ALTAMIRA

November 13, 2024

New Mexico Environment Department
Air Quality Bureau, Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
(505) 476-4300

RE: NSR Permit Application
Copperhead Gas Plant
Lea County, New Mexico
Targa Midstream Services, LLC

Dear Sir or Madam:

On behalf of Targa Midstream Services, LLC (Targa), Altamira-US, LLC is submitting the enclosed NSR Permit Application for the Copperhead Gas Plant (Facility), which is located approximately 23.6 miles southwest of Eunice in Lea County. The compressor station existing at the site is authorized under General Construction Permit Oil & Gas (GCP-OG) No. 7712-M3. The Facility also has various tanks, produced water loading, and an emergency generator that are exempt.

Targa proposes adding two gas plants to the facility that will be collocated with the compressor station.

Two complete copies of the application are enclosed along with a check for $500. Therefore, Targa is requesting an NSR permit for the Facility.

If you have any questions or comments, please contact Robert Andries of Targa at (713) 584-1360 or randries@targaresources.com.

Sincerely,
Altamira-US, LLC

Laura Worthen-Lodes, PE
Chief Engineering Officer

NSR PERMIT APPLICATION
COPPERHEAD GAS PLANT
LEA COUNTY, NM

October 2024

Submitted to:
New Mexico Environment Department
Air Quality Bureau, Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

Prepared for:
Targa Midstream Services, LLC
Box 1909
Eunice, NM 88231
575-394-2534

Prepared by:
Altamira-US, LLC
525 Central Park Dr., Suite 500
Oklahoma City, Oklahoma 73105
405-842-1066

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Mail Application To:		For Department use only:
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		

Universal Air Quality Permit Application

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

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

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

Acknowledgements:

☒ I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.
☒ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).
☒ Check No.: 3500508894 in the amount of 500
☒ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.
☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.
☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known: 38309	Updating Permit/NOI #: **7712**
1	Facility Name: Copperhead Gas Plant	Plant primary SIC Code (4 digits): 1321	
		Plant NAIC code (6 digits): 211112	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): The subject facility is located approximately 25.9 miles east of Malaga in Lea County, NM. 32.212128, -103.624164		
2	Plant Operator Company Name: Targa Midstream Services LLC	Phone/Fax: 575-631-7093	
a	Plant Operator Address: PO Box 1909 Eunice, NM 88231		

b	Plant Operator's New Mexico Corporate ID or Tax ID: 1948249	
3	Plant Owner(s) name(s): Targa Midstream Services LLC	Phone/Fax: 575-631-7093
a	Plant Owner(s) Mailing Address(s): PO Box 1909 Eunice, NM 88231	
4	Bill To (Company): Targa Midstream Services LLC	Phone/Fax: 575-631-7093
a	Mailing Address: PO Box 1909 Eunice, NM 88231	E-mail: cschroder@targaresources.com
5	☒ Preparer: Laura Worthen Lodes, PE ☒ Consultant: Altamira-US LLC	Phone/Fax: 405-919-4129
a	Mailing Address:525 Central Park Dr, Suite 500	E-mail: laura.worthen-lodes@altamira-us.com
6	Plant Operator Contact: Jimmy Oxford	Phone/Fax: (940) 220-2493
a	Address: 4401 N I-35, Suite 303, Denton, TX 76207	E-mail: joxford@targaresources.com
7	Air Permit Contact: Catherine Schroder	Title: Supervisor ES&H – Air Quality Permitting – G&P
a	E-mail: cschroder@targaresources.com	Phone/Fax: (405) 749-5614
b	Mailing Address: 14000 Quail Springs Pkwy Ste 215, Oklahoma City, OK 73134	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☒ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☒ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☒ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☒ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☒No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☐ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☐ Yes ☒ No	If yes, the permit No. is: P-
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☒ No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☒ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☐ Yes ☒ No	If yes, the permit No. is:
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☒ Yes ☐ No	If yes, the register No. is: 7712

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) Natural Gas			
a	Current	Hourly: 6250 MSCF/Hr	Daily: 150 MMSCF/d	Annually: 54750 MMSCF/yr
b	Proposed	Hourly: 35.42 MMSCF/hr	Daily: 850 MMSCF/D	Annually: 310,250 MMSCF/yr
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:	Daily:	Annually:
b	Proposed	Hourly:	Daily:	Annually:

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.212128	Longitude (decimal degrees): -103.624164	County: Lea	Elevation (ft): 3594
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☒ NAD 83 ☐ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 629663.29	UTM N (in meters, to nearest 10 meters): 3564780		
3	Name and zip code of nearest New Mexico town: Malaga			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): The subject facility is located approximately 25.9 miles east of Malaga in Lea County, NM. 32.212128, -103.624164			
5	The facility is 25.9 (distance) miles East (direction) of Malaga (nearest town).			
6	Land Status of facility (check one): ☐ Private ☐ Indian/Pueblo ☒ Government ☐ BLM ☐ Forest Service ☐ Military			
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: N/A			
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☐ Yes ☒ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers:			
9	Name nearest Class I area: Carlsbad Caverns			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 53 miles			
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: 5.87 miles			
12	Method(s) used to delineate the Restricted Area: continuous fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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

1	Facility **maximum** operating ($\frac{hours}{day}$): 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:	☐AM ☐PM	End:		☐AM ☐PM
3	Month and year of anticipated start of construction: December 2024				
4	Month and year of anticipated construction completion: January 2025				
5	Month and year of anticipated startup of new or modified facility: January 2025				
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:	
a	If yes, NOV date or description of issue:	NOV Tracking No:

b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☒ No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☒ Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☒ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☒ Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☒ **Minor** (☒ <10 tpy of any single HAP **AND** ☒ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☒ Yes ☐ No		
a	If yes, include the name of company providing commercial electric power to the facility: ____Xcel ______________________ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): Jimmy Oxford	Phone: (940) 220-2493
a	R.O. Title: Senior Vice President Operations	R.O. e-mail: joxford@targaresources.com
b	R. O. Address: 4401 North I-35, Suite 303	
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.): Targa Resources, Inc.	
a	Address of Parent Company: 811 Louisiana Street, Suite 2100, Houston, TX 77002	
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.): None	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Catherine Schroder, cschroder@targaresources.com	
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: 25.72 km from Texas; No Tribes or pueblos or local pollution control programs within 80 km.	

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package printed double sided 'head-to-toe' 2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.
2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.
3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☒ Secure electronic transfer. Air Permit Contact Name Laura Worthen Lodes,

Email Laura.Worthen-Lodes@altamira-us.com Phone number 405-919-4129.

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

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.
5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.
6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

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

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

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

application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

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

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

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Change Log – Do **not** submit this page with your application.

If you are using a form older than the most current form posted on the website, you are required to incorporate the changes listed. Periodically, AQB will announce when older form versions will no longer be accepted.

Version Date	Changes Incorporated
April 1, 2021	Current version of this form. Older versions are not accepted.
July 12, 2023	Removed Section, Township, Range, and NAD 27, changed font to Calibri, inserted active checkboxes.

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
EM-1a	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-1a / EM-1a	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-1b	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-1b / EM-1b	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-2a	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-2a / EM-2a	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-2b	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-2b / EM-2b	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-3a	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-3a / EM-3a	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-3b	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-3b / EM-3b	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-4a	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-4a / EM-4a	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
EM-4b	Diesel Generator	Aggreko	TD1683GE	TBD	919 HP	919 HP		EM-4b / EM-4b	20200102	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
FUG	Facility Fugitives	N/A	N/A	N/A	N/A	N/A		FUG / FUG	31088811	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
DEHY-1	Glycol Dehydrator	N/A	N/A	N/A	150 MMSCFD	150 MMSCFD		FLARE / FLARE	31000227	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
H-1	Dehydrator Boiler	N/A	N/A	N/A	3 MMBTUH	3 MMBTUH		H-1 / H-1	31000404	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
FLARE	Flare-Dehydrator/Tank control	N/A	N/A	N/A	150 MMSCFD	150 MMSCFD		FLARE / FLARE	31000205	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
Tank-1	Produced Water Tank	N/A	N/A	N/A	400 bbl	400 bbl		Tank-1 / Flare	40400315	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
Tank-2	Produced Water Tank	N/A	N/A	N/A	400 bbl	400 bbl		Tank-2 / Flare	40400315	☑ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2]	Date of Construction/ Reconstruction[2]	Controlled by Unit #	Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
Tank-3	Slop Tank	N/A	N/A	N/A	400 bbl	400 bbl			Tank-3		40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
Tank-4	Combo Tank	N/A	N/A	N/A	400 bbl	400 bbl			Tank-4		40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
Tank-5	New H2S scavenger tank	N/A	N/A	N/A	500 bbl	500 bbl			Tank-5		40400311	Existing (unchanged) To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
Tank-6	Spent H2S scavenger tank	N/A	N/A	N/A	500 bbl	500 bbl			Tank-6		40400311	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
Load-1	Load-out of Produced Water	N/A	N/A	N/A	33791.70 bbl/y	33791.70 bbl/y			Load-1	Load-1	40400250	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
Load-2	Load-out of Slop Tnk	N/A	N/A	N/A	824,564 bbl/y	824,564 bbl/y			Load-2	Load-2	40400250	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
SSM	Pigging and purging pipeline Flare - SSM	N/A	N/A	N/A	150 MMSCFD	150 MMSCFD			SSM	SSM	31000299	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
M	Malfunction	N/A	N/A	N/A	N/A	N/A			M	M	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1701-CHP	HMO Heater 1701	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1702-CHP	HMO Heater 1702	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1703-CHP	HMO Heater 1703	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1704-CHP	HMO Heater 1704	N/A	N/A	N/A	37.8 MMBtu/hr	37.8 MMBtu/hr					31000404	Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-4701-CHP	Regen Gas Heater 4701	N/A	N/A	N/A	16.2 MMBtu/hr	16.2 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1701-CH2	HMO Heater 1701	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1702-CH2	HMO Heater 1802	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-1703-CH2	HMO Heater 1803	N/A	N/A	N/A	79.4 MMBtu/hr	79.4 MMBtu/hr					31000405	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
H-1704-CH2	HMO Heater 1704	N/A	N/A	N/A	37.8 MMBtu/hr	37.8 MMBtu/hr			31000404	☐ Existing (unchanged) To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-4701-CH2	Regen Gas Heater 4701	N/A	N/A	N/A	16.2 MMBtu/hr	16.2 MMBtu/hr			31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FL-1800-CHP	Flare 1	N/A	N/A	N/A	0.0255 MMSCFD	0.0255 MMSCFD			31000227	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FL-1800-CH2	Flare 2	N/A	N/A	N/A	0.0255 MMSCFD	0.0255 MMSCFD			31000227	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FL-1800-CHP-SSM	Flare 1 SSM	N/A	N/A	N/A	N/A	N/A			31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FL-1800-CH2-SSM	Flare 2 SSM	N/A	N/A	N/A	N/A	N/A			31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FUG-CHP	Plant 1 Fugitives	N/A	N/A	N/A	N/A	N/A			31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FUG-CH2	Plant 2 Fugitives	N/A	N/A	N/A	N/A	N/A			31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-1907-CHP	Produced Water Tank	N/A	N/A	N/A	500 bbl	500 bbl			40400315	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-1908-CHP	Produced Water Tank	N/A	N/A	N/A	500 bbl	500 bbl			40400315	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-1907-CH2	Produced Water Tank	N/A	N/A	N/A	500 bbl	500 bbl			40400315	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
TK-1908-CH2	Produced Water Tank	N/A	N/A	N/A	500 bbl	500 bbl			40400315	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
L-P	Pressurized Loading	N/A	N/A	N/A	200 Loads/yr	200 Loads/yr			40400250	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
VCU	Vapor Combustion Unit	N/A	N/A	N/A	0.45 MMBtu/hr	0.45 MMBtu/hr				☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
NRU	Nitrogen Rejection Unit	N/A	N/A	N/A						☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
MSSFUG	MSS - NRU Residue Gas Blowdown	N/A	N/A	N/A						☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
H-2	Dehydrator Boiler	N/A	N/A	N/A	3 MMBTUH	3 MMBTUH			31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
DEHY-2	Glycol Dehydrator	N/A	N/A	N/A	150 MMSCFD	150 MMSCFD		Flare / Flare	31000227	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
GEN-1	Natural Gas Generator	Cummins	GQSK60-G8	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GEN-2	Natural Gas Generator	Cummins	GQSK60-G9	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GEN-3	Natural Gas Generator	Cummins	GQSK60-G10	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GEN-4	Natural Gas Generator	Cummins	GQSK60-G11	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GEN-5	Natural Gas Generator	Cummins	GQSK60-G12	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
GEN-6	Natural Gas Generator	Cummins	GQSK60-G13	TBD	1,747 Hp	1,747 Hp			20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

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

[2] Specify dates required to determine regulatory applicability.

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

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

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

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/InsignificantListTitleV.pdf. TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TANK-7	Lube Oil						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TANK-8	Lube Oil						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TANK-9	TEG Tank						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TANK-10	Methanol Tote			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1901-CHP	LUBE OIL DRAIN SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1902-CHP	OPEN DRAIN SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1903-CHP	USED LUBE OIL TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1904-CHP	USED LUBE OIL TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1905-CHP	OPEN DRAIN STORAGE TANK			400 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1906-CHP	REFRIGERATION LUBE OIL TANK			1000 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-1909-CHP	LEAN AMINE TANK			400 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1910-CHP	WATER MAKEUP TANK			1000 BBl			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1911-CHP	TEG TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1917-CHP	NEW LUBE OIL TANK (ACID GAS)			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1960-CHP	LUBE OIL MAKEUP TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1970-CHP	CYLINDER OIL TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1980-CHP	CYLINDER OIL TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-2901-CHP	AMINE SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3901-CHP	GLYCOL SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3920-CHP	JW SURGE TANK						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3921-CHP	LUBE OIL MAKEUP TANK			300 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3930-CHP	JW SURGE TANK						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-6900-CHP	ACID GAS CYLINDER LUBE OIL TANK			1000 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1901-CH2	LUBE OIL DRAIN SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1902-CH2	OPEN DRAIN SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
TK-1903-CH2	USED LUBE OIL TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1904-CH2	NEW LUBE OIL TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1905-CH2	OPEN DRAIN STORAGE TANK			400 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1906-CH2	REFRIGERATION LUBE OIL TANK			1000 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1909-CH2	LEAN AMINE TANK			400 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1910-CH2	WATER MAKEUP TANK			1000 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1911-CH1	TEG TANK			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1917-CH2	NEW LUBE OIL TANK (ACID GAS)			210 BBL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1960-CH2	LUBE OIL MAKEUP TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1970-CH2	CYLINDER OIL TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-1980-CH2	CYLINDER OIL TANK			500 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-2901-CH2	AMINE SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3901-CH2	GLYCOL SUMP						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3920-CH2	JW SURGE TANK						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3921-CH2	LUBE OIL MAKEUP TANK			300 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TK-3930-CH2	JW SURGE TANK						☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TK-6900-CH2	ACID GAS CYLINDER LUBE OIL TANK			1000 GAL			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
E-1	NATURAL GAS-FIRED MICROTURBINE			87.17 HP			☒ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Table 2-C: Emissions Control Equipment

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

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
BTEX	BTEX Condenser/Incinerator		Total HAP	Dehy/Amine	52	Process simulator
FLARE	Flare		Total HAP	Dehy/Amine	98	Design Calculation
BTEX	BTEX Condenser/Incinerator		Volatile Organic Compounds (VOC)	Dehy/Amine	33	Process simulator
FLARE	Flare		Volatile Organic Compounds (VOC)	Dehy/Amine	98	Design Calculation
FLARE	Flare		Volatile Organic Compounds (VOC)	Tank-1	98	Design Calculation
FLARE	Flare		Volatile Organic Compounds (VOC)	Tank-2	98	Design Calculation
AGI	Acid Gas Injection Unit		Volatile Organic Compounds (VOC)	Amine	100	Design Calculation
AGI	Acid Gas Injection Unit		Hydrogen Sulfide (H2)	Amine	100	Design Calculation
FL-1800-CHP	Flare		Volatile Organic Compounds (VOC)	Amine/process vents	98	Design Calculation
FL-1800-CHP	Flare		Hydrogen Sulfide (H2)	Amine	98	Design Calculation
FL-1800-CH2	Flare		Volatile Organic Compounds (VOC)	Amine/process vents	98	Design Calculation
FL-1800-CH2	Flare		Hydrogen Sulfide (H2)	Amine	98	Design Calculation
VCU	Vapor Combustion Unit		Volatile Organic Compounds (VOC)	Produced Water Tank	98	Design Calculation
VCU	Vapor Combustion Unit		Hydrogen Sulfide (H2)	Produced Water Tank	98	Design Calculation

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

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr

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

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
EM-1a	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-1b	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-2a	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-2b	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-3a	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-4a	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-4a	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
EM-4b	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	-	-	-	-
GEN-1	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
GEN-2	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
GEN-3	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
GEN-4	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
GEN-5	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
GEN-6	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	-	-	-	-
FUG	-	-	-	-	0.43	1.87	-	-	-	-	-	-	-	-	0.00	0.00	-	-
DEHY-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H-1	0.29	1.29	0.25	1.08	0.02	0.07	0.02	0.09	0.02	0.10	0.02	0.10	0.02	0.10	-	-	-	-
H-2	0.29	1.29	0.25	1.08	0.02	0.07	0.02	0.09	0.02	0.10	0.02	0.10	0.02	0.10	-	-	-	-
FLARE	1.47	6.43	2.93	12.84	3.10	13.56	8.91	39.02	-	-	-	-	-	-	0.10	0.42	-	-
Tank-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank-3	-	-	-	-	0.01	0.05	-	-	-	-	-	-	-	-	0.00	0.00	-	-
Tank-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank-5	-	-	-	-	0.08	0.35	-	-	-	-	-	-	-	-	-	-	-	-
Tank-6	-	-	-	-	0.08	0.35	-	-	-	-	-	-	-	-	-	-	-	-
LOAD-1	-	-	-	-	116.55	11.35	-	-	-	-	-	-	-	-	-	-	-	-
LOAD-2	-	-	-	-	0.00	0.01	-	-	-	-	-	-	-	-	-	-	-	-
HAUL	-	-	-	-	-	-	-	-	1.38		0.35		0.04		-	-		
H-1701-CHP	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	-	-	-	-
H-1702-CHP	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	-	-	-	-
H-1703-CHP	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	-	-	-	-
H-1704-CHP	1.36	5.96	2.31	10.10	0.20	0.89	0.03	0.11	0.28	1.23	0.28	1.23	0.28	1.23	-	-	-	-

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
H-4701-CHP	1.59	6.96	1.33	5.84	0.09	0.38	0.01	0.05	0.12	0.53	0.12	0.53	0.12	0.53	-	-	-	-
H-1701-CH2	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	-	-	-	-
H-1702-CH2	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	-	-	-	-
H-1703-CH2	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59				
H-1704-CH2	1.36	5.96	2.31	10.10	0.20	0.89	0.03	0.11	0.28	1.23	0.28	1.23	0.28	1.23	-	-	-	-
H-4701-CH2	1.59	6.96	1.33	5.84	0.09	0.38	0.01	0.05	0.12	0.53	0.12	0.53	0.12	0.53	-	-	-	-
FL-1800-CHP	0.21	0.93	0.43	1.86	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	-	-
FL-1800-CH2	0.21	0.93	0.43	1.86	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	-	-
FUG-CHP	-	-	-	-	2.05	8.99	-	-	-	-	-	-	-	-	0.05	0.24	-	-
FUG-CH2	-	-	-	-	2.05	8.99	-	-	-	-	-	-	-	-	0.05	0.24	-	-
TK-1907-CHP	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.30	-	-
TK-1908-CHP	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.30	-	-
TK-1907-CH2	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.30	-	-
TK-1908-CH2	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.30	-	-
L-P	-	-	-	-	0.54	0.05	-	-	-	-	-	-	-	-	-	-	-	-
VCU	0.06	0.27	0.12	0.54	0.32	1.40	2.59	11.33	-	-	-	-	-	-	0.03	0.12	-	-
NRU	-	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	
Totals	**45.90**	**201.03**	**45.32**	**198.49**	**139.35**	**108.89**	**12.11**	**53.05**	**6.18**	**21.00**	**5.15**	**21.00**	**4.83**	**21.00**	**0.22**	**2.23**	**-**	**-**

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FL-1800-CHP	1801.87	24.04	3597.22	48.00	1630.79	3.49	1260.55	36.91	-	-	-	-	-	-	13.67	0.40	-	-
FL-1800-CH2	1801.87		3597.22		1630.79		1560.55		-	-	-	-	-	-	13.67		-	-
SSM	-	-	-	-		10.00	-	-	-	-	-	-	-	-	0.00	0.00	-	-
SSM-Flare	10.88	0.05	21.71	0.09	19.08	0.07	1.15	0.005	-	-	-	-	-	-	0.00	0.00	-	-
M	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	-
MSSFUG	-	-	-	-	315.76	7.58	-	-	-	-	-	-	-	-	-	-	-	-
Totals	3614.62	24.09	7216.15	48.09	3596.42	31.15	2822.25	36.91	0.00	0.00	0.00	0.00	0.00	0.00	27.33	0.40	0.00	0.00

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

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

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

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

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

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

Table 2-P: Greenhouse Gas Emissions

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

☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	GWPs [1]	1	298	25	22,800	footnote 3										
EM-1a	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-1b	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-2a	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-2b	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-3a	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-3b	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-4a	mass GHG															
	CO_2e	7757.63	18.75	7.87												
EM-4b	mass GHG															
	CO_2e	7757.63	18.75	7.87												
GEN-1	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
GEN-2	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
GEN-3	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
GEN-4	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
GEN-5	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
GEN-6	mass GHG															
	CO_2e	5859.503	3.290863	2.7607911												
H-1	mass GHG															
	CO_2e	1394.42	0.78	0.66												
H-1701-CHP	mass GHG															
	CO_2e	36905.565	20.727211	17.3886												
H-1702-CHP	mass GHG															
	CO_2e	36905.565	20.727211	17.3886												

H-1703-CHP	mass GHG															
	CO_2e	36905.565	20.727211	17.3886												
H-1704-CHP	mass GHG															
	CO_2e	17569.652	9.8676144	8.2782												
H-4701-CHP	mass GHG															
	CO_2e	7529.8507	4.2289776	3.5478												
H-1701-CH2	mass GHG															
	CO_2e	36905.565	20.727211	21.47												
H-1702-CH2	mass GHG															
	CO_2e	36905.565	20.727211	21.47												
H-1703-CH2	mass GHG															
	CO_2e	36905.565	20.727211	21.47												
H-1704-CH2	mass GHG															
	CO_2e	17569.652	9.8676144	8.2782												
H-4701-CH2	mass GHG															
	CO_2e	7529.8507	4.2289776	3.5478												
VCU	mass GHG															
	CO_2e	208.81	0.12	0.1												
FLARE	mass GHG															
	CO_2e	314.86898	0	260.2												
FL-1800-CHP	mass GHG															
	CO_2e	37548.505	9.64E-06	3.538494												
FL-1800-CH2	mass GHG															
	CO_2e	37548.505	9.64E-06	3.538494												
DEHY-1	mass GHG															
	CO_2e	44.99	-	214.14											259.13	285.64
LOADOUT	mass GHG															
	CO_2e														182.39	182.39
LOAD	mass GHG															
	CO_2e														4.9	4.9
Dehy-2	mass GHG															
	CO_2e															
H-2	mass GHG															
	CO_2e															
Total	mass GHG															
	CO_2e															

[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.

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
EM-1a	EM-1a	V	No	14.8	892				391.30	0.67
EM-1b	EM-1b	V	No	14.8	892				391.30	0.67
EM-2a	EM-2a	V	No	14.8	892				391.30	0.67
EM-2b	EM-2b	V	No	14.8	892				391.30	0.67
EM-3a	EM-3a	V	No	14.8	892				391.30	0.67
EM-4a	EM-4a	V	No	14.8	892				391.30	0.67
EM-4a	EM-4a	V	No	14.8	892				391.30	0.67
EM-4b	EM-4b	V	No	14.8	892				391.30	0.67
GEN-1	GEN-1	V	No	19.0	497				209.90	1.06
GEN-2	GEN-2	V	No	19.0	497				209.90	1.06
GEN-3	GEN-3	V	No	19.0	497				209.90	1.06
GEN-4	GEN-4	V	No	19.0	497				209.90	1.06
GEN-5	GEN-5	V	No	19.0	497				209.90	1.06
GEN-6	GEN-6	V	No	19.0	497				209.90	1.06
FUG	FUG	Fugitive	No	10						
DEHY-1	DEHY	Fugitive	No	10						
H-1	H-1	V	No	20	400				1.37	3.50
H-2	H-2	V	No	20	400				1.37	3.50
FLARE	FLARE	V	No	20	1832				65.60	1.37
Tank-1	Tank-1	Fugitive	No	20						
Tank-2	Tank-2	Fugitive	No	20						
Tank-3	Tank-3	Fugitive	No	20						
Tank-5	Tank-5	Fugitive	No	20						
Tank-6	Tank-6	Fugitive	No	20						
LOAD-1	LOAD-1	Fugitive	No	10						

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
LOAD-2	LOAD-2	Fugitive	No	10						
SSM	SSM	Fugitive	No	10						
SSM-Flare	SSM-Flare	V	No	20	1832				65.60	1.37
M	M	Fugitive	No	10						
H-1701-CHP	H-1701-CHP	V	No	32.0	723				13.64	5.00
H-1702-CHP	H-1702-CHP	V	No	32	723				13.64	5.00
H-1703-CHP	H-1703-CHP	V	No	32	723				13.64	5.00
H-1704-CHP	H-1704-CHP	V	No	25.0	475				22.98	2.50
H-4701-CHP	H-4701-CHP	V	No	20	400				1.70	2.50
H-1701-CH2	H-1701-CH2	V	No	32.0	723				13.64	5.00
H-1702-CH2	H-1702-CH2	V	No	32	723				13.64	5.00
H-1703-CH2	H-1703-CH2	V	No	32	723				13.64	5.00
H-1704-CH2	H-1704-CH2	V	No	25.0	475				22.98	2.50
H-4701-CH2	H-4701-CH2	V	No	20	400				1.70	2.50
DEHY-2	DEHY	Fugitive	No	10						
TK-1907-CHP	Produced Water Tank	Fugitive	No	25						
TK-1908-CHP	Produced Water Tank	Fugitive	No	25						
TK-1907-CH2	Produced Water Tank	Fugitive	No	25						
TK-1908-CH2	Produced Water Tank	Fugitive	No	25						
VCU	Vapor Combustion Unit	V	No	25	1600				18.90	4.00
FL_1800_CHPM	Flare 1: MSS	V	No	157.1	1832				65.62	21.00
FL_1800_CH2M	Flare 2:MSS	V	No	157.1	1832				65.62	21.00
FL_1800_CHP	Flare 1: Steady State - Amine Control	V	No	150	1832				65.62	0.86
FL_1800_CH2	Flare 2: Steady State - Amine Control	V	No	150	1832				65.62	0.86

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		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP		Provide Pollutant Name Here ☐HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
	EM-1a	0.02	0.07																
	EM-1b	0.02	0.07																
	EM-2a	0.02	0.07																
	EM-2b	0.02	0.07																
	EM-3a	0.02	0.07																
	EM-4a	0.02	0.07																
	EM-4a	0.02	0.07																
	EM-4b	0.02	0.07																
	GEN-1	0.47	2.05																
	GEN-2	0.47	2.05																
	GEN-3	0.47	2.05																
	GEN-4	0.47	2.05																
	GEN-5	0.47	2.05																
	GEN-6	0.47	2.05																
	FUG	0.02	0.10																
	H-1	0.0002	0.001																
	H-2	0.0002	0.001																
	FLARE	0.48	2.12																
	Tank-3	-	0.02																
	Tank-4	-	0.05																
	Tank-5	-	0.35																
	Tank-6	-	0.35																
	LOAD-1	-	2.07																
	LOAD-2	-	0.00																
	SSM	-	0.00																
	M	-	0.00																
	H-1701-CHP	0.01	0.03																
	H-1702-CHP	0.01	0.03																
	H-1703-CHP	0.01	0.03																
	H-1704-CHP	0.003	0.01																
	H-4701-CHP	0.001	0.01																
	H-1701-CH2	0.01	0.03																
	H-1702-CH2	0.01	0.03																
	H-1703-CH2	0.01	0.03																
	H-1704-CH2	0.003	0.01																
	H-4701-CH2	0.001	0.01																
	FL-1800-CHP	0.00	0.00																
	FL-1800-CH2	0.00	0.00																
	FUG-CHP	0.09	0.39																
	FUG-CH2	0.09	0.39																
	FL-1800-CHP	-	-																
	FL-1800-CH2	-	-																
	TK-1907-CHP	-	0.89																
	TK-1908-CHP	-	0.89																
	TK-1907-CH2	-	0.89																
	TK-1908-CH2	-	0.89																
	L-P	-	-																
	VCU	0.29	1.28																
	NRU	0.00	0.00																
	MSSFUG	0.00	0.00																
Totals:		3.98	23.80																

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
EM-1a	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-1b	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-2a	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-2b	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-3a	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-4a	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-4a	Diesel		138,700 BTU/gal		756,233 gal/yr		
EM-4b	Diesel		138,700 BTU/gal		756,233 gal/yr		
GEN-1	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
GEN-2	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
GEN-3	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
GEN-4	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
GEN-5	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
GEN-6	Natural Gas		1020 BTU/SCF		36.8 MMSCF/yr		
H-1	Natural gas		1020 BTU/SCF		25.8 MMSCF/yr		
H-2	Natural gas		1020 BTU/SCF		25.8 MMSCF/yr		
FLARE	Natural gas		1020 BTU/SCF		5.04 MMSCF/yr		
H-1701-CHP	Natural gas		1020 BTU/SCF		841.8 MMSCF/yr		

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
H-1702-CHP	Natural gas		1020 BTU/SCF		841.8 MMSCF/yr		
H-1703-CHP	Natural gas		1021 BTU/SCF		841.8 MMSCF/yr		
H-1704-CHP	Natural gas		1020 BTU/SCF		290.8 MMSCF/yr		
H-4701-CHP	Natural gas		1020 BTU/SCF		123.1 MMSCF/yr		
H-1701-CH2	Natural gas		1020 BTU/SCF		841.8 MMSCF/yr		
H-1702-CH2	Natural gas		1020 BTU/SCF		841.8 MMSCF/yr		
H-1703-CH2	Natural gas		1020 BTU/SCF		841.8 MMSCF/yr		
H-1704-CH2	Natural gas		1020 BTU/SCF		290.8 MMSCF/yr		
H-4701-CH2	Natural gas		1020 BTU/SCF		123.1 MMSCF/yr		
FL-1800-CHP	Natural gas		1020 BTU/SCF		5.04 MMSCF/yr		
FL-1800-CH2	Natural gas		1020 BTU/SCF		5.04 MMSCF/yr		

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)
Tank-1		Produced Water							
Tank-2		Produced Water							
Tank-3		Condensate							
Tank-4		Condensate							
Tank-5		Condensate							
Tank-6		Condensate							
TK-1907-CHP		Produced Water							
TK-1908-CHP		Produced Water							
TK-1907-CH2		Produced Water							
TK-1908-CH2		Produced Water							

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			
Tank-1		Produced Water		Vertical-Fixed Roof	400-bbl		12		white	white		709,624	84.50
Tank-2		Produced Water		Vertical-Fixed Roof	400-bbl		12		white	white		709,624	84.50
Tank-3		Condensate		Vertical-Fixed Roof	400-bbl		12		white	white		412,374	84.50
Tank-4		Condensate		Vertical-Fixed Roof	400-bbl		12		white	white		412,374	84.50
Tank-5		Condensate		Vertical-Fixed Roof	400-bbl		12		white	white		701	19.64
Tank-6		Condensate		Vertical-Fixed Roof	400-bbl		12		white	white		701	19.64
TK-1907-CHP		Produced Water		Vertical-Fixed Roof	500-bbl		12		white	white		8,657,924	412.28
TK-1908-CHP		Produced Water		Vertical-Fixed Roof	500-bbl		12		white	white		8,657,924	412.28
TK-1907-CH2		Produced Water		Vertical-Fixed Roof	500-bbl		12		white	white		8,657,924	412.28
TK-1908-CH2		Produced Water		Vertical-Fixed Roof	500-bbl		12		white	white		8,657,924	412.28

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)

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time

Section 3

Application Summary

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

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

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

Targa Resources, LLC (Targa) owns and operates the Copperhead Compressor Station located near Malaga in Lea County, NM. The site is current authorized under GCP 7712. Targa is proposing to authorize the installation of proposed processing trains 1 and 2 and to change the name to the Copperhead Gas Plant.

The primary function of the Copperhead Gas Processing Plant is to separate natural gas (methane) from heavier (liquid) hydrocarbons, raw sweet field gas so that the gas can meet pipeline specifications. The plant has been designated a primary Standard Industrial Classification (SIC) Code of 1321. The gas is treated to remove CO_2, H_2S, water and heavy (liquid) hydrocarbons from the gas stream. Stabilized condensate is removed from the site via pipeline with the option to truck it out as needed. Produced water is trucked out from the site. The amine treater vent flows to a thermal oxidizer to remove volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions.

Following is a summary of changes being proposed in this application:

- Increase site processing throughput.
- Construction of proposed processing trains 1 and 2.
- Increase permit limits to allow the ability to process gas containing up to 10,000 ppm H_2S.

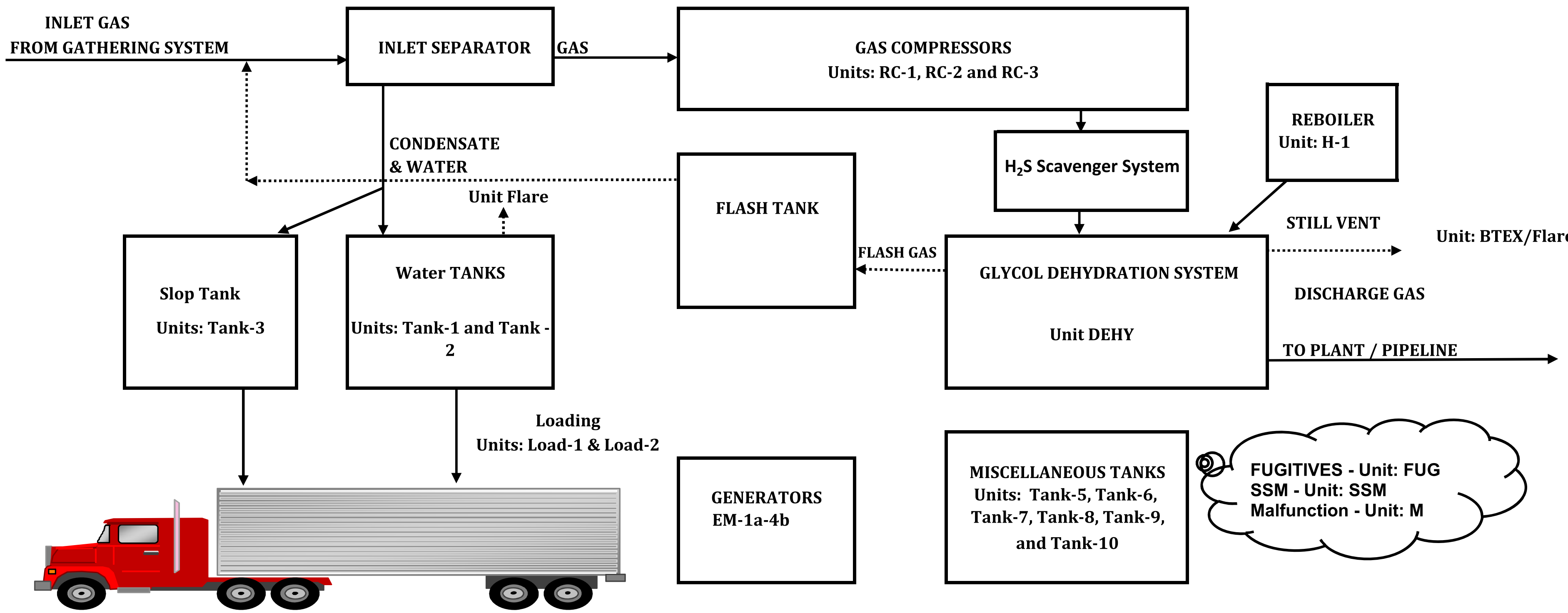
This project will not trigger Prevention of Significant Deterioration (PSD) review, as the facility is currently a minor NSR source and the proposed emission changes are less than 250 tons per year (tpy) for each criteria pollutant and will remain an area source of HAPs.

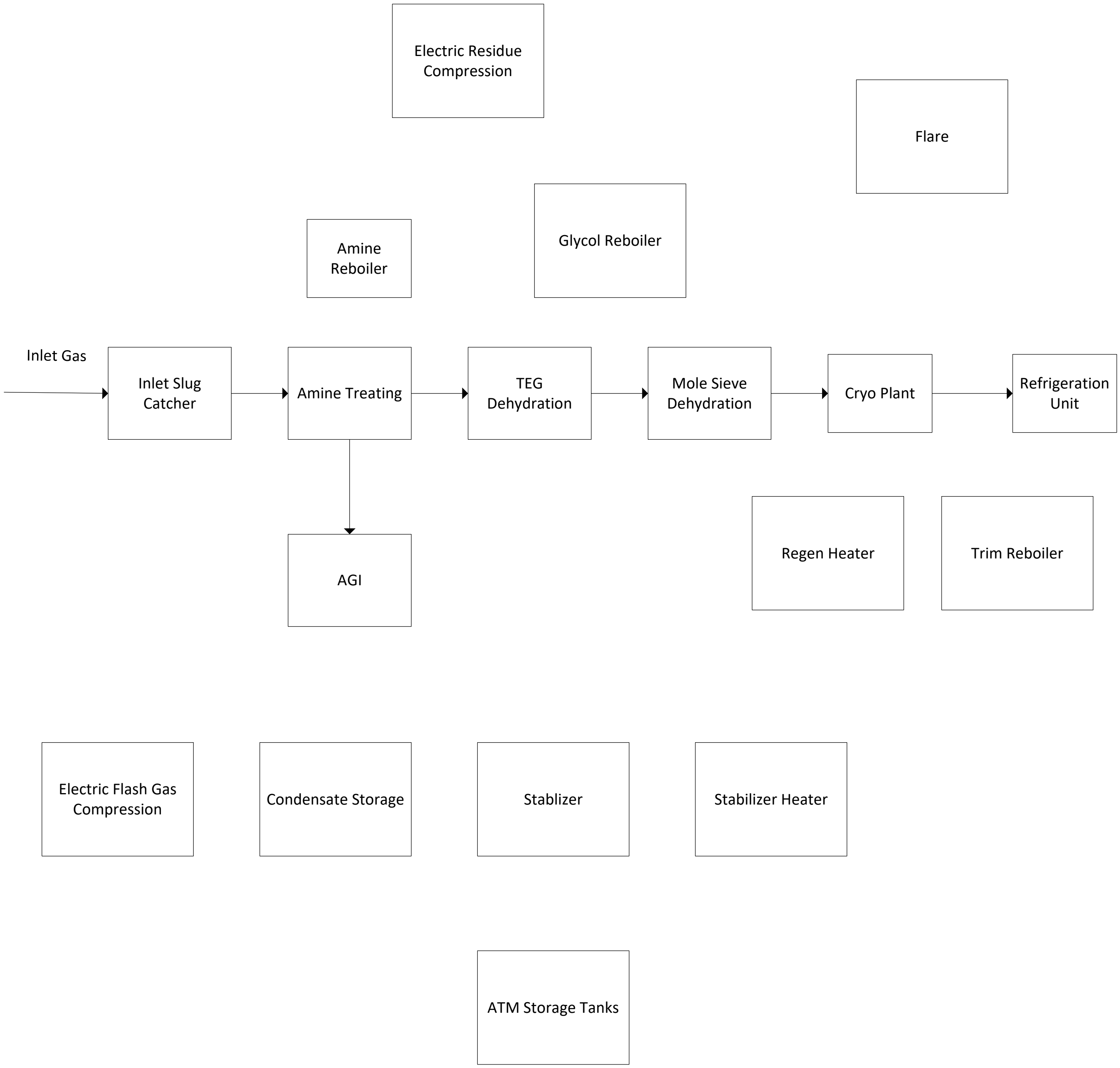
Section 4

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.

Targa Midstream Services, LLC
Copperhead Compressor Station





ALTAMIRA

525 Central Park Drive
Suite 500
Oklahoma City, OK 73105

www.altamira-us.com

FIGURE TITLE
GAS PLANT PROCESS FLOW DIAGRAM

DOCUMENT TITLE
NEW SOURCE REVIEW APPLICATION

CLIENT
TARGA MIDSTREAM SERVICES LLC

LOCATION
COPPERHEAD GAS PLANT

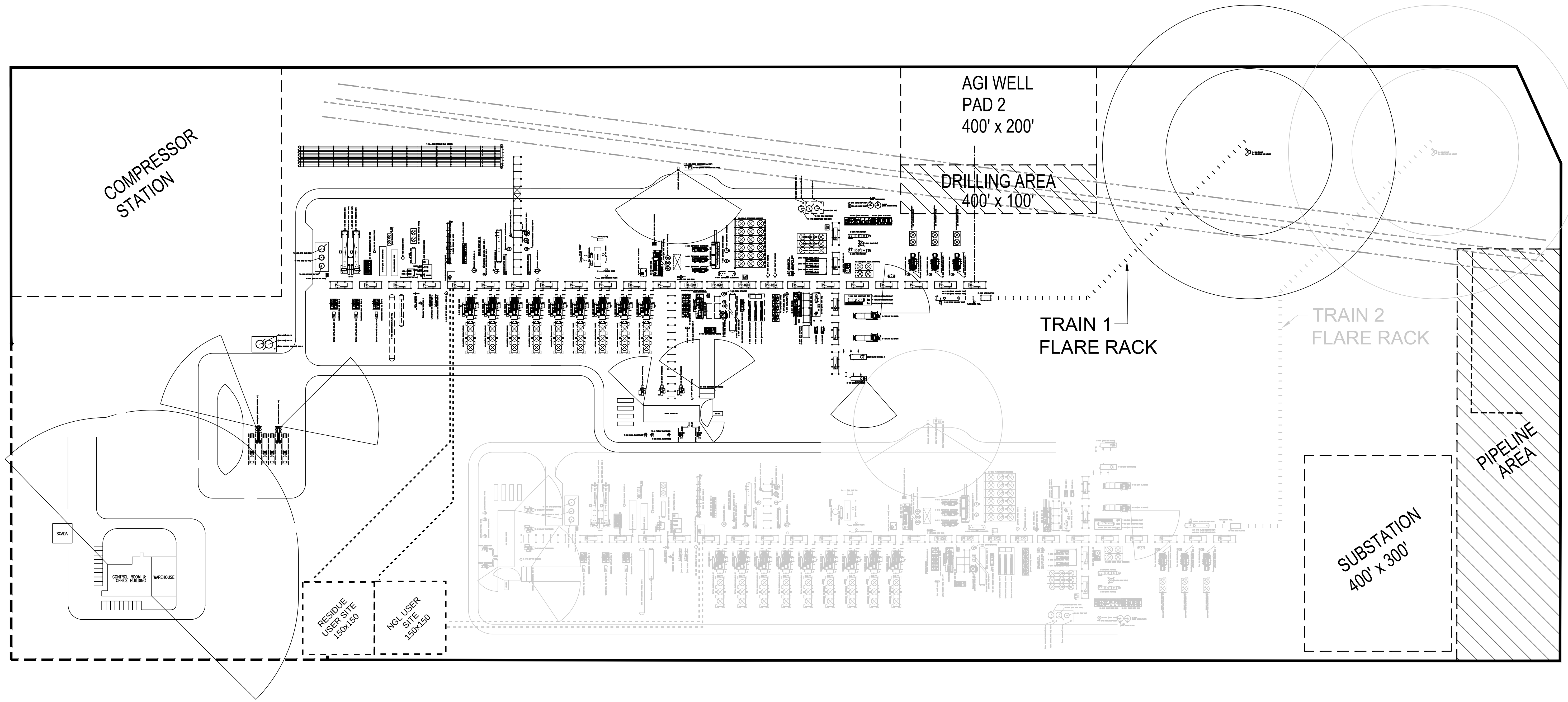
DATE	11/27/2023
SCALE	NOT TO SCALE
DESIGNED BY	CM
APPROVED BY	LWL
DRAWN BY	CM
PROJECT NUMBER	
FIGURE NUMBER	

Section 5

Plot Plan Drawn to Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

A plot plan is attached. Access and haul roads are indicated in green, the facility property boundary is indicated in blue, and the area which will be restricted to public access is indicated in red.



FUTURE

0 25' 50' 100' 200'

PLOT DATE: 1/25/2024

REFERENCE DWGS.	REV	DESCRIPTION	DWN	CHKD	DATE	REV	DESCRIPTION	DWN	CHKD	DATE
						C	UPDATED PLANT 2 & ADJUSTED WELL PADS	FRD		1/24/24
						B	ADDED NRU SECTION IN PLANT 1	FRD	DV	1/23/24
						A	NEW DRAWING	FRD		9/15/23

PREPARED BY: TARGA RESOURCES TECHNICAL SERVICES

PROJECT NUMBER:

	DATE
SCALE: NONE	
DWN BY: FRD	9/15/23
CHKD BY:	
FINAL CK:	
ENGR.:	
APPRV:	
APPRV:	

FACILITY NAME
—

DRAWING NUMBER
TEMP PLOT

CAD FILE NAME

REVISION
C

PLOT PLAN

G:\CAD\COPPERHEAD\TEMP PLOT_REV C.DWG

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:

A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.
B. At least 5 significant figures shall be retained in all intermediate calculations.
C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

(1) If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;
(2) If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**
(3) If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.

(4) The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Heaters and Reboilers

The facility will be equipped with several heaters and reboilers of various heat input capacities. For units H-1, H-2, H-1704-CH1, H-4701-CH1, H-1704-CH2, H-4701-CH2 AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of Nitrogen oxides (NO_x), carbon monoxide (CO)volatile organic compounds (VOC), particulate matter (PM), and hazardous air pollutants (HAPs). For units H-1701-CH1, H-1702-CH1, H-1701-CH2, H-1702-CH2 AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of volatile organic compounds (VOC), particulate matter (PM), and hazardous air pollutants (HAPs). Nitrogen oxides (NO_x) and carbon monoxide (CO) were determined based on manufacturer guarantees. Sulfur dioxide emissions were calculated stoichiometrically assuming that the natural gas used as fuel in the heaters and reboilers contains a maximum H_2S content of 5 ppm based on pipeline specifications.

For units H-1701-CHP, H-1702-CHP, H-1701-CH2, and H-1702-CH2, manufacturer specifications were used to determine emissions of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and particulate matter (PM). AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of and hazardous air pollutants (HAPs). Sulfur dioxide emissions were calculated stoichiometrically assuming that the natural gas used as fuel in the heaters and reboilers contains a maximum H_2S content of 5 ppm based on pipeline specifications.

For units H-1, H-2, H-1704-CHP, H-4701-CHP, H-1704-CH2, and H-4701-CH2, AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM), and hazardous air pollutants (HAPs). Sulfur dioxide emissions were calculated stoichiometrically assuming that the natural gas used as fuel in the heaters and reboilers contains a maximum H_2S content of 5 ppm based on pipeline specifications. Emissions of nitrogen oxides (NO_x) are based on the emission factor presented in 20.2.50.119.B(1) NMAC to comply with 20.2.50.119.B(3) NMAC as these units will be considered new units and must comply upon startup.

Greenhouse gas emissions from all heaters and reboilers were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2.

TEG Glycol Dehydrators

BR&E ProMax was used to determine emissions from the glycol still vents and non-condensable overheads from the BTEX condensers. The glycol dehydrators associated with the gas plant are routed back to the inlet with a VRU as part of closed loop system. The glycol dehydrators associated with the compressor station are controlled by the flare (FLARE).

Amine Units

BR&E ProMax was used to determine emissions from the amine units. Contactor overheads are routed to the back to the system for further treatment. The regenerator overheads are routed to the acid gas injection (AGI) well for injection. The Flares (FL-1800-CHP and FL-1800-CH2) control the amine units if the AGI is off line for well maintenance.

Flares and Vapor Combustors

The flares at the facility (FLARE, FL-1800-CHP and FL-1800-CH2, VCU) will flare both inlet and residue gas. The expected composition and maximum expected volumes of inlet gas and residue gas were used as the basis of the flare calculation. TNRCC RG-109 flare emission factors for low Btu gas were used to calculate emissions of nitrogen oxides (NO_x) and carbon monoxide (CO). VOC, H_2S, and SO_2 emissions are calculated based on the VOC and H_2S content of the inlet and residue gas. An assumed 98% destruction efficiency is applied to the VOC and H_2S emissions.

Greenhouse gas emissions from the flares were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2 with the methodology outlined in 40 CFR 98.233(n).

Condensate Storage Tanks

Emissions from various storage tanks were determined using BR&E ProMax.

H2S Scavenger Storage Tanks
Emissions from the H_2S scavenger storage tanks were determined using BR&E ProMax. Emissions from the H_2S scavenger storage tanks are uncontrolled and are vented to the atmosphere.

Condensate Loading
Condensate loading emissions were calculated using the loading loss equation and variables from AP-42 Section 5.2, *Transportation and Marketing of Petroleum Liquids*. True vapor pressure of loaded liquid, molecular weight of vapor, temperature of bulk liquid, and volatile organic compound (VOC), hazardous air pollutants (HAP), and hydrogen sulfide (H_2S) mass percentage were determined with BR&E ProMax. Condensate loading is vapor balanced with the condensate tanks with a 95% capture efficiency.

Fugitives
The emissions from fugitive components associated with this project are calculated using emission factors from Table 2-4 of the EPA Protocol for Equipment Leak Emission estimates, November 1995. Site specific analyses for inlet gas, residue gas, and condensate were used.

Haul Road Emissions
Unpaved haul road emissions were calculated using constants from AP-42 Table 13.2.2-2 and the methodology outlined in AP-42 Chapter 13.2.2.

Miscellaneous MSS
Miscellaneous MSS emissions include routine pigging activities, routine replacement of glycol solution used in dehydration units, routine replacement of solution used in amine units, use of aerosol lubricants, piping components, and calibration activities.

MSS Blowdowns
MSS Blowdown emissions include venting emissions from blowdowns, starter vents, and any gas operated controllers present at the facility, if any.

Targa Midstream Services, LLC, Copperhead Gas Plant

Emissions Summary

Uncontrolled Steady-State Emissions

Unit	Description	NO_x		CO		VOC		SO_2		TSP		PM_{10}		$PM_{2.5}$		Total HAPs		H2S	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tpy	lb/hr	tpy
FUG	Facility fugitives	-	-	-	-	-	1.87	-	-	-	-	-	-	-	-	-	0.10	1.08E-04	4.74E-04
DEHY	Glycol Dehydrator	-	-	-	-	-	447.0	-	-	-	-	-	-	-	-	-	199.54	-	-
H-1	Dehydrator Reboiler	0.29	1.29	0.25	1.08	0.0162	0.071	0.020	0.09	0.022	0.098	0.022	0.098	0.022	0.098	0.000	0.001	-	-
H-2	Dehydrator Reboiler	0.29	1.29	0.25	1.08	0.0162	0.071	0.020	0.09	0.022	0.098	0.022	0.098	0.022	0.098	0.000	0.001	-	-
FLARE	Flare	0.090	0.39	0.18	0.79	-	-	0.049	0.213	-	-	-	-	-	-	-	-	5.16E-04	0.0023
Tank-1	Condensate tank	-	-	-	-	-	8.2	-	-	-	-	-	-	-	-	-	0.23	1.34E-03	0.01
Tank-2	Condensate tank	-	-	-	-	-	8.2	-	-	-	-	-	-	-	-	-	0.23	1.34E-03	0.01
Tank-3	Produced Water tank	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.0158	7.07E-04	0.0031
Tank-4	Produced Water tank	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.0158	-	-
Tank-5	New H2S scavenger tank	-	-	-	-	-	0.35	-	-	-	-	-	-	-	-	-	0.35	-	-
Tank-6	Spent H2S scavenger tank	-	-	-	-	-	0.35	-	-	-	-	-	-	-	-	-	0.35	-	-
LOAD-1	Load-out of condensate	-	-	-	-	-	12.56	-	-	-	-	-	-	-	-	-	2.1E+00	-	-
LOAD-2	Load-out of Produced Water	-	-	-	-	-	7.68E-04	-	-	-	-	-	-	-	-	-	0.0000	-	-
	Electric Compressors Blowdowns	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-	-	0.000	0.00E+00	0.0000
SSM	Pigging and purging pipeline	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-	-	0.000	0.00E+00	0.0000
	Pipeline Maintenance	-	-	-	-	-	0.0010	-	-	-	-	-	-	-	-	-	1.59E-05	1.40E-05	6.1E-05
	Vessel Blowdown	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-	-	0.000	0.00E+00	0.0000
	Totals	0.68	2.97	0.67	2.95	0.0324	478.9	0.09	0.39	0.045	0.196	0.04	0.196	0.04	0.196	0.000	202.92	0.004	0.02

Controlled Steady State Emissions

Unit	Description	NO_x		CO		VOC		SO_2		TSP		PM_{10}		$PM_{2.5}$		Total HAPs		H2S	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tpy	lb/hr	tpy
	Compressor Station Equipment																		
EM-1a	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-1b	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-2a	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-2b	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-3a	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-4a	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-4a	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
EM-4b	Diesel Generator	1.09	4.79	0.42	1.85	0.10	0.44	0.02	0.08	0.02	0.09	0.02	0.09	0.02	0.09	0.02	0.07	-	-
GEN-1	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
GEN-2	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
GEN-3	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
GEN-4	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
GEN-5	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
GEN-6	Cummins GQSK60-G8	1.93	8.43	1.23	5.40	1.53	6.70	0.01	0.03	0.04	0.17	0.04	0.17	0.04	0.17	0.47	2.05	-	-
FUG	Facility fugitives	-	-	-	-	0.43	1.87	-	-	-	-	-	-	-	-	0.02	0.10	1.08E-04	4.74E-04
DEHY1	Glycol Dehydrator	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEHY2	Glycol Dehydrator	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H-1	Dehydrator Reboiler	0.29	1.29	0.25	1.08	0.0162	0.071	0.02	0.09	0.022	0.098	0.022	0.098	0.022	0.098	0.0002	0.001	-	-
H-2	Dehydrator Reboiler	0.29	1.29	0.25	1.08	0.0162	0.071	0.02	0.09	0.022	0.098	0.022	0.098	0.022	0.098	0.0002	0.001	-	--
FLARE	Flare - Dehydrator/Tank Control	1.47	6.43	2.93	12.84	3.10	13.56	8.91	39.02	-	-	-	-	-	-	0.48	2.12	0.097	0.42
Tank-1	Produced Water tank	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank-2	Produced Water tank	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank-3	Slop Tank	-	-	-	-	0.01	0.05	-	-	-	-	-	-	-	-	-	0.016	7.07E-04	0.0031
Tank-4	Produced Water Tank	-	-	-	-	-		-	-	-	-	-	-	-	-	-			
Tank-5	New H2S scavenger tank	-	-	-	-	0.08	0.35	-	-	-	-	-	-	-	-	-	0.35	-	-
Tank-6	Spent H2S scavenger tank	-	-	-	-	0.08	0.35	-	-	-	-	-	-	-	-	-	0.35	-	-
LOAD-1	Load-out of Produced Water	-	-	-	-	116.55	11.35	-	-	-	-	-	-	-	-	-	2.07	-	-
LOAD-2	Load-out of Slop Tank	-	-	-	-	0.003	0.007	-	-	-	-	-	-	-	-	-	0.000	-	-
HAUL	Haul Roads	-	-	-	-	-	-	-	-	1.38		0.35		0.04		-	-	-	-
	Pigging and purging pipeline	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	0.00	0.00E+00	0.00E+00
SSM	Pipeline Maintenance	-	-	-	-	-	0.0010	-	-	-	-	-	-	-	-	-	1.59E-05	1.40E-05	6.15E-05
	Flare - SSM	10.88	0.05	21.71	0.09	19.08	0.0746	1.15	4.50E-03	-	-	-	-	-	-	-	-	1.11E-05	4.88E-05
M	Malfunction	-	-	-	-	-	10.00	-	-	-	-	-	-	-	-	-	0.00	-	-
	Gas Processing Plant Equipment																		
H-1701-CHP	HMO Heater 1701	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1702-CHP	HMO Heater 1702	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1703-CHP	HMO Heater 1703	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1704-CHP	HMO Heater 1704	1.36	5.96	2.31	10.10	0.20	0.89	0.03	0.11	0.28	1.23	0.28	1.23	0.28	1.23	0.003	0.01	-	-
H-4701-CHP	Regen Gas Heater 4701	1.59	6.96	1.33	5.84	0.09	0.38	0.01	0.05	0.12	0.53	0.12	0.53	0.12	0.53	0.001	0.01	-	-
H-1701-CH2	HMO Heater 1701	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1702-CH2	HMO Heater 1702	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1703-CH2	HMO Heater 1703	2.86	12.52	3.81	16.69	0.43	1.88	0.05	0.23	0.59	2.59	0.59	2.59	0.59	2.59	0.01	0.03	-	-
H-1704-CH2	HMO Heater 1704	1.36	5.96	2.31	10.10	0.20	0.89	0.03	0.11	0.28	1.23	0.28	1.23	0.28	1.23	0.003	0.01	-	-
H-4701-CH2	Regen Gas Heater 4701	1.59	6.96	1.33	5.84	0.09	0.38	0.01	0.05	0.12	0.53	0.12	0.53	0.12	0.53	0.001	0.01	-	-
FL-1800-CHP	Flare 1: Steady State	0.21	0.93	0.43	1.86	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	1.40E-06	6.14E-06
FL-1800-CH2	Flare 2: Steady State	0.21	0.93	0.43	1.86	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	1.40E-06	6.14E-06
FUG-CHP	Plant 1 Fugitives	-	-	-	-	2.05	8.99	-	-	-	-	-	-	-	-	0.09	0.39	0.05	0.24
FUG-CH2	Plant 2 Fugitives	-	-	-	-	2.05	8.99	-	-	-	-	-	-	-	-	0.09	0.39	0.05	0.24
FL-1800-CHP	Flare: Startup, Shutdown, Maintenance E	1801.87	24.04	3597.22	48.00	1630.79	3.49	1260.55	36.91	-	-	-	-	-	-	-	-	13.67	0.40
FL-1800-CH2	Flare: Startup, Shutdown, Maintenance E	1801.87		3597.22		1630.79		1260.55		-	-	-	-	-	-	-	-	13.67	
TK-1907-CHP	Produced Water Tank	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.89	-	0.301
TK-1908-CHP	Produced Water Tank	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.89	-	0.301
TK-1907-CH2	Produced Water Tank	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.89	-	0.301
TK-1908-CH2	Produced Water Tank	-	-	-	-	0.24	1.05	-	-	-	-	-	-	-	-	-	0.89	-	0.301
L-P	Pressurized Loading	-	-	-	-	0.54	0.05	-	-	-	-	-	-	-	-	-	-	-	-
VCU	Vapor Combustion Unit	0.06	0.27	0.12	0.54	0.32	1.40	2.59	11.33	-	-	-	-	-	-	0.29	1.28	0.03	0.12
NRU	Nitrogen Rejection Unit	-	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-	0.00	0.00	-	-
MSSFUG	MSS - NRU Residue Gas Blowdown	-	-	-	-	315.76	7.58	-	-	-	-	-	-	-	-	0.00	0.00	-	
	Totals	**3,660.52**	**225.12**	**7,261.46**	**246.58**	**3,735.76**	**140.04**	**2,534.36**	**89.96**	**6.18**	**21.00**	**5.15**	**21.00**	**4.83**	**21.00**	**3.96**	**23.72**	**27.57**	**2.63**

FUGITIVE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

EPN: **FUG**

COMPONENT	COUNT [1]	EPA FACTOR [2] (lb/hr-src)	REDUCTION ALLOWED FOR LDAR	VOC CONTENT IN STREAM	TOTAL VOC EMISSIONS (lb/hr)	TOTAL VOC EMISSIONS (tpy)	H_2S CONTENT IN STREAM[4]	TOTAL H2S EMISSIONS (lb/hr)	TOTAL H_2S EMISSIONS (tpy)	HAP CONTENT IN STREAM[4]	TOTAL HAP EMISSIONS (lb/hr)	TOTAL HAP EMISSIONS (tpy)	n-Hexane (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	n-Hexane (tpy)	Benzene (tpy)	Toluene (tpy)
INLET GAS (gas)																		
VALVES	360	0.00992	97%	23.46%	2.51E-02	1.10E-01	0.015%	1.62E-05	7.09E-05	0.39%	4.20E-04	1.84E-03	2.70E-04	9.38E-05	4.90E-05	1.18E-03	4.11E-04	2.15E-04
FLANGES	720	0.00086	30%	23.46%	1.02E-01	4.45E-01	0.015%	6.55E-05	2.87E-04	0.39%	1.70E-03	7.45E-03	1.09E-03	3.80E-04	1.98E-04	4.78E-03	1.66E-03	8.69E-04
CONNECTORS	360	0.00044	30%	23.46%	2.60E-02	1.14E-01	0.015%	1.68E-05	7.34E-05	0.39%	4.35E-04	1.91E-03	2.79E-04	9.71E-05	5.08E-05	1.22E-03	4.25E-04	2.22E-04
PRVs	16	0.01940	97%	23.46%	2.20E-03	9.60E-03	0.015%	1.41E-06	6.16E-06	0.39%	3.65E-05	1.60E-04	2.35E-05	8.16E-06	4.26E-06	1.03E-04	3.57E-05	1.87E-05
OTHER[3]	65	0.01940	97%	23.46%	8.90E-03	3.89E-02	0.015%	5.72E-06	2.50E-05	0.39%	1.48E-04	6.50E-04	9.53E-05	3.31E-05	1.73E-05	4.17E-04	1.45E-04	7.59E-05
CONDENSATE (light oil)																		
VALVES	192	0.00550	97%	100.00%	3.17E-02	1.39E-01	0.001%	3.19E-07	1.40E-06	7.70%	2.44E-03	1.07E-02	1.82E-03	6.25E-04	1.22E-03	7.99E-03	2.74E-03	5.36E-03
FLANGES	384	0.000243	30%	100.00%	6.53E-02	2.86E-01	0.001%	6.58E-07	2.88E-06	7.70%	5.03E-03	2.20E-02	3.76E-03	1.29E-03	2.52E-03	1.65E-02	5.64E-03	1.10E-02
CONNECTORS	192	0.00046	30%	100.00%	6.22E-02	2.73E-01	0.001%	6.26E-07	2.74E-06	7.70%	4.79E-03	2.10E-02	3.58E-03	1.23E-03	2.40E-03	1.57E-02	5.37E-03	1.05E-02
PUMP SEALS	7	0.02866	85%	100.00%	3.01E-02	1.32E-01	0.001%	3.03E-07	1.33E-06	7.70%	2.32E-03	1.02E-02	1.73E-03	5.93E-04	1.16E-03	7.59E-03	2.60E-03	5.09E-03
PRVs	8	0.016535	97%	100.00%	4.00E-03	1.74E-02	0.001%	3.99E-08	1.75E-07	7.70%	3.06E-04	1.34E-03	2.29E-04	7.82E-05	1.53E-04	1.00E-03	3.43E-04	6.71E-04
OTHER[3]	2	0.016535	97%	100.00%	1.00E-03	4.30E-03	0.001%	9.99E-09	4.37E-08	7.70%	7.64E-05	3.35E-04	5.71E-05	1.96E-05	3.83E-05	2.50E-04	8.57E-05	1.68E-04
WATER/OIL																		
VALVES	192	0.0002161	97%	100.00%	1.20E-03	5.50E-03	0.0010%	1.25E-08	5.49E-08	7.70%	9.59E-05	4.20E-04	7.17E-05	2.45E-05	4.81E-05	3.14E-04	1.07E-04	2.11E-04
CONNECTORS	384	0.000243	30%	100.00%	6.53E-02	2.86E-01	0.0010%	6.58E-07	2.88E-06	7.70%	5.03E-03	2.20E-02	3.76E-03	1.29E-03	2.52E-03	1.65E-02	5.64E-03	1.10E-02
FLANGES	192	0.0000064	30%	100.00%	9.00E-04	3.80E-03	0.0010%	8.65E-09	3.79E-08	7.70%	6.62E-05	2.90E-04	4.95E-05	1.69E-05	3.32E-05	2.17E-04	7.42E-05	1.45E-04
PRVs	2	0.030864	97%	100.00%	1.90E-03	8.10E-03	0.0010%	1.86E-08	8.17E-08	7.70%	1.43E-04	6.25E-04	1.07E-04	3.65E-05	7.15E-05	4.67E-04	1.60E-04	3.13E-04
TOTAL EMISSIONS					**0.43**	**1.87**		**1.08E-04**	**4.74E-04**		**0.02**	**0.10**	**0.02**	**0.004**	**0.01**	**0.06**	**0.02**	**0.03**

[1] Fugitive emission source counts were calculated based on information provided by the facility. Reduction credits are based on the TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance (06/2018), utilizing a 28VHP program.

[2] Factors are from TCEQ's "Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives," (October 2000). Emission factors pulled from Facility/Compound Specific Fugitive Emission Factors Table for Oil and Gas Production Operations.

[3] Includes compressors and sample points

[4] For conservative emission calculation purposes, the Total HAP and H_2S content of the water/oil stream was assumed to be equal to that of the condensate stream.

FUGITIVE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

EPN: FUG-CHP

COMPONENT	COUNT [1]	EPA FACTOR [2] (lb/hr-src)	REDUCTION ALLOWED FOR LDAR	VOC CONTENT IN STREAM	TOTAL VOC EMISSIONS (lb/hr)	TOTAL VOC EMISSIONS (tpy)	H_2S CONTENT IN STREAM[4]	TOTAL H2S EMISSIONS (lb/hr)	TOTAL H_2S EMISSIONS (tpy)	HAP CONTENT IN STREAM[4]	TOTAL HAP EMISSIONS (lb/hr)	TOTAL HAP EMISSIONS (tpy)	n-Hexane (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	n-Hexane (tpy)	Benzene (tpy)	Toluene (tpy)
INLET GAS (gas)																		
VALVES	971	0.00992	97%	25.49%	7.37E-02	3.23E-01	0.014%	4.15E-05	1.82E-04	0.29%	8.37E-04	3.67E-03	6.83E-04	1.04E-04	4.29E-05	2.99E-03	4.56E-04	1.88E-04
FLANGES	1942	0.00086	30%	25.49%	2.98E-01	1.31E+00	0.014%	1.68E-04	7.35E-04	0.29%	3.39E-03	1.48E-02	2.76E-03	4.21E-04	2.48E-04	1.21E-02	1.85E-03	1.09E-03
CONNECTORS	971	0.00044	30%	25.49%	7.62E-02	3.34E-01	0.014%	4.29E-05	1.88E-04	0.29%	8.66E-04	3.79E-03	7.07E-04	1.08E-04	6.34E-05	3.09E-03	4.72E-04	2.78E-04
PRVs	44	0.01940	97%	25.49%	6.50E-03	2.86E-02	0.014%	3.68E-06	1.61E-05	0.29%	7.42E-05	3.25E-04	6.05E-05	9.23E-06	1.27E-04	2.65E-04	4.04E-05	5.55E-04
OTHER[3]	1155	0.01940	97%	25.49%	1.71E-01	7.51E-01	0.014%	9.65E-05	4.23E-04	0.29%	1.95E-03	8.53E-03	1.59E-03	2.42E-04	3.33E-03	6.96E-03	1.06E-03	1.46E-02
RESIDUE GAS (gas)																		
VALVES	541	0.00992	97%	0.07%	1.00E-04	5.00E-04	0.00001%	1.88E-08	8.23E-08	0.000001%	2.03E-09	8.87E-09	1.27E-09	7.21E-10	3.83E-11	5.54E-09	3.16E-09	1.68E-10
FLANGES	1082	0.00086	30%	0.07%	4.00E-04	1.90E-03	0.00001%	7.60E-08	3.33E-07	0.000001%	8.19E-09	3.59E-08	5.12E-09	2.92E-09	1.55E-10	2.24E-08	1.28E-08	6.79E-10
CONNECTORS	541	0.00044	30%	0.07%	1.00E-04	5.00E-04	0.00001%	1.94E-08	8.51E-08	0.000001%	2.10E-09	9.18E-09	1.31E-09	7.46E-10	3.97E-11	5.74E-09	3.27E-09	1.74E-10
PRVs	22	0.01940	97%	0.07%	0.00E+00	0.00E+00	0.00001%	1.49E-09	6.54E-09	0.000001%	1.61E-10	7.06E-10	1.01E-10	5.74E-11	3.05E-12	4.41E-10	2.51E-10	1.33E-11
OTHER[3]	750	0.01940	97%	0.07%	3.00E-04	1.30E-03	0.00001%	5.09E-08	2.23E-07	0.000001%	5.49E-09	2.41E-08	3.43E-09	1.96E-09	1.04E-10	1.50E-08	8.56E-09	4.55E-10
PROPANE REFRIGERATION GAS (gas)																		
VALVES	202	0.00992	97%	99.30%	5.97E-02	2.62E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	404	0.00086	30%	99.30%	2.42E-01	1.06E+00	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	202	0.00044	30%	99.30%	6.18E-02	2.71E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	7	0.01940	97%	99.30%	4.00E-03	1.77E-02	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OTHER[3]	198	0.01940	97%	99.30%	1.14E-01	5.01E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ACID GAS (gas)																		
VALVES	96	0.00992	97%	0.07%	0.00E+00	1.00E-04	13.174%	3.76E-03	1.65E-02	0.04%	1.12E-05	4.90E-05	1.64E-08	8.09E-06	2.77E-06	7.18E-08	3.55E-05	1.21E-05
FLANGES	192	0.00086	30%	0.07%	1.00E-04	4.00E-04	13.174%	1.52E-02	6.67E-02	0.04%	4.53E-05	1.98E-04	6.63E-08	3.27E-05	1.12E-05	2.91E-07	1.43E-04	4.91E-05
CONNECTORS	96	0.00044	30%	0.07%	0.00E+00	1.00E-04	13.174%	3.90E-03	1.71E-02	0.04%	1.16E-05	5.07E-05	1.70E-08	8.38E-06	2.87E-06	7.43E-08	3.67E-05	1.26E-05
PRVs	2	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	1.53E-04	6.72E-04	0.04%	4.56E-07	2.00E-06	6.68E-10	3.30E-07	1.13E-07	2.93E-09	1.44E-06	4.94E-07
OTHER[3]	6	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	4.60E-04	2.01E-03	0.04%	1.37E-06	5.99E-06	2.00E-09	9.89E-07	3.39E-07	8.78E-09	4.33E-06	1.48E-06
FLARE PRODUCT GAS (gas)																		
VALVES	95	0.00992	97%	0.07%	0.00E+00	1.00E-04	13.174%	0.004	1.63E-02	0.04%	1.11E-05	4.85E-05	1.62E-08	8.01E-06	2.74E-06	7.11E-08	3.51E-05	1.20E-05
FLANGES	190	0.00086	30%	0.07%	1.00E-04	4.00E-04	13.174%	0.015	6.60E-02	0.04%	4.48E-05	1.96E-04	6.57E-08	3.24E-05	1.11E-05	2.88E-07	1.42E-04	4.86E-05
CONNECTORS	95	0.00044	30%	0.07%	0.00E+00	1.00E-04	13.174%	0.004	1.69E-02	0.04%	1.15E-05	5.02E-05	1.68E-08	8.29E-06	2.84E-06	7.36E-08	3.63E-05	1.24E-05
PRVs	0	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	0.000	0.00E+00	0.04%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OTHER[3]	110	0.01940	97%	0.07%	0.00E+00	2.00E-04	13.174%	0.008	3.69E-02	0.04%	2.51E-05	1.10E-04	3.68E-08	1.81E-05	6.21E-06	1.61E-07	7.94E-05	2.72E-05
CONDENSATE (light oil)																		
VALVES	602	0.00550	97%	99.66%	9.90E-02	4.34E-01	0.0010%	1.00E-06	4.38E-06	7.70%	7.65E-03	3.35E-02	5.72E-03	1.96E-03	3.84E-03	2.51E-02	8.58E-03	1.68E-02
FLANGES	1204	0.000243	30%	99.66%	2.04E-01	8.94E-01	0.0010%	2.06E-06	9.03E-06	7.70%	1.58E-02	6.91E-02	1.18E-02	4.04E-03	7.91E-03	5.17E-02	1.77E-02	3.46E-02
CONNECTORS	602	0.00046	30%	99.66%	1.94E-01	8.52E-01	0.0010%	1.96E-06	8.60E-06	7.70%	1.50E-02	6.58E-02	1.12E-02	3.85E-03	7.54E-03	4.92E-02	1.68E-02	3.30E-02
PUMP SEALS	4	0.02866	85%	99.66%	1.71E-02	7.51E-02	0.0010%	1.73E-07	7.58E-07	7.70%	1.32E-03	5.80E-03	9.91E-04	3.39E-04	6.64E-04	4.34E-03	1.48E-03	2.91E-03
PRVs	12	0.016535	97%	99.66%	5.90E-03	2.60E-02	0.0010%	5.99E-08	2.62E-07	7.70%	4.59E-04	2.01E-03	3.43E-04	1.17E-04	2.30E-04	1.50E-03	5.14E-04	1.01E-03
OTHER[3]	793	0.016535	97%	99.66%	3.92E-01	1.72E+00	0.0010%	3.96E-06	1.73E-05	7.70%	3.03E-02	1.33E-01	2.27E-02	7.75E-03	1.52E-02	9.92E-02	3.40E-02	6.65E-02
METHANOL																		
VALVES	25	0.0002161	97%	100.00%	2.00E-04	7.00E-04	0.0000%	0.00E+00	0.00E+00	100.00%	1.62E-04	7.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	50	0.0000064	30%	100.00%	2.00E-04	1.00E-03	0.0000%	0.00E+00	0.00E+00	100.00%	2.24E-04	9.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	25	0.000243	30%	100.00%	4.30E-03	1.86E-02	0.0000%	0.00E+00	0.00E+00	100.00%	4.25E-03	1.86E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PUMP SEALS	1	0.02866	85%	100.00%	4.30E-03	1.88E-02	0.0000%	0.00E+00	0.00E+00	100.00%	4.30E-03	1.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	1	0.030864	97%	100.00%	9.00E-04	4.10E-03	0.0000%	0.00E+00	0.00E+00	100.00%	9.26E-04	4.06E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WATER/OIL																		
VALVES	107	0.0002161	97%	99.66%	7.00E-04	3.00E-03	0.0010%	6.98E-09	3.06E-08	7.70%	5.34E-05	2.34E-04	3.99E-05	1.37E-05	2.68E-05	1.75E-04	5.99E-05	1.17E-04
FLANGES	214	0.0000064	30%	99.66%	1.00E-03	4.20E-03	0.0010%	9.64E-09	4.22E-08	7.70%	7.37E-05	3.23E-04	5.51E-05	1.89E-05	3.70E-05	2.42E-04	8.27E-05	1.62E-04
CONNECTORS	107	0.000243	30%	99.66%	1.81E-02	7.94E-02	0.0010%	1.83E-07	8.03E-07	7.70%	1.40E-03	6.14E-03	1.05E-03	3.59E-04	7.03E-04	4.59E-03	1.57E-03	3.08E-03
PRVs	2	0.030864	97%	99.66%	1.80E-03	8.10E-03	0.0010%	1.86E-08	8.17E-08	7.70%	1.43E-04	6.25E-04	1.07E-04	3.65E-05	7.15E-05	4.67E-04	1.60E-04	3.13E-04
LIQUID PRODUCT																		
VALVES	287	0.0002161	97%	61.43%	1.10E-03	5.00E-03	0.0004%	7.68E-09	3.36E-08	0.65%	1.21E-05	5.31E-05	1.03E-05	1.25E-06	4.74E-07	4.52E-05	5.48E-06	2.07E-06
FLANGES	574	0.0000064	30%	61.43%	1.60E-03	6.90E-03	0.0004%	1.06E-08	4.64E-08	0.65%	1.67E-05	7.33E-05	1.42E-05	1.73E-06	6.54E-07	6.24E-05	7.57E-06	2.86E-06
CONNECTORS	287	0.000243	30%	61.43%	3.00E-02	1.31E-01	0.0004%	2.02E-07	8.83E-07	0.65%	3.18E-04	1.39E-03	2.71E-04	3.29E-05	1.24E-05	1.19E-03	1.44E-04	5.44E-05
PUMP SEALS	5	0.02866	85%	61.43%	1.32E-02	5.78E-02	0.0004%	8.87E-08	3.89E-07	0.65%	1.40E-04	6.13E-04	1.19E-04	1.45E-05	5.47E-06	5.22E-04	6.34E-05	2.40E-05
PRVs	22	0.030864	97%	61.43%	1.25E-02	5.48E-02	0.0004%	8.41E-08	3.68E-07	0.65%	1.33E-04	5.81E-04	1.13E-04	1.37E-05	5.19E-06	4.95E-04	6.01E-05	2.27E-05
AMINE PRODUCT																		
VALVES	229	0.0002161	97%	45.00%	7.00E-04	2.90E-03	0.0517%	7.68E-07	3.36E-06	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	458	0.0000064	30%	45.00%	9.00E-04	4.00E-03	0.0517%	1.06E-06	4.64E-06	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	229	0.000243	30%	45.00%	1.75E-02	7.68E-02	0.0517%	2.01E-05	8.82E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PUMP SEALS	4	0.02866	85%	45.00%	7.70E-03	3.39E-02	0.0517%	8.89E-06	3.90E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	11	0.030864	97%	45.00%	4.60E-03	2.01E-02	0.0517%	5.27E-06	2.31E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GYCOL PRODUCT																		
VALVES	191	0.0002161	97%	100.00%	1.20E-03	5.40E-03	0.0000%	0.00E+00	0.00E+00	0.01%	3.51E-06	1.54E-05	4.36E-10	3.46E-08	5.00E-08	1.91E-09	1.51E-07	2.19E-07
FLANGES	382	0.0000064	30%	100.00%	1.70E-03	7.50E-03	0.0000%	0.00E+00	0.00E+00	0.01%	2.08E-07	9.10E-07	6.02E-10	4.77E-08	6.90E-08	2.64E-09	2.09E-07	3.02E-07
CONNECTORS	191	0.000243	30%	100.00%	3.25E-02	1.42E-01	0.0000%	0.00E+00	0.00E+00	0.01%	3.95E-06	1.73E-05	1.15E-08	9.08E-07	1.31E-06	5.02E-08	3.97E-06	5.74E-06
PUMP SEALS	4	0.02866	85%	100.00%	1.72E-02	7.53E-02	0.0000%	0.00E+00	0.00E+00	0.01%	9.76E-06	4.28E-05	6.06E-09	4.80E-07	6.94E-07	2.65E-08	2.10E-06	3.04E-06
PRVs	13	0.030864	97%	100.00%	1.20E-02	5.27E-02	0.0000%	0.00E+00	0.00E+00	0.01%	3.42E-05	1.50E-04	4.24E-09	3.36E-07	4.86E-07	1.86E-08	1.47E-06	2.13E-06
TOTAL EMISSIONS					**2.05**	**8.99**		**0.05**	**0.24**		**0.09**	**0.39**	**0.06**	**0.01**	**0.02**	**0.16**	**0.05**	**0.11**

[1] Fugitive emission source counts were calculated based on information provided by the facility. Reduction credits are based on the TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance (06/2018), utilizing a 28VHP program.
[2] Factors are from TCEQ's "Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives," (October 2000). Emission factors pulled from Facility/Compound Specific Fugitive Emission Factors Table for Oil and Gas Production Operations.
[3] Includes compressors and sample points
[4] For conservative emission calculation purposes, the Total HAP and H_2S content of the water/oil stream was assumed to be equal to that of the condensate stream.

FUGITIVE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

EPN: FUG-CH2

COMPONENT	COUNT [1]	EPA FACTOR [2] (lb/hr-src)	REDUCTION ALLOWED FOR LDAR	VOC CONTENT IN STREAM	TOTAL VOC EMISSIONS (lb/hr)	TOTAL VOC EMISSIONS (tpy)	H_2S CONTENT IN STREAM[4]	TOTAL H2S EMISSIONS (lb/hr)	TOTAL H_2S EMISSIONS (tpy)	HAP CONTENT IN STREAM[4]	TOTAL HAP EMISSIONS (lb/hr)	TOTAL HAP EMISSIONS (tpy)	n-Hexane (lb/hr)	Benzene (lb/hr)	Toluene (lb/hr)	n-Hexane (tpy)	Benzene (tpy)	Toluene (tpy)
INLET GAS (gas)																		
VALVES	971	0.00992	97%	25.49%	7.37E-02	3.23E-01	0.014%	4.15E-05	1.82E-04	0.29%	8.37E-04	3.67E-03	6.83E-04	1.04E-04	4.29E-05	2.99E-03	4.56E-04	1.88E-04
FLANGES	1942	0.00086	30%	25.49%	2.98E-01	1.31E+00	0.014%	1.68E-04	7.35E-04	0.29%	3.39E-03	1.48E-02	2.76E-03	4.21E-04	2.48E-04	1.21E-02	1.85E-03	1.09E-03
CONNECTORS	971	0.00044	30%	25.49%	7.62E-02	3.34E-01	0.014%	4.29E-05	1.88E-04	0.29%	8.66E-04	3.79E-03	7.07E-04	1.08E-04	6.34E-05	3.09E-03	4.72E-04	2.78E-04
PRVs	44	0.01940	97%	25.49%	6.50E-03	2.86E-02	0.014%	3.68E-06	1.61E-05	0.29%	7.42E-05	3.25E-04	6.05E-05	9.23E-06	1.27E-04	2.65E-04	4.04E-05	5.55E-04
OTHER[3]	1155	0.01940	97%	25.49%	1.71E-01	7.51E-01	0.014%	9.65E-05	4.23E-04	0.29%	1.95E-03	8.53E-03	1.59E-03	2.42E-04	3.33E-03	6.96E-03	1.06E-03	1.46E-02
RESIDUE GAS (gas)																		
VALVES	541	0.00992	97%	0.07%	1.00E-04	5.00E-04	0.00001%	1.88E-08	8.23E-08	0.000001%	2.03E-09	8.87E-09	1.27E-09	7.21E-10	3.83E-11	5.54E-09	3.16E-09	1.68E-10
FLANGES	1082	0.00086	30%	0.07%	4.00E-04	1.90E-03	0.00001%	7.60E-08	3.33E-07	0.000001%	8.19E-09	3.59E-08	5.12E-09	2.92E-09	1.55E-10	2.24E-08	1.28E-08	6.79E-10
CONNECTORS	541	0.00044	30%	0.07%	1.00E-04	5.00E-04	0.00001%	1.94E-08	8.51E-08	0.000001%	2.10E-09	9.18E-09	1.31E-09	7.46E-10	3.97E-11	5.74E-09	3.27E-09	1.74E-10
PRVs	22	0.01940	97%	0.07%	0.00E+00	0.00E+00	0.00001%	1.49E-09	6.54E-09	0.000001%	1.61E-10	7.06E-10	1.01E-10	5.74E-11	3.05E-12	4.41E-10	2.51E-10	1.33E-11
OTHER[3]	750	0.01940	97%	0.07%	3.00E-04	1.30E-03	0.00001%	5.09E-08	2.23E-07	0.000001%	5.49E-09	2.41E-08	3.43E-09	1.96E-09	1.04E-10	1.50E-08	8.56E-09	4.55E-10
PROPANE REFRIGERATION GAS (gas)																		
VALVES	202	0.00992	97%	99.30%	5.97E-02	2.62E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	404	0.00086	30%	99.30%	2.42E-01	1.06E+00	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	202	0.00044	30%	99.30%	6.18E-02	2.71E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	7	0.01940	97%	99.30%	4.00E-03	1.77E-02	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OTHER[3]	198	0.01940	97%	99.30%	1.14E-01	5.01E-01	0.000%	0.00E+00	0.00E+00	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ACID GAS (gas)																		
VALVES	96	0.00992	97%	0.07%	0.00E+00	1.00E-04	13.174%	3.76E-03	1.65E-02	0.04%	1.12E-05	4.90E-05	1.64E-08	8.09E-06	2.77E-06	7.18E-08	3.55E-05	1.21E-05
FLANGES	192	0.00086	30%	0.07%	1.00E-04	4.00E-04	13.174%	1.52E-02	6.67E-02	0.04%	4.53E-05	1.98E-04	6.63E-08	3.27E-05	1.12E-05	2.91E-07	1.43E-04	4.91E-05
CONNECTORS	96	0.00044	30%	0.07%	0.00E+00	1.00E-04	13.174%	3.90E-03	1.71E-02	0.04%	1.16E-05	5.07E-05	1.70E-08	8.38E-06	2.87E-06	7.43E-08	3.67E-05	1.26E-05
PRVs	2	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	1.53E-04	6.72E-04	0.04%	4.56E-07	2.00E-06	6.68E-10	3.30E-07	1.13E-07	2.93E-09	1.44E-06	4.94E-07
OTHER[3]	6	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	4.60E-04	2.01E-03	0.04%	1.37E-06	5.99E-06	2.00E-09	9.89E-07	3.39E-07	8.78E-09	4.33E-06	1.48E-06
FLARE PRODUCT GAS (gas)																		
VALVES	95	0.00992	97%	0.07%	0.00E+00	1.00E-04	13.174%	3.72E-03	1.63E-02	0.04%	1.11E-05	4.85E-05	1.62E-08	8.01E-06	2.74E-06	7.11E-08	3.51E-05	1.20E-05
FLANGES	190	0.00086	30%	0.07%	1.00E-04	4.00E-04	13.174%	1.51E-02	6.60E-02	0.04%	4.48E-05	1.96E-04	6.57E-08	3.24E-05	1.11E-05	2.88E-07	1.42E-04	4.86E-05
PRVs	0	0.01940	97%	0.07%	0.00E+00	0.00E+00	13.174%	0.00E+00	0.00E+00	0.04%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
OTHER[3]	110	0.01940	97%	0.07%	0.00E+00	2.00E-04	13.174%	8.43E-03	3.69E-02	0.04%	2.51E-05	1.10E-04	3.68E-08	1.81E-05	6.21E-06	1.61E-07	7.94E-05	2.72E-05
CONDENSATE (light oil)																		
VALVES	602	0.00550	97%	99.66%	9.90E-02	4.34E-01	0.0010%	1.00E-06	4.38E-06	7.70%	7.65E-03	3.35E-02	5.72E-03	1.96E-03	3.84E-03	2.51E-02	8.58E-03	1.68E-02
FLANGES	1204	0.000243	30%	99.66%	2.04E-01	8.94E-01	0.0010%	2.06E-06	9.03E-06	7.70%	1.58E-02	6.91E-02	1.18E-02	4.04E-03	7.91E-03	5.17E-02	1.77E-02	3.46E-02
PUMP SEALS	4	0.02866	85%	99.66%	1.71E-02	7.51E-02	0.0010%	1.73E-07	7.58E-07	7.70%	1.32E-03	5.80E-03	9.91E-04	3.39E-04	6.64E-04	4.34E-03	1.48E-03	2.91E-03
PRVs	12	0.016535	97%	99.66%	5.90E-03	2.60E-02	0.0010%	5.99E-08	2.62E-07	7.70%	4.59E-04	2.01E-03	3.43E-04	1.17E-04	2.30E-04	1.50E-03	5.14E-04	1.01E-03
OTHER[3]	793	0.016535	97%	99.66%	3.92E-01	1.72E+00	0.0010%	3.96E-06	1.73E-05	7.70%	3.03E-02	1.33E-01	2.27E-02	7.75E-03	1.52E-02	9.92E-02	3.40E-02	6.65E-02
METHANOL																		
VALVES	25	0.0002161	97%	100.00%	2.00E-04	7.00E-04	0.0000%	0.00E+00	0.00E+00	100.00%	1.62E-04	7.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	50	0.0000064	30%	100.00%	2.00E-04	1.00E-03	0.0000%	0.00E+00	0.00E+00	100.00%	2.24E-04	9.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	25	0.000243	30%	100.00%	4.30E-03	1.86E-02	0.0000%	0.00E+00	0.00E+00	100.00%	4.25E-03	1.86E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PUMP SEALS	1	0.02866	85%	100.00%	4.30E-03	1.88E-02	0.0000%	0.00E+00	0.00E+00	100.00%	4.30E-03	1.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	1	0.030864	97%	100.00%	9.00E-04	4.10E-03	0.0000%	0.00E+00	0.00E+00	100.00%	9.26E-04	4.06E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
WATER/OIL																		
VALVES	107	0.0002161	97%	99.66%	7.00E-04	3.00E-03	0.0010%	6.98E-09	3.06E-08	7.70%	5.34E-05	2.34E-04	3.99E-05	1.37E-05	2.68E-05	1.75E-04	5.99E-05	1.17E-04
FLANGES	214	0.0000064	30%	99.66%	1.00E-03	4.20E-03	0.0010%	9.64E-09	4.22E-08	7.70%	7.37E-05	3.23E-04	5.51E-05	1.89E-05	3.70E-05	2.42E-04	8.27E-05	1.62E-04
CONNECTORS	107	0.000243	30%	99.66%	1.81E-02	7.94E-02	0.0010%	1.83E-07	8.03E-07	7.70%	1.40E-03	6.14E-03	1.05E-03	3.59E-04	7.03E-04	4.59E-03	1.57E-03	3.08E-03
PRVs	2	0.030864	97%	99.66%	1.80E-03	8.10E-03	0.0010%	1.86E-08	8.17E-08	7.70%	1.43E-04	6.25E-04	1.07E-04	3.65E-05	7.15E-05	4.67E-04	1.60E-04	3.13E-04
LIQUID PRODUCT																		
VALVES	287	0.0002161	97%	61.43%	1.10E-03	5.00E-03	0.0004%	7.68E-09	3.36E-08	0.65%	1.21E-05	5.31E-05	1.03E-05	1.25E-06	4.74E-07	4.52E-05	5.48E-06	2.07E-06
FLANGES	574	0.0000064	30%	61.43%	1.60E-03	6.90E-03	0.0004%	1.06E-08	4.64E-08	0.65%	1.67E-05	7.33E-05	1.42E-05	1.73E-06	6.54E-07	6.24E-05	7.57E-06	2.86E-06
CONNECTORS	287	0.000243	30%	61.43%	3.00E-02	1.31E-01	0.0004%	2.02E-07	8.83E-07	0.65%	3.18E-04	1.39E-03	2.71E-04	3.29E-05	1.24E-05	1.19E-03	1.44E-04	5.44E-05
PUMP SEALS	5	0.02866	85%	61.43%	1.32E-02	5.78E-02	0.0004%	8.87E-08	3.89E-07	0.65%	1.40E-04	6.13E-04	1.19E-04	1.45E-05	5.47E-06	5.22E-04	6.34E-05	2.40E-05
PRVs	22	0.030864	97%	61.43%	1.25E-02	5.48E-02	0.0004%	8.41E-08	3.68E-07	0.65%	1.33E-04	5.81E-04	1.13E-04	1.37E-05	5.19E-06	4.95E-04	6.01E-05	2.27E-05
AMINE PRODUCT																		
VALVES	229	0.0002161	97%	45.00%	7.00E-04	2.90E-03	0.0517%	7.68E-07	3.36E-06	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FLANGES	458	0.0000064	30%	45.00%	9.00E-04	4.00E-03	0.0517%	1.06E-06	4.64E-06	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CONNECTORS	229	0.000243	30%	45.00%	1.75E-02	7.68E-02	0.0517%	2.01E-05	8.82E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PUMP SEALS	4	0.02866	85%	45.00%	7.70E-03	3.39E-02	0.0517%	8.89E-06	3.90E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PRVs	11	0.030864	97%	45.00%	4.60E-03	2.01E-02	0.0517%	5.27E-06	2.31E-05	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GYCOL PRODUCT																		
VALVES	191	0.0002161	97%	100.00%	1.20E-03	5.40E-03	0.0000%	0.00E+00	0.00E+00	0.01%	3.51E-06	1.54E-05	4.36E-10	3.46E-08	5.00E-08	1.91E-09	1.51E-07	2.19E-07
FLANGES	382	0.0000064	30%	100.00%	1.70E-03	7.50E-03	0.0000%	0.00E+00	0.00E+00	0.01%	2.08E-07	9.10E-07	6.02E-10	4.77E-08	6.90E-08	2.64E-09	2.09E-07	3.02E-07
CONNECTORS	191	0.000243	30%	100.00%	3.25E-02	1.42E-01	0.0000%	0.00E+00	0.00E+00	0.01%	3.95E-06	1.73E-05	1.15E-08	9.08E-07	1.31E-06	5.02E-08	3.97E-06	5.74E-06
PUMP SEALS	4	0.02866	85%	100.00%	1.72E-02	7.53E-02	0.0000%	0.00E+00	0.00E+00	0.01%	9.76E-06	4.28E-05	6.06E-09	4.80E-07	6.94E-07	2.65E-08	2.10E-06	3.04E-06
PRVs	13	0.030864	97%	100.00%	1.20E-02	5.27E-02	0.0000%	0.00E+00	0.00E+00	0.01%	3.42E-05	1.50E-04	4.24E-09	3.36E-07	4.86E-07	1.86E-08	1.47E-06	2.13E-06
TOTAL EMISSIONS					**2.05**	**8.99**		**5.49E-02**	**2.41E-01**		**0.09**	**0.39**	**0.06**	**0.01**	**0.02**	**0.157**	**0.049**	**0.105**

[1] Fugitive emission source counts were calculated based on information provided by the facility. Reduction credits are based on the TCEQ Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance (06/2018), utilizing a 28VHP program.

[2] Factors are from TCEQ's "Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives," (October 2000). Emission factors pulled from Facility/Compound Specific Fugitive Emission Factors Table for Oil and Gas Production Operations.

[3] Includes compressors and sample points

[4] For conservative emission calculation purposes, the Total HAP and H_2S content of the water/oil stream was assumed to be equal to that of the condensate stream.

DEHYDRATOR EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Uncontrolled Dehydrator Emissions [1]

	VOC		H_2S		Total HAP		n-Hexane		Benzene		Toluene		Ethylbenzene		Xylenes	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Regen Overhead	102.1	447.0	1.54	6.7	45.56	199.54	2.10	9.22	22.72	99.53	17.45	76.42	0.74	3.25	2.54	11.12
Flash Tank	82.6	361.9	0.88	3.9	2.26	9.90	1.04	4.57	0.83	3.63	0.35	1.53	0.01	0.04	0.03	0.13

Uncontrolled Dehydrator Emissions [1]

	VOC		H_2S		Total HAP		n-Hexane		Benzene		Toluene		Ethylbenzene		Xylenes	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Condenser Off-Gas	68.4	299.6	1.51	6.6	21.79	95.45	1.56	6.84	13.71	60.05	6.04	26.44	0.10	0.46	0.38	1.66

Controlled Dehydrator Emissions [2]

VOC		H_2S		Total HAP		n-Hexane		Benzene		Toluene		Ethylbenzene		Xylenes	
lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
3.02	13.23	0.05	0.21	0.48	2.11	0.05	0.23	0.29	1.27	0.13	0.56	0.00	0.01	0.01	0.04

Notes

[1] Emissions are calculated using Promax

[2] Flash tank off gas emissions are recycled and recompressed or sent to the reboiler as fuel.

Dehydrator vent gas is controlled by the flare, with a control efficiency of 98%

FLARE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): Flare
Description: Steady State - Dehydrator Control

Flow Rate:

Pilot	575.0	scf/hr	flare pilot
	0.0138	MMscf/d	scf/hr * 24 (hr/day) / 1e6 SCF/MMscf
	1134.70	BTU/scf	Nominal, sweet natural gas
	0.652	MMBtu/hr	
Storage Tank Gas	0.397	MMscf/yr	
	4.53E-05	MMscf/hr	Vent gas
	0.113	MMBtu/hr	scfh * Maximum heating value
Dehy vent gas	57.308	MMscf/yr	
	0.007	MMscf/hr	Vent gas
	1509.89	Wtd Btu/Scf	
	9.88	MMBtu/hr	scfh * Maximum heating value
	10.64	MMBtu/hr	Pilot + vent gas

Emission Calculations

Pilot Emissions	**NOx**	**CO**	**SO_2**	**H_2S**	**VOC**	**HAPs**	**Units**	
	0.138	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
				500			ppm	Fuel H2S content of 60 ppm H2S.
					-	-	mol%	Assume no VOC content fuel (methane)
	0.090	**0.18**					lb/hr	lb/MMBtu * MMBtu/hr
			0.049	**5.2E-04**	**-**	**-**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
	0.39	**0.79**	**0.21**	**2.3E-03**	**-**	**-**	tpy	8760 hrs/yr

Storage Tank Flaring	**NO_X**	**CO**	**SO_2**	**H_2S**	**VOC**	**HAPs**		
	0.1380	0.2755					lb/MMBtu	RG-109 Emission Factors for high-Btu, non-steam assisted
				0.01	3.75	0.11	lb/hr	All Controlled VOC and HAP from tanks is represented at the tanks
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					Estimated H_2S conversion to SO_2 (1-1 molar ratio)
	0.016	**0.03**	**0.022**	**0.0002**	**0.08**	**0.002**	lb/hr	Based on pilot plus flared gas
	0.07	**0.14**	**0.10**	**0.001**	**0.33**	**0.009**	tpy	

Dehy vent gas Flaring	**NO_X**	**CO**	**SO_2**	**H_2S**	**VOC**	**HAPs**		
	0.1380	0.2755					lb/MMBtu	RG-109 Emission Factors for high-Btu, non-steam assisted
				4.79	151.02	24.05	lb/hr	Uncontrolled DEHY emissions
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					Estimated H_2S conversion to SO_2 (1-1 molar ratio)
	1.363	**2.72**	**8.838**	**0.0958**	**3.02**	**0.48**	lb/hr	Based on pilot plus flared gas
	5.97	**11.92**	**38.71**	**0.420**	**13.23**	**2.11**	tpy	

Total Pilot + Flaring	**NO_X**	**CO**	**SO_2**	**H_2S**	**VOC**	**HAPs**	
	1.47	**2.93**	**8.91**	**0.10**	**3.10**	**0.48**	**lb/hr**
	6.43	**12.84**	**39.02**	**0.42**	**13.56**	**2.12**	**tpy**

FLARE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): Emergency Flare

Description: Startup, Shutdown, Maintenance Emissions Controlled by Flare

Flow Rate:

SSM flaring	543,337	scf/yr	
	69457.2	scf/hr	SSM flaring
	78.81	MMBtu/hr	
	672.22	MMBtu/yr	

Emission Calculations

SSM Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs		
	0.138	0.2755					lb/MMBtu	
				0.62	**954.0**	**15.9**	lb/hr	
				4.88	**7462.6**	**124.4**	lb/yr	
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					98% combustion H_2S; 100% conversion to SO_2
	10.876	**21.71**	**1.151**	**1.2E-02**	**19.08**	**0.32**	lb/hr	Based on pilot plus flared gas
	0.046	**0.09**	**4.5E-03**	**4.9E-05**	**7.5E-02**	**1.2E-03**	tpy	

Total SSM Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs	
	10.88	**21.71**	**1.15**	**1.25E-02**	**19.08**	**0.32**	**lb/hr**
	0.05	**0.09**	**4.50E-03**	**4.88E-05**	**7.46E-02**	**1.24E-03**	**tpy**

NITROGEN REJECTION UNIT

Targa Midstream Services, LLC, Copperhead Gas Plant

| **Nitrogen Reject Stream MW:** | 27.84 lb/lbmol |
| **Nitrogen Reject Stream Flow:** | 4.99 MMSFD |

Component	**Mol %**	**Mass Flow Rate (lb/hr)**	**Mass Flow Rate (tpy)**
Nitrogen	98.52	15,112.00	66,190.56
Carbon Dioxide	0.00	0.00	0.00
Methane	1.48	130.32	570.80
Ethane	0.00	9.61E-09	4.21E-08
Propane	0.00	1.46E-15	6.39E-15
i-Butane	0.00	0.00	0.00
n-Butane	0.00	0.00	0.00
i-Pentane	0.00	0.00	0.00
n-Pentane	0.00	0.00	0.00
Hexanes	0.00	0.00	0.00
Heptanes	0.00	0.00	0.00
Octanes	0.00	0.00	0.00
Benzene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00
Nonanes	0.00	0.00	0.00
Decanes	0.00	0.00	0.00
Total	**100.00**	**15,242**	**66,761**
Total VOC		**1.46E-15**	**6.39E-15**
Total HAP		**0.00**	**0.00**
Total CO2e		**3,258.00**	**14,270.04**

MSS - NRU Residue Gas Blowdown
Targa Midstream Services, LLC, Copperhead Gas Plant

Residue Gas, EPN: **MSSFUG**

Input Data

	Residue Gas	
Duration of Blowdown Event	48	hr/event
Number of Events per Hour	1	event/hr
Estimated Annual Frequency	1	events/yr
Residue Gas Flow Rate	500,000	scf/hr
	24,000,000	scf/yr

Residue Gas - VOC and H_2S

Compound	Composition [1] (Mole %)	MW (lb/lb-mole)	Gas Vented to Atmostphere [3,4] (lb/hr)	(tpy)
Carbon Dioxide	0.00%	44.00	2.55E-05	6.12E-07
Hydrogen Sulfide	0.00%	34.08	2.51E-03	6.03E-05
Nitrogen	1.84%	28.00	677.95	16.27
methane	97.60%	16.00	20,573.65	493.77
ethane	8.06%	30.07	3194.79	76.67
propane	0.53%	44.10	307.34	7.38
i-butane	0.01%	58.12	3.83	0.09
N-butane	0.01%	58.12	4.59	0.11
i-pentane	0.00%	72.15	0.00	0.00
n-pentane	0.00%	72.15	0.00	0.00
cyclopentane	0.00%	70.10	0.00	0.00
n-hexane	0.00%	86.18	0.00	0.00
cyclohexane	0.00%	84.16	0.00	0.00
other hexanes	0.00%	86.18	0.00	0.00
heptanes	0.00%	100.21	0.00	0.00
Methylcyclohexane	0.00%	98.18	0.00	0.00
2,2,4-trimethylpentane	0.00%	114.23	0.00	0.00
benzene	0.00%	78.11	0.00	0.00
toluene	0.00%	92.14	0.00	0.00
ethylbenzene	0.00%	106.17	0.00	0.00
xylenes	0.00%	106.16	0.00	0.00
octanes	0.00%	114.23	0.00	0.00
nonanes	0.00%	128.26	0.00	0.00
decanes	0.00%	142.29	0.00	0.00
C11	0.00%	156.31	0.00	0.00
C12+	0.00%	170.34	0.00	0.00
Diethanolamine	0.00%	105.14	0.00	0.00
VOC [6]	0.54%		315.76	7.58
Total HAPs	0.00%		0.00	0.00

[1] Composition of the gas stream is obtained from Residue Gas stream.
[2] Per TCEQ "Air Permit Guidance For Chemical Sources, Flare And Vapor Oxidizers" (Draft Oct. 2000).
[3] Gas Vented to Atmosphere (lb/hr) = Hourly Flowrate (scf/hr) x Mole Percent x MW (lb/lb-mole) / 379.5 (scf/lb-mole)

: Propane Hourly Gas Vented to Atmosphere (lb/hr) = $\frac{500,000\ scf}{hr} \times 0.53\% \times \frac{44.10\ lb}{lb\text{-}mole} \times \frac{lb\text{-}mole}{379.5\ scf} = \frac{307.34\ lb}{hr}$

[4] Annual Gas Vented to Flare (tpy) = Annual Flowrate (scf/yr) x Mole Percent x MW (lb/lb-mole) / 379.5 (scf/lb-mole)x (1 ton / 2000 lb)

Example Propane Vented to Atmosphere Annual Emission Rate (tpy) = $\frac{24,000,000\ scf}{yr} \times 0.53\% \times \frac{44.10\ lb}{lb\text{-}mole} \times \frac{lb\text{-}mole}{379.5\ scf} \times \frac{1\ ton}{2,000\ lb} = \frac{7.38\ lb}{hr}$

[6] Total VOC taken as the sum of NMNEHC.

DEHYDRATOR REBOILER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1
Unit No(s):	H-2
Description:	Dehydrator Reboiler

Heater Data

Heating rate:	3.0	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0029	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	25.8	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
100	84	5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.098	0.082	0.005		0.0075	lb/MMBtu	
0.29	**0.25**	**0.016**	**0.020**	**0.022**	**lb/hr**	
1.29	**1.08**	**0.071**	**0.087**	**0.098**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0002	**0.00001**	**0.00001**	**0.00000**	**0.00000**	**0.0002**	**lb/hr**
0.0010	**0.00003**	**0.00004**	**0.00000**	**0.00000**	**0.0010**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
1545.88	**0.030**	**0.028**	**1555.07**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of H_2S to SO_2. The fuel gas concentration is based on 500 ppm of H_2S.

[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1701-CHP
Description:	HMO Heater 1701

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.01**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of

[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1702-CHP
Description:	HMO Heater 1702

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.006**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1703-CHP
Description:	HMO Heater 1703

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.006**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): H-1704-CHP
Description: HMO Heater 1704

Heater Data

Heating rate:	37.8	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0371	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	324.6	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.061	0.005		0.0075	lb/MMBtu	
1.36	**2.31**	**0.204**	**0.025**	**0.282**	**lb/hr**	
5.96	**10.10**	**0.893**	**0.110**	**1.234**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0028	**0.0001**	**0.0001**	**0.00000**	**0.00000**	**0.003**	**lb/hr**
0.0122	**0.0003**	**0.0006**	**0.00000**	**0.00000**	**0.01**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
19478.12	**0.373**	**0.357**	**19593.87**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

REGEN GAS HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): H-4701-CHP
Description: Regen Gas Heater 4701

Heater Data

Heating rate:	16.2	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0159	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	139.1	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
100	84	5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.098	0.082	0.005		0.0075	lb/MMBtu	
1.59	**1.33**	**0.087**	**0.011**	**0.121**	**lb/hr**	
6.96	**5.84**	**0.383**	**0.047**	**0.529**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0012	**0.0000**	**0.0001**	**0.00000**	**0.00000**	**0.001**	**lb/hr**
0.0052	**0.0001**	**0.0002**	**0.00000**	**0.00000**	**0.01**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
8347.76	**0.160**	**0.153**	**8397.37**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): H-1701-CH2
Description: HMO Heater 1701

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.006**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1702-CH2
Description:	HMO Heater 1702

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2 [1]	PM [2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH [4]	Benzene [4]	Toluene [4]	Acetaldehyde [4]	Methanol [4]	Total HAPs [4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.006**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of

[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1703-CH2
Description:	HMO Heater 1703

Heater Data

Heating rate:	79.4	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0778	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	681.9	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.048	0.005		0.0075	lb/MMBtu	
2.86	**3.81**	**0.428**	**0.053**	**0.592**	**lb/hr**	
12.52	**16.69**	**1.875**	**0.231**	**2.591**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0058	**0.0002**	**0.0003**	**0.00000**	**0.00000**	**0.006**	**lb/hr**
0.0256	**0.0007**	**0.0012**	**0.00000**	**0.00000**	**0.03**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
40914.35	**0.784**	**0.750**	**41157.49**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

HMO HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-1704-CH2
Description:	HMO Heater 1704

Heater Data

Heating rate:	37.8	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0371	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	324.6	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
		5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.036	0.061	0.005		0.0075	lb/MMBtu	
1.36	**2.31**	**0.204**	**0.025**	**0.282**	**lb/hr**	
5.96	**10.10**	**0.893**	**0.110**	**1.234**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0028	**0.0001**	**0.0001**	**0.00000**	**0.00000**	**0.003**	**lb/hr**
0.0122	**0.0003**	**0.0006**	**0.00000**	**0.00000**	**0.01**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
19478.12	**0.373**	**0.357**	**19593.87**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

REGEN GAS HEATER EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s):	H-4701-CH2
Description:	Regen Gas Heater 4701

Heater Data

Heating rate:	16.2	MMBtu/hr	
Fuel heat value:	1020	Btu/scf	
Fuel usage:	0.0159	MMscf/hr	MMBtu/hr * MMscf/MMBtu
	139.1	MMscf/yr	
Operating hours:	8760	hours/year	

Emission Rates

NO_x	CO	VOC	SO_2[1]	PM[2]		
100	84	5.5		7.6	lb/MMscf	AP-42 Tables 1.4-1 and 1.4-2
0.098	0.082	0.005		0.0075	lb/MMBtu	
1.59	**1.33**	**0.087**	**0.011**	**0.121**	**lb/hr**	
6.96	**5.84**	**0.383**	**0.047**	**0.529**	**tpy**	

HCOH[4]	Benzene[4]	Toluene[4]	Acetaldehyde[4]	Methanol[4]	Total HAPs[4]	
7.50E-02	0.0021	3.40E-03			lb/MMscf	
7.35E-05	2.06E-06	3.33E-06			lb/MMBtu	
0.0012	**0.0000**	**0.0001**	**0.00000**	**0.00000**	**0.001**	**lb/hr**
0.0052	**0.0001**	**0.0002**	**0.00000**	**0.00000**	**0.01**	**tpy**

CO_2	CH_4	N_2O	CO_2e		
120000	2.3	2.2		lb/MMscf	AP-42 Table 1.4-2
8347.76	**0.160**	**0.153**	**8397.37**	**tpy**	
1	25	298		GWP	

Notes

[1] SO_2 emissions are based on the conversion of H_2S to SO_2 during the combustion process and a 1:1 molar ratio conversion of
[2] It is assumed that TSP = PM_{10} = $PM_{2.5}$

FLARE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): FL-1800-CHP
Description: Flare 1: Steady State

Flow Rate:

Pilot	195.0	scf/hr	flare pilot
Sweep Gas	1185.0	scf/hr	
Assist Gas	170.0	scf/hr	
	0.0372	MMscf/d	scf/hr * 24 (hr/day) / 1e6 SCF/MMscf
	995.93	BTU/scf	Nominal, sweet natural gas
	1.544	MMBtu/hr	

Emission Calculations

Pilot/Sweep/Assist Emissions	NOx	CO	SO_2	H_2S	VOC	HAPs	Units	
	0.138	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
				4			ppm	Fuel H2S content of 4 ppm H2S.
					-	-	mol%	Assume no VOC content fuel (metha
	0.213	**0.43**					lb/hr	lb/MMBtu * MMBtu/hr
			0.000	**1.4E-06**	**-**	**-**	lb/hr	98% combustion H_2S; 100% convers
	0.93	**1.86**	**0.00**	**6.1E-06**	**-**	**-**	tpy	8760 hrs/yr

Total Pilot/Sweep/Assist + Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs	
	0.21	**0.43**	**0.0001**	**0.00**	**0.00**	**0.00**	**lb/hr**
	0.93	**1.86**	**0.0006**	**0.00**	**0.000**	**0.0000**	**tpy**

FLARE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): FL-1800-CH2
Description: Flare 2: Steady State

Flow Rate:

Pilot	195.0 scf/hr	flare pilot
Sweep Gas	1185.0 scf/hr	
Assist Gas	170.0 scf/hr	
	0.0372 MMscf/d	scf/hr * 24 (hr/day) / 1e6 SCF/MMscf
	995.93 BTU/scf	Nominal, sweet natural gas
	1.544 MMBtu/hr	

Emission Calculations

Pilot/Sweep/Assist Emissions	NOx	CO	SO_2	H_2S	VOC	HAPs	Units	
	0.138	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
				4			ppm	Fuel H2S content of 60 ppm H2S.
					-	-	mol%	Assume no VOC content fuel (methane)
	0.213	**0.43**					lb/hr	lb/MMBtu * MMBtu/hr
			0.000	**1.4E-06**	**-**	**-**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
	0.93	**1.86**	**0.00**	**6.1E-06**	**-**	**-**	tpy	8760 hrs/yr

Total Pilot/Sweep/Assist + Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs	
	0.21	**0.43**	**0.00**	**0.00**	**0.00**	**0.00**	**lb/hr**
	0.93	**1.86**	**0.00**	**0.00**	**0.000**	**0.0000**	**tpy**

FLARE EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Unit No(s): FL-1800-CHP
Unit No(s): FL-1800-CH2
Description: Flare: Startup, Shutdown, Maintenance Emissions Controlled by Flare

Flow Rate:

Assist/Residue Gas	660000.0	scf/hr	
	15.8400	MMscf/d	scf/hr * 24 (hr/day) / 1e6 SCF/MMscf
	36.3000	MMScf/yr	
	995.93	BTU/scf	Nominal, sweet natural gas
	657.314	MMBtu/hr	
	36152.247	MMBtu/yr	

Amine	8.37	MMscf/yr	
	0.15	MMscf/hr	Vent gas
	16.401	MMBtu/hr	scfh * Maximum heating value
	55.0	AGI Downtime hrs	

Residue	260.21	MMscf/yr	
	7.85	MMscf/hr	Vent gas
	7,817.69	MMBtu/hr	scfh * Maximum heating value
	33.1	Residue Gas Flaring hrs	

Inlet	41.44	MMscf/yr	
	10.36	MMscf/hr	Vent gas
	13,057.044	MMBtu/hr	scfh * Maximum heating value
	4.0	Inlet Gas Flaring hrs	

Emission Calculations

Assist Emissions	NOx	CO	SO_2	H_2S	VOC	HAPs	Units	
	0.138	0.2755					lb/MMBtu	TNRCC RG-109 (high Btu; other)
				4			ppm	Fuel H2S content of 60 ppm H2S.
				0.0002	226.35	1.60E-03	lb/hr	
				98%	98%	98%		
					-	-		
	90.709	**181.09**					lb/hr	lb/MMBtu * MMBtu/hr
			0.446	**4.7E-03**	**4.527**	**0.000**	lb/hr	98% combustion H_2S; 100% conversion to SO_2
	2.49	**4.98**	**0.012**	**1.3E-05**	**0.124**	**0.000**	tpy	

Inlet Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs		
	0.1380	0.2755					lb/MMBtu	RG-109 Emission Factors for high-Btu, non-steam assisted
							lb/hr	All Controlled VOC and HAP from tanks is represented at the tanks
				625.00			ppm	
				581.46	81,539.26	81,537.59	lb/hr	
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					Estimated H_2S conversion to SO_2 (1-1 molar ratio)
	1801.872	**3597.216**	**1,072.631**	**12.5**	**1,630.79**	**1,630.752**	lb/hr	Based on pilot plus flared gas
	3.60	**7.19**	**2.15**	**0.03**	**3.26**	**3.26**	tpy	

Residue Gas Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs		
	0.1380	0.2755					lb/MMBtu	RG-109 Emission Factors for high-Btu, non-steam assisted
				4.00			ppm	
				2.82	226.35	1.60E-03	lb/hr	Uncontrolled Amine emissions
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					Estimated H_2S conversion to SO_2 (1-1 molar ratio)
	1078.841	**2153.774**	**5.201**	**0.0564**	**4.53**	**0.00**	lb/hr	Based on pilot plus flared gas
	17.88	**35.70**	**0.09**	**0.00**	**0.08**	**0.00**	tpy	

Amine and other vent gas Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs		
	0.1380	0.2755					lb/MMBtu	RG-109 Emission Factors for high-Btu, non-steam assisted
				50,000.00			ppm	
				683.33	58.66	32.47	lb/hr	Uncontrolled Amine emissions
				98%	98%	98%		Estimated control efficiency for H_2S and VOC
			100%					Estimated H_2S conversion to SO_2 (1-1 molar ratio)
	2.263	**4.518**	**1,260.547**	**13.6666**	**1.17**	**0.65**	lb/hr	Based on pilot plus flared gas
	0.06	**0.12**	**34.67**	**0.38**	**0.032**	**0.0179**	tpy	

Total Flaring	NO_X	CO	SO_2	H_2S	VOC	HAPs		
	1801.87	**3597.22**	**1260.55**	**13.67**	**1630.79**	**1630.75**	**lb/hr**	This is based on worst case scenario assuming AGI downtime and inlet flar
	24.04	**48.00**	**36.91**	**0.40**	**3.49**	**3.28**	**tpy**	

Vapor Combustion Unit
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

EPN	**VCU**
FIN	**TK-1907-CHP, TK-1908-CHP, TK-1907-CH2, TK-1908-CH2**

Total Emissions from VCU

Pollutant	(lb/hr)	(tpy)
NO_x	0.06	0.27
CO	0.12	0.54
VOC	0.32	1.40
SO_2	2.59	11.33
H_2S	0.03	0.12
HAPs	0.29	1.28

Streams Sent to VCU

Pre-Control Emissions	Produced Water Tank W&B		Produced Water Tank Flash		Produced Water Loading		Pilot[1]		TOTAL		Pilot Composition	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy		Wt%
Total VOC	1.21	5.29	10.82	47.40	2.95E-03	0.01	5.27E-04	2.31E-03	**12.03**	**52.70**	Total VOC	2.44%
Total HAPs	13.45	58.92	9.00	39.41	4.45	19.51	5.32E-09	2.33E-08	**26.90**	**117.84**	Total HAPs	2.47108E-07
H2S	0.43	1.88	0.47	2.07	0.47	2.07	1.20E-07	5.28E-07	**1.38**	**6.03**	H2S	5.59469E-06
Propane	0.01	0.02	1.10	4.80	1.68E-18	7.36E-18	5.02E-04	2.20E-03	**1.10**	**4.82**	Propane	0.023311808
i-Butane	3.82E-04	1.68E-03	0.10	0.45	5.25E-20	2.30E-19	8.53E-06	3.74E-05	**0.10**	**0.46**	i-Butane	0.000396265
n-Butane	2.46E-03	0.01	0.51	2.25	4.20E-19	1.84E-18	1.55E-05	6.78E-05	**0.52**	**2.26**	n-Butane	0.000718919
i-Pentane	2.45E-04	1.07E-03	0.07	0.31	5.25E-20	2.30E-19	1.74E-07	7.61E-07	**0.07**	**0.31**	i-Pentane	8.06476E-06
n-Pentane	4.71E-05	2.06E-04	0.04	0.15	6.57E-21	2.88E-20	2.74E-07	1.20E-06	**0.04**	**0.15**	n-Pentane	1.27122E-05
Cyclohexane	--	--	--	--	--	--	--	--	**--**	**--**	Cyclohexane	0
Other C6	--	--	--	--	--	--	--	--	**--**	**--**	Other C6	0
Heptanes	2.80E-06	1.23E-05	4.05E-03	0.02	4.10E-22	1.80E-21	3.85E-10	1.68E-09	**4.05E-03**	**0.02**	Heptanes	1.78569E-08
Octanes	1.25E-07	5.47E-07	4.26E-04	1.87E-03	2.56E-23	1.12E-22	3.36E-12	1.47E-11	**4.26E-04**	**1.87E-03**	Octanes	1.55957E-10
Nonanes	4.85E-08	2.12E-07	1.56E-04	6.82E-04	6.41E-24	2.81E-23	1.08E-12	4.73E-12	**1.56E-04**	**6.82E-04**	Nonanes	5.01525E-11
Decanes +	7.38E-11	3.23E-10	8.02E-07	3.51E-06	1.57E-26	6.86E-26	--	--	**8.02E-07**	**3.51E-06**	Decanes +	0
Benzene	0.82	3.59	6.14	26.91	3.40	14.88	2.02E-09	8.84E-09	**10.36**	**45.38**	Benzene	9.37316E-08
Toluene	0.35	1.52	2.60	11.38	1.00	4.37	9.09E-11	3.98E-10	**3.94**	**17.27**	Toluene	4.22149E-09
Ethylbenzene	0.01	0.06	0.11	0.48	0.04	0.16	1.14E-13	4.97E-13	**0.16**	**0.70**	Ethyl benzene	5.27222E-12
Xylenes	0.02	0.08	0.14	0.61	0.02	0.10	5.39E-13	2.36E-12	**0.18**	**0.79**	Xylenes	2.50437E-11
Cumene	--	--	--	--	--	--	--	--	**--**	**--**	Cumene	0
n-Hexane	6.60E-06	2.89E-05	0.01	0.03	1.64E-21	7.19E-21	3.21E-09	1.41E-08	**0.01**	**0.03**	n-Hexane	1.49124E-07
2,2,4 Trimethylpentane	--	--	--	--	--	--	--	--	--	--	2,2,4 Trimethylpent	0

[1] Pilot gas component flow rates are calculated from the pilot gas flow rate and the fuel gas composition as follows:

(Component Flow Rate, lb/hr) = (Component Content, Wt%) x (Pilot gas flow rate, scf/hr) x (Pilot Gas Molecular Weight, lb/lb-mole) / (Ideal Gas Constant, scf/lb-mole)

Vapor Combustion Unit
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Stream Properties

	Produced Water Tank W&B		Produced Water Tank Flash		Produced Water Loading		Pilot		TOTAL/AVERAGE	
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual
Vapor MW (lb/lb-mole)	45.02	45.02	41.82	41.82	45.02	45.02	16.35	16.35	41.00	41.00
VOC Content (Wt%)	7.82%	7.82%	6.93%	6.93%	7.8223%	7.8223%	2.4448%	2.4448%	6.8360%	6.8360%
Heat Value (Btu/scf)	363.34	363.34	434.03	434.03	363.34	363.34	996	996	452	452
Vapor Volumetric Flow[1] (scf)	71.57	626,926	800.5	7,012,136	72	626,926	50	438,000	994	8,703,988

[1] Vapor Volumetric Flow Rates are calculated from the VOC emission rates as follows:

(Vapor Volumetric Flow Rate scf) = (VOC Emissions, lb) x (Ideal Cas Constant, 379.5 scf/lb-mole) / (Vapor Molecular Weight, lb/lb-mole) / (Vapor VOC Content, Wt%)

VCU Values	Produced Water Tank W&B		Produced Water Tank Flash		Produced Water Loading		Pilot	
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual
VOC DRE (C3)	99%	99%	99%	99%	99%	99%	99%	99%
VOC DRE (C4+)	98%	98%	98%	98%	98%	98%	98%	98%
H_2S DRE	98%	98%	98%	98%	98%	98%	98%	98%
NOx EF(lb/MMBtu)[1]	0.138	0.138	0.138	0.138	0.138	0.138	0.138	0.138
CO EF(lb/MMBtu)[1]	0.2755	0.2755	0.2755	0.2755	0.2755	0.2755	0.2755	0.2755

[1] Emission Factors from TCEQ Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers (RG-109, 10/2000).

