NMED AIR QUALITY BUREAU
NSR SIGNIFICANT REVISION

TARGA NORTHERN DELAWARE LLC
Road Runner Gas Plant



Prepared By:
Jaimy Karacaoglu – Senior Consultant

TRINITY CONSULTANTS
1999 Broadway
Suite 820
Denver, CO
(505) 266-6611

July 2026

Project 253201.0253

Trinity Consultants
1999 Broadway, Suite 820, Denver, CO 80202 / P 713.552.1371 / F 713.552.1374 /
trinityconsultants.com

July 27, 2026

Permit Programs Manager
NMED Air Quality Bureau
525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816

RE: Application for NSR Significant Modification
Targa Northern Delaware LLC; Road Runner Gas Plant

To Whom It May Concern:

On behalf of Targa Northern Delaware LLC, Trinity Consultants is submitting an application for the Road Runner Gas Plant, currently authorized to operate under NSR Permit No. 7200-M6. With this application, Targa seeks to revise the current NSR permit, 7200-M6 by authorizing the following changes (A detailed list of revisions is included within section 3 of the application):

- Increase the gas throughput of Train 3 to 325 MMSCFD.
- Replace the existing Train 3 heaters with a hot oil system (RR3-H-1700, RR3-H-1701, RR3-H-1703) and a regen gas heater (RR3-H-4701).
- Install a dedicated Train 3 thermal oxidizer to control emissions.
- Incorporate a recent facility-wide gas analysis.

The format and content of this application are consistent with the Bureau's current policy regarding NSR significant modification applications. Enclosed are two hard copies of the application, including the original certification. Electronic files will be provided upon request from our assigned permit engineer. Please feel free to contact me by email at Jaimy.Karacaoglu@trinityconsultants.com if you have any questions regarding this application.

Sincerely,

TRINITY CONSULTANTS

Jaimy Karacaoglu
Senior Consultant

Cc: Robert Andries (Targa Northern Delaware, LLC)
Andrea Sayles (Trinity Consultants)

Trinity Project File: 253201.0253

WARNING – THIS CHECK IS PROTECTED BY SPECIAL SECURITY GUARD PROGRAM™ FEATURES

Targa Resources Partners LP
811 Louisiana Street
Suite 2100
Houston, TX 77002

JPMORGAN CHASE BANK NA
Chicago, IL

CHECK NO. 3500511901
CHECK DATE 04/14/2026

70-2322/719
709373500

3673 81

* * * Five Hundred Dollars And Zero Cents*

CHECK AMOUNT
$500.00

Pay To The Order Of
STATE OF NEW MEXICO
GENERAL FUND AIR QUALITY BUREAU
SANTA FE NM 87505-1816

HEAT SENSITIVE RUB AREA TO VERIFY

THIS CHECK CONTAINS MULTIPLE SECURITY FEATURES – SEE BACK FOR DETAILS

⑈3500511901⑈ ⑆071923226⑆ 709373500⑈

PAY TO:
STATE OF NEW MEXICO
GENERAL FUND AIR QUALITY BUREAU
SANTA FE NM 87505-1816

Targa Resources Corp.

VENDOR NO.	CHECK DATE	CHECK NO	CHECK TOTAL
1004108	04/14/2026	3500511901	$500.00

INVOICE NUMBER	INVOICE DATE			AMOUNT PAID
CKRQ041426_2	20260414	Robert Andries	$	500.00

AI: 36536 Road Runner GP (2025-03)

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: ☐ a NOI 20.2.73 NMAC ☑ 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:

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

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

☑ Check No.: 3500511901 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.1 NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): 36536	Updating Permit/NOI #: 7200-M6
1	Facility Name: Road Runner Gas Processing Plant	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 211112	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From Allsup's store in Loving, go South on Pecos Hwy to Higby Hole Road to Bounds Road. Turn West for 0.5 miles to facility on North side of road.		
2	Plant Operator Company Name: **Targa Northern Delaware, LLC**	Phone/Fax: (575) 631-7093 / (575) 396-7702	
a	Plant Operator Address: 201 S 4th Street, Artesia, NM, 88210		

b	Plant Operator's New Mexico Corporate ID or Tax ID: 1948249	
3	Plant Owner(s) name(s): Targa Northern Delaware, LLC	Phone/Fax: (575) 631-7093 / (575) 396-7702
a	Plant Owner(s) Mailing Address(s): 201 S 4th Street, Artesia, NM, 88210	
4	Bill To (Company): Targa Northern Delaware, LLC	Phone/Fax: (575) 631-7093 / (575) 396-7702
a	Mailing Address: 201 S 4th Street, Artesia, NM, 88210	E-mail: Jaylen.fuente@targaresources.com
5	☐ Preparer: ☑ Consultant: Jaimy Karacaoglu, Trinity Consultants	Phone/Fax: (410) 903-0750
a	Mailing Address: 9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87011	E-mail: Jaimy.Karacaoglu@trinityconsultants.com
6	Plant Operator Contact: Nehemiah Gonzales	Phone/Fax: (575) 748-7018
a	Address: 201 South 4th Street, NM 88210	E-mail: nehemiah.gonzales@targaresources.com
7	Air Permit Contact: Robert Andries	Title: Senior Environmental Specialist
a	E-mail: randries@targaresources.com	Phone/Fax: (713) 584-1360
b	Mailing Address: 1675 Broadway, Suite 2260, Denver, CO 80202	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☑ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☑ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☑ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☐ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☑ No	If yes, give month and year of shut down (MM/YY): N/A
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☑ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐Yes ☐No ☑N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: P-309
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☑ No	If yes, the NPR No. is: N/A
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☐ No	If yes, the NOI No. is: N/A
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: 7200-M6
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑ No	If yes, the register No. is: N/A

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 33.13 MMscf	Daily: 795 MMscf	Annually: 290,175 MMscf
b	Proposed	Hourly: 35.63 MMscf	Daily: 855.16 MMscf	Annually: 312,134.24 MMscf
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: 33.13 MMscf	Daily: 795 MMscf	Annually: 290,175 MMscf

b	Proposed	Hourly: 35.63 MMscf	Daily: 855.16 MMscf	Annually: 312,134.24 MMscf

Section 1-D: Facility Location Information

1	Section:	Range:	Township:	County: Eddy	Elevation (ft): 3124
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☑ NAD 83 ☐ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 583,982.0 m			UTM N (in meters, to nearest 10 meters): 3,570,216.0 m	
b	**AND** Latitude (deg., min., sec.): 32.265519°			Longitude (deg., min., sec.): -104.108318°	
3	Name and zip code of nearest New Mexico town: Loving, NM 88256				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the intersection of Highway 8 and Monument Highway, travel west on Monument Highway for approximately 3.4 miles. The plant will be on the left.				
5	The facility is 1.6 (distance) miles south-southwest (direction) of Loving, NM (nearest town).				
6	Status of land at facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Municipalities: None; Indian Tribes: None; Eddy County, NM				
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: Lea County (37 km east), Texas (30.6 km south), Carlsbad Caverns National Park (26 km west southwest).				
9	Name nearest Class I area: Carlsbad Caverns National Park (26 km)				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 25.97 km				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 760 m				
12	Method(s) used to delineate the Restricted Area: Continuous Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

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

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: N/A		☐AM ☐PM	End: N/A	☐AM ☐PM	
3	Month and year of anticipated start of construction: October 2026 or upon permit issuance					
4	Month and year of anticipated construction completion: October 2026 or upon permit issuance					
5	Month and year of anticipated startup of new or modified facility: October 2026 or upon permit issuance					
6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No					

Section 1-F: Other Facility Information

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

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): Andrew Perdue	Phone: (713) 584-1000
a	R.O. Title: Vice President Operations	R.O. e-mail: APerdue@targaresources.com
b	R. O. Address: 1675 Broadway, Suite 2260, Denver, CO 80202	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): Jimmy Oxford	Phone: (940) 220-2493
a	A. R.O. Title: Vice President Operations	A. R.O. e-mail: JOxford@targaresources.com
b	A. R. O. Address: 4401 North I-35, Suite 303 Denton, Texas 76207	
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): Targa Resources, LLC	
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, LLC	
a	Address of Parent Company: 811 Louisiana Suite 2000, Houston, TX 77002-1400	
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): N/A	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: Tillman Austin – (575) 942-7435 and Nehemiah Gonzales – (575) 748-7018	
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: Yes; The facility is 30.6 km from Texas. No other states, local pollution control programs, or Indian tribes and pueblos are within 50 miles of Roadrunner Gas Plant.	

