blowdown Data for Unit 2
	131	Btu/scf	Heating value calculated from gas compostion above.
	33	MMBtu/hr	Hourly heat rate = Heating value * Effective hourly flow rate.
Flared Gas - Annual	2.9	MMscf/yr	Estimated Maximum annual SSM flow rate. Taken from avg of 2010 - 2013 SSM blowdown data for Linam Ranch GP. Not a requested limit; for calculation only.
Total	216	MMBtu/hr	**Pilot + Purge gas + Flared gas**

Stack Parameters

	1,832	˚F	Exhaust temperature
	65.6	ft/sec	Exhaust velocity
	222.0	ft	Flare height

Pilot+ Purge Gas only

16.04	g/mol	Pilot & Purge gas molecular weight	Mol. wt. of methane, the dominant species
81,667	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
65,967		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.26	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Pilot + Purge Gas+ Flared Gas + Assist Gas

42.16	g/mol	Flared gas molecular weight	Volume weighted mol. wt. of all components
1.52E+07	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
1.04E+07		q_n	$q_n = q(1-0.048(MW)^{1/2})$
3.23	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

E. Amine Unit Acid Gas Flare- Acid Gas Analysis (per 11/4/13 DCP Email)

Emission Unit: Acid Gas Flare

Emission Rates

Pilot+ Purge Gas

NOx	CO	VOC	H_2S	SO_2	Units	
0.068	0.370				lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
			3.6E-04		lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
			4.2E-04		lb H_2S/hr	H_2S rate * fuel usage
				7.1E-03	lb S/Mscf	Sweet natural gas fuel, 5 gr S/100scf
				8.3E-03	lb SO_2/hr	SO_2 rate * fuel usage
		0.00%			mol%	Assume no VOC content in purchased fuel (methane)
		23.7			ft^3/lb	Specific volume (methane)
		0.00			lb/hr	vol. Gas * mole fraction / specific volume
100%	100%	100%	100%	100%	%	Safety Factor
0.14	0.74				lb/MMBtu	Unit emission rate with Safety Factor
0.16	**0.86**				lb/hr	lb/MMBtu * MMBtu/hr
		-	**1.7E-05**	**1.7E-02**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
0.69	**3.8**	**-**	**7.3E-05**	**7.3E-02**	tpy	8760 hrs/yr

Assist gas

NOx	CO	VOC	H_2S	SO_2	Units	
0.0680	0.3700				lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
			4E-04		lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
			6.52E-02		lb H_2S/hr	H_2S rate * fuel usage
				7.1E-03	lb S/Mscf	Purchased sweet natural gas fuel, 5 gr S/100scf
				1.3	lb SO_2/hr	SO_2 rate * fuel usage
		0.00%			mol%	Assume no VOC content in purchased fuel (methane)
		23.7			ft^3/lb	Specific volume (methane)
		0.000			lb/hr	vol. Gas * mole fraction / specific volume
12.4	**67.5**				lb/hr	lb/MMBtu * MMBtu/hr
		-	**1.3E-03**	**1.3**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
0.17	**0.92**	**-**	**1.8E-05**	**0.018**	tpy	

Flared Gas

NOx	CO	VOC	H_2S	SO_2	Total HAPs	Units	
0.068	0.370					lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
		0.18%	0.187		0.05%	mol%	Flare Gas
		5.8	11.1		4.4	ft^3/lb	Specific volume
		77.9	4201		31.1	lb/hr	vol. Gas * mole fraction / specific volume
2.2	12.1					lb/hr	lb/MMBtu * MMBtu/hr
2.2	**12**	**78**	**4201**	**7750**	**31**	**lb/hr**	Uncontrolled emissions at maximum rate
0.013	**0.070**	**0.45**	**24**	**46**	**0.18**	**tpy**	

Controlled #2 Acid Gas Flare	NOx	CO	VOC	H_2S	SO_2	HAPs	Units
Pilot + Purge Gas+ Flared Gas	**1.5E+01**	**8.1E+01**	**1.6**	**8.4E+01**	**7.8E+03**	**0.62**	lb/hr
	0.88	**4.8**	**0.0090**	**0.48**	**45.6**	**0.0036**	tpy

Total HAPs conservatively assumed to be Hexanes+

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	137	Eq 4-15	API Compendium
CH_4	1.1E-03	Eq 4-16	API Compendium
N_2O	4.8E-06	Eq 4-17	API Compendium
Total CO2e	**137**		

DCP Midstream, LP - Linam Ranch Gas Plant

AGI Flare- Measured Acid Gas Analysis (per 11/4/13 DCP email)

Emission Unit: AGI Flare

Meter #	Name	Date	Carbon Dioxide	Nitrogen	Methane	Ethane	Propane	iso-Butane	n-Butane	iso-Pentane	n-Pentane	Hexane	Heptane	Octane	Nonane	Decane	Water	Hydrogen Sulfide
M0489-00	Linam Acid Gas	11/1/2013 0:00	80.65%	0.01%	0.36%	0.08%	0.03%	0.056%	0.024%	5.2E-05	8.3E-05	0.055%	-	-	-	-	1.1%	18.71%
	Average		**80.653%**	**0.011%**	**0.360%**	**0.081%**	**0.034%**	**0.056%**	**0.024%**	**5.2E-05**	**8.3E-05**	**0.055%**	**-**	**-**	**-**	**-**	**1.1%**	**18.714%**

DCP Midstream, LP - Linam Ranch Gas Plant

AGI Flare- Acid Gas Analysis (per 11/4/13 DCP Email)

Emission Unit: AGI Flare

Estimated Flared Gas Composition Used for Calculations

Component	MW	Flared Gas[1] Mol%	MW * wet vol %	HHV Btu/scf[2]	Btu/scf * wet vol %	Mass Fraction (wet)	Spec. Volume[2] ft^3/lb	Spec. Volume VOC ft^3/lb
Water	18.02	1.13%	0.20	0.0	0.0	0.00	21.06	
Hydrogen Sulfide	34.08	18.71%	6.38	637.02	119.2	0.15	11.136	
Carbon Dioxide	44.01	80.65%	35.50	0.0	0.0	0.84	8.623	
Nitrogen	28.01	0.01%	0.00	0.0	0.0	0.00	13.547	
Oxygen	32.00	0.00%	0.00	0.0	0.0	0.00	11.859	
Methane	16.04	0.36%	0.06	1009.7	3.6	0.00	23.65	
Ethane	30.07	0.08%	0.02	1768.7	1.4	0.00	12.62	
Propane	44.10	0.03%	0.02	2517.2	0.9	0.00	8.606	1.094
i-Butane	58.12	0.06%	0.03	3252.6	1.8	0.00	6.529	1.790
n-Butane	58.12	0.02%	0.01	3262	0.8	0.00	6.529	0.764
i-Pentane	72.15	0.01%	0.00	3999.7	0.2	0.00	5.26	0.167
n-Pentane	72.15	0.01%	0.01	4008.7	0.3	0.00	5.26	0.266
Hexane	86.18	0.05%	0.05	4756.1	2.6	0.00	4.404	1.759
		101%	42.28		130.9	1.00		5.840
NMNEHC (VOC)		0.2%				0.3%		

[1] *Based on DCP's recent 11/1/13 Linam Ranch Acid Gas Flare Gas Analysis to provide conservative estimates for sulfur dioxide and heat release estimate.*

[2] *Component HHVs and specific volumes obtained from Physical Properties of Hydrocarbons, API Research Project 44, Fig. 16-1, Rev. 1981.*

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.0005	MMscf/hr	
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	16	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	0.67	Mscf/hr	Mscf/d / 24 hr/day
	0.001	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.
	0.67	MMBtu/hr	MMscf/hr * Btu/scf
Assist Gas			
	134	Btu/scf	Heating value of Pilot + Purge gas + Flared gas
	500	Btu/scf	target heat content
	1000	Btu/scf	Assist gas-assumed sweet
	0.22	MMscf/hr	Assist gas volume
	219	MMBtu/hr	Assist gas heat input
Assist gas - Annual*	0.44	MMscf/yr	Estimated Maximum annual SSM flow rate. Not a requested limit; for calculation only.

Note: Flared gas annual/ ratio of assist gas: flared gas hourly usage) ex: 10.5 MMscf/yr / (1-.8054)

Flared Gas - Short Term	0.30	MMscf/hr	Maximum Effective hourly flowrate taken from 2010 - 2013 Blowdown Data for AGI Flare
	131	Btu/scf	Heating value calculated from gas compostion above.
	39	MMBtu/hr	Hourly heat rate = Heating value * Effective hourly flow rate.
Flared Gas - Annual	0.26	MMscf/yr	Estimated Maximum annual SSM flow rate. Taken from avg of 2010 - 2013 SSM blowdown data for Linam Ranch GP. Not a requested limit; for calculation only.
Total	260	MMBtu/hr	**Pilot + Purge gas + Flared gas**

Stack Parameters

	1,832	˚F	Exhaust temperature	Per Linam 2-H sheet
	65.6	ft/sec	Exhaust velocity	Per Linam 2-H sheet
	210.0	ft	Flare height	
Pilot+ Purge Gas only				
	16.04	g/mol	Pilot & Purge gas molecular weight	Mol. wt. of methane, the dominant species

DCP Midstream, LP - Linam Ranch Gas Plant

AGI Flare- Acid Gas Analysis (per 11/4/13 DCP Email)

Emission Unit: AGI Flare

81,667	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
65,967		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.26	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Pilot + Purge Gas+ Flared Gas + Assist Gas

42.18	g/mol	Flared gas molecular weight	Volume weighted mol. wt. of all components
1.82E+07	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
1.25E+07		q_n	$q_n = q(1-0.048(MW)^{1/2})$
3.5	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Emission Rates

Pilot+ Purge Gas

NOx	CO	VOC	H_2S	SO_2	Units	
0.068	0.37				lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
			3.6E-04		lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
			4.17E-04		lb H_2S/hr	H_2S rate * fuel usage
				7.1E-03	lb S/Mscf	Sweet natural gas fuel, 5 gr S/100scf
				8.3E-03	lb SO_2/hr*	SO_2 rate * fuel usage
		0.00%			mol%	Assume no VOC content in purchased fuel (methane)
		13			ft^3/lb	Specific volume (methane)
		0.00			lb/hr	vol. Gas * mole fraction / specific volume
100%	100%	100%	100%	100%	%	Safety Factor
0.14	0.74				lb/MMBtu	Unit emission rate with Safety Factor
0.16	**0.86**				lb/hr	lb/MMBtu * MMBtu/hr
		-	**1.7E-05**	**1.7E-02**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
0.69	**3.8**	**-**	**7.3E-05**	**7.3E-02**	tpy	8760 hrs/yr

Assist gas

NOx	CO	VOC	H_2S	SO_2	Units	
0.068	0.370				lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
			3.6E-04		lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
			7.84E-02		lb H_2S/hr	H_2S rate * fuel usage
				7.1E-03	lb S/Mscf	Purchased sweet natural gas fuel, 5 gr S/100scf
				1.6E+00	lb SO_2/hr	SO_2 rate * fuel usage
		0.00%			mol%	Assume no VOC content in purchased fuel (methane)
		12.6			ft^3/lb	Specific volume (methane)
		0.000			lb/hr	vol. Gas * mole fraction / specific volume
14.9	**81.2**				lb/hr	lb/MMBtu * MMBtu/hr
		-	**1.6E-03**	**1.6E+00**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
0.015	**40.6**	**-**	**1.6E-06**	**1.6E-03**	tpy	

Flared Gas

NOx	CO	VOC	H_2S	SO_2	Total HAPs	Units	
0.0680	0.3700					lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
		0.18%	18.71%		0.05%	mol%	Flare Gas
		5.840	11.136		4.404	ft^3/lb	Specific volume
		93.5	5,041.4		37.3	lb/hr	vol. Gas * mole fraction / specific volume
2.67	14.53					lb/hr	lb/MMBtu * MMBtu/hr
2.7	**14.5**	**93.5**	**5,041.4**	**9,299.9**	**37.3**	**lb/hr**	Uncontrolled emissions at maximum rate
0.0011	**0.0062**	**0.040**	**2.2**	**4.1**	**0.016**	**tpy**	

Controlled AGI Flare	NOx	CO	VOC	H_2S	SO_2	HAPs	Units
Pilot + Purge Gas+ Flared Gas	**18**	**97**	**1.9**	**101**	**9,301**	**0.75**	lb/hr
	0.71	**44**	**8.0E-04**	**0.043**	**4.1**	**0.00032**	tpy

Total HAPs conservatively assumed to be Hexanes+

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	0.2	Eq 4-15	API Compendium
CH_4	9.7E-05	Eq 4-16	API Compendium
N_2O	4.2E-07	Eq 4-17	API Compendium
Total CO2e	**0**		

DCP Midstream, LP - Linam Ranch Gas Plant

ESD Flare- per 11/11/13 Extended Inlet Gas Analysis

Emission Unit: ESD Flare

Meter #	Name	Date	Carbon Dioxide	Nitrogen	Methane	Ethane	Propane	iso-Butane	n-Butane	n-Pentane & iso-Pentanes	Cyclo-Pentane	non-HAP C6 HCs	non-HAP C7 HCs	non-HAP C8 HCs	C9 HCs	n-Hexane	Benzene	HAPs Toluene	Ethyl Benzene	Xylenes	Water	Hydrogen Sulfide
M0500-00	Inlet Gas	11/6/2013	1.61%	2.46%	73.54%	12.59%	6.15%	0.70%	1.62%	0.65%	0.03%	0.15%	0.044%	5.2E-05	0.001%	0.054%	0.028%	5.6E-05	1.0E-06	2.0E-06	0.0E+00	0.38%
	Average		**1.608%**	**2.461%**	**73.538%**	**12.587%**	**6.148%**	**0.696%**	**1.619%**	**0.647%**	**0.028%**	**0.149%**	**0.044%**	**5.2E-05**	**0.001%**	**0.054%**	**0.028%**	**5.6E-05**	**1.0E-06**	**2.0E-06**	**0.0E+00**	**0.380%**

DCP Midstream, LP - Linam Ranch Gas Plant

ESD Flare- per 11/11/13 Extended Inlet Gas Analysis

Emission Unit: ESD Flare

Estimated Flared Gas Composition Used for Calculations

Component	MW	Flared Gas[1] Mol%	MW * wet vol %	HHV Btu/scf[2]	Btu/scf * wet vol %	Mass Fraction (wet)	Spec. Volume[2] ft^3/lb	Spec. Volume VOC ft^3/lb
Water	18.02	0.00%	0.00	0.0	0.0	0.00	21.06	
Hydrogen Sulfide	34.08	0.38%	0.13	637.02	2.4	0.01	11.136	
Carbon Dioxide	44.01	1.61%	0.71	0.0	0.0	0.03	8.623	
Nitrogen	28.01	2.46%	0.69	0.0	0.0	0.03	13.547	
Oxygen	32.00	0.00%	0.00	0.0	0.0	0.00	11.859	
Methane	16.04	73.54%	11.80	1009.7	742.5	0.54	23.65	
Ethane	30.07	12.59%	3.78	1768.7	222.6	0.17	12.62	
Propane	44.10	6.15%	2.71	2517.2	154.7	0.12	8.606	4.863
i-Butane	58.12	0.70%	0.40	3252.6	22.6	0.02	6.529	0.551
n-Butane	58.12	1.62%	0.94	3262	52.8	0.04	6.529	1.281
n- & iso-Pentanes	72.15	0.65%	0.47	3999.7	25.9	0.02	5.26	0.512
Cyclopentane	70.14	0.03%	0.02	4008.7	1.1	0.00	5.26	0.022
C6 HCs	86.18	0.15%	0.13	4747.3	7.1	0.006	4.404	0.118
C7 HCs	100.21	0.04%	0.04	5498.6	2.4	0.002	3.787	0.035
C8 HCs	114.23	0.01%	0.01	6248.9	0.3	0.0003	3.322	0.004
C9 HCs	128.26	0.00%	0.00	6996.3	0.1	0.0001	2.959	0.001
n-Hexane	86.18	0.05%	0.05	4756.1	2.6	0.00213	4.404	0.043
Benzene	78.11	0.03%	0.02	3741.9	1.0	0.00098	4.858	0.022
Toluene	92.14	0.01%	0.01	4474.8	0.3	0.00024	4.119	0.004
Ethyl Benzene	106.17	0.0001%	0.00	5222.1	0.0	0.000005	3.574	0.000
Xylenes	106.17	0.0002%	0.00	5207.8	0.0	0.00001	3.574	0.000
		100%	21.91		1238.6	1.00		7.456
NMNEHC (VOC)		9.4%				21.9%		

[1] *Based on DCP's recent 11/11/13 Linam Ranch inlet gas analysis from 11/6/13 sample to provide accurate estimates for sulfur dioxide and heat release.*

[2] *Component HHVs and specific volumes obtained from Physical Properties of Hydrocarbons, API Research Project 44, Fig. 16-1, Rev. 1981.*

Fuel Data

Flare Pilot	500	scf/hr	Engineering judgement
	0.00050	MMscf/hr	
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.
	0.50	MMBtu/hr	MMscf/hr * Btu/scf
Purge Gas	63.8	Mscf/day	per DCP Midstream (Jennifer Corser 10/29/13 email)
	2.7	Mscf/hr	Mscf/d / 24 hr/day
	0.0027	MMscf/hr	Mscf/hr / 1000
	1000	Btu/scf	Pipeline Gas, HHV, nominal from Linam T5 app.
	2.7	MMBtu/hr	MMscf/hr * Btu/scf
Flared Gas - Short Term	3.410	MMscf/hr	Maximum Effective hourly flowrate taken from 2010 - 2013 Blowdown Data for AGI Flare
	1,239	Btu/scf	Heating value calculated from gas compostion above.
	4,224	MMBtu/hr	Hourly heat rate = Heating value * Effective hourly flow rate.
Flared Gas - Annual	58.2	MMscf/yr	Estimated Maximum annual SSM flow rate. Taken from avg of 2010 - 2013 SSM blowdown data for Linam Ranch GP. Not a requested limit; for calculation only.
Total	4227	MMBtu/hr	**Pilot + Purge gas + Flared gas**

Stack Parameters

	1,832	˚F	Exhaust temperature	Per Linam 2-H sheet
	65.6	ft/sec	Exhaust velocity	Per Linam 2-H sheet
	175.0	ft	Flare height	
Pilot+ Purge Gas only				
	16.04	g/mol	Pilot & Purge gas molecular weight	Mol. wt. of methane, the dominant species

DCP Midstream, LP - Linam Ranch Gas Plant

ESD Flare- per 11/11/13 Extended Inlet Gas Analysis

Emission Unit: ESD Flare

221,083	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
178,582		q_n	$q_n = q(1-0.048(MW)^{1/2})$
0.42	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Pilot + Purge Gas+ Flared Gas

21.90	g/mol	Flared gas molecular weight	Volume weighted mol. wt. of all components
2.96E+08	cal/sec	Heat release (q)	MMBtu/hr * 10^6 * 252 cal/Btu ÷ 3600 sec/hr
2.29E+08		q_n	$q_n = q(1-0.048(MW)^{1/2})$
15.1	m	Effective stack diameter (D)	$D = (10^{-6}q_n)^{1/2}$

Emission Rates

Pilot+ Purge Gas

NOx	CO	VOC	H_2S	SO_2	Units	
0.068	0.370				lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
			4E-04		lb H_2S/Mscf	Purchased sweet natural gas fuel, 0.25 gr H_2S/100scf
			1.1E-03		lb H_2S/hr	H_2S rate * fuel usage
				7E-03	lb S/Mscf	Sweet natural gas fuel, 5 gr S/100scf
				2E-02	lb SO_2/hr*	SO_2 rate * fuel usage
		0.00%			mol%	Assume no VOC content in purchased fuel (methane)
		12.6			ft^3/lb	Specific volume (methane)
		0.00			lb/hr	vol. Gas * mole fraction / specific volume
100%	100%	100%	100%	100%	%	Safety Factor
0.14	0.74				lb/MMBtu	Unit emission rate with Safety Factor
0.43	**2.3**				lb/hr	lb/MMBtu * MMBtu/hr
		-	**4.5E-05**	**4.5E-02**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
1.9	**10.2**	**-**	**2.0E-04**	**2.0E-01**	tpy	8760 hrs/yr

Flared Gas

NOx	CO	VOC	H_2S	SO_2	Total HAPs	Units	
0.068	0.370					lb/MMBtu	AP-42 Table 13.5-1 (9/91) (Reformatted 1/95)
		9.43%	0.38%		0.09%	mol%	Flare Gas
		7.5	11		4.1	ft^3/lb	Specific volume
		43,114	1,165		728	lb/hr	vol. Gas * mole fraction / specific volume
287	1563					lb/hr	lb/MMBtu * MMBtu/hr
287	**1563**	**43,114**	**1,165**	**2,148**	**728**	**lb/hr**	Uncontrolled emissions at maximum rate
2.4	**13**	**368**	**9.9**	**19**	**6.2**	**tpy**	

Controlled AGI Flare	NOx	CO	VOC	H_2S	SO_2	HAPs	Units
Pilot + Purge Gas+ Flared Gas	**288**	**1,565**	**862**	**23.3**	**2,148**	**15**	lb/hr
	4.3	**24**	**7.4**	**0.20**	**19**	**0.12**	tpy

Total HAPs conservatively assumed to be Hexanes+

GHG Emissions

	CO_2e Short Tons/yr		
CO_2	4,387	Eq 4-15	API Compendium
CH_4	4.5E+00	Eq 4-16	API Compendium
N_2O	9.6E-05	Eq 4-17	API Compendium
Total CO2e	**4,500**		

Section 7

Information Used To Determine Emissions

<u>Information Used to Determine Emissions</u> shall include the following:

- ☐ If manufacturer data are used, include specifications for emissions units <u>and</u> 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.

7.1 Existing Unchanged Steady State Calculations

- Emissions are carried forward as permitted in NSR permit 0039-M6R1.
- This section contains the following references or actual documentation to support the emissions in the required forms and the calculations in Section 6:
  - Current version of AP-42 located online at: http://www.epa.gov/ttn/chief/ap42/index.html. Specific sections used in this application include:
    - Section 13.5 – Miscellaneous Sources – Industrial Flares (Table 13.5-1)
    - Section 3.1 – Stationary Internal Combustion Sources – Stationary Gas Turbines (Tables 3.1-3 and 3.1-2a)
    - Section 3.2 – Stationary Internal Combustion Sources – Natural Gas-fired Reciprocating Engines (Table 3.2-1)
    - Section 1.4 – External Combustion – Natural Gas Combustion (Tables 1.4-1, 1.4-2 and 1.4-3)
  - Manufacture data for Solar Turbine Taurus 70-10302S
  - Manufacture data for Solar Turbine Taurus 70-9702S
  - Manufacture data for Solar Turbine Taurus 60-7800S
  - Manufacture emission estates for Turbine particulate matter
  - Tanks 4.0.9d to determine tank working and breaking losses during VRU downtime

7.2 Existing Updated Steady State Calculations

- This section contains the following references or actual documentation to support the emissions in the required forms and the calculations in Section 6:
  - Ideal Gas Law and based on the entire pipe volume venting to the atmosphere at pipeline pressure.
  - Current version of AP-42 located online at: http://www.epa.gov/ttn/chief/ap42/index.html. Specific sections used in this application include:
    - Section 13.5 – Industrial Flares (Tables 13.5 (9/91) (Reformatted 1/95))
  - Tanks 4.0.9d to determine tank working and breaking losses during VRU downtime.
  - Greenhouse Gases were also calculated using from the API Compendium document equations 4-15 to 4-17.
  - Acid, residual-flue, inlet gas analysis.

7.3 New Calculations for Existing Routine or Predictable Emissions during Startup, Shutdown, and Scheduled Maintenance (SSM)

- This section contains the following references or actual documentation to support the emissions in the required forms and the calculations in Section 6:
    - Ideal Gas Law and based on the entire pipe volume venting to the atmosphere at pipeline pressure.
    - Current version of AP-42 located online at: http://www.epa.gov/ttn/chief/ap42/index.html. Specific sections used in this application include:
        - Section 13.5 – Industrial Flares (Tables 13.5 (9/91) (Reformatted 1/95))
    - Tanks 4.0.9d to determine tank working and breaking losses during VRU downtime.
    - Greenhouse Gases were also calculated using from the API Compendium document equations 4-15 to 4-17.
    - Acid, residual-flue, inlet gas analysis.

Supporting information: Existing Unchanged Steady State Calculations

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

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

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

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

EMISSION FACTOR RATING: B

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

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

Table 3.1-2a. 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/10^6scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

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

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

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

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

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

TABLE 3.2-1 UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-52)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	3.17 E+00	A
NO_x[c] <90% Load	1.94 E+00	A
CO[c] 90 - 105% Load	3.86 E-01	A
CO[c] <90% Load	3.53 E-01	A
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.64 E+00	A
Methane[g]	1.45 E+00	C
VOC[h]	1.20 E-01	C
PM10 (filterable)[i]	3.84 E-02	C
PM2.5 (filterable)[i]	3.84 E-02	C
PM Condensable[j]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	6.63 E-05	C
1,1,2-Trichloroethane[k]	5.27 E-05	C
1,1-Dichloroethane	3.91 E-05	C
1,2,3-Trimethylbenzene	3.54 E-05	D
1,2,4-Trimethylbenzene	1.11 E-04	C
1,2-Dichloroethane	4.22 E-05	D
1,2-Dichloropropane	4.46 E-05	C
1,3,5-Trimethylbenzene	1.80 E-05	D
1,3-Butadiene[k]	8.20 E-04	D
1,3-Dichloropropene[k]	4.38 E-05	C
2,2,4-Trimethylpentane[k]	8.46 E-04	B
2-Methylnaphthalene[k]	2.14 E-05	C
Acenaphthene[k]	1.33 E-06	C

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES

(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	3.17 E-06	C
Acetaldehyde[k,l]	7.76 E-03	A
Acrolein[k,l]	7.78 E-03	A
Anthracene[k]	7.18 E-07	C
Benz(a)anthracene[k]	3.36 E-07	C
Benzene[k]	1.94 E-03	A
Benzo(a)pyrene[k]	5.68 E-09	D
Benzo(b)fluoranthene[k]	8.51 E-09	D
Benzo(e)pyrene[k]	2.34 E-08	D
Benzo(g,h,i)perylene[k]	2.48 E-08	D
Benzo(k)fluoranthene[k]	4.26 E-09	D
Biphenyl[k]	3.95 E-06	C
Butane	4.75 E-03	C
Butyr/Isobutyraldehyde	4.37 E-04	C
Carbon Tetrachloride[k]	6.07 E-05	C
Chlorobenzene[k]	4.44 E-05	C
Chloroform[k]	4.71 E-05	C
Chrysene[k]	6.72 E-07	C
Cyclohexane	3.08 E-04	C
Cyclopentane	9.47 E-05	C
Ethane	7.09 E-02	A
Ethylbenzene[k]	1.08 E-04	B
Ethylene Dibromide[k]	7.34 E-05	C
Fluoranthene[k]	3.61 E-07	C
Fluorene[k]	1.69 E-06	C
Formaldehyde[k,l]	5.52 E-02	A

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES

(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	3.17 E-06	C
Acetaldehyde[k,l]	7.76 E-03	A
Acrolein[k,l]	7.78 E-03	A
Anthracene[k]	7.18 E-07	C
Benz(a)anthracene[k]	3.36 E-07	C
Benzene[k]	1.94 E-03	A
Benzo(a)pyrene[k]	5.68 E-09	D
Benzo(b)fluoranthene[k]	8.51 E-09	D
Benzo(e)pyrene[k]	2.34 E-08	D
Benzo(g,h,i)perylene[k]	2.48 E-08	D
Benzo(k)fluoranthene[k]	4.26 E-09	D
Biphenyl[k]	3.95 E-06	C
Butane	4.75 E-03	C
Butyr/Isobutyraldehyde	4.37 E-04	C
Carbon Tetrachloride[k]	6.07 E-05	C
Chlorobenzene[k]	4.44 E-05	C
Chloroform[k]	4.71 E-05	C
Chrysene[k]	6.72 E-07	C
Cyclohexane	3.08 E-04	C
Cyclopentane	9.47 E-05	C
Ethane	7.09 E-02	A
Ethylbenzene[k]	1.08 E-04	B
Ethylene Dibromide[k]	7.34 E-05	C
Fluoranthene[k]	3.61 E-07	C
Fluorene[k]	1.69 E-06	C
Formaldehyde[k,l]	5.52 E-02	A

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Indeno(1,2,3-c,d)pyrene[k]	9.93 E-09	D
Isobutane	3.75 E-03	C
Methanol[k]	2.48 E-03	A
Methylcyclohexane	3.38 E-04	C
Methylene Chloride[k]	1.47 E-04	C
n-Hexane[k]	4.45 E-04	C
n-Nonane	3.08 E-05	C
n-Octane	7.44 E-05	C
n-Pentane	1.53 E-03	C
Naphthalene[k]	9.63 E-05	C
PAH[k]	1.34 E-04	D
Perylene[k]	4.97 E-09	D
Phenanthrene[k]	3.53 E-06	C
Phenol[k]	4.21 E-05	C
Propane	2.87 E-02	C
Pyrene[k]	5.84 E-07	C
Styrene[k]	5.48 E-05	A
Toluene[k]	9.63 E-04	A
Vinyl Chloride[k]	2.47 E-05	C
Xylene[k]	2.68 E-04	A

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

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA

Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (1/\text{operating HP, 1/hp})$$

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

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6 scf.

[f] Emission factor for TOC is based on measured emission levels of 43 tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.48 lb/MMBtu vs. 1.45 lb/MMBtu, respectively.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.

[i] Considered $\leq 1\ \mu$m in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[j] No data were available for condensable PM emissions. The presented emission factor reflects emissions from 4SLB engines.

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

[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

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

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

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

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

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

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

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

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

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

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

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

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

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

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

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

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

Solar Turbines

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PREDICTED EMISSION PERFORMANCE

Customer: **Duke Energy**	Engine Model: **TAURUS 70-9702S CS/MD 59F MATCH**
Job ID:	
Inquiry Number:	Fuel Type: **SD NATURAL GAS** — Water Injection: **NO**
Run By: **Michael E Clay** — Date Run: **12-Jan-06**	Engine Emissions Data: **REV. 0.1** — Engines Tested: **0**

	NOx EMISSIONS Nominal	NOx EMISSIONS Maximum	CO EMISSIONS Nominal	CO EMISSIONS Maximum	UHC EMISSIONS Nominal	UHC EMISSIONS Maximum
[illegible] Hz — 100% Load — Elev. [illegible] ft — Rel. Humidity 60.0% — Temperature 59.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	41.31	*	33.09	*	9.48
lbm/MMBtu (Fuel LHV)	*	0.151	*	0.121	*	0.035
lbm/(MW-hr)	*	1.59	*	1.27	*	0.36
(gas turbine shaft pwr) lbm/hr	*	9.43	*	7.55	*	2.16
[illegible] Hz — 100.0% Load — Elev. 37.0 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	38.07	*	30.50	*	8.73
lbm/MMBtu (Fuel LHV)	*	0.150	*	0.120	*	0.034
lbm/(MW-hr)	*	1.63	*	1.31	*	0.37
(gas turbine shaft pwr) lbm/hr	*	8.69	*	6.96	*	1.99
[illegible] Hz — 100.0% Load — Elev. 37.0 ft — Rel. Humidity 60.0% — Temperature [illegible] Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	35.09	*	28.11	*	8.05
lbm/MMBtu (Fuel LHV)	*	0.148	*	0.119	*	0.034
lbm/(MW-hr)	*	1.69	*	1.35	*	0.39
(gas turbine shaft pwr) lbm/hr	*	8.01	*	6.42	*	1.84

Important Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another. The emission values on this form are only predicted emissions at the specific operating conditions listed.
2. Solar's typical SoLoNOx warranty is for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 80% and 100% load for liquid fuel. An emission warranty for non-SoLoNOx equipment is for greater than 0 deg F and between 80% and 100% load.
3. 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.
4. If needed, Solar can provide generic documents to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. 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.

Solar Turbines

A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer: Duke Energy	Engine Model: TAURUS 70-9702S CS/MD 59F MATCH
Job ID	
Inquiry Number	Fuel Type: SD NATURAL GAS — Water Injection: NO
Run By: Michael E Clay — Date Run: 12-Jan-06	Engine Emissions Data: REV. 0.1 — Engines Tested: 0

	NOx EMISSIONS Nominal	NOx EMISSIONS Maximum	CO EMISSIONS Nominal	CO EMISSIONS Maximum	UHC EMISSIONS Nominal	UHC EMISSIONS Maximum
1 — 9890 Hp — 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 59.0 Deg F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	49.32	*	39.50	*	11.31
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr)	*	1.51	*	1.21	*	0.35
(gas turbine shaft pwr) lbm/hr	*	11.26	*	9.02	*	2.58
2 — 9266 Hp — 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 20.0 Deg F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	46.90	*	37.57	*	10.76
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr)	*	1.53	*	1.23	*	0.35
(gas turbine shaft pwr) lbm/hr	*	10.71	*	8.58	*	2.46
3 — 8746 Hp — 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 100.0 Deg F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	44.32	*	35.51	*	10.17
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr)	*	1.56	*	1.25	*	0.36
(gas turbine shaft pwr) lbm/hr	*	10.12	*	8.11	*	2.32

Important Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another. The emission values on this form are only predicted emissions at the specific operating conditions listed.
2. Solar's typical SoLoNOx warranty is for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 80% and 100% load for liquid fuel. An emission warranty for non-SoLoNOx equipment is for greater than 0 deg F and between 80% and 100% load.
3. 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.
4. If needed, Solar can provide generic documents to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. 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.