Vapor Combustion Unit
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Post-Control Emissions	**Produced Water Tank W&B**		**Produced Water Tank Flash**		**Produced Water Loading**		**Pilot**		**TOTAL**	
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**
NOx	3.59E-03	0.02	0.05	0.21	3.59E-03	0.02	0.01	0.03	**0.06**	**0.27**
CO	0.01	0.03	0.10	0.42	0.01	0.03	0.01	0.06	**0.12**	**0.54**
SO_2	0.81	3.54	0.89	3.90	0.89	3.90	2.26E-07	9.91E-07	**2.59**	**11.33**
Total VOC	0.02	0.11	0.21	0.90	0.09	0.39	5.51E-06	2.41E-05	**0.32**	**1.40**
Total HAPs	0.02	0.11	0.18	0.79	0.09	0.39	1.06E-10	4.66E-10	**0.29**	**1.28**
H2S	0.01	0.04	0.01	0.04	0.01	0.04	2.41E-09	1.06E-08	**0.03**	**0.12**
Propane	5.69E-05	2.49E-04	0.01	0.05	1.68E-20	7.36E-20	5.02E-06	2.20E-05	**0.01**	**0.05**
i-Butane	7.65E-06	3.35E-05	2.07E-03	0.01	1.05E-21	4.60E-21	1.71E-07	7.48E-07	**2.08E-03**	**0.01**
n-Butane	4.91E-05	2.15E-04	0.01	0.05	8.40E-21	3.68E-20	3.10E-07	1.36E-06	**0.01**	**0.05**
i-Pentane	4.90E-06	2.15E-05	1.43E-03	0.01	1.05E-21	4.60E-21	3.47E-09	1.52E-08	**1.43E-03**	**0.01**
n-Pentane	9.42E-07	4.12E-06	7.01E-04	3.07E-03	1.31E-22	5.75E-22	5.48E-09	2.40E-08	**7.02E-04**	**3.08E-03**
Cyclohexane	--	--	--	--	--	--	--	--	**--**	**--**
Other C6	--	--	--	--	--	--	--	--	**--**	**--**
Heptanes	5.61E-08	2.46E-07	8.09E-05	3.54E-04	8.21E-24	3.59E-23	7.69E-12	3.37E-11	**8.10E-05**	**3.55E-04**
Octanes	2.50E-09	1.09E-08	8.52E-06	3.73E-05	5.13E-25	2.25E-24	6.72E-14	2.94E-13	**8.52E-06**	**3.73E-05**
Nonanes	9.70E-10	4.25E-09	3.11E-06	1.36E-05	1.28E-25	5.62E-25	2.16E-14	9.46E-14	**3.11E-06**	**1.36E-05**
Decanes +	1.48E-12	6.47E-12	1.60E-08	7.03E-08	3.13E-28	1.37E-27	--	--	**1.60E-08**	**7.03E-08**
Benzene	0.02	0.07	0.12	0.54	0.07	0.30	4.04E-11	1.77E-10	**0.21**	**0.91**
Toluene	0.01	0.03	0.05	0.23	0.02	0.09	1.82E-12	7.96E-12	**0.08**	**0.35**
Ethylbenzene	2.83E-04	1.24E-03	2.17E-03	0.01	7.38E-04	3.23E-03	2.27E-15	9.95E-15	**3.20E-03**	**0.01**
Xylenes	3.75E-04	1.64E-03	2.79E-03	0.01	4.62E-04	2.02E-03	1.08E-14	4.72E-14	**3.63E-03**	**0.02**
Cumene	--	--	--	--	--	--	--	--	**--**	**--**
n-Hexane	1.32E-07	5.78E-07	1.42E-04	6.24E-04	3.28E-23	1.44E-22	6.42E-11	2.81E-10	**1.43E-04**	**6.24E-04**
2,2,4 Trimethylpentane	--	--	--	--	--	--	--	--	**--**	**--**

Emissions were calculated as follows:

(NOx or CO Emissions, lb/hr) = (Emission Factor, lb/MMBtu) x (Flow rate, scf/hr) x (Heat Value, Btu/scf) / (1,000,000 Btu/MMBtu)

(NOx or CO Emissions, tpy) = (Emission Factor, lb/MMBtu) x (Flow rate, scf/yr) x (Heat Value, Btu/scf) / (1,000,000 Btu/MMBtu) / (2,000 lb/ton)

(SO_2 emissions, lb/hr or tpy) = (Uncontrolled H_2S rate, lb/hr or tpy) x (Molecular Weight of SO_2, 64.06 lb/lb-mole) / (Molecular Weight of H_2S, 34.08 lb/lb-mole)

(VOC or H_2S emissions, lb/hr or tpy) = (Uncontrolled VOC or H_2S rate, lb/hr or tpy) x (1 - DRE, %)

DIESEL ENGINES
Targa Midstream Services, LLC, Copperhead Gas Plant

EPN	TYPE	RATED HP (hp)	ENGINE TYPE	RUNTIME (hr/yr)	MAXIMUM HOURLY EMISSIONS NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)	CH_2O (lb/hr)	HAPs (lb/hr)	$PM/PM_{10}/PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	ANNUAL EMISSIONS NO_X (tpy)	CO (tpy)	VOC (tpy)	CH_2O (tpy)	HAPs (tpy)	$PM/PM_{10}/PM_{2.5}$ (tpy)	SO_2 (tpy)
EM-1a	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-1b	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-2a	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-2b	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-3a	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-3b	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-4a	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
EM-4b	Aggreko TD1683GE	919	Diesel >600 hp	8,760	1.09	0.42	0.10	0.00	0.02	0.02	0.02	4.79	1.85	0.44	<0.01	0.07	0.09	0.08
				TOTAL	**8.75**	**3.38**	**0.81**	**--**	**0.14**	**0.17**	**0.15**	**38.32**	**14.79**	**3.54**	**--**	**0.59**	**0.73**	**0.64**

EPN	Emission Factors (Pre-Control) NO_X[1] (g/hp-hr)	CO[1] (g/hp-hr)	VOC[1] (g/hp-hr)	CH_2O[2] (lb/MMBtu)	HAPs[2] (lb/MMBtu)	Claimed Control Efficiency[3] NO_X	CO	VOC	CH_2O	Emission Factors (Post-Control) NO_X (g/hp-hr)	CO (g/hp-hr)	VOC (g/hp-hr)	CH_2O (lb/MMBtu)	HAPs[2] (lb/MMBtu)	PM[2] (g/hp-hr)	SO_2[2] (lb/MMBtu)
EM-1a	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-1b	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-2a	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-2b	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-3a	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-3b	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-4a	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515
EM-4b	0.5	0.21	0.05	0.0001	0.001	0%	0%	0%	0%	0.5400	0.2084	0.05	0.0001	0.001	0.01022	0.001515

[1] Emission factor based on Manufacturer Data. VOC emission factor includes formaldehyde.

[2] Emission factor from AP-42 Section 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines, October 1996. The HAPs emission factor is the sum of all individual AP-42 HAP emission factors, with the exception of formaldehyde (CH_2O). Formaldehyde emissions are calculated separately. The total HAP emission rates are the sum of formaldehyde emissions plus HAPs w/o CH_2O emissions.

STORAGE TANK EMISSION TOTALS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

VOC Emissions

EPN	Tank Description	Annual Throughput (gal/yr)	Breathing Losses[1] (lb/yr)	Working Losses[1] (lb/yr)	Flash Losses[1] (lb/yr)	Total Losses (lb/yr)	Uncontrolled Annual VOC Emissions (tpy)	Uncontrolled Annual H_2S Emissions (tpy)	Uncontrolled Annual HAP emissions (tpy)	Control Efficiency[2] (%)	Controlled Annual VOC Emissions (tpy)	Controlled Annual H_2S emissions (tpy)	Controlled Annual HAP emissions (tpy)
Tank-1	Water Tank	709,624	1,396.46		15,040.78	16,437.24	8.22	0.006	0.23	98%	0.16	0.0001	0.005
Tank-2	Water Tank	709,624	1,396.46		15,040.78	16,437.24	8.22	0.006	0.23	98%	0.16	0.0001	0.005
Tank-3	Slop Tank	412,374	62.44		39.54	101.98	0.05	0.003	0.02	0.0%	0.05	0.003	0.02
Tank-4	Condensate/Water Tank	412,374	62.44		39.54	101.98	0.05	0.0031	0.0158	0.0%	0.05	0.0031	0.0158
Tank-5	New H2S scavenger tank	575,000	700.87		-	700.87	0.35	-	0.350	0.0%	0.35	-	0.35
Tank-6	Spent H2S scavenger tank	575,000	700.87		-	700.87	0.35	-	0.350	0.0%	0.35	-	0.35
Diesel Tank 1	Diesel Tank	3,066,000	18.52		-	18.52	0.01	-	-	0.0%	0.01	-	-
Diesel Tank 2	Diesel Tank	3,066,000	18.52		-	18.52	0.01	-	-	0.0%	0.01	-	-
Diesel Tank 3	Diesel Tank	1,533,000	7.80		-	7.80	0.00	-	-	0.0%	0.00	-	-
Diesel Tank 4	Diesel Tank	1,533,000	7.80		-	7.80	0.00	-	-	0.0%	0.00	-	-
Diesel Tank 5	Diesel Tank	1,533,000	7.80		-	7.80	0.00	-	-	0.0%	0.00	-	-
Diesel Tank 6	Diesel Tank	1,533,000	7.80		-	7.80	0.00	-	-	0.0%	0.00	-	-
TK-1907-CHP	Produced Water Tank	8,657,924	10,586.81		94,799.13	105,385.94	52.69	15.041	44.67	98%	1.05	0.30	0.89
TK-1908-CHP	Produced Water Tank	8,657,924	10,586.81		94,799.13	105,385.94	52.69	15.041	44.67	98%	1.05	0.30	0.89
TK-1907-CH2	Produced Water Tank	8,657,924	10,586.81		94,799.13	105,385.94	52.69	15.041	44.67	98%	1.05	0.30	0.89
TK-1908-CH2	Produced Water Tank	8,657,924	10,586.81		94,799.13	105,385.94	52.69	15.041	44.67	98%	1.05	0.30	0.89

[1] Breathing, working, and flash losses for the condensate tanks are calculated ProMax and AP-42

[2] The control efficiency assumes 98% flare control.

[3] Diesel Tank 1-6 are exempt under 20.2.72.202.B.5

NATURAL GAS ENGINES
Targa Midstream Services, LLC, Copperhead Compressor Station

EPN	TYPE	RATED HP (hp)	ENGINE TYPE	RUNTIME (hr/yr)	MAXIMUM HOURLY EMISSIONS							ANNUAL EMISSIONS						
					NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)	CH_2O (lb/hr)	HAPs (lb/hr)	$PM/PM_{10}/PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_X (tpy)	CO (tpy)	VOC (tpy)	CH_2O (tpy)	HAPs (tpy)	$PM/PM_{10}/PM_{2.5}$ (tpy)	SO_2 (tpy)
GEN-1	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.0385	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
GEN-2	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.04	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
GEN-3	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.04	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
GEN-4	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.04	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
GEN-5	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.04	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
GEN-6	Cummins GQSK60-G8	1,747	4SLB	8,760	1.93	1.23	1.53	0.270	0.47	0.04	<0.01	8.43	5.40	6.70	1.18	2.05	0.17	0.03
				TOTAL	**11.55**	**7.39**	**9.20**	**1.62**	**2.80**	**0.23**	**0.04**	**50.61**	**32.39**	**40.22**	**7.09**	**12.28**	**1.01**	**0.19**

	Emission Factors (Pre-Control)					Claimed Control Efficiency[3]				Emission Factors (Post-Control)						
EPN	NO_X[1] (g/hp-hr)	CO[1] (g/hp-hr)	VOC[1] (g/hp-hr)	CH_2O[1] (g/hp-hr)	TOTAL HAPs	NO_X	CO	VOC	CH_2O	NO_X (g/hp-hr)	CO (g/hp-hr)	VOC (g/hp-hr)	CH_2O (g/hp-hr)	TOTAL HAPs	PM[2] (lb/MMBtu)	SO_2[2] (lb/MMBtu)
GEN-1	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588
GEN-2	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588
GEN-3	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588
GEN-4	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588
GEN-5	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588
GEN-6	0.5	1.60	0.30	0.07	-	0%	80%	0%	0%	0.50	0.32	0.30	0.07	-	0.00999	0.000588

[1] Emission factor based on Manufacturer Data. VOC emission factor includes formaldehyde.

[2] Emission factor from AP-42 Section 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines, October 1996. The HAPs emission factor is the sum of all individual AP-42 HAP emission factors, with the exception of formaldehyde (CH_2O). Formaldehyde emissions are calculated separately. The total HAP emission rates are the sum of formaldehyde emissions plus HAPs w/o CH_2O emissions.

STORAGE TANK LIST
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

EPN	ID	Tank Description	Tank Size	Tank Type	Tank Height (ft)	Diameter (ft)	Tank Throughput (bbl/day)	VOC Emissions (tpy)
Tank-1	Tank-1	Water Tank	400 bbl	Vertical Fixed Roof	20	12	46.3	0.16
Tank-2	Tank-2	Water Tank	400 bbl	Vertical Fixed Roof	20	12	46.3	0.16
Tank-3	Tank-3	Slop Tank	400 bbl	Vertical Fixed Roof	20	12	27	0.05
Tank-4	Tank-4	Condensate/Water Tank	400 bbl	Vertical Fixed Roof	20	12	27	0.05
Tank-5	Tank-5	New H2S scavenger Tank	500 bbl	Vertical Fixed Roof	16	15.5	38	0.35
Tank-6	Tank-6	Spent H2S scavenger Tank	500 bbl	Vertical Fixed Roof	16	15.5	38	0.35
Tank-7	Tank-7	Lube Oil	TBD	TBD	exempt per 20.2.72.202.B(2)			
Tank-8	Tank-8	Lube Oil	TBD	TBD				
Tank-9	Tank-9	TEG Tank	TBD	TBD				
Tank-10	Tank-10	Methanol Tote	500 gal	Tote	exempt per 20.2.72.202.B(5)			
TK-1901-CHP	TK-1901-CHP	LUBE OIL DRAIN SUMP	-	TBD	exempt per 20.2.72.202.B(2)			
TK-1902-CHP	TK-1902-CHP	OPEN DRAIN SUMP	-	TBD				
TK-1903-CHP	TK-1903-CHP	USED LUBE OIL TANK	210 BBL	Vertical Fixed Roof				
TK-1904-CHP	TK-1904-CHP	NEW LUBE OIL TANK	210 BBL	Vertical Fixed Roof				
TK-1905-CHP	TK-1905-CHP	OPEN DRAIN STORAGE TANK	400 BBL	Vertical Fixed Roof				
TK-1906-CHP	TK-1906-CHP	REFRIGERATION LUBE OIL TANK	1000 GAL	TBD				
TK-1907-CHP	TK-1907-CHP	Produced Water Tank	500 BBL	Vertical Fixed Roof	25	12	23720	1.05
TK-1908-CHP	TK-1908-CHP	Produced Water Tank	500 BBL	Vertical Fixed Roof	25	12	23720	1.05
TK-1909-CHP	TK-1909-CHP	LEAN AMINE TANK	400 BBL	Vertical Fixed Roof	exempt per 20.2.72.202.B(2)			
TK-1910-CHP	TK-1910-CHP	WATER MAKEUP TANK	1000 BBL	Vertical Fixed Roof				
TK-1911-CHP	TK-1911-CHP	TEG TANK	210 BBL	Vertical Fixed Roof				
TK-1917-CHP	TK-1917-CHP	NEW LUBE OIL TANK (ACID GAS)	210 BBL	Vertical Fixed Roof				
TK-1960-CHP	TK-1960-CHP	LUBE OIL MAKEUP TANK	500 GAL	TBD				
TK-1970-CHP	TK-1970-CHP	CYLINDER OIL TANK	500 GAL	TBD				
TK-1980-CHP	TK-1980-CHP	CYLINDER OIL TANK	500 GAL	TBD				
TK-2901-CHP	TK-2901-CHP	AMINE SUMP	-	TBD				
TK-3901-CHP	TK-3901-CHP	GLYCOL SUMP	-	TBD				
TK-3920-CHP	TK-3920-CHP	JW SURGE TANK	-	TBD				
TK-3921-CHP	TK-3921-CHP	LUBE OIL MAKEUP TANK	300 GAL	TBD				
TK-3930-CHP	TK-3930-CHP	JW SURGE TANK	-	TBD				
TK-6900-CHP	TK-6900-CHP	ACID GAS CYLINDER LUBE OIL TANK	1000 GAL	TBD				
TK-6901-CHP	TK-6901-CHP	Methanol Tank	500 GAL	Vertical Fixed Roof	3.8	6	0.274	1.5
TK-1901-CH2	TK-1901-CH2	LUBE OIL DRAIN SUMP	-	TBD	exempt per 20.2.72.202.B(2)			
TK-1902-CH2	TK-1902-CH2	OPEN DRAIN SUMP	-	TBD				
TK-1903-CH2	TK-1903-CH2	USED LUBE OIL TANK	210 BBL	TBD				
TK-1904-CH2	TK-1904-CH2	NEW LUBE OIL TANK	210 BBL	TBD				
TK-1905-CH2	TK-1905-CH2	OPEN DRAIN STORAGE TANK	400 BBL	TBD				
TK-1906-CH2	TK-1906-CH2	REFRIGERATION LUBE OIL TANK	1000 GAL	TBD				
TK-1907-CH2	TK-1907-CH2	Produced Water Tank	500 BBL	TBD	25	12	23720	1.05
TK-1908-CH2	TK-1908-CH2	Produced Water Tank	500 BBL	TBD	25	12	23720	1.05
TK-1909-CH2	TK-1909-CH2	LEAN AMINE TANK	400 BBL	TBD	exempt per 20.2.72.202.B(2)			
TK-1910-CH2	TK-1910-CH2	WATER MAKEUP TANK	1000 BBL	TBD				
TK-1911-CH2	TK-1911-CH2	TEG TANK	210 BBL	TBD				
TK-1917-CH2	TK-1917-CH2	NEW LUBE OIL TANK (ACID GAS)	210 BBL	TBD				
TK-1960-CH2	TK-1960-CH2	LUBE OIL MAKEUP TANK	500 GAL	TBD				
TK-1970-CH2	TK-1970-CH2	CYLINDER OIL TANK	500 GAL	TBD				
TK-1980-CH2	TK-1980-CH2	CYLINDER OIL TANK	500 GAL	TBD				
TK-2901-CH2	TK-2901-CH2	AMINE SUMP	-	TBD				
TK-3901-CH2	TK-3901-CH2	GLYCOL SUMP	-	TBD				
TK-3920-CH2	TK-3920-CH2	JW SURGE TANK	-	TBD				
TK-3921-CH2	TK-3921-CH2	LUBE OIL MAKEUP TANK	300 GAL	TBD				
TK-3930-CH2	TK-3930-CH2	JW SURGE TANK	-	TBD				
TK-6900-CH2	TK-6900-CH2	ACID GAS CYLINDER LUBE OIL TANK	1000 GAL	TBD				

WATER LOADING EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Promax Loading Losses

Equation[1]:

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

Variables[1]:

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

VOC Emissions

EPN	Loading Method	S^2	P_{max}[3] (psia)	M[3] (lb/lbmol)	T[3] (°R)	L_L (lbs/1000 gal)	Max Hourly Throughput[4] (gal/hr)	VOC Content[5] (wt %)	% Control	Max Hourly Emissions (lb/hr)
LOAD-1	Submerged	0.60	13.34	85.88	554.67	15.44	7,560	99.82	0.0	116.55

EPN	Loading Method	S^2	P_{max} (psia)	M (lb/lbmol)	T (°R)	L_L (lbs/1000 gal)	Annual Throughput (gal/yr)	VOC Content[5] (wt %)	% Control	Annual Emissions (tpy)
LOAD-1	Submerged	0.60	13.3430	85.88	534.67	16.02	1,419,247.83	99.82	0.0	11.35

[1] Loading Loss Equation and Variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] The S-factor is based on submerged loading in dedicated normal service
[3] Vapor pressure and molecular weight obtained from ProMax storage tank simulations. The maximum true vapor pressure is used to calculate the hourly emission rate and is based on maximum temperature of 95°F and 75°F.
[4] The maximum hourly throughput is based on the capability of the tank truck to load liquids in one hour's time.
[5] The hourly and annual VOC content was derived from the ProMax Simulation

Pollutant	Uncontrolled Loadout Emission	
	tpy	lb/hr
H2S	*0.0001*	0.001
Benzene	0.3009	3.09
Toluene	0.5709	5.86
Ethylbenzene	0.0694	0.71
Xylene (m)	0.2461	2.53
n-Hexane	0.8862	9.10
TOTAL HAPs	***2.07***	21.29

SLOP LOADING EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

Promax Loading Losses

Equation[1]:

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

Variables[1]:

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

VOC Emissions

EPN	S^2	P_{max}[3] (psia)	M[3] (lb/lbmol)	T[3] (°R)	L_L (lbs/1000 gal)	Max Hourly Throughput[4] (gal/hr)	VOC Content[5] (wt %)	% Control[5]	Max Hourly Emissions (lb/hr)
LOAD-2	0.60	13.34	18.02	554.67	3.24	7,560	0.01	0	0.003

EPN	S^2	P_{max} (psia)	M (lb/lbmol)	T (°R)	L_L (lbs/1000 gal)	Annual Throughput (gal/yr)	VOC Content[5] (wt %)	% Control[5]	Annual Emissions (tpy)
LOAD-2	0.60	13.34	18.02	534.67	3.36	34,631,696	0.01	0	0.0070

[1] Loading Loss Equation and Variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] The S-factor is based on submerged loading in dedicated normal service
[3] Vapor pressure and molecular weight obtained from ProMax storage tank simulations. The maximum true vapor pressure is used to calculate the hourly emission rate and is based on maximum temperature of 95°F and 75°F.
[4] The maximum hourly throughput is based on the capability of the tank truck to load liquids in one hour's time.
[5] VOC weight % determined via Promax

Pollutants	Uncontrolled Loadout Emission tpy
H2S	0.0000
Benzene	0.0000
Toluene	0.0000
Ethylbenzene	0.0000
Xylene (m)	0.0000
n-Hexane	0.0000
TOTAL HAPs	***2.73E-06***

[1] Loadout HAPs (tpy) =Tank-3 HAP Working and Breathing *(total loadout VOC/ Tank-3 working and breathing losses)

Pressurized Loading
Targa Midstream Services, LLC, Copperhead Gas Plant
Emissions Summary

PRESSURIZED LOADING

Equation:

$$L_L = \frac{(P+14.7)*(V_{Hose})*MW}{14.7*(359\ scf/lb\text{-}mol)}$$

Variables:

L_L - Loading Loss (lbs)
P - Pressure of Tank (psig)
V_{Hose} - Volume of Hose (ft^3) = $pi*D^2*L/4$
MW - Molecular Weight of Vapor (lb/lb mol)

EPN	Material Loaded	Loading Method	L (ft)	D (ft)	P (psig)	MW (lb/lb-mol)	L_L (lbs)	Max Loads per Hour	Max Hourly Emissions (lb/hr)
L-P	Condensate	Pressurized	15.0	0.3	45	65.32	0.544	1	0.5441

EPN	Material Loaded	Loading Method	L (ft)	D (ft)	P (psig)	MW (lb/lb-mol)	L_L (lbs)	Loads per Year	Annual Emissions (tpy)
L-P	Condensate	Pressurized	15.0	0.3	45	65.32	0.544	200	0.0544

Notes:
Loading losses from pressurized loading occur when the line between the pressurized tank and tank-truck is disconnected.

Speciated Emissions

Pollutant	Pressurized Condensate Composition[1]		Total Condensate Loading Emissions	
	Hourly Wt %	Annual Wt %	lb/hr	tpy
Total	--	--	**0.5441**	**0.0544**
H_2S[2]	0.2064	0.0010	0.0019	0.0000
Propane	12.9632	12.9632	0.1199	0.0120
i-Butane	3.7301	3.7301	0.0345	0.0034
n-Butane	12.5068	12.5068	0.1156	0.0116
i-Pentane	6.4277	6.4277	0.0594	0.0059
n-Pentane	8.1712	8.1712	0.0755	0.0076
Cyclohexane	0.0000	0.0000	0.0000	0.0000
Other C6	0.0000	0.0000	0.0000	0.0000
Heptanes	11.4422	11.4422	0.1058	0.0106
Octanes	3.0512	3.0512	0.0282	0.0028
Nonanes	0.5510	0.5510	0.0051	0.0005
Decanes +	0.0075	0.0075	0.0001	0.0000
Benzene	0.0000	0.0000	0.0000	0.0000
Toluene	0.0000	0.0000	0.0000	0.0000
Ethylbenzene	0.0000	0.0000	0.0000	0.0000
Xylenes	0.0000	0.0000	0.0000	0.0000
Cumene	0.0000	0.0000	0.0000	0.0000
n-Hexane	0.0000	0.0000	0.0000	0.0000
2,2,4 Trimethylpentane	0.0000	0.0000	0.0000	0.0000
Total	**59.0572**	**58.8518**	**0.5460**	**0.0544**
Total VOC	**58.8508**	**58.8508**	**0.5441**	**0.0544**
Total HAP	**0.0000**	**0.0000**	**0.0000**	**0.0000**

[1]The composition used is from the pressurized inlet condensate liquid analysis.

[2] This site handles only sweet natural gas and crude oil/condensate. An H_2S content of 10 ppm was assumed based on the sales specification for the oil.

Unit(s): HAUL
Description: Truck haul road emissions

Input Data

Empty vehicle weight[1]	16	tons
Load weight[2]	21.5	tons
Loaded vehicle[3]	37.5	tons
Mean vehicle weight[4]	26.8	tons
Vehicle frequency	1.0	trips/hour
Round-trip distance	0.20	mile/trip
Operating hours	8760	hours/yr
Surface silt content[5]	4.8	%
Annual wet days[6]	70	days/yr
Vehicle miles traveled[7]	0.2	mile/hr
Control percentage	0%	nominal, base course chemical treatment

Emission Factors and Constants

Parameter	PM_{30}	PM_{10}	$PM_{2.5}$
k, lb/VMT[8]	4.9	1.5	0.15
a, lb/VMT[8]	0.70	0.90	0.90
b, lb/VMT[8]	0.45	0.45	0.45
Hourly EF, lb/VMT[9]	6.91	1.76	0.18
Annual EF, lb/VMT[10]	5.58	1.42	0.14

Uncontrolled Emissions

PM_{30}	PM_{10}	$PM_{2.5}$	
1.38	0.35	0.035	lb/hr[11]
0.12	0.03	0.003	ton/yr[12]

Notes

[1] Empty vehicle weight includes driver and occupants and full fuel load.
[2] Cargo, transported materials, etc. (5.7 lb/gal RVP5 *7560 gal truck/ 2000lb/ton)
[3] Loaded vehicle weight = Empty + Load Size
[4] Mean Vehicle weight = (Loaded Weight + Empty Weight) / 2
[5] AP-42 Table 13.2.2-1, Sand and gravel processing
[6] AP-42 Figure 13.2.2-1
[7] VMT/hr = Vehicle Miles Traveled per hour = Trips per hour * Segment Length
[8] Table 13.2.2-2, Industrial Roads
[9] AP-42 13.2.2, Equation 1a
[10] AP-42 13.2.2, Equation 2
[11] lb/hr = Hourly EF (lb/VMT) * VMT (mile/hr)
[12] ton/yr = Annual EF (lb/VMT) * Truck/day * Mile/truck * 365day/yr * 1ton/2000lb
[13] Uncontrolled emissions * (1 - Control%)

Targa Midstream Services, LLC, Copperhead Gas Plant

Capstone G65 Microturbines

Emission Unit: E-1
Source Description: Natural Gas-Fired Microturbine
EXEMPT: This unit is exempt pursuant to NMAC 20.72.202.B(5)
Annual operating hours: 8,760

Parameters	Value	Unit	Note
Maximum Power Rating	65	kW	Manufacturer data
Maximum Horsepower	87.17	hp	Calculated
Total Mass Flow of Exhaust	1.08	lb/s	Manufacturer data
Fuel Heating Value	1,020	Btu/scf	Nominal
Fuel Usage	842,000	BTU/hr	Manufacturer data
Engine BSFC	9,660	BTU/hp-hr	Calculated
Hourly Fuel Usage	0.8255	Mscf/hr	Calculated
Annual Fuel Usage	7.231	MMscf/yr	Calculated
Heat Input	0.84	MMBtu/hr	Calculated

Emissions per Unit

	NOx	CO	VOC	SO_2 [1]	PM [2]	Total HAP	Formaldehyde	Acetaldehdye	Acrolein	Benzene	Ethylbenzene	Toluene	Xylene	Naphthalene	PAH	Propolyne Oxide	1,3-Butadiene	CO_2	CH_4	N_2O	CO_2e [4]	Unit	Note
Emission Factors	0.16	0.42	0.034																			g/hp-hr	Manufacturer data
					0.0066		7.10E-04	4.00E-05	6.40E-06	1.20E-05	3.20E-05	1.30E-04	6.40E-05	1.30E-06	2.20E-06	2.90E-05	4.30E-07					lb/MMBtu	AP-42 Table 3.1-2a and Table 3.1-3
					0.0066		7.10E-04	4.00E-05	6.40E-06	1.20E-05	3.20E-05	1.30E-04	6.40E-05	1.30E-06	2.20E-06	2.90E-05	4.30E-07					lb/MMBtu	EF adjusted based on fuel heat value[4]
																		53.02	0.001	1.0E-04		kg/MMBtu	Table C-1 and C-2 of 40 CFR Part 98
																		116.64	0.0022	2.2E-04		lb/MMBtu	
Emission Rates	***0.031***	***0.081***	***0.0065***	***0.0037***	***0.0056***	***8.37E-04***	***5.98E-04***	***3.37E-05***	***5.39E-06***	***1.01E-05***	***2.69E-05***	***1.09E-04***	***5.39E-05***	***1.09E-06***	***1.85E-06***	***2.44E-05***	***3.62E-07***	***98.2***	***0.0019***	***1.9E-04***	***98.3***	***lb/hr***	
	0.13	***0.35***	***0.029***	***0.016***	***0.024***	***0.0037***	***2.62E-03***	***1.48E-04***	***2.36E-05***	***4.43E-05***	***1.18E-04***	***4.79E-04***	***2.36E-04***	***4.79E-06***	***8.11E-06***	***1.07E-04***	***1.59E-06***	***430.2***	***0.0081***	***8.1E-04***	***430.6***	***tpy***	*8760 hrs/yr*

[1] SO_2 emissions based on fuel consumption and fuel sulfur content of 1.57 gr S/Mscf

2 gr S/Mscf * fuel scf/hr * 1 lb/7000 gr * 64 lb SO_2/ 32 lb S = lb/hr SO_2

[2] Assumes TSP = PM_{10} = $PM_{2.5}$

[3] AP42 natural gas heat value is: 1,020 Btu/scf

[4] Global Warming Potentials (GWP) are from Table A-1 of the EPA GHG MRR under 40 CFR Part 98.

CH_4 GWP = 25

N_2O GWP = 298

Exhaust Parameters

Parameters	Value	Unit	Note
Exhaust temp	588	°F	Manufacturer data
Stack height		ft	Engineering Estimate
Stack diameter		ft	Engineering Estimate
Exhaust flow (Actual)	0	acfm	*Flow (acfm) = Flow (scfm) * (Stack Temp + 460) / 528 * 29.92 / Site Bar. Pres. / (100% - Moisture%)*
Exhaust velocity		ft/sec	Exhaust flow / stack area
O_2 F factor	8,710	dscf/MMBtu	Method 9
Moisture	10	%	nominal
Exhaust flow (Dry)	0.0	dscfm	= heat input * O2 F * [20.9 / (20.9 - O2%)]
O_2 %	10	%	
Site Elevation		ft MSL	
Pressure at Elevation	29.92	in Hg	

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:
Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

ESTIMATION OF FACILITY-WIDE GHG EMISSIONS
Targa Midstream Services, LLC, Copperhead Gas Plant

GHG Emission Source	Total GHG Emissions (m.t. CO_2e)	(tons CO_2e)
Natural Gas Combustion	446,575	492,264
Fugitives	170	187
Dehy Unit	259	286
tal Estimated Facility Emissions:	447,004	492,737

Conversion Factors		Global Warming Potential	
1.10231	ton/m.t.	CO_2	1
0.001	m.t./kg	CH_4	25
8,760	Hrs/yr	N_2O	298

CO_2 (mol %)	CH_4 (mol %)	C_2H_3 (mol %)	C_3H_8 (mol %)	C_4H_{10} (mol %)	C5+ (mol %)
2.35886	73.89146	11.56952	6.24368	2.75657	1.20219

* Processing emissions for compressor, venting and flaring estimated using EPA's 40 CFR Subpart W Onshore Natural Gas Processing Screening Tool
Mole % CO_2 for Acid gas venting used for screening obtained from process simulation data.

Note:
Carbon Dioxide Equivalent (CO_2e) emissions are calculated in the tables below by multiplying emissions by global warming potentials for each pollutant.
Emissions estimates converted to short tons in the tables below using conversion factor from 40 CFR 98 Subpart A for comparison to PSD/TV thresholds.
Global Warming Potentials obtained from 40 CFR 98 Supart A, Table A-1.
Mol % values obtained from the gas analysis from a representative facility.

Natural Gas Combustion Emissions

Emissions Source	Emission Point Identification	Rated Horsepower	Capacity (MMBtu/hr)	Emissions Factors [1] CO_2 (kg/MMBtu)	CH_4 (kg/MMBtu)	N_2O (kg/MMBtu)	Emissions (m.t.) CO_2	CH_4	N_2O	Emissions (m.t. CO_2e) CO_2	CH_4	N_2O	Total Emissions (m.t. CO_2e)	(tons CO_2e)
Aggreko TD1683GE	EM-1a	919	11.97	73.96	0.0030	0.00060	7,757.63	0.31	0.063	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-1b	919	11.97	73.96	0.0030	0.00060	7,757.63	0.31	0.063	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-2a	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-2b	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-3a	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-3b	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-4a	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Aggreko TD1683GE	EM-4b	919	11.97	73.96	0.0030	0.00060	7,757.63	0.315	0.0629	7,757.63	7.87	18.75	7,784	8,581
Cummins GQSK60-G8	GEN-1	1,747	12.61	53.06	0.0010	0.00010	5,859.50	0.110	0.0110	5,859.50	2.76	3.29	5,866	6,466
Cummins GQSK60-G8	GEN-2	1,747	12.61	53.06	0.0010	0.00010	5,859.50	0.110	0.0110	5,859.50	2.76	3.29	5,866	6,466
Cummins GQSK60-G8	GEN-3	1,747	12.61	53.06	0.0010	0.00010	5,859.50	0.110	0.0110	5,859.50	2.76	3.29	5,866	6,466
Cummins GQSK60-G8	GEN-4	1,747	12.61	53.06	0.0010	0.00010	5,859.50	0.110	0.0110	5,859.50	2.76	3.29	5,866	6,466
Cummins GQSK60-G8	GEN-5	1,747	12.61	53.06	0.0010	0.00010	5,859.50	0.110	0.0110	5,859.50	2.76	3.29	5,866	6,466
Cummins GQSK60-G8	GEN-6	1,747	12.61	53.06	0.0010	0.00010	5,860.32	0.110	0.0110	5,860.32	2.76	3.29	5,866	6,467
Dehydrator Reboiler	H-1	--	3.00	53.06	0.0010	0.00010	1,394.42	0.026	0.0026	1,394.42	0.66	0.78	1,396	1,539
HMO Heater 1701	H-1701-CHP	--	79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1702	H-1702-CHP	--	79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1703	H-1703-CHP	--	79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1704	H-1704-CHP	--	37.80	53.06	0.0010	0.00010	17,569.65	0.331	0.0331	17,569.65	8.28	9.87	17,588	19,387
Regen Gas Heater 4701	H-4701-CHP	--	16.20	53.06	0.0010	0.00010	7,529.85	0.142	0.0142	7,529.85	3.55	4.23	7,538	8,309
HMO Heater 1701	H-1701-CH2	--	79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1702	H-1702-CH2	--	79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1703	H-1703-CH2		79.40	53.06	0.0010	0.00010	36,905.56	0.696	0.0696	36,905.56	17.39	20.73	36,944	40,723
HMO Heater 1704	H-1704-CH2	--	37.80	53.06	0.0010	0.00010	17,569.65	0.331	0.0331	17,569.65	8.28	9.87	17,588	19,387
Regen Gas Heater 4701	H-4701-CH2	--	16.20	53.06	0.0010	0.00010	7,529.85	0.142	0.0142	7,529.85	3.55	4.23	7,538	8,309
	VCU		0.45	53.06	0.0010	0.00010	208.81	0.004	0.0004	208.81	0.10	0.12	209	230
												Total Natural Gas Combustion:	370,986	408,942

Notes:
1. Emission factors for GHG obtained from 40 CFR 98 Supart C, Tables C-1 and C-2.

Source ID Number	Description	Maximum Hours of Operation	Annual Gas Usage (scf/hr)	Annual Gas Processed (scf/yr)	CO_2 (mol %)	CH_4 (mol %)	Emission Factor N_2O (m.t./MMscf)	Emissions CO_2 (m.t.)	CH_4 (m.t.)	N_2O (m.t.)	Global Warming Potential CO_2	CH_4	N_2O	Emissions CO_2 (m.t. CO_2e)	CH_4 (m.t. CO_2e)	N_2O (m.t. CO_2e)	Total Emissions (m.t. CO_2e)	(tons CO_2e)
FLARE	Flare - Dehydrator/Tank Control	8,760						54.67	10.4079	0.0000000	1	25	298	54.67	260.20	0.00000	314.87	347.08
FL-1800-CHP	Flare 1: Steady State	8,760	1,550	13,578,000	0.050	0.68	7.10E-07	37,548.50	3.5385	0.0000096	1	25	298	37,548.50	88.46	0.00287	37,636.97	41,487.61
FL-1800-CH2	Flare 2: Steady State	8,760	1,550	13,578,000	0.050	0.68	7.10E-07	37,548.50	3.5385	0.0000096	1	25	298	37,548.50	88.46	0.00287	37,636.97	41,487.61
																Total Flare Combustion:	314.87	83,322.30

Note - CO_2 and N_2O Emissions estimated using API Compendium Section 4.6

Dehy Units

Source ID Number	Description	Maximum Days of Operation	Annual Gas Processed (MMscf/yr)	Conversion Factor (m.t./ton)	Emissions[1] CO_2 (tons)	CH_4 (tons)	N_2O (tons)	Global Warming Potential CO_2	CH_4	N_2O	Emissions CO_2 (m.t. CO_2e)	CH_4 (m.t. CO_2e)	N_2O (m.t. CO_2e)	Total Emissions (m.t. CO_2e)	(tons CO_2e)
DEHY	GLYCOL DEHYDRATOR	365	150	1.10231	49.60	9.44	--	1	25	298	44.99	214.14	--	259.13	285.64

[1] Emissions estimated using process simulation and a natural gas feed rate of 150 MMcf/day.

Fugitive Sources

Emissions Source	Emission Point Identification	Annual Condensate Production (bbl/yr)	Annual Condensate Production (1,000 gal/yr)	Default Liquid CH_4 Content [1] (mol %)	Emission Factor VOC (lb/1,000 gal)	Emissions VOC (tons)	VOC (m.t.)	Control (%)	Controlled VOC (m.t.)	Emissions [2] (m.t.) CH_4	Total Emissions (m.t. CO_2e)	(tons CO_2e)
Condensate Truck Loading 1	LOADOUT	292,000	12,264	27.40	4.79	29.35	26.63	0%	26.63	7.30	182.39	182.39
Scrubber Oil	LOAD	17,520	736	28.40	-	0.76	0.69	0%	0.69	0.20	4.90	4.90

Notes:
1. Default CH_4 content for crude oil per API compendium Section 5.4 and Appendix B.
2. Emissions estimated using API Compendium, Section 5.5.

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.

Heaters and Reboilers (H-1, H-2, H-1701-CHP, H-1702-CHP, H-1704-CHP, H-4701-CH2, H-1701-CH2, H-1702-CH2, H-1704-CH2, H-4701-CH2**)**
- AP-42 Chapter 1.4 *Natural Gas Combustion*
- Manufacturer specifications
- 20.2.50.119.B(1) NMAC
- 40 CFR 98 Subpart C Table C-1 and Table C-2

TEG Glycol Dehydrators (DEHY1, DEHY2)
- BR&E ProMax

Amine Units
- BR&E ProMax
- Inlet gas analysis

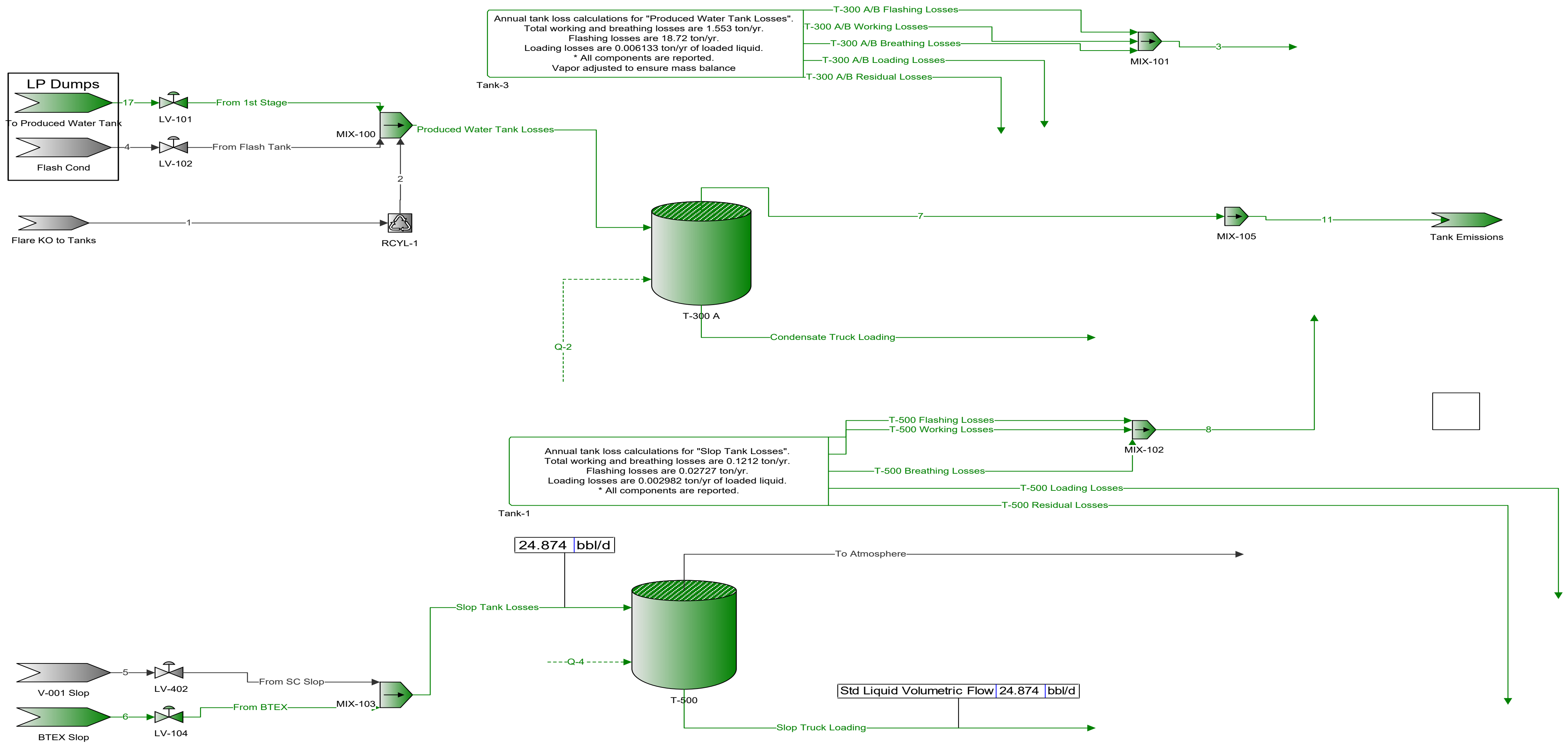
Flares (FLARE, FL1800-CHP, FL-1800-CH2, VCU)
- TNRCC RG-109 Emission Factors

Sour Slop Tanks (TK-1907-CHP, TK-1908-CHP, TK-1907-CH2, TK-1908-CH2)
- BR&E ProMax

Condensate Loading (LOAD)
- AP-42 Chapter 5.2, *Transportation and Marketing of Petroleum Liquids*
- BR&E ProMax

Fugitives (FUG, FUG-CHP, FUG-CH2)
- Site Specific Analyses
- Table 2-4 of the EPA Protocol for Equipment Leak Emission Estimates, November 1995

Haul Roads (HAUL)
- AP-42 Chapter 13.2.2, *Unpaved Roads*, Table 13.2.2-2



Annual tank loss calculations for "Produced Water Tank Losses".
Total working and breathing losses are 1.553 ton/yr.
Flashing losses are 18.72 ton/yr.
Loading losses are 0.006133 ton/yr of loaded liquid.
* All components are reported.
Vapor adjusted to ensure mass balance
Tank-3
T-300 A/B Flashing Losses
T-300 A/B Working Losses
T-300 A/B Breathing Losses
T-300 A/B Loading Losses
T-300 A/B Residual Losses
MIX-101
3
LP Dumps
To Produced Water Tank
Flash Cond
17
4
LV-101
LV-102
From 1st Stage
From Flash Tank
MIX-100
Produced Water Tank Losses
2
1
Flare KO to Tanks
RCYL-1
7
MIX-105
11
Tank Emissions
T-300 A
Q-2
Condensate Truck Loading
Annual tank loss calculations for "Slop Tank Losses".
Total working and breathing losses are 0.1212 ton/yr.
Flashing losses are 0.02727 ton/yr.
Loading losses are 0.002982 ton/yr of loaded liquid.
* All components are reported.
Tank-1
T-500 Flashing Losses
T-500 Working Losses
MIX-102
8
T-500 Breathing Losses
T-500 Loading Losses
T-500 Residual Losses
24.874 bbl/d
To Atmosphere
Slop Tank Losses
Q-4
T-500
V-001 Slop
5
LV-402
From SC Slop
MIX-103
BTEX Slop
6
LV-104
From BTEX
Std Liquid Volumetric Flow 24.874 bbl/d
Slop Truck Loading

Process Streams	Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Composition Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
To Block:	--	MIX-103	T-300 A	T-500	--
Mole Fraction	%	%	%	%	%
H2S	0.00280677	0.00460828	0.0300720	0.00460828	0.00460828
Nitrogen	0.000155680	4.38575E-07	0.0492002	4.38575E-07	4.38575E-07
Methane	0.0756953	0.000684374	6.74542	0.000684374	0.000684374
CO2	0.0184986	0.00817562	0.582679	0.00817562	0.00817562
Ethane	0.454825	0.00399201	6.40657	0.00399201	0.00399201
Propane	2.69092	0.0153722	11.7825	0.0153722	0.0153722
i-Butane	1.79100	0.00543158	3.74482	0.00543158	0.00543158
n-Butane	8.54495	0.0365708	13.2811	0.0365708	0.0365708
i-Pentane	7.36556	0.0293997	6.95340	0.0293997	0.0293997
n-Pentane	10.7001	0.0482889	9.02215	0.0482889	0.0482889
Neohexane	0.142301	0.000574906	0.104058	0.000574906	0.000574906
Cyclopentane	1.43848	0.0471466	1.06828	0.0471466	0.0471466
2-Methylpentane	4.83796	0.0213815	3.26064	0.0213815	0.0213815
3-Methylpentane	3.07453	0.0171169	2.02731	0.0171169	0.0171169
n-Hexane	7.78180	0.0346046	4.95061	0.0346046	0.0346046
Methylcyclopentane	3.96875	0.0806185	2.52640	0.0806185	0.0806185
Benzene	2.91530	0.632516	1.84578	0.632516	0.632516
Cyclohexane	6.86051	0.129745	4.20030	0.129745	0.129745
2-Methylhexane	1.78917	0.00721177	1.05622	0.00721177	0.00721177
3-Methylhexane	2.97270	0.0146180	1.74225	0.0146180	0.0146180
1,1-Dimethylcyclopentane	3.16087	0.0549262	1.88089	0.0549262	0.0549262
n-Heptane	3.37213	0.0146852	1.94769	0.0146852	0.0146852
Methylcyclohexane	7.48256	0.0850681	4.32075	0.0850681	0.0850681
1,1,2-Trimethylcyclopentane	0.435746	0.00336538	0.248396	0.00336538	0.00336538
Toluene	4.68852	0.678626	2.69558	0.678626	0.678626
2-Methylheptane	2.59340	0.00797897	1.46035	0.00797897	0.00797897
3-Methylheptane	0.384231	0.00128874	0.216032	0.00128874	0.00128874
1,1-Dimethylcyclohexane	1.41540	0.00826825	0.799262	0.00826825	0.00826825
n-Octane	1.67103	0.00479233	0.934694	0.00479233	0.00479233
Ethylbenzene	0.494888	0.0329130	0.276228	0.0329130	0.0329130
m-Xylene	0.700664	0.0431630	0.390658	0.0431630	0.0431630
p-Xylene	0.695201	0.0422617	0.387802	0.0422617	0.0422617
o-Xylene	0.358407	0.0260166	0.199604	0.0260166	0.0260166
n-Nonane	3.80075	0.00528397	2.10450	0.00528397	0.00528397
n-Decane	1.31895	0.000959915	0.728121	0.000959915	0.000959915
TEG	0	0.00123304	0	0.00123304	0.00123304
Water	0.00120561	97.8511	0.0297023	97.8511	97.8511
Methanol	0	0	0	0	0
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	4.11400E-06	0.000840901	7.99605E-05	0.000840901	0.000840901
Nitrogen	2.28186E-07	8.00295E-08	0.000130822	8.00295E-08	8.00295E-08
Methane	0.000110950	0.000124882	0.0179358	0.000124882	0.000124882
CO2	2.71142E-05	0.00149186	0.00154932	0.00149186	0.00149186
Ethane	0.000666655	0.000728447	0.0170349	0.000728447	0.000728447
Propane	0.00394419	0.00280505	0.0313292	0.00280505	0.00280505
i-Butane	0.00262514	0.000991135	0.00995734	0.000991135	0.000991135
n-Butane	0.0125247	0.00667330	0.0353140	0.00667330	0.00667330
i-Pentane	0.0107960	0.00536475	0.0184888	0.00536475	0.00536475
n-Pentane	0.0156836	0.00881158	0.0239896	0.00881158	0.00881158
Neohexane	0.000208576	0.000104907	0.000276687	0.000104907	0.000104907
Cyclopentane	0.00210843	0.00860313	0.00284052	0.00860313	0.00860313
2-Methylpentane	0.00709119	0.00390161	0.00866993	0.00390161	0.00390161
3-Methylpentane	0.00450646	0.00312342	0.00539054	0.00312342	0.00312342
n-Hexane	0.0114061	0.00631452	0.0131635	0.00631452	0.00631452
Methylcyclopentane	0.00581715	0.0147110	0.00671761	0.0147110	0.0147110
Benzene	0.00427308	0.115419	0.00490786	0.115419	0.115419
Cyclohexane	0.0100557	0.0236754	0.0111685	0.0236754	0.0236754
2-Methylhexane	0.00262245	0.00131598	0.00280846	0.00131598	0.00131598
3-Methylhexane	0.00435720	0.00266744	0.00463259	0.00266744	0.00266744
1,1-Dimethylcyclopentane	0.00463301	0.0100227	0.00500122	0.0100227	0.0100227
n-Heptane	0.00494266	0.00267969	0.00517885	0.00267969	0.00267969
Methylcyclohexane	0.0109675	0.0155229	0.0114887	0.0155229	0.0155229
1,1,2-Trimethylcyclopentane	0.000638690	0.000614102	0.000660477	0.000614102	0.000614102
Toluene	0.00687216	0.123833	0.00716745	0.123833	0.123833
2-Methylheptane	0.00380125	0.00145597	0.00388303	0.00145597	0.00145597
3-Methylheptane	0.000563182	0.000235165	0.000574421	0.000235165	0.000235165
1,1-Dimethylcyclohexane	0.00207460	0.00150876	0.00212521	0.00150876	0.00150876
n-Octane	0.00244930	0.000874486	0.00248532	0.000874486	0.000874486
Ethylbenzene	0.000725377	0.00600585	0.000734480	0.00600585	0.00600585
m-Xylene	0.00102699	0.00787621	0.00103875	0.00787621	0.00787621
p-Xylene	0.00101898	0.00771176	0.00103115	0.00771176	0.00771176
o-Xylene	0.000525331	0.00474742	0.000530740	0.00474742	0.00474742
n-Nonane	0.00557091	0.000964200	0.00559578	0.000964200	0.000964200
n-Decane	0.00193324	0.000175162	0.00193605	0.000175162	0.000175162
TEG	0	0.000225001	0	0.000225001	0.000225001
Water	1.76712E-06	17.8555	7.89775E-05	17.8555	17.8555
Methanol	0	0	0	0	0
Mass Fraction	%	%	%	%	%
H2S	0.00111384	0.00806182	0.0148039	0.00806182	0.00806182
Nitrogen	5.07812E-05	6.30657E-07	0.0199084	6.30657E-07	6.30657E-07
Methane	0.0141398	0.000563571	1.56309	0.000563571	0.000563571
CO2	0.00947961	0.0184693	0.370407	0.0184693	0.0184693
Ethane	0.159246	0.00616162	2.78259	0.00616162	0.00616162
Propane	1.38166	0.0347948	7.50474	0.0347948	0.0347948
i-Butane	1.21211	0.0162051	3.14396	0.0162051	0.0162051
n-Butane	5.78304	0.109109	11.1501	0.109109	0.109109
i-Pentane	6.18784	0.108882	7.24652	0.108882	0.108882
n-Pentane	8.98922	0.178838	9.40249	0.178838	0.178838
Neohexane	0.142789	0.00254310	0.129528	0.00254310	0.00254310
Cyclopentane	1.17470	0.169729	1.08221	0.169729	0.169729
2-Methylpentane	4.85456	0.0945810	4.05872	0.0945810	0.0945810
3-Methylpentane	3.08508	0.0757167	2.52352	0.0757167	0.0757167
n-Hexane	7.80850	0.153074	6.16234	0.153074	0.153074

		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Methylcyclopentane		3.88920	0.348274	3.07120	0.348274	0.348274
Benzene		2.65158	2.53614	2.08257	2.53614	2.53614
Cyclohexane		6.72300	0.560502	5.10607	0.560502	0.560502
2-Methylhexane		2.08752	0.0370938	1.52875	0.0370938	0.0370938
3-Methylhexane		3.46841	0.0751879	2.52169	0.0751879	0.0751879
1,1-Dimethylcyclopentane		3.61377	0.276830	2.66758	0.276830	0.276830
n-Heptane		3.93445	0.0755334	2.81903	0.0755334	0.0755334
Methylcyclohexane		8.55469	0.428746	6.12791	0.428746	0.428746
1,1,2-Trimethylcyclopentane		0.569350	0.0193847	0.402615	0.0193847	0.0193847
Toluene		5.03015	3.20963	3.58754	3.20963	3.20963
2-Methylheptane		3.44944	0.0467848	2.40955	0.0467848	0.0467848
3-Methylheptane		0.511058	0.00755656	0.356448	0.00755656	0.00755656
1,1-Dimethylcyclohexane		1.84937	0.0476255	1.29549	0.0476255	0.0476255
n-Octane		2.22261	0.0280999	1.54222	0.0280999	0.0280999
Ethylbenzene		0.611776	0.179363	0.423597	0.179363	0.179363
m-Xylene		0.866155	0.235221	0.599075	0.235221	0.235221
p-Xylene		0.859401	0.230310	0.594696	0.230310	0.230310
o-Xylene		0.443059	0.141780	0.306094	0.141780	0.141780
n-Nonane		5.67607	0.0347872	3.89876	0.0347872	0.0347872
n-Decane		2.18516	0.00701077	1.49643	0.00701077	0.00701077
TEG		0	0.00950504	0	0.00950504	0.00950504
Water		0.000252903	90.4879	0.00772921	90.4879	90.4879
Methanol		0	0	0	0	0

Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h
H2S		0.000140209	0.0286586	0.00272512	0.0286586	0.0286586
Nitrogen		6.39228E-06	2.24190E-06	0.00366476	2.24190E-06	2.24190E-06
Methane		0.00177990	0.00200342	0.287735	0.00200342	0.00200342
CO2		0.00119328	0.0656558	0.0681849	0.0656558	0.0656558
Ethane		0.0200457	0.0219037	0.512222	0.0219037	0.0219037
Propane		0.173921	0.123691	1.38148	0.123691	0.123691
i-Butane		0.152579	0.0576070	0.578743	0.0576070	0.0576070
n-Butane		0.727962	0.387867	2.05253	0.387867	0.387867
i-Pentane		0.778918	0.387060	1.33395	0.387060	0.387060
n-Pentane		1.13155	0.635745	1.73082	0.635745	0.635745
Neohexane		0.0179741	0.00904037	0.0238436	0.00904037	0.00904037
Cyclopentane		0.147870	0.603362	0.199214	0.603362	0.603362
2-Methylpentane		0.611086	0.336222	0.747134	0.336222	0.336222
3-Methylpentane		0.388346	0.269162	0.464531	0.269162	0.269162
n-Hexane		0.982924	0.544156	1.13437	0.544156	0.544156
Methylcyclopentane		0.489569	1.23807	0.565350	1.23807	1.23807
Benzene		0.333778	9.01561	0.383362	9.01561	9.01561
Cyclohexane		0.846284	1.99251	0.939931	1.99251	1.99251
2-Methylhexane		0.262775	0.131863	0.281413	0.131863	0.131863
3-Methylhexane		0.436600	0.267282	0.464195	0.267282	0.267282
1,1-Dimethylcyclopentane		0.454897	0.984092	0.491050	0.984092	0.984092
n-Heptane		0.495265	0.268511	0.518931	0.268511	0.268511
Methylcyclohexane		1.07685	1.52413	1.12803	1.52413	1.52413
1,1,2-Trimethylcyclopentane		0.0716691	0.0689100	0.0741138	0.0689100	0.0689100
Toluene		0.633190	11.4098	0.660397	11.4098	11.4098
2-Methylheptane		0.434212	0.166314	0.443552	0.166314	0.166314
3-Methylheptane		0.0643314	0.0268625	0.0656153	0.0268625	0.0268625
1,1-Dimethylcyclohexane		0.232797	0.169302	0.238475	0.169302	0.169302
n-Octane		0.279779	0.0998913	0.283894	0.0998913	0.0998913
Ethylbenzene		0.0770096	0.637611	0.0779761	0.637611	0.637611
m-Xylene		0.109031	0.836178	0.110278	0.836178	0.836178
p-Xylene		0.108180	0.818719	0.109472	0.818719	0.818719
o-Xylene		0.0557717	0.504010	0.0563461	0.504010	0.504010
n-Nonane		0.714497	0.123664	0.717688	0.123664	0.123664
n-Decane		0.275065	0.0249223	0.275464	0.0249223	0.0249223
TEG		0	0.0337891	0	0.0337891	0.0337891
Water		3.18351E-05	321.672	0.00142280	321.672	321.672
Methanol		0	0	0	0	0

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Property	Units					
Temperature	°F	75	119.974	19.3552	119.974	75
Pressure	psig	0.5	0.5*	0.5*	0.5	0.5
Mole Fraction Vapor	%	0	0.00539480	24.0591	0.00539480	0
Mole Fraction Light Liquid	%	100	2.12254	75.9409	2.12254	2.12614
Mole Fraction Heavy Liquid	%	0	97.8721	0	97.8721	97.8739
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	85.8808	19.4812	69.2303	19.4812	19.4812
Mass Density	lb/ft^3	43.5442	56.4894	0.849937	56.4894	60.9599
Molar Flow	lbmol/h	0.146574	18.2476	0.265897	18.2476	18.2476
Mass Flow	lb/h	12.5879	355.486	18.4081	355.486	355.486
Vapor Volumetric Flow	ft^3/h	0.289083	6.29297	21.6582	6.29297	5.83148
Liquid Volumetric Flow	gpm	0.0360415	0.784578	2.70024	0.784578	0.727041
Std Vapor Volumetric Flow	MMSCFD	0.00133494	0.166192	0.00242168	0.166192	0.166192
Std Liquid Volumetric Flow	sgpm	0.0359765	0.725482	0.0576850	0.725482	0.725482
Compressibility		0.00522329	0.000842465	0.240777	0.000842465	0.000846351
Specific Gravity		0.698174				0.977411
API Gravity		68.9284				12.8347
Enthalpy	Btu/h	-10548.1?	-2.18650E+06	-17486.1	-2.18650E+06	-2.20132E+06?
Mass Enthalpy	Btu/lb	-837.960?	-6150.75	-949.912	-6150.75	-6192.42?
Mass Cp	Btu/(lb*°F)	0.492897?	0.926571	0.458857?	0.926571	0.924646?
Ideal Gas CpCv Ratio		1.06860	1.30676	1.09219	1.30676	1.31048
Dynamic Viscosity	cP	0.363516				0.889744
Kinematic Viscosity	cSt	0.521161				0.911172
Thermal Conductivity	Btu/(h*ft*°F)	0.0678688				0.317932
Surface Tension	lbf/ft	0.00132245?				0.00462443?
Net Ideal Gas Heating Value	Btu/ft^3	4308.04	87.6871	3498.48	87.6871	87.6871
Net Liquid Heating Value	Btu/lb	18918.8	734.380	19051.3	734.380	734.380
Gross Ideal Gas Heating Value	Btu/ft^3	4631.45	141.782	3772.06	141.782	141.782
Gross Liquid Heating Value	Btu/lb	20348.0	1788.07	20551.0	1788.07	1788.07

Process Streams	Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Composition Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Vapor** From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
To Block:	--	MIX-103	T-300 A	T-500	--
Mole Fraction		%	%	%	
H2S		2.54604	0.0994162	2.54604	
Nitrogen		0.00541224	0.203516	0.00541224	
Methane		4.89460	27.4644	4.89460	
CO2		13.8466	2.25623	13.8466	
Ethane		8.73385	22.4255	8.73385	
Propane		12.8607	26.5986	12.8607	
i-Butane		2.32006	4.45401	2.32006	
n-Butane		10.1727	10.7527	10.1727	
i-Pentane		3.18237	2.15529	3.18237	
n-Pentane		4.04423	1.99139	4.04423	
Neohexane		0.0333948	0.0135147	0.0333948	
Cyclopentane		2.18770	0.151895	2.18770	
2-Methylpentane		0.888290	0.271047	0.888290	
3-Methylpentane		0.625667	0.145016	0.625667	
n-Hexane		1.07069	0.256305	1.07069	
Methylcyclopentane		2.19498	0.140638	2.19498	
Benzene		10.3759	0.100974	10.3759	
Cyclohexane		2.53014	0.160841	2.53014	
2-Methylhexane		0.110586	0.0228000	0.110586	
3-Methylhexane		0.197900	0.0322897	0.197900	
1,1-Dimethylcyclopentane		0.769642	0.0467889	0.769642	
n-Heptane		0.155650	0.0259109	0.155650	
Methylcyclohexane		0.834040	0.0584565	0.834040	
1,1,2-Trimethylcyclopentane		0.0208875	0.00251271	0.0208875	
Toluene		3.87444	0.0342695	3.87444	
2-Methylheptane		0.0424298	0.00750195	0.0424298	
3-Methylheptane		0.00629792	0.00102389	0.00629792	
1,1-Dimethylcyclohexane		0.0385530	0.00515716	0.0385530	
n-Octane		0.0179932	0.00307543	0.0179932	
Ethylbenzene		0.0582821	0.000814457	0.0582821	
m-Xylene		0.0808155	0.00103735	0.0808155	
p-Xylene		0.0806482	0.00109222	0.0806482	
o-Xylene		0.0502344	0.000472220	0.0502344	
n-Nonane		0.00837109	0.00159511	0.00837109	
n-Decane		0.000593019	0.000150565	0.000593019	
TEG		7.89028E-09	0	7.89028E-09	
Water		11.1392	0.113855	11.1392	
Methanol		0	0	0	
Molar Flow		lbmol/h	lbmol/h	lbmol/h	
H2S		2.50638E-05	6.35988E-05	2.50638E-05	
Nitrogen		5.32794E-08	0.000130194	5.32794E-08	
Methane		4.81835E-05	0.0175696	4.81835E-05	
CO2		0.000136309	0.00144336	0.000136309	
Ethane		8.59781E-05	0.0143461	8.59781E-05	
Propane		0.000126604	0.0170157	0.000126604	
i-Butane		2.28392E-05	0.00284934	2.28392E-05	
n-Butane		0.000100143	0.00687873	0.000100143	
i-Pentane		3.13280E-05	0.00137879	3.13280E-05	
n-Pentane		3.98123E-05	0.00127394	3.98123E-05	
Neohexane		3.28746E-07	8.64567E-06	3.28746E-07	
Cyclopentane		2.15362E-05	9.71706E-05	2.15362E-05	
2-Methylpentane		8.74453E-06	0.000173395	8.74453E-06	
3-Methylpentane		6.15921E-06	9.27702E-05	6.15921E-06	
n-Hexane		1.05401E-05	0.000163965	1.05401E-05	
Methylcyclopentane		2.16079E-05	8.99695E-05	2.16079E-05	
Benzene		0.000102143	6.45956E-05	0.000102143	
Cyclohexane		2.49073E-05	0.000102893	2.49073E-05	
2-Methylhexane		1.08864E-06	1.45857E-05	1.08864E-06	
3-Methylhexane		1.94817E-06	2.06565E-05	1.94817E-06	
1,1-Dimethylcyclopentane		7.57654E-06	2.99319E-05	7.57654E-06	
n-Heptane		1.53225E-06	1.65758E-05	1.53225E-06	
Methylcyclohexane		8.21048E-06	3.73960E-05	8.21048E-06	
1,1,2-Trimethylcyclopentane		2.05621E-07	1.60744E-06	2.05621E-07	
Toluene		3.81409E-05	2.19230E-05	3.81409E-05	
2-Methylheptane		4.17688E-07	4.79917E-06	4.17688E-07	
3-Methylheptane		6.19982E-08	6.55009E-07	6.19982E-08	
1,1-Dimethylcyclohexane		3.79524E-07	3.29916E-06	3.79524E-07	
n-Octane		1.77129E-07	1.96742E-06	1.77129E-07	
Ethylbenzene		5.73742E-07	5.21027E-07	5.73742E-07	
m-Xylene		7.95566E-07	6.63616E-07	7.95566E-07	
p-Xylene		7.93920E-07	6.98719E-07	7.93920E-07	
o-Xylene		4.94519E-07	3.02090E-07	4.94519E-07	
n-Nonane		8.24070E-08	1.02043E-06	8.24070E-08	
n-Decane		5.83781E-09	9.63197E-08	5.83781E-09	
TEG		7.76737E-14	0	7.76737E-14	
Water		0.000109657	7.28358E-05	0.000109657	
Methanol		0	0	0	
Mass Fraction		%	%	%	
H2S		1.65437	0.0913591	1.65437	
Nitrogen		0.00289068	0.153726	0.00289068	
Methane		1.49708	11.8802	1.49708	
CO2		11.6184	2.67741	11.6184	
Ethane		5.00705	18.1821	5.00705	
Propane		10.8123	31.6256	10.8123	
i-Butane		2.57097	6.98036	2.57097	
n-Butane		11.2729	16.8516	11.2729	
i-Pentane		4.37760	4.19293	4.37760	
n-Pentane		5.56316	3.87408	5.56316	
Neohexane		0.0548680	0.0314032	0.0548680	
Cyclopentane		2.92527	0.287243	2.92527	
2-Methylpentane		1.45947	0.629813	1.45947	
3-Methylpentane		1.02798	0.336964	1.02798	

		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
n-Hexane			1.75916	0.595559	1.75916	
Methylcyclopentane			3.52201	0.319147	3.52201	
Benzene			15.4526	0.212673	15.4526	
Cyclohexane			4.05980	0.364992	4.05980	
2-Methylhexane			0.211269	0.0616020	0.211269	
3-Methylhexane			0.378076	0.0872417	0.378076	
1,1-Dimethylcyclopentane			1.44077	0.123873	1.44077	
n-Heptane			0.297359	0.0700073	0.297359	
Methylcyclohexane			1.56133	0.154763	1.56133	
1,1,2-Trimethylcyclopentane			0.0446874	0.00760272	0.0446874	
Toluene			6.80623	0.0851399	6.80623	
2-Methylheptane			0.0924064	0.0231064	0.0924064	
3-Methylheptane			0.0137160	0.00315365	0.0137160	
1,1-Dimethylcyclohexane			0.0824814	0.0156040	0.0824814	
n-Octane			0.0391868	0.00947249	0.0391868	
Ethylbenzene			0.117970	0.00233149	0.117970	
m-Xylene			0.163581	0.00296955	0.163581	
p-Xylene			0.163242	0.00312663	0.163242	
o-Xylene			0.101681	0.00135179	0.101681	
n-Nonane			0.0204698	0.00551634	0.0204698	
n-Decane			0.00160870	0.000577639	0.00160870	
TEG			2.25913E-08	0	2.25913E-08	
Water			3.82608	0.0553068	3.82608	
Methanol			0	0	0	
Mass Flow			lb/h	lb/h	lb/h	
H2S			0.000854195	0.00216750	0.000854195	
Nitrogen			1.49254E-06	0.00364717	1.49254E-06	
Methane			0.000772982	0.281860	0.000772982	
CO2			0.00599888	0.0635218	0.00599888	
Ethane			0.00258528	0.431373	0.00258528	
Propane			0.00558269	0.750320	0.00558269	
i-Butane			0.00132746	0.165610	0.00132746	
n-Butane			0.00582051	0.399807	0.00582051	
i-Pentane			0.00226028	0.0994777	0.00226028	
n-Pentane			0.00287241	0.0919130	0.00287241	
Neohexane			2.83298E-05	0.000745044	2.83298E-05	
Cyclopentane			0.00151040	0.00681486	0.00151040	
2-Methylpentane			0.000753563	0.0149424	0.000753563	
3-Methylpentane			0.000530772	0.00799451	0.000530772	
n-Hexane			0.000908301	0.0141297	0.000908301	
Methylcyclopentane			0.00181851	0.00757179	0.00181851	
Benzene			0.00797859	0.00504568	0.00797859	
Cyclohexane			0.00209618	0.00865946	0.00209618	
2-Methylhexane			0.000109084	0.00146151	0.000109084	
3-Methylhexane			0.000195211	0.00206982	0.000195211	
1,1-Dimethylcyclopentane			0.000743910	0.00293890	0.000743910	
n-Heptane			0.000153535	0.00166093	0.000153535	
Methylcyclohexane			0.000806155	0.00367176	0.000806155	
1,1,2-Trimethylcyclopentane			2.30733E-05	0.000180375	2.30733E-05	
Toluene			0.00351424	0.00201995	0.00351424	
2-Methylheptane			4.77119E-05	0.000548202	4.77119E-05	
3-Methylheptane			7.08197E-06	7.48207E-05	7.08197E-06	
1,1-Dimethylcyclohexane			4.25874E-05	0.000370207	4.25874E-05	
n-Octane			2.02332E-05	0.000224736	2.02332E-05	
Ethylbenzene			6.09113E-05	5.53148E-05	6.09113E-05	
m-Xylene			8.44613E-05	7.04528E-05	8.44613E-05	
p-Xylene			8.42865E-05	7.41795E-05	8.42865E-05	
o-Xylene			5.25006E-05	3.20714E-05	5.25006E-05	
n-Nonane			1.05691E-05	0.000130876	1.05691E-05	
n-Decane			8.30614E-07	1.37045E-05	8.30614E-07	
TEG			1.16645E-11	0	1.16645E-11	
Water			0.00197551	0.00131216	0.00197551	
Methanol			0	0	0	

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Vapor**	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Property	**Units**					
Temperature	°F		119.974	19.3552	119.974	
Pressure	psig		0.5	0.5	0.5	
Mole Fraction Vapor	%		100	100	100	
Mole Fraction Light Liquid	%		0	0	0	
Mole Fraction Heavy Liquid	%		0	0	0	
Phase Mole Fraction	%		0.00539480	24.0591	0.00539480	
Molecular Weight	lb/lbmol		52.4497	37.0865	52.4497	
Mass Density	lb/ft^3		0.130282	0.111416	0.130282	
Molar Flow	lbmol/h		0.000984423	0.0639723	0.000984423	
Mass Flow	lb/h		0.0516327	2.37251	0.0516327	
Vapor Volumetric Flow	ft^3/h		0.396315	21.2941	0.396315	
Liquid Volumetric Flow	gpm		0.0494107	2.65485	0.0494107	
Std Vapor Volumetric Flow	MMSCFD		8.96575E-06	0.000582635	8.96575E-06	
Std Liquid Volumetric Flow	sgpm		0.000156805	0.0102226	0.000156805	
Compressibility			0.983471	0.983951	0.983471	
Specific Gravity			1.81095	1.28050	1.81095	
API Gravity						
Enthalpy	Btu/h		-57.5562	-2917.34?	-57.5562	
Mass Enthalpy	Btu/lb		-1114.72	-1229.64?	-1114.72	
Mass Cp	Btu/(lb*°F)		0.357419	0.384403?	0.357419	
Ideal Gas CpCv Ratio			1.11945	1.16355	1.11945	
Dynamic Viscosity	cP		0.00968300	0.00812981	0.00968300	
Kinematic Viscosity	cSt		4.63986	4.55524	4.63986	
Thermal Conductivity	Btu/(h*ft*°F)		0.0104137	0.0103707?	0.0104137	
Surface Tension	lbf/ft					
Net Ideal Gas Heating Value	Btu/ft^3		2192.54	1903.91	2192.54	
Net Liquid Heating Value	Btu/lb		15686.3	19345.2	15686.3	
Gross Ideal Gas Heating Value	Btu/ft^3		2357.83	2074.41	2357.83	
Gross Liquid Heating Value	Btu/lb		16882.3	21090.4	16882.3	

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liquid	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Mole Fraction		%	%	%	%	%
H2S		0.00280677	0.0913681	0.00810286	0.0913681	0.0951412
Nitrogen		0.000155680	4.42167E-06	0.000310972	4.42167E-06	1.20473E-05
Methane		0.0756953	0.0152540	0.181367	0.0152540	0.0241762
CO2		0.0184986	0.138165	0.0524742	0.138165	0.140822
Ethane		0.454825	0.155749	1.33158	0.155749	0.175555
Propane		2.69092	0.681246	7.08853	0.681246	0.712812
i-Butane		1.79100	0.248972	3.52014	0.248972	0.254325
n-Butane		8.54495	1.68955	14.0822	1.68955	1.71394
i-Pentane		7.36556	1.37561	8.47350	1.37561	1.38159
n-Pentane		10.7001	2.26375	11.2496	2.26375	2.27064
Neohexane		0.142301	0.0269955	0.132743	0.0269955	0.0270354
Cyclopentane		1.43848	2.21074	1.35860	2.21074	2.21341
2-Methylpentane		4.83796	1.00484	4.20778	1.00484	1.00549
3-Methylpentane		3.07453	0.804454	2.62364	0.804454	0.804802
n-Hexane		7.78180	1.62745	6.43783	1.62745	1.62749
Methylcyclopentane		3.96875	3.79039	3.28224	3.79039	3.79023
Benzene		2.91530	29.0540	2.39855	29.0540	29.1574
Cyclohexane		6.86051	6.10089	5.48005	6.10089	6.09842
2-Methylhexane		1.78917	0.339475	1.38362	0.339475	0.339184
3-Methylhexane		2.97270	0.688172	2.28399	0.688172	0.687514
1,1-Dimethylcyclopentane		3.16087	2.58523	2.46196	2.58523	2.58286
n-Heptane		3.37213	0.691458	2.55654	0.691458	0.690689
Methylcyclohexane		7.48256	4.00496	5.67110	4.00496	4.00056
1,1,2-Trimethylcyclopentane		0.435746	0.158500	0.326295	0.158500	0.158286
Toluene		4.68852	31.7546	3.53871	31.7546	31.7744
2-Methylheptane		2.59340	0.375806	1.92064	0.375806	0.375279
3-Methylheptane		0.384231	0.0607006	0.284149	0.0607006	0.0606140
1,1-Dimethylcyclohexane		1.41540	0.389441	1.05084	0.389441	0.388883
n-Octane		1.67103	0.225737	1.22984	0.225737	0.225401
Ethylbenzene		0.494888	1.54808	0.363483	1.54808	1.54638
m-Xylene		0.700664	2.03076	0.514095	2.03076	2.02863
p-Xylene		0.695201	1.98815	0.510317	1.98815	1.98607
o-Xylene		0.358407	1.22243	0.262692	1.22243	1.22151
n-Nonane		3.80075	0.248925	2.77072	0.248925	0.248525
n-Decane		1.31895	0.0452234	0.958752	0.0452234	0.0451483
TEG		0	2.08250E-05	0	2.08250E-05	3.73056E-06
Water		0.00120561	0.362944	0.00304157	0.362944	0.146782
Methanol		0	0	0	0	0
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S		4.11400E-06	0.000353880	1.63616E-05	0.000353880	0.000369119
Nitrogen		2.28186E-07	1.71257E-08	6.27927E-07	1.71257E-08	4.67398E-08
Methane		0.000110950	5.90806E-05	0.000366225	5.90806E-05	9.37964E-05
CO2		2.71142E-05	0.000535129	0.000105958	0.000535129	0.000546348
Ethane		0.000666655	0.000603235	0.00268878	0.000603235	0.000681100
Propane		0.00394419	0.00263855	0.0143135	0.00263855	0.00276549
i-Butane		0.00262514	0.000964301	0.00710801	0.000964301	0.000986703
n-Butane		0.0125247	0.00654383	0.0284353	0.00654383	0.00664957
i-Pentane		0.0107960	0.00532792	0.0171101	0.00532792	0.00536015
n-Pentane		0.0156836	0.00876780	0.0227157	0.00876780	0.00880937
Neohexane		0.000208576	0.000104557	0.000268041	0.000104557	0.000104889
Cyclopentane		0.00210843	0.00856246	0.00274335	0.00856246	0.00858734
2-Methylpentane		0.00709119	0.00389187	0.00849653	0.00389187	0.00390099
3-Methylpentane		0.00450646	0.00311575	0.00529777	0.00311575	0.00312239
n-Hexane		0.0114061	0.00630333	0.0129995	0.00630333	0.00631417
Methylcyclopentane		0.00581715	0.0146807	0.00662764	0.0146807	0.0147049
Benzene		0.00427308	0.112530	0.00484326	0.112530	0.113122
Cyclohexane		0.0100557	0.0236295	0.0110656	0.0236295	0.0236600
2-Methylhexane		0.00262245	0.00131483	0.00279387	0.00131483	0.00131593
3-Methylhexane		0.00435720	0.00266537	0.00461194	0.00266537	0.00266734
1,1-Dimethylcyclopentane		0.00463301	0.0100129	0.00497129	0.0100129	0.0100207
n-Heptane		0.00494266	0.00267810	0.00516227	0.00267810	0.00267966
Methylcyclohexane		0.0109675	0.0155117	0.0114513	0.0155117	0.0155210
1,1,2-Trimethylcyclopentane		0.000638690	0.000613890	0.000658869	0.000613890	0.000614099
Toluene		0.00687216	0.122989	0.00714552	0.122989	0.123275
2-Methylheptane		0.00380125	0.00145554	0.00387823	0.00145554	0.00145597
3-Methylheptane		0.000563182	0.000235101	0.000573766	0.000235101	0.000235164
1,1-Dimethylcyclohexane		0.00207460	0.00150835	0.00212191	0.00150835	0.00150875
n-Octane		0.00244930	0.000874306	0.00248335	0.000874306	0.000874485
Ethylbenzene		0.000725377	0.00599590	0.000733959	0.00599590	0.00599950
m-Xylene		0.00102699	0.00786539	0.00103808	0.00786539	0.00787045
p-Xylene		0.00101898	0.00770035	0.00103045	0.00770035	0.00770533
o-Xylene		0.000525331	0.00473462	0.000530438	0.00473462	0.00473907
n-Nonane		0.00557091	0.000964116	0.00559476	0.000964116	0.000964199
n-Decane		0.00193324	0.000175156	0.00193595	0.000175156	0.000175162
TEG		0	8.06580E-08	0	8.06580E-08	1.44734E-08
Water		1.76712E-06	0.00140573	6.14166E-06	0.00140573	0.000569467
Methanol		0	0	0	0	0
Mass Fraction		%	%	%	%	%
H2S		0.00111384	0.0361124	0.00347738	0.0361124	0.0375632
Nitrogen		5.07812E-05	1.43649E-06	0.000109696	1.43649E-06	3.90966E-06
Methane		0.0141398	0.00283795	0.0366381	0.00283795	0.00449307
CO2		0.00947961	0.0705170	0.0290801	0.0705170	0.0717963
Ethane		0.159246	0.0543119	0.504184	0.0543119	0.0611528
Propane		1.38166	0.348377	3.93600	0.348377	0.364128
i-Butane		1.21211	0.167820	2.57635	0.167820	0.171244
n-Butane		5.78304	1.13884	10.3066	1.13884	1.15404
i-Pentane		6.18784	1.15100	7.69831	1.15100	1.15476
n-Pentane		8.98922	1.89413	10.2204	1.89413	1.89784
Neohexane		0.142789	0.0269789	0.144045	0.0269789	0.0269897
Cyclopentane		1.17470	1.79808	1.19983	1.79808	1.79832
2-Methylpentane		4.85456	1.00422	4.56604	1.00422	1.00379
3-Methylpentane		3.08508	0.803961	2.84702	0.803961	0.803444

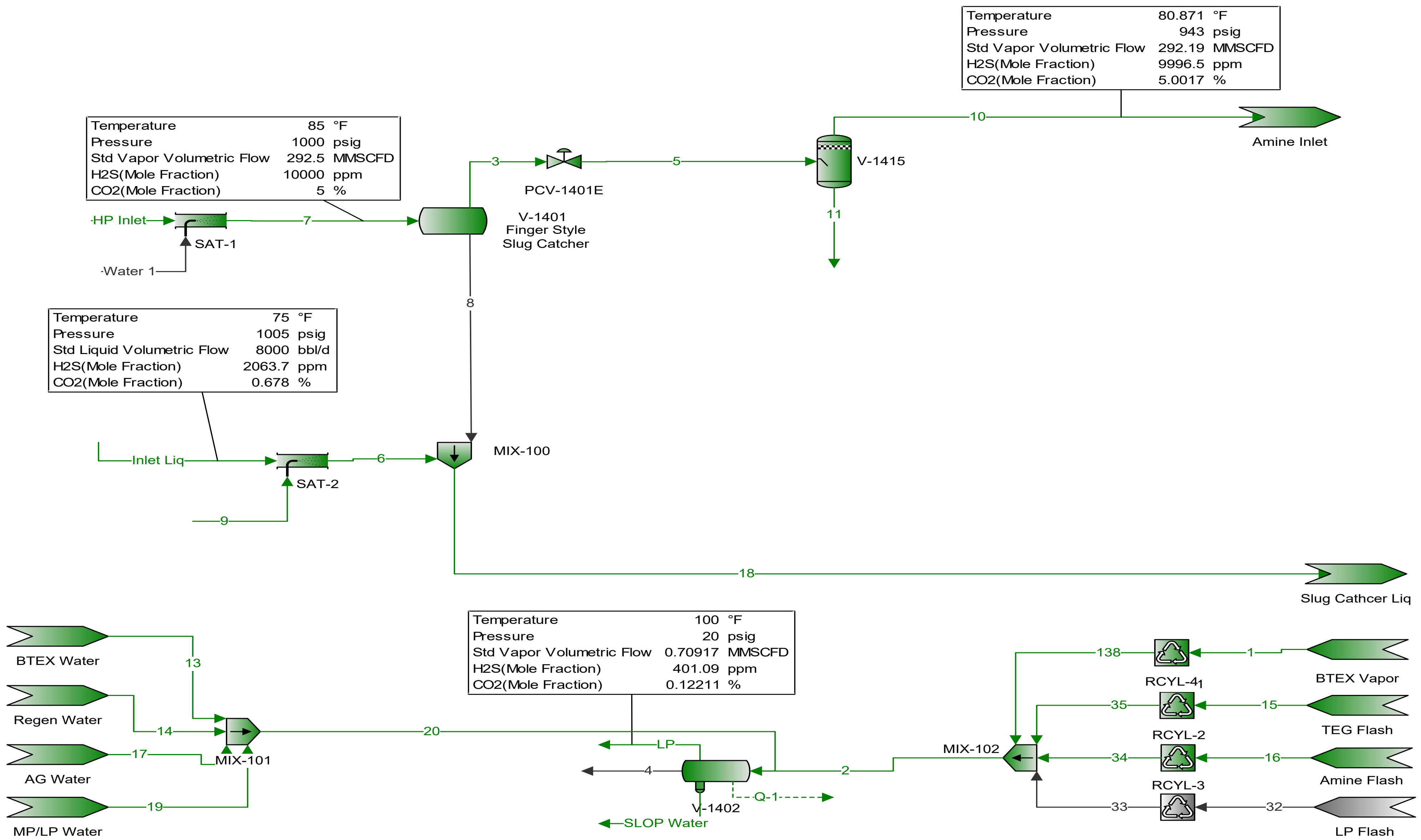
n-Hexane		7.80850	1.62646	6.98596	1.62646	1.62475
Methylcyclopentane		3.88920	3.69946	3.47838	3.69946	3.69532
Benzene		2.65158	26.3192	2.35923	26.3192	26.3845
Cyclohexane		6.72300	5.95453	5.80753	5.95453	5.94571
2-Methylhexane		2.08752	0.394489	1.74581	0.394489	0.393727
3-Methylhexane		3.46841	0.799694	2.88187	0.799694	0.798070
1,1-Dimethylcyclopentane		3.61377	2.94374	3.04392	2.94374	2.93788
n-Heptane		3.93445	0.803512	3.22576	0.803512	0.801756
Methylcyclohexane		8.55469	4.56036	7.01165	4.56036	4.55045
1,1,2-Trimethylcyclopentane		0.569350	0.206263	0.461058	0.206263	0.205763
Toluene		5.03015	33.9311	4.10572	33.9311	33.9158
2-Methylheptane		3.44944	0.497839	2.76263	0.497839	0.496606
3-Methylheptane		0.511058	0.0804115	0.408718	0.0804115	0.0802105
1,1-Dimethylcyclohexane		1.84937	0.506798	1.48485	0.506798	0.505527
n-Octane		2.22261	0.299039	1.76900	0.299039	0.298272
Ethylbenzene		0.611776	1.90601	0.485924	1.90601	1.90188
m-Xylene		0.866155	2.50029	0.687271	2.50029	2.49498
p-Xylene		0.859401	2.44783	0.682220	2.44783	2.44263
o-Xylene		0.443059	1.50507	0.351181	1.50507	1.50231
n-Nonane		5.67607	0.370249	4.47477	0.370249	0.369256
n-Decane		2.18516	0.0746213	1.71774	0.0746213	0.0744173
TEG		0	3.62684E-05	0	3.62684E-05	6.49007E-06
Water		0.000252903	0.0758283	0.000689989	0.0758283	0.0306334
Methanol		0	0	0	0	0
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h
H2S		0.000140209	0.0120605	0.000557619	0.0120605	0.0125799
Nitrogen		6.39228E-06	4.79749E-07	1.75904E-05	4.79749E-07	1.30934E-06
Methane		0.00177990	0.000947798	0.00587514	0.000947798	0.00150472
CO2		0.00119328	0.0235508	0.00466316	0.0235508	0.0240445
Ethane		0.0200457	0.0181387	0.0808489	0.0181387	0.0204800
Propane		0.173921	0.116348	0.631161	0.116348	0.121946
i-Butane		0.152579	0.0560473	0.413133	0.0560473	0.0573494
n-Butane		0.727962	0.380342	1.65272	0.380342	0.386488
i-Pentane		0.778918	0.384403	1.23447	0.384403	0.386728
n-Pentane		1.13155	0.632586	1.63891	0.632586	0.635586
Neohexane		0.0179741	0.00901021	0.0230985	0.00901021	0.00903884
Cyclopentane		0.147870	0.600510	0.192399	0.600510	0.602255
2-Methylpentane		0.611086	0.335383	0.732192	0.335383	0.336169
3-Methylpentane		0.388346	0.268501	0.456537	0.268501	0.269073
n-Hexane		0.982924	0.543192	1.12024	0.543192	0.544126
Methylcyclopentane		0.489569	1.23552	0.557778	1.23552	1.23756
Benzene		0.333778	8.78990	0.378316	8.78990	8.83614
Cyclohexane		0.846284	1.98865	0.931272	1.98865	1.99121
2-Methylhexane		0.262775	0.131748	0.279951	0.131748	0.131859
3-Methylhexane		0.436600	0.267076	0.462125	0.267076	0.267273
1,1-Dimethylcyclopentane		0.454897	0.983129	0.488111	0.983129	0.983892
n-Heptane		0.495265	0.268351	0.517270	0.268351	0.268507
Methylcyclohexane		1.07685	1.52303	1.12436	1.52303	1.52394
1,1,2-Trimethylcyclopentane		0.0716691	0.0688862	0.0739335	0.0688862	0.0689097
Toluene		0.633190	11.3320	0.658377	11.3320	11.3584
2-Methylheptane		0.434212	0.166264	0.443004	0.166264	0.166313
3-Methylheptane		0.0643314	0.0268552	0.0655404	0.0268552	0.0268624
1,1-Dimethylcyclohexane		0.232797	0.169256	0.238105	0.169256	0.169300
n-Octane		0.279779	0.0998707	0.283670	0.0998707	0.0998911
Ethylbenzene		0.0770096	0.636554	0.0779208	0.636554	0.636936
m-Xylene		0.109031	0.835030	0.110208	0.835030	0.835566
p-Xylene		0.108180	0.817508	0.109398	0.817508	0.818036
o-Xylene		0.0557717	0.502651	0.0563140	0.502651	0.503123
n-Nonane		0.714497	0.123653	0.717557	0.123653	0.123663
n-Decane		0.275065	0.0249215	0.275451	0.0249215	0.0249223
TEG		0	1.21126E-05	0	1.21126E-05	2.17352E-06
Water		3.18351E-05	0.0253246	0.000110644	0.0253246	0.0102591
Methanol		0	0	0	0	0

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Nonspecific Liquid**	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Property	**Units**					
Temperature	°F	75	119.974	19.3552	119.974	75
Pressure	psig	0.5	0.5	0.5	0.5	0.5
Mole Fraction Vapor	%	0	0	0	0	0
Mole Fraction Light Liquid	%	100	100	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	2.12254	75.9409	2.12254	2.12614
Molecular Weight	lb/lbmol	85.8808	86.2282	79.4139	86.2282	86.3210
Mass Density	lb/ft^3	43.5442	49.4409	44.0433	49.4409	50.9035
Molar Flow	lbmol/h	0.146574	0.387312	0.201924	0.387312	0.387969
Mass Flow	lb/h	12.5879	33.3972	16.0356	33.3972	33.4899
Vapor Volumetric Flow	ft^3/h	0.289083	0.675498	0.364087	0.675498	0.657910
Liquid Volumetric Flow	gpm	0.0360415	0.0842180	0.0453926	0.0842180	0.0820251
Std Vapor Volumetric Flow	MMSCFD	0.00133494	0.00352749	0.00183905	0.00352749	0.00353348
Std Liquid Volumetric Flow	sgpm	0.0359765	0.0814375	0.0474624	0.0814375	0.0816904
Compressibility		0.00522329	0.00426055	0.00532994	0.00426055	0.00449104
Specific Gravity		0.698174	0.792719	0.706177	0.792719	0.816170
API Gravity		68.9284	40.1143	75.1812	40.1143	40.2246
Enthalpy	Btu/h	-10548.1?	-5783.74	-14568.7?	-5783.74	-6351.88?
Mass Enthalpy	Btu/lb	-837.960?	-173.180	-908.525?	-173.180	-189.665?
Mass Cp	Btu/(lb*°F)	0.492897?	0.439367	0.469873?	0.439367	0.411341?
Ideal Gas CpCv Ratio		1.06860	1.07925	1.08099	1.07925	1.08671
Dynamic Viscosity	cP	0.363516	0.403653	0.432016	0.403653	0.533741
Kinematic Viscosity	cSt	0.521161	0.509683	0.612349	0.509683	0.654579
Thermal Conductivity	Btu/(h*ft*°F)	0.0678688	0.0705567	0.0720533?	0.0705567	0.0745129
Surface Tension	lbf/ft	0.00132245?	0.00153139?	0.00146608?	0.00153139?	0.00172206?
Net Ideal Gas Heating Value	Btu/ft^3	4308.04	4086.11	4003.66	4086.11	4092.35
Net Liquid Heating Value	Btu/lb	18918.8	17827.1	19007.8	17827.1	17835.5
Gross Ideal Gas Heating Value	Btu/ft^3	4631.45	4313.22	4309.89	4313.22	4319.70
Gross Liquid Heating Value	Btu/lb	20348.0	18826.0	20471.3	18826.0	18834.5

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Mole Fraction			%		%	%
H2S			0.00258665		0.00258665	0.00264161
Nitrogen			5.38903E-08		5.38903E-08	1.86396E-07
Methane			9.86483E-05		9.86483E-05	0.000174055
CO2			0.00459378		0.00459378	0.00529410
Ethane			0.000219686		0.000219686	0.000265109
Propane			0.000223406		0.000223406	0.000221499
i-Butane			2.23698E-05		2.23698E-05	2.48161E-05
n-Butane			0.000164243		0.000164243	0.000132849
i-Pentane			3.07992E-05		3.07992E-05	2.57514E-05
n-Pentane			2.22276E-05		2.22276E-05	1.23642E-05
Neohexane			1.18827E-07		1.18827E-07	9.95508E-08
Cyclopentane			0.000107095		0.000107095	8.84082E-05
2-Methylpentane			5.56165E-06		5.56165E-06	3.45589E-06
3-Methylpentane			8.48749E-06		8.48749E-06	5.80451E-06
n-Hexane			3.65719E-06		3.65719E-06	1.95983E-06
Methylcyclopentane			4.86574E-05		4.86574E-05	3.37100E-05
Benzene			0.0156078		0.0156078	0.0128647
Cyclohexane			0.000117320		0.000117320	8.61619E-05
2-Methylhexane			3.25071E-07		3.25071E-07	2.57742E-07
3-Methylhexane			6.44724E-07		6.44724E-07	5.35171E-07
1,1-Dimethylcyclopentane			1.25176E-05		1.25176E-05	1.13887E-05
n-Heptane			3.37055E-07		3.37055E-07	1.79646E-07
Methylcyclohexane			1.67394E-05		1.67394E-05	1.09218E-05
1,1,2-Trimethylcyclopentane			3.51285E-08		3.51285E-08	1.20181E-08
Toluene			0.00451151		0.00451151	0.00312464
2-Methylheptane			7.36834E-08		7.36834E-08	3.76801E-08
3-Methylheptane			8.81864E-09		8.81864E-09	3.59243E-09
1,1-Dimethylcyclohexane			1.41092E-07		1.41092E-07	7.08303E-08
n-Octane			1.93849E-08		1.93849E-08	7.62270E-09
Ethylbenzene			5.24957E-05		5.24957E-05	3.55575E-05
m-Xylene			5.61274E-05		5.61274E-05	3.22947E-05
p-Xylene			5.94196E-05		5.94196E-05	3.60103E-05
o-Xylene			6.88728E-05		6.88728E-05	4.67416E-05
n-Nonane			5.41357E-09		5.41357E-09	3.23275E-09
n-Decane			1.30551E-10		1.30551E-10	5.91135E-11
TEG			0.00125940		0.00125940	0.00125975
Water			99.9701		99.9701	99.9736
Methanol			0		0	0
Molar Flow			lbmol/h		lbmol/h	lbmol/h
H2S			0.000461957		0.000461957	0.000471782
Nitrogen			9.62445E-09		9.62445E-09	3.32897E-08
Methane			1.76179E-05		1.76179E-05	3.10856E-05
CO2			0.000820418		0.000820418	0.000945508
Ethane			3.92344E-05		3.92344E-05	4.73476E-05
Propane			3.98988E-05		3.98988E-05	3.95590E-05
i-Butane			3.99509E-06		3.99509E-06	4.43206E-06
n-Butane			2.93326E-05		2.93326E-05	2.37263E-05
i-Pentane			5.50053E-06		5.50053E-06	4.59911E-06
n-Pentane			3.96969E-06		3.96969E-06	2.20821E-06
Neohexane			2.12217E-08		2.12217E-08	1.77794E-08
Cyclopentane			1.91265E-05		1.91265E-05	1.57894E-05
2-Methylpentane			9.93274E-07		9.93274E-07	6.17210E-07
3-Methylpentane			1.51581E-06		1.51581E-06	1.03667E-06
n-Hexane			6.53149E-07		6.53149E-07	3.50019E-07
Methylcyclopentane			8.68989E-06		8.68989E-06	6.02050E-06
Benzene			0.00278745		0.00278745	0.00229759
Cyclohexane			2.09526E-05		2.09526E-05	1.53882E-05
2-Methylhexane			5.80554E-08		5.80554E-08	4.60318E-08
3-Methylhexane			1.15143E-07		1.15143E-07	9.55797E-08
1,1-Dimethylcyclopentane			2.23555E-06		2.23555E-06	2.03397E-06
n-Heptane			6.01957E-08		6.01957E-08	3.20841E-08
Methylcyclohexane			2.98954E-06		2.98954E-06	1.95059E-06
1,1,2-Trimethylcyclopentane			6.27372E-09		6.27372E-09	2.14639E-09
Toluene			0.000805726		0.000805726	0.000558050
2-Methylheptane			1.31594E-08		1.31594E-08	6.72953E-09
3-Methylheptane			1.57495E-09		1.57495E-09	6.41596E-10
1,1-Dimethylcyclohexane			2.51981E-08		2.51981E-08	1.26500E-08
n-Octane			3.46202E-09		3.46202E-09	1.36139E-09
Ethylbenzene			9.37538E-06		9.37538E-06	6.35044E-06
m-Xylene			1.00240E-05		1.00240E-05	5.76773E-06
p-Xylene			1.06119E-05		1.06119E-05	6.43131E-06
o-Xylene			1.23002E-05		1.23002E-05	8.34789E-06
n-Nonane			9.66828E-10		9.66828E-10	5.77358E-10
n-Decane			2.33155E-11		2.33155E-11	1.05575E-11
TEG			0.000224920		0.000224920	0.000224987
Water			17.8540		17.8540	17.8549
Methanol			0		0	0
Mass Fraction			%		%	%
H2S			0.00488885		0.00488885	0.00499346
Nitrogen			8.37213E-08		8.37213E-08	2.89618E-07
Methane			8.77646E-05		8.77646E-05	0.000154875
CO2			0.0112118		0.0112118	0.0129229
Ethane			0.000366337		0.000366337	0.000442147
Propane			0.000546323		0.000546323	0.000541739
i-Butane			7.21046E-05		7.21046E-05	8.00013E-05
n-Butane			0.000529404		0.000529404	0.000428275
i-Pentane			0.000123233		0.000123233	0.000103051
n-Pentane			8.89365E-05		8.89365E-05	4.94787E-05
Neohexane			5.67880E-07		5.67880E-07	4.75828E-07
Cyclopentane			0.000416534		0.000416534	0.000343904
2-Methylpentane			2.65795E-05		2.65795E-05	1.65183E-05
3-Methylpentane			4.05622E-05		4.05622E-05	2.77441E-05

n-Hexane			1.74779E-05		1.74779E-05	9.36750E-06
Methylcyclopentane			0.000227097		0.000227097	0.000157357
Benzene			0.0676110		0.0676110	0.0557363
Cyclohexane			0.000547565		0.000547565	0.000402199
2-Methylhexane			1.80640E-06		1.80640E-06	1.43246E-06
3-Methylhexane			3.58269E-06		3.58269E-06	2.97434E-06
1,1-Dimethylcyclopentane			6.81599E-05		6.81599E-05	6.20218E-05
n-Heptane			1.87299E-06		1.87299E-06	9.98424E-07
Methylcyclohexane			9.11481E-05		9.11481E-05	5.94791E-05
1,1,2-Trimethylcyclopentane			2.18605E-07		2.18605E-07	7.47998E-08
Toluene			0.0230527		0.0230527	0.0159685
2-Methylheptane			4.66770E-07		4.66770E-07	2.38731E-07
3-Methylheptane			5.58644E-08		5.58644E-08	2.27607E-08
1,1-Dimethylcyclohexane			8.78019E-07		8.78019E-07	4.40842E-07
n-Octane			1.22800E-07		1.22800E-07	4.82954E-08
Ethylbenzene			0.000309075		0.000309075	0.000209380
m-Xylene			0.000330457		0.000330457	0.000190167
p-Xylene			0.000349841		0.000349841	0.000212046
o-Xylene			0.000405497		0.000405497	0.000275237
n-Nonane			3.85051E-08		3.85051E-08	2.29969E-08
n-Decane			1.03012E-09		1.03012E-09	4.66507E-10
TEG			0.0104885		0.0104885	0.0104930
Water			99.8781		99.8781	99.8961
Methanol			0		0	0
Mass Flow			lb/h		lb/h	lb/h
H2S			0.0157439		0.0157439	0.0160787
Nitrogen			2.69614E-07		2.69614E-07	9.32559E-07
Methane			0.000282635		0.000282635	0.000498690
CO2			0.0361062		0.0361062	0.0416113
Ethane			0.00117974		0.00117974	0.00142370
Propane			0.00175936		0.00175936	0.00174438
i-Butane			0.000232204		0.000232204	0.000257601
n-Butane			0.00170488		0.00170488	0.00137903
i-Pentane			0.000396856		0.000396856	0.000331820
n-Pentane			0.000286408		0.000286408	0.000159320
Neohexane			1.82879E-06		1.82879E-06	1.53215E-06
Cyclopentane			0.00134140		0.00134140	0.00110736
2-Methylpentane			8.55957E-05		8.55957E-05	5.31883E-05
3-Methylpentane			0.000130625		0.000130625	8.93351E-05
n-Hexane			5.62854E-05		5.62854E-05	3.01630E-05
Methylcyclopentane			0.000731337		0.000731337	0.000506682
Benzene			0.217732		0.217732	0.179469
Cyclohexane			0.00176336		0.00176336	0.00129506
2-Methylhexane			5.81727E-06		5.81727E-06	4.61248E-06
3-Methylhexane			1.15376E-05		1.15376E-05	9.57727E-06
1,1-Dimethylcyclopentane			0.000219500		0.000219500	0.000199708
n-Heptane			6.03173E-06		6.03173E-06	3.21489E-06
Methylcyclohexane			0.000293531		0.000293531	0.000191521
1,1,2-Trimethylcyclopentane			7.03990E-07		7.03990E-07	2.40852E-07
Toluene			0.0742383		0.0742383	0.0514179
2-Methylheptane			1.50317E-06		1.50317E-06	7.68705E-07
3-Methylheptane			1.79904E-07		1.79904E-07	7.32885E-08
1,1-Dimethylcyclohexane			2.82755E-06		2.82755E-06	1.41950E-06
n-Octane			3.95461E-07		3.95461E-07	1.55509E-07
Ethylbenzene			0.000995337		0.000995337	0.000674195
m-Xylene			0.00106420		0.00106420	0.000612331
p-Xylene			0.00112662		0.00112662	0.000682780
o-Xylene			0.00130585		0.00130585	0.000886254
n-Nonane			1.24001E-07		1.24001E-07	7.40491E-08
n-Decane			3.31737E-09		3.31737E-09	1.50213E-09
TEG			0.0337770		0.0337770	0.0337869
Water			321.645		321.645	321.662
Methanol			0		0	0

Process Streams		Condensate Truck Loading	From BTEX	Produced Water Tank Losses	Slop Tank Losses	Slop Truck Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Aqueous Liquid**	From Block:	T-300 A	LV-104	MIX-100	MIX-103	T-500
	To Block:	--	MIX-103	T-300 A	T-500	--
Property	**Units**					
Temperature	°F		119.974		119.974	75
Pressure	psig		0.5		0.5	0.5
Mole Fraction Vapor	%		0		0	0
Mole Fraction Light Liquid	%		0		0	0
Mole Fraction Heavy Liquid	%		100		100	100
Phase Mole Fraction	%		97.8721		97.8721	97.8739
Molecular Weight	lb/lbmol		18.0319		18.0319	18.0292
Mass Density	lb/ft^3		61.6793		61.6793	62.2387
Molar Flow	lbmol/h		17.8593		17.8593	17.8597
Mass Flow	lb/h		322.037		322.037	321.996
Vapor Volumetric Flow	ft^3/h		5.22115		5.22115	5.17357
Liquid Volumetric Flow	gpm		0.650949		0.650949	0.645016
Std Vapor Volumetric Flow	MMSCFD		0.162656		0.162656	0.162659
Std Liquid Volumetric Flow	sgpm		0.643887		0.643887	0.643791
Compressibility			0.000714174		0.000714174	0.000767177
Specific Gravity			0.988946		0.988946	0.997915
API Gravity			9.98435		9.98435	9.98600
Enthalpy	Btu/h		-2.18066E+06		-2.18066E+06	-2.19497E+06?
Mass Enthalpy	Btu/lb		-6771.46		-6771.46	-6816.75?
Mass Cp	Btu/(lb*°F)		0.977188		0.977188	0.978033?
Ideal Gas CpCv Ratio			1.32716		1.32716	1.32892
Dynamic Viscosity	cP		0.570582		0.570582	0.935016
Kinematic Viscosity	cSt		0.577507		0.577507	0.937859
Thermal Conductivity	Btu/(h*ft*°F)		0.366910		0.366910	0.348887
Surface Tension	lbf/ft		0.00466187		0.00466187	0.00499352?
Net Ideal Gas Heating Value	Btu/ft^3		0.857890		0.857890	0.692920
Net Liquid Heating Value	Btu/lb		-1040.63		-1040.63	-1044.26
Gross Ideal Gas Heating Value	Btu/ft^3		51.1942		51.1942	51.0237
Gross Liquid Heating Value	Btu/lb		18.7041		18.7041	15.1153



Temperature 80.871 °F
Pressure 943 psig
Std Vapor Volumetric Flow 292.19 MMSCFD
H2S(Mole Fraction) 9996.5 ppm
CO2(Mole Fraction) 5.0017 %
10
Amine Inlet
Temperature 85 °F
Pressure 1000 psig
Std Vapor Volumetric Flow 292.5 MMSCFD
H2S(Mole Fraction) 10000 ppm
CO2(Mole Fraction) 5 %
3
PCV-1401E
5
V-1415
11
HP Inlet
7
SAT-1
Water 1
V-1401
Finger Style
Slug Catcher
8
Temperature 75 °F
Pressure 1005 psig
Std Liquid Volumetric Flow 8000 bbl/d
H2S(Mole Fraction) 2063.7 ppm
CO2(Mole Fraction) 0.678 %
Inlet Liq
SAT-2
6
MIX-100
9
18
Slug Cathcer Liq
BTEX Water
13
Regen Water
14
AG Water
17
MP/LP Water
19
MIX-101
20
Temperature 100 °F
Pressure 20 psig
Std Vapor Volumetric Flow 0.70917 MMSCFD
H2S(Mole Fraction) 401.09 ppm
CO2(Mole Fraction) 0.12211 %
LP
4
V-1402
Q-1
SLOP Water
2
MIX-102
138
RCYL-4
1
BTEX Vapor
35
RCYL-2
15
TEG Flash
34
RCYL-3
16
Amine Flash
33
32
LP Flash