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: Jaimy Karacaoglu

Jaimy.Karacaoglu@trinityconsultants.com

(410) 903-0750

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

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

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

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

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

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

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

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the

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

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

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

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Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RDR-FL-5100	Emergency Flare (Pilot with auto ignition)	Zeeco Inc.	AFDSMJW-14-16/58	31927	240.025 MMscf/yr	240.025 MMscf/yr	2017 / 2017	NA / RDR-FL-5100	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-FL-991	Emergency Flare (Pilot with auto ignition)	Zeeco Inc.	AFDSGA-14/50	20238	240.025 MMscf/yr	240.025 MMscf/yr	2017 / 2017	NA / RR2-FL-991	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-FL-1800	Emergency Flare (Pilot with auto ignition)	Zeeco Inc.	TBD[5]	TBD[5]	240.025 MMscf/yr	240.025 MMscf/yr	TBD[5] / TBD[5]	NA / RR3-FL-1800	31000205	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
Flare-M	Malfunction flaring at RDR-FL-5100	Zeeco Inc.	AFDSMJW-14-16/58	31927	240.025 MMscf/yr	240.025 MMscf/yr	2017 / 2017	NA / RDR-FL-5100	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
	Malfunction flaring at RR2-FL-991	Zeeco Inc.	AFDSGA-14/50	20238	240.025 MMscf/yr	240.025 MMscf/yr	2017 / 2017	NA / RR3-FL-1800		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
	Malfunction flaring at RR3-FL-1800	TBD[5]	TBD[5]	TBD[5]	240.025 MMscf/yr	240.025 MMscf/yr	TBD[5] / TBD[5]	NA / RR3-FL-1800		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-H-781	Trim Reboiler	Heatec	HCI-8010-40	14-149	23.65 MMBtu/hr	23.65 MMBtu/hr	2017 / 2017	NA / RDR-H-781	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-H-781	Trim Reboiler	Heatec	HCI-10010-40	11-041	26.5 MMBtu/hr	26.5 MMBtu/hr	2017 / 2017	NA / RR2-H-781	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-781	Trim Reboiler	TBD[5]	TBD[5]	TBD[5]	26.5 MMBtu/hr	26.5 MMBtu/hr	TBD[5] / TBD[5]	NA / RR3-H-781	31000404	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-H-0901	Amine Reboiler Heater	Devco Process Heaters	Heliflo	268720020	75 MMBtu/hr	75 MMBtu/hr	2017 / 2017	NA / RDR-H-0901	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-H-1054	Amine Reboiler Heater	Tulsa Heaters Midstream	SHO-5000	MJ16-199	70.28 MMBtu/hr	70.28 MMBtu/hr	2017 / 2017	NA / RDR-H-1054	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-0901	Amine Reboiler Heater	TBD[5]	TBD[5]	TBD[5]	70.28 MMBtu/hr	70.28 MMBtu/hr	TBD[5] / TBD[5]	NA / RR3-H-0901	31000404	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-H-2301	Glycol Reboiler Heater	Reset Energy	H-2801	F-9	3.9 MMBtu/hr	3.9 MMBtu/hr	2017 / 2017	NA / RDR-H-2301	31000302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-H-0801	Glycol Reboiler Heater	JW Williams	72" OD x 30'-0" S/S	M07366	3.9 MMBtu/hr	3.9 MMBtu/hr	2017 / 2017	NA / RR2-H-0801	31000302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-0801	Glycol Reboiler Heater	TBD[5]	TBD[5]	TBD[5]	3.90 MMBtu/hr	3.90 MMBtu/hr	TBD[5] / TBD[5]	NA / RR3-H-0801	31000302	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-1700	HMO Heater	Astec Industries	Heatec HCI 18010-50-T-G	TBD[5]	53.62 MMBtu/hr	53.62 MMBtu/hr	TBD / TBD	NA / RR3-H-1701	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-1701	HMO Heater	Astec Industries	Heatec HCI 18010-50-T-G	TBD[5]	53.62 MMBtu/hr	53.62 MMBtu/hr	TBD / TBD	NA / RR3-H-1701	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-1703	HMO Heater	Astec Industries	Heatec HCI 8010-40-S-G	TBD[5]	19.97 MMBtu/hr	19.97 MMBtu/hr	TBD / TBD	NA / RR3-H-1702	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-4701	Regen Gas Heater	Astec Industries	Heatec HCI 10010-40-D-G	TBD[5]	14.17 MMBtu/hr	14.17 MMBtu/hr	TBD / TBD	NA / RR3-H-1703	31000404	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RDR-H-741	Regen Gas Heater	TBD[5]	TBD[5]	TBD[5]	10.5 MMBtu/hr	10.5 MMBtu/hr	TBD[5] / TBD[5]	NA / RDR-H-741	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-H-741	Regen Gas Heater	TBD[5]	TBD[5]	TBD[5]	10.5 MMBtu/hr	10.5 MMBtu/hr	TBD[5] / TBD[5]	NA / RR2-H-741	31000404	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-741	Regen Gas Heater	TBD[5]	TBD[5]	TBD[5]	10.5 MMBtu/hr	10.5 MMBtu/hr	TBD[5] / TBD[5]	NA / RR3-H-741	31000404	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-H-3601	Stabilizer Heater	Phoenix	PX-180	17169	19.9 MMBtu/hr	19.9 MMBtu/hr	2017 / 2017	NA / RDR-H-3601	31000404	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-H-3601	Stabilizer Heater	TBD[5]	TBD[5]	TBD[5]	23.40 MMBtu/hr	23.40 MMBtu/hr	TBD[5] / TBD[5]	NA / RR3-H-3601	31000404	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-TEG	Glycol Dehydrator Still Vent	Reset Energy	T-2707	153	260.00 MMSCFD	260.00 MMSCFD	2017 / 2017	RDR-TO-5500 / RDR-TO-5500	31000301	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-TEG	Glycol Dehydrator Still Vent	JW Williams	24" OD x 64"	M07366	260.00 MMSCFD	260.00 MMSCFD	2017 / 2017	RDR-TO-5500 / RDR-TO-5500	31000301	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-TEG	Glycol Dehydrator Still Vent	TBD[5]	TBD[5]	TBD[5]	320.00 MMSCFD	320.00 MMSCFD	TBD[5] / TBD[5]	RR3-TO-1801 / RR3-TO-1801	31000301	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-AMINE	Amine Still Vent[8]	PBP Fabrication[8]	V-5520[8]	493[8]	265 MMSCFD	265 MMSCFD	2017 / 2017	RDR-TO-5500 / RDR-TO-5500	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-AMINE	Amine Still Vent[8]	PBP Fabrication[8]	V-5520[8]	493[8]	265 MMSCFD	265 MMSCFD	2017 / 2017	RDR-TO-5500 / RDR-TO-5500	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-AMINE	Amine Still Vent	TBD[5]	TBD[5]	TBD[5]	325 MMSCFD	325 MMSCFD	TBD[5] / TBD[5]	RR3-TO-1801 / RR3-TO-1801	31000305	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-TO-5500	Thermal Oxidizer	Zeeco Inc	TO-55	32339	71 MMBtu/hr	71 MMBtu/hr	2017 / 2017	NA / RDR-TO-5500	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-TO-1801	Thermal Oxidizer	Zeeco Inc	TBD[5]	TBD[5]	52.84 MMBtu/hr	52.84 MMBtu/hr	2017 / 2017	NA / RR3-TO-1801	31000209	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-G-2220	Generator	GENERAC	2506C-E15TAG3	3014159489	762 hp	762 hp	2022 / 2022	NA / RR2-G-2220	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-2	Generator	Generac	F2CE9685A-E	3014145933	389 hp	389 hp	2017 / 2017	NA / RDR-G-2	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-3	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-3	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-4	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-4	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-5	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-5	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-6	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-6	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-7	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-7	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RDR-G-8	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-8	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-9	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-9	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-10	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-10	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-11	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-11	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
RDR-G-12	Temporary Mobile Generator	TBD[6]	TBD[6]	TBD[6]	499 hp	499 hp	TBD[6] / TBD[6]	NA / RDR-G-12	20100202	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	N/A
SSMM	Startup, Shutdown, Malfunction Emissions from Pigging and Component Venting	N/A	N/A	N/A	N/A	N/A	N/A / 2017	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SSMB	Startup, Shutdown, Maintenance, Blowdown Emissions	N/A	N/A	N/A	N/A	N/A	N/A / 2017	N/A / N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSMT	SSM from Degassing	N/A	N/A	N/A	N/A	N/A	N/A / 2017	N/A / N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSMBLAST	SSM Abrasive Blasting	N/A	N/A	N/A	N/A	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	N/A	N/A
SSMCOAT	SSM Surface Coating	N/A	N/A	N/A	N/A	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	N/A	N/A
RDR-TO-5500-SSM	Thermal Oxidizer SSM	N/A	N/A	N/A	N/A	N/A	N/A / 2017	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-TO-1801-SSM	Thermal Oxidizer SSM	N/A	N/A	N/A	N/A	N/A	N/A / TBD	N/A / N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-FL-2850	Combustor	Zeeco Inc	VCU-7.5.40 Flare System	31974-001	2.24 MMscf/yr	2.24 MMscf/yr	2017 / 2017	N/A / RDR-FL-2850	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-LOAD	Condensate Loadout Emissions	N/A	N/A	N/A	1904761.9 bbl/yr	1904761.9 bbl/yr	N/A / 2017	RDR-FL-2850 / RDR-FL-2850	40600132	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-FUG	Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	N/A / 2017	N/A / N/A	31000220	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-T-1	Condensate Storage Tank	Tank &Vessel Boilers LP	N/A[7]	201723	1000 bbl	1000 bbl	2017 / 2017	RDR-FL-2850 / RDR-FL-2850	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-T-2	Condensate Storage Tank	Tank &Vessel Boilers LP	N/A[7]	201724	1000 bbl	1000 bbl	2017 / 2017	RDR-FL-2850 / RDR-FL-2850	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-T-3	Condensate Storage Tank	Tank &Vessel Boilers LP	N/A[7]	201720	1000 bbl	1000 bbl	2017 / 2017	RDR-FL-2850 / RDR-FL-2850	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-T-4	Condensate Storage Tank	Tank &Vessel Boilers LP	N/A[7]	201721	1000 bbl	1000 bbl	2017 / 2017	RDR-FL-2850 / RDR-FL-2850	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RDR-T-5	Condensate Storage Tank	Tank &Vessel Boilers LP	N/A[7]	201722	1000 bbl	1000 bbl	2017 2017	RDR-FL-2850 RDR-FL-2850	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-T-6	Produced Water (Slop) Tank	Palmer	N/A[7]	ST-1711323	400 bbl	400 bbl	8/2017 2017	RDR-FL-2850 RDR-FL-2850	40400315	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-1300	Electric Driven Residue Compressor	Ariel	KBZ/6	F54680	60 MMscf/d	60 MMscf/d	9/2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-1350	Electric Driven Residue Compressor	Ariel	KBZ/6	F54701	60 MMscf/d	60 MMscf/d	9/2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-1400	Electric Driven Residue Compressor	Ariel	KBZ/6	F54720	60 MMscf/d	60 MMscf/d	9/2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-1450	Electric Driven Residue Compressor	Ariel	KBZ/6	F54750	60 MMscf/d	60 MMscf/d	9/2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-161	Electric Driven Refrigeration Compressor	GEA	XCR-XC26555-18	XC0507	4500 hp	4500 hp	2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-162	Electric Driven Refrigeration Compressor	GEA	XCR-XC26555-18	XC0508	4500 hp	4500 hp	2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-163	Electric Driven Refrigeration Compressor	GEA	XCR-XC26555-18	XC0510	4500 hp	4500 hp	2017 2017	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RDR-C-164	Electric Driven Refrigeration Compressor	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD[5]	TBD5 TBD5	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-1130	Electric Driven Residue Compressor	Ariel	KBZ/4	F-36592	50 MMscf/d	50 MMscf/d	8/2017 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-1160	Electric Driven Residue Compressor	Ariel	KBZ/4	F-36534	50 MMscf/d	50 MMscf/d	8/2017 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-502B1	Electric Driven Residue Compressor	Ariel	KBZ/4	F-39578	50 MMscf/d	50 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-502B2	Electric Driven Residue Compressor	Ariel	KBZ/4	F-39594	50 MMscf/d	50 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-161	Electric Refrigeration Compressor	Frick	SGC2824	10241N2197355Z	12.14 MMscf/d	12.14 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-162	Electric Refrigeration Compressor	Frick	SGC2824	1241B31308259	12.14 MMscf/d	12.14 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-4163	Electric Refrigeration Compressor	Frick	SGC2824	10242L41098041	12.14 MMscf/d	12.14 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR2-C-4164	Electric Refrigeration Compressor	Frick	SGC2824	10242A31098040	12.14 MMscf/d	12.14 MMscf/d	2012 45442	N/A N/A	31000203	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-1300	Electric Driven Residue Compressor	Ariel	KBZ/4	TBD5	TBD5	TBD5	TBD[5] TBD[5]	N/A N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-1350	Electric Driven Residue Compressor	Ariel	KBZ/4	TBD[5]	TBD[5]	TBD[5]	TBD[5] TBD[5]	N/A N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RR3-C-1400	Electric Driven Residue Compressor	Ariel	KBZ/4	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-1450	Electric Driven Residue Compressor	Ariel	KBZ/4	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-161	Electric Driven Refrigeration Compressor	Frick	RWF546E	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-162	Electric Driven Refrigeration Compressor	Frick	RWF546E	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-163	Electric Driven Refrigeration Compressor	Frick	RWF546E	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-164	Electric Driven Refrigeration Compressor	Frick	RWF546E	TBD[5]	TBD[5]	TBD[5]	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
RR3-C-5100	Electric Driven Residue Compressor	Ariel	KBZ/6	TBD5	5500 hp	5500 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-5110	Electric Driven Residue Compressor	Ariel	KBZ/6	TBD[5]	5500 hp	5500 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-5120	Electric Driven Residue Compressor	Ariel	KBZ/6	TBD[5]	5500 hp	5500 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-5130	Electric Driven Residue Compressor	Ariel	KBZ/6	TBD[5]	5500 hp	5500 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-5140	Electric Driven Residue Compressor	Ariel	KBZ/6	TBD[5]	5500 hp	5500 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-4111	Electric Driven Refrigeration Compressor	Frick	RFW856	TBD[5]	3000 hp	3000 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-4112	Electric Driven Refrigeration Compressor	Frick	RFW856	TBD[5]	3000 hp	3000 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
RR3-C-4113	Electric Driven Refrigeration Compressor	Frick	RFW856	TBD[5]	3000 hp	3000 hp	TBD[5] / TBD[5]	N/A / N/A	31000203	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[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
[5] Units with TBD make, models, serial numbers, manufacturer, or install dates have not been constructed or installed at facility yet.
[6] Units RDR-G-3 through RDR-G-12 are temporary mobile generators. Serial numbers, makes, models, construction and manufacture dates may change as long as the generator's capacity is less than or equal to 499 hp
[7] The manufacturer does not provide a model number for this unit.
[8] RDR-Amine and RR2-Amine have the same make, model, and serial number, as the amine unit is currently servicing both Train 1 and Train 2.