Solar Turbines
A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer: *Duke Energy Field Services*	Model: TAURUS 70-10302S
Job ID: Linam Ranch T70	Package Type: CS/MD
Run By: Eric L Moore — Date Run: 4-Feb-06	Match: 59F MATCH
Engine Performance Code: REV. 3.40 — Engine Performance Data: REV. 0.5	Fuel System: GAS
	Fuel Type: SD NATURAL GAS

DATA FOR MINIMUM PERFORMANCE

Elevation	feet	3710
Inlet Loss	in H20	3.0
Exhaust Loss	in H20	4.0
Accessory on GP Shaft	HP	26.0

		1	2	3	4	5	6
Engine Inlet Temperature	deg F	0	20.0	40.0	60.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	11279	11205	11099	10964	10799	10587
Specified Load	HP	FULL	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	10702	10010	9301	8510	7687	6876
Fuel Flow	mmBtu/hr	77.63	73.70	69.62	64.99	60.38	56.35
Heat Rate	Btu/HP-hr	7254	7362	7486	7638	7855	8195
Therm Eff	%	35.076	34.560	33.991	33.315	32.394	31.047
Engine Exhaust Flow	lbm/hr	216159	204605	193208	181710	168939	156979
Exhaust Temperature	deg F	858	885	908	927	952	981

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.79
Ethane (C2H6)	4.16
Propane (C3H8)	0.84
N-Butane (C4H10)	0.18
N-Pentane (C5H12)	0.04
Hexane (C6H14)	0.04
Carbon Dioxide (CO2)	0.44
Hydrogen Sulfide (H2S)	0.0001
Nitrogen (N2)	1.51

Fuel Gas Properties

LHV (Btu/Scf)	939.2	Specific Gravity	0.5970	Wobbe Index at 60F	1215.6

Solar Turbines

A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer: Duke Energy Field Services	Engine Model: TAURUS 70-10302S CS/MD 59F MATCH
Job ID: Linam Ranch T70	
Inquiry Number: Linam Ranch T70	Fuel Type: SD NATURAL GAS / Water Injection: NO
Run By: Eric L Moore / Date Run: 4-Feb-06	Engine Emissions Data: REV. 0.1 / Engines Tested: 0

	NOx EMISSIONS Nominal	NOx EMISSIONS Maximum	CO EMISSIONS Nominal	CO EMISSIONS Maximum	UHC EMISSIONS Nominal	UHC EMISSIONS Maximum
4 — 8510 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 60.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	43.05	*	34.49	*	9.88
lbm/MMBtu (Fuel LHV)	*	0.151	*	0.121	*	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.55	*	1.24	*	0.36
lbm/hr	*	9.83	*	7.87	*	2.25
5 — 7687 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	39.70	*	31.80	*	9.11
lbm/MMBtu (Fuel LHV)	*	0.150	*	0.120	*	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.58	*	1.27	*	0.36
lbm/hr	*	9.06	*	7.26	*	2.08
6 — 6876 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 100.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	36.56	*	29.29	*	8.39
lbm/MMBtu (Fuel LHV)	*	0.148	*	0.119	*	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.63	*	1.30	*	0.37
lbm/hr	*	8.35	*	6.69	*	1.91

Important Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another. The emission values on this form are only predicted emissions at the specific operating conditions listed.
2. Solar's typical SoLoNOx warranty is for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 80% and 100% load for liquid fuel. An emission warranty for non-SoLoNOx equipment is for greater than 0 deg F and between 80% and 100% load.
3. 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.
4. If needed, Solar can provide generic documents to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. 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.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer: Duke Energy Field Services	Engine Model: TAURUS 70-10302S CS/MD 59F MATCH
Job ID: Linam Ranch T70	
Inquiry Number: Linam Ranch T70	Fuel Type: SD NATURAL GAS — Water Injection: NO
Run By: Eric L Moore — Date Run: 4-Feb-06	Engine Emissions Data: REV. 0.1 — Engines Tested: 0

	NOx EMISSIONS Nominal	NOx EMISSIONS Maximum	CO EMISSIONS Nominal	CO EMISSIONS Maximum	UHC EMISSIONS Nominal	UHC EMISSIONS Maximum
1 — 10702 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	51.78	*	41.48	*	11.88
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.48	*	1.19	*	0.34
lbm/hr	*	11.82	*	9.47	*	2.71
2 — 10010 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 20.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	49.11	*	39.34	*	11.27
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.50	*	1.20	*	0.34
lbm/hr	*	11.21	*	8.98	*	2.57
3 — 9301 Hp 100.0% Load — Elev. 3710 ft — Rel. Humidity 60.0% — Temperature 40.0 Deg. F						
PPMvd at 15% O2	*	38.00	*	50.00	*	25.00
ton/yr	*	46.30	*	37.09	*	10.62
lbm/MMBtu (Fuel LHV)	*	0.152	*	0.122	*	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	*	1.52	*	1.22	*	0.35
lbm/hr	*	10.57	*	8.47	*	2.43

Important Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another. The emission values on this form are only predicted emissions at the specific operating conditions listed.
2. Solar's typical SoLoNOx warranty is for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 80% and 100% load for liquid fuel. An emission warranty for non-SoLoNOx equipment is for greater than 0 deg F and between 80% and 100% load.
3. 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.
4. If needed, Solar can provide generic documents to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. 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.

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

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

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

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

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

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

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

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

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

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

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

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

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

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

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

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

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act*.

[b] 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".

[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. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.

[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.

[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.

[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

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/10^6scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

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

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

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

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

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

TABLE 3.2-1 UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-52)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	3.17 E+00	A
NO_x[c] <90% Load	1.94 E+00	A
CO[c] 90 - 105% Load	3.86 E-01	A
CO[c] <90% Load	3.53 E-01	A
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.64 E+00	A
Methane[g]	1.45 E+00	C
VOC[h]	1.20 E-01	C
PM10 (filterable)[i]	3.84 E-02	C
PM2.5 (filterable)[i]	3.84 E-02	C
PM Condensable[j]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	6.63 E-05	C
1,1,2-Trichloroethane[k]	5.27 E-05	C
1,1-Dichloroethane	3.91 E-05	C
1,2,3-Trimethylbenzene	3.54 E-05	D
1,2,4-Trimethylbenzene	1.11 E-04	C
1,2-Dichloroethane	4.22 E-05	D
1,2-Dichloropropane	4.46 E-05	C
1,3,5-Trimethylbenzene	1.80 E-05	D
1,3-Butadiene[k]	8.20 E-04	D
1,3-Dichloropropene[k]	4.38 E-05	C
2,2,4-Trimethylpentane[k]	8.46 E-04	B
2-Methylnaphthalene[k]	2.14 E-05	C
Acenaphthene[k]	1.33 E-06	C

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES

(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	3.17 E-06	C
Acetaldehyde[k,l]	7.76 E-03	A
Acrolein[k,l]	7.78 E-03	A
Anthracene[k]	7.18 E-07	C
Benz(a)anthracene[k]	3.36 E-07	C
Benzene[k]	1.94 E-03	A
Benzo(a)pyrene[k]	5.68 E-09	D
Benzo(b)fluoranthene[k]	8.51 E-09	D
Benzo(e)pyrene[k]	2.34 E-08	D
Benzo(g,h,i)perylene[k]	2.48 E-08	D
Benzo(k)fluoranthene[k]	4.26 E-09	D
Biphenyl[k]	3.95 E-06	C
Butane	4.75 E-03	C
Butyr/Isobutyraldehyde	4.37 E-04	C
Carbon Tetrachloride[k]	6.07 E-05	C
Chlorobenzene[k]	4.44 E-05	C
Chloroform[k]	4.71 E-05	C
Chrysene[k]	6.72 E-07	C
Cyclohexane	3.08 E-04	C
Cyclopentane	9.47 E-05	C
Ethane	7.09 E-02	A
Ethylbenzene[k]	1.08 E-04	B
Ethylene Dibromide[k]	7.34 E-05	C
Fluoranthene[k]	3.61 E-07	C
Fluorene[k]	1.69 E-06	C
Formaldehyde[k,l]	5.52 E-02	A

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES

(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	3.17 E-06	C
Acetaldehyde[k,l]	7.76 E-03	A
Acrolein[k,l]	7.78 E-03	A
Anthracene[k]	7.18 E-07	C
Benz(a)anthracene[k]	3.36 E-07	C
Benzene[k]	1.94 E-03	A
Benzo(a)pyrene[k]	5.68 E-09	D
Benzo(b)fluoranthene[k]	8.51 E-09	D
Benzo(e)pyrene[k]	2.34 E-08	D
Benzo(g,h,i)perylene[k]	2.48 E-08	D
Benzo(k)fluoranthene[k]	4.26 E-09	D
Biphenyl[k]	3.95 E-06	C
Butane	4.75 E-03	C
Butyr/Isobutyraldehyde	4.37 E-04	C
Carbon Tetrachloride[k]	6.07 E-05	C
Chlorobenzene[k]	4.44 E-05	C
Chloroform[k]	4.71 E-05	C
Chrysene[k]	6.72 E-07	C
Cyclohexane	3.08 E-04	C
Cyclopentane	9.47 E-05	C
Ethane	7.09 E-02	A
Ethylbenzene[k]	1.08 E-04	B
Ethylene Dibromide[k]	7.34 E-05	C
Fluoranthene[k]	3.61 E-07	C
Fluorene[k]	1.69 E-06	C
Formaldehyde[k,l]	5.52 E-02	A

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Indeno(1,2,3-c,d)pyrene[k]	9.93 E-09	D
Isobutane	3.75 E-03	C
Methanol[k]	2.48 E-03	A
Methylcyclohexane	3.38 E-04	C
Methylene Chloride[k]	1.47 E-04	C
n-Hexane[k]	4.45 E-04	C
n-Nonane	3.08 E-05	C
n-Octane	7.44 E-05	C
n-Pentane	1.53 E-03	C
Naphthalene[k]	9.63 E-05	C
PAH[k]	1.34 E-04	D
Perylene[k]	4.97 E-09	D
Phenanthrene[k]	3.53 E-06	C
Phenol[k]	4.21 E-05	C
Propane	2.87 E-02	C
Pyrene[k]	5.84 E-07	C
Styrene[k]	5.48 E-05	A
Toluene[k]	9.63 E-04	A
Vinyl Chloride[k]	2.47 E-05	C
Xylene[k]	2.68 E-04	A

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

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA

Table 3.2-1. UNCONTROLLED EMISSION FACTORS FOR 2-STROKE LEAN-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Indeno(1,2,3-c,d)pyrene[k]	9.93 E-09	D
Isobutane	3.75 E-03	C
Methanol[k]	2.48 E-03	A
Methylcyclohexane	3.38 E-04	C
Methylene Chloride[k]	1.47 E-04	C
n-Hexane[k]	4.45 E-04	C
n-Nonane	3.08 E-05	C
n-Octane	7.44 E-05	C
n-Pentane	1.53 E-03	C
Naphthalene[k]	9.63 E-05	C
PAH[k]	1.34 E-04	D
Perylene[k]	4.97 E-09	D
Phenanthrene[k]	3.53 E-06	C
Phenol[k]	4.21 E-05	C
Propane	2.87 E-02	C
Pyrene[k]	5.84 E-07	C
Styrene[k]	5.48 E-05	A
Toluene[k]	9.63 E-04	A
Vinyl Chloride[k]	2.47 E-05	C
Xylene[k]	2.68 E-04	A

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

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA

Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (1/\text{operating HP, 1/hp})$$

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

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6 scf.

[f] Emission factor for TOC is based on measured emission levels of 43 tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.48 lb/MMBtu vs. 1.45 lb/MMBtu, respectively.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.

[i] Considered $\leq 1\ \mu$m in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[j] No data were available for condensable PM emissions. The presented emission factor reflects emissions from 4SLB engines.

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

[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	
Job ID	
Inquiry Number	
Run By: David A Pocengal	Date Run: 7-Mar-11

Engine Model	TAURUS 60-7800S CS/MD 59F MATCH
Fuel Type: SD NATURAL GAS	Water Injection: NO
Engine Emissions Data	REV. 0.1

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 7340 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	15.18	15.41	8.82
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.63	0.64	0.37
lbm/hr	3.47	3.52	2.01
g/(Hp-hr) (gas turbine shaft pwr)	0.21	0.22	0.12
2 — 7121 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 20.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	14.84	15.05	8.62
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.64	0.65	0.37
lbm/hr	3.39	3.44	1.97
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.22	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can 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.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	
Job ID	
Inquiry Number	
Run By: David A Pocengal	Date Run: 7-Mar-11

Engine Model	TAURUS 60-7800S CS/MD 59F MATCH
Fuel Type: SD NATURAL GAS	Water Injection: NO
Engine Emissions Data	REV. 0.1

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
3 — 6868 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 40.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	14.40	14.61	8.37
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.64	0.65	0.37
lbm/hr	3.29	3.34	1.91
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.22	0.13
4 — 6520 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 60.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	13.82	14.02	8.03
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.65	0.66	0.38
lbm/hr	3.16	3.20	1.83
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.22	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can 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.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	
Job ID	
Inquiry Number	
Run By: David A Pocengal	Date Run: 7-Mar-11

Engine Model	TAURUS 60-7800S CS/MD 59F MATCH
Fuel Type: SD NATURAL GAS	Water Injection: NO
Engine Emissions Data	REV. 0.1

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
3 — 6868 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 40.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	14.40	14.61	8.37
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.64	0.65	0.37
lbm/hr	3.29	3.34	1.91
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.22	0.13
4 — 6520 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 60.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	13.82	14.02	8.03
lbm/MMBtu (Fuel LHV)	0.060	0.061	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	0.65	0.66	0.38
lbm/hr	3.16	3.20	1.83
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.22	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can 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.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer	
Job ID	
Inquiry Number	
Run By: David A Pocengal	Date Run: 7-Mar-11

Engine Model	TAURUS 60-7800S CS/MD 59F MATCH
Fuel Type: SD NATURAL GAS	Water Injection: NO
Engine Emissions Data	REV. 0.1

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
5 — 6006 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	12.98	13.17	7.54
lbm/MMBtu (Fuel LHV)	0.059	0.060	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	0.66	0.67	0.38
lbm/hr	2.96	3.01	1.72
g/(Hp-hr) (gas turbine shaft pwr)	0.22	0.23	0.13
6 — 5169 HP 100.0% Load — Elev. 3647 ft — Rel. Humidity 60.0% — Temperature 110.0 Deg. F			
PPMvd at 15% O2	15.00	25.00	25.00
ton/yr	11.59	11.76	6.74
lbm/MMBtu (Fuel LHV)	0.058	0.059	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	0.69	0.70	0.40
lbm/hr	2.65	2.69	1.54
g/(Hp-hr) (gas turbine shaft pwr)	0.23	0.24	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can 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.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
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PREDICTED ENGINE PERFORMANCE

Customer	
Job ID	
Run By: David A Pocengal	Date Run: 7-Mar-11
Engine Performance Code: REV. 3.48	Engine Performance Data: REV. 0.8

Model	TAURUS 60-7800S
Package Type	CS/MD
Match	59F MATCH
Fuel System	GAS
Fuel Type	SD NATURAL GAS

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	3647
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	14.0

		1	2	3	4	5	6
Engine Inlet Temperature	deg F	0	20.0	40.0	60.0	80.0	110.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	13721	13769	13815	13846	13803	13678
Specified Load	HP	FULL	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	7340	7121	6868	6520	6006	5169
Fuel Flow	mmBtu/hr	57.66	56.39	54.84	52.84	49.99	45.70
Heat Rate	Btu/HP-hr	7855	7918	7985	8104	8324	8841
Therm Eff	%	32.391	32.133	31.864	31.397	30.569	28.781
Engine Exhaust Flow	lbm/hr	163305	158768	153869	148153	140672	128015
Exhaust Temperature	deg F	890	914	937	957	977	1013

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.79
Ethane (C2H6)	4.16
Propane (C3H8)	0.84
N-Butane (C4H10)	0.18
N-Pentane (C5H12)	0.04
Hexane (C6H14)	0.04
Carbon Dioxide (CO2)	0.44
Hydrogen Sulfide (H2S)	0.0001
Nitrogen (N2)	1.51

Fuel Gas Properties

LHV (Btu/Scf)	939.2	Specific Gravity	0.5970	Wobbe Index at 60F	1215.6

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.

Particulate Matter Emission Estimates

Leslie Witherspoon
Solar Turbines Incorporated

PURPOSE

Since particulate matter is a regulated pollutant, most air permitting agencies require customers to provide particulate matter emission estimates during the air permitting process. In addition, many air permit agencies require dispersion modeling analyses for particulate matter. More and more often, regulatory agencies are including a particulate matter compliance testing requirement in the air permit.

This document summarizes Solar's recommended $PM_{10/2.5}$ emission levels for our combustion turbines. The recommended levels are based on an analysis of emissions tests collected from customer sites.

Particulate Matter Definition

National Ambient Air Quality Standards (NAAQS) for particulate matter were first set in 1971. Total suspended particulate (TSP) was the first indicator used to represent suspended particles in the ambient air. Since July 1, 1987, the Environmental Protection Agency (EPA) has used the indicator PM_{10}, which includes only the particles with aerodynamic diameter smaller than 10 micrometers. PM_{10} (coarse particles) come from sources such as windblown dust from the desert or agricultural fields and dust kicked up on unpaved roads by vehicle traffic.

The EPA added a $PM_{2.5}$ ambient air standard in 1997. $PM_{2.5}$ includes particles with an aerodynamic diameter less than 2.5 micrometers. $PM_{2.5}$ (fine particles) are generally emitted from activities such as industrial and residential combustion and from vehicle exhaust. Fine particles are also formed in the atmosphere when gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds, emitted by combustion activities, are transformed by chemical reactions.

Nearly all particulate matter from gas turbine exhaust is less than one micrometer (micron) in diameter. Thus the emission rates of TSP, PM_{10}, and $PM_{2.5}$ from gas turbines are theoretically equivalent although source testing will show significant variation due to test method detection levels and processes.

TESTING FOR PARTICULATE MATTER

The turbine combustion process has little effect on the particulate matter generated and measured. The largest contributor to particulate matter emissions for gas and liquid fired combustion turbines is measurement technique and error. Other, minor contributing, sources of particulate matter emissions include carbon, ash, fuel-bound sulfur, artifact sulfate formation, compressor/lubricating oils, and inlet air.

Historical customer particulate matter source test data show that there is significant variability from test to test. The source test results support the common industry argument that particulate matter from natural gas fired combustion sources is difficult to measure accurately. The reference test methods for particulate matter were developed primarily for measuring emissions from coal-fired power plants and other major emitters of particulates. Particulate concentrations from gas turbine can be 100 to 10,000 times lower than the "traditional" particulate sources. The test methods were not developed or verified for low emission levels. There

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are interferences, insignificant at higher exhaust particulate matter concentrations that result in emissions greater than the actual emissions from gas turbines. New methods are being developed to address this problem.

Due to measurement and procedural errors, the measured results, in most cases, may not be representative of actual particulate matter emitted. There are many potential error sources in measuring particulate matter. Most of these have to do with contamination of the samples, material from the sampling apparatus getting into the samples, and general sloppiness in samples and analysis.

Recommended Particulate Matter Emission Factors

When necessary to support the air permitting process Solar recommends using a $PM_{10/2.5}$ emission factor of 0.021 lb/MMBtu fuel input (HHV) for natural gas. For landfill gas, the recommended emission factor is 0.03 lb/MMBtu fuel input (HHV). For liquid fuel, the recommended emission factor is 0.06 lb/MMBtu fuel input (HHV). The liquid fuel emission factor assumes fuel sulfur content is <500 ppm and ash content is <0.005% by wt.

The emission levels cited above are only for engine operation with the fuels listed. Other fuels many not yield similar results.

At this time, Solar does not recommend using AP-42 (EPA AP-42 "Compilation of Air Pollutant Emission Factors.") AP-42. While some source tests have had similar results to AP-42, others are higher.

Test Method Recommendation

For customers who conduct emission source tests for particulate matter, Solar recommends that EPA Methods 201/201A[1] be used to measure the "front half". "Front half" represents filterable particulate matter.

EPA Method 202[2] (with nitrogen purge and field blanks) should be used to measure the "back half". "Back half" measurements represent the condensable portion of particulate matter.

EPA Method 5[3], which measures the front and back halves may be substituted (e.g. where exhaust temperatures do not allow the use of Method 202).

Testing should include three test runs of 4 hours each.

Solar recommends using the aforementioned test methods until more representative test methods are developed and made commercially available.

References

[1] EPA Method 201, Determination of PM10 Emissions, Exhaust Gas Recycle Procedure. EPA Method 201A, Determination of PM10 Emissions, Constant Sampling Rate Procedure, 40 CFR 60, Part 60, Appendix A.

[2] EPA Method 202, Determination of Condensible Particulate Emissions from Stationary Sources, 40 CFR 60, Part 60, Appendix A.

[3] EPA Method 5, Determination of Particulate Emissions from Stationary Sources, 40 CFR 60, Part 60, Appendix

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Volatile Organic Compound, Sulfur Dioxide, and Formaldehyde Emission Estimates

Leslie Witherspoon
Solar Turbines Incorporated

PURPOSE

This Product Information Letter summarizes methods that are available to estimate emissions of volatile organic compounds (VOC), sulfur dioxide (SO_2), and formaldehyde from gas turbines. Most customers are required to estimate emissions of these pollutants during the air permitting process.

INTRODUCTION

In absence of site-specific or representative source test data, Solar refers customers to a United States Environmental Protection Agency (EPA) document titled "AP-42" or other appropriate EPA reference documents. AP-42 is a collection of emission factors for different emission sources. The emission factors found in AP-42 provide a generally accepted way of estimating emissions when more representative data are not available. The most recent version of AP-42 (dated April 2000) can be found at:

http://www.epa.gov/ttn/chief/ap42/ch03/index.html

Solar does not typically warranty the emission rates for VOC, SO_2 or formaldehyde.

Volatile Organic Compounds

Most permitting agencies require gas turbine users to estimate emissions of VOC, a subpart of the unburned hydrocarbon (UHC) emissions, during the air permitting process. Volatile organic compounds, non-methane hydrocarbons (NMHC), and reactive organic gases (ROG) are some of the many ways of referring to the non-methane (and non-ethane) portion of an "unburned hydrocarbon" emission estimate.

For natural gas fuel, most of Solar's customers use 10-20% of the UHC emission rate to represent VOC emissions. The estimate of 10-20% is based on a ratio of total non-methane hydrocarbons to total organic compounds. The use of 10 up to 20% provides a conservative estimate of VOC emissions. The balance of the UHC is assumed to be primarily methane.

For liquid fuel, it is appropriate to estimate that 100% of the UHC emission estimate is VOC.

Sulfur Dioxide

Sulfur dioxide emissions are produced by conversion of sulfur in the fuel to SO_2. Since Solar does not control the amount of sulfur in the fuel, we are unable to generically predict SO_2 emissions. Customers generally estimate SO_2 emissions with a mass balance calculation by assuming that any sulfur in the fuel will convert to SO_2. For reference, the typical mass balance equation is shown below.

Variables: wt % of sulfur in fuel
Btu/lb fuel (LHV*)
MMBtu/hr fuel flow (LHV)

$$\frac{\text{lb } SO_2}{\text{hr}} = \left(\frac{\text{wt\% Sulfur}}{100}\right)\left(\frac{\text{lb fuel}}{\text{Btu}}\right)\left(\frac{10^6 \text{ Btu}}{\text{MMBtu}}\right)\left(\frac{\text{MMBtu fuel}}{\text{hr}}\right)\left(\frac{\text{MW } SO_2}{\text{MW Sulfur}}\right)$$

As an alternative to a mass balance calculation, EPA's AP-42 document can be used. AP-42 (Table 3.1-2a, April 2000) suggests emission factors of 0.0034 lb/MMBtu for gas fuel (HHV*) and 0.033 lb/MMBtu for liquid fuel (HHV).

*LHV = Lower Heating Value; HHV = Higher Heating Value

Formaldehyde

In gas turbines, formaldehyde emissions are a result of incomplete combustion. Formaldehyde in the exhaust stream is unstable and very difficult to measure. In addition to turbine characteristics including combustor design, size, maintenance history, and load profile, the formaldehyde emission level is also affected by:

- Ambient temperature
- Humidity
- Atmospheric pressure
- Fuel quality
- Formaldehyde concentration in the ambient air
- Test method measurement variability
- Operational factors

The emission factor data in Table 1 is an excerpt from an EPA memo: "Revised HAP Emission Factors for Stationary Combustion Turbines, 8/22/03." The memo presents hazardous air pollutant (HAP) emission factor data in several categories including: mean, median, maximum, and minimum. The emission factors in the memo are a compilation of the HAP data EPA collected during the Maximum Achievable Control Technology (MACT) standard development process. The emission factor documentation shows there is a high degree of variability in formaldehyde emissions from gas turbines, depending on the manufacturer, rating size of equipment, combustor design, and testing events. To estimate formaldehyde emissions from gas turbines, users should use the emission factor(s) that best represent the gas turbines actual / planned operating profile. Refer to the memo for alternative emission factors.

Table 1. EPA's Total HAP and Formaldehyde Emission Factors for <50 MW Lean-Premix Gas Turbines burning Natural Gas

(Source: Revised HAP Emission Factors for Stationary Combustion Turbines, OAR-2002-0060, IV-B-09, 8/22/03)

Pollutant	Engine Load	95% Upper Confidence of Mean, lb/MMBtu HHV	95% Upper Confidence of Data, lb/MMBtu HHV	Memo Reference
Total HAP	> 90%	0.00144	0.00258	Table 19
Total HAP	All	0.00160	0.00305	Table 16
Formaldehyde	> 90%	0.00127	0.00241	Table 19
Formaldehyde	All	0.00143	0.00288	Table 16

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

Emissions Report for: Annual

Linam Ranch TK-2 - Horizontal Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	41.35	1,358.40	1,399.75
Hexane (-n)	0.19	6.22	6.41
Benzene	0.21	7.02	7.23
Isooctane	0.26	8.55	8.81
Toluene	0.25	8.14	8.39
Ethylbenzene	0.02	0.57	0.58
Xylene (-m)	0.07	2.37	2.44
Isopropyl benzene	0.00	0.10	0.10
1,2,4-Trimethylbenzene	0.01	0.21	0.21
Cyclohexane	0.03	0.96	0.99
Unidentified Components	40.31	1,324.27	1,364.58

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

Linam Ranch TK-2 - Horizontal Tank
Near Hobbs, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	1,358.4042
Vapor Space Volume (cu ft):	42.0213
Vapor Density (lb/cu ft):	0.1006
Vapor Space Expansion Factor:	1.7509
Vented Vapor Saturation Factor:	0.5026
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	42.0213
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.1722
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.1006
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.3367
Daily Avg. Liquid Surface Temp. (deg. R):	535.9964
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	524.9467
Tank Paint Solar Absorptance (Shell):	0.9100
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	1.7509
Daily Vapor Temperature Range (deg. R):	67.5988
Daily Vapor Pressure Range (psia):	5.5751
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.3367
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.8731
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	12.4481
Daily Avg. Liquid Surface Temp. (deg R):	535.9964
Daily Min. Liquid Surface Temp. (deg R):	519.0967
Daily Max. Liquid Surface Temp. (deg R):	552.8961
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5026
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	9.3367
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	41.3484
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	9.3367
Annual Net Throughput (gal/yr.):	3,000.0000
Annual Turnovers:	6.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1,399.7525

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

Identification

User Identification:	Linam Ranch TK-2
City:	Near Hobbs
State:	New Mexico
Company:	DCP Midstream, LP
Type of Tank:	Horizontal Tank
Description:	500 gallon gasoline tank

Tank Dimensions

Shell Length (ft):		5.25
Diameter (ft):		4.00
Volume (gallons):		500.00
Turnovers:		6.00
Net Throughput(gal/yr):		3,000.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Poor

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

Identification		
User Identification:	TK-VRU	
City:	Hobbs, NM	
State:		
Company:	DCP Midstream	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	750 bbl Linam Ranch Gas Plant	
Tank Dimensions		
Shell Height (ft):		24.00
Diameter (ft):		15.50
Liquid Height (ft) :		24.00
Avg. Liquid Height (ft):		12.00
Volume (gallons):		31,500.00
Turnovers:		876.00
Net Throughput(gal/yr):		27,594,000.00
Is Tank Heated (y/n):	N	
Paint Characteristics		
Shell Color/Shade:	White/White	
Shell Condition	Good	
Roof Color/Shade:	White/White	
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: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

LRGP G-Tank - Vertical Fixed Roof Tank
Artesia, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 10)	All	63.26	55.73	70.78	60.84	5.5219	4.7708	6.3647	66.0000			92.00	Option 4: RVP=10, ASTM Slope=3

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

LRGP G-Tank - Vertical Fixed Roof Tank
Artesia, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	3,225.4083
Vapor Space Volume (cu ft):	2,294.7688
Vapor Density (lb/cu ft):	0.0649
Vapor Space Expansion Factor:	0.2703
Vented Vapor Saturation Factor:	0.2193
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,294.7688
Tank Diameter (ft):	15.5000
Vapor Space Outage (ft):	12.1615
Tank Shell Height (ft):	24.0000
Average Liquid Height (ft):	12.0000
Roof Outage (ft):	0.1615
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1615
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	7.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0649
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Daily Avg. Liquid Surface Temp. (deg. R):	522.9287
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	520.5067
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2703
Daily Vapor Temperature Range (deg. R):	30.0956
Daily Vapor Pressure Range (psia):	1.5939
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	4.7708
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.3647
Daily Avg. Liquid Surface Temp. (deg R):	522.9287
Daily Min. Liquid Surface Temp. (deg R):	515.4048
Daily Max. Liquid Surface Temp. (deg R):	530.4526
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.2193
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	5.5219
Vapor Space Outage (ft):	12.1615
Working Losses (lb):	48,106.3704
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Annual Net Throughput (gal/yr.):	27,594,000.0000
Annual Turnovers:	876.0000
Turnover Factor:	0.2009
Maximum Liquid Volume (gal):	31,500.0000
Maximum Liquid Height (ft):	24.0000
Tank Diameter (ft):	15.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	51,331.7787

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

Emissions Report for: Annual

LRGP G-Tank - Vertical Fixed Roof Tank
Artesia, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 10)	48,106.37	3,225.41	51,331.78

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

Identification

User Identification:	TK-VRUTMP 1 and 2
City:	Hobbs
State:	New Mexico
Company:	DCP Midstream
Type of Tank:	Horizontal Tank
Description:	Horizontal bullet tanks, 1500 bbl

Tank Dimensions

Shell Length (ft):	72.50
Diameter (ft):	12.00
Volume (gallons):	63,000.00
Turnovers:	438.00
Net Throughput(gal/yr):	27,594,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

TK-VRUTMP 1 and 2 - Horizontal Tank
Hobbs, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 10)	All	63.26	55.73	70.78	60.84	5.5219	4.7708	6.3647	66.0000			92.00	Option 4: RVP=10, ASTM Slope=3

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

TK-VRUTMP 1 and 2 - Horizontal Tank
Hobbs, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	12,143.6488
Vapor Space Volume (cu ft):	5,222.6477
Vapor Density (lb/cu ft):	0.0649
Vapor Space Expansion Factor:	0.2703
Vented Vapor Saturation Factor:	0.3629
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	5,222.6477
Tank Diameter (ft):	12.0000
Effective Diameter (ft):	33.2908
Vapor Space Outage (ft):	6.0000
Tank Shell Length (ft):	72.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0649
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Daily Avg. Liquid Surface Temp. (deg. R):	522.9287
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	520.5067
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2703
Daily Vapor Temperature Range (deg. R):	30.0956
Daily Vapor Pressure Range (psia):	1.5939
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	4.7708
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.3647
Daily Avg. Liquid Surface Temp. (deg R):	522.9287
Daily Min. Liquid Surface Temp. (deg R):	515.4048
Daily Max. Liquid Surface Temp. (deg R):	530.4526
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.3629
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	5.5219
Vapor Space Outage (ft):	6.0000
Working Losses (lb):	56,306.3199
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5219
Annual Net Throughput (gal/yr.):	27,594,000.0000

Annual Turnovers:	438.0000
Turnover Factor:	0.2352
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	68,449.9687

Gas Analysis: Meter #M0501-00 Linam total inlet West from PGAS dated 4/22/05

Gas Constituent	Mol. Wt. (lb/lbmole)	Mole % (Vol %)	**Weight (lb/lbmole Gas)**	Wt. % (Wt %)
Methane	16.0	78.957	12.63	60.83
Ethane	30.0	9.477	2.84	13.69
Hydrogen Sulfide	**34.1**	**0.661**	**0.23**	**1.08**
Propane	44.0	4.757	2.09	10.08
i-Butane	58.0	0.678	0.39	1.89
n-Butane	58.0	1.390	0.81	3.88
i-Pentane	72.0	0.301	0.22	1.04
n-Pentane	72.0	0.284	0.20	0.98
Hexanes+	86.0	0.270	0.23	1.12
n-Hexane	86.0	0.000	0.00	0.00
Carbon Dioxide	44.0	1.359	0.60	2.88
Helium	4.0	0.000	0.00	0.00
Nitrogen	28.0	1.866	0.52	2.52
Total		**100.00**	**20.77**	**100.0**

Gas Analysis: Meter #M0500-00 Linam total inlet East from PGAS dated 7/27/05

Gas Constituent	Mol. Wt. (lb/lbmole)	Mole % (Vol %)	**Weight (lb/lbmole Gas)**	Wt. % (Wt %)
Methane	16.0	79.337	12.69	61.12
Ethane	30.0	9.553	2.87	13.80
Hydrogen Sulfide	**34.1**	**0.300**	**0.10**	**0.49**
Propane	44.0	4.578	2.01	9.70
i-Butane	58.0	0.596	0.35	1.66
n-Butane	58.0	1.314	0.76	3.67
i-Pentane	72.0	0.363	0.26	1.26
n-Pentane	72.0	0.363	0.26	1.26
Hexanes+	86.0	0.549	0.47	2.27
n-Hexane	86.0	0.000	0.00	0.00
Carbon Dioxide	44.0	1.280	0.56	2.71
Helium	4.0	0.000	0.00	0.00
Nitrogen	28.0	1.767	0.49	2.38
Total		**100.00**	**20.84**	**100.3**