Process Streams — Composition, Phase: Total

Process Streams	HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Mole Fraction	%	%	%	%	%	%	%	%		%	%	%		%	%	%	%	%	%	%	%	%	%	%		%	%	%	%
H2S	1.00000	0.206370*	0.0401094	0.000108850	0*	0.00878049	0.0194018	1.00000		1.00000	0.206141	1.00000		0*	0.999652	1.33175	9.88718E-06	7.54928E-05	0.00112585	0.0240845	0.0261723	0.206141	0.00672849	0.0176745		0.254123	0.0240845	0.00112585	0.00878049
CO2	5.00002	0.677998*	0.122114	0.000109025	0*	1.80141E-06	0.0880900	5.00002		5.00002	0.677245	5.00002		0*	5.00169	3.43014	6.58066E-10	3.49893E-08	1.10131E-06	0.113409	0.0429205	0.677245	0.0146478	0.0289857		0.000255172	0.113409	1.10131E-06	1.80141E-06
N2	1.27339	0*	0.385839	9.41576E-06	0*	0.00823666	0.385969	1.27339		1.27339	0	1.27339		0*	1.27451	0.222954	1.03746E-07	0.00680314	0.253083	0.442410	2.35865E-09	0	0	3.34222E-06		0.000231915	0.442410	0.253083	0.00823666
Methane	68.1003	9.60028*	63.7143	0.00317026	0*	7.71685	63.7377	68.1003		68.1003	9.58961	68.1003		0*	68.1451	25.8988	0.000229298	1.11408	47.4408	71.3820	4.14538E-06	9.58961	0.0182566	0.000650257		0.234997	71.3820	47.4408	7.71685
Ethane	12.7147	7.78018*	16.6607	0.00110876	0*	13.3421	16.6666	12.7147		12.7147	7.77154	12.7147		0*	12.7122	15.0846	0.00103166	0.495916	21.9586	15.7876	2.15301E-06	7.77154	0.00673927	0.000587528		7.93887	15.7876	21.9586	13.3421
Propane	7.38549	12.9632*	9.05164	0.000416715	0*	20.3179	9.05346	7.38549		7.38549	12.9488	7.38549		0*	7.37289	19.2587	0.00350396	0.399623	17.2137	6.47665	5.15897E-07	12.9488	0.00287408	0.00133151		32.9770	6.47665	17.2137	20.3179
i-Butane	0.981438	3.73009*	1.06338	2.96850E-05	0*	3.67453	1.06327	0.981438		0.981438	3.72595	0.981438		0*	0.977731	4.47350	0.00118685	0.0544296	2.28481	0.608605	2.48939E-08	3.72595	0.000221256	0.000410250		8.29629	0.608605	2.28481	3.67453
n-Butane	2.49118	12.5068*	3.75390	0.000158870	0*	17.2984	3.75192	2.49118		2.49118	12.4929	2.49118		0*	2.47834	14.5886	0.00851569	0.202526	7.28745	1.98972	1.67600E-07	12.4929	0.000766057	0.00285073		23.7266	1.98972	7.28745	17.2984
i-Pentane	0.456632	6.42769*	0.595476	1.60753E-05	0*	4.76371	0.593426	0.456632		0.456632	6.42054	0.456632		0*	0.452211	4.62084	0.00586873	0.0411627	1.27646	0.137240	2.88328E-09	6.42054	0.000115649	0.00191600		7.62483	0.137240	1.27646	4.76371
n-Pentane	0.432517	8.17118*	0.711528	9.41223E-06	0*	6.04199	0.708084	0.432517		0.432517	8.16210	0.432517		0*	0.427478	5.17984	0.00960229	0.0420202	1.35362	0.173170	2.45050E-09	8.16210	5.35682E-05	0.00312236		8.01103	0.173170	1.35362	6.04199
n-Hexane	0.0649309	22.8844*	0.136312	1.15763E-06	0*	1.55731	0.133736	0.0649309		0.0649309	22.8589	0.0649309		0*	0.0631696	1.72422	0.00686460	0.00838353	0.176733	0.0185001	1.43338E-10	22.8589	2.93216E-05	0.00222161		8.70700	0.0185001	0.176733	1.55731
n-Heptane	0.0395754	11.4422*	0.122314	6.98195E-07	0*	1.60053	0.114652	0.0395754		0.0395754	11.4295	0.0395754		0*	0.0375524	1.94539	0.0202031	0.00667471	0.111274	0.00464621	1.07590E-11	11.4295	3.49322E-06	0.00652949		1.69403	0.00464621	0.111274	1.60053
n-Octane	0.00352291	3.05125*	0.0140769	3.71772E-08	0*	0.172872	0.0116865	0.00352291		0.00352291	3.04786	0.00352291		0*	0.00317267	0.333468	0.00628420	0.000670281	0.00817115	0.000423774	6.61855E-13	3.04786	1.40287E-07	0.00203032		0.167230	0.000423774	0.00817115	0.172872
n-Nonane	0.00678106	0.550999*	0.0324348	6.38091E-08	0*	0.329059	0.0211164	0.00678106		0.00678106	0.550387	0.00678106		0*	0.00536739	1.33853	0.0297290	0.00138876	0.0113924	0.000239497	9.40379E-14	0.550387	6.25571E-09	0.00960406		0.0111423	0.000239497	0.0113924	0.329059
n-Decane	1.39021E-05	0.00746564*	7.62282E-05	4.76203E-11	0*	0.000496851	3.14713E-05	1.39021E-05		1.39021E-05	0.00745734	1.39021E-05		0*	9.41169E-06	0.00424414	0.000117518	2.70111E-06	1.59454E-05	9.78285E-08	0	0.00745734	9.62816E-12	3.79632E-05		5.88141E-05	9.78285E-08	1.59454E-05	0.000496851
Undecane	6.73979E-05	0*	0.000385490	1.86836E-10	0*	0.00129829	8.30083E-05	6.73979E-05		6.73979E-05	0	6.73979E-05		0*	3.39947E-05	0.0315349	0.000794123	1.25390E-05	4.69017E-05	1.35569E-07	0	0	0	0.000256533		2.72449E-08	1.35569E-07	4.69017E-05	0.00129829
Benzene	0.0109308	0*	0.536904	0.00252299	0*	8.05564	0.514517	0.0109308		0.0109308	0	0.0109308		0*	0.0106633	0.262969	0.0668618	0.0343476	0.0687576	0.0474756	4.57495E-05	0	0	0.0216460		0.0163035	0.0474756	0.0687576	8.05564
Toluene	0.00381449	0*	0.258643	0.000924541	0*	3.71928	0.228543	0.00381449		0.00381449	0	0.00381449		0*	0.00361442	0.192292	0.0820266	0.0155136	0.0195755	0.0129117	1.01162E-05	0	0	0.0265115		0.00276649	0.0129117	0.0195755	3.71928
Ethylbenzene	0.000185144	0*	0.0136250	3.97065E-05	0*	0.161950	0.00985147	0.000185144		0.000185144	0	0.000185144		0*	0.000166148	0.0180799	0.0100357	0.000848014	0.000687481	0.000468517	2.25769E-07	0	0	0.00324242		4.80842E-05	0.000468517	0.000687481	0.161950
m-Xylene	0.000363317	0*	0.0269310	5.61876E-05	0*	0.319787	0.0193996	0.000363317		0.000363317	0	0.000363317		0*	0.000323301	0.0380603	0.0199581	0.00159276	0.00132291	0.000864138	4.12032E-07	0	0	0.00644813		8.54274E-05	0.000864138	0.00132291	0.319787
Water	0.0340539	0*	2.75901	99.9700	100*	10.9088	2.87721	0.0340539		0.0340539	0.111099	0.0340539		100*	0.0340672	0.0214601	99.7145	63.6737	0.531960	2.77805	99.9308	0.111099	99.9496	99.8434		0.337128	2.77805	0.531960	10.9088
MDEA	1.52627E-07	0*	0.000306570	9.90196E-05	0*	0.000558623	0.000352900	1.52627E-07		1.52627E-07	0	1.52627E-07		0*	1.37896E-07	1.40305E-05	0.000170614	0.00963930	6.93341E-07	0.000412558	8.65978E-10	0	0	5.98000E-05		2.21302E-07	0.000412558	6.93341E-07	0.000558623
Piperazine	4.85897E-10	0*	1.49471E-07	0.00270318	0*	2.45669E-06	0.000823013	4.85897E-10		4.85897E-10	0	4.85897E-10		0*	4.81077E-10	5.02681E-09	0.00598282	0.148374	5.65168E-05	0.00104735	1.43443E-07	0	0	0.00200486		3.33927E-08	0.00104735	5.65168E-05	2.45669E-06
Phosphoric Acid	0	0*	0	0	0*	0	0	0		0	0	0		0*	0	0	0	0	0	0	0	0	0	0		0	0	0	0
TEG	1.13384E-11	0*	1.12289E-08	0.0185588	0*	4.01043E-08	7.04546E-05	1.13384E-11		1.13384E-11	0	1.13384E-11		0*	6.68715E-12	4.39307E-09	0.00647439	33.7422	0.000426011	0	0	0	0	0.0184940		1.03202E-12	0	0.000426011	4.01043E-08
O2	0	0*	0	0	0*	0	0	0		0	0	0		0*	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	321.161	2.21458*	0.0312313	9.99193E-05	0	0.000395604	0.0151024	321.161	0	321.161	2.21458	321.161	0	0*	320.707	0.453531	2.93262E-06	3.36964E-08	0.000144931	0.0145619	0.0162150	2.21458	1.07676E-05	0.0162287	0	0	0.0145619	0.000144931	0.000395604
CO2	1605.81	7.27569*	0.0950841	0.000100080	0	8.11621E-08	0.0685695	1605.81	0	1605.81	7.27569	1605.81	0	0*	1604.64	1.16815	1.95188E-10	1.56176E-11	1.41771E-07	0.0685693	0.0265913	7.27569	2.34408E-05	0.0266147	0	0	0.0685693	1.41771E-07	8.11621E-08
N2	408.962	0*	0.300434	8.64324E-06	0	0.000371102	0.300440	408.962	0	408.962	0	408.962	0	0*	408.886	0.0759279	3.07719E-08	3.03660E-06	0.0325793	0.267489	1.46129E-09	0	0	3.06883E-06	0	0	0.267489	0.0325793	0.000371102
Methane	21871.1	103.022*	49.6113	0.00291015	0	0.347682	49.6136	21871.1	0	21871.1	103.022	21871.1	0	0*	21862.3	8.81995	6.80118E-05	0.000497272	6.10704	43.1589	2.56826E-06	103.022	2.92160E-05	0.000597068	0	0	43.1589	6.10704	0.347682
Ethane	4083.46	83.4902*	12.9729	0.00101779	0	0.601127	12.9734	4083.46	0	4083.46	83.4902	4083.46	0	0*	4078.33	5.13713	0.000305998	0.000221353	2.82672	9.54550	1.33389E-06	83.4902	1.07848E-05	0.000539470	0	0	9.54550	2.82672	0.601127
Propane	2371.92	139.110*	7.04808	0.000382525	0	0.915419	7.04724	2371.92	0	2371.92	139.110	2371.92	0	0*	2365.36	6.55861	0.00103930	0.000178373	2.21592	3.91590	3.19623E-07	139.110	4.59938E-06	0.00122260	0	0	3.91590	2.21592	0.915419
i-Butane	315.198	40.0281*	0.828002	2.72495E-05	0	0.165555	0.827652	315.198	0	315.198	40.0281	315.198	0	0*	313.675	1.52347	0.000352029	2.42948E-05	0.294123	0.367974	1.54230E-08	40.0281	3.54074E-07	0.000376693	0	0	0.367974	0.294123	0.165555
n-Butane	800.067	134.212*	2.92298	0.000145835	0	0.779375	2.92051	800.067	0	800.067	134.212	800.067	0	0*	795.099	4.96819	0.00252582	9.03978E-05	0.938111	1.20302	1.03836E-07	134.212	1.22592E-06	0.00261755	0	0	1.20302	0.938111	0.779375
i-Pentane	146.652	68.9763*	0.463669	1.47564E-05	0	0.214628	0.461924	146.652	0	146.652	68.9763	146.652	0	0*	145.078	1.57364	0.00174071	1.83731E-05	0.164318	0.0829778	1.78633E-09	68.9763	1.85073E-07	0.00175927	0	0	0.0829778	0.164318	0.214628
n-Pentane	138.907	87.6860*	0.554033	8.64000E-06	0	0.272221	0.551174	138.907	0	138.907	87.6860	138.907	0	0*	137.143	1.76401	0.00284812	1.87558E-05	0.174251	0.104702	1.51820E-09	87.6860	8.57249E-08	0.00286696	0	0	0.104702	0.174251	0.272221
n-Hexane	20.8532	245.575*	0.106140	1.06265E-06	0	0.0701644	0.104101	20.8532	0	20.8532	245.575	20.8532	0	0*	20.2660	0.587191	0.00203610	3.74201E-06	0.0227509	0.0111855	8.88048E-11	245.575	4.69232E-08	0.00203989	0	0	0.0111855	0.0227509	0.0701644
n-Heptane	12.7100	122.788*	0.0952400	6.40911E-07	0	0.0721118	0.0892452	12.7100	0	12.7100	122.788	12.7100	0	0*	12.0475	0.662510	0.00599241	2.97927E-06	0.0143242	0.00280918	6.66573E-12	122.788	5.59018E-09	0.00599540	0	0	0.00280918	0.0143242	0.0721118
n-Octane	1.13142	32.7434*	0.0109610	3.41269E-08	0	0.00778871	0.00909680	1.13142	0	1.13142	32.7434	1.13142	0	0*	1.01785	0.113564	0.00186395	2.99182E-07	0.00105187	0.000256222	4.10051E-13	32.7434	2.24501E-10	0.00186425	0	0	0.000256222	0.00105187	0.00778871
n-Nonane	2.17780	5.91284*	0.0252555	5.85738E-08	0	0.0148257	0.0164370	2.17780	0	2.17780	5.91284	2.17780	0	0*	1.72196	0.455841	0.00881785	6.19875E-07	0.00146654	0.000144804	5.82610E-14	5.91284	1.00110E-11	0.00881847	0	0	0.000144804	0.00146654	0.0148257
n-Decane	0.00446481	0.0801147*	5.93552E-05	4.37132E-11	0	2.23855E-05	2.44973E-05	0.00446481	0	0.00446481	0.0801147	0.00446481	0	0*	0.00301945	0.00144536	3.48567E-05	1.20565E-09	2.05264E-06	5.91489E-08	0	0.0801147	1.54079E-14	3.48580E-05	0	0	5.91489E-08	2.05264E-06	2.23855E-05
Undecane	0.0216455	0*	0.000300163	1.71507E-10	0	5.84943E-05	6.46139E-05	0.0216455	0	0.0216455	0	0.0216455	0	0*	0.0109062	0.0107393	0.000235543	5.59683E-09	6.03764E-06	8.19678E-08	0	0	0	0.000235549	0	0	8.19678E-08	6.03764E-06	5.84943E-05
Benzene	3.51053	0*	0.418061	0.00231598	0	0.362946	0.400502	3.51053	0	3.51053	0	3.51053	0	0*	3.42098	0.0895550	0.0198318	1.53312E-05	0.00885115	0.0287046	2.83440E-05	0	0	0.0198754	0	0	0.0287046	0.00885115	0.362946
Toluene	1.22506	0*	0.201393	0.000848686	0	0.167572	0.177898	1.22506	0	1.22506	0	1.22506	0	0*	1.15957	0.0654858	0.0243297	6.92456E-06	0.00251995	0.00780667	6.26749E-06	0	0	0.0243429	0	0	0.00780667	0.00251995	0.167572
Ethylbenzene	0.0594608	0*	0.0106092	3.64487E-05	0	0.00729664	0.00766841	0.0594608	0	0.0594608	0	0.0594608	0	0*	0.0533036	0.00615717	0.00297668	3.78513E-07	8.84992E-05	0.000283274	1.39875E-07	0	0	0.00297720	0	0	0.000283274	8.84992E-05	0.00729664
m-Xylene	0.116683	0*	0.0209698	5.15776E-05	0	0.0144080	0.0151007	0.116683	0	0.116683	0	0.116683	0	0*	0.103721	0.0129616	0.00591973	7.10934E-07	0.000170298	0.000522474	2.55274E-07	0	0	0.00592069	0	0	0.000522474	0.000170298	0.0144080
Water	10.9367	0*	2.14831	91.7678	0	0.491493	2.23963	10.9367	0	10.9367	1.19354	10.9367	0	1.19354*	10.9294	0.00730831	29.5761	0.0284209	0.0684790	1.67966	61.9120	1.19354	0.159949	91.6765	0	0	1.67966	0.0684790	0.491493
MDEA	4.90177E-05	0*	0.000238711	9.08954E-05	0	2.51687E-05	0.000274698	4.90177E-05	0	4.90177E-05	0	4.90177E-05	0	0*	4.42395E-05	4.77814E-06	5.06054E-05	4.30253E-06	8.92536E-08	0.000249440	5.36515E-10	0	0	5.49085E-05	0	0	0.000249440	8.92536E-08	2.51687E-05
Piperazine	1.56051E-07	0*	1.16386E-07	0.00248139	0	1.10686E-07	0.000640636	1.56051E-07	0	1.56051E-07	0	1.56051E-07	0	0*	1.54339E-07	1.71190E-09	0.00177455	6.62273E-05	7.27539E-06	0.000633250	8.88698E-08	0	0	0.00184087	0	0	0.000633250	7.27539E-06	1.10686E-07
Phosphoric Acid	0	0*	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEG	3.64144E-09	0*	8.74341E-09	0.0170361	0	1.80689E-09	5.48420E-05	3.64144E-09	0	3.64144E-09	0	3.64144E-09	0	0*	2.14537E-09	1.49607E-09	0.00192036	0.0150609	5.48402E-05	0	0	0	0	0.0169813	0	0	0	5.48402E-05	1.80689E-09
O2	0	0*	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mass Fraction	%	%	%	%	%	%	%	%		%	%	%		%	%	%	%	%	%	%	%	%	%	%		%	%	%	%
H2S	1.43863	0.107669*	0.0554833	0.000205588	0*	0.00598911	0.0269299	1.43863		1.43863	0.107636	1.43863		0*	1.43939	1.04595	1.84839E-05	4.08018E-05	0.00128782	0.0380989	0.0494699	0.107636	0.0127241	0.0332484		0.153480	0.0380989	0.00128782	0.00598911
CO2	9.28868	0.456780*	0.218130	0.000265908	0*	1.58668E-06	0.157890	9.28868		9.28868	0.456640	9.28868		0*	9.29998	3.47885	1.58864E-09	2.44200E-08	1.62674E-06	0.231665	0.104761	0.456640	0.0357699	0.0704116		0.000199011	0.231665	1.62674E-06	1.58668E-06
N2	1.50579	0*	0.438709	1.46177E-05	0*	0.00461795	0.440351	1.50579		1.50579	0	1.50579		0*	1.50844	0.143932	1.59422E-07	0.00302231	0.237953	0.575249	3.66451E-09	0	0	5.16791E-06		0.000115131	0.575249	0.237953	0.00461795
Methane	46.1164	2.35769*	41.4871	0.00281854	0*	2.47767	41.6436	46.1164		46.1164	2.35697	46.1164		0*	46.1876	9.57477	0.000201782	0.283433	25.5438	53.1527	3.68828E-06	2.35697	0.0162514	0.000575798		0.0668085	53.1527	25.5438	2.47767
Ethane	16.1385	3.58131*	20.3338	0.00184763	0*	8.02929	20.4102	16.1385		16.1385	3.58021	16.1385		0*	16.1495	10.4528	0.00170163	0.236478	22.1609	22.0345	3.59048E-06	3.58021	0.0112443	0.000975130		4.23036	22.0345	22.1609	8.02929
Propane	13.7471	8.75062*	16.2005	0.00101834	0*	17.9311	16.2589	13.7471		13.7471	8.74794	13.7471		0*	13.7358	19.5703	0.00847549	0.279453	25.4761	13.2560	1.26167E-06	8.74794	0.00703225	0.00324081		25.7695	13.2560	25.4761	17.9311
i-Butane	2.40791	3.31890*	2.50862	9.56177E-05	0*	4.27441	2.51690	2.40791		2.40791	3.31788	2.40791		0*	2.40094	5.99192	0.00378396	0.0501696	4.45712	1.64189	8.02458E-08	3.31788	0.000713569	0.00131615		8.54525	1.64189	4.45712	4.27441
n-Butane	6.11200	11.1281*	8.85583	0.000511731	0*	20.1224	8.88130	6.11200		6.11200	11.1246	6.11200		0*	6.08586	19.5403	0.0271501	0.186674	14.2161	5.36783	5.40260E-07	11.1246	0.00247060	0.00914560		24.4386	5.36783	14.2161	20.1224
i-Pentane	1.39069	7.09930*	1.74381	6.42757E-05	0*	6.87871	1.74372	1.39069		1.39069	7.09713	1.39069		0*	1.37845	7.68292	0.0232264	0.0470973	3.09099	0.459595	1.15373E-08	7.09713	0.000462990	0.00763023		9.74896	0.459595	3.09099	6.87871
n-Pentane	1.31725	9.02497*	2.08366	3.76340E-05	0*	8.72452	2.08063	1.31725		1.31725	9.02221	1.31725		0*	1.30305	8.61235	0.0380026	0.0480785	3.27785	0.579920	9.80556E-09	9.02221	0.000214455	0.0124344		10.2427	0.579920	3.27785	8.72452
n-Hexane	0.236195	30.1894*	0.476785	5.52855E-06	0*	2.68591	0.469368	0.236195		0.236195	30.1801	0.236195		0*	0.229991	3.42416	0.0324495	0.0114571	0.511169	0.0739983	6.85066E-10	30.1801	0.000140207	0.0105673		13.2969	0.0739983	0.511169	2.68591
n-Heptane	0.167393	17.5516*	0.497459	3.87714E-06	0*	3.20977	0.467883	0.167393		0.167393	17.5462	0.167393		0*	0.158976	4.49221	0.111046	0.0106065	0.374223	0.0216093	5.97912E-11	17.5462	1.94223E-05	0.0361135		3.00812	0.0216093	0.374223	3.20977
n-Octane	0.0169868	5.33561*	0.0652660	2.35348E-07	0*	0.395213	0.0543675	0.0169868		0.0169868	5.33398	0.0169868		0*	0.0153115	0.877821	0.0393763	0.00121421	0.0313271	0.00224685	4.19300E-12	5.33398	8.89184E-07	0.0128013		0.338523	0.00224685	0.0313271	0.395213
n-Nonane	0.0367120	1.08183*	0.168846	4.53540E-07	0*	0.844658	0.110300	0.0367120		0.0367120	1.08149	0.0367120		0*	0.0290842	3.95621	0.209153	0.00282465	0.0490402	0.00142574	6.68907E-13	1.08149	4.45196E-08	0.0679897		0.0253250	0.00142574	0.0490402	0.844658
n-Decane	8.34961E-05	0.0162610*	0.000440220	3.75491E-10	0*	0.00141484	0.000182366	8.34961E-05		8.34961E-05	0.0162560	8.34961E-05		0*	5.65765E-05	0.0139160	0.000917197	6.09473E-06	7.61459E-05	6.46070E-07	0	0.0162560	7.60138E-11	0.000298144		0.000148296	6.46070E-07	7.61459E-05	0.00141484
Undecane	0.000444697	0*	0.00244568	1.61845E-09	0*	0.00406150	0.000528426	0.000444697		0.000444697	0	0.000444697		0*	0.000224498	0.113593	0.00680894	3.10820E-05	0.000246056	9.83578E-07	0	0	0	0.00221329		7.54685E-08	9.83578E-07	0.000246056	0.00406150
Benzene	0.0360416	0*	1.70223	0.0109217	0*	12.5936	1.63681	0.0360416		0.0360416	0	0.0360416		0*	0.0351905	0.473367	0.286487	0.0425478	0.180260	0.172129	0.000198194	0	0	0.0933273		0.0225682	0.172129	0.180260	12.5936
Toluene	0.0148359	0*	0.967266	0.00472091	0*	6.85855	0.857608	0.0148359		0.0148359	0	0.0148359		0*	0.0140701	0.408300	0.414577	0.0226682	0.0605364	0.0552192	5.16949E-05	0	0	0.134831		0.00451719	0.0552192	0.0605364	6.85855
Ethylbenzene	0.000829710	0*	0.0587116	0.000233615	0*	0.344108	0.0425954	0.000829710		0.000829710	0	0.000829710		0*	0.000745241	0.0442338	0.0584440	0.00142773	0.00244965	0.00230872	1.32933E-06	0	0	0.0190005		9.04654E-05	0.00230872	0.00244965	0.344108
m-Xylene	0.00162818	0*	0.116048	0.000330583	0*	0.679477	0.0838794	0.00162818		0.00162818	0	0.00162818		0*	0.00145013	0.0931172	0.116228	0.00268161	0.00471384	0.00425824	2.42606E-06	0	0	0.0377859		0.000160723	0.00425824	0.00471384	0.679477
Water	0.0258966	0*	2.01743	99.8089	100*	3.93323	2.11103	0.0258966		0.0258966	0.0306642	0.0258966		100*	0.0259297	0.00890941	98.5392	18.1913	0.321649	2.32298	99.8455	0.0306642	99.9130	99.2829		0.107630	2.32298	0.321649	3.93323
MDEA	7.67725E-07	0*	0.00148277	0.000653911	0*	0.00133226	0.00171266	7.67725E-07		7.67725E-07	0	7.67725E-07		0*	6.94237E-07	3.85290E-05	0.00111522	0.0182158	2.77299E-06	0.00228186	5.72312E-09	0	0	0.000393327		4.67330E-07	0.00228186	2.77299E-06	0.00133226
Piperazine	1.76670E-09	0*	5.22571E-07	0.0129037	0*	4.23511E-06	0.00288716	1.76670E-09		1.76670E-09	0	1.76670E-09		0*	1.75072E-09	9.97819E-09	0.0282682	0.202677	0.000163389	0.00418738	6.85251E-07	0	0	0.00953194		5.09722E-08	0.00418738	0.000163389	4.23511E-06
Phosphoric Acid	0	0*	0	0	0*	0	0	0		0	0	0		0*	0	0	0	0	0	0	0	0	0	0		0	0	0	0
TEG	7.18753E-11	0*	6.84438E-08	0.154454	0*	1.20536E-07	0.000430905	7.18753E-11		7.18753E-11	0	7.18753E-11		0*	4.24279E-11	1.52032E-08	0.0533335	80.3579	0.00214721	0	0	0	0	0.153298		2.74651E-12	0	0.00214721	1.20536E-07
O2	0	0*	0	0	0*	0	0	0		0	0	0		0*	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	10945.4	75.4749*	1.06439	0.00340534	0	0.0134825	0.514704	10945.4	0	10945.4	75.4749	10945.4	0	0*	10930.0	15.4567	9.99462E-05	1.14840E-06	0.00493937	0.496283	0.552622	75.4749	0.000366968	0.553090	0	0	0.496283	0.00493937	0.0134825
CO2	70670.7	320.200*	4.18461	0.00440447	0	3.57190E-06	3.01771	70670.7	0	70670.7	320.200	70670.7	0	0*	70619.3	51.4096	8.59012E-09	6.87322E-10	6.23927E-06	3.01770	1.17027	320.200	0.00103162	1.17130	0	0	3.01770	6.23927E-06	3.57190E-06
N2	11456.4	0*	8.41618	0.000242126	0	0.0103958	8.41634	11456.4	0	11456.4	0	11456.4	0	0*	11454.3	2.12700	8.62027E-07	8.50655E-05	0.912658	7.49328	4.09358E-08	0	0	8.59685E-05	0	0	7.49328	0.912658	0.0103958
Methane	350866	1652.72*	795.887	0.0466860	0	5.57767	795.924	350866	0	350866	1652.72	350866	0	0*	350725	141.494	0.00109108	0.00797747	97.9719	692.375	4.12013E-05	1652.72	0.000468696	0.00957844	0	0	692.375	97.9719	5.57767
Ethane	122786	2510.47*	390.082	0.0306039	0	18.0753	390.096	122786	0	122786	2510.47	122786	0	0*	122631	154.469	0.00920107	0.00665588	84.9968	287.024	4.01088E-05	2510.47	0.000324289	0.0162213	0	0	287.024	84.9968	18.0753
Propane	104591	6134.12*	310.789	0.0168677	0	40.3660	310.752	104591	0	104591	6134.12	104591	0	0*	104302	289.206	0.0458288	0.00786545	97.7122	172.674	1.40940E-05	6134.12	0.000202812	0.0539111	0	0	172.674	97.7122	40.3660
i-Butane	18320.0	2326.52*	48.1253	0.00158380	0	9.62245	48.1050	18320.0	0	18320.0	2326.52	18320.0	0	0*	18231.5	88.5472	0.0204607	0.00141207	17.0951	21.3875	8.96416E-07	2326.52	2.05796E-05	0.0218942	0	0	21.3875	17.0951	9.62245
n-Butane	46501.7	7800.69*	169.890	0.00847624	0	45.2990	169.746	46501.7	0	46501.7	7800.69	46501.7	0	0*	46212.9	288.762	0.146806	0.00525412	54.5251	69.9222	6.03518E-06	7800.69	7.12530E-05	0.152138	0	0	69.9222	54.5251	45.2990
i-Pentane	10580.7	4976.56*	33.4531	0.00106466	0	15.4852	33.3273	10580.7	0	10580.7	4976.56	10580.7	0	0*	10467.2	113.536	0.125590	0.00132559	11.8553	5.98675	1.28881E-07	4976.56	1.33528E-05	0.126929	0	0	5.98675	11.8553	15.4852
n-Pentane	10022.0	6326.44*	39.9728	0.000623365	0	19.6404	39.7666	10022.0	0	10022.0	6326.44	10022.0	0	0*	9894.71	127.271	0.205488	0.00135321	12.5720	7.55412	1.09537E-07	6326.44	6.18495E-06	0.206848	0	0	7.55412	12.5720	19.6404
n-Hexane	1797.03	21162.5*	9.14662	9.15743E-05	0	6.04645	8.97092	1797.03	0	1797.03	21162.5	1797.03	0	0*	1746.43	50.6014	0.175461	0.000322469	1.96056	0.963913	7.65278E-09	21162.5	4.04363E-06	0.175788	0	0	0.963913	1.96056	6.04645
n-Heptane	1273.57	12303.6*	9.54323	6.42205E-05	0	7.22575	8.94255	1273.57	0	1273.57	12303.6	1273.57	0	0*	1207.19	66.3848	0.600452	0.000298529	1.43531	0.281485	6.67920E-10	12303.6	5.60147E-07	0.600751	0	0	0.281485	1.43531	7.22575
n-Octane	129.240	3740.23*	1.25206	3.89827E-06	0	0.889693	1.03911	129.240	0	129.240	3740.23	129.240	0	0*	116.268	12.9722	0.212916	3.41751E-05	0.120153	0.0292678	4.68395E-11	3740.23	2.56444E-08	0.212950	0	0	0.0292678	0.120153	0.889693
n-Nonane	279.314	758.352*	3.23914	7.51238E-06	0	1.90147	2.10814	279.314	0	279.314	758.352	279.314	0	0*	220.851	58.4640	1.13093	7.95022E-05	0.188091	0.0185719	7.47227E-12	758.352	1.28396E-09	1.13101	0	0	0.0185719	0.188091	1.90147
n-Decane	0.635260	11.3989*	0.00844516	6.21959E-09	0	0.00318505	0.00348552	0.635260	0	0.635260	11.3989	0.635260	0	0*	0.429613	0.205648	0.00495948	1.71542E-07	0.000292054	8.41581E-06	0	11.3989	2.19226E-12	0.00495965	0	0	8.41581E-06	0.000292054	0.00318505
Undecane	3.38337	0*	0.0469179	2.68079E-08	0	0.00914314	0.0100997	3.38337	0	3.38337	0	3.38337	0	0*	1.70472	1.67865	0.0368174	8.74830E-07	0.000943734	1.28122E-05	0	0	0	0.0368183	0	0	1.28122E-05	0.000943734	0.00914314
Benzene	274.214	0*	32.6555	0.180906	0	28.3504	31.2839	274.214	0	274.214	0	274.214	0	0*	267.219	6.99530	1.54909	0.00119754	0.691380	2.24217	0.00221400	0	0	1.55251	0	0	2.24217	0.691380	28.3504
Toluene	112.875	0*	18.5560	0.0781966	0	15.4398	16.3913	112.875	0	112.875	0	112.875	0	0*	106.841	6.03376	2.24170	0.000638018	0.232184	0.719294	0.000577477	0	0	2.24292	0	0	0.719294	0.232184	15.4398
Ethylbenzene	6.31265	0*	1.12632	0.00386958	0	0.774648	0.814117	6.31265	0	6.31265	0	6.31265	0	0*	5.65898	0.653676	0.316019	4.01849E-05	0.00939552	0.0300738	1.48498E-05	0	0	0.316074	0	0	0.0300738	0.00939552	0.774648
m-Xylene	12.3876	0*	2.22626	0.00547574	0	1.52962	1.60317	12.3876	0	12.3876	0	12.3876	0	0*	11.0116	1.37606	0.628468	7.54763E-05	0.0180797	0.0554684	2.71012E-05	0	0	0.628570	0	0	0.0554684	0.0180797	1.52962
Water	197.028	0*	38.7024	1653.22	0	8.85438	40.3476	197.028	0	197.028	21.5020	197.028	0	21.5020*	196.897	0.131661	532.823	0.512011	1.23367	30.2595	1115.36	21.5020	2.88152	1651.58	0	0	30.2595	1.23367	8.85438
MDEA	0.00584105	0*	0.0284454	0.0108313	0	0.00299916	0.0327337	0.00584105	0	0.00584105	0	0.00584105	0	0*	0.00527168	0.000569373	0.00603025	0.000512699	1.06357E-05	0.0297239	6.39323E-08	0	0	0.00654302	0	0	0.0297239	1.06357E-05	0.00299916
Piperazine	1.34415E-05	0*	1.00250E-05	0.213736	0	9.53398E-06	0.0551816	1.34415E-05	0	1.34415E-05	0	1.34415E-05	0	0*	1.32941E-05	1.47455E-07	0.152852	0.00570453	0.000626670	0.0545454	7.65486E-06	0	0	0.158564	0	0	0.0545454	0.000626670	9.53398E-06
Phosphoric Acid	0	0*	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEG	5.46846E-07	0*	1.31302E-06	2.55836	0	2.71347E-07	0.00823579	5.46846E-07	0	5.46846E-07	0	5.46846E-07	0	0*	3.22176E-07	2.24670E-07	0.288386	2.26174	0.00823552	0	0	0	0	2.55013	0	0	0	0.00823552	2.71347E-07
O2	0	0*	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Process Streams — Properties, Phase: Total

Process Streams	Units	HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Status:		Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
From Block:		--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
To Block:		SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Property	**Units**																													
Temperature	°F	85*	75*	100*	100		120	117.245	84.2533	100	81.0007	75	85		362.721	80.8715	80.8715	120.119	119.867	143.085	134.274	94.2868	75	94.7700	102.776			134.274	143.085	120
Pressure	psia	1014.70*	1019.70*	34.6959	34.6959	1014.70	34.6959	34.6959	1004.70	34.6959	959.696*	1019.70	1014.70	1004.70	1019.70	957.696	957.696	44.6959	893.696	79.6959	79.1959	44.6959	1019.70	214.696	44.6959	139.696	34.6959	79.1959	79.6959	34.6959
Mole Fraction Vapor	%	100	0	100	0		81.0122	100	100		99.9071	0	100		0	100	0	0	0	100	100	0	0	0	0			100	100	81.0122
Mole Fraction Light Liquid	%	0	100	0	100		12.0454	0	0		0.0929209	99.9256	0		100	0	100	0.255350	100	0	0	100	99.9256	100	0.0756072			0	0	12.0454
Mole Fraction Heavy Liquid	%	0	0	0	0		6.94233	0	0		0	0.0743603	0		0	0	0	99.7447	0	0	0	0	0.0743603	0	99.9244			0	0	6.94233
Molecular Weight	lb/lbmol	23.6900	65.3233	24.6374	18.0444	18.0153	49.9652	24.5538	23.6900		23.6900	65.2707	23.6900		18.0153	23.6690	43.3933	18.2302	63.0575	29.7946	21.5444	18.0307	65.2707	18.0219	18.1170		56.4288	21.5444	29.7946	49.9652
Mass Density	lb/ft^3	5.60773	38.3959	0.143855	61.9635		0.356472	0.138937	5.55446		5.30824	38.4030	5.60773		55.2241	5.28822	31.1952	61.4493	67.2951	0.378040	0.271814	62.0348	38.4030	62.0089	61.8700			0.271814	0.378040	0.356472
Molar Flow	lbmol/h	32116.0	1073.11	77.8652	91.7954	0	4.50549	77.8403	32116.0	0	32116.0	1074.31	32116.0	0	1.19354	32081.9	34.0554	29.6608	0.0446352	12.8730	60.4618	61.9548	1074.31	0.160030	91.8203	0	0	60.4618	12.8730	4.50549
Mass Flow	lb/h	760826	70099.3	1918.40	1656.39	0	225.117	1911.28	760826	0	760826	70120.8	760826	0	21.5020	759348	1477.78	540.721	2.81459	383.545	1302.61	1117.09	70120.8	2.88403	1663.51	0	0	1302.61	383.545	225.117
Vapor Volumetric Flow	ft^3/h	135675	1825.70	13335.6	26.7317	0	631.515	13756.5	136976	0	143329	1825.92	135675	0	0.389359	143592	47.3720	8.79947	0.0418245	1014.56	4792.31	18.0074	1825.92	0.0465100	26.8871	0	0	4792.31	1014.56	631.515
Liquid Volumetric Flow	gpm	16915.3	227.619	1662.62	3.33278	0	78.7344	1715.09	17077.5	0	17869.6	227.647	16915.3	0	0.0485434	17902.4	5.90612	1.09708	0.00521449	126.491	597.483	2.24508	227.647	0.00579865	3.35216	0	0	597.483	126.491	78.7344
Std Vapor Volumetric Flow	MMSCFD	292.5*	9.77351	0.709167	0.836037	0	0.0410343	0.708940	292.5	0	292.5	9.78438	292.5	0	0.0108703	292.190	0.310163	0.270139	0.000406521	0.117242	0.550663	0.564261	9.78438	0.00145749	0.836264	0	0	0.550663	0.117242	0.0410343
Std Liquid Volumetric Flow	sgpm	3970.32	233.333*	10.0087	3.31127	0	0.768206	9.99017	3970.32	0	3970.32	233.376	3970.32	0	0.0429840	3964.55	5.77201	1.08489	0.00520288	1.85809	7.36387	2.23394	233.376	0.00576995	3.32981	0	0	7.36387	1.85809	0.768206
Compressibility		0.733359	0.302346	0.989354	0.00168224		0.781765	0.990389	0.734101		0.738162	0.302047	0.733359		0.0376913	0.738935	0.229652	0.00213112	0.134648	0.971027	0.984821	0.00218527	0.302047	0.0104870	0.00216835			0.984821	0.971027	0.781765
Specific Gravity		0.817953	0.615627	0.850665	0.993503			0.847780	0.817953			0.615742	0.817953		0.885445	0.817231	0.500173	0.985258	1.07899	1.02873	0.743873	0.994645	0.615742	0.994230	0.992004			0.743873	1.02873	
API Gravity			95.1198		9.96683							95.0785			9.87676		140.961	10.4433	-3.10026			9.96478	95.0785	10.0126	10.0813					
Enthalpy	Btu/h	-1.34641E+09	-7.55007E+07	-2.87025E+06	-1.12461E+07	0	-214223	-2.85869E+06	-1.34641E+09		-1.34641E+09	-7.56411E+07	-1.34641E+09		-140442	-1.34452E+09	-1.89788E+06	-3.61473E+06	-8714.37	-487018	-2.15745E+06	-7.59410E+06	-7.56411E+07	-19610.0	-1.12372E+07		0	-2.15745E+06	-487018	-214223
Mass Enthalpy	Btu/lb	-1769.67	-1077.05	-1496.17	-6789.53		-951.605	-1495.70	-1769.67		-1769.67	-1078.73	-1769.67		-6531.57	-1770.62	-1284.28	-6685.02	-3096.14	-1269.78	-1656.25	-6798.13	-1078.73	-6799.50	-6755.10		-934.987	-1656.25	-1269.78	-951.605
Mass Cp	Btu/(lb*°F)	0.670403	0.559604	0.468210	0.976933		0.446315	0.476813	0.668448		0.658474	0.559723	0.670403		1.07993	0.657905	0.675311	0.970569	0.683085	0.481052	0.505772	0.977004	0.559723	0.976979	0.974645			0.505772	0.481052	0.446315
Ideal Gas CpCv Ratio		1.23327	1.08267	1.21020	1.32755		1.11005	1.20629	1.23346		1.23432	1.08274	1.23327		1.31416	1.23456	1.12730	1.32368	1.08359	1.16473	1.22714	1.32836	1.08274	1.32830	1.32643			1.22714	1.16473	1.11005
Dynamic Viscosity	cP	0.0139729	0.213037	0.0106287	0.703342			0.0109227	0.0139181			0.213124	0.0139729		0.148166	0.0136569	0.0991822	0.568104	6.66703	0.0107526	0.0115952	0.744134	0.213124	0.741701	0.680099			0.0115952	0.0107526	
Kinematic Viscosity	cSt	0.155553	0.346377	4.61245	0.708614			4.90787	0.156429			0.346455	0.155553		0.167494	0.161221	0.198484	0.577153	6.18484	1.77564	2.66309	0.748851	0.346455	0.746713	0.686232			2.66309	1.77564	
Thermal Conductivity	Btu/(h*ft*°F)	0.0217490	0.0647725	0.0169154	0.359307			0.0176402	0.0216645			0.0648140	0.0217490		0.390094	0.0212677	0.0590679	0.361872	0.137980	0.0171744	0.0194830	0.356866	0.0648140	0.357144	0.358187			0.0194830	0.0171744	
Surface Tension	lbf/ft		0.000496625?		0.00480703							0.000497625?			0.00282729		0.000233232?	0.00460597?	0.00333107			0.00484692	0.000497625?	0.00484492	0.00476709?					
Net Ideal Gas Heating Value	Btu/ft^3	1145.49	3348.26	1299.81	0.989131	0	2441.56	1295.75	1145.49		1145.49	3344.54	1145.49		0	1144.39	2174.41	12.4881	1320.59	1588.90	1147.95	0.155778	3344.54	0.418597	4.78185		2918.87	1147.95	1588.90	2441.56
Net Liquid Heating Value	Btu/lb	18273.7	19295.5	19910.4	-1037.40	-1059.76	18347.3	19915.2	18273.7		18273.7	19289.3	18273.7		-1059.76	18272.5	18874.2	-786.919	7543.89	20116.9	20126.8	-1055.02	19289.3	-1050.11	-953.317		19468.6	20126.8	20116.9	18347.3
Gross Ideal Gas Heating Value	Btu/ft^3	1260.41	3623.93	1427.32	51.3686	50.3100	2636.36	1423.09	1260.41		1260.41	3619.96	1260.41		50.3100	1259.24	2363.40	63.4035	1475.47	1737.92	1265.65	50.4442	3619.96	50.7440	55.3237		3163.70	1265.65	1737.92	2636.36
Gross Liquid Heating Value	Btu/lb	20115.0	20897.4	21874.9	22.1100	0	19827.1	21883.8	20115.0		20115.0	20891.0	20115.0		0	20114.2	20527.4	272.947	8475.94	22015.6	22200.4	3.37921	20891.0	9.58636	105.348		21115.4	22200.4	22015.6	19827.1

Process Streams — Composition, Phase: Vapor

Process Streams	HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Mole Fraction	%		%			%	%	%		%		%			%				%	%							%	%	%
H2S	1.00000		0.0401094			0.0107112	0.0194018	1.00000		0.999695		1.00000			0.999652				0.00112585	0.0240845							0.0240845	0.00112585	0.0107112
CO2	5.00002		0.122114			2.21547E-06	0.0880900	5.00002		5.00148		5.00002			5.00169				1.10131E-06	0.113409							0.113409	1.10131E-06	2.21547E-06
N2	1.27339		0.385839			0.0101635	0.385969	1.27339		1.27437		1.27339			1.27451				0.253083	0.442410							0.442410	0.253083	0.0101635
Methane	68.1003		63.7143			9.51365	63.7377	68.1003		68.1396		68.1003			68.1451				47.4408	71.3820							71.3820	47.4408	9.51365
Ethane	12.7147		16.6607			16.3595	16.6666	12.7147		12.7125		12.7147			12.7122				21.9586	15.7876							15.7876	21.9586	16.3595
Propane	7.38549		9.05164			24.5926	9.05346	7.38549		7.37447		7.38549			7.37289				17.2137	6.47665							6.47665	17.2137	24.5926
i-Butane	0.981438		1.06338			4.35698	1.06327	0.981438		0.978197		0.981438			0.977731				2.28481	0.608605							0.608605	2.28481	4.35698
n-Butane	2.49118		3.75390			20.1031	3.75192	2.49118		2.47995		2.49118			2.47834				7.28745	1.98972							1.98972	7.28745	20.1031
i-Pentane	0.456632		0.595476			5.09866	0.593426	0.456632		0.452767		0.456632			0.452211				1.27646	0.137240							0.137240	1.27646	5.09866
n-Pentane	0.432517		0.711528			6.23120	0.708084	0.432517		0.428111		0.432517			0.427478				1.35362	0.173170							0.173170	1.35362	6.23120
n-Hexane	0.0649309		0.136312			1.24287	0.133736	0.0649309		0.0633894		0.0649309			0.0631696				0.176733	0.0185001							0.0185001	0.176733	1.24287
n-Heptane	0.0395754		0.122314			0.761285	0.114652	0.0395754		0.0378009		0.0395754			0.0375524				0.111274	0.00464621							0.00464621	0.111274	0.761285
n-Octane	0.00352291		0.0140769			0.0391087	0.0116865	0.00352291		0.00321403		0.00352291			0.00317267				0.00817115	0.000423774							0.000423774	0.00817115	0.0391087
n-Nonane	0.00678106		0.0324348			0.0347847	0.0211164	0.00678106		0.00551770		0.00678106			0.00536739				0.0113924	0.000239497							0.000239497	0.0113924	0.0347847
n-Decane	1.39021E-05		7.62282E-05			2.21578E-05	3.14713E-05	1.39021E-05		9.82882E-06		1.39021E-05			9.41169E-06				1.59454E-05	9.78285E-08							9.78285E-08	1.59454E-05	2.21578E-05
Undecane	6.73979E-05		0.000385490			2.28804E-05	8.30083E-05	6.73979E-05		3.63813E-05		6.73979E-05			3.39947E-05				4.69017E-05	1.35569E-07							1.35569E-07	4.69017E-05	2.28804E-05
Benzene	0.0109308		0.536904			5.41913	0.514517	0.0109308		0.0106966		0.0109308			0.0106633				0.0687576	0.0474756							0.0474756	0.0687576	5.41913
Toluene	0.00381449		0.258643			1.30132	0.228543	0.00381449		0.00363886		0.00381449			0.00361442				0.0195755	0.0129117							0.0129117	0.0195755	1.30132
Ethylbenzene	0.000185144		0.0136250			0.0226024	0.00985147	0.000185144		0.000168378		0.000185144			0.000166148				0.000687481	0.000468517							0.000468517	0.000687481	0.0226024
m-Xylene	0.000363317		0.0269310			0.0469113	0.0193996	0.000363317		0.000327965		0.000363317			0.000323301				0.00132291	0.000864138							0.000864138	0.00132291	0.0469113
Water	0.0340539		2.75901			4.85538	2.87721	0.0340539		0.0340656		0.0340539			0.0340672				0.531960	2.77805							2.77805	0.531960	4.85538
MDEA	1.52627E-07		0.000306570			3.30258E-05	0.000352900	1.52627E-07		1.39635E-07		1.52627E-07			1.37896E-07				6.93341E-07	0.000412558							0.000412558	6.93341E-07	3.30258E-05
Piperazine	4.85897E-10		1.49471E-07			6.68822E-09	0.000823013	4.85897E-10		4.81680E-10		4.85897E-10			4.81077E-10				5.65168E-05	0.00104735							0.00104735	5.65168E-05	6.68822E-09
Phosphoric Acid	0		0			0	0	0		0		0			0				0	0							0	0	0
TEG	1.13384E-11		1.12289E-08			1.72169E-12	7.04546E-05	1.13384E-11		7.06854E-12		1.13384E-11			6.68715E-12				0.000426011	0							0	0.000426011	1.72169E-12
O2	0		0			0	0	0		0		0			0				0	0							0	0	0
Molar Flow	lbmol/h		lbmol/h			lbmol/h	lbmol/h	lbmol/h		lbmol/h		lbmol/h			lbmol/h				lbmol/h	lbmol/h							lbmol/h	lbmol/h	lbmol/h
H2S	321.161		0.0312313			0.000390959	0.0151024	321.161		320.763		321.161			320.707				0.000144931	0.0145619							0.0145619	0.000144931	0.000390959
CO2	1605.81		0.0950841			8.08647E-08	0.0685695	1605.81		1604.78		1605.81			1604.64				1.41771E-07	0.0685693							0.0685693	1.41771E-07	8.08647E-08
N2	408.962		0.300434			0.000370968	0.300440	408.962		408.896		408.962			408.886				0.0325793	0.267489							0.267489	0.0325793	0.000370968
Methane	21871.1		49.6113			0.347248	49.6136	21871.1		21863.3		21871.1			21862.3				6.10704	43.1589							43.1589	6.10704	0.347248
Ethane	4083.46		12.9729			0.597119	12.9734	4083.46		4078.96		4083.46			4078.33				2.82672	9.54550							9.54550	2.82672	0.597119
Propane	2371.92		7.04808			0.897629	7.04724	2371.92		2366.18		2371.92			2365.36				2.21592	3.91590							3.91590	2.21592	0.897629
i-Butane	315.198		0.828002			0.159030	0.827652	315.198		313.865		315.198			313.675				0.294123	0.367974							0.367974	0.294123	0.159030

n-Pentane	10022.0	39.9728	16.4094	39.7666	10022.0	9910.66	10022.0	9894.71	12.5720	7.55412	7.55412	12.5720	16.4094
n-Hexane	1797.03	9.14662	3.90931	8.97092	1797.03	1752.74	1797.03	1746.43	1.96056	0.963913	0.963913	1.96056	3.90931
n-Heptane	1273.57	9.54323	2.78430	8.94255	1273.57	1215.33	1273.57	1207.19	1.43531	0.281485	0.281485	1.43531	2.78430
n-Octane	129.240	1.25206	0.163057	1.03911	129.240	117.799	129.240	116.268	0.120153	0.0292678	0.0292678	0.120153	0.163057
n-Nonane	279.314	3.23814	0.162838	2.10814	279.314	227.065	279.314	220.851	0.188091	0.0185719	0.0185719	0.188091	0.162838
n-Decane	0.635260	0.00644516	0.000115071	0.00348552	0.635260	0.448712	0.635260	0.429613	0.000292054	8.41581E-06	8.41581E-06	0.000292054	0.000115071
Undecane	3.38337	0.0489179	0.000130538	0.0100997	3.38337	1.82464	3.38337	1.70472	0.000943734	1.28122E-05	1.28122E-05	0.000943734	0.000130538
Benzene	274.214	32.6555	15.4504	31.2839	274.214	268.089	274.214	267.219	0.691380	2.24217	2.24217	0.691380	15.4504
Toluene	112.875	18.5560	4.37641	16.3913	112.875	107.578	112.875	106.841	0.232184	0.719294	0.719294	0.232184	4.37641
Ethylbenzene	6.31265	1.12632	0.0875846	0.814117	6.31265	5.73565	6.31265	5.65898	0.00939552	0.0300738	0.0300738	0.00939552	0.0875846
m-Xylene	12.3876	2.22626	0.181782	1.60317	12.3876	11.1719	12.3876	11.0116	0.0180797	0.0554684	0.0554684	0.0180797	0.181782
Water	197.028	38.7024	3.19269	40.3476	197.028	196.913	197.028	196.897	1.23367	30.2595	30.2595	1.23367	3.19269
MDEA	0.00584105	0.0284454	0.000143643	0.0327337	0.00584105	0.00533889	0.00584105	0.00527168	1.06357E-05	0.0297239	0.0297239	1.06357E-05	0.000143643
Piperazine	1.34415E-05	1.00250E-05	2.10274E-06	0.0551818	1.34415E-05	1.33125E-05	1.34415E-05	1.32941E-05	0.000626670	0.0545454	0.0545454	0.000626670	2.10274E-06
Phosphoric Acid	0	0	0	0	0	0	0	0	0	0	0	0	0
TEG	5.46846E-07	1.31302E-06	9.43713E-12	0.00823579	5.46846E-07	3.40595E-07	5.46846E-07	3.22176E-07	0.00823552	0	0	0.00823552	9.43713E-12
O2	0	0	0	0	0	0	0	0	0	0	0	0	0

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2
Property	Units														
Temperature	°F	85		100			120	117.245	84.2533		81.0007		85		
Pressure	psia	1014.70		34.6959			34.6959	34.6959	1004.70		959.696		1014.70		
Mole Fraction Vapor	%	100		100			100	100	100		100		100		
Mole Fraction Light Liquid	%	0		0			0	0	0		0		0		
Mole Fraction Heavy Liquid	%	0		0			0	0	0		0		0		
Molecular Weight	lb/lbmol	23.6900		24.6374			47.9910	24.5538	23.6900		23.6716		23.6900		
Mass Density	lb/ft^3	5.60773		0.143855			0.277840	0.138937	5.55446		5.30074		5.60773		
Molar Flow	lbmol/h	32116.0		77.8652			3.65000	77.8403	32116.0		32086.1		32116.0		
Mass Flow	lb/h	760826		1918.40			175.167	1911.28	760826		759531		760826		
Vapor Volumetric Flow	ft^3/h	135675		13335.6			630.459	13756.5	136976		143288		135675		
Liquid Volumetric Flow	gpm	16915.3		1662.62			78.6027	1715.09	17077.5		17864.5		16915.3		
Std Vapor Volumetric Flow	MMSCFD	292.5		0.709167			0.0332428	0.708940	292.5		292.228		292.5		
Std Liquid Volumetric Flow	sgpm	3970.32		10.0087			0.640390	9.99017	3970.32		3965.26		3970.32		
Compressibility		0.733359		0.989354			0.963383	0.990389	0.734101		0.738634		0.733359		
Specific Gravity		0.817953		0.850665			1.65700	0.847780	0.817953		0.817320		0.817953		
API Gravity															
Enthalpy	Btu/h	-1.34641E+09		-2.87025E+06			-162141	-2.85869E+06	-1.34641E+09		-1.34475E+09		-1.34641E+09		
Mass Enthalpy	Btu/lb	-1769.67		-1496.17			-925.637	-1495.70	-1769.67		-1770.50		-1769.67		
Mass Cp	Btu/(lb*°F)	0.670403		0.466210			0.421094	0.476813	0.668448		0.658445		0.670403		
Ideal Gas CpCv Ratio		1.23327		1.21020			1.11092	1.20629	1.23346		1.23450		1.23327		
Dynamic Viscosity	cP	0.0139729		0.0106287			0.00897723	0.0109227	0.0139181		0.0136683		0.0139729		
Kinematic Viscosity	cSt	0.155553		4.61245			2.01710	4.90787	0.156429		0.160975		0.155553		
Thermal Conductivity	Btu/(h*ft*°F)	0.0217490		0.0169154			0.0118734	0.0176402	0.0216645		0.0212843		0.0217490		
Surface Tension	lbf/ft														
Net Ideal Gas Heating Value	Btu/ft^3	1145.49		1299.81			2428.08	1295.75	1145.49		1144.53		1145.49		
Net Liquid Heating Value	Btu/lb	18273.7		19910.4			19025.7	19915.2	18273.7		18272.6		18273.7		
Gross Ideal Gas Heating Value	Btu/ft^3	1260.41		1427.32			2628.66	1423.09	1260.41		1259.38		1260.41		
Gross Liquid Heating Value	Btu/lb	20115.0		21874.9			20612.2	21883.8	20115.0		20114.3		20115.0		

Process Streams		10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	To Block:	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Property	Units															
Temperature	°F	80.8715				143.085	134.274							134.274	143.085	120
Pressure	psia	957.696				79.6959	79.1959							79.1959	79.6959	34.6959
Mole Fraction Vapor	%	100				100	100							100	100	100
Mole Fraction Light Liquid	%	0				0	0							0	0	0
Mole Fraction Heavy Liquid	%	0				0	0							0	0	0
Molecular Weight	lb/lbmol	23.6690				29.7946	21.5444							21.5444	29.7946	47.9910
Mass Density	lb/ft^3	5.28822				0.378040	0.271814							0.271814	0.378040	0.277840
Molar Flow	lbmol/h	32081.9				12.8730	60.4618							60.4618	12.8730	3.65000
Mass Flow	lb/h	759348				383.545	1302.61							1302.61	383.545	175.167
Vapor Volumetric Flow	ft^3/h	143592				1014.56	4792.31							4792.31	1014.56	630.459
Liquid Volumetric Flow	gpm	17902.4				126.491	597.483							597.483	126.491	78.6027
Std Vapor Volumetric Flow	MMSCFD	292.190				0.117242	0.550663							0.550663	0.117242	0.0332428
Std Liquid Volumetric Flow	sgpm	3964.55				1.85809	7.36387							7.36387	1.85809	0.640390
Compressibility		0.738935				0.971027	0.984821							0.984821	0.971027	0.963383
Specific Gravity		0.817231				1.02873	0.743873							0.743873	1.02873	1.65700
API Gravity																
Enthalpy	Btu/h	-1.34452E+09				-487018	-2.15745E+06							-2.15745E+06	-487018	-162141
Mass Enthalpy	Btu/lb	-1770.62				-1269.78	-1656.25							-1656.25	-1269.78	-925.637
Mass Cp	Btu/(lb*°F)	0.657905				0.481052	0.505772							0.505772	0.481052	0.421094
Ideal Gas CpCv Ratio		1.23456				1.16473	1.22714							1.22714	1.16473	1.11092
Dynamic Viscosity	cP	0.0136569				0.0107526	0.0115952							0.0115952	0.0107526	0.00897723
Kinematic Viscosity	cSt	0.161221				1.77564	2.66309							2.66309	1.77564	2.01710
Thermal Conductivity	Btu/(h*ft*°F)	0.0212677				0.0171744	0.0194830							0.0194830	0.0171744	0.0118734
Surface Tension	lbf/ft															
Net Ideal Gas Heating Value	Btu/ft^3	1144.39				1588.90	1147.95							1147.95	1588.90	2428.08
Net Liquid Heating Value	Btu/lb	18272.5				20116.9	20126.8							20126.8	20116.9	19025.7
Gross Ideal Gas Heating Value	Btu/ft^3	1259.24				1737.92	1265.65							1265.65	1737.92	2628.66
Gross Liquid Heating Value	Btu/lb	20114.2				22015.6	22200.4							22200.4	22015.6	20612.2

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Light Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2
Mole Fraction			%		%		%				%	%			%
H2S			0.206370		0.000108850		0.000841706				1.33191	0.206288			0
CO2			0.677998		0.000109025		5.38381E-08				3.43249	0.677732			0
N2			0		9.41576E-06		2.44210E-05				0.223423	0			0
Methane			9.60028		0.00317026		0.0796844				25.9313	9.59672			0
Ethane			7.78018		0.00110876		0.737988				15.0946	7.77732			0
Propane			12.9632		0.000416715		3.27743				19.2420	12.9584			0
i-Butane			3.73009		2.96850E-05		1.20241				4.46661	3.72872			0
n-Butane			12.5068		0.000156870		8.40428				14.5640	12.5022			0
i-Pentane			6.42769		1.60753E-05		5.25650				4.61161	6.42532			0
n-Pentane			8.17118		9.41223E-06		8.25168				5.17010	8.16818			0
n-Hexane			22.8844		1.15763E-06		4.56968				1.72233	22.8760			0
n-Heptane			11.4422		6.98195E-07		8.16741				1.94755	11.4380			0
n-Octane			3.05125		3.71772E-08		1.17214				0.335627	3.05013			0
n-Nonane			0.550999		6.38091E-08		2.49787				1.36513	0.550796			0
n-Decane			0.00746564		4.76203E-11		0.00397579				0.00439348	0.00746289			0
Undecane			0		1.86836E-10		0.0106244				0.0334159	0			0
Benzene			0		0.00252299		30.4203				0.262747	0			0
Toluene			0		0.000924541		22.1231				0.192650	0			0
Ethylbenzene			0		3.97065E-05		1.19246				0.0182120	0			0
m-Xylene			0		5.61876E-05		2.33930				0.0383738	0			0
Water			0		99.9700		0.287878				0.0214890	0.0368305			100
MDEA			0		9.90196E-05		0.00441007				1.41213E-05	0			0
Piperazine			0		0.00270318		9.91452E-09				5.02047E-09	0			0
Phosphoric Acid			0		0		0				0	0			0
TEG			0		0.0185588		5.58287E-09				4.60224E-09	0			0
O2			0		0		0				0	0			0
Molar Flow			lbmol/h		lbmol/h		lbmol/h				lbmol/h	lbmol/h			lbmol/h
H2S			2.21458		9.99193E-06		4.56798E-06				0.397476	2.21452			0
CO2			7.27569		0.000100090		2.92182E-10				1.02434	7.27550			0
N2			0		8.64324E-06		1.32534E-07				0.0666748	0			0
Methane			103.022		0.00291015		0.000432451				7.73855	103.022			0
Ethane			83.4902		0.00101779		0.00400510				4.50161	83.4901			0
Propane			139.110		0.000382525		0.0177868				5.74230	139.109			0
i-Butane			40.0281		2.72495E-05		0.00652552				1.33290	40.0281			0
n-Butane			134.212		0.000145835		0.0456105				4.34625	134.212			0
i-Pentane			68.9763		1.47564E-05		0.0285273				1.37622	68.9763			0
n-Pentane			87.6860		8.64000E-06		0.0447823				1.54289	87.6860			0
n-Hexane			245.575		1.06265E-06		0.0247999				0.513986	245.575			0
n-Heptane			122.788		6.40911E-07		0.0443249				0.581198	122.788			0
n-Octane			32.7434		3.41269E-08		0.00636125				0.100159	32.7434			0
n-Nonane			5.91284		5.85738E-08		0.0135561				0.407388	5.91284			0
n-Decane			0.0801147		4.37132E-11		2.15768E-05				0.00131112	0.0801147			0
Undecane			0		1.71507E-10		5.76592E-05				0.00997214	0			0
Benzene			0		0.00231598		0.165093				0.0784102	0			0
Toluene			0		0.000848686		0.120063				0.0574915	0			0
Ethylbenzene			0		3.64487E-05		0.00647152				0.00543492	0			0
m-Xylene			0		5.15776E-05		0.0126955				0.0114517	0			0
Water			0		91.7678		0.00156233				0.00641285	0.395378			1.19354
MDEA			0		9.08954E-05		2.39337E-05				4.21416E-06	0			0
Piperazine			0		0.00248139		5.38066E-11				1.49823E-09	0			0
Phosphoric Acid			0		0		0				0	0			0
TEG			0		0.0170361		3.02985E-11				1.37342E-09	0			0
O2			0		0		0				0	0			0
Mass Fraction			%		%		%				%	%			%
H2S			0.107669		0.000205588		0.000351335				1.04588	0.107655			0
CO2			0.456780		0.000265908		2.90193E-08				3.48059	0.456722			0
N2			0		1.46177E-05		8.37875E-06				0.144208	0			0
Methane			2.35769		0.00281854		0.0156565				9.58500	2.35744			0
Ethane			3.58131		0.00184763		0.271781				10.4508	3.58094			0
Propane			8.75062		0.00101834		1.77003				19.5498	8.74973			0
i-Butane			3.31890		9.56177E-05		0.855940				5.98159	3.31856			0
n-Butane			11.1281		0.000511731		5.98264				19.5038	11.1269			0
i-Pentane			7.09930		6.42757E-05		4.64489				7.66617	7.09858			0
n-Pentane			9.02497		3.76340E-05		7.29157				8.59459	9.02406			0
n-Hexane			30.1894		5.52855E-06		4.82302				3.41977	30.1863			0
n-Heptane			17.5516		3.87714E-06		10.0233				4.49637	17.5498			0
n-Octane			5.33561		2.35348E-07		1.63985				0.883340	5.33507			0
n-Nonane			1.08183		4.53540E-07		3.92369				4.03409	1.08172			0
n-Decane			0.0162610		3.75491E-10		0.00692823				0.0144030	0.0162594			0
Undecane			0		1.61845E-09		0.0203393				0.120346	0			0
Benzene			0		0.0109217		29.1025				0.472881	0			0
Toluene			0		0.00472091		24.9653				0.408984	0			0
Ethylbenzene			0		0.000233615		1.55051				0.0445489	0			0
m-Xylene			0		0.000330583		3.04170				0.0938669	0			0
Water			0		99.8089		0.0635184				0.00891978	0.0101601			100
MDEA			0		0.000653911		0.00643627				3.87714E-05	0			0
Piperazine			0		0.0129037		1.04593E-08				9.96378E-09	0			0
Phosphoric Acid			0		0		0				0	0			0
TEG			0		0.154454		1.02683E-08				1.59242E-08	0			0
O2			0		0		0				0	0			0
Mass Flow			lb/h		lb/h		lb/h				lb/h	lb/h			lb/h
H2S			75.4749		0.00340534		0.000155681				13.5463	75.4727			0
CO2			320.200		0.00440447		1.28588E-08				45.0807	320.191			0
N2			0		0.000242126		3.71273E-06				1.86779	0			0
Methane			1652.72		0.0466860		0.00693759				124.145	1652.72			0
Ethane			2510.47		0.0306039		0.120429				135.359	2510.47			0
Propane			6134.12		0.0168677		0.784320				253.210	6134.12			0
i-Butane			2326.52		0.00158380		0.379277				77.4738	2326.52			0
n-Butane			7800.69		0.00847624		2.65098				252.614	7800.69			0
i-Pentane			4976.56		0.00106466		2.05821				99.2925	4976.56			0
n-Pentane			6326.44		0.000623365		3.23099				111.317	6326.44			0
n-Hexane			21162.5		9.15743E-05		2.13714				44.2929	21162.5			0
n-Heptane			12303.6		6.42205E-05		4.44145				58.2372	12303.6			0
n-Octane			3740.23		3.89827E-06		0.726636				11.4411	3740.23			0
n-Nonane			758.352		7.51238E-06		1.73863				52.2496	758.352			0
n-Decane			11.3989		6.21959E-09		0.00306998				0.186549	11.3989			0
Undecane			0		2.68079E-08		0.00901260				1.55873	0			0
Benzene			0		0.180906		12.8957				6.12477	0			0
Toluene			0		0.0781966		11.0624				5.29718	0			0
Ethylbenzene			0		0.00386958		0.687049				0.576999	0			0
m-Xylene			0		0.00547574		1.34782				1.21577	0			0
Water			0		1653.22		0.0281458				0.115529	7.12285			21.5020
MDEA			0		0.0108313		0.00285199				0.000502168	0			0
Piperazine			0		0.213736		4.63466E-09				1.29051E-07	0			0
Phosphoric Acid			0		0		0				0	0			0
TEG			0		2.55836		4.55002E-09				2.06251E-07	0			0
O2			0		0		0				0	0			0

Process Streams	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Composition	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Light Liquid	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Mole Fraction		%	%	%			%	%	%	%					%
H2S		1.33175	0.000316174	7.54928E-05			0.0261723	0.206288	0.00672849	0.597018					0.000841706
CO2		3.43014	1.94455E-08	3.49893E-08			0.0429205	0.677732	0.0146478	0.870175					5.38381E-08
N2		0.222954	7.92282E-06	0.00680314			2.35865E-09	0	0	0.000282597					2.44210E-05
Methane		25.8988	0.0277735	1.11408			4.14538E-06	9.59672	0.0182566	0.0993871					0.0796844
Ethane		15.0846	0.270203	0.495916			2.15301E-06	7.77732	0.00673927	0.290318					0.737988
Propane		19.2587	1.23150	0.399623			5.15897E-07	12.9584	0.00287408	1.28594					3.27743
i-Butane		4.47350	0.450677	0.0544296			2.48939E-08	3.72872	0.000221256	0.490759					1.20241
n-Butane		14.5886	3.22358	0.202526			1.67600E-07	12.5022	0.000766057	3.41207					8.40428
i-Pentane		4.62084	2.27994	0.0411627			2.88328E-09	6.42532	0.000115649	2.47246					5.25650
n-Pentane		5.17984	3.74720	0.0420202			2.45050E-09	8.16818	5.35682E-05	4.09098					8.25168
n-Hexane		1.72422	2.68619	0.00838353			1.43338E-10	22.8760	2.93216E-05	2.93227					4.56968
n-Heptane		1.94539	7.91056	0.00667471			1.07590E-11	11.4380	3.49322E-06	8.63208					8.16741
n-Octane		0.333468	2.46094	0.000670281			6.61855E-13	3.05013	1.40287E-07	2.68516					1.17214
n-Nonane		1.33853	11.6424	0.00138876			9.40379E-14	0.550796	6.25571E-09	12.7023					2.49787
n-Decane		0.00424414	0.0460222	2.70111E-06			0	0.00746289	9.62816E-12	0.0502110					0.00397579
Undecane		0.0315349	0.310994	1.25390E-05			0	0	0	0.339296					0.0106244
Benzene		0.262969	21.3599	0.0343476			4.57495E-05	0	0	16.5272					30.4203
Toluene		0.192292	30.3993	0.0155136			1.01162E-05	0	0	29.9247					22.1231
Ethylbenzene		0.0180799	3.87216	0.000848014			2.25769E-07	0	0	4.09814					1.19246
m-Xylene		0.0380603	7.72758	0.00159276			4.12032E-07	0	0	8.26043					2.33930
Water		0.0214601	0.316000	63.6737			99.9308	0.0368305	99.9496	0.213230					0.287878
MDEA		1.40305E-05	0.0367715	0.00963930			8.65978E-10	0	0	0.0253937					0.00441007
Piperazine		5.02681E-09	1.67745E-06	0.148374			1.43443E-07	0	0	2.33446E-07					9.91452E-09
Phosphoric Acid		0	0	0			0	0	0	0					0
TEG		4.39307E-09	5.93822E-05	33.7422			0	0	0	7.66469E-05					5.58287E-09
O2		0	0	0			0	0	0	0					0
Molar Flow		lbmol/h	lbmol/h	lbmol/h			lbmol/h	lbmol/h	lbmol/h	lbmol/h					lbmol/h
H2S		0.453531	2.39467E-07	3.36964E-08			0.0162150	2.21452	1.07676E-05	0.000414466					4.56798E-06
CO2		1.16815	1.47278E-11	1.56176E-11			0.0265913	7.27550	2.34408E-05	0.000604099					2.92182E-10
N2		0.0759279	6.00065E-09	3.03660E-06			1.46129E-09	0	0	1.96187E-07					1.32534E-07
Methane		8.81995	2.10353E-05	0.000497272			2.56826E-06	103.022	2.92160E-05	6.89973E-05					0.000432451
Ethane		5.13713	0.000204649	0.000221353			1.33389E-06	83.4901	1.07848E-05	0.000201547					0.00400510
Propane		6.55861	0.000932721	0.000178373			3.19623E-07	139.109	4.59938E-06	0.000892737					0.0177868
i-Butane		1.52347	0.000341338	2.42948E-05			1.54230E-08	40.0281	3.54074E-07	0.000340698					0.00652552
n-Butane		4.96819	0.00244150	9.03978E-05			1.03836E-07	134.212	1.22592E-06	0.00236875					0.0456105
i-Pentane		1.57364	0.00172680	1.83731E-05			1.78633E-09	68.9763	1.85073E-07	0.00171645					0.0285273
n-Pentane		1.76401	0.00283808	1.87558E-05			1.51820E-09	87.6860	8.57249E-08	0.00284007					0.0447823
n-Hexane		0.587191	0.00203449	3.74201E-06			8.88048E-11	245.575	4.69232E-08	0.00203567					0.0247999
n-Heptane		0.662510	0.00599137	2.97927E-06			6.66573E-12	122.788	5.59018E-09	0.00599263					0.0443249
n-Octane		0.113564	0.00186389	2.99182E-07			4.10051E-13	32.7434	2.24501E-10	0.00186411					0.00636125
n-Nonane		0.455841	0.00881779	6.19875E-07			5.82610E-14	5.91284	1.00110E-11	0.00881830					0.0135561
n-Decane		0.00144536	3.48567E-05	1.20565E-09			0	0.0801147	1.54079E-14	3.48579E-05					2.15768E-05
Undecane		0.0107393	0.000235543	5.59683E-09			0	0	0	0.000235549					5.76592E-05
Benzene		0.0895550	0.0161777	1.53312E-05			2.83440E-05	0	0	0.0114737					0.165093
Toluene		0.0654858	0.0230241	6.92456E-06			6.26749E-06	0	0	0.0207746					0.120063
Ethylbenzene		0.00615717	0.00293273	3.78513E-07			1.39875E-07	0	0	0.00284504					0.00647152
m-Xylene		0.0129616	0.00585278	7.10934E-07			2.55274E-07	0	0	0.00573462					0.0126955
Water		0.00730831	0.000239335	0.0284209			61.9120	0.395378	0.159949	0.000148030					0.00156233
MDEA		4.77814E-06	2.78503E-05	4.30253E-06			5.36515E-10	0	0	1.76290E-05					2.39337E-05
Piperazine		1.71190E-09	1.27048E-09	6.62273E-05			8.88698E-08	0	0	1.62065E-10					5.38066E-11
Phosphoric Acid		0	0	0			0	0	0	0					0
TEG		1.49607E-09	4.49754E-08	0.0150609			0	0	0	5.32104E-08					3.02985E-11
O2		0	0	0			0	0	0	0					0
Mass Fraction		%	%	%			%	%	%	%					%
H2S		1.04595	0.000116167	4.08018E-05			0.0494699	0.107655	0.0127241	0.218622					0.000351335
CO2		3.47885	9.22597E-09	2.44200E-08			0.104761	0.456722	0.0357699	0.411481					2.90193E-08
N2		0.143932	2.39272E-06	0.00302231			3.66451E-09	0	0	8.50610E-05					8.37875E-06
Methane		9.57477	0.00480338	0.283433			3.68828E-06	2.35744	0.0162514	0.0171316					0.0156565
Ethane		10.4528	0.0875902	0.236478			3.59048E-06	3.58094	0.0112443	0.0937972					0.271781
Propane		19.5703	0.585429	0.279453			1.26167E-06	8.74973	0.00703225	0.609275					1.77003
i-Butane		5.99192	0.282393	0.0501696			8.02458E-08	3.31856	0.000713569	0.306483					0.855940
n-Butane		19.5403	2.01988	0.186674			5.40260E-07	11.1269	0.00247060	2.13087					5.98264
i-Pentane		7.68292	1.77337	0.0470973			1.15373E-08	7.09858	0.000462990	1.91670					4.64489
n-Pentane		8.61235	2.91461	0.0480785			9.80556E-09	9.02406	0.000214455	3.17142					7.29157
n-Hexane		3.42416	2.49555	0.0114571			6.85066E-10	30.1863	0.000140207	2.71509					4.82302
n-Heptane		4.49221	8.54534	0.0106065			5.97912E-11	17.5498	1.94223E-05	9.29369					10.0233
n-Octane		0.877821	3.03055	0.00121421			4.19300E-12	5.33507	8.89184E-07	3.29565					1.63985
n-Nonane		3.95621	16.0976	0.00282465			6.68907E-13	1.08172	4.45196E-08	17.5047					3.92369
n-Decane		0.0139160	0.0705931	6.09473E-06			0	0.0162594	7.60138E-11	0.0767617					0.00692823
Undecane		0.113593	0.524059	3.10820E-05			0	0	0	0.569846					0.0203393
Benzene		0.473367	17.9871	0.0425478			0.000198194	0	0	13.8712					29.1025
Toluene		0.408300	30.1961	0.0226682			5.16949E-05	0	0	29.6257					24.9653
Ethylbenzene		0.0442338	4.43180	0.00142773			1.32933E-06	0	0	4.67482					1.55051
m-Xylene		0.0931172	8.84444	0.00268161			2.42606E-06	0	0	9.42282					3.04170
Water		0.00890941	0.0613726	18.1913			99.8455	0.0101601	99.9130	0.0412750					0.0635184
MDEA		3.85290E-05	0.0472384	0.0182158			5.72312E-09	0	0	0.0325133					0.00643627
Piperazine		9.97819E-09	1.55768E-06	0.202677			6.85251E-07	0	0	2.16056E-07					1.04593E-08
Phosphoric Acid		0	0	0			0	0	0	0					0
TEG		1.52032E-08	9.61377E-05	80.3579			0	0	0	0.000123675					1.02683E-08
O2		0	0	0			0	0	0	0					0
Mass Flow		lb/h	lb/h	lb/h			lb/h	lb/h	lb/h	lb/h					lb/h
H2S		15.4567	8.16123E-06	1.14840E-06			0.552622	75.4727	0.000366968	0.0141254					0.000155681
CO2		51.4096	6.48164E-10	6.87322E-10			1.17027	320.191	0.00103162	0.0265861					1.28588E-08
N2		2.12700	1.68099E-07	8.50655E-05			4.09358E-08	0	0	5.49586E-06					3.71273E-06
Methane		141.494	0.000337458	0.00797747			4.12013E-05	1652.72	0.000468696	0.00110689					0.00693759
Ethane		154.469	0.00615359	0.00665588			4.01088E-05	2510.47	0.000324289	0.00606031					0.120429
Propane		289.206	0.0411289	0.00786545			1.40940E-05	6134.12	0.000202812	0.0393658					0.784320
i-Butane		88.5472	0.0198393	0.00141207			8.96416E-07	2326.52	2.05796E-05	0.0198021					0.379277
n-Butane		288.762	0.141905	0.00525412			6.03518E-06	7800.69	7.12530E-05	0.137677					2.65098
i-Pentane		113.536	0.124587	0.00132559			1.28881E-07	4976.56	1.33528E-05	0.123840					2.05821
n-Pentane		127.271	0.204764	0.00135321			1.09537E-07	6326.44	6.18495E-06	0.204908					3.23099
n-Hexane		50.6014	0.175323	0.000322469			7.65278E-09	21162.5	4.04363E-06	0.175424					2.13714
n-Heptane		66.3848	0.600347	0.000298529			6.67920E-10	12303.6	5.60147E-07	0.600473					4.44145
n-Octane		12.9722	0.212909	3.41751E-05			4.68395E-11	3740.23	2.56444E-08	0.212935					0.726636
n-Nonane		58.4640	1.13093	7.95022E-05			7.47227E-12	758.352	1.28396E-09	1.13099					1.73863
n-Decane		0.205648	0.00495947	1.71542E-07			0	11.3989	2.19226E-12	0.00495964					0.00306998
Undecane		1.67865	0.0368174	8.74830E-07			0	0	0	0.0368182					0.00901260
Benzene		6.99530	1.26367	0.00119754			0.00221400	0	0	0.896229					12.8957
Toluene		6.03376	2.12140	0.000638018			0.000577477	0	0	1.91414					11.0624
Ethylbenzene		0.653676	0.311353	4.01849E-05			1.48498E-05	0	0	0.302044					0.687049
m-Xylene		1.37606	0.621360	7.54763E-05			2.71012E-05	0	0	0.608816					1.34782
Water		0.131661	0.00431169	0.512011			1115.36	7.12285	2.88152	0.00266681					0.0281458
MDEA		0.000569373	0.00331870	0.000512699			6.39323E-08	0	0	0.00210071					0.00285199
Piperazine		1.47455E-07	1.09433E-07	0.00570453			7.65486E-06	0	0	1.39596E-08					4.63466E-09
Phosphoric Acid		0	0	0			0	0	0	0					0
TEG		2.24670E-07	6.75409E-06	2.26174			0	0	0	7.99076E-06					4.55002E-09
O2		0	0	0			0	0	0	0					0

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Light Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2
Property	Units														
Temperature	°F		75		100		120				81.0007	75			362.721
Pressure	psia		1019.70		34.6959		34.6959				959.696	1019.70			1019.70
Mole Fraction Vapor	%		0		0		0				0	0			0
Mole Fraction Light Liquid	%		100		100		100				100	100			100
Mole Fraction Heavy Liquid	%		0		0		0				0	0			0
Molecular Weight	lb/lbmol		65.3233		18.0444		81.6488				43.4014	65.3059			18.0153
Mass Density	lb/ft^3		38.3959		61.9635		45.9359				31.1935	38.4000			55.2241
Molar Flow	lbmol/h		1073.11		91.7954		0.542705				29.8425	1073.51			1.19354
Mass Flow	lb/h		70099.3		1656.39		44.3112				1295.20	70106.4			21.5020
Vapor Volumetric Flow	ft^3/h		1825.70		26.7317		0.964632				41.5216	1825.69			0.389359
Liquid Volumetric Flow	gpm		227.619		3.33278		0.120266				5.17672	227.618			0.0485434
Std Vapor Volumetric Flow	MMSCFD		9.77351		0.836037		0.00494275				0.271794	9.77710			0.0108703
Std Liquid Volumetric Flow	sgpm		233.333		3.31127		0.116540				5.05841	233.347			0.0429840
Compressibility			0.302346		0.00168224		0.00991362				0.230132	0.302233			0.0376913
Specific Gravity			0.615627		0.993503		0.736521				0.500146	0.615693			0.885445
API Gravity			95.1198		9.96683		52.4219				140.914	95.0960			9.87676
Enthalpy	Btu/h		-7.55007E+07		-1.12461E+07		-13892.2				-1.66326E+06	-7.55430E+07			-140442
Mass Enthalpy	Btu/lb		-1077.05		-6789.53		-313.515				-1284.17	-1077.55			-6531.57
Mass Cp	Btu/(lb*°F)		0.559604		0.976933		0.478453				0.675310	0.559637			1.07993
Ideal Gas CpCv Ratio			1.08267		1.32755		1.07667				1.12725	1.08269			1.31416
Dynamic Viscosity	cP		0.213037		0.703342		0.306512				0.0991794	0.213032			0.148166
Kinematic Viscosity	cSt		0.346377		0.708614		0.416558				0.198489	0.346332			0.167494
Thermal Conductivity	Btu/(h*ft*°F)		0.0647725		0.359307		0.0683582				0.0590656	0.0647781			0.390094
Surface Tension	lbf/ft		0.000496625?		0.00480703		0.00131581?				0.000232605?	0.000497056?			0.00282729
Net Ideal Gas Heating Value	Btu/ft^3		3348.26		0.989131		3938.93				2174.74	3347.03			0
Net Liquid Heating Value	Btu/lb		19295.5		-1037.40		18132.9				18873.6	19293.5			-1059.76
Gross Ideal Gas Heating Value	Btu/ft^3		3623.93		51.3686		4178.09				2363.75	3622.62			50.3100
Gross Liquid Heating Value	Btu/lb		20897.4		22.1100		19244.4				20526.7	20895.3			0

Process Streams		10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Light Liquid	From Block:	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	To Block:	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Temperature	°F		80.8715	120.119	119.867			94.2868	75	94.7700	102.776					120
Pressure	psia		957.696	44.6959	893.696			44.6959	1019.70	214.696	44.6959					34.6959
Mole Fraction Vapor	%		0	0	0			0	0	0	0					0
Mole Fraction Light Liquid	%		100	100	100			100	100	100	100					100
Mole Fraction Heavy Liquid	%		0	0	0			0	0	0	0					0
Molecular Weight	lb/lbmol		43.3933	92.7586	63.0575			18.0307	65.3059	18.0219	93.0686					81.6488
Mass Density	lb/ft^3		31.1952	47.7509	67.2951			62.0348	38.4000	62.0089	47.9797					45.9359
Molar Flow	lbmol/h		34.0554	0.0757388	0.0446352			61.9548	1073.51	0.160030	0.0694228					0.542705
Mass Flow	lb/h		1477.78	7.02543	2.81459			1117.09	70106.4	2.88403	6.46108					44.3112
Vapor Volumetric Flow	ft^3/h		47.3720	0.147127	0.0418245			18.0074	1825.69	0.0465100	0.134663					0.964632
Liquid Volumetric Flow	gpm		5.90612	0.0183431	0.00521449			2.24508	227.618	0.00579865	0.0167891					0.120266
Std Vapor Volumetric Flow	MMSCFD		0.310163	0.000689800	0.000406521			0.564261	9.77710	0.00145749	0.000632276					0.00494275
Std Liquid Volumetric Flow	sgpm		5.77201	0.0177979	0.00520288			2.23394	233.347	0.00576995	0.0165188					0.116540
Compressibility			0.229652	0.0139543	0.134648			0.00218527	0.302233	0.0104870	0.0143638					0.00991362
Specific Gravity			0.500173	0.765622	1.07899			0.994645	0.615693	0.994230	0.769291					0.736521
API Gravity			140.961	46.1427	-3.10026			9.96478	95.0960	10.0126	47.3302					52.4219
Enthalpy	Btu/h		-1.89788E+06	-2108.84	-8714.37			-7.59410E+06	-7.55430E+07	-19610.0	-2375.97					-13892.2
Mass Enthalpy	Btu/lb		-1284.28	-300.173	-3096.14			-6798.13	-1077.55	-6799.50	-367.736					-313.515
Mass Cp	Btu/(lb*°F)		0.675311	0.466378	0.683085			0.977004	0.559637	0.976979	0.460712					0.478453
Ideal Gas CpCv Ratio			1.12730	1.06718	1.08359			1.32836	1.08269	1.32830	1.06803					1.07667
Dynamic Viscosity	cP		0.0991822	0.382102	6.66703			0.744134	0.213032	0.741701	0.410897					0.306512
Kinematic Viscosity	cSt		0.198484	0.499549	6.18484			0.748851	0.346332	0.746713	0.534631					0.416558
Thermal Conductivity	Btu/(h*ft*°F)		0.0590679	0.0708194	0.137980			0.356866	0.0647781	0.357144	0.0719368					0.0683582
Surface Tension	lbf/ft		0.000233232?	0.00143496?	0.00333107			0.00484692	0.000497056?	0.00484492	0.00150030?					0.00131581?
Net Ideal Gas Heating Value	Btu/ft^3		2174.41	4453.95	1320.59			0.155778	3347.03	0.418597	4461.56					3938.93
Net Liquid Heating Value	Btu/lb		18874.2	18048.6	7543.89			-1055.02	19293.5	-1050.11	18020.6					18132.9
Gross Ideal Gas Heating Value	Btu/ft^3		2363.40	4720.44	1475.47			50.4442	3622.62	50.7440	4734.66					4178.09
Gross Liquid Heating Value	Btu/lb		20527.4	19138.5	8475.94			3.37921	20895.3	9.58636	19133.9					19244.4

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Heavy Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2
Mole Fraction							%					%			
H2S							2.46939E-05					0.00814791			
CO2							1.67820E-09					0.0237270			
N2							2.33957E-07					0			
Methane							0.000439754					0.0428009			
Ethane							0.000929745					0.00838255			
Propane							0.000953283					0.00289938			
i-Butane							9.27529E-05					0.000224623			
n-Butane							0.000715176					0.000668990			
i-Pentane							0.000107574					0.000101153			
n-Pentane							7.45308E-05					3.91705E-05			
n-Hexane							9.11431E-06					2.05663E-05			
n-Heptane							3.49723E-06					2.47610E-06			
n-Octane							8.82234E-08					8.60530E-08			
n-Nonane							4.63914E-08					4.57092E-09			
n-Decane							9.93489E-12					6.17143E-12			
Undecane							6.58743E-12					0			
Benzene							0.0177360					0			
Toluene							0.00325418					0			
Ethylbenzene							4.31764E-05					0			
m-Xylene							6.90093E-05					0			
Water							99.9755					99.9130			
MDEA							9.45547E-06					0			
Piperazine							3.52918E-05					0			
Phosphoric Acid							0					0			
TEG							5.67971E-07					0			
O2							0					0			
Molar Flow							lbmol/h					lbmol/h			
H2S							7.72391E-08					6.50902E-05			
CO2							5.24916E-12					0.000189545			
N2							7.31784E-10					0			
Methane							1.37549E-06					0.000341918			
Ethane							2.90811E-06					6.69646E-05			
Propane							2.98173E-06					2.31619E-05			
i-Butane							2.90118E-07					1.79442E-06			
n-Butane							2.23697E-06					5.34428E-06			
i-Pentane							3.36476E-07					8.08069E-07			

Process Streams	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Composition	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Heavy Liquid	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Mole Fraction			%					%		%					%
H2S			9.10308E-06					0.00814791		0.0172361					2.46939E-05
CO2			6.09970E-10					0.0237270		0.0283492					1.67820E-09
N2			8.37290E-08					0		3.13092E-06					2.33957E-07
Methane			0.000158784					0.0428009		0.000575549					0.000439754
Ethane			0.000342569					0.00838255		0.000368306					0.000929745
Propane			0.000360261					0.00289938		0.000359516					0.000953283
i-Butane			3.61366E-05					0.000224623		3.92310E-05					9.27529E-05
n-Butane			0.000285014					0.000668990		0.000271169					0.000715176
i-Pentane			4.70179E-05					0.000101153		4.66746E-05					0.000107574
n-Pentane			3.39113E-05					3.91705E-05		2.93033E-05					7.45308E-05
n-Hexane			5.42882E-06					2.05663E-05		4.59955E-06					9.11431E-06
n-Heptane			3.53543E-06					2.47610E-06		3.02024E-06					3.49723E-06
n-Octane			1.90013E-07					8.60530E-08		1.44939E-07					8.82234E-08
n-Nonane			2.16661E-07					4.57092E-09		1.86360E-07					4.63914E-08
n-Decane			1.11410E-10					6.17143E-12		8.60594E-11					9.93489E-12
Undecane			1.89260E-10					0		1.60654E-10					6.58743E-12
Benzene			0.0123510					0		0.00915715					0.0177360
Toluene			0.00441321					0		0.00388918					0.00325418
Ethylbenzene			0.000148554					0		0.000144034					4.31764E-05
m-Xylene			0.000226296					0		0.000202804					6.90093E-05
Water			99.9690					99.9130		99.9188					99.9755
MDEA			7.69142E-05					0		4.06312E-05					9.45547E-06
Piperazine			0.00599814					0		0.00200638					3.52918E-05
Phosphoric Acid			0					0		0					0
TEG			0.00649081					0		0.0185080					5.67971E-07
O2			0					0		0					0
Molar Flow			lbmol/h					lbmol/h		lbmol/h					lbmol/h
H2S			2.69315E-06					6.50902E-05		0.0158143					7.72391E-08
CO2			1.80460E-10					0.000189545		0.0260106					5.24916E-12
N2			2.47713E-08					0		2.87265E-06					7.31784E-10
Methane			4.69765E-05					0.000341918		0.000528071					1.37549E-06
Ethane			0.000101349					6.69646E-05		0.000337924					2.90811E-06
Propane			0.000106584					2.31619E-05		0.000329859					2.98173E-06
i-Butane			1.06910E-05					1.79442E-06		3.59948E-05					2.90118E-07
n-Butane			8.43217E-05					5.34428E-06		0.000248799					2.23697E-06
i-Pentane			1.39103E-05					8.08069E-07		4.28244E-05					3.36476E-07

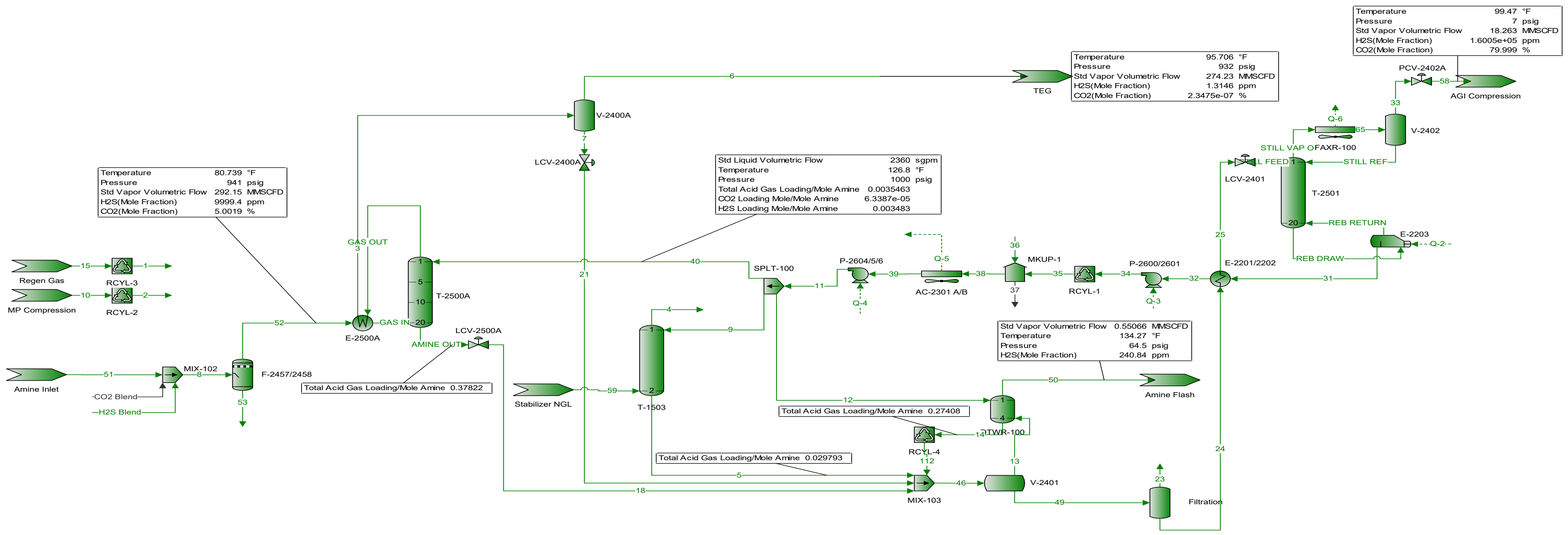
n-Pentane							2.33122E-07					3.12916E-07						1.00327E-05					3.12916E-07		2.68861E-05					2.33122E-07
n-Hexane							2.85083E-08					1.64296E-07						1.60612E-06					1.64296E-07		4.22013E-06					2.85083E-08
n-Heptane							1.09388E-08					1.97805E-08						1.04596E-06					1.97805E-08		2.77110E-06					1.09388E-08
n-Octane							2.75950E-10					6.87441E-10						5.62156E-08					6.87441E-10		1.32983E-07					2.75950E-10
n-Nonane							1.45106E-10					3.65152E-11						6.40994E-08					3.65152E-11		1.70987E-07					1.45106E-10
n-Decane							3.10749E-14					4.93009E-14						3.29607E-11					4.93009E-14		7.89603E-11					3.10749E-14
Undecane							2.06046E-14					0						5.59928E-11					0		1.47402E-10					2.06046E-14
Benzene							5.54758E-05					0						0.00365405					0		0.00840176					5.54758E-05
Toluene							1.01786E-05					0						0.00130565					0		0.00356835					1.01786E-05
Ethylbenzene							1.35050E-07					0						4.39498E-05					0		0.000132153					1.35050E-07
m-Xylene							2.15851E-07					0						6.69500E-05					0		0.000186074					2.15851E-07
Water							0.312709					0.798163						29.5759					0.798163		91.6763					0.312709
MDEA							2.95754E-08					0						2.27551E-05					0		3.72795E-05					2.95754E-08
Piperazine							1.10388E-07					0						0.00177455					0		0.00184087					1.10388E-07
Phosphoric Acid							0					0						0					0		0					0
TEG							1.77653E-09					0						0.00192031					0		0.0169812					1.77653E-09
O2							0					0						0					0		0					0
Mass Fraction							%					%						%					%		%					%
H2S							4.66791E-05					0.0154065						1.71980E-05					0.0154065		0.0325256					4.66791E-05
CO2							4.09648E-09					0.0579341						1.48811E-09					0.0579341		0.0690817					4.09648E-09
N2							3.63516E-07					0						1.30023E-07					0		4.85639E-06					3.63516E-07
Methane							0.000391294					0.0380951						0.000141207					0.0380951		0.000511245					0.000391294
Ethane							0.00155062					0.0139843						0.000571014					0.0139843		0.000613202					0.00155062
Propane							0.00233152					0.00709327						0.000880627					0.00709327		0.000877788					0.00233152
i-Butane							0.000299014					0.000724338						0.000116431					0.000724338		0.000126255					0.000299014
n-Butane							0.00230556					0.00215728						0.000918307					0.00215728		0.000872684					0.00230556
i-Pentane							0.000430485					0.000404906						0.000188049					0.000404906		0.000186460					0.000430485
n-Pentane							0.000298254					0.000156796						0.000135629					0.000156796		0.000117064					0.000298254
n-Hexane							4.35641E-05					9.83299E-05						2.59339E-05					9.83299E-05		2.19470E-05					4.35641E-05
n-Heptane							1.94367E-05					1.37654E-05						1.96380E-05					1.37654E-05		1.67569E-05					1.94367E-05
n-Octane							5.58959E-07					5.45364E-07						1.20320E-06					5.45364E-07		9.16720E-07					5.58959E-07
n-Nonane							3.30016E-07					3.25255E-08						1.54041E-06					3.25255E-08		1.32344E-06					3.30016E-07
n-Decane							7.84032E-11					4.87170E-11						8.78723E-10					4.87170E-11		6.77990E-10					7.84032E-11
Undecane							5.71110E-11					0						1.63991E-09					0		1.39043E-09					5.71110E-11
Benzene							0.0768413					0						0.0534807					0		0.0396052					0.0768413
Toluene							0.0166305					0						0.0225411					0		0.0198415					0.0166305
Ethylbenzene							0.000254244					0						0.000874268					0		0.000846686					0.000254244
m-Xylene							0.000406360					0						0.00133180					0		0.00119216					0.000406360
Water							99.8979					99.8639						99.8356					99.8639		99.6698					99.8979
MDEA							6.24947E-05					0						0.000508070					0		0.000268086					6.24947E-05
Piperazine							0.000168608					0						0.0286403					0		0.00956910					0.000168608
Phosphoric Acid							0					0						0					0		0					0
TEG							4.73086E-06					0						0.0540343					0		0.153896					4.73086E-06
O2							0					0						0					0		0					0
Mass Flow							lb/h					lb/h						lb/h					lb/h		lb/h					lb/h
H2S							2.63238E-06					0.00221833						9.17850E-05					0.00221833		0.538965					2.63238E-06
CO2							2.31013E-10					0.00834177						7.94195E-09					0.00834177		1.14471					2.31013E-10
N2							2.04998E-08					0						6.93928E-07					0		8.04726E-05					2.04998E-08
Methane							2.20662E-05					0.00548521						0.000753618					0.00548521		0.00847156					2.20662E-05
Ethane							8.74441E-05					0.00201356						0.00304748					0.00201356		0.0101610					8.74441E-05
Propane							0.000131481					0.00102134						0.00469987					0.00102134		0.0145454					0.000131481
i-Butane							1.68623E-05					0.000104295						0.000621387					0.000104295		0.00209210					1.68623E-05
n-Butane							0.000130018					0.000310621						0.00490096					0.000310621		0.0144608					0.000130018
i-Pentane							2.42763E-05					5.83012E-05						0.00100361					5.83012E-05		0.00308973					2.42763E-05
n-Pentane							1.68195E-05					2.25765E-05						0.000723845					2.25765E-05		0.00193980					1.68195E-05
n-Hexane							2.45671E-06					1.41582E-05						0.000138408					1.41582E-05		0.000363671					2.45671E-06
n-Heptane							1.09609E-06					1.98204E-06						0.000104807					1.98204E-06		0.000277669					1.09609E-06
n-Octane							3.15214E-08					7.85254E-08						6.42143E-06					7.85254E-08		1.51905E-05					3.15214E-08
n-Nonane							1.86106E-08					4.68326E-09						8.22108E-06					4.68326E-09		2.19300E-05					1.86106E-08
n-Decane							4.42139E-12					7.01462E-12						4.68971E-09					7.01462E-12		1.12346E-08					4.42139E-12
Undecane							3.22066E-12					0						8.75214E-09					0		2.30401E-08					3.22066E-12
Benzene							0.00433331					0						0.285424					0		0.656277					0.00433331
Toluene							0.000937843					0						0.120301					0		0.328783					0.000937843
Ethylbenzene							1.43376E-05					0						0.00466593					0		0.0140300					1.43376E-05
m-Xylene							2.29158E-05					0						0.00710774					0		0.0197546					2.29158E-05
Water							5.63354					14.3791						532.818					14.3791		1651.57					5.63354
MDEA							3.52427E-06					0						0.00271155					0		0.00444231					3.52427E-06
Piperazine							9.50832E-06					0						0.152852					0		0.158564					9.50832E-06
Phosphoric Acid							0					0						0					0		0					0
TEG							2.66787E-07					0						0.288379					0		2.55012					2.66787E-07
O2							0					0						0					0		0					0

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Heavy Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Property	Units																													
Temperature	°F						120					75						120.119					75		102.776					120
Pressure	psia						34.6959					1019.70						44.6959					1019.70		44.6959					34.6959
Mole Fraction Vapor	%						0					0						0					0		0					0
Mole Fraction Light Liquid	%						0					0						0					0		0					0
Mole Fraction Heavy Liquid	%						100					100						100					100		100					100
Molecular Weight	lb/lbmol						18.0293					18.0241						18.0394					18.0241		18.0603					18.0293
Mass Density	lb/ft^3						61.6764					62.2537						61.6822					62.2537		61.9400					61.6764
Molar Flow	lbmol/h						0.312786					0.798858						29.5851					0.798858		91.7509					0.312786
Mass Flow	lb/h						5.63930					14.3987						533.696					14.3987		1657.05					5.63930
Vapor Volumetric Flow	ft^3/h						0.0914338					0.231291						8.65235					0.231291		26.7525					0.0914338
Liquid Volumetric Flow	gpm						0.0113995					0.0288363						1.07873					0.0288363		3.33537					0.0113995
Std Vapor Volumetric Flow	MMSCFD						0.00284873					0.00727569						0.269450					0.00727569		0.835632					0.00284873
Std Liquid Volumetric Flow	sgpm						0.0112757					0.0288245						1.06710					0.0288245		3.31329					0.0112757
Compressibility							0.00163040					0.0514530						0.00210085					0.0514530		0.00215912					0.00163040
Specific Gravity							0.988899					0.998156						0.988992					0.998156		0.993125					0.988899
API Gravity							9.99109					9.95468						9.97340					9.95468		9.93607					9.99109
Enthalpy	Btu/h						-38189.7					-98121.9						-3.61262E+06					-98121.9		-1.12348E+07					-38189.7
Mass Enthalpy	Btu/lb						-6772.05					-6814.63						-6769.07					-6814.63		-6780.01					-6772.05
Mass Cp	Btu/(lb*°F)						0.977191					0.976849						0.977206					0.976849		0.976649					0.977191
Ideal Gas CpCv Ratio							1.32718					1.32900						1.32688					1.32900		1.32737					1.32718
Dynamic Viscosity	cP						0.570586					0.942004						0.571267					0.942004		0.681454					0.570586
Kinematic Viscosity	cSt						0.577540					0.944641						0.578174					0.944641		0.686823					0.577540
Thermal Conductivity	Btu/(h*ft*°F)						0.366985					0.348175						0.366821					0.348175		0.359628					0.366985
Surface Tension	lbf/ft						0.00466199					0.00498538?						0.00465989					0.00498538?		0.00478353					0.00466199
Net Ideal Gas Heating Value	Btu/ft^3						0.855877					0.672989						1.11783					0.672989		1.40965					0.855877
Net Liquid Heating Value	Btu/lb						-1040.85					-1044.26						-1034.86					-1044.26		-1027.30					-1040.85
Gross Ideal Gas Heating Value	Btu/ft^3						51.1936					51.0076						51.4813					51.0076		51.7832					51.1936
Gross Liquid Heating Value	Btu/lb						18.6701					15.4963						24.6053					15.4963		31.1527					18.6701

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Mixed Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Mole Fraction							%					%						%					%		%					%
H2S							0.000542989					0.206141						9.88718E-06					0.206141		0.0176745					0.000542989
CO2							3.47673E-08					0.677245						6.58066E-10					0.677245		0.0289857					3.47673E-08
N2							1.55777E-05					0						1.03746E-07					0		3.34222E-06					1.55777E-05
Methane							0.0507109					9.58961						0.000229298					9.58961		0.000650257					0.0507109
Ethane							0.468504					7.77154						0.00103166					7.77154		0.000587528					0.468504
Propane							2.07948					12.9488						0.00350396					12.9488		0.00133151					2.07948
i-Butane							0.762815					3.72595						0.00118685					3.72595		0.000410250					0.762815
n-Butane							5.33176					12.4929						0.00851569					12.4929		0.00285073					5.33176
i-Pentane							3.33465					6.42054						0.00586873					6.42054		0.00191600					3.33465
n-Pentane							5.23471					8.16210						0.00960229					8.16210		0.00312236					5.23471
n-Hexane							2.89891					22.8589						0.00686460					22.8589		0.00222161					2.89891
n-Heptane							5.18123					11.4295						0.0202031					11.4295		0.00652949					5.18123
n-Octane							0.743579					3.04786						0.00628420					3.04786		0.00203032					0.743579
n-Nonane							1.58459					0.550387						0.0297290					0.550387		0.00960406					1.58459
n-Decane							0.00252215					0.00745734						0.000117518					0.00745734		3.79632E-05					0.00252215
Undecane							0.00673989					0						0.000794123					0		0.000256533					0.00673989
Benzene							19.3045					0						0.0669618					0		0.0216460					19.3045
Toluene							14.0356					0						0.0820266					0		0.0265115					14.0356
Ethylbenzene							0.756484					0						0.0100357					0		0.00324242					0.756484
m-Xylene							1.48402					0						0.0199581					0		0.00644813					1.48402
Water							36.7358					0.111099						99.7145					0.111099		99.8434					36.7358
MDEA							0.00280111					0						0.000170614					0		5.98000E-05					0.00280111
Piperazine							1.29097E-05					0						0.00598282					0		0.00200486					1.29097E-05
Phosphoric Acid							0					0						0					0		0					0
TEG							2.11204E-07					0						0.00647439					0		0.0184940					2.11204E-07
O2							0					0						0					0		0					0
Molar Flow							lbmol/h					lbmol/h						lbmol/h					lbmol/h		lbmol/h					lbmol/h
H2S							4.64522E-06					2.21458						2.93262E-06					2.21458		0.0162287					4.64522E-06
CO2							2.97431E-10					7.27569						1.95188E-10					7.27569		0.0266147					2.97431E-10
N2							1.33266E-07					0						3.07719E-08					0		3.06883E-06					1.33266E-07
Methane							0.000433827					103.022						6.80118E-05					103.022		0.000597068					0.000433827
Ethane							0.00400801					83.4902						0.000305998					83.4902		0.000539470					0.00400801
Propane							0.0177898					139.110						0.00103930					139.110		0.00122260					0.0177898
i-Butane							0.00652581					40.0281						0.000352029					40.0281		0.000376693					0.00652581
n-Butane							0.0456127					134.212						0.00252582					134.212		0.00261755					0.0456127
i-Pentane							0.0285276					68.9763						0.00174071					68.9763		0.00175927					0.0285276
n-Pentane							0.0447825					87.6860						0.00284812					87.6860		0.00286696					0.0447825
n-Hexane							0.0247999					245.575						0.00203610					245.575		0.00203989					0.0247999
n-Heptane							0.0443250					122.788						0.00599241					122.788		0.00599540					0.0443250
n-Octane							0.00636125					32.7434						0.00186395					32.7434		0.00186425					0.00636125
n-Nonane							0.0135561					5.91284						0.00881785					5.91284		0.00881847					0.0135561
n-Decane							2.15768E-05					0.0801147						3.48567E-05					0.0801147		3.48580E-05					2.15768E-05
Undecane							5.76592E-05					0						0.000235543					0		0.000235549					5.76592E-05
Benzene							0.165148					0						0.0198618					0		0.0198754					0.165148
Toluene							0.120073					0						0.0243297					0		0.0243429					0.120073
Ethylbenzene							0.00647165					0						0.00297668					0		0.00297720					0.00647165
m-Xylene							0.0126957					0						0.00591973					0		0.00592069					0.0126957
Water							0.314272					1.19354						29.5761					1.19354		91.6765					0.314272
MDEA							2.39632E-05					0						5.06054E-05					0		5.49085E-05					2.39632E-05
Piperazine							1.10442E-07					0						0.00177455					0		0.00184087					1.10442E-07
Phosphoric Acid							0					0						0					0		0					0
TEG							1.80683E-09					0						0.00192036					0		0.0169813					1.80683E-09
O2							0					0						0					0		0					0
Mass Fraction							%					%						%					%		%					%
H2S							0.000316940					0.107636						1.84839E-05					0.107636		0.0332484					0.000316940
CO2							2.62055E-08					0.456640						1.58864E-09					0.456640		0.0704116					2.62055E-08
N2							7.47385E-06					0						1.59422E-07					0		5.16791E-06					7.47385E-06
Methane							0.0139331					2.35697						0.000201782					2.35697		0.000575798					0.0139331
Ethane							0.241273					3.58021						0.00170163					3.58021		0.000975130					0.241273
Propane							1.57046					8.74794						0.00847549					8.74794		0.00324081					1.57046
i-Butane							0.759340					3.31788						0.00378396					3.31788		0.00131615					0.759340
n-Butane							5.30747					11.1246						0.0271501					11.1246		0.00914560					5.30747
i-Pentane							4.12054					7.09713						0.0232264					7.09713		0.00763023					4.12054
n-Pentane							6.46841					9.02221						0.0380026					9.02221		0.0124344					6.46841
n-Hexane							4.27851					30.1801						0.0324495					30.1801		0.0105673					4.27851
n-Heptane							8.89169					17.5462						0.111046					17.5462		0.0361135					8.89169
n-Octane							1.45471					5.33398						0.0393763					5.33398		0.0128013					1.45471
n-Nonane							3.48071					1.08149						0.209153					1.08149		0.0679897					3.48071
n-Decane							0.00614604					0.0162560						0.000917197					0.0162560		0.000298144					0.00614604
Undecane							0.0180431					0						0.00686894					0		0.00221329					0.0180431
Benzene							25.8256					0						0.286487					0		0.0933273					25.8256
Toluene							22.1487					0						0.414577					0		0.134831					22.1487
Ethylbenzene							1.37549					0						0.0584440					0		0.0190005					1.37549
m-Xylene							2.69835					0						0.116228					0		0.0377859					2.69835
Water							11.3346					0.0306642						98.5392					0.0306642		99.2629					11.3346
MDEA							0.00571668					0						0.00111522					0		0.000393327					0.00571668
Piperazine							1.90447E-05					0						0.0282682					0		0.00953194					1.90447E-05
Phosphoric Acid							0					0						0					0		0					0
TEG							5.43212E-07					0						0.0533335					0		0.153298					5.43212E-07
O2							0					0						0					0		0					0
Mass Flow							lb/h					lb/h						lb/h					lb/h		lb/h					lb/h
H2S							0.000158313					75.4749						9.99462E-05					75.4749		0.553090					0.000158313
CO2							1.30898E-08					320.200						8.59012E-09					320.200		1.17130					1.30898E-08
N2							3.73323E-06					0						8.62027E-07					0		8.59685E-05					3.73323E-06
Methane							0.00695965					1652.72						0.00109108					1652.72		0.00957844					0.00695965
Ethane							0.120517					2510.47						0.00920107					2510.47		0.0162213					0.120517
Propane							0.784452					6134.12						0.0458288					6134.12		0.0539111					0.784452
i-Butane							0.379294					2326.52						0.0204607					2326.52		0.0218942					0.379294
n-Butane							2.65111					7800.69						0.146806					7800.69		0.152138					2.65111
i-Pentane							2.05823					4976.56						0.125590					4976.56		0.126929					2.05823
n-Pentane							3.23100					6326.44						0.205488					6326.44		0.206848					3.23100
n-Hexane							2.13714					21162.5						0.175461					21162.5		0.175788					2.13714
n-Heptane							4.44145					12303.6						0.600452					12303.6		0.600751					4.44145
n-Octane							0.726636					3740.23						0.212916					3740.23		0.212950					0.726636
n-Nonane							1.73863					758.352						1.13093					758.352		1.13101					1.73863
n-Decane							0.00306998					11.3989						0.00495948					11.3989		0.00495965					0.00306998
Undecane							0.00901260					0						0.0368174					0		0.0368183					0.00901260
Benzene							12.9000					0						1.54909					0		1.55251					12.9000
Toluene							11.0634					0						2.24170					0		2.24292					11.0634
Ethylbenzene							0.687063					0						0.316019					0		0.316074					0.687063
m-Xylene							1.34784					0						0.628468					0		0.628570					1.34784
Water							5.66169					21.5020						532.823					21.5020		1651.58					5.66169
MDEA							0.00285551					0						0.00603025					0		0.00654302					0.00285551
Piperazine							9.51295E-06					0						0.152852					0		0.158564					9.51295E-06
Phosphoric Acid							0					0						0					0		0					0
TEG							2.71337E-07					0						0.288386					0		2.55013					2.71337E-07
O2							0					0						0					0		0					0

Process Streams		HP Inlet	Inlet Liq	LP	SLOP Water	Water 1	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	32	33	34	35	138
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Mixed Liquid	From Block:	--	--	V-1402	V-1402	--	BTEX Vapor	MIX-102	V-1401	V-1402	PCV-1401E	SAT-2	SAT-1	V-1401	--	V-1415	V-1415	BTEX Water	Regen Water	TEG Flash	Amine Flash	AG Water	MIX-100	MP/LP Water	MIX-101	LP Flash	RCYL-3	RCYL-2	RCYL-1	RCYL-4
	To Block:	SAT-1	SAT-2	--	--	SAT-1	RCYL-4	V-1402	PCV-1401E	--	V-1415	MIX-100	V-1401	MIX-100	SAT-2	Amine Inlet	--	MIX-101	MIX-101	RCYL-1	RCYL-2	MIX-101	Slug Cathcer Liq	MIX-101	V-1402	RCYL-3	MIX-102	MIX-102	MIX-102	MIX-102
Property	Units																													
Temperature	°F						120					75						120.119					75		102.776					120
Pressure	psia						34.6959					1019.70						44.6959					1019.70		44.6959					34.6959
Mole Fraction Vapor	%						0					0						0					0		0					0
Mole Fraction Light Liquid	%						63.4379					99.9256						0.255350					99.9256		0.0756072					63.4379
Mole Fraction Heavy Liquid	%						36.5621					0.0743603						99.7447					0.0743603		99.9244					36.5621
Molecular Weight	lb/lbmol						58.3881					65.2707						18.2302					65.2707		18.1170					58.3881
Mass Density	lb/ft^3						47.2987					38.4030						61.4493					38.4030		61.8700					47.2987
Molar Flow	lbmol/h						0.855491					1074.31						29.6608					1074.31		91.8203					0.855491
Mass Flow	lb/h						49.9505					70120.8						540.721					70120.8		1663.51					49.9505
Vapor Volumetric Flow	ft^3/h						1.05607					1825.92						8.79947					1825.92		26.8871					1.05607
Liquid Volumetric Flow	gpm						0.131665					227.647						1.09708					227.647		3.35216					0.131665
Std Vapor Volumetric Flow	MMSCFD						0.00779148					9.78438						0.270139					9.78438		0.836264					0.00779148
Std Liquid Volumetric Flow	sgpm						0.127816					233.376						1.08489					233.376		3.32981					0.127816
Compressibility							0.00688510					0.302047						0.00213112					0.302047		0.00216835					0.00688510
Specific Gravity							0.758372					0.615742						0.985258					0.615742		0.992004					0.758372
API Gravity							47.6316					95.0785						10.4433					95.0785		10.0813					47.6316
Enthalpy	Btu/h						-52081.9					-7.56411E+07						-3.61473E+06					-7.56411E+07		-1.12372E+07					-52081.9
Mass Enthalpy	Btu/lb						-1042.67					-1078.73						-6685.02					-1078.73		-6755.10					-1042.67

Mass Cp	Btu/(lb*°F)	0.534759	0.559723	0.970569	0.559723	0.974645	0.534759
Ideal Gas CpCv Ratio		1.10648	1.08274	1.32368	1.08274	1.32643	1.10648
Dynamic Viscosity	cP	0.329376	0.213124	0.568104	0.213124	0.680099	0.329376
Kinematic Viscosity	cSt	0.434732	0.346455	0.577153	0.346455	0.686232	0.434732
Thermal Conductivity	Btu/(h*ft*°F)	0.0942132	0.0648140	0.361872	0.0648140	0.358187	0.0942132
Surface Tension	lbf/ft	0.00160552?	0.000497625?	0.00460597?	0.000497625?	0.00476709?	0.00160552?
Net Ideal Gas Heating Value	Btu/ft^3	2499.08	3344.54	12.4881	3344.54	4.78185	2499.08
Net Liquid Heating Value	Btu/lb	15968.2	19289.3	-786.919	19289.3	-953.317	15968.2
Gross Ideal Gas Heating Value	Btu/ft^3	2669.21	3619.96	63.4035	3619.96	55.3237	2669.21
Gross Liquid Heating Value	Btu/lb	17073.8	20891.0	272.947	20891.0	105.348	17073.8



Temperature 99.47 °F
Pressure 7 psig
Std Vapor Volumetric Flow 18.263 MMSCFD
H2S(Mole Fraction) 1.6005e+05 ppm
CO2(Mole Fraction) 79.999 %
PCV-2402A
AGI Compression
V-2402
FAXR-100
Q-6
STILL VAP O
STILL FEED
STILL REF
LCV-2401
T-2501
REB RETURN
REB DRAW
E-2203
Q-2
E-2201/2202
Temperature 95.706 °F
Pressure 932 psig
Std Vapor Volumetric Flow 274.23 MMSCFD
H2S(Mole Fraction) 1.3146 ppm
CO2(Mole Fraction) 2.3475e-07 %
TEG
V-2400A
LCV-2400A
Std Liquid Volumetric Flow 2360 sgpm
Temperature 126.8 °F
Pressure 1000 psig
Total Acid Gas Loading/Mole Amine 0.0035463
CO2 Loading Mole/Mole Amine 6.3387e-05
H2S Loading Mole/Mole Amine 0.003483
Temperature 80.739 °F
Pressure 941 psig
Std Vapor Volumetric Flow 292.15 MMSCFD
H2S(Mole Fraction) 9999.4 ppm
CO2(Mole Fraction) 5.0019 %
Regen Gas
RCYL-3
MP Compression
RCYL-2
GAS OUT
T-2500A
GAS IN
E-2500A
AMINE OUT
LCV-2500A
SPLT-100
P-2604/5/6
Q-4
Q-5
AC-2301 A/B
MKUP-1
RCYL-1
P-2600/2601
Q-3
Amine Inlet
MIX-102
F-2457/2458
CO2 Blend
H2S Blend
Total Acid Gas Loading/Mole Amine 0.37822
Stabilizer NGL
T-1503
Std Vapor Volumetric Flow 0.55066 MMSCFD
Temperature 134.27 °F
Pressure 64.5 psig
H2S(Mole Fraction) 240.84 ppm
Amine Flash
Total Acid Gas Loading/Mole Amine 0.27408
TWR-100
RCYL-4
Total Acid Gas Loading/Mole Amine 0.029793
MIX-103
V-2401
Filtration

Process Streams		AMINE OUT	CO2 Blend	GAS IN	GAS OUT	58	59	65	112
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	T-2500A	--	E-2500A	T-2500A	PCV-2402A	Stabilizer NGL	FAXR-100	RCYL-4
	To Block:	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
Mole Fraction		%	%	%	%	%	%	%	%
H2S		0.851023	0*	0.999942	0.000162824	16.0055	0.0728404	7.58051	0.448714
CO2		4.03338	100*	5.00186	5.10616E-07	79.9993	0.00246924	37.8139	3.11197
N2		0.000685498	0*	1.27463	1.35544	0.000166085	0	7.83923E-05	1.61364E-05
Methane		0.116877	0*	68.1501	72.3649	0.142326	0.000346632	0.0671793	0.0108425
Ethane		0.0269744	0*	12.7119	13.4912	0.0535924	1.89219	0.0252964	0.00419756
Propane		0.0108412	0*	7.37140	7.82966	0.0183942	23.9049	0.00868226	0.00151415
i-Butane		0.00100052	0*	0.977296	1.03863	0.00141250	8.60950	0.000666704	0.000122275
n-Butane		0.00336470	0*	2.47684	2.63118	0.00647112	27.7879	0.00305442	0.000540841
i-Pentane		0.000216804	0*	0.451695	0.480367	0.000169515	9.94983	8.00114E-05	1.68947E-05
n-Pentane		0.000278975	0*	0.426890	0.453889	0.000308419	10.8311	0.000145575	2.87966E-05
n-Hexane		2.87087E-05	0*	0.0629645	0.0669631	2.75811E-05	13.4735	1.30183E-05	2.94631E-06
n-Heptane		7.22157E-06	0*	0.0373174	0.0397003	3.00324E-06	3.06581	1.41752E-06	3.83940E-07
n-Octane		6.68134E-07	0*	0.00313223	0.00333215	4.04905E-07	0.376567	1.91113E-07	4.84792E-08
n-Nonane		3.70307E-07	0*	0.00520681	0.00554013	7.14663E-08	0.0324763	3.37316E-08	1.23781E-08
n-Decane		1.49420E-10	0*	8.91334E-06	9.48457E-06	0	0.000222565	0	0
Undecane		2.06503E-10	0*	3.04812E-05	3.24350E-05	0	0	0	0
Benzene		0.000830082	0*	0.0106321	0.0102181	0.0150189	0	0.00711624	0.00124205
Toluene		0.000239473	0*	0.00359120	0.00350535	0.00435629	0	0.00206260	0.000405146
Ethylbenzene		6.56919E-06	0*	0.000163957	0.000165798	0.000116002	0	5.48913E-05	1.15589E-05
m-Xylene		1.65997E-05	0*	0.000318690	0.000317212	0.000302910	0	0.000143550	3.13885E-05
Water		82.0399	0*	0.0340687	0.224400	3.75254	0.000385943	54.4635	83.4291
MDEA		11.1939	0*	1.36195E-07	0.000130721	4.42532E-09	0	0.0192130	11.2605
Piperazine		1.72047	0*	4.80515E-10	0.000266502	4.43171E-09	0	0.00834998	1.73078
Phosphoric Acid		0	0*	0	0	0	0	0	0
TEG		0	0*	6.18310E-12	0	0	0	0	0
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S		338.610	0	320.762	0.0490840	320.949	0.276392	322.056	2.63219
CO2		1604.83	0	1604.50	0.000153928	1604.18	0.00936948	1606.51	18.2551
N2		0.272750	0	408.878	408.605	0.00333041	0	0.00333047	9.46573E-05
Methane		46.5036	0	21861.2	21814.7	2.85398	0.00131529	2.85409	0.0636031
Ethane		10.7327	0	4077.73	4067.00	1.07466	7.17990	1.07471	0.0246232
Propane		4.31355	0	2364.60	2360.29	0.368850	90.7067	0.368864	0.00888211
i-Butane		0.398093	0	313.498	313.100	0.0283241	32.6686	0.0283247	0.000717274
n-Butane		1.33877	0	794.521	793.183	0.129762	105.441	0.129766	0.00317262
i-Pentane		0.0862634	0	144.895	144.809	0.00339920	37.7545	0.00339926	9.91060E-05
n-Pentane		0.111000	0	136.938	136.827	0.00618455	41.0984	0.00618469	0.000168923
n-Hexane		0.0114228	0	20.1978	20.1864	0.000553069	51.1250	0.000553077	1.72833E-05
n-Heptane		0.00287336	0	11.9707	11.9678	6.02223E-05	11.6332	6.02228E-05	2.25222E-06
n-Octane		0.000265841	0	1.00476	1.00449	8.11933E-06	1.42888	8.11938E-06	2.84383E-07
n-Nonane		0.000147340	0	1.67025	1.67010	1.43307E-06	0.123231	1.43308E-06	7.26107E-08
n-Decane		5.94520E-08	0	0.00285923	0.00285917	0	0.000844519	0	0
Undecane		8.21648E-08	0	0.00977778	0.00977770	0	0	0	0
Benzene		0.330278	0	3.41058	3.08030	0.301167	0	0.302331	0.00728598
Toluene		0.0952830	0	1.15199	1.05671	0.0873543	0	0.0876291	0.00237662
Ethylbenzene		0.00261379	0	0.0525944	0.0499806	0.00232613	0	0.00233204	6.78056E-05
m-Xylene		0.00660479	0	0.102230	0.0956250	0.00607409	0	0.00609869	0.000184127
Water		32642.5	0	10.9286	67.6465	75.2475	0.00146445	2313.87	489.402
MDEA		4453.88	0	4.36886E-05	0.0394066	8.87386E-08	0	0.816259	66.0548
Piperazine		684.550	0	1.54140E-07	0.0803384	8.88667E-08	0	0.354746	10.1529
Phosphoric Acid		0	0	0	0	0	0	0	0
TEG		0	0	1.98342E-09	0	0	0	0	0