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 One
T-7	Used Oil/Slop Oil/Skid Runoff	N/A	N/A N/A	400 bbl	20.2.72.202.B(5) NMAC	2020 TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-8	Used Oil/Slop Oil/Skid Runoff	N/A	N/A N/A	400 bbl	20.2.72.202.B(5) NMAC	2020 TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
LOAD-2	Produced Water (Slop) Loading	N/A	N/A N/A	3025967.102 gal/yr	20.2.72.202.B(5) NMAC	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-9	Methanol Tank	N/A	N/A N/A	1000 gallons	20.2.72.202.B(5) NMAC	TBD 2020	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-10	Methanol Tank	N/A	N/A N/A	1500 gallons	20.2.72.202.B(5) NMAC	TBD 2020	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-11	Diesel Tote	N/A	N/A N/A	220 gallons	20.2.72.202.B(2) NMAC	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-12	Diesel Tote	N/A	N/A N/A	220 gallons	20.2.72.202.B(2) NMAC	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-13	Diesel Tote	N/A	N/A N/A	300 gallons	20.2.72.202.B(2) NMAC	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
RDR-HAUL	Haul Road Emissions	N/A	N/A N/A	N/A N/A	20.2.72.202.B(5) NMAC	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Glycol	Glycol Dehydration Unit - Replacement of Glycol Solution	N/A	N/A N/A	N/A N/A	20.2.72.202.B(2) NMAC	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Amine	Amine Unit - Replacement of Amine Solution	N/A	N/A N/A	N/A N/A	20.2.72.202.B(2) NMAC	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Aerosol	Aerosol Lubricants	N/A	N/A N/A	N/A N/A	20.2.72.202.A NMAC	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Piping	Piping Components	N/A	N/A N/A	N/A N/A	20.72.202.A(12) NMAC	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Cal	Use of Calibration Gases	N/A	N/A N/A	N/A N/A	20.72.202.A(10) NMAC	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
MSSM-Misc	Miscellanous Maintenance Activities	N/A	N/A N/A	N/A N/A	20.72.202.A NMAC	N/A N/A	☑ 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-1	Condenser	2017	VOC, HAP	RDR-TEG , RR2-TEG , RR3-TEG	98.00%	Engineering Estimate
RDR-FL-2850	Combustor	2017	VOC, HAP, H_2S	RDR-T-1 , RDR-T-2 , RDR-T-3 , RDR-T-4 , RDR-T-5, RDR-LOAD	98.00%	Manufacturer Spec
RDR-TO-5500	Thermal Oxidizer	2017	VOC, HAP, H_2S	RDR-TEG , RR2-TEG , RDR-AMINE , RR2-AMINE	99.90%	Manufacturer Spec
RR3-TO-1801	Thermal Oxidizer	TBD	VOC, HAP, H_2S	RR3-TEG, RR3-AMINE	99.90%	Manufacturer Spec
RDR-FL-5100	SSM Flare	2017	VOC, HAP, H_2S	Train 1 inlet gas and residue gas	98.00%	Manufacturer Spec
RR2-FL-991	SSM Flare	2017	VOC, HAP, H_2S	Train 2 inlet gas and residue gas	98.00%	Manufacturer Spec
RR3-FL-1800	SSM Flare	TBD5	VOC, HAP, H_2S	Train 3 inlet gas and residue gas	98.00%	Manufacturer Spec

[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
RDR-H-781	0.42	1.84	2.55	11.19	0.13	0.56	0.017	0.074	0.18	0.77	0.18	0.77	0.18	0.77	3.16E-04	1.38E-03	-	-
RR2-H-781	0.47	2.06	0.95	4.18	0.14	0.63	0.019	0.082	0.20	0.86	0.20	0.86	0.20	0.86	3.54E-04	1.55E-03	-	-
RDR-H-0901	1.33	5.83	2.70	11.82	0.40	1.77	0.053	0.23	0.56	2.45	0.56	2.45	0.56	2.45	1.18E-04	1.18E-08	-	-
RDR-H-1054	1.25	5.46	2.88	12.62	1.34	5.85	0.050	0.22	0.28	1.23	0.28	1.23	0.28	1.23	9.39E-04	4.11E-03	-	-
RDR-H-2301	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	-	-
RR2-H-0801	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	-	-
RDR-H-741	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	-	-
RR2-H-741	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	-	-
RDR-H-3601	1.95	8.55	1.64	7.18	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.66E-04	1.17E-03	-	-
RR3-H-1700	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	-	-
RR3-H-1701	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	-	-
RR3-H-1703	0.34	1.49	0.34	1.51	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.67E-04	1.17E-03	-	-
RR3-H-4701	0.25	1.12	0.26	1.13	0.076	0.33	0.010	0.044	0.11	0.46	0.11	0.46	0.11	0.46	1.89E-04	8.30E-04	-	-
RDR-TEG	-	-	-	-	200.02	876.10	-	-	-	-	-	-	-	-	4.21E-05	1.85E-04	-	-
RR2-TEG	-	-	-	-	200.13	876.56	-	-	-	-	-	-	-	-	4.92E-05	2.15E-04	-	-
RR3-TEG	-	-	-	-	356.72	1,562.44	-	-	-	-	-	-	-	-	3.46E-05	1.51E-04	-	-
RDR-AMINE	-	-	-	-	85.17	373.06	-	-	-	-	-	-	-	-	4.94	21.62	-	-
RR2-AMINE	-	-	-	-	85.17	373.06	-	-	-	-	-	-	-	-	4.94	21.62	-	-
RR3-AMINE	-	-	-	-	80.73	353.59	-	-	-	-	-	-	-	-	5.77	25.29	-	-
RDR-TO-5500	0.100	0.44	0.061	0.27	0.35	1.55	0.047	0.20	0.33	1.43	0.33	1.43	0.33	1.43	8.76E-04	3.83E-03	-	-
RR3-TO-1801	0.018	0.077	0.011	0.047	0.058	0.26	7.69E-03	0.034	0.054	0.24	0.054	0.24	0.054	0.24	1.45E-04	6.34E-04	-	-
RDR-FL-5100	0.19	0.81	0.37	1.62	-	-	9.28E-03	0.041	-	-	-	-	-	-	2.65E-05	1.16E-04	-	-
RR2-FL-991	0.14	0.61	0.28	1.22	-	-	8.23E-03	0.036	-	-	-	-	-	-	2.00E-05	8.76E-05	-	-
RR3-FL-1800	0.027	0.12	0.055	0.24	-	-	1.61E-03	7.06E-03	-	-	-	-	-	-	1.40E-06	6.11E-06	-	-
RR2-G-2220	5.75	1.44	0.79	0.20	0.40	0.10	6.48E-03	1.62E-03	0.034	8.40E-03	0.034	8.40E-03	0.034	8.40E-03	-	-	-	-
RDR-G-2	2.43	0.61	2.24	0.56	0.13	0.032	0.76	0.19	0.13	0.032	0.13	0.032	0.13	0.032	-	-	-	-
RDR-G-3	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-4	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-5	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-6	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-7	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-8	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-9	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-10	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-11	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-12	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-T-1	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	-	-
RDR-T-2	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	-	-
RDR-T-3	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	-	-
RDR-T-4	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	-	-
RDR-T-5	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	-	-
RDR-T-6	-	-	-	-	0.14	0.63	-	-	-	-	-	-	-	-	5.19E-03	0.010	-	-
RDR-FL-2850	2.80E-03	0.012	2.35E-03	0.010	1.54E-04	6.75E-04	2.00E-05	8.76E-05	2.13E-04	9.32E-04	2.13E-04	9.32E-04	2.13E-04	9.32E-04	3.77E-07	1.65E-06	-	-
RDR-LOAD	-	-	-	-	175.29	491.92	-	-	-	-	-	-	-	-	-	-	-	-
RDR-FUG	-	-	-	-	23.00	100.74	-	-	-	-	-	-	-	-	0.034	0.15	-	-
Totals	22.34	50.45	47.84	78.89	1,232.37	5,113.36	12.69	4.61	4.19	17.00	4.19	17.00	4.19	17.00	15.69	68.70	-	-