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

Identification

User Identification:	Linam Ranch TK-1370
City:	Near Hobbs
State:	New Mexico
Company:	DCP Midstream, LP
Type of Tank:	Horizontal Tank
Description:	500 gallon methanol tank

Tank Dimensions

Shell Length (ft):	5.25
Diameter (ft):	4.00
Volume (gallons):	500.00
Turnovers:	144.00
Net Throughput(gal/yr):	72,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Poor

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

Linam Ranch TK-1370 - Horizontal Tank
Near Hobbs, 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	76.33	59.43	93.23	65.28	2.3677	1.4163	3.8159	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)

Linam Ranch TK-1370 - Horizontal Tank
Near Hobbs, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	56.9023
Vapor Space Volume (cu ft):	42.0213
Vapor Density (lb/cu ft):	0.0132
Vapor Space Expansion Factor:	0.3519
Vented Vapor Saturation Factor:	0.7994
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	42.0213
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.1722
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.2500
Vapor Density	
Vapor Density (lb/cu ft):	0.0132
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Daily Avg. Liquid Surface Temp. (deg. R):	535.9964
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	524.9467
Tank Paint Solar Absorptance (Shell):	0.9100
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.3519
Daily Vapor Temperature Range (deg. R):	67.5988
Daily Vapor Pressure Range (psia):	2.3996
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.4163
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.8159
Daily Avg. Liquid Surface Temp. (deg R):	535.9964
Daily Min. Liquid Surface Temp. (deg R):	519.0967
Daily Max. Liquid Surface Temp. (deg R):	552.8961
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7994
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3677
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	48.7688
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Annual Net Throughput (gal/yr.):	72,000.0000
Annual Turnovers:	144.0000
Turnover Factor:	0.3750
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	105.6711

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

Emissions Report for: Annual

Linam Ranch TK-1370 - Horizontal Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	48.77	56.90	105.67

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

Identification

User Identification:	Linam Ranch TK-20
City:	Near Hobbs
State:	New Mexico
Company:	DCP Midstream, LP
Type of Tank:	Horizontal Tank
Description:	1130 gallon methanol tank

Tank Dimensions

Shell Length (ft):	6.50
Diameter (ft):	5.50
Volume (gallons):	1,130.00
Turnovers:	144.00
Net Throughput(gal/yr):	162,720.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Poor

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

Linam Ranch TK-20 - Horizontal Tank
Near Hobbs, 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	76.33	59.43	93.23	65.28	2.3677	1.4163	3.8159	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)

Linam Ranch TK-20 - Horizontal Tank
Near Hobbs, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	123.8757
Vapor Space Volume (cu ft):	98.3624
Vapor Density (lb/cu ft):	0.0132
Vapor Space Expansion Factor:	0.3519
Vented Vapor Saturation Factor:	0.7434
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	98.3624
Tank Diameter (ft):	5.5000
Effective Diameter (ft):	6.7484
Vapor Space Outage (ft):	2.7500
Tank Shell Length (ft):	6.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0132
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Daily Avg. Liquid Surface Temp. (deg. R):	535.9964
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	524.9467
Tank Paint Solar Absorptance (Shell):	0.9100
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.3519
Daily Vapor Temperature Range (deg. R):	67.5988
Daily Vapor Pressure Range (psia):	2.3996
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.4163
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.8159
Daily Avg. Liquid Surface Temp. (deg R):	535.9964
Daily Min. Liquid Surface Temp. (deg R):	519.0967
Daily Max. Liquid Surface Temp. (deg R):	552.8961
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7434
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3677
Vapor Space Outage (ft):	2.7500
Working Losses (lb):	110.2175
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Annual Net Throughput (gal/yr.):	162,720.0000
Annual Turnovers:	144.0000
Turnover Factor:	0.3750
Tank Diameter (ft):	5.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	234.0931

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

Emissions Report for: Annual

Linam Ranch TK-20 - Horizontal Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	110.22	123.88	234.09

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

Identification

User Identification:	Linam Ranch TK-21
City:	Near Hobbs
State:	New Mexico
Company:	DCP Midstream, LP
Type of Tank:	Horizontal Tank
Description:	659 gallon methanol tank

Tank Dimensions

Shell Length (ft):	5.50
Diameter (ft):	4.50
Volume (gallons):	660.00
Turnovers:	144.00
Net Throughput(gal/yr):	95,040.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Poor

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

Linam Ranch TK-21 - Horizontal Tank
Near Hobbs, 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	76.33	59.43	93.23	65.28	2.3677	1.4163	3.8159	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)

Linam Ranch TK-21 - Horizontal Tank
Near Hobbs, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	73.6006
Vapor Space Volume (cu ft):	55.7157
Vapor Density (lb/cu ft):	0.0132
Vapor Space Expansion Factor:	0.3519
Vented Vapor Saturation Factor:	0.7798
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	55.7157
Tank Diameter (ft):	4.5000
Effective Diameter (ft):	5.6150
Vapor Space Outage (ft):	2.2500
Tank Shell Length (ft):	5.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0132
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Daily Avg. Liquid Surface Temp. (deg. R):	535.9964
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	524.9467
Tank Paint Solar Absorptance (Shell):	0.9100
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.3519
Daily Vapor Temperature Range (deg. R):	67.5988
Daily Vapor Pressure Range (psia):	2.3996
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.4163
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.8159
Daily Avg. Liquid Surface Temp. (deg R):	535.9964
Daily Min. Liquid Surface Temp. (deg R):	519.0967
Daily Max. Liquid Surface Temp. (deg R):	552.8961
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7798
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3677
Vapor Space Outage (ft):	2.2500
Working Losses (lb):	64.3748
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Annual Net Throughput (gal/yr.):	95,040.0000
Annual Turnovers:	144.0000
Turnover Factor:	0.3750
Tank Diameter (ft):	4.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	137.9754

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

Emissions Report for: Annual

Linam Ranch TK-21 - Horizontal Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	64.37	73.60	137.98

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

Identification

User Identification:	Linam Ranch TK-27
City:	Near Hobbs
State:	New Mexico
Company:	DCP Midstream, LP
Type of Tank:	Vertical Fixed Roof Tank
Description:	7050 gallon methanol storage tank

Tank Dimensions

Shell Height (ft):	12.00
Diameter (ft):	10.00
Liquid Height (ft) :	11.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	7,050.00
Turnovers:	50.00
Net Throughput(gal/yr):	352,500.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Poor
Roof Color/Shade:	Red/Primer
Roof Condition:	Poor

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: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

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

Linam Ranch TK-27 - Vertical Fixed Roof Tank
Near Hobbs, 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	76.33	59.43	93.23	65.28	2.3677	1.4163	3.8159	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)

Linam Ranch TK-27 - Vertical Fixed Roof Tank
Near Hobbs, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	480.4657
Vapor Space Volume (cu ft):	518.6900
Vapor Density (lb/cu ft):	0.0132
Vapor Space Expansion Factor:	0.3519
Vented Vapor Saturation Factor:	0.5468
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	518.6900
Tank Diameter (ft):	10.0000
Vapor Space Outage (ft):	6.6042
Tank Shell Height (ft):	12.0000
Average Liquid Height (ft):	5.5000
Roof Outage (ft):	0.1042

Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1042
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0132
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Daily Avg. Liquid Surface Temp. (deg. R):	535.9964
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	524.9467
Tank Paint Solar Absorptance (Shell):	0.9100
Tank Paint Solar Absorptance (Roof):	0.9100
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.3519
Daily Vapor Temperature Range (deg. R):	67.5988
Daily Vapor Pressure Range (psia):	2.3996
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.4163
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.8159
Daily Avg. Liquid Surface Temp. (deg R):	535.9964
Daily Min. Liquid Surface Temp. (deg R):	519.0967
Daily Max. Liquid Surface Temp. (deg R):	552.8961
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5468
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	2.3677
Vapor Space Outage (ft):	6.6042
Working Losses (lb):	488.1395
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	2.3677
Annual Net Throughput (gal/yr.):	352,500.0000
Annual Turnovers:	50.0000
Turnover Factor:	0.7667
Maximum Liquid Volume (gal):	7,050.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	968.6051

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

Emissions Report for: Annual

Linam Ranch TK-27 - Vertical Fixed Roof Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	488.14	480.47	968.61

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

Emissions Report for: Annual

Linam Ranch TK-2 - Horizontal Tank
Near Hobbs, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	41.35	1,358.40	1,399.75
Hexane (-n)	0.19	6.22	6.41
Benzene	0.21	7.02	7.23
Isooctane	0.26	8.55	8.81
Toluene	0.25	8.14	8.39
Ethylbenzene	0.02	0.57	0.58
Xylene (-m)	0.07	2.37	2.44
Isopropyl benzene	0.00	0.10	0.10
1,2,4-Trimethylbenzene	0.01	0.21	0.21
Cyclohexane	0.03	0.96	0.99
Unidentified Components	40.31	1,324.27	1,364.58

Supporting information: Existing Updated Steady State Calculations

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

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

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

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

EMISSION FACTOR RATING: B

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

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

Table 13.5-2. HYDROCARBON COMPOSITION OF FLARE EMISSION[a]

Composition	Volume %	
	Average	Range
Methane	55	14 - 83
Ethane/Ethylene	8	1 - 14
Acetylene	5	0.3 - 23
Propane	7	0 - 16
Propylene	25	1 - 65

[a] Reference 1. The composition presented is an average of a number of test results obtained under the following sets of test conditions: steam-assisted flare using high-Btu-content feed; steam-assisted using low-Btu-content feed; air-assisted flare using high-Btu-content feed; and air-assisted flare using low-Btu-content feed. In all tests, "waste" gas was a synthetic gas consisting of a mixture of propylene and propane.

References For Section 13.5

1. *Flare Efficiency Study*, EPA-600/2-83-052, U. S. Environmental Protection Agency, Cincinnati, OH, July 1983.

2. K. D. Siegel, *Degree Of Conversion Of Flare Gas In Refinery High Flares*, Dissertation, University of Karlsruhe, Karlsruhe, Germany, February 1980.

3. *Manual On Disposal Of Refinery Wastes, Volume On Atmospheric Emissions*, API Publication 931, American Petroleum Institute, Washington, DC, June 1977.

Table 4-11. GHG Emission Factors for Gas Flares in Developed Countries [a]

Original Units							
Flare Source	**Emission Factors**						
	CO_2	**Uncertainty [b] (%)**	**CH_4**	**Uncertainty [b] (%)**	**N_2O**	**Uncertainty [b] (%)**	**Units**
Flaring - gas production [c]	1.2E-03	±25	7.6E-07	±25	2.1E-08	-10 to +1000	Gg/10^6 m^3 gas production
Flaring - sweet gas processing	1.8E-03	±25	1.2E-06	±25	2.5E-08	-10 to +1000	Gg/10^6 m^3 raw gas feed
Flaring - sour gas processing	3.6E-03	±25	2.4E-06	±25	5.4E-08	-10 to +1000	Gg/10^6 m^3 raw gas feed
Flaring - conventional oil production	4.1E-02	±50	2.5E-05	±50	6.4E-07	-10 to +1000	Gg/10^3 m^3 conventional oil production
Flaring - heavy oil/cold bitumen production	2.2E-02	±75	1.4E-04	±75	4.6E-07	-10 to +1000	Gg/10^3 m^3 heavy oil production
Flaring - thermal oil production	2.7E-02	±75	1.6E-05	±75	2.4E-07	-10 to +1000	Gg/10^3 m^3 thermal bitumen production
Flaring – refining [d, e]	No data	No data	0.189	No data	No data	No data	scf/10^3 bbl refinery feed
Units Converted to tonnes/10^6 scf or tonnes/1000 bbl							
Flare Source	**Emission Factors**						
	CO_2	**Uncertainty [b] (%)**	**CH_4**	**Uncertainty [b] (%)**	**N_2O**	**Uncertainty [b] (%)**	**Units**
Flaring - gas production [c]	3.4E-02	±25	2.2E-05	±25	5.9E-07	-10 to +1000	tonnes/10^6 scf gas production
Flaring - sweet gas processing	5.1E-02	±25	3.4E-05	±25	7.1E-07	-10 to +1000	tonnes/10^6 scf raw gas feed
Flaring - sour gas processing	0.10	±25	6.8E-05	±25	1.5E-06	-10 to +1000	tonnes/10^6 scf raw gas feed
Flaring - conventional oil production	6.5	±50	4.0E-03	±50	1.0E-04	-10 to +1000	tonnes/10^3 bbl conventional oil production
Flaring - heavy oil/cold bitumen production	3.5	±75	2.2E-02	±75	7.3E-05	-10 to +1000	tonnes/10^3 bbl heavy oil production
Flaring - thermal oil production	4.3	±75	2.5E-03	±75	3.8E-05	-10 to +1000	tonnes/10^3 bbl thermal bitumen production
Flaring - refining [d, e]	No data	No data	3.63E-06	No data	No data	No data	tonnes/10^3 bbl refinery feed

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Table 4-11. GHG Emission Factors for Gas Flares in Developed Countries [a], continued

Units Converted to tonnes/10^6 m^3 or tonnes/1000 m^3							
	Emission Factors						
Flare Source	**CO_2**	**Uncertainty [b] (%)**	**CH_4**	**Uncertainty [b] (%)**	**N_2O**	**Uncertainty [b] (%)**	**Units**
Flaring - gas production [c]	1.2	±25	7.6E-04	±25	2.1E-05	-10 to +1000	tonnes/10^6 m^3 gas production
Flaring - sweet gas processing	1.8	±25	1.2E-03	±25	2.5E-05	-10 to +1000	tonnes/$10^6$$m^3$ raw gas feed
Flaring - sour gas processing	3.6	±25	2.4E-03	±25	5.4E-05	-10 to +1000	tonnes/$10^6$$m^3$ raw gas feed
Flaring - conventional oil production	41.0	±50	2.5E-02	±50	6.4E-04	-10 to +1000	tonnes/10^3 m^3 conventional oil production
Flaring - heavy oil/cold bitumen production	22.0	±75	1.4E-01	±75	4.6E-04	-10 to +1000	tonnes/10^3 m^3 heavy oil production
Flaring - thermal oil production	27.0	±75	1.6E-02	±75	2.4E-04	-10 to +1000	tonnes/10^3 m^3 thermal bitumen production
Flaring – refining [d, e]	No data	No data	2.28E-05	No data	No data	No data	tonnes/10^3 m^3 refinery feed

Footnotes and Sources:

[a] IPCC, *2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 4 (Fugitive Emissions*), Table 4.2.4, 2006 Revised November 2008.

[b] Uncertainty based on a 95% confidence interval (IPCC, Volume 2, Chapter 4, Section 4.2.2.7.2, 2006 Revised November 2008).

[c] IPCC reports that flared volumes should be used to estimate flare emissions instead of the above emission factors when such data are available. IPCC reports that flared volume based emission factors are 0.012, 2.0 and 0.000023 Gg/10^6 m^3 of gas flared for CH_4, CO_2, and N_2O, respectively, based on a flaring efficiency of 98% and a typical gas analysis at a gas processing plant (91.9% CH_4, 0.58% CO_2, 0.68% N_2 and 6.84% non-CH_4 hydrocarbons, by volume).

[d] U.S. Environmental Protection Agency (EPA*). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007*, Table A-127, April 15, 2009.

[e] CH_4 emission factors converted from scf or m^3 are based on 60°F and 14.7 psia.

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Table 4-12. GHG Emission Factors for Gas Flares in Developing Countries and Countries with Economies in Transition [a]

Original Units

Flare Source	Emission Factors						
	CO_2	Uncertainty [b] (%)	CH_4	Uncertainty [b] (%)	N_2O	Uncertainty [b] (%)	Units
Flaring - gas production [c]	1.2E-03 – 1.6E-03	±75	7.6E-07 – 1.0E-06	±75	2.1E-08 – 2.9E-08	-10 to +1000	Gg/10^6 m^3 gas production
Flaring - sweet gas processing	1.8E-03 – 2.5E-03	±75	1.2E-06 – 1.6E-06	±75	2.5E-08 – 3.4E-08	-10 to +1000	Gg/10^6 m^3 raw gas feed
Flaring - sour gas processing	3.6E-03 – 4.9E-03	±75	2.4E-06 – 3.3E-06	±75	5.4E-08 – 7.4E-08	-10 to +1000	Gg/10^6 m^3 raw gas feed
Flaring - conventional oil production	4.1E-02 – 5.6E-02	±75	2.5E-05 – 3.4E-05	±75	6.4E-07 – 8.8E-07	-10 to +1000	Gg/10^3 m^3 conventional oil production
Flaring - heavy oil/cold bitumen production	2.2E-02 – 3.0E-02	-67 to +150	1.4E-04 – 1.9E-04	-67 to +150	4.6E-07 – 6.3E-07	-10 to +1000	Gg/10^3 m^3 heavy oil production
Flaring - thermal oil production	2.7E-02 – 3.7E-02	-67 to +150	1.6E-05 – 2.2E-05	-67 to +150	2.4E-07 – 3.3E-07	-10 to +1000	Gg/10^3 m^3 thermal bitumen production

Units Converted to tonnes/10^6 scf or tonnes/1000 bbl

Flare Source	Emission Factors						
	CO_2	Uncertainty [b] (%)	CH_4	Uncertainty [b] (%)	N_2O	Uncertainty [b] (%)	Units
Flaring - gas production [c]	3.4E-02 – 4.5E-02	±75	2.2E-05 – 2.8E-05	±75	5.9E-07 – 8.2E-07	-10 to +1000	tonnes/10^6 scf gas production
Flaring - sweet gas processing	5.1E-02 – 7.1E-02	±75	3.4E-05 – 4.5E-05	±75	7.1E-07 – 9.6E-07	-10 to +1000	tonnes/10^6 scf raw gas feed
Flaring - sour gas processing	0.10 – 0.14	±75	6.8E-05 – 9.3E-05	±75	1.5E-06 – 2.1E-06	-10 to +1000	tonnes/10^6 scf raw gas feed
Flaring - conventional oil production	6.5 – 8.9	±75	4.0E-03 – 5.4E-03	±75	1.0E-04 – 1.4E-04	-10 to +1000	tonnes/10^3 bbl conventional oil production
Flaring - heavy oil/cold bitumen production	3.5 – 4.8	-67 to +150	2.2E-02 – 3.0E-02	-67 to +150	7.3E-05 – 1.0E-04	-10 to +1000	tonnes/10^3 bbl heavy oil production
Flaring - thermal oil production	4.3 – 5.9	-67 to +150	2.5E-03 – 3.5E-03	-67 to +150	3.8E-05 – 5.2E-05	-10 to +1000	tonnes/10^3 bbl thermal bitumen production

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Table 4-12. GHG Emission Factors for Gas Flares in Developing Countries and Countries with Economies in Transition [a], continued

Units Converted to tonnes/10^6 m^3 or tonnes/1000 m^3

	Emission Factors						
Flare Source	**CO_2**	**Uncertainty [b] (%)**	**CH_4**	**Uncertainty [b] (%)**	**N_2O**	**Uncertainty [b] (%)**	**Units**
Flaring - gas production [c]	1.2 – 1.6	±75	7.6E-04 – 1.0E-03	±75	2.1E-05 – 2.9E-05	-10 to +1000	tonnes/10^6 m^3 gas production
Flaring - sweet gas processing	1.8 – 2.5	±75	1.2E-03 – 1.6E-03	±75	2.5E-05 – 3.4E-05	-10 to +1000	tonnes/$10^6 m^3$ raw gas feed
Flaring - sour gas processing	3.6 – 4.9	±75	2.4E-03 – 3.3E-03	±75	5.4E-05 – 7.4E-05	-10 to +1000	tonnes/$10^6 m^3$ raw gas feed
Flaring - conventional oil production	41.0 – 56.0	±75	2.5E-02 – 3.4E-02	±75	6.4E-04 – 8.8E-04	-10 to +1000	tonnes/10^3 m^3 conventional oil production
Flaring - heavy oil/cold bitumen production	22.0 – 30.0	-67 to +150	1.4E-01 – 1.9E-01	-67 to +150	4.6E-04 – 6.3E-04	-10 to +1000	tonnes/10^3 m^3 heavy oil production
Flaring - thermal oil production	27.0 – 37.0	-67 to +150	1.6E-02 – 2.2E-02	-67 to +150	2.4E-04 – 3.3E-04	-10 to +1000	tonnes/10^3 m^3 thermal bitumen production

Footnotes and Sources:

[a] IPCC, *2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Chapter 4 (Fugitive Emissions*), Table 4.2.5, 2006 Revised November 2008.

[a] Uncertainty based on a 95% confidence interval (IPCC, Volume 2, Chapter 4, Section 4.2.2.7.2, 2006 Revised November 2008).

[c] IPCC reports that flared volumes should be used to estimate flare emissions instead of the above emission factors when such data are available. IPCC reports that flared volume based emission factors are 0.012, 2.0 and 0.000023 Gg/10^6 m^3 of gas flared for CH_4, CO_2, and N_2O, respectively, based on a flaring efficiency of 98% and a typical gas analysis at a gas processing plant (91.9% CH_4, 0.58% CO_2, 0.68% N_2 and 6.84% non-CH_4 hydrocarbons, by volume).

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Supporting information: New Calculations for Existing Routine or Predictable Emissions during Startup, Shutdown, and Scheduled Maintenance (SSM)

MOBILE ANALYTICAL LABS, INC.

P.O. BOX 69210
ODESSA, TEXAS 79769

GAS EXTENDED ANALYSIS

11/11/13 LAB # 18951

DCP MIDSTREAM
LINAM RANCH
INLET GAS
STATION NO. M0500

	MOL %	GPM
HYDROGEN SULFIDE	0.3803	0.000
NITROGEN	2.4609	0.000
METHANE	73.5375	0.000
CARBON DIOXIDE	1.6084	0.000
ETHANE	12.5872	3.360
PROPANE	6.1477	1.690
ISO-BUTANE	0.6961	0.227
N-BUTANE	1.6193	0.509
ISO-PENTANE	0.3336	0.122
N-PENTANE	0.3137	0.113
NEOHEXANE	0.0031	0.001
CYCLOPENTANE	0.0281	0.012
2-METHYLPENTANE	0.0532	0.022
3-METHYLPENTANE	0.0299	0.012
N-HEXANE	0.0541	0.022
METHYLCYCLOPENTANE	0.0333	0.012
BENZENE	0.0276	0.008
CYCLOHEXANE	0.0292	0.010
2-METHYLHEXANE	0.0057	0.003
3-METHYLHEXANE	0.0072	0.003
DIMETHYLCYCLOPENTANES	0.0115	0.005
N-HEPTANE	0.0070	0.003
METHYLCYCLOHEXANE	0.0130	0.005
TRIMETHYLCYCLOPENTANES	0.0008	0.000
TOLUENE	0.0056	0.002
2-METHYLHEPTANE	0.0023	0.001
3-METHYLHEPTANE	0.0005	0.000
DIMETHYLCYCLOHEXANES	0.0011	0.000
N-OCTANE	0.0005	0.000
ETHYL BENZENE	0.0001	0.000
M&P-XYLENES	0.0002	0.000
O-XYLENE	0.0000	0.000
C9 NAPHTHENES	0.0005	0.000
C9 PARAFFINS	0.0008	0.000
N-NONANE	0.0000	0.000
N-DECANE	0.0000	0.000
UNDECANE PLUS	0.0000	0.000
TOTALS	100.0000	6.142

SPECIFIC GRAVITY	0.759
GROSS DRY BTU/CU.FT.	1239.4
GROSS WET BTU/CU.FT.	1218.3
TOTAL MOL. WT.	21.907
MOL. WT. C6+	86.919
SP. GRAVITY C6+	3.342
MOL. WT. C7+	100.411
SP. GRAVITY C7+	4.187

BASIS: 14.65 PSIA @ 60 °F

NOTES:
SAMPLED 11/06/13 BY: SR
285 PSIG @ 58 °F
H2S = 3803 PPM
CYLINDER NO. 1293
SPOT

DISTRIBUTION:
MR. STEVEN BOATENHAMER
MS. DENA RAGSDALE

MOBILE ANALYTICAL LABS, INC.

P.O. BOX 69210
ODESSA, TEXAS 79769

GAS EXTENDED ANALYSIS

10/21/13 LAB # 18489

DCP MIDSTREAM
LINAM RANCH
FUEL GAS

	MOL %	GPM
HYDROGEN SULFIDE	0.0000	0.000
NITROGEN	3.1359	0.000
METHANE	91.2431	0.000
CARBON DIOXIDE	0.0030	0.000
ETHANE	5.4849	1.462
PROPANE	0.1310	0.036
ISO-BUTANE	0.0012	0.000
N-BUTANE	0.0009	0.000
ISO-PENTANE	0.0000	0.000
N-PENTANE	0.0000	0.000
NEOHEXANE	0.0000	0.000
CYCLOPENTANE	0.0000	0.000
2-METHYLPENTANE	0.0000	0.000
3-METHYLPENTANE	0.0000	0.000
N-HEXANE	0.0000	0.000
METHYLCYCLOPENTANE	0.0000	0.000
BENZENE	0.0000	0.000
CYCLOHEXANE	0.0000	0.000
2-METHYLHEXANE	0.0000	0.000
3-METHYLHEXANE	0.0000	0.000
DIMETHYLCYCLOPENTANES	0.0000	0.000
N-HEPTANE	0.0000	0.000
METHYLCYCLOHEXANE	0.0000	0.000
TRIMETHYLCYCLOPENTANES	0.0000	0.000
TOLUENE	0.0000	0.000
2-METHYLHEPTANE	0.0000	0.000
3-METHYLHEPTANE	0.0000	0.000
DIMETHYLCYCLOHEXANES	0.0000	0.000
N-OCTANE	0.0000	0.000
ETHYL BENZENE	0.0000	0.000
M&P-XYLENES	0.0000	0.000
O-XYLENE	0.0000	0.000
C9 NAPHTHENES	0.0000	0.000
C9 PARAFFINS	0.0000	0.000
N-NONANE	0.0000	0.000
N-DECANE	0.0000	0.000
UNDECANE PLUS	0.0000	0.000
TOTALS	100.0000	1.498

SPECIFIC GRAVITY	0.596
GROSS DRY BTU/CU.FT.	1021.0
GROSS WET BTU/CU.FT.	1003.4
TOTAL MOL. WT.	17.226

NOTES:
SAMPLED 10/14/13 BY: SR
175 PSIG @ 79 °F
H2S = 0 PPM
CYLINDER NO. 1102
ANNUAL SPOT

DISTRIBUTION
MR. JON BEBBINGTON

BASIS: 14.65 PSIA @ 60 °F

****

MOBILE ANALYTICAL LABORATORIES, INC.
P.O. BOX 69210
ODESSA, TEXAS 79769
432-337-4744

****

10/21/13 GAS EXTENDED SULFUR ANALYSIS LAB NO. 18490

DCP MIDSTREAM
LINAM RANCH
FUEL GAS

	ppm
Hydrogen Sulfide	ND
Carbonyl Sulfide	ND
Methyl Mercaptan	ND
Ethyl Mercaptan	ND
Dimethyl Sulfide	ND
Carbon Disulfide	ND
I-Propyl Mercaptan	ND
T-Butyl Mercaptan	ND
N-Propyl Mercaptan	ND
Methyl Ethyl Sulfide	ND
S-Butyl Mercaptan/Thiophene	ND
I-Butyl Mercaptan	ND
Diethyl Sulfide	ND
N-Butyl Mercaptan	ND
Dimethyl Disulfide	ND
3-Methyl Thiophene	ND
2-Methyl Thiophene	ND
Dimethyl Thiophene	ND
Diethyl Disulfide	ND
Trimethyl Thiophene	ND
Undetermined Organic Sulfur	ND
	ND

Test Methods: H2S by ASTM D4084, Other Sulfur compounds by Capillary GC with SCD Detector ASTM D5504.

Sampled: 10/14/13 BY: SR
ND = NONE DETECTED (< 0.1 PPM)

Distribution:
Mr. Jon Bebbington

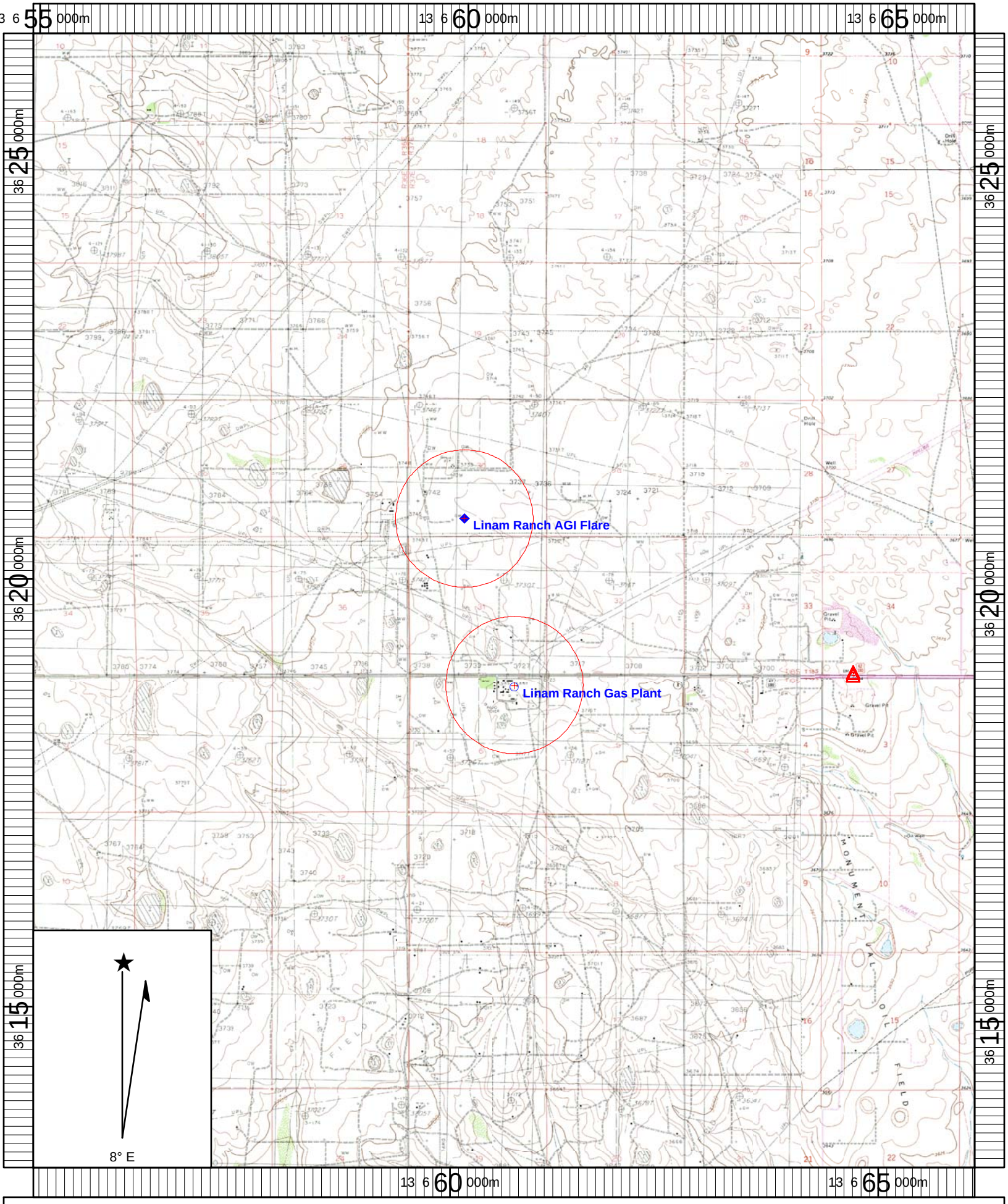
Section 8

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 map is attached in this section.



Name: MONUMENT NORTH
Date: 8/11/2008
Scale: 1 inch equals 4545 feet

Location: 13 0660523 E 3619841 N
Caption: Site Location
DCP Linam Ranch Gas Plant
DCP Linam Ranch AGI Flare

Copyright (C) 1997, Maptech, Inc.

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.

A copy of the above identified documents is attached for reference

Affidavit of Publication

State of New Mexico,
County of Lea.

I, DANIEL RUSSELL
PUBLISHER
of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period

of 1 issue(s).
Beginning with the issue dated
December 08, 2013
and ending with the issue dated
December 08, 2013

PUBLISHER
Sworn and subscribed to before me
this 9th day of
December, 2013

Notary Public

My commission expires
January 29, 2015
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-15

This newspaper is duly qualified to publish legal notices or advertisments within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

NOTICE

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for the Linam Ranch Gas Plant. This facility is a natural gas processing plant that processes natural gas from surrounding area gas wells. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

This facility operates 24 hours a day, 7 days a week. The facility is roughly 7 miles West of Hobbs, New Mexico. In Section 6, Range 37E, Township 19S in Lea County (Latitude 32°41'43"N / Longitude 103°17'07"W). To reach the facility from Hobbs, NM, travel 7 miles west on Hwy 62/180. The facility is adjacent to the highway on your left.

After this modification, the facility estimates its maximum quantities of any regulated air contaminant to be approximately as follows:

Air Emissions

Pollutant	Pounds per hour	Tons per year
Oxides of Nitrogen (NO_x)	660	995
Carbon Monoxide (CO)	2,350	610
Volatile Organic Compounds (VOC)	7,300	285
$PM_{2.5}$	8	35
PM_{10}	9	40
Total Suspended Particulate (TSP)	9	40
Sulfur Dioxide (SO_2)	35,400	105
Formaldehyde	5	15
n-Hexane	7	30
Total HAPS	95	60
Hydrogen Sulfide (H_2S)	455	15
Greenhouse Gas as Total CO2e	88,585	388,000

The owner/operator of this facility is:

DCP Midstream, LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

If you have any comments about the construction or operation of the above facility, and you would like your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Program Manager, Permit Section
New Mexico Environment Department
Air Quality Bureau
525 Camino De Los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816
(505) 476-4300 FAX (505) 476-4375

Other comments and questions may be submitted verbally. Please refer to the company name and site name, as used in this notice or send a copy of this notice along with your comments to help identify the facility being commented on, since the Department may not have received the permit application at the time of this notice. Once the Department has performed a preliminary review of the application and its air quality impacts, another notice from the Department will be published in the legal section of the newspaper.