Process Streams	AMINE OUT	CO2 Blend	GAS IN	GAS OUT	58	59	65	112
Properties Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	T-2500A	--	E-2500A	T-2500A	PCV-2402A	Stabilizer NGL	FAXR-100	RCYL-4
Mass Fraction	%	%	%	%	%	%	%	%
H2S	0.914904	0*	1.43995	0.000247002	13.1738	0.0397582	8.87825	0.485987
CO2	5.59937	100*	9.30125	1.00026E-06	85.0287	0.00174041	57.1894	4.35237
N2	0.000605752	0*	1.50874	1.69013	0.000112364	0	7.54670E-05	1.43654E-05
Methane	0.0591456	0*	46.1956	51.6738	0.0551426	8.90602E-05	0.0370360	0.00552772
Ethane	0.0255855	0*	16.1508	18.0569	0.0389184	0.911231	0.0261394	0.00401108
Propane	0.0150798	0*	13.7344	15.3678	0.0195889	16.8821	0.0131567	0.00212182
i-Butane	0.00183439	0*	2.40011	2.68704	0.00198273	8.01425	0.00133166	0.000225852
n-Butane	0.00616896	0*	6.08279	6.80715	0.00908352	25.8667	0.00610083	0.000998979
i-Pentane	0.000493424	0*	1.37701	1.54267	0.000295373	11.4971	0.000198380	3.87370E-05
n-Pentane	0.000634917	0*	1.30139	1.45764	0.000537406	12.5154	0.000360938	6.60259E-05
n-Hexane	7.80404E-05	0*	0.229267	0.256857	5.74021E-05	18.5955	3.85526E-05	8.06874E-06
n-Heptane	2.28261E-05	0*	0.157998	0.177069	7.26773E-06	4.91999	4.88115E-06	1.22260E-06
n-Octane	2.40747E-06	0*	0.0151179	0.0169423	1.11702E-06	0.688907	7.50209E-07	1.75985E-07
n-Nonane	1.49817E-06	0*	0.0282169	0.0316276	2.21365E-07	0.0667091	1.48672E-07	5.04512E-08
n-Decane	6.70625E-10	0*	5.35862E-05	6.00674E-05	0	0.000507164	0	0
Undecane	1.01820E-09	0*	0.000201315	0.000225667	0	0	0	0
Benzene	0.00204532	0*	0.0350913	0.0355271	0.0283328	0	0.0191023	0.00308320
Toluene	0.000696019	0*	0.0139812	0.0143762	0.00969372	0	0.00653092	0.00118631
Ethylbenzene	2.19997E-05	0*	0.000735488	0.000783488	0.000297428	0	0.000200264	3.89981E-05
m-Xylene	5.55910E-05	0*	0.00142960	0.00149900	0.000776654	0	0.000523725	0.000105900
Water	46.6218	0*	0.0259334	0.179943	1.63267	0.000111354	33.7182	47.7643
MDEA	42.0767	0*	6.85743E-07	0.000693358	1.27355E-08	0	0.0786777	42.6422
Piperazine	4.67469	0*	1.74885E-09	0.00102178	9.21906E-09	0	0.0247164	4.73772
Phosphoric Acid	0	0*	0	0	0	0	0	0
TEG	0	0*	3.92339E-11	0	0	0	0	0
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	11540.1	0	10931.8	1.67282	10938.2	9.41967	10976.0	89.7074
CO2	70627.7	0	70613.3	0.00677428	70599.3	0.412346	70701.7	803.396
N2	7.64065	0	11454.0	11446.4	0.0932960	0	0.0932979	0.00265167
Methane	746.032	0	350708	349962	45.7849	0.0211005	45.7867	1.02035
Ethane	322.723	0	122613	122291	32.3139	215.893	32.3155	0.740397
Propane	190.209	0	104269	104078	16.2647	3999.77	16.2653	0.391662
i-Butane	23.1380	0	18221.2	18198.0	1.64626	1898.77	1.64630	0.0416895
n-Butane	77.8121	0	46179.3	46101.5	7.54205	6128.44	7.54230	0.184399
i-Pentane	6.22380	0	10454.0	10447.8	0.245248	2723.94	0.245253	0.00715038
n-Pentane	8.00853	0	9879.91	9871.90	0.446208	2965.20	0.446218	0.0121876
n-Hexane	0.984362	0	1740.55	1739.57	0.0476610	4405.72	0.0476616	0.00148939
n-Heptane	0.287917	0	1199.49	1199.20	0.00603439	1165.67	0.00603444	0.000225677
n-Octane	0.0303667	0	114.772	114.742	0.000927459	163.219	0.000927465	3.24846E-05
n-Nonane	0.0188971	0	214.217	214.199	0.000183799	15.8050	0.000183800	9.31269E-06
n-Decane	8.45893E-06	0	0.406816	0.406807	0	0.120160	0	0
Undecane	1.28430E-05	0	1.52835	1.52833	0	0	0	0
Benzene	25.7986	0	266.406	240.608	23.5247	0	23.6157	0.569122
Toluene	8.77923	0	106.142	97.3632	8.04869	0	8.07401	0.218978
Ethylbenzene	0.277493	0	5.58368	5.30619	0.246954	0	0.247581	0.00719858
m-Xylene	0.701197	0	10.8532	10.1520	0.644855	0	0.647467	0.0195479
Water	588064	0	196.881	1218.67	1355.61	0.0263825	41684.9	8816.71
MDEA	530735	0	0.00520603	4.69578	1.05743E-05	0	97.2673	7871.24
Piperazine	58964.1	0	1.32769E-05	6.92000	7.65458E-06	0	30.5563	874.527
Phosphoric Acid	0	0	0	0	0	0	0	0
TEG	0	0	2.97856E-07	0	0	0	0	0

Property	Units	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
	To Block:	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
Temperature	°F	171.972	90*	110*	126.873	99.4699	120.971	100*	180.172
Pressure	psia	951.696	960.696*	951.696	949.696	21.6959*	209.696	25.6959	79.6959
Mole Fraction Vapor	%	0		100	100	100	0	47.1992	0
Mole Fraction Light Liquid	%	100		0	0	0	100	52.8008	100
Mole Fraction Heavy Liquid	%	0		0	0	0	0	0	0
Molecular Weight	lb/lbmol	31.7013	44.0095	23.6667	22.4661	41.4064	62.4391	29.0993	31.4670
Mass Density	lb/ft^3	68.1227		4.66135	4.14879	0.150875	35.0731	0.265810	66.9228
Molar Flow	lbmol/h	39788.6	0	32078.1	30145.5	2005.25	379.448	4248.47	586.608
Mass Flow	lb/h	1.26135E+06	0	759181	677252	83030.0	23692.4	123627	18458.8
Vapor Volumetric Flow	ft^3/h	18515.9	0	162867	163241	550324	675.516	465097	275.822
Liquid Volumetric Flow	gpm	2308.47	0	20305.5	20352.1	68611.9	84.2202	57986.1	34.3882
Std Vapor Volumetric Flow	MMSCFD	362.379	0*	292.155	274.554	18.2630	3.45587	38.6935	5.34260
Std Liquid Volumetric Flow	sgpm	2566.06	0	3963.89	3757.83	203.450	79.9795	284.688	37.3424
Compressibility		0.0653354		0.790382	0.817012	0.992307	0.0599103	0.468360	0.00545735
Specific Gravity		1.09226		0.817148	0.775697	1.42966	0.562350		1.07302
API Gravity		-4.43498					103.528		-2.82864
Enthalpy	Btu/h	-5.12624E+09	0	-1.33011E+09	-1.05071E+09	-2.81858E+08	-2.48990E+07	-5.56452E+08	-7.54097E+07
Mass Enthalpy	Btu/lb	-4064.09		-1752.03	-1551.44	-3394.66	-1050.93	-4501.04	-4085.30
Mass Cp	Btu/(lb*°F)	0.750016		0.613034	0.634065	0.215402	0.618781	0.471485	0.785237
Ideal Gas CpCv Ratio		1.14277	1.28531	1.22697	1.21977	1.28942	1.08094	1.30794	1.14064
Dynamic Viscosity	cP	2.14849		0.0137109	0.0134053	0.0153173	0.148565		1.81270
Kinematic Viscosity	cSt	1.96889		0.183626	0.201713	6.33790	0.264437		1.69095
Thermal Conductivity	Btu/(h*ft*°F)	0.183869		0.0218188	0.0227357	0.0100352	0.0561235		0.188153
Surface Tension	lbf/ft	0.00333769?					0.000570175?		0.00332825?
Net Ideal Gas Heating Value	Btu/ft^3	462.323	0	1144.27	1208.83	97.5087	3222.67	47.1309	461.019
Net Liquid Heating Value	Btu/lb	4878.45	-74.8536	18272.3	20343.8	785.938	19426.3	196.126	4891.58
Gross Ideal Gas Heating Value	Btu/ft^3	545.113	0	1259.10	1330.33	107.764	3489.50	78.5777	544.378
Gross Liquid Heating Value	Btu/lb	5869.49	-74.8536	20114.0	22396.6	879.953	21048.3	606.242	5896.88

Process Streams		AMINE OUT	CO2 Blend	GAS IN	GAS OUT	58	59	65	112
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	T-2500A	--	E-2500A	T-2500A	PCV-2402A	Stabilizer NGL	FAXR-100	RCYL-4
	To Block:	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
Mole Fraction				%	%	%		%	
H2S				0.999942	0.000162824	16.0055		16.0055	
CO2				5.00186	5.10616E-07	79.9993		79.9993	
N2				1.27463	1.35544	0.000166085		0.000166085	
Methane				68.1501	72.3649	0.142326		0.142326	
Ethane				12.7119	13.4912	0.0535924		0.0535924	
Propane				7.37140	7.82966	0.0183942		0.0183942	
i-Butane				0.977296	1.03863	0.00141250		0.00141250	
n-Butane				2.47684	2.63118	0.00647112		0.00647112	
i-Pentane				0.451695	0.480367	0.000169515		0.000169515	
n-Pentane				0.426890	0.453889	0.000308419		0.000308419	
n-Hexane				0.0629645	0.0669631	2.75811E-05		2.75811E-05	
n-Heptane				0.0373174	0.0397003	3.00324E-06		3.00324E-06	
n-Octane				0.00313223	0.00333215	4.04905E-07		4.04905E-07	
n-Nonane				0.00520681	0.00554013	7.14663E-08		7.14663E-08	
n-Decane				8.91334E-06	9.48457E-06	0		0	
Undecane				3.04812E-05	3.24350E-05	0		0	
Benzene				0.0106321	0.0102181	0.0150189		0.0150189	
Toluene				0.00359120	0.00350535	0.00435629		0.00435629	
Ethylbenzene				0.000163957	0.000165798	0.000116002		0.000116002	
m-Xylene				0.000318690	0.000317212	0.000302910		0.000302910	

Water	0.0340687	0.224400	3.75254	3.75254
MDEA	1.36195E-07	0.000130721	4.42532E-09	4.42532E-09
Piperazine	4.80515E-10	0.000266502	4.43171E-09	4.43171E-09
Phosphoric Acid	0	0	0	0
TEG	6.18310E-12	0	0	0
Molar Flow	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**
H2S	320.762	0.0490840	320.949	320.949
CO2	1604.50	0.000153928	1604.18	1604.18
N2	408.878	408.605	0.00333041	0.00333041
Methane	21861.2	21814.7	2.85398	2.85398
Ethane	4077.73	4067.00	1.07466	1.07466
Propane	2364.60	2360.29	0.368850	0.368850
i-Butane	313.498	313.100	0.0283241	0.0283241
n-Butane	794.521	793.183	0.129762	0.129762
i-Pentane	144.895	144.809	0.00339920	0.00339920
n-Pentane	136.938	136.827	0.00618455	0.00618455
n-Hexane	20.1978	20.1864	0.000553069	0.000553069
n-Heptane	11.9707	11.9678	6.02223E-05	6.02223E-05
n-Octane	1.00476	1.00449	8.11933E-06	8.11933E-06
n-Nonane	1.67025	1.67010	1.43307E-06	1.43307E-06
n-Decane	0.00285923	0.00285917	0	0
Undecane	0.00977778	0.00977770	0	0
Benzene	3.41058	3.08030	0.301167	0.301167
Toluene	1.15199	1.05671	0.0873543	0.0873543
Ethylbenzene	0.0525944	0.0499806	0.00232613	0.00232613
m-Xylene	0.102230	0.0956250	0.00607409	0.00607409
Water	10.9286	67.6465	75.2475	75.2475
MDEA	4.36886E-05	0.0394066	8.87386E-08	8.87386E-08
Piperazine	1.54140E-07	0.0803384	8.88667E-08	8.88667E-08
Phosphoric Acid	0	0	0	0
TEG	1.98342E-09	0	0	0
Mass Fraction	**%**	**%**	**%**	**%**
H2S	1.43995	0.000247002	13.1738	13.1738
CO2	9.30125	1.00026E-06	85.0287	85.0287
N2	1.50874	1.69013	0.000112364	0.000112364
Methane	46.1956	51.6738	0.0551426	0.0551426
Ethane	16.1508	18.0569	0.0389184	0.0389184
Propane	13.7344	15.3678	0.0195889	0.0195889
i-Butane	2.40011	2.68704	0.00198273	0.00198273
n-Butane	6.08279	6.80715	0.00908352	0.00908352
i-Pentane	1.37701	1.54267	0.000295373	0.000295373
n-Pentane	1.30139	1.45764	0.000537406	0.000537406
n-Hexane	0.229267	0.256857	5.74021E-05	5.74021E-05
n-Heptane	0.157998	0.177069	7.26773E-06	7.26773E-06
n-Octane	0.0151179	0.0169423	1.11702E-06	1.11702E-06
n-Nonane	0.0282169	0.0316276	2.21365E-07	2.21365E-07
n-Decane	5.35862E-05	6.00674E-05	0	0
Undecane	0.000201315	0.000225667	0	0
Benzene	0.0350913	0.0355271	0.0283328	0.0283328
Toluene	0.0139812	0.0143762	0.00969372	0.00969372
Ethylbenzene	0.000735488	0.000783488	0.000297428	0.000297428
m-Xylene	0.00142960	0.00149900	0.000776654	0.000776654
Water	0.0259334	0.179943	1.63267	1.63267
MDEA	6.85743E-07	0.000693358	1.27355E-08	1.27355E-08
Piperazine	1.74885E-09	0.00102178	9.21906E-09	9.21906E-09
Phosphoric Acid	0	0	0	0
TEG	3.92339E-11	0	0	0
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**

H2S				10931.8	1.67282	10938.2		10938.2	
CO2				70613.3	0.00677428	70599.3		70599.3	
N2				11454.0	11446.4	0.0932960		0.0932960	
Methane				350708	349962	45.7849		45.7849	
Ethane				122613	122291	32.3139		32.3139	
Propane				104269	104078	16.2647		16.2647	
i-Butane				18221.2	18198.0	1.64626		1.64626	
n-Butane				46179.3	46101.5	7.54205		7.54205	
i-Pentane				10454.0	10447.8	0.245248		0.245248	
n-Pentane				9879.91	9871.90	0.446208		0.446208	
n-Hexane				1740.55	1739.57	0.0476610		0.0476610	
n-Heptane				1199.49	1199.20	0.00603439		0.00603439	
n-Octane				114.772	114.742	0.000927459		0.000927459	
n-Nonane				214.217	214.199	0.000183799		0.000183799	
n-Decane				0.406816	0.406807	0		0	
Undecane				1.52835	1.52833	0		0	
Benzene				266.406	240.608	23.5247		23.5247	
Toluene				106.142	97.3632	8.04869		8.04869	
Ethylbenzene				5.58368	5.30619	0.246954		0.246954	
m-Xylene				10.8532	10.1520	0.644855		0.644855	
Water				196.881	1218.67	1355.61		1355.61	
MDEA				0.00520603	4.69578	1.05743E-05		1.05743E-05	
Piperazine				1.32769E-05	6.92000	7.65458E-06		7.65458E-06	
Phosphoric Acid				0	0	0		0	
TEG				2.97856E-07	0	0		0	

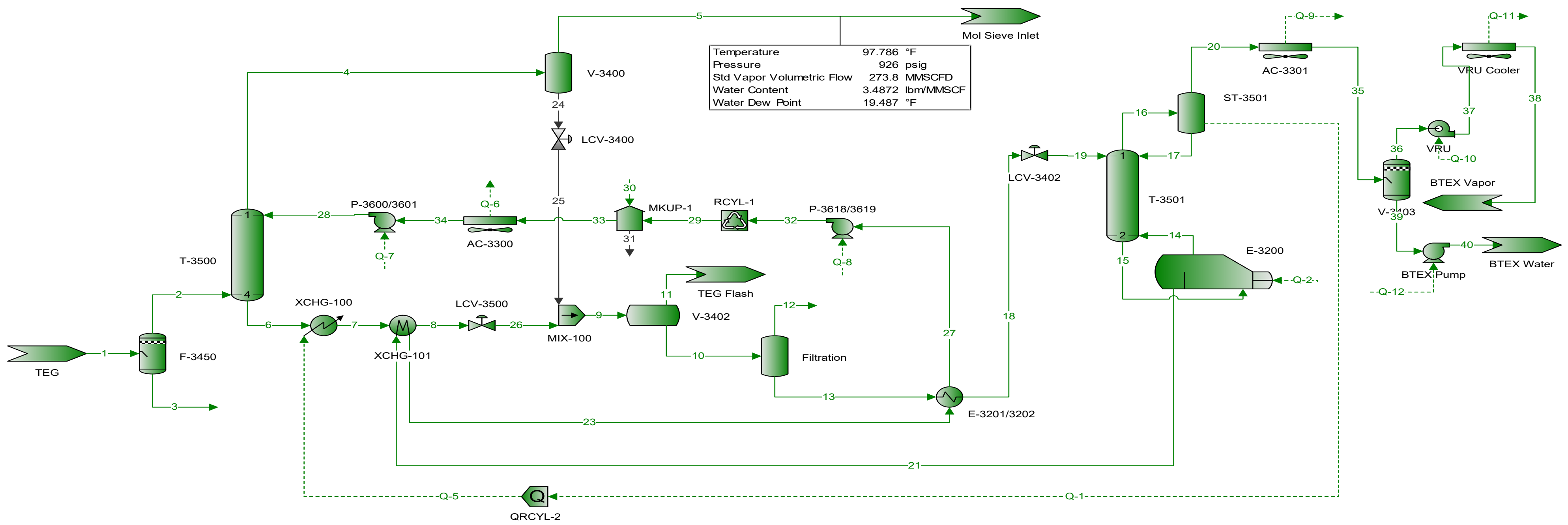
Process Streams		AMINE OUT	CO2 Blend	GAS IN	GAS OUT	58	59	65	112
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	T-2500A	--	E-2500A	T-2500A	PCV-2402A	Stabilizer NGL	FAXR-100	RCYL-4
	To Block:	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
Property	Units								
Temperature	°F			110	126.873	99.4699		100	
Pressure	psia			951.696	949.696	21.6959		25.6959	
Mole Fraction Vapor	%			100	100	100		100	
Mole Fraction Light Liquid	%			0	0	0		0	
Mole Fraction Heavy Liquid	%			0	0	0		0	
Molecular Weight	lb/lbmol			23.6667	22.4661	41.4064		41.4064	
Mass Density	lb/ft^3			4.66135	4.14879	0.150875		0.178773	
Molar Flow	lbmol/h			32078.1	30145.5	2005.25		2005.25	
Mass Flow	lb/h			759181	677252	83030.0		83030.0	
Vapor Volumetric Flow	ft^3/h			162867	163241	550324		464442	
Liquid Volumetric Flow	gpm			20305.5	20352.1	68611.9		57904.5	
Std Vapor Volumetric Flow	MMSCFD			292.155	274.554	18.2630		18.2630	
Std Liquid Volumetric Flow	sgpm			3963.89	3757.83	203.450		203.450	
Compressibility				0.790382	0.817012	0.992307		0.990908	
Specific Gravity				0.817148	0.775697	1.42966		1.42966	
API Gravity									
Enthalpy	Btu/h			-1.33011E+09	-1.05071E+09	-2.81858E+08		-2.81858E+08	
Mass Enthalpy	Btu/lb			-1752.03	-1551.44	-3394.66		-3394.66	
Mass Cp	Btu/(lb*°F)			0.613034	0.634065	0.215402		0.215787	
Ideal Gas CpCv Ratio				1.22697	1.21977	1.28942		1.28930	
Dynamic Viscosity	cP			0.0137109	0.0134053	0.0153173		0.0153380	
Kinematic Viscosity	cSt			0.183626	0.201713	6.33790		5.35606	
Thermal Conductivity	Btu/(h*ft*°F)			0.0218188	0.0227357	0.0100352		0.0100608	
Surface Tension	lbf/ft								
Net Ideal Gas Heating Value	Btu/ft^3			1144.27	1208.83	97.5087		97.5087	

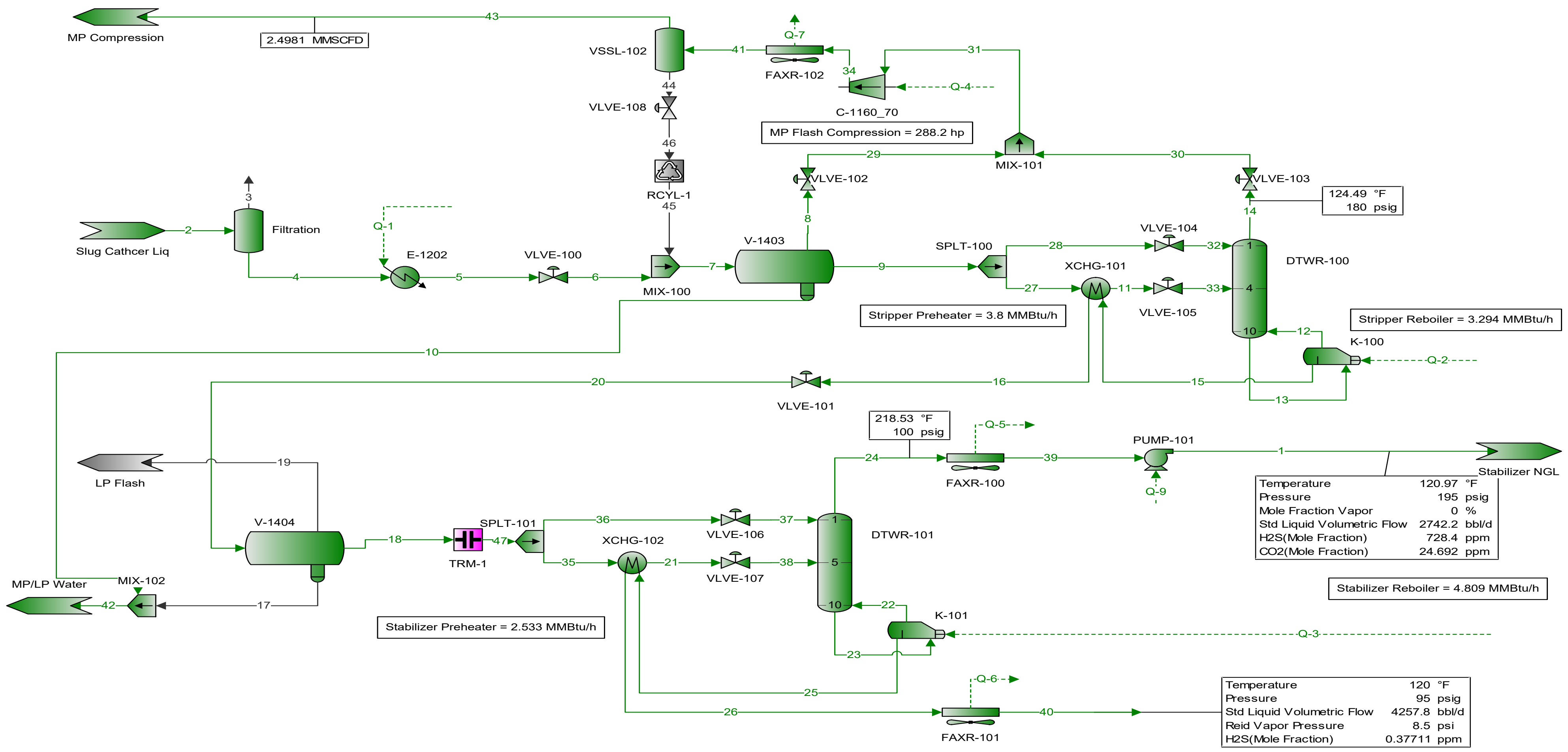
Net Liquid Heating Value	Btu/lb			18272.3	20343.8	785.938		785.938	
Gross Ideal Gas Heating Value	Btu/ft^3			1259.10	1330.33	107.764		107.764	
Gross Liquid Heating Value	Btu/lb			20114.0	22396.6	879.953		879.953	

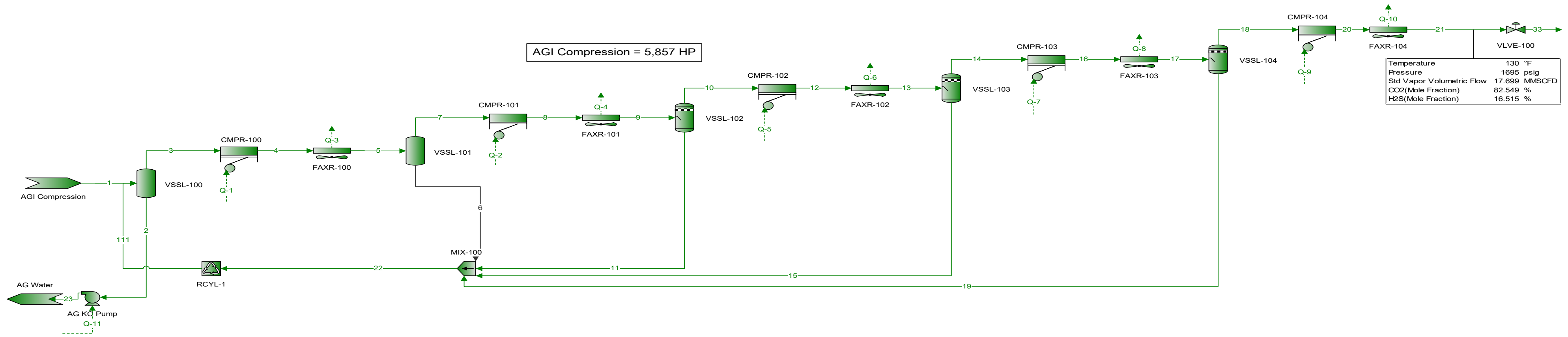
Process Streams		**AMINE OUT**	**CO2 Blend**	**GAS IN**	**GAS OUT**	**58**	**59**	**65**	**112**
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Light Liquid**	**From Block:**	**T-2500A**	**--**	**E-2500A**	**T-2500A**	**PCV-2402A**	**Stabilizer NGL**	**FAXR-100**	**RCYL-4**
	To Block:	**LCV-2500A**	**MIX-102**	**T-2500A**	**E-2500A**	**AGI Compression**	**T-1503**	**V-2402**	**MIX-103**
Mole Fraction		**%**					**%**	**%**	**%**
H2S		0.851023					0.0728404	0.0493533	0.448714
CO2		4.03338					0.00246924	0.103783	3.11197
N2		0.000685498					0	2.96422E-09	1.61364E-05
Methane		0.116877					0.000346632	5.09968E-06	0.0108425
Ethane		0.0269744					1.89219	2.29225E-06	0.00419756
Propane		0.0108412					23.9049	6.21751E-07	0.00151415
i-Butane		0.00100052					8.60950	2.89851E-08	0.000122275
n-Butane		0.00336470					27.7879	1.96279E-07	0.000540841
i-Pentane		0.000216804					9.94983	2.82818E-09	1.68947E-05
n-Pentane		0.000278975					10.8311	6.23158E-09	2.87966E-05
n-Hexane		2.87087E-05					13.4735	3.50390E-10	2.94631E-06
n-Heptane		7.22157E-06					3.06581	2.21330E-11	3.83940E-07
n-Octane		6.68134E-07					0.376567	2.29968E-12	4.84792E-08
n-Nonane		3.70307E-07					0.0324763	1.92273E-13	1.23781E-08
n-Decane		1.49420E-10					0.000222565	0	0
Undecane		2.06503E-10					0	0	0
Benzene		0.000830082					0	5.19245E-05	0.00124205
Toluene		0.000239473					0	1.22502E-05	0.000405146
Ethylbenzene		6.56919E-06					0	2.63274E-07	1.15589E-05
m-Xylene		1.65997E-05					0	1.09671E-06	3.13885E-05
Water		82.0399					0.000385943	99.7946	83.4291
MDEA		11.1939					0	0.0363877	11.2605
Piperazine		1.72047					0	0.0158141	1.73078
Phosphoric Acid		0					0	0	0
TEG		0					0	0	0
Molar Flow		**lbmol/h**					**lbmol/h**	**lbmol/h**	**lbmol/h**
H2S		338.610					0.276392	1.10711	2.63219
CO2		1604.83					0.00936948	2.32809	18.2551
N2		0.272750					0	6.64942E-08	9.46573E-05
Methane		46.5036					0.00131529	0.000114397	0.0636031
Ethane		10.7327					7.17990	5.14204E-05	0.0246232
Propane		4.31355					90.7067	1.39473E-05	0.00888211
i-Butane		0.398093					32.6686	6.50201E-07	0.000717274
n-Butane		1.33877					105.441	4.40298E-06	0.00317262
i-Pentane		0.0862634					37.7545	6.34425E-08	9.91060E-05
n-Pentane		0.111000					41.0984	1.39788E-07	0.000168923
n-Hexane		0.0114228					51.1250	7.86004E-09	1.72833E-05
n-Heptane		0.00287336					11.6332	4.96494E-10	2.25222E-06
n-Octane		0.000265841					1.42888	5.15871E-11	2.84383E-07
n-Nonane		0.000147340					0.123231	4.31311E-12	7.26107E-08
n-Decane		5.94520E-08					0.000844519	0	0
Undecane		8.21648E-08					0	0	0
Benzene		0.330278					0	0.00116478	0.00728598
Toluene		0.0952830					0	0.000274799	0.00237662
Ethylbenzene		0.00261379					0	5.90583E-06	6.78056E-05
m-Xylene		0.00660479					0	2.46016E-05	0.000184127
Water		32642.5					0.00146445	2238.62	489.402

MDEA	4453.88	0	0.816259	66.0548
Piperazine	684.550	0	0.354746	10.1529
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0
Mass Fraction	**%**	**%**	**%**	**%**
H2S	0.914904	0.0397582	0.0929397	0.485987
CO2	5.59937	0.00174041	0.252375	4.35237
N2	0.000605752	0	4.58828E-09	1.43654E-05
Methane	0.0591456	8.90602E-05	4.52052E-06	0.00552772
Ethane	0.0255855	0.911231	3.80852E-06	0.00401108
Propane	0.0150798	16.8821	1.51491E-06	0.00212182
i-Butane	0.00183439	8.01425	9.30874E-08	0.000225852
n-Butane	0.00616896	25.8667	6.30362E-07	0.000998979
i-Pentane	0.000493424	11.4971	1.12748E-08	3.87370E-05
n-Pentane	0.000634917	12.5154	2.48428E-08	6.60259E-05
n-Hexane	7.80404E-05	18.5955	1.66843E-09	8.06874E-06
n-Heptane	2.28261E-05	4.91999	1.22544E-10	1.22260E-06
n-Octane	2.40747E-06	0.688907	1.45150E-11	1.75985E-07
n-Nonane	1.49817E-06	0.0667091	1.36259E-12	5.04512E-08
n-Decane	6.70625E-10	0.000507164	0	0
Undecane	1.01820E-09	0	0	0
Benzene	0.00204532	0	0.000224111	0.00308320
Toluene	0.000696019	0	6.23673E-05	0.00118631
Ethylbenzene	2.19997E-05	0	1.54441E-06	3.89981E-05
m-Xylene	5.55910E-05	0	6.43348E-06	0.000105900
Water	46.6218	0.000111354	99.3395	47.7643
MDEA	42.0767	0	0.239589	42.6422
Piperazine	4.67469	0	0.0752665	4.73772
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**
H2S	11540.1	9.41967	37.7312	89.7074
CO2	70627.7	0.412346	102.458	803.396
N2	7.64065	0	1.86273E-06	0.00265167
Methane	746.032	0.0211005	0.00183521	1.02035
Ethane	322.723	215.893	0.00154616	0.740397
Propane	190.209	3999.77	0.000615014	0.391662
i-Butane	23.1380	1898.77	3.77911E-05	0.0416895
n-Butane	77.8121	6128.44	0.000255911	0.184399
i-Pentane	6.22380	2723.94	4.57730E-06	0.00715038
n-Pentane	8.00853	2965.20	1.00856E-05	0.0121876
n-Hexane	0.984362	4405.72	6.77342E-07	0.00148939
n-Heptane	0.287917	1165.67	4.97497E-08	0.000225677
n-Octane	0.0303667	163.219	5.89272E-09	3.24846E-05
n-Nonane	0.0188971	15.8050	5.53179E-10	9.31269E-06
n-Decane	8.45893E-06	0.120160	0	0
Undecane	1.28430E-05	0	0	0
Benzene	25.7986	0	0.0909834	0.569122
Toluene	8.77923	0	0.0253195	0.218978
Ethylbenzene	0.277493	0	0.000626993	0.00719858
m-Xylene	0.701197	0	0.00261183	0.0195479
Water	588064	0.0263825	40329.3	8816.71
MDEA	530735	0	97.2673	7871.24
Piperazine	58964.1	0	30.5563	874.527
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0

Process Streams		AMINE OUT	CO2 Blend	GAS IN	GAS OUT	58	59	65	112
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Light Liquid	From Block:	T-2500A	--	E-2500A	T-2500A	PCV-2402A	Stabilizer NGL	FAXR-100	RCYL-4
	To Block:	LCV-2500A	MIX-102	T-2500A	E-2500A	AGI Compression	T-1503	V-2402	MIX-103
Property	Units								
Temperature	°F	171.972					120.971	100	180.172
Pressure	psia	951.696					209.696	25.6959	79.6959
Mole Fraction Vapor	%	0					0	0	0
Mole Fraction Light Liquid	%	100					100	100	100
Mole Fraction Heavy Liquid	%	0					0	0	0
Molecular Weight	lb/lbmol	31.7013					62.4391	18.0978	31.4670
Mass Density	lb/ft^3	68.1227					35.0731	61.9990	66.9228
Molar Flow	lbmol/h	39788.6					379.448	2243.23	586.608
Mass Flow	lb/h	1.26135E+06					23692.4	40597.5	18458.8
Vapor Volumetric Flow	ft^3/h	18515.9					675.516	654.809	275.822
Liquid Volumetric Flow	gpm	2308.47					84.2202	81.6385	34.3882
Std Vapor Volumetric Flow	MMSCFD	362.379					3.45587	20.4304	5.34260
Std Liquid Volumetric Flow	sgpm	2566.06					79.9795	81.2378	37.3424
Compressibility		0.0653354					0.0599103	0.00124885	0.00545735
Specific Gravity		1.09226					0.562350	0.994072	1.07302
API Gravity		-4.43498					103.528	9.87721	-2.82864
Enthalpy	Btu/h	-5.12624E+09					-2.48990E+07	-2.74594E+08	-7.54097E+07
Mass Enthalpy	Btu/lb	-4064.09					-1050.93	-6763.81	-4085.30
Mass Cp	Btu/(lb*°F)	0.750016					0.618781	0.994438	0.785237
Ideal Gas CpCv Ratio		1.14277					1.08094	1.32676	1.14064
Dynamic Viscosity	cP	2.14849					0.148565	0.702761	1.81270
Kinematic Viscosity	cSt	1.96889					0.264437	0.707624	1.69095
Thermal Conductivity	Btu/(h*ft*°F)	0.183869					0.0561235	0.356782	0.188153
Surface Tension	lbf/ft	0.00333769?					0.000570175?	0.00479325	0.00332825?
Net Ideal Gas Heating Value	Btu/ft^3	462.323					3222.67	2.09769	461.019
Net Liquid Heating Value	Btu/lb	4878.45					19426.3	-1010.16	4891.58
Gross Ideal Gas Heating Value	Btu/ft^3	545.113					3489.50	52.4879	544.378
Gross Liquid Heating Value	Btu/lb	5869.49					21048.3	46.4497	5896.88


Mol Sieve Inlet
Temperature 97.786 °F
Pressure 926 psig
Std Vapor Volumetric Flow 273.8 MMSCFD
Water Content 3.4872 lbm/MMSCF
Water Dew Point 19.487 °F
V-3400
LCV-3400
T-3500
P-3600/3601
AC-3300
MKUP-1
RCYL-1
P-3618/3619
TEG
F-3450
XCHG-100
XCHG-101
LCV-3500
MIX-100
V-3402
TEG Flash
Filtration
E-3201/3202
QRCYL-2
LCV-3402
T-3501
ST-3501
AC-3301
E-3200
VRU
VRU Cooler
V-3403
BTEX Vapor
BTEX Pump
BTEX Water


MP Compression
2.4981 MMSCFD
VSSL-102
FAXR-102
Q-7
C-1160_70
Q-4
MP Flash Compression = 288.2 hp
VLVE-108
RCYL-1
MIX-101
VLVE-102
VLVE-103
124.49 °F
180 psig
Slug Catcher Liq
Filtration
E-1202
Q-1
VLVE-100
MIX-100
V-1403
SPLT-100
VLVE-104
XCHG-101
VLVE-105
DTWR-100
Stripper Preheater = 3.8 MMBtu/h
Stripper Reboiler = 3.294 MMBtu/h
K-100
Q-2
VLVE-101
218.53 °F
100 psig
Q-5
FAXR-100
PUMP-101
Q-9
Stabilizer NGL
Temperature 120.97 °F
Pressure 195 psig
Mole Fraction Vapor 0 %
Std Liquid Volumetric Flow 2742.2 bbl/d
H2S(Mole Fraction) 728.4 ppm
CO2(Mole Fraction) 24.692 ppm
Stabilizer Reboiler = 4.809 MMBtu/h
LP Flash
V-1404
TRM-1
SPLT-101
XCHG-102
VLVE-106
VLVE-107
DTWR-101
K-101
Q-3
MP/LP Water
MIX-102
Stabilizer Preheater = 2.533 MMBtu/h
Q-6
FAXR-101
Temperature 120 °F
Pressure 95 psig
Std Liquid Volumetric Flow 4257.8 bbl/d
Reid Vapor Pressure 8.5 psi
H2S(Mole Fraction) 0.37711 ppm



AGI Compression = 5,857 HP
AGI Compression
VSSL-100
CMPR-100
FAXR-100
VSSL-101
CMPR-101
FAXR-101
VSSL-102
CMPR-102
FAXR-102
VSSL-103
CMPR-103
FAXR-103
VSSL-104
CMPR-104
FAXR-104
VLVE-100
MIX-100
RCYL-1
AG Water
AG Kg Pump
Temperature 130 °F
Pressure 1695 psig
Std Vapor Volumetric Flow 17.699 MMSCFD
CO2(Mole Fraction) 82.549 %
H2S(Mole Fraction) 16.515 %

Process Streams	1
Composition	Status: Solved
Phase: Total	From Block: AGI Compression
	To Block: VSSL-100
Mole Fraction	**%**
H2S	16.0055
CO2	79.9993
N2	0.000166085
Methane	0.142326
Ethane	0.0535924
Propane	0.0183942
i-Butane	0.00141250
n-Butane	0.00647112
i-Pentane	0.000169515
n-Pentane	0.000308419
n-Hexane	2.75811E-05
n-Heptane	3.00324E-06
n-Octane	4.04905E-07
n-Nonane	7.14663E-08
n-Decane	0
Undecane	0
Benzene	0.0150189
Toluene	0.00435629
Ethylbenzene	0.000116002
m-Xylene	0.000302910
Water	3.75254
MDEA	4.42532E-09
Piperazine	4.43171E-09
Phosphoric Acid	0
TEG	0
O2	0
Molar Flow	**lbmol/h**
H2S	320.949
CO2	1604.18
N2	0.00333041
Methane	2.85398
Ethane	1.07466
Propane	0.368850
i-Butane	0.0283241
n-Butane	0.129762
i-Pentane	0.00339920
n-Pentane	0.00618455
n-Hexane	0.000553069
n-Heptane	6.02223E-05
n-Octane	8.11933E-06
n-Nonane	1.43307E-06
n-Decane	0
Undecane	0
Benzene	0.301167
Toluene	0.0873543
Ethylbenzene	0.00232613
m-Xylene	0.00607409
Water	75.2475
MDEA	8.87386E-08
Piperazine	8.88667E-08
Phosphoric Acid	0
TEG	0
O2	0
Mass Fraction	**%**
H2S	13.1738
CO2	85.0287

N2	0.000112364
Methane	0.0551426
Ethane	0.0389184
Propane	0.0195889
i-Butane	0.00198273
n-Butane	0.00908352
i-Pentane	0.000295373
n-Pentane	0.000537406
n-Hexane	5.74021E-05
n-Heptane	7.26773E-06
n-Octane	1.11702E-06
n-Nonane	2.21365E-07
n-Decane	0
Undecane	0
Benzene	0.0283328
Toluene	0.00969372
Ethylbenzene	0.000297428
m-Xylene	0.000776654
Water	1.63267
MDEA	1.27355E-08
Piperazine	9.21906E-09
Phosphoric Acid	0
TEG	0
O2	0
Mass Flow	**lb/h**
H2S	10938.2
CO2	70599.3
N2	0.0932960
Methane	45.7849
Ethane	32.3139
Propane	16.2647
i-Butane	1.64626
n-Butane	7.54205
i-Pentane	0.245248
n-Pentane	0.446208
n-Hexane	0.0476610
n-Heptane	0.00603439
n-Octane	0.000927459
n-Nonane	0.000183799
n-Decane	0
Undecane	0
Benzene	23.5247
Toluene	8.04869
Ethylbenzene	0.246954
m-Xylene	0.644855
Water	1355.61
MDEA	1.05743E-05
Piperazine	7.65458E-06
Phosphoric Acid	0
TEG	0
O2	0

Process Streams		**1**
Properties	**Status:**	Solved
Phase: **Total**	**From Block:**	**AGI Compression**
	To Block:	**VSSL-100**
Property	**Units**	
Temperature	°F	99.4699
Pressure	psia	21.6959
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0

Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	41.4064
Mass Density	lb/ft^3	0.150875
Molar Flow	lbmol/h	2005.25
Mass Flow	lb/h	83030.0
Vapor Volumetric Flow	ft^3/h	550324
Liquid Volumetric Flow	gpm	68611.9
Std Vapor Volumetric Flow	MMSCFD	18.2630
Std Liquid Volumetric Flow	sgpm	203.450
Compressibility		0.992307
Specific Gravity		1.42966
API Gravity		
Enthalpy	Btu/h	-2.81858E+08
Mass Enthalpy	Btu/lb	-3394.66
Mass Cp	Btu/(lb*°F)	0.215402
Ideal Gas CpCv Ratio		1.28942
Dynamic Viscosity	cP	0.0153173
Kinematic Viscosity	cSt	6.33790
Thermal Conductivity	Btu/(h*ft*°F)	0.0100352
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	97.5087
Net Liquid Heating Value	Btu/lb	785.938
Gross Ideal Gas Heating Value	Btu/ft^3	107.764
Gross Liquid Heating Value	Btu/lb	879.953

Process Streams		**1**
Composition	**Status:**	Solved
Phase: **Vapor**	**From Block:**	**AGI Compression**
	To Block:	**VSSL-100**
Mole Fraction		**%**
H2S		16.0055
CO2		79.9993
N2		0.000166085
Methane		0.142326
Ethane		0.0535924
Propane		0.0183942
i-Butane		0.00141250
n-Butane		0.00647112
i-Pentane		0.000169515
n-Pentane		0.000308419
n-Hexane		2.75811E-05
n-Heptane		3.00324E-06
n-Octane		4.04905E-07
n-Nonane		7.14663E-08
n-Decane		0
Undecane		0
Benzene		0.0150189
Toluene		0.00435629
Ethylbenzene		0.000116002
m-Xylene		0.000302910
Water		3.75254
MDEA		4.42532E-09
Piperazine		4.43171E-09
Phosphoric Acid		0
TEG		0
O2		0
Molar Flow		**lbmol/h**
H2S		320.949
CO2		1604.18
N2		0.00333041
Methane		2.85398

Ethane	1.07466
Propane	0.368850
i-Butane	0.0283241
n-Butane	0.129762
i-Pentane	0.00339920
n-Pentane	0.00618455
n-Hexane	0.000553069
n-Heptane	6.02223E-05
n-Octane	8.11933E-06
n-Nonane	1.43307E-06
n-Decane	0
Undecane	0
Benzene	0.301167
Toluene	0.0873543
Ethylbenzene	0.00232613
m-Xylene	0.00607409
Water	75.2475
MDEA	8.87386E-08
Piperazine	8.88667E-08
Phosphoric Acid	0
TEG	0
O2	0
Mass Fraction	**%**
H2S	13.1738
CO2	85.0287
N2	0.000112364
Methane	0.0551426
Ethane	0.0389184
Propane	0.0195889
i-Butane	0.00198273
n-Butane	0.00908352
i-Pentane	0.000295373
n-Pentane	0.000537406
n-Hexane	5.74021E-05
n-Heptane	7.26773E-06
n-Octane	1.11702E-06
n-Nonane	2.21365E-07
n-Decane	0
Undecane	0
Benzene	0.0283328
Toluene	0.00969372
Ethylbenzene	0.000297428
m-Xylene	0.000776654
Water	1.63267
MDEA	1.27355E-08
Piperazine	9.21906E-09
Phosphoric Acid	0
TEG	0
O2	0
Mass Flow	**lb/h**
H2S	10938.2
CO2	70599.3
N2	0.0932960
Methane	45.7849
Ethane	32.3139
Propane	16.2647
i-Butane	1.64626
n-Butane	7.54205
i-Pentane	0.245248
n-Pentane	0.446208
n-Hexane	0.0476610
n-Heptane	0.00603439

n-Octane	0.000927459
n-Nonane	0.000183799
n-Decane	0
Undecane	0
Benzene	23.5247
Toluene	8.04869
Ethylbenzene	0.246954
m-Xylene	0.644855
Water	1355.61
MDEA	1.05743E-05
Piperazine	7.65458E-06
Phosphoric Acid	0
TEG	0
O2	0

Process Streams		**1**
Properties	**Status:**	Solved
Phase: **Vapor**	**From Block:**	**AGI Compression**
	To Block:	**VSSL-100**
Property	**Units**	
Temperature	°F	99.4699
Pressure	psia	21.6959
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	41.4064
Mass Density	lb/ft^3	0.150875
Molar Flow	lbmol/h	2005.25
Mass Flow	lb/h	83030.0
Vapor Volumetric Flow	ft^3/h	550324
Liquid Volumetric Flow	gpm	68611.9
Std Vapor Volumetric Flow	MMSCFD	18.2630
Std Liquid Volumetric Flow	sgpm	203.450
Compressibility		0.992307
Specific Gravity		1.42966
API Gravity		
Enthalpy	Btu/h	-2.81858E+08
Mass Enthalpy	Btu/lb	-3394.66
Mass Cp	Btu/(lb*°F)	0.215402
Ideal Gas CpCv Ratio		1.28942
Dynamic Viscosity	cP	0.0153173
Kinematic Viscosity	cSt	6.33790
Thermal Conductivity	Btu/(h*ft*°F)	0.0100352
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	97.5087
Net Liquid Heating Value	Btu/lb	785.938
Gross Ideal Gas Heating Value	Btu/ft^3	107.764
Gross Liquid Heating Value	Btu/lb	879.953

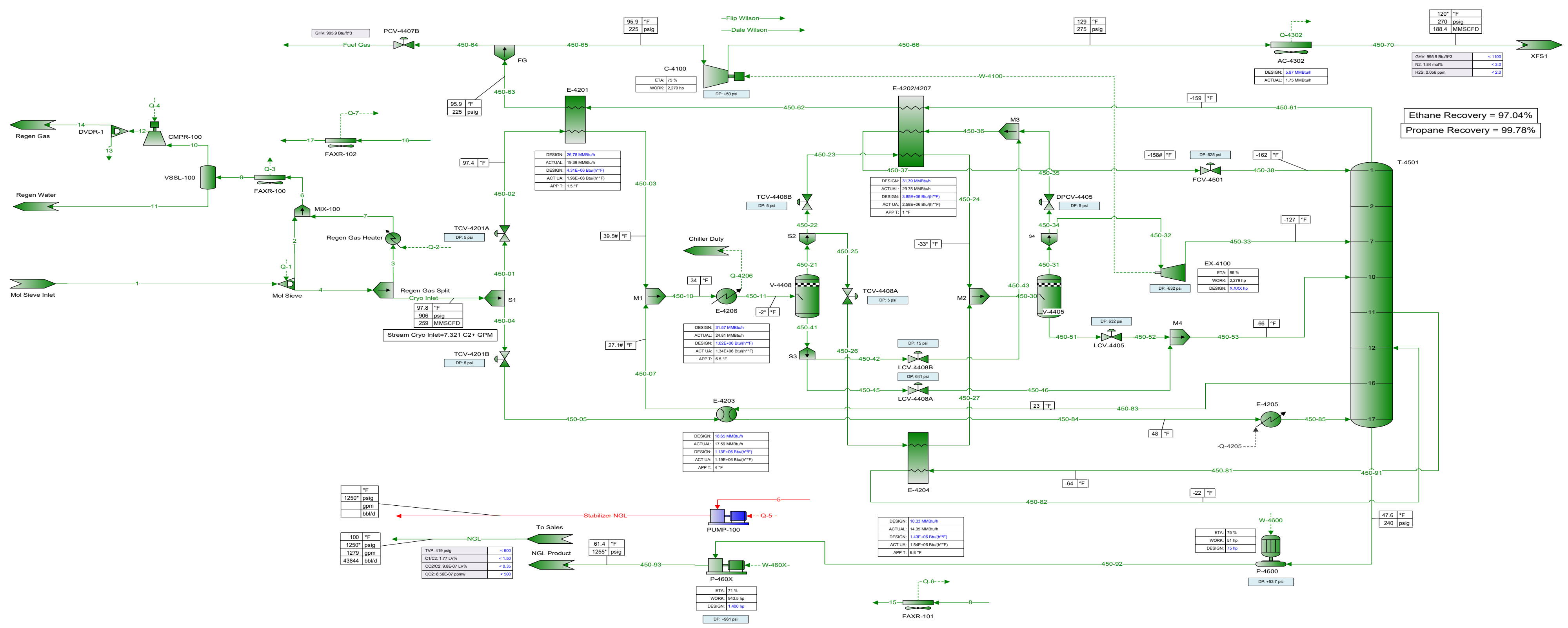
Process Streams		**1**
Composition	**Status:**	Solved
Phase: **Light Liquid**	**From Block:**	**AGI Compression**
	To Block:	**VSSL-100**
Mole Fraction		
H2S		
CO2		
N2		
Methane		
Ethane		

Propane	
i-Butane	
n-Butane	
i-Pentane	
n-Pentane	
n-Hexane	
n-Heptane	
n-Octane	
n-Nonane	
n-Decane	
Undecane	
Benzene	
Toluene	
Ethylbenzene	
m-Xylene	
Water	
MDEA	
Piperazine	
Phosphoric Acid	
TEG	
O2	
Molar Flow	
H2S	
CO2	
N2	
Methane	
Ethane	
Propane	
i-Butane	
n-Butane	
i-Pentane	
n-Pentane	
n-Hexane	
n-Heptane	
n-Octane	
n-Nonane	
n-Decane	
Undecane	
Benzene	
Toluene	
Ethylbenzene	
m-Xylene	
Water	
MDEA	
Piperazine	
Phosphoric Acid	
TEG	
O2	
Mass Fraction	
H2S	
CO2	
N2	
Methane	
Ethane	
Propane	
i-Butane	
n-Butane	
i-Pentane	
n-Pentane	
n-Hexane	
n-Heptane	
n-Octane	

n-Nonane	
n-Decane	
Undecane	
Benzene	
Toluene	
Ethylbenzene	
m-Xylene	
Water	
MDEA	
Piperazine	
Phosphoric Acid	
TEG	
O2	
Mass Flow	
H2S	
CO2	
N2	
Methane	
Ethane	
Propane	
i-Butane	
n-Butane	
i-Pentane	
n-Pentane	
n-Hexane	
n-Heptane	
n-Octane	
n-Nonane	
n-Decane	
Undecane	
Benzene	
Toluene	
Ethylbenzene	
m-Xylene	
Water	
MDEA	
Piperazine	
Phosphoric Acid	
TEG	
O2	

Process Streams		**1**
Properties	**Status:**	Solved
Phase: **Light Liquid**	**From Block:**	**AGI Compression**
	To Block:	**VSSL-100**
Property	**Units**	
Temperature	°F	
Pressure	psia	
Mole Fraction Vapor	%	
Mole Fraction Light Liquid	%	
Mole Fraction Heavy Liquid	%	
Molecular Weight	lb/lbmol	
Mass Density	lb/ft^3	
Molar Flow	lbmol/h	
Mass Flow	lb/h	
Vapor Volumetric Flow	ft^3/h	
Liquid Volumetric Flow	gpm	
Std Vapor Volumetric Flow	MMSCFD	
Std Liquid Volumetric Flow	sgpm	
Compressibility		
Specific Gravity		

API Gravity	
Enthalpy	Btu/h
Mass Enthalpy	Btu/lb
Mass Cp	Btu/(lb*°F)
Ideal Gas CpCv Ratio	
Dynamic Viscosity	cP
Kinematic Viscosity	cSt
Thermal Conductivity	Btu/(h*ft*°F)
Surface Tension	lbf/ft
Net Ideal Gas Heating Value	Btu/ft^3
Net Liquid Heating Value	Btu/lb
Gross Ideal Gas Heating Value	Btu/ft^3
Gross Liquid Heating Value	Btu/lb


Ethane Recovery = 97.04%
Propane Recovery = 99.78%
T-4501
Regen Gas
Regen Water
Mol Sieve Inlet
Mol Sieve
Regen Gas Heater
Regen Gas Split
Chiller Duty
Stabilizer NGL
To Sales
NGL Product
PUMP-100
P-4600
P-460X
E-4201
E-4203
E-4204
E-4205
E-4206
E-4202/4207
C-4100
AC-4302
XFS1
Fuel Gas
PCV-4407B
FCV-4501
EX-4100
V-4408
V-4405
LCV-4405
TCV-4201A
TCV-4201B
TCV-4408A
TCV-4408B
DPCV-4405
VSSL-100
CMPR-100
FAXR-100
FAXR-101
FAXR-102
MIX-100
DVDR-1

Process Streams		Fuel Gas	NGL	Stabilizer NGL	1
Composition	Status:	Solved	Solved	Unsolved	Solved
Phase: **Total**	From Block:	PCV-4407B	To Sales	PUMP-100	Mol Sieve Inlet
	To Block:	--	--	--	Mol Sieve
Mole Fraction		%	%		%
H2S		5.59469E-06	0.000482782		0.000129851
CO2		4.40069E-08	7.75079E-07		2.34370E-07
N2		1.83772	4.67837E-07		1.35905
Methane		97.5963	1.40666		72.5419
Ethane		0.541556	50.3711		13.5168
Propane		0.0233118	30.0447		7.84069
i-Butane		0.000396265	3.99262		1.03994
n-Butane		0.000718919	10.1083		2.63266
i-Pentane		8.06476E-06	1.84494		0.480416
n-Pentane		1.27122E-05	1.74208		0.453637
n-Hexane		1.49124E-07	0.256652		0.0668307
n-Heptane		1.78569E-08	0.151699		0.0395015
n-Octane		1.55957E-10	0.0126949		0.00330567
n-Nonane		5.01525E-11	0.0210135		0.00547178
n-Decane		0	3.57664E-05		9.31333E-06
Undecane		0	0.000121070		3.15258E-05
Benzene		9.37316E-08	0.0343437		0.00894294
Toluene		4.22149E-09	0.0110147		0.00286815
Ethylbenzene		5.27222E-12	0.000506096		0.000131784
m-Xylene		2.50437E-11	0.000959676		0.000249893
Water		0	0		0.00734509
MDEA		0	0		6.93017E-08
Piperazine		0	0		4.99661E-06
Phosphoric Acid		0	0		0
TEG		0	0		5.21043E-05
O2		0	0		0
Molar Flow		lbmol/h	lbmol/h		lbmol/h
H2S		1.84286E-05	0.0357224		0.0390369
CO2		1.44956E-07	5.73503E-05		7.04584E-05
N2		6.05335	3.46166E-05		408.571
Methane		321.477	104.083		21808.2
Ethane		1.78385	3727.11		4063.54
Propane		0.0767878	2223.10		2357.14
i-Butane		0.00130527	295.425		312.637
n-Butane		0.00236808	747.942		791.456
i-Pentane		2.65649E-05	136.512		144.427
n-Pentane		4.18735E-05	128.902		136.376
n-Hexane		4.91207E-07	18.9904		20.0912
n-Heptane		5.88196E-08	11.2247		11.8753
n-Octane		5.13716E-10	0.939333		0.993781
n-Nonane		1.65200E-10	1.55485		1.64498
n-Decane		0	0.00264646		0.00279986
Undecane		0	0.00895833		0.00947759
Benzene		3.08747E-07	2.54119		2.68851
Toluene		1.39054E-08	0.815008		0.862250
Ethylbenzene		1.73664E-11	0.0374475		0.0396181
m-Xylene		8.24927E-11	0.0710092		0.0751251
Water		0	0		2.20815
MDEA		0	0		2.08341E-05
Piperazine		0	0		0.00150213
Phosphoric Acid		0	0		0
TEG		0	0		0.0156641
O2		0	0		0
Mass Fraction		%	%		%
H2S		1.16652E-05	0.000412811		0.000196965
CO2		1.18487E-07	8.55819E-07		4.59075E-07

N2	3.14955	3.28814E-07		1.69449
Methane	95.7872	0.566175		51.7959
Ethane	0.996245	38.0007		18.0896
Propane	0.0628890	33.2394		15.3881
i-Butane	0.00140906	5.82223		2.69022
n-Butane	0.00255638	14.7404		6.81040
i-Pentane	3.55979E-05	3.33965		1.54270
n-Pentane	5.61119E-05	3.15347		1.45671
n-Hexane	7.86203E-07	0.554904		0.256327
n-Heptane	1.09468E-07	0.381373		0.176167
n-Octane	1.08989E-09	0.0363826		0.0168062
n-Nonane	3.93523E-10	0.0676182		0.0312348
n-Decane	0	0.000127677		5.89779E-05
Undecane	0	0.000474798		0.000219323
Benzene	4.47926E-07	0.0673060		0.0310908
Toluene	2.37964E-08	0.0254626		0.0117619
Ethylbenzene	3.42435E-11	0.00134804		0.000622701
m-Xylene	1.62661E-10	0.00255620		0.00118079
Water	0	0		0.00588944
MDEA	0	0		3.67551E-07
Piperazine	0	0		1.91555E-05
Phosphoric Acid	0	0		0
TEG	0	0		0.000348258
O2	0	0		0
Mass Flow	**lb/h**	**lb/h**		**lb/h**
H2S	0.000628063	1.21745		1.33041
CO2	6.37946E-06	0.00252396		0.00310084
N2	169.575	0.000969728		11445.5
Methane	5157.28	1669.75		349857
Ethane	53.6388	112070		122187
Propane	3.38601	98028.8		103940
i-Butane	0.0758654	17170.8		18171.2
n-Butane	0.137638	43472.0		46001.1
i-Pentane	0.00191662	9849.20		10420.2
n-Pentane	0.00302112	9300.11		9839.39
n-Hexane	4.23299E-05	1636.51		1731.37
n-Heptane	5.89384E-06	1124.73		1189.93
n-Octane	5.86810E-08	107.299		113.518
n-Nonane	2.11877E-08	199.418		210.977
n-Decane	0	0.376543		0.398369
Undecane	0	1.40026		1.48142
Benzene	2.41168E-05	198.497		210.004
Toluene	1.28122E-06	75.0936		79.4464
Ethylbenzene	1.84370E-09	3.97562		4.20606
m-Xylene	8.75784E-09	7.53869		7.97566
Water	0	0		39.7804
MDEA	0	0		0.00248264
Piperazine	0	0		0.129387
Phosphoric Acid	0	0		0
TEG	0	0		2.35232
O2	0	0		0

Process Streams		**Fuel Gas**	**NGL**	**Stabilizer NGL**	**1**
Properties	**Status:**	Solved	Solved	Unsolved	Solved
Phase: **Total**	**From Block:**	**PCV-4407B**	**To Sales**	**PUMP-100**	**Mol Sieve Inlet**
	To Block:	**--**	**--**	**--**	**Mol Sieve**
Property	**Units**				
Temperature	°F	91.4895	100.031		97.7857
Pressure	psia	164.696*	1264.70*	1264.70*	940.696
Mole Fraction Vapor	%	100	0		100
Mole Fraction Light Liquid	%	0	100		0

Mole Fraction Heavy Liquid	%	0	0		0
Molecular Weight	lb/lbmol	16.3454	39.8575		22.4680
Mass Density	lb/ft^3	0.464887	28.7530		4.54535
Molar Flow	lbmol/h	329.395	7399.29		30062.9
Mass Flow	lb/h	5384.10	294917		675454
Vapor Volumetric Flow	ft^3/h	11581.5	10256.9		148603
Liquid Volumetric Flow	gpm	1443.93	1278.78		18527.2
Std Vapor Volumetric Flow	MMSCFD	3	67.3899		273.802
Std Liquid Volumetric Flow	sgpm	35.1171	1306.75		3752.81
Compressibility		0.979019	0.291873		0.777272
Specific Gravity		0.564366	0.461016		0.775762
API Gravity			153.791		
Enthalpy	Btu/h	-1.03666E+07	-3.55951E+08		-1.05564E+09
Mass Enthalpy	Btu/lb	-1925.41	-1206.95		-1562.86
Mass Cp	Btu/(lb*°F)	0.541613	0.699466		0.658040
Ideal Gas CpCv Ratio		1.30076	1.13453		1.22724
Dynamic Viscosity	cP	0.0116563	0.0824943		0.0131936
Kinematic Viscosity	cSt	1.56528	0.179110		0.181207
Thermal Conductivity	Btu/(h*ft*°F)	0.0203921	0.0529038		0.0219214
Surface Tension	lbf/ft		0.000110725?		
Net Ideal Gas Heating Value	Btu/ft^3	896.882	2103.73		1211.07
Net Liquid Heating Value	Btu/lb	20820.9	19873.2		20381.8
Gross Ideal Gas Heating Value	Btu/ft^3	995.930	2289.52		1332.70
Gross Liquid Heating Value	Btu/lb	23120.4	21643.0		22436.5

Process Streams		Fuel Gas	NGL	Stabilizer NGL	1
Composition	Status:	Solved	Solved	Unsolved	Solved
Phase: **Vapor**	From Block:	PCV-4407B	To Sales	PUMP-100	Mol Sieve Inlet
	To Block:	--	--	--	Mol Sieve
Mole Fraction		%			%
H2S		5.59469E-06			0.000129851
CO2		4.40069E-08			2.34370E-07
N2		1.83772			1.35905
Methane		97.5963			72.5419
Ethane		0.541556			13.5168
Propane		0.0233118			7.84069
i-Butane		0.000396265			1.03994
n-Butane		0.000718919			2.63266
i-Pentane		8.06476E-06			0.480416
n-Pentane		1.27122E-05			0.453637
n-Hexane		1.49124E-07			0.0668307
n-Heptane		1.78569E-08			0.0395015
n-Octane		1.55957E-10			0.00330567
n-Nonane		5.01525E-11			0.00547178
n-Decane		0			9.31333E-06
Undecane		0			3.15258E-05
Benzene		9.37316E-08			0.00894294
Toluene		4.22149E-09			0.00286815
Ethylbenzene		5.27222E-12			0.000131784
m-Xylene		2.50437E-11			0.000249893
Water		0			0.00734509
MDEA		0			6.93017E-08
Piperazine		0			4.99661E-06
Phosphoric Acid		0			0
TEG		0			5.21043E-05
O2		0			0
Molar Flow		lbmol/h			lbmol/h
H2S		1.84286E-05			0.0390369
CO2		1.44956E-07			7.04584E-05
N2		6.05335			408.571
Methane		321.477			21808.2

Ethane	1.78385	4063.54
Propane	0.0767878	2357.14
i-Butane	0.00130527	312.637
n-Butane	0.00236808	791.456
i-Pentane	2.65649E-05	144.427
n-Pentane	4.18735E-05	136.376
n-Hexane	4.91207E-07	20.0912
n-Heptane	5.88196E-08	11.8753
n-Octane	5.13716E-10	0.993781
n-Nonane	1.65200E-10	1.64498
n-Decane	0	0.00279986
Undecane	0	0.00947759
Benzene	3.08747E-07	2.68851
Toluene	1.39054E-08	0.862250
Ethylbenzene	1.73664E-11	0.0396181
m-Xylene	8.24927E-11	0.0751251
Water	0	2.20815
MDEA	0	2.08341E-05
Piperazine	0	0.00150213
Phosphoric Acid	0	0
TEG	0	0.0156641
O2	0	0
Mass Fraction	**%**	**%**
H2S	1.16652E-05	0.000196965
CO2	1.18487E-07	4.59075E-07
N2	3.14955	1.69449
Methane	95.7872	51.7959
Ethane	0.996245	18.0896
Propane	0.0628890	15.3881
i-Butane	0.00140906	2.69022
n-Butane	0.00255638	6.81040
i-Pentane	3.55979E-05	1.54270
n-Pentane	5.61119E-05	1.45671
n-Hexane	7.86203E-07	0.256327
n-Heptane	1.09468E-07	0.176167
n-Octane	1.08989E-09	0.0168062
n-Nonane	3.93523E-10	0.0312348
n-Decane	0	5.89779E-05
Undecane	0	0.000219323
Benzene	4.47926E-07	0.0310908
Toluene	2.37964E-08	0.0117619
Ethylbenzene	3.42435E-11	0.000622701
m-Xylene	1.62661E-10	0.00118079
Water	0	0.00588944
MDEA	0	3.67551E-07
Piperazine	0	1.91555E-05
Phosphoric Acid	0	0
TEG	0	0.000348258
O2	0	0
Mass Flow	**lb/h**	**lb/h**
H2S	0.000628063	1.33041
CO2	6.37946E-06	0.00310084
N2	169.575	11445.5
Methane	5157.28	349857
Ethane	53.6388	122187
Propane	3.38601	103940
i-Butane	0.0758654	18171.2
n-Butane	0.137638	46001.1
i-Pentane	0.00191662	10420.2
n-Pentane	0.00302112	9839.39
n-Hexane	4.23299E-05	1731.37
n-Heptane	5.89384E-06	1189.93

n-Octane		5.86810E-08			113.518
n-Nonane		2.11877E-08			210.977
n-Decane		0			0.398369
Undecane		0			1.48142
Benzene		2.41168E-05			210.004
Toluene		1.28122E-06			79.4464
Ethylbenzene		1.84370E-09			4.20606
m-Xylene		8.75784E-09			7.97566
Water		0			39.7804
MDEA		0			0.00248264
Piperazine		0			0.129387
Phosphoric Acid		0			0
TEG		0			2.35232
O2		0			0

Process Streams		Fuel Gas	NGL	Stabilizer NGL	1
Properties	Status:	Solved	Solved	Unsolved	Solved
Phase: **Vapor**	From Block:	PCV-4407B	To Sales	PUMP-100	Mol Sieve Inlet
	To Block:	--	--	--	Mol Sieve
Property	**Units**				
Temperature	°F	91.4895			97.7857
Pressure	psia	164.696			940.696
Mole Fraction Vapor	%	100			100
Mole Fraction Light Liquid	%	0			0
Mole Fraction Heavy Liquid	%	0			0
Molecular Weight	lb/lbmol	16.3454			22.4680
Mass Density	lb/ft^3	0.464887			4.54535
Molar Flow	lbmol/h	329.395			30062.9
Mass Flow	lb/h	5384.10			675454
Vapor Volumetric Flow	ft^3/h	11581.5			148603
Liquid Volumetric Flow	gpm	1443.93			18527.2
Std Vapor Volumetric Flow	MMSCFD	3			273.802
Std Liquid Volumetric Flow	sgpm	35.1171			3752.81
Compressibility		0.979019			0.777272
Specific Gravity		0.564366			0.775762
API Gravity					
Enthalpy	Btu/h	-1.03666E+07			-1.05564E+09
Mass Enthalpy	Btu/lb	-1925.41			-1562.86
Mass Cp	Btu/(lb*°F)	0.541613			0.658040
Ideal Gas CpCv Ratio		1.30076			1.22724
Dynamic Viscosity	cP	0.0116563			0.0131936
Kinematic Viscosity	cSt	1.56528			0.181207
Thermal Conductivity	Btu/(h*ft*°F)	0.0203921			0.0219214
Surface Tension	lbf/ft				
Net Ideal Gas Heating Value	Btu/ft^3	896.882			1211.07
Net Liquid Heating Value	Btu/lb	20820.9			20381.8
Gross Ideal Gas Heating Value	Btu/ft^3	995.930			1332.70
Gross Liquid Heating Value	Btu/lb	23120.4			22436.5

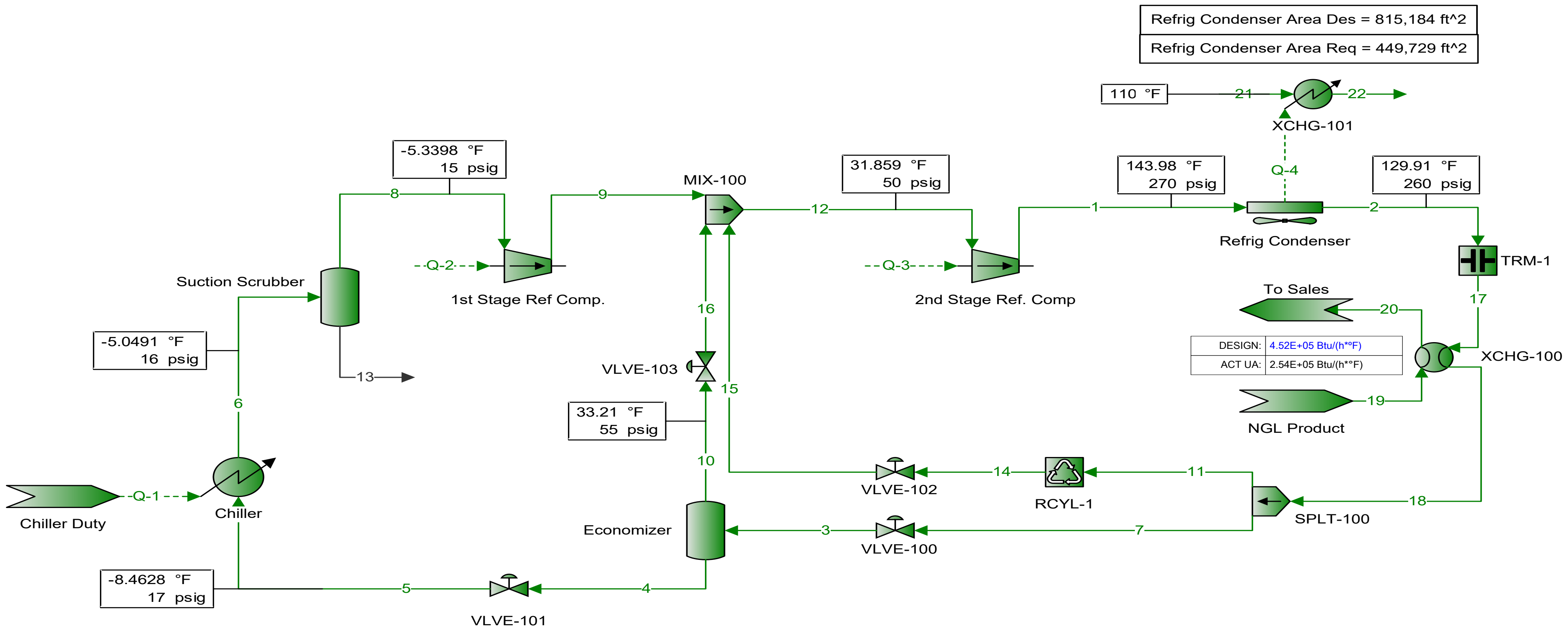
Process Streams		Fuel Gas	NGL	Stabilizer NGL	1
Composition	Status:	Solved	Solved	Unsolved	Solved
Phase: **Light Liquid**	From Block:	PCV-4407B	To Sales	PUMP-100	Mol Sieve Inlet
	To Block:	--	--	--	Mol Sieve
Mole Fraction			%		
H2S			0.000482782		
CO2			7.75079E-07		
N2			4.67837E-07		
Methane			1.40666		
Ethane			50.3711		

Propane	30.0447
i-Butane	3.99262
n-Butane	10.1083
i-Pentane	1.84494
n-Pentane	1.74208
n-Hexane	0.256652
n-Heptane	0.151699
n-Octane	0.0126949
n-Nonane	0.0210135
n-Decane	3.57664E-05
Undecane	0.000121070
Benzene	0.0343437
Toluene	0.0110147
Ethylbenzene	0.000506096
m-Xylene	0.000959676
Water	0
MDEA	0
Piperazine	0
Phosphoric Acid	0
TEG	0
O2	0
Molar Flow	**lbmol/h**
H2S	0.0357224
CO2	5.73503E-05
N2	3.46166E-05
Methane	104.083
Ethane	3727.11
Propane	2223.10
i-Butane	295.425
n-Butane	747.942
i-Pentane	136.512
n-Pentane	128.902
n-Hexane	18.9904
n-Heptane	11.2247
n-Octane	0.939333
n-Nonane	1.55485
n-Decane	0.00264646
Undecane	0.00895833
Benzene	2.54119
Toluene	0.815008
Ethylbenzene	0.0374475
m-Xylene	0.0710092
Water	0
MDEA	0
Piperazine	0
Phosphoric Acid	0
TEG	0
O2	0
Mass Fraction	**%**
H2S	0.000412811
CO2	8.55819E-07
N2	3.28814E-07
Methane	0.566175
Ethane	38.0007
Propane	33.2394
i-Butane	5.82223
n-Butane	14.7404
i-Pentane	3.33965
n-Pentane	3.15347
n-Hexane	0.554904
n-Heptane	0.381373
n-Octane	0.0363826

n-Nonane	0.0676182
n-Decane	0.000127677
Undecane	0.000474798
Benzene	0.0673060
Toluene	0.0254626
Ethylbenzene	0.00134804
m-Xylene	0.00255620
Water	0
MDEA	0
Piperazine	0
Phosphoric Acid	0
TEG	0
O2	0
Mass Flow	**lb/h**
H2S	1.21745
CO2	0.00252396
N2	0.000969728
Methane	1669.75
Ethane	112070
Propane	98028.8
i-Butane	17170.8
n-Butane	43472.0
i-Pentane	9849.20
n-Pentane	9300.11
n-Hexane	1636.51
n-Heptane	1124.73
n-Octane	107.299
n-Nonane	199.418
n-Decane	0.376543
Undecane	1.40026
Benzene	198.497
Toluene	75.0936
Ethylbenzene	3.97562
m-Xylene	7.53869
Water	0
MDEA	0
Piperazine	0
Phosphoric Acid	0
TEG	0
O2	0

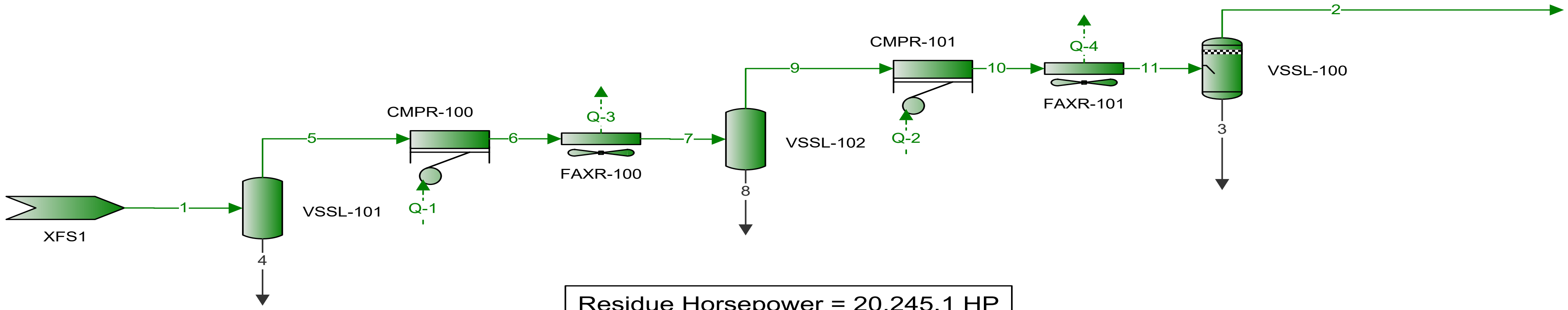
Process Streams		Fuel Gas	NGL	Stabilizer NGL	1
Properties	Status:	Solved	Solved	Unsolved	Solved
Phase: **Light Liquid**	From Block:	PCV-4407B	To Sales	PUMP-100	Mol Sieve Inlet
	To Block:	--	--	--	Mol Sieve
Property	**Units**				
Temperature	°F		100.031		
Pressure	psia		1264.70		
Mole Fraction Vapor	%		0		
Mole Fraction Light Liquid	%		100		
Mole Fraction Heavy Liquid	%		0		
Molecular Weight	lb/lbmol		39.8575		
Mass Density	lb/ft^3		28.7530		
Molar Flow	lbmol/h		7399.29		
Mass Flow	lb/h		294917		
Vapor Volumetric Flow	ft^3/h		10256.9		
Liquid Volumetric Flow	gpm		1278.78		
Std Vapor Volumetric Flow	MMSCFD		67.3899		
Std Liquid Volumetric Flow	sgpm		1306.75		
Compressibility			0.291873		
Specific Gravity			0.461016		

API Gravity		153.791
Enthalpy	Btu/h	-3.55951E+08
Mass Enthalpy	Btu/lb	-1206.95
Mass Cp	Btu/(lb*°F)	0.699466
Ideal Gas CpCv Ratio		1.13453
Dynamic Viscosity	cP	0.0824943
Kinematic Viscosity	cSt	0.179110
Thermal Conductivity	Btu/(h*ft*°F)	0.0529038
Surface Tension	lbf/ft	0.000110725?
Net Ideal Gas Heating Value	Btu/ft^3	2103.73
Net Liquid Heating Value	Btu/lb	19873.2
Gross Ideal Gas Heating Value	Btu/ft^3	2289.52
Gross Liquid Heating Value	Btu/lb	21643.0



Refrigeration Horsepower = 6,154HP

Refrigeration Capacity = 2,068 TR



Residue Horsepower = 20,245.1 HP

Process Streams		1	2	3	4	5	6	7	8	9	10	11
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	XFS1	VSSL-100	VSSL-100	VSSL-101	VSSL-101	CMPR-100	FAXR-100	VSSL-102	VSSL-102	CMPR-101	FAXR-101
	To Block:	VSSL-101	--	--	--	CMPR-100	FAXR-100	VSSL-102	--	CMPR-101	FAXR-101	VSSL-100
Mole Fraction		%	%			%	%	%		%	%	%
H2S		5.59469E-06	5.59469E-06			5.59469E-06	5.59469E-06	5.59469E-06		5.59469E-06	5.59469E-06	5.59469E-06
CO2		4.40069E-08	4.40069E-08			4.40069E-08	4.40069E-08	4.40069E-08		4.40069E-08	4.40069E-08	4.40069E-08
N2		1.83772	1.83772			1.83772	1.83772	1.83772		1.83772	1.83772	1.83772
Methane		97.5963	97.5963			97.5963	97.5963	97.5963		97.5963	97.5963	97.5963
Ethane		0.541556	0.541556			0.541556	0.541556	0.541556		0.541556	0.541556	0.541556
Propane		0.0233118	0.0233118			0.0233118	0.0233118	0.0233118		0.0233118	0.0233118	0.0233118
i-Butane		0.000396265	0.000396265			0.000396265	0.000396265	0.000396265		0.000396265	0.000396265	0.000396265
n-Butane		0.000718919	0.000718919			0.000718919	0.000718919	0.000718919		0.000718919	0.000718919	0.000718919
i-Pentane		8.06476E-06	8.06476E-06			8.06476E-06	8.06476E-06	8.06476E-06		8.06476E-06	8.06476E-06	8.06476E-06
n-Pentane		1.27122E-05	1.27122E-05			1.27122E-05	1.27122E-05	1.27122E-05		1.27122E-05	1.27122E-05	1.27122E-05
n-Hexane		1.49124E-07	1.49124E-07			1.49124E-07	1.49124E-07	1.49124E-07		1.49124E-07	1.49124E-07	1.49124E-07
n-Heptane		1.78569E-08	1.78569E-08			1.78569E-08	1.78569E-08	1.78569E-08		1.78569E-08	1.78569E-08	1.78569E-08
n-Octane		1.55957E-10	1.55957E-10			1.55957E-10	1.55957E-10	1.55957E-10		1.55957E-10	1.55957E-10	1.55957E-10
n-Nonane		5.01525E-11	5.01525E-11			5.01525E-11	5.01525E-11	5.01525E-11		5.01525E-11	5.01525E-11	5.01525E-11
n-Decane		0	0			0	0	0		0	0	0
Undecane		0	0			0	0	0		0	0	0
Benzene		9.37316E-08	9.37316E-08			9.37316E-08	9.37316E-08	9.37316E-08		9.37316E-08	9.37316E-08	9.37316E-08
Toluene		4.22149E-09	4.22149E-09			4.22149E-09	4.22149E-09	4.22149E-09		4.22149E-09	4.22149E-09	4.22149E-09
Ethylbenzene		5.27222E-12	5.27222E-12			5.27222E-12	5.27222E-12	5.27222E-12		5.27222E-12	5.27222E-12	5.27222E-12
m-Xylene		2.50437E-11	2.50437E-11			2.50437E-11	2.50437E-11	2.50437E-11		2.50437E-11	2.50437E-11	2.50437E-11
Water		0	0			0	0	0		0	0	0
MDEA		0	0			0	0	0		0	0	0
Piperazine		0	0			0	0	0		0	0	0
Phosphoric Acid		0	0			0	0	0		0	0	0
TEG		0	0			0	0	0		0	0	0
O2		0	0			0	0	0		0	0	0
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S		0.00115726	0.00115726	0	0	0.00115726	0.00115726	0.00115726	0	0.00115726	0.00115726	0.00115726
CO2		9.10284E-06	9.10284E-06	0	0	9.10284E-06	9.10284E-06	9.10284E-06	0	9.10284E-06	9.10284E-06	9.10284E-06
N2		380.133	380.133	0	0	380.133	380.133	380.133	0	380.133	380.133	380.133
Methane		20187.8	20187.8	0	0	20187.8	20187.8	20187.8	0	20187.8	20187.8	20187.8
Ethane		112.021	112.021	0	0	112.021	112.021	112.021	0	112.021	112.021	112.021
Propane		4.82206	4.82206	0	0	4.82206	4.82206	4.82206	0	4.82206	4.82206	4.82206
i-Butane		0.0819675	0.0819675	0	0	0.0819675	0.0819675	0.0819675	0	0.0819675	0.0819675	0.0819675
n-Butane		0.148709	0.148709	0	0	0.148709	0.148709	0.148709	0	0.148709	0.148709	0.148709
i-Pentane		0.00166820	0.00166820	0	0	0.00166820	0.00166820	0.00166820	0	0.00166820	0.00166820	0.00166820
n-Pentane		0.00262953	0.00262953	0	0	0.00262953	0.00262953	0.00262953	0	0.00262953	0.00262953	0.00262953
n-Hexane		3.08464E-05	3.08464E-05	0	0	3.08464E-05	3.08464E-05	3.08464E-05	0	3.08464E-05	3.08464E-05	3.08464E-05
n-Heptane		3.69370E-06	3.69370E-06	0	0	3.69370E-06	3.69370E-06	3.69370E-06	0	3.69370E-06	3.69370E-06	3.69370E-06
n-Octane		3.22599E-08	3.22599E-08	0	0	3.22599E-08	3.22599E-08	3.22599E-08	0	3.22599E-08	3.22599E-08	3.22599E-08
n-Nonane		1.03741E-08	1.03741E-08	0	0	1.03741E-08	1.03741E-08	1.03741E-08	0	1.03741E-08	1.03741E-08	1.03741E-08
n-Decane		0	0	0	0	0	0	0	0	0	0	0
Undecane		0	0	0	0	0	0	0	0	0	0	0
Benzene		1.93884E-05	1.93884E-05	0	0	1.93884E-05	1.93884E-05	1.93884E-05	0	1.93884E-05	1.93884E-05	1.93884E-05
Toluene		8.73217E-07	8.73217E-07	0	0	8.73217E-07	8.73217E-07	8.73217E-07	0	8.73217E-07	8.73217E-07	8.73217E-07
Ethylbenzene		1.09056E-09	1.09056E-09	0	0	1.09056E-09	1.09056E-09	1.09056E-09	0	1.09056E-09	1.09056E-09	1.09056E-09
m-Xylene		5.18031E-09	5.18031E-09	0	0	5.18031E-09	5.18031E-09	5.18031E-09	0	5.18031E-09	5.18031E-09	5.18031E-09
Water		0	0	0	0	0	0	0	0	0	0	0
MDEA		0	0	0	0	0	0	0	0	0	0	0
Piperazine		0	0	0	0	0	0	0	0	0	0	0
Phosphoric Acid		0	0	0	0	0	0	0	0	0	0	0
TEG		0	0	0	0	0	0	0	0	0	0	0
O2		0	0	0	0	0	0	0	0	0	0	0
Mass Fraction		%	%			%	%	%		%	%	%
H2S		1.16652E-05	1.16652E-05			1.16652E-05	1.16652E-05	1.16652E-05		1.16652E-05	1.16652E-05	1.16652E-05
CO2		1.18487E-07	1.18487E-07			1.18487E-07	1.18487E-07	1.18487E-07		1.18487E-07	1.18487E-07	1.18487E-07
N2		3.14955	3.14955			3.14955	3.14955	3.14955		3.14955	3.14955	3.14955
Methane		95.7872	95.7872			95.7872	95.7872	95.7872		95.7872	95.7872	95.7872
Ethane		0.996245	0.996245			0.996245	0.996245	0.996245		0.996245	0.996245	0.996245
Propane		0.0628890	0.0628890			0.0628890	0.0628890	0.0628890		0.0628890	0.0628890	0.0628890
i-Butane		0.00140906	0.00140906			0.00140906	0.00140906	0.00140906		0.00140906	0.00140906	0.00140906
n-Butane		0.00255638	0.00255638			0.00255638	0.00255638	0.00255638		0.00255638	0.00255638	0.00255638
i-Pentane		3.55979E-05	3.55979E-05			3.55979E-05	3.55979E-05	3.55979E-05		3.55979E-05	3.55979E-05	3.55979E-05
n-Pentane		5.61119E-05	5.61119E-05			5.61119E-05	5.61119E-05	5.61119E-05		5.61119E-05	5.61119E-05	5.61119E-05
n-Hexane		7.86203E-07	7.86203E-07			7.86203E-07	7.86203E-07	7.86203E-07		7.86203E-07	7.86203E-07	7.86203E-07
n-Heptane		1.09468E-07	1.09468E-07			1.09468E-07	1.09468E-07	1.09468E-07		1.09468E-07	1.09468E-07	1.09468E-07
n-Octane		1.08989E-09	1.08989E-09			1.08989E-09	1.08989E-09	1.08989E-09		1.08989E-09	1.08989E-09	1.08989E-09
n-Nonane		3.93523E-10	3.93523E-10			3.93523E-10	3.93523E-10	3.93523E-10		3.93523E-10	3.93523E-10	3.93523E-10
n-Decane		0	0			0	0	0		0	0	0
Undecane		0	0			0	0	0		0	0	0
Benzene		4.47926E-07	4.47926E-07			4.47926E-07	4.47926E-07	4.47926E-07		4.47926E-07	4.47926E-07	4.47926E-07
Toluene		2.37964E-08	2.37964E-08			2.37964E-08	2.37964E-08	2.37964E-08		2.37964E-08	2.37964E-08	2.37964E-08
Ethylbenzene		3.42435E-11	3.42435E-11			3.42435E-11	3.42435E-11	3.42435E-11		3.42435E-11	3.42435E-11	3.42435E-11
m-Xylene		1.62661E-10	1.62661E-10			1.62661E-10	1.62661E-10	1.62661E-10		1.62661E-10	1.62661E-10	1.62661E-10
Water		0	0			0	0	0		0	0	0
MDEA		0	0			0	0	0		0	0	0
Piperazine		0	0			0	0	0		0	0	0
Phosphoric Acid		0	0			0	0	0		0	0	0
TEG		0	0			0	0	0		0	0	0
O2		0	0			0	0	0		0	0	0
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S		0.0394406	0.0394406	0	0	0.0394406	0.0394406	0.0394406	0	0.0394406	0.0394406	0.0394406
CO2		0.000400612	0.000400612	0	0	0.000400612	0.000400612	0.000400612	0	0.000400612	0.000400612	0.000400612
N2		10648.8	10648.8	0	0	10648.8	10648.8	10648.8	0	10648.8	10648.8	10648.8
Methane		323862	323862	0	0	323862	323862	323862	0	323862	323862	323862
Ethane		3368.36	3368.36	0	0	3368.36	3368.36	3368.36	0	3368.36	3368.36	3368.36
Propane		212.632	212.632	0	0	212.632	212.632	212.632	0	212.632	212.632	212.632
i-Butane		4.76413	4.76413	0	0	4.76413	4.76413	4.76413	0	4.76413	4.76413	4.76413
n-Butane		8.64328	8.64328	0	0	8.64328	8.64328	8.64328	0	8.64328	8.64328	8.64328
i-Pentane		0.120359	0.120359	0	0	0.120359	0.120359	0.120359	0	0.120359	0.120359	0.120359
n-Pentane		0.189718	0.189718	0	0	0.189718	0.189718	0.189718	0	0.189718	0.189718	0.189718
n-Hexane		0.00265820	0.00265820	0	0	0.00265820	0.00265820	0.00265820	0	0.00265820	0.00265820	0.00265820
n-Heptane		0.000370116	0.000370116	0	0	0.000370116	0.000370116	0.000370116	0	0.000370116	0.000370116	0.000370116
n-Octane		3.68500E-06	3.68500E-06	0	0	3.68500E-06	3.68500E-06	3.68500E-06	0	3.68500E-06	3.68500E-06	3.68500E-06
n-Nonane		1.33053E-06	1.33053E-06	0	0	1.33053E-06	1.33053E-06	1.33053E-06	0	1.33053E-06	1.33053E-06	1.33053E-06
n-Decane		0	0	0	0	0	0	0	0	0	0	0
Undecane		0	0	0	0	0	0	0	0	0	0	0
Benzene		0.00151446	0.00151446	0	0	0.00151446	0.00151446	0.00151446	0	0.00151446	0.00151446	0.00151446

		1	2	3	4	5	6	7	8	9	10	11
Toluene		8.04569E-05	8.04569E-05	0	0	8.04569E-05	8.04569E-05	8.04569E-05	0	8.04569E-05	8.04569E-05	8.04569E-05
Ethylbenzene		1.15779E-07	1.15779E-07	0	0	1.15779E-07	1.15779E-07	1.15779E-07	0	1.15779E-07	1.15779E-07	1.15779E-07
m-Xylene		5.49967E-07	5.49967E-07	0	0	5.49967E-07	5.49967E-07	5.49967E-07	0	5.49967E-07	5.49967E-07	5.49967E-07
Water		0	0	0	0	0	0	0	0	0	0	0
MDEA		0	0	0	0	0	0	0	0	0	0	0
Piperazine		0	0	0	0	0	0	0	0	0	0	0
Phosphoric Acid		0	0	0	0	0	0	0	0	0	0	0
TEG		0	0	0	0	0	0	0	0	0	0	0
O2		0	0	0	0	0	0	0	0	0	0	0

Process Streams		1	2	3	4	5	6	7	8	9	10	11
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	XFS1	VSSL-100	VSSL-100	VSSL-101	VSSL-101	CMPR-100	FAXR-100	VSSL-102	VSSL-102	CMPR-101	FAXR-101
	To Block:	VSSL-101	--	--	--	CMPR-100	FAXR-100	VSSL-102	--	CMPR-101	FAXR-101	VSSL-100
Property	Units											
Temperature	°F	120	119.801			119.894	266.556	120*		119.903	258.198	120*
Pressure	psia	284.994	1244.70	1244.70	282.994	282.994	613.696*	608.696	606.696	606.696	1254.70*	1249.70
Mole Fraction Vapor	%	100	100			100	100	100		100	100	100
Mole Fraction Light Liquid	%	0	0			0	0	0		0	0	0
Mole Fraction Heavy Liquid	%	0	0			0	0	0		0	0	0
Molecular Weight	lb/lbmol	16.3454	16.3454			16.3454	16.3454	16.3454		16.3454	16.3454	16.3454
Mass Density	lb/ft^3	0.771310	3.63998			0.765901	1.31027	1.69826		1.69274	2.74309	3.65374
Molar Flow	lbmol/h	20685.0	20685.0	0	0	20685.0	20685.0	20685.0	0	20685.0	20685.0	20685.0
Mass Flow	lb/h	338106	338106	0	0	338106	338106	338106	0	338106	338106	338106
Vapor Volumetric Flow	ft^3/h	438353	92886.8	0	0	441448	258043	199089	0	199738	123257	92536.9
Liquid Volumetric Flow	gpm	54651.8	11580.7	0	0	55037.7	32171.6	24821.5	0	24902.4	15367.2	11537.1
Std Vapor Volumetric Flow	MMSCFD	188.391	188.391	0	0	188.391	188.391	188.391	0	188.391	188.391	188.391
Std Liquid Volumetric Flow	sgpm	2205.25	2205.25	0	0	2205.25	2205.25	2205.25	0	2205.25	2205.25	2205.25
Compressibility		0.970866	0.898805			0.971038	0.982322	0.941777		0.941900	0.970482	0.898708
Specific Gravity		0.564366	0.564366			0.564366	0.564366	0.564366		0.564366	0.564366	0.564366
API Gravity												
Enthalpy	Btu/h	-6.46941E+08	-6.56132E+08			-6.46941E+08	-6.20008E+08	-6.50144E+08		-6.50144E+08	-6.25564E+08	-6.56132E+08
Mass Enthalpy	Btu/lb	-1913.43	-1940.61			-1913.43	-1833.77	-1922.90		-1922.90	-1850.20	-1940.61
Mass Cp	Btu/(lb*°F)	0.560971	0.658275			0.560755	0.631015	0.592704		0.592490	0.662593	0.658721
Ideal Gas CpCv Ratio		1.29357	1.29362			1.29360	1.25537	1.29357		1.29360	1.25744	1.29357
Dynamic Viscosity	cP	0.0122692	0.0138492			0.0122652	0.0148837	0.0126908		0.0126864	0.0155198	0.0138621
Kinematic Viscosity	cSt	0.993041	0.237522			0.999727	0.709134	0.466514		0.467871	0.353204	0.236849
Thermal Conductivity	Btu/(h*ft*°F)	0.0220092	0.0256321			0.0219981	0.0297804	0.0231243		0.0231131	0.0311444	0.0256598
Surface Tension	lbf/ft											
Net Ideal Gas Heating Value	Btu/ft^3	896.882	896.882			896.882	896.882	896.882		896.882	896.882	896.882
Net Liquid Heating Value	Btu/lb	20820.9	20820.9			20820.9	20820.9	20820.9		20820.9	20820.9	20820.9
Gross Ideal Gas Heating Value	Btu/ft^3	995.930	995.930			995.930	995.930	995.930		995.930	995.930	995.930
Gross Liquid Heating Value	Btu/lb	23120.4	23120.4			23120.4	23120.4	23120.4		23120.4	23120.4	23120.4

Process Streams		1	2	3	4	5	6	7	8	9	10	11
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	XFS1	VSSL-100	VSSL-100	VSSL-101	VSSL-101	CMPR-100	FAXR-100	VSSL-102	VSSL-102	CMPR-101	FAXR-101
	To Block:	VSSL-101	--	--	--	CMPR-100	FAXR-100	VSSL-102	--	CMPR-101	FAXR-101	VSSL-100
Mole Fraction		%	%			%	%	%		%	%	%
H2S		5.59469E-06	5.59469E-06			5.59469E-06	5.59469E-06	5.59469E-06		5.59469E-06	5.59469E-06	5.59469E-06
CO2		4.40069E-08	4.40069E-08			4.40069E-08	4.40069E-08	4.40069E-08		4.40069E-08	4.40069E-08	4.40069E-08
N2		1.83772	1.83772			1.83772	1.83772	1.83772		1.83772	1.83772	1.83772
Methane		97.5963	97.5963			97.5963	97.5963	97.5963		97.5963	97.5963	97.5963
Ethane		0.541556	0.541556			0.541556	0.541556	0.541556		0.541556	0.541556	0.541556
Propane		0.0233118	0.0233118			0.0233118	0.0233118	0.0233118		0.0233118	0.0233118	0.0233118
i-Butane		0.000396265	0.000396265			0.000396265	0.000396265	0.000396265		0.000396265	0.000396265	0.000396265
n-Butane		0.000718919	0.000718919			0.000718919	0.000718919	0.000718919		0.000718919	0.000718919	0.000718919
i-Pentane		8.06476E-06	8.06476E-06			8.06476E-06	8.06476E-06	8.06476E-06		8.06476E-06	8.06476E-06	8.06476E-06
n-Pentane		1.27122E-05	1.27122E-05			1.27122E-05	1.27122E-05	1.27122E-05		1.27122E-05	1.27122E-05	1.27122E-05
n-Hexane		1.49124E-07	1.49124E-07			1.49124E-07	1.49124E-07	1.49124E-07		1.49124E-07	1.49124E-07	1.49124E-07
n-Heptane		1.78569E-08	1.78569E-08			1.78569E-08	1.78569E-08	1.78569E-08		1.78569E-08	1.78569E-08	1.78569E-08
n-Octane		1.55957E-10	1.55957E-10			1.55957E-10	1.55957E-10	1.55957E-10		1.55957E-10	1.55957E-10	1.55957E-10
n-Nonane		5.01525E-11	5.01525E-11			5.01525E-11	5.01525E-11	5.01525E-11		5.01525E-11	5.01525E-11	5.01525E-11
n-Decane		0	0			0	0	0		0	0	0
Undecane		0	0			0	0	0		0	0	0
Benzene		9.37316E-08	9.37316E-08			9.37316E-08	9.37316E-08	9.37316E-08		9.37316E-08	9.37316E-08	9.37316E-08
Toluene		4.22149E-09	4.22149E-09			4.22149E-09	4.22149E-09	4.22149E-09		4.22149E-09	4.22149E-09	4.22149E-09
Ethylbenzene		5.27222E-12	5.27222E-12			5.27222E-12	5.27222E-12	5.27222E-12		5.27222E-12	5.27222E-12	5.27222E-12
m-Xylene		2.50437E-11	2.50437E-11			2.50437E-11	2.50437E-11	2.50437E-11		2.50437E-11	2.50437E-11	2.50437E-11
Water		0	0			0	0	0		0	0	0
MDEA		0	0			0	0	0		0	0	0
Piperazine		0	0			0	0	0		0	0	0
Phosphoric Acid		0	0			0	0	0		0	0	0
TEG		0	0			0	0	0		0	0	0
O2		0	0			0	0	0		0	0	0
Molar Flow		lbmol/h	lbmol/h			lbmol/h	lbmol/h	lbmol/h		lbmol/h	lbmol/h	lbmol/h
H2S		0.00115726	0.00115726			0.00115726	0.00115726	0.00115726		0.00115726	0.00115726	0.00115726
CO2		9.10284E-06	9.10284E-06			9.10284E-06	9.10284E-06	9.10284E-06		9.10284E-06	9.10284E-06	9.10284E-06
N2		380.133	380.133			380.133	380.133	380.133		380.133	380.133	380.133
Methane		20187.8	20187.8			20187.8	20187.8	20187.8		20187.8	20187.8	20187.8
Ethane		112.021	112.021			112.021	112.021	112.021		112.021	112.021	112.021
Propane		4.82206	4.82206			4.82206	4.82206	4.82206		4.82206	4.82206	4.82206
i-Butane		0.0819675	0.0819675			0.0819675	0.0819675	0.0819675		0.0819675	0.0819675	0.0819675
n-Butane		0.148709	0.148709			0.148709	0.148709	0.148709		0.148709	0.148709	0.148709
i-Pentane		0.00166820	0.00166820			0.00166820	0.00166820	0.00166820		0.00166820	0.00166820	0.00166820
n-Pentane		0.00262953	0.00262953			0.00262953	0.00262953	0.00262953		0.00262953	0.00262953	0.00262953
n-Hexane		3.08464E-05	3.08464E-05			3.08464E-05	3.08464E-05	3.08464E-05		3.08464E-05	3.08464E-05	3.08464E-05
n-Heptane		3.69370E-06	3.69370E-06			3.69370E-06	3.69370E-06	3.69370E-06		3.69370E-06	3.69370E-06	3.69370E-06
n-Octane		3.22599E-08	3.22599E-08			3.22599E-08	3.22599E-08	3.22599E-08		3.22599E-08	3.22599E-08	3.22599E-08
n-Nonane		1.03741E-08	1.03741E-08			1.03741E-08	1.03741E-08	1.03741E-08		1.03741E-08	1.03741E-08	1.03741E-08
n-Decane		0	0			0	0	0		0	0	0
Undecane		0	0			0	0	0		0	0	0
Benzene		1.93884E-05	1.93884E-05			1.93884E-05	1.93884E-05	1.93884E-05		1.93884E-05	1.93884E-05	1.93884E-05
Toluene		8.73217E-07	8.73217E-07			8.73217E-07	8.73217E-07	8.73217E-07		8.73217E-07	8.73217E-07	8.73217E-07
Ethylbenzene		1.09056E-09	1.09056E-09			1.09056E-09	1.09056E-09	1.09056E-09		1.09056E-09	1.09056E-09	1.09056E-09
m-Xylene		5.18031E-09	5.18031E-09			5.18031E-09	5.18031E-09	5.18031E-09		5.18031E-09	5.18031E-09	5.18031E-09
Water		0	0			0	0	0		0	0	0
MDEA		0	0			0	0	0		0	0	0
Piperazine		0	0			0	0	0		0	0	0
Phosphoric Acid		0	0			0	0	0		0	0	0
TEG		0	0			0	0	0		0	0	0

O2	0	0			0	0	0		0	0	0
Mass Fraction	%	%			%	%	%		%	%	%
H2S	1.16652E-05	1.16652E-05			1.16652E-05	1.16652E-05	1.16652E-05		1.16652E-05	1.16652E-05	1.16652E-05
CO2	1.18487E-07	1.18487E-07			1.18487E-07	1.18487E-07	1.18487E-07		1.18487E-07	1.18487E-07	1.18487E-07
N2	3.14955	3.14955			3.14955	3.14955	3.14955		3.14955	3.14955	3.14955
Methane	95.7872	95.7872			95.7872	95.7872	95.7872		95.7872	95.7872	95.7872
Ethane	0.996245	0.996245			0.996245	0.996245	0.996245		0.996245	0.996245	0.996245
Propane	0.0628890	0.0628890			0.0628890	0.0628890	0.0628890		0.0628890	0.0628890	0.0628890
i-Butane	0.00140906	0.00140906			0.00140906	0.00140906	0.00140906		0.00140906	0.00140906	0.00140906
n-Butane	0.00255638	0.00255638			0.00255638	0.00255638	0.00255638		0.00255638	0.00255638	0.00255638
i-Pentane	3.55979E-05	3.55979E-05			3.55979E-05	3.55979E-05	3.55979E-05		3.55979E-05	3.55979E-05	3.55979E-05
n-Pentane	5.61119E-05	5.61119E-05			5.61119E-05	5.61119E-05	5.61119E-05		5.61119E-05	5.61119E-05	5.61119E-05
n-Hexane	7.86203E-07	7.86203E-07			7.86203E-07	7.86203E-07	7.86203E-07		7.86203E-07	7.86203E-07	7.86203E-07
n-Heptane	1.09468E-07	1.09468E-07			1.09468E-07	1.09468E-07	1.09468E-07		1.09468E-07	1.09468E-07	1.09468E-07
n-Octane	1.08989E-09	1.08989E-09			1.08989E-09	1.08989E-09	1.08989E-09		1.08989E-09	1.08989E-09	1.08989E-09
n-Nonane	3.93523E-10	3.93523E-10			3.93523E-10	3.93523E-10	3.93523E-10		3.93523E-10	3.93523E-10	3.93523E-10
n-Decane	0	0			0	0	0		0	0	0
Undecane	0	0			0	0	0		0	0	0
Benzene	4.47926E-07	4.47926E-07			4.47926E-07	4.47926E-07	4.47926E-07		4.47926E-07	4.47926E-07	4.47926E-07
Toluene	2.37964E-08	2.37964E-08			2.37964E-08	2.37964E-08	2.37964E-08		2.37964E-08	2.37964E-08	2.37964E-08
Ethylbenzene	3.42435E-11	3.42435E-11			3.42435E-11	3.42435E-11	3.42435E-11		3.42435E-11	3.42435E-11	3.42435E-11
m-Xylene	1.62661E-10	1.62661E-10			1.62661E-10	1.62661E-10	1.62661E-10		1.62661E-10	1.62661E-10	1.62661E-10
Water	0	0			0	0	0		0	0	0
MDEA	0	0			0	0	0		0	0	0
Piperazine	0	0			0	0	0		0	0	0
Phosphoric Acid	0	0			0	0	0		0	0	0
TEG	0	0			0	0	0		0	0	0
O2	0	0			0	0	0		0	0	0
Mass Flow	lb/h	lb/h			lb/h	lb/h	lb/h		lb/h	lb/h	lb/h
H2S	0.0394406	0.0394406			0.0394406	0.0394406	0.0394406		0.0394406	0.0394406	0.0394406
CO2	0.000400612	0.000400612			0.000400612	0.000400612	0.000400612		0.000400612	0.000400612	0.000400612
N2	10648.8	10648.8			10648.8	10648.8	10648.8		10648.8	10648.8	10648.8
Methane	323862	323862			323862	323862	323862		323862	323862	323862
Ethane	3368.36	3368.36			3368.36	3368.36	3368.36		3368.36	3368.36	3368.36
Propane	212.632	212.632			212.632	212.632	212.632		212.632	212.632	212.632
i-Butane	4.76413	4.76413			4.76413	4.76413	4.76413		4.76413	4.76413	4.76413
n-Butane	8.64328	8.64328			8.64328	8.64328	8.64328		8.64328	8.64328	8.64328
i-Pentane	0.120359	0.120359			0.120359	0.120359	0.120359		0.120359	0.120359	0.120359
n-Pentane	0.189718	0.189718			0.189718	0.189718	0.189718		0.189718	0.189718	0.189718
n-Hexane	0.00265820	0.00265820			0.00265820	0.00265820	0.00265820		0.00265820	0.00265820	0.00265820
n-Heptane	0.000370116	0.000370116			0.000370116	0.000370116	0.000370116		0.000370116	0.000370116	0.000370116
n-Octane	3.68500E-06	3.68500E-06			3.68500E-06	3.68500E-06	3.68500E-06		3.68500E-06	3.68500E-06	3.68500E-06
n-Nonane	1.33053E-06	1.33053E-06			1.33053E-06	1.33053E-06	1.33053E-06		1.33053E-06	1.33053E-06	1.33053E-06
n-Decane	0	0			0	0	0		0	0	0
Undecane	0	0			0	0	0		0	0	0
Benzene	0.00151446	0.00151446			0.00151446	0.00151446	0.00151446		0.00151446	0.00151446	0.00151446
Toluene	8.04569E-05	8.04569E-05			8.04569E-05	8.04569E-05	8.04569E-05		8.04569E-05	8.04569E-05	8.04569E-05
Ethylbenzene	1.15779E-07	1.15779E-07			1.15779E-07	1.15779E-07	1.15779E-07		1.15779E-07	1.15779E-07	1.15779E-07
m-Xylene	5.49967E-07	5.49967E-07			5.49967E-07	5.49967E-07	5.49967E-07		5.49967E-07	5.49967E-07	5.49967E-07
Water	0	0			0	0	0		0	0	0
MDEA	0	0			0	0	0		0	0	0
Piperazine	0	0			0	0	0		0	0	0
Phosphoric Acid	0	0			0	0	0		0	0	0
TEG	0	0			0	0	0		0	0	0
O2	0	0			0	0	0		0	0	0

Process Streams		1	2	3	4	5	6	7	8	9	10	11
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	XFS1	VSSL-100	VSSL-100	VSSL-101	VSSL-101	CMPR-100	FAXR-100	VSSL-102	VSSL-102	CMPR-101	FAXR-101
	To Block:	VSSL-101	--	--	--	CMPR-100	FAXR-100	VSSL-102	--	CMPR-101	FAXR-101	VSSL-100
Property	**Units**											
Temperature	°F	120	119.801			119.894	266.556	120		119.903	258.198	120
Pressure	psia	284.994	1244.70			282.994	613.696	608.696		606.696	1254.70	1249.70
Mole Fraction Vapor	%	100	100			100	100	100		100	100	100
Mole Fraction Light Liquid	%	0	0			0	0	0		0	0	0
Mole Fraction Heavy Liquid	%	0	0			0	0	0		0	0	0
Molecular Weight	lb/lbmol	16.3454	16.3454			16.3454	16.3454	16.3454		16.3454	16.3454	16.3454
Mass Density	lb/ft^3	0.771310	3.63998			0.765901	1.31027	1.69826		1.69274	2.74309	3.65374
Molar Flow	lbmol/h	20685.0	20685.0			20685.0	20685.0	20685.0		20685.0	20685.0	20685.0
Mass Flow	lb/h	338106	338106			338106	338106	338106		338106	338106	338106
Vapor Volumetric Flow	ft^3/h	438353	92886.8			441448	258043	199089		199738	123257	92536.9
Liquid Volumetric Flow	gpm	54651.8	11580.7			55037.7	32171.6	24821.5		24902.4	15367.2	11537.1
Std Vapor Volumetric Flow	MMSCFD	188.391	188.391			188.391	188.391	188.391		188.391	188.391	188.391
Std Liquid Volumetric Flow	sgpm	2205.25	2205.25			2205.25	2205.25	2205.25		2205.25	2205.25	2205.25
Compressibility		0.970866	0.898805			0.971038	0.982322	0.941777		0.941900	0.970482	0.898708
Specific Gravity		0.564366	0.564366			0.564366	0.564366	0.564366		0.564366	0.564366	0.564366
API Gravity												
Enthalpy	Btu/h	-6.46941E+08	-6.56132E+08			-6.46941E+08	-6.20008E+08	-6.50144E+08		-6.50144E+08	-6.25564E+08	-6.56132E+08
Mass Enthalpy	Btu/lb	-1913.43	-1940.61			-1913.43	-1833.77	-1922.90		-1922.90	-1850.20	-1940.61
Mass Cp	Btu/(lb*°F)	0.560971	0.658275			0.560755	0.631015	0.592704		0.592490	0.662593	0.658721
Ideal Gas CpCv Ratio		1.29357	1.29362			1.29360	1.25537	1.29357		1.29360	1.25744	1.29357
Dynamic Viscosity	cP	0.0122692	0.0138492			0.0122652	0.0148837	0.0126908		0.0126864	0.0155198	0.0138621
Kinematic Viscosity	cSt	0.993041	0.237522			0.999727	0.709134	0.466514		0.467871	0.353204	0.236849
Thermal Conductivity	Btu/(h*ft*°F)	0.0220092	0.0256321			0.0219981	0.0297804	0.0231243		0.0231131	0.0311444	0.0256598
Surface Tension	lbf/ft											
Net Ideal Gas Heating Value	Btu/ft^3	896.882	896.882			896.882	896.882	896.882		896.882	896.882	896.882
Net Liquid Heating Value	Btu/lb	20820.9	20820.9			20820.9	20820.9	20820.9		20820.9	20820.9	20820.9
Gross Ideal Gas Heating Value	Btu/ft^3	995.930	995.930			995.930	995.930	995.930		995.930	995.930	995.930
Gross Liquid Heating Value	Btu/lb	23120.4	23120.4			23120.4	23120.4	23120.4		23120.4	23120.4	23120.4

Pr

Client Name:
Location:
Job:

ProMax Filename:
ProMax Version:
Simulation Initiated:

Repo

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Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

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Targa
Produced Water Tanks

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ort Navigator can be activated via the ProMax Navigator Toolbar.
asterisk (*), throughout the report, denotes a user specified value.
after a value, throughout the report, denotes an extrapolated or approximate value.