[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
RDR-H-781	0.42	1.84	2.55	11.19	0.13	0.56	0.017	0.074	0.18	0.77	0.18	0.77	0.18	0.77	3.16E-04	1.38E-03	-	-
RR2-H-781	0.47	2.06	0.95	4.18	0.14	0.63	0.019	0.082	0.20	0.86	0.20	0.86	0.20	0.86	3.54E-04	1.55E-03	-	-
RDR-H-0901	1.33	5.83	2.70	11.82	0.40	1.77	0.053	0.23	0.56	2.45	0.56	2.45	0.56	2.45	1.18E-04	1.18E-08	-	-
RDR-H-1054	1.25	5.46	2.88	12.62	1.34	5.85	0.050	0.22	0.28	1.23	0.28	1.23	0.28	1.23	9.39E-04	4.11E-03	-	-
RDR-H-2301	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	-	-
RR2-H-0801	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	-	-
RDR-H-741	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	-	-
RR2-H-741	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	-	-
RDR-H-3601	1.95	8.55	1.64	7.18	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.66E-04	1.17E-03	-	-
RR3-H-1700	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	-	-
RR3-H-1701	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	-	-
RR3-H-1703	0.34	1.49	0.34	1.51	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.67E-04	1.17E-03	-	-
RR3-H-4701	0.25	1.12	0.26	1.13	0.076	0.33	0.010	0.044	0.11	0.46	0.11	0.46	0.11	0.46	1.89E-04	8.30E-04	-	-
RDR-TEG	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR2-TEG	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-TEG	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-AMINE	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR2-AMINE	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-AMINE	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-TO-5500	0.97	4.25	0.59	2.59	0.75	3.26	18.61	81.51	0.38	1.64	0.38	1.64	0.38	1.64	0.011	0.047	-	-
RR3-TO-1801	0.62	2.74	0.38	1.67	1.34	5.85	11.01	48.20	0.29	1.26	0.29	1.26	0.29	1.26	5.99E-03	0.026	-	-
RDR-FL-5100	0.19	0.81	0.37	1.62	-	-	9.28E-03	0.041	-	-	-	-	-	-	2.65E-05	1.16E-04	-	-
RR2-FL-991	0.14	0.61	0.28	1.22	-	-	8.23E-03	0.036	-	-	-	-	-	-	2.00E-05	8.76E-05	-	-
RR3-FL-1800	0.027	0.12	0.055	0.24	-	-	1.61E-03	7.06E-03	-	-	-	-	-	-	1.40E-06	6.11E-06	-	-
RR2-G-2220	5.75	1.44	0.79	0.20	0.40	0.10	6.48E-03	1.62E-03	0.034	8.40E-03	0.034	8.40E-03	0.034	8.40E-03	-	-	-	-
RDR-G-2	2.43	0.61	2.24	0.56	0.13	0.032	0.76	0.19	0.13	0.032	0.13	0.032	0.13	0.032	-	-	-	-
RDR-G-3	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-4	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-5	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-6	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-7	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-8	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-9	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-10	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-11	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-G-12	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	-	-
RDR-T-1	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-2	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-3	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-4	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-5	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-6	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	0.040	0.18	0.034	0.15	3.86	11.48	9.59E-03	0.019	3.06E-03	0.013	3.06E-03	0.013	3.06E-03	0.013	1.04E-04	2.06E-04	-	-
RDR-LOAD	-	-	-	-	2.28	6.39	-	-	-	-	-	-	-	-	-	-	-	-
RDR-FUG	-	-	-	-	23.00	100.74	-	-	-	-	-	-	-	-	0.034	0.15	-	-
Totals	23.86	57.09	48.77	82.98	36.74	143.35	42.26	134.10	4.47	18.25	4.47	18.25	4.47	18.25	0.055	0.24	-	-

[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
RDR-FL-5100	1,551.50	19.37	3,097.38	38.67	2,458.40	30.94	82.97	1.01	-	-	-	-	-	-	0.90	0.035	-	-
RR2-FL-991	1,549.24	18.97	3,092.86	37.88	2,450.72	29.60	82.91	1.00	-	-	-	-	-	-	0.90	0.035	-	-
RR3-FL-1800	1,557.20	19.05	3,108.76	38.04	2,464.16	29.73	83.05	1.00	-	-	-	-	-	-	0.90	0.035	-	-
Flare-M	1,549.59	10.00	3,093.56	10.00	2,450.43	10.00	0.17	10.00	-	-	-	-	-	-	0.090	10.00	-	-
	1,549.59		3,093.56		2,450.43		0.17		-		-		-		0.090		-	-
	1,549.59		3,093.56		2,450.43		0.17		-		-		-		0.090		-	-
RDR-TO-5500-SSM	-	-	-	-	392.39	3.92	-	-	-	-	-	-	-	-	9.87	0.099	-	-
RR3-TO-1801-SSM	-	-	-	-	80.73	0.81	-	-	-	-	-	-	-	-	5.77	0.058	-	-
SSMM	-	-	-	-	122.01	3.18	-	-	-	-	-	-	-	-	0.019	4.86E-04	-	-
SSMT	-	-	-	-	42.11	0.037	-	-	-	-	-	-	-	-	-	-	-	-
SSMB	Emissions represented at the SSM flares (Units RDR-FL-5100, RR2-FL-991, RR3-FL-1800)																	
SSMBLAST	-	-	-	-	-	-	-	-	23.51	0.14	3.36	0.020	0.34	2.02E-03	-	-	-	-
SSMCOAT	-	-	-	-	73.00	0.15	-	-	0.77	1.54E-03	0.070	1.39E-04	5.36E-03	1.07E-05	-	-	-	-
Totals	4,657.94	67.40	9,299.00	124.59	8,083.52	108.37	248.93	13.00	24.28	0.14	3.43	0.020	0.34	2.03E-03	18.36	10.26	-	-

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

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

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

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

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

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

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H=Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)[1]	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
RDR-H-781	RDR-H-781	V	No	23.06	624.00	170.84	64.50	10.00	14.76	3.84
RR2-H-781	RR2-H-781	V	No	19.29	624.00	191.43	72.28	10.00	20.15	3.48
RDR-H-0901	RDR-H-0901	V	No	27.59	624.00	541.79	204.55	10.00	55.99	3.51
RDR-H-1054	RDR-H-1054	V	No	41.67	624.00	507.69	191.68	10.00	40.34	4.00
RDR-H-2301	RDR-H-2301	V	No	26.77	624.00	84.18	31.78	10.00	26.77	2.00
RR2-H-0801	RR2-H-0801	V	No	27.89	624.00	87.70	33.11	10.00	27.89	2.00
RDR-H-741	RDR-H-741	V	No	15.60	624.00	153.94	58.12	10.00	49.00	2.00
RR2-H-741	RR2-H-741	V	No	15.60	575.01	153.94	60.87	10.00	49.00	2.00
RDR-H-3601	RDR-H-3601	V	No	15.78	624.00	137.15	51.78	10.00	32.19	2.33
RDR-TO-5500	RDR-TO-5500	V	No	75.98	1,600.00	952.16	189.17	10.00	12.11	10.01
RDR-FL-5100	RDR-FL-5100	V	No	100.56	1,832.00	367,174.63	65,564.15	10.00	65.62	84.41
RR2-FL-991	RR2-FL-991	V	No	124.28	1,832.00	341,588.94	60,995.47	10.00	65.62	81.41
RR3-FL-1800	RR3-FL-1800	V	No	124.28	1,832.00	341,044.36	60,898.23	10.00	65.62	81.35
RDR-FL-2850	RDR-FL-2850	V	No	48.00	1,200.00	813.13	200.47	10.00	18.41	7.50
RR3-H-1700	RR3-H-1700	V	No	23.90	751.00	432.74	146.25	10.00	61.22	3.00
RR3-H-1701	RR3-H-1701	V	No	23.90	751.00	432.74	146.25	10.00	61.22	3.00
RR3-H-1703	RR3-H-1703	V	No	19.50	671.00	150.53	54.47	10.00	30.66	2.50
RR3-H-4701	RR3-H-4701	V	No	17.60	610.00	101.05	38.65	10.00	20.59	2.50
RR3-TO-1801	RR3-TO-1801	V	No	30.00	1,457.00	735.84	157.10	10.00	43.33	4.65
RR2-G-2220	RR2-G-2220	V	No	10.17	710.33	0.16	0.05	10.00	45.93	0.07
RDR-G-2	RDR-G-2	V	No	6.56	920.00	22.24	6.60	10.00	456.67	0.25
RDR-G-3	RDR-G-3	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-4	RDR-G-4	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-5	RDR-G-5	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-6	RDR-G-6	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-7	RDR-G-7	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-8	RDR-G-8	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-9	RDR-G-9	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-10	RDR-G-10	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-11	RDR-G-11	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25
RDR-G-12	RDR-G-12	V	No	6.56	440.33	4.18	1.90	10.00	85.85	0.25

[1] Nominal moisture content.