01100104 00127307
TRINITY CONSULTANTS
9400 HOLLY AVE NE BLG 3 SUITE 300
ALBUQUERQUE, NM 87122

UNDER CONSTRUCTION

HOBBS
TOTAL TYPE OF CONSTRUCTION
Monthly Report for November 2013

Type of Construction		# of Permits		
Commercial				
COMMERCIAL 100 A SERV	C	1	1,200.00	52.00
COMMERCIAL 101-200 AMPS	C	3	4,800.00	249.00
COMMERCIAL 401-600 AMPS	C	3	7,500.00	930.00
COMMERCIAL ADDITION	C	1	294,886.00	696.00
COMMERCIAL FOOTING/FOUNDATION	C	1	25,000.00	150.00
COMMERCIAL REMODEL	C	9	352,926.00	1,516.00
COMMERCIAL RE-ROOFING	C	1	4,000.00	40.00
COMMERCIAL SIGN	C	3	15,300.00	75.00
ELECTRICAL LOW VOLTAGE	C	25	30,600.00	500.00
ELECTRICAL OTHER	C	3	3,800.00	90.00
ELECTRICAL TEMP. SERV. POLE	C	3	3,600.00	90.00
NEW COMMERCIAL	C	4	1,388,112.00	3,007.20
SPRINKLER SYSTEM	C	1	2,000.00	100.00
		58	2,133,724.00	7,495.20
Residential				
PERMITS RENEWED	R	1	200,000.00	190.00
RESIDENTIAL 100 A SERV	R	2	2,200.00	104.00
RESIDENTIAL 101-200 AMPS	R	26	45,200.00	2,158.00
RESIDENTIAL 201-320 AMPS	R	1	2,600.00	115.00
RESIDENTIAL ADDITION	R	2	125,000.00	470.00
RESIDENTIAL CARPORT	R	3	6,300.00	100.00
RESIDENTIAL DETACHED GARAGE	R	1	4,200.00	40.00
RESIDENTIAL DRIVEWAY	R	2	3,000.00	35.00
RESIDENTIAL EXCAVATION	R	2	3,200.00	210.00
RESIDENTIAL FENCE	R	2	4,200.00	20.00
RESIDENTIAL MANUFACTURED HOME	R	6	185,890.00	360.00
RESIDENTIAL REMODEL	R	9	127,469.00	860.00
RESIDENTIAL RE-ROOF	R	20	125,499.00	1,230.00
RESIDENTIAL SINGLE FAMILY	R	2	169,750.00	570.00
RESIDENTIAL STORAGE	R	4	93,350.00	480.00
		83	1,097,858.00	6,942.00
		141	3,231,582.00	14,437.20

Cold
from PAGE 25

houses," which are often near rigs. Many companies also try to hire locals with at least five years of experience.

"If they've made it that long, they're probably going to stick around," said Larry Dokken, a veteran oilman whose consulting firm recruits workers for oil companies.

Hendershot has shared the advice of dreaming of warmer climes to fellow workers in years past. He said a few have taken it literally.

"Some have actually left and gone to that warm, happy place," he said.

Some workers gripe about the bone-numbing temperatures, he added. Many others take pride in withstanding it.

"This is what I love to do," said Craig Hovet, during a break from maintenance work on a well Wednesday near Mandaree. "The joke around here is: This kind of weather keeps out the riffraff."

North Dakota historically has conjured up images of a bleak, wind-swept and treeless wasteland. The perception was so great that one group a decade ago proposed changing the state's name by dropping "North" and leaving just "Dakota," to dispel the state's image of inhospitable winter weather.

That was before North Dakota's recent oil bonanza, which has brought swarms of people to the state in search of jobs and a fresh start. Now thousands of new oil wells have been punched though the prairie, generating billions of dollars and abundant work. It's a boom that doesn't pause for the weather.

"The pace probably slows during extreme blizzard conditions," said Ron Ness, president of the North Dakota Petroleum Council, an industry group that represents hundreds of oil-related companies. "And there are extra precautions on safety. But it's work that is not going to stop."

Hendershot was keeping close tabs on his crew Thursday, making sure they got plenty of breaks in vehicles and the heated work shacks.

One worker told him Thursday that it had gotten so cold that "it froze his soul."

"There is only a certain amount of time these guys can work in this, and some people get cold quicker than others," Hendershot said. "Everybody talks about how much money an oil worker is paid. They earn it."

Daryl Andersen, a North Dakota native and 30-year oilman who now runs a well-services company, recalled his grade-school history books that described how George Washington and his army suffered at Valley Forge.

"But we're colder here than they ever were," he said.

North Dakota's notorious cold isn't a deterrent for Dylan Grossman, a 23-year-old Alaska native who posted a Craigslist ad seeking a laborer's job in the oil fields. Grossman is currently in Florida, where he's struggled to find work. He said he intends to move to North Dakota soon and has asked his mother to mail him his warmest clothes.

"I've heard it's cold and flat in North Dakota," Grossman said. "I think I can layer for it."

Hovet, who grew up in North Dakota, has heard that before. He recalls four Texans walking off a job site after being in North Dakota for just one day last winter.

"It was about 5 above and sunny and really kind of a pretty day," Hovet said. "They got their truck stuck in a ditch, and their equipment got frozen up. They said, 'The heck with this. We're going back to Texas.'"

Rig count up by 12

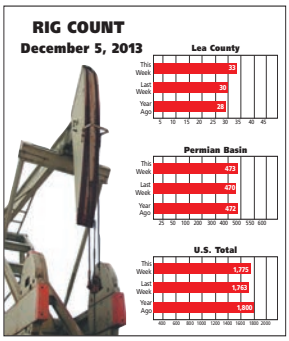
HOUSTON (AP) — Oilfield services company Baker Hughes Inc. says the number of rigs exploring for oil and natural gas in the U.S. increased by 12 this week to 1,775.

The Houston-based company said in its weekly report Friday that 1,397 rigs were exploring for oil and 375 for gas. Three were listed as miscellaneous. A year ago there were 1,800 active rigs.

Of the major oil- and gas-producing states, Texas gained eight rigs, Oklahoma rose by five, California gained two and Alaska, Utah and West Virginia each increased by one.

Louisiana and Pennsylvania each dropped two rigs, while Colorado and North Dakota lost one each. Arkansas, Kansas, New Mexico, Ohio and Wyoming remained unchanged.

The U.S. rig count peaked at 4,530 in 1981 and bottomed at 488 in 1999.



Energy
from PAGE 25

Bogle founded Pelican Energy Consultants in August 2005 — just two weeks before Hurricane Katrina struck. The company says it's growing in part because of the engineering services it provides relating to enhanced oil recovery, where carbon dioxide is pumped into an older oil field to push out more oil.

"Pelican Energy is proud of our Louisiana heritage," Bogle said in a statement. "Many in the oil-and-gas industry are tempted to explore the Houston market as an option for an international headquarters. We believe that our purpose, which is to create a platform for people to improve their quality of life, is steeped in the vision of Louisiana."

The company will begin hiring immediately and plans to hire all 195 by the end 2018. It also plans to complete a 35,000 square-foot office expansion by then.

Hess selling Indonesia assets to joint venture for $1.3 billion

NEW YORK (AP) — Energy company Hess is selling its Indonesia assets to a joint venture between PT Pertamina and PT'T Exploration and Production Co. Ltd. for $1.3 billion.

Hess has been shifting away from refining and toward exploration and production. As part of that plan, it's selling off some assets. The Indonesia assets were included in that plan.

The assets are off Indonesia's coast and produced an average of 15,000 barrels of oil equivalent per day net to Hess in the first three quarters of the year.

The sale is being conducted under two separate agreements with the joint venture.

Hess Corp. said Monday that it will use proceeds from the sale to continue buying back shares under an existing $4 billion program.

The deal is expected to close in 2014's first quarter.

Shell jettisons plans to build $12.5 billion plant in Louisiana

BATON ROUGE, La. (AP) — Shell has delivered a blow to Louisiana's industrial boom, saying it is scrapping a proposal to build a $12.5 billion natural gas-to-liquids plant in Ascension Parish.

The company announced Thursday that it was suspending further work on the project, which would have created 740 direct jobs and thousands more in spinoff employment.

Shell says the project isn't viable because of factors including high cost and uncertainty in long-term oil and gas prices.

Gov. Bobby Jindal's administration had offered an incentive package that included $112 million for road improvements, land purchasing and other infrastructure.

Economic Development Secretary Stephen Moret calls the abrupt decision very disappointing. But he says Louisiana is being considered for several other multibillion-dollar projects and has other large announced projects on the way.

Maine wind industry, lawmakers applaud proposal

AUGUSTA, Maine (AP) — Maine energy industry officials and lawmakers applauded on Wednesday the potential environmental and economic benefits of a 12-megawatt offshore wind project that could be built off the state's coast, but a lot remains to be settled before construction of the two-turbine project is ensured.

In documents released Wednesday, officials estimated that the project proposed by the University of Maine and a host of partner companies could bring at least 340 full and part-time jobs during the three years of planning and construction and create $120 million in investments, half of which would be paid to Maine-based entities. But at 23 cents per kilowatt hour — significantly higher than current market rates — it will cost utility customers nearly $9 more a year on their bills.

Renewable energy advocates and lawmakers, who've long believed Maine's wind resources and location can make it an international leader in offshore wind development and technology, said the significant environmental and economic impacts of the wind project are clear.

"There are very few places where we can compete and actually be a world leader from the start," said Democratic Senate President Justin Alfond of Portland.

He said that created an opportunity, and it's up to the public, the Public Utilities Commission and the Department of Energy to take advantage of it.

"I hope that we seize it," he added.

State regulators are expected to decide within the next month whether to approve the proposed terms of the project and begin negotiating a contract with the Maine Aqua Ventus, the umbrella company of the university and its partners. UMaine officials and Gov. Paul LePage's office have said that agreement will help it win a $50 million energy grant in the spring, a critical funding piece for the project.

Environmentalists to N.Y.: Scrap liquefied gas plans

ALBANY, N.Y. (AP) — Environmental groups Wednesday delivered thousands of comments critical of New York's proposed liquefied natural gas regulations and demanded the state withdraw the proposals and start over.

The regulations would allow LNG fueling and storage facilities in New York for the first time since 1973, when the state imposed a moratorium following an LNG facility explosion on Staten Island that killed 40 workers.

New Yorkers Against Fracking, Sierra Club and other organizations were in Albany to deliver what they said were more than 50,000 comments on the regulations. They also delivered a letter to Gov. Andrew Cuomo asking that the regulations be withdrawn. Wednesday was the last day for public comment on the proposed regulations.

The Department of Environmental Conservation says the main reason for the new rules is to allow fueling stations.

But the environmental groups say they pave the way for much larger facilities and lack sufficient safety protections. They say the regulations also would allow the oil and gas industry to set in place the infrastructure needed if Cuomo allows high-volume hydraulic fracturing, which has been banned since an environmental review began in 2008.

"These regulations have nothing whatsoever to do with fracking, and everything to do with putting cleaner trucks on our highways," DEC spokesman Peter Constantakes said via email, noting that LNG-fueled long-haul trucks produce less of the health-damaging emissions produced by burning diesel fuel.

The regulations have drawn support from the American Lung Association, the League of Conservation Voters and other groups because of the potential to reduce diesel pollution.

New York's moratorium puts up a roadblock as companies, including Royal Dutch Shell PLC, General Electric Co. and Clean Energy Fuels build out a nationwide network of LNG fueling facilities and several companies, including UPS, have begun to convert to LNG-fueled fleets. The fuel, made by chilling natural gas to an extremely low temperature to liquefy it, is far cheaper than diesel.

NOTICE

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for the Linam Ranch Gas Plant. This facility is a natural gas processing plant that processes natural gas from surrounding area gas wells. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

This facility operates 24 hours a day, 7 days a week. The facility is roughly 7 miles West of Hobbs, New Mexico. In Section 6, Range 37E, Township 19S in Lea County (Latitude 32°41'43"N / Longitude 103°17'07"W). To reach the facility from Hobbs, NM, travel 7 miles west on Hwy 62/180. The facility is adjacent to the highway on your left.

After this modification, the facility estimates its maximum quantities of any regulated air contaminant to be approximately as follows:

Air Emissions

Pollutant	Pounds per hour	Tons per year
Oxides of Nitrogen (NO_x)	660	995
Carbon Monoxide (CO)	2.350	610
Volatile Organic Compounds (VOC)	7.300	285
$PM_{2.5}$	8	35
PM_{10}	9	40
Total Suspended Particulate (TSP)	9	40
Sulfur Dioxide (SO_2)	35.400	105
Formaldehyde	5	15
n-Hexane	7	30
Total HAPS	95	60
Hydrogen Sulfide (H_2S)	455	15
Greenhouse Gas as Total CO2e	88,585	388,000

The owner/operator of this facility is:

DCP Midstream, LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

If you have any comments about the construction or operation of the above facility, and you would like your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Program Manager, Permit Section
New Mexico Environment Department
Air Quality Bureau
525 Camino De Los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816
(505) 476-4300 FAX (505) 476-4375

Other comments and questions may be submitted verbally. Please refer to the company name and site name, as used in this notice or send a copy of this notice along with your comments to help identify the facility being commented on, since the Department may not have received the permit application at the time of this notice. Once the Department has performed a preliminary review of the application and its air quality impacts, another notice from the Department will be published in the legal section of the newspaper.

Affidavit of Publication

State of New Mexico,
County of Lea.

I, DANIEL RUSSELL
PUBLISHER
of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period

of 1 issue(s).
Beginning with the issue dated
December 08, 2013
and ending with the issue dated
December 08, 2013

PUBLISHER

Sworn and subscribed to before me
this 9th day of
December, 2013

Notary Public

My commission expires
January 29, 2015
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-15

This newspaper is duly qualified to publish legal notices or advertisments within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

LEGAL | LEGAL | LEGAL

LEGAL NOTICE
December 8, 2013

NOTICE

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#28626

01100104 00127311
TRINITY CONSULTANTS
9400 HOLLY AVE NE BLG 3 SUITE 300
ALBUQUERQUE, NM 87122

Farm Auction

Wednesday December 18, 2013
Starting Time: 9 AM MST

Texas/New Mexico State Line

From: Hobbs, New Mexico Go North on NM #132 same being N. Dal Paso St-Denver City Hwy
7 miles to mile marker 7 and go East 1 mile on Lawrence Rd.

Owners: Lawrence Enterprises LLC & Larry Parker Farms

Reputation late model Farm Equipment to be sold at Public Farm Auction

Tractors: JD 8235 R MFWD, JD 8130 MFWD, JD 8120 MFWD, JD 7610 MFWD, Spray Machine JD 4730 Spray Rig low hours clean, JD 7460 Cotton Stripper 8 Row Brush Header 4 x 4 low hours, JD 110 Loader /Backhoe, Crustbuster Module Builder, Crustbuster Boll Buggy's, Big 12 Module Builder, Peanut Harvest Equipment, Amadas Peanut Combine, Diggers, Fluffer, Conveyor Belt, John Deere 1720 Maxemerge XP 16 Row folding bar cotton planter Nice, Yetter 16 row rotary hoe, Orthman 13 row Lister folding bar, JD Breaking Plows, AMCO Offset Disk Plows, J&M Peanut Trailers, Power Line Contractor Bucket and Pressure Digger Trucks, Pole Cat Auger Truck, Pickups, Trailers, High Line Contractor Trucks, Mack R 600 Dump Truck, Orthman 13 row folding lister, Great Plains 2700 Drill, Lot of items not listed here!! No BUYERS FEE, Live on-site real time auction, NO Internet or phone bids, you have to be at the auction to participate. After 60 years of farming they have decided to retire. DO NOT MISS your chance to buy some good machinery. Terms of Payment: CASH or Good Check ONLY! No Credit or Debit Cards Be sure and go the auctioneer's web site to see the photos:

WWW.BMJAUCTION.COM

Ben Jenkins Auctioneers

Ben M. Jenkins Auctioneer	TX 9728	575-361-5901
Ben H. Royston Auctioneer	TX 15425	432-788-7879

Auction

Saturday, December 14, 2013 9 am
3913 West Lea Street Carlsbad, NM

In Carlsbad, from the traffic light at Canal St (62/180-285) and Lea St. (Hwy 524) go West 2.7 miles. From Artesia, NM, take 285 S. to NM Hwy 524 (Truck By-Pass) and follow to the sharp curve and turn right. (The auction will at the Ben Jenkins Auction Yard-Red Barn)

Surplus Vehicle & Equipment Auction
Eddy County Road Department
City of Carlsbad and Others
Notice: Firearms-Guns Sell First at 9 AM followed by the Vehicles and Heavy Equipment

2002 John Deere 8120 MFWD Farm Tractor, Peterbilt Semi Truck Tractor, Ford 9000 Semi Truck Tractor, Case 480 E Loader/Backhoe, 2-Load King backhoe trailers, Trail-Eze 60 Ton Low Boy Triple Axle Semi-Trailer, Pickups, Patrol Cars, Utility Trailers, Chevy Winch Truck, Jeep Pickup, Several HVAC Units 25 ton-5 ton units, Ford gasoline single axle 6 yard dump truck, Welding machine, portable air compressor, Ford pickup bed, 25-Firearms, Rifles, Shotguns, to be sold at 9 am

Make your plans to attend!
Terms: Cash-Check No credit/debit cards
No buyer's fee!
Look at the web site for photos:

WWW.BMJAUCTION.COM
Ben Jenkins Auctioneers
575-885-5901

106 MISCELLANEOUS

Thomas Kincaid large nativity village. If interested, call 393-3267.

Used carpet, 13x20, light beige color; console record player. 397-2245

Want to buy flatbed, ball hitch, tandem trailer.14000 lb load limit. 392-2241

112 OILFIELD SERVICES & EQUIP.

1971 5 axle Skytop 400 double drum service rig. Detroit series 60 motor, 5860 Allison transmission. Complete with all tools. $225,000, negotiable. Contact Tex at 432-682-2727 or 432-238-4372.

121 PETS

PRECIOUS PUPS
Dog Grooming
575-631-3885

T-CUP AND TOY CHIHUAHUAS Tiny...Many colors, Registered, Shots, Health Guarantee, POTTY PAD trained. Great PAYMENT PLAN. $200-500 PAYPAL/Debit/Credit 575-910-1818 cingard1@yahoo.com txt4pics

T-CUP AND TOY PUPS
POMERANIANS
YORKIES
CHIHUAHUAS
POODLES
MALTESE
SHIHTZUS
MINI DACHSHUNDS
SCHNAUZERS
DESIGNER BREEDS
Fluffy Cute Pups
Registered, Shots, Health Guaranteed, POTTY PAD trained. Great PAYMENT PLAN. Most non-shedding, Hypo-allergenic. PAYPAL/DEBIT/CREDIT cards accepted. $150-$1500. txt4pics 575-910-1818 cingard1@hotmail.com

123 FREE PETS

* * * * * * * * * * * *
Beautiful white spayed young female cat. Young gray male neutered tabby, about four-five months old. Indoors only! 393-4086

Free Puppies, 1 female/3 male. Adorable. Free to good home. Call 942-2222

124 LIVESTOCK & EQUIPMENT

Hay for sale. Premium quality alfalfa & Coastal Bermuda grass Call 575-631-3129.

124 LIVESTOCK & EQUIPMENT

Stalls for rent. Multiple options available. Call 631-3129.

127 AUTOMOBILES FOR SALE

2007 Lincoln MKZ. 33K miles.Loaded. Asking $11,500. 575-441-5368

130 AUTO PARTS

350 Chevy heads and crank. Race ready. $300. Circle track. 297-1022.

133 RV/CAMPERS

2006 Toy Hauler. 24 ft., 4000 watt Onan generator. Great condition. More info, call 575-942-8635.

139 TRUCKS & TRAILERS

14' HD trailer,7000 lb cap, single axle, $2200 OBO 575-777-9974/390-1480

140 SUV

1999 Chevy Suburban, $2500. 1960 Chevy truck w/ utility bed, $1500 OBO. 1995 Ford 1 ton dually w/ propane system $3000. 1992 Chevy Van $1500. 602-2084.

142 MOTORCYCLES & ATV'S

2007 Honda 450R 4 wheeler. $4000. 575-942-8635.

LEGAL

LEGAL NOTICE
December 8, 2013

NOTICE

REGULAR MEETING/REC VII BOARD
THURSDAY, DECEMBER 12, 2013
9:00 A.M.
NEW MEXICO JUNIOR COLLEGE/ DANIELS ROOM #150
5317 N LOVINGTON HWY
HOBBS, NM 88240

AGENDA CAN BE OBTAINED @ MEETING
#28628

Place your business name, address & phone number in the Service Directory

3 Lines - $32.99
4 Lines - $43.77
5 Lines - $54.56
6 Lines - $65.43

for 26 days of publication

393-2123

Corrections: Please check your ad for errors on the first day it appears. The News-Sun will not be responsible for incorrect ads after the first day of publication.

JUMBLE THAT SCRAMBLED WORD GAME by David L. Hoyt and Jeff Knurek

Unscramble these four Jumbles, one letter to each square, to form four ordinary words.

ADAHE
FORLO
VATREN
LILHRS

2013 Tribune Content Agency, LLC All Rights Reserved

Now arrange the circled letters to form the surprise answer, as suggested by the above cartoon.

Answer here: " "

(Answers tomorrow)

Saturday's | Jumbles: TAKEN TOPAZ INNING SUMMER
Answer: The farmer's cornfield labyrinth was — "A-MAIZE-ING"

72 GENERAL HELP WANTED

Don't Read This!..........Unless?

You genuinely like people. You have a warm smile for everyone, especially strangers. It's easy for you to strike up a conversation. When others talk, you not only listen to what they are saying but ask questions to learn more. You're a team player and support others. You own up to your mistakes, learn from them and improve. You find joy and satisfaction in going the extra mile for others even when you're not noticed. You understand the principle of reaping and sowing. You dress professionally and look your best when out in public. Are you willing to do menial tasks when asked? If this describes you then a career in selling home furnishings at Miller Waldrop Furniture in Hobbs may be just the place for you. Full-time positions are available. 30K - 60K. Email resumes to beckey@millerwaldrop.com No phone calls, please.

Excellent Opportunity for a reliable, outgoing individual to work in a professional office, strong attention to details required. Will train. Must have reliable transportation, valid drivers license & auto insurance. Benefits include free health insurance, weekends off, plus monthly bonuses.Full time positions open. Apply in person at: **Liberty Finance 416 N TURNER**

Guidance Center of Lea County is hiring for residential caseworkers, and CCSS caseworkers. Apply at 920 W. Broadway.

Guidance Center of Lea County is looking to hire a time limited reunification therapist. Requirements include a bachelor's degree in social work, psychology or a related field and five years' experience with children and families. Call Kawin Nunnery at 393-3168 or stop by for an application.

The Hobbs News-Sun has an immediate opening for a District Manager in our Circulation Department. The District Manager assists in overseeing the distribution of newspapers to subscribers, works with customers and independent contract carriers, and drives new sales. Job requires early morning hours and valid drivers license. The full-time position includes benefits. Submit resume at 201 N. Thorp, Hobbs, N.M. 88240.

☺☺☺☺☺☺☺☺☺☺☺☺☺☺
ADULT SERVICE COACHES needed! Shift Work, Days, Nights, & Weekends. Full time & Part Time available. Working in the homes of adults with developmental disabilities. Absolutely must have a phone (and keep it) and a clean driving record. Alcohol/Drug testing & fingerprinting. Applications taken at LEADERS, 115 W. Dunnam, Hobbs, E.O.E.
☺☺☺☺☺☺☺☺☺☺☺☺☺☺

72 GENERAL HELP WANTED

HIGH DESERT FAMILY SERVICES INC.

HDFS is a leading provider of services for individual with development disabilities under the DD Waiver program. We believe that each of our clients deserve a place in the community and are appreciated for their own individuality. As a caregiver for individuals with development disabilities you will be contributing to a culture of quality, respect, and integrity. You will gain a tremendous sense of accomplishment as you aid an individual in living, learning and leading a life filled with value. HDFS promotes advocacy and self advocacy for the clients we serve.

We are seeking compassionate and professional caregivers to provide the following services on a full time or part time basis in the Hobbs area.

- Independent Contractors Substitute care/Respite $9.50 per hour CNA preferred
- Employees Day Hab in the Community. $8.50 per hour Community Access

You must be able to pass a background check, have a valid driver's license and reliable transportation. Prefer HS grad/GED and previous experience working with the DD Waiver program. Training provided at no cost.

Please call, or email for further information. Contact Anne Salmon, asalmon@highdesertfs.com, 505-823-4530 ext. 823-4530, ext. 5001.

HOLIDAZE RESTAURANT IS NOW HIRING COOKS, PREP COOKS AND FRONT OF HOUSE STAFF. PLEASE APPLY IN PERSON AT 2827 N. DAL PASO. NO PHONE CALLS, PLEASE.

Home Health Aides needed. New pay scale. Must have vehicle. Apply in person at Total Care at Home at 1706 N Dal Paso. No phone calls, please.

Need forklift operators at a cotton warehouse. Day and night shifts. Call Jesse at 432-758-2786.

72 GENERAL HELP WANTED

Housekeepers needed. Criminal background check required. Must have vehicle.Apply in person at Happy Housekeepers. 1706 N. Dal Paso

Looking for Experienced Computer Technician Minimum two years experience required.Come by 118 N. Turner or call 575-391-0210.

Looking for Licensed Esthetician (with experience / but will train). 2 more people to do eyelash extensions at a boutique /spa opening soon. Call for info 575-942-3039.

Looking for secretary or personal helper. Flexible hours. Call 393-1912

Lea COUNTY new mexico
Maintenance Tech (13.01-$19.59)
Performs preventative maintenance
Repairs buildings and facilities as needed
Open and secure building for daily activity
Maintains grounds
Open until filled
Complete job description and application: www.leacounty.net
Human Resource Dept. 100 N Main, Suite 4 Lovington, NM 88260 575-396-8605

Mr. B's has an Immediate opening for a vending tech/mechanic. Apply at 504 E. Marland. Good driving record required. Must be self-motivated. Experience preferred, not required. Will train the right person. Repairing and equipment installations. Pay D.O.E. Call 575-397-3745

P/T bilingual housekeeping wanted for large apartment community. Please apply in person at Windscape Apartments at 3901 N. Central Ave., Hobbs, NM 88240.

St. Helena School is seeking qualified personnel for the following opening: **Part-time Spanish teacher.** Come teach in a loving environment. Call 392-5405 or email resume to office@sthelenaschool.net. We are an equal opportunity employer. All faiths welcome!

72 GENERAL HELP WANTED

MIDLAND COLLEGE IS SEEKING APPLICANTS FOR THE FOLLOWING POSITION:

FULL TIME DATABASE PROGRAMMER

MIDLAND COLLEGE IS AN EQUAL OPPORTUNITY EMPLOYER
For additional information on this position please visit our website at www.midland.edu/jobs, go directly to the Human Resources office located at 3600 N. Garfield, or call (432) 685-4532.

The Hobbs News-Sun is looking for a general assignment reporter to cover beats such as courts, government and education. We want someone who can cover it all and appreciates community journalism. Rookie reporters are welcome to apply and pay is based on experience. This position opens Jan. 1, 2014, but a start date in early December is possible. Mail your resume and clips to managing editor Levi Hill, P.O. Box 850, Hobbs, N.M., 88241 or email them to jobs@hobbsnews.com.

Seeking maintenance for apartment complex. Must have some experience and your own tools. Comparable pay, bonus program, Stop by for application or drop resume off at LaPradera, 1023 E. Glorietta Dr.

Wanted: Drivers for deliveries to West Texas and southeastern New Mexico. For information and application, come by 1021 E. Bender, Hobbs, NM.

72 GENERAL HELP WANTED

University of the Southwest in Hobbs, NM (Christ-centered, interdenominational, faith based university), seeks F/T Assistant Professor to teach biology and other related subject courses at least 12 hrs/semester, contribute to curriculum development, and participate on faculty committees and in Faculty Council. PhD or ABD plus 5 yrs teaching exp. reqd. EEO employer. Please send CV and cover letter to Linda Chapman, Admin. Asst. to Provost, 6610 N Lovington Hwy #504, Hobbs, NM 88240.

Good Samaritan Society Lovington

We are currently accepting applications for a Social Worker. The person in this job needs to be self motivated and a team player. Requirements: bachelor's degree in Social Work, or in a human services field including sociology, special education, rehabilitation counseling, or psychology. If you are interested please fill out an application on line at www.good-sam.com EOE

Wrap On Custom Gift Wrapping is now hiring experienced gift wrappers. Call (575)631-8112 or come by the Broadmoor Mall from 11-4. Ask for Wanda.

"Strength does not come from physical capacity. It comes from an indomitable will."
–Mohandas K. Gandhi

74 MEDICAL HELP WANTED

Interim HEALTHCARE

Seeking homemakers. Stop by 726 E. Michigan, Suite 130 for an application. www.interimhealthcare.com

78 LOANS INVESTMENTS

YOUR CREDIT
$200 - $2,000
"WE WANT TO MAKE YOU A LOAN"
(575) 393-4415

90 ANTIQUES

Duncan Phyfe dining set, wing back chairs, couch, lg. floor to ceiling mirror, etc. 605-4422.

106 MISCELLANEOUS

$300 OBO, Beautiful Accent piece. Upright Piano,only needs tuning. 575-441-0766

15 metal frame trees, 5' to 12', with Christmas lights. All for $1,000 or $100 to $200 each. See at 38 Broadmoor Park.

DOG HOUSES: All sizes, sturdy and convenient 396-3655, 575-399-3655 ddartsandcrafts@aol.com

Electric Cigarettes, atomizers, clearamizers, batteries, charges, E-Juice 390-1599

NEW Kitchen Aid 5 burner glass cook top; Oak dining room set, like new condition; victorian wing chair, very nice; small chest of drawers; 631-7593

Sewing Machine Repairman Hobbs Sewing Center 1-575-393-2344

LEGAL

LEGAL NOTICE
December 8, 2013

Eunice Special Hospital District
Board of Trustees
Regular Board Meeting
December 10, 2013
4:30 P.M.
Eunice Clinic

AGENDA

Call to Order
Roll Call
Pledge of Allegiance
Invocation

I. Approve Minutes, November 21, 2013 Meeting

II. Consultant Report

III. Finance Report

IV. Clinic Report

V. Other Business - May be Discussed but no Action May be Taken

VI. Public Comment

VII. Next Meeting - TBA

VIII. Adjourn

#28632

LEGAL

LEGAL NOTICE
December 8, 2013

NOTICE

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525 Camino de los Marquez, Suite 1
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(505) 476-4300 FAX (505) 476-4375

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#28626

LEGAL

LEGAL NOTICE
December 8, 2013

STATE OF NEW MEXICO
LEA SOIL AND WATER CONSERVATION DISTRICT
RESOLUTION

RESOLUTION 2014 (FY)
OPEN MEETINGS RESOLUTION
JANUARY 1, 2014 TO DECEMBER 31, 2014

WHEREAS, section 10-15-1 (B) of the Open Meetings Act (Sections 10-15-1 through 10-15-4 NMSA 1978) states that except as may be otherwise provided in the Constitution of the Open Meetings Act, all meetings of the quorum of members of any board, commission or other policy-making body of any State Agency held for the purpose of formulating public policy, discussing public policy, discussing public business or the purpose of taking any action within the authority of such board, commission, other policy-making body, are declared to be public meetings open to the public at all times; and:

WHEREAS, any meetings subject to the Open Meetings Act at which the discussion or adoption of any proposed resolutions, rule, regulation or formal action occurs shall be held only after reasonable notice to the public; and:

WHEREAS, Section 10-15-1 (C) of the Open Meetings Act requires the Lea Soil and Water Conservation District to determine annually what constitutes reasonable notice of its public meetings;

NOW THEREFORE BE IT RESOLVED; by the Lea Soil and Water Conservation District on the 14th day of November 2013 that:

1) Regular meetings of the Lea Soil and Water Conservation District shall ordinarily be held each month on the second (2nd) Thursday of each month at the USDA building located at 401 Tatum Highway, Lovington, New Mexico. Notice of regular meetings will be given ten days before the meeting to parties who request it in writing.
2) Special meetings of Lea SWCD may be called by the Chairman or majority of the members upon three (3) days notice. Parties who have requested notice of meetings in writing will be notified by telephone. The Lovington Leader newspaper and Hobbs News-Sun newspaper will be notified by fax and confirmed by telephone.
3) Emergency meetings of Lea Soil & Water Conservation District are meetings called under circumstances, which demand immediate action by the Board of Supervisors. Although the Board of Supervisors would avoid emergency meetings whenever possible, such circumstances may occasionally arise. Emergency meetings may be called by the Chairman or a majority of the members upon twenty-four (24) hours notice.
a) Parties who have requested a notice of meetings in writing will be notified by telephone.
b) The Lovington Leader and Hobbs News Sun, radio stations KLEA 101.7 FM and KIXN 102.9 FM will be notified by telephone.
4) Pursuant to Section 10-15-1 NMSA 1978, the Lea Soil and Water Conservation District may close a meeting to the public if the subject matter of such discussion or action is included in Subsection H of the Open Meetings Act, 10-15-1 NMSA 1978. If any Board of Supervisors meeting is closed Pursuant to Section 10-15-1- I NMSA such closure:
a) If made in an open meeting shall be approved by a majority vote of a quorum of the Board of Supervisors and authority for the closure shall be stated in the motion calling for the vote on a closed meeting. The vote on a closed meeting of each individual member is to be recorded in the minutes. Only those subjects announced or voted upon prior to closure by the Board of Supervisors may be discussed in a closed meeting; and
b) If called for when the Board of Supervisors is not in an open meeting, the closed meeting shall not be held until public notice, appropriate under the circumstance, stating the specific provision of the law authorizing the closed meeting and stating the subject to be discussed is given to the members and to the general public.

RESOLVED: in session, this 12th day of November, 2013

This resolution passed upon motion by: __Ron Glass__________________________
and seconded by _____JW Spears____.