Copperhead Gas Plant - Produced Water Tank
Annual & Hourly Worst Case Short Term Emissions
Annual Rate= ~8.8 MMgal/Yr

Annual Emissions

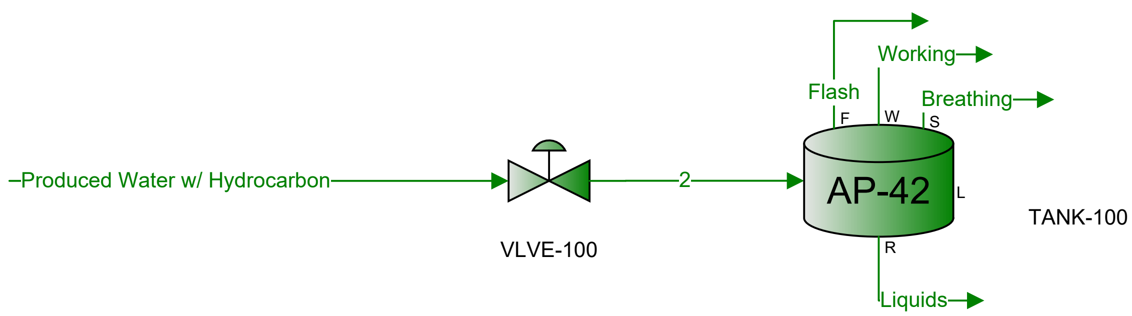
"Flash" VOCs = 47.4 ton/yr

"Breathing" VOCs = 0.3182 ton/yr

"Working" VOCs = 4.975 ton/yr

Hourly Emissions

Names	Units	TANK-100
Worst-Case Flashing Losses	lb/h	183.62
Short-Term Working Losses per Tank	lb/h	7.2047



Names	Units	Produced Water w / Hydrocarbon	2	Flash	Working	Breathing	Liquids
Temperature	°F	97.259*	97.126	73.443	73.443	73.443	73.443
Pressure	psia	19.696*	14.696*	13.26	13.26	13.26	13.26
Std Vapor Volumetric Flow	MMSCFD	4.1771	4.1771	0.019211	0.0016144	0.00010324	4.1562
Std Liquid Volumetric Flow	sgpm	16.7*	16.7	0.236	0.019404	0.0012409	16.443
Gross Ideal Gas Heating Value	Btu/ft^3	52.682	52.682	434.03	363.34	363.34	50.791
Net Ideal Gas Heating Value	Btu/ft^3	2.463	2.463	403.64	343.88	343.88	0.46753

Process Streams	Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
To Block:	--	--	--	VLVE-100	--	TANK-100
Mole Fraction	%	%	%	%	%	%
Water Gas	0	0	0	0*	0	0
Water	4.26803	3.10488	99.9849	99.5*	4.26803	99.5
Methane	0.498967	9.23513	4.59143E-20	0.0426795*	0.498967	0.0426795
Ethane	0.269647	3.29476	2.44962E-20	0.0152642*	0.269647	0.0152642
Propane	0.0684278	1.17731	8.35206E-21	0.00544285*	0.0684278	0.00544285
i-Butane	0.00348920	0.0845441	1.98014E-22	0.000390271*	0.00348920	0.000390271
n-Butane	0.0224010	0.419055	1.58412E-21	0.00193653*	0.0224010	0.00193653
i-Pentane	0.00180106	0.0469286	1.59518E-22	0.000216575*	0.00180106	0.000216575
n-Pentane	0.000346043	0.0230406	1.99398E-23	0.000106111*	0.000346043	0.000106111
Neohexane	0	0	0	0*	0	0
2,3-Dimethylbutane	0	0	0	0*	0	0
2-Methylpentane	0	0	0	0*	0	0
3-Methylpentane	0	0	0	0*	0	0
n-Hexane	4.05999E-05	0.00391737	4.17355E-24	1.80335E-05*	4.05999E-05	1.80335E-05
2,2-Dimethylpentane	0	0	0	0*	0	0
Methylcyclopentane	0	0	0	0*	0	0
2,4-Dimethylpentane	0	0	0	0*	0	0
Benzene	5.56097	3.72917	0.00952839	0.0289185*	5.56097	0.0289185
3,3-Dimethylpentane	0	0	0	0*	0	0
Cyclohexane	0	0	0	0*	0	0
2-Methylhexane	0	0	0	0*	0	0
2,3-Dimethylpentane	0	0	0	0*	0	0
1,1-Dimethylcyclopentane	0	0	0	0*	0	0
3-Methylhexane	0	0	0	0*	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0*	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0*	0	0
2,2,4-Trimethylpentane	0	0	0	0*	0	0
n-Heptane	1.48381E-05	0.00191418	8.97331E-25	8.80980E-06*	1.48381E-05	8.80980E-06
Methylcyclohexane	0	0	0	0*	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0*	0	0
2,5-Dimethylhexane	0	0	0	0*	0	0
2,4-Dimethylhexane	0	0	0	0*	0	0
3,3-Dimethylhexane	0	0	0	0*	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0*	0	0
2,3,4-Trimethylpentane	0	0	0	0*	0	0
Toluene	2.00064	1.33691	0.00237238	0.00933189*	2.00064	0.00933189
2,3-Dimethylhexane	0	0	0	0*	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0*	0	0
2-Methylheptane	0	0	0	0*	0	0
4-Methylheptane	0	0	0	0*	0	0
3,4-Dimethylhexane	0	0	0	0*	0	0
3-Methylheptane	0	0	0	0*	0	0
3-Ethylhexane	0	0	0	0*	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0*	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0*	0	0
1,1-Dimethylcyclohexane	0	0	0	0*	0	0
2,2,4-Trimethylhexane	0	0	0	0*	0	0
Cycloheptane	0	0	0	0*	0	0
n-Octane	5.80025E-07	0.000176739	4.91965E-26	8.13100E-07*	5.80025E-07	8.13100E-07
1,t-3-Dimethylcyclohexane	0	0	0	0*	0	0
2,2-Dimethylheptane	0	0	0	0*	0	0
2,4-Dimethylheptane	0	0	0	0*	0	0
2,6-Dimethylheptane	0	0	0	0*	0	0
2,5-Dimethylheptane	0	0	0	0*	0	0
Ethylcyclohexane	0	0	0	0*	0	0
3,3-Dimethylheptane	0	0	0	0*	0	0
2,3,4-Trimethylhexane	0	0	0	0*	0	0
Ethylbenzene	0.0705691	0.0485550	7.61804E-05	0.000328131*	0.0705691	0.000328131
2,3-Dimethylheptane	0	0	0	0*	0	0
m-Xylene	0.0936527	0.0623334	4.76363E-05	0.000372591*	0.0936527	0.000372591
p-Xylene	0	0	0	0*	0	0
3,4-Dimethylheptane	0	0	0	0*	0	0
2-Methyloctane	0	0	0	0*	0	0
4-Methyloctane	0	0	0	0*	0	0
3-Methyloctane	0	0	0	0*	0	0
o-Xylene	0	0	0	0*	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0*	0	0
n-Nonane	2.00461E-07	5.75137E-05	1.09540E-26	2.64600E-07*	2.00461E-07	2.64600E-07
Isopropylbenzene	0	0	0	0*	0	0
n-Butylcyclopentane	0	0	0	0*	0	0
n-Propylbenzene	0	0	0	0*	0	0
m-Ethyltoluene	0	0	0	0*	0	0
p-Ethyltoluene	0	0	0	0*	0	0
4-Methylnonane	0	0	0	0*	0	0
2-Methylnonane	0	0	0	0*	0	0
t-Butylbenzene	0	0	0	0*	0	0
Butylcyclohexane	0	0	0	0*	0	0
n-Decane	1.99389E-10	1.95668E-07	1.92855E-29	9.00000E-10*	1.99389E-10	9.00000E-10
Undecane	6.89353E-11	6.52225E-08	4.38871E-30	3.00000E-10*	6.89353E-11	3.00000E-10
Dodecane	0	0	0	0*	0	0
Tridecane	0	0	0	0*	0	0
Nitrogen	0.000772508	0.0294576	5.13551E-23	0.000135799*	0.000772508	0.000135799
Carbon Dioxide	80.4520	73.2229	4.28462E-18	0.369849*	80.4520	0.369849
Hydrogen Sulfide	6.68820	4.17890	0.00304545	0.025*	6.68820	0.025
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h

Water Gas	0	0	0	0*	0	0
Water	0.000483820	0.0654933	456.271	456.344*	0.00756525	456.344
Methane	5.65624E-05	0.194803	2.09525E-19	0.195744*	0.000884438	0.195744
Ethane	3.05669E-05	0.0694987	1.11786E-19	0.0700072*	0.000477960	0.0700072
Propane	7.75692E-06	0.0248339	3.81137E-20	0.0249630*	0.000121291	0.0249630
i-Butane	3.95533E-07	0.00178335	9.03618E-22	0.00178993*	6.18475E-06	0.00178993
n-Butane	2.53935E-06	0.00883941	7.22895E-21	0.00888166*	3.97066E-05	0.00888166
i-Pentane	2.04167E-07	0.000989898	7.27944E-22	0.000993295*	3.19246E-06	0.000993295
n-Pentane	3.92271E-08	0.000486012	9.09930E-23	0.000486665*	6.13375E-07	0.000486665
Neohexane	0	0	0	0*	0	0
2,3-Dimethylbutane	0	0	0	0*	0	0
2-Methylpentane	0	0	0	0*	0	0
3-Methylpentane	0	0	0	0*	0	0
n-Hexane	4.60237E-09	8.26318E-05	1.90456E-23	8.27084E-05*	7.19650E-08	8.27084E-05
2,2-Dimethylpentane	0	0	0	0*	0	0
Methylcyclopentane	0	0	0	0*	0	0
2,4-Dimethylpentane	0	0	0	0*	0	0
Benzene	0.000630386	0.0786620	0.0434818	0.132631*	0.00985704	0.132631
3,3-Dimethylpentane	0	0	0	0*	0	0
Cyclohexane	0	0	0	0*	0	0
2-Methylhexane	0	0	0	0*	0	0
2,3-Dimethylpentane	0	0	0	0*	0	0
1,1-Dimethylcyclopentane	0	0	0	0*	0	0
3-Methylhexane	0	0	0	0*	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0*	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0*	0	0
2,2,4-Trimethylpentane	0	0	0	0*	0	0
n-Heptane	1.68203E-09	4.03771E-05	4.09488E-24	4.04050E-05*	2.63011E-08	4.04050E-05
Methylcyclohexane	0	0	0	0*	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0*	0	0
2,5-Dimethylhexane	0	0	0	0*	0	0
2,4-Dimethylhexane	0	0	0	0*	0	0
3,3-Dimethylhexane	0	0	0	0*	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0*	0	0
2,3,4-Trimethylpentane	0	0	0	0*	0	0
Toluene	0.000226790	0.0282004	0.0108261	0.0427995*	0.00354621	0.0427995
2,3-Dimethylhexane	0	0	0	0*	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0*	0	0
2-Methylheptane	0	0	0	0*	0	0
4-Methylheptane	0	0	0	0*	0	0
3,4-Dimethylhexane	0	0	0	0*	0	0
3-Methylheptane	0	0	0	0*	0	0
3-Ethylhexane	0	0	0	0*	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0*	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0*	0	0
1,1-Dimethylcyclohexane	0	0	0	0*	0	0
2,2,4-Trimethylhexane	0	0	0	0*	0	0
Cycloheptane	0	0	0	0*	0	0
n-Octane	6.57511E-11	3.72809E-06	2.24503E-25	3.72918E-06*	1.02812E-09	3.72918E-06
1,t-3-Dimethylcyclohexane	0	0	0	0*	0	0
2,2-Dimethylheptane	0	0	0	0*	0	0
2,4-Dimethylheptane	0	0	0	0*	0	0
2,6-Dimethylheptane	0	0	0	0*	0	0
2,5-Dimethylheptane	0	0	0	0*	0	0
Ethylcyclohexane	0	0	0	0*	0	0
3,3-Dimethylheptane	0	0	0	0*	0	0
2,3,4-Trimethylhexane	0	0	0	0*	0	0
Ethylbenzene	7.99965E-06	0.00102420	0.000347641	0.00150493*	0.000125087	0.00150493
2,3-Dimethylheptane	0	0	0	0*	0	0
m-Xylene	1.06164E-05	0.00131484	0.000217383	0.00170884*	0.000166003	0.00170884
p-Xylene	0	0	0	0*	0	0
3,4-Dimethylheptane	0	0	0	0*	0	0
2-Methyloctane	0	0	0	0*	0	0
4-Methyloctane	0	0	0	0*	0	0
3-Methyloctane	0	0	0	0*	0	0
o-Xylene	0	0	0	0*	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0*	0	0
n-Nonane	2.27241E-11	1.21318E-06	4.99876E-26	1.21355E-06*	3.55325E-10	1.21355E-06
Isopropylbenzene	0	0	0	0*	0	0
n-Butylcyclopentane	0	0	0	0*	0	0
n-Propylbenzene	0	0	0	0*	0	0
m-Ethyltoluene	0	0	0	0*	0	0
p-Ethyltoluene	0	0	0	0*	0	0
4-Methylnonane	0	0	0	0*	0	0
2-Methylnonane	0	0	0	0*	0	0
t-Butylbenzene	0	0	0	0*	0	0
Butylcyclohexane	0	0	0	0*	0	0
n-Decane	2.26026E-14	4.12736E-09	8.80072E-29	4.12774E-09*	3.53426E-13	4.12774E-09
Undecane	7.81444E-15	1.37578E-09	2.00274E-29	1.37591E-09*	1.22190E-13	1.37591E-09
Dodecane	0	0	0	0*	0	0
Tridecane	0	0	0	0*	0	0
Nitrogen	8.75708E-08	0.000621369	2.34353E-22	0.000622826*	1.36930E-06	0.000622826
Carbon Dioxide	0.00911997	1.54454	1.95524E-17	1.69627*	0.142604	1.69627
Hydrogen Sulfide	0.000758168	0.0881485	0.0138976	0.114659*	0.0118551	0.114659
Mass Fraction	%	%	%	%	%	%
Water Gas	0	0	0	0*	0	0
Water	1.70773	1.33754	99.9401	98.7946*	1.70773	98.7946
Methane	0.177784	3.54271	4.08680E-20	0.0377363*	0.177784	0.0377363
Ethane	0.180080	2.36900	4.08680E-20	0.0252966*	0.180080	0.0252966
Propane	0.0670162	1.24139	2.04340E-20	0.0132279*	0.0670162	0.0132279
i-Butane	0.00450422	0.117502	6.38562E-22	0.00125019*	0.00450422	0.00125019
n-Butane	0.0289174	0.582417	5.10850E-21	0.00620348*	0.0289174	0.00620348
i-Pentane	0.00288609	0.0809633	6.38562E-22	0.000861205*	0.00288609	0.000861205
n-Pentane	0.000554511	0.0397507	7.98203E-23	0.000421948*	0.000554511	0.000421948

Neohexane	0	0	0		0*	0	0
2,3-Dimethylbutane	0	0	0		0*	0	0
2-Methylpentane	0	0	0		0*	0	0
3-Methylpentane	0	0	0		0*	0	0
n-Hexane	7.77069E-05	0.00807234	1.99551E-23		8.56510E-05*	7.77069E-05	8.56510E-05
2,2-Dimethylpentane	0	0	0		0*	0	0
Methylcyclopentane	0	0	0		0*	0	0
2,4-Dimethylpentane	0	0	0		0*	0	0
Benzene	9.64758	6.96547	0.0412953		0.124498*	9.64758	0.124498
3,3-Dimethylpentane	0	0	0		0*	0	0
Cyclohexane	0	0	0		0*	0	0
2-Methylhexane	0	0	0		0*	0	0
2,3-Dimethylpentane	0	0	0		0*	0	0
1,1-Dimethylcyclopentane	0	0	0		0*	0	0
3-Methylhexane	0	0	0		0*	0	0
1,t-3-Dimethylcyclopentane	0	0	0		0*	0	0
1,c-3-Dimethylcyclopentane	0	0	0		0*	0	0
2,2,4-Trimethylpentane	0	0	0		0*	0	0
n-Heptane	3.30222E-05	0.00458648	4.98877E-24		4.86532E-05*	3.30222E-05	4.86532E-05
Methylcyclohexane	0	0	0		0*	0	0
1,1,3-Trimethylcyclopentane	0	0	0		0*	0	0
2,5-Dimethylhexane	0	0	0		0*	0	0
2,4-Dimethylhexane	0	0	0		0*	0	0
3,3-Dimethylhexane	0	0	0		0*	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0		0*	0	0
2,3,4-Trimethylpentane	0	0	0		0*	0	0
Toluene	4.09412	2.94554	0.0121280		0.0473892*	4.09412	0.0473892
2,3-Dimethylhexane	0	0	0		0*	0	0
1,1,2-Trimethylcyclopentane	0	0	0		0*	0	0
2-Methylheptane	0	0	0		0*	0	0
4-Methylheptane	0	0	0		0*	0	0
3,4-Dimethylhexane	0	0	0		0*	0	0
3-Methylheptane	0	0	0		0*	0	0
3-Ethylhexane	0	0	0		0*	0	0
1,c-3-Dimethylcyclohexane	0	0	0		0*	0	0
1,t-4-Dimethylcyclohexane	0	0	0		0*	0	0
1,1-Dimethylcyclohexane	0	0	0		0*	0	0
2,2,4-Trimethylhexane	0	0	0		0*	0	0
Cycloheptane	0	0	0		0*	0	0
n-Octane	1.47154E-06	0.000482758	3.11798E-25		5.11903E-06*	1.47154E-06	5.11903E-06
1,t-3-Dimethylcyclohexane	0	0	0		0*	0	0
2,2-Dimethylheptane	0	0	0		0*	0	0
2,4-Dimethylheptane	0	0	0		0*	0	0
2,6-Dimethylheptane	0	0	0		0*	0	0
2,5-Dimethylheptane	0	0	0		0*	0	0
Ethylcyclohexane	0	0	0		0*	0	0
3,3-Dimethylheptane	0	0	0		0*	0	0
2,3,4-Trimethylhexane	0	0	0		0*	0	0
Ethylbenzene	0.166398	0.123264	0.000448734		0.00191998*	0.166398	0.00191998
2,3-Dimethylheptane	0	0	0		0*	0	0
m-Xylene	0.220828	0.158243	0.000280597		0.00218013*	0.220828	0.00218013
p-Xylene	0	0	0		0*	0	0
3,4-Dimethylheptane	0	0	0		0*	0	0
2-Methyloctane	0	0	0		0*	0	0
4-Methyloctane	0	0	0		0*	0	0
3-Methyloctane	0	0	0		0*	0	0
o-Xylene	0	0	0		0*	0	0
1,1,2-Trimethylcyclohexane	0	0	0		0*	0	0
n-Nonane	5.71027E-07	0.000176387	7.79495E-26		1.87040E-06*	5.71027E-07	1.87040E-06
Isopropylbenzene	0	0	0		0*	0	0
n-Butylcyclopentane	0	0	0		0*	0	0
n-Propylbenzene	0	0	0		0*	0	0
m-Ethyltoluene	0	0	0		0*	0	0
p-Ethyltoluene	0	0	0		0*	0	0
4-Methylnonane	0	0	0		0*	0	0
2-Methylnonane	0	0	0		0*	0	0
t-Butylbenzene	0	0	0		0*	0	0
Butylcyclohexane	0	0	0		0*	0	0
n-Decane	6.30090E-10	6.65718E-07	1.52245E-28		7.05766E-09*	6.30090E-10	7.05766E-09
Undecane	2.39318E-10	2.43781E-07	3.80613E-29		2.58447E-09*	2.39318E-10	2.58447E-09
Dodecane	0	0	0		0*	0	0
Tridecane	0	0	0		0*	0	0
Nitrogen	0.000480640	0.0197326	7.98203E-23		0.000209668*	0.000480640	0.000209668
Carbon Dioxide	78.6384	77.0575	1.04622E-17		0.897099*	78.6384	0.897099
Hydrogen Sulfide	5.06257	3.40561	0.00575872		0.0469591*	5.06257	0.0469591
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**		**lb/h**	**lb/h**
Water Gas	0	0	0		0*	0	0
Water	0.00871615	1.17988	8219.85		8221.17*	0.136290	8221.17
Methane	0.000907400	3.12512	3.36130E-18		3.14022*	0.0141886	3.14022
Ethane	0.000919118	2.08976	3.36130E-18		2.10505*	0.0143718	2.10505
Propane	0.000342046	1.09507	1.68065E-18		1.10076*	0.00534840	1.10076
i-Butane	2.29892E-05	0.103652	5.25203E-20		0.104035*	0.000359471	0.104035
n-Butane	0.000147593	0.513766	4.20162E-19		0.516221*	0.00230783	0.516221
i-Pentane	1.47304E-05	0.0714199	5.25203E-20		0.0716650*	0.000230332	0.0716650
n-Pentane	2.83019E-06	0.0350652	6.56504E-21		0.0351123*	4.42542E-05	0.0351123
Neohexane	0	0	0		0*	0	0
2,3-Dimethylbutane	0	0	0		0*	0	0
2-Methylpentane	0	0	0		0*	0	0
3-Methylpentane	0	0	0		0*	0	0
n-Hexane	3.96611E-07	0.00712083	1.64126E-21		0.00712743*	6.20161E-06	0.00712743
2,2-Dimethylpentane	0	0	0		0*	0	0
Methylcyclopentane	0	0	0		0*	0	0
2,4-Dimethylpentane	0	0	0		0*	0	0
Benzene	0.0492406	6.14443	3.39644		10.3601*	0.769951	10.3601

3,3-Dimethylpentane	0	0	0	0*	0	0
Cyclohexane	0	0	0	0*	0	0
2-Methylhexane	0	0	0	0*	0	0
2,3-Dimethylpentane	0	0	0	0*	0	0
1,1-Dimethylcyclopentane	0	0	0	0*	0	0
3-Methylhexane	0	0	0	0*	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0*	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0*	0	0
2,2,4-Trimethylpentane	0	0	0	0*	0	0
n-Heptane	1.68543E-07	0.00404586	4.10315E-22	0.00404866*	2.63542E-06	0.00404866
Methylcyclohexane	0	0	0	0*	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0*	0	0
2,5-Dimethylhexane	0	0	0	0*	0	0
2,4-Dimethylhexane	0	0	0	0*	0	0
3,3-Dimethylhexane	0	0	0	0*	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0*	0	0
2,3,4-Trimethylpentane	0	0	0	0*	0	0
Toluene	0.0208961	2.59834	0.997502	3.94348*	0.326742	3.94348
2,3-Dimethylhexane	0	0	0	0*	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0*	0	0
2-Methylheptane	0	0	0	0*	0	0
4-Methylheptane	0	0	0	0*	0	0
3,4-Dimethylhexane	0	0	0	0*	0	0
3-Methylheptane	0	0	0	0*	0	0
3-Ethylhexane	0	0	0	0*	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0*	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0*	0	0
1,1-Dimethylcyclohexane	0	0	0	0*	0	0
2,2,4-Trimethylhexane	0	0	0	0*	0	0
Cycloheptane	0	0	0	0*	0	0
n-Octane	7.51065E-09	0.000425854	2.56447E-23	0.000425979*	1.17440E-07	0.000425979
1,t-3-Dimethylcyclohexane	0	0	0	0*	0	0
2,2-Dimethylheptane	0	0	0	0*	0	0
2,4-Dimethylheptane	0	0	0	0*	0	0
2,6-Dimethylheptane	0	0	0	0*	0	0
2,5-Dimethylheptane	0	0	0	0*	0	0
Ethylcyclohexane	0	0	0	0*	0	0
3,3-Dimethylheptane	0	0	0	0*	0	0
2,3,4-Trimethylhexane	0	0	0	0*	0	0
Ethylbenzene	0.000849283	0.108735	0.0369073	0.159771*	0.0132798	0.159771
2,3-Dimethylheptane	0	0	0	0*	0	0
m-Xylene	0.00112709	0.139590	0.0230785	0.181419*	0.0176237	0.181419
p-Xylene	0	0	0	0*	0	0
3,4-Dimethylheptane	0	0	0	0*	0	0
2-Methyloctane	0	0	0	0*	0	0
4-Methyloctane	0	0	0	0*	0	0
3-Methyloctane	0	0	0	0*	0	0
o-Xylene	0	0	0	0*	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0*	0	0
n-Nonane	2.91448E-09	0.000155596	6.41117E-24	0.000155645*	4.55723E-08	0.000155645
Isopropylbenzene	0	0	0	0*	0	0
n-Butylcyclopentane	0	0	0	0*	0	0
n-Propylbenzene	0	0	0	0*	0	0
m-Ethyltoluene	0	0	0	0*	0	0
p-Ethyltoluene	0	0	0	0*	0	0
4-Methylnonane	0	0	0	0*	0	0
2-Methylnonane	0	0	0	0*	0	0
t-Butylbenzene	0	0	0	0*	0	0
Butylcyclohexane	0	0	0	0*	0	0
n-Decane	3.21594E-12	5.87248E-07	1.25218E-26	5.87301E-07*	5.02860E-11	5.87301E-07
Undecane	1.22146E-12	2.15046E-07	3.13045E-27	2.15067E-07*	1.90994E-11	2.15067E-07
Dodecane	0	0	0	0*	0	0
Tridecane	0	0	0	0*	0	0
Nitrogen	2.45315E-06	0.0174067	6.56504E-21	0.0174475*	3.83588E-05	0.0174475
Carbon Dioxide	0.401365	67.9745	8.60492E-16	74.6519*	6.27595	74.6519
Hydrogen Sulfide	0.0258390	3.00418	0.473642	3.90769*	0.404032	3.90769

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
	To Block:	--	--	--	VLVE-100	--	TANK-100
Property	Units						
Temperature	°F	73.4428	73.4428	73.4428	97.2586*	73.4428	97.1263
Pressure	psia	13.26	13.26	13.26	19.6959*	13.26	14.6959*
Mole Fraction Vapor	%	98.2969	100	0	0.462179	98.2969	0.484842
Mole Fraction Light Liquid	%	0.489425	0	100	99.5378	0.489425	99.5152
Mole Fraction Heavy Liquid	%	1.21369	0	0	0	1.21369	0
Phase Mole Fraction	%	100	100	100	100	100	100
Molecular Weight	lb/lbmol	45.0245	41.8195	18.0234	18.1439	45.0245	18.1439
Mass Density	lb/ft^3	0.106877	0.0975083	62.2510	10.7939	0.106877	8.06802
Molar Flow	lbmol/h	0.0113359	2.10937	456.340	458.638	0.177254	458.638
Mass Flow	lb/h	0.510393	88.2127	8224.77	8321.48	7.98077	8321.48
Vapor Volumetric Flow	ft^3/h	4.77553	904.669	132.123	770.942	74.6725	1031.42
Liquid Volumetric Flow	gpm	0.595390	112.790	16.4725	96.1174	9.30982	128.592
Std Vapor Volumetric Flow	MMSCFD	0.000103243	0.0192113	4.15617	4.17710	0.00161436	4.17710
Std Liquid Volumetric Flow	sgpm	0.00124091	0.236001	16.4434	16.7*	0.0194036	16.7
Compressibility		0.976395	0.994026	0.000671043	0.00553944	0.976395	0.00553097
Specific Gravity			1.44392	0.998112			
API Gravity				9.99322			
Enthalpy	Btu/h	-1579.93	-276135	-5.60973E+07	-5.62084E+07	-24704.6	-5.62084E+07
Mass Enthalpy	Btu/lb	-3095.51	-3130.33	-6820.53	-6754.61	-3095.51	-6754.61
Mass Cp	Btu/(lb*°F)	0.221158	0.233326	0.978251	0.968951	0.221158	0.968706
Ideal Gas CpCv Ratio		1.25647	1.25735	1.32904	1.32767	1.25647	1.32768

Dynamic Viscosity	cP		0.0136471	0.953391			
Kinematic Viscosity	cSt		8.73733	0.956102			
Thermal Conductivity	Btu/(h*ft*°F)		0.0101568	0.348393			
Surface Tension	lbf/ft			0.00500592			
Net Ideal Gas Heating Value	Btu/ft^3	343.877	403.643	0.467530	2.46303	343.877	2.46303
Net Liquid Heating Value	Btu/lb	2784.44	3558.16	-1049.39	-996.637	2784.44	-996.637
Gross Ideal Gas Heating Value	Btu/ft^3	363.341	434.029	50.7909	52.6820	363.341	52.6820
Gross Liquid Heating Value	Btu/lb	2948.47	3833.94	10.1731	53.7056	2948.47	53.7056

Process Streams		**Breathing**	**Flash**	**Liquids**	**Produced Water w/ Hydrocarbon**	**Working**	**2**
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Vapor**	**From Block:**	**TANK-100**	**TANK-100**	**TANK-100**	**--**	**TANK-100**	**VLVE-100**
	To Block:	**--**	**--**	**--**	**VLVE-100**	**--**	**TANK-100**
Mole Fraction		**%**	**%**		**%**	**%**	**%**
Water Gas		0	0		0	0	0
Water		3.10683	3.10488		4.48858	3.10683	5.97499
Methane		0.507605	9.23513		9.17745	0.507605	8.76411
Ethane		0.274294	3.29476		3.27496	0.274294	3.12944
Propane		0.0695925	1.17731		1.17075	0.0695925	1.11791
i-Butane		0.00354751	0.0845441		0.0841346	0.00354751	0.0802855
n-Butane		0.0227654	0.419055		0.416729	0.0227654	0.397869
i-Pentane		0.00182632	0.0469286		0.0466943	0.00182632	0.0445567
n-Pentane		0.000350497	0.0230406		0.0229200	0.000350497	0.0218593
Neohexane		0	0		0	0	0
2,3-Dimethylbutane		0	0		0	0	0
2-Methylpentane		0	0		0	0	0
3-Methylpentane		0	0		0	0	0
n-Hexane		4.07844E-05	0.00391737		0.00389755	4.07844E-05	0.00371654
2,2-Dimethylpentane		0	0		0	0	0
Methylcyclopentane		0	0		0	0	0
2,4-Dimethylpentane		0	0		0	0	0
Benzene		5.44632	3.72917		3.85618	5.44632	4.12561
3,3-Dimethylpentane		0	0		0	0	0
Cyclohexane		0	0		0	0	0
2-Methylhexane		0	0		0	0	0
2,3-Dimethylpentane		0	0		0	0	0
1,1-Dimethylcyclopentane		0	0		0	0	0
3-Methylhexane		0	0		0	0	0
1,t-3-Dimethylcyclopentane		0	0		0	0	0
1,c-3-Dimethylcyclopentane		0	0		0	0	0
2,2,4-Trimethylpentane		0	0		0	0	0
n-Heptane		1.44553E-05	0.00191418		0.00190471	1.44553E-05	0.00181607
Methylcyclohexane		0	0		0	0	0
1,1,3-Trimethylcyclopentane		0	0		0	0	0
2,5-Dimethylhexane		0	0		0	0	0
2,4-Dimethylhexane		0	0		0	0	0
3,3-Dimethylhexane		0	0		0	0	0
1,t-2,c-3-Trimethylcyclopentane		0	0		0	0	0
2,3,4-Trimethylpentane		0	0		0	0	0
Toluene		1.80694	1.33691		1.36811	1.80694	1.43537
2,3-Dimethylhexane		0	0		0	0	0
1,1,2-Trimethylcyclopentane		0	0		0	0	0
2-Methylheptane		0	0		0	0	0
4-Methylheptane		0	0		0	0	0
3,4-Dimethylhexane		0	0		0	0	0
3-Methylheptane		0	0		0	0	0
3-Ethylhexane		0	0		0	0	0
1,c-3-Dimethylcyclohexane		0	0		0	0	0
1,t-4-Dimethylcyclohexane		0	0		0	0	0
1,1-Dimethylcyclohexane		0	0		0	0	0
2,2,4-Trimethylhexane		0	0		0	0	0
Cycloheptane		0	0		0	0	0
n-Octane		5.17914E-07	0.000176739		0.000175867	5.17914E-07	0.000167663
1,t-3-Dimethylcyclohexane		0	0		0	0	0
2,2-Dimethylheptane		0	0		0	0	0
2,4-Dimethylheptane		0	0		0	0	0
2,6-Dimethylheptane		0	0		0	0	0
2,5-Dimethylheptane		0	0		0	0	0
Ethylcyclohexane		0	0		0	0	0
3,3-Dimethylheptane		0	0		0	0	0
2,3,4-Trimethylhexane		0	0		0	0	0
Ethylbenzene		0.0484194	0.0485550		0.0508977	0.0484194	0.0527365
2,3-Dimethylheptane		0	0		0	0	0
m-Xylene		0.0677458	0.0623334		0.0630062	0.0677458	0.0640172
p-Xylene		0	0		0	0	0
3,4-Dimethylheptane		0	0		0	0	0
2-Methyloctane		0	0		0	0	0
4-Methyloctane		0	0		0	0	0
3-Methyloctane		0	0		0	0	0
o-Xylene		0	0		0	0	0
1,1,2-Trimethylcyclohexane		0	0		0	0	0
n-Nonane		1.54249E-07	5.75137E-05		5.72352E-05	1.54249E-07	5.45640E-05
Isopropylbenzene		0	0		0	0	0
n-Butylcyclopentane		0	0		0	0	0
n-Propylbenzene		0	0		0	0	0
m-Ethyltoluene		0	0		0	0	0
p-Ethyltoluene		0	0		0	0	0
4-Methylnonane		0	0		0	0	0
2-Methylnonane		0	0		0	0	0
t-Butylbenzene		0	0		0	0	0
Butylcyclohexane		0	0		0	0	0
n-Decane		1.08210E-10	1.95668E-07		1.94713E-07	1.08210E-10	1.85616E-07
Undecane		2.12125E-11	6.52225E-08		6.49055E-08	2.12125E-11	6.18728E-08

Dodecane	0	0	0	0	0
Tridecane	0	0	0	0	0
Nitrogen	0.000785890	0.0294576	0.0292936	0.000785890	0.0279488
Carbon Dioxide	81.8408	73.2229	71.9177	81.8408	70.6148
Hydrogen Sulfide	6.80208	4.17890	4.02656	6.80208	4.14274
Molar Flow	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**
Water Gas	0	0	0	0	0
Water	0.000346190	0.0654933	0.0951455	0.00541320	0.132864
Methane	5.65617E-05	0.194803	0.194537	0.000884427	0.194885
Ethane	3.05641E-05	0.0694987	0.0694201	0.000477916	0.0695884
Propane	7.75459E-06	0.0248339	0.0248166	0.000121255	0.0248585
i-Butane	3.95293E-07	0.00178335	0.00178342	6.18101E-06	0.00178528
n-Butane	2.53671E-06	0.00883941	0.00883350	3.96653E-05	0.00884727
i-Pentane	2.03504E-07	0.000989898	0.000989791	3.18209E-06	0.000990791
n-Pentane	3.90553E-08	0.000486012	0.000485841	6.10689E-07	0.000486077
Neohexane	0	0	0	0	0
2,3-Dimethylbutane	0	0	0	0	0
2-Methylpentane	0	0	0	0	0
3-Methylpentane	0	0	0	0	0
n-Hexane	4.54454E-09	8.26318E-05	8.26173E-05	7.10607E-08	8.26434E-05
2,2-Dimethylpentane	0	0	0	0	0
Methylcyclopentane	0	0	0	0	0
2,4-Dimethylpentane	0	0	0	0	0
Benzene	0.000606875	0.0786620	0.0817403	0.00948940	0.0917397
3,3-Dimethylpentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
2-Methylhexane	0	0	0	0	0
2,3-Dimethylpentane	0	0	0	0	0
1,1-Dimethylcyclopentane	0	0	0	0	0
3-Methylhexane	0	0	0	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
n-Heptane	1.61073E-09	4.03771E-05	4.03747E-05	2.51862E-08	4.03833E-05
Methylcyclohexane	0	0	0	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0	0
2,5-Dimethylhexane	0	0	0	0	0
2,4-Dimethylhexane	0	0	0	0	0
3,3-Dimethylhexane	0	0	0	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0	0
2,3,4-Trimethylpentane	0	0	0	0	0
Toluene	0.000201345	0.0282004	0.0290002	0.00314833	0.0319179
2,3-Dimethylhexane	0	0	0	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0	0
2-Methylheptane	0	0	0	0	0
4-Methylheptane	0	0	0	0	0
3,4-Dimethylhexane	0	0	0	0	0
3-Methylheptane	0	0	0	0	0
3-Ethylhexane	0	0	0	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0	0
1,1-Dimethylcyclohexane	0	0	0	0	0
2,2,4-Trimethylhexane	0	0	0	0	0
Cycloheptane	0	0	0	0	0
n-Octane	5.77103E-11	3.72809E-06	3.72789E-06	9.02388E-10	3.72826E-06
1,t-3-Dimethylcyclohexane	0	0	0	0	0
2,2-Dimethylheptane	0	0	0	0	0
2,4-Dimethylheptane	0	0	0	0	0
2,6-Dimethylheptane	0	0	0	0	0
2,5-Dimethylheptane	0	0	0	0	0
Ethylcyclohexane	0	0	0	0	0
3,3-Dimethylheptane	0	0	0	0	0
2,3,4-Trimethylhexane	0	0	0	0	0
Ethylbenzene	5.39530E-06	0.00102420	0.00107889	8.43637E-05	0.00117268
2,3-Dimethylheptane	0	0	0	0	0
m-Xylene	7.54881E-06	0.00131484	0.00133556	0.000118037	0.00142353
p-Xylene	0	0	0	0	0
3,4-Dimethylheptane	0	0	0	0	0
2-Methyloctane	0	0	0	0	0
4-Methyloctane	0	0	0	0	0
3-Methyloctane	0	0	0	0	0
o-Xylene	0	0	0	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0	0
n-Nonane	1.71878E-11	1.21318E-06	1.21323E-06	2.68757E-10	1.21332E-06
Isopropylbenzene	0	0	0	0	0
n-Butylcyclopentane	0	0	0	0	0
n-Propylbenzene	0	0	0	0	0
m-Ethyltoluene	0	0	0	0	0
p-Ethyltoluene	0	0	0	0	0
4-Methylnonane	0	0	0	0	0
2-Methylnonane	0	0	0	0	0
t-Butylbenzene	0	0	0	0	0
Butylcyclohexane	0	0	0	0	0
n-Decane	1.20577E-14	4.12736E-09	4.12739E-09	1.88540E-13	4.12749E-09
Undecane	2.36367E-15	1.37578E-09	1.37582E-09	3.69596E-14	1.37584E-09
Dodecane	0	0	0	0	0
Tridecane	0	0	0	0	0
Nitrogen	8.75705E-08	0.000621369	0.000620944	1.36930E-06	0.000621489
Carbon Dioxide	0.00911940	1.54454	1.52446	0.142595	1.57024
Hydrogen Sulfide	0.000757945	0.0881485	0.0853519	0.0118516	0.0921207
Mass Fraction	**%**	**%**	**%**	**%**	**%**
Water Gas	0	0	0	0	0
Water	1.23966	1.33754	1.94600	1.23966	2.59918
Methane	0.180360	3.54271	3.54311	0.180360	3.39498

Ethane	0.182675	2.36900		2.36983	0.182675	2.27219
Propane	0.0679676	1.24139		1.24237	0.0679676	1.19031
i-Butane	0.00456677	0.117502		0.117682	0.00456677	0.112678
n-Butane	0.0293063	0.582417		0.582891	0.0293063	0.558393
i-Pentane	0.00291843	0.0809633		0.0810747	0.00291843	0.0776247
n-Pentane	0.000560089	0.0397507		0.0397957	0.000560089	0.0380823
Neohexane	0	0		0	0	0
2,3-Dimethylbutane	0	0		0	0	0
2-Methylpentane	0	0		0	0	0
3-Methylpentane	0	0		0	0	0
n-Hexane	7.78432E-05	0.00807234		0.00808290	7.78432E-05	0.00773357
2,2-Dimethylpentane	0	0		0	0	0
Methylcyclopentane	0	0		0	0	0
2,4-Dimethylpentane	0	0		0	0	0
Benzene	9.42245	6.96547		7.24880	9.42245	7.78150
3,3-Dimethylpentane	0	0		0	0	0
Cyclohexane	0	0		0	0	0
2-Methylhexane	0	0		0	0	0
2,3-Dimethylpentane	0	0		0	0	0
1,1-Dimethylcyclopentane	0	0		0	0	0
3-Methylhexane	0	0		0	0	0
1,t-3-Dimethylcyclopentane	0	0		0	0	0
1,c-3-Dimethylcyclopentane	0	0		0	0	0
2,2,4-Trimethylpentane	0	0		0	0	0
n-Heptane	3.20809E-05	0.00458648		0.00459302	3.20809E-05	0.00439407
Methylcyclohexane	0	0		0	0	0
1,1,3-Trimethylcyclopentane	0	0		0	0	0
2,5-Dimethylhexane	0	0		0	0	0
2,4-Dimethylhexane	0	0		0	0	0
3,3-Dimethylhexane	0	0		0	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0		0	0	0
2,3,4-Trimethylpentane	0	0		0	0	0
Toluene	3.68748	2.94554		3.03358	3.68748	3.19348
2,3-Dimethylhexane	0	0		0	0	0
1,1,2-Trimethylcyclopentane	0	0		0	0	0
2-Methylheptane	0	0		0	0	0
4-Methylheptane	0	0		0	0	0
3,4-Dimethylhexane	0	0		0	0	0
3-Methylheptane	0	0		0	0	0
3-Ethylhexane	0	0		0	0	0
1,c-3-Dimethylcyclohexane	0	0		0	0	0
1,t-4-Dimethylcyclohexane	0	0		0	0	0
1,1-Dimethylcyclohexane	0	0		0	0	0
2,2,4-Trimethylhexane	0	0		0	0	0
Cycloheptane	0	0		0	0	0
n-Octane	1.31032E-06	0.000482758		0.000483448	1.31032E-06	0.000462455
1,t-3-Dimethylcyclohexane	0	0		0	0	0
2,2-Dimethylheptane	0	0		0	0	0
2,4-Dimethylheptane	0	0		0	0	0
2,6-Dimethylheptane	0	0		0	0	0
2,5-Dimethylheptane	0	0		0	0	0
Ethylcyclohexane	0	0		0	0	0
3,3-Dimethylheptane	0	0		0	0	0
2,3,4-Trimethylhexane	0	0		0	0	0
Ethylbenzene	0.113853	0.123264		0.130038	0.113853	0.135192
2,3-Dimethylheptane	0	0		0	0	0
m-Xylene	0.159297	0.158243		0.160974	0.159297	0.164110
p-Xylene	0	0		0	0	0
3,4-Dimethylheptane	0	0		0	0	0
2-Methyloctane	0	0		0	0	0
4-Methyloctane	0	0		0	0	0
3-Methyloctane	0	0		0	0	0
o-Xylene	0	0		0	0	0
1,1,2-Trimethylcyclohexane	0	0		0	0	0
n-Nonane	4.38169E-07	0.000176387		0.000176657	4.38169E-07	0.000168982
Isopropylbenzene	0	0		0	0	0
n-Butylcyclopentane	0	0		0	0	0
n-Propylbenzene	0	0		0	0	0
m-Ethyltoluene	0	0		0	0	0
p-Ethyltoluene	0	0		0	0	0
4-Methylnonane	0	0		0	0	0
2-Methylnonane	0	0		0	0	0
t-Butylbenzene	0	0		0	0	0
Butylcyclohexane	0	0		0	0	0
n-Decane	3.41005E-10	6.65718E-07		6.66710E-07	3.41005E-10	6.37710E-07
Undecane	7.34374E-11	2.43781E-07		2.44149E-07	7.34374E-11	2.33529E-07
Dodecane	0	0		0	0	0
Tridecane	0	0		0	0	0
Nitrogen	0.000487609	0.0197326		0.0197484	0.000487609	0.0189055
Carbon Dioxide	79.7738	77.0575		76.1683	79.7738	75.0414
Hydrogen Sulfide	5.13448	3.40561		3.30245	5.13448	3.40924
Mass Flow	**lb/h**	**lb/h**	**lb/h**		**lb/h**	**lb/h**
Water Gas	0	0		0	0	0
Water	0.00623670	1.17988		1.71407	0.0975202	2.39358
Methane	0.000907389	3.12512		3.12084	0.0141884	3.12643
Ethane	0.000919034	2.08976		2.08740	0.0143705	2.09246
Propane	0.000341943	1.09507		1.09430	0.00534680	1.09615
i-Butane	2.29753E-05	0.103652		0.103656	0.000359254	0.103765
n-Butane	0.000147439	0.513766		0.513422	0.00230543	0.514223
i-Pentane	1.46826E-05	0.0714199		0.0714122	0.000229584	0.0714844
n-Pentane	2.81779E-06	0.0350652		0.0350528	4.40604E-05	0.0350699
Neohexane	0	0		0	0	0
2,3-Dimethylbutane	0	0		0	0	0
2-Methylpentane	0	0		0	0	0

3-Methylpentane	0	0		0	0	0
n-Hexane	3.91627E-07	0.00712083		0.00711958	6.12368E-06	0.00712182
2,2-Dimethylpentane	0	0		0	0	0
Methylcyclopentane	0	0		0	0	0
2,4-Dimethylpentane	0	0		0	0	0
Benzene	0.0474041	6.14443		6.38489	0.741234	7.16596
3,3-Dimethylpentane	0	0		0	0	0
Cyclohexane	0	0		0	0	0
2-Methylhexane	0	0		0	0	0
2,3-Dimethylpentane	0	0		0	0	0
1,1-Dimethylcyclopentane	0	0		0	0	0
3-Methylhexane	0	0		0	0	0
1,t-3-Dimethylcyclopentane	0	0		0	0	0
1,c-3-Dimethylcyclopentane	0	0		0	0	0
2,2,4-Trimethylpentane	0	0		0	0	0
n-Heptane	1.61398E-07	0.00404586		0.00404562	2.52371E-06	0.00404649
Methylcyclohexane	0	0		0	0	0
1,1,3-Trimethylcyclopentane	0	0		0	0	0
2,5-Dimethylhexane	0	0		0	0	0
2,4-Dimethylhexane	0	0		0	0	0
3,3-Dimethylhexane	0	0		0	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0		0	0	0
2,3,4-Trimethylpentane	0	0		0	0	0
Toluene	0.0185516	2.59834		2.67204	0.290082	2.94087
2,3-Dimethylhexane	0	0		0	0	0
1,1,2-Trimethylcyclopentane	0	0		0	0	0
2-Methylheptane	0	0		0	0	0
4-Methylheptane	0	0		0	0	0
3,4-Dimethylhexane	0	0		0	0	0
3-Methylheptane	0	0		0	0	0
3-Ethylhexane	0	0		0	0	0
1,c-3-Dimethylcyclohexane	0	0		0	0	0
1,t-4-Dimethylcyclohexane	0	0		0	0	0
1,1-Dimethylcyclohexane	0	0		0	0	0
2,2,4-Trimethylhexane	0	0		0	0	0
Cycloheptane	0	0		0	0	0
n-Octane	6.59217E-09	0.000425854		0.000425831	1.03078E-07	0.000425873
1,t-3-Dimethylcyclohexane	0	0		0	0	0
2,2-Dimethylheptane	0	0		0	0	0
2,4-Dimethylheptane	0	0		0	0	0
2,6-Dimethylheptane	0	0		0	0	0
2,5-Dimethylheptane	0	0		0	0	0
Ethylcyclohexane	0	0		0	0	0
3,3-Dimethylheptane	0	0		0	0	0
2,3,4-Trimethylhexane	0	0		0	0	0
Ethylbenzene	0.000572792	0.108735		0.114540	0.00895647	0.124498
2,3-Dimethylheptane	0	0		0	0	0
m-Xylene	0.000801419	0.139590		0.141790	0.0125314	0.151129
p-Xylene	0	0		0	0	0
3,4-Dimethylheptane	0	0		0	0	0
2-Methyloctane	0	0		0	0	0
4-Methyloctane	0	0		0	0	0
3-Methyloctane	0	0		0	0	0
o-Xylene	0	0		0	0	0
1,1,2-Trimethylcyclohexane	0	0		0	0	0
n-Nonane	2.20442E-09	0.000155596		0.000155603	3.44694E-08	0.000155615
Isopropylbenzene	0	0		0	0	0
n-Butylcyclopentane	0	0		0	0	0
n-Propylbenzene	0	0		0	0	0
m-Ethyltoluene	0	0		0	0	0
p-Ethyltoluene	0	0		0	0	0
4-Methylnonane	0	0		0	0	0
2-Methylnonane	0	0		0	0	0
t-Butylbenzene	0	0		0	0	0
Butylcyclohexane	0	0		0	0	0
n-Decane	1.71559E-12	5.87248E-07		5.87251E-07	2.68258E-11	5.87266E-07
Undecane	3.69462E-13	2.15046E-07		2.15052E-07	5.77709E-12	2.15056E-07
Dodecane	0	0		0	0	0
Tridecane	0	0		0	0	0
Nitrogen	2.45315E-06	0.0174067		0.0173948	3.83587E-05	0.0174100
Carbon Dioxide	0.401340	67.9745		67.0906	6.27556	69.1054
Hydrogen Sulfide	0.0258314	3.00418		2.90887	0.403913	3.13956

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Vapor	From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
	To Block:	--	--	--	VLVE-100	--	TANK-100
Property	Units						
Temperature	°F	73.4428	73.4428		97.2586	73.4428	97.1263
Pressure	psia	13.26	13.26		19.6959	13.26	14.6959
Mole Fraction Vapor	%	100	100		100	100	100
Mole Fraction Light Liquid	%	0	0		0	0	0
Mole Fraction Heavy Liquid	%	0	0		0	0	0
Phase Mole Fraction	%	98.2969	100		0.462179	98.2969	0.484842
Molecular Weight	lb/lbmol	45.1498	41.8195		41.5535	45.1498	41.4134
Mass Density	lb/ft^3	0.105352	0.0975083		0.138029	0.105352	0.102473
Molar Flow	lbmol/h	0.0111428	2.10937		2.11972	0.174235	2.22367
Mass Flow	lb/h	0.503098	88.2127		88.0820	7.86669	92.0897
Vapor Volumetric Flow	ft^3/h	4.77540	904.669		638.142	74.6705	898.676
Liquid Volumetric Flow	gpm	0.595374	112.790		79.5606	9.30957	112.043
Std Vapor Volumetric Flow	MMSCFD	0.000101485	0.0192113		0.0193056	0.00158687	0.0202523
Std Liquid Volumetric Flow	sgpm	0.00122497	0.236001		0.235353	0.0191542	0.244720
Compressibility		0.993286	0.994026		0.992092	0.993286	0.993966

Specific Gravity		1.55891	1.44392		1.43474	1.55891	1.42990
API Gravity							
Enthalpy	Btu/h	-1563.48	-276135		-275176	-24447.4	-286472
Mass Enthalpy	Btu/lb	-3107.71	-3130.33		-3124.09	-3107.71	-3110.79
Mass Cp	Btu/(lb*°F)	0.215859	0.233326		0.240230	0.215859	0.240948
Ideal Gas CpCv Ratio		1.25793	1.25735		1.25062	1.25793	1.25019
Dynamic Viscosity	cP	0.0138851	0.0136471		0.0141843	0.0138851	0.0141287
Kinematic Viscosity	cSt	8.22780	8.73733		6.41533	8.22780	8.60740
Thermal Conductivity	Btu/(h*ft*°F)	0.00906961	0.0101568		0.0108261	0.00906961	0.0107641
Surface Tension	lbf/ft						
Net Ideal Gas Heating Value	Btu/ft^3	329.975	403.643		407.698	329.975	412.917
Net Liquid Heating Value	Btu/lb	2664.85	3558.16		3612.35	2664.85	3665.45
Gross Ideal Gas Heating Value	Btu/ft^3	348.247	434.029		438.857	348.247	444.623
Gross Liquid Heating Value	Btu/lb	2818.42	3833.94		3896.95	2818.42	3956.02

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Nonspecific Liquid**	**From Block:**	**TANK-100**	**TANK-100**	**TANK-100**	**--**	**TANK-100**	**VLVE-100**
	To Block:	**--**	**--**	**--**	**VLVE-100**	**--**	**TANK-100**
Mole Fraction		**%**				**%**	
Water Gas		0				0	
Water		0.255437				0.255437	
Methane		0.00127244				0.00127244	
Ethane		0.00501286				0.00501286	
Propane		0.00419547				0.00419547	
i-Butane		0.000431674				0.000431674	
n-Butane		0.00475980				0.00475980	
i-Pentane		0.00119523				0.00119523	
n-Pentane		0.000309611				0.000309611	
Neohexane		0				0	
2,3-Dimethylbutane		0				0	
2-Methylpentane		0				0	
3-Methylpentane		0				0	
n-Hexane		0.000104235				0.000104235	
2,2-Dimethylpentane		0				0	
Methylcyclopentane		0				0	
2,4-Dimethylpentane		0				0	
Benzene		42.3347				42.3347	
3,3-Dimethylpentane		0				0	
Cyclohexane		0				0	
2-Methylhexane		0				0	
2,3-Dimethylpentane		0				0	
1,1-Dimethylcyclopentane		0				0	
3-Methylhexane		0				0	
1,t-3-Dimethylcyclopentane		0				0	
1,c-3-Dimethylcyclopentane		0				0	
2,2,4-Trimethylpentane		0				0	
n-Heptane		0.000128516				0.000128516	
Methylcyclohexane		0				0	
1,1,3-Trimethylcyclopentane		0				0	
2,5-Dimethylhexane		0				0	
2,4-Dimethylhexane		0				0	
3,3-Dimethylhexane		0				0	
1,t-2,c-3-Trimethylcyclopentane		0				0	
2,3,4-Trimethylpentane		0				0	
Toluene		45.8525				45.8525	
2,3-Dimethylhexane		0				0	
1,1,2-Trimethylcyclopentane		0				0	
2-Methylheptane		0				0	
4-Methylheptane		0				0	
3,4-Dimethylhexane		0				0	
3-Methylheptane		0				0	
3-Ethylhexane		0				0	
1,c-3-Dimethylcyclohexane		0				0	
1,t-4-Dimethylcyclohexane		0				0	
1,1-Dimethylcyclohexane		0				0	
2,2,4-Trimethylhexane		0				0	
Cycloheptane		0				0	
n-Octane		1.44928E-05				1.44928E-05	
1,t-3-Dimethylcyclohexane		0				0	
2,2-Dimethylheptane		0				0	
2,4-Dimethylheptane		0				0	
2,6-Dimethylheptane		0				0	
2,5-Dimethylheptane		0				0	
Ethylcyclohexane		0				0	
3,3-Dimethylheptane		0				0	
2,3,4-Trimethylhexane		0				0	
Ethylbenzene		4.69388				4.69388	
2,3-Dimethylheptane		0				0	
m-Xylene		5.52886				5.52886	
p-Xylene		0				0	
3,4-Dimethylheptane		0				0	
2-Methyloctane		0				0	
4-Methyloctane		0				0	
3-Methyloctane		0				0	
o-Xylene		0				0	
1,1,2-Trimethylcyclohexane		0				0	
n-Nonane		9.97883E-06				9.97883E-06	
Isopropylbenzene		0				0	
n-Butylcyclopentane		0				0	
n-Propylbenzene		0				0	
m-Ethyltoluene		0				0	
p-Ethyltoluene		0				0	

4-Methylnonane	0	0
2-Methylnonane	0	0
t-Butylbenzene	0	0
Butylcyclohexane	0	0
n-Decane	1.90064E-08	1.90064E-08
Undecane	9.82461E-09	9.82461E-09
Dodecane	0	0
Tridecane	0	0
Nitrogen	3.86315E-07	3.86315E-07
Carbon Dioxide	0.938501	0.938501
Hydrogen Sulfide	0.378655	0.378655
Molar Flow	**lbmol/h**	**lbmol/h**
Water Gas	0	0
Water	1.41719E-07	2.21598E-06
Methane	7.05960E-10	1.10387E-08
Ethane	2.78117E-09	4.34878E-08
Propane	2.32768E-09	3.63967E-08
i-Butane	2.39496E-10	3.74488E-09
n-Butane	2.64077E-09	4.12924E-08
i-Pentane	6.63125E-10	1.03690E-08
n-Pentane	1.71774E-10	2.68595E-09
Neohexane	0	0
2,3-Dimethylbutane	0	0
2-Methylpentane	0	0
3-Methylpentane	0	0
n-Hexane	5.78302E-11	9.04262E-10
2,2-Dimethylpentane	0	0
Methylcyclopentane	0	0
2,4-Dimethylpentane	0	0
Benzene	2.34876E-05	0.000367264
3,3-Dimethylpentane	0	0
Cyclohexane	0	0
2-Methylhexane	0	0
2,3-Dimethylpentane	0	0
1,1-Dimethylcyclopentane	0	0
3-Methylhexane	0	0
1,t-3-Dimethylcyclopentane	0	0
1,c-3-Dimethylcyclopentane	0	0
2,2,4-Trimethylpentane	0	0
n-Heptane	7.13015E-11	1.11491E-09
Methylcyclohexane	0	0
1,1,3-Trimethylcyclopentane	0	0
2,5-Dimethylhexane	0	0
2,4-Dimethylhexane	0	0
3,3-Dimethylhexane	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0
2,3,4-Trimethylpentane	0	0
Toluene	2.54393E-05	0.000397782
2,3-Dimethylhexane	0	0
1,1,2-Trimethylcyclopentane	0	0
2-Methylheptane	0	0
4-Methylheptane	0	0
3,4-Dimethylhexane	0	0
3-Methylheptane	0	0
3-Ethylhexane	0	0
1,c-3-Dimethylcyclohexane	0	0
1,t-4-Dimethylcyclohexane	0	0
1,1-Dimethylcyclohexane	0	0
2,2,4-Trimethylhexane	0	0
Cycloheptane	0	0
n-Octane	8.04073E-12	1.25729E-10
1,t-3-Dimethylcyclohexane	0	0
2,2-Dimethylheptane	0	0
2,4-Dimethylheptane	0	0
2,6-Dimethylheptane	0	0
2,5-Dimethylheptane	0	0
Ethylcyclohexane	0	0
3,3-Dimethylheptane	0	0
2,3,4-Trimethylhexane	0	0
Ethylbenzene	2.60420E-06	4.07206E-05
2,3-Dimethylheptane	0	0
m-Xylene	3.06745E-06	4.79642E-05
p-Xylene	0	0
3,4-Dimethylheptane	0	0
2-Methyloctane	0	0
4-Methyloctane	0	0
3-Methyloctane	0	0
o-Xylene	0	0
1,1,2-Trimethylcyclohexane	0	0
n-Nonane	5.53633E-12	8.65688E-11
Isopropylbenzene	0	0
n-Butylcyclopentane	0	0
n-Propylbenzene	0	0
m-Ethyltoluene	0	0
p-Ethyltoluene	0	0
4-Methylnonane	0	0
2-Methylnonane	0	0
t-Butylbenzene	0	0
Butylcyclohexane	0	0
n-Decane	1.05449E-14	1.64886E-13
Undecane	5.45077E-15	8.52309E-14
Dodecane	0	0
Tridecane	0	0
Nitrogen	2.14331E-13	3.35138E-12

Carbon Dioxide	5.20687E-07	8.14173E-06
Hydrogen Sulfide	2.10081E-07	3.28493E-06
Mass Fraction	**%**	**%**
Water Gas	0	0
Water	0.0530371	0.0530371
Methane	0.000235268	0.000235268
Ethane	0.00173724	0.00173724
Propane	0.00213221	0.00213221
i-Butane	0.000289169	0.000289169
n-Butane	0.00318849	0.00318849
i-Pentane	0.000993886	0.000993886
n-Pentane	0.000257454	0.000257454
Neohexane	0	0
2,3-Dimethylbutane	0	0
2-Methylpentane	0	0
3-Methylpentane	0	0
n-Hexane	0.000103526	0.000103526
2,2-Dimethylpentane	0	0
Methylcyclopentane	0	0
2,4-Dimethylpentane	0	0
Benzene	38.1126	38.1126
3,3-Dimethylpentane	0	0
Cyclohexane	0	0
2-Methylhexane	0	0
2,3-Dimethylpentane	0	0
1,1-Dimethylcyclopentane	0	0
3-Methylhexane	0	0
1,t-3-Dimethylcyclopentane	0	0
1,c-3-Dimethylcyclopentane	0	0
2,2,4-Trimethylpentane	0	0
n-Heptane	0.000148418	0.000148418
Methylcyclohexane	0	0
1,1,3-Trimethylcyclopentane	0	0
2,5-Dimethylhexane	0	0
2,4-Dimethylhexane	0	0
3,3-Dimethylhexane	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0
2,3,4-Trimethylpentane	0	0
Toluene	48.6921	48.6921
2,3-Dimethylhexane	0	0
1,1,2-Trimethylcyclopentane	0	0
2-Methylheptane	0	0
4-Methylheptane	0	0
3,4-Dimethylhexane	0	0
3-Methylheptane	0	0
3-Ethylhexane	0	0
1,c-3-Dimethylcyclohexane	0	0
1,t-4-Dimethylcyclohexane	0	0
1,1-Dimethylcyclohexane	0	0
2,2,4-Trimethylhexane	0	0
Cycloheptane	0	0
n-Octane	1.90802E-05	1.90802E-05
1,t-3-Dimethylcyclohexane	0	0
2,2-Dimethylheptane	0	0
2,4-Dimethylheptane	0	0
2,6-Dimethylheptane	0	0
2,5-Dimethylheptane	0	0
Ethylcyclohexane	0	0
3,3-Dimethylheptane	0	0
2,3,4-Trimethylhexane	0	0
Ethylbenzene	5.74338	5.74338
2,3-Dimethylheptane	0	0
m-Xylene	6.76505	6.76505
p-Xylene	0	0
3,4-Dimethylheptane	0	0
2-Methyloctane	0	0
4-Methyloctane	0	0
3-Methyloctane	0	0
o-Xylene	0	0
1,1,2-Trimethylcyclohexane	0	0
n-Nonane	1.47506E-05	1.47506E-05
Isopropylbenzene	0	0
n-Butylcyclopentane	0	0
n-Propylbenzene	0	0
m-Ethyltoluene	0	0
p-Ethyltoluene	0	0
4-Methylnonane	0	0
2-Methylnonane	0	0
t-Butylbenzene	0	0
Butylcyclohexane	0	0
n-Decane	3.11677E-08	3.11677E-08
Undecane	1.76991E-08	1.76991E-08
Dodecane	0	0
Tridecane	0	0
Nitrogen	1.24728E-07	1.24728E-07
Carbon Dioxide	0.476031	0.476031
Hydrogen Sulfide	0.148734	0.148734
Mass Flow	**lb/h**	**lb/h**
Water Gas	0	0
Water	2.55310E-06	3.99215E-05
Methane	1.13253E-08	1.77089E-07
Ethane	8.36272E-08	1.30764E-06
Propane	1.02640E-07	1.60494E-06
i-Butane	1.39200E-08	2.17660E-07

n-Butane	1.53487E-07				2.40001E-06	
i-Pentane	4.78437E-08				7.48108E-07	
n-Pentane	1.23933E-08				1.93788E-07	
Neohexane	0				0	
2,3-Dimethylbutane	0				0	
2-Methylpentane	0				0	
3-Methylpentane	0				0	
n-Hexane	4.98354E-09				7.79251E-08	
2,2-Dimethylpentane	0				0	
Methylcyclopentane	0				0	
2,4-Dimethylpentane	0				0	
Benzene	0.00183466				0.0286877	
3,3-Dimethylpentane	0				0	
Cyclohexane	0				0	
2-Methylhexane	0				0	
2,3-Dimethylpentane	0				0	
1,1-Dimethylcyclopentane	0				0	
3-Methylhexane	0				0	
1,t-3-Dimethylcyclopentane	0				0	
1,c-3-Dimethylcyclopentane	0				0	
2,2,4-Trimethylpentane	0				0	
n-Heptane	7.14455E-09				1.11716E-07	
Methylcyclohexane	0				0	
1,1,3-Trimethylcyclopentane	0				0	
2,5-Dimethylhexane	0				0	
2,4-Dimethylhexane	0				0	
3,3-Dimethylhexane	0				0	
1,t-2,c-3-Trimethylcyclopentane	0				0	
2,3,4-Trimethylpentane	0				0	
Toluene	0.00234394				0.0366510	
2,3-Dimethylhexane	0				0	
1,1,2-Trimethylcyclopentane	0				0	
2-Methylheptane	0				0	
4-Methylheptane	0				0	
3,4-Dimethylhexane	0				0	
3-Methylheptane	0				0	
3-Ethylhexane	0				0	
1,c-3-Dimethylcyclohexane	0				0	
1,t-4-Dimethylcyclohexane	0				0	
1,1-Dimethylcyclohexane	0				0	
2,2,4-Trimethylhexane	0				0	
Cycloheptane	0				0	
n-Octane	9.18481E-10				1.43618E-08	
1,t-3-Dimethylcyclohexane	0				0	
2,2-Dimethylheptane	0				0	
2,4-Dimethylheptane	0				0	
2,6-Dimethylheptane	0				0	
2,5-Dimethylheptane	0				0	
Ethylcyclohexane	0				0	
3,3-Dimethylheptane	0				0	
2,3,4-Trimethylhexane	0				0	
Ethylbenzene	0.000276475				0.00432310	
2,3-Dimethylheptane	0				0	
m-Xylene	0.000325656				0.00509212	
p-Xylene	0				0	
3,4-Dimethylheptane	0				0	
2-Methyloctane	0				0	
4-Methyloctane	0				0	
3-Methyloctane	0				0	
o-Xylene	0				0	
1,1,2-Trimethylcyclohexane	0				0	
n-Nonane	7.10062E-10				1.11029E-08	
Isopropylbenzene	0				0	
n-Butylcyclopentane	0				0	
n-Propylbenzene	0				0	
m-Ethyltoluene	0				0	
p-Ethyltoluene	0				0	
4-Methylnonane	0				0	
2-Methylnonane	0				0	
t-Butylbenzene	0				0	
Butylcyclohexane	0				0	
n-Decane	1.50035E-12				2.34602E-11	
Undecane	8.52000E-13				1.33223E-11	
Dodecane	0				0	
Tridecane	0				0	
Nitrogen	6.00413E-12				9.38836E-11	
Carbon Dioxide	2.29152E-05				0.000358313	
Hydrogen Sulfide	7.15974E-06				0.000111953	

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Nonspecific Liquid	From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
	To Block:	--	--	--	VLVE-100	--	TANK-100
Property	Units						
Temperature	°F	73.4428				73.4428	
Pressure	psia	13.26				13.26	
Mole Fraction Vapor	%	0				0	
Mole Fraction Light Liquid	%	100				100	
Mole Fraction Heavy Liquid	%	0				0	
Phase Mole Fraction	%	0.489425				0.489425	
Molecular Weight	lb/lbmol	86.7652				86.7652	
Mass Density	lb/ft^3	54.3690				54.3690	
Molar Flow	lbmol/h	5.54807E-05				0.000867525	

		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Mass Flow	lb/h	0.00481380				0.0752709	
Vapor Volumetric Flow	ft^3/h	8.85393E-05				0.00138444	
Liquid Volumetric Flow	gpm	1.10387E-05				0.000172606	
Std Vapor Volumetric Flow	MMSCFD	5.05297E-07				7.90108E-06	
Std Liquid Volumetric Flow	sgpm	1.09853E-05				0.000171771	
Compressibility		0.00369875				0.00369875	
Specific Gravity		0.871736				0.871736	
API Gravity		29.5120				29.5120	
Enthalpy	Btu/h	0.466087				7.28797	
Mass Enthalpy	Btu/lb	96.8231				96.8231	
Mass Cp	Btu/(lb*°F)	0.384719				0.384719	
Ideal Gas CpCv Ratio		1.09550				1.09550	
Dynamic Viscosity	cP	0.590547				0.590547	
Kinematic Viscosity	cSt	0.678082				0.678082	
Thermal Conductivity	Btu/(h*ft*°F)	0.0788674				0.0788674	
Surface Tension	lbf/ft	0.00195349?				0.00195349?	
Net Ideal Gas Heating Value	Btu/ft^3	3986.68				3986.68	
Net Liquid Heating Value	Btu/lb	17254.4				17254.4	
Gross Ideal Gas Heating Value	Btu/ft^3	4169.06				4169.06	
Gross Liquid Heating Value	Btu/lb	18051.5				18051.5	

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Aqueous Liquid	From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
	To Block:	--	--	--	VLVE-100	--	TANK-100
Mole Fraction		%		%	%	%	%
Water Gas		0		0	0	0	0
Water		99.9314		99.9849	99.9412	99.9314	99.9557
Methane		1.13662E-05		4.59143E-20	0.000264509	1.13662E-05	0.000188309
Ethane		9.31312E-06		2.44962E-20	0.000128605	9.31312E-06	9.17735E-05
Propane		1.68000E-06		8.35206E-21	3.20536E-05	1.68000E-06	2.28773E-05
i-Butane		6.08721E-08		1.98014E-22	1.42492E-06	6.08721E-08	1.01774E-06
n-Butane		5.05987E-07		1.58412E-21	1.05494E-05	5.05987E-07	7.53493E-06
i-Pentane		2.91765E-08		1.59518E-22	7.67430E-07	2.91765E-08	5.48529E-07
n-Pentane		2.19216E-09		1.99398E-23	1.80429E-07	2.19216E-09	1.28746E-07
Neohexane		0		0	0	0	0
2,3-Dimethylbutane		0		0	0	0	0
2-Methylpentane		0		0	0	0	0
3-Methylpentane		0		0	0	0	0
n-Hexane		1.76239E-10		4.17355E-24	1.99442E-08	1.76239E-10	1.42464E-08
2,2-Dimethylpentane		0		0	0	0	0
Methylcyclopentane		0		0	0	0	0
2,4-Dimethylpentane		0		0	0	0	0
Benzene		0.0173613		0.00952839	0.0111476	0.0173613	0.00895930
3,3-Dimethylpentane		0		0	0	0	0
Cyclohexane		0		0	0	0	0
2-Methylhexane		0		0	0	0	0
2,3-Dimethylpentane		0		0	0	0	0
1,1-Dimethylcyclopentane		0		0	0	0	0
3-Methylhexane		0		0	0	0	0
1,t-3-Dimethylcyclopentane		0		0	0	0	0
1,c-3-Dimethylcyclopentane		0		0	0	0	0
2,2,4-Trimethylpentane		0		0	0	0	0
n-Heptane		4.67741E-11		8.97331E-25	6.65111E-09	4.67741E-11	4.75693E-09
Methylcyclohexane		0		0	0	0	0
1,1,3-Trimethylcyclopentane		0		0	0	0	0
2,5-Dimethylhexane		0		0	0	0	0
2,4-Dimethylhexane		0		0	0	0	0
3,3-Dimethylhexane		0		0	0	0	0
1,t-2,c-3-Trimethylcyclopentane		0		0	0	0	0
2,3,4-Trimethylpentane		0		0	0	0	0
Toluene		0.00435142		0.00237238	0.00302273	0.00435142	0.00238416
2,3-Dimethylhexane		0		0	0	0	0
1,1,2-Trimethylcyclopentane		0		0	0	0	0
2-Methylheptane		0		0	0	0	0
4-Methylheptane		0		0	0	0	0
3,4-Dimethylhexane		0		0	0	0	0
3-Methylheptane		0		0	0	0	0
3-Ethylhexane		0		0	0	0	0
1,c-3-Dimethylcyclohexane		0		0	0	0	0
1,t-4-Dimethylcyclohexane		0		0	0	0	0
1,1-Dimethylcyclohexane		0		0	0	0	0
2,2,4-Trimethylhexane		0		0	0	0	0
Cycloheptane		0		0	0	0	0
n-Octane		7.10555E-13		4.91965E-26	2.83443E-10	7.10555E-13	2.02725E-10
1,t-3-Dimethylcyclohexane		0		0	0	0	0
2,2-Dimethylheptane		0		0	0	0	0
2,4-Dimethylheptane		0		0	0	0	0
2,6-Dimethylheptane		0		0	0	0	0
2,5-Dimethylheptane		0		0	0	0	0
Ethylcyclohexane		0		0	0	0	0
3,3-Dimethylheptane		0		0	0	0	0
2,3,4-Trimethylhexane		0		0	0	0	0
Ethylbenzene		0.000105856		7.61804E-05	9.33241E-05	0.000105856	7.27953E-05
2,3-Dimethylheptane		0		0	0	0	0
m-Xylene		9.45665E-05		4.76363E-05	8.17680E-05	9.45665E-05	6.25126E-05
p-Xylene		0		0	0	0	0
3,4-Dimethylheptane		0		0	0	0	0
2-Methyloctane		0		0	0	0	0
4-Methyloctane		0		0	0	0	0
3-Methyloctane		0		0	0	0	0
o-Xylene		0		0	0	0	0
1,1,2-Trimethylcyclohexane		0		0	0	0	0

n-Nonane	2.24987E-13	1.09540E-26	7.15464E-11	2.24987E-13	5.13103E-11
Isopropylbenzene	0	0	0	0	0
n-Butylcyclopentane	0	0	0	0	0
n-Propylbenzene	0	0	0	0	0
m-Ethyltoluene	0	0	0	0	0
p-Ethyltoluene	0	0	0	0	0
4-Methylnonane	0	0	0	0	0
2-Methylnonane	0	0	0	0	0
t-Butylbenzene	0	0	0	0	0
Butylcyclohexane	0	0	0	0	0
n-Decane	4.62201E-17	1.92855E-29	7.71273E-14	4.62201E-17	5.53158E-14
Undecane	9.40794E-18	4.38871E-30	2.06161E-14	9.40794E-18	1.48193E-14
Dodecane	0	0	0	0	0
Tridecane	0	0	0	0	0
Nitrogen	8.53827E-09	5.13551E-23	4.12143E-07	8.53827E-09	2.92920E-07
Carbon Dioxide	0.0372348	4.28462E-18	0.0376349	0.0372348	0.0276131
Hydrogen Sulfide	0.00947582	0.00304545	0.00641979	0.00947582	0.00493820
Molar Flow	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**	**lbmol/h**
Water Gas	0	0	0	0	0
Water	0.000137488	456.271	456.249	0.00214984	456.211
Methane	1.56380E-11	2.09525E-19	0.00120753	2.44523E-10	0.000859470
Ethane	1.28132E-11	1.11786E-19	0.000587106	2.00354E-10	0.000418867
Propane	2.31139E-12	3.81137E-20	0.000146330	3.61421E-11	0.000104415
i-Butane	8.37495E-14	9.03618E-22	6.50501E-06	1.30955E-12	4.64509E-06
n-Butane	6.96151E-13	7.22895E-21	4.81601E-05	1.08854E-11	3.43905E-05
i-Pentane	4.01418E-14	7.27944E-22	3.50346E-06	6.27678E-13	2.50356E-06
n-Pentane	3.01603E-15	9.09930E-23	8.23689E-07	4.71602E-14	5.87615E-07
Neohexane	0	0	0	0	0
2,3-Dimethylbutane	0	0	0	0	0
2-Methylpentane	0	0	0	0	0
3-Methylpentane	0	0	0	0	0
n-Hexane	2.42475E-16	1.90456E-23	9.10486E-08	3.79146E-15	6.50226E-08
2,2-Dimethylpentane	0	0	0	0	0
Methylcyclopentane	0	0	0	0	0
2,4-Dimethylpentane	0	0	0	0	0
Benzene	2.38862E-08	0.0434818	0.0508909	3.73496E-07	0.0408915
3,3-Dimethylpentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
2-Methylhexane	0	0	0	0	0
2,3-Dimethylpentane	0	0	0	0	0
1,1-Dimethylcyclopentane	0	0	0	0	0
3-Methylhexane	0	0	0	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
n-Heptane	6.43531E-17	4.09488E-24	3.03635E-08	1.00626E-15	2.17113E-08
Methylcyclohexane	0	0	0	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0	0
2,5-Dimethylhexane	0	0	0	0	0
2,4-Dimethylhexane	0	0	0	0	0
3,3-Dimethylhexane	0	0	0	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0	0
2,3,4-Trimethylpentane	0	0	0	0	0
Toluene	5.98681E-09	0.0108261	0.0137993	9.36128E-08	0.0108816
2,3-Dimethylhexane	0	0	0	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0	0
2-Methylheptane	0	0	0	0	0
4-Methylheptane	0	0	0	0	0
3,4-Dimethylhexane	0	0	0	0	0
3-Methylheptane	0	0	0	0	0
3-Ethylhexane	0	0	0	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0	0
1,1-Dimethylcyclohexane	0	0	0	0	0
2,2,4-Trimethylhexane	0	0	0	0	0
Cycloheptane	0	0	0	0	0
n-Octane	9.77601E-19	2.24503E-25	1.29397E-09	1.52863E-17	9.25267E-10
1,t-3-Dimethylcyclohexane	0	0	0	0	0
2,2-Dimethylheptane	0	0	0	0	0
2,4-Dimethylheptane	0	0	0	0	0
2,6-Dimethylheptane	0	0	0	0	0
2,5-Dimethylheptane	0	0	0	0	0
Ethylcyclohexane	0	0	0	0	0
3,3-Dimethylheptane	0	0	0	0	0
2,3,4-Trimethylhexane	0	0	0	0	0
Ethylbenzene	1.45640E-10	0.000347641	0.000426041	2.27729E-09	0.000332248
2,3-Dimethylheptane	0	0	0	0	0
m-Xylene	1.30107E-10	0.000217383	0.000373285	2.03442E-09	0.000285316
p-Xylene	0	0	0	0	0
3,4-Dimethylheptane	0	0	0	0	0
2-Methyloctane	0	0	0	0	0
4-Methyloctane	0	0	0	0	0
3-Methyloctane	0	0	0	0	0
o-Xylene	0	0	0	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0	0
n-Nonane	3.09543E-19	4.99876E-26	3.26622E-10	4.84017E-18	2.34187E-10
Isopropylbenzene	0	0	0	0	0
n-Butylcyclopentane	0	0	0	0	0
n-Propylbenzene	0	0	0	0	0
m-Ethyltoluene	0	0	0	0	0
p-Ethyltoluene	0	0	0	0	0
4-Methylnonane	0	0	0	0	0
2-Methylnonane	0	0	0	0	0
t-Butylbenzene	0	0	0	0	0

Butylcyclohexane	0	0	0	0	0
n-Decane	6.35908E-23	8.80072E-29	3.52100E-13	9.94338E-22	2.52469E-13
Undecane	1.29437E-23	2.00274E-29	9.41162E-14	2.02394E-22	6.76373E-14
Dodecane	0	0	0	0	0
Tridecane	0	0	0	0	0
Nitrogen	1.17472E-14	2.34353E-22	1.88151E-06	1.83685E-13	1.33693E-06
Carbon Dioxide	5.12286E-08	1.95524E-17	0.171810	8.01037E-07	0.126030
Hydrogen Sulfide	1.30371E-08	0.0138976	0.0293075	2.03855E-07	0.0225387
Mass Fraction	**%**	**%**	**%**	**%**	**%**
Water Gas	0	0	0	0	0
Water	99.7927	99.9401	99.8307	99.7927	99.8711
Methane	1.01075E-05	4.08680E-20	0.000235283	1.01075E-05	0.000167546
Ethane	1.55228E-05	4.08680E-20	0.000214416	1.55228E-05	0.000153048
Propane	4.10640E-06	2.04340E-20	7.83702E-05	4.10640E-06	5.59488E-05
i-Butane	1.96117E-07	6.38562E-22	4.59210E-06	1.96117E-07	3.28071E-06
n-Butane	1.63019E-06	5.10850E-21	3.39977E-05	1.63019E-06	2.42892E-05
i-Pentane	1.16686E-07	6.38562E-22	3.07006E-06	1.16686E-07	2.19492E-06
n-Pentane	8.76711E-09	7.98203E-23	7.21794E-07	8.76711E-09	5.15174E-07
Neohexane	0	0	0	0	0
2,3-Dimethylbutane	0	0	0	0	0
2-Methylpentane	0	0	0	0	0
3-Methylpentane	0	0	0	0	0
n-Hexane	8.41864E-10	1.99551E-23	9.52966E-08	8.41864E-10	6.80895E-08
2,2-Dimethylpentane	0	0	0	0	0
Methylcyclopentane	0	0	0	0	0
2,4-Dimethylpentane	0	0	0	0	0
Benzene	0.0751718	0.0412953	0.0482812	0.0751718	0.0388135
3,3-Dimethylpentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
2-Methylhexane	0	0	0	0	0
2,3-Dimethylpentane	0	0	0	0	0
1,1-Dimethylcyclopentane	0	0	0	0	0
3-Methylhexane	0	0	0	0	0
1,t-3-Dimethylcyclopentane	0	0	0	0	0
1,c-3-Dimethylcyclopentane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
n-Heptane	2.59799E-10	4.98877E-24	3.69529E-08	2.59799E-10	2.64359E-08
Methylcyclohexane	0	0	0	0	0
1,1,3-Trimethylcyclopentane	0	0	0	0	0
2,5-Dimethylhexane	0	0	0	0	0
2,4-Dimethylhexane	0	0	0	0	0
3,3-Dimethylhexane	0	0	0	0	0
1,t-2,c-3-Trimethylcyclopentane	0	0	0	0	0
2,3,4-Trimethylpentane	0	0	0	0	0
Toluene	0.0222243	0.0121280	0.0154425	0.0222243	0.0121834
2,3-Dimethylhexane	0	0	0	0	0
1,1,2-Trimethylcyclopentane	0	0	0	0	0
2-Methylheptane	0	0	0	0	0
4-Methylheptane	0	0	0	0	0
3,4-Dimethylhexane	0	0	0	0	0
3-Methylheptane	0	0	0	0	0
3-Ethylhexane	0	0	0	0	0
1,c-3-Dimethylcyclohexane	0	0	0	0	0
1,t-4-Dimethylcyclohexane	0	0	0	0	0
1,1-Dimethylcyclohexane	0	0	0	0	0
2,2,4-Trimethylhexane	0	0	0	0	0
Cycloheptane	0	0	0	0	0
n-Octane	4.49913E-12	3.11798E-25	1.79523E-09	4.49913E-12	1.28432E-09
1,t-3-Dimethylcyclohexane	0	0	0	0	0
2,2-Dimethylheptane	0	0	0	0	0
2,4-Dimethylheptane	0	0	0	0	0
2,6-Dimethylheptane	0	0	0	0	0
2,5-Dimethylheptane	0	0	0	0	0
Ethylcyclohexane	0	0	0	0	0
3,3-Dimethylheptane	0	0	0	0	0
2,3,4-Trimethylhexane	0	0	0	0	0
Ethylbenzene	0.000622950	0.000448734	0.000549356	0.000622950	0.000428624
2,3-Dimethylheptane	0	0	0	0	0
m-Xylene	0.000556512	0.000280597	0.000481330	0.000556512	0.000368078
p-Xylene	0	0	0	0	0
3,4-Dimethylheptane	0	0	0	0	0
2-Methyloctane	0	0	0	0	0
4-Methyloctane	0	0	0	0	0
3-Methyloctane	0	0	0	0	0
o-Xylene	0	0	0	0	0
1,1,2-Trimethylcyclohexane	0	0	0	0	0
n-Nonane	1.59951E-12	7.79495E-26	5.08793E-10	1.59951E-12	3.64981E-10
Isopropylbenzene	0	0	0	0	0
n-Butylcyclopentane	0	0	0	0	0
n-Propylbenzene	0	0	0	0	0
m-Ethyltoluene	0	0	0	0	0
p-Ethyltoluene	0	0	0	0	0
4-Methylnonane	0	0	0	0	0
2-Methylnonane	0	0	0	0	0
t-Butylbenzene	0	0	0	0	0
Butylcyclohexane	0	0	0	0	0
n-Decane	3.64532E-16	1.52245E-28	6.08465E-13	3.64532E-16	4.36505E-13
Undecane	8.15140E-17	3.80613E-29	1.78676E-13	8.15140E-17	1.28470E-13
Dodecane	0	0	0	0	0
Tridecane	0	0	0	0	0
Nitrogen	1.32584E-08	7.98203E-23	6.40166E-07	1.32584E-08	4.55100E-07
Carbon Dioxide	0.0908345	1.04622E-17	0.0918365	0.0908345	0.0673988
Hydrogen Sulfide	0.0179013	0.00575872	0.0121314	0.0179013	0.00933407
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**	**lb/h**

Water Gas	0		0	0	0	0
Water	0.00247689		8219.85	8219.46	0.0387299	8218.78
Methane	2.50871E-10		3.36130E-18	0.0193717	3.92275E-09	0.0137880
Ethane	3.85282E-10		3.36130E-18	0.0176537	6.02446E-09	0.0125949
Propane	1.01922E-10		1.68065E-18	0.00645253	1.59371E-09	0.00460424
i-Butane	4.86770E-12		5.25203E-20	0.000378085	7.61139E-11	0.000269983
n-Butane	4.04618E-11		4.20162E-19	0.00279917	6.32682E-10	0.00199885
i-Pentane	2.89618E-12		5.25203E-20	0.000252770	4.52862E-11	0.000180629
n-Pentane	2.17603E-13		6.56504E-21	5.94281E-05	3.40255E-12	4.23957E-05
Neohexane	0		0	0	0	0
2,3-Dimethylbutane	0		0	0	0	0
2-Methylpentane	0		0	0	0	0
3-Methylpentane	0		0	0	0	0
n-Hexane	2.08954E-14		1.64126E-21	7.84615E-06	3.26730E-13	5.60335E-06
2,2-Dimethylpentane	0		0	0	0	0
Methylcyclopentane	0		0	0	0	0
2,4-Dimethylpentane	0		0	0	0	0
Benzene	1.86579E-06		3.39644	3.97518	2.91745E-05	3.19411
3,3-Dimethylpentane	0		0	0	0	0
Cyclohexane	0		0	0	0	0
2-Methylhexane	0		0	0	0	0
2,3-Dimethylpentane	0		0	0	0	0
1,1-Dimethylcyclopentane	0		0	0	0	0
3-Methylhexane	0		0	0	0	0
1,t-3-Dimethylcyclopentane	0		0	0	0	0
1,c-3-Dimethylcyclopentane	0		0	0	0	0
2,2,4-Trimethylpentane	0		0	0	0	0
n-Heptane	6.44831E-15		4.10315E-22	3.04248E-06	1.00829E-13	2.17551E-06
Methylcyclohexane	0		0	0	0	0
1,1,3-Trimethylcyclopentane	0		0	0	0	0
2,5-Dimethylhexane	0		0	0	0	0
2,4-Dimethylhexane	0		0	0	0	0
3,3-Dimethylhexane	0		0	0	0	0
1,t-2,c-3-Trimethylcyclopentane	0		0	0	0	0
2,3,4-Trimethylpentane	0		0	0	0	0
Toluene	5.51615E-07		0.997502	1.27145	8.62533E-06	1.00262
2,3-Dimethylhexane	0		0	0	0	0
1,1,2-Trimethylcyclopentane	0		0	0	0	0
2-Methylheptane	0		0	0	0	0
4-Methylheptane	0		0	0	0	0
3,4-Dimethylhexane	0		0	0	0	0
3-Methylheptane	0		0	0	0	0
3-Ethylhexane	0		0	0	0	0
1,c-3-Dimethylcyclohexane	0		0	0	0	0
1,t-4-Dimethylcyclohexane	0		0	0	0	0
1,1-Dimethylcyclohexane	0		0	0	0	0
2,2,4-Trimethylhexane	0		0	0	0	0
Cycloheptane	0		0	0	0	0
n-Octane	1.11670E-16		2.56447E-23	1.47808E-07	1.74613E-15	1.05692E-07
1,t-3-Dimethylcyclohexane	0		0	0	0	0
2,2-Dimethylheptane	0		0	0	0	0
2,4-Dimethylheptane	0		0	0	0	0
2,6-Dimethylheptane	0		0	0	0	0
2,5-Dimethylheptane	0		0	0	0	0
Ethylcyclohexane	0		0	0	0	0
3,3-Dimethylheptane	0		0	0	0	0
2,3,4-Trimethylhexane	0		0	0	0	0
Ethylbenzene	1.54618E-08		0.0369073	0.0452307	2.41769E-07	0.0352731
2,3-Dimethylheptane	0		0	0	0	0
m-Xylene	1.38128E-08		0.0230785	0.0396298	2.15984E-07	0.0302906
p-Xylene	0		0	0	0	0
3,4-Dimethylheptane	0		0	0	0	0
2-Methyloctane	0		0	0	0	0
4-Methyloctane	0		0	0	0	0
3-Methyloctane	0		0	0	0	0
o-Xylene	0		0	0	0	0
1,1,2-Trimethylcyclohexane	0		0	0	0	0
n-Nonane	3.97005E-17		6.41117E-24	4.18909E-08	6.20777E-16	3.00357E-08
Isopropylbenzene	0		0	0	0	0
n-Butylcyclopentane	0		0	0	0	0
n-Propylbenzene	0		0	0	0	0
m-Ethyltoluene	0		0	0	0	0
p-Ethyltoluene	0		0	0	0	0
4-Methylnonane	0		0	0	0	0
2-Methylnonane	0		0	0	0	0
t-Butylbenzene	0		0	0	0	0
Butylcyclohexane	0		0	0	0	0
n-Decane	9.04781E-21		1.25218E-26	5.00973E-11	1.41476E-19	3.59217E-11
Undecane	2.02321E-21		3.13045E-27	1.47111E-11	3.16359E-20	1.05723E-11
Dodecane	0		0	0	0	0
Tridecane	0		0	0	0	0
Nitrogen	3.29079E-13		6.56504E-21	5.27074E-05	5.14564E-12	3.74519E-05
Carbon Dioxide	2.25455E-06		8.60492E-16	7.56127	3.52532E-05	5.54651
Hydrogen Sulfide	4.44316E-07		0.473642	0.998824	6.94754E-06	0.768137

Process Streams		Breathing	Flash	Liquids	Produced Water w/ Hydrocarbon	Working	2
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Aqueous Liquid**	From Block:	TANK-100	TANK-100	TANK-100	--	TANK-100	VLVE-100
	To Block:	--	--	--	VLVE-100	--	TANK-100
Property	**Units**						
Temperature	°F	73.4428		73.4428	97.2586	73.4428	97.1263
Pressure	psia	13.26		13.26	19.6959	13.26	14.6959

Mole Fraction Vapor	%	0	0	0	0	0
Mole Fraction Light Liquid	%	0	100	100	0	100
Mole Fraction Heavy Liquid	%	100	0	0	100	0
Phase Mole Fraction	%	1.21369	100	99.5378	1.21369	99.5152
Molecular Weight	lb/lbmol	18.0403	18.0234	18.0352	18.0403	18.0305
Mass Density	lb/ft^3	62.2648	62.2510	61.9988	62.2648	61.9967
Molar Flow	lbmol/h	0.000137583	456.340	456.518	0.00215131	456.414
Mass Flow	lb/h	0.00248204	8224.77	8233.40	0.0388104	8229.39
Vapor Volumetric Flow	ft^3/h	3.98626E-05	132.123	132.799	0.000623312	132.739
Liquid Volumetric Flow	gpm	4.96989E-06	16.4725	16.5568	7.77116E-05	16.5493
Std Vapor Volumetric Flow	MMSCFD	1.25305E-06	4.15617	4.15779	1.95933E-05	4.15684
Std Liquid Volumetric Flow	sgpm	4.96366E-06	16.4434	16.4646	7.76143E-05	16.4553
Compressibility		0.000671526	0.000671043	0.000958631	0.000671526	0.000715282
Specific Gravity		0.998333	0.998112	0.994069	0.998333	0.994036
API Gravity		9.96085	9.99322	9.96354	9.96085	9.97279
Enthalpy	Btu/h	-16.9127	-5.60973E+07	-5.59332E+07	-264.455	-5.59219E+07
Mass Enthalpy	Btu/lb	-6814.04	-6820.53	-6793.45	-6814.04	-6795.39
Mass Cp	Btu/(lb*°F)	0.977971	0.978251	0.976747	0.977971	0.976850
Ideal Gas CpCv Ratio		1.32895	1.32904	1.32814	1.32895	1.32817
Dynamic Viscosity	cP	0.951221	0.953391	0.720380	0.951221	0.721757
Kinematic Viscosity	cSt	0.953714	0.956102	0.725366	0.953714	0.726777
Thermal Conductivity	Btu/(h*ft*°F)	0.347613	0.348393	0.358036	0.347613	0.358209
Surface Tension	lbf/ft	0.00500180?	0.00500592	0.00482695	0.00500180?	0.00482863
Net Ideal Gas Heating Value	Btu/ft^3	0.875196	0.467530	0.581419	0.875196	0.463276
Net Liquid Heating Value	Btu/lb	-1039.44	-1049.39	-1045.94	-1039.44	-1048.81
Gross Ideal Gas Heating Value	Btu/ft^3	51.1909	50.7909	50.8889	51.1909	50.7725
Gross Liquid Heating Value	Btu/lb	18.9684	10.1731	12.5900	18.9684	10.0374

October 2, 2024 ASTEC PROPOSAL #: HI 23-15003 Rev 8

THE WORLD LEADER IN INTEGRATED PROCESS SOLUTIONS

SUPPORT•TECHNOLOGY•TRAINING

A PROPOSAL TO PROVIDE A

THERMAL FLUID HEATING SYSTEM

FOR

H-1701, H-1702 and H-1703 HMO for Targa's DOU Copperhead plant in NM

PREPARED EXCLUSIVELY FOR

Bryan Nix
TARGA RESOURCES
811 Louisiana Street
Houston, TX 77002
Office:713-584-1575
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Presented by:

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tmfraney@astecindustries.com

ASTEC SCOPE OF SUPPLY (Quote validity is for 30 days):
All equipment will be completely assembled at ASTEC. It will arrive at your facility completely packaged and mock tested. The package you will receive includes the following items:

Model	Description	Investment (U.S. $)
Heatec HCI 25010-50-Q-G	Thermal Fluid Heater x 1	$Included
Burner	Low NOx Burner x 1	$Included
Blower	Blower for burner x 1	$Included
Control Panel	Panel x 1	$Included
Fuel Train	Gas Train x 1	$Included
Economizer	Economizer x 1	$Included
Stack	Exhaust Stack x 1	$Included
	Total for Heating Unit #1 - H-1701	$949,430.00
	Total for Heating Unit #2 - H-1702	$949,430.00
	Total for Heating Unit #3 - H-1703	$949,430.00
	Total for Three (3) Identical Heating Units	**$2,848,290.00**

NOTE: Our price and delivery are based on ASTEC's "General Terms and Conditions" listed at the end of this proposal. Any purchase order that includes Terms and Conditions different from those will be reviewed, and it may impact the price and delivery offered. ASTEC reserves the right to review and revise the pricing and delivery.

DELIVERY PERIOD:
The delivery period of the equipment is listed below. Delivery times may vary depending on engineering and production workload when the written P.O. is received. *Long lead items (pumps, burner, blower, relief valves, etc) need to be ordered prior to approvals.*

Description	Weeks
Drawings Issued for Approval	9 ARO
Equipment Ready to Ship after All Drawings Approved	19 ARAD

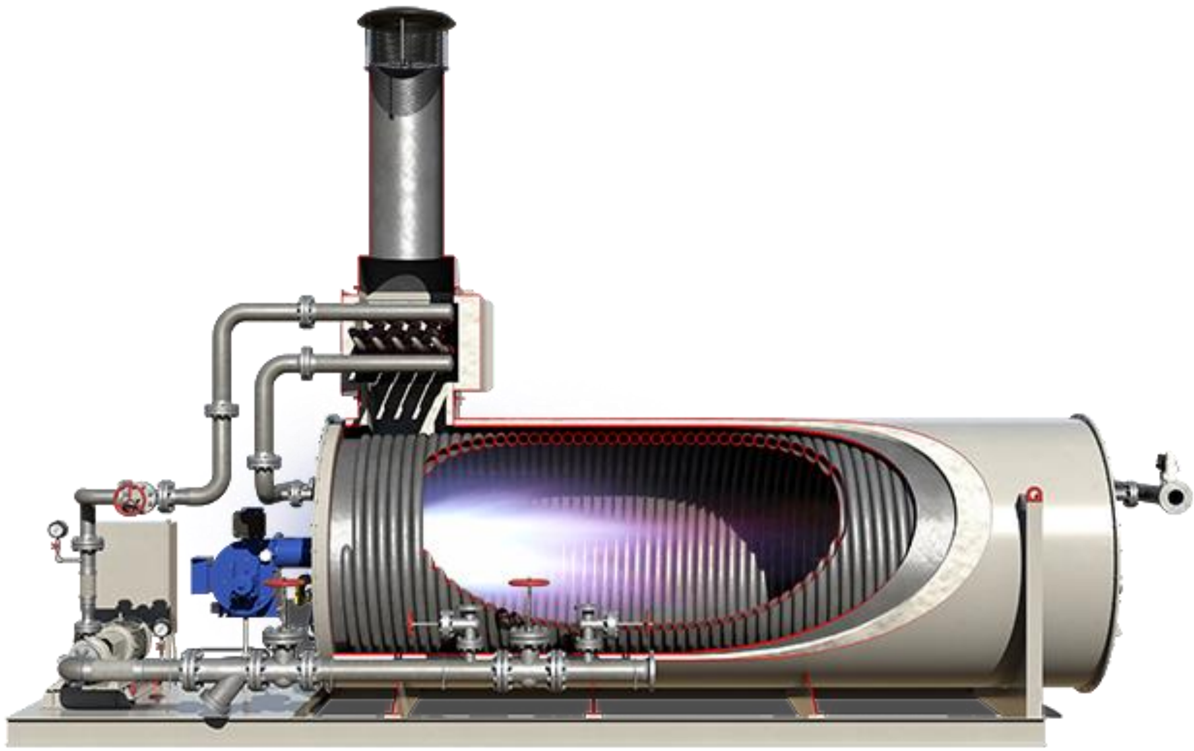
ARO = After receipt of written purchase order
ARAD = After receipt of approved drawings from the customer

OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

Model	Description	Investment (U.S. $)
5 Days Service On-site	Estimate (1 Man, 1 Trip, 2 Weeks Notice)	See Page 27
Industrial Customer School	Tentatively in April / October	$1,600.00
Commissioning Spare Parts	Estimate, Class 1 Div 2	$24,500.00 per heater
2 Years Spare Parts	Estimate, Class 1 Div 2	$19,750.00 per heater

NOTE;
This is only a partial, preliminary spare parts list. The complete parts list will be sent after ASTEC is the successful bidder, the P.O. has been received by ASTEC, and once we have the final scope defined.

COMMISSIONING SPARES:	**2 YEAR SPARES:**
Flame safeguard	Flame safeguard
Flame scanner	High media controller
High media controller	Stack temp controller
Stack temp controller	Modulation controller
Modulation controller	Ignition transformer
Motor starter	Control relays
Main gas valve	Low combustion air switch
Pilot solenoid valve	Modulating control motor
Modulating control motor	Burner blower wheel
Spark igniter for burner	Rear heater sight glass
Blower motor for burner	Spark igniter for burner
Media Thermocouple	Indicating lights for control panel
Stack Thermocouple	Butterfly valve for burner control
Main gas regulator	High gas pressure switch
Pilot gas regulator	Low gas pressure switch



This is a cut away depiction of our standard horizontal heater internals. It does not necessarily represent the package quoted. The main advantage of this design is the extremely large radiant section. Since this is where most heat transfer occurs, the ideal design utilizes a large radiant section. The two-pass heater life expectancy is 2-4 times that of other styles.

ASTEC ADVANTAGES:

1. The radiant heating surface of two pass heaters is typically 50% greater compared to that of other style heaters. The result is that the two-pass heater will have lower radiant flux rates. High radiant heat flux causes high metal wall temperatures, causing premature coil failure and premature degradation of the thermal fluid. The life expectancy of the two-pass heater will be 2-4 times that of other designs
2. Should the coil ever have to be replaced, the bolted cover(s) of the two-pass design allow(s) for easy coil replacement without having to replace the entire heater or requiring shipment back to the factory for costly repair
3. There is more internal “room” in the less crowded two pass heater which allows for greater space between the flame and the coil. This lessens the chances for flame impingement and thus lengthens coil and thermal fluid life. Ease of inspection is also increased
4. The velocity in the coil is in the range of 5 – 13 fps as recommended by most thermal fluid manufacturers. Due to the low average radiant heat flux of the two pass designs, the heater does not have to rely on excessive fluid velocity (which can lead to erosion) to keep the film temperatures low. The result is the most forgiving heater on the market
5. The heater has an 18” bolted man-way. This allows access to the radiant section without removing the cover, the burner, the fuel train, the can and the conduit. This internal inspection is required in many locations
6. The heater utilizes complete flow through a uniform diameter coil without mixing or by-passing.
7. Front and rear peep sight(s) for viewing flame pattern and coil condition
8. No orifice plates required for balancing the flow
9. Insulation is on the inside of the heater where it cannot be damaged during shipment
10. Totally Packaged Heaters
11. In House Panel Shop
12. In House Coil Manufacturing
13. In House Hydro-Test
14. In House Painting / Sandblasting
15. In House Fully Function Tested Heaters
16. Custom (Highly Specified or Standard Units)
17. On Site Training
18. In House Service Department which is available for on-site training and start up
19. In House Engineering Department
20. Seventeen AutoCAD stations utilizing AutoCAD / Inventor / AutoCAD Electrical
21. In House Quality Assurance / Control Department
22. Heater manufacturer since 1977
23. Heatec Coil warranty will be 3 years from ship date. Typical lifetime of this heater without coil replacement is 20 to 30 years
24. Stamps and Certifications

EQUIPMENT DESIGN DATA:

HCI 25010-50-Q-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	55,000,000	16.12
Firing Rate (HHV) (Btu/hr) (MW)	79,365,888	23.26
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	1,022,363	463,615
Heater Circulation Rate (Gal/min) (m^3/hr) {Constant}	2,486	565
Minimum Allowable Circulation Rate (Gal/min) (m^3/hr)	1,989	452
Heater Inlet Temperature (°F) (°C)	282	139
Heater Outlet Temperature (°F) (°C)	375	191
Stack Temperature (°F) (°C)	723	384
Calculated Heater Efficiency (%) (LHV) [See Note 1]	81.6	81.6
Calculated ΔP through Heater (psid) (Bar) (Clean)	20.7	1.4
Heater Volume (Gallons) (m^3)	3,015	11.4
Total Coil Surface Area (ft^2) (m^2)	5,590	519.5
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	9,840	31.0
Radiant Surface Area (ft^2) (m^2)	1,755	163.1
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	16,521	52.1
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	22,304	70.3
Maximum Metal Temperature (°F) (°C) AICHE	477	247
Maximum Calculated Film Temperature (°F) (°C) AICHE	460	238
Average Thermal Fluid Velocity (ft/s) (m/s)	10.2	3.1
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	880,259	24,929
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	71,075	2,013
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	964,160	27,306
Flue Gas Pressure Drop (" WC) (mmHg)	0.90	46.67

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.
Note 2: It is the Customer's responsibility to confirm/verify user volume and pressure drop, which are not in ASTEC's scope of supply. ASTEC assumes no liability for non-verified estimated data.

SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,500
Heater location	Outdoor
Ambient Temperature (ºF)	0 to 110
Burner turndown	6:1 Gas
Excess air %	15
Flue Gas Recirculation %	15
Noise Limit (dB(A))	< 85 at 3 ft
Heater orientation	Horizontal
Primary fuel (psig @ rated capacity of the burner)	Fuel gas (125)
Compressed air from clean, dry, safe source	10 to 40 scfm @ 116 to 80 psig
Electrical	480 V / 3 PH / 60 Hz
Control voltage	110 V / 1 PH / 60 HZ / 24 V DC
Area Classification	Class 1 Div. 2 Group C & D
Thermal fluid (Not Included)	Chemtherm 550 or Equal

Note: Please confirm fuel pressure and temperature.

	FUEL TABLE	MOL %
N_2	Nitrogen	1.84
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.00001
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	97.6
C_2H_6	Ethane	0.54
C_3H_8	Propane	0.0235
C_4H_{10}	i-Butane	0.00
C_4H_{10}	n-Butane	0.00
C_5H_{12}	i-Pentane	0.00
C_5H_{12}	n-Pentane	0.00
C_6H_{14}	n-Hexane	0.00
O_2	Oxygen	0.00

THERMAL FLUID PROPERTIES	
Inlet Temperature (°F)	282.5
Inlet Density (lb/ft^3)	51.27
Inlet Heat Capacity (Btu/(lb*°F))	0.560
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.075
Inlet Dynamic Viscosity (cP)	1.923
Outlet Temperature (°F)	375
Outlet Density (lb/ft^3)	49.23
Outlet Heat Capacity (Btu/(lb*°F))	0.603
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.067
Outlet Dynamic Viscosity (cP)	1.012

APPROXIMATE PHYSICAL DATA:

The equipment will have the following estimated dimensions and dry weights. Piping and controls external to the heater are to be insulated in the field by customer. All equipment will be assembled and mounted as stated below. Items too large for shipment, or subject to damage during shipment, will be shipped loose (unattached) and will require re-assembly in the field.

Equipment	L (ft)	W (ft)	H (ft)	Wt (Lbs)	Mounting
Horizontal Heater	52.8	12.4	12.7	94,850	Skid
Economizer	10.4	6.0	3.5	10,912	Top of Heater
Exhaust Stack		4.0	8.0	1,029	Top of Economizer
Blower (HP)	100	TEFC			Front Cover of Heater
Pilot Gas Train	NPT	0.5	Inch		Side of Heater
Main Gas Train	NPT	4.0	Inch		Side of Heater
Control Panel	3.0	1.0	4.0	500	Front of Heater Skid

DRAWINGS / ENGINEERING:

Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on USB thumb drive (AutoCAD). Please note that the tolerance of our drawings is + or – ¼”. Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.

Description	Description
Manuals on CD	General Arrangement
P & ID	Bill of Material Mechanical
Electrical Diagrams (Ladder Type)	Bill of Material Electrical
Nameplate Details	Hydro-test Report
Lift Lug Details	Spare Parts
Motor Curves	NDT Reports
Motor Data Sheets	Utility Requirements
Material Certifications	Quality Control Manual
Foundation Loadings	Mechanical Design Calculations

DESIGN CRITERIA:
The equipment will be designed to the requirements stated below. Quality is assured by our in house quality control department. Thickness of coil and shell will not be affected by the manufacturing process as we keep all diameters above the limits that would have an impact on it. Hydrostatic testing will be carried out at our facility and witnessed by our quality control manager.

Heater Coil Design:
ASME Section VIII design @ 650 ºF to -20 ºF, @ 300 psig with CA = 0.0625
Heater Shell Design:
Non-code design @ 300 ºF to -20 ºF @ 15 In W.C. with CA = 0.0625
Fuel Train Design:
110 ºF to 0 ºF / UL / NFPA 87 & 70
NEC Class I Division 2 / Group C & D
Heater Stack Design:
Non-code 800 ºF to -20 ºF @ +15” W.C. w/ CA = .0625
Panel & Controls:
110 ºF to 0 ºF / UL 508 A / NFPA 87 & 70
NEC Class I Division 2 Group C & D
NEMA 4X (316 Stainless Steel) with “Z” type purging

PAINTING:
Customer specified paint system.

Purchased items will be painted with vendors’ standard paint, stainless items will remain unpainted.

EQUIPMENT RECOMMENDATIONS:
The heater is designed, manufactured, wired, and tested at our facility in Chattanooga, Tennessee USA. It is completely packaged and will include the following:

HEATEC HCI HEATER:
- Two-pass tight-wound helical coil heater
- Carbon steel (SA106 Gr. B seamless) schedule 40 tight-wound helical coil
- Single 12" inlet and outlet 300 # (SA105) flanges
- Heater coil hydro-testing per ASME code
- Coil will be stamped and receive National Board Registration
- 304 SS coil supports (skip welded to shell to help dissipate heat transmission)
- Coil is enclosed by an (minimum ¼" thick) A36 carbon steel shell with bolted end covers (w/ lift eyes)
- Internally insulated with ceramic fiber blanket, using welded 310 SS pins with washers for support. Blanket will receive a coat of rigidizer
- Peep sight in rear cover
- Inert gas smothering connection in front cover. (Gas and controls by others)
- Structural steel skid with saddles welded to channels to form a skid mounted frame, and a five foot skid deck extension for mounting controls
- Skid lifting lugs (minimum of four)
- 18" diameter bolted access door in rear of heater
- Coil butt welds receive 100% radiography
- Extra convection section to increase heater efficiency. Economizer (Extra Convection Section) with stack transitions and piping to heater inlet (Crossover piping). Economizer consists of a serpentine carbon steel pipe coil with carbon steel serrated fins. Piping to heater inlet is included (Insulation of piping is not included).

EXHAUST STACK:
An exhaust stack to disperse the heater flue gasses to the atmosphere.
- Stack with flanged bottom connection and 2 flue gas sampling ports, rain cap and bird screen (Un-insulated)

POWER FLAME TYPE LNICM BURNER:
The Induced Flue Gas Recirculation (IFGR) System was developed as a compliment to the Power Flame Forced FGR and Staged Fuel systems in order to encompass a broader spectrum of low NOx emissions demands. The LNICM System incorporates Induced Flue Gas Recirculation technology to reduce the level of NOx emissions. The IFGR inlet assembly is adapted directly to Power Flame's standard gas or gas/oil burner.

The combustion air, thoroughly mixed with a percentage of Flue Gas, is introduced to the combustion zone through the standard burner and burner head assembly. This increased "air side" mass flow for a given heat release provides results very similar to lean combustion but, with less added oxygen to combine with nitrogen to form NOx. The rate of thermal NOx formation is primarily temperature dependent, hence lower resultant NOx formation is achieved by the heat absorption effect of the increased mass flow of combustion air/IFGR mixture in the combustion zone. This increased mass flow results in greater turbulence for the combustion process generally providing shorter, more compact flame envelopes.

- Direct spark ignited natural gas pilot (Interrupted type)
- Ignition transformer
- UV self-checking flame detection scanner
- Blower is integral to burner
- Inlet damper with modulation motor, duct and combustion air differential pressure switch
- Burner is sized for 108% capacity

GAS TRAIN:

- Pilot train with regulator, electric double block safety shutdown valves, manual valve, 1 x pressure gauge
- Main train
- Drip leg
- Manual shutoff valve
- Gas Strainer
- Tee to pilot train
- Pressure gauge x 2
- Stepdown gas regulator (Must be vented to a safe location)
- Gas regulator (Must be vented to a safe location)
- Vent line with manual shutoff valve for leak testing
- Low and high pressure switches
- Leakage test connection with manual shutoff valve
- Fuel Modulation via modulation valves with linkage-less system
- Double block (one with proof of closure switch) safety shutdown valves
- Bleed line with two (2) manual shutoff valves for leak testing
- Heat tracing, if necessary, is by customer

Emission Guarantees based on HHV:
NOx (lbs/mmbtu – PPM) = .0365 – 30
CO (lbs/mmbtu - PPM) = .049 – 65
SOx (lbs/mmbtu - PPM) = Negligible
PM (lbs/mmbtu - PPM) = Negligible
VOC (lbs/mmbtu - PPM) = Negligible

1. All emissions are from 50% to 100% of maximum combustion rating (MCR)
2. All emissions in the units of PPM are referenced to 3% dry stack oxygen
3. Emissions are valid for natural gas (fuel analysis must be submitted by customer) combustion only. The values are based on natural gas containing no bound nitrogen and no sulfur
4. If the stack emissions exceed the guarantee level, ASTEC/ Burner manufacturer will work with customer to reduce the emissions to the guaranteed level. ASTEC / Burner manufacturer will, at its costs, make any and all adjustments and / or modifications to burner that it deems appropriate and proper to meet required levels
5. Compliance testing of the system must be conducted within 60 days of initial start-up. Start-up must occur no later than 120 days from shipment. Testing is to be accomplished by an independent authorized agency agreed to by ASTEC / burner manufacturer utilizing EPA-Method 7E. All costs of compliance testing shall be paid by customer
6. All guarantees contained in these conditions and limits shall end following completion of compliance testing wherein all emission test points are documented to be at or below guaranteed levels

LOCALLY MOUNTED INSTRUMENTS:

- Digital differential pressure switch for detection of low thermal fluid flow condition
- Inlet / outlet thermal fluid pressure gauge with isolation valve (NPT)
- Inlet / outlet thermal fluid thermometer with thermo-well (NPT)
- Outlet thermal fluid temperature thermocouples with thermo-well (NPT)
- Stack temperature thermocouple with thermo-well
- ASME Section VIII Type pressure relief valve(s) on the thermal fluid outlet piping (Must be vented to a safe location) 1.5” 300# inlet, 2” 300# flanged outlet
- Conduit will be used for all wiring

BURNER MANAGEMENT SYSTEM (BMS) ELECTRICAL CONTROL ENCLOSURE:
The heater's electrical control enclosure contains all of the electrical components to safely operate the heater. The burner management controller provides the proper burner sequencing, pre-purge, ignition and flame monitoring protection for automatically ignited oil or gas fuel burners. The enclosure also has a single-loop, 4-20mA modulating, digital temperature controller and two digital temperature limit controllers; one for the thermal fluid and one for the stack. The burner managment controller also monitors other heater safety limits in it's limit circuit. If a limit condition occurs, the burner managment controller safely shuts down the burner.

The enclosure and installed components meet NEMA standards. The enclosure is designed and wired to meet the requirments of NFPA 70, National Electric Code (NEC) and the requirements found in Underwriters Laboratories Inc. (UL) 508A Listing for Industrial Control Panels. This listing can be verified on the following website: http://www.ul.com/database.

The BMS control enclosure will be manufactured and tested by ASTEC.

The control panel includes the following:
- AO ground to -24vdc common
- All safety devices connected to DI through relays as input for troubleshooting.
- DI register on HMI page
- LOP (light off position) Hold through MTFI (main trial for ignition) and additional 30 seconds, then release to modulate. Program changes from basic package
- Reset PID PV to Zero at the same time it releases to Auto modulation.
- Heater tied to burner alarm on FAL and FALL shutdown conditions
- Siemens breaker disconnect mounted on back panel with a through-the-door operator handle
- Motor starters are by others
- Fireye BurnerLogix burner management system (BMS) model YB110UVSC with self-check scanner amplifier card. The YB110 has a display with keypad mounted in the enclosure door allowing user to easily scroll through various menus to view the current operating status, review programmer configurations and lockout history. The flame reset button is on the keypad. The YB110 has the capability to communicate its status data via Mod-Bus RTU as a slave with a Mod-Bus RTU master device. Programming of the RTU Master to pole the Fireye is responsibility of the customer. The YB110 BurnerLogix is cUL US Listed, CE and FM approved
- Control relays and fused terminal blocks
- DI, DO & AI fused connections entering and leaving the rack.
- Control relays and fused terminal blocks
- Yokogawa UT55A-040 (1/4 DIN) thermal fluid temperature controller, digital display, 4-20mA analog control output, second input for remote set-point capability and 4-20 mA re-transmission analog output capability
- Yokogawa UT35L (1/4 DIN) high thermal fluid temperature limit controller with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability
- Yokogawa UT35L (1/4DIN) high stack temperature limit switch with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability.
- Lights for: power and alarm indicator lights
- Switches for: burner off/on, alarm silence, low fire hold and pump select (if applicable)
- Dry contacts on common alarm and heater run status
- Flame safety reset button

- Emergency shut down button
- Alarm horn, to indicate alarm (mounted adjacent to panel)
- Window kit for indicating controls
- “Z” Purge Package
- Allen-Bradley CompactLogix 5069 PLC with Panelview Plus 12 HMI for air-fuel ratio control.
- Panelview HMI to be updated to latest firmware version and VNC enabled.
- PLC rack and programs to have same version.
- Heating element with panel insulation and thermostat

Exceptions and Clarifications

HEATEC's Quotation is in basic accordance with the specifications, drawings, terms and conditions, and requirements of the invitation to bid; however, the following exceptions have been identified, priced and are attached hereto for consideration
Purchase order must make reference to HEATEC Quotation
Equipment is quoted EXW, HEATEC, Chattanooga, TN, Incoterms® 2020. Equipment will be loaded on truck free of charge. This means the delivery of Equipment on the truck at the specified point of departure (HEATEC) is covered in the quotation price. Purchaser is responsible for the main carriage / freight, cargo insurance and other costs and risks. Purchaser shall furnish all necessary facilities, labor, materials and equipment for unloading and conveying the Equipment to its erection point. The Equipment shall be erected, installed, set and leveled by Purchaser at its expense.
Purchaser shall furnish all necessary labor, materials, equipment, fuel, inert snuffing controls / media, air (if required), nitrogen (if required) and electricity required for starting up the Equipment. HEATEC will not be responsible for the installation or design of the footings, foundations or anchor bolts. Emissions compliance testing, mechanical run test, Site Acceptance Test, and performance tests are not included in Quotation. Testing included in Quotation includes the testing as described in the HEATEC Standard FAT (Available for inspection) and the HEATEC Standard ITP (Available for inspection) and any tests stated in the Quotation.
Heatec warranty, payment terms and cancellation charges are as stated below.
Export packing / preservation / storage are not included. Domestic packing is included. This includes flange / stack covers, wrapping of panel, crating of loose shipped parts.
Taxes, tariffs and duties are not included.
Order will be executed according to USA / TN laws. It is the responsibility of Purchaser to inform HEATEC via specifications of local / jurisdictional laws that may affect Equipment design (i.e. emissions, insurance codes, etc.). Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the design, installation and operation of the Equipment and any other activity related thereto, including, without limitation, the Clean Air Act and all rules and regulations promulgated thereunder and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder. Some parts of the heater will exceed OSHA temperature requirements. (Average skin temperature of heater shell is 170°F with 5 mph wind and 70°F ambient.)
Any freight prices that may be quoted are estimates for budgetary purposes only. Due to the volatile nature of freight pricing, HEATEC cannot give a firm price for freight during the proposal phase of the project, because this phase occurs well in advance of the actual delivery. If contracted with HEATEC, freight will be billed at the actual cost plus a 10% handling fee.
All drawings will be standard AUTO-CAD. Delivery time stated in Quotation depends upon the approval process and the changes made during this process. Typical approval time is two weeks after receipt on all drawings. Only those drawings listed above will be offered. Drawings will be submitted electronically. If drawing approval consists of multiple or major changes, delivery time can be affected as well as the price. Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on disk. Hard copies will require additional cost. Please note that the tolerance of HEATEC drawings is + or – ¼”. Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.
Control voltage is as stated in quotation.
Insulation / tracing / personnel protection of piping and equipment external of heater is not included. This is best done in the field by local contractor to eliminate damage during shipment and to allow checking for leaks prior to start up.
Fusible loop system, testing of refractory / insulation materials, burner / blower testing, spreader bar and slings are not included.
Galvanic isolation barriers and cathodic protection are not included.