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

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

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Hexane ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP o ☐ TAP		Acrolein ☑ 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
RDR-H-781	RDR-H-781	0.044	0.19	1.74E-03	7.62E-03	0.042	0.18	4.87E-05	2.13E-04	7.88E-05	3.45E-04	-	-	-	-	-	-	-	-
RR2-H-781	RR2-H-781	0.049	0.21	1.95E-03	8.53E-03	0.047	0.20	5.46E-05	2.39E-04	8.83E-05	3.87E-04	-	-	-	-	-	-	-	-
RDR-H-0901	RDR-H-0901	0.14	0.61	5.51E-03	0.024	0.13	0.58	1.54E-04	6.76E-04	2.50E-04	1.10E-03	-	-	-	-	-	-	-	-
RDR-H-1054	RDR-H-1054	0.13	0.57	5.17E-03	0.023	0.12	0.54	1.45E-04	6.34E-04	2.34E-04	1.03E-03	-	-	-	-	-	-	-	-
RDR-H-2301	RDR-H-2301	7.19E-03	0.031	2.87E-04	1.26E-03	6.88E-03	0.030	8.03E-06	3.52E-05	1.30E-05	5.69E-05	-	-	-	-	-	-	-	-
RR2-H-0801	RR2-H-0801	7.19E-03	0.031	2.87E-04	1.26E-03	6.88E-03	0.030	8.03E-06	3.52E-05	1.30E-05	5.69E-05	-	-	-	-	-	-	-	-
RDR-H-741	RDR-H-741	0.019	0.085	7.72E-04	3.38E-03	0.019	0.081	2.16E-05	9.47E-05	3.50E-05	1.53E-04	-	-	-	-	-	-	-	-
RR2-H-741	RR2-H-741	0.019	0.085	7.72E-04	3.38E-03	0.019	0.081	2.16E-05	9.47E-05	3.50E-05	1.53E-04	-	-	-	-	-	-	-	-
RDR-H-3601	RDR-H-3601	0.037	0.16	1.46E-03	6.41E-03	0.035	0.15	4.10E-05	1.79E-04	6.63E-05	2.91E-04	-	-	-	-	-	-	-	-
RR3-H-1700	RR3-H-1700	0.099	0.43	3.94E-03	0.017	0.095	0.41	1.10E-04	4.84E-04	1.79E-04	7.83E-04	-	-	-	-	-	-	-	-
RR3-H-1701	RR3-H-1701	0.099	0.43	3.94E-03	0.017	0.095	0.41	1.10E-04	4.84E-04	1.79E-04	7.83E-04	-	-	-	-	-	-	-	-
RR3-H-1703	RR3-H-1703	0.037	0.16	1.47E-03	6.43E-03	0.035	0.15	4.11E-05	1.80E-04	6.66E-05	2.92E-04	-	-	-	-	-	-	-	-
RR3-H-4701	RR3-H-4701	0.026	0.11	1.04E-03	4.56E-03	0.025	0.11	2.92E-05	1.28E-04	4.72E-05	2.07E-04	-	-	-	-	-	-	-	-
RDR-TO-5500	RDR-TEG	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RDR-TO-5500	RR2-TEG	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-TO-1801	RR3-TEG	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-TO-5500	RDR-AMINE	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RDR-TO-5500	RR2-AMINE	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-TO-1801	RR3-AMINE	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-TO-5500	RDR-TO-5500	0.22	0.94	-	-	0.025	0.11	0.098	0.43	0.057	0.25	0.019	0.083	0.016	0.071	-	-	-	-
RR3-TO-1801	RR3-TO-1801	0.17	0.73	-	-	0.028	0.12	0.071	0.31	0.036	0.16	0.011	0.047	8.45E-03	0.037	-	-	-	-
RDR-FL-5100	RDR-FL-5100	134.99	1.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR2-FL-991	RR2-FL-991	134.85	1.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR3-FL-1800	RR3-FL-1800	136.83	1.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RDR-FL-5100	Flare-M	125.41	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR2-FL-991		125.41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR3-FL-1800		125.41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Hexane ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP o ☐ TAP		Acrolein ☑ 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
RR2-G-2220	RR2-G-2220	5.82E-03	1.46E-03	3.37E-04	8.43E-05	-	-	3.32E-03	8.29E-04	1.20E-03	3.00E-04	-	-	8.25E-04	2.06E-04	1.08E-04	2.69E-05	3.37E-05	8.42E-06
RDR-G-2	RDR-G-2	9.70E-03	2.42E-03	3.09E-03	7.72E-04	-	-	2.44E-03	6.10E-04	1.07E-03	2.68E-04	-	-	7.46E-04	1.86E-04	2.01E-03	5.02E-04	2.42E-04	6.05E-05
RDR-G-3	RDR-G-3	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-4	RDR-G-4	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-5	RDR-G-5	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-6	RDR-G-6	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-7	RDR-G-7	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-8	RDR-G-8	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-9	RDR-G-9	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-10	RDR-G-10	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-11	RDR-G-11	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-12	RDR-G-12	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-FL-2850	RDR-T-1	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	RDR-T-2	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	RDR-T-3	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	RDR-T-4	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	RDR-T-5	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-6	RDR-T-6	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	RDR-FL-2850	0.50	1.48	-	-	0.99	1.31	0.20	0.11	0.10	0.057	0.032	2.35E-03	0.025	0.013	-	-	-	-
RDR-LOAD	RDR-LOAD	0.29	0.82	-	-	0.072	0.20	0.26	0.73	0.035	0.097	0.040	0.11	0.040	0.11	-	-	-	-
RDR-FUG	RDR-FUG	2.76	12.10	-	-	1.92	8.40	0.22	0.95	0.34	1.50	0.25	1.09	0.039	0.17	-	-	-	-
RDR-TO-5500-SSM	RDR-TO-5500-SSM	215.69	2.16	-	-	25.05	0.25	97.97	0.98	57.41	0.57	18.95	0.19	16.31	0.16	-	-	-	-
RR3-TO-1801-SSM	RR3-TO-1801-SSM	63.77	0.64	-	-	0.30	3.03E-03	34.22	0.34	18.12	0.18	5.86	0.059	5.26	0.053	-	-	-	-
SSMM	SSMM	78.28	2.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSMT	SSMT	42.73	8.92E-03	-	-	1.34	1.19E-03	37.47	4.25E-03	0.64	5.66E-04	0.73	6.51E-04	0.74	6.59E-04	-	-	-	-
SSMB	SSMB	Emissions represented at the SSM flares (Units RDR-FL-5100, RR2-FL-991, RR3-FL-1800)																	
SSMBLAST	SSMBLAST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSMCOAT	SSMCOAT	13.39	0.027	-	-	-	-	-	-	-	-	1.87	3.75E-03	10.71	0.021	-	-	-	-
Totals:		1201.56	30.02	0.08	0.14	30.41	13.39	170.55	3.86	76.76	2.83	27.76	1.58	33.16	6.45E-01	3.27E-02	8.18E-03	3.97E-03	9.92E-04

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, ...)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash[1]
RDR-FL-5100	Natural Gas	Residue Gas	906.06 BTU/scf	500 scf/hr	4.38 MMscf/yr	2 gr/ 100 scf	NA
RR2-FL-991	Natural Gas	Residue Gas	906.06 BTU/scf	78 scf/hr	0.68 MMscf/yr	2 gr/ 100 scf	NA
RR3-FL-1800	Natural Gas	Residue Gas	906.06 BTU/scf	219 scf/hr	1.92 MMscf/yr	2 gr/ 100 scf	NA
RDR-H-781	Natural Gas	Residue Gas	1005.90 BTU/scf	23511.27 scf/hr	205.96 MMscf/yr	0.25 gr/ 100 scf	NA
RR2-H-781	Natural Gas	Residue Gas	1005.90 BTU/scf	26344.55 scf/hr	230.78 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-H-0901	Natural Gas	Residue Gas	1005.90 BTU/scf	74560.06 scf/hr	653.15 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-H-1054	Natural Gas	Residue Gas	1005.90 BTU/scf	69867.74 scf/hr	653.15 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-H-2301	Natural Gas	Residue Gas	1005.90 BTU/scf	3877.12 scf/hr	33.96 MMscf/yr	0.25 gr/ 100 scf	NA
RR2-H-0801	Natural Gas	Residue Gas	1005.90 BTU/scf	3877.12 scf/hr	33.96 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-H-741	Natural Gas	Residue Gas	1005.90 BTU/scf	10438.41 scf/hr	91.44 MMscf/yr	0.25 gr/ 100 scf	NA
RR2-H-741	Natural Gas	Residue Gas	1005.90 BTU/scf	10438.41 scf/hr	91.44 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-H-3601	Natural Gas	Residue Gas	1005.90 BTU/scf	19783.27 scf/hr	173.30 MMscf/yr	0.25 gr/ 100 scf	NA
RR3-H-1700	Natural Gas	Residue Gas	1005.90 BTU/scf	53308.31 scf/hr	466.98 MMscf/yr	0.25 gr/ 100 scf	NA
RR3-H-1701	Natural Gas	Residue Gas	1005.90 BTU/scf	53308.31 scf/hr	466.98 MMscf/yr	0.25 gr/ 100 scf	NA
RR3-H-1703	Natural Gas	Residue Gas	1005.90 BTU/scf	19854.45 scf/hr	173.92 MMscf/yr	0.25 gr/ 100 scf	NA
RR3-H-4701	Natural Gas	Residue Gas	1005.90 BTU/scf	14088.80 scf/hr	123.42 MMscf/yr	0.25 gr/ 100 scf	NA