Brent Van Dyke- _____; Rhea Howe - __Yea___ ; Ron Glass - _Yea____; Mark Daugherty - _Yea___; J.W. Spears - _Yea___; Jeremy Gonzales - _Yea____; John Norris - _Yea____.

STATE OF NEW MEXICO)
) SS.
County of Lea)

The foregoing instrument was acknowledged before me this 12th day of November, 2013 by John Norris of the Lea Soil and Water Conservation District Board of Supervisors.
#28629

NOTICE OF AIR QUALITY PERMIT APPLICATION

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for Linam Ranch Gas Plant. The facility is a natural gas processing plant that removes hydrogen sulfide, water and carbon dioxide from field natural gas and separates natural gas liquids from the field natural gas stream. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

This facility operates 24 hours a day, 7 days a week. The facility is roughly 7 miles West of Hobbs, New Mexico. In Section 6, Range 37E, Township 19S in Lea County (Latitude 32°41'43"N / Longitude 103°17'07"W). To reach the facility from Hobbs, NM, travel 7 miles west on Hwy 62/180. The facility is adjacent to the highway on your left.

After this modification, the facility estimates its maximum quantities of any regulated air contaminant to be approximately as follows:

Air Emissions

Pollutant	**Pounds per hour**	**Tons per year**
Oxides of Nitrogen (NO_x)	660	995
Carbon Monoxide (CO)	2,350	610
Volatile Organic Compounds (VOC)	7,300	285
$PM_{2.5}$	8	35
PM_{10}	9	40
Total Suspended Particulate (TSP)	9	40
Sulfur Dioxide (SO_2)	35,400	105
Formaldehyde	5	15
n-Hexane	7	30
Total HAPS	95	60
Hydrogen Sulfide (H_2S)	455	15
Greenhouse Gas as Total CO2e	88,585	388,000

The owner/operator of this facility is:

DCP Midstream, LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

If you have any comments about the construction or operation of the above facility, and you would like your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

Program Manager, Permit Section
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505-1816
(505) 476-4300 FAX (505) 476-4375

Other comments and questions may be submitted verbally. Please refer to the company name and site name, as used in this notice or send a copy of this notice along with your comments to help identify the facility being commented on, since the Department may not have received the permit application at the time of this notice. Once the Department has performed a preliminary review of the application and its air quality impacts, another notice from the Department will be published in the legal section of the newspaper.

VIA CERTIFIED MAIL

December 4, 2013

To Whom It May Concern:

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for the Linam Ranch Gas Plant. This facility is a natural gas processing plant that processes natural gas from surrounding area gas wells. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

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The owner/operator of this facility is:

DCP Midstream, LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

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

DCP Midstream LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

NOTICE

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for the Linam Ranch Gas Plant. This facility is a natural gas processing plant that processes natural gas from surrounding area gas wells. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

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DCP Midstream, LP
10 Desta Drive, Suite 400 West
Midland, TX 79705

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New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505-1816
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Lea County New Mexico
powered by SDS

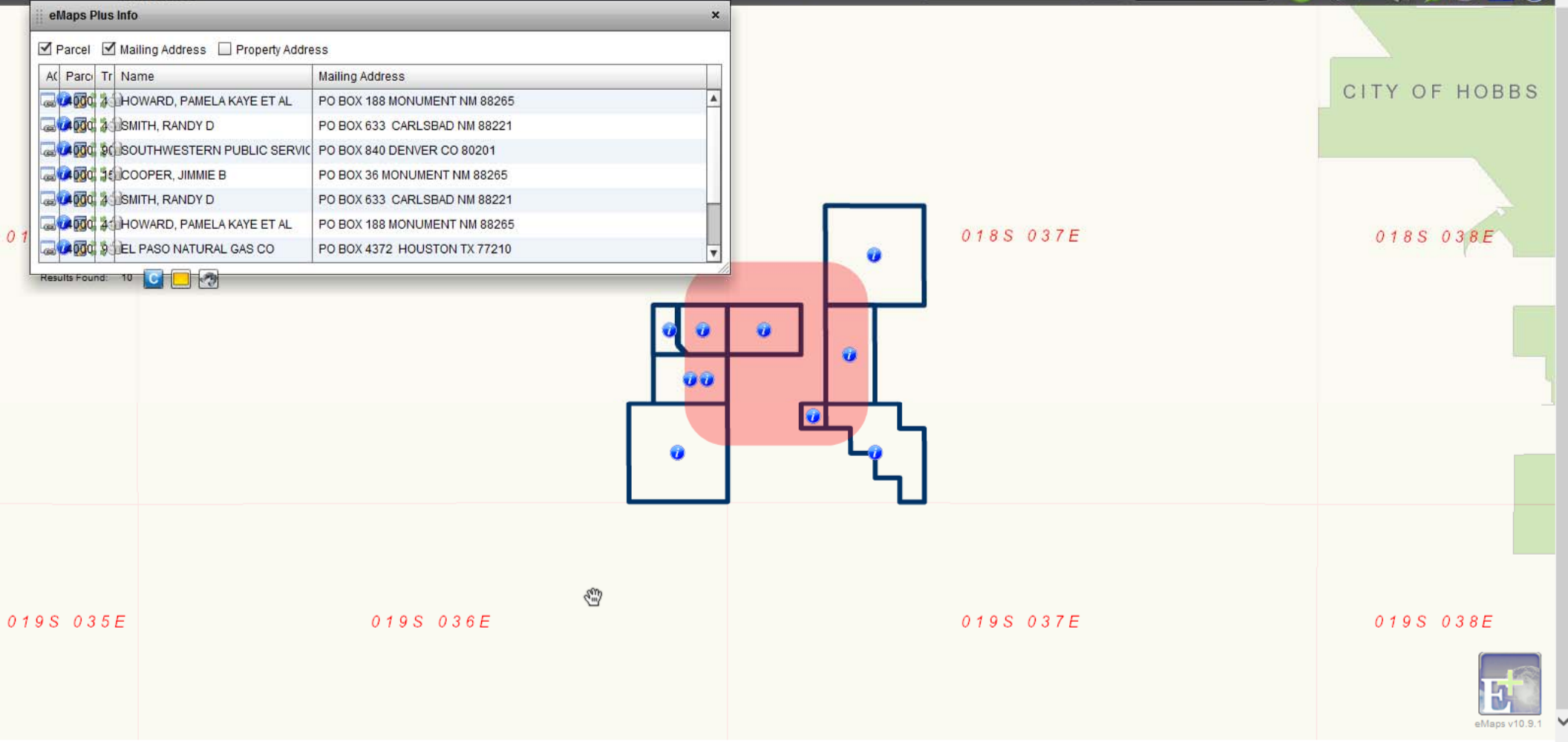
Owner | Go

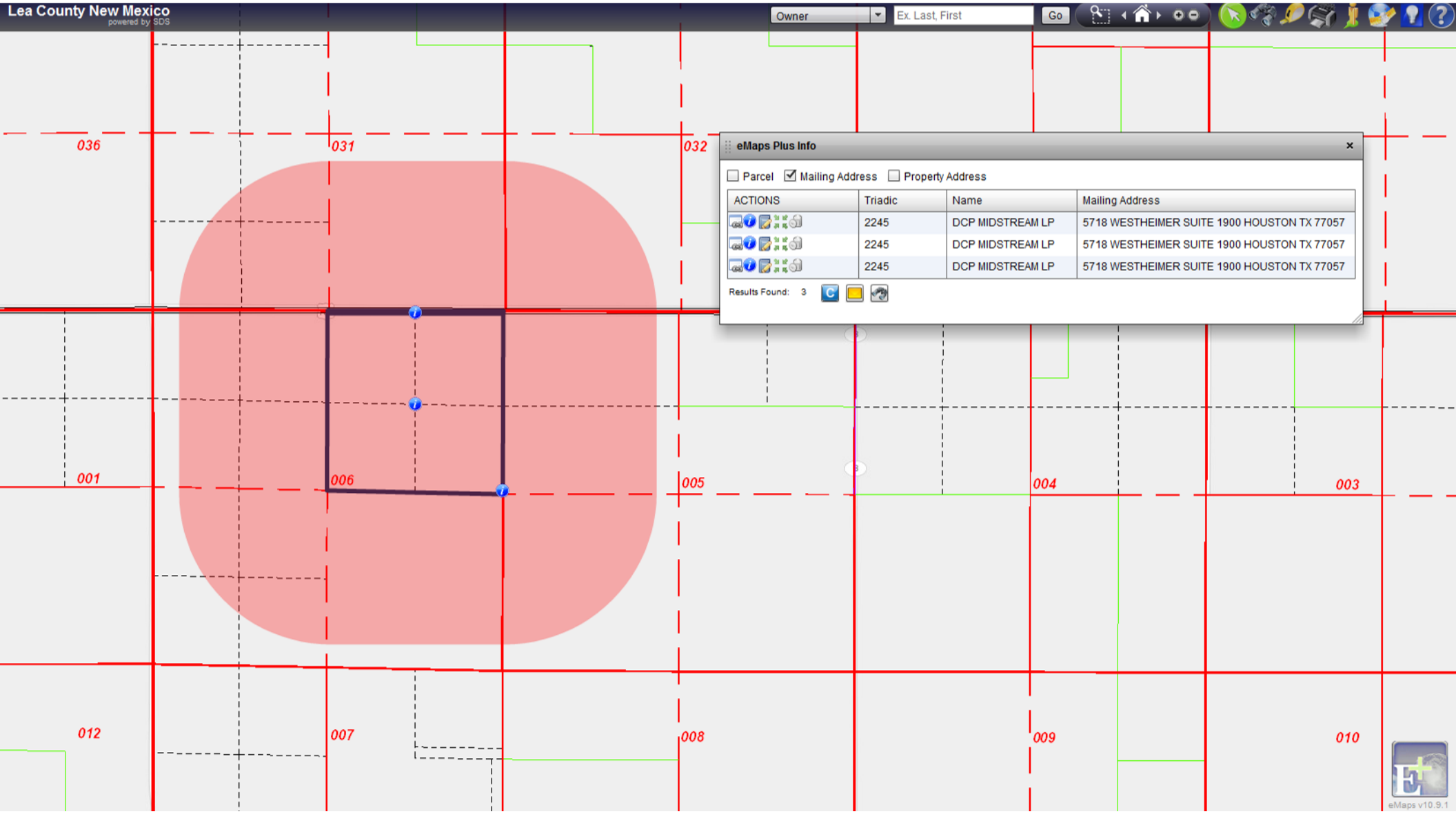
eMaps Plus Info

☑ Parcel ☑ Mailing Address ☐ Property Address

AC	Parcel	Tr	Name	Mailing Address
	4000	4	HOWARD, PAMELA KAYE ET AL	PO BOX 188 MONUMENT NM 88265
	4000	4	SMITH, RANDY D	PO BOX 633 CARLSBAD NM 88221
	4000	90	SOUTHWESTERN PUBLIC SERVIC	PO BOX 840 DENVER CO 80201
	4000	15	COOPER, JIMMIE B	PO BOX 36 MONUMENT NM 88265
	4000	4	SMITH, RANDY D	PO BOX 633 CARLSBAD NM 88221
	4000	4	HOWARD, PAMELA KAYE ET AL	PO BOX 188 MONUMENT NM 88265
	4000	9	EL PASO NATURAL GAS CO	PO BOX 4372 HOUSTON TX 77210

Results Found: 10




Lea County New Mexico
powered by SDS
Owner
Ex. Last, First
Go
036
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eMaps Plus Info
Parcel
Mailing Address
Property Address
ACTIONS
Triadic
Name
Mailing Address
2245
DCP MIDSTREAM LP
5718 WESTHEIMER SUITE 1900 HOUSTON TX 77057
2245
DCP MIDSTREAM LP
5718 WESTHEIMER SUITE 1900 HOUSTON TX 77057
2245
DCP MIDSTREAM LP
5718 WESTHEIMER SUITE 1900 HOUSTON TX 77057
Results Found: 3
eMaps v10.9.1

DCP Midstream LP
Linam Ranch Gas Plant
Section 9 - Public Notice

Posted Notice	Physical Address
Linam Ranch Gas Plant Entrance	From Hobbs, NM travel 7 miles west on Hwy 62/180. Plant is adjacent to highway on the south (on your left side)
Hobbs Public Library	509 North Shipp Hobbs, NM 88240
Hobbs City Offices	200 E. Broadway Hobbs, NM 88240
Lea County Courthouse	100 N Main Ave, Lovington, NM 88260

Counties, Cities, Tribes - 10 Mile Radius		Postal Address
Hobbs City	City Manager	300 North Turner St. Hobbs NM 88240
Lea County	Manager's Office	100 N. Main St., Suite 4 Lovington NM 88260

Landowners	Postal Address
New Mexico State Land	P.O. Box 1148, Santa Fe, NM 87504
DCP MidStream LP	5718 Westheimer Suite 1900 Houston TX 77057
Howard, Pamela Kaye ET Al	PO Box 188 Monument NM 88265
Smith, Randy D	PO Box 633 Carlsbad, NM 88221
Southwestern Public Service	PO Box 840 Denver CO 80201
Cooper, Smith B	PO Box 36 Monument NM 88165
El Paso Natural Gas Co	PO Box 4372 Houston TX 77210

Note: There are no Indian tribes within a 10 miles radius from this facility.

7006 2760 0005 6146 6545

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
HOBBS NM 88240 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No.; or PO Box No. Hobbs City
City, State, ZIP+4 City Manager
300 North Turner St. Hobbs NM 88240
PS Form 38

7006 2760 0005 6146 6538

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
LOVINGTON NM 88260 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No. or PO Box No. Lea County
City, State, ZIP+4 Manager's Office
100 N. Main St., Suite 4 Lovington NM 88260
PS Form 3800

7006 2760 0005 6146 5531

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
HOUSTON TX 77210 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No.; or PO Box No. El Paso Natural Gas Co
City, State, ZIP+4 PO Box 4372 Houston TX 77210
PS Form 3800

7006 2760 0005 6146 5548

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
DENVER CO 80201 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No. or PO Box No. Southwestern Public Service
City, State, ZIP+4 PO Box 840 Denver CO 80201
PS Form 3800

7006 2760 0005 6146 5555

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
CARLSBAD NM 88221 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No.; or PO Box No. Smith, Randy D
City, State, ZIP+4 PO Box 633 Carlsbad, NM 88221
PS Form 3800

7006 2760 0005 6146 5562

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
MONUMENT NM 88265 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	DEC 05 2013
Total Postage & Fees	$ $3.56	12/05/2013

ACADEMY STA ALBUQUERQUE NM 87109 USPS

Sent To
Street, Apt. No.; or PO Box No. Howard, Pamela Kaye
City, State, ZIP+4 PO Box 188 Monument NM 88265
PS Form 3800, A

7006 2760 0005 6146 5593

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MONUMENT NM 88265 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	
Total Postage & Fees	$ $3.56	12/05/2013

ACADAMY STA ALBUQUERQUE NM 87109 DEC 05 2013

Sent To
Street, Apt. or PO Box: Cooper, Smith B
City, State: PO Box 36 Monument
NM 88265

PS Form 3 ... tions

7006 2760 0005 6146 5586

U.S. Postal Service™
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For delivery information visit our website at www.usps.com®

SANTA FE NM 87504 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	
Total Postage & Fees	$ $3.56	12/05/2013

ACADAMY DEC 05 2013

Sent To
Street, Apt. or PO Box: New Mexico State Land
City, State: P.O. Box 1148, Santa Fe, NM 87504

PS Form 3 ... ions

7006 2760 0005 6146 5579

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

HOUSTON TX 77057 OFFICIAL USE

Postage	$ $0.46	0109
Certified Fee	$3.10	14
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	
Total Postage & Fees	$ $3.56	12/05/2013

ACADAMY STA ALBUQUERQUE NM 87109 DEC 05 2013

Sent To
Street, Apt. No.; or PO Box No.: DCP MidStream LP
City, State, ZIP+4: 5718 Westheimer Suite 1900 Houston
TX 77057

PS Form 3800, A...

December 5, 2013

KPER 95.7 FM
575.397.6088 FAX

RE: Public Service Announcement

As part of the air quality permit process, New Mexico requires applicants to submit a public service announcement identifying the proposed permit action and providing information as to how the public can comment on this action.

Attached is such an announcement. Would you air it as a PSA?

Thank you

Milton Rosado
Trinity Consultants
9400 Holly Ave NE
Building 3, Suite 300
Albuquerque NM 87122
(505) 266-6611
FAX (505) 266-7731
mrosado@trinityconsultants.com

Radio Public Service Announcement

NOTICE OF AIR QUALITY PERMIT APPLICATION

DCP Midstream, LP announces its intent to apply to the New Mexico Environment Department for the modification of air quality permit NSR 0039M6R1 for the Linam Ranch Gas Plant. This facility is a natural gas processing plant that processes natural gas from surrounding area gas wells. The proposed modification seeks to account for existing emissions from Startup, Shutdown, Maintenance, and Malfunction. With these modifications, the facility complies with all applicable air quality standards and requirements. The expected date of application submittal to the Air Quality Bureau is December 13, 2013. This notice is a requirement according to New Mexico air quality regulations.

This facility operates 24 hours a day, 7 days a week. The facility is roughly 7 miles West of Hobbs, New Mexico. In Section 6, Range 37E, Township 19S in Lea County (Latitude 32°41'43"N / Longitude 103°17'07"W). To reach the facility from Hobbs, NM, travel 7 miles west on Hwy 62/180. The facility is adjacent to the highway on your left.

Public notice of this modification is posted at the facility, at the Hobbs Public Library, the Hobbs City Offices, and the Lea County Courthouse.

If you have any questions regarding this application, please contact Program Manager, Permit Section, New Mexico Environment Department, Air Quality Bureau, 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico 87505-1816. Their phone number is (505) 476-4375.

Milton Rosado

From: scanner@trinity.com
Sent: Thursday, December 05, 2013 3:43 PM
To: Milton Rosado
Subject: Transmission Result : OK Fax Message NO.2361
Attachments: 20131205174312740.tif

This E-mail was sent from "RNPE8A6AB" (Aficio MP C5000).

Queries to: scanner@trinity.com

******** Communication Result Report(2013.12. 5 17:43) ********

Sender:
Time : 2013/12/ 5 17:42

[Dest.] G3 :15753976088
[Sent Page/Total Page] 2/ 2 [Result] OK

Reason for error
E.1) Hang up or line fail
E.2) Busy
E.3) No answer
E.4) No facsimile connection
E.5) Exceeded max. E-mail size

Submittal of Public Service Announcement – Certification

I, Milton Rosado, the undersigned, certify that on **December 5, 2013** I submitted a public service announcement to **KPER 95.7 FM** that serves the City of **Hobbs and the surrounding areas, Lea County,** State of New Mexico, in which the source is or is proposed to be located and that **KPER DID NOT RESPOND.**

Signed this 5th day of December, 2013

Signature

December 5, 2013
Date

Milton Rosado
Printed Name

Senior Consultant
Title

General Posting of Notices – Certification

I, Tom Bebbington, the undersigned, certify that on {12/10/13 posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the City of Hobbs of Lea County, State of New Mexico on the following dates:

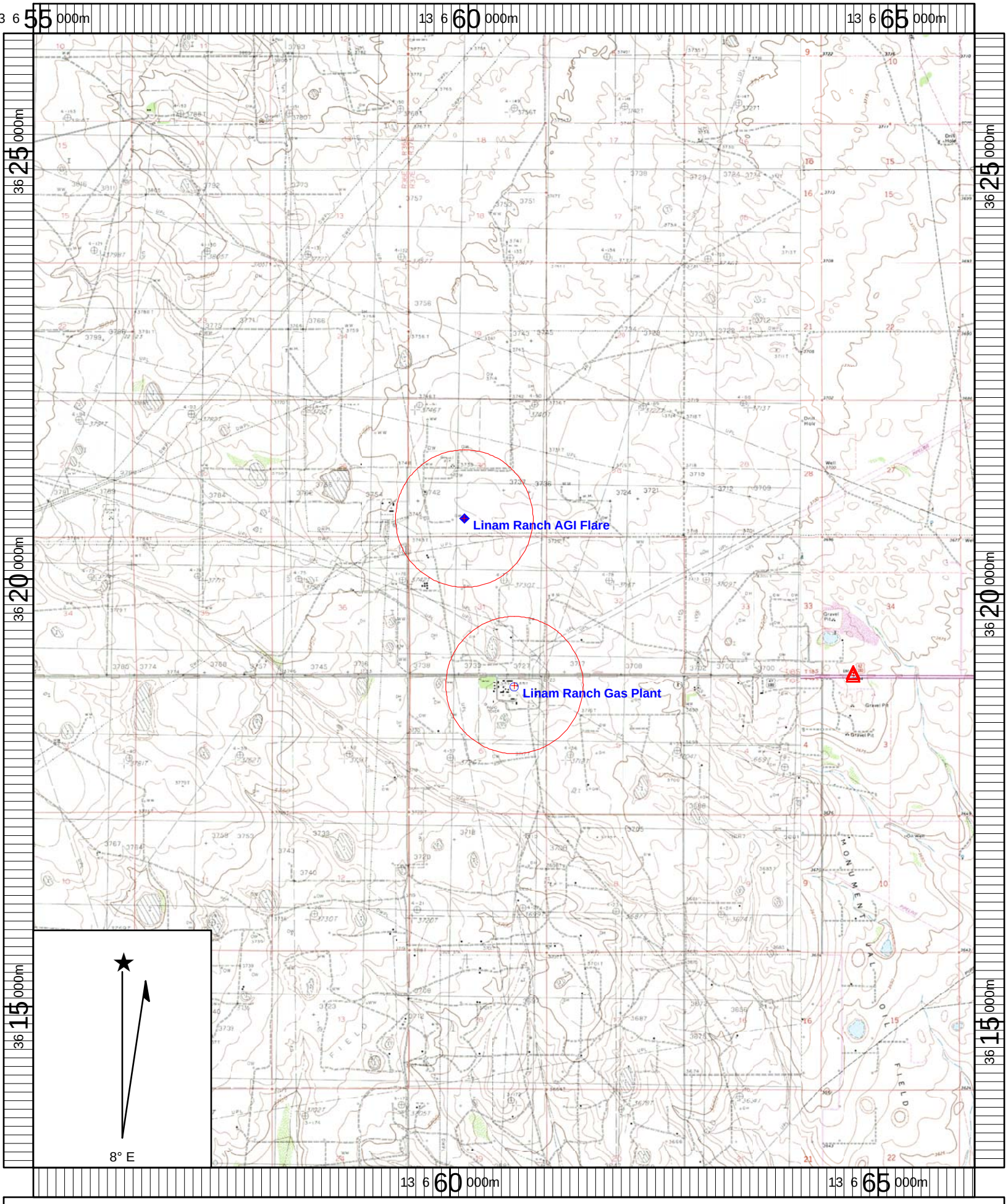
1. Linam Plant entrance & lobby. Date: 12/10/13
2. City Hall, 200 E. Broadway St, Hobbs, NM. Date: 12/10/13
3. US Post Office, 9921 W. NM Hwy 322, Monument, NM. Date: 12/10/13
4. Hobbs Public Library, 509 North Shipp Street, Hobbs, NM. Date: 12/10/13

Signed this 10 day of December 2013

Signature [signature] Date 12-10-13

Tom Bebbington
Printed Name

Sr. Env. Spec. / DCP
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}



Name: MONUMENT NORTH
Date: 8/11/2008
Scale: 1 inch equals 4545 feet

Location: 13 0660523 E 3619841 N
Caption: Site Location
DCP Linam Ranch Gas Plant
DCP Linam Ranch AGI Flare

Copyright (C) 1997, Maptech, Inc.

Section 10

Written Description of the Routine Operations of the Facility

---

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

Linam Ranch Plant is a natural gas processing plant permitted to process up to 225 MM standard cubic feet of natural gas per day. The natural gas processed at Linam Ranch is mostly methane, but contains other hydrocarbons heavier than methane that can be condensed into liquids in the plant. The gas also contains impurities including water, hydrogen sulfide, and carbon dioxide.

The plant consists of an Inlet Receiving System, Amine Treater, Acid Gas Injection well, Sulfur Recovery Unit, Inlet Compression and Dehydration System, Cryogenic/Turbo Expander Plant with external Propane Refrigeration, Residue Compression, and Product Sales for Residue Gas, NGL Liquids, Stabilized Oil, Slop Oil, and Molten Liquid Sulfur. Additionally, the Fuel Gas Systems, Instrument and Starting Air Systems, Steam Systems, Cooling Towers, ESD Flare, Acid Gas Flare, Acid Gas Injection Flare and Drain Systems are supporting units that aid the processes. Processing operations involve chemical reaction processes, thermodynamic processes and physical processes. The chemical reactions that take place are exothermic in nature; that is, they generate heat.

Amine (DGA) Treating:
Amine treating is used to remove H_2S and CO_2 from the gas. This is known as the gas sweetening process. Amine treating is an exothermic chemical reaction process. The treating solution is made up DGA (Diglycolamine) in water solution. This aqueous mixture is regenerated and reused. Lean DGA solution is pumped to the top of the Contactor (trayed tower) and allowed to flow downward. Sour inlet gas is fed into the bottom of the Contactor and flows upward.

As lean DGA solution flows down through the Contactor, it comes into contact with the sour gas. The sour gas contains H_2S and CO_2, which react with the amine to form an amine sulfide complex and carbonate, i.e., the amine absorbs the H_2S and CO2 and is known as sour (rich) amine. The remaining gas is known as sweet gas and leaves the Contactor containing less than 4 ppm of H_2S.

Rich DGA solution leaves the bottom of the Contactor and is fed into a flash tank so any absorbed hydrocarbons can be flashed out of the liquid prior to amine regeneration. Due to weak chemical bonds between the sour gas components and the DGA, H_2S and CO_2 can be stripped from the amine by heating up the amine at low pressures. Rich amine is fed into a stripper column known as a Still, which is operated at low pressure and high temperature. 45 # Steam is used to supply heat to the Still reboiler. H_2S, and CO_2, known as "acid gases", with small amounts of hydrocarbons and water vapors exit the top of the Still and normally routed to the Acid Gas Injection (AGI) well system. Alternately, during maintenance or upsets of the AGI system, the acid gas stream may be routed to the sulfur plant (SRU). The Lean DGA is now regenerated and leaves the stripper column to be cooled and recirculated to the Contactor.

Acid Gas Injection (AGI) System
Acid gas from the Amine Treating system routed to the AGI well located approximately 1 ½ miles north of the main Linam Ranch facility for injection into sub-surface strata. The acid gas consists of electrically-driven compressors, tanks and ancillary devices. During normal operation of the AGI system, a low volume of gas is flared at the AGI flare. Under upset conditions that require depressurization of the AGI system, the acid gas contained within the system may be flared.

Waste Heat Recovery Units and Boilers:
The Linam Ranch Plant (Volcano) Heat Recovery Unit is used to produce high pressure 250# steam from the Residue Turbine Exhaust. Additionally, two (2) fuel gas Fired Boilers producing 250# steam are available. This 250# steam is used primarily to operate the various Steam Driven Turbines throughout the plant. Some of the 250# Steam is used to supply heat for the stabilizer reboiler.

Cooling Water System:
The cooling water system is a thermodynamic process that provides cooling for process and utility services. Water is circulated from the South Cooling Tower to various heat exchangers and then back to the cooling tower. The North Cooling Tower is a 'Bay Tower' with cooling water circulated over exposed process coils.

To minimize corrosion, scaling, and fouling of plant equipment, chemicals are added to the cooling water. This chemical addition also helps control microbiological growth in the Cooling Towers, since these systems are open to the atmosphere and microbiological growth can be a problem.

Stabilized Product System:
The stabilized product system is a heat added process, which is used to reduce the vapor pressure of inlet condensate, and closed drain liquids. Inlet liquids are sent to the stabilizer feed tanks where their pressure is reduced to allow certain light hydrocarbons to flash off to the gathering system. From the stabilizer system feed tanks, the liquid condensate is fed to the stabilizer tower where the pressure is further reduced and the process is heated significantly to flash off more of the light hydrocarbons. Liquids are dumped to the stabilized condensate storage tanks and are pumped to a sales pipeline or shipped by truck.

Units TK-VRU and TK-VRUTMP are a combined group of 9 tanks with integrated vapor recovery units (VRU). The VRUs at the facility are inherent to the process and design of the facility. The VRUs are designed to recover vapors and return the vapors back into the low pressure gathering system.

Molecular Sieve Dehydration (Mole Sieve):
Process gas is dehydrated to prevent hydrate formation in the turbo expander process unit. Molecular sieve dehydration is a solid bed adsorption process used to remove moisture from the inlet gas.
There are four packed towers in the Linam Ranch system. Three towers are dehydrating gas while the other is being regenerated. The towers are packed with a molecular sieve desiccant. The Linam Ranch mole sieve is a Type 4A sieve (pore size) and does not slip minor amounts of H_2S. This trace contaminant of H_2S and Water Vapor are released from the mole sieve in the regeneration cycle.
The mole sieve is a crystalline aluminosilicate material selected for its ability to adsorb water. Water is removed from the gas due to a weak bonding reaction between the solid mole sieve desiccant and water. The bonding action generates only a small amount of heat. Fresh molecular sieve can adsorb about 10% of its weight in water.

Sweet gas compressed to about 660 psig flows from the top of the mole sieve packed tower to the bottom of the tower. As the gas flows downward, the mole sieve adsorbs water and other trace contaminants. The moisture content of the mole sieve is monitored and once it becomes saturated, it must be regenerated. Regeneration of a tower is accomplished by passing hot (450°F+)-residue gas through the tower from the bottom to the top of the tower. The hot gas breaks the water/desiccant weak bond and absorbs the free water and removes it from the tower.

The regeneration (regen) gas is cooled downstream of the desiccant beds so absorbed water will condense and drop out of the regen gas stream. After the water is separated from the regen gas in a separator, the gas is further cooled in the Regeneration Gas Propane Chiller Unit to remove additional water vapors and then is compressed to the Residue Compression System and thence the gas goes to the residue gas sales stream.

Cryogenic / TurboExpander Plant:
The purpose of the Cryogenic Plant is to recover the natural gas liquids (NGL) from the Plant feed gas. The NGL product is composed of ethane and heavier hydrocarbons when the plant is operated in ethane recovery mode and the residue gas is mostly methane. The plant can also be operated in an ethane rejection mode where most of the ethane will be rejected from the NGL product and into the residue gas stream.

The inlet gas passes through the Dehydration Outlet Filters to remove solid particles that can potentially plug downstream equipment. The inlet gas is then split into two streams. The first stream goes to the Inlet Gas Chiller and the second goes to the Demethanizer Reboiler. The main inlet gas stream enters the Inlet Gas Chiller, which is a multiple stream, brazed aluminum plate-fin exchanger. Physically, the exchanger is combined with the Reflux Condenser. The inlet gas is cooled to -60 °F by cross exchanging with the residue gas, and with propane refrigerant. The other portion of the inlet gas stream enters the Demethanizer Reboiler, which is a multiple stream, brazed aluminum plate-fin exchanger. The inlet gas is cooled to -76 °F by cross exchanging with the Demethanizer bottom liquid product, reboiling the Demethanizer liquids, and heating the liquid stream from the Expander Inlet Separator. The chilled inlet gas stream is then combined with the inlet gas from the outlet of the Inlet Gas Chiller.

The combined stream enters the Expander Inlet Separator where the condensed liquids are separated from the vapors. The vapors flow to the Turbo Expander and the liquid flows to the Liquid Gas Exchanger. The gas enters the Turbo Expander and the pressure is let down isentropically to about 170 psig. The energy released from the expansion, 2150 BHP, is used to drive the Booster Compressor. The expansion process cools the gas to -150 °F. In the event that the Turbo Expander/Booster Compressor is removed from service, flow can be bypassed around the unit by using the J-T valve to throttle the pressure. After the Turbo Expander, the inlet gas enters the Demethanizer. The liquid from the Expander Inlet Separator flows through the Liquid Gas Exchanger to the Cold Gas Separator.

In the Cold Gas Separator, the vapor is separated from the liquid. The liquid flows to the Demethanizer and the vapors flow to the Reflux Condenser. In the Reflux Condenser, the vapors from the Cold Gas Separator are condensed to provide reflux at the top section of the Demethanizer using cold residue gas from the overhead of the Demethanizer. The exchanger is a brazed aluminum plate-fin exchanger and is physically attached to the Inlet Gas Chiller.

The Demethanizer accomplishes the separation of the inlet gas into the residue gas and NGL product that meets the required specifications. The residue gas leaves as column overhead and is composed mostly of methane. In the ethane rejection mode the residue gas will contain an increased amount of ethane and propane. The NGL product, which is composed of ethane and heavier hydrocarbons, leaves as the column bottoms. During ethane rejection most of the Demethanizer reboiler passes will be bypassed and the Demethanizer Trim Reboiler will be the operational reboiler. The Demethanizer Trim Reboiler is a once through reboiler using condensing 45# steam. From the Demethanizer the residue gas flows to the Reflux Condenser and the NGL product flows to the Demethanizer Bottoms Transfer Pumps.
From the Demethanizer, the NGL is pumped by the Demethanizer Bottoms Pump to the NGL Product Heater. During ethane rejection the NGL bypasses the NGL Product Heater and goes directly to the NGL Storage Tank. The residue gas flows to the Reflux Condenser and the Inlet Gas Chiller where the residue gas is heated by the Inlet gas stream. During ethane rejection there will not be a vapor flow coming from the Cold Gas Separator, but the residue gas will still flow through the Reflux Condenser.
The residue gas enters the Booster Compressor where it is compressed to 215 psig. The gas flows to the Booster Compressor Aftercooler, a forced draft air cooled exchanger. A side stream is taken off at the discharge of the Booster Compressor as warm regen gas that goes to the Regeneration Gas Heater. Downstream of the Booster Compressor Aftercooler part of the residue gas is taken for fuel gas to run the plant. Further downstream, past the existing Cooling Tower, a side stream is taken as cool regeneration gas to the Dehydrators with the remainder of the residue gas continuing on to the Residue Compression System.