Single line drawings are not included. HEATEC performs ladder type diagrams.
Pipe, fittings, bolts, nuts and steel will be purchased from HEATEC's standard vendors. Plate and shapes are A36 carbon steel. Tubes supports are 304 SS. Stud bolts are SA 193 Br B7. Nuts are SA 194.
All purchased items will remain as painted from respective vendor.
Ladders and platforms are not included unless stated in Quotation.
If area is Class I Div 2 then panel is NEMA 4X with "Z" type purging. All other controls are NEMA 7, hermetically sealed, intrinsically safe or they are purged. Motors are TEFC. Equipment will be designed to NEC area as stated in Quotation.
Unless stated otherwise in Quotation, HEATEC takes exception to ISO, BS, NACE, API, GOST, ATEX, CE, IEC, SIL, & CENELEC specifications. HEATEC will assist in complying with these regulations where required but HEATEC cannot be sure the equipment as quoted will comply.
Heatec standard Quality control manual will be used for all welding, NDE, etc. Heatec standard welding procedures will be used for all welding. Heatec weld procedures and welders are ASME approved/certified. The weld procedures are available for Purchaser review only and revisions are not allowed. If Purchaser specifications have requirements other than what is listed on Heatec weld procedures, then Purchaser specific weld procedures can be produced. New procedures will result in a cost adder and will delay the original shipping date provided in the HEATEC Quotation. The increase in cost and length of delay will be dependent on the extent of the specification requirements. NDE of non-pressure vessel welds is not included unless stated in Quotation. Non pressure vessel welds are continuous but are not full penetration.
Flame arrestor, spark arrestor, UPS, noise test, fire & gas detection, outdoor lights, aviation lights, variable speed motors, soot blowers, lancing ports, fireproofing, knockout tank, insulation rings, insulation clips, vapor barriers, explosion door, spare parts, thermal fluid, shell / structural / piping stress analysis test, export custom clearance and vibration tests, start-up and erection assistance are not included. Only the controls listed in the Quotation are provided.
Hazardous area electrical equipment certification is simply a copy of each electrical item certificate. The entire heater does not have this type of approval.
Liquidated damages shall not apply.
HEATEC takes exception to specifications and required documentation referring to any other language other than English.
HEATEC is not responsible for implementing documentation or paying taxes, duties or other charges relating to exporting/importing proposed equipment into any country outside the Continental United States
Seal offs (If required) are to be poured in the field by Purchaser.
Relief valves and vents should be piped to a safe location by Purchaser.
Noise data sheet is provided by the blower manufacturer only
Redundancy is not included.
Thermal fluid by-pass, relief valve by-pass, relief valve isolation and flow control is not included unless specifically stated in the Quotation. By-pass and isolation valves around flow control valves and regulators have not been included.
Shield rows in convection section are not required or included.
SAT / Performance test is not included. Functional test of all components is included.
Skid drip pan, lip and grating have not been included.
Rupture discs are not included on relief valves.
Galvanizing of any materials is not included unless stated in Quotation.
PWHT is not included.
API guidelines are not included unless specifically stated in the body of this proposal

API 560 EXCEPTIONS:

ANSI / API STANDARD 560 4TH EDITION AUGUST 2007

SPEC #	EXCEPTION
2	HEATEC TAKES EXCEPTION TO THE FOLLOWING SPECIFICATIONS: ISO, EN, API 673, MSS
5.2	NOISE DATA SHEET IS NOT INCLUDED EXCEPT FOR THE FAN
5.3.3	TUBE SUPPORT DETAILS & CALCULATIONS ARE NOT INCLUDED. DECOKING IS NOT ALLOWED.
5.4	TUBE SUPPORTS ARE NOT CASTINGS AND THEY DO NOT HAVE TEST CERTIFICATES
6.1.3	HEATER IS A TIGHT WOUND HELICAL COIL WITH NEGLIGIBLE TUBE SPACING
6	FLUX RATE, VOLUMTERIC HEAT RELEASE AND H/W RATIO ARE AS STATED IN QUOTATION
6.2.6	HEATER IS A FORCED DRAFT HEATER. NEGATIVE PRESSURES ARE NOT TYPICALLY EXPERIENCED.
6.3.3	SOOTBLOWERS ARE NOT INCLUDED
6.3.2 & 6.3.4	CONVECTION SECTIONS (ECONOMIZER) DOES NOT INCLUDE SPACE FOR FUTURE INSTALLATION OFSOOTBLOWERS, WATERWASHING TUBE ROWS, OR STEAM LANCE DOORS.
6.3.7	SHIELD SECTION IN ECONOMIZER DOES NOT HAVE BARE ROWS OF TUBES
6.3.8	CORBELS / BAFFLES ARE NOT INCLUDED
6.3.9	PLENUM CHAMBER WILL NOT HAVE THE CLEARANCE FROM GRADE SPECIFIED.
6.3.10 & 6.3.11	HEATEC TAKES EXCEPTION TO THIS SPECIFICATION AS IT DOES NOT APPLY TO HELICAL COIL HEATERS
6.3.12	INDIVIDUAL TUBES ARE NOT REPLACEABLE. ENTIRE COIL IS REPLACEABLE.
7.1.2	CORROSION ALLOWANCE FOR TUBE WALL THICKNESS CALCULATIONS IS AS STATED IN THE QUOTATION.
7.1.4	HELICAL COIL HAS CIRCUMFERENTIAL WELDS THRUOUT ITS COIL LENGTH
10	HELICAL COIL TUBE SUPPORTS 304 SS. THIS SECTION DOES NOT APPLY TO HELICAL COILS AND HEATEC TAKES EXCEPTION TO IT.
11.1.5 / 11.4.1	INSULATION TYPE IS AS STATED IN QUOTATION FOR ENTIRE HEATER. NO BRICK OR REFRACTORY IS USED EXCEPT IN THE BURNER BLOCK. STACKS AND DUCTS ARE NOT INSULATED.
11.1.9	HEATEC PROVIDES THERMO CERAM ROPE OR EQUAL AROUND BURNER THROAT. NO EXPANSION JOINT IS REQUIRED.
11.4	CERAMIC FIBER BLANKET IS 6 LB/FT^3 WITH 310 SS PINS AND WASHERS. CERAMIC FIBER MODULES ARE 8 OR 10 LB/FT^3 WITH 304 OR 316 SS ANCHOR SYSTEM. RETAINER CUPS ARE NOT UTILIZED.
11.4.8	FLUE GAS VELOCITY AA STATED IN THE QUOTATION MAY EXCEED THIS SPECIFICATION

12.2.7	FIREPROOFING IS NOT INCLUDED
12.3	HEADER BOX IS BOLTED. PLUG HEADERS ARE NOT UTILIZED.
12.3.2.1 / 12.3.2.2	ONLY ONE 18" DIAMETER RADIANT SECTION ACCESS DOOR IS PROVIDED. IT IS BOLTED. IT IS IN THE REAR COVER OF HORIZONTAL HEATERS AND THE TOP COVER OF VERTICAL HEATERS. BURNER DESIGN DOES NOT HAVE AIR PLENUM DESIGN, IT IS SIMPLY A BLOWER WITH DAMPER AND DUCT. IT HAS NO ACCESS DOOR OR PORT.
12.3.2.3 / 12.3.2.4 / 12.3.2.6	DAMPER IS PROVIDED IN COMBUSTION AIR DUCT ONLY. ACCESS DOOR BEFORE ABD AFTER CONVECTION SECTION IS NOT INCLUDED. INDIVIUAL TUBES ARE NOT REPLACEABLE. ENTIRE COIL IS REPLACEABLE. END COVERS OF HEATER ARE REMOVED FOR THIS PURPOSE. TUBE REMOVAL DOOR IS NOT INCLUDED. DUCTS AND DAMPERS DO NOT HAVE ACCESS DOORS.
13.2.2 / 13.2.7 / 13.2.8	STACK IS SEAL WELDED EXTERNALLY ONLY. STACK IS NOT LINED.
13.2.12	BREECHING WILL NOT MEET CLEARANCE SPECIFICATIONS
13.2.15	STACK DOES NOT HAVE A CORROSION ALLOWANCE.
14.1.3	BURNER MAY NOT MEET SPECIFIED CLEARANCES
14.1.8	A SINGLE BURNER IS USED ONLY
14.1.21	IF BURNER IS OIL FIRED. THE OIL GUN IS NOT REMMOVABLE DURING OPERATION. MATERIALS OF CONSTRUCTION MAY NOT MEET ALL REQUIREMENTS IN TABLE 15.
14.2	SOOTBLOWERS, PORTS AND LANES ARE NOT INCLUDED UNLESS STATED IN QUOTATION.
14.3	FANS AND DRIVERS WILL NOT MEET API REQUIREMENTS
14.4	HEATEC USES BUTTERFLY DAMPERS AND RADIAL DAMPERS IN THE COMBUSTION AIR DUCT. THEY ARE MILD STEEL CONSTRUCTION.
15	FLUE GAS AND COMBUSTION AIR CONNECTIONS ARE SCH 40 NPT CONNECTIONS.
15.3.2	VENT AND DRAIN CONNECTIONS ARE NOT INCLUDED
15.4	TUBE SKIN THERMOCOUPLES ARE NOT INCLUDED UNLESS STATED IN QUOTATION.
15.5	INSTRUMENT CONNECTIONS ARE NOT NECESSARILY ACCESSIBLE FROM GRADE.
16.2	PLATE WELDS ARE SEAMLESSLY WELDED ON THE EXTERIOR
16.7	FIELD ERECTION / ASSISTANCE ARE NOT INCLUDED.
17.3 17.4	HEATEC TAKES EXCEPTION TO 17.3 & 17.4
ANNEX E	STRESS CALCULATIONS ARE NOT PERFORMED ON TUBES, SHELL OR TUBE SUPPORTS.
ANNEX F	AIR PREHEATER IS NOT INCLUDED.

SALES PROPOSAL
SPECIFIC TERMS AND CONDITIONS

PARTIES: - Heatec, Inc. shall be referred to as "**Heatec**" in this Sales Proposal.
- Good Customer shall be referred to as "**Purchaser**" in this Sales Proposal.

PRICING: - The Price is valid for sixty (60) days after date of this Sales Proposal.
- The Prices do not include any sale, use, property value added, duties or other taxes or charges, whether federal, state, local or provincial that may be applicable, which shall be the responsibility of the Purchaser.

TERMS: - Purchaser shall pay the purchase price in progress payments as follows:
Receipt of these progress payments is required before the Equipment will be released for shipment.
20% @ ARO
30% @ Approval Drawing Submittal
30% @ Coil Hydro Test
Balance @ ready to ship
Electronic Transfer required 30 days after invoice receipt
Refundment / security / performance bonds are not included.

PACKING: - The Price includes Heatec's standard packing. If Purchaser requires special packing, the extra cost caused thereby shall be borne by Purchaser.

SHIPPING: - Transportation charges from point of shipment to point of destination shall be arranged for and paid for by the Purchaser, unless a separate freight contract is entered into between the parties.
- Purchaser shall control the type of transportation and routing.
- An anticipated ready for ship date shall be established upon Heatec's receipt of signed Sales Proposal and Heatec's receipt of the down payment.

DELAY: - If Heatec is not released by the Purchaser to order materials for fabrication at the time Purchaser signs this Sales Proposal, Heatec reserves the right to review and adjust the Price.
- In addition, delays in fabrication due to delays in Purchaser's release or other reasons due to Purchaser, will require an adjustment in the anticipated shipment date.

STEEL PRICES ESCALATION NOTE:

Because of price volatility from steel manufacturers, any order will be subject to a review of material costs from the time of the proposal to the time that the material is actually allocated to the order. Any steel material cost changes will be based on the #1 Chicago Heavy Melt which is listed daily in numerous publications such as THE AMERICAN METAL MARKET. The calculation for the cost variation will be the difference between the Chicago #1 Heavy Melt scrap index 8 weeks prior to the date of this quotation and that same index price on the date 8 weeks prior to shipment of the respective order, which roughly corresponds to the steel material order date. That calculation will multiply the total weight of the steel plate, structural steel, and steel pipe of the product provided by the applicable index price variation. The increase, or decrease, in price will be shown as an additional line item on the respective invoice. This is the most appropriate and transparent method to deal with the current unpredictability of the steel market today. Please, contact us if you have any questions concerning this Escalation Note.

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SALES PROPOSAL
GENERAL TERMS AND CONDITIONS OF SALE

1. **GENERAL: As used herein, "Equipment" is the equipment and/or parts identified in this Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Services", if any, are the services identified in the Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Software", if any, is the software identified in the Sales Proposal as expressly agreed to be licensed by Heatec to Purchaser. These General Terms and Conditions of Sale (the "Terms") and all other sections of this Sales Proposal are collectively referred to in the Terms as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Heatec and Purchaser with respect to the sale and purchase of the Equipment, the performance of the Services and the license of the Software and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Purchaser's terms and conditions of purchase or purchase order, regardless of whether or when Purchaser submitted such terms and conditions or purchase order. Fulfillment of Purchaser's order does not constitute acceptance of any of Purchaser's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Heatec and Purchaser.

2. **ENGINEERING**: Heatec and Purchaser acknowledge and contemplate that any engineering services for which Heatec is responsible pursuant to this Agreement will be performed by engineers employed by Heatec only to the extent allowed by applicable laws and regulations. Otherwise, such engineering services will be provided by qualified, licensed engineers selected and retained by Heatec at Heatec's expense. Except as otherwise provided herein, Heatec and Purchaser acknowledge and contemplate that upon acceptance of this Agreement by Heatec, Heatec's engineering department or a qualified, licensed engineer selected and retained by Heatec at Heatec's expense will perform whatever engineering analysis and design is necessary to fulfill its obligations under this Agreement, and will prepare whatever plant layouts, drawings, and design specifications are necessary in Heatec's discretion to facilitate the performance of the Equipment in accordance with this Agreement. Heatec and Purchaser further acknowledge and contemplate that this engineering process may result in modifications or changes which may include, but are not limited to: modifications in conveyor lengths, sizes, speeds, angles, or positions; changes in motor sizes; changes in Equipment or plant configuration; and modifications or parts lists. No such modifications or changes shall constitute a breach of contract by Heatec.

3. **DRAWINGS**: Heatec will furnish Purchaser with necessary drawings and instruction for Purchaser's erection of the Equipment. Heatec will not be held responsible for design and/or installation of footings and/or other items necessary for installing the Equipment unless otherwise stated herein.

4. **DIFFERING SITE CONDITIONS**: If, in the performance of this Agreement, subsurface or latent conditions at the site are found to be materially different from those indicated by geotechnical reports provided by Purchaser, or unknown conditions of an unusual nature are disclosed differing materially from those ordinarily encountered by Heatec, then such conditions may result in adjustments to the Price, anticipated dates for delivery/shipment, and other contractual obligations. No such adjustments shall constitute a breach of contract by Heatec.

5. **CONFIDENTIALITY**: All non-public, confidential or proprietary information of Heatec, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, purchaser lists, pricing, discounts or rebates, disclosed by Heatec to Purchaser, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Purchaser as confidential and may not be disclosed to any third party or copied by Purchaser unless authorized in advance by Heatec in writing. Upon Heatec's request, Purchaser shall return all documents and other materials received from Heatec. Heatec shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Purchaser can show was known to Purchaser at the time of disclosure; or (c) Purchaser can show was rightfully obtained by Purchaser on a non-confidential basis from a third party. Purchaser's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. **WARRANTY**:
   a. **Heatec warrants that upon shipment from Heatec's site and continuing for a period of** eighteen (18) months after shipment of such Equipment to Purchaser or twelve (12) months after startup, whichever occurs first (the **"Equipment Warranty Period"**), that the Heatec manufactured Equipment will be free of defects in design, material and workmanship, provided any operation of the Equipment by Purchaser has been in accordance with generally approved practice as instructed by Heatec service personnel or set forth in Heatec service instructions, if any, and provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Equipment Warranty Period. Heatec shall repair, or at its option replace FCA point of shipment, any defective Equipment or parts covered by the warranty. The right to have defective Equipment repaired or replaced shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Equipment warranty. Labor for defective Equipment repair will be paid by Purchaser under a formula determined by Heatec. For helical coils found in Heatec's heaters, the Equipment Warranty Period for the helical coils is three (3) years. Equipment which is repaired or replaced shall carry a warranty equal to the unexpired portion of the Equipment Warranty Period. Heatec warrants to Purchaser that the Equipment will perform at its rated capacity as indicated on the Sales Proposal when properly installed, connected, and correctly operated and maintained. Where the Equipment is merely a part of a whole system, Heatec can only accept responsibility for performance of the Equipment furnished by it. The performance of the Equipment covered in this Agreement cannot be exactly predicted for every operating condition. In consequence, any predicted performance data submitted is intended to show probable operating results which may be closely approximated, but which cannot be guaranteed.

   b. Heatec makes no warranties or guarantees with respect to Equipment not manufactured by Heatec, including but not limited to diesel engines, motors, motor starters, pumps, mixers, mills, scales, speed reducers, and other assemblies, valves, pressure regulators, solenoids, electronic drives, pressure differential switches, temperature sensing switches, flame scanners, gauge boards, modulating actuators, electronic displays, pressure transmitters, radar sensors, other electronic controls and instrumentation and other parts and accessories. Liners, castings, furnace refractories, and refractory materials are subject to wide variations of destructive service, are also not covered by the Equipment warranty and are a maintenance responsibility of Purchaser from the beginning of operation. Heatec will pass through to Purchaser any warranties and limitations provided by the original manufacturer of parts used in the Equipment manufactured by Heatec, but Heatec does not provide any warranty as to such items.

c. Heatec warrants that the Services performed hereunder shall be free from defects in workmanship for a period of thirty (30) days from the date of performance (the **"Service Warranty Period"**). Heatec undertakes at its cost to reperform defective Services covered by the warranty, provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

d. No warranty shall apply to Equipment which has been repaired or altered by others so as, in Heatec's judgment, to adversely affect the same or which shall have been subject to negligence, accident, abuse or improper care, installation, maintenance, storage or other than normal use or service, during or after shipment. No warranty shall apply to any used Equipment or for ordinary wear and tear, or ordinary corrosion or erosion. No warranty shall apply to any Equipment adversely affected by being used with any machinery, part or accessory not manufactured or authorized by Heatec. No warranty shall apply to consumables or parts having a life expectancy shorter than the Equipment Warranty Period.

e. Except as expressly set forth in this Sales Proposal, Heatec does not warrant or represent that any Equipment furnished by it meets any state or local safety, environmental or electrical regulations. Heatec is wholly discharged from all liability under this warranty in the event that Purchaser fails to pay for the Equipment or Services in accordance with the applicable purchase terms. This Equipment warranty extends only to the first end-user and is not transferable. This warranty may not be modified except pursuant to a written agreement signed by Heatec.

f. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 6 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY HEATEC TO PURCHASER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (EXCEPT WARRANTY OF TITLE), INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

7. **LIMITATION OF LIABILITY**: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS HEATEC LIABLE TO PURCHASER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY PURCHASER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL HEATEC'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO HEATEC FOR THE EQUIPMENT SOLD HEREUNDER.

8. **SECURITY INTEREST; COST OF RECORDING**: Purchaser hereby conveys and grants to Heatec a purchase money security interest in the Equipment to secure payment by Purchaser of all amounts due hereunder including the Price and such other debts, obligations and liabilities of Purchaser to Heatec which may now exist or hereafter arise, whether absolute or contingent, or primary or secondary, together with all extensions or renewals for the foregoing and all expenses, legal or otherwise (including court costs and reasonable attorney's fees) incurred by Heatec in collecting or endeavoring to collect any or all of the foregoing, in protecting any collateral and in enforcing the Agreement. The Equipment shall remain personal property in all respects notwithstanding the manner of annexation of any of the Equipment to realty. Purchaser agrees to execute any instrument or document considered necessary by Heatec to perfect its security interest in the Equipment, including, but not limited to, financing statements, chattel mortgages, deeds of trust, deeds to secure debt, mortgages or other security instruments. Until default hereunder, Purchaser may have possession of the Equipment and use the same in any lawful manner not inconsistent with this Proposal or with any policy of insurance thereon. Purchaser will pay the costs and taxes due for recording and filing any Financing, Continuation or Termination Statements with respect to Heatec's security interest in the Equipment or in connection with any of the other security documents referred to above.

9. **EQUIPMENT NOT TO BE REMOVED**: As long as the security interest in the Equipment is retained by Heatec, the Equipment shall not be removed from the erection site and Purchaser shall not permit, voluntarily or involuntarily, the Equipment or any part of it to be sold, transferred, encumbered, attached, seized or removed in any manner whatsoever.

10. **DEFAULT**: Upon default by Purchaser in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Heatec shall thereupon be immediately due and payable and Heatec shall have the rights and remedies contained herein and the rights and remedies of a secured party under the Uniform Commercial Code of the State of Tennessee or under the laws of any other jurisdiction as a court of competent jurisdiction shall determine to be applicable. In the event of Purchaser's default, the following provisions shall apply: (a) Purchaser shall, upon request of Heatec, disassemble the Equipment and make it available to Heatec at a place designated by Heatec; (b) Heatec may enter Purchaser's premises where any part of the Equipment is located, and take possession of and remove all or any portion of the Equipment for purposes of disposition pursuant hereto; (c) Purchaser agrees that sales for cash or on credit to a wholesaler, retailer, or user or property of the type subject to this Agreement or at public auction or private sale are all commercially reasonable; (d) Heatec shall give Purchaser notice of the time and place of any sale of any of the Equipment or of the time after which any private sale or any other intended disposition thereof is to be made by notice, postage prepaid and addressed to Purchaser at the latest address of Purchaser appearing on the records of Heatec at least seven (7) days before the time of the sale or other disposition, which provisions for notice Purchaser and Heatec agree are reasonable; (e) any proceeds of any disposition of any of the Equipment may be first applied by Heatec to the payment of expenses in connection with exercising its rights and remedies hereunder, including reasonable attorney's fees and legal expenses, and any balance of such proceeds may be applied as Heatec may elect in its sole discretion; (f) if the sale or other disposition of the Equipment fails to satisfy in full obligations of Purchaser secured by this Agreement, and the reasonable expenses of retaking, holding, preparing for sale, selling and the like, including reasonable attorney's fees and legal expenses incurred by Heatec in connection with this Agreement or the obligation it secures, Purchaser shall be liable for any deficiency.

11. **PERMITS AND APPROVAL OF PLANS**: Purchaser assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Purchaser's expense.

12. **PERMIT CONTINGENCY**: If the purchase of Equipment under this Agreement is contingent on Purchaser's receipt of one or more permits or other governmental approvals, then the Price set forth in this Agreement will not be binding on Heatec. Once all contingencies have been fulfilled or are waived, the Price will be determined by Heatec taking into account any increase in Heatec's cost of purchased components and/or raw materials, among other factors.

13. **COMPLIANCE WITH APPLICABLE LAWS**: Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

14. **PATENTS**: In the event that any of the Equipment specified in this Agreement is based upon designs of or furnished by Purchaser, Purchaser shall indemnify Heatec for any loss or expense incurred by it by reason of any claim for infringement of patents.

15. **SHIPMENT**:
    a. If Purchaser is in default of any of its obligations under this Agreement, Heatec may, at its election, withhold any further performance of its obligations and duties under this Agreement until such time as such default has been cured by Purchaser, in which event the anticipated date of shipment as set forth herein shall be adjusted accordingly. Heatec shall not be liable or responsible for, nor shall the Price be reduced by any amount because of any matters beyond the control of Heatec which delay or postpone the anticipated date set forth above for the shipment of the Equipment, such matters including, but not limited to, warlike acts, civil disorder, governmental restriction, acts of God, prior sale, acceptance of United States governmental contracts, strike, lockout, accidents, freight embargo, fire, flood, inability of Heatec to obtain necessary materials, supplies, labor or transportation, pandemic, or any unforeseen water, soil or rock conditions.

    b. A detailed shipping list will accompany the bill of lading and Purchaser agrees to check the Equipment as it is unloaded and any claim for shortage against Heatec will be made in writing within twenty-four (24) hours of time of unloading, to be followed by an affidavit (if required) from the person in charge of the unloading. Claims for loss or damage in transit will be made on the carrier by Purchaser.

    c. Except to the extent otherwise provided herein, Purchaser has full responsibility for erection and installation of the Equipment.

    d. Delivery period is based on current manufacturing load and is subject to change without notice. Long lead items will need to be ordered prior to approvals in order to meet the quoted delivery date. If any of these items are changed during the approval process, charges may result for restocking.

16. **LATE CHARGES AND ATTORNEY'S FEES**: Purchaser agrees that in the event any amount payable by Purchaser to Heatec remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Heatec and Purchaser is placed in the hands of an attorney for collection, or is collected by and through an attorney, Purchaser will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.

17. **POSTPONED DELIVERY (INCLUDING SHIPPING DELAY)**: If, through no fault of Heatec, delivery or shipment is delayed or postponed (including deferral of shipment requested by Purchaser), Purchaser shall pay to Heatec any additional costs, including plant Equipment storage, handling, and insurance, incurred by Heatec arising from such delay, deferral, or postponement. Such a delay, postponement or deferral is considered "offer to ship" or "shipment" for all purposes, including invoicing, payment and transfer of title. Therefore, the balance remaining unpaid on the Price shall become due and payable immediately. Purchaser shall bear the risk of loss of or damage to the Equipment during storage and thereafter. If, as a result of the delay, postponement or deferral, the Equipment requires repainting, all costs associated with repainting shall be paid by the Purchaser. Should Purchaser delay/postpone/defer shipment, Purchaser and Heatec will complete the attached "Postponed Delivery/Shipping Delay/Deferral Notice".

18. **EQUIPMENT CERTIFICATION**: Once certification and fabrication has been completed on any Equipment, if state certification specifications change or unit(s) are to be shipped to a location other than that for which the certification was acquired, the cost of any recertification and/or modifications required to be done on the Equipment shall be paid by Purchaser.

19. **LIMITATION OF PROPOSAL**: The Price and terms quoted in this Sales Proposal are subject to formal acceptance (i.e. signature on this Sales Proposal) without change by Purchaser within a period 30 days from the date hereof, except that Heatec shall have the right to withdraw its Sales Proposal at any time before formal acceptance by Purchaser.

20. **EXECUTION OF CONTRACT**: This Sales Proposal is merely the solicitation of an order and is not an offer from Heatec to Purchaser (even though executed on behalf of Heatec under "RESPECTFULLY SUBMITTED,") and does not obligate Heatec in any manner whatsoever until this Agreement is both executed below on behalf of Purchaser as an order made to Heatec as well as executed below on behalf of Heatec as an acceptance of such order from Purchaser, at which time this Agreement shall become a binding contract between Heatec and Purchaser. Once this Agreement has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Heatec, which may be withheld in the sole discretion of Heatec. In the event Purchaser elects to cancel any order, or a portion of thereof, Heatec shall proportionally be paid a percentage of the price of the cancelled order. This portion will be a minimum of ten percent (10%) of the total P.O. value, or will be a percentage relative to the completed portion of the order, whichever is greater. This proportional percentage shall reflect the amount of materials used, purchased materials, and/or work performed prior to the cancellation notice, plus any charges which Heatec can demonstrate resulted from the cancellation including, but not limited to, storage fees, cancellation or restocking charges from sub-vendors, plus the cost of any non-returnable items. Non-returnable items become the property of Purchaser and are delivered EXW Chattanooga-TN or sub-vendor location.

21. **SEVERABILITY**: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable and enforced in its modified form.

22. **ASSIGNMENT**: Purchaser shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Heatec. Any purported assignment or delegation in violation of this Paragraph 22 is null and void. No assignment or delegation relieves Purchaser of any of its obligations under this Agreement.

23. **LAW CONTROLLING**: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law). The parties agree that the United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement, or the transactions contemplated thereby.

24. **DISPUTE RESOLUTION**: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a "**Dispute**"), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**

25. **TAXES**: Prices quoted herein do not include any Federal, State or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Heatec is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Heatec upon demand. If Purchaser holds resale tax permits and the material described herein is for resale, such information shall be shown by Purchaser.

26. **BACK-CHARGES AND ALLOWANCES**: Heatec shall not be called upon to make any allowance for material, labor, repairs or alterations made for its account unless authorized by Heatec in writing.

27. **INSPECTION AND ACCEPTANCE PERIOD**: Purchaser agrees to inspect the Equipment immediately after delivery to the site, but in no event later than five (5) calendar days after such delivery (the "**Acceptance Period**"). Any defect discovered during the Acceptance period is subject to the procedures and remedies set forth in Paragraph 6 (Warranty).

28. **RESPONSIBILITY OF PURCHASER FOR OPERATION OF EQUIPMENT**: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Purchaser. Any Services by Heatec's representatives shall be given solely in a consulting or advisory capacity and shall not release Purchaser in any manner whatsoever from its responsibility for operating the Equipment.

29. **INDEMNIFICATION**: Purchaser agrees to indemnify and hold harmless Heatec, its affiliates and their respective employees from and against any and all liabilities, damages, obligations and claims (including, without limitation, court costs and reasonable attorney's fees) arising from or with respect to the operation of the Equipment. Without limiting the generality of the preceding sentence, the parties acknowledge and agree that if a claim initially was brought against Heatec for defective manufacture, design or the like and was finally determined by a court of competent jurisdiction or otherwise settled (such settlement being with Purchaser's consent) on a basis relating to the negligent operation or use of the Equipment, Heatec will be entitled to indemnification pursuant to the provisions of the preceding sentence.

30. **TITLE AND RISK OF LOSS:** Title to the Equipment shall pass to Purchaser upon shipment or offer to ship should Purchaser delay shipment. The risk of loss or damage to the Equipment shall pass to Purchaser upon delivery of the Equipment (FCA point of shipment Heatec site, Incoterms 2020), unless transferred earlier in accordance with Paragraph 17 (Postponed Delivery (Including Shipping Delay)).

31. **NOTICES:** Each party shall deliver all notices and other communications under this Agreement (each, a "**Notic**e") in writing and addressed to the other party at the addresses set forth on the first page of this Sales Proposal. Each party shall deliver all Notices by personal delivery or through deposit in the mail, certified or registered (in each case, return receipt requested, postage prepaid) or through a nationally recognized overnight courier (with all fees prepaid). If Notice should be given immediately or promptly, then in addition to furnishing a copy of the Notice in the manner aforesaid, a copy shall be sent via e-mail (with confirmation of transmission). A Notice is effective only (a) upon receipt by the receiving party and (b) if the party giving the Notice has complied with the requirements of this Paragraph 31, unless the receiving party has waived its requirements in writing. A copy of all notices to Heatec shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

32. **INSURANCE:** Until the Equipment is accepted and the price is paid in full, Purchaser shall provide and maintain insurance for the full replacement value of the Equipment against customary casualties and risks, including fire and explosion, and liability insurance for accidents or injuries to the public or to employees, in the names of Heatec and Purchaser, as their interests may appear, and in amounts satisfactory to Heatec. If Purchaser fails to provide such insurance, Heatec may provide it and the cost thereof shall be added to the contract price. All loss resulting from failure to affect such insurance shall be the responsibility of Purchaser.

33. **CHANGE ORDERS:** Either Heatec or Purchaser may propose a change in the specifications for the Equipment or Services. Should any change proposed by Heatec or Purchaser cause an increase or decrease in the cost of or time required for performance of this Agreement or otherwise affect any provision of this Agreement, an adjustment shall be made to the corresponding provision(s) of this Agreement in accordance with this Paragraph 33. Within ten (10) business days after receipt of Purchaser's proposal for a change, or with any proposal for a change by Heatec, Heatec shall prepare and submit to Purchaser a change order in the form attached (the "Change Order"), which shall contain (i) a description of the change, (ii) the net increase or decrease in the Price, (iii) the effect of the change on the estimated delivery schedule and (iv) a description of changes to any other provisions of this Agreement. Purchaser shall accept or reject the Change Order within five (5) business days. No change shall be effective unless evidenced by a written Change Order issued by Heatec and signed by authorized representatives of Purchaser and Heatec; provided that if Purchaser does not notify Heatec of Purchaser's acceptance or rejection of any Change Order, then the Change Order shall be deemed accepted by Purchaser and the parties shall proceed on the basis of the changes set forth therein. If Purchaser rejects a Change Order, this Agreement shall continue to remain in full force and effect notwithstanding the parties' failure to agree to such Change Order, and the

parties shall continue to work reasonably and in good faith (but shall not be obligated) to reach a mutually acceptable agreement with respect to such proposed changes; provided that Heatec shall not be required to proceed with any such proposed change until the parties have mutually agreed on an appropriate Change Order. In the event that Heatec and Purchaser cannot agree to a change in Price, the change will be priced on a time and materials basis, and Heatec's charges shall be equal to direct costs incurred by Heatec for labor, equipment and materials plus 27% for overhead and profit as full compensation for such change. In the event that Heatec and Purchaser cannot agree to any other changes, such dispute will be resolved in accordance with the dispute resolution procedures in Paragraph 24.

SALES PROPOSAL SOFTWARE TERMS OF USE (ONLY APPLICABLE IN CASE OF PLC)

These Software Terms of Use ("**Terms of Use**") govern the use of the Software, including all user manuals, technical manuals and any other materials in printed, electronic or other form, that describe the Software or its use (collectively, "**Documentation**") that is or has been furnished by Heatec to Purchaser for use in connection with the Equipment.

1. **License Grant.** Subject to Purchaser's strict compliance with these Terms of Use and pursuant to and conditioned upon Purchaser's compliance with all of the terms of the Agreement, including, but not limited to its payment terms, Heatec hereby grants to Purchaser a non-exclusive, non-transferable, non-sublicensable, limited license to use the Software solely in connection with its operation of the Equipment pursuant to the instructions contained in the Documentation. The foregoing license will terminate immediately on the earlier to occur of: (a) Purchaser's removal, disposal or transfer of the Equipment; or (b) Purchaser's failure to comply with these Terms of Use.

2. **Use Restrictions.** Purchaser shall not, directly or indirectly: (a) use the Software or Documentation except as set forth in Paragraph 1 of these Terms of Use; (b) copy the Software or Documentation, in whole or in part; (c) modify, translate, adapt or otherwise create derivative works of the Software or any part thereof; (d) combine the Software or any part thereof with, or incorporate the Software or any part thereof in, any other software programs; (e) reverse engineer, disassemble, decompile, decode or otherwise attempt to derive or gain access to the source code of the Software or any part thereof; (f) remove, delete, alter or obscure any trademarks or any copyright or other intellectual property or proprietary rights notices included on or in the Software or Documentation; (g) transfer or otherwise provide any access to or use of the Equipment, Documents or the Software or any features or functionality of the Software, for any reason, to any other person or entity; (h) use or attempt to use the Software or Documentation in, or in association with, components, systems or equipment other than the Equipment; (i) use or attempt to use the Software or Documentation in violation of any law, regulation or rule; or (j) use or attempt to use the Software or Documentation for purposes of competitive analysis of the Software, the development of a competing software product or service or any other purpose that is to Heatec's commercial disadvantage.

3. **Compliance Measures.** The Software contains technological copy protection or other security features designed to prevent unauthorized use of the Software, including features to protect against use of the Software in a manner: (a) that is beyond the scope of the license granted to Purchaser hereby; or (b) that is prohibited under Paragraph 2 of these Terms of Use. Purchaser agrees that it shall not, and shall not attempt to, remove, disable, circumvent or otherwise create or implement any workaround to, any such copy protection or security features.

4. **Collection and Use of Information.** Heatec may, directly or indirectly through the services of other affiliated parties, collect and store information regarding use of the Software and the Equipment. Purchaser agrees that Heatec may use such information for any purpose that it deems fit. Heatec assumes no duty to review, access, use or retain the information collected. Purchaser consents to the collection, transmission and sharing of the information described above, and authorizes Heatec, its affiliates, subsidiaries and distributors to gather, process and use, without limitation, the information developed or collected by or in connection with the Software. This may include sharing of such information with select third parties and business partners.

5. **Remote Access Services**. A representative of Heatec may provide technical support through the Software ("**Remote Access Services**"). Any Remote Access Services are provided at Purchaser's sole risk. The ability for Heatec to remotely access the Software and Equipment significantly enhances Heatec's ability to resolve Purchaser's technical problems quickly. Purchaser understands that the provision of Remote Access Services requires Purchaser to provide Heatec's technical support personnel with access to and control of the Software and Equipment. Heatec may, but has no obligation to, troubleshoot, evaluate, run programs or install/uninstall Software, reconfigure and/or otherwise perform service or technical support work on the Software and Equipment, either directly or through an internal network. Heatec may make any changes that it determines are necessary to increase the performance of the Software or Equipment and/or to alleviate the problem at hand or any other problem discovered during the course of performing the Remote Access Services. Purchaser shall indemnify and hold harmless Heatec against all claims, actions, proceedings, costs, damages, and liabilities, including attorneys' fees and litigation and related costs and expenses, incurred by Heatec for injuries to person, property or otherwise resulting from any cause whatsoever arising out of, connected with, or resulting from any Remote Access Services performed by Heatec.

6. **Intellectual Property Rights.** Purchaser acknowledges that: (a) Purchaser does not acquire any ownership interest in the Software, or any rights to the Software other than the right to use the Software as provided herein; (b) Heatec reserves and shall retain its entire right, title and interest in and to the Software and all intellectual property rights arising out of or relating to the Software, subject to the license expressly granted to Purchaser by this Agreement; and (c) Purchaser shall use commercially reasonable efforts to safeguard the Software and the media on which it is stored from infringement, misappropriation, theft, misuse or unauthorized access.

7. **Limited Warranties.** Heatec warrants that, for a period of one year following the date of the purchase of the Equipment from Heatec: (a) any media on which the Software is provided will be free of material damage and defects in materials and workmanship under normal use;

and (b) the Software will substantially contain the functionality described in the Documentation, and when properly operated in accordance with the Documentation, will substantially perform as described therein. The warranties set out in this Paragraph 7 will not apply and will become null and void if Purchaser materially breaches any provision of this Agreement, or if Purchaser or any other person provided access by Purchaser to the Software or the media on which it is provided, whether or not in violation of this Agreement: (a) uses the Software in a manner other than as described in the Documentation; or (b) damages the Software or the media on which it is provided, including by means of abnormal physical or electrical stress.

8. <u>Purchaser's Exclusive Remedy.</u> If, during the warranty period set out in Paragraph 7, the Software fails to perform substantially in accordance with the Documentation, and such failure is not excluded from warranty pursuant to Paragraph 7, Heatec will, subject to Purchaser's promptly notifying Heatec in writing of such failure, but in all events during the warranty period set out in Paragraph 7, at its sole option, either repair or replace the Software, provided that Purchaser provides Heatec with all information Heatec reasonably requests to resolve the reported failure, including sufficient information to enable Heatec to recreate such failure. Upon such repair or replacement of the Software, the warranty will continue to run from the date of the purchase of the Equipment from Heatec, and not from Purchaser's receipt of the repair or replacement. The remedies set forth in this Paragraph 8 are Purchaser's sole and exclusive remedies and Heatec's sole and exclusive liability under the limited warranties described in Paragraph 7.

9. <u>Disclaimer of Warranties; Limitations of Liability.</u>

(A) EXCEPT FOR THE LIMITED WARRANTY SET FORTH IN PARAGRAPH 7, THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES ARE PROVIDED TO LICENSEE "AS IS" AND WITH ALL FAULTS AND DEFECTS WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, LICENSOR, ON ITS OWN BEHALF AND ON BEHALF OF ITS AFFILIATES, EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT, AND WARRANTIES THAT MAY ARISE OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OR TRADE PRACTICE. WITHOUT LIMITING THE FOREGOING, LICENSOR PROVIDES NO WARRANTY OR UNDERTAKING, AND MAKES NO REPRESENTATION OF ANY KIND THAT THE SOFTWARE WILL MEET LICENSEE’S REQUIREMENTS, ACHIEVE ANY INTENDED RESULTS, BE COMPATIBLE OR WORK WITH ANY OTHER SOFTWARE, APPLICATIONS, SYSTEMS OR SERVICES, OPERATE WITHOUT INTERRUPTION, MEET ANY PERFORMANCE OR RELIABILITY STANDARDS OR BE ERROR FREE OR THAT ANY ERRORS OR DEFECTS CAN OR WILL BE CORRECTED.

(B) TO THE FULLEST EXTENT PERMITTED UNDER APPLICABLE LAW, IN NO EVENT WILL LICENSOR OR ITS AFFILIATES BE LIABLE TO LICENSEE OR ANY THIRD PARTY FOR ANY USE, INTERRUPTION, DELAY OR INABILITY TO USE THE SOFTWARE OR THE EQUIPMENT, LOST REVENUES OR PROFITS, DELAYS, INTERRUPTION OR LOSS OF SERVICES, BUSINESS OR GOODWILL, LOSS OR CORRUPTION OF DATA, LOSS RESULTING FROM EQUIPMENT FAILURE, MALFUNCTION OR SHUTDOWN, LOSS RESULTING FROM THE PERFORMANCE OF, OR FAILURE TO PERFORM, ANY REMOTE ACCESS SERVICES, FAILURE TO ACCURATELY TRANSFER, READ OR TRANSMIT INFORMATION, FAILURE TO UPDATE OR PROVIDE CORRECT INFORMATION, SYSTEM INCOMPATIBILITY OR PROVISION OF INCORRECT COMPATIBILITY INFORMATION OR BREACHES IN SYSTEM SECURITY, OR FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY, SPECIAL OR PUNITIVE DAMAGES, WHETHER ARISING OUT OF OR IN CONNECTION WITH THESE TERMS OF USE OR THE AGREEMENT, BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT LICENSOR WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

(C) THE LIMITATIONS SET OUT IN THIS PARAGRAPH 9 SHALL APPLY EVEN IF LICENSEE'S REMEDIES UNDER THESE TERMS OF USE FAIL OF THEIR ESSENTIAL PURPOSE AND SHALL SURVIVE ANY TERMINATION OF THESE TERMS OF USE.

10. <u>Export Regulation</u>. The Software may be subject to U.S. export control laws, including the U.S. Export Administration Act and its associated regulations. Purchaser agrees that it will not, directly or indirectly, export, re-export or release the Software to, or make the Software or Documentation accessible from, any jurisdiction or country to which export, re-export or release is prohibited by law, rule or regulation. Purchaser agrees to comply with all applicable federal laws, regulations and rules, and complete all required undertakings (including obtaining any necessary export license or other governmental approval), prior to exporting, re-exporting, releasing or otherwise making the Software available outside the United States.

11. <u>Interpretation.</u> These Terms of Use are incorporated into and are a part of the Agreement. These Terms of Use apply to updates, supplements, add-on components or internet-based service components of the Software that Heatec may provide to Purchaser or make available to Purchaser after the date Purchaser obtains its initial copy of the Software, unless they are accompanied by separate terms. The headings in these Terms of Use are for reference only and do not affect the interpretation of these Terms of Use or the Agreement.

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SERVICE DEPARTMENT REQUEST FOR PAID SERVICE
2024 Paid Service Agreement

Time Frame of Service Work	North America Work Rate	Daily Overtime Rate > 8 Hours	International Work Rate	International Overtime Rate	Minimum Charges
Monday – Friday	$183.75/ Hour	$275.63/Hour	$220.50/ Hour	$299.25/ Hour	8 Hour Minimum
Saturday & Sunday	$275.63/Hour	$275.63/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum
Holidays	$367.50/Hour	$367.50/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum

Travel Charges	North America Travel Rates	International Travel Rates	
Monday-Sunday	$183.75/Hour	$220.50/ Hour	Plus mileage at $0.68/mile
Holidays	$367.50/Hour	$367.50/ Hour	Plus mileage at $0.68/mile

Expense Charges	Expense Rates	
Hotel	$90.00 per day or actual cost, whichever is greater	High-Cost Area rates may apply
Meals	$46.00 per day or actual cost, whichever is greater	
Airfare	Actual Cost	
Auto Rental / Fuel	Actual Cost	
Incidentals	Actual Cost	

Terms

- This form must be returned with a purchase order number before a technician will be dispatched
- If a purchase order is issued it must incorporate this Request for Paid Service, including the attached terms and conditions
- Weekend rates are charged when the technician is mobilized but does not go to the site
- We reserve the right to request payment in advance
- All invoices will be sent to you at the end of the month following the completion of your project
- The General Terms and Conditions Field Services and Installation – North America and International, attached hereto, apply to the work performed hereunder.

Date	Customer Name Completing Request (Print)
Company Name	Astec Job Number / Sales Order Number
Telephone Number	E-mail Address
Plant Address	City, State, and ZIP
Purchase Order Number	Purchase Order Number Authorization (signature)
Trip Purpose	

GENERAL TERMS AND CONDITIONS
FIELD SERVICES AND INSTALLATION – NORTH AMERICA AND INTERNATIONAL

1. GENERAL: As used herein, "Provider" is Heatec, Inc. and **"Customer"** is the person or entity identified as the customer in Provider's order acknowledgement or quotation (the **"Order"**). **As used herein, the "Services" are the services identified in the Order, as expressly agreed to be provided by Provider to Customer. These General Terms and Conditions for Field Services and Installation (the "Terms") and all other sections of the Order are collectively referred to as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Provider and Customer with respect to the performance of the Services and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Customer's terms and conditions of purchase or purchase order, regardless of whether or when Customer submitted such terms and conditions or purchase order. Fulfillment of Customer's order does not constitute acceptance of any of Customer's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Provider and Customer.

2. PAYMENT; TAXES: In consideration of the provision of the Services by Provider, Customer shall pay the fees set forth in the Order. Customer shall make all payments in U.S. dollars. Customer shall reimburse Provider for all additional costs and expenses incurred in accordance with the performance of the Services, within thirty (30) days of receipt by Customer of any invoice from Provider accompanied by receipts and reasonable supporting documentation. Customer shall be responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state or local governmental entity on any amounts payable by Customer. If any amounts due are placed in the hands of any attorney for collection, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorneys' fees.

3. CHANGES: If either party wishes to change the scope or performance of the Services, it shall submit details of the requested change to the other party in writing. Provider shall, within a reasonable time after such request, provide a written estimate to Customer of (i) the likely time required to implement the change; (ii) any necessary variations to the fees and other charges for the Services arising from the change; and (iii) the likely effect of the change on the Services. Promptly after receipt of the written estimate, the parties shall negotiate and agree in writing on the terms of such change (a "Change Order"). Neither party shall be bound by any Change Order unless mutually agreed upon in writing.

4. PERFORMANCE: Provider shall use reasonable efforts to meet any performance dates specified in the Order, but any such dates shall be estimates only. Provider's performance of the Services is subject to Customer's performance of the obligations identified in the Order as "Customer Responsibility", including without limitation obtaining or providing necessary approvals, information, licenses, permits and instructions on a timely basis. Provider shall not be responsible for any delay or failure to perform the Services due to causes beyond its control, including, but not limited to, accidents, casualty, strikes or other labor disputes, acts of God, delays in transportation, government regulations, shortages, strike, lockout, pandemic, and inability of Provider to obtain necessary materials, supplies, labor or transportation.

5. CONFIDENTIALITY: All non-public, confidential or proprietary information of Provider, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, Customer lists, pricing, discounts or rebates, disclosed by Provider to Customer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Customer as confidential and may not be disclosed to any third party or copied by Customer unless authorized in advance by Provider in writing. Upon Provider's request, Customer shall return all documents and other materials received from Provider. Provider shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Customer can show was known to Customer at the time of disclosure; or (c) Customer can show was rightfully obtained Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA by Customer on a non-confidential basis from a third party. Customer's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. INTELLECTUAL PROPERTY: All intellectual property rights, including copyrights, patents, trademarks, service marks, trade secrets, know-how and other confidential information and all other rights in and to all documents, work product and other materials that are delivered to Customer under the Order or prepared by Provider in the course of performing the Services shall be solely owned by Provider. Provider hereby grants Customer a license to use all such intellectual property rights free of additional charge and on a non-exclusive, worldwide, non-transferable, non-sublicensable, fully paid-up, royalty-free and perpetual basis to the extent necessary to enable Customer to make reasonable use of the Services.

7. WARRANTY:

a. Provider warrants that the Services performed hereunder shall be free from defects in workmanship for a period of ninety (90) days from the completion of the applicable Services (the **"Service Warranty Period"**). Provider undertakes at its cost to reperform defective Services covered by the warranty, provided that Customer notifies Provider in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Customer's sole and exclusive remedy for breach of this Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

b. Provider is wholly discharged from all liability under this warranty in the event that Customer fails to pay for the Services in accordance with the Order. This warranty may not be modified except pursuant to a written agreement signed by Provider.

c. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 7 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY PROVIDER TO CUSTOMER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY ORFITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

8. LIMITATION OF LIABILITY: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS PROVIDER LIABLE TO CUSTOMER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY CUSTOMER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL PROVIDER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO PROVIDER FOR THE SERVICES PERFORMED HEREUNDER.

9. DEFAULT: Upon default by Customer in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Provider shall thereupon be immediately due and payable and Provider shall have the rights and remedies contained herein and the rights and remedies as a court of competent jurisdiction shall determine to be applicable.

10. PERMITS AND APPROVAL OF PLANS: Customer assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Customer's expense.

11. COMPLIANCE WITH APPLICABLE LAWS: Customer assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation (if not done by Provider) and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

12. LATE CHARGES AND ATTORNEY'S FEES: Customer agrees that in the event any amount payable by Customer to Provider remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Provider and Customer is placed in the hands of an attorney for collection, or is collected by and through an attorney, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.
13. EXECUTION OF CONTRACT: Once an Order has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Provider, which may be withheld in the sole discretion of Provider. In no event will consent to suspension or cancellation be given without full reimbursement by Customer of all Provider's expenses, damages and losses arising from such cancellation or suspension and incurred through the date of cancellation or suspension, plus reasonable overhead and profit allocation on such amounts.
14. RELATIONSHIP OF THE PARTIES: The relationship of the parties is that of independent contractors. Nothing contained herein shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment, or fiduciary relationship between the parties, and neither party shall have authority to contract for or bind the other party in any manner whatsoever. The method and manner for performance of the Services by Provider shall be under its own control. The parties acknowledge that Provider is not performing the Services as a general contractor.
15. SEVERABILITY: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable, and enforced in its modified form.
16. ASSIGNMENT: Customer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Provider. Any purported assignment or delegation in violation of this Paragraph 16 is null and void. No assignment or delegation relieves Customer of any of its obligations under this Agreement.
17. LAW CONTROLLING: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law).
18. DISPUTE RESOLUTION: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a **"Dispute"**), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**
19. TAXES: Prices quoted herein do not include any Federal, State, Local or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Provider, in its opinion, is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Provider upon demand.
20. BACK-CHARGES AND ALLOWANCES: Provider shall not be called upon to make any allowance for material, labor, repairs, or alterations made for its account unless authorized by Provider in writing.
21. RESPONSIBILITY OF CUSTOMER FOR OPERATION OF EQUIPMENT: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Customer. Any Services by Provider's representatives shall not release Customer in any manner whatsoever from its responsibility for operating the Equipment.
22. INDEMNIFICATION: Customer covenants and agrees that it will indemnify and hold harmless Provider, its affiliates and their respective directors, officers, employees and agents from and against any and all claims, actions, demands, damages, costs, expenses, judgments and awards, including without limitation court costs and reasonable attorneys' fees (collectively, "Claims"), including but not limited to any Claims by third parties, arising out of or caused by the acts or omissions of Customer, its directors, officers, employees, agents and/or subcontractors. This indemnity shall survive the execution and performance of the Order.
23. NOTICES: Any notices given between the parties under this Agreement may be given by courier, personal delivery or mail, postage prepaid, or by e-mail. The date of service shall be the date on which the notice is received. A copy of all notices to Provider shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

PURCHASER PLANT SETUP RESPONSIBILITIES (TASKS TO BE COMPLETED PRIOR TO HEATEC'S SERVICE TECH'S ARRIVAL AT PLANT)

1. All equipment set, bolted and completely sealed up.
2. All Process Lines & Hot Oil Lines put together and tested.
3. Fuel lines/Gas lines including all lines for the pilots hooked up and run.
4. All air lines run and hooked up from air compressor to all locations on the plant.
5. All electrical cables 480vac/120vac pulled and hooked up.
6. Main power run and hooked up to main in MCC cabinet.
7. Hot oil on site.

NOTE: Items 1, 2, 3, 4 & 5 are performed by Heatec when plant installation is purchased from Heatec.

SALES PROPOSAL SIGNATURE PAGE

This Agreement is made in Chattanooga, Tennessee.

RESPECTFULLY SUBMITTED
HEATEC, INC.

Date: ______________________________

By: ______________________________

Name: ______________________________

Title: ______________________________

ORDER BY PURCHASER
The foregoing proposal is hereby offered as an order by PURCHASER.

Date: ______________________________

By: ______________________________

Name: ______________________________

Title: ______________________________

ACCEPTANCE OF ORDER BY HEATEC

The foregoing order is hereby accepted at Chattanooga, Tennessee, as of the date of acceptance.

HEATEC, INC.

Date: ______________________________

By: ______________________________

Name: ______________________________

Title: ______________________________

POSTPONED DELIVERY/SHIPPING DELAY/DEFERRAL NOTICE

Purchaser: ___________________

Seller: Heatec, Inc.

Contract or PO Date: ________________

Contract or PO #: _____________

Delivery: FCA point of shipment Heatec site, Incoterms 2020

Heatec has notified Purchaser that the Equipment (as defined in the Heatec General Terms and Conditions of Sale) will be ready for Purchaser to pick up at Heatec's site on ______________ ____, 20____.

Purchaser hereby requests deferral of shipment of the Equipment until ____________ ___, 20___.

Reason for delay:____.

Pursuant to paragraph 16 of the Heatec General Terms and Conditions of Sale, Purchaser's deferral is considered "offer to ship" or "shipment" for all purposes, including invoicing, payment, and transfer of title. Purchaser bears all risk of loss of or damage to the Equipment during storage and thereafter.

Pursuant to paragraph 29 of the Heatec General Terms and Conditions of Sale, title to the Equipment passes to Purchaser upon offer to ship should Purchaser delay/defer shipment.

____
Customer

____
Customer Signature and Title

____
Date

* *

Heatec Acknowledgments:

Except as otherwise noted above, there have been no written or oral amendments to the Contract. The Equipment is complete in accordance with the Contract, ready for shipment and has been segregated from other Heatec inventory.

____________________________ General Manager Signature	____________________________ Date
____________________________ Controller Signature	____________________________ Date
____________________________ Manufacturing Dept Head Signature	____________________________ Date

September 27, 2023 ASTEC PROPOSAL #: HI 23-15004 Rev 2

THE WORLD LEADER IN INTEGRATED PROCESS SOLUTIONS

SUPPORT•TECHNOLOGY•TRAINING

A PROPOSAL TO PROVIDE A
THERMAL FLUID HEATING SYSTEM

FOR
H-1704 HMO for Targa's DOU Copperhead plant in NM

PREPARED EXCLUSIVELY FOR

Bryan Nix
TARGA RESOURCES
811 Louisiana Street
Houston, TX 77002
Office:713-584-1575
Cell:918-557-2676
bnix@targaresources.com

Presented by:

Thomas Franey, Regional Sales Manager
Cell: (423) 309-3631
tmfraney@astecindustries.com

ASTEC
www.astecindustries.com
Office: 423.821.5200
5200 Wilson Rd
Chattanooga, TN 37410 USA

ASTEC SCOPE OF SUPPLY (Quote validity is for 60 days):
All equipment will be completely assembled at ASTEC. It will arrive at your facility completely packaged and mock tested. The package you will receive includes the following items:

Model	Description	Investment (U.S. $)
Heatec HCI 12010-40-D-G	Thermal Fluid Heater x 1	$Included
Burner	Low NOx Burner x 1	$Included
Blower	Blower for burner x 1	$Included
Control Panel	Panel x 1	$Included
Fuel Train	Gas Train x 1	$Included
Economizer	Economizer x 1	$Included
Stack	Exhaust Stack x 1	$Included
	Total for H-1704 Heating Unit	**$509,658.00**

NOTE: Our price and delivery are based on ASTEC's "General Terms and Conditions" listed at the end of this proposal. Any purchase order that includes Terms and Conditions different from those will be reviewed, and it may impact the price and delivery offered. ASTEC reserves the right to review and revise the pricing and delivery.

DELIVERY PERIOD:
The delivery period of the equipment is listed below. Delivery times may vary depending on engineering and production workload when the written P.O. is received. *Long lead items (pumps, burner, blower, relief valves, etc) need to be ordered prior to approvals.*

Description	Weeks
Drawings Issued for Approval	8 ARO
Equipment Ready to Ship after All Drawings Approved	16 ARAD

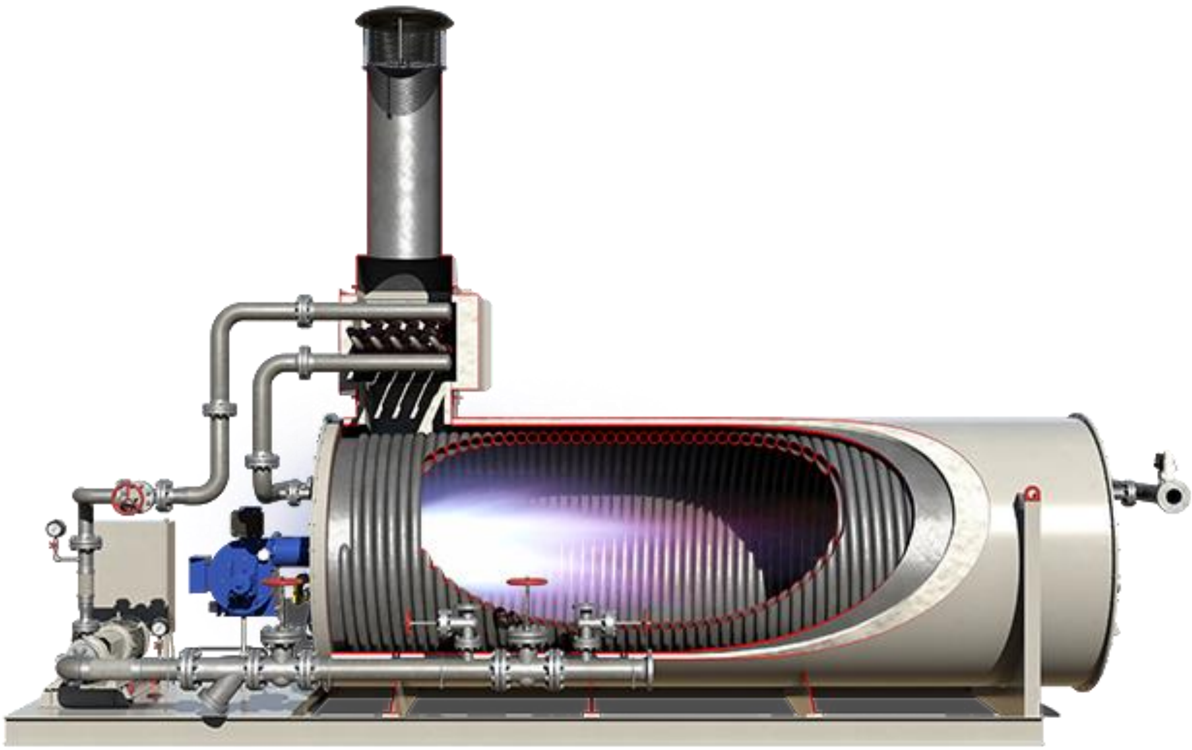
ARO = After receipt of written purchase order
ARAD = After receipt of approved drawings from the customer

OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

Model	Description	Investment (U.S. $)
5 Days Service On-site	Estimate (1 Man, 1 Trip, 2 Weeks Notice)	See Page 24
Industrial Customer School	Tentatively in April / October	$1,600.00
Commissioning Spare Parts	Estimate, Class 1 Div 2	$24,500.00 per heater
2 Years Spare Parts	Estimate, Class 1 Div 2	$19,750.00 per heater

NOTE;
This is only a partial, preliminary spare parts list. The complete parts list will be sent after ASTEC is the successful bidder, the P.O. has been received by ASTEC, and once we have the final scope defined.

COMMISSIONING SPARES:	**2 YEAR SPARES:**
Flame safeguard	Flame safeguard
Flame scanner	High media controller
High media controller	Stack temp controller
Stack temp controller	Modulation controller
Modulation controller	Ignition transformer
Motor starter	Control relays
Main gas valve	Low combustion air switch
Pilot solenoid valve	Modulating control motor
Modulating control motor	Burner blower wheel
Spark igniter for burner	Rear heater sight glass
Blower motor for burner	Spark igniter for burner
Media Thermocouple	Indicating lights for control panel
Stack Thermocouple	Butterfly valve for burner control
Main gas regulator	High gas pressure switch
Pilot gas regulator	Low gas pressure switch



This is a cut away depiction of our standard horizontal heater internals. It does not necessarily represent the package quoted. The main advantage of this design is the extremely large radiant section. Since this is where most heat transfer occurs, the ideal design utilizes a large radiant section. The two-pass heater life expectancy is 2-4 times that of other styles.

ASTEC ADVANTAGES:

1. The radiant heating surface of two pass heaters is typically 50% greater compared to that of other style heaters. The result is that the two-pass heater will have lower radiant flux rates. High radiant heat flux causes high metal wall temperatures, causing premature coil failure and premature degradation of the thermal fluid. The life expectancy of the two-pass heater will be 2-4 times that of other designs
2. Should the coil ever have to be replaced, the bolted cover(s) of the two-pass design allow(s) for easy coil replacement without having to replace the entire heater or requiring shipment back to the factory for costly repair
3. There is more internal “room” in the less crowded two pass heater which allows for greater space between the flame and the coil. This lessens the chances for flame impingement and thus lengthens coil and thermal fluid life. Ease of inspection is also increased
4. The velocity in the coil is in the range of 5 – 13 fps as recommended by most thermal fluid manufacturers. Due to the low average radiant heat flux of the two pass designs, the heater does not have to rely on excessive fluid velocity (which can lead to erosion) to keep the film temperatures low. The result is the most forgiving heater on the market
5. The heater has an 18” bolted man-way. This allows access to the radiant section without removing the cover, the burner, the fuel train, the can and the conduit. This internal inspection is required in many locations
6. The heater utilizes complete flow through a uniform diameter coil without mixing or by-passing.
7. Front and rear peep sight(s) for viewing flame pattern and coil condition
8. No orifice plates required for balancing the flow
9. Insulation is on the inside of the heater where it cannot be damaged during shipment
10. Totally Packaged Heaters
11. In House Panel Shop
12. In House Coil Manufacturing
13. In House Hydro-Test
14. In House Painting / Sandblasting
15. In House Fully Function Tested Heaters
16. Custom (Highly Specified or Standard Units)
17. On Site Training
18. In House Service Department which is available for on-site training and start up
19. In House Engineering Department
20. Seventeen AutoCAD stations utilizing AutoCAD / Inventor / AutoCAD Electrical
21. In House Quality Assurance / Control Department
22. Heater manufacturer since 1977
23. Heatec Coil warranty will be 3 years from ship date. Typical lifetime of this heater without coil replacement is 20 to 30 years
24. Stamps and Certifications

EQUIPMENT DESIGN DATA:

HCI 12010-40-D-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	26,740,928	7.84
Firing Rate (HHV) (Btu/hr) (MW)	37,778,708	11.07
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	228,688	103,704
Heater Circulation Rate (Gal/min) (m^3/hr) {Constant}	556	126
Minimum Allowable Circulation Rate (Gal/min) (m^3/hr)	445	101
Heater Inlet Temperature (°F) (°C)	282	139
Heater Outlet Temperature (°F) (°C)	475	246
Stack Temperature (°F) (°C)	615	324
Calculated Heater Efficiency (%) (LHV) [See Note 1]	83.3	83.3
Calculated ΔP through Heater (psid) (Bar) (Clean)	17.1	1.2
Heater Volume (Gallons) (m^3)	1,016	3.8
Total Coil Surface Area (ft^2) (m^2)	3,157	293.4
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	8,469	26.7
Radiant Surface Area (ft^2) (m^2)	837	77.8
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	17,655	55.7
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	23,834	75.1
Maximum Metal Temperature (°F) (°C) AICHE	589	309
Maximum Calculated Film Temperature (°F) (°C) AICHE	571	300
Average Thermal Fluid Velocity (ft/s) (m/s)	7.3	2.2
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	370,662	10,497
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	33,832	958
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	406,096	11,501
Flue Gas Pressure Drop (" WC) (mmHg)	0.82	42.33

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.
Note 2: It is the Customer's responsibility to confirm/verify user volume and pressure drop, which are not in ASTEC's scope of supply. ASTEC assumes no liability for non-verified estimated data.

SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,500
Heater location	Outdoor
Ambient Temperature (ºF)	-20 to 110
Burner turndown	6:1 Gas
Excess air %	15
Noise Limit (dB(A))	< 85 at 1 m
Heater orientation	Horizontal
Primary fuel (psig @ rated capacity of the burner)	Fuel gas (125)
Compressed air from clean, dry, safe source	10 to 40 scfm @ 116 to 80 psig
Electrical	480 V / 3 PH / 60 Hz
Control voltage	110 V / 1 PH / 60 HZ / 24 V DC
Area Classification	Class 1 Div. 2 Group C & D
Thermal fluid (Not Included)	Chemtherm 550 or Equal

Note: Please confirm fuel pressure and temperature.

	FUEL TABLE	MOL %
N_2	Nitrogen	1.84
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.00001
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	97.6
C_2H_6	Ethane	0.54
C_3H_8	Propane	0.0235
C_4H_{10}	i-Butane	0.00
C_4H_{10}	n-Butane	0.00
C_5H_{12}	i-Pentane	0.00
C_5H_{12}	n-Pentane	0.00
C_6H_{14}	n-Hexane	0.00
O_2	Oxygen	0.00

THERMAL FLUID PROPERTIES	
Inlet Temperature (°F)	282.2
Inlet Density (lb/ft^3)	51.28
Inlet Heat Capacity (Btu/(lb*°F))	0.560
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.075
Inlet Dynamic Viscosity (cP)	1.927
Outlet Temperature (°F)	475
Outlet Density (lb/ft^3)	47.06
Outlet Heat Capacity (Btu/(lb*°F))	0.653
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.073
Outlet Dynamic Viscosity (cP)	0.635

APPROXIMATE PHYSICAL DATA:
The equipment will have the following estimated dimensions and dry weights. Piping and controls external to the heater are to be insulated in the field by customer. All equipment will be assembled and mounted as stated below. Items too large for shipment, or subject to damage during shipment, will be shipped loose (unattached) and will require re-assembly in the field.

Equipment	L (ft)	W (ft)	H (ft)	Wt (Lbs)	Mounting
Horizontal Heater	34.5	10.0	10.2	42,061	Skid
Economizer	9.0	4.2	3.7	5,693	Top of Heater
Exhaust Stack		2.5	8.0	643	Top of Economizer
Blower (HP)	50	TEFC			Front Cover of Heater
Pilot Gas Train	NPT	0.5	Inch		Side of Heater
Main Gas Train	NPT	2.0	Inch		Side of Heater
Control Panel	3.0	1.0	4.0	500	Front of Heater Skid

DRAWINGS / ENGINEERING:
Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on USB thumb drive (AutoCAD). Please note that the tolerance of our drawings is + or – ¼”. Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.

Description	Description
Manuals on CD	General Arrangement
P & ID	Bill of Material Mechanical
Electrical Diagrams (Ladder Type)	Bill of Material Electrical
Nameplate Details	Hydro-test Report
Lift Lug Details	Spare Parts
Motor Curves	NDT Reports
Motor Data Sheets	Utility Requirements
Material Certifications	Quality Control Manual
Foundation Loadings	Mechanical Design Calculations

DESIGN CRITERIA:
The equipment will be designed to the requirements stated below. Quality is assured by our in house quality control department. Thickness of coil and shell will not be affected by the manufacturing process as we keep all diameters above the limits that would have an impact on it. Hydrostatic testing will be carried out at our facility and witnessed by our quality control manager.

Heater Coil Design:
ASME Section VIII design @ 650 ºF to -20 ºF, @ 300 psig with CA = 0.0625
Heater Shell Design:
Non-code design @ 300 ºF to -20 ºF @ 15 In W.C. with CA = 0.0625
Fuel Train Design:
110 ºF to -20 ºF / UL / NFPA 87 & 70
NEC Class I Division 2 / Group C & D
Heater Stack Design:
Non-code 800 ºF to -20 ºF @ +15" W.C. w/ CA = .0625
Panel & Controls:
110 ºF to -20 ºF / UL 508 A / NFPA 87 & 70
NEC Class I Division 2 Group C & D
NEMA 4X (316 Stainless Steel) with "Z" type purging

PAINTING:
Customer specified paint system.

Purchased items will be painted with vendors' standard paint, stainless items will remain unpainted.

EQUIPMENT RECOMMENDATIONS:
The heater is designed, manufactured, wired, and tested at our facility in Chattanooga, Tennessee USA. It is completely packaged and will include the following:

HEATEC HCI HEATER:
- Two-pass tight-wound helical coil heater
- Carbon steel (SA106 Gr. B seamless) schedule 40 tight-wound helical coil
- Single 6" inlet and outlet 300 # (SA105) flanges
- Heater coil hydro-testing per ASME code
- Coil will be stamped and receive National Board Registration
- 304 SS coil supports (skip welded to shell to help dissipate heat transmission)
- Coil is enclosed by an (minimum ¼" thick) A36 carbon steel shell with bolted end covers (w/ lift eyes)
- Internally insulated with ceramic fiber blanket, using welded 310 SS pins with washers for support. Blanket will receive a coat of rigidizer
- Peep sight in rear cover
- Inert gas smothering connection in front cover. (Gas and controls by others)
- Structural steel skid with saddles welded to channels to form a skid mounted frame, and a five foot skid deck extension for mounting controls
- Skid lifting lugs (minimum of four)
- 18" diameter bolted access door in rear of heater
- Coil butt welds receive 100% radiography
- Extra convection section to increase heater efficiency. Economizer (Extra Convection Section) with stack transitions and piping to heater inlet (Crossover piping). Economizer consists of a serpentine carbon steel pipe coil with carbon steel serrated fins. Piping to heater inlet is included (Insulation of piping is not included).

EXHAUST STACK:
An exhaust stack to disperse the heater flue gasses to the atmosphere.
- Stack with flanged bottom connection and 2 flue gas sampling ports, rain cap and bird screen (Un-insulated)

POWER FLAME TYPE EVO BURNER:
The Power Flame EVO™ burner offers staged/premix combustion technology to maximize operating efficiency and reduce NOx emission on natural gas firing below 30 PPM without the use of flue gas recirculation (FGR). Designed to fire a range of gaseous fuels and light oil, this burner utilizes a unique firing head design which provides stable combustion over a wide turndown.
- Direct spark ignited natural gas pilot (Interrupted type)
- Ignition transformer
- UV self-checking flame detection scanner
- Blower is integral to burner
- Inlet damper with modulation motor, duct and combustion air pressure switch
- Burner is sized for 101% capacity

GAS TRAIN:

- Pilot train with regulator, electric double block safety shutdown valves, manual valve, 1 x pressure gauge
- Main train
- Drip leg
- Manual shutoff valve
- Gas Strainer
- Tee to pilot train
- Pressure gauge x 2
- Stepdown gas regulator (Must be vented to a safe location)
- Gas regulator (Must be vented to a safe location)
- Vent line with manual shutoff valve for leak testing
- Low and high pressure switches
- Leakage test connection with manual shutoff valve
- Fuel Modulation via modulation valves with linkage-less system
- Double block (one with proof of closure switch) safety shutdown valves
- Bleed line with two (2) manual shutoff valves for leak testing
- Heat tracing, if necessary, is by customer

Emission Guarantees based on HHV:
NOx (lbs/mmbtu – PPM) = .0365 – 30
CO (lbs/mmbtu - PPM) = .049 – 65
SOx (lbs/mmbtu - PPM) = Negligible
PM (lbs/mmbtu - PPM) = Negligible
VOC (lbs/mmbtu - PPM) = Negligible

1. All emissions are from 50% to 100% of maximum combustion rating (MCR)
2. All emissions in the units of PPM are referenced to 3% dry stack oxygen
3. Emissions are valid for natural gas (fuel analysis must be submitted by customer) combustion only. The values are based on natural gas containing no bound nitrogen and no sulfur
4. If the stack emissions exceed the guarantee level, ASTEC/ Burner manufacturer will work with customer to reduce the emissions to the guaranteed level. ASTEC / Burner manufacturer will, at its costs, make any and all adjustments and / or modifications to burner that it deems appropriate and proper to meet required levels
5. Compliance testing of the system must be conducted within 60 days of initial start-up. Start-up must occur no later than 120 days from shipment. Testing is to be accomplished by an independent authorized agency agreed to by ASTEC / burner manufacturer utilizing EPA-Method 7E. All costs of compliance testing shall be paid by customer
6. All guarantees contained in these conditions and limits shall end following completion of compliance testing wherein all emission test points are documented to be at or below guaranteed levels

LOCALLY MOUNTED INSTRUMENTS:

- Digital differential pressure switch for detection of low thermal fluid flow condition
- Inlet / outlet thermal fluid pressure gauge with isolation valve (NPT)
- Inlet / outlet thermal fluid thermometer with thermo-well (NPT)
- Outlet thermal fluid temperature thermocouples with thermo-well (NPT)
- Stack temperature thermocouple with thermo-well
- ASME Section VIII Type pressure relief valve(s) on the thermal fluid outlet piping (Must be vented to a safe location) 1.5" 300# inlet, 2" 300# flanged outlet
- Conduit will be used for all wiring

BURNER MANAGEMENT SYSTEM (BMS) ELECTRICAL CONTROL ENCLOSURE:

The heater's electrical control enclosure contains all of the electrical components to safely operate the heater. The burner management controller provides the proper burner sequencing, pre-purge, ignition and flame monitoring protection for automatically ignited oil or gas fuel burners. The enclosure also has a single-loop, 4-20mA modulating, digital temperature controller and two digital temperature limit controllers; one for the thermal fluid and one for the stack. The burner managment controller also monitors other heater safety limits in it's limit circuit. If a limit condition occurs, the burner managment controller safely shuts down the burner.

The enclosure and installed components meet NEMA standards. The enclosure is designed and wired to meet the requirments of NFPA 70, National Electric Code (NEC) and the requirements found in Underwriters Laboratories Inc. (UL) 508A Listing for Industrial Control Panels. This listing can be verified on the following website: http://www.ul.com/database.

The BMS control enclosure will be manufactured and tested by ASTEC.

The control panel includes the following:

- AO ground to -24vdc common
- All safety devices connected to DI through relays as input for troubleshooting.
- DI register on HMI page
- LOP (light off position) Hold through MTFI (main trial for ignition) and additional 30 seconds, then release to modulate. Program changes from basic package
- Reset PID PV to Zero at the same time it releases to Auto modulation.
- Heater tied to burner alarm on FAL and FALL shutdown conditions
- Siemens breaker disconnect mounted on back panel with a through-the-door operator handle
- Motor starters are by others
- Fireye BurnerLogix burner management system (BMS) model YB110UVSC with self-check scanner amplifier card. The YB110 has a display with keypad mounted in the enclosure door allowing user to easily scroll through various menus to view the current operating status, review programmer configurations and lockout history. The flame reset button is on the keypad. The YB110 has the capability to communicate its status data via Mod-Bus RTU as a slave with a Mod-Bus RTU master device. Programming of the RTU Master to pole the Fireye is responsibility of the customer. The YB110 BurnerLogix is cUL US Listed, CE and FM approved
- Control relays and fused terminal blocks
- DI, DO & AI fused connections entering and leaving the rack.
- Control relays and fused terminal blocks
- Yokogawa UT55A-040 (1/4 DIN) thermal fluid temperature controller, digital display, 4-20mA analog control output, second input for remote set-point capability and 4-20 mA re-transmission analog output capability

- Yokogawa UT35L (1/4 DIN) high thermal fluid temperature limit controller with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability
- Yokogawa UT35L (1/4DIN) high stack temperature limit switch with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability.
- Lights for: power and alarm indicator lights
- Switches for: burner off/on, alarm silence, low fire hold and pump select (if applicable)
- Dry contacts on common alarm and heater run status
- Flame safety reset button
- Emergency shut down button
- Alarm horn, to indicate alarm (mounted adjacent to panel)
- Window kit for indicating controls
- “Z” Purge Package
- Allen-Bradley CompactLogix 5069 PLC with Panelview Plus 12 HMI for air-fuel ratio control.
- Panelview HMI to be updated to latest firmware version and VNC enabled.
- PLC rack and programs to have same version.
- Heating element with panel insulation and thermostat

Exceptions and Clarifications

HEATEC's Quotation is in basic accordance with the specifications, drawings, terms and conditions, and requirements of the invitation to bid; however, the following exceptions have been identified, priced and are attached hereto for consideration
Purchase order must make reference to HEATEC Quotation
Equipment is quoted EXW, HEATEC, Chattanooga, TN, Incoterms® 2020. Equipment will be loaded on truck free of charge. This means the delivery of Equipment on the truck at the specified point of departure (HEATEC) is covered in the quotation price. Purchaser is responsible for the main carriage / freight, cargo insurance and other costs and risks. Purchaser shall furnish all necessary facilities, labor, materials and equipment for unloading and conveying the Equipment to its erection point. The Equipment shall be erected, installed, set and leveled by Purchaser at its expense.
Purchaser shall furnish all necessary labor, materials, equipment, fuel, inert snuffing controls / media, air (if required), nitrogen (if required) and electricity required for starting up the Equipment. HEATEC will not be responsible for the installation or design of the footings, foundations or anchor bolts. Emissions compliance testing, mechanical run test, Site Acceptance Test, and performance tests are not included in Quotation. Testing included in Quotation includes the testing as described in the HEATEC Standard FAT (Available for inspection) and the HEATEC Standard ITP (Available for inspection) and any tests stated in the Quotation.
Heatec warranty, payment terms and cancellation charges are as stated below.
Export packing / preservation / storage are not included. Domestic packing is included. This includes flange / stack covers, wrapping of panel, crating of loose shipped parts.
Taxes, tariffs and duties are not included.
Order will be executed according to USA / TN laws. It is the responsibility of Purchaser to inform HEATEC via specifications of local / jurisdictional laws that may affect Equipment design (i.e. emissions, insurance codes, etc.). Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the design, installation and operation of the Equipment and any other activity related thereto, including, without limitation, the Clean Air Act and all rules and regulations promulgated thereunder and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder. Some parts of the heater will exceed OSHA temperature requirements. (Average skin temperature of heater shell is 170°F with 5 mph wind and 70°F ambient.)
Any freight prices that may be quoted are estimates for budgetary purposes only. Due to the volatile nature of freight pricing, HEATEC cannot give a firm price for freight during the proposal phase of the project, because this phase occurs well in advance of the actual delivery. If contracted with HEATEC, freight will be billed at the actual cost plus a 10% handling fee.
All drawings will be standard AUTO-CAD. Delivery time stated in Quotation depends upon the approval process and the changes made during this process. Typical approval time is two weeks after receipt on all drawings. Only those drawings listed above will be offered. Drawings will be submitted electronically. If drawing approval consists of multiple or major changes, delivery time can be affected as well as the price. Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on disk. Hard copies will require additional cost. Please note that the tolerance of HEATEC drawings is + or – ¼". Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.
Control voltage is as stated in quotation.
Insulation / tracing / personnel protection of piping and equipment external of heater is not included. This is best done in the field by local contractor to eliminate damage during shipment and to allow checking for leaks prior to start up.
Fusible loop system, testing of refractory / insulation materials, burner / blower testing, spreader bar and slings are not included.
Galvanic isolation barriers and cathodic protection are not included.
Single line drawings are not included. HEATEC performs ladder type diagrams.

Pipe, fittings, bolts, nuts and steel will be purchased from HEATEC's standard vendors. Plate and shapes are A36 carbon steel. Tubes supports are 304 SS. Stud bolts are SA 193 Br B7. Nuts are SA 194.
All purchased items will remain as painted from respective vendor.
Ladders and platforms are not included unless stated in Quotation.
If area is Class I Div 2 then panel is NEMA 4X with "Z" type purging. All other controls are NEMA 7, hermetically sealed, intrinsically safe or they are purged. Motors are TEFC. Equipment will be designed to NEC area as stated in Quotation.
Unless stated otherwise in Quotation, HEATEC takes exception to ISO, BS, NACE, API, GOST, ATEX, CE, IEC, SIL, & CENELEC specifications. HEATEC will assist in complying with these regulations where required but HEATEC cannot be sure the equipment as quoted will comply.
Heatec standard Quality control manual will be used for all welding, NDE, etc. Heatec standard welding procedures will be used for all welding. Heatec weld procedures and welders are ASME approved/certified. The weld procedures are available for Purchaser review only and revisions are not allowed. If Purchaser specifications have requirements other than what is listed on Heatec weld procedures, then Purchaser specific weld procedures can be produced. New procedures will result in a cost adder and will delay the original shipping date provided in the HEATEC Quotation. The increase in cost and length of delay will be dependent on the extent of the specification requirements. NDE of non-pressure vessel welds is not included unless stated in Quotation. Non pressure vessel welds are continuous but are not full penetration.
Flame arrestor, spark arrestor, UPS, noise test, fire & gas detection, outdoor lights, aviation lights, variable speed motors, soot blowers, lancing ports, fireproofing, knockout tank, insulation rings, insulation clips, vapor barriers, explosion door, spare parts, thermal fluid, shell / structural / piping stress analysis test, export custom clearance and vibration tests, start-up and erection assistance are not included. Only the controls listed in the Quotation are provided.
Hazardous area electrical equipment certification is simply a copy of each electrical item certificate. The entire heater does not have this type of approval.
Liquidated damages shall not apply.
HEATEC takes exception to specifications and required documentation referring to any other language other than English.
HEATEC is not responsible for implementing documentation or paying taxes, duties or other charges relating to exporting/importing proposed equipment into any country outside the Continental United States
Seal offs (If required) are to be poured in the field by Purchaser.
Relief valves and vents should be piped to a safe location by Purchaser.
Noise data sheet is provided by the blower manufacturer only
Redundancy is not included.
Thermal fluid by-pass, relief valve by-pass, relief valve isolation and flow control is not included unless specifically stated in the Quotation. By-pass and isolation valves around flow control valves and regulators have not been included.
Shield rows in convection section are not required or included.
SAT / Performance test is not included. Functional test of all components is included.
Skid drip pan, lip and grating have not been included.
Rupture discs are not included on relief valves.
Galvanizing of any materials is not included unless stated in Quotation.
PWHT is not included.
API guidelines are not included unless specifically stated in the body of this proposal

API 560 EXCEPTIONS:

ANSI / API STANDARD 560 4TH EDITION AUGUST 2007

SPEC #	EXCEPTION
2	HEATEC TAKES EXCEPTION TO THE FOLLOWING SPECIFICATIONS: ISO, EN, API 673, MSS
5.2	NOISE DATA SHEET IS NOT INCLUDED EXCEPT FOR THE FAN
5.3.3	TUBE SUPPORT DETAILS & CALCULATIONS ARE NOT INCLUDED. DECOKING IS NOT ALLOWED.
5.4	TUBE SUPPORTS ARE NOT CASTINGS AND THEY DO NOT HAVE TEST CERTIFICATES
6.1.3	HEATER IS A TIGHT WOUND HELICAL COIL WITH NEGLIGIBLE TUBE SPACING
6	FLUX RATE, VOLUMTERIC HEAT RELEASE AND H/W RATIO ARE AS STATED IN QUOTATION
6.2.6	HEATER IS A FORCED DRAFT HEATER. NEGATIVE PRESSURES ARE NOT TYPICALLY EXPERIENCED.
6.3.3	SOOTBLOWERS ARE NOT INCLUDED
6.3.2 & 6.3.4	CONVECTION SECTIONS (ECONOMIZER) DOES NOT INCLUDE SPACE FOR FUTURE INSTALLATION OFSOOTBLOWERS, WATERWASHING TUBE ROWS, OR STEAM LANCE DOORS.
6.3.7	SHIELD SECTION IN ECONOMIZER DOES NOT HAVE BARE ROWS OF TUBES
6.3.8	CORBELS / BAFFLES ARE NOT INCLUDED
6.3.9	PLENUM CHAMBER WILL NOT HAVE THE CLEARANCE FROM GRADE SPECIFIED.
6.3.10 & 6.3.11	HEATEC TAKES EXCEPTION TO THIS SPECIFICATION AS IT DOES NOT APPLY TO HELICAL COIL HEATERS
6.3.12	INDIVIDUAL TUBES ARE NOT REPLACEABLE. ENTIRE COIL IS REPLACEABLE.
7.1.2	CORROSION ALLOWANCE FOR TUBE WALL THICKNESS CALCULATIONS IS AS STATED IN THE QUOTATION.
7.1.4	HELICAL COIL HAS CIRCUMFERENTIAL WELDS THRUOUT ITS COIL LENGTH
10	HELICAL COIL TUBE SUPPORTS 304 SS. THIS SECTION DOES NOT APPLY TO HELICAL COILS AND HEATEC TAKES EXCEPTION TO IT.
11.1.5 / 11.4.1	INSULATION TYPE IS AS STATED IN QUOTATION FOR ENTIRE HEATER. NO BRICK OR REFRACTORY IS USED EXCEPT IN THE BURNER BLOCK. STACKS AND DUCTS ARE NOT INSULATED.
11.1.9	HEATEC PROVIDES THERMO CERAM ROPE OR EQUAL AROUND BURNER THROAT. NO EXPANSION JOINT IS REQUIRED.
11.4	CERAMIC FIBER BLANKET IS 6 LB/FT^3 WITH 310 SS PINS AND WASHERS. CERAMIC FIBER MODULES ARE 8 OR 10 LB/FT^3 WITH 304 OR 316 SS ANCHOR SYSTEM. RETAINER CUPS ARE NOT UTILIZED.
11.4.8	FLUE GAS VELOCITY AA STATED IN THE QUOTATION MAY EXCEED THIS SPECIFICATION
12.2.7	FIREPROOFING IS NOT INCLUDED
12.3	HEADER BOX IS BOLTED. PLUG HEADERS ARE NOT UTILIZED.

12.3.2.1 / 12.3.2.2	ONLY ONE 18" DIAMETER RADIANT SECTION ACCESS DOOR IS PROVIDED. IT IS BOLTED. IT IS IN THE REAR COVER OF HORIZONTAL HEATERS AND THE TOP COVER OF VERTICAL HEATERS. BURNER DESIGN DOES NOT HAVE AIR PLENUM DESIGN, IT IS SIMPLY A BLOWER WITH DAMPER AND DUCT. IT HAS NO ACCESS DOOR OR PORT.
12.3.2.3 / 12.3.2.4 / 12.3.2.6	DAMPER IS PROVIDED IN COMBUSTION AIR DUCT ONLY. ACCESS DOOR BEFORE ABD AFTER CONVECTION SECTION IS NOT INCLUDED. INDIVIUAL TUBES ARE NOT REPLACEABLE. ENTIRE COIL IS REPLACEABLE. END COVERS OF HEATER ARE REMOVED FOR THIS PURPOSE. TUBE REMOVAL DOOR IS NOT INCLUDED. DUCTS AND DAMPERS DO NOT HAVE ACCESS DOORS.
13.2.2 / 13.2.7 / 13.2.8	STACK IS SEAL WELDED EXTERNALLY ONLY. STACK IS NOT LINED.
13.2.12	BREECHING WILL NOT MEET CLEARANCE SPECIFICATIONS
13.2.15	STACK DOES NOT HAVE A CORROSION ALLOWANCE.
14.1.3	BURNER MAY NOT MEET SPECIFIED CLEARANCES
14.1.8	A SINGLE BURNER IS USED ONLY
14.1.21	IF BURNER IS OIL FIRED. THE OIL GUN IS NOT REMMOVABLE DURING OPERATION. MATERIALS OF CONSTRUCTION MAY NOT MEET ALL REQUIREMENTS IN TABLE 15.
14.2	SOOTBLOWERS, PORTS AND LANES ARE NOT INCLUDED UNLESS STATED IN QUOTATION.
14.3	FANS AND DRIVERS WILL NOT MEET API REQUIREMENTS
14.4	HEATEC USES BUTTERFLY DAMPERS AND RADIAL DAMPERS IN THE COMBUSTION AIR DUCT. THEY ARE MILD STEEL CONSTRUCTION.
15	FLUE GAS AND COMBUSTION AIR CONNECTIONS ARE SCH 40 NPT CONNECTIONS.
15.3.2	VENT AND DRAIN CONNECTIONS ARE NOT INCLUDED
15.4	TUBE SKIN THERMOCOUPLES ARE NOT INCLUDED UNLESS STATED IN QUOTATION.
15.5	INSTRUMENT CONNECTIONS ARE NOT NECESSARILY ACCESSIBLE FROM GRADE.
16.2	PLATE WELDS ARE SEAMLESSLY WELDED ON THE EXTERIOR
16.7	FIELD ERECTION / ASSISTANCE ARE NOT INCLUDED.
17.3 17.4	HEATEC TAKES EXCEPTION TO 17.3 & 17.4
ANNEX E	STRESS CALCULATIONS ARE NOT PERFORMED ON TUBES, SHELL OR TUBE SUPPORTS.
ANNEX F	AIR PREHEATER IS NOT INCLUDED.

SALES PROPOSAL
SPECIFIC TERMS AND CONDITIONS

PARTIES: - Heatec, Inc. shall be referred to as "**Heatec**" in this Sales Proposal.
- Good Customer shall be referred to as "**Purchaser**" in this Sales Proposal.

PRICING: - The Price is valid for sixty (60) days after date of this Sales Proposal.
- The Prices do not include any sale, use, property value added, duties or other taxes or charges, whether federal, state, local or provincial that may be applicable, which shall be the responsibility of the Purchaser.

TERMS: - Purchaser shall pay the purchase price in progress payments as follows:
Receipt of these progress payments is required before the Equipment will be released for shipment.
20% @ ARO
30% @ Approval Drawing Submittal
30% @ Coil Hydro Test
Balance @ ready to ship
Electronic Transfer required 30 days after invoice receipt
Refundment / security / performance bonds are not included.

PACKING: - The Price includes Heatec's standard packing. If Purchaser requires special packing, the extra cost caused thereby shall be borne by Purchaser.

SHIPPING: - Transportation charges from point of shipment to point of destination shall be arranged for and paid for by the Purchaser, unless a separate freight contract is entered into between the parties.
- Purchaser shall control the type of transportation and routing.
- An anticipated ready for ship date shall be established upon Heatec's receipt of signed Sales Proposal and Heatec's receipt of the down payment.

DELAY: - If Heatec is not released by the Purchaser to order materials for fabrication at the time Purchaser signs this Sales Proposal, Heatec reserves the right to review and adjust the Price.
- In addition, delays in fabrication due to delays in Purchaser's release or other reasons due to Purchaser, will require an adjustment in the anticipated shipment date.

STEEL PRICES ESCALATION NOTE:

Because of price volatility from steel manufacturers, any order will be subject to a review of material costs from the time of the proposal to the time that the material is actually allocated to the order. Any steel material cost changes will be based on the #1 Chicago Heavy Melt which is listed daily in numerous publications such as THE AMERICAN METAL MARKET. The calculation for the cost variation will be the difference between the Chicago #1 Heavy Melt scrap index 8 weeks prior to the date of this quotation and that same index price on the date 8 weeks prior to shipment of the respective order, which roughly corresponds to the steel material order date. That calculation will multiply the total weight of the steel plate, structural steel, and steel pipe of the product provided by the applicable index price variation. The increase, or decrease, in price will be shown as an additional line item on the respective invoice. This is the most appropriate and transparent method to deal with the current unpredictability of the steel market today. Please, contact us if you have any questions concerning this Escalation Note.

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SALES PROPOSAL
GENERAL TERMS AND CONDITIONS OF SALE

1. **GENERAL: As used herein, "Equipment" is the equipment and/or parts identified in this Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Services", if any, are the services identified in the Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Software", if any, is the software identified in the Sales Proposal as expressly agreed to be licensed by Heatec to Purchaser. These General Terms and Conditions of Sale (the "Terms") and all other sections of this Sales Proposal are collectively referred to in the Terms as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Heatec and Purchaser with respect to the sale and purchase of the Equipment, the performance of the Services and the license of the Software and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Purchaser's terms and conditions of purchase or purchase order, regardless of whether or when Purchaser submitted such terms and conditions or purchase order. Fulfillment of Purchaser's order does not constitute acceptance of any of Purchaser's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Heatec and Purchaser.

2. **ENGINEERING**: Heatec and Purchaser acknowledge and contemplate that any engineering services for which Heatec is responsible pursuant to this Agreement will be performed by engineers employed by Heatec only to the extent allowed by applicable laws and regulations. Otherwise, such engineering services will be provided by qualified, licensed engineers selected and retained by Heatec at Heatec's expense. Except as otherwise provided herein, Heatec and Purchaser acknowledge and contemplate that upon acceptance of this Agreement by Heatec, Heatec's engineering department or a qualified, licensed engineer selected and retained by Heatec at Heatec's expense will perform whatever engineering analysis and design is necessary to fulfill its obligations under this Agreement, and will prepare whatever plant layouts, drawings, and design specifications are necessary in Heatec's discretion to facilitate the performance of the Equipment in accordance with this Agreement. Heatec and Purchaser further acknowledge and contemplate that this engineering process may result in modifications or changes which may include, but are not limited to: modifications in conveyor lengths, sizes, speeds, angles, or positions; changes in motor sizes; changes in Equipment or plant configuration; and modifications or parts lists. No such modifications or changes shall constitute a breach of contract by Heatec.

3. **DRAWINGS**: Heatec will furnish Purchaser with necessary drawings and instruction for Purchaser's erection of the Equipment. Heatec will not be held responsible for design and/or installation of footings and/or other items necessary for installing the Equipment unless otherwise stated herein.

4. **DIFFERING SITE CONDITIONS**: If, in the performance of this Agreement, subsurface or latent conditions at the site are found to be materially different from those indicated by geotechnical reports provided by Purchaser, or unknown conditions of an unusual nature are disclosed differing materially from those ordinarily encountered by Heatec, then such conditions may result in adjustments to the Price, anticipated dates for delivery/shipment, and other contractual obligations. No such adjustments shall constitute a breach of contract by Heatec.

5. **CONFIDENTIALITY**: All non-public, confidential or proprietary information of Heatec, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, purchaser lists, pricing, discounts or rebates, disclosed by Heatec to Purchaser, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Purchaser as confidential and may not be disclosed to any third party or copied by Purchaser unless authorized in advance by Heatec in writing. Upon Heatec's request, Purchaser shall return all documents and other materials received from Heatec. Heatec shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Purchaser can show was known to Purchaser at the time of disclosure; or (c) Purchaser can show was rightfully obtained by Purchaser on a non-confidential basis from a third party. Purchaser's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. **WARRANTY**:
   a. **Heatec warrants that upon shipment from Heatec's site and continuing for a period of** eighteen (18) months after shipment of such Equipment to Purchaser or twelve (12) months after startup, whichever occurs first (the **"Equipment Warranty Period"**), that the Heatec manufactured Equipment will be free of defects in design, material and workmanship, provided any operation of the Equipment by Purchaser has been in accordance with generally approved practice as instructed by Heatec service personnel or set forth in Heatec service instructions, if any, and provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Equipment Warranty Period. Heatec shall repair, or at its option replace FCA point of shipment, any defective Equipment or parts covered by the warranty. The right to have defective Equipment repaired or replaced shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Equipment warranty. Labor for defective Equipment repair will be paid by Purchaser under a formula determined by Heatec. For helical coils found in Heatec's heaters, the Equipment Warranty Period for the helical coils is three (3) years. Equipment which is repaired or replaced shall carry a warranty equal to the unexpired portion of the Equipment Warranty Period. Heatec warrants to Purchaser that the Equipment will perform at its rated capacity as indicated on the Sales Proposal when properly installed, connected, and correctly operated and maintained. Where the Equipment is merely a part of a whole system, Heatec can only accept responsibility for performance of the Equipment furnished by it. The performance of the Equipment covered in this Agreement cannot be exactly predicted for every operating condition. In consequence, any predicted performance data submitted is intended to show probable operating results which may be closely approximated, but which cannot be guaranteed.

   b. Heatec makes no warranties or guarantees with respect to Equipment not manufactured by Heatec, including but not limited to diesel engines, motors, motor starters, pumps, mixers, mills, scales, speed reducers, and other assemblies, valves, pressure regulators, solenoids, electronic drives, pressure differential switches, temperature sensing switches, flame scanners, gauge boards, modulating actuators, electronic displays, pressure transmitters, radar sensors, other electronic controls and instrumentation and other parts and accessories. Liners, castings, furnace refractories, and refractory materials are subject to wide variations of destructive service, are also not covered by the Equipment warranty and are a maintenance responsibility of Purchaser from the beginning of operation. Heatec will pass through to Purchaser any warranties and limitations provided by the original manufacturer of parts used in the Equipment manufactured by Heatec, but Heatec does not provide any warranty as to such items.

c. Heatec warrants that the Services performed hereunder shall be free from defects in workmanship for a period of thirty (30) days from the date of performance (the **"Service Warranty Period"**). Heatec undertakes at its cost to reperform defective Services covered by the warranty, provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

d. No warranty shall apply to Equipment which has been repaired or altered by others so as, in Heatec's judgment, to adversely affect the same or which shall have been subject to negligence, accident, abuse or improper care, installation, maintenance, storage or other than normal use or service, during or after shipment. No warranty shall apply to any used Equipment or for ordinary wear and tear, or ordinary corrosion or erosion. No warranty shall apply to any Equipment adversely affected by being used with any machinery, part or accessory not manufactured or authorized by Heatec. No warranty shall apply to consumables or parts having a life expectancy shorter than the Equipment Warranty Period.

e. Except as expressly set forth in this Sales Proposal, Heatec does not warrant or represent that any Equipment furnished by it meets any state or local safety, environmental or electrical regulations. Heatec is wholly discharged from all liability under this warranty in the event that Purchaser fails to pay for the Equipment or Services in accordance with the applicable purchase terms. This Equipment warranty extends only to the first end-user and is not transferable. This warranty may not be modified except pursuant to a written agreement signed by Heatec.

f. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 6 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY HEATEC TO PURCHASER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (EXCEPT WARRANTY OF TITLE), INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

7. LIMITATION OF LIABILITY: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS HEATEC LIABLE TO PURCHASER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY PURCHASER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL HEATEC'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO HEATEC FOR THE EQUIPMENT SOLD HEREUNDER.

8. SECURITY INTEREST; COST OF RECORDING: Purchaser hereby conveys and grants to Heatec a purchase money security interest in the Equipment to secure payment by Purchaser of all amounts due hereunder including the Price and such other debts, obligations and liabilities of Purchaser to Heatec which may now exist or hereafter arise, whether absolute or contingent, or primary or secondary, together with all extensions or renewals for the foregoing and all expenses, legal or otherwise (including court costs and reasonable attorney's fees) incurred by Heatec in collecting or endeavoring to collect any or all of the foregoing, in protecting any collateral and in enforcing the Agreement. The Equipment shall remain personal property in all respects notwithstanding the manner of annexation of any of the Equipment to realty. Purchaser agrees to execute any instrument or document considered necessary by Heatec to perfect its security interest in the Equipment, including, but not limited to, financing statements, chattel mortgages, deeds of trust, deeds to secure debt, mortgages or other security instruments. Until default hereunder, Purchaser may have possession of the Equipment and use the same in any lawful manner not inconsistent with this Proposal or with any policy of insurance thereon. Purchaser will pay the costs and taxes due for recording and filing any Financing, Continuation or Termination Statements with respect to Heatec's security interest in the Equipment or in connection with any of the other security documents referred to above.

9. EQUIPMENT NOT TO BE REMOVED: As long as the security interest in the Equipment is retained by Heatec, the Equipment shall not be removed from the erection site and Purchaser shall not permit, voluntarily or involuntarily, the Equipment or any part of it to be sold, transferred, encumbered, attached, seized or removed in any manner whatsoever.

10. DEFAULT: Upon default by Purchaser in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Heatec shall thereupon be immediately due and payable and Heatec shall have the rights and remedies contained herein and the rights and remedies of a secured party under the Uniform Commercial Code of the State of Tennessee or under the laws of any other jurisdiction as a court of competent jurisdiction shall determine to be applicable. In the event of Purchaser's default, the following provisions shall apply: (a) Purchaser shall, upon request of Heatec, disassemble the Equipment and make it available to Heatec at a place designated by Heatec; (b) Heatec may enter Purchaser's premises where any part of the Equipment is located, and take possession of and remove all or any portion of the Equipment for purposes of disposition pursuant hereto; (c) Purchaser agrees that sales for cash or on credit to a wholesaler, retailer, or user or property of the type subject to this Agreement or at public auction or private sale are all commercially reasonable; (d) Heatec shall give Purchaser notice of the time and place of any sale of any of the Equipment or of the time after which any private sale or any other intended disposition thereof is to be made by notice, postage prepaid and addressed to Purchaser at the latest address of Purchaser appearing on the records of Heatec at least seven (7) days before the time of the sale or other disposition, which provisions for notice Purchaser and Heatec agree are reasonable; (e) any proceeds of any disposition of any of the Equipment may be first applied by Heatec to the payment of expenses in connection with exercising its rights and remedies hereunder, including reasonable attorney's fees and legal expenses, and any balance of such proceeds may be applied as Heatec may elect in its sole discretion; (f) if the sale or other disposition of the Equipment fails to satisfy in full obligations of Purchaser secured by this Agreement, and the reasonable expenses of retaking, holding, preparing for sale, selling and the like, including reasonable attorney's fees and legal expenses incurred by Heatec in connection with this Agreement or the obligation it secures, Purchaser shall be liable for any deficiency.

11. PERMITS AND APPROVAL OF PLANS: Purchaser assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Purchaser's expense.

12. PERMIT CONTINGENCY: If the purchase of Equipment under this Agreement is contingent on Purchaser's receipt of one or more permits or other governmental approvals, then the Price set forth in this Agreement will not be binding on Heatec. Once all contingencies have been fulfilled or are waived, the Price will be determined by Heatec taking into account any increase in Heatec's cost of purchased components and/or raw materials, among other factors.

13. COMPLIANCE WITH APPLICABLE LAWS: Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

14. PATENTS: In the event that any of the Equipment specified in this Agreement is based upon designs of or furnished by Purchaser, Purchaser shall indemnify Heatec for any loss or expense incurred by it by reason of any claim for infringement of patents.

15. SHIPMENT:

a. If Purchaser is in default of any of its obligations under this Agreement, Heatec may, at its election, withhold any further performance of its obligations and duties under this Agreement until such time as such default has been cured by Purchaser, in which event the anticipated date of shipment as set forth herein shall be adjusted accordingly. Heatec shall not be liable or responsible for, nor shall the Price be reduced by any amount because of any matters beyond the control of Heatec which delay or postpone the anticipated date set forth above for the shipment of the Equipment, such matters including, but not limited to, warlike acts, civil disorder, governmental restriction, acts of God, prior sale, acceptance of United States governmental contracts, strike, lockout, accidents, freight embargo, fire, flood, inability of Heatec to obtain necessary materials, supplies, labor or transportation, pandemic, or any unforeseen water, soil or rock conditions.

b. A detailed shipping list will accompany the bill of lading and Purchaser agrees to check the Equipment as it is unloaded and any claim for shortage against Heatec will be made in writing within twenty-four (24) hours of time of unloading, to be followed by an affidavit (if required) from the person in charge of the unloading. Claims for loss or damage in transit will be made on the carrier by Purchaser.

c. Except to the extent otherwise provided herein, Purchaser has full responsibility for erection and installation of the Equipment.

d. Delivery period is based on current manufacturing load and is subject to change without notice. Long lead items will need to be ordered prior to approvals in order to meet the quoted delivery date. If any of these items are changed during the approval process, charges may result for restocking.

16. LATE CHARGES AND ATTORNEY'S FEES: Purchaser agrees that in the event any amount payable by Purchaser to Heatec remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Heatec and Purchaser is placed in the hands of an attorney for collection, or is collected by and through an attorney, Purchaser will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.

17. POSTPONED DELIVERY (INCLUDING SHIPPING DELAY): If, through no fault of Heatec, delivery or shipment is delayed or postponed (including deferral of shipment requested by Purchaser), Purchaser shall pay to Heatec any additional costs, including plant Equipment storage, handling, and insurance, incurred by Heatec arising from such delay, deferral, or postponement. Such a delay, postponement or deferral is considered “offer to ship” or “shipment” for all purposes, including invoicing, payment and transfer of title. Therefore, the balance remaining unpaid on the Price shall become due and payable immediately. Purchaser shall bear the risk of loss of or damage to the Equipment during storage and thereafter. If, as a result of the delay, postponement or deferral, the Equipment requires repainting, all costs associated with repainting shall be paid by the Purchaser. Should Purchaser delay/postpone/defer shipment, Purchaser and Heatec will complete the attached “Postponed Delivery/Shipping Delay/Deferral Notice”.

18. EQUIPMENT CERTIFICATION: Once certification and fabrication has been completed on any Equipment, if state certification specifications change or unit(s) are to be shipped to a location other than that for which the certification was acquired, the cost of any recertification and/or modifications required to be done on the Equipment shall be paid by Purchaser.

19. LIMITATION OF PROPOSAL: The Price and terms quoted in this Sales Proposal are subject to formal acceptance (i.e. signature on this Sales Proposal) without change by Purchaser within a period 30 days from the date hereof, except that Heatec shall have the right to withdraw its Sales Proposal at any time before formal acceptance by Purchaser.

20. EXECUTION OF CONTRACT: This Sales Proposal is merely the solicitation of an order and is not an offer from Heatec to Purchaser (even though executed on behalf of Heatec under "RESPECTFULLY SUBMITTED,") and does not obligate Heatec in any manner whatsoever until this Agreement is both executed below on behalf of Purchaser as an order made to Heatec as well as executed below on behalf of Heatec as an acceptance of such order from Purchaser, at which time this Agreement shall become a binding contract between Heatec and Purchaser. Once this Agreement has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Heatec, which may be withheld in the sole discretion of Heatec. In the event Purchaser elects to cancel any order, or a portion of thereof, Heatec shall proportionally be paid a percentage of the price of the cancelled order. This portion will be a minimum of ten percent (10%) of the total P.O. value, or will be a percentage relative to the completed portion of the order, whichever is greater. This proportional percentage shall reflect the amount of materials used, purchased materials, and/or work performed prior to the cancellation notice, plus any charges which Heatec can demonstrate resulted from the cancellation including, but not limited to, storage fees, cancellation or restocking charges from sub-vendors, plus the cost of any non-returnable items. Non-returnable items become the property of Purchaser and are delivered EXW Chattanooga-TN or sub-vendor location.

21. SEVERABILITY: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable and enforced in its modified form.

22. ASSIGNMENT: Purchaser shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Heatec. Any purported assignment or delegation in violation of this Paragraph 22 is null and void. No assignment or delegation relieves Purchaser of any of its obligations under this Agreement.

23. LAW CONTROLLING: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law). The parties agree that the United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement, or the transactions contemplated thereby.

24. DISPUTE RESOLUTION: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a "**Dispute**"), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**

25. TAXES: Prices quoted herein do not include any Federal, State or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Heatec is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Heatec upon demand. If Purchaser holds resale tax permits and the material described herein is for resale, such information shall be shown by Purchaser.

26. BACK-CHARGES AND ALLOWANCES: Heatec shall not be called upon to make any allowance for material, labor, repairs or alterations made for its account unless authorized by Heatec in writing.

27. INSPECTION AND ACCEPTANCE PERIOD: Purchaser agrees to inspect the Equipment immediately after delivery to the site, but in no event later than five (5) calendar days after such delivery (the "**Acceptance Period**"). Any defect discovered during the Acceptance period is subject to the procedures and remedies set forth in Paragraph 6 (Warranty).

28. RESPONSIBILITY OF PURCHASER FOR OPERATION OF EQUIPMENT: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Purchaser. Any Services by Heatec's representatives shall be given solely in a consulting or advisory capacity and shall not release Purchaser in any manner whatsoever from its responsibility for operating the Equipment.

29. INDEMNIFICATION: Purchaser agrees to indemnify and hold harmless Heatec, its affiliates and their respective employees from and against any and all liabilities, damages, obligations and claims (including, without limitation, court costs and reasonable attorney's fees) arising from or with respect to the operation of the Equipment. Without limiting the generality of the preceding sentence, the parties acknowledge and agree that if a claim initially was brought against Heatec for defective manufacture, design or the like and was finally determined by a court of competent jurisdiction or otherwise settled (such settlement being with Purchaser's consent) on a basis relating to the negligent operation or use of the Equipment, Heatec will be entitled to indemnification pursuant to the provisions of the preceding sentence.

30. TITLE AND RISK OF LOSS: Title to the Equipment shall pass to Purchaser upon shipment or offer to ship should Purchaser delay shipment. The risk of loss or damage to the Equipment shall pass to Purchaser upon delivery of the Equipment (FCA point of shipment Heatec site, Incoterms 2020), unless transferred earlier in accordance with Paragraph 17 (Postponed Delivery (Including Shipping Delay)).

31. NOTICES: Each party shall deliver all notices and other communications under this Agreement (each, a "**Notic**e") in writing and addressed to the other party at the addresses set forth on the first page of this Sales Proposal. Each party shall deliver all Notices by personal delivery or through deposit in the mail, certified or registered (in each case, return receipt requested, postage prepaid) or through a nationally recognized overnight courier (with all fees prepaid). If Notice should be given immediately or promptly, then in addition to furnishing a copy of the Notice in the manner aforesaid, a copy shall be sent via e-mail (with confirmation of transmission). A Notice is effective only (a) upon receipt by the receiving party and (b) if the party giving the Notice has complied with the requirements of this Paragraph 31, unless the receiving party has waived its requirements in writing. A copy of all notices to Heatec shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

32. INSURANCE: Until the Equipment is accepted and the price is paid in full, Purchaser shall provide and maintain insurance for the full replacement value of the Equipment against customary casualties and risks, including fire and explosion, and liability insurance for accidents or injuries to the public or to employees, in the names of Heatec and Purchaser, as their interests may appear, and in amounts satisfactory to Heatec. If Purchaser fails to provide such insurance, Heatec may provide it and the cost thereof shall be added to the contract price. All loss resulting from failure to affect such insurance shall be the responsibility of Purchaser.

33. CHANGE ORDERS: Either Heatec or Purchaser may propose a change in the specifications for the Equipment or Services. Should any change proposed by Heatec or Purchaser cause an increase or decrease in the cost of or time required for performance of this Agreement or otherwise affect any provision of this Agreement, an adjustment shall be made to the corresponding provision(s) of this Agreement in accordance with this Paragraph 33. Within ten (10) business days after receipt of Purchaser's proposal for a change, or with any proposal for a change by Heatec, Heatec shall prepare and submit to Purchaser a change order in the form attached (the "Change Order"), which shall contain (i) a description of the change, (ii) the net increase or decrease in the Price, (iii) the effect of the change on the estimated delivery schedule and (iv) a description of changes to any other provisions of this Agreement. Purchaser shall accept or reject the Change Order within five (5) business days. No change shall be effective unless evidenced by a written Change Order issued by Heatec and signed by authorized representatives of Purchaser and Heatec; provided that if Purchaser does not notify Heatec of Purchaser's acceptance or rejection of any Change Order, then the Change Order shall be deemed accepted by Purchaser and the parties shall proceed on the basis of the changes set forth therein. If Purchaser rejects a Change Order, this Agreement shall continue to remain in full force and effect notwithstanding the parties' failure to agree to such Change Order, and the parties shall continue to work reasonably and in good faith (but shall not be obligated) to reach a mutually acceptable agreement with respect to such proposed changes; provided that Heatec shall not be required to proceed with any such proposed change until the parties have mutually agreed on an appropriate Change Order. In the event that Heatec and Purchaser cannot agree to a change in Price, the change will be priced on a time and materials basis, and Heatec's charges shall be equal to direct costs incurred by Heatec for labor, equipment and materials plus 27% for overhead and profit as full compensation for such change. In the event that Heatec and Purchaser cannot agree to any other changes, such dispute will be resolved in accordance with the dispute resolution procedures in Paragraph 24.

SALES PROPOSAL SOFTWARE TERMS OF USE (ONLY APPLICABLE IN CASE OF PLC)

These Software Terms of Use ("**Terms of Use**") govern the use of the Software, including all user manuals, technical manuals and any other materials in printed, electronic or other form, that describe the Software or its use (collectively, "**Documentation**") that is or has been furnished by Heatec to Purchaser for use in connection with the Equipment.

1. **License Grant.** Subject to Purchaser's strict compliance with these Terms of Use and pursuant to and conditioned upon Purchaser's compliance with all of the terms of the Agreement, including, but not limited to its payment terms, Heatec hereby grants to Purchaser a non-exclusive, non-transferable, non-sublicensable, limited license to use the Software solely in connection with its operation of the Equipment pursuant to the instructions contained in the Documentation. The foregoing license will terminate immediately on the earlier to occur of: (a) Purchaser's removal, disposal or transfer of the Equipment; or (b) Purchaser's failure to comply with these Terms of Use.

2. **Use Restrictions.** Purchaser shall not, directly or indirectly: (a) use the Software or Documentation except as set forth in Paragraph 1 of these Terms of Use; (b) copy the Software or Documentation, in whole or in part; (c) modify, translate, adapt or otherwise create derivative works of the Software or any part thereof; (d) combine the Software or any part thereof with, or incorporate the Software or any part thereof in, any other software programs; (e) reverse engineer, disassemble, decompile, decode or otherwise attempt to derive or gain access to the source code of the Software or any part thereof; (f) remove, delete, alter or obscure any trademarks or any copyright or other intellectual property or proprietary rights notices included on or in the Software or Documentation; (g) transfer or otherwise provide any access to or use of the Equipment, Documents or the Software or any features or functionality of the Software, for any reason, to any other person or entity; (h) use or attempt to use the Software or Documentation in, or in association with, components, systems or equipment other than the Equipment; (i) use or attempt to use the Software or Documentation in violation of any law, regulation or rule; or (j) use or attempt to use the Software or Documentation for purposes of competitive analysis of the Software, the development of a competing software product or service or any other purpose that is to Heatec's commercial disadvantage.

3. **Compliance Measures.** The Software contains technological copy protection or other security features designed to prevent unauthorized use of the Software, including features to protect against use of the Software in a manner: (a) that is beyond the scope of the license granted to Purchaser hereby; or (b) that is prohibited under Paragraph 2 of these Terms of Use. Purchaser agrees that it shall not, and shall not attempt to, remove, disable, circumvent or otherwise create or implement any workaround to, any such copy protection or security features.

4. **Collection and Use of Information.** Heatec may, directly or indirectly through the services of other affiliated parties, collect and store information regarding use of the Software and the Equipment. Purchaser agrees that Heatec may use such information for any purpose that it deems fit. Heatec assumes no duty to review, access, use or retain the information collected. Purchaser consents to the collection, transmission and sharing of the information described above, and authorizes Heatec, its affiliates, subsidiaries and distributors to gather, process and use, without limitation, the information developed or collected by or in connection with the Software. This may include sharing of such information with select third parties and business partners.

5. **Remote Access Services**. A representative of Heatec may provide technical support through the Software ("**Remote Access Services**"). Any Remote Access Services are provided at Purchaser's sole risk. The ability for Heatec to remotely access the Software and Equipment significantly enhances Heatec's ability to resolve Purchaser's technical problems quickly. Purchaser understands that the provision of Remote Access Services requires Purchaser to provide Heatec's technical support personnel with access to and control of the Software and Equipment. Heatec may, but has no obligation to, troubleshoot, evaluate, run programs or install/uninstall Software, reconfigure and/or otherwise perform service or technical support work on the Software and Equipment, either directly or through an internal network. Heatec may make any changes that it determines are necessary to increase the performance of the Software or Equipment and/or to alleviate the problem at hand or any other problem discovered during the course of performing the Remote Access Services. Purchaser shall indemnify and hold harmless Heatec against all claims, actions, proceedings, costs, damages, and liabilities, including attorneys' fees and litigation and related costs and expenses, incurred by Heatec for injuries to person, property or otherwise resulting from any cause whatsoever arising out of, connected with, or resulting from any Remote Access Services performed by Heatec.

6. **Intellectual Property Rights.** Purchaser acknowledges that: (a) Purchaser does not acquire any ownership interest in the Software, or any rights to the Software other than the right to use the Software as provided herein; (b) Heatec reserves and shall retain its entire right, title and interest in and to the Software and all intellectual property rights arising out of or relating to the Software, subject to the license expressly granted to Purchaser by this Agreement; and (c) Purchaser shall use commercially reasonable efforts to safeguard the Software and the media on which it is stored from infringement, misappropriation, theft, misuse or unauthorized access.

7. **Limited Warranties.** Heatec warrants that, for a period of one year following the date of the purchase of the Equipment from Heatec: (a) any media on which the Software is provided will be free of material damage and defects in materials and workmanship under normal use; and (b) the Software will substantially contain the functionality described in the Documentation, and when properly operated in accordance with the Documentation, will substantially perform as described therein. The warranties set out in this Paragraph 7 will not apply and will become null and void if Purchaser materially breaches any provision of this Agreement, or if Purchaser or any other person provided access by Purchaser to the Software or the media on which it is provided, whether or not in violation of this Agreement: (a) uses the Software in a manner other than as described in the Documentation; or (b) damages the Software or the media on which it is provided, including by means of abnormal physical or electrical stress.

8. Purchaser's Exclusive Remedy. If, during the warranty period set out in Paragraph 7, the Software fails to perform substantially in accordance with the Documentation, and such failure is not excluded from warranty pursuant to Paragraph 7, Heatec will, subject to Purchaser's promptly notifying Heatec in writing of such failure, but in all events during the warranty period set out in Paragraph 7, at its sole option, either repair or replace the Software, provided that Purchaser provides Heatec with all information Heatec reasonably requests to resolve the reported failure, including sufficient information to enable Heatec to recreate such failure. Upon such repair or replacement of the Software, the warranty will continue to run from the date of the purchase of the Equipment from Heatec, and not from Purchaser's receipt of the repair or replacement. The remedies set forth in this Paragraph 8 are Purchaser's sole and exclusive remedies and Heatec's sole and exclusive liability under the limited warranties described in Paragraph 7.

9. Disclaimer of Warranties; Limitations of Liability.

(A) EXCEPT FOR THE LIMITED WARRANTY SET FORTH IN PARAGRAPH 7, THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES ARE PROVIDED TO LICENSEE "AS IS" AND WITH ALL FAULTS AND DEFECTS WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, LICENSOR, ON ITS OWN BEHALF AND ON BEHALF OF ITS AFFILIATES, EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT, AND WARRANTIES THAT MAY ARISE OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OR TRADE PRACTICE. WITHOUT LIMITING THE FOREGOING, LICENSOR PROVIDES NO WARRANTY OR UNDERTAKING, AND MAKES NO REPRESENTATION OF ANY KIND THAT THE SOFTWARE WILL MEET LICENSEE'S REQUIREMENTS, ACHIEVE ANY INTENDED RESULTS, BE COMPATIBLE OR WORK WITH ANY OTHER SOFTWARE, APPLICATIONS, SYSTEMS OR SERVICES, OPERATE WITHOUT INTERRUPTION, MEET ANY PERFORMANCE OR RELIABILITY STANDARDS OR BE ERROR FREE OR THAT ANY ERRORS OR DEFECTS CAN OR WILL BE CORRECTED.

(B) TO THE FULLEST EXTENT PERMITTED UNDER APPLICABLE LAW, IN NO EVENT WILL LICENSOR OR ITS AFFILIATES BE LIABLE TO LICENSEE OR ANY THIRD PARTY FOR ANY USE, INTERRUPTION, DELAY OR INABILITY TO USE THE SOFTWARE OR THE EQUIPMENT, LOST REVENUES OR PROFITS, DELAYS, INTERRUPTION OR LOSS OF SERVICES, BUSINESS OR GOODWILL, LOSS OR CORRUPTION OF DATA, LOSS RESULTING FROM EQUIPMENT FAILURE, MALFUNCTION OR SHUTDOWN, LOSS RESULTING FROM THE PERFORMANCE OF, OR FAILURE TO PERFORM, ANY REMOTE ACCESS SERVICES, FAILURE TO ACCURATELY TRANSFER, READ OR TRANSMIT INFORMATION, FAILURE TO UPDATE OR PROVIDE CORRECT INFORMATION, SYSTEM INCOMPATIBILITY OR PROVISION OF INCORRECT COMPATIBILITY INFORMATION OR BREACHES IN SYSTEM SECURITY, OR FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY, SPECIAL OR PUNITIVE DAMAGES, WHETHER ARISING OUT OF OR IN CONNECTION WITH THESE TERMS OF USE OR THE AGREEMENT, BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT LICENSOR WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

(C) THE LIMITATIONS SET OUT IN THIS PARAGRAPH 9 SHALL APPLY EVEN IF LICENSEE'S REMEDIES UNDER THESE TERMS OF USE FAIL OF THEIR ESSENTIAL PURPOSE AND SHALL SURVIVE ANY TERMINATION OF THESE TERMS OF USE.

10. Export Regulation. The Software may be subject to U.S. export control laws, including the U.S. Export Administration Act and its associated regulations. Purchaser agrees that it will not, directly or indirectly, export, re-export or release the Software to, or make the Software or Documentation accessible from, any jurisdiction or country to which export, re-export or release is prohibited by law, rule or regulation. Purchaser agrees to comply with all applicable federal laws, regulations and rules, and complete all required undertakings (including obtaining any necessary export license or other governmental approval), prior to exporting, re-exporting, releasing or otherwise making the Software available outside the United States.

11. Interpretation. These Terms of Use are incorporated into and are a part of the Agreement. These Terms of Use apply to updates, supplements, add-on components or internet-based service components of the Software that Heatec may provide to Purchaser or make available to Purchaser after the date Purchaser obtains its initial copy of the Software, unless they are accompanied by separate terms. The headings in these Terms of Use are for reference only and do not affect the interpretation of these Terms of Use or the Agreement.