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, ...)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash[1]
RDR-TO-5500	Natural Gas	Residue Gas	1005.90 BTU/scf	65118.89 scf/hr	570.44 MMscf/yr	0.25 gr/ 100 scf	NA
RR3-TO-1801	Natural Gas	Residue Gas	1005.90 BTU/scf	10759.30 scf/hr	94.25 MMscf/yr	0.25 gr/ 100 scf	NA
RDR-FL-2850	Natural Gas	Residue Gas	1005.90 BTU/scf	26.67 scf/hr	0.25 MMscf/yr	0.25 gr/ 100 scf	NA
RR2-G-2220	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	31.2 gal/hr	15600 gal/yr	15 ppm	NA
RDR-G-2	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	19.1 gal/hr	9550 gal/yr	15 ppm	NA
RDR-G-3	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-4	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-5	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-6	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-7	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-8	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-9	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-10	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-11	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA
RDR-G-12	Diesel Fuel	Purchased Commercial	137000.00 Btu/gal	29.14 gal/hr	72846.7 gal/yr	15 ppm	NA

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)
RDR-T-1	40400311	Condensate	Condensate	5.71	79.03	63.2	6.82	95	4.69
RDR-T-2	40400311	Condensate	Condensate	5.71	79.03	63.2	6.82	95	4.69
RDR-T-3	40400311	Condensate	Condensate	5.71	79.03	63.2	6.82	95	4.69
RDR-T-4	40400311	Condensate	Condensate	5.71	79.03	63.2	6.82	95	4.69
RDR-T-5	40400311	Condensate	Condensate	5.71	79.03	63.2	6.82	95	4.69
RDR-T-6	40400315	Produced Water (Slop)	Produced Water (Slop)	8.29	27.30	63.4	0.822	95	0.42

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			
RDR-T-1	2017	Condensate	NA	FX	1,000	119	6.55	8	White	White	Good	24,528,000	584.00
RDR-T-2	2017	Condensate	NA	FX	1,000	119	6.55	8	White	White	Good	24,528,000	584.00
RDR-T-3	2017	Condensate	NA	FX	1,000	119	6.55	8	White	White	Good	24,528,000	584.00
RDR-T-4	2017	Condensate	NA	FX	1,000	119	6.55	8	White	White	Good	24,528,000	584.00
RDR-T-5	2017	Condensate	NA	FX	1,000	119	6.55	8	White	White	Good	24,528,000	584.00
RDR-T-6	2017	Produced Water (Slop)	NA	FX	400	48	3.66	10	White	White	Good	3,024,000	180.00

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Natural Gas	Natural Gas	Gas	855 MMscf/day	Natural Gas	Natural Gas	Gas	855 MMscf/day
				Condensate	Condensate	Liquid	8000 bopd
				Produced Water (Slop)	Produced Water (Slop)	Liquid	1200 bwpd

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
Not Applicable									

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
Not Applicable								

Table 2-P: Greenhouse Gas Emissions

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

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]								Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	GWPs [1]	1	265	28	22,800	footnote 3									
RDR-H-781	mass GHG	10,992.65	0.021	0.21										10,992.88	
	CO_2e	10,992.65	5.49	5.80											11,003.94
RR2-H-781	mass GHG	12,317.35	0.023	0.23										12,317.60	
	CO_2e	12,317.35	6.15	6.50											12,330.00
RDR-H-0901	mass GHG	34,860.42	0.066	0.66										34,861.14	
	CO_2e	34,860.42	17.41	18.40											34,896.23
RDR-H-1054	mass GHG	32,666.54	0.062	0.62										32,667.21	
	CO_2e	32,666.54	16.31	17.24											32,700.09
RDR-H-2301	mass GHG	1,812.74	3.42E-03	0.034										1,812.78	
	CO_2e	1,812.74	0.91	0.96											1,814.60
RR2-H-0801	mass GHG	1,812.74	3.42E-03	0.034										1,812.78	
	CO_2e	1,812.74	0.91	0.96											1,814.60
RDR-H-741	mass GHG	4,880.46	9.20E-03	0.092										4,880.56	
	CO_2e	4,880.46	2.44	2.58											4,885.47
RR2-H-741	mass GHG	4,880.46	9.20E-03	0.092										4,880.56	
	CO_2e	4,880.46	2.44	2.58											4,885.47
RDR-H-3601	mass GHG	9,249.63	0.017	0.17										9,249.82	
	CO_2e	9,249.63	4.62	4.88											9,259.13
RR3-H-1700	mass GHG	24,924.20	0.047	0.47										24,924.72	
	CO_2e	24,924.20	12.45	13.15											24,949.80
RR3-H-1701	mass GHG	24,924.20	0.047	0.47										24,924.72	
	CO_2e	24,924.20	12.45	13.15											24,949.80
RR3-H-1703	mass GHG	24,924.20	0.047	0.47										24,924.72	
	CO_2e	24,924.20	12.45	13.15											24,949.80
RR3-H-4701	mass GHG	6,587.19	0.012	0.12										6,587.33	
	CO_2e	6,587.19	3.29	3.48											6,593.96
RDR-TEG	mass GHG	-	-	-										-	
	CO_2e	-	-	-											-
RR2-TEG	mass GHG	-	-	-										-	
	CO_2e	-	-	-											-
RR3-TEG	mass GHG	-	-	-										-	
	CO2e	-	-	-											-
RDR-AMINE	mass GHG	-	-	-										-	
	CO_2e	-	-	-											-
RR2-AMINE	mass GHG	-	-	-										-	
	CO_2e	-	-	-											-
RR3-AMINE	mass GHG	-	-	-										-	
	CO_2e	-	-	-											-
RDR-TO-5500	mass GHG	34,860.42	0.066	0.66										34,861.14	
	CO_2e	34,860.42	17.41	18.40											34,896.23
RR3-TO-1801	mass GHG	26,772.80	0.050	0.50										26,773.36	
	CO_2e	26,772.80	13.37	14.13											26,800.30
RDR-FL-5100	mass GHG	689.61	0.029	64.89										754.52	
	CO_2e	689.61	7.62	1,816.86											2,514.09
RR2-FL-991	mass GHG	493.70	0.028	64.88										558.62	
	CO_2e	493.70	7.52	1,816.76											2,317.98
RR3-FL-1800	mass GHG	559.16	0.028	64.89										624.07	
	CO_2e	559.16	7.55	1,816.80											2,383.51
Flare-M2	mass GHG	148.08	7.28E-03	16.54										164.63	
	CO_2e	148.08	1.93	463.18											613.19

RR2-G-2220	mass GHG	174.24	1.41E-03	7.07E-03											174.25	
	CO_2e	174.24	0.37	0.20												174.81
RDR-G-2	mass GHG	106.67	8.65E-04	4.33E-03											106.67	
	CO_2e	106.67	0.23	0.12												107.02
RDR-G-3	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-4	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-5	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-6	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO2e	162.73	0.35	0.18												163.26
RDR-G-7	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-8	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-9	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-10	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-11	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-G-12	mass GHG	162.73	1.32E-03	6.60E-03											162.74	
	CO_2e	162.73	0.35	0.18												163.26
RDR-T-1	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-T-2	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-T-3	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-T-4	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-T-5	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-T-6	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-FL-2850	mass GHG	368.98	1.14E-03	0.011											368.99	
	CO_2e	368.98	0.30	0.32												369.60
RDR-LOAD	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
RDR-FUG	mass GHG	9.24	-	286.35											295.59	
	CO_2e	9.24	-	8,017.74												8,026.98
RDR-TO-5500-SSM	mass GHG	612.61	-	0.62											613.23	
	CO_2e	612.61	-	17.46												630.07
RR3-TO-1801-SSM	mass GHG	358.56	-	0.43											358.99	
	CO_2e	358.56	-	11.93												370.49
SSMM	mass GHG	1.84	-	341.72											343.56	
	CO_2e	1.84	-	9,568.24												9,570.08
SSMT	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
SSMB	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
SSMBLAST	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
SSMCOAT	mass GHG	-	-	-											-	
	CO_2e	-	-	-												-
Total	mass GHG	261,615.97	0.59	844.27											262,460.83	
	CO_2e	261,615.97	157.11	23,666.81												285,439.89

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

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

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

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

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

Section 3

Application Summary

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

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

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

Targa Northern Delaware, LLC (Targa) owns and operates the Road Runner Gas Processing Plant (Road Runner) located near Loving in Eddy County, NM. The most recent New Source Review (NSR) permit No. 7200-M6 was issued on May 6, 2026.

The primary function of the Road Runner 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 as a primary Standard Industrial Classification (SIC) Code of 1311. 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 compounds (VOCs) and hazardous air pollutants (HAPs).

Targa is proposing a significant revision to NSR Permit No.7200-M6 to authorize the following design changes:

- Increase the gas throughput of train 3 to 325 MMSCFD from 265 MMSCFD;
- Increase the capacities and emission limits of train 3's amine regeneration system, TEG regeneration system, and inlet flare
- Update the inlet gas analysis for the facility leading to updated emission limits for units at the facility;
- Existing permitted train 1 and train 2 heater emissions are being updated to represent 3% oxygen in the exhaust; ;
- Remove permitted train 3 reboilers (RR3-H-781, RR3-H-0901, RR3-H-0801) and heaters (RR3-H-741, RR3-H-3601);
- Add new train 3 hot oil heaters (RR3-H-1700, RR3-H-1701, RR3-H-1703) and regen gas heater (RR3-H-4701);
- Add a new train 3 thermal oxidizer (RR3-TO-1801) to control train 3 amine venting, amine flash tank gas, dehydrator flash tank gas, and dehydrator BTEX overheads;
- Add train 3 thermal oxidizer SSM (RR3-TO-1801-SSM) for train 3 amine venting during thermal oxidizer downtime;
- Add RR3-TO-1801 downtime emissions routed to RR3-FL-1800 emissions; and
- Update pigging activity emissions.