Propane Refrigeration System:
The purpose of the Propane Refrigeration System is to provide the additional refrigeration required at the Inlet Gas Chiller to achieve high ethane recoveries at the cryogenic plant. The refrigeration system also supplies refrigeration duty to the Regen Gas Chiller to cool the regen gas to achieve the required water specification on the residue gas and to the Refrigeration Compressor Lube Oil Cooler. Refrigeration is supplied at -37 °F and at 18 °F for the Inlet Gas Chiller and at 40 °F for the Regen Gas Chiller.

Water Wash System:
A 200-MMscfd Water Wash System is operating at the facility. The process makes use of the existing utilities including electrical power, steam, cooling water, plant and acid gas flare(s), and instrument air. All heat trace are sourced from the 40# steam system. A stand-alone Reverse Osmosis water treatment system was installed as part of this project to provide make-up water for the Water Wash System and replacement Boilers. Waste water from the Still Reflux Accumulator and Still Bottoms are dumped to the existing water holding tanks (referred to as the "A" Tanks). Vapors from the Still Inlet Surge Tank and Reflux Accumulator discharge to the low pressure gathering system or to the existing plant flare if the gathering system is inaccessible. NGL from the Still Inlet Surge Tank and Reflux Accumulator are dumped to a battery of existing holding tanks (referred to as the "B" Tanks). In general, lighter than air releases are vented to the atmosphere and heavier than air releases are vented to the Plant Flare. Blanket gas to the Still Inlet and Bottoms Surge Tanks are sourced from the Residue System.

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)**:** Linam Ranch Gas Plant
Please see sources listed in Table 2-A.

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

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

☒ **Yes** ☐ **No**

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

☒ **Yes** ☐ **No**

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

☒ **Yes** ☐ **No**

C. Make a determination:

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

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

Section 12

Section 12.A
PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

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

A. This facility is:

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

B. **This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories. The emissions from Startup, Shutdown, Maintenance and Malfunction which are being accounted for in this application are existing and therefore are not considered "project" emissions.**

C. **Netting is not required (project is not significant), since the proposed emissions do not represent an increase in emissions above the significant thresholds established under 40 CRF 51.166(23)(i).**

D. **BACT** is **not required for this modification, as this application is a minor modification.**

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.

This significant modification to the NSR Permit No. 0039M6R1 as indicated in Section # 3 was prepared to comply with a requirement of the NMED requesting the quantification of routine or predictable emission during startup, shutdown, and scheduled maintenance (SSM) at Linam and submit the necessary SSM permit application no later than 120 days after the request. On this respect, this revision will add existing SSM emissions for all the applicable units at the site while it will update emission calculations for the following units: 2, 4A, AGI Flare and FUG.

The determination of whether the proposed changes area part of the project was done by comparing the changes to the term "project" (as defined in 20.2.74.7AQ and interpreted in accordance with 20.2.74NMAC and the published USEPA guide documents).

Table 12-1: Proposed Changes as "Project" Determination

Item	Proposed Changes	"Project"	Comments
All equipment with SSM emissions	Updated/add SSM Emission	No	Not a project as there will be no physical changes or changes in method of production of existing stationary sources.
Units 2, 4A, AGI Flare and FUG	Updated calculations based new gas analysis and the addition of purge calculations.	No	

F. The changes requested in this application do not constitute a "project" as defined in 20.2.74.7AQ. As this revision is not a project, there is no need to determine whether any permit modifications are related, or could be considered a single project with this action. A PSD modification is not triggered by the updates being made in this application. Netting and BACT are not applicable.

Section 13

Discussion Demonstrating Compliance With Each Applicable State & Federal Regulation

Provide a discussion demonstrating compliance with applicable state & federal regulation. If there is a state or federal regulation (other than those listed here) for your facility's source category that does not apply to your facility, but seems on the surface that it should apply, add the regulation to the appropriate table below and provide the analysis. Examples of regulatory requirements that may or may not apply to your facility include 40 CFR 60 Subpart OOO (crushers), 40 CFR 63 Subpart HHH (HAPs), or 20.2.74 NMAC (PSD major sources). We don't want a discussion of every non-applicable regulation, but if there is questionable applicability, explain why it does not apply. All input cells should be filled in, even if the response is 'No' or 'N/A'.

In the "Justification" column, identify the criteria that are critical to the applicability determination, numbering each. For each unit listed in the "Applies to Unit No(s)" column, after each listed unit, include the number(s) of the criteria that made the regulation applicable. For example, TK-1 & TK-2 would be listed as: TK-1 (1, 3, 4), TK-2 (1, 2, 4). Doing so will provide the applicability criteria for each unit, while also minimizing the length of these tables.

As this table will become part of the SOB, please do not change the any formatting in the table, especially the width of the table.

If this application includes any proposed exemptions from otherwise applicable requirements, provide a narrative explanation of these proposed exemptions. These exemptions are from specific applicable requirements, which are spelled out in the requirements themselves, not exemptions from 20.2.70 NMAC or 20.2.72 NMAC.

Table for Applicable STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m^3, 3. VOL)
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	x	N/A	x	N/A	20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. Title V applications, see exemption at 20.2.3.9 NMAC.
20.2.7 NMAC	Excess Emissions	x	N/A	x	N/A	All Title V major sources are subject to Air Quality Control Regulations, as defined in 20.2.7 NMAC, and are thus subject to the requirements of this regulation. Also listed as applicable in NSR Permit 0039-M6R1..
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	N/A	N/A	N/A	x	This facility does not have existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.34 NMAC	Oil Burning Equipment: NO_2	N/A	N/A	N/A	x	This facility does not have oil burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	x	N/A	N/A	x	This facility is classified as a New Natural Gas Processing Plant and meet the requirements established under regulations 20.2.35.100 A. B. C. D. Per NMAC 2.35 a "New Natural Gas Processing Plants is a plant that was constructed or modification commenced on or after July 1, 1974.
20.2.37 NMAC	Petroleum Processing Facilities	x	N/A	N/A	N/A	This regulation applies to the entire facility becuase it meets the definition of a natural gas processing plant. Parts of the facility are considered a new gas plant and other parts are considered an existing gas plant.
20.2.38 NMAC	Hydrocarbon Storage Facil.	N/A	TK-VRU and TK-VRUTMP	N/A	**x**	Portions of this facility are potentially subject to Section 109 of NMAC 2.38. The tanks TK-39 through TK-41, TK-44 through TK-48 and TK0-54 are pressurized vessels and are compliant with this section.

STATE REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION: Identify the applicability criteria, numbering each (i.e. 1. Post 7/23/84, 2. 75 m^3, 3. VOL)
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	N/A	N/A	N/A	**x**	Does not apply because it is superseded by 20.2.35 NMAC.
20.2.61.109 NMAC	Smoke & Visible Emissions	N/A	N/A	N/A	x	Not applicable because this regulations is superseded by 20.2.37 NMAC.
20.2.70 NMAC	Operating Permits	x	N/A	x	N/A	This facility is a major source for the following criteria pollutants: NO_x, CO, VOC, and HAPs. This facility is a major source for formaladehyde and n-Hexane. The facility currently operates under Title V Permit 094-M1R1.
20.2.71 NMAC	Operating Permit Fees	x	N/A	x	N/A	This facility is subject to 20.2.70 NMAC and is in turn subject to 20.2.71 NMAC. - Refer to NSR Permit 0039M6R1 Table 103.A under Applicable Requirement column: 20.2.71 NMAC.
20.2.72 NMAC	Construction Permits	x	N/A	x	N/A	This facility is subject to 20.2.72 NMAC and NSR Permit number: 0039-M6R1, issued on 11/13/13.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	x	N/A	x	N/A	Applicable because the facility is a major source and must submit an annual emission inventory (EIQ) - Refer to NSR Permit 0039M6R1 Table 103.A under Applicable Requirement column: 20.2.73 NMAC.
20.2.74 NMAC	Permits – PSD	x	N/A	x	N/A	Applicable because the facility has PTE in excess of 250 tpy for NOx, and CO; however, this permitting action does not trigger PSD requirements. This facility is a PSD major source that has never had a major modification. - Refer to NSR Permit 0039M6R1 Table 103.A under Applicable Requirement column: 20.2.74 NMAC.
20.2.75 NMAC	Construction Permit Fees	N/A	N/A	N/A	x	Annual fees are not applicable because the facility is subject to 20.2.71 NMAC.
20.2.77 NMAC	New Source Performance	N/A	28, 29, 30, 31 32B, 34, 36, 37, FUG, AM-10, TK-VRU and TK-VRUTMP	x	N/A	This is a stationary source which is subject to the requirements of 40 CFR Part 60, as amended through January 31, 2009.
20.2.78 NMAC	Emission Standards for HAPS	x (potentially)	N/A	x	x	Does not apply in normal operation. Under demolition, this facility could potentially emit asbestos which is subject to the requirements of 40 CFR Part 61, as amended through January 31, 2009.
20.2.79 NMAC	Permits – Nonattainment Areas	N/A	N/A	N/A	x	This facility is not located in a nonattainment area.
20.2.80 NMAC	Stack Heights	N/A	N/A	N/A	x	Not applicable to stacks at this facility.
20.2.82 NMAC	MACT Standards for source categories of HAPS	x	28	x	N/A	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63, as amended through January 31, 2009.

Table for Applicable FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies to **Entire Facility**	Applies to **Unit No(s).**	**Federally Enforce-able**	**Does Not Apply**	**JUSTIFICATION:**
40 CFR 50	NAAQS	x	N/A	x	N/A	This regulation defines national ambient air quality standards. The facility meets all applicable national ambient air quality standards for NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ under this regulation. .
NSPS 40 CFR 60, Subpart A	General Provisions	N/A	2, 4A, AGI Flare, 34, 36, 37, 28, 29, 30, 31, 32B	x	N/A	Applies because other NSPS subparts apply. Specifically, section 60.18 (b) Flares applies to Unit 2 (Amine Plant Flare East) and 4A (ESD Flare).
NSPS 40 CFR60.40 a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	N/A	N/A	N/A	x	This regulation establishes standards of performance for electric utility steam generating units. This regulation does not apply because the facility does not operate any electric utility steam generating units.
NSPS 40 CFR60.40b Subpart Db	Standards of Performance for **Industrial-Commercial-Institutional Steam Generating Units**	N/A	N/A	N/A	x	This regulation establishes standards of performance for industrial-commercial-institutional steam generating units. There are no steam generating units that commenced construction, modification, or reconstruction after June 19, 1984, and that have a heat input capacity greater than 100 MMBtu/hr at the facility.
NSPS 40 CFR60.40b Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	N/A	34, 36, and 37	x	N/A	This regulation establishes standards of performance for small industrial-commercial-institutional steam generating units. Units 34, 36, and 37 will be installed or modified after June 9, 1989, with a heat input capacity greater than or equal to 10 MMbtu/hr but less than 100 MMbtu/hr. The units will only burn natural gas and therefore will not be subject to performance tests, reporting requirements, or emission limits under this regulation. The facility will follow all record keeping requirements for these units.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	N/A	29,30, 31 and 32B	x	N/A	The turbines at Linam Ranch all have heat inputs greater than the 10 MMBtu/hour were installed on after the October 3, 1977 applicability date and prior to February 18, 2005.
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	N/A	N/A	N/A	X	This regulation establishes standards of performance for petroleum liquids for which construction, reconstruction, or modification commenced after May 18, 1978, and prior to July 23, 1984. The tanks at the facility commenced construction after the July 23, 1984 regulation date and are therefore not subject to this regulation. Note: The two (2) Condensate Tanks controlled by the VRU which have a capacity of 1,500 bbl were built by 1954, thus they are also exempted from this regulation.

FEDERAL REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION:
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	N/A	TK-VRU, TK-VRUTMP	X	N/A	This facility has storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. However TK39-41, TK44-48 and TK53,54 are pressure vessels and pursuant to§60.110b(d)(2) are not subject to this subpart. <u>TK-VRU and TK-VRUTMP</u> As discussed under Section 10 of this permit application, this facility operates a combine group of nine (9) tanks that ranges from 210 to 1,500 bbl (33.39 to 238.5 m^3) that are part of the vapor recovery units. From these nine tanks, two tanks, one of 210 bbl and one of 400 bbl, have capacity lower than the threshold of 75 m^3, thus they are exempted to comply with this regulation. The five (5) 750 bbl tanks are covered under this regulations since they were installed after July 23, 1984, implementation date, and they have a capacity equivalent to 119.2 m^3. The remainder two (2) 1,500 bbl tanks were installed in 1954 and are also covered with this regulation since these tanks used to be pressurized tanks that were modified to be atmospheric tanks after the date this rule was implemented. Note: The VRUs at the facility are inherent to the process and design of the facility. The VRUs are designed to recover vapor and return the vapors back into the low pressure gathering system. The tanks that meet this capacity and date of construction date are subject to this regulations and compliant with this subpart because VOC emissions are routed to a VRU with 95% efficiency.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	x	FUG	x	N/A	Linam Ranch is subject to the requirements of this subpart and has instituted a Leak Detection and Repair program and submits reports twice each year.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	N/A	N/A	N/A	x	The sweetening units produce acid gas that is completely re-injected into geologic strata or that is otherwise not released to the atmosphere; pursuant to §60.640(e) the sweetening units are not subject to this subpart.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	N/A	N/A	N/A	x	The SI RICE at this facility were constructed before June 12, 2006. This subpart does not apply to these units.
NSPS 40 CFR Part 60 Subpart KKKK	Standards of Performance for **Stationary Combustion Turbines**	N/A	28	x	N/A	Unit 28 will commence construction after February 18, 2005; this subpart applies to this unit.
NSPS 40 CFR Part 60 Subpart	Standards of Performance for **Crude Oil and Natural Gas**	N/A	Equipment leaks associate with equipment	X	X	This regulation establishes emission standards and compliance schedule for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after

FEDERAL REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION:
OOOO	**Production, Transmission and Distribution**		added in NSR 0039-M6, Turbine, AM-10			August 23, 2011. The following are equipment constructed after August 23, 2011 and subject to this regulation: Turbine (Unit 28), and equipment leaks associated with the equipment added in NSR 0039-M6R1. The acid gas from the amine unit (sweetening unit) at the facility is completely injected into oil or gas-bearing geological strata (AGI wells) and is not subject to 60.5405 through 60.5407, 60.5410(g), and 60.5423 of this subpart [per NSPS OOOO 60.5365(g)(4)]. When the acid gas flare is used during planned SSM and, the acid gas is not sent to the AGI wells, the facility is subject to SO_2 standards for the amine unit. Since the flare will be used as a control device during planned SSM, the flare is subject to NSPS 60.18. The facility will comply with this regulation upon startup. The pneumatic devices located at the facility are not continuous bleed and therefore will not have applicable requirements under this regulation. The tanks are subject to NSPS Kb and are therefore not subject to this regulation.
NESHAP 40 CFR 61 Subpart A	General Provisions	x (potentially)	N/A	x	N/A	This part applies to the owner or operator of any stationary source for which a standard is prescribed under this part. There is one potentially applicable NESHAP. (See discussion of 40 CFR 61, part M below.)
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	N/A	N/A	N/A	x	The facility is not subject to this regulation.
NESHAP 40 CFR 61 Subpart M	National Emission Standards for **Asbestos**	x Potentially	N/A	x	x	Although this standard does not apply to this facility under routine operating conditions, in the case of **asbestos** demolition, Subpart M would apply.
MACT 40 CFR 63, Subpart A	General Provisions	N/A	DH-10, 28, 6-11	x	N/A	Applies because 40 CFR Part 63, Subpart HH applies.
MACT 40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities	x	DH-10	x	N/A	A glycol contactor is being added to the dehydration process to address a moisture problem with the existing regenerator gas system and will be subject to Subpart HH but exempt from requirements due to emissions less than 1.0 Mg/yr benzene. According to current estimates, the storage tanks do not meet the definition of "storage vessels with the potential for flash emissions" since the gas-to-oil-ratio (GOR) is less than 0.31 m^3/l (40 CFR 63.761). If the GOR of the storage tanks changes at the facility and the tanks are later determined to meet the definition of "storage vessels with the potential for flash emissions" given in Subpart HH, DCP will comply with applicable requirements. No equipment at the facility is in VHAP service (greater than 10% HAP).
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission	N/A	N/A	N/A	x	This is not a transmission and storage facility.

FEDERAL REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION:
	and Storage Facilities					
MACT 40 CFR 63 Subpart YYYY	NESHAP for Stationary Combustion Turbines	N/A	28	x	N/A	Units 29, 30, 31 and 32B are existing units and pursuant to§63.6090(b)(4) have no requirements under this subpart or subpart A. Unit 28 is a new or reconstructed gas-fired combustion turbine. Pursuant to §63.6095(d), this unit is subject to the initial notification requirements set forth in §63.6145 but need not comply with any other requirement of Subpart YYYY until final action on compliance by the EPA is taken.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	N/A	6-11	x	N/A	These engines are subject to MACT ZZZZ but have no requirements. These engines commenced construction before the December 19, 2002 (40 CFR 63.6590 (a)(1)(i)) .
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	N/A	34, 36, and 37	X	N/A	The facility is a major source of HAPS. Units 34, 36 and 37 will be subject to MACT 40 CFR 63 Subpart DDDDD as they will be constructed after the June 4, 2010 applicability date. The boilers will be combusting natural gas and will have the following compliance requirement in MACT DDDDD: Per 63.7540 (a)(10) - Tune up every year (except for boilers and process heaters with continuous oxygen trim system which conduct a tune-up every 5 years). Units 34, 36, and 37 do not have emission limits under this regulation. DCP will comply with all applicable MACT DDDDD requirements.
MACT 40 CFR 63 Subpart JJJJJJ	National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Source	N/A	N/A	N/A	X	This regulation establishes emission standards for hazardous air pollutants for industrial, commercial, and industrial boilers area sources. This regulation does not apply to the facility, as the facility is a major source of HAPs.
NESHAP 40 CFR 64	**Compliance Assurance Monitoring**	N/A	AM-10	x	N/A	The sulfur recovery unit (Unit 5) has been removed and is no longer subject to CAM. The amine unit (Unit AM-10) is a controlled major source and is subject to CAM. Units TK-VRU and TK-VRUTMP are a combined group of 9 tanks with integrated vapor recovery units (VRU). The VRUs at the facility are inherent to the process and design of the facility and are not subject to CAM. The VRUs are designed to recover vapors and return the vapors back into the low pressure gathering system.
NESHAP	**Chemical**	x	N/A	x	N/A	This facility has quantities of materials regulated by this requirement that are in excess of the triggering threshold. A

FEDERAL REGU-LATIONS CITATION	Title	Applies to Entire Facility	Applies to Unit No(s).	Federally Enforce-able	Does Not Apply	JUSTIFICATION:
40 CFR 68	**Accident Prevention**					RMP has been submitted to and approved by the EPA on 8/31/2012.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	N/A	N/A	N/A	x	This facility is not regulated by the acid rain program.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	N/A	N/A	N/A	x	This facility is not regulated by the acid rain program.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	N/A	N/A	N/A	x	This facility is not regulated by the acid rain program.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	x	N/A	x	N/A	DCP Midstream owns appliances containing CFCs and is therefore subject to this requirement. DCP Midstream uses only certified technicians for the maintenance, service, repair and disposal of appliances and maintains the appropriate records for this requirement. Note: Disposal definition in 82.152: Disposal means the process leading to and including: (1) The discharge, deposit, dumping or placing of any discarded appliance into or on any land or water; (2) The disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water; or (3) The disassembly of any appliance for reuse of its component parts. "Major maintenance, service, or repair means" any maintenance, service, or repair that involves the removal of any or all of the following appliance components: compressor, condenser, evaporator, or auxiliary heat exchange coil; or any maintenance, service, or repair that involves uncovering an opening of more than four (4) square inches of "flow area" for more than 15 minutes.
CAA Section 112(r)		x	N/A	x	N/A	Chemical Accident Prevention Provisions

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.

DCP Midstream developed an Operational Plan to Mitigate Source Emission during Malfunction, Startup or Shutdown as required by 20.2.72.203.A.5 NMAC. This plan is available at the project site for evaluation and review

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.

Scenario A

This is the primary operating scenario. Under Scenario A of one (1) of the four (4) HBAs is operating at any given time, while simultaneously being allowed to operate all other equipment at the facility at maximum capacity without limits on the hours of operation.

Scenario B

This is the alternative operating scenario. Under Scenario B, this application seeks to allow operation of two (2) of the four (4) HBAs when one of the TLA engines is down. In order to preserve the PSD netting result for NOx and VOC, the number of hours this scenario is allowed to run is up to 3,400 hours in any rolling 12-month period.

If DCP exceeds this threshold, DCP must perform an updated PSD netting analysis for these pollutants to show that the SERs were not exceeded based on actual hours of operation in each rolling 12-month period.

The following formula shall be used to calculate tons per year emissions for each HBA and TLA. The sum of each of the HBA and TLA emissions calculated by the formula is then compared to the limits shown in Table 2-E of this application. The sum should be less than or equal to these limits to demonstrate that the SERs for NOx and VOC were not exceeded.

Formula to calculate emissions for NOx and VOC, in tons, for a given HBA or TLA unit over a rolling 12-month period:

$$\frac{\text{[Permit Limit (lb/hr)] x [Rolling 12-month hours of operation (hr)] x [Actual power (hp) ÷ Permitted power (hp)]}}{\text{2000 (lb/ton)}}$$

Then, for NOx and VOC, calculate the sum:

Unit 6 + Unit 7 + Unit 8 + Unit 9 +Unit 10 + Unit 11 = Total All Units

Then, compare the sum “Total All Units” for each pollutant to the corresponding tons per year limit shown in Table 2-E

Section 16

Air Dispersion Modeling

NSR (20.2.72 NMAC) and PSD (20.2.74 NMAC) Modeling: Provide an air quality **dispersion modeling** demonstration (if applicable) as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines. If air dispersion modeling has been waived for this permit application, attach the AQB Modeling Section modeling waiver documentation.

SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions 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.nmenv.state.nm.us/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.

Title V (20.2.70 NMAC) Modeling: Title V applications must specify the NSR Permit number for which air quality dispersion modeling was last submitted. Additionally, Title V facilities reporting new SSM emissions require modeling or a modeling waiver to demonstrate compliance with standards.

Refer to the attached documents.

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Air Dispersion Modeling Protocol

DCP Midstream, LP
Linam Ranch Gas Plant

Introduction

Purpose of Modeling

DCP Midstream, LP (DCP) is preparing a construction permit application to modify operations at Linam Ranch Gas Plant (Linam Ranch) by adding Startup, Shutdown, Maintenance (SSM) and Malfunction emissions. On August 15, 2013, DCP received a letter from the New Mexico Environment Department (NMED) Air Quality Bureau requesting the quantification of routine or predictable emissions during startup, shutdown, and scheduled maintenance. The permit application is being submitted to satisfy this request. This facility is currently permitted under NSR Permit 0039-M6-R1 and Title V Operating Permit P094-R1-M1.

DCP seeks to demonstrate compliance with the New Mexico Ambient Air Quality Standards (NMAAQS) and National Ambient Air Quality Standards (NAAQS) for CO, NO_2, SO_2, TSP, PM_{10}, $PM_{2.5}$, and H_2S as well as the PSD Increment Standards for NO_2, SO_2, PM_{10} and $PM_{2.5}$.

Facility Description and Location

Linam Ranch Gas Plant is equipped to process natural gas under SIC 1321. Linam Gas Plant is located 7 miles west of Hobbs, New Mexico in Lea County, Air Quality Control Region (AQCR) 155. The approximate UTM coordinates of the facility are 660,738 meters east and 3,618,810 meters north based on WGS 84 datum at an elevation of approximately 3,710 feet above mean sea level.

Proposed Modeling

Model Input Options

The latest version of the AERMOD dispersion model (version 12345) will be used for this analysis. The model will be run in Regulatory Default mode to determine the impacts for CO, NO_2, SO_2, TSP, PM_{10}, $PM_{2.5}$, and H_2S for each of the applicable averaging periods. The modeled results for each pollutant and averaging period will be compared to the applicable significance level.

A building downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential pollutant downwash due to the equipment structures and buildings.

Section 4.1.6 of the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines, Revised July 29, 2011 (Guidelines) states that "SSM annual emission rate for a pollutant (in tons/yr) may be converted to an annual average emission rate (in lb/hr or g/sec). The annual average SSM emission rate can be used to establish a significant impact area (SIA) for each averaging time period (3-hour, 8-hour, 24-hour, and annual)." Annual emission rates (ton/yr) will be used to establish the significant impact area for the pollutants to be modeled. The highest effective hourly SSM emission rates will be modeled for NAAQS, NMAAQS, and increment consumption modeling if necessary. Effective emission rates will be calculated based on SSM flow rates and the typical duration of flaring events from each flare.

Condition A201.A of NSR Permit 0039-M6-R1 states that "The Permittee shall operate under either Scenario A or B during any monthly rolling 12-month period.

> **Scenario A**: This is the primary operating scenario. The permittee shall only operate one (1) of Units 8, 9, 10 or 11 (Clark HBA-6 RICE) while simultaneously operating all other equipment at maximum capacity without limits on the hours of operation.
>
> **Scenario B:** This is the alternative operating scenario. The Permittee shall only operate two of the four of Units 8, 9, 10, or 11 (Clark HBA-6 RICE) when one of Units 6 or 7 is inoperable (Clark TLA-6 RICE) when the facility is in operation. The Permittee shall not operate under Scenario B for greater than 3400 hours per any monthly rolling 12-month period."

Various source groups will be used to account for all possible operating scenarios based on these permit conditions for steady-state and SSM operation. The scenario with the highest impacts will be used for the Cumulative Impact Analysis (CIA). A detailed table of source groups will be provided within the modeling report.

Receptor Grid Description and Elevation Data

There will be two center points designated for this facility in Zone 13: one for the main facility (approximately 660,620 meters east and 3,618,635 meters north) and one for the nearby AGI flare (approximately 659,620 meters east and 3,621,135 meters north). These center points will serve as the center points for two overlapping receptor grids. The AGI flare itself will be located slightly off-center in its receptor grid. The fine receptor grid for the AGI flare site will be large enough to reduce any discrepancies this offset may cause. This will be done to achieve a neat overlap of the two grids; there will not be duplicate receptors.

A 25 meter grid spacing will be used for the facility and AGI flare boundary receptors. A 50 meter grid spacing will extend out to 1000 meters from each center point in each direction for a very fine grid resolution. A 100 meter grid spacing will extend from 1,000 meters to 2,000 meters in each direction for a fine grid resolution. A 500 meter grid spacing will extend from 2,000 meters to 5,000 meters in each direction for a medium grid resolution. A 1,000 meter grid spacing will extend from 5,000 meters to 25,000 meters in each direction for a coarse grid resolution. It is expected that the highest impacts from the proposed source will be at or near the fence line.

The elevations of receptors, buildings, and facility sources will be determined using the most recent DEM data currently available. Elevations for surrounding sources will be preserved as provided by the NMED.

Meteorological Data

We will use the one-year Empire Abo (1993-1994) meteorological data set available on the NMED website. We feel that this meteorological set is located in comparable terrain not far from the facility. Therefore, this data is representative of meteorological conditions at the facility.

Radius of Impact (ROI) Analysis and Cumulative Impact Analysis (CIA)

If any air pollutant discharged by the facility results in an ambient impact greater than the significance levels shown in the Guidelines, then the maximum extent of the significant impact area will be determined as measured from the center of the facility to the furthest extent of the significant impact. The maximum extent will become a Radius of Impact (ROI). A separate ROI may be determined for each pollutant and each averaging period. The ROI for NO_2

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may be determined by application of the Ambient Ratio Method. The area within the ROI then becomes the modeling domain for the CIA.

The CIA will be analyzed including impacts from the facility sources and, when background concentrations are not added, any surrounding sources within 30 km of the facility. Section 4.8.1 of the Guidelines states that surrounding sources within 25 km of the facility should be added when background concentrations are not added. Because there are two facility center points about 2,400 meters apart, surrounding sources will be added out to an additional 5 km to ensure all nearby sources will be accounted for. For particulates, the CIA will be analyzed including impacts from the facility sources, any surrounding sources out to 15 km, and background concentrations where applicable. The inclusion of surrounding sources and/or background concentrations will follow the guidance shown in Table 6C: "Modeling the Design Value Summary (Default Modeling)" from the modeling Guidelines.

An inventory of surrounding sources was obtained from Eric Peters, Air Dispersion Modeler at the NMED, on November 18, 2013. Adjustments to surrounding source parameters will be documented in the modeling report and made per the guidance in Section 4.8.1 of the Modeling Guidelines. Surrounding source elevations will be preserved as provided.

PSD Class II Increment Analysis

If impacts for NO_2, SO_2, PM_{10}, or $PM_{2.5}$ indicate concentrations greater than the significance levels, PSD Class II increment analysis will be conducted for the appropriate averaging periods. The major source baseline dates as shown in Table 8 of the Guidelines will be used. If required, the PSD increment analysis will be conducted including all PSD increment consuming and expanding sources within 30 km of the facility per Table 6C of the Modeling Guidelines. The predicted maximum concentrations will be compared with the appropriate Class II PSD standard.

Class I Areas Analysis

The nearest Class I area is Carlsbad Caverns National Park at 117 km from the facility. Class I area analysis is not applicable as the national park is not within the 100 km inclusion zone.

If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at (505) 266-6611.

Sincerely,

TRINITY CONSULTANTS

Dr. Andrew Glen
Consultant

Milton Rosado

From: Andrew Glen
Sent: Thursday, December 12, 2013 2:35 PM
To: Milton Rosado
Subject: FW: Modeling Protocol for Linam Ranch

.....

Andrew Glen, PhD, MSc
Consultant
Office: **505-266-6611 x106**

From: Peters, Eric, NMENV [mailto:eric.peters@state.nm.us]
Sent: Wednesday, December 11, 2013 4:41 PM
To: Andrew Glen
Cc: Adam Erenstein
Subject: RE: Modeling Protocol for Linam Ranch

Andrew,

I approve the Linam Ranch Gas Plant modeling protocol. I noted that the protocol did not specify the monitors that would be used for background concentrations, but it was not clear if these would be necessary for the modeling analysis.

Eric Peters, Air Dispersion Modeler
New Mexico Environment Department / Air Quality Bureau
525 Camino de Los Marquez - Suite 1 / Santa Fe, NM, 87505
Phone: (505) 476-4327 / Fax: (505) 476-4375
E-mail: eric.peters@state.nm.us

From: Andrew Glen [mailto:aglen@trinityconsultants.com]
Sent: Monday, December 09, 2013 10:33 PM
To: Peters, Eric, NMENV
Cc: Adam Erenstein
Subject: Modeling Protocol for Linam Ranch

Hi Eric,

Please find attached the modeling protocol for DCP Midstream's Linam Ranch Gas Plant for review. We plan to submit the application on Thursday December 12 and would appreciate any comments you have prior to this submission.

If you have any questions please feel free to contact me at (505)-266-6611 or by email.

Regards,

Andy

.....

Andrew Glen, PhD, MSc
Consultant

Trinity Consultants
9400 Holly Blvd NE, Building 3, Suite 300 | Albuquerque, New Mexico 87122

Office: **505-266-6611 x106** | Mobile: 307-760-6246
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Air Dispersion Modeling Report

DCP Midstream, LP
Linam Ranch Gas Plant

Introduction

Purpose of Modeling

DCP Midstream, LP (DCP) is preparing a construction permit application to modify operations at Linam Ranch Gas Plant (Linam Ranch) by adding Startup, Shutdown, Maintenance (SSM) and Malfunction emissions. On August 15, 2013, DCP received a letter from the New Mexico Environment Department (NMED) Air Quality Bureau requesting the quantification of routine or predictable emissions during startup, shutdown, and scheduled maintenance. The permit application is being submitted to satisfy this request. This facility is currently permitted under NSR Permit 0039-M6-R1 and Title V Operating Permit P094-R1-M1.

DCP seeks to demonstrate compliance with the New Mexico Ambient Air Quality Standards (NMAAQS) and National Ambient Air Quality Standards (NAAQS) for CO, NO_2, SO_2, TSP, PM_{10}, $PM_{2.5}$, and H_2S as well as the PSD Increment Standards for NO_2, SO_2, PM_{10} and $PM_{2.5}$.

Facility Description and Location

Linam Gas Plant is equipped to process natural gas under SIC 1321. Linam Gas Plant is located 7 miles west of Hobbs, New Mexico in Lea County, Air Quality Control Region (AQCR) 155. The approximate UTM coordinates of the facility are 660,738 meters east and 3,618,810 meters north with WGS 84 datum at an elevation of approximately 3,710 feet above mean sea level.

Modeling

Receptor Grid Description and Elevation Data

There are two center points designated for this facility: one for the main facility (approximately 660,620 meters east and 3,618,635 meters north) and one for the nearby AGI flare (approximately 659,620 meters east and 3,621,135 meters north). These center points served as the center points for two overlapping receptor grids. The AGI flare itself is located slightly off-center in its receptor grid. This was done to achieve a neat overlap of the two grids.

A 25 meter grid spacing was used for the facility and AGI flare boundary receptors. A 50 meter grid spacing extends out to 1000 meters from each center point in each direction for a very fine grid resolution. A 100 meter grid spacing extends from 1,000 meters to 2,000 meters in each direction for a fine grid resolution. A 500 meter grid spacing extends from 2,000 meters to 5,000 meters in each direction for a medium grid resolution. A 1,000 meter grid spacing extends from 5,000 meters to 25,000 meters in each direction for a coarse grid resolution. The receptor grid for the Cumulative Impact Analyses were reduced to no greater than 6 km as this was the largest Radius of Impact. It is expected that the highest impacts from the proposed source will be at or near the fence line.

The elevations of receptors, buildings, and facility sources were determined using the most recent DEM data currently available. Elevations for surrounding sources will be preserved as provided.