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September 27, 2023 ASTEC PROPOSAL #: HI 23-15004 Rev 2

SERVICE DEPARTMENT REQUEST FOR PAID SERVICE
2024 Paid Service Agreement

Time Frame of Service Work	North America Work Rate	Daily Overtime Rate > 8 Hours	International Work Rate	International Overtime Rate	Minimum Charges
Monday – Friday	$183.75/ Hour	$275.63/Hour	$220.50/ Hour	$299.25/ Hour	8 Hour Minimum
Saturday & Sunday	$275.63/Hour	$275.63/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum
Holidays	$367.50/Hour	$367.50/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum

Travel Charges	North America Travel Rates	International Travel Rates	
Monday-Sunday	$183.75/Hour	$220.50/ Hour	Plus mileage at $0.68/mile
Holidays	$367.50/Hour	$367.50/ Hour	Plus mileage at $0.68/mile

Expense Charges	Expense Rates	
Hotel	$90.00 per day or actual cost, whichever is greater	High-Cost Area rates may apply
Meals	$46.00 per day or actual cost, whichever is greater	
Airfare	Actual Cost	
Auto Rental / Fuel	Actual Cost	
Incidentals	Actual Cost	

Terms

- This form must be returned with a purchase order number before a technician will be dispatched
- If a purchase order is issued it must incorporate this Request for Paid Service, including the attached terms and conditions
- Weekend rates are charged when the technician is mobilized but does not go to the site
- We reserve the right to request payment in advance
- All invoices will be sent to you at the end of the month following the completion of your project
- The General Terms and Conditions Field Services and Installation – North America and International, attached hereto, apply to the work performed hereunder.

Date	Customer Name Completing Request (Print)
Company Name	Astec Job Number / Sales Order Number
Telephone Number	E-mail Address
Plant Address	City, State, and ZIP
Purchase Order Number	Purchase Order Number Authorization (signature)
Trip Purpose	

GENERAL TERMS AND CONDITIONS
FIELD SERVICES AND INSTALLATION – NORTH AMERICA AND INTERNATIONAL

1. GENERAL: As used herein, "Provider" is Heatec, Inc. and **"Customer"** is the person or entity identified as the customer in Provider's order acknowledgement or quotation (the **"Order"**). **As used herein, the "Services" are the services identified in the Order, as expressly agreed to be provided by Provider to Customer. These General Terms and Conditions for Field Services and Installation (the "Terms") and all other sections of the Order are collectively referred to as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Provider and Customer with respect to the performance of the Services and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Customer's terms and conditions of purchase or purchase order, regardless of whether or when Customer submitted such terms and conditions or purchase order. Fulfillment of Customer's order does not constitute acceptance of any of Customer's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Provider and Customer.

2. PAYMENT; TAXES: In consideration of the provision of the Services by Provider, Customer shall pay the fees set forth in the Order. Customer shall make all payments in U.S. dollars. Customer shall reimburse Provider for all additional costs and expenses incurred in accordance with the performance of the Services, within thirty (30) days of receipt by Customer of any invoice from Provider accompanied by receipts and reasonable supporting documentation. Customer shall be responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state or local governmental entity on any amounts payable by Customer. If any amounts due are placed in the hands of any attorney for collection, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorneys' fees.

3. CHANGES: If either party wishes to change the scope or performance of the Services, it shall submit details of the requested change to the other party in writing. Provider shall, within a reasonable time after such request, provide a written estimate to Customer of (i) the likely time required to implement the change; (ii) any necessary variations to the fees and other charges for the Services arising from the change; and (iii) the likely effect of the change on the Services. Promptly after receipt of the written estimate, the parties shall negotiate and agree in writing on the terms of such change (a "Change Order"). Neither party shall be bound by any Change Order unless mutually agreed upon in writing.

4. PERFORMANCE: Provider shall use reasonable efforts to meet any performance dates specified in the Order, but any such dates shall be estimates only. Provider's performance of the Services is subject to Customer's performance of the obligations identified in the Order as "Customer Responsibility", including without limitation obtaining or providing necessary approvals, information, licenses, permits and instructions on a timely basis. Provider shall not be responsible for any delay or failure to perform the Services due to causes beyond its control, including, but not limited to, accidents, casualty, strikes or other labor disputes, acts of God, delays in transportation, government regulations, shortages, strike, lockout, pandemic, and inability of Provider to obtain necessary materials, supplies, labor or transportation.

5. CONFIDENTIALITY: All non-public, confidential or proprietary information of Provider, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, Customer lists, pricing, discounts or rebates, disclosed by Provider to Customer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Customer as confidential and may not be disclosed to any third party or copied by Customer unless authorized in advance by Provider in writing. Upon Provider's request, Customer shall return all documents and other materials received from Provider. Provider shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Customer can show was known to Customer at the time of disclosure; or (c) Customer can show was rightfully obtained Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA by Customer on a non-confidential basis from a third party. Customer's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. INTELLECTUAL PROPERTY: All intellectual property rights, including copyrights, patents, trademarks, service marks, trade secrets, know-how and other confidential information and all other rights in and to all documents, work product and other materials that are delivered to Customer under the Order or prepared by Provider in the course of performing the Services shall be solely owned by Provider. Provider hereby grants Customer a license to use all such intellectual property rights free of additional charge and on a non-exclusive, worldwide, non-transferable, non-sublicensable, fully paid-up, royalty-free and perpetual basis to the extent necessary to enable Customer to make reasonable use of the Services.

7. WARRANTY:

a. Provider warrants that the Services performed hereunder shall be free from defects in workmanship for a period of ninety (90) days from the completion of the applicable Services (the **"Service Warranty Period"**). Provider undertakes at its cost to reperform defective Services covered by the warranty, provided that Customer notifies Provider in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Customer's sole and exclusive remedy for breach of this Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

b. Provider is wholly discharged from all liability under this warranty in the event that Customer fails to pay for the Services in accordance with the Order. This warranty may not be modified except pursuant to a written agreement signed by Provider.

c. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 7 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY PROVIDER TO CUSTOMER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY ORFITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

8. LIMITATION OF LIABILITY: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS PROVIDER LIABLE TO CUSTOMER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY CUSTOMER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL PROVIDER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO PROVIDER FOR THE SERVICES PERFORMED HEREUNDER.

9. DEFAULT: Upon default by Customer in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Provider shall thereupon be immediately due and payable and Provider shall have the rights and remedies contained herein and the rights and remedies as a court of competent jurisdiction shall determine to be applicable.

10. PERMITS AND APPROVAL OF PLANS: Customer assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Customer's expense.

11. COMPLIANCE WITH APPLICABLE LAWS: Customer assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation (if not done by Provider) and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

12. LATE CHARGES AND ATTORNEY'S FEES: Customer agrees that in the event any amount payable by Customer to Provider remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Provider and Customer is placed in the hands of an attorney for collection, or is collected by and through an attorney, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.
13. EXECUTION OF CONTRACT: Once an Order has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Provider, which may be withheld in the sole discretion of Provider. In no event will consent to suspension or cancellation be given without full reimbursement by Customer of all Provider's expenses, damages and losses arising from such cancellation or suspension and incurred through the date of cancellation or suspension, plus reasonable overhead and profit allocation on such amounts.
14. RELATIONSHIP OF THE PARTIES: The relationship of the parties is that of independent contractors. Nothing contained herein shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment, or fiduciary relationship between the parties, and neither party shall have authority to contract for or bind the other party in any manner whatsoever. The method and manner for performance of the Services by Provider shall be under its own control. The parties acknowledge that Provider is not performing the Services as a general contractor.
15. SEVERABILITY: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable, and enforced in its modified form.
16. ASSIGNMENT: Customer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Provider. Any purported assignment or delegation in violation of this Paragraph 16 is null and void. No assignment or delegation relieves Customer of any of its obligations under this Agreement.
17. LAW CONTROLLING: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law).
18. DISPUTE RESOLUTION: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a **"Dispute"**), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**
19. TAXES: Prices quoted herein do not include any Federal, State, Local or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Provider, in its opinion, is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Provider upon demand.
20. BACK-CHARGES AND ALLOWANCES: Provider shall not be called upon to make any allowance for material, labor, repairs, or alterations made for its account unless authorized by Provider in writing.
21. RESPONSIBILITY OF CUSTOMER FOR OPERATION OF EQUIPMENT: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Customer. Any Services by Provider's representatives shall not release Customer in any manner whatsoever from its responsibility for operating the Equipment.
22. INDEMNIFICATION: Customer covenants and agrees that it will indemnify and hold harmless Provider, its affiliates and their respective directors, officers, employees and agents from and against any and all claims, actions, demands, damages, costs, expenses, judgments and awards, including without limitation court costs and reasonable attorneys' fees (collectively, "Claims"), including but not limited to any Claims by third parties, arising out of or caused by the acts or omissions of Customer, its directors, officers, employees, agents and/or subcontractors. This indemnity shall survive the execution and performance of the Order.
23. NOTICES: Any notices given between the parties under this Agreement may be given by courier, personal delivery or mail, postage prepaid, or by e-mail. The date of service shall be the date on which the notice is received. A copy of all notices to Provider shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

PURCHASER PLANT SETUP RESPONSIBILITIES (TASKS TO BE COMPLETED PRIOR TO HEATEC'S SERVICE TECH'S ARRIVAL AT PLANT)

1. All equipment set, bolted and completely sealed up.
2. All Process Lines & Hot Oil Lines put together and tested.
3. Fuel lines/Gas lines including all lines for the pilots hooked up and run.
4. All air lines run and hooked up from air compressor to all locations on the plant.
5. All electrical cables 480vac/120vac pulled and hooked up.
6. Main power run and hooked up to main in MCC cabinet.
7. Hot oil on site.

NOTE: Items 1, 2, 3, 4 & 5 are performed by Heatec when plant installation is purchased from Heatec.

SALES PROPOSAL SIGNATURE PAGE

This Agreement is made in Chattanooga, Tennessee.

RESPECTFULLY SUBMITTED
HEATEC, INC.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: _______________________________

ORDER BY PURCHASER
The foregoing proposal is hereby offered as an order by PURCHASER.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: _______________________________

ACCEPTANCE OF ORDER BY HEATEC

The foregoing order is hereby accepted at Chattanooga, Tennessee, as of the date of acceptance.

HEATEC, INC.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: _______________________________

www.astecindustries.com
Office: 423.821.5200
5200 Wilson Rd
Chattanooga, TN 37410 USA

POSTPONED DELIVERY/SHIPPING DELAY/DEFERRAL NOTICE

Purchaser: ___________________

Seller: Heatec, Inc.

Contract or PO Date: ________________

Contract or PO #: _____________

Delivery: FCA point of shipment Heatec site, Incoterms 2020

Heatec has notified Purchaser that the Equipment (as defined in the Heatec General Terms and Conditions of Sale) will be ready for Purchaser to pick up at Heatec's site on ______________ ____, 20____.

Purchaser hereby requests deferral of shipment of the Equipment until ____________ ___, 20___.

Reason for delay:____.

Pursuant to paragraph 16 of the Heatec General Terms and Conditions of Sale, Purchaser's deferral is considered "offer to ship" or "shipment" for all purposes, including invoicing, payment, and transfer of title. Purchaser bears all risk of loss of or damage to the Equipment during storage and thereafter.

Pursuant to paragraph 29 of the Heatec General Terms and Conditions of Sale, title to the Equipment passes to Purchaser upon offer to ship should Purchaser delay/defer shipment.

____
Customer

____
Customer Signature and Title

____
Date

* *

Heatec Acknowledgments:

Except as otherwise noted above, there have been no written or oral amendments to the Contract. The Equipment is complete in accordance with the Contract, ready for shipment and has been segregated from other Heatec inventory.

___________________________________	____
General Manager Signature	Date
___________________________________	____
Controller Signature	Date
___________________________________	____
Manufacturing Dept Head Signature	Date

September 27, 2024 ASTEC PROPOSAL #: HI 23-15005 Rev 2

THE WORLD LEADER IN INTEGRATED PROCESS SOLUTIONS

SUPPORT•TECHNOLOGY•TRAINING

A PROPOSAL TO PROVIDE A

REGEN GAS HEATING SYSTEM

FOR

H-4701 Regen Gas Heater for Targa's DOU Copperhead plant in NM

PREPARED EXCLUSIVELY FOR

Bryan Nix
TARGA RESOURCES
811 Louisiana Street
Houston, TX 77002
Office:713-584-1575
Cell:918-557-2676
bnix@targaresources.com

Presented by:

Thomas Franey, Regional Sales Manager
Cell: (423) 309-3631
tmfraney@astecindustries.com

September 27, 2024 ASTEC PROPOSAL #: HI 23-15005 Rev 2

ASTEC SCOPE OF SUPPLY (Quote validity is for 60 days):
All equipment will be completely assembled at ASTEC. It will arrive at your facility completely packaged and mock tested. The package you will receive includes the following items:

Model	Description	Investment (U.S. $)
Heatec HCI 10010-40-D-G	Regen Gas Heater x 1	$Included
Burner	Low NOx Burner x 1	$Included
Blower	Blower for burner x 1	$Included
Control Panel	Panel x 1	$Included
Fuel Train	Gas Train x 1	$Included
Stack	Exhaust Stack x 1	$Included
	Total for H-4701 Regen Gas Heating Unit	**$439,827.00**

NOTE: Our price and delivery are based on ASTEC's "General Terms and Conditions" listed at the end of this proposal. Any purchase order that includes Terms and Conditions different from those will be reviewed, and it may impact the price and delivery offered. ASTEC reserves the right to review and revise the pricing and delivery.

DELIVERY PERIOD:
The delivery period of the equipment is listed below. Delivery times may vary depending on engineering and production workload when the written P.O. is received. *Long lead items (pumps, burner, blower, relief valves, etc) need to be ordered prior to approvals.*

Description	Weeks
Drawings Issued for Approval	9 ARO
Equipment Ready to Ship after All Drawings Approved	17 ARAD

ARO = After receipt of written purchase order
ARAD = After receipt of approved drawings from the customer

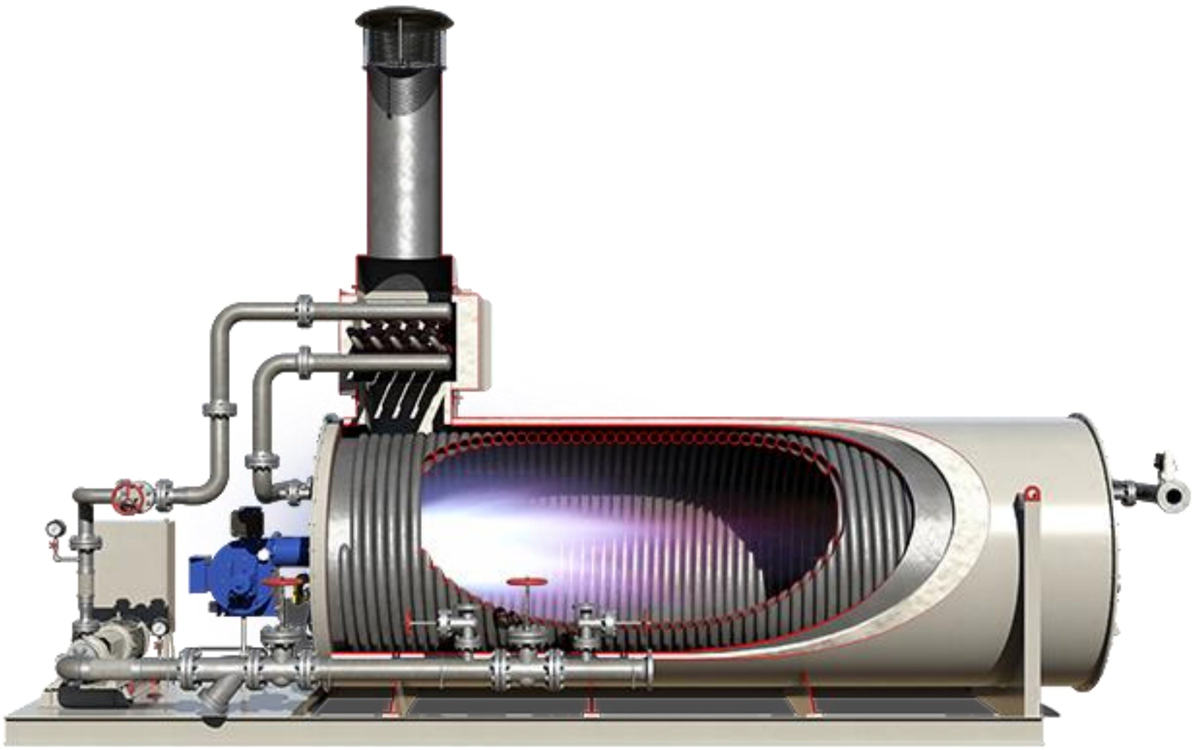
OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

Model	Description	Investment (U.S. $)
5 Days Service On-site	Estimate (1 Man, 1 Trip, 2 Weeks Notice)	See Page 23
Industrial Customer School	Tentatively in April / October	$1,875.00
Commissioning Spare Parts	Estimate, Class 1 Div 2	$24,500.00 per heater
2 Years Spare Parts	Estimate, Class 1 Div 2	$19,750.00 per heater

NOTE;

This is only a partial, preliminary spare parts list. The complete parts list will be sent after ASTEC is the successful bidder, the P.O. has been received by ASTEC, and once we have the final scope defined.

COMMISSIONING SPARES:	2 YEAR SPARES:
Flame safeguard	Flame safeguard
Flame scanner	High media controller
High media controller	Stack temp controller
Stack temp controller	Modulation controller
Modulation controller	Ignition transformer
Motor starter	Control relays
Main gas valve	Low combustion air switch
Pilot solenoid valve	Modulating control motor
Modulating control motor	Burner blower wheel
Spark igniter for burner	Rear heater sight glass
Blower motor for burner	Spark igniter for burner
Media Thermocouple	Indicating lights for control panel
Stack Thermocouple	Butterfly valve for burner control
Main gas regulator	High gas pressure switch
Pilot gas regulator	Low gas pressure switch



This is a cut away depiction of our standard horizontal heater internals. It does not necessarily represent the package quoted. The main advantage of this design is the extremely large radiant section. Since this is where most heat transfer occurs, the ideal design utilizes a large radiant section. The two-pass heater life expectancy is 2-4 times that of other styles.

ASTEC ADVANTAGES:

1. The radiant heating surface of two pass heaters is typically 50% greater compared to that of other style heaters. The result is that the two-pass heater will have lower radiant flux rates. High radiant heat flux causes high metal wall temperatures, causing premature coil failure and premature degradation of the thermal fluid. The life expectancy of the two-pass heater will be 2-4 times that of other designs
2. Should the coil ever have to be replaced, the bolted cover(s) of the two-pass design allow(s) for easy coil replacement without having to replace the entire heater or requiring shipment back to the factory for costly repair
3. There is more internal “room” in the less crowded two pass heater which allows for greater space between the flame and the coil. This lessens the chances for flame impingement and thus lengthens coil and thermal fluid life. Ease of inspection is also increased
4. The heater has an 18” bolted man-way. This allows access to the radiant section without removing the cover, the burner, the fuel train, the can and the conduit. This internal inspection is required in many locations
5. The heater utilizes complete flow through a uniform diameter coil without mixing or by-passing.
6. Front and rear peep sight(s) for viewing flame pattern and coil condition
7. No orifice plates required for balancing the flow
8. Insulation is on the inside of the heater where it cannot be damaged during shipment
9. Totally Packaged Heaters
10. In House Panel Shop
11. In House Coil Manufacturing
12. In House Hydro-Test
13. In House Painting / Sandblasting
14. In House Fully Function Tested Heaters
15. Custom (Highly Specified or Standard Units)
16. On Site Training
17. In House Service Department which is available for on-site training and start up
18. In House Engineering Department
19. Seventeen AutoCAD stations utilizing AutoCAD / Inventor / AutoCAD Electrical
20. In House Quality Assurance / Control Department
21. Heater manufacturer since 1977
22. Heatec Coil warranty will be 3 years from ship date. Typical lifetime of this heater without coil replacement is 20 to 30 years
23. Stamps and Certifications

UL NB R ASME U ASME S NSF

EQUIPMENT DESIGN DATA:

HCI 10010-40-D-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	11,516,583	3.38
Firing Rate (HHV) (Btu/hr) (MW)	16,165,674	4.74
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	37,000	16,779
Heater Circulation Rate (MMSCFD) (Nm^3/hr) {Constant}	14.99	17,656
Minimum Allowable Circulation Rate (MMSCFD) (Nm^3/hr)	11.99	14,125
Heater Inlet Pressure (psig) (Barg)	900	62.1
Heater Outlet Pressure (psig) (Barg)	890.9	61.4
Heater Inlet Temperature (°F) (°C)	98	37
Heater Outlet Temperature (°F) (°C)	550	288
Stack Temperature (°F) (°C)	664	351
Calculated Heater Efficiency (%) (LHV) [See Note 1]	83.9	83.9
Calculated ΔP through Heater (psid) (Bar) (Clean)	9.1	0.6
Heater Volume (Gallons) (m^3)	746	2.8
Total Coil Surface Area (ft^2) (m^2)	1,453	135.0
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	7,926	25.0
Radiant Surface Area (ft^2) (m^2)	726	67.5
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	10,373	32.7
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	14,003	44.1
Maximum Metal Temperature (°F) (°C) AICHE	617	325
Maximum Calculated Film Temperature (°F) (°C) AICHE	602	317
Average Fluid Velocity (ft/s) (m/s)	24.5	7.5
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	158,608	4,492
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	14,477	410
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	173,770	4,921
Flue Gas Pressure Drop (" WC) (mmHg)	0.30	15.77

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.
Note 2: It is the Customer's responsibility to confirm/verify user volume and pressure drop, which are not in ASTEC's scope of supply. ASTEC assumes no liability for non-verified estimated data.

SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,500
Heater location	Outdoor
Ambient Temperature (ºF)	-20 to 110
Burner turndown	5:1 Gas
Excess air %	15
Noise Limit (dB(A))	< 85 at 3 ft
Heater orientation	Horizontal
Primary fuel (psig @ rated capacity of the burner)	Fuel gas (125)
Compressed air from clean, dry, safe source	10 to 40 scfm @ 116 to 80 psig
Electrical	480 V / 3 PH / 60 Hz
Control voltage	110 V / 1 PH / 60 HZ / 24 V DC
Area Classification	Class 1 Div. 2 Group C & D
Thermal fluid (Not Included)	Regen Gas

Note: Please confirm fuel pressure and temperature.

	FUEL TABLE	MOL %
N_2	Nitrogen	1.84
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.00
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	97.60
C_2H_6	Ethane	0.54
C_3H_8	Propane	0.02
C_4H_{10}	i-Butane	0.00
C_4H_{10}	n-Butane	0.00
C_5H_{12}	i-Pentane	0.00
C_5H_{12}	n-Pentane	0.00
C_6H_{14}	n-Hexane	0.00
O_2	Oxygen	0.00

REGEN GAS PROPERTIES	
Inlet Temperature (°F)	98
Inlet Density (lb/ft^3)	4.42
Inlet Heat Capacity (Btu/(lb*°F))	0.651
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.022
Inlet Dynamic Viscosity (cP)	0.013
Outlet Temperature (°F)	550
Outlet Density (lb/ft^3)	1.87
Outlet Heat Capacity (Btu/(lb*°F))	0.729
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.042
Outlet Dynamic Viscosity (cP)	0.018

	REGEN GAS TABLE	MOL %
N_2	Nitrogen	1.35931
H_2O	Water	0.00
H_2S	Hydrogen Sulfide	0.000132193
CO_2	Carbon Dioxide	2.33237E-07
CH_4	Methane	72.55050
C_2H_6	Ethane	13.51700
C_3H_8	Propane	7.840360
C_4H_{10}	i-Butane	1.03989
C_4H_{10}	n-Butane	2.632210
C_5H_{12}	i-Pentane	0.480309
C_5H_{12}	n-Pentane	0.453480
C_6H_{14}	n-Hexane	0.0667919
C_7H_{16}	Heptane	0.039458
C_8H_{18}	Octane	0.003300
C_9H_{20}	Nonane	0.005458
$C_{10}H_{22}$	Decane	9.2761E-06
	Undecane	3.13074E-06
	Benzene	0.00871813
	Toluene	0.002751
	Ethylbenzene	0.000123
	m-Xylene	0.000230885

APPROXIMATE PHYSICAL DATA:
The equipment will have the following estimated dimensions and dry weights. Piping and controls external to the heater are to be insulated in the field by customer. All equipment will be assembled and mounted as stated below. Items too large for shipment, or subject to damage during shipment, will be shipped loose (unattached) and will require re-assembly in the field.

Equipment	L (ft)	W (ft)	H (ft)	Wt (Lbs)	Mounting
Horizontal Heater	31.1	9.3	9.6	41,968	Skid
Exhaust Stack		2.5	8.0	643	Top of Heater
Blower (HP)	20	TEFC			Front Cover of Heater
Pilot Gas Train	NPT	0.5	Inch		Side of Heater
Main Gas Train	NPT	2.0	Inch		Side of Heater
Control Panel	3.0	1.0	4.0	500	Front of Heater Skid

PAINTING:
Customer specified paint system.

Purchased items will be painted with vendors' standard paint, stainless items will remain unpainted.

DRAWINGS / ENGINEERING:

Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on USB thumb drive (AutoCAD). Please note that the tolerance of our drawings is + or – ¼". Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.

Description	Description
Manuals on CD	General Arrangement
P & ID	Bill of Material Mechanical
Electrical Diagrams (Ladder Type)	Bill of Material Electrical
Nameplate Details	Hydro-test Report
Lift Lug Details	Spare Parts
Motor Curves	NDT Reports
Motor Data Sheets	Utility Requirements
Material Certifications	Quality Control Manual
Foundation Loadings	Mechanical Design Calculations

DESIGN CRITERIA:

The equipment will be designed to the requirements stated below. Quality is assured by our in house quality control department. Thickness of coil and shell will not be affected by the manufacturing process as we keep all diameters above the limits that would have an impact on it. Hydrostatic testing will be carried out at our facility and witnessed by our quality control manager.

Heater Coil Design:
ASME Section VIII design @ 650 ºF to -20 ºF, @ 1100 psig with CA = 0.0625
Heater Shell Design:
Non-code design @ 300 ºF to -20 ºF @ 15 In W.C. with CA = 0.0625
Fuel Train Design:
110 ºF to -20 ºF / UL / NFPA 87 & 70
Heater Stack Design:
Non-code 800 ºF to -20 ºF @ +15" W.C. w/ CA = .0625
Panel & Controls:
110 ºF to -20 ºF / UL 508 A / NFPA 87 & 70
NEC Class I Division 2 Group C & D T3
NEMA 4X (316 Stainless Steel) with "Z" type purging

EQUIPMENT RECOMMENDATIONS:
The heater is designed, manufactured, wired, and tested at our facility in Chattanooga, Tennessee USA. It is completely packaged and will include the following:

HEATEC HCI HEATER:
- Two-pass tight-wound helical coil heater
- Carbon steel (SA106 Gr. B seamless) schedule 80 tight-wound helical coil
- Single 4" inlet and outlet 600 # (SA105) flanges
- Heater coil hydro-testing per ASME code
- Coil will be stamped and receive National Board Registration
- 304 SS coil supports (skip welded to shell to help dissipate heat transmission)
- Coil is enclosed by an (minimum ¼" thick) A36 carbon steel shell with bolted end covers (w/ lift eyes)
- Internally insulated with ceramic fiber blanket, using welded 310 SS pins with washers for support. Blanket will receive a coat of rigidizer
- Peep sight in rear cover
- Inert gas smothering connection in front cover. (Gas and controls by others)
- Structural steel skid with saddles welded to channels to form a skid mounted frame, and a five foot skid deck extension for mounting controls
- Skid lifting lugs (minimum of four)
- 18" diameter bolted access door in rear of heater
- Coil butt welds receive 100% radiography

EXHAUST STACK:
An exhaust stack to disperse the heater flue gasses to the atmosphere.
- Stack with flanged bottom connection and 2 flue gas sampling ports, rain cap and bird screen (Un-insulated)

POWER FLAME TYPE EVO BURNER:
The Power Flame EVO™ burner offers staged/premix combustion technology to maximize operating efficiency and reduce NOx emission on natural gas firing below 30 PPM without the use of flue gas recirculation (FGR). Designed to fire a range of gaseous fuels and light oil, this burner utilizes a unique firing head design which provides stable combustion over a wide turndown.
- Direct spark ignited natural gas pilot (Interrupted type)
- Ignition transformer
- UV self-checking flame detection scanner
- Blower is integral to burner
- Inlet damper with modulation motor, duct and combustion air pressure switch
- Burner is sized for 104% capacity

GAS TRAIN:

- Pilot train with regulator, double block safety shutdown valves, manual valve, 1 x pressure gauge
- Main train
- Drip leg
- Manual shutoff valve
- Gas Strainer
- Tee to pilot train
- Pressure gauge x 2
- Stepdown gas regulator (Must be vented to a safe location)
- Gas regulator (Must be vented to a safe location)
- Vent line with manual shutoff valve for leak testing
- Low and high pressure switches
- Leakage test connection with manual shutoff valve
- Fuel Modulation via modulation valves with linkage-less system
- Double block (one with proof of closure switch) safety shutdown valves
- Bleed line with two (2) manual shutoff valves for leak testing
- Heat tracing, if necessary, is by customer

Emission Guarantees based on HHV:
NOx (lbs/mmbtu – PPM) = .0365 – 30
CO (lbs/mmbtu - PPM) = .049 – 65
SOx (lbs/mmbtu - PPM) = Negligible
PM (lbs/mmbtu - PPM) = Negligible
VOC (lbs/mmbtu - PPM) = Negligible

1. All emissions are from 50% to 100% of maximum combustion rating (MCR)
2. All emissions in the units of PPM are referenced to 3% dry stack oxygen
3. Emissions are valid for natural gas (fuel analysis must be submitted by customer) combustion only. The values are based on natural gas containing no bound nitrogen and no sulfur
4. If the stack emissions exceed the guarantee level, ASTEC/ Burner manufacturer will work with customer to reduce the emissions to the guaranteed level. ASTEC / Burner manufacturer will, at its costs, make any and all adjustments and / or modifications to burner that it deems appropriate and proper to meet required levels
5. Compliance testing of the system must be conducted within 60 days of initial start-up. Start-up must occur no later than 120 days from shipment. Testing is to be accomplished by an independent authorized agency agreed to by ASTEC / burner manufacturer utilizing EPA-Method 7E. All costs of compliance testing shall be paid by customer
6. All guarantees contained in these conditions and limits shall end following completion of compliance testing wherein all emission test points are documented to be at or below guaranteed levels

LOCALLY MOUNTED INSTRUMENTS:

- Low flow signal is to be supplied by customer.
- Inlet / outlet Regeneration Gas pressure gauge with isolation valve (NPT)
- Inlet / outlet Regeneration Gas thermometer with thermo-well (NPT)
- Outlet Regeneration Gas temperature thermocouples with thermo-well (NPT)
- Stack temperature thermocouple with thermo-well
- Relief valve is to be supplied by customer.
- Conduit will be used for all wiring

BURNER MANAGEMENT SYSTEM (BMS) ELECTRICAL CONTROL ENCLOSURE:
The heater's electrical control enclosure contains all of the electrical components to safely operate the heater. The burner management controller provides the proper burner sequencing, pre-purge, ignition and flame monitoring protection for automatically ignited oil or gas fuel burners. The enclosure also has a single-loop, 4-20mA modulating, digital temperature controller and two digital temperature limit controllers; one for the thermal fluid and one for the stack. The burner managment controller also monitors other heater safety limits in it's limit circuit. If a limit condition occurs, the burner managment controller safely shuts down the burner. The enclosure and installed components meet NEMA standards. The enclosure is designed and wired to meet the requirments of NFPA 70, National Electric Code (NEC) and the requirements found in Underwriters Laboratories Inc. (UL) 508A Listing for Industrial Control Panels. This listing can be verified on the following website: http://www.ul.com/database.
The BMS control enclosure will be manufactured and tested by ASTEC.
The control panel includes the following:

- AO ground to -24vdc common
- All safety devices connected to DI through relays as input for troubleshooting.
- DI register on HMI page
- LOP (light off position) Hold through MTFI (main trial for ignition) and additional 30 seconds, then release to modulate. Program changes from basic package
- Reset PID PV to Zero at the same time it releases to Auto modulation.
- Heater tied to burner alarm on FAL and FALL shutdown conditions
- Siemens breaker disconnect mounted on back panel with a through-the-door operator handle
- Motor starters are by others
- Fireye BurnerLogix burner management system (BMS) model YB110UVSC with self-check scanner amplifier card. The YB110 has a display with keypad mounted in the enclosure door allowing user to easily scroll through various menus to view the current operating status, review programmer configurations and lockout history. The flame reset button is on the keypad. The YB110 has the capability to communicate its status data via Mod-Bus RTU as a slave with a Mod-Bus RTU master device. Programming of the RTU Master to pole the Fireye is responsibility of the customer. The YB110 BurnerLogix is cUL US Listed, CE and FM approved
- Control relays and fused terminal blocks
- DI, DO & AI fused connections entering and leaving the rack.
- Control relays and fused terminal blocks
- Yokogawa UT35L (1/4 DIN) high thermal fluid temperature limit controller with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability
- Yokogawa UT35L (1/4DIN) high stack temperature limit switch with primary output relay, manual reset, digital display and 4-20mA re-transmission output capability.
- Lights for: power and alarm indicator lights
- Switches for: burner off/on, alarm silence, low fire hold and pump select (if applicable)
- Dry contacts on common alarm and heater run status
- Flame safety reset button
- Emergency shut down button
- Alarm horn, to indicate alarm (mounted adjacent to panel)
- Window kit for indicating controls
- "Z" Purge Package
- Allen-Bradley CompactLogix 5069 PLC with Panelview Plus 12 HMI for air-fuel ratio control.
- Panelview HMI to be updated to latest firmware version and VNC enabled.
- PLC rack and programs to have same version.
- Heating element with panel insulation and thermostat

Exceptions and Clarifications

HEATEC's Quotation is in basic accordance with the specifications, drawings, terms and conditions, and requirements of the invitation to bid; however, the following exceptions have been identified, priced and are attached hereto for consideration
Purchase order must make reference to HEATEC Quotation
Equipment is quoted EXW, HEATEC, Chattanooga, TN, Incoterms® 2020. Equipment will be loaded on truck free of charge. This means the delivery of Equipment on the truck at the specified point of departure (HEATEC) is covered in the quotation price. Purchaser is responsible for the main carriage / freight, cargo insurance and other costs and risks. Purchaser shall furnish all necessary facilities, labor, materials and equipment for unloading and conveying the Equipment to its erection point. The Equipment shall be erected, installed, set and leveled by Purchaser at its expense.
Purchaser shall furnish all necessary labor, materials, equipment, fuel, inert snuffing controls / media, air (if required), nitrogen (if required) and electricity required for starting up the Equipment. HEATEC will not be responsible for the installation or design of the footings, foundations or anchor bolts. Emissions compliance testing, mechanical run test, Site Acceptance Test, and performance tests are not included in Quotation. Testing included in Quotation includes the testing as described in the HEATEC Standard FAT (Available for inspection) and the HEATEC Standard ITP (Available for inspection) and any tests stated in the Quotation.
Heatec warranty, payment terms and cancellation charges are as stated below.
Export packing / preservation / storage are not included. Domestic packing is included. This includes flange / stack covers, wrapping of panel, crating of loose shipped parts.
Taxes, tariffs and duties are not included.
Order will be executed according to USA / TN laws. It is the responsibility of Purchaser to inform HEATEC via specifications of local / jurisdictional laws that may affect Equipment design (i.e. emissions, insurance codes, etc.). Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the design, installation and operation of the Equipment and any other activity related thereto, including, without limitation, the Clean Air Act and all rules and regulations promulgated thereunder and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder. Some parts of the heater will exceed OSHA temperature requirements. (Average skin temperature of heater shell is 170°F with 5 mph wind and 70°F ambient.)
Any freight prices that may be quoted are estimates for budgetary purposes only. Due to the volatile nature of freight pricing, HEATEC cannot give a firm price for freight during the proposal phase of the project, because this phase occurs well in advance of the actual delivery. If contracted with HEATEC, freight will be billed at the actual cost plus a 10% handling fee.
All drawings will be standard AUTO-CAD. Delivery time stated in Quotation depends upon the approval process and the changes made during this process. Typical approval time is two weeks after receipt on all drawings. Only those drawings listed above will be offered. Drawings will be submitted electronically. If drawing approval consists of multiple or major changes, delivery time can be affected as well as the price. Drawing period is based on current engineering load and is subject to change without notice. Drawings will be sent via e-mail or provided on disk. Hard copies will require additional cost. Please note that the tolerance of HEATEC drawings is + or – ¼”. Construction of connections to heater should allow for modifications to be made in the field with at least 2 degrees of freedom.
Control voltage is as stated in quotation.
Insulation / tracing / personnel protection of piping and equipment external of heater is not included. This is best done in the field by local contractor to eliminate damage during shipment and to allow checking for leaks prior to start up.
Fusible loop system, testing of refractory / insulation materials, burner / blower testing, spreader bar and slings are not included.
Galvanic isolation barriers and cathodic protection are not included.
Single line drawings are not included. HEATEC performs ladder type diagrams.

Pipe, fittings, bolts, nuts and steel will be purchased from HEATEC's standard vendors. Plate and shapes are A36 carbon steel. Tubes supports are 304 SS. Stud bolts are SA 193 Br B7. Nuts are SA 194.
All purchased items will remain as painted from respective vendor.
Ladders and platforms are not included unless stated in Quotation.
If area is Class I Div 2 then panel is NEMA 4X with "Z" type purging. All other controls are NEMA 7, hermetically sealed, intrinsically safe or they are purged. Motors are TEFC. Equipment will be designed to NEC area as stated in Quotation.
Unless stated otherwise in Quotation, HEATEC takes exception to ISO, BS, NACE, API, GOST, ATEX, CE, IEC, SIL, & CENELEC specifications. HEATEC will assist in complying with these regulations where required but HEATEC cannot be sure the equipment as quoted will comply.
Heatec standard Quality control manual will be used for all welding, NDE, etc. Heatec standard welding procedures will be used for all welding. Heatec weld procedures and welders are ASME approved/certified. The weld procedures are available for Purchaser review only and revisions are not allowed. If Purchaser specifications have requirements other than what is listed on Heatec weld procedures, then Purchaser specific weld procedures can be produced. New procedures will result in a cost adder and will delay the original shipping date provided in the HEATEC Quotation. The increase in cost and length of delay will be dependent on the extent of the specification requirements. NDE of non-pressure vessel welds is not included unless stated in Quotation. Non pressure vessel welds are continuous but are not full penetration.
Flame arrestor, spark arrestor, UPS, noise test, fire & gas detection, outdoor lights, aviation lights, variable speed motors, soot blowers, lancing ports, fireproofing, knockout tank, insulation rings, insulation clips, vapor barriers, explosion door, spare parts, thermal fluid, shell / structural / piping stress analysis test, export custom clearance and vibration tests, start-up and erection assistance are not included. Only the controls listed in the Quotation are provided.
Hazardous area electrical equipment certification is simply a copy of each electrical item certificate. The entire heater does not have this type of approval.
Liquidated damages shall not apply.
HEATEC takes exception to specifications and required documentation referring to any other language other than English.
HEATEC is not responsible for implementing documentation or paying taxes, duties or other charges relating to exporting/importing proposed equipment into any country outside the Continental United States
Seal offs (If required) are to be poured in the field by Purchaser.
Relief valves and vents should be piped to a safe location by Purchaser.
Noise data sheet is provided by the blower manufacturer only
Redundancy is not included.
Thermal fluid by-pass, relief valve by-pass, relief valve isolation and flow control is not included unless specifically stated in the Quotation. By-pass and isolation valves around flow control valves and regulators have not been included.
Shield rows in convection section are not required or included.
SAT / Performance test is not included. Functional test of all components is included.
Skid drip pan, lip and grating have not been included.
Rupture discs are not included on relief valves.
Galvanizing of any materials is not included unless stated in Quotation.
PWHT is not included.
API guidelines are not included unless specifically stated in the body of this proposal

SALES PROPOSAL
SPECIFIC TERMS AND CONDITIONS

PARTIES: - Heatec, Inc. shall be referred to as "**Heatec**" in this Sales Proposal.
- Good Customer shall be referred to as "**Purchaser**" in this Sales Proposal.

PRICING: - The Price is valid for sixty (60) days after date of this Sales Proposal.
- The Prices do not include any sale, use, property value added, duties or other taxes or charges, whether federal, state, local or provincial that may be applicable, which shall be the responsibility of the Purchaser.

TERMS: - Purchaser shall pay the purchase price in progress payments as follows:
Receipt of these progress payments is required before the Equipment will be released for shipment.
20% @ ARO
30% @ Approval Drawing Submittal
30% @ Coil Hydro Test
Balance @ ready to ship
Electronic Transfer required 30 days after invoice receipt
Refundment / security / performance bonds are not included.

PACKING: - The Price includes Heatec's standard packing. If Purchaser requires special packing, the extra cost caused thereby shall be borne by Purchaser.

SHIPPING: - Transportation charges from point of shipment to point of destination shall be arranged for and paid for by the Purchaser, unless a separate freight contract is entered into between the parties.
- Purchaser shall control the type of transportation and routing.
- An anticipated ready for ship date shall be established upon Heatec's receipt of signed Sales Proposal and Heatec's receipt of the down payment.

DELAY: - If Heatec is not released by the Purchaser to order materials for fabrication at the time Purchaser signs this Sales Proposal, Heatec reserves the right to review and adjust the Price.
- In addition, delays in fabrication due to delays in Purchaser's release or other reasons due to Purchaser, will require an adjustment in the anticipated shipment date.

STEEL PRICES ESCALATION NOTE:

Because of price volatility from steel manufacturers, any order will be subject to a review of material costs from the time of the proposal to the time that the material is actually allocated to the order. Any steel material cost changes will be based on the #1 Chicago Heavy Melt which is listed daily in numerous publications such as THE AMERICAN METAL MARKET. The calculation for the cost variation will be the difference between the Chicago #1 Heavy Melt scrap index 8 weeks prior to the date of this quotation and that same index price on the date 8 weeks prior to shipment of the respective order, which roughly corresponds to the steel material order date. That calculation will multiply the total weight of the steel plate, structural steel, and steel pipe of the product provided by the applicable index price variation. The increase, or decrease, in price will be shown as an additional line item on the respective invoice. This is the most appropriate and transparent method to deal with the current unpredictability of the steel market today. Please, contact us if you have any questions concerning this Escalation Note.

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SALES PROPOSAL
GENERAL TERMS AND CONDITIONS OF SALE

1. **GENERAL: As used herein, "Equipment" is the equipment and/or parts identified in this Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Services", if any, are the services identified in the Sales Proposal as expressly agreed to be provided by Heatec to Purchaser. As used herein, the "Software", if any, is the software identified in the Sales Proposal as expressly agreed to be licensed by Heatec to Purchaser. These General Terms and Conditions of Sale (the "Terms") and all other sections of this Sales Proposal are collectively referred to in the Terms as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Heatec and Purchaser with respect to the sale and purchase of the Equipment, the performance of the Services and the license of the Software and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Purchaser's terms and conditions of purchase or purchase order, regardless of whether or when Purchaser submitted such terms and conditions or purchase order. Fulfillment of Purchaser's order does not constitute acceptance of any of Purchaser's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Heatec and Purchaser.

2. **ENGINEERING**: Heatec and Purchaser acknowledge and contemplate that any engineering services for which Heatec is responsible pursuant to this Agreement will be performed by engineers employed by Heatec only to the extent allowed by applicable laws and regulations. Otherwise, such engineering services will be provided by qualified, licensed engineers selected and retained by Heatec at Heatec's expense. Except as otherwise provided herein, Heatec and Purchaser acknowledge and contemplate that upon acceptance of this Agreement by Heatec, Heatec's engineering department or a qualified, licensed engineer selected and retained by Heatec at Heatec's expense will perform whatever engineering analysis and design is necessary to fulfill its obligations under this Agreement, and will prepare whatever plant layouts, drawings, and design specifications are necessary in Heatec's discretion to facilitate the performance of the Equipment in accordance with this Agreement. Heatec and Purchaser further acknowledge and contemplate that this engineering process may result in modifications or changes which may include, but are not limited to: modifications in conveyor lengths, sizes, speeds, angles, or positions; changes in motor sizes; changes in Equipment or plant configuration; and modifications or parts lists. No such modifications or changes shall constitute a breach of contract by Heatec.

3. **DRAWINGS**: Heatec will furnish Purchaser with necessary drawings and instruction for Purchaser's erection of the Equipment. Heatec will not be held responsible for design and/or installation of footings and/or other items necessary for installing the Equipment unless otherwise stated herein.

4. **DIFFERING SITE CONDITIONS**: If, in the performance of this Agreement, subsurface or latent conditions at the site are found to be materially different from those indicated by geotechnical reports provided by Purchaser, or unknown conditions of an unusual nature are disclosed differing materially from those ordinarily encountered by Heatec, then such conditions may result in adjustments to the Price, anticipated dates for delivery/shipment, and other contractual obligations. No such adjustments shall constitute a breach of contract by Heatec.

5. **CONFIDENTIALITY**: All non-public, confidential or proprietary information of Heatec, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, purchaser lists, pricing, discounts or rebates, disclosed by Heatec to Purchaser, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Purchaser as confidential and may not be disclosed to any third party or copied by Purchaser unless authorized in advance by Heatec in writing. Upon Heatec's request, Purchaser shall return all documents and other materials received from Heatec. Heatec shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Purchaser can show was known to Purchaser at the time of disclosure; or (c) Purchaser can show was rightfully obtained by Purchaser on a non-confidential basis from a third party. Purchaser's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. **WARRANTY**:
   a. **Heatec warrants that upon shipment from Heatec's site and continuing for a period of** eighteen (18) months after shipment of such Equipment to Purchaser or twelve (12) months after startup, whichever occurs first (the **"Equipment Warranty Period"**), that the Heatec manufactured Equipment will be free of defects in design, material and workmanship, provided any operation of the Equipment by Purchaser has been in accordance with generally approved practice as instructed by Heatec service personnel or set forth in Heatec service instructions, if any, and provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Equipment Warranty Period. Heatec shall repair, or at its option replace FCA point of shipment, any defective Equipment or parts covered by the warranty. The right to have defective Equipment repaired or replaced shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Equipment warranty. Labor for defective Equipment repair will be paid by Purchaser under a formula determined by Heatec. For helical coils found in Heatec's heaters, the Equipment Warranty Period for the helical coils is three (3) years. Equipment which is repaired or replaced shall carry a warranty equal to the unexpired portion of the Equipment Warranty Period. Heatec warrants to Purchaser that the Equipment will perform at its rated capacity as indicated on the Sales Proposal when properly installed, connected, and correctly operated and maintained. Where the Equipment is merely a part of a whole system, Heatec can only accept responsibility for performance of the Equipment furnished by it. The performance of the Equipment covered in this Agreement cannot be exactly predicted for every operating condition. In consequence, any predicted performance data submitted is intended to show probable operating results which may be closely approximated, but which cannot be guaranteed.

   b. Heatec makes no warranties or guarantees with respect to Equipment not manufactured by Heatec, including but not limited to diesel engines, motors, motor starters, pumps, mixers, mills, scales, speed reducers, and other assemblies, valves, pressure regulators, solenoids, electronic drives, pressure differential switches, temperature sensing switches, flame scanners, gauge boards, modulating actuators, electronic displays, pressure transmitters, radar sensors, other electronic controls and instrumentation and other parts and accessories. Liners, castings, furnace refractories, and refractory materials are subject to wide variations of destructive service, are also not covered by the Equipment warranty and are a maintenance responsibility of Purchaser from the beginning of operation. Heatec will pass through to Purchaser any warranties and limitations provided by the original manufacturer of parts used in the Equipment manufactured by Heatec, but Heatec does not provide any warranty as to such items.

c. Heatec warrants that the Services performed hereunder shall be free from defects in workmanship for a period of thirty (30) days from the date of performance (the **"Service Warranty Period"**). Heatec undertakes at its cost to reperform defective Services covered by the warranty, provided that Purchaser notifies Heatec in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Purchaser's sole and exclusive remedy for breach of this limited Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

d. No warranty shall apply to Equipment which has been repaired or altered by others so as, in Heatec's judgment, to adversely affect the same or which shall have been subject to negligence, accident, abuse or improper care, installation, maintenance, storage or other than normal use or service, during or after shipment. No warranty shall apply to any used Equipment or for ordinary wear and tear, or ordinary corrosion or erosion. No warranty shall apply to any Equipment adversely affected by being used with any machinery, part or accessory not manufactured or authorized by Heatec. No warranty shall apply to consumables or parts having a life expectancy shorter than the Equipment Warranty Period.

e. Except as expressly set forth in this Sales Proposal, Heatec does not warrant or represent that any Equipment furnished by it meets any state or local safety, environmental or electrical regulations. Heatec is wholly discharged from all liability under this warranty in the event that Purchaser fails to pay for the Equipment or Services in accordance with the applicable purchase terms. This Equipment warranty extends only to the first end-user and is not transferable. This warranty may not be modified except pursuant to a written agreement signed by Heatec.

f. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 6 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY HEATEC TO PURCHASER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (EXCEPT WARRANTY OF TITLE), INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

7. **LIMITATION OF LIABILITY**: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS HEATEC LIABLE TO PURCHASER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY PURCHASER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL HEATEC'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO HEATEC FOR THE EQUIPMENT SOLD HEREUNDER.

8. **SECURITY INTEREST; COST OF RECORDING**: Purchaser hereby conveys and grants to Heatec a purchase money security interest in the Equipment to secure payment by Purchaser of all amounts due hereunder including the Price and such other debts, obligations and liabilities of Purchaser to Heatec which may now exist or hereafter arise, whether absolute or contingent, or primary or secondary, together with all extensions or renewals for the foregoing and all expenses, legal or otherwise (including court costs and reasonable attorney's fees) incurred by Heatec in collecting or endeavoring to collect any or all of the foregoing, in protecting any collateral and in enforcing the Agreement. The Equipment shall remain personal property in all respects notwithstanding the manner of annexation of any of the Equipment to realty. Purchaser agrees to execute any instrument or document considered necessary by Heatec to perfect its security interest in the Equipment, including, but not limited to, financing statements, chattel mortgages, deeds of trust, deeds to secure debt, mortgages or other security instruments. Until default hereunder, Purchaser may have possession of the Equipment and use the same in any lawful manner not inconsistent with this Proposal or with any policy of insurance thereon. Purchaser will pay the costs and taxes due for recording and filing any Financing, Continuation or Termination Statements with respect to Heatec's security interest in the Equipment or in connection with any of the other security documents referred to above.

9. **EQUIPMENT NOT TO BE REMOVED**: As long as the security interest in the Equipment is retained by Heatec, the Equipment shall not be removed from the erection site and Purchaser shall not permit, voluntarily or involuntarily, the Equipment or any part of it to be sold, transferred, encumbered, attached, seized or removed in any manner whatsoever.

10. **DEFAULT**: Upon default by Purchaser in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Heatec shall thereupon be immediately due and payable and Heatec shall have the rights and remedies contained herein and the rights and remedies of a secured party under the Uniform Commercial Code of the State of Tennessee or under the laws of any other jurisdiction as a court of competent jurisdiction shall determine to be applicable. In the event of Purchaser's default, the following provisions shall apply: (a) Purchaser shall, upon request of Heatec, disassemble the Equipment and make it available to Heatec at a place designated by Heatec; (b) Heatec may enter Purchaser's premises where any part of the Equipment is located, and take possession of and remove all or any portion of the Equipment for purposes of disposition pursuant hereto; (c) Purchaser agrees that sales for cash or on credit to a wholesaler, retailer, or user or property of the type subject to this Agreement or at public auction or private sale are all commercially reasonable; (d) Heatec shall give Purchaser notice of the time and place of any sale of any of the Equipment or of the time after which any private sale or any other intended disposition thereof is to be made by notice, postage prepaid and addressed to Purchaser at the latest address of Purchaser appearing on the records of Heatec at least seven (7) days before the time of the sale or other disposition, which provisions for notice Purchaser and Heatec agree are reasonable; (e) any proceeds of any disposition of any of the Equipment may be first applied by Heatec to the payment of expenses in connection with exercising its rights and remedies hereunder, including reasonable attorney's fees and legal expenses, and any balance of such proceeds may be applied as Heatec may elect in its sole discretion; (f) if the sale or other disposition of the Equipment fails to satisfy in full obligations of Purchaser secured by this Agreement, and the reasonable expenses of retaking, holding, preparing for sale, selling and the like, including reasonable attorney's fees and legal expenses incurred by Heatec in connection with this Agreement or the obligation it secures, Purchaser shall be liable for any deficiency.

11. **PERMITS AND APPROVAL OF PLANS**: Purchaser assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Purchaser's expense.

12. PERMIT CONTINGENCY: If the purchase of Equipment under this Agreement is contingent on Purchaser's receipt of one or more permits or other governmental approvals, then the Price set forth in this Agreement will not be binding on Heatec. Once all contingencies have been fulfilled or are waived, the Price will be determined by Heatec taking into account any increase in Heatec's cost of purchased components and/or raw materials, among other factors.

13. COMPLIANCE WITH APPLICABLE LAWS: Purchaser assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

14. PATENTS: In the event that any of the Equipment specified in this Agreement is based upon designs of or furnished by Purchaser, Purchaser shall indemnify Heatec for any loss or expense incurred by it by reason of any claim for infringement of patents.

15. SHIPMENT:

a. If Purchaser is in default of any of its obligations under this Agreement, Heatec may, at its election, withhold any further performance of its obligations and duties under this Agreement until such time as such default has been cured by Purchaser, in which event the anticipated date of shipment as set forth herein shall be adjusted accordingly. Heatec shall not be liable or responsible for, nor shall the Price be reduced by any amount because of any matters beyond the control of Heatec which delay or postpone the anticipated date set forth above for the shipment of the Equipment, such matters including, but not limited to, warlike acts, civil disorder, governmental restriction, acts of God, prior sale, acceptance of United States governmental contracts, strike, lockout, accidents, freight embargo, fire, flood, inability of Heatec to obtain necessary materials, supplies, labor or transportation, pandemic, or any unforeseen water, soil or rock conditions.

b. A detailed shipping list will accompany the bill of lading and Purchaser agrees to check the Equipment as it is unloaded and any claim for shortage against Heatec will be made in writing within twenty-four (24) hours of time of unloading, to be followed by an affidavit (if required) from the person in charge of the unloading. Claims for loss or damage in transit will be made on the carrier by Purchaser.

c. Except to the extent otherwise provided herein, Purchaser has full responsibility for erection and installation of the Equipment.

d. Delivery period is based on current manufacturing load and is subject to change without notice. Long lead items will need to be ordered prior to approvals in order to meet the quoted delivery date. If any of these items are changed during the approval process, charges may result for restocking.

16. LATE CHARGES AND ATTORNEY'S FEES: Purchaser agrees that in the event any amount payable by Purchaser to Heatec remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Heatec and Purchaser is placed in the hands of an attorney for collection, or is collected by and through an attorney, Purchaser will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.

17. POSTPONED DELIVERY (INCLUDING SHIPPING DELAY): If, through no fault of Heatec, delivery or shipment is delayed or postponed (including deferral of shipment requested by Purchaser), Purchaser shall pay to Heatec any additional costs, including plant Equipment storage, handling, and insurance, incurred by Heatec arising from such delay, deferral, or postponement. Such a delay, postponement or deferral is considered “offer to ship” or “shipment” for all purposes, including invoicing, payment and transfer of title. Therefore, the balance remaining unpaid on the Price shall become due and payable immediately. Purchaser shall bear the risk of loss of or damage to the Equipment during storage and thereafter. If, as a result of the delay, postponement or deferral, the Equipment requires repainting, all costs associated with repainting shall be paid by the Purchaser. Should Purchaser delay/postpone/defer shipment, Purchaser and Heatec will complete the attached “Postponed Delivery/Shipping Delay/Deferral Notice”.

18. EQUIPMENT CERTIFICATION: Once certification and fabrication has been completed on any Equipment, if state certification specifications change or unit(s) are to be shipped to a location other than that for which the certification was acquired, the cost of any recertification and/or modifications required to be done on the Equipment shall be paid by Purchaser.

19. LIMITATION OF PROPOSAL: The Price and terms quoted in this Sales Proposal are subject to formal acceptance (i.e. signature on this Sales Proposal) without change by Purchaser within a period 30 days from the date hereof, except that Heatec shall have the right to withdraw its Sales Proposal at any time before formal acceptance by Purchaser.

20. EXECUTION OF CONTRACT: This Sales Proposal is merely the solicitation of an order and is not an offer from Heatec to Purchaser (even though executed on behalf of Heatec under "RESPECTFULLY SUBMITTED,") and does not obligate Heatec in any manner whatsoever until this Agreement is both executed below on behalf of Purchaser as an order made to Heatec as well as executed below on behalf of Heatec as an acceptance of such order from Purchaser, at which time this Agreement shall become a binding contract between Heatec and Purchaser. Once this Agreement has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Heatec, which may be withheld in the sole discretion of Heatec. In the event Purchaser elects to cancel any order, or a portion of thereof, Heatec shall proportionally be paid a percentage of the price of the cancelled order. This portion will be a minimum of ten percent (10%) of the total P.O. value, or will be a percentage relative to the completed portion of the order, whichever is greater. This proportional percentage shall reflect the amount of materials used, purchased materials, and/or work performed prior to the cancellation notice, plus any charges which Heatec can demonstrate resulted from the cancellation including, but not limited to, storage fees, cancellation or restocking charges from sub-vendors, plus the cost of any non-returnable items. Non-returnable items become the property of Purchaser and are delivered EXW Chattanooga-TN or sub-vendor location.

21. SEVERABILITY: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable and enforced in its modified form.

22. ASSIGNMENT: Purchaser shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Heatec. Any purported assignment or delegation in violation of this Paragraph 22 is null and void. No assignment or delegation relieves Purchaser of any of its obligations under this Agreement.

23. LAW CONTROLLING: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law). The parties agree that the United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement, or the transactions contemplated thereby.

24. DISPUTE RESOLUTION: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a "**Dispute**"), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**

25. TAXES: Prices quoted herein do not include any Federal, State or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Heatec is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Heatec upon demand. If Purchaser holds resale tax permits and the material described herein is for resale, such information shall be shown by Purchaser.

26. BACK-CHARGES AND ALLOWANCES: Heatec shall not be called upon to make any allowance for material, labor, repairs or alterations made for its account unless authorized by Heatec in writing.

27. INSPECTION AND ACCEPTANCE PERIOD: Purchaser agrees to inspect the Equipment immediately after delivery to the site, but in no event later than five (5) calendar days after such delivery (the "**Acceptance Period**"). Any defect discovered during the Acceptance period is subject to the procedures and remedies set forth in Paragraph 6 (Warranty).

28. RESPONSIBILITY OF PURCHASER FOR OPERATION OF EQUIPMENT: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Purchaser. Any Services by Heatec's representatives shall be given solely in a consulting or advisory capacity and shall not release Purchaser in any manner whatsoever from its responsibility for operating the Equipment.

29. INDEMNIFICATION: Purchaser agrees to indemnify and hold harmless Heatec, its affiliates and their respective employees from and against any and all liabilities, damages, obligations and claims (including, without limitation, court costs and reasonable attorney's fees) arising from or with respect to the operation of the Equipment. Without limiting the generality of the preceding sentence, the parties acknowledge and agree that if a claim initially was brought against Heatec for defective manufacture, design or the like and was finally determined by a court of competent jurisdiction or otherwise settled (such settlement being with Purchaser's consent) on a basis relating to the negligent operation or use of the Equipment, Heatec will be entitled to indemnification pursuant to the provisions of the preceding sentence.

30. TITLE AND RISK OF LOSS: Title to the Equipment shall pass to Purchaser upon shipment or offer to ship should Purchaser delay shipment. The risk of loss or damage to the Equipment shall pass to Purchaser upon delivery of the Equipment (FCA point of shipment Heatec site, Incoterms 2020), unless transferred earlier in accordance with Paragraph 17 (Postponed Delivery (Including Shipping Delay)).

31. NOTICES: Each party shall deliver all notices and other communications under this Agreement (each, a "**Notic**e") in writing and addressed to the other party at the addresses set forth on the first page of this Sales Proposal. Each party shall deliver all Notices by personal delivery or through deposit in the mail, certified or registered (in each case, return receipt requested, postage prepaid) or through a nationally recognized overnight courier (with all fees prepaid). If Notice should be given immediately or promptly, then in addition to furnishing a copy of the Notice in the manner aforesaid, a copy shall be sent via e-mail (with confirmation of transmission). A Notice is effective only (a) upon receipt by the receiving party and (b) if the party giving the Notice has complied with the requirements of this Paragraph 31, unless the receiving party has waived its requirements in writing. A copy of all notices to Heatec shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

32. INSURANCE: Until the Equipment is accepted and the price is paid in full, Purchaser shall provide and maintain insurance for the full replacement value of the Equipment against customary casualties and risks, including fire and explosion, and liability insurance for accidents or injuries to the public or to employees, in the names of Heatec and Purchaser, as their interests may appear, and in amounts satisfactory to Heatec. If Purchaser fails to provide such insurance, Heatec may provide it and the cost thereof shall be added to the contract price. All loss resulting from failure to affect such insurance shall be the responsibility of Purchaser.

33. CHANGE ORDERS: Either Heatec or Purchaser may propose a change in the specifications for the Equipment or Services. Should any change proposed by Heatec or Purchaser cause an increase or decrease in the cost of or time required for performance of this Agreement or otherwise affect any provision of this Agreement, an adjustment shall be made to the corresponding provision(s) of this Agreement in accordance with this Paragraph 33. Within ten (10) business days after receipt of Purchaser's proposal for a change, or with any proposal for a change by Heatec, Heatec shall prepare and submit to Purchaser a change order in the form attached (the "Change Order"), which shall contain (i) a description of the change, (ii) the net increase or decrease in the Price, (iii) the effect of the change on the estimated delivery schedule and (iv) a description of changes to any other provisions of this Agreement. Purchaser shall accept or reject the Change Order within five (5) business days. No change shall be effective unless evidenced by a written Change Order issued by Heatec and signed by authorized representatives of Purchaser and Heatec; provided that if Purchaser does not notify Heatec of Purchaser's acceptance or rejection of any Change Order, then the Change Order shall be deemed accepted by Purchaser and the parties shall proceed on the basis of the changes set forth therein. If Purchaser rejects a Change Order, this Agreement shall continue to remain in full force and effect notwithstanding the parties' failure to agree to such Change Order, and the parties shall continue to work reasonably and in good faith (but shall not be obligated) to reach a mutually acceptable agreement with respect to such proposed changes; provided that Heatec shall not be required to proceed with any such proposed change until the parties have mutually agreed on an appropriate Change Order. In the event that Heatec and Purchaser cannot agree to a change in Price, the change will be priced on a time and materials basis, and Heatec's charges shall be equal to direct costs incurred by Heatec for labor, equipment and materials plus 27% for overhead and profit as full compensation for such change. In the event that Heatec and Purchaser cannot agree to any other changes, such dispute will be resolved in accordance with the dispute resolution procedures in Paragraph 24.

SALES PROPOSAL SOFTWARE TERMS OF USE (ONLY APPLICABLE IN CASE OF PLC)

These Software Terms of Use ("**Terms of Use**") govern the use of the Software, including all user manuals, technical manuals and any other materials in printed, electronic or other form, that describe the Software or its use (collectively, "**Documentation**") that is or has been furnished by Heatec to Purchaser for use in connection with the Equipment.

1. License Grant. Subject to Purchaser's strict compliance with these Terms of Use and pursuant to and conditioned upon Purchaser's compliance with all of the terms of the Agreement, including, but not limited to its payment terms, Heatec hereby grants to Purchaser a non-exclusive, non-transferable, non-sublicensable, limited license to use the Software solely in connection with its operation of the Equipment pursuant to the instructions contained in the Documentation. The foregoing license will terminate immediately on the earlier to occur of: (a) Purchaser's removal, disposal or transfer of the Equipment; or (b) Purchaser's failure to comply with these Terms of Use.

2. Use Restrictions. Purchaser shall not, directly or indirectly: (a) use the Software or Documentation except as set forth in Paragraph 1 of these Terms of Use; (b) copy the Software or Documentation, in whole or in part; (c) modify, translate, adapt or otherwise create derivative works of the Software or any part thereof; (d) combine the Software or any part thereof with, or incorporate the Software or any part thereof in, any other software programs; (e) reverse engineer, disassemble, decompile, decode or otherwise attempt to derive or gain access to the source code of the Software or any part thereof; (f) remove, delete, alter or obscure any trademarks or any copyright or other intellectual property or proprietary rights notices included on or in the Software or Documentation; (g) transfer or otherwise provide any access to or use of the Equipment, Documents or the Software or any features or functionality of the Software, for any reason, to any other person or entity; (h) use or attempt to use the Software or Documentation in, or in association with, components, systems or equipment other than the Equipment; (i) use or attempt to use the Software or Documentation in violation of any law, regulation or rule; or (j) use or attempt to use the Software or Documentation for purposes of competitive analysis of the Software, the development of a competing software product or service or any other purpose that is to Heatec's commercial disadvantage.

3. Compliance Measures. The Software contains technological copy protection or other security features designed to prevent unauthorized use of the Software, including features to protect against use of the Software in a manner: (a) that is beyond the scope of the license granted to Purchaser hereby; or (b) that is prohibited under Paragraph 2 of these Terms of Use. Purchaser agrees that it shall not, and shall not attempt to, remove, disable, circumvent or otherwise create or implement any workaround to, any such copy protection or security features.

4. Collection and Use of Information. Heatec may, directly or indirectly through the services of other affiliated parties, collect and store information regarding use of the Software and the Equipment. Purchaser agrees that Heatec may use such information for any purpose that it deems fit. Heatec assumes no duty to review, access, use or retain the information collected. Purchaser consents to the collection, transmission and sharing of the information described above, and authorizes Heatec, its affiliates, subsidiaries and distributors to gather, process and use, without limitation, the information developed or collected by or in connection with the Software. This may include sharing of such information with select third parties and business partners.

5. Remote Access Services. A representative of Heatec may provide technical support through the Software ("**Remote Access Services**"). Any Remote Access Services are provided at Purchaser's sole risk. The ability for Heatec to remotely access the Software and Equipment significantly enhances Heatec's ability to resolve Purchaser's technical problems quickly. Purchaser understands that the provision of Remote Access Services requires Purchaser to provide Heatec's technical support personnel with access to and control of the Software and Equipment. Heatec may, but has no obligation to, troubleshoot, evaluate, run programs or install/uninstall Software, reconfigure and/or otherwise perform service or technical support work on the Software and Equipment, either directly or through an internal network. Heatec may make any changes that it determines are necessary to increase the performance of the Software or Equipment and/or to alleviate the problem at hand or any other problem discovered during the course of performing the Remote Access Services. Purchaser shall indemnify and hold harmless Heatec against all claims, actions, proceedings, costs, damages, and liabilities, including attorneys' fees and litigation and related costs and expenses, incurred by Heatec for injuries to person, property or otherwise resulting from any cause whatsoever arising out of, connected with, or resulting from any Remote Access Services performed by Heatec.

6. Intellectual Property Rights. Purchaser acknowledges that: (a) Purchaser does not acquire any ownership interest in the Software, or any rights to the Software other than the right to use the Software as provided herein; (b) Heatec reserves and shall retain its entire right, title and interest in and to the Software and all intellectual property rights arising out of or relating to the Software, subject to the license expressly granted to Purchaser by this Agreement; and (c) Purchaser shall use commercially reasonable efforts to safeguard the Software and the media on which it is stored from infringement, misappropriation, theft, misuse or unauthorized access.

7. Limited Warranties. Heatec warrants that, for a period of one year following the date of the purchase of the Equipment from Heatec: (a) any media on which the Software is provided will be free of material damage and defects in materials and workmanship under normal use; and (b) the Software will substantially contain the functionality described in the Documentation, and when properly operated in accordance with the Documentation, will substantially perform as described therein. The warranties set out in this Paragraph 7 will not apply and will become null and void if Purchaser materially breaches any provision of this Agreement, or if Purchaser or any other person provided access by Purchaser to the Software or the media on which it is provided, whether or not in violation of this Agreement: (a) uses the Software in a manner other than as described in the Documentation; or (b) damages the Software or the media on which it is provided, including by means of abnormal physical or electrical stress.

8. **Purchaser's Exclusive Remedy.** If, during the warranty period set out in Paragraph 7, the Software fails to perform substantially in accordance with the Documentation, and such failure is not excluded from warranty pursuant to Paragraph 7, Heatec will, subject to Purchaser's promptly notifying Heatec in writing of such failure, but in all events during the warranty period set out in Paragraph 7, at its sole option, either repair or replace the Software, provided that Purchaser provides Heatec with all information Heatec reasonably requests to resolve the reported failure, including sufficient information to enable Heatec to recreate such failure. Upon such repair or replacement of the Software, the warranty will continue to run from the date of the purchase of the Equipment from Heatec, and not from Purchaser's receipt of the repair or replacement. The remedies set forth in this Paragraph 8 are Purchaser's sole and exclusive remedies and Heatec's sole and exclusive liability under the limited warranties described in Paragraph 7.

9. **Disclaimer of Warranties; Limitations of Liability.**

(A) EXCEPT FOR THE LIMITED WARRANTY SET FORTH IN PARAGRAPH 7, THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES ARE PROVIDED TO LICENSEE "AS IS" AND WITH ALL FAULTS AND DEFECTS WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, LICENSOR, ON ITS OWN BEHALF AND ON BEHALF OF ITS AFFILIATES, EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE SOFTWARE AND DOCUMENTATION AND ANY REMOTE ACCESS SERVICES, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT, AND WARRANTIES THAT MAY ARISE OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OR TRADE PRACTICE. WITHOUT LIMITING THE FOREGOING, LICENSOR PROVIDES NO WARRANTY OR UNDERTAKING, AND MAKES NO REPRESENTATION OF ANY KIND THAT THE SOFTWARE WILL MEET LICENSEE'S REQUIREMENTS, ACHIEVE ANY INTENDED RESULTS, BE COMPATIBLE OR WORK WITH ANY OTHER SOFTWARE, APPLICATIONS, SYSTEMS OR SERVICES, OPERATE WITHOUT INTERRUPTION, MEET ANY PERFORMANCE OR RELIABILITY STANDARDS OR BE ERROR FREE OR THAT ANY ERRORS OR DEFECTS CAN OR WILL BE CORRECTED.

(B) TO THE FULLEST EXTENT PERMITTED UNDER APPLICABLE LAW, IN NO EVENT WILL LICENSOR OR ITS AFFILIATES BE LIABLE TO LICENSEE OR ANY THIRD PARTY FOR ANY USE, INTERRUPTION, DELAY OR INABILITY TO USE THE SOFTWARE OR THE EQUIPMENT, LOST REVENUES OR PROFITS, DELAYS, INTERRUPTION OR LOSS OF SERVICES, BUSINESS OR GOODWILL, LOSS OR CORRUPTION OF DATA, LOSS RESULTING FROM EQUIPMENT FAILURE, MALFUNCTION OR SHUTDOWN, LOSS RESULTING FROM THE PERFORMANCE OF, OR FAILURE TO PERFORM, ANY REMOTE ACCESS SERVICES, FAILURE TO ACCURATELY TRANSFER, READ OR TRANSMIT INFORMATION, FAILURE TO UPDATE OR PROVIDE CORRECT INFORMATION, SYSTEM INCOMPATIBILITY OR PROVISION OF INCORRECT COMPATIBILITY INFORMATION OR BREACHES IN SYSTEM SECURITY, OR FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY, SPECIAL OR PUNITIVE DAMAGES, WHETHER ARISING OUT OF OR IN CONNECTION WITH THESE TERMS OF USE OR THE AGREEMENT, BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT LICENSOR WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

(C) THE LIMITATIONS SET OUT IN THIS PARAGRAPH 9 SHALL APPLY EVEN IF LICENSEE'S REMEDIES UNDER THESE TERMS OF USE FAIL OF THEIR ESSENTIAL PURPOSE AND SHALL SURVIVE ANY TERMINATION OF THESE TERMS OF USE.

10. **Export Regulation.** The Software may be subject to U.S. export control laws, including the U.S. Export Administration Act and its associated regulations. Purchaser agrees that it will not, directly or indirectly, export, re-export or release the Software to, or make the Software or Documentation accessible from, any jurisdiction or country to which export, re-export or release is prohibited by law, rule or regulation. Purchaser agrees to comply with all applicable federal laws, regulations and rules, and complete all required undertakings (including obtaining any necessary export license or other governmental approval), prior to exporting, re-exporting, releasing or otherwise making the Software available outside the United States.

11. **Interpretation.** These Terms of Use are incorporated into and are a part of the Agreement. These Terms of Use apply to updates, supplements, add-on components or internet-based service components of the Software that Heatec may provide to Purchaser or make available to Purchaser after the date Purchaser obtains its initial copy of the Software, unless they are accompanied by separate terms. The headings in these Terms of Use are for reference only and do not affect the interpretation of these Terms of Use or the Agreement.

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SERVICE DEPARTMENT REQUEST FOR PAID SERVICE
2024 Paid Service Agreement

Time Frame of Service Work	North America Work Rate	Daily Overtime Rate > 8 Hours	International Work Rate	International Overtime Rate	Minimum Charges
Monday – Friday	$183.75/ Hour	$275.63/Hour	$220.50/ Hour	$299.25/ Hour	8 Hour Minimum
Saturday & Sunday	$275.63/Hour	$275.63/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum
Holidays	$367.50/Hour	$367.50/Hour	$299.25/ Hour	$299.25/ Hour	8 Hour Minimum

Travel Charges	North America Travel Rates	International Travel Rates	
Monday-Sunday	$183.75/Hour	$220.50/ Hour	Plus mileage at $0.68/mile
Holidays	$367.50/Hour	$367.50/ Hour	Plus mileage at $0.68/mile

Expense Charges	Expense Rates	
Hotel	$90.00 per day or actual cost, whichever is greater	High-Cost Area rates may apply
Meals	$46.00 per day or actual cost, whichever is greater	
Airfare	Actual Cost	
Auto Rental / Fuel	Actual Cost	
Incidentals	Actual Cost	

Terms

- This form must be returned with a purchase order number before a technician will be dispatched
- If a purchase order is issued it must incorporate this Request for Paid Service, including the attached terms and conditions
- Weekend rates are charged when the technician is mobilized but does not go to the site
- We reserve the right to request payment in advance
- All invoices will be sent to you at the end of the month following the completion of your project
- The General Terms and Conditions Field Services and Installation – North America and International, attached hereto, apply to the work performed hereunder.

Date	Customer Name Completing Request (Print)
Company Name	Astec Job Number / Sales Order Number
Telephone Number	E-mail Address
Plant Address	City, State, and ZIP
Purchase Order Number	Purchase Order Number Authorization (signature)
Trip Purpose	

GENERAL TERMS AND CONDITIONS
FIELD SERVICES AND INSTALLATION – NORTH AMERICA AND INTERNATIONAL

1. GENERAL: As used herein, "Provider" is Heatec, Inc. and **"Customer"** is the person or entity identified as the customer in Provider's order acknowledgement or quotation (the **"Order"**). **As used herein, the "Services" are the services identified in the Order, as expressly agreed to be provided by Provider to Customer. These General Terms and Conditions for Field Services and Installation (the "Terms") and all other sections of the Order are collectively referred to as the "Agreement".** The Agreement sets forth the entire, exclusive and complete agreement of Provider and Customer with respect to the performance of the Services and supersedes any prior or contemporaneous written or oral agreement, understanding and communications and any course of dealing, usage of trade or course of performance. This Agreement prevails over any of Customer's terms and conditions of purchase or purchase order, regardless of whether or when Customer submitted such terms and conditions or purchase order. Fulfillment of Customer's order does not constitute acceptance of any of Customer's terms and conditions and does not serve to modify or amend these terms and conditions. No waiver or modification of this Agreement shall be effective unless in writing and signed by both Provider and Customer.

2. PAYMENT; TAXES: In consideration of the provision of the Services by Provider, Customer shall pay the fees set forth in the Order. Customer shall make all payments in U.S. dollars. Customer shall reimburse Provider for all additional costs and expenses incurred in accordance with the performance of the Services, within thirty (30) days of receipt by Customer of any invoice from Provider accompanied by receipts and reasonable supporting documentation. Customer shall be responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state or local governmental entity on any amounts payable by Customer. If any amounts due are placed in the hands of any attorney for collection, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorneys' fees.

3. CHANGES: If either party wishes to change the scope or performance of the Services, it shall submit details of the requested change to the other party in writing. Provider shall, within a reasonable time after such request, provide a written estimate to Customer of (i) the likely time required to implement the change; (ii) any necessary variations to the fees and other charges for the Services arising from the change; and (iii) the likely effect of the change on the Services. Promptly after receipt of the written estimate, the parties shall negotiate and agree in writing on the terms of such change (a "Change Order"). Neither party shall be bound by any Change Order unless mutually agreed upon in writing.

4. PERFORMANCE: Provider shall use reasonable efforts to meet any performance dates specified in the Order, but any such dates shall be estimates only. Provider's performance of the Services is subject to Customer's performance of the obligations identified in the Order as "Customer Responsibility", including without limitation obtaining or providing necessary approvals, information, licenses, permits and instructions on a timely basis. Provider shall not be responsible for any delay or failure to perform the Services due to causes beyond its control, including, but not limited to, accidents, casualty, strikes or other labor disputes, acts of God, delays in transportation, government regulations, shortages, strike, lockout, pandemic, and inability of Provider to obtain necessary materials, supplies, labor or transportation.

5. CONFIDENTIALITY: All non-public, confidential or proprietary information of Provider, including but not limited to specifications, samples, patterns, designs, plans, drawings, documents, data, business operations, Customer lists, pricing, discounts or rebates, disclosed by Provider to Customer, whether disclosed orally or disclosed or accessed in written, electronic or other form or media, and whether or not marked, designated or otherwise identified as "confidential" in connection with this Agreement shall be treated by Customer as confidential and may not be disclosed to any third party or copied by Customer unless authorized in advance by Provider in writing. Upon Provider's request, Customer shall return all documents and other materials received from Provider. Provider shall be entitled to seek injunctive relief for any violation of this Paragraph 5. This Paragraph 5 does not apply to information that is: (a) in the public domain; (b) Customer can show was known to Customer at the time of disclosure; or (c) Customer can show was rightfully obtained Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA by Customer on a non-confidential basis from a third party. Customer's confidentiality, non-disclosure and non-use obligations herein shall remain in force for the maximum term permitted by applicable law.

6. INTELLECTUAL PROPERTY: All intellectual property rights, including copyrights, patents, trademarks, service marks, trade secrets, know-how and other confidential information and all other rights in and to all documents, work product and other materials that are delivered to Customer under the Order or prepared by Provider in the course of performing the Services shall be solely owned by Provider. Provider hereby grants Customer a license to use all such intellectual property rights free of additional charge and on a non-exclusive, worldwide, non-transferable, non-sublicensable, fully paid-up, royalty-free and perpetual basis to the extent necessary to enable Customer to make reasonable use of the Services.

7. WARRANTY:

a. Provider warrants that the Services performed hereunder shall be free from defects in workmanship for a period of ninety (90) days from the completion of the applicable Services (the **"Service Warranty Period"**). Provider undertakes at its cost to reperform defective Services covered by the warranty, provided that Customer notifies Provider in writing as soon as such defect becomes apparent, but in all events during the Service Warranty Period. The right to have defective Services reperformed shall constitute the Customer's sole and exclusive remedy for breach of this Service warranty. Services which are reperformed shall carry a warranty equal to the unexpired portion of the Service Warranty Period.

b. Provider is wholly discharged from all liability under this warranty in the event that Customer fails to pay for the Services in accordance with the Order. This warranty may not be modified except pursuant to a written agreement signed by Provider.

c. THE EXPRESS WARRANTIES AND WARRANTY REMEDIES PROVIDED IN THIS PARAGRAPH 7 ARE THE SOLE AND EXCLUSIVE WARRANTIES AND WARRANTY REMEDIES PROVIDED BY PROVIDER TO CUSTOMER AND ARE PROVIDED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY ORFITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY FROM COURSE OF DEALING OR USAGE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY WAIVED AND DISCLAIMED.

8. LIMITATION OF LIABILITY: NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY CONTAINED IN THIS AGREEMENT, THE PARTIES AGREE THAT IN NO EVENT OR CIRCUMSTANCE IS PROVIDER LIABLE TO CUSTOMER FOR SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, COSTS OR LOSSES OF ANY NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS OR REVENUE, LOSS OF PRODUCTION, LOSS OF USE OR LOSS OF CONTRACTS, COSTS FOR RAW MATERIAL, ENERGY, UTILITY, LABOR OR CAPITAL OR FOR ANY OTHER INDIRECT LOSS; OR FOR CLAIMS RAISED BY CUSTOMER'S CUSTOMERS; AND WHETHER BASED ON BREACH OF CONTRACT OR WARRANTY, TERMINATION, NEGLIGENCE, TORT, STRICT LIABLITY, INDEMNITY AT LAW OR IN EQUITY OR OTHERWISE. IN NO EVENT SHALL PROVIDER'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO PROVIDER FOR THE SERVICES PERFORMED HEREUNDER.

9. DEFAULT: Upon default by Customer in the payment of the Price or any portion thereof when due or in the payment of all or any portion of any other indebtedness secured under this Agreement when due or in the performance of any other term or provision hereof, all unpaid amounts due Provider shall thereupon be immediately due and payable and Provider shall have the rights and remedies contained herein and the rights and remedies as a court of competent jurisdiction shall determine to be applicable.

10. PERMITS AND APPROVAL OF PLANS: Customer assumes all responsibility for securing any necessary governmental approvals of the plans and specifications and any permits required for the installation and operation of the Equipment, all at Customer's expense.

11. COMPLIANCE WITH APPLICABLE LAWS: Customer assumes all responsibility for complying with all federal, state and local statutes, laws, codes, regulations and ordinances in connection with the installation (if not done by Provider) and operation of the Equipment and any other activity related thereto, including, without limitation, all federal, state and local environmental laws and regulations relating to pollution and protection of the environment and the Occupational Safety and Health Act and all rules and regulations promulgated thereunder.

12. LATE CHARGES AND ATTORNEY'S FEES: Customer agrees that in the event any amount payable by Customer to Provider remains unpaid for more than 30 days, a service charge of 1.5% per month (18% per annum) or any portion thereof (or the highest rate of interest allowed by law, whichever is less) shall accrue on such unpaid amount beginning on Heatec, Inc. 5200 Wilson Road Chattanooga, TN 37410, USA the thirty-first (31st) day after such date payment is due. If the indebtedness, including late charges, arising out of this or any other transaction between Provider and Customer is placed in the hands of an attorney for collection, or is collected by and through an attorney, Customer will pay all costs of collection, including without limitation, court costs and reasonable attorney's fees.
13. EXECUTION OF CONTRACT: Once an Order has become a binding contract, it cannot be suspended or cancelled without the prior written consent of Provider, which may be withheld in the sole discretion of Provider. In no event will consent to suspension or cancellation be given without full reimbursement by Customer of all Provider's expenses, damages and losses arising from such cancellation or suspension and incurred through the date of cancellation or suspension, plus reasonable overhead and profit allocation on such amounts.
14. RELATIONSHIP OF THE PARTIES: The relationship of the parties is that of independent contractors. Nothing contained herein shall be construed as creating any agency, partnership, joint venture or other form of joint enterprise, employment, or fiduciary relationship between the parties, and neither party shall have authority to contract for or bind the other party in any manner whatsoever. The method and manner for performance of the Services by Provider shall be under its own control. The parties acknowledge that Provider is not performing the Services as a general contractor.
15. SEVERABILITY: If any provision of this Agreement is found to be legally invalid or unenforceable: (i) the validity and enforceability of the remainder of this Agreement shall not be affected, (ii) such provision shall be deemed modified to the minimum extent necessary to make such provision consistent with applicable law, and (iii) such provision shall be valid, enforceable, and enforced in its modified form.
16. ASSIGNMENT: Customer shall not assign any of its rights or delegate any of its obligations under this Agreement without the prior written consent of Provider. Any purported assignment or delegation in violation of this Paragraph 16 is null and void. No assignment or delegation relieves Customer of any of its obligations under this Agreement.
17. LAW CONTROLLING: This Agreement and all questions regarding the performance of the parties hereunder shall be controlled by the laws of the State of Tennessee (without regard to conflicts of law).
18. DISPUTE RESOLUTION: Any dispute or claim arising out of or relating to this Agreement, or the breach, termination or invalidity thereof, and any related tort, statutory and equitable claims (each a **"Dispute"**), which the parties are not able to settle amicably within 3 months from the first written request for such settlement, shall be brought exclusively in a state or federal court in the State of Tennessee, County of Hamilton. The parties hereby waive any right to challenge such choice of jurisdiction or venue or to seek transfer to another jurisdiction. **THE PARTIES FURTHER KNOWINGLY AND VOLUNTARILY WAIVE ANY RIGHT TO A JURY TRIAL OF THE DISPUTE.**
19. TAXES: Prices quoted herein do not include any Federal, State, Local or Municipal Taxes. If under existing or future law passed by the United States, any state or any municipality, Provider, in its opinion, is required to pay or collect a tax, impost or charge upon the manufacture, sale, use or assembly of the material described herein, the Price shall be increased by the amount of such tax, impost or charge. The amount of such increase is to be paid to Provider upon demand.
20. BACK-CHARGES AND ALLOWANCES: Provider shall not be called upon to make any allowance for material, labor, repairs, or alterations made for its account unless authorized by Provider in writing.
21. RESPONSIBILITY OF CUSTOMER FOR OPERATION OF EQUIPMENT: The operation of the Equipment at all times shall be the sole and exclusive responsibility of Customer. Any Services by Provider's representatives shall not release Customer in any manner whatsoever from its responsibility for operating the Equipment.
22. INDEMNIFICATION: Customer covenants and agrees that it will indemnify and hold harmless Provider, its affiliates and their respective directors, officers, employees and agents from and against any and all claims, actions, demands, damages, costs, expenses, judgments and awards, including without limitation court costs and reasonable attorneys' fees (collectively, "Claims"), including but not limited to any Claims by third parties, arising out of or caused by the acts or omissions of Customer, its directors, officers, employees, agents and/or subcontractors. This indemnity shall survive the execution and performance of the Order.
23. NOTICES: Any notices given between the parties under this Agreement may be given by courier, personal delivery or mail, postage prepaid, or by e-mail. The date of service shall be the date on which the notice is received. A copy of all notices to Provider shall be sent to: Heatec, Inc., 1725 Shepherd Road, Chattanooga, TN 37421, Attn: Legal Counsel.

PURCHASER PLANT SETUP RESPONSIBILITIES (TASKS TO BE COMPLETED PRIOR TO HEATEC'S SERVICE TECH'S ARRIVAL AT PLANT)

1. All equipment set, bolted and completely sealed up.
2. All Process Lines & Hot Oil Lines put together and tested.
3. Fuel lines/Gas lines including all lines for the pilots hooked up and run.
4. All air lines run and hooked up from air compressor to all locations on the plant.
5. All electrical cables 480vac/120vac pulled and hooked up.
6. Main power run and hooked up to main in MCC cabinet.
7. Hot oil on site.

NOTE: Items 1, 2, 3, 4 & 5 are performed by Heatec when plant installation is purchased from Heatec.

September 27, 2024 ASTEC PROPOSAL #: HI 23-15005 Rev 2

SALES PROPOSAL SIGNATURE PAGE

This Agreement is made in Chattanooga, Tennessee.

RESPECTFULLY SUBMITTED
HEATEC, INC.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: ______________________________

ORDER BY PURCHASER
The foregoing proposal is hereby offered as an order by PURCHASER.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: ______________________________

ACCEPTANCE OF ORDER BY HEATEC

The foregoing order is hereby accepted at Chattanooga, Tennessee, as of the date of acceptance.

HEATEC, INC.

Date: ______________________________

By: ________________________________

Name: ______________________________

Title: ______________________________

September 27, 2024 ASTEC PROPOSAL #: HI 23-15005 Rev 2

POSTPONED DELIVERY/SHIPPING DELAY/DEFERRAL NOTICE

Purchaser: ___________________

Seller: Heatec, Inc.

Contract or PO Date: ________________

Contract or PO #: _____________

Delivery: FCA point of shipment Heatec site, Incoterms 2020

Heatec has notified Purchaser that the Equipment (as defined in the Heatec General Terms and Conditions of Sale) will be ready for Purchaser to pick up at Heatec's site on ______________ ____, 20____.

Purchaser hereby requests deferral of shipment of the Equipment until ____________ ___, 20___.

Reason for delay:____.

Pursuant to paragraph 16 of the Heatec General Terms and Conditions of Sale, Purchaser's deferral is considered "offer to ship" or "shipment" for all purposes, including invoicing, payment, and transfer of title. Purchaser bears all risk of loss of or damage to the Equipment during storage and thereafter.

Pursuant to paragraph 29 of the Heatec General Terms and Conditions of Sale, title to the Equipment passes to Purchaser upon offer to ship should Purchaser delay/defer shipment.

____
Customer

____
Customer Signature and Title

____
Date

* *

Heatec Acknowledgments:

Except as otherwise noted above, there have been no written or oral amendments to the Contract. The Equipment is complete in accordance with the Contract, ready for shipment and has been segregated from other Heatec inventory.

___________________________________	____
General Manager Signature	Date
___________________________________	____
Controller Signature	Date
___________________________________	____
Manufacturing Dept Head Signature	Date

ZEECO QUOTATION

CLIENT:	Targa Resources, Inc.
END USER:	Targa Resources, Inc.
ZEECO QUOTE #:	2023-10875FL-01
QUOTE REV #:	0
DATE OF ISSUE:	September 29, 2023
APPLICATION ENGINEER:	Kendall Konrade

ZEECO®

BURNERS | FLARES | THERMAL OXIDIZERS
VAPOR CONTROL | RENTALS | AFTERMARKET

Zeeco; Inc
22151 East 91st Street
Broken Arrow, OK 74014 USA

Tel: +1 918-258-8551
Fax: +1 918-251-5519
kendall_konrade@zeeco.com
zeeco.com

September 29, 2023

Targa Resources, Inc.

Houston, TX

Attention:	Brian Nix Ph: Email:
Subject:	Targa Resources, Inc. Ref.: Zeeco Reference: 2023-10875FL-01 -- Rev. 0

Thank you for your interest in Zeeco, Inc. We look forward to the opportunity to work with you on this project. In response to your above referenced inquiry, we are pleased to provide you with our proposal for the combustion equipment designed specifically for your needs.

Zeeco's flare systems are designed to handle peak releases immediately, with no adverse effects on the flare itself or on the pilots or ignition system. Zeeco's design also offers exceptional reliability and life expectancy as well as provisions for easy maintenance and repair.

Zeeco appreciates the opportunity to propose our products to Targa Resources, Inc.. We are confident that we offer the best flaring equipment in the world at competitive prices. Should you have additional questions or require additional information, please feel free to contact us.

Best Regards,

Kendall Konrade
Flare Application Engineer
(reach me by email at: kendall_konrade@zeeco.com)

CELEBRATING 40 YEARS | EST. 1979

AVAILABLE ATTACHMENTS

Attachment A	**Company Introduction**
Attachment B	**Commercial Proposal**
Attachment C	**Process Conditions**
Attachment D	**Specification Sheets:** • Flare Tip Specification Sheet • Flare Pilot Specification Sheet
Attachment E	**Spare Parts** • Spare Parts for Start-up & Commissioning • Spare Parts for Two Years Operation
Attachment F	**Clarifications and Exceptions**
Attachment G	**Start-up & Maintenance Services**
Attachment H	**Radiation Profile**
Attachment I	**Typical GA Drawing**
Attachment J	**ISO &ASME Sec. VIII Code Certificates**
Attachment K	**Sample Inspection and Test Plan**
Attachment L	**Zeeco Rental Brochure**

Attachment A

Company Introduction

COMPANY INTRODUCTION

Since its inception in the early 1980's, Zeeco has been committed to providing quality combustion equipment and services for the petroleum, chemical, petrochemical, pharmaceutical and food processing industries worldwide. To fulfill this commitment, Zeeco built a modern facility on 193 acres just outside of Tulsa, Oklahoma. This complex is the home for Zeeco corporate headquarters, an ASME code manufacturing facility and a comprehensive combustion research and testing center.

Zeeco management knew that a world-class facility alone would not be enough to earn customer recognition as a leader in combustion technology. They knew that they also needed the talents of knowledgeable and innovative people. By recruiting a team of engineers with years of hands-on experience in the design and operation of complex combustion and pollution control equipment, Zeeco has achieved its goal of not merely matching the performance of equipment already on the market but creating the next generation of burners, flares, incinerators and combustion systems.

Zeeco feels strongly that its people and its commitment to quality products and services, set it apart from the competition. Zeeco is flexible enough to provide personalized attention to each customer whether the customer requires a small replacement part or multi-million dollar system. With its sound financial strength, modern facility and creative, knowledgeable staff, Zeeco is your logical choice for combustion equipment both now and in the future.

Having manufactured and installed many of the world's largest and most complex flare systems, Zeeco has consistently shown the ability to satisfy any customer requirement. In addition to standard utility flares, Zeeco offers a comprehensive selection of smokeless flares for new installations and retrofits including steam-assisted, air-assisted, gas-assisted, high-pressure/low-pressure, staged, sonic, ground and enclosed models. Zeeco manufactures flares for numerous applications including refineries, petrochemical and gas plants, offshore platforms, pulp and paper mills, landfills and food processing plants.

Zeeco also offers comprehensive engineering services to design, build and erect multi-million dollar flare projects. Zeeco systems include self-supported, guy-supported and derrick-supported flare stacks as well as offshore boom-mounted flares, portable flares and demountable flares.
Zeeco also has the ability to develop specialty flares for custom applications. For example, Zeeco accepted an industry challenge to develop a crude oil flare which could substantially reduce pollution by decreasing the level of smoke and hydrocarbon fallout produced during offshore well testing. The result was the introduction of the ZLF Flare, rated more than 99.99% efficient by independent industry testing firms.

Auxiliary flare system equipment available from Zeeco includes purge reduction devices, liquid seals, knock-out drums and the most reliable pilot ignition systems. Zeeco also refurbishes existing flares and provides spare parts for their flare equipment and that of other flare manufacturers.

Attachment B

Commercial Proposal

Scope of Supply

Our scope of supply will include:

1) General Arrangement Drawings for customer approval.
2) Operation & Maintenance Manual.
3) The equipment necessary for flaring the waste streams as specified in the inquiry documents, including:

Air Assisted Flare Tip (F-1) with Integral Velocity Seal & Pilots
150 ft Overall Height Self-supported Flare Stack (STK-1)
Manual/Automatic High Energy Spark (HEI-1) Ignition System
Pilot Fuel Gas Train Shipped Loose
Utility Piping & Supports Along Flare Stack from Tip to Near Grade
One (1) Duplex Retractable Thermocouple per Pilot with JB Near Grade
Conduit & High Temp HEI Ignition Wiring Along Stack with JB Near Grade
One (1) Common Zeeco Navigator Thermocouple Straightener Device
One (1) Vane Axial Blower - 150 HP, VFD Compatible
Flare Stack Base Plate Template
Process Engineering & Design Work for the Complete Flare System
Domestic Packing / Shipping Preparation

Scope of Supply (Continued)

Our Scope of Supply does NOT include:

1) Stack or Piping External Insulation, Fireproofing, or Heat Tracing.
2) Field Assembly and / or Erection.
3) Commissioning, Start-up, Supervision, Training, etc. (PER DIEM BASIS).
4) Foundation Design / Supply or Civil Engineering.
5) Interconnecting Piping, Wiring or Conduit Between Stack Base and LCP.
6) Ocean or Inland Freight to Jobsite.
7) Shop Details / Fabrication Drawings of Proprietary Equipment.
8) Any Containerization of Equipment for Shipment or Storage Purposes.
9) Flare Stack Base Plate Templates.
10) Foundation Imbedded Anchor Bolts.
11) Spare Parts Quoted Separately and Priced Lists Included in Proposal.
12) Any Motor Starters or Motor Drivers or Motor Controls.
13) Any Third Party Inspection / Testing / Certification Services.
14) Any VFD System
15) Any Aircraft Warning Lights

Scope of Supply (Continued)

Pricing and Payment Terms

Flare System as Detailed In This Proposal:

Options:

Project is based on duplication of Greenwood I Gas Plant Flare System and Design. As such, all drawings and documentation would be issued for information only, and any additional changes to design will need to be reviewed to determine cost and/or schedule impact.

FCA:	Shop Door, Zeeco (Flare Tip, Pilots & Ignition Point of Manufacture (Stack, Structural Steel,
Base Pricing Validity:	30 days from date of quotation
Optional Pricing Validity:	7 days after receipt of an order or LOI, unless specifically defined otherwise
Terms of Payment:	20% Of Order Value Upon Receipt of Order 25% Of Order Value Upon Submittal of GA and P&ID 25% Of Order Value Upon Purchase of Flare Stack Material 25% Of Order Value Upon Readiness for Shipment 5% Of Order Value Upon Submittal of Final Documents, Latest 90 Days After Shipment Net 30 Days

Delivery:

Foundation Loadings:	3 weeks after receipt of order
GA Drawings / P&ID for Approval:	4 weeks after receipt of order
Panel Drawings / IDS for Review:	4 weeks after receipt of order
Equipment Readied for Shipment:	28 weeks after drawing approval
Warranty:	18 months from ship date, or 12 months from start-up, whichever condition expires first.

Attachment C

Process Conditions

Process Conditions -- English Units

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

	Mol %					
	Fire Zone 17	Fire Zone 14	Fire Zone 20	PSV-2401A CV Failure	IP Broken Arrow	Flip Wilson Recovery
METHANE	34.20			73.96	70.45	96.82
ETHANE	21.96	1.45	0.01	10.81	12.10	0.47
PROPANE	27.30	96.56	0.11	7.11	8.65	0.02
BUTANE	12.44	1.99	11.92	3.18	3.61	
PENTANE	3.44		15.06	0.94	1.42	
HEXANE	0.20		25.31	0.28	0.42	
HEPTANE	0.02		23.70	0.04	0.14	
OCTANE			18.42	0.01	0.02	
NONANE			4.74			
DECANE			0.72			
DODECANE						
TRIDECANE						
CYCLOPENTANE						
ETHYLENE						
PROPYLENE						
BUTYLENE						
ACETYLENE						
BENZENE						
TOLUENE						
XYLENE						
CARBON MONOXIDE						
CARBON DIOXIDE				1.50	0.36	
HYDROGEN SULFIDE						
SULFUR DIOXIDE						
AMMONIA						
AIR						
HYDROGEN						
OXYGEN						
NITROGEN				2.05	2.50	2.69
WATER				0.12	0.34	
BUTADIENE						
METHANOL						
Total	**100**	**100**	**100**	**100**	**100**	**100**
Mol. Wt.	34.03	44.17	91.55	22.33	23.32	16.44
L. H. V. (BTU/SCF):	1,809	2,319	4,636	1,157	1,224	888.6
Temperature (Deg. F):	22.0	85.5	409.8	39.4	71.6	107.2
Avail. Static Pressure (psig):	10.00	10.00	10.00	10.00	10.00	10.00
Flow Rate (lbs/hr):	312,439	281,715	155,450	296,622	706,575	360,970
Smokeless Rate (lbs/hr):	56,500	53,000	46,000	69,500	66,500	360,970

Process Conditions -- English Units

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

	Mol %					
	Flip Wilson Rejection	Case B	Case C	Case J	Case K	Case L
METHANE	87.77					
ETHANE	9.63					
PROPANE	0.16					
BUTANE						
PENTANE						
HEXANE						
HEPTANE						
OCTANE						
NONANE						
DECANE						
DODECANE						
TRIDECANE						
CYCLOPENTANE						
ETHYLENE						
PROPYLENE						
BUTYLENE						
ACETYLENE						
BENZENE						
TOLUENE						
XYLENE						
CARBON MONOXIDE						
CARBON DIOXIDE						
HYDROGEN SULFIDE						
SULFUR DIOXIDE						
AMMONIA						
AIR						
HYDROGEN						
OXYGEN						
NITROGEN	2.44					
WATER						
BUTADIENE						
METHANOL						
Total	**100**					
Mol. Wt.	17.73					
L. H. V. (BTU/SCF):	958					
Temperature (Deg. F):	104.6					
Avail. Static Pressure (psig):	10.00					
Flow Rate (lbs/hr):	430,263					
Smokeless Rate (lbs/hr):	77,000					

Attachment D

Specification Sheets:

- Flare Tip Specification Sheet
- Flare Pilot Specification Sheet

Air Assisted Flare Tip Specification Sheet

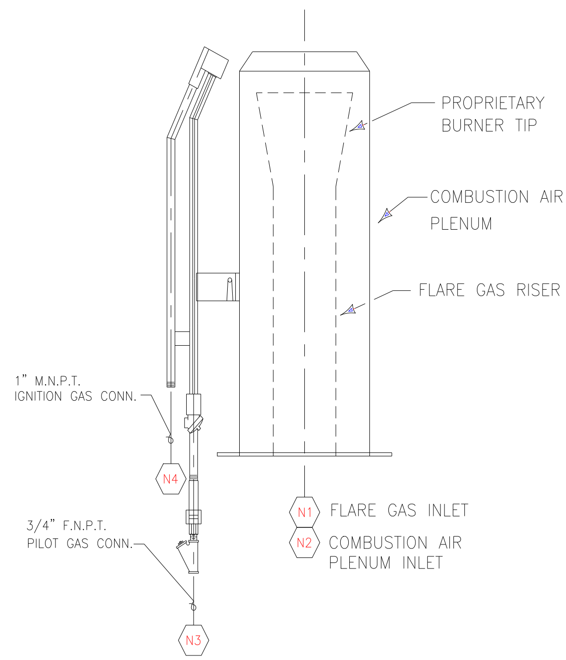
Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

General Information:

Tag No.:	F-1	
Model:	AFTA-28/56	Type: Air-Assisted
Length:	10'- 0 "	
Weight:	3420 lbs	
No. of Pilots:	3	

Design Case:

Governing Case:	IP Broken Arrow
Molecular weight:	23.3
L. H. V. :	1,224 BTU/SCF
Temperature:	72 Deg. F
Available Static Pressure:	10.0 psig
Design Flow Rate:	706,575 lbs/hr
Governing Smokeless Case:	Case E
Design Smokeless Rate:	66,500 lbs/hr
Approximate Exit Velocity:	946 ft/s
Mach No.:	0.79
Approx. Tip Press. Drop:	5.27 psig



(Typical drawing only)

Construction:

Upper Section:	310 SS	Windshield:	NO
Lower Section:	304LSS	Flame Retention Hub:	310 SS
Refractory:	None	Lifting Lugs:	NO
Refractory Thk:	N/A		

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP6	Primer:	Inorganic Zinc
Paint (c. s. surfaces):	High Heat Aluminum		

Connections:

	Qty.	Size	Type	Material
N1 - Flare Gas Inlet:	1	28 "	Beveled ; Weld	Carbon Steel
N2 - Combustion Air Inlet:	1	56 "	Fab. Plate Flange	Carbon Steel
N3 - Pilot Gas:	1	1/2"	FNPT	CF8M
N4 - Ignition Line:	0	n/a	n/a	n/a

Miscellaneous Notes:

1. Includes Integral Purge Reducing Velocity Seal.
2. Required Purge Gas Fuel Rate = 1185 SCFH
3. Lower Section of Air Riser to be constructed out of Carbon Steel material.

Pre-Mix Flare Pilot Assembly Specification Sheet

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

General Information:

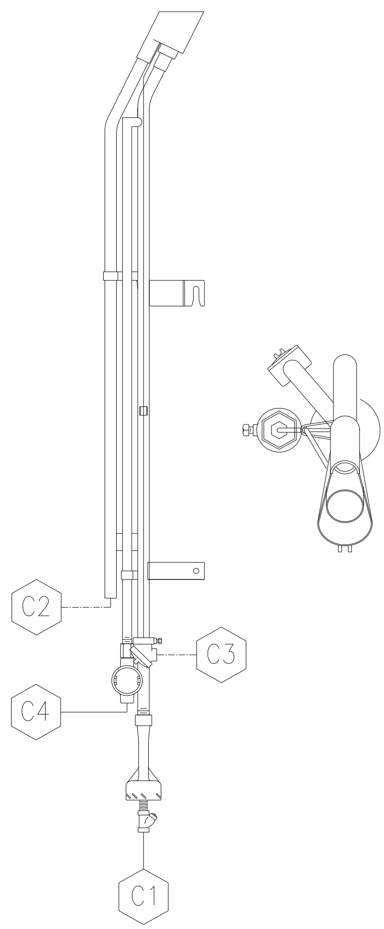
Tag No.:	FP-1	
Model:	HSLF	
Length:	9.135	feet
Weight:	68	lbs.
Pilot Type:	Pre-Mix	High Stability
Ignition Type:	High Energy Ignition/Flame Front Generator	

Process Design Data:

Design Heat Release:	65,000	BTU/hr
Fuel Gas MW:	18.00	
Fuel Gas LHV:	1,000	BTU/SCF
Fuel Gas Temperature:	100	Deg. F
Fuel Gas Inlet Pressure:	15.00	psig
Fuel Gas Flow rate:	65.0	SCFH
Design Wind Velocity:	170	mph
Design Rainfall:	50.00	inches/hr
Mounting Position:	Vertical	
Thermocouple Type:	K	Ungrounded

Construction:

Pilot Firing Tip:	CK-20
Windshield Assembly:	CK-20
Integral Thermowell:	CK-20
FFG Ignition Line:	n/a
Mounting Brackets:	CK-20
Premix Fuel Line:	310 SS
Thermocouple Sheath:	310 SS
Thermocouple Head:	CF-3M
Fuel Mixer / Spud Assembly:	CK-20 / SS316
Fuel Strainer Assembly:	CF-8M
HEI Probe and Support:	310 SS
HEI Junction Head:	CF-3M



Connections:	**Qty.**	**Size**	**Type**	**Material**
C1 - Fuel Gas Inlet:	1	1/2"	FNPT	CF8M
C2 - FFG Ignition Inlet:	0	n/a	n/a	n/a
C3 - Thermocouple:	1	3/4"	Conduit	CF-3M
C4 - HEI Ignition:	1	3/4"	FNPT	CF-3M

Misc. Notes: (see ignition system datasheet for type applicable to this quote)

1. Upper mounting bracket is reinforced hook type for pilot removal from platform.
2. Pilot mounting brackets and thermocouple mounting brackets are investment cast assemblies.
3. Pilot mixer assembly is investment cast, high efficiency computer modeled venturi section.
4. Thermocouples are duplex retractable type.

Self-supported Flare Stack Specification Sheet

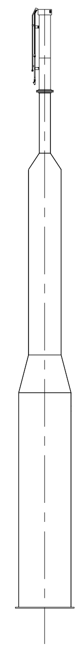
Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.:	0

General Information:

Tag No.:	STK-1
Overall Height:	150'- 0 "

Design Criteria:

Wind Design Code:	ASCE 7-10
Seismic Design Code:	ASCE 7-10
Importance Factor:	1.25
Structural Design Code:	ASME STS-1/AISC
Wind Speed (Structural):	120 mph
Seismic Zone:	Site Class "D"
Max. Design Temperature:	400 Deg. F
Min. Design Temperature:	-20 Deg. F
Design Pressure:	50 psig
Riser Corrosion Allow.:	0.063 in.



(Typical drawing only)

Construction:

Riser Material:	Carbon Steel	Ladders & Step-offs:	None
Upper Diameter (approx.):	2'- 0 "	Platform at Tip:	None
Middle Diameter (approx.):	4'- 0 "	Additional Platforms:	None
Base Diameter (approx.):	8'- 0 "	ACWL:	None

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP-6	Primer:	Inorganic Zinc
Int. Coat:	None	Finish Paint:	None

Utility Piping:

Per Attached Utility Piping Scope of Supply

Miscellaneous Notes:

1. See attached GA Drawing in Proposal Attachment I.
2. Flare Stack will be designed for single piece lift with flare tip.
3. Flare Stack is designed for elastic foundation per ASME STS-1.
4. Vane Axial blower to be suitable for installation directly to flare stack.

High Energy Electronic Ignition Generator Specification Sheet

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

General Information:

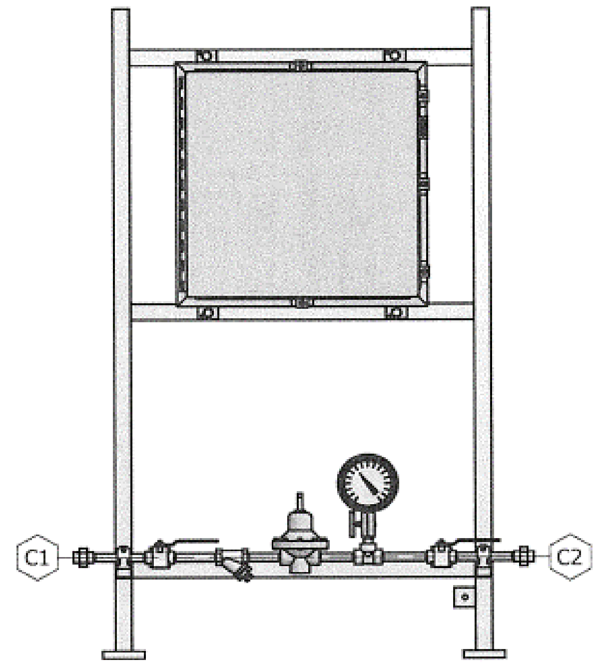
Tag No.:	HEI-1
Model No.:	HEIC-3-DT/S
Operation:	Manual/Automatic
No. of Pilots Ignited:	3
Area Classification:	Non-Hazardous
Spark Intensity:	Approx. 1,000 Volts

Fuel Gas Data:

Molecular Weight:	16.5
L. H. V.:	892 BTU/SCF
Temperature:	60 Deg. F
Pressure:	15 psig

Utility Consumption:

Pilot Gas (Per Pilot):	73 SCFH
Pilot Gas (Total):	219 SCFH
Power Available:	120 Volt, 1 Phase, 60 Hertz



(Typical drawing only)

Construction:

Fuel Gas Piping:	Carbon Steel	Ignition Probe Mat'l:	310 SS
Mounting Rack:	Carbon Steel	No. Thermocouples/Pilot:	1
Enclosure:	NEMA 4	Thermocouple Type:	K
Sun / Rain Shield:	No	Ignition Probes per Pilot:	1

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	Per Rack GA	First Coat:	Per Rack GA
Second Coat:	Per Rack GA	Finish Color:	Per Rack GA
		Enclosure:	Manufacturer Std.

Connections:

	Qty.	Size	Type	Material
Pilot Gas Inlet:	1	1/2"	3000# Thrd. Union	Carbon Steel
Pilot Gas Outlet:	1	1/2"	3000# Thrd. Union	Carbon Steel

Miscellaneous Notes:

1. Pilot Fuel Gas Piping would utilize carbon steel threaded components
2. Local Control Panel would utilize relay logic.
3. Ignition Panel will be mounted on rack while Pilot Fuel Gas Regulation Train to be shipped loose.
4. Pilot Gas Piping to be Schedule 80

Utility Piping Scope of Supply

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

Flare Tag No.	Description	Qty	Pipe Size	Pipe Sch.	Pipe Material	Origination Point	Termination Point	Termination Rating	Termination Type	Termination Material	Paint	Insulation
F-1	Pilot Gas Line	1	1"	Sch 80	A106-B	Base of Stack	Flare Tip	3000#	Thrd Union	A-105	Inorganic Zinc	n/a
F-1	TC Conduit	3	1/2"	n/a	316 SS	Near Grade	Flare Tip	n/a	Tubing	316 SS	n/a	n/a
F-1	HEI Conduit	1	1-1/2"	Std.	Carbon Steel	Near Grade	Flare Tip	n/a	Coupling	Carbon Steel	Galvanized	n/a

Notes:
1. All utility piping larger than 2" will be supplied in pre-fabricated spools.
2. Piping 2" and smaller will be supplied in random lengths for field fabrication and installation by others.
3. Base of Stack = Approximate Flare Stack Inlet Elevation.

Attachment E

Spare Parts

• Spare Parts for Start-up & Commissioning
• Spare Parts for Two Years Operation

Spare Parts for Start-up and Commissioning

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

Part No.	Qty	Description	Unit Price	Delivery (Weeks)
	1	Pilot Temperature Switch		4
	1	Pilot Thermocouple		4
	1	Electric Ignitor Probe Assembly		4
	1	HEI Ignition Module		4
	2	Pilot Light Bulb		4
	1	Pressure Gauge (Pilot Fuel Gas)		4

Net Price: U. S. Dollars

Minimum Invoice:

F.O.B. Point: Shop Door - Broken Arrow, OK, USA

Terms: Net 30 Days

Notes: 1. Prices are subject to change without notice.
2. The spare part items and quantities listed above are preliminary and are subject to change upon determination of final scope of supply.

Spare Parts for Two Years Operation

Client: Targa Resources, Inc.	Zeeco Ref.: 2023-10875FL-01	Date: 29-Sep-23
Location: Texas	Client Ref.: 0	Rev. 0

Part No.	Qty	Description	Unit Price	Delivery (Weeks)
	2	Pilot Temperature Switch		4
	2	Pilot Thermocouple		4
	1	HSLF-Z-HEI-1T/C		4
	1	Electric Ignitor Probe Assembly		4
	2	HEI Ignition Module		4
	4	Pilot Light Bulb		4

Net Price: U. S. Dollars

Minimum Invoice:

F.O.B. Point: Shop Door - Broken Arrow, OK, USA

Terms: Net 30 Days

Notes:
1. Prices are subject to change without notice.
2. The spare part items and quantities listed above are preliminary and are subject to change upon determination of final scope of supply.

Attachment F

Clarifications and Exceptions

Clarifications & Exceptions

Client:	Targa Resources, Inc.	Zeeco Ref.:	2023-10875FL-01	Date:	29-Sep-23
Location:	Texas	Client Ref.:	0	Rev.	0

Please note that it is Zeeco's intention to comply with the specifications received with this inquiry, except as noted below. Please also note that we have done our best to clearly specify what our proposal includes in order to avoid confusion. In the event that any portion of our quotation other than the list below does not meet your specifications or fit your needs, please notify us immediately so that we may rectify the situation.

No.	Specification	Item	Clarification / Exception
1	General	Applicable Specifications	Zeeco is not responsible for specifications not included in the inquiry package or revised after the issuance of the PO. We can provide a cost impact (if any) to meet any particular new or revised specification after receiving the specification.
2	General	Special Tools	No special tools are required for operation or maintenance of the proposed system.
3	General	Spare Parts	Spare parts are listed and quoted separately.
4	General	Assistance / Training	Assistance / training at the job site, or attendance to any meetings outside Zeeco, is available based on our attached per diem rate sheet.
5	General	Sizing	Sizes / dimensions / weights / models noted in this quotation are preliminary only and subject to change upon final equipment design after an order is received.
6	General	Documentation	All required documentation will be submitted in .pdf format and submitted in soft copy. Any hard copies for final documentation can be supplied for additional cost upon request. On receipt of drawing or document approvals, Zeeco will generate a Comment Resolution Form. This form will address all open comments and is to be reviewed and closed prior to any submittal of revised drawings or documents.
7	General	Performance Bonds / Guarantees	Any performance bond or bank guarantee issued by Zeeco for this project will be in the form of a standby letter of credit. The format of this standby letter of credit is to be mutually agreeable to both Zeeco and our customer, subject to the requirements outlined in ICC Publication 500 (Uniform Customs and Practices for Documentary Credits).
8	General	Terms & Conditions	All Terms & Conditions shall be mutually agreed upon prior to issuance of PO.

Clarifications & Exceptions

9	General	Pricing & Invoices	Unless noted, all prices are US Dollars. Any amounts owed by Buyer under this contract that are not paid when due shall bear interest, from the time the payment was due until the time paid, at a rate of one and a half percent (1.5%) per month, or the maximum allowed by law, whichever is lower.
10	General	Pricing & VAT/GST	Unless specifically noted otherwise, our pricing is exclusive of any local VAT/GST or other taxes/duties in the country of installation.
11	General	Limit of Liability	Sellers total liability for this purchase order, whether in contract, tort, or otherwise, shall in no event exceed the total amount of the purchase order. In no event shall seller be liable to the buyer for delays, curtailment of plant operation, process failure, loss of profits, or any indirect, incidental, special or consequential damages.
12	General	Warranty	Consumables such as, but not limited to, bulbs, fuses, thermocouples, gaskets, etc. shall be outside the scope of the above warranties. All warranty work is considered applicable "at grade" for elevated flare systems. Warranty is for material and workmanship only. Except as defined in the contract, there are no warranties, express or implied, of merchantability, fitness for use or otherwise.
13	General	Noise Measurement	Noise is predicted as +/- 3 dB(A) considering a background noise level of 6 dB(A) less than the measurement point in each frequency.
14	Clarification	Flare Tip Inlet Flange Material	Please note that our proposal is based on supplying a tip inlet connection flange that is the same material as the connection flange on the top of the stack in an effort to minimize the thermal expansion differences within the flange material and thus lower the possibility of gas leakage at the flange.
15	Clarification	Smokeless Flaring	Smokeless requirement is estimated as Ringelmann 1.0 or less at one flame length from the end of the flame per EPA Test Methods 9, at steady state process and environmental conditions.
16	General	Ignition Rack Pipe Testing	B31.3 requires a hydrostatic leak test unless "The Owner" considers a hydrostatic test impractical. We do not hydrostatic-test the piping components of the ignition system. The use of water can damage some of the components as well as cause internal corrosion, which could be detrimental to the operation of the equipment. It is Zeeco's policy to pneumatically pressure test the piping using shop air (90 psig max) and soapy-water on our ignition rack piping.
17	Clarification	Nozzle Loads	The offered equipment has been designed considering maximum nozzle loads as stated in API 537 standard “Flare Details for General Refinery and Petrochemical Service”.