With the proposed changes listed above, the following units will be modified:

Train 1:
One (1) Trim Reboiler (RDR-H-781)
One (1) Amine Reboiler (RDR-H-0901)
One (1) Glycol Reboiler (RDR-H-2301)
One (1) Regen Gas Heater (RDR-H-741)
One (1) TEG Regeneration System (RDR-TEG)
One (1) Amine Regeneration System (RDR-AMINE)
One (1) Thermal Oxidizer (RDR-TO-5500)

One (1) Flare (RDR-FL-5100)
One (1) Tank Combustor (RDR-FL-2850)

Train 2:
One (1) Trim Reboiler (RR2-H-781)
One (1) Amine Reboiler (RR2-H-1054)
One (1) Glycol Reboiler (RR2-H-0801)
One (1) Regen Gas Heater (RR2-H-741)
One (1) TEG Regeneration System (RR2-TEG)
One (1) Amine Regeneration System (RR2-AMINE)
One (1) Flare (RR2-FL-991)

Train 3:
Three (3) HMO Heaters (RR3-H-1700, RR3-H-1701, RR3-H-1703)
One (1) Regen Gas Heater (RR3-H-4701)
One (1) TEG Regeneration System (RR3-TEG)
One (1) Amine Regeneration System (RR3-AMINE)
One (1) Flare (RR3-FL-1800)
One (1) Thermal Oxidizer (RR3-TO-1801)

Emissions will also result from the following new or updated units:

- Addition of HMO heaters; two (2) 53.62 MMBtu/hr heaters (RR3-H-1700, RR3-H-1701) and one (1) 19.97 MMBtu/hr heater (RR3-H-1703)
- One (1) 14.17 MMBtu/hr Regen Gas heater (RR3-H-4701)
- Addition of one (1) thermal oxidizer (RR3-TO-1801) and SSM activities for this unit (RR3-TO-1801 SSM)

This project will not trigger a 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. With this revision, this facility will now be a major source of HAPS.