Meteorological Data

We will use the one-year Empire Abo (1993-1994) meteorological data set available on the NMED website. We feel that this meteorological set is located in comparable terrain not far from the facility. Therefore, this data is representative of meteorological conditions at the facility.

Model Input Options

The latest version of the AERMOD dispersion model was used for this analysis. The model was run in Regulatory Default mode to determine the impacts for CO, NO_2, SO_2, TSP, PM_{10}, $PM_{2.5}$, and H_2S for each of the applicable averaging periods.

The input parameters used in the modeling are discussed below. The emission sources and stack parameters for the facility are shown in Table 1. The building heights of structures at the facility and used in the model are shown in Table 2.

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Table 1. Stack Parameters for Air Dispersion Modeling.

Point Sources								
ID	Description	X Coordinate m	Y Coordinate m	Elevation m	Stack Height ft	Stack Temp K	Stack Velocity m/s	Stack Diameter m
SS_2	EU2 Amine Plant Flare	660639.7	3618589.7	1134.2	222	1273.15	20.0	0.61
SS_4A	EU4 ESD (Plant) Flare	660762.0	3618416.8	1134.0	175	1273.15	20.0	0.61
SS_6	EU6 Clark TLA-6	660625.0	3618911.5	1135.5	74	672.04	40.3	0.53
SS_7	EU7 Clark TLA-6	660633.0	3618911.5	1135.5	74	672.04	40.3	0.53
SS_8	EU8 Clark HBA-6	660581.5	3618911.5	1135.5	75	616.48	37.36	0.46
SS_9	EU9 Clark HBA-6	660589.5	3618911.5	1135.5	75	616.48	37.36	0.46
SS_10	EU10 Clark HBA-6	660597.5	3618911.5	1135.5	74	616.48	37.2	0.46
SS_11	EU11 Clark HBA-6	660605.5	3618911.5	1135.5	74	616.48	37.2	0.46
SS_28	EU28 Solar T-60	660684.2	3618878.0	1135.5	36	749.82	47.2	1.17
SS_29	EU29 Solar Taurus 70-10302S	660652.9	3618863.8	1135.5	44	732.04	47.6	1.22
SS_30	EU30 Solar Taurus 70-9702S	660536.4	3618839.0	1135.4	44	714.26	20.7	1.83
SS_31	EU31 Solar Centaur 50-6200LS	660552.6	3618839.0	1135.4	44	709.26	31.5	1.22
SS_32B	EU32B Solar Centaur T-4000	660675.0	3618667.9	1134.8	32	709.26	31.7	1.22
SS_34	EU34 Furnace B	660517.9	3618769.3	1134.9	45	588.71	11.1	0.61
SS_36	EU36 Boiler 36	660523.0	3618721.0	1134.4	50	422.04	15.2	1.14
SS_37	EU37 Boiler 37	660523.0	3618701.0	1134.0	50	422.04	15.2	1.14
SS_AGI	AGI Flare - Steady State	659809.2	3621270.7	1139.7	210	1273.15	20.0	0.61
SSM_2	EU2 Amine Plant Flare - SSM - Annualized (TPY)	660639.7	3618589.7	1134.2	222	1273.15	20.0	3.23
SSM_4A	EU4 ESD (Plant) Flare - SSM - Annualized (TPY)	660762.0	3618416.8	1134.0	175	1273.15	20.0	15.15
SSM_AGI	AGI Flare - SSM - Annualized (TPY)	659809.2	3621270.7	1139.7	210	1273.15	20.0	3.54

Volume Sources							
ID	Description	X Coordinate m	Y Coordinate m	Elevation m	Release Height m	Init Lat Dim m	Init Vert Dim m
CT-1	North Cooling Tower	660599.0	3618724.7	1135.0	12.19	4.65	2.3
CT-2	South Cooling Tower	660599.0	3618709.7	1135.0	12.19	4.65	2.3

Table 2. Building heights and coordinates.

ID	X Coordinate	Y Coordinate	Elevation	Height
	m	m	m	ft
ENGBLG	660573.3	3618896.3	1135.5	30.5
WAREHOUS	660470.7	3618858.9	1135.4	14.0
COOPER	660627.3	3618676.6	1134.5	24.0
BLDG5	660520.6	3618896.3	1135.5	20.0
BOILER	660489.5	3618767.0	1134.8	30.0
EU29BLDG	660653.4	3618871.2	1135.5	15.0
COOLERW	660591.0	3618720.6	1134.6	13.0
KEKOK008	660591.0	3618729.0	1134.7	34.0
COOLERS	660591.0	3618705.0	1134.5	4.0
KEKOK00B	660603.0	3618705.0	1134.5	15.0
NEWBOILR	660510.7	3618690.0	1134.0	30.0
OFFICE_1	660409.2	3618875.3	1135.4	12.0
OFFICE_2	660426.0	3618885.1	1135.4	12.0
OFFICE_3	660427.4	3618848.0	1135.2	12.0
OFFICE_4	660413.6	3618834.5	1135.1	12.0
OFFICE_5	660423.0	3618823.8	1135.0	12.0
OFFICE_6	660426.2	3618804.4	1135.0	12.0
OFFICE_7	660415.6	3618773.8	1134.8	12.0
BLDG_1	660467.9	3618830.0	1135.1	20.0
BLDG_2	660566.2	3618766.7	1134.9	25.0
BLDG_3	660679.7	3618655.2	1134.8	12.0
BLDG_4	660682.3	3618737.5	1135.1	12.0

A building downwash analysis using the latest version of BPIP was conducted and incorporated into the modeling analysis to account for potential pollutant downwash due to the equipment structures and buildings.

The modeling submitted in this application includes both Steady State (SS) and Startup, Shutdown, Maintenance (SSM) emissions. Section 4.1.6 of the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines, Revised July 29, 2011 (Guidelines) states that "SSM annual emission rate for a pollutant (in tons/yr) may be converted to an annual average emission rate (in lb/hr or g/sec). The annual average SSM emission rate can be used to establish a significant impact area (SIA) for each averaging time period (3-hour, 8-hour, 24-hour, and annual)." Annual emission rates for SSM activities (ton/yr) were used to establish the significant impact area for the modeled pollutants and are shown in Table 3. For Cumulative Impacts Analysis (CIA) the highest effective hourly SSM emission rates were calculated and modeled for; NAAQS, NMAAQS, and increment consumption modeling. Effective emission rates were calculated based on the highest possible hourly SSM flow rates and the typical duration of flaring events from each flare. The calculated effective emission rates are shown in Table 4.

Table 3. Annualized Emission Rates for SSM activities.

Unit No.	Description	NOx	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	H_2S	Effective Diameter (m)
		ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	
SSM_2	EU2 Amine Plant Flare - SSM - Annualized (TPY)	0.88	4.77	45.59	-	-	-	0.48	3.2293
SSM_4A	EU4 ESD (Plant) Flare - SSM - Annualized (TPY)	4.33	23.57	18.91	-	-	-	0.20	15.1467
SSM_AGI	AGI Flare - SSM - Annualized (TPY)	0.71	44.39	4.13	-	-	-	0.043	3.5385

Table 4. Effective Emission Rates for SSM activities.

	Unit No.	Source ID	Hours	NOx	CO	SOx	H_2S	
				lb/hr	lb/hr	lb/hr	lb/hr	
Annual	2	SSM_2EA	2	1.2	6.7	645.9	7.0	lb/hr * 2 hours/day * 365 days/year / 8760 hours/year
	4A	SSM_4AEA	12	143.8	782.6	1074.2	11.6	lb/hr * 12 hours/day * 365 days/year / 8760 hours/year
	AGI Flare	SSM_AGEA	2	1.5	8.0	775.1	8.4	lb/hr * 2 hours/day * 365 days/year / 8760 hours/year
24 hr	2	SSM_2ED	2	1.2	6.7	645.9	7.0	lb/hr * 2 hours/24 hours
	4A	SSM_4AED	12	143.8	782.6	1074.2	11.6	lb/hr * 12 hours/24 hours
	AGI Flare	SSM_AGED	2	1.5	8.0	775.1	8.4	lb/hr * 2 hours/24 hours
3 hr	2	SSM_2E3	2			5167.5	56.0	lb/hr * 2/3 hours
	4A	SSM_4AE3	12			2148.4	23.3	lb/hr
	AGI Flare	SSM_AGE3	2			6201.0	67.2	lb/hr * 2/3 hours

The SIA and CIA model ready emission rates for both Steady State (SS) and Startup, Shutdown, Maintenance (SSM) emissions are shown in Table 5 and Table 6 respectively. The emission rates for SIA were used to assess the significance of a pollutant and establish a Radius of Influence (ROI). The CIA model ready emission rates were then used for the impacts assessment.

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Table 5. SIA model emission rate inputs for both Steady State and Startup, Shutdown, Maintenance (SSM) emission sources.

Point Sources		Emission Rate (lb/hr)						
		NOx	CO	SOx	TSP	PM10	PM25	H2S
SS_2	EU2 Amine Plant Flare	0.079	0.43	0.0083	-	-	-	-
SS_4A	EU4 ESD (Plant) Flare	0.21	1.2	0.023	-	-	-	-
SS_6	EU6 Clark TLA-6	39.3	19.8	0.010	0.86	0.86	0.86	-
SS_7	EU7 Clark TLA-6	39.3	19.8	0.010	0.86	0.86	0.86	-
SS_8	EU8 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-
SS_9	EU9 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-
SS_10	EU10 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-
SS_11	EU11 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-
SS_28	EU28 Solar T-60	3.5	3.5	0.91	1.3	1.3	1.3	-
SS_29	EU29 Solar Taurus 70-10302S	11.8	9.5	0.26	0.51	0.51	0.51	-
SS_30	EU30 Solar Taurus 70-9702S	11.3	9.0	0.25	0.49	0.49	0.49	-
SS_31	EU31 Solar Centaur 50-6200LS	26.0	5.0	0.13	0.24	0.24	0.24	-
SS_32B	EU32B Solar Centaur T-4000	23.7	4.4	0.12	0.24	0.24	0.24	-
SS_34	EU34 Furnace B	1.7	1.4	0.010	0.13	0.13	0.13	-
SS_36	EU36 Boiler 36	5.5	9.3	0.066	0.84	0.84	0.84	-
SS_37	EU37 Boiler 37	5.5	9.3	0.066	0.84	0.84	0.84	-
SS_AGI	AGI Flare - Steady State	0.079	0.43	0.0083	-	-	-	-
SSM_2	EU2 Amine Plant Flare - SSM - Annualized (TPY)	0.20	1.1	10.4	-	-	-	0.11
SSM_4A	EU4 ESD (Plant) Flare - SSM - Annualized (TPY)	0.99	5.4	4.3	-	-	-	0.045
SSM_AGI	AGI Flare - SSM - Annualized (TPY)	0.16	10.1	0.94	-	-	-	0.010
Volume Sources		**Emission Rate (lb/hr)**						
		NOx	**CO**	**SOx**	**TSP**	**PM10**	**PM25**	**H2S**
CT_1	North Cooling Tower	-	-	-	0.47	0.15	-	-
CT_2	South Cooling Tower	-	-	-	0.30	0.10	-	-
FUG	Fugitives	-	-	-	-	-	-	0.11

Table 6. CIA model emission rate inputs for both Steady State and Startup, Shutdown, Maintenance (SSM) emission sources.

Point Sources		Emission Rate (lb/hr)							Effective Diameter (m)
		NOx	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	H_2S	
SS_2	EU2 Amine Plant Flare	0.079	0.43	0.0083	-	-	-	-	-
SS_4A	EU4 ESD (Plant) Flare	0.21	1.2	0.023	-	-	-	-	-
SS_6	EU6 Clark TLA-6	39.3	19.8	0.010	0.86	0.86	0.86	-	-
SS_7	EU7 Clark TLA-6	39.3	19.8	0.010	0.86	0.86	0.86	-	-
SS_8	EU8 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-	-
SS_9	EU9 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-	-
SS_10	EU10 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-	-
SS_11	EU11 Clark HBA-6	47.5	23.5	0.0070	0.57	0.57	0.57	-	-
SS_28	EU28 Solar T-60	3.5	3.5	0.915	1.3	1.3	1.3	-	-
SS_29	EU29 Solar Taurus 70-10302S	11.8	9.5	0.264	0.51	0.51	0.51	-	-
SS_30	EU30 Solar Taurus 70-9702S	11.3	9.0	0.251	0.49	0.49	0.49	-	-
SS_31	EU31 Solar Centaur 50-6200LS	26.0	5.0	0.125	0.24	0.24	0.24	-	-
SS_32B	EU32B Solar Centaur T-4000	23.7	4.4	0.123	0.24	0.24	0.24	-	-
SS_34	EU34 Furnace B	1.7	1.4	0.010	0.13	0.13	0.13	-	-
SS_36	EU36 Boiler 36	5.5	9.3	0.066	0.84	0.84	0.84	-	-
SS_37	EU37 Boiler 37	5.5	9.3	0.066	0.84	0.84	0.84	-	-
SS_AGI	AGI Flare - Steady State	0.079	0.43	0.0083	-	-	-	-	-
SSM_2EA	EU2 Amine Plant Flare - SSM - Effective Annual (lb/hr)	1.2	6.7	645.9	-	-	-	7.0	3.2
SSM_4AEA	EU4 ESD (Plant) Flare - SSM - Effective Annual (lb/hr)	143.8	782.6	1074.2	-	-	-	11.6	15.1
SSM_AGEA	AGI Flare - SSM - Effective Annual (lb/hr)	1.5	8.0	775.1	-	-	-	8.4	3.5
SSM_2ED	EU2 Amine Plant Flare - SSM - Effective 24 hr (lb/hr)	1.2	6.7	645.9	-	-	-	7.0	3.2
SSM_4AED	EU4 ESD (Plant) Flare - SSM - Effective 24 hr (lb/hr)	143.8	782.6	1074.2	-	-	-	11.6	15.1
SSM_AGED	AGI Flare - SSM - Effective 24 hr (lb/hr)	1.5	8.0	775.1	-	-	-	8.4	3.5
SSM_2E3	EU2 Amine Plant Flare - SSM - Effective 3 hr (lb/hr)	-	-	5167.5	-	-	-	56.0	3.2
SSM_4AE3	EU4 ESD (Plant) Flare - SSM - Effective 3 hr (lb/hr)	-	-	2148.4	-	-	-	23.3	15.1
SSM_AGE3	AGI Flare - SSM - Effective 3 hr (lb/hr)	-	-	6201.0	-	-	-	67.2	3.5
Volume Sources		**Emission Rate (lb/hr)**							**Effective Diameter (m)**
		NOx	**CO**	**SOx**	**TSP**	**PM10**	**PM25**	**H2S**	
CT_1	North Cooling Tower	-	-	-	0.47	0.15	-	-	-
CT_2	South Cooling Tower	-	-	-	0.30	0.10	-	-	-
FUG	Fugitives				-	-	-	0.11	-

Significant Impact Analysis

To ensure the maximum impacts are modeled all SSM emission sources and applicable SS sources will be modeled concurrently. However, there are two operational scenarios under which the Linam Ranch facility may operate. Condition A201.A of NSR Permit 0039-M6-R1 states that "The Permittee shall operate under either Scenario A or B during any monthly rolling 12-month period.

Scenario A: This is the primary operating scenario. The permittee shall only operate one (1) of Units 8, 9, 10 or 11 (Clark HBA-6 RICE) while simultaneously operating all other equipment at maximum capacity without limits on the hours of operation.

Scenario B: This is the alternative operating scenario. The Permittee shall only operate two of the four of

Units 8, 9, 10, or 11 (Clark HBA-6 RICE) when one of Units 6 or 7 is inoperable (Clark TLA-6 RICE) when the facility is in operation. The Permittee shall not operate under Scenario B for greater than 3400 hours per any monthly rolling 12-month period."

Various source groups were used to account for all possible operating scenarios based on these permit conditions for steady-state and SSM operation. These source groups are shown in Table 7 and Table 8. The scenario with the highest impacts was used in the Cumulative Impact Analysis (CIA). The nomenclature used to describe the source groups is as follows:

SS_ - Steady State

SA# - Scenario A, where # represents the perturbation 1,2,3,4, based on the usage of unit 8,9,10 or 11.

SB# - Scenario B, where # represents the perturbation 1 – 12, based on the usage of units 8,9,10, 11 when either unit 6 or 7 is operational.

SSM_ - Startup, Shutdown, Maintenance

SA# - Scenario A, where # represents the perturbation 1,2,3,4, based on the usage of unit 8,9,10 or 11.

SB# - Scenario B, where # represents the perturbation 1 – 12, based on the usage of units 8,9,10, 11 when either unit 6 or 7 is operational.

All source groups were modeled as part of the SIA and the source group with the maximum impact for each pollutant and interval was carried forward and used in the CIA run. The results for each source group for all pollutants is shown in Appendix A. A summary of the maximum impacts, corresponding source groups and ROI results are shown in Table 9.

Table 7. Steady State Source Groups.

	Steady State Source Groups															
	SS_SA1	**SS_SA2**	**SS_SA3**	**SS_SA4**	**SS_SB1**	**SS_SB2**	**SS_SB3**	**SS_SB4**	**SS_SB5**	**SS_SB6**	**SS_SB7**	**SS_SB8**	**SS_SB9**	**SS_SB10**	**SS_SB11**	**SS_SB12**
Emission Sources	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2	SS_2
	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A	SS_4A
	SS_6	SS_6	SS_6	SS_6							SS_6	SS_6	SS_6	SS_6	SS_6	SS_6
	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7						
	SS_8				SS_8			SS_8	SS_8		SS_8			SS_8	SS_8	
		SS_9			SS_9	SS_9				SS_9	SS_9	SS_9				SS_9
			SS_10			SS_10	SS_10		SS_10			SS_10	SS_10		SS_10	
				SS_11			SS_11	SS_11		SS_11			SS_11	SS_11		SS_11
	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28
	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29
	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30
	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31
	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B
	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34
	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36
	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37
	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF	SS_AGIF
	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1
	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2

Table 8. SSM State Source Groups.

	SSM Source Groups															
	SSM_SA1	**SSM_SA2**	**SSM_SA3**	**SSM_SA4**	**SSM_SB1**	**SSM_SB2**	**SSM_SB3**	**SSM_SB4**	**SSM_SB5**	**SSM_SB6**	**SSM_SB7**	**SSM_SB8**	**SSM_SB9**	**SSM_SB10**	**SSM_SB11**	**SSM_SB12**
Emission Sources	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2	SSM_2
	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A	SSM_4A
	SS_6	SS_6	SS_6	SS_6							SS_6	SS_6	SS_6	SS_6	SS_6	SS_6
	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7	SS_7						
	SS_8				SS_8			SS_8	SS_8		SS_8			SS_8	SS_8	
		SS_9			SS_9	SS_9				SS_9	SS_9	SS_9				SS_9
			SS_10			SS_10	SS_10		SS_10			SS_10	SS_10		SS_10	
				SS_11			SS_11	SS_11		SS_11			SS_11	SS_11		SS_11
	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28	SS_28
	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29	SS_29
	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30	SS_30
	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31	SS_31
	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B	SS_32B
	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34	SS_34
	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36	SS_36
	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37	SS_37
	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF	SSM_AGIF
	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1	CT-1
	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2	CT-2

Table 9. Results summary for SIA modeling.

	CO		**NO_2**		**SO_2**			**TSP**		**$PM_{2.5}$**		**PM_{10}**		**H_2S**
	Modeled Impacts µg/m3		**Calculated Impacts µg/m^3**		**Modeled Impacts µg/m3**			**Modeled Impacts µg/m3**		**Modeled Impacts µg/m3**		**Modeled Impacts µg/m3**		**Modeled Impacts µg/m3**
	1-hr	**8-hr**	**Annual**	**24-hr**	**Annual**	**24-hr**	**3-hr**	**Annual**	**24-hr**	**Annual**	**24-hr**	**Annual**	**24-hr**	**1-hr**
Max	380.83	246.53	53.08	125.84	0.18	0.79	1.58	2.06	7.92	1.28	6.70	1.48	7.09	47.41
Group	SSM_SB9	SSM_SB9	SS_SB9	SS_SB9	SSM_SB9	SSM_SA4	SS_SA4	SSM_SB8	SSM_SB9	SSM_SB9	SSM_SB9	SSM_SB9	SSM_SB9	N/A
ROI	N/A	N/A	5700.9	3911.50	N/A	N/A	N/A	651.90	538.50	1118.00	1264.90	585.20	412.30	5000.0

Radius of Impact (ROI) Analysis and Cumulative Impact Analysis (CIA)

Impacts of NO_x, TSP, PM_{10}, $PM_{2.5}$ and H_2S were greater than the significance levels shown in the Guidelines. The maximum extent of the significant impact area was determined as measured from the center of the main facility to the furthest extent of the significant impact. The maximum extent became a Radius of Impact (ROI). A separate ROI was determined for each pollutant. The ROI for NO_2 was determined by application of the Ambient Ratio Method. The area within the ROI then became the modeling domain for the CIA for NO_2. CO and SO_2 were either insignificant during the SIA and therefore had no ROI or had a ROI less than 1,500 m, therefore the CIA modeling for these pollutants used an assumed ROI of 5 km as directed in Section 4.1.6 of the Guidelines.

The CIA was analyzed including impacts from the facility sources and, when background concentrations are not added, any surrounding sources within 30 km of the facility. Section 4.8.1 of the Guidelines states that surrounding sources within 25 km of the facility should be added when background concentrations are not added. Because there are two nearby facility center points, surrounding sources will be added out to an additional 5 km to ensure all nearby sources will be accounted for. For particulates, the CIA was analyzed including impacts from the facility

sources, any surrounding sources out to 15 km, and background concentrations where applicable. The inclusion of surrounding sources and/or background concentrations will follow the guidance shown in Table 6C: "Modeling the Design Value Summary (Default Modeling)" from the modeling Guidelines. The monitored background concentrations used in the CIA analysis will be based on the data found in Section 4.4 of the Guidelines for the Hobbs, NM (ID 5ZS) monitor.

An inventory of surrounding sources was obtained from Eric Peters, Air Dispersion Modeler at the NMED, on November 18, 2013. Adjustments to surrounding source parameters were made per the guidance in Section 4.8.1 of the Modeling Guidelines. Surrounding source elevations were preserved as provided. Table 10 lists the changes made to the surrounding source data.

Table 10. Changes to Surrounding Source Data

Source ID	Master AI Name	UTM E (m)	UTM N (m)	Changes Made to Surrounding Source Data
2415R3	North Hobbs Reinjection Compression and Injection Tank Battery	668608	3621588	This unit is listed as malfunction emissions. Source ID 2415R4 is the SSM emissions. Because malfunction and SSM will not occur simultaneously, the malfunction unit was removed.
2415R4	North Hobbs Reinjection Compression and Injection Tank Battery	668608	3621588	The surrounding source data was replaced with data from the modeling files submitted with the 2012 application for NSR Permit 2656-M5. These modeling files were received from Eric Peters at the NMED on December 6th and 9th, 2013. We feel this data provides a better representation of emissions from the process flare at the North Hobbs facility. The North Hobbs modeling was performed with the assumption that the flare will not operate more than 1 hour in any given 3 hour time period. This unit was incorporated into our surrounding source data, preserving the previously submitted modeling methodology.
25726E10	Hobbs Generating Station	658424	3622223	The surrounding source data had a stack velocity of -9999 m/s. Per guidance from Eric Peters at the NMED (email correspondence on November 26, 2013), this value was replaced with 18.1 m/s per section 4.8.1.3 of the Guidelines as this unit is a diesel fire pump.
28233E6	Chevron - Berry 1-1	667316	3636848	The surrounding source data had a stack velocity of 246.2 m/s. This unit is a 46 hp RICE. This value was replaced with 32.6 m/s per Section 4.8.1.3 of the Guidelines.
819E4	Outland State Unit No3	647071	3595396	The surrounding source data had a stack velocity of -9999 m/s. This unit is a heater stak pak. This value was replaced with 18.1 m/s per Section 4.8.1.3 of the Guidelines.
1682E1	Lipham Construction - Mri 400TPH Crusher No0427	656000	3619996	This unit is listed as a portable source on EnviroFacts. Based on Google Earth images of the site location, the unit no longer appears to be operating at the facility location provided in the surrounding source data. As a conservative measure, we have retained this source in the surrounding source data. Per Section 4.8.1.2 of the Guidelines, because this unit is a crusher we are representing this unit as a GCP-2 source. The surrounding source data listed hours of operation for this unit as 480 per year, however we are representing hours of operation as 4,380 hours per year. According to Section III.A.7 of the GCP-2 Permit, "The facility shall operate during daylight hours only. Daylight hours are defined as those hours between astronomical sunrise and sunset. No facility shall operate for more than 4,380 hours per year." Per Section 4.8.1.3 of the Guidelines, the particulate emission rates were replaced with 95 tpy TSP, 71.25 tpy PM_{10}, and 17.875 tpy $PM_{2.5}$.
610R3	Monument Gas Plant	658384	3609163	The surrounding source data for the AGI SSM to Acid Gas Flare was updated with the modeling inputs used in the submittal for revision of NSR Permit 0110-M5 for Monument Gas Plant.
N/A	Monument Gas Plant	658384	3609163	The surrounding source data for the F01Inc was added to the modeling inputs to account for an increment expander discussed in the revision of NSR Permit 0110-M5 for Monument Gas Plant.
595R2	DCP Midstream - Eunice Gas Plant	661000	3598495	The surrounding source data listed as the SSM activities for this facility are shown as one souce with emissions of 10,000 lb/hr. This source was replaced with the modeled SO_2 emission rates for SSM activities at this site found in the revision of NSR Permit 0044-M9 for Eunice Gas Plant.

PSD Class II Increment Analysis

Because further modeling was required for NO_2, SO_2 and PM_{10}, PSD Class II increment analysis was conducted for the appropriate averaging periods. The major source baseline dates as shown in Table 8 of the Guidelines were used. PSD increment analysis was conducted including all PSD increment consuming and expanding sources within 30 km of the facility per Table 6C of the Modeling Guidelines. The predicted maximum concentrations were compared with the appropriate Class II PSD standard.

Table 11 shows the analysis of increment expanders and consumers at Linam Ranch Gas Plant. Table 12 lists the modeling inputs for the facility increment expander units. Surrounding source data obtained from Eric Peters at the NMED were used for the coordinates and elevation of the expanders. The emission rates and stack heights, velocities, and diameters were taken from source data provided by David Heath at the NMED. Per Section K of the 2006 application for significant revision to NSR Permit 0039-M3, the actual SO_2 emissions at the major source baseline date for the sulfur recovery unit (unit EU-5) are 296.9 lb/hr. This unit was removed from the facility and was not included in the November 2011 NSR Permit 0039-M6.

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Table 11. PSD Increment Analysis.

Expander Emission Rates (Source: NSR Permit Application 039-M3)			Major Source Baseline (NMAQB Air Dispersion Modeling Guidelines - July 2011)			
ID	Description	Date of Construction	NO_2 2/8/1988	SO_2 1/6/1975	PM_{10} 1/6/1975	$PM_{2.5}$ 10/20/2010
SS_2	EU2 Amine Plant Flare	2005	Consume	Consume	Consume	Baseline
SS_4A	EU4 ESD (Plant) Flare	2008	Consume	Consume	Consume	Baseline
EX-5	SRU Unit **	Removed	Expander	Expander	Expander	Expander
SS_6	EU6 Clark TLA-6	1974	Baseline	Baseline	Baseline	Baseline
SS_7	EU7 Clark TLA-6	1974	Baseline	Baseline	Baseline	Baseline
SS_8	EU8 Clark HBA-6	1954	Baseline	Baseline	Baseline	Baseline
SS_9	EU9 Clark HBA-6	1954	Baseline	Baseline	Baseline	Baseline
SS_10	EU10 Clark HBA-6	1954	Baseline	Baseline	Baseline	Baseline
SS_11	EU11 Clark HBA-6	1954	Baseline	Baseline	Baseline	Baseline
EX-12	EU12 Ingersol PSVG Engine **	Removed	Expander	Expander	Expander	Expander
EX-13	EU13 Ingersol PSVG Engine **	Removed	Expander	Expander	Expander	Expander
EX-14	EU14 Ingersol PSVG Engine **	Removed	Expander	Expander	Expander	Expander
EX-15	EU15 Cooper GM V8 Engine **	Removed	Expander	Expander	Expander	Expander
EX-16	EU16 Cooper GM V8 Engine **	Removed	Expander	Expander	Expander	Expander
EX-17	EU17 Cooper GM V8 Engine **	Removed	Expander	Expander	Expander	Expander
EX-18	EU18 20 MMBtu Boiler **	Removed	Expander	Expander	Expander	Expander
EX-19	EU19 20 MMBtu Boiler **	Removed	Expander	Expander	Expander	Expander
EX-20	EU20 36 MMBtu Boiler **	Removed	Expander	Expander	Expander	Expander
EX-21	EU21 36 MMBtu Boiler **	Removed	Expander	Expander	Expander	Expander
EX-22	EU22 36 MMBtu Boiler **	Removed	Expander	Expander	Expander	Expander
EX-26	EU26 Alcorn Furnace **	Removed	Expander	Expander	Expander	Expander
EX-27A	EU27 Alcorn Furnace **	Removed	Expander	Expander	Expander	Expander
EX-27B	EU28 Alcorn Furnace **	Removed	Expander	Expander	Expander	Expander
SS_28	EU28 Solar T-60	2012	Consume	Consume	Consume	Consume
SS_29	EU29 Solar Taurus 70-10302S	1995	Consume	Consume	Consume	Baseline
SS_30	EU30 Solar Taurus 70-9702S	1995	Consume	Consume	Consume	Baseline
SS_31	EU31 Solar Centaur 50-6200LS	1995	Consume	Consume	Consume	Baseline
SS_32B	EU32B Solar Centaur T-4000	1995	Consume	Consume	Consume	Baseline
EX-33	Stabilizer **	Removed	Expander	Expander	Expander	Expander
SS_34	EU34 Furnace B	1995	Consume	Consume	Consume	Baseline
SS_36	EU36 Boiler 36	2006	Consume	Consume	Consume	Baseline
SS_37	EU37 Boiler 37	2010	Consume	Consume	Consume	Baseline
SS_AGI	AGI Flare - Steady State	2009	Consume	Consume	Consume	Baseline
SSM_2	EU2 Amine Plant Flare - SSM	2005	Consume	Consume	Consume	Baseline
SSM_4A	EU4 ESD (Plant) Flare - SSM	2008	Consume	Consume	Consume	Baseline
SSM_AGI	AGI Flare - SSM	2009	Consume	Consume	Consume	Baseline

SS Steady State Consumer
SSM SSM Consumer
EX Expander
** Previously Removed or never installed (Source: NSR Permit Application 039-M3)

Table 12. Expander model inputs.

ID	Description	X Coordinate [A]	Y Coordinate [A]	Elevation [A]	NO_x [B]	SO_2 [B]	Stack Height [B]	Stack Temp [B]	Stack Velocity [B]	Stack Diameter [B]
		m	m	m	g/s	g/s	m	K	m/s	m
EX5	SRU Unit **	660742	3618892	1133.9	-0.173	-37.397	63.09	922.00	10.67	1.12
EX12	EU12 Ingersol PSVG Engine **	660742	3618892	1133.9	-0.581	0.0	4.88	588.70	31.97	0.20
EX13	EU13 Ingersol PSVG Engine **	660742	3618892	1133.9	-0.386	0.0	4.88	588.70	31.97	0.20
EX14	EU14 Ingersol PSVG Engine **	660742	3618892	1133.9	-0.191	0.0	4.88	588.70	31.97	0.20
EX15	EU15 Cooper GM V8 Engine **	660742	3618892	1133.9	-7.106	0.0	9.14	655.30	20.33	0.41
EX16	EU16 Cooper GM V8 Engine **	660742	3618892	1133.9	-6.933	0.0	9.14	655.30	20.33	0.41
EX17	EU17 Cooper GM V8 Engine **	660742	3618892	1133.9	-6.645	0.0	9.14	655.30	20.33	0.41
EX18	EU18 20 MMBtu Boiler **	660742	3618892	1133.9	-0.472	0.0	11.58	588.70	7.80	0.84
EX19	EU19 20 MMBtu Boiler **	660742	3618892	1133.9	-0.472	0.0	13.11	588.70	7.80	0.84
EX20	EU20 36 MMBtu Boiler **	660742	3618892	1133.9	-0.846	0.0	13.41	588.70	14.05	0.84
EX21	EU21 36 MMBtu Boiler **	660742	3618892	1133.9	-0.846	0.0	13.41	588.70	14.05	0.84
EX22	EU22 36 MMBtu Boiler [C]	660742	3618892	1133.9	0.000	0.0	13.41	588.70	14.05	0.84
EX26	EU26 Alcorn Furnace **	660742	3618892	1133.9	-0.659	0.0	13.26	727.50	3.53	1.83
EX27A	EU27 Alcorn Furnace **	660742	3618892	1133.9	-0.144	0.0	13.26	727.50	3.53	1.83
EX27B	EU28 Alcorn Furnace **	660742	3618892	1133.9	-0.636	0.0	13.26	727.50	3.53	1.83
EX33	Stabilizer **	660742	3618892	1133.9	-0.084	0.0	10.97	588.70	9.45	0.38

[A] Increment source locations were taken from Surrounding Source date provided by the NMED (Email Eric Peters dated 11/18/2013. Data location "P:\1. CLIENTS\DCP Midstream\Linam Ranch\Projects\133201.0163 Linam Ranch NSR Sig Rev SSM\07 MODELING\Supporting Information\Surrounding Sources"

[B] Source Data provided by Dave Heath (NMED) on 12/4/2013. Source file is located at "P:\1. CLIENTS\DCP Midstream\Linam Ranch\Projects\133201.0163 Linam Ranch NSR Sig Rev SSM\07 MODELING\Supporting Information\PSD Increment Expanders\"

[C] Only one unit (21 or 22) can be operational at one time so only one unit included in the expander

Class I Areas Analysis

The nearest Class I area is Carlsbad Caverns National Park at 117 km from the facility. Class I area analysis is not applicable as the national park is not within the 100 km inclusion zone.