Clarifications & Exceptions			
18	General	Inspection and Testing	Testing, NDE, and inspection performed for all Zeeco designed proprietary components of the system (pilot, mixer, flare tip, ignition chamber, etc.) will be per Zeeco standards unless specifically noted otherwise.
19	General	Stack Riser Designs	Stack risers are structural members open to atmosphere and therefore are not considered as piping or pressure vessels. Any piping specification, applicable pipe class to the flare header or pressure vessel specification is not applicable to the flare stack riser. Only the flare stack inlet flange will meet the pipe class applicable to the flare header. In addition, the flare stack riser will follow B31.3 for thickness, internal pressure and NDE (spot RT). Hydrostatic, PWHT or impact testing of the stack risers in the shop is not required and has not been included.
20	General	Equipment Storage	If equipment is not picked up or shipped from Zeeco's shop or other designated sub-fabricators / suppliers within 6 weeks from the notification date that equipment is ready to ship, storage and handling fees will be applied based on the size and storage requirements of the equipment.
21	General	Export Packing / Crating / Containerization	Export crating, when included or offered as an option, provides for break bulk packing of smaller materials in wooden crates or pallets, and skid mounting and bundling of larger components for deck shipment. Packaging for large items is not designed for stacking. Containerization of any material is not included. If materials are quoted as FOB Port of Export basis, or if optional pricing is provided to move the goods to the port of export, this is understood to mean the port nearest to the point of manufacture of the goods, unless an alternative port of export is clearly defined in the inquiry documents.
22	Clarification	Pilot Ignition Rack	Zeeco's proposal is based on the pilot ignition rack located within 600 Feet (185 Meters) from the pilots. If the distance between the ignition rack and pilots is more than 600 Feet (185 Meters), Zeeco shall be notified as the design of the ignition system may need slight modification. FFG system performance is based on the use of nominal 1 inch diameter schedule 40 ignition lines. Additionally, Zeeco requires the use of swing type check valves for air and fuel gas service on FFG ignition racks. Due to operating pressure and flow rates, piston (lift) type check valves in this service may prevent the FFG from lighting the
23	General	Motor Starters	Our proposal does not include for any motor starters, variable frequency drives, or motor controls unless specifically stated otherwise.

Clarifications & Exceptions

24	General	Lifting Lugs	Zeeco recommends handling flare tip assemblies using slings and straps. If flare tip lifting lugs are supplied, they will be defined as being included on the Zeeco flare tip datasheet. Any lifting lugs supplied on a flare tip are designed for vertical lifting only, lifting along the major axis of the flare tip. Lifting lugs will be carbon steel designed for use when initially installing the flare tip prior to any use of possible heat damage to same. Lifting lugs should not be re-used after the flare tip has been in operation due to safety issues.
25	General	Piping	Piping 2" and smaller will be supplied in random lengths with loose fittings, for field fabrication and installation by others. Fittings are supplied without paint. Pipe joints are prime painted only.
26	General	Radiographic Examination	Radiographic examination, when included, shall be performed by gamma-ray (Iridium 192) radiography. The radiographic sensitivity shall be equal to or better than that specified in the ASME Boiler & Pressure Vessel Code, Section VIII-1 and B31.3.
27	General	Damages	In no event shall seller be liable to the buyer for delays, curtailment of plant operation, process failure, loss of profits, or any indirect, incidental, special or consequential damages.
28	General	Written Communication	Zeeco Inc.'s offer is based on all resulting orders and documents and correspondence with Zeeco Inc. being in the English language.
29	General	Approved Manufacturer's Lists (AML)	All proprietary items including flare tip assemblies, flare tip accessories (steam / gas risers, steam / gas manifolds, etc.), liquid seal internals, gas seals, pilot assemblies, etc. shall follow Zeeco's AML in conjunction with Zeeco's ISO requirements. All process and utility connections for flare tip assemblies, gas seals, pilots, etc. shall meet any applicable project AML if separately provided to Zeeco and agreed.
30	General	Materials of Origin	Zeeco confirms its proposal is in full compliance with received project material sourcing requirements for all non-proprietary components. For any proprietary components and small bore (2" and less) commodity valves critical to proper operation of the system and to the Zeeco performance guarantee of the system, Zeeco will use its normal stock components and castings in which many of our casting are sourced from Chinese foundries, which Zeeco have used for many years and have partnering relationships with. These casting are stocked in Zeeco's facility and all machining is performed in our facility to Zeeco standards and Zeeco NDE requirements.

Clarifications & Exceptions

31	General	Purge Rates	Please note, the purge gas rate we have quoted is the minimum purge gas recommended to ensure the safety of the upstream systems, and to prevent flashbacks from occurring in the flare stack. If the flare system will be required to meet the proposed EPA Combustion Zone Net Heating Value requirements for Flares, it is likely this purge gas flow rate will have to be increased above our stated quantity. The gas required to meet the CZNHV requirements is a function of the turndown capability of the control system applied for the assist medium.
32	General	Pipe Specification Conformation	Any project pipe specification will be applicable up to the pilot inlet connections only: FFG Ignition Connection and Pilot Gas Manifold Connection (more than one pilot) or Pilot Gas Connection (when no manifold is included).
33	General	Stack Foundation Type	For the purpose of the flare structural calculations, Zeeco has assumed an elastic foundation type per ASME STS-1. Please advise if rigid foundation type is to be considered
34	General	Point of Manufacture / Material Selection when Utilizing India or China Fabrication	Structural plates, pipes and shapes will be to IS/GB standards, but will not be less in Tensile Properties than the minimum specified in ASTM A36 / A36M or equivalent for plates and shapes and A53B or equivalent for pipe.
35	Clarification	Blower	Zeeco will supply (1) vane axial blower and associated motor. Any VFD or other controls are outside of Zeeco's scope of supply.
36	Clarification	Exit Velocity	Zeeco has considered maximum exit velocity as per 40 CFR for normal operating conditions. Zeeco understands normal operating conditions to be continuous purge. Zeeco has not considered these exit velocity requirements for any emergency releases.
37	Clarification	Paint	Zeeco has only considered painting of the external air riser. Internal Gas riser will be primered only.
38	Clarification	Flare Design	The Flare Design is based on the same design as the Greenwood I Gas Plant Flare. Any associated drawings and documentation will be submitted for information only.
39	Clarification	Thermocouple	Pilot Thermocouples will be retractable, duplex type. One element per thermocouple will be monitored at ignition control panel, with the other terminated at the JB at the base of the stack, acting as a spare.
40	Clarification	Blower	Zeeco has considered supply of a 150 hp blower as requested. Blower would provide for necessary air needed for smokeless flaring of rates indicated within Proposal Attachment C. Please note, as blower will be vane axial type, motor enclosure would be Totally Enclosed, Air Over (TEAO) rather than TEFC. Blower will be VFD compatible, with any VFD Device Provided by others.

Clarifications & Exceptions			
41	Clarification	Allowable Pressure	The allowable pressure for each gas case was not given, therefore Zeeco has confirms that a minimum of 10 psig will be required at the base of the stack.

Attachment G

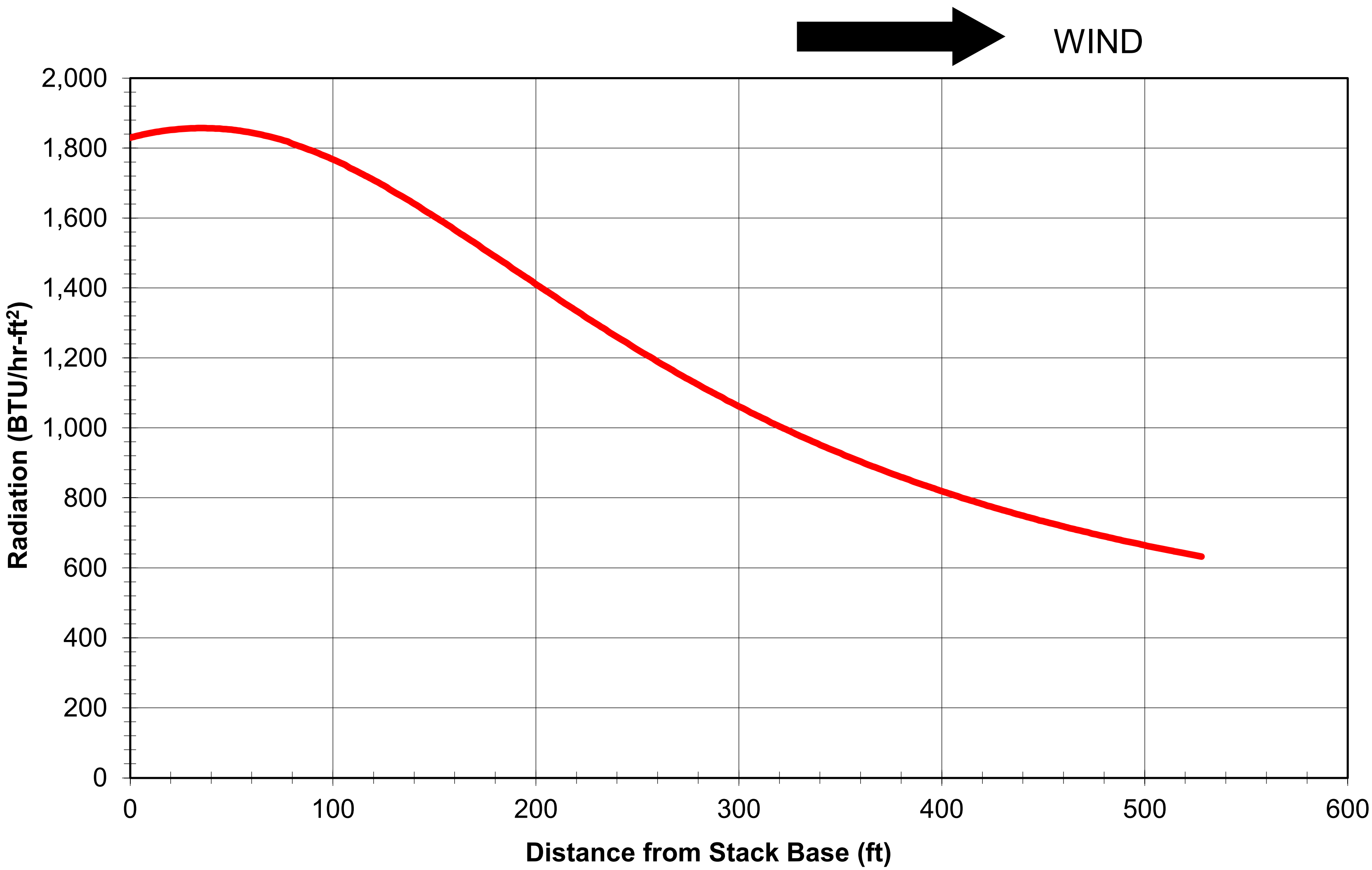
Start-up & Maintenance Services

Refer to priced proposal

Attachment H

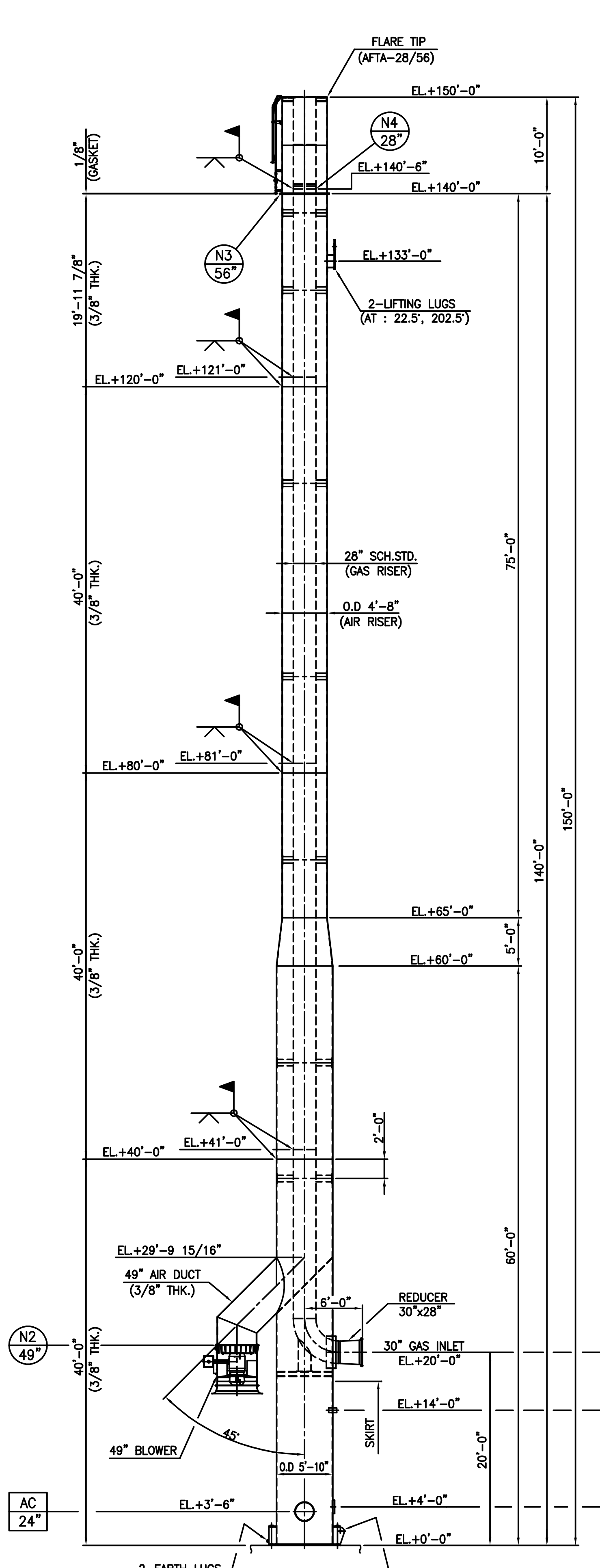
Radiation Profile

Zeeco Quotation Ref: 2023-10875FL-01 Rev. 0
Radiation At Grade Versus Distance From Stack Base
Stack Height = 150 ft ; Relative Humidity = 70%
Solar Radiation Included = 300 BTU/hr-ft^2 ; Wind Speed = 30 ft/s
Flare Tag No. = F-1 ; Operating Case = IP Broken Arrow

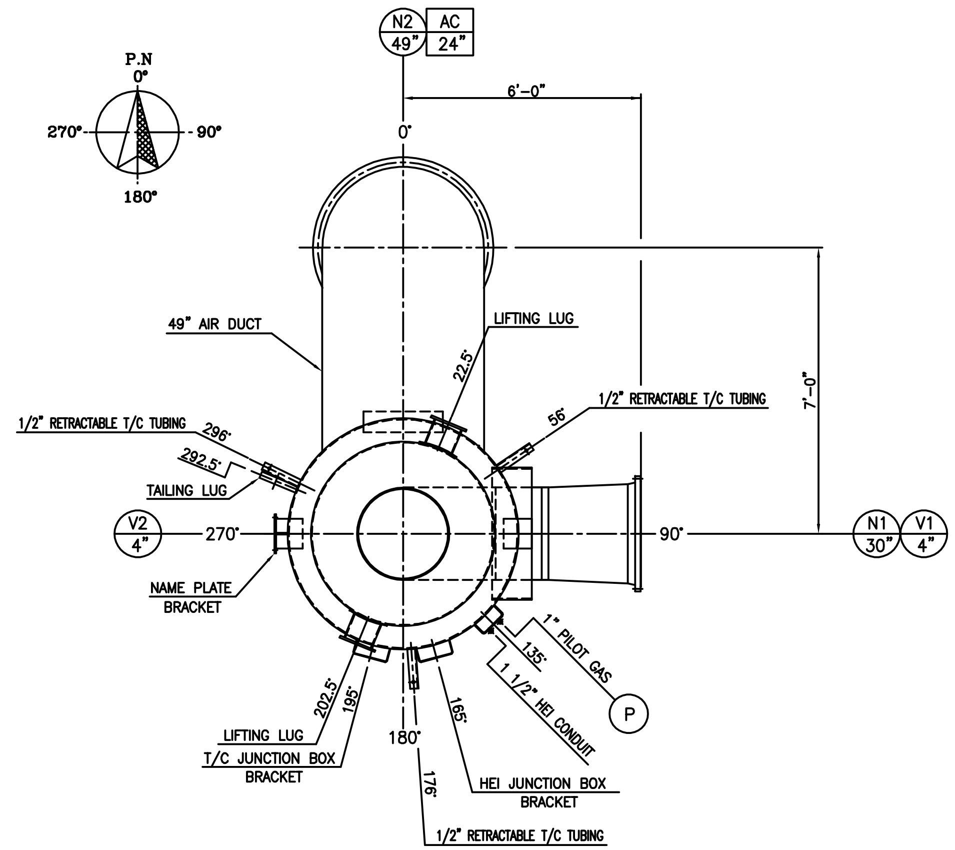


Attachment I

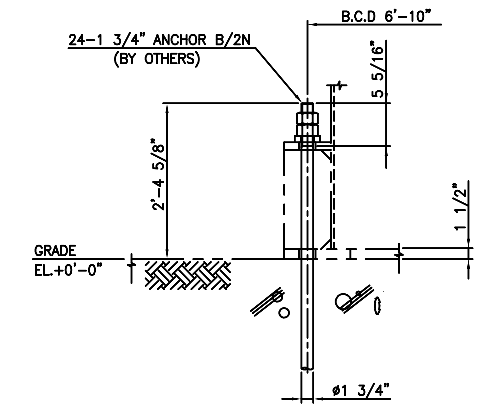
Typical GA Drawing



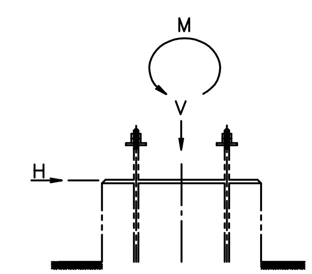
ELEVATION
(NOT TRUE ORIENTATION)



NOZZLE ORIENTATION
(SCALE : 1/30)

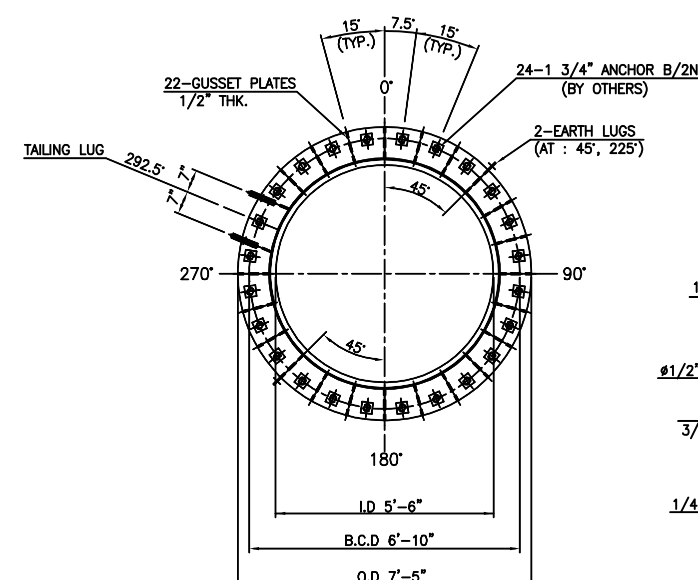


ANCHOR BOLT
(SCALE : NONE)

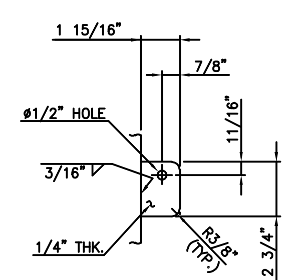


LOADING DATA			
LOAD CASE	VERTICAL (KIPS)	SHEAR (KIPS)	MOMENT (KIP-FT)
DEAD LOAD	72.1	0.0	0.0
WIND LOAD	0.0	22.0	1668.8
SEISMIC LOAD	1.5	1.0	108.7
NOZZLE LOAD	1.3	1.6	33.7

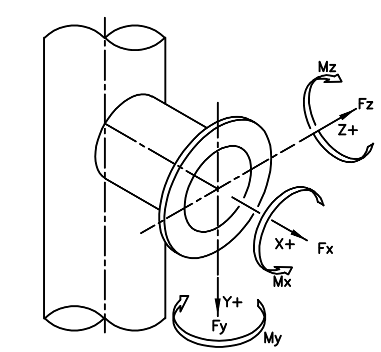
LOADING DATA
(FOR STACK)



ANCHOR PLAN
(SCALE : 1/30)



EARTH LUG
(AT : 45˚, 225˚)
(SCALE : 1/5)



PIPE SIZE (IN)	Fx	Fy	Fz	Mx	My	Mz
	lb	lb	lb	lb-ft	lb-ft	lb-ft
30	850	1150	1150	1630	1200	1200

MAX. ALLOWABLE INLET NOZZLE LOADS
(PER API560/537)

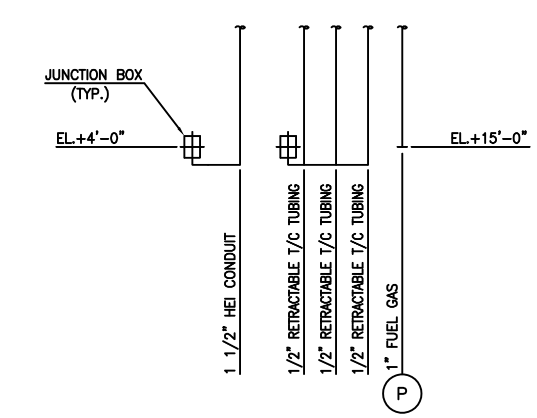
MATERIAL SPECIFICATIONS		DESIGN DATA		
GAS RISER	A53-B ERW OR EQ.	TYPE		SELF SUPPORTED
AIR RISER	A36 OR EQ.	DESIGN CODE		ASME STS-1 / AISC
SKIRT	A36 OR EQ.	WIND LOAD	WIND DESIGN CODE	ASCE 7-10
FLARE TIP	SEE FLARE TIP DWG.		EXP.	C
BASE PLATE	A36		WIND SPEED	120 mph
GAS RISER FLANGE	A105.		CATEGORY	III
AIR RISER FLANGE	A36	SEISMIC LOAD	SEISMIC DESIGN CODE	ASCE 7-10
RISER GASKET	C4401 OR EQ.		SITE CLASS	D
FITTING	A234-WPB		Ss	0.098
LIFTING LUGS / PAD	A36		S1	0.031
TAILING LUG	A36		I.F	1.25
EARTHING LUGS	304 S.S	DESIGN PRESS. (GAS/AIR)		50 / 2 psig
NAME PLATE	304 S.S	DESIGN TEMP. (GAS/AIR)		-20~400 / -20~120 ˚F
NAME PLATE BRACKET	A36	OPERATING PRESSURE (GAS/AIR)		0~31.4 / ATM psig
FUEL GAS	A106-B	OPERATING TEMP. (GAS/AIR)		26~104 / AMB ˚F
FLANGE CONN. STUD BOLT/NUT	A193-B7/A194-2H	C.A (GAS/AIR)		1/16"
ANCHOR BOLT (BY OTHERS)	A307-C	PAINTING		SEE NOTE 2
RETRACTABLE TUBING	316SS TUBING	NDE		AS PER ITP
CONDUIT	C.S+GALV.			

NOZZLE AND CONNECTIONS

MARK	Q'TY	SIZE	SCH.	RATING	FACING	FLG.MAT'L	NOZZLE MAT'L	SERVICE	REMARKS
N1	1	30"	STD.	ASME B16.47 SERIES "B" 150#	WN, RF	A105	A53-B ERW OR EQ.	GAS INLET	6-0"
N2	1	49"	3/8" THK.	FABRICATED PLATE		A36 OR EQ.	A36 OR EQ.	AIR INLET	
N3	1	56"	3/8" THK.	FABRICATED PLATE		A36 OR EQ.	A36 OR EQ.	AIR OUTLET	
N4	1	28"	STD.	PIPE END		-	A53-B ERW OR EQ.	GAS OUTLET	
V1,2	2	4"	40	-	-	-	A53-B ERW	VENT HOLES	
AC	1	24"	3/8" THK.	-	-	-	A36	ACCESS HOLE	
P	1	1"	80	ASME 150#	SW, RF	A105	A106-B	FUEL GAS	

NOTE

1. FLANGE BOLTING TO STRADDLE CENTERLINES INDICATED BY CENTERLINE UNLESS NOTED OTHERWISE.
2. PAINTING
   - EXTERNAL CARBON STEEL SURFACE
     * SURFACE PREPARATION : SSPC-SP10
     * PRIMER : SHERWIN-WILLIAMS ZINC CLAD II(B69V3) - 3 ~ 4 MILS
     * FINAL : SHERWIN-WILLIAMS HEAT-FLEX HI-TEMP 1000(B59-820) - 1.5 ~ 2MILS
     * COLOR: SHERWIN WILLIAMS SW-4031 STRUCTURAL GRAY
   - GAS RISER, SKIRT INSIDE, TEMPLATE, AND SHIP LOOSE UTILITY PIPING
     * SURFACE PREPARATION : SSPC-SP10
     * PRIMER ONLY : SHERWIN-WILLIAMS ZINC CLAD II(B69V3) - 3 ~ 4 MILS
     * FINAL COAT OF PAINT ONLY NECESSARY FOR UTILITY PIPING, BY OTHERS.
3. PIPING 2" AND SMALLER WILL BE SUPPLIED IN RANDOM LENGTHS WITH LOOSE FITTINGS, FOR FIELD FABRICATION AND INSTALLATION BY OTHERS, FITTINGS ARE SUPPLIED WITHOUT PAINT, PIPE JOINTS ARE PRIME PAINTED ONLY.
4. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS , FC' = 4000 PSI
5. LOADING DATA INCLUDES OVERAGE FACTOR OF 10% ABOVE CALCULATED LOADS.
6. FLARE STACK STRUCTURAL DESIGN ASSUMES ELASTIC FOUNDATION SUPPORT PER ASME STS-1.
7. ALL SHIP LOOSE UTILITY PIPING CARBON STEEL FITTINGS TO BE SHIPPED IN THE BLACK.



UTILITY PIPING ELEVATION
(SCALE : NONE)

JOBSITE: GREENWOOD GAS PLANT (MIDLAND, TX)
END USER: TARGA PIPELINE MID-CONTINENT WESTTEX LLC
S.O. NO.: 59777 | P.O. NO.: TAR264073 | APP CTM

NO	DATE	REVISION DESCRIPTION	BY	CKD	APP.
0	18NOV22	ISSUED FOR INFORMATION	HMC	HMC	CTM

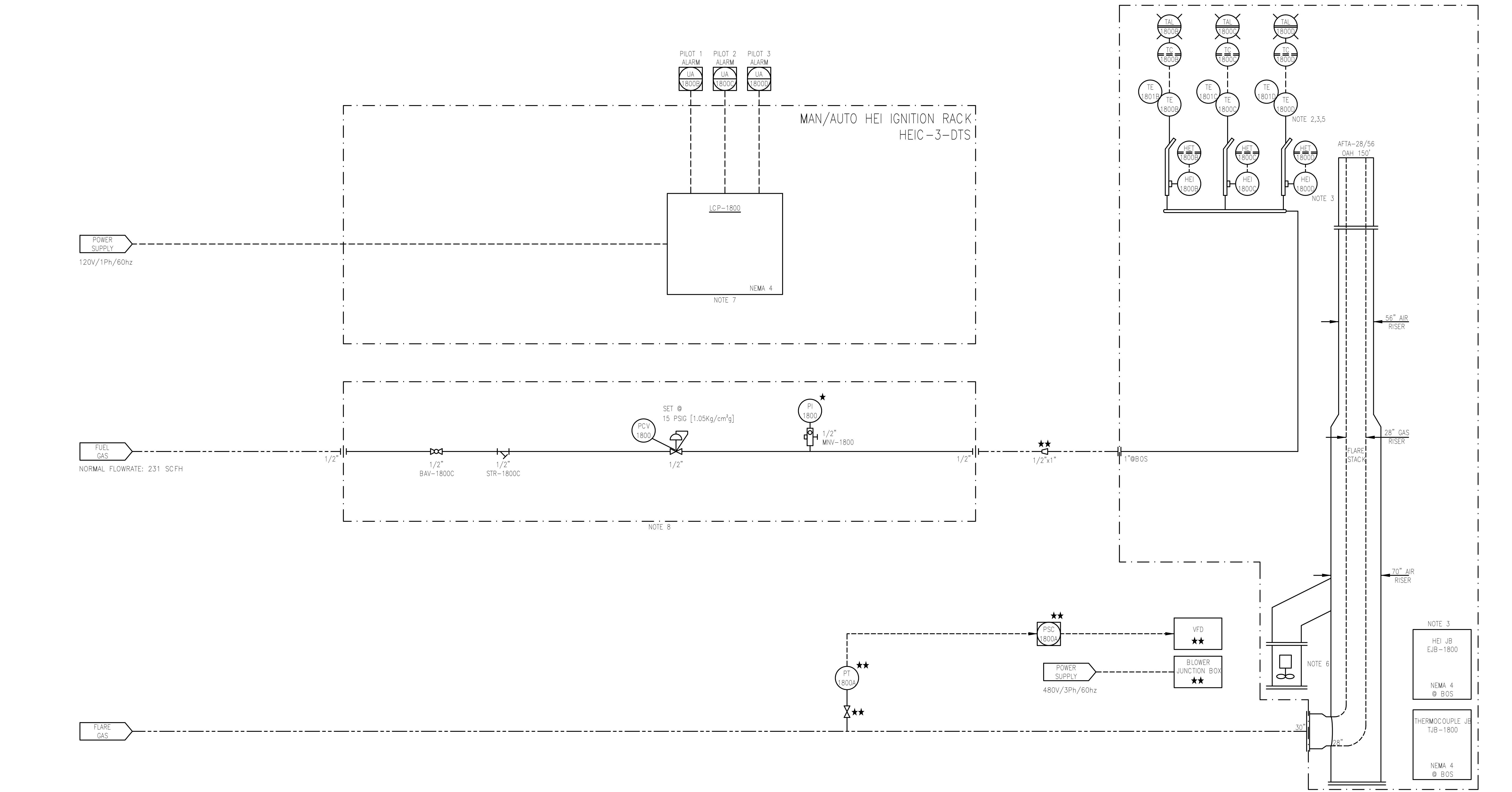
ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

GENERAL ARRANGEMENT
WITH LOADING DATA
(FL-1800)

FOR: TARGA PIPELINE MID-CONTINENT WESTTEX LLC

DRAWN	DATE
HMC	18NOV22
CHK HMC	APP LA
SCALE 1/100	REV 0

DRAWING NUMBER SE-2506
SHT. 1 OF 1



LEGEND:

- PIPING
- PIPING BY OTHERS
- ELECTRICAL
- DCS SOFTWARE
- ZEECO SCOPE LIMITS
- 316SS TUBING & FITTINGS (SWAGELOK OR EQUAL) 3/8" UNLESS NOTED OTHERWISE
- ★ ITEMS FURNISHED BY ZEECO AND INSTALLED BY OTHERS
- ★★ ITEMS FURNISHED AND INSTALLED BY OTHERS
- BOS BASE OF STACK

NOTES:

1. AREA CLASSIFICATION: NON-HAZARDOUS.
2. THERMOCOUPLES ARE DUPLEX TYPE K, RETRACTABLE.
3. THERMOCOUPLE/HEI WIRING BETWEEN JUNCTION BOXES AT BASE OF FLARE STACK AND LOCAL CONTROL PANEL IS SUPPLIED AND INSTALLED BY OTHERS.
4. FUEL GAS SUPPLY FOR PILOT OPERATION IS CONTINUOUS.
5. THE PILOT THERMOCOUPLE IS FOR ON/OFF INDICATION ONLY. IT IS NOT FOR ACCURATE MEASUREMENT OF THE PILOT FLAME TEMPERATURE.
6. BLOWER IS 150 HP TEAO, VFD DUTY.
7. CONTROL PANEL TO BE INSTALLED ON RACK.
8. PILOT FUEL GAS REGULATION TRAIN SHALL BE SHIPPED LOOSE.

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
0	21NOV22	ISSUED FOR INFORMATION	SC	RM	LA

JOBSITE: GREENWOOD GAS PLANT, (MIDLAND, TX)

END USER: TARGA PIPELINE MID-CONTINENT WESTTEX LLC

S.O. NO.: 59777 | P.O. NO.: TAR264073 | APP CTM

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

PIPING AND INSTRUMENT DIAGRAM

FOR: TARGA PIPELINE MID-CONTINENT WESTTEX LLC

DRAWN	DATE
SC	21NOV22
CHK RM	APP LA
SCALE NONE	REV 0

DRAWING NUMBER YA-4196

SHT. 1 OF 1

Attachment J

ISO &ASME Sec. VIII Code Certificates

Certificate of Registration

This certifies that the Quality Management System of

Zeeco, Inc.

22151 E. 91st Street
Broken Arrow, Oklahoma, 74014, United States

has been assessed by NSF-ISR and found to be in conformance to the following standard(s):

ISO 9001:2015

Scope of Registration:
Design, manufacture, installation, and testing of flares, burners, and incinerators.

Certificate Number:	0Z911-IS6
Certificate Issue Date:	03-AUG-2018
Registration Date:	02-AUG-2018
Expiration Date *:	01-AUG-2021

Carl Blazik,
Director, Technical
Operations & Business Units,
NSF-ISR, Ltd.

NSF International Strategic Registrations

789 North Dixboro Road, Ann Arbor, Michigan 48105 | (888) NSF-9000 | www.nsf-isr.org

CERTIFICATE OF AUTHORIZATION

The American Society of Mechanical Engineers

S

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

Zeeco, Inc.
22151 East 91st Street
Broken Arrow, Oklahoma 74014

SCOPE:

Manufacture and assembly of power boilers at the above location and field sites controlled by the above location

AUTHORIZED: **June 27, 2018**

EXPIRES: **August 20, 2021**

CERTIFICATE NUMBER: **29,790**

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment

The American Society of Mechanical Engineers

U

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

Zeeco, Inc.
22151 East 91st Street
Broken Arrow, Oklahoma 74014

SCOPE:

Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)

AUTHORIZED: **June 27, 2018**

EXPIRES: **August 20, 2021**

CERTIFICATE NUMBER: **29,791**

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment

Attachment K

Sample Inspection and Test Plan

Zeeco, Inc. Quality Assurance Manual, Volume II
Inspection and Test Plan
Document #: ZQS-QUA-IV-160 | **Revision:** **0**
Created By: Bobby Martin | **Revision Date:** **7/1/03**

PROJECT:	LEGACY GAS PLANT FLARE FL-1800	ITP NUMBER:	51592-4010	LEGEND
SHOP ORDER NUMBER:	51592	REVISION NUMBER:	0	W-WITNESS / M-MONITOR
PURCHASE ORDER NUMBER:	TAR194452	PAGES:	3	R-REVIEW / I-IN HOUSE
TAG NUMBER:	FL-1800			H-HOLD / S-SUBCONTRACTORS
SUPPLIER CONTACT:	JOSHUA HARRISON			V-VERIFY / SW-SPOT WITNESS
DESCRIPTION:	SELF SUPPORTED AIR FLARE SYSTEM			

TASK NUMBER		TASK DESCRIPTION	LOCATION CODE (I OR S)	PROCEDURE	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	INSPECTION REQUIREMENTS V/W/H/R/O PROJECT INSPECTION (INSPECTOR TO INITIAL)				NOTES
							SUB	ZEECO			
A		**APPROVALS**									
	A1	PRE-INSPECTION MEETING	I	PROJECT	PROJECT	PROJECT		H			
	A2	WPS & PQR	I/S	ASME SECT. IX	ASME SECT IX	QW-482 & 483	H	H			NOTE 1
	A3	WELDER QUALIFICATION	I/S	ASME SECT. IX	ASME SECT IX	QW-484	H	H			
	A4	NDE QUALIFICATION	S	ASNT SNT-TC-1A	ASNT SNT-TC-1A	CERTIFICATE	H	H			
	A5	NDE PROCEDURES	S	GLOBE	ASME	PROCEDURES	H	H			NOTE 2
	A6	PAINT PROCEDURES	I/S	PROJECT	PROJECT	PROJECT	H	H			
		ZEECO USA									**MDMT = -20F**
1.0		**AFTA-28/56**									
		AIR PLENUM									
	1.1	MATERIAL CONFORMANCE	I	ASTM	ASTM	PO/BOM		R			
	1.2	MATERIAL IDENTIFICATION	I	ASTM	ASTM	MTR		W			
	1.3	*IN-PROCESS INSPECTION*									
		A. DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		B. VISUAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		C. WELD INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
	1.4	*NON-DESTRUCTIVE EXAMINATION*									
		A. RADIOGRAPHY - SPOT	S	GLOBE I-B	ASME VIII-1, UW-52	REPORT		R			NOTE 6
		GAS RISER									
	1.5	MATERIAL CONFORMANCE	I	ASTM	ASTM	PO/BOM		R			**EN 10204 3.1 CERTIFICATION**
	1.6	MATERIAL IDENTIFICATION	I	ASTM	ASTM	MTR		W			
	1.7	*IN-PROCESS INSPECTION*									
		A. DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		B. VISUAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		C. WELD INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
	1.8	*NON-DESTRUCTIVE EXAMINATION*									
		A. RADIOGRAPHY - SPOT	S	GLOBE I-B	ASME VIII-1, UW-52	REPORT		R			NOTE 6
		PILOTS (QTY. 3) W/ MANIFOLD									
	1.9	MATERIAL CONFORMANCE	I	ASTM	ASTM	PO/BOM		R			**EN 10204 3.1 CERTIFICATION**
	1.10	MATERIAL IDENTIFICATION	I	ASTM	ASTM	MTR		W			
	1.11	*IN PROCESS INSPECTION*									
		A. DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		B. VISUAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		C. WELD INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		FINAL INSPECTION									
	1.12	TEST FIT OF PILOTS AND MANIFOLD TO FLARE TIP	I	DRAWING	DRAWING	PICTURES		W			
	1.13	DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	REPORT		W			
	1.14	VISUAL INSPECTION	I	DRAWING	DRAWING	REPORT		W			
	1.15	WELD INSPECTION	I	WPS	ASME IX	ITP SIGN OFF		W			
		COATING INSPECTION									
	1.16	SURFACE PREPARATION	I	DRAWING	SSPC	REPORT		R			CS ONLY
	1.17	MEK RUB TEST	I	ASTM D4752	ASTM D4752	REPORT		H			INORGANIC ZINC PRIMER
	1.18	COATING INSPECTION	I	DRAWING	DFT/MILLAGE	REPORT		W			CS ONLY
	1.19	CLEANING/PAINT TOUCH-UP	I	DRAWING	DRAWING	DRAWING		H			

PROJECT:	LEGACY GAS PLANT FLARE FL-1800	ITP NUMBER:	51592-4010
SHOP ORDER NUMBER:	51592	REVISION NUMBER:	0
PURCHASE ORDER NUMBER:	TAR194452	PAGES:	3
TAG NUMBER:	FL-1800		
SUPPLIER CONTACT:	JOSHUA HARRISON		
DESCRIPTION:	SELF SUPPORTED AIR FLARE SYSTEM		

LEGEND	
W-WITNESS	M-MONITOR
R-REVIEW	I-IN HOUSE
H-HOLD	S-SUBCONTRACTORS
V-VERIFY	SW-SPOT WITNESS

TASK NUMBER		TASK DESCRIPTION	LOCATION CODE (I OR S)	PROCEDURE	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	INSPECTION REQUIREMENTS V/W/H/R/O PROJECT INSPECTION (INSPECTOR TO INITIAL)				NOTES
							SUB	ZEECO			
2.0		**IGNITION RACK ASSEMBLY WITH PANEL**									
	2.1	MATERIAL CONFORMANCE	I	ASTM	ASTM	PO/BOM		R			**EN 10204 3.1 CERTIFICATION FOR PRESSURE PARTS**
	2.3	*IN PROCESS INSPECTION*									
		A. DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		B. VISUAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		C. WELD INSPECTION	I	WPS	ASME IX	ITP SIGN OFF		H			
		COATING INSPECTION									
	2.4	SURFACE PREPARATION	I	DRAWING	SSPC	REPORT		R			CS ONLY
	2.5	MEK RUB TEST	I	ASTM D4752	ASTM D4752	REPORT		H			INORGANIC ZINC PRIMER
	2.6	COATING INSPECTION	I	DRAWING	DFT/MILLAGE	REPORT		W			CS ONLY
		FINAL INSPECTION									
	2.7	DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	REPORT		H			
	2.8	VISUAL INSPECTION	I	DRAWING	DRAWING	REPORT		H			
	2.10	FACTORY ACCEPTANCE TEST	I	FUNCTIONAL	DATA SHEET	CHECKLIST		H			
	2.12	CLEANING/PAINT TOUCH-UP	I	DRAWING	DRAWING	DRAWING		H			
3.0		**FUEL GAS SPOOL**									**SHIPPED LOOSE FROM RACK**
	3.1	MATERIAL CONFORMANCE	I	ASTM	ASTM	PO/BOM		R			**EN 10204 3.1 CERTIFICATION FOR PRESSURE PARTS**
	3.2	MATERIAL IDENTIFICATION	I	ASTM	ASTM	MTR		V			
	3.3	*IN PROCESS INSPECTION*									
		A. DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		B. VISUAL INSPECTION	I	DRAWING	DRAWING	DRAWING		V			
		C. WELD INSPECTION	I	WPS	ASME IX	ITP SIGN OFF		H			
		D. PNEUMATIC TEST BEFORE PAINT	I	ZQS-QUA-III-070	NO LEAKAGE	REPORT		W			70-120 PSIG MAX
		COATING INSPECTION									
	3.4	SURFACE PREPARATION	I	DRAWING	SSPC	REPORT		R			CS ONLY
	3.5	MEK RUB TEST	I	ASTM D4752	ASTM D4752	REPORT		H			INORGANIC ZINC PRIMER
	3.6	COATING INSPECTION	I	DRAWING	DFT/MILLAGE	REPORT		W			CS ONLY
		FINAL INSPECTION									
	3.7	DIMENSIONAL INSPECTION	I	DRAWING	DRAWING	REPORT		H			
	3.8	VISUAL INSPECTION	I	DRAWING	DRAWING	REPORT		H			
	3.9	PNEUMATIC TEST AFTER PAINT	I	ZQS-QUA-III-070	NO LEAKAGE	REPORT		H			70-120 PSIG MAX
	3.1	CLEANING/PAINT TOUCH-UP	I	DRAWING	DRAWING	DRAWING		H			
4.0		**BUYOUT ITEMS**									
	4.1	VANE AXIAL BLOWER	S	DATA SHEET	DATA SHEET	CERTIFICATE		R			
5.0		**SHIPPING INSPECTION @ ZEECO**									
	5.1	MARKING/TAGGING	I	PO/BOM	PO/BOM	PICTURES		H			
	5.2	PACKING INSPECTION	I	SPECIFICATION	DRAWING	PACKING LIST		H			
	5.3	INSPECTION RELEASE	I	PROJECT	PROJECT	RELEASE		H			
	5.4	**FINAL DOCUMENTATION REVIEW**	I	SPECIFICATION	SPECIFICATION	MDR		H			

PROJECT:	LEGACY GAS PLANT FLARE FL-1800	ITP NUMBER:	51592-4010	LEGEND	
SHOP ORDER NUMBER:	51592	REVISION NUMBER:	0	W-WITNESS	M-MONITOR
PURCHASE ORDER NUMBER:	TAR194452	PAGES:	3	R-REVIEW	I-IN HOUSE
TAG NUMBER:	FL-1800			H-HOLD	S-SUBCONTRACTORS
SUPPLIER CONTACT:	JOSHUA HARRISON			V-VERIFY	SW-SPOT WITNESS
DESCRIPTION:	SELF SUPPORTED AIR FLARE SYSTEM				

TASK NUMBER		TASK DESCRIPTION	LOCATION CODE (I OR S)	PROCEDURE	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	INSPECTION REQUIREMENTS V/W/H/R/O PROJECT INSPECTION (INSPECTOR TO INITIAL) SUB	ZEECO			NOTES
		SUBVENDOR									**MDMT = -20F**
6.0		**SELF SUPPORTED STACK ASSEMBLY**									
		AIR RISER									
	6.1	MATERIAL CONFORMANCE	S	ASTM	ASTM	PO/BOM	M	R			
	6.2	MATERIAL IDENTIFICATION	S	ASTM	ASTM	MTR	M	W			
	6.3	*IN PROCESS INSPECTION*									
		A. FIT-UP	S	DRAWING	DRAWING	DRAWING	M	SW			
		B. DIMENSIONAL INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
		C. VISUAL INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
		D. WELD INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
	6.4	BASE PLATE TEMPLATE INSPECION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
	6.5	*NON-DESTRUCTIVE EXAMINATION*									
		A. RADIOGRAPHY-SPOT	S	PROCEDURE	ASME VIII-1, UW-52	REPORT	M	R			NOTE 6
		B. DYE PENETRANT OR MAGNETIC PARTICLE-100%	S	PROCEDURE	ASME VIII-I, APP. 6/8	REPORT	M	W			LIFTING DEVICES
		PRIMARY GAS RISER									
	6.6	MATERIAL CONFORMANCE	S	ASTM	ASTM	PO/BOM	M	R			**EN 10204 3.1 CERTIFICATION**
	6.7	MATERIAL IDENTIFICATION	S	ASTM	ASTM	MTR	M	W			
	6.8	*IN PROCESS INSPECTION*									
		A. FIT-UP	S	DRAWING	DRAWING	DRAWING	M	SW			
		B. DIMENSIONAL INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
		C. VISUAL INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
		D. WELD INSPECTION	S	DRAWING	DRAWING	ITP SIGN OFF	M	W			
	6.9	*NON-DESTRUCTIVE EXAMINATION*									
		A. RADIOGRAPHY-SPOT	S	PROCEDURE	ASME VIII-1, UW-52	REPORT	M	R			NOTE 6
		UTILITY PIPING AND CONDUIT									**SHIP LOOSE IN RANDOM LENGHTS**
	6.10	MATERIAL CONFORMANCE	S	ASTM	ASTM	PO/BOM	M	R			
	6.11	MATERIAL IDENTIFICATION	S	ASTM	ASTM	MTR	M	W			
	6.12	DIMENSIONAL INSPECTION	S	DRAWING	DRAWING	DRAWING	M	W			
	6.13	VISUAL INSPECTION	S	DRAWING	DRAWING	DRAWING	M	W			
		FINAL INSPECTION									
	6.14	TEST FIT INDIVIDUAL SECTIONS	S	DRAWING	DRAWING	PICTURES	M	R			MATCH MARK
	6.15	DIMENSIONAL INSPECTION	S	DRAWING	DRAWING	REPORT	M	W			PER OSHA
	6.16	VISUAL INSPECTION	S	DRAWING	DRAWING	REPORT	M	W			
	6.17	WELD INSPECTION	S	WPS	ASME IX	ITP SIGN OFF	M	W			
		COATING INSPECTION									
	6.18	SURFACE PREPARATION	S	DRAWING	SSPC	REPORT	H	R			CS ONLY
	6.19	MEK RUB TEST	S	ASTM D4752	ASTM D4752	REPORT	H	H			INORGANIC ZINC PRIMER
	6.20	COATING INSPECTION	S	DRAWING	DFT/MILLAGE	REPORT	H	W			CS ONLY
	6.21	CLEANING/PAINT TOUCH-UP	S	DRAWING	DRAWING	DRAWING	H	H			
7.0		**SHIPPING INSPECTION @ SUBVENDOR**									
	7.1	MARKING/TAGGING	S	PO/BOM	PO/BOM	PICTURES	M	H			
	7.2	PACKING INSPECTION	S	SPECIFICATION	DRAWING	PACKING LIST	M	H			
	7.3	INSPECTION RELEASE	S	PROJECT	PROJECT	RELEASE	M	H			
	7.4	**FINAL DOCUMENTATION REVIEW**	S	SPECIFICATION	SPECIFICATION	MDR	M	H			

General Notes:

1. ZEECO USA WPS LIST: 111, 135A, 135B, 136A, 136B, 190, 203, 501, 900, 901
2. ZEECO USA SUB-CONTRACTS ALL NDE TO GLOBE X-RAY SERVICES
3. ZEECO USA ISO PROCEDURES BEGIN WITH ZQS
4. SUBVENDOR WPS LIST: TO FOLLOW
5. ASME B31.3: 5% OF EACH WELDERS WELD (BUTTWELDS) SHALL BE 100% RADIOGRAPHED.
6. ASME VIII-I, UW-52 SPOT: MINIMUM ONE 6" SPOT EXAMINED FOR EACH 50' OF WELD FOR EACH WELDER.

Revision	Description	Made By	Date
0	Initial Issue	Andrea Dominguez	8/3/2021

Hardcopy

Approved by Bobby Martin

G:\Common\Quality\II\ZQS-QUA-IV-160.xls

Attachment L

Zeeco Rental Brochure

FLARE SYSTEMS

22151 East 91st Street | Broken Arrow, OK 74014 USA | +1 (918) 258 8551 | zeeco.com

INSTALLATION, CONSTRUCTION, & ERECTION SERVICES

Managing an array of system engineers and contractors and dealing with unpleasant surprises can result in significant downtime for installations and lead to business losses. Let Zeeco's Global Field Services eliminate the hassles, reduce costs, and save time and resources by assuming single-point responsibility for your project. With Zeeco, there are no contractual layers between the customer, the OEM supplier, and the contractors. You're guaranteed a single team with a single vision and singular commitment to your success – all backed by the world leader's engineering experience in combustion and environmental solutions.

FLAREGUARDIAN™

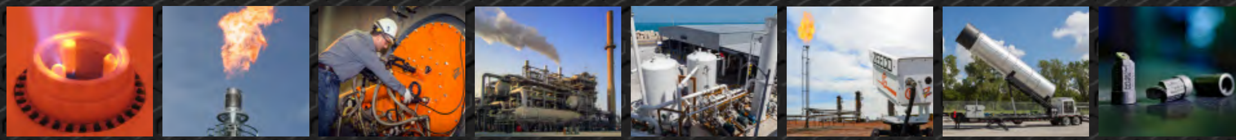
The award-winning ZEECO® FlareGuardian flare monitor is a revolutionary instrument utilizing patented Video Imaging Spectro-Radiometry (VISR) technology. The innovative device allows operators to directly, continuously, and autonomously measure flare performance – including Combustion Effeciency (CE), smoke index levels, flame stability, flame footprint, heat release, and pilot presence – in real-time. Eliminate the tedious aiming, data reduction, and ongoing operation and maintenance costs associated with other flare monitoring methods while staying in compliance with the most stringent EPA or other environmental regulations.

PARTS

It doesn't matter if your equipment was manufactured by Zeeco or another combustion equipment supplier. We have what you need to restore or improve your equipment's safety, efficiency, functionality, and environmental performance at a competitive price. Plus, our experts understand the complexities of your system, not just the replacement parts. If you need custom components made specifically for your project, Zeeco can engineer a solution to fit seamlessly into your system and have it operating like new or better.

FLARE TIP ENGINEERED SOLUTIONS

There are many reasons why flare tips shouldn't be replaced like-in-kind, especially if a failure is being replicated. Regardless of the original equipment manufacturer, let Zeeco's Engineered Solutions team evaluate the root cause of your flare tip failure or revised process requirements. Whether the need for change is due to mechanical failures, operational struggles, or updated environmental rules, our team of engineers is ready to provide the optimal technology for your plant moving forward.



BURNERS FLARES THERMAL OXIDIZERS VAPOR CONTROL RENTALS AFTERMARKET

22151 East 91st Street | Broken Arrow, OK 74014 USA
+1.918.258.8551 | zeeco.com

DO YOU NEED TO SHUTDOWN YOUR FLARE?

ZEECO® Combustion Rentals span the scope and capacity to keep any facility's essential operations online during both planned and emergency flare outages. Our rental flare systems are supported entirely by ZEECO Turnkey Combustion Services and can keep specific processes online or eliminate the need to fully de-inventory plants - shortening turnarounds by days. Go with the industry's largest, most dependable combustion rental fleet. Go Zeeco.

ZEECO COMBUSTION RENTAL CAPABILITIES

100% PLANT CAPACITY

- Keep entire facilities online at design capacity to maintain revenues
- Flare options up to 300-feet-tall and 50-inch-diameter
- Flare capacity: 0 to 3 MM lb/Hr
- Smokeless, steam, air, and unassisted available
- Multiple installation and support options
- Rapid deployment and installation
- Self-contained operation and controls

PARTIAL PLANT OR IDLE RELIEF CAPACITY

- Leave relief gathering systems intact
- Reduce required isolation
- Lower capacity required for plant during reduced / idle operation
- Allows full service of main flare while keeping critical systems online
- Reduce outages by days by eliminating purge-out
- Mobile units ensure rapid deployment and installation

SINGLE PROCESS AREA MAINTENANCE CAPACITY

- Service a single system during maintenance activity
- Installation can be in close proximity to emissions point
- Enclosed flare option shields visible flames from community view
- Mobile units ensure rapid deployment and installation

GO ZEECO®

The Zeeco Difference.

Our only business is the combustion business. By concentrating on what we do best, Zeeco has grown into a worldwide leader in combustion solutions. We are a privately held company whose ownership stays highly involved in daily operations, with upper management comprised of the world's leading combustion experts.

When you call Zeeco, we answer. When you make a request, you get a quick, efficient response. We are lean and efficient, able to make decisions quickly, without bureaucracy and red tape. Our sales, engineering, and purchasing groups work hand-in-hand to deliver highly competitive quotes and heroic turnaround times. We stand ready and willing to travel anywhere in the world to discuss upcoming projects firsthand, and to ensure that every existing project runs seamlessly.

*Visit **zeco.com/contact** for additional Global Location contact information*

GO ZEECO®

Choose to work with our dedicated, flexible, and innovative team, and you won't be disappointed. Call or email us today to request a quote or to learn more about our proprietary combustion systems.

sales@zeeco.com
+1 (918) 258 8551

Certifications apply to Zeeco Headquarters.

NSF REGISTERED ISO 9001: 2015

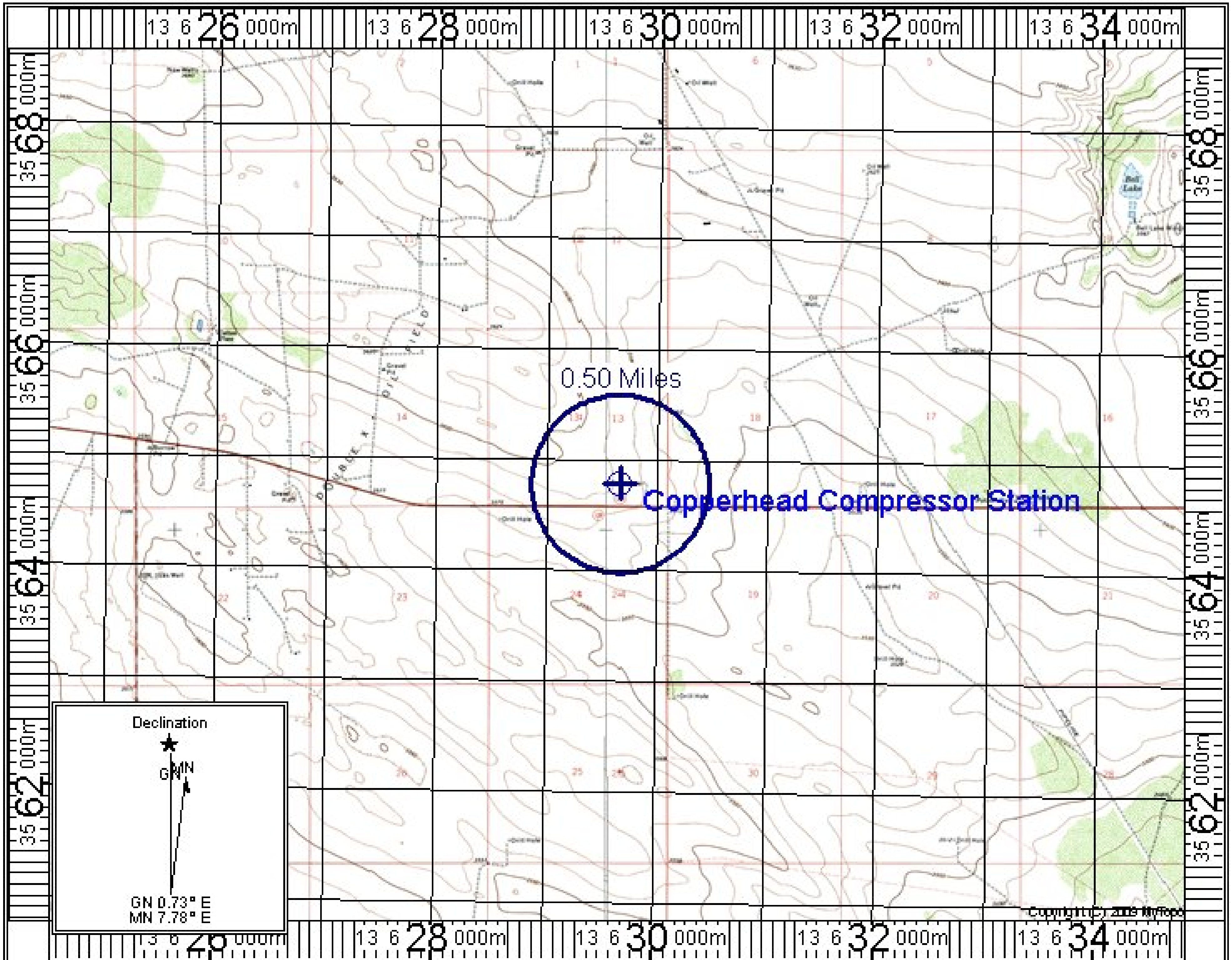
UB20 Rev 1

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	



Map Name: BELL LAKE (NM)
Print Date: 06/21/18

Scale: 1 inch = 4,761 ft.
Map Center: 13 0629614 E 3564793 N

Horizontal Datum: WGS84

SCALE 1:57142

0 10000 20000
FEET

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.

NOTICE OF AIR QUALITY PERMIT APPLICATION

Targa Midstream Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the modification of its gas plant. The expected date of application submittal to the Air Quality Bureau is October 31, 2024.

The exact location for the facility, known as Copperhead Gas Plant, is at latitude 32.212128 North and longitude -103.624164 West. The approximate location of this facility is 25.9 miles east of Malaga in Lea County.

The proposed modification consists of adding process trains 1 and 2 at the facility.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	4.85	15.20
PM_{10}	3.82	15.20
$PM_{2.5}$	3.51	15.20
Sulfur Dioxide (SO_2)	2,536.98	89.83
Nitrogen Oxides (NO_x)	4,289.49	195.16
Carbon Monoxide (CO)	8,526.21	226.58
Volatile Organic Compounds (VOC)	3,734.80	135.84
Total sum of all Hazardous Air Pollutants (HAPs)	3.93	23.57
Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emission as Total CO_2e	n/a	306,289

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year.

The owner/operator of the Facility is: Targa Midstream Services, LLC, Box 1909, Eunice, NM 88231.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Atención

Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

General Posting of Notices – Certification

I, ______________________________________, the undersigned, certify that on **_________,** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in, or near, **Jal, Lea** County, state of New Mexico on the following dates:

1. Targa Midstream Services, LLC
   Copperhead Gas Plant
   Date:_______________

2. Woolworth Community Library
   100 E. Utah
   Jal, NM 88252
   Date:______________

3. Jal City Hall
   710 W Wyoming Ave.
   Jal, NM 88252
   Date:_______________

4. US Post Office
   111 South Fourth Street
   Jal, NM 88252
   Date:________________

Signed this ________day of _________________, 2024____,

____ ____________________

Signature Date

Printed Name

Title

PUBLIC SERVICE ANNOUNCEMENT

Targa Midstream Services LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its gas plant. The proposed modification consists of installing process train 1 and 2. The expected date of application submittal to the Air Quality Bureau is October 31, 2024. This notice is a requirement according to New Mexico air quality regulations.

The exact location for the facility, known as the Copperhead Gas Plant, is at latitude 32.212128 North and longitude -103.624164 West. The approximate location of this facility is roughly 25.9 East of Malaga, NM, in Lea County.

The site will be a natural gas processing plant.

The owner and/or operator of the Facility is:
Targa Midstream Services LLC
PO Box 1909
Eunice, NM 88231

Notices were posted at the Copperhead Compressor Station site and the following three locations:

Woolworth Community Library
100 E. Utah
Jal, NM 88252

Jal City Hall
710 W. Wyoming Ave.
Jal, NM 88252

US Post Office
111 South Fourth Street
Jal, NM 88252

The address for submitting comments to the NMED is as follows:

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

Submittal of Public Service Announcement – Certification

I, Angie Dawson, the undersigned, certify that on **January 31, 2024,** submitted a public service announcement to **KZOR - KIXN- KPZA -KEJL - KYKK/KOOL FM Radio** that serves the City\Town\Village of **Jal and the surrounding areas, Lea** County, New Mexico, in which the source is or is proposed to be located and that **KZOR - KIXN- KPZA -KEJL - KYKK/KOOL FM Radio** has responded that it will air the announcement.

Signed this _24th__day of__October___, _2024,

_Angie Dawson__________________ 10/24/2024

Signature Date

Angie Dawson

Printed Name

Consultant

Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Angie Dawson

From: Aaron Forrister <aaron@noalmark.com>
Sent: Thursday, October 24, 2024 11:43 AM
To: Angie Dawson
Subject: Re: PSA Needed As Soon As Possible
Attachments: CREDIT CARD FORM.docx

Hi Angie,

Sure...we can run it Monday 10/28/24.

The fee is $75 for one time. Credit Card Form attached. Please fill out the form and return to me.

Aaron Forrister, CRMC
New Mexico Market Manager
KZOR-KIXN-KPZA-KEJL-KLEA-KBIM FM-KBIM
575-318-7217 mobile
575-397-4969 office
575-393-4310 fax
619 North Turner
Hobbs, NM 88240

From: Angie Dawson <Angie.Dawson@altamira-us.com>
Sent: Thursday, October 24, 2024 9:32 AM
To: Aaron Forrister <aaron@noalmark.com>
Cc: Laura Worthen-Lodes <Laura.Worthen-Lodes@Altamira-US.com>
Subject: PSA Needed As Soon As Possible

Hi Aaron,

My company is doing an air application for our client Targa. It is for their Copperhead Gas Plant. The application requires a public
service announcement on a local station that services the Lea county area. The attached announcement will only need to run
one time. Is this something that you can help with?

Angie Dawson

Air Quality Technician | 405-317-0942 | altamira-us.com
525 Central Park Dr., Suite 500
Oklahoma City, OK 73105

ALTAMIRA

New Mexico Municipalities (04-2023)

Municipality	Mayor (as of 4-2023)	County	2010 Population	2020 Population	% Change (2010 to 2020)	Incorporation Date
Alamogordo	Susan Payne	Otero	30,403	31,361	3%	1912
Albuquerque	Timothy Keller	Bernalillo	545,852	564,648	3%	1885
Angel Fire	Jo Mixon	Colfax	1,216	1,211	0%	1986
Anthony	Diana Murillo-Trujillo	Dona Ana	9,360	8,701	-7%	2010
Artesia	Jon Henry	Eddy	11,301	12,844	14%	1905
Aztec	Michael Padilla	San Juan	6,763	6,196	-8%	1905
Bayard	Chon Fierro	Grant	2,328	2,124	-9%	1938
Belen	Robert Noblin	Valencia	7,269	7,386	2%	1918
Bernalillo	Jack Torres	Sandoval	8,320	9,084	9%	1948
Bloomfield	Cynthia Atencio	San Juan	8,112	7,407	-9%	1958
Bosque Farms	Russel Walkup	Valencia	3,904	4,053	4%	1974
Capitan	Ron Lowrance	Lincoln	1,489	1,396	-6%	1937
Carlsbad	Dale Janway	Eddy	26,138	32,248	23%	1918
Carrizozo	Ray Dean	Lincoln	996	968	-3%	1917
Causey	Kris King	Roosevelt	104	69	-34%	1959
Chama	Ernest Vigil	Rio Arriba	1,022	914	-11%	1961
Cimarron	Matthew Gonzales	Colfax	1,021	802	-21%	1910
Clayton	Ernest Sanches	Union	2,980	2,731	-8%	1912
Cloudcroft	Bill Denney	Otero	674	768	14%	1948
Clovis	Michael Morris	Curry	37,775	38,244	1%	1909
Columbus	Esequiel Salas	Luna	1,664	1,451	-13%	1913
Corona	Samuel Seely	Lincoln	172	130	-24%	1947
Corrales	James Fahey, Jr., MD	Sandoval	8,329	8,517	2%	1971
Cuba	Denny Herrera	Sandoval	731	630	-14%	1964
Deming	Benny Jasso	Luna	14,855	14,787	0%	1902
Des moines	Jonathan Valdez	Union	143	109	-24%	1915
Dexter	Mitch Daubert	Chaves	1,266	1,079	-15%	1903
Dora	Michey Burkett	Roosevelt	133	117	-12%	1959
Eagle Nest	Jeff Carr	Colfax	290	328	13%	1976
Edgewood	Audrey Jaramillo	Santa Fe	3,735	6,183	66%	1999
Elephant Butte	Philip Mortensen	Sierra	1,431	1,432	0%	1998
Elida	Durwood Dixon	Roosevelt	197	160	-19%	1907
Encino	Boyd Herrington	Torrance	82	51	-38%	1938
Espanola	John Ramon	Rio Arriba	10,224	10,514	3%	1925
Estancia	Nathan Dial	Torrance	1,655	1,487	-10%	1909
Eunice	Billy Hobbs	Lea	2,922	3,065	5%	1936
Farmington	Nate Duckett	San Juan	45,877	46,596	2%	1901
Floyd	Colin Chandler	Roosevelt	133	85	-36%	1959
Folsom	Stephanie King	Union	56	43	-23%	1908
Fort Sumner	Louie Gallegos	De Baca	1,031	877	-15%	1916
Gallup	Louie Bonaguidi	McKinley	21,678	21,765	0%	1891
Grady	Wesley Shafer	Curry	107	88	-18%	1936
Grants	Erik Garcia	Cibola	9,182	9,141	0%	1933
Grenville	Judy Jacobs	Union	38	22	-42%	1920
Hagerman	Tony Garcia	Chaves	1,257	982	-22%	1905
Hatch	James Whitlock	Dona Ana	1,648	1,550	-6%	1927
Hobbs	Sam Cobb	Lea	34,122	40,618	19%	1937
Hope	Bill Fletcher	Eddy	105	114	9%	1910
House	Sherman Martin	Quay	68	55	-19%	1959
Hurley	Ed Stevens	Grant	1,297	1,262	-3%	1956
Jal	Stephen Aldridge	Lea	2,047	2,196	7%	1950
Jemez Springs	Roger Sweet	Sandoval	250	197	-21%	1955
Kirtland	Mark Duncan	San Juan	7,875	580	-93%	2015
Lake Arthur	Ysidro Salazar	Chaves	436	382	-12%	1906
Las Cruces	Ken Miyagishima	Dona Ana	97,618	111,738	14%	1907
Las Vegas	Louie Trujillo	San Miguel	13,753	13,163	-4%	1888
Logan	David Babb	Quay	1,042	974	-7%	1959

Municipality	Mayor (as of 4-2023)	County	2010 Population	2020 Population	% Change (2010 to 2020)	Incorporation Date
Lordsburg	Glenda Greene	Hidalgo	2,797	2,318	-17%	1916
Los Alamos	Randall Tyti	Los Alamos	17,744	12,978	-27%	1969
Los Lunas	Charles Griego	Valencia	14,835	17,370	17%	1928
Los Ranchos	Don Lopez	Bernalillo	6,024	5,881	-2%	1958
Loving	Pete Estrada	Eddy	1,413	1,386	-2%	1945
Lovington	David Ttrujillo	Lea	11,009	11,678	6%	1917
Magdalena	Richard Rumpf	Socorro	938	821	-12%	1918
Maxwell	Shantelle Gallegos	Colfax	254	230	-9%	1912
Melrose	Barry Green	Curry	651	612	-6%	1916
Mesilla	Nora Barraza	Dona Ana	2,196	1,804	-18%	1959
Milan	Felix Gonzales	Cibola	3,245	2,531	-22%	1957
Moriarty	Ted Moriarty	Torrance	1,910	1,908	0%	1953
Mosquero	Victor Vihil	Harding	93	100	8%	1922
Mountainair	Peter Nieto	Torrance	928	869	-6%	1903
Pecos	Telesfor Benavidez	San Miguel	1,398	1,377	-2%	1953
Peralta	Bryan Olguin	Valencia	3,660	3,380	-8%	2007
Portales	Ronald Jackson	Roosevelt	12,280	12,109	-1%	1909
Questa	John Ortega	Taos	1,770	1,724	-3%	1964
Raton	Neil Segotta	Colfax	6,885	6,031	-12%	1891
Red River	Linda Calhoun	Taos	477	537	13%	1971
Reserve	Hilda Kellar	Catron	289	290	0%	1974
Rio Communities	Joshua Ramsell	Valencia	5,000	4,965	-1%	2013
Rio Rancho	Greggory Hull	Sandoval	87,521	104,257	19%	1981
Roswell	Timothy Jennings	Chaves	48,366	48,541	0%	1903
Roy	Matthew Baca	Harding	234	194	-17%	1916
Ruidoso	Lynn Crawford	Lincoln	8,029	7,693	-4%	1945
Ruidoso Downs	Dean holman	Lincoln	2,815	2,632	-7%	1947
San Jon	Billie jo Barnes	Quay	216	195	-10%	1946
San Ysidro	Steve Lucero	Sandoval	193	166	-14%	1967
Santa Clara	Richard Bauch	Grant	1,686	1,624	-4%	1947
Santa Fe	Alan Webber	Santa Fe	67,947	87,684	29%	1891
Santa Rosa	Nelson Kotiar	Guadalupe	2,848	2,846	0%	1914
Silver City	Ken Ladner	Grant	10,315	9,689	-6%	1878
Socorro	Ravi Bhasker	Socorro	9,051	8,549	-6%	1894
Springer	Boe Lopez	Colfax	1,047	939	-10%	1910
Sunland Park	Javier Perea	Dona Ana	14,106	16,807	19%	1983
T or C	Amanda Forrister	Sierra	6,475	6,064	-6%	1916
Taos	Pascualito Maestas	Taos	5,716	6,577	15%	1934
Taos Ski Valley	Christof Brownell	Taos	69	79	14%	1996
Tatum	Amy Gutierrez	Lea	798	711	-11%	1948
Texico	Jerry Bradley	Curry	1,130	938	-17%	1908
Tijeras	Jake Bruton	Bernalillo	541	465	-14%	1973
Tucumcari	Ruth Ann Litchfield	Quay	5,363	5,252	-2%	1908
Tularosa	Margaret Trujillo	Otero	2,842	2,610	-8%	1916
Vaugn	Roman Garcia	Guadalupe	446	282	-37%	1919
Virden	Jacob Bigler	Hidalgo	152	125	-18%	1932
Wagon Mound	Andres Martinez	Mora	314	264	-16%	1918
Willard	David Dean	Torrance	253	201	-21%	1910
Williamsburg	Deb Stubblefield	Sierra	449	461	3%	1949

Owner Information

Owner # 206138 **District** 190

VERSADO GAS PROCESSORS LLC

KE ANDREWS & CO %

2424 RIDGE RD

ROCKWALL TX 75087

Estimated Taxes for Owner

Estimated Tax	Estimated Year used
$.	

Calculate Estimated Tax

Recap Value Information

Central Full Value	46583352	**Full Value**	46583352
Land Full Value	0	**Taxable Value**	15527784
Improvements Full value	0	**Exempt Value**	0
Personal Property Full Value	0	**Net Value**	15527784
Manufactured Home Full Value	0		
Livestock Full Value	0		

Property Information

Property Code 4000051757005

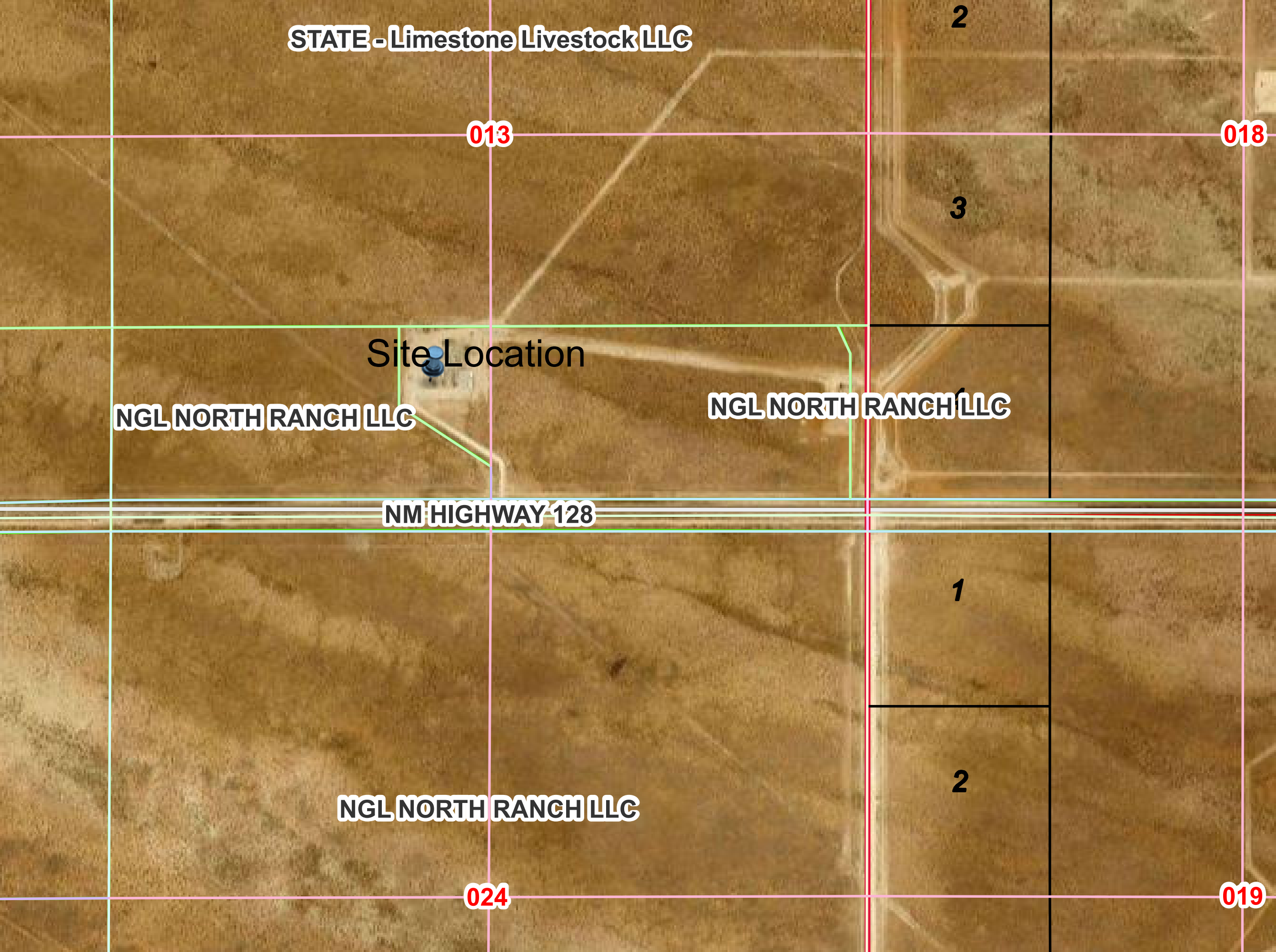
Book 2132 **Page** 32 **Reception#** 22911

Physical Address

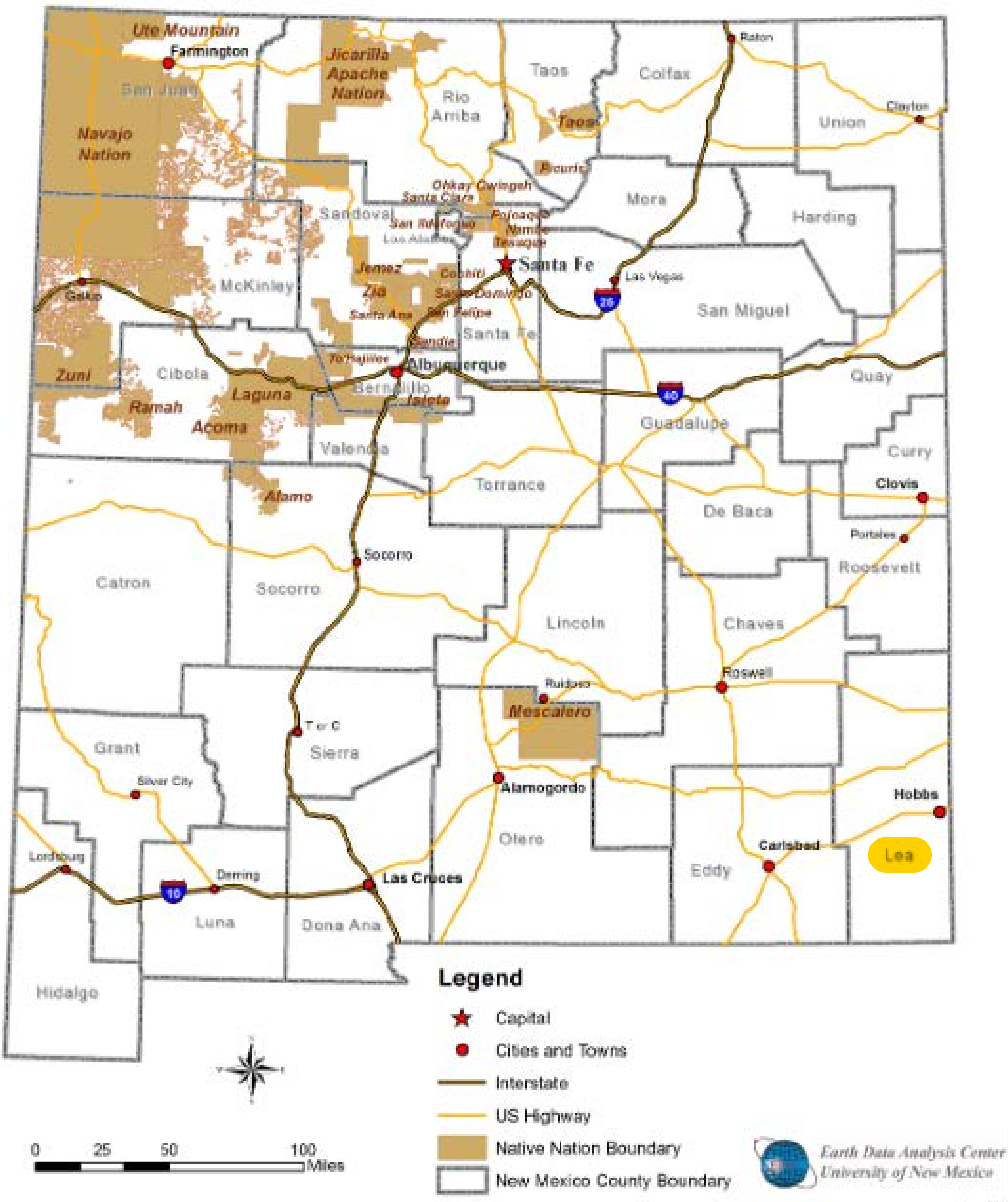
Bldg **Apt**

Section 13 **Township** 24 S **Range** 32 E

80.00 AC LOC IN S2S2
BEG AT THE NE CORNER OF THE SE4
BEARS N89D32'53"E 183.74'AND
N0D20'02"W 1320.33';
TH S24D46'49"E 215.77',
TH S0D20'02"E 1006.52',
TH S89D42'18"W 2503.90',
TH N0D20'02"W 224.49',
TH N57D26'36"W 763.82',
TH N0D20'02"W 555.68',
TH N89D32'53"W 3056.00', TO THE POB
8/19/10-KELLER, JAMES & LANETT
10/11/11-WRIGHT, WILLIAM J &
MARJORIE TRUST
12/22/17 BK 2, PG 487, MCCLOY LAND
DIVISION
3/01/17 BK 2129/788 MEMORANDUM OF
OPTION TO PURCHASE AGREEMENT
04/09/18-MC CLOY, MARK & ANNETTE
TRUST
04/09/18 REDESC FROM #206181


STATE - Limestone Livestock LLC
2
013
018
3
Site Location
NGL NORTH RANCH LLC
NGL NORTH RANCH LLC
NM HIGHWAY 128
1
2
NGL NORTH RANCH LLC
024
019

Native Nation Lands
New Mexico



October 24, 2024

Lea County New Mexico
Keith Manes, Lea County Clerk
100 N. Main Avenue, Suite 1C
Lovington, NM 88260
(575) 396-8619

Certified Mail 9589 0710 5270 1125 5841 51

Dear Mr. Manes,
Targa Midstream Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for its gas plant. The expected date of application submittal to the Air Quality Bureau is October 31, 2024.

The exact location for the facility, known as Copperhead Gas Plant, is at latitude 32.212128 north and longitude -103.624164 west. The approximate location of this facility is 25.9 miles east of Malaga in Lea County.

The proposed modification consists of adding process trains 1 and 2 at the facility.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	4.85	15.20
PM_{10}	3.82	15.20
$PM_{2.5}$	3.51	15.20
Sulfur Dioxide (SO_2)	2,536.98	89.83
Nitrogen Oxides (NO_x)	4,289.49	195.16
Carbon Monoxide (CO)	8,526.21	226.58
Volatile Organic Compounds (VOC)	3,734.80	135.84
Total sum of all Hazardous Air Pollutants (HAPs)	3.93	23.57
Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emission as Total CO_2e	n/a	306,289

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year.

The owner/operator of the Facility is: Targa Midstream Services, LLC, Box 1909, Eunice, NM 88231.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Sincerely,
Altamira-US, LLC

Laura Worthen Lodes
Chief Engineering Officer

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

ALTAMIRA

October 24, 2024

NGL North Ranch LLC
6120 S Yale Ave., Suite 805
Tulsa, OK 74136

Certified Mail 9589 0710 5270 1125 5841 44

Dear Ms. Marks,

Targa Midstream Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for its gas plant. The expected date of application submittal to the Air Quality Bureau is October 31, 2024.

The exact location for the facility, known as Copperhead Gas Plant, is at latitude 32.212128 north and longitude -103.624164 west. The approximate location of this facility is 25.9 miles east of Malaga in Lea County.

The proposed modification consists of adding process trains 1 and 2 at the facility.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	4.85	15.20
PM_{10}	3.82	15.20
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Sulfur Dioxide (SO_2)	2,536.98	89.83
Nitrogen Oxides (NO_x)	4,289.49	195.16
Carbon Monoxide (CO)	8,526.21	226.58
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Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emission as Total CO_2e	n/a	306,289

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days a week and a maximum of 52 weeks per year.

The owner/operator of the Facility is: Targa Midstream Services, LLC, Box 1909, Eunice, NM 88231.

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

Sincerely,
Altamira-US, LLC

Laura Worthen Lodes
Chief Engineering Officer

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

ALTAMIRA

October 24, 2024

New Mexico State Land Officer
Oil, Gas and Minerals Division
Allison Marks, Director
310 Old Santa Fe Trail
Santa Fe, NM 87501
(505) 827-5745

Certified Mail 9589 0710 5270 1125 5841 68

Dear Ms. Marks,

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Sincerely,
Altamira-US, LLC

Laura Worthen Lodes
Chief Engineering Officer

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9589 0710 5270 1125 5841 68

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Domestic Mail Only

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OFFICIAL USE

Certified Mail Fee
$

Extra Services & Fees *(check box, add fee as appropriate)*
- ☐ Return Receipt (hardcopy) $
- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$ 5.54

Total Postage and Fees
$

Postmark Here

OCT 24 2024

Sent To
New Mexico State Land Officer

Street and Apt. No., or PO Box No.
310 Old Santa Fe Trail

City, State, ZIP+4®
Santa Fe, NM 87501

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Section 10

Written Description of the Routine Operations of the Facility

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

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

The Copperhead Gas Processing Plant is a natural gas processing plant located in Lea County near Malaga, NM. The primary function of the plant is to separate natural gas (methane) from heavier (liquid) hydrocarbons, raw sweet field gas so that the gas can meet pipeline specifications. The plant has been designated a primary Standard Industrial Classification (SIC) Code of 1311.

The operation of the Copperhead Gas Processing Plant is intended to process 850 MMscfd of gas from the combined compressor station and two (2) gas processing plants at the facility. The gas will be treated to remove CO_2 and H_2S, dehydrated to remove water, and processed to remove heavy (liquid) hydrocarbons from the gas stream. Several plant systems will be involved to perform these functions.

Slug Catcher / Separator
A large slug catcher has been placed at the front of the plant to catch and separate any free hydrocarbon liquids and water present in the inlet pipeline gas stream. It is capable of handling large slugs of liquid brought into the plant from pipeline pigging operations. The equipment also serves as a three-phase separator to separate the free hydrocarbons, gas to be processed, and any water that may have condensed out in the pipeline after field dehydration.

Stabilizers
The overhead stabilization system is in place to lower the Reid Vapor Pressure (RVP) of the pipeline liquids and condensate after they are dropped out of the gas stream. Through a process that heats the condensate to flash off lighter hydrocarbons so the RVP is lowered to 9. The liquids out of the slug catcher are stabilized and sent to the tank farm for truck sales. Any remaining vapors are recycled back to the front of the Slug Catcher. The liquid in the tank farm is then stable and thus does not give off significant flashing vapors. Significant working and standing losses will occur at the tank farm. These emissions will be controlled with a vapor combustor.

Amine Treating
The amine units are designed to remove CO_2 and H_2S (from the natural gas stream) to meet pipeline specifications. Streams containing up to 10,000 ppm H_2S will be processed at the plants. Amine treating is an exothermic chemical reaction process. The treating solution is a mixture of 50% RO water, 40% methyl-diethanolamine (MDEA) and 10% Piperazine. This aqueous mixture is regenerated and reused. Lean MDEA solution is pumped to the top of the contactor and allowed to flow downward. Wet gas is fed into the bottom of the contactor and flows upward. As the lean MDEA solution flows down through the contactor, it comes into contact with the wet gas. The CO_2 and H_2S are absorbed by amine. The amine is now known as rich amine and the remaining gas is sweet and continues to the dehydration systems.

The regeneration of the amine utilizes one 98 MMBtu/hr heater (H-1701-CHP for plant 1 and H-1702-CH2 for plant 2) and one 98 MMBtu/hr heater (H-1702-CHP for plant 1 and H-1702-CH2 for plant 2). Significant amounts of VOC and HAP can be generated in this process. The acid gas is sent to an acid gas injection well.

Glycol Dehydration
Triethylene glycol (TEG) is used to remove water from the natural gas stream. For the TEG units associated with the plants, water is saturated into the sweet gas stream during the Amine Treating process. This water is absorbed by the TEG solution. The wet gas is brought into contact with dry glycol in an absorber. Water vapor is absorbed in the glycol and consequently, the water content is reduced. The wet rich glycol then flows from the absorber to a regeneration system in which the entrained gas is separated and fractionated in a column and re-boiler. The heating allows boiling off the absorbed water vapor and the water dry

lean glycol is cooled (via heat exchange) and pumped back to the absorber. The regeneration of the TEG utilizes small heaters. This process produces VOC and HAP emission. This stream is condensed. The wastewater stream is sent to a wastewater tank. The non-condensable stream is sent back to the inlet for a closed loop system. The dehydration flash gas stream is used as plant fuel.

Molecular Sieve Dehydration
Molecular sieve dehydration is used upstream of the cryogenic processes to achieve a -160°F water dew point. The process uses three molecular sieve vessels with two vessels in service adsorbing moisture from the gas stream and the other vessel in the regeneration mode. During the regeneration mode, hot, dry gas (regen gas) is passed up through the vessel to drive off the adsorbed moisture from the molecular sieve. The gas comes from the discharge of the residue compressors and it is passed through a heat exchanger and a heater to achieve a temperature of approximately 500°F. After the gas passes through the bed it is cooled in an air cooled exchanger. The water in the gas condenses and is separated from the gas stream in a separator. The regen gas is routed to the inlet of the cryogenic unit. There is one unit associated with each plant

Cryogenic Unit
The cryogenic units are designed to liquefy natural gas components from the sweet, dehydrated inlet gas by removing work from the gas be means of the turbo expander/compressor. The cryogenic unit recovers natural gas liquids (NGL) by cooling the gas stream to extremely cold temperatures (-160°F and lower) and condensing components such as ethane, propane, butanes and heavier. The gas is cooled by a series of heat exchangers and by lowering the pressure of the gas from around 950 PSIG to approximately 190 PSIG. Once the gas has passed through the system of heat exchangers and expansion it is re-compressed using the energy obtained from expanding the gas. The gas will flow through the following heat exchangers:
• **Gas to Gas Exchanger –** This unit exchanges heat from the warm inlet gas and the cold residue gas that has already been expanded. This cools the inlet gas.
• **Product Heater –** This unit will cool the inlet gas by exchanging heat with the cold liquid product that has been recovered.
• **Side-Reboiler –** This unit uses heat from the inlet gas to boil the methane out of the liquid. One stream comes off the side of the tower and one stream comes off of the bottom of the tower. This also cools the inlet gas. The gas is expanded and recompressed in the expander/compressor.

Emergency Flares
Three flares are proposed. These flares' header system gathers hydrocarbons from Pressure Safety Devices in the plant, and routes them to the flares. These systems are also used to safely control blow-down hydrocarbons from equipment in the plant.

Compressors
The site will operate a total of 30 electric-driven compressors, there are 8 electric compressors associated with the compressor station and 11 compressors associated with each gas plant. No internal combustion engines or turbines will be used to drive compressors.

Nitrogen Rejection Unit
The site will operate a nitrogen rejection unit (NRU) which will remove nitrogen from the residue gas stream as necessary so the gas meets pipeline specifications. The NRU consists of various heat exchangers, separation, and recompression.

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)**:**
The proposed Copperhead Gas Plant and adjacent Copperhead Compressor Station are considered in this application and treated as a single source.

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.

X Yes ☐ **No**

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

X Yes ☐ **No**

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

X Yes ☐ **No**

C. Make a determination:

X 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:

- **X 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 "project" emissions** for this modification are **not significant. Project increases are less than 250 tpy. The "project" emissions listed below do only result from changes described in this permit application, thus no emissions from other revisions or modifications, past or future to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. Debottlenecked emissions are not accounted for since the source is an existing minor NSR site. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: 225.12 TPY**
b. **CO: 246.58 TPY**
c. **VOC: 140.04 TPY**
d. **SOx: 89.96 TPY**
e. **PM: 21.00 TPY**
f. **PM10: 21.00 TPY**
g. **PM2.5: 21.00 TPY**
h. **Sulfur compounds (listed in Table 2): 2.63 TPY**
i. **GHG: 492,737 TPY**

C. Netting N/A

D. BACT N/A

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. N/A

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

Example of a Table for State Regulations:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	If subject, this would normally apply to the entire facility. 20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. Title V applications, see exemption at 20.2.3.9 NMAC The TSP NM ambient air quality standard was repealed by the EIB effective November 30, 2018.
20.2.7 NMAC	Excess Emissions	Yes	Facility	If subject, this would normally apply to the entire facility. If your entire facility or individual pieces of equipment are subject to emissions limits in a permit or numerical emissions standards in a federal or state regulation, this applies. This would not apply to Notices of Intent since these are not permits.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	This regulation may apply if, this is an application for a notice of intent (NOI) per 20.2.73 NMAC, if the activity or facility is a fugitive dust source listed at 20.2.23.108.A NMAC, **and** if the activity or facility is located in an area subject to a mitigation plan pursuant to 40 CFR 51.930. As of January 2019, the only areas of the State subject to a mitigation plan per 40 CFR 51.930 are in Doña Ana and Luna Counties. Sources exempt from 20.2.23 NMAC are activities and facilities subject to a permit issued pursuant to the NM Air Quality Control Act, the Mining Act, or the Surface Mining Act (20.2.23.108.B NMAC. **20.2.23.108 APPLICABILITY:** **A.** This part shall apply to persons owning or operating the following fugitive dust sources in areas requiring a mitigation plan in accordance with 40 CFR Part 51.930: **(1)** disturbed surface areas or inactive disturbed surface areas, or a combination thereof, encompassing an area equal to or greater than one acre; **(2)** any commercial or industrial bulk material processing, handling, transport or storage operations. **B.** The following fugitive dust sources are exempt from this part: **(1)** agricultural facilities, as defined in this part; **(2)** roadways, as defined in this part; **(3)** operations issued permits pursuant to the state of New Mexico Air Quality Control Act, Mining Act or Surface Mining Act; and **(4)** lands used for state or federal military activities. [20.2.23.108 NMAC - N, 01/01/2019]
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	The site does not have gas burning equipment larger than 1,000,000 MM Btu/year.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	The site does not have oil burning equipment larger than 1,000,000 MM Btu/year.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	Yes	Facility	This regulation could apply to existing (prior to July 1, 1974) or new (on or after July 1, 1974) natural gas processing plants that use a Sulfur Recovery Unit to reduce sulfur emissions. **The Facility will comply with all applicable requirements of 20.2.35 NMAC.**

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	**These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.**
20.2.38 NMAC	Hydrocarbon Storage Facility	N/A	**N/A**	This regulation could apply to storage tanks at petroleum production facilities, processing facilities, tanks batteries, or hydrocarbon storage facilities. The facility does not have tank sizes that meet the applicability criteria.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	N/A	**N/A**	This regulation could apply to sulfur recovery plants that are not part of petroleum or natural gas processing facilities.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	Facility	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NOx) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: Include the construction status of applicable units as “New”, “Existing”, “Relocation of Existing”, or “Reconstructed” as defined by this Part in your justification: Check the box for the subparts that are applicable: ☐113 – Engines and Turbines ☒114 – Compressor Seals ☒115 – Control Devices and Closed Vent Systems ☒116 – Equipment Leaks and Fugitive Emissions ☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators ☒ 119 – Heaters ☒ 120 – Hydrocarbon Liquid Transfers ☒121 – Pig Launching and Receiving ☒122 – Pneumatic Controllers and Pumps ☒ 123 – Storage Vessels ☐124 – Well Workovers ☐ 125 – Small Business Facilities ☐126 – Produced Water Management Unit ☐127 – Flowback Vessels and Preproduction Operations
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	EM-1a EM-1b EM-2a EM-2b EM-3a EM-3b EM-4a EM-4b GEN-1 GEN-2 GEN-3 GEN-4 GEN-5 GEN-6 H-1 H-2 Flare	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless your equipment is subject to another state regulation that limits particulate matter such as 20.2.19 NMAC (see 20.2.61.109 NMAC). **If equipment at your facility was subject to the repealed regulation 20.2.37 NMAC it is now subject to 20.2.61 NMAC.**

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
			H-1701-CHP H-1702-CHP H-1703-CHP H-1704-CHP H-4701-CHP FL-1800-CHP H-1701-CH2 H-1702-CH2 H-1703-CH2 H-1704-CH2 H-4701-CH2 FL-1800-CH2 VCU	
20.2.70 NMAC	Operating Permits	Yes	Facility	If subject, this would normally apply to the entire facility. Applies if your facility's potential to emit (PTE) is 100 tpy or more of any regulated air pollutant other than HAPs; and/or a HAPs PTE of 10 tpy or more for a single HAP or 25 or more tpy for combined HAPs; is subject to a 20.2.79 NMAC nonattainment permit; or is a facility subject to a federal regulation that requires you to obtain a Title V permit such as landfills or air curtain incinerators. Include both stack and fugitive emissions to determine the HAP's PTE regardless of the facility type. If your facility is one of those listed at 20.2.70.7(2)(a) through (aa) state which source type your facility is and count both fugitive and stack emissions to determine your PTE. If your facility is not in this (a) through (aa) list, count only stack emissions to determine your PTE. Landfills and Air Curtain Incinerators are not Title V Major Sources, but it would apply pursuant to 20.2.70.200.B NMAC.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	If subject to 20.2.70 NMAC and your permit includes numerical ton per year emission limits, you are subject to 20.2.71 NMAC and normally applies to the entire facility.
20.2.72 NMAC	Construction Permits	No	Facility	If subject, this would normally apply to the entire facility. Could apply if your facility's potential emission rate (PER) is greater than 10 pph or greater than 25 tpy for any pollutant subject to a state or federal ambient air quality standard (does not include VOCs or HAPs); if the PER of lead is 5 tpy or more; if your facility is subject to 20.2.72.400 NMAC; or if you have equipment subject to 40 CFR 60 Subparts I and OOO, 40 CFR 61 Subparts C and D. Include both stack and fugitive emissions to determine PER.

State Regulation Citation	**Title**	**Applies? Enter Yes or No**	**Unit(s) or Facility**	**Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)**
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	If subject, this would normally apply to the entire facility. **A Notice of Intent application 20.2.73.200 NMAC** could apply if your facility's PER of <u>any</u> regulated air pollutant, including VOCs and HAPs, is 10 tpy or more or if you have lead emissions of 1 tpy or more. Include both fugitive and stack emissions to determine your PER. You could be required to submit **Emissions Inventory Reporting per** 20.2.73.300 NMAC if your facility is subject to 20.2.73.200, 20.2.72, or emits more than 1 ton of lead or 10 tons of PM10, PM2.5, SOx, NOx CO, or VOCs in any calendar year. All facilities that are a Title V Major Source as defined at 20.2.70.7.R NMAC, are subject to Emissions Inventory Reporting.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	If subject, this would normally apply to the entire facility. **If you are an existing PSD major source you are subject to the applicability determination requirements at 20.2.74.200 NMAC to determine if you are subject to a PSD permit, <u>before</u> commencing actual construction of any modifications at your facility.** Complete the applicability determination in Section 12 of the application. If you are constructing a new PSD major source or are proposing a major modification to an existing PSD major source, you must obtain a PSD permit. Minor NSR Exemptions at 20.2.72.200 NMAC nor Title V Insignificant Activities do not apply to the PSD permit regulation. **Choose which applies and delete the rest.** See NMACS 20.2.74.7.AE and AG Major Modification and Major Stationary Source, 20.2.74.200 Applicability, and 20.2.74.201 Exemptions. **20.2.74.7.AG(1)** A stationary source listed in Table 1 of this Part (20.2.74.501 NMAC) which emits, or has the potential to emit, emissions equal to or greater than one hundred (100) tons per year of any stack and fugitive emissions (as defined) of any regulated air pollutant; or **20.2.74.7.AG(2)** A stationary source not listed in Table 1 of this Part (20.2.74.501 NMAC) and which emits or has the potential to emit stack emissions of two hundred fifty (250) tons per year or more of any regulated pollutant; or **20.2.74.7.AG(3)** A physical change that would occur at a stationary source not otherwise qualifying under paragraphs (1) or (2) of subsection if the change would constitute a major stationary source by itself (e.g. an increase of 250 tpy or more); or **20.2.74.300.D** a source or modification that becomes a major stationary source or major modification solely due to a relaxation in any enforceable limitation established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then this part shall apply to the source or modification as through construction had not yet commenced. **20.2.74.200.7.AG(5)** The fugitive emissions of a stationary source shall not be included in determining for any of the purposes of this section whether it is a major stationary source, unless the source belongs to one of the stationary source categories found in Table 1 of this Part (20.2.74.501 NMAC) or any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.
20.2.75 NMAC	Construction Permit Fees	No	Facility	If subject, this would apply to the entire facility. It is not necessary to include each low level regulatory citation for this regulation. This regulation applies if you are submitting an application pursuant to 20.2.72, 20.2.73, 20.2.74, and/or 20.2.79 NMAC. If this is a 20.2.73 NMAC application it is subject to the filing fee at 20.2.75.10 NMAC. If this is a 20.2.72, 20.2.74, and/or 20.2.79 NMAC application it is subject to 20.2.75.10, 11 permit fee, and 11.E annual fees. You are not subject to the 75.11.E annual fees if you are subject to 20.2.71 NMAC.

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.77 NMAC	New Source Performance	Yes	Units subject to 40 CFR 60	This is a stationary source which is subject to the requirements of 40 CFR Part 60.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	No units are subject to the requirements of 40 CFR Part 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	Site is not located in a nonattainment county
20.2.80 NMAC	Stack Heights	No	N/A	Not cited in NSR permit. No stacks exceed GEP Height
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	Units Subject to 40 CFR 63	The site has equipment that is subject to MACT Subpart HH and ZZZZ.

Table for Applicable Federal Regulations

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	No	N/A	The modeling and conditions developed from the modeling are the applicable requirements to demonstration compliance with the NAAQs..
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Units subject to 40 CFR 60	The site has units subject to an NSPS shown below
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	No units are subject to NSPS Subpart Da.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	No units are subject to NSPS Subpart Db.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	H-1 H-2 Flare H-1701-CHP H-1702-CHP H-1703-CHP H-1704-CHP H-4701-CHP H-1701-CH2 H-1702-CH2 H-1703-CH2 H-1704-CH2 H-4701-CH2	Applicability: facility has steam generating units for which construction, modification or reconstruction is commenced after June 9, 1989 and that have a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr).
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	All tanks have a storage capacity greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978.
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	No	TK-1907-CHP TK-1908-CHP TK-1910-CHP TK-1907-CH2 TK-1908-CH2	This facility has storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	Commenced **After** July 23, 1984		TK-1910-CH2	
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	No stationary gas turbines are operated at the site.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This facility commenced construction after August 23, 2011. Thus, the facility is not subject to this subpart.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The facility is a natural gas processing plant; however, there is no sulfur recovery plant. Thus, this location does not meet the applicability criteria of 40 CFR 60.640.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No	N/A	This facility commenced construction after September 18, 2015. Thus, the facility is not subject to this subpart.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced **After** September 18, 2015	Yes	Compressors, Storage Tanks, Fugitives	Targa will make a final determination of NSPS OOOO/a/b applicability upon completion of installation of the equipment. There are 27 electric-driven compressors associated with the compressor stations, Plant 1 and Plant 2 and were manufactured after September 18, 2015. The ones associated with the compressor station were constructed prior to December 6, 2022 are subject to 60.5385a, 60.5410a, 60.5415a, and 60.5420a. The ones associated with the plant will be evaluated upon installation for applicability with OOOOa and OOOOb T-1, T-2, T-3, T-4, and T-5 are storage vessels constructed after September 18, 2015 with federally enforceable limitations that limit emissions to less than 6 tpy of VOCs. As such, T1 to T6 are not subject to 60.5395a, 60.5410a, 60.5417a, 60.5420a. The amine units are sweetening units as defined in this subpart that were constructed after September 18, 2015. Per 60.5365a(g) (3) the amine units are required to comply with 60.5423a(c) but not required to comply with 60.5405a through 60.5407 and 60.5410a(g) and 60.5415a(g). The facility is defined as an onshore natural gas processing plant. Therefore, fugitives are covered by 60.5400a, 60.5401a, 60.5402a, 60.5421a, and 60.5422a. Pneumatic devices and pumps will utilize instrument air.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	Yes	EM-1a, EM-1b, EM-2a, EM-2b, EM-3a, EM-3b, EM-4a, EM-4b	See 60.4200 and EPA Region 1's Reciprocating Internal Combustion Guidance website.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	GEN-1 GEN-2 GEN-3 GEN-4 GEN-5 GEN-6	No spark ignited RICE are operated at the site.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	No affected units at the Facility
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	No affected units at the Facility
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	No affected units at the Facility
NESHAP 40 CFR 61 Subpart A	General Provisions	No	Units Subject to 40 CFR 61	No 40 CFR 61 sources at the site.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	No units at the facility. .
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	**No**	**N/A**	No units at the site operate in more than 10 wt% VHAP service.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	Units Subject to 40 CFR 63	This facility is an area source for HAPs. Area source provisions of 40 CFR Part 63 subpart HH apply to the glycol dehydrators at the site

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY1, DEHY2, DEHY-CHP, DEHY-CH2	This facility is a HAP Area Source and is subject to the requirements of 40 CFR 63 Subpart HH. Dehydrators DEHY1, DEHY2, DEHY-CHP, DEHY-CH2 have actual and potential emissions less than 1 tpy (0.9 Megagrams per year) and are therefore exempt from control requirements per 40 CFR 63.764(e)(1)(ii). Records of the exempt status will be maintained as required in 40 CFR 63.774(d)(1).
MACT 40 CFR 63 Subpart HHH		No	N/A	This Facility is not a natural gas transmission facility.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This regulation establishes national emission standards for hazardous air pollutants for major industrial, commercial, and institutional boilers and process heaters at Major sources of HAPs. The facility is an area source of HAPs; therefore, this regulation does not apply
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	There are no affected units at the Facility
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	EM-1a, EM-1b, EM-2a, EM-2b, EM-3a, EM-3b, EM-4a, EM-4b GEN-1 GEN-2 GEN-3 GEN-4 GEN-5 GEN-6	The units are subject to and will comply with the area source requirements of 40 CFR Part 63 Subpart ZZZZ.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 64	**Compliance Assurance Monitoring**			**CAM will be addressed as part of the initial Title V permit application**
40 CFR 68	**Chemical Accident Prevention**	Yes	Facility	An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under §68.115, See 40 CFR 68
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This regulation establishes a regulation for protection of the stratospheric ozone. The regulation is not applicable because the facility does not “service”, “maintain”, or “repair” class I or class II appliances nor “disposes” of the appliances [40 CFR Part 82.1(a)].

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.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

Either the natural gas fired generators or the diesel fired generators will be installed. The SSM from the flare is assumed to occur outside of steady state operations.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	X
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☒ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☐ No modeling is required.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification		
1	Name of facility:	Copperhead Gas Plant
2	Name of company:	Targa Midstream Services, LLC
3	Current Permit number:	7712
4	Name of applicant's modeler:	Laura Worthen Lodes, PE
5	Phone number of modeler:	405-702-1618
6	E-mail of modeler:	Laura.Worthen-Lodes@Altamira-US.com

16-B: Brief			
1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Adding New Equipment	
3	Describe the permit changes relevant to the modeling.		
	The addition of 2 gas processing trains to the facility.		
4	What geodetic datum was used in the modeling?	NAD83	
5	How long will the facility be at this location?	Permanent	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒

7	Identify the Air Quality Control Region (AQCR) in which the facility is located		155
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	3/16/1988	
	SO2	7/28/1978	
	PM10	2/20/1979	
	PM2.5	11/13/2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	Carlsbad Caverns National Park is located 86.1 km from the Facility, the Class I Area Analysis is not applicable.		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A		

16-C: Modeling History of Facility

1 Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	N/A		
NO_2	N/A		
SO_2	N/A		
H_2S	N/A		
PM2.5	N/A		
PM10	N/A		
Lead	N/A		
Ozone (PSD only)	N/A		
NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A		

16-D: Modeling performed for this application

1 For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.

	CO	☒	☐	☐	☐	☐
	NO_2	☒	☐	☐	☐	☐
	SO_2	☒	☐	☐	☐	☐
	H_2S	☒	☐	☐	☐	☐
	PM2.5	☒	☐	☐	☐	☐
	PM10	☒	☐	☐	☐	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☒	☐	☐	☐	☐
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☐

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.
N/A

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐

BEEST AERMOD with US EPA executable 23132 which provides more detailed background concentration tools and added flexibility.

The model was run in regulatory default mode for all pollutants other than NO_x. The NO_x model was run utilizing the Tier 2, Ambient Ratio Method 2 (ARM2): 0.5 ambient ratio of NO_2 to NO_x.

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	Background monitoring data was utilized. 5ZS for NOx, PM2.5, PM10, 350010023 for CO and 1H for SO2 per the July 2024 modeling guidance

2 If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections

16-H: Building and structure downwash

1	How many buildings are present at the facility?	There is one building present at the facility.		
2	How many above ground storage tanks are present at the facility?	There are two (2) produced water storage tanks, one (1) condensate storage tank, one (1) new H_2S scavenger tank, and one (1) Spent H_2S scavenger tank present at the facility.		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		Yes☒	No☐
4	Building comments			

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.		
	The facility has a continuous fence line which defines the restricted area.		
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?	Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?	Yes☒	No☐
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.		

Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
Very Fine	Rectangle	100 m	Fenceline	1,000 m	
Fine	Rectangle	250 m	1,000 m	2,500 m	
Medium	Rectangle	500 m	2,500 m	5,000 m	
Coarse	Rectangle	1,000 m	5,000 m	10,000 m	

5	Describe receptor spacing along the fence line.
	50 m spacing along the fence line
6	Describe the PSD Class I area receptors.
	N/A

16-J: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	There are no modeling scenarios as described above. The maximum NO_x lb/hr rate was utilized for all sources.		
2	Which scenario produces the highest concentrations? Why?		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

If hourly, variable emission rates were used that were not described above, describe them below.

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒
	A worst case hourly rate was used for the SSM from the flares, annual modeling was based on the expect annual emissions.		

16-K: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2

	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:

2	Describe the NO_2 modeling.		
	Modeling was performed utilizing Tier 2, ARM2 within AERMOD.		
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒	No☐
	N/A		
4	Describe the design value used for each averaging period modeled.		
	1-hour: High eighth high Annual One Year Annual Average:		

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows. The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$ =1.546 µg/m^3, which is below the significance level of 1.96 µg/m^3. Sources that produce ozone concentrations below the ozone SIL do not cause or contribute to air contaminant levels exceeding the ozone NAAQS.

3	Does the facility emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs? Sources that emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs are covered by the analysis above and require an individual analysis.	Yes☐	No☒

5	For new PSD Major Sources or PSD major modifications, if MERPs were used to account for ozone fill out the information below. If another method was used describe below.				
	NO_X (ton/yr)	$MERP_{NOX}$	VOCs (ton/yr)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.					
	☐	PM2.5				
	☐	PM10				
	☒	None				
2	Describe the particle size distributions used. Include the source of information.					
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.				Yes☒	No☐
4	Was secondary PM modeled for PM2.5?				Yes☒	No☐
5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.					
	Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour}}$	
	$MERP_{annual}$	26780	14978		0.092 $\mu g/m^3$	
	$MERP_{24\text{-hour}}$	7331	1981		$[PM2.5]_{annual}$	
	Emission rate (ton/yr)	225.75	90.34		0.0029 $\mu g/m^3$	

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.		Yes☒	No☐
	Unit Number in UA-2	Unit Number in Modeling Files		
	FUG	COMPFUG		
2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.		Yes☒	No☐

3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?			Yes☒	No☐
4	Which units consume increment for which pollutants?				
	Unit ID	NO_2	SO_2	PM10	PM2.5
	H_1704_CH1	X	X	X	X
	FL_1800_CHP	X	X		
	FL_1800_CH2	X	X		
	H_1701_CH1	X	X	X	X
	H_1702_CH1	X	X	X	X
	H_4701_CH1	X	X	X	X
	H_1701_CH2	X	X	X	X
	H_1702_CH2	X	X	X	X
	H_1704_CH2	X	X	X	X
	H_4701_CH2	X	X	X	X
	H_1	X	X	X	X
	SSM	X	X		
	EM_1A	X	X	X	X
	EM_1B	X	X	X	X
	EM_2A	X	X	X	X
	EM_2B	X	X	X	X
	EM_3A	X	X	X	X
	EM_3B	X	X	X	X
	EM_4A	X	X	X	X
	EM_4B	X	X	X	X
	VCU	X	X		
	H_1703_CHP	X	X	X	X
	H_1703_CH2	X	X	X	X
	GEN1	X	X	X	X
	GEN2	X	X	X	X

	GEN3	X	X	X	X
	GEN4	X	X	X	X
	GEN5	X	X	X	X
	GEN6	X	X	X	X
	H_2	X	X	X	X
5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).				
6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐		

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL-1800-CHP	58.69 g/mol	13,650 cal/s	0.4188
	FL-1800-CH2	58.69 g/mol	13,650 cal/s	0.4189
	SSM			0.4188

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
4	Describe any open pits.		
5	Describe emission units included in each open pit.		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: Del Norte High School (350010023)		
	NO_2: Outside Carlsbad (350151005)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: Shiprock Substation (350451005)		
	Other:		
	Comments:		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Carlsbad	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	USGS		

16-U: Modeling Files

1	Describe the modeling files:		
	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
	Copperhead_XXXX_CO.XX	CO	ROI/SIA/Cumulative
	Copperhead_XXXX_SO2.XX	SO2	ROI/SIA/Cumulative
	Copperhead_XXXX_NO2.XX	NO2	ROI/SIA/Cumulative

	Copperhead_XXXX_PM10.XX	PM10	ROI/SIA/Cumulative
	Copperhead_XXXX_PM2.5.XX	PM2.5	ROI/SIA/Cumulative
	Copperhead_XXXX_H2S.XX	H2S	ROI/SIA/Cumulative

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☐
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☐
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☐

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☐	No☒
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
NOx – 1hr	132.92			54.5	187.4	188.03	99.68	629910.09	3564987.12	1090.66
NOx-24-hr	64.86489				64.9	188.03	34.50	629882.86	3564619.80	1090.62
NOx - annual	25.15829			9.3	34.5	94.02	36.65	629573.38	3564987.45	1093.43
CO-1 hr	565.9			2148	2,713.9	14,997.5	18.10	631000.00	3565200.00	1081.47
CO-8 hr	353.6			1265	1,618.6	9,960.1	16.25	630700.00	3565200.00	1082.80
PM10 – 24hr	15.30934			37.3	52.6	150	35.07	629882.86	3564619.80	1090.62
PM10 – Annual	2.80496				2.8	17	16.50	629573.38	3564987.45	1093.43
PM2.5 – 24hr	5.87127		0.0917	16.5	22.5	35	64.18	629882.86	3564619.80	1090.62
PM2.5 – Annual	1.28952		0.0029	7.1	8.4	9	93.25	629621.48	3564987.40	1092.72

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
SO2-1hr	167.64896			27.9	195.5	196.4	99.57	631000.00	3565200.00	1081.47
SO2-3hr	122.11756				122.1	1309.3	9.33	629300.00	3565300.00	1096.76
SO2-24hr	44.02670				44.0	261.9	16.81	631100.00	3565300.00	1082.60
SO2-Annual	9.64136			1.0	10.6	52.4	20.31	629600.00	3565300.00	1093.65
H2S-1hr	11.98				11.98	13.9	86.19	630031.48	3564755.76	1089.74
H2S-1/2hr	11.98				11.98	139.3	8.6	630031.48	3564755.76	1089.74

16-X: Summary/conclusions	
1	A statement that modeling requirements have been satisfied and that the permit can be issued.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

N/A – there is no compliance test history for this facility. This is a proposed construction project.

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.

The required Compliance History Disclosure Form is attached.

According to 20.2.72.203.A(3), all information, including all calculations and computations, to describe the specific chemical and physical nature and to estimate the maximum quantities of any regulated air contaminants the source will emit through routine operations after construction, modification or installation is completed, and estimate maximum potential emissions during malfunction, startup, shutdown must be included with an application. With respect to a toxic air pollutant as defined by Subsection H of 20.2.72.401 NMAC this requirement only applies when the toxic air pollutant is emitted in such a manner that a permit is required under the provisions of 20.2.72.400 NMAC - 20.2.72.499 NMAC. Calculations and computations for toxic air pollutants are included in this section. No toxic air pollutant, as defined in 20.2.72.401 NMAC, is emitted in a quantity exceeding the screening threshold established in 20.2.72.502 Table A and Table B.

Air Permit Application
Compliance History Disclosure Form

Pursuant to Subsection 74-2-7(S) of the New Mexico Air Quality Control Act ("AQCA"), NMSA §§ 74-2-1 to -17, the New Mexico Environment Department ("Department") may deny any permit application or revoke any permit issued pursuant to the AQCA if, within ten years immediately preceding the date of submission of the permit application, the applicant met any one of the criteria outlined below. In order for the Department to deem an air permit application administratively complete, or issue an air permit for those permits without an administrative completeness determination process, the applicant must complete this Compliance History Disclosure Form as specified in Subsection 74-2-7(P). An existing permit holder (permit issued prior to June 18, 2021) shall provide this Compliance History Disclosure Form to the Department upon request.

Permittee/Applicant Company Name		**Expected Application Submittal Date**
Targa Midstream Services, LLC		10/31/2024
Permittee/Company Contact	**Phone**	**Email**
Robert Andries	713 584 1360	randries@targaresources.com

Within the 10 years preceding the expected date of submittal of the application, has the permittee or applicant:		
1	Knowingly misrepresented a material fact in an application for a permit?	☐ Yes ☒ No
2	Refused to disclose information required by the provisions of the New Mexico Air Quality Control Act?	☐ Yes ☒ No
3	Been convicted of a felony related to environmental crime in any court of any state or the United States?	☐ Yes ☒ No
4	Been convicted of a crime defined by state or federal statute as involving or being in restraint of trade, price fixing, bribery, or fraud in any court of any state or the United States?	☐ Yes ☒ No
5a	Constructed or operated any facility for which a permit was sought, including the current facility, without the required air quality permit(s) under 20.2.70 NMAC, 20.2.72 NMAC, 20.2.74 NMAC, 20.2.79 NMAC, or 20.2.84 NMAC?	☐ Yes ☒ No
5b	If "No" to question 5a, go to question 6. If "Yes" to question 5a, state whether each facility that was constructed or operated without the required air quality permit met at least one of the following exceptions: a. The unpermitted facility was discovered after acquisition during a timely environmental audit that was authorized by the Department; or b. The operator of the facility estimated that the facility's emissions would not require an air permit, **and** the operator applied for an air permit within 30 calendar days of discovering that an air permit was required for the facility.	☐ Yes ☒ No
6	Had any permit revoked or permanently suspended for cause under the environmental laws of any state or the United States?	☐ Yes ☒ No
7	For each "yes" answer, please provide an explanation and documentation.	

Section 22: Certification

Company Name: Targa Midstream Services, LLC

I, Jimmy E Oxford, 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 16th day of October, 2024, upon my oath or affirmation, before a notary of the State of

Texas.

*Signature

10/16/2024
Date

Jimmy E Oxford
Printed Name

VP operations
Title

Scribed and sworn before me on this 16th day of October, 2024.

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

20th day of January, 2026.

Notary's Signature

10/06/2024
Date

BETTY SUE HERNANDEZ
Notary Public, State of Texas
Comm. Expires 01-20-2026
Notary ID 133543174

Betty Sue Hernandez
Notary's Printed Name

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