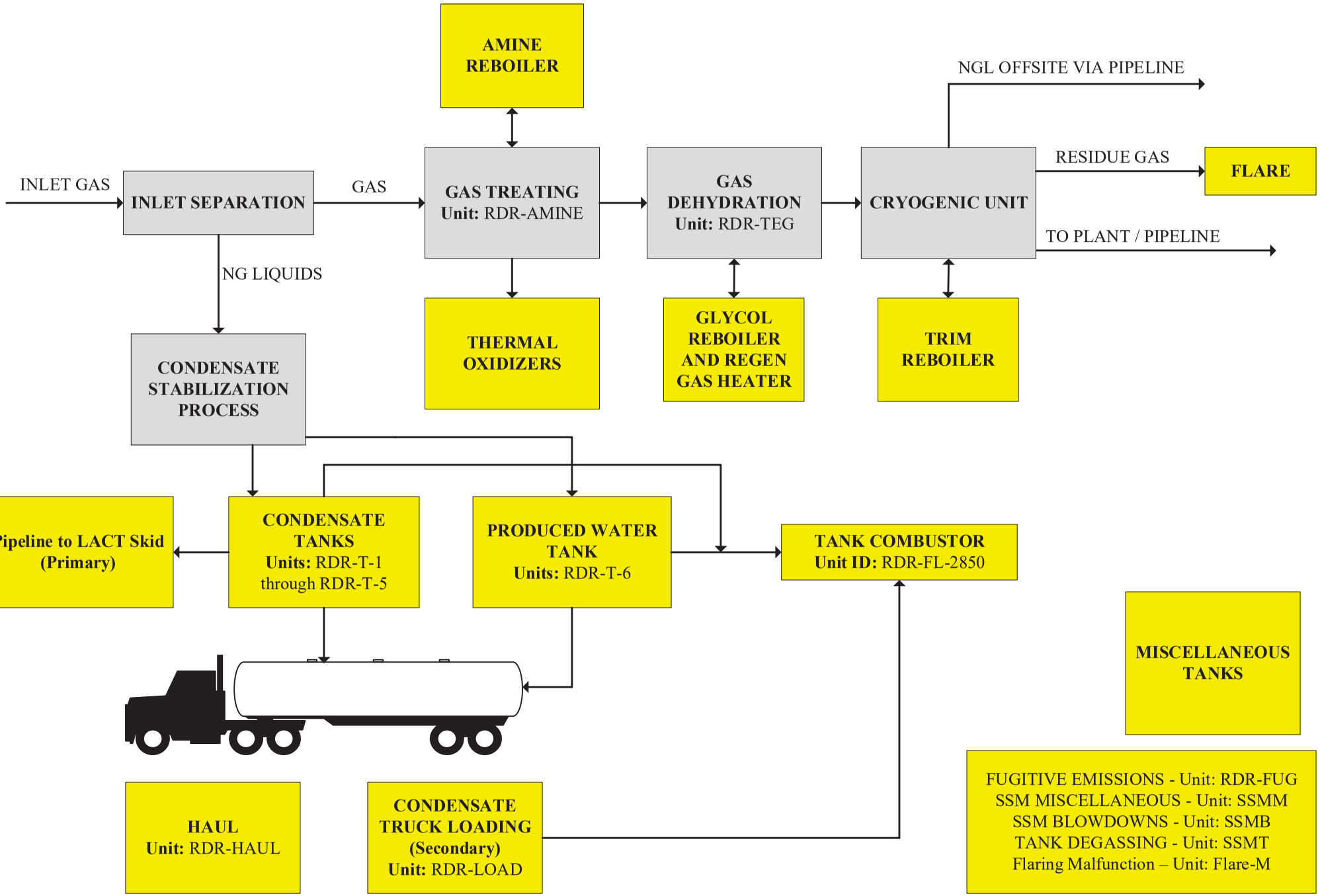
Section 4

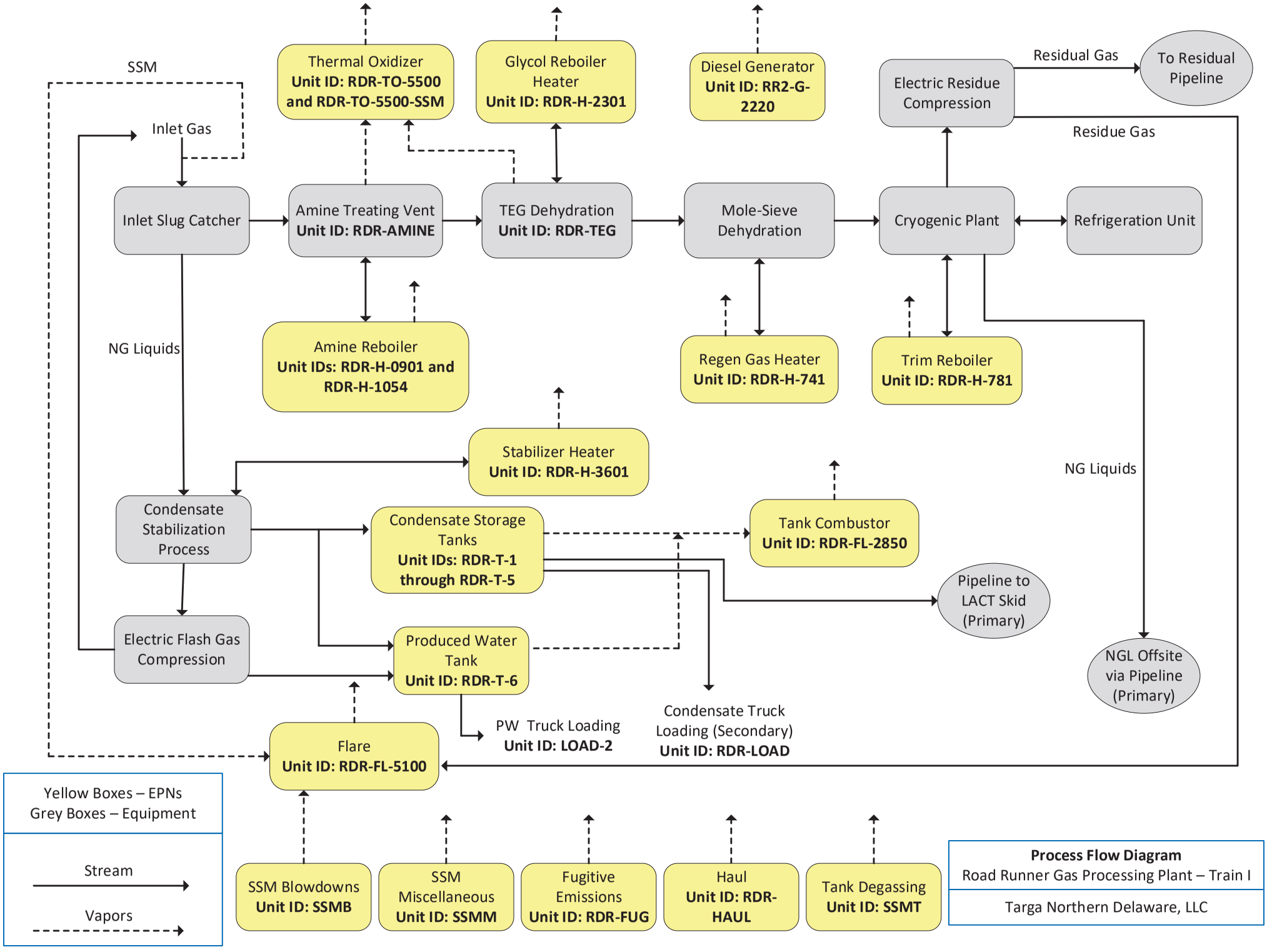
Process Flow Sheet

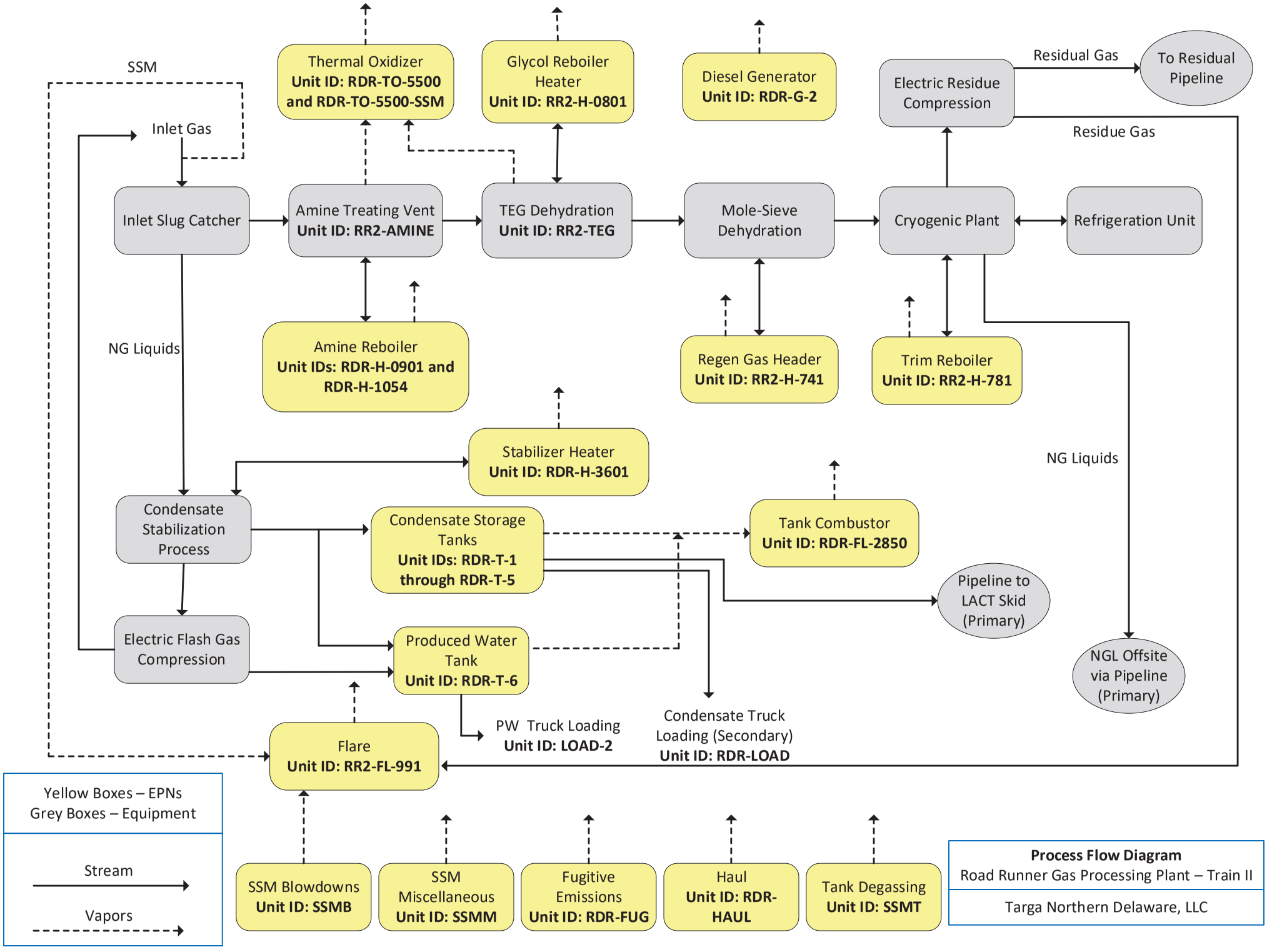
A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

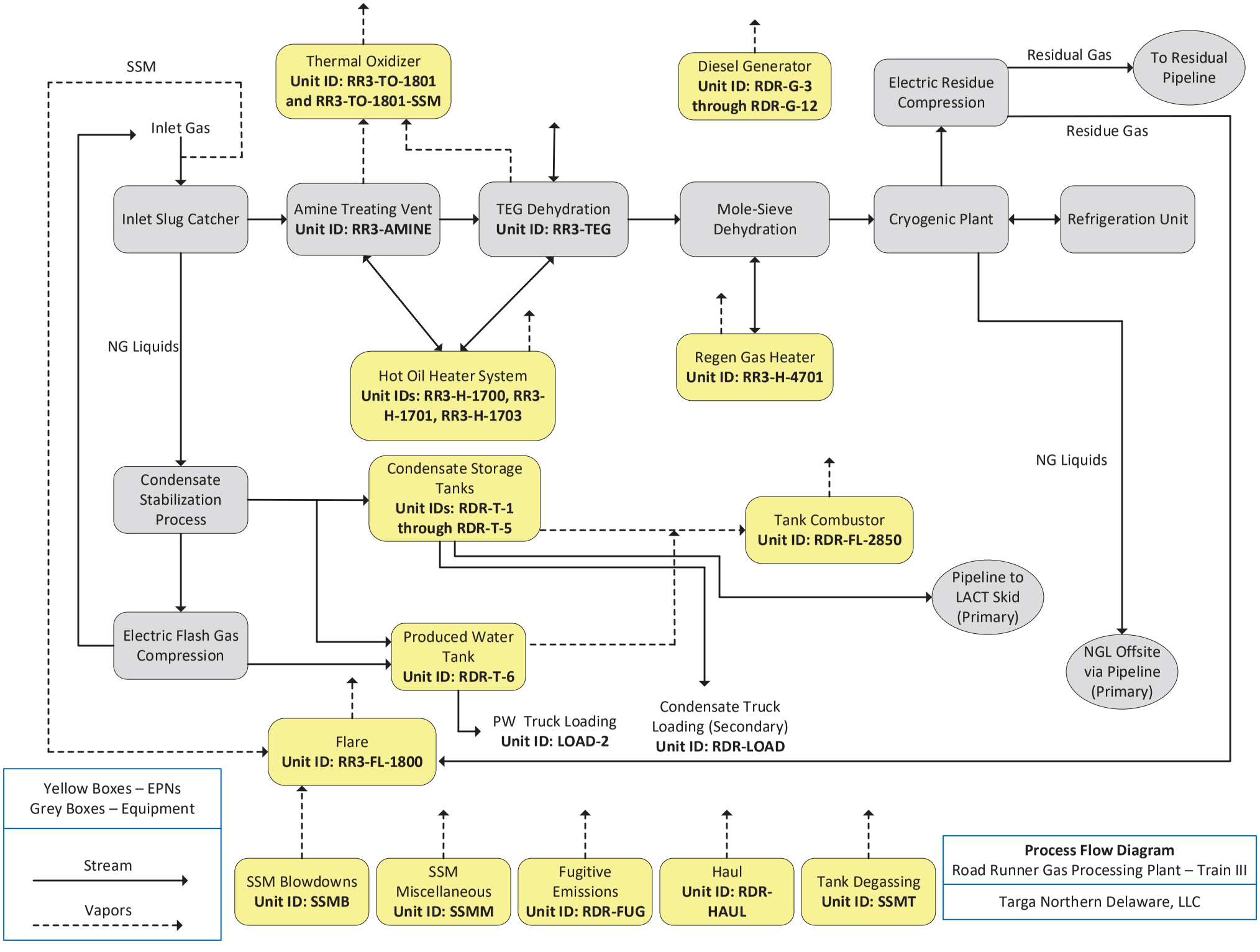
A process flow sheet is attached.

Targa Northern Delaware, LLC
Road Runner Gas Processing Plant




SSM
Thermal Oxidizer
Unit ID: RDR-TO-5500 and RDR-TO-5500-SSM
Glycol Reboiler Heater
Unit ID: RDR-H-2301
Diesel Generator
Unit ID: RR2-G-2220
Residual Gas
To Residual Pipeline
Electric Residue Compression
Residue Gas
Inlet Gas
Inlet Slug Catcher
Amine Treating Vent
Unit ID: RDR-AMINE
TEG Dehydration
Unit ID: RDR-TEG
Mole-Sieve Dehydration
Cryogenic Plant
Refrigeration Unit
NG Liquids
Amine Reboiler
Unit IDs: RDR-H-0901 and RDR-H-1054
Regen Gas Heater
Unit ID: RDR-H-741
Trim Reboiler
Unit ID: RDR-H-781
Stabilizer Heater
Unit ID: RDR-H-3601
NG Liquids
Condensate Stabilization Process
Condensate Storage Tanks
Unit IDs: RDR-T-1 through RDR-T-5
Tank Combustor
Unit ID: RDR-FL-2850
Pipeline to LACT Skid (Primary)
Electric Flash Gas Compression
Produced Water Tank
Unit ID: RDR-T-6
NGL Offsite via Pipeline (Primary)
PW Truck Loading
Unit ID: LOAD-2
Condensate Truck Loading (Secondary)
Unit ID: RDR-LOAD
Flare
Unit ID: RDR-FL-5100
Yellow Boxes – EPNs
Grey Boxes – Equipment
Stream
Vapors
SSM Blowdowns
Unit ID: SSMB
SSM Miscellaneous
Unit ID: SSMM
Fugitive Emissions
Unit ID: RDR-FUG
Haul
Unit ID: RDR-HAUL
Tank Degassing
Unit ID: SSMT
Process Flow Diagram
Road Runner Gas Processing Plant – Train I
Targa Northern Delaware, LLC


SSM
Thermal Oxidizer
Unit ID: RDR-TO-5500 and RDR-TO-5500-SSM
Glycol Reboiler Heater
Unit ID: RR2-H-0801
Diesel Generator
Unit ID: RDR-G-2
Electric Residue Compression
Residual Gas
To Residual Pipeline
Residue Gas
Inlet Gas
Inlet Slug Catcher
Amine Treating Vent
Unit ID: RR2-AMINE
TEG Dehydration
Unit ID: RR2-TEG
Mole-Sieve Dehydration
Cryogenic Plant
Refrigeration Unit
NG Liquids
Amine Reboiler
Unit IDs: RDR-H-0901 and RDR-H-1054
Regen Gas Header
Unit ID: RR2-H-741
Trim Reboiler
Unit ID: RR2-H-781
Stabilizer Heater
Unit ID: RDR-H-3601
NG Liquids
Condensate Stabilization Process
Condensate Storage Tanks
Unit IDs: RDR-T-1 through RDR-T-5
Tank Combustor
Unit ID: RDR-FL-2850
Pipeline to LACT Skid (Primary)
Electric Flash Gas Compression
Produced Water Tank
Unit ID: RDR-T-6
NGL Offsite via Pipeline (Primary)
PW Truck Loading
Unit ID: LOAD-2
Condensate Truck Loading (Secondary)
Unit ID: RDR-LOAD
Flare
Unit ID: RR2-FL-991
Yellow Boxes – EPNs
Grey Boxes – Equipment
Stream
Vapors
SSM Blowdowns
Unit ID: SSMB
SSM Miscellaneous
Unit ID: SSMM
Fugitive Emissions
Unit ID: RDR-FUG
Haul
Unit ID: RDR-HAUL
Tank Degassing
Unit ID: SSMT
Process Flow Diagram
Road Runner Gas Processing Plant – Train II
Targa Northern Delaware, LLC