Results

The results of the modeling analysis are shown in Tables 13, 14, and 15. The cumulative impact analyses for CO, NO_2, H_2S, and SO_2 and the PSD Class II increment analyses for NO_2 and SO_2 indicate that emissions of these pollutants are below the applicable standards.

A culpability analysis was performed for 24-hour and annual $PM_{2.5}$ NAAQS, 24-hr and annual PM_{10} Class II increment, and 24-hour TSP NMAAQS. The culpability analyses determined that Linam Ranch Gas Plant is not significant where the facility plus surrounding sources and background impact is in excess of the standard. The values in Tables 14 and 15 below for the aforementioned pollutants are the facility plus the surrounding sources impact at the first receptor that is significant for the facility only. Linam Ranch Gas Plant does not contribute to any exceedances of the standards.

Table 13. Results of Significance Analysis

Significance		Significance, µg/m3	Modeled, µg/m3	Calculated[2] µg/m3	% Significance	Radius of Impact[1] (m)	Source Group
Pollutant	Period			Max Impact			
CO	8-hr	500	246.53	246.53	49.3%	N/A	SSM_SB9
CO	1-hr	2000	380.83	380.83	19.0%	N/A	SSM_SB9
NO_2	Annual	1.0	53.08	39.81	Significant	5700.9	SS_SB9
NO_2	24-hr	5.0	125.84	50.34	Significant	3911.5	SS_SB9
SO_2	Annual	1.0	0.18	0.18	17.6%	N/A	SSM_SB9
SO_2	24-hr	5.0	0.79	0.79	15.7%	N/A	SSM_SA4
SO_2	3-hr	25.0	1.58	1.58	6.3%	N/A	SS_SA4
H_2S	1-hr	1.0	47.41	47.41	Significant	5000.0	N/A
$PM_{2.5}$	Annual	0.3	1.28	1.28	Significant	1118.0	SSM_SB9
$PM_{2.5}$	24-hr	1.2	6.70	6.70	Significant	1264.9	SSM_SB9
PM_{10}	Annual	1.0	1.48	1.48	Significant	585.2	SSM_SB9
PM_{10}	24-hr	5.0	7.09	7.09	Significant	412.3	SSM_SB9
TSP	Annual	1.0	2.06	2.06	Significant	651.9	SSM_SB8
TSP	24-hr	5.0	7.92	7.92	Significant	538.5	SSM_SB9

Notes

[1] Radius of impact is defined as the greatest distance from the center of the facility to the most distant receptor where concentrations are greater than the significance levels. The facility center is located at 660,620 UTME, 3,618,635 UTMN.

[2] 75% and 40% ARM factor applied to modeled annual and 24-hr NOx, respectively.
SIA model output was analyzed in accordance with NMAQB Air Dispersion Modeling Guidelines 4.1.6 Startup,

[3] Shutdown, Maintenance (SSM), and Other Short-term Emissions

Table 14. Results of NAAQS and NMAAQS Analysis

Standards		Significance, µg/m3	Standard, µg/m^3		Standard, ppm		Modeled, µg/m^3	Background[2,3], µg/m^3	Calculated[1] µg/m^3	Calculated ppm	Calculated as a % of Standard	
Pollutant	Period		NAAQS	NMAAQS	NAAQS	NMAAQS			Max Impact		NAAQS	NMAAQS
CO	8-hour	500.0	9,107.0	8,803.5	9.0	8.7	468.3		468.3	0.463	5.1%	5.3%
CO	1-hour	2000.0	35,416.2	13,255.8	35.0	13.1	2331.7		2331.7	2.304	6.6%	17.6%
NO_2	Annual	1.0	99.67	83.1	0.053	0.050	74.8	-	56.1	0.034	56.3%	67.5%
NO_2	24-hr	5.0	-	166.2	-	0.100	316.0	-	126.4	0.076	-	76.1%
SO_2	Annual	1.0	-	46.3	-	0.020	10.5	-	10.5	0.005	-	22.7%
SO_2	24-hr	5.0	-	231.4	-	0.100	51.3	-	51.3	0.022	-	22.2%
SO_2	3-hr	25.0	1309	-	-	-	493.3	-	493.3	0.213	37.7%	-
H_2S	1-hr	1.0	-	123.1	-	0.100	47.4	-	47.4	0.039	-	38.5%
$PM_{2.5}$	Annual	0.3	12.0	-	-	-	0.6	6.2	6.80		56.7%	-
$PM_{2.5}$	24-hr	1.2	35.0	-	-	-	2.4	12.4	14.80		42.3%	-
PM_{10}	24-hr	5.0	150.0				73.0	51.9	124.91		83.3%	
TSP	Annual	1.0	-	60.0	-	-	9.2	28.1	37.31		-	62.2%
TSP	24-hr	5.0	-	150.0	-	-	5.6	69.0	74.60		-	49.7%

Notes

1 75% and 40% ARM factor applied to modeled annual and 24-hr NOx, respectively.

2 Background and/or surrounding sources added as applicable. Background monitor is Hobbs Station 5ZS for use with NMED Air Dispersion modeling Guidelines - Table 6C, 19A, 20A

3 TSP Annual background is 1.33 x Annual PM10 Average.
TSP 24hr background is 1.33 x 24hr PM10 Average.

Table 15. Results of PSD Class II Increment Analysis

Increment		PSD Standard, µg/m^3		Modeled, µg/m^3	Calculated[1] µg/m^3	Calculated as a % of Standard	
Pollutant	**Period**	**Class I**	**Class II**		**Max Impact**	**Class I**	**Class II**
NO_2	Annual	2.5	25.0	**13.1**	9.8	n/a	39.3%
PM_{10}	Annual	4.0	17.0	**1.7**	1.7	n/a	9.8%
PM_{10}	24-hr	8.0	30.0	**8.4**	8.4	n/a	28.0%
SO_2	Annual	2.0	20.0	**7.0**	7.0	n/a	34.9%
SO_2	24-hr	5.0	91.0	**40.9**	40.9	n/a	45.0%
SO_2	3-hr	25.0	512.0	**489.8**	489.8	n/a	95.7%

Notes

1 75% ARM factor applied to modeled annual NOx.

Conclusion

DCP has demonstrated compliance with the New Mexico Ambient Air Quality Standards (NMAAQS) and National Ambient Air Quality Standards (NAAQS) for CO, NO_2, SO_2, TSP, PM_{10}, $PM_{2.5}$, and H_2S as well as the PSD Increment Standards for NO_2, SO_2, PM_{10} and $PM_{2.5}$.

Appendix A

Appendix A shows the results for all source groups shown in Table 7 and Table 8 for all pollutants. The impacts highlighted in yellow are the maximum impacts for each time interval.

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Table A1 – CO Source Group Results

		CO					
	Group	Modeled Impacts µg/m^3		NMAAQS µg/m^3		Pass /Fail	Pass/Fail
		1-hr	8-hr	1-hr	8-hr	1-hr	8-hr
SSM	SSM_SA1	168.06	116.84	13255.8	8803.5	1%	1%
	SSM_SA2	168.06	130.99	13255.8	8803.5	1%	1%
	SSM_SA3	234.94	148.43	13255.8	8803.5	2%	2%
	SSM_SA4	245.70	165.72	13255.8	8803.5	2%	2%
	SSM_SB1	216.45	141.62	13255.8	8803.5	2%	2%
	SSM_SB2	326.13	218.05	13255.8	8803.5	2%	2%
	SSM_SB3	380.31	245.59	13255.8	8803.5	3%	3%
	SSM_SB4	230.97	169.15	13255.8	8803.5	2%	2%
	SSM_SB5	287.46	193.94	13255.8	8803.5	2%	2%
	SSM_SB6	265.76	193.26	13255.8	8803.5	2%	2%
	SSM_SB7	217.43	142.56	13255.8	8803.5	2%	2%
	SSM_SB8	326.73	218.99	13255.8	8803.5	2%	2%
	SSM_SB9	380.83	246.53	13255.8	8803.5	3%	3%
	SSM_SB10	248.59	170.09	13255.8	8803.5	2%	2%
	SSM_SB11	288.21	194.88	13255.8	8803.5	2%	2%
	SSM_SB12	267.06	194.20	13255.8	8803.5	2%	2%
Steady State	SS_SA1	168.06	116.91	13255.8	8803.5	1%	1%
	SS_SA2	168.06	131.05	13255.8	8803.5	1%	1%
	SS_SA3	234.94	148.49	13255.8	8803.5	2%	2%
	SS_SA4	245.70	165.75	13255.8	8803.5	2%	2%
	SS_SB1	216.45	141.62	13255.8	8803.5	2%	2%
	SS_SB2	326.13	218.05	13255.8	8803.5	2%	2%
	SS_SB3	380.31	245.59	13255.8	8803.5	3%	3%
	SS_SB4	230.98	169.15	13255.8	8803.5	2%	2%
	SS_SB5	287.46	193.94	13255.8	8803.5	2%	2%
	SS_SB6	265.76	193.26	13255.8	8803.5	2%	2%
	SS_SB7	217.43	142.56	13255.8	8803.5	2%	2%
	SS_SB8	326.73	218.99	13255.8	8803.5	2%	2%
	SS_SB9	380.83	246.53	13255.8	8803.5	3%	3%
	SS_SB10	248.59	170.09	13255.8	8803.5	2%	2%
	SS_SB11	288.21	194.88	13255.8	8803.5	2%	2%
	SS_SB12	267.06	194.20	13255.8	8803.5	2%	2%

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Table A2 – NO_x Source Group Results

		NOx							
	Group	Modeled Impacts µg/m^3		Impacts With Ambient Ratio Method µg/m^3		NMAAQS µg/m^3		Pass /Fail	Pass/Fail
		Annual	24-hr	Annual	24-hr	Annual	24-hr	Annual	24-hr
SSM	SSM_SA1	40.88	177.39	30.66	70.96	83.08	166.16	37%	43%
	SSM_SA2	43.93	191.26	32.95	76.50	83.08	166.16	40%	46%
	SSM_SA3	49.29	207.92	36.97	83.17	83.08	166.16	44%	50%
	SSM_SA4	51.77	221.50	38.83	88.60	83.08	166.16	47%	53%
	SSM_SB1	48.25	200.16	36.19	80.06	83.08	166.16	44%	48%
	SSM_SB2	59.91	246.51	44.93	98.61	83.08	166.16	54%	59%
	SSM_SB3	68.81	313.71	51.61	125.49	83.08	166.16	62%	76%
	SSM_SB4	56.84	230.31	42.63	92.12	83.08	166.16	51%	55%
	SSM_SB5	54.36	210.36	40.77	84.15	83.08	166.16	49%	51%
	SSM_SB6	62.39	266.46	46.79	106.58	83.08	166.16	56%	64%
	SSM_SB7	49.90	207.24	37.43	82.89	83.08	166.16	45%	50%
	SSM_SB8	61.87	257.96	46.40	103.18	83.08	166.16	56%	62%
	SSM_SB9	70.77	314.60	53.08	125.84	83.08	166.16	64%	76%
	SSM_SB10	58.80	241.76	44.10	96.70	83.08	166.16	53%	58%
	SSM_SB11	56.32	221.81	42.24	88.72	83.08	166.16	51%	53%
	SSM_SB12	64.35	277.90	48.27	111.16	83.08	166.16	58%	67%
Steady State	SS_SA1	40.89	177.42	30.66	70.97	83.08	166.16	37%	43%
	SS_SA2	43.94	191.29	32.95	76.51	83.08	166.16	40%	46%
	SS_SA3	49.30	207.94	36.97	83.18	83.08	166.16	45%	50%
	SS_SA4	51.78	221.52	38.84	88.61	83.08	166.16	47%	53%
	SS_SB1	48.26	200.19	36.20	80.07	83.08	166.16	44%	48%
	SS_SB2	59.92	246.53	44.94	98.61	83.08	166.16	54%	59%
	SS_SB3	68.82	313.71	51.61	125.49	83.08	166.16	62%	76%
	SS_SB4	56.85	230.32	42.63	92.13	83.08	166.16	51%	55%
	SS_SB5	54.37	210.38	40.77	84.15	83.08	166.16	49%	51%
	SS_SB6	62.40	266.47	46.80	106.59	83.08	166.16	56%	64%
	SS_SB7	49.91	207.26	37.43	82.91	83.08	166.16	45%	50%
	SS_SB8	61.88	257.98	46.41	103.19	83.08	166.16	56%	62%
	SS_SB9	70.78	314.60	53.08	125.84	83.08	166.16	64%	76%
	SS_SB10	58.81	241.77	44.11	96.71	83.08	166.16	53%	58%
	SS_SB11	56.33	221.83	42.25	88.73	83.08	166.16	51%	53%
	SS_SB12	64.36	277.92	48.27	111.17	83.08	166.16	58%	67%

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Table A3 – SO_2 Source Group Results

		SO_2								
	Group	Modeled Impacts µg/m3			NMAAQS µg/m3		NAAQS µg/m^3	Pass /Fail	Pass /Fail	Pass /Fail
		Annual	24-hr	3-hr	Annual	24-hr	3-hr	Annual	24-hr	3-hr
SSM	SSM_SA1	0.1749	0.7843	1.5702	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SA2	0.1752	0.7849	1.5725	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SA3	0.1755	0.7858	1.5752	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SA4	0.1757	0.7864	1.5774	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB1	0.1750	0.7816	1.5584	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB2	0.1757	0.7830	1.5634	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB3	0.1761	0.7845	1.5683	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB4	0.1754	0.7830	1.5633	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB5	0.1753	0.7824	1.5610	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB6	0.1757	0.7837	1.5656	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB7	0.1752	0.7817	1.5585	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB8	0.1759	0.7832	1.5635	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB9	0.1763	0.7847	1.5684	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB10	0.1756	0.7832	1.5634	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB11	0.1756	0.7826	1.5612	46.28	231.38	1309.00	0.38%	0.34%	0.12%
	SSM_SB12	0.1760	0.7838	1.5658	46.28	231.38	1309.00	0.38%	0.34%	0.12%
Steady State	SS_SA1	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SA2	0.11	0.69	1.5749	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SA3	0.11	0.69	1.5776	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SA4	0.11	0.69	1.5798	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB1	0.11	0.69	1.56	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB2	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB3	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB4	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB5	0.11	0.69	1.56	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB6	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB7	0.11	0.69	1.56	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB8	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB9	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB10	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB11	0.11	0.69	1.56	46.28	231.38	1309.00	0.25%	0.30%	0.12%
	SS_SB12	0.11	0.69	1.57	46.28	231.38	1309.00	0.25%	0.30%	0.12%

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Table A4 – TSP Source Group Results

		TSP					
	Group	Modeled Impacts µg/m^3		NMAAQS µg/m^3		Pass /Fail	Pass /Fail
		Annual	24-hr	Annual	24-hr	Annual	24-hr
SSM	SSM_SA1	2.00	6.88	60.00	150.00	3%	5%
	SSM_SA2	2.02	6.91	60.00	150.00	3%	5%
	SSM_SA3	2.02	6.98	60.00	150.00	3%	5%
	SSM_SA4	2.00	7.02	60.00	150.00	3%	5%
	SSM_SB1	2.04	6.87	60.00	150.00	3%	5%
	SSM_SB2	2.06	6.97	60.00	150.00	3%	5%
	SSM_SB3	2.04	7.90	60.00	150.00	3%	5%
	SSM_SB4	2.02	6.98	60.00	150.00	3%	5%
	SSM_SB5	2.04	6.94	60.00	150.00	3%	5%
	SSM_SB6	2.04	7.01	60.00	150.00	3%	5%
	SSM_SB7	2.04	6.95	60.00	150.00	3%	5%
	SSM_SB8	2.0649	7.05	60.00	150.00	3%	5%
	SSM_SB9	2.04	7.9199	60.00	150.00	3%	5%
	SSM_SB10	2.02	7.07	60.00	150.00	3%	5%
	SSM_SB11	2.04	7.02	60.00	150.00	3%	5%
	SSM_SB12	2.04	7.13	60.00	150.00	3%	5%
Steady State	SS_SA1	2.00	6.88	60.00	150.00	3%	5%
	SS_SA2	2.02	6.91	60.00	150.00	3%	5%
	SS_SA3	2.02	6.98	60.00	150.00	3%	5%
	SS_SA4	2.00	7.02	60.00	150.00	3%	5%
	SS_SB1	2.04	6.87	60.00	150.00	3%	5%
	SS_SB2	2.06	6.97	60.00	150.00	3%	5%
	SS_SB3	2.04	7.90	60.00	150.00	3%	5%
	SS_SB4	2.02	6.98	60.00	150.00	3%	5%
	SS_SB5	2.04	6.94	60.00	150.00	3%	5%
	SS_SB6	2.04	7.01	60.00	150.00	3%	5%
	SS_SB7	2.04	6.95	60.00	150.00	3%	5%
	SS_SB8	2.06	7.05	60.00	150.00	3%	5%
	SS_SB9	2.04	7.92	60.00	150.00	3%	5%
	SS_SB10	2.02	7.07	60.00	150.00	3%	5%
	SS_SB11	2.04	7.02	60.00	150.00	3%	5%
	SS_SB12	2.04	7.13	60.00	150.00	3%	5%

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Table A5 – $PM_{2.5}$ Source Group Results

		$PM_{2.5}$					
	Group	Modeled Impacts µg/m³		NAAQS µg/m³		Pass /Fail	Pass /Fail
		Annual	24-hr	Annual	24-hr	Annual	24-hr
SSM	SSM_SA1	1.14	4.29	12.00	35.00	10%	12%
	SSM_SA2	1.15	4.29	12.00	35.00	10%	12%
	SSM_SA3	1.15	4.98	12.00	35.00	10%	14%
	SSM_SA4	1.13	4.95	12.00	35.00	9%	14%
	SSM_SB1	1.17	4.29	12.00	35.00	10%	12%
	SSM_SB2	1.18	5.57	12.00	35.00	10%	16%
	SSM_SB3	1.24	6.68	12.00	35.00	10%	19%
	SSM_SB4	1.15	5.24	12.00	35.00	10%	15%
	SSM_SB5	1.17	5.27	12.00	35.00	10%	15%
	SSM_SB6	1.16	5.54	12.00	35.00	10%	16%
	SSM_SB7	1.17	4.54	12.00	35.00	10%	13%
	SSM_SB8	1.19	5.59	12.00	35.00	10%	16%
	SSM_SB9	1.2781	6.6986	12.00	35.00	11%	19%
	SSM_SB10	1.15	5.26	12.00	35.00	10%	15%
	SSM_SB11	1.17	5.29	12.00	35.00	10%	15%
	SSM_SB12	1.20	5.56	12.00	35.00	10%	16%
Steady State	SS_SA1	1.14	4.29	12.00	35.00	10%	12%
	SS_SA2	1.15	4.29	12.00	35.00	10%	12%
	SS_SA3	1.15	4.98	12.00	35.00	10%	14%
	SS_SA4	1.13	4.95	12.00	35.00	9%	14%
	SS_SB1	1.17	4.29	12.00	35.00	10%	12%
	SS_SB2	1.18	5.57	12.00	35.00	10%	16%
	SS_SB3	1.24	6.68	12.00	35.00	10%	19%
	SS_SB4	1.15	5.24	12.00	35.00	10%	15%
	SS_SB5	1.17	5.27	12.00	35.00	10%	15%
	SS_SB6	1.16	5.54	12.00	35.00	10%	16%
	SS_SB7	1.17	4.54	12.00	35.00	10%	13%
	SS_SB8	1.19	5.59	12.00	35.00	10%	16%
	SS_SB9	1.28	6.70	12.00	35.00	11%	19%
	SS_SB10	1.15	5.26	12.00	35.00	10%	15%
	SS_SB11	1.17	5.29	12.00	35.00	10%	15%
	SS_SB12	1.20	5.56	12.00	35.00	10%	16%

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Table A6 – PM_{10} Source Group Results

		PM_{10}			
	Group	Modeled Impacts µg/m³		NAAQS µg/m³	Pass /Fail
		Annual	24-hr	24-hr	24-hr
SSM	SSM_SA1	1.41	5.05	150.00	3%
	SSM_SA2	1.42	5.05	150.00	3%
	SSM_SA3	1.43	5.37	150.00	4%
	SSM_SA4	1.41	5.35	150.00	4%
	SSM_SB1	1.44	5.05	150.00	3%
	SSM_SB2	1.47	5.96	150.00	4%
	SSM_SB3	1.45	7.07	150.00	5%
	SSM_SB4	1.42	5.64	150.00	4%
	SSM_SB5	1.45	5.66	150.00	4%
	SSM_SB6	1.44	5.93	150.00	4%
	SSM_SB7	1.45	5.05	150.00	3%
	SSM_SB8	1.47	5.98	150.00	4%
	SSM_SB9	1.4778	7.0908	150.00	5%
	SSM_SB10	1.43	5.66	150.00	4%
	SSM_SB11	1.45	5.68	150.00	4%
	SSM_SB12	1.44	5.95	150.00	4%
Steady State	SS_SA1	1.41	5.05	150.00	3%
	SS_SA2	1.42	5.05	150.00	3%
	SS_SA3	1.43	5.37	150.00	4%
	SS_SA4	1.41	5.35	150.00	4%
	SS_SB1	1.44	5.05	150.00	3%
	SS_SB2	1.47	5.96	150.00	4%
	SS_SB3	1.45	7.07	150.00	5%
	SS_SB4	1.42	5.64	150.00	4%
	SS_SB5	1.45	5.66	150.00	4%
	SS_SB6	1.44	5.93	150.00	4%
	SS_SB7	1.45	5.05	150.00	3%
	SS_SB8	1.47	5.98	150.00	4%
	SS_SB9	1.48	7.09	150.00	5%
	SS_SB10	1.43	5.66	150.00	4%
	SS_SB11	1.45	5.68	150.00	4%
	SS_SB12	1.44	5.95	150.00	4%

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Table A7 – H_2S Source Group Results

		H_2S		
	Group	Modeled Impacts µg/m3	NMAAQS µg/m^3	Pass /Fail
		1-hr	1-hr	1-hr
SSM	SSM_SA1	47.41	123.12	39%
	SSM_SA2	47.41	123.12	39%
	SSM_SA3	47.41	123.12	39%
	SSM_SA4	47.41	123.12	39%
	SSM_SB1	47.41	123.12	39%
	SSM_SB2	47.41	123.12	39%
	SSM_SB3	47.41	123.12	39%
	SSM_SB4	47.41	123.12	39%
	SSM_SB5	47.41	123.12	39%
	SSM_SB6	47.41	123.12	39%
	SSM_SB7	47.41	123.12	39%
	SSM_SB8	47.41	123.12	39%
	SSM_SB9	47.41	123.12	39%
	SSM_SB10	47.41	123.12	39%
	SSM_SB11	47.41	123.12	39%
	SSM_SB12	47.41	123.12	39%
Steady State	SS_SA1	47.41	123.12	39%
	SS_SA2	47.41	123.12	39%
	SS_SA3	47.41	123.12	39%
	SS_SA4	47.41	123.12	39%
	SS_SB1	47.41	123.12	39%
	SS_SB2	47.41	123.12	39%
	SS_SB3	47.41	123.12	39%
	SS_SB4	47.41	123.12	39%
	SS_SB5	47.41	123.12	39%
	SS_SB6	47.41	123.12	39%
	SS_SB7	47.41	123.12	39%
	SS_SB8	47.41	123.12	39%
	SS_SB9	47.41	123.12	39%
	SS_SB10	47.41	123.12	39%
	SS_SB11	47.41	123.12	39%
	SS_SB12	47.41	123.12	39%

Section 17

Compliance Test History

(submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Compliance Test History Table

Unit No.	Test Description	Test Date
6	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	1/6/2011 3/29/2011 6/30/2011 1/12/2012 7/2/2012
7	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	1/5/2011 3/29/2011 6/30/2011 1/6/2012
8	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	3/29/2011 1/7/2012
9	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	Out of Service ('04)
10	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	1/5/2011 1/5/2012
11	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.3	1/5/2011 1/5/2012 1/11/2012
28	Tested using portable emission analyzer in accordance with NSR permit 0039-M6 condition A205	12/4/2012 (scheduled)
29	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.2	1/6/2011 3/30/2011 1/13/2012
30	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.2	1/7/2011 3/31/2011 1/13/2012
31a	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.2	1/7/2011 3/31/2011 1/13/2012
32b	Tested using portable emission analyzer in accordance with Title V permit P-094-R1-M1 condition 3.4.2.2	1/10/2011 4/1/2011 1/13/2012
34	Operational inspection monitoring in accordance with Title V permit P-094-R1-M1 condition 3.4.2.4	4/1/2011 3/30/2012
36	Operational inspection monitoring in accordance with Title V permit P-094-R1-M1 condition 3.4.2.4	4/1/2011 3/30/2012
37	Operational inspection monitoring in accordance with Title V permit P-094-R1-M1 condition 3.4.2.4	4/1/2011 9/30/2011 3/30/2012
38	Emission Test for Turbines (EU 29, 30, 31A, 32B), in accordance with NSR Permit 0039M3R1 A205 Turbines A. Periodic Testing (Units 28, 29, 30, and 31A)	1/16/2013 1/17/2013 1/18/2013
39	Emission Test for RICE Unit EU 6, in accordance with NSR Permit 0039M3R1 A201 Engines B. Periodic Testing (Units 6, 7, 8, 9, 10 and 11)	1/10/2013 9/30/2013

Unit No.	Test Description	Test Date
40	Emission Test for RICE Unit EU 7, in accordance with NSR Permit 0039M3R1 A201 Engines B. Periodic Testing (Units 6, 7, 8, 9, 10 and 11)	4/10/2013 Next test scheduled for week-ending 12/20/2013
41	Emission Test for RICE Unit EU 10 & EU 11, in accordance with NSR Permit 0039M3R1 A201 Engines B. Periodic Testing (Units 6, 7, 8, 9, 10 and 11)	4/10/2013
42	Emission Test for RICE Unit EU 8 & EU 9, in accordance with NSR Permit 0039M3R1 A201 Engines B. Periodic Testing (Units 6, 7, 8, 9, 10 and 11)	Did not operated in 2013

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

No other information is being submitted at this time.

Section 22

Green House Gas Applicability

(submitting under 20.2.70, 20.2.72, 20.2.73, 20.2.74 NMAC)

Title V (20.2.70 NMAC), NSR (20.2.72 NMAC), NOI (20.2.73 NMAC) and PSD (20.2.74 NMAC) applicants must determine if they are subject to Title V permitting and/or PSD permitting for green house gas (GHG) emissions. GHG emissions are the sum of the aggregate group of six green house gases that include carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). There are two thresholds that must be computed to determine applicability. The first threshold is the sum of GHG mass emissions in TPY. GHG mass emissions are the sum of the total annual tons of green house gases without adjusting with the GWPs. The second threshold is the sum of CO_2 equivalent (CO_2e) emissions in TPY GHG. CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its global warming potential (GWP) found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.

Green House Gas TV and PSD Applicability Determination:

☐ **Notice of Intent Sources** (20.2.73 NMAC): By checking this box and certifying this application the applicant certifies that the facility, based upon the quantity of stack emissions, including start up, shut down, and maintenance emissions, is not subject to 20.2.70 NMAC or 20.2.74 NMAC for Green House Gas (GHG) Emissions. The Department may request the emissions calculations and other documents supporting this determination.

Minor NSR (20.2.72 NMAC), PSD Major (20.2.74 NMAC), and Title V (20.2.70 NMAC) sources must complete the steps outlined below to determine GHG TV and/or PSD applicability.

1. Calculate existing mass GHG and CO_2e emissions from your source. For PSD purposes, if this is a modification to an existing source, you must also calculate the increase in mass GHG and CO_2e emissions due to the modification. Start up, shut down, and maintenance emissions must be included.
2. See Tables 1 and 2 below and compare your mass GHG and CO_2e emissions to the appropriate category for your source.
3. If your source meets all of the criteria within a category, then you must obtain a PSD permit and/or a Title V permit for green house gas emissions.
4. If this is a GHG Major source with an existing BACT or if this is a permit application for a PSD or Title V permit with GHG above the thresholds in Tables 1 or 2, include the emissions calculations and supporting documents in the appropriate sections of this application unless instructed otherwise in Tables 1 or 2. Report GHG mass and CO_2e emissions in Table 2-P of this application unless instructed otherwise in Tables 1 or 2. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).

NSR (20.2.72 NMAC), PSD Major (20.2.74 NMAC), and Title V (20.2.70 NMAC): Based upon the GHG applicability criteria in this section the applicant certifies that the source is (check all that apply):

☐ Title V Minor and PSD Minor for GHG Emissions [The Department may request the emissions calculations and other documents supporting this determination.]

☒ Title V Major for GHG Emissions

☐ PSD Major for GHG Emissions

Table 1 - Title V Applicability Criteria		
On or after July 1, 2011, newly constructed source, or existing source that does not have a Title V permit	**On or after July 1, 2011, modification or Renewal to Existing Title V Source**	**Requirement**
Source emits or has potential to emit (PTE) ≥ 100,000 TPY CO_2e **and** 100 TPY GHG mass basis	Source emits or has PTE of ≥100,000 TPY CO_2e **and** 100 TPY GHG mass basis	**For new sources:** For a source that meets the criteria on July 1, 2011, submit a Title V permit application no later than June 30, 2012.

Table 1 - Title V Applicability Criteria		
		For a source that meets the criteria after July 1, 2011, submit a Title V application within 12 months of becoming subject to the GHG operating permit program (12 months from commencement of operation of the new unit or modification that caused the source to be subject to Title V). **For existing sources:** Include GHG with the next Title V application for a renewal or modification. **For both new and existing sources:** Include in the TV application, GHG emissions calculations and supporting documents, report CO_2e and GHG emissions in Table 2-P, and address any applicable CAA requirements (e.g. PSD BACT, NSPS). If there are no applicable requirements and if GHG emissions have been reported to the Department under 20.2.73 NMAC, the requirements of the previous sentence do not apply, but changes in GHG emissions resulting in GHG emission limits must be calculated and reported in Table 2-P for Title V permit modifications. Typically GHG emission limits would be established only when there is an applicable requirement, such as a PSD GHG BACT or limits taken to be GHG synthetic minor.

Table 2 - PSD Applicability Criteria			
On or After July 1, 2011, New Source	**On or After July 1, 2011, Major Modification to Existing PSD Major Source**	**On or After July 1, 2011, Modification to Existing PSD Minor Source**	**Requirement**
Source is subject to PSD for another pollutant **and** GHG PTE is ≥ than 75,000 tpy CO_2e **or** GHG PTE is ≥ 100,000 TPY CO_2e **and** ≥ 100/250 TPY mass basis	Source is subject to PSD for another regulated pollutant **and** net GHG emissions increase is ≥ 75,000 tpy CO_2e and greater than zero TPY mass basis **or** existing source has GHG PTE ≥ 100,000 TPY CO_2e **and** ≥ 100/250 TPY mass basis **and** net emissions GHG increase is ≥ 75,000 TPY	Actual or potential emissions of GHGs from the modification is ≥ 100,000 TPY CO_2e **and** ≥ 100/250 TPY mass basis. Minor PSD sources cannot net out of PSD review.	The source is subject to PSD permitting for GHG emissions and other regulated pollutants that are significant. In the application include GHG emissions calculations and supporting documents, report CO_2e and GHG emissions in Table 2-P, complete a GHG BACT determination, and include the TPY CO_2e and GHG mass emissions in the public notice. **Note:** If a minor source permit is issued after January 2, 2011, but before July 1, 2011, and construction has not commenced by July 1, 2011, the permit must be

Table 2 - PSD Applicability Criteria			
	CO_2e and greater than zero TPY mass basis		cancelled, reopened, or an additional PSD permitting action taken, if the approved change/construction would trigger GHG PSD after July 1, 2011.

Additional Information:

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/
- Subparts C through UU of 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 and TV 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/ghgresources.html:
  - ENERGY STAR Industrial Sector Energy Guides and Plant Energy Performance Indicators (benchmarks) http://www.energystar.gov;
  - US EPA National Greenhouse Gas Inventory, http://epa.gov/climatechange/emissions/usinventoryreport.html;
  - EPA's Climate Leaders, http://www.epa.gov/climateleaders/index.html
  - EPA Voluntary Partnerships of GHG Reductions that include the landfill methane outreach program, the CHP partnership program, the Green Power Partnership, the Coalbed Methane Outreach program, the Natural Gas STAR program, and the Voluntary Aluminum Industrial Partnership.
  - SF Emission Reduction Partnership for the Magensium Industry http://www.epa.gov/highgwp/magnesium-sf6/index.html
  - PFC Reduction/Climate Partnership for the Semiconductor Industry http://www.epa.gov/highgwp/semiconductor-pfc/index.html

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. Please note that sources not subject to 40 CFR 98 and/or 20.2.300 NMAC may still be subject to the GHG PSD and/or TV permitting. 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 this part 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.O NMAC, 20.2.74.7.Y NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Short Tons:
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)

EPA's GHG Tailoring Rule:
To review EPA's final GHG Tailoring rule and pre-amble, See "Final GHG Tailoring Rule dated May 13, 2010 located on EPA's NSR Regulations Webpage or Federal Register June 3, 2010 Volume 75, No. 106
http://www.epa.gov/nsr/actions.html

EPA Permitting Guidance:
EPA's Permitting Guidance for GHG and other GHG information can be found on EPA's NSR Clear Air Act Permitting for Greenhouse Gases webpage.
http://www.epa.gov/nsr/ghgpermitting.html

Section 23: Certification

Company Name: DCP Midstream, LP

I, David L. Stone, 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 5th day of December, 2013, upon my oath or affirmation, before a notary of the State of

Texas.

*Signature

December 5, 2013
Date

David L. Stone
Printed Name

VP Commercial & Operations
Title

Scribed and sworn before me on this 5th day of December, 2013.

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

10th day of November 2016.

Yolanda DeLaO
Notary's Signature

12/5/2013
Date

Yolanda DeLaO
Notary's Printed Name

NOTARY PUBLIC STATE OF TEXAS
YOLANDA DELAO
My Commission Expires
November 10, 2016

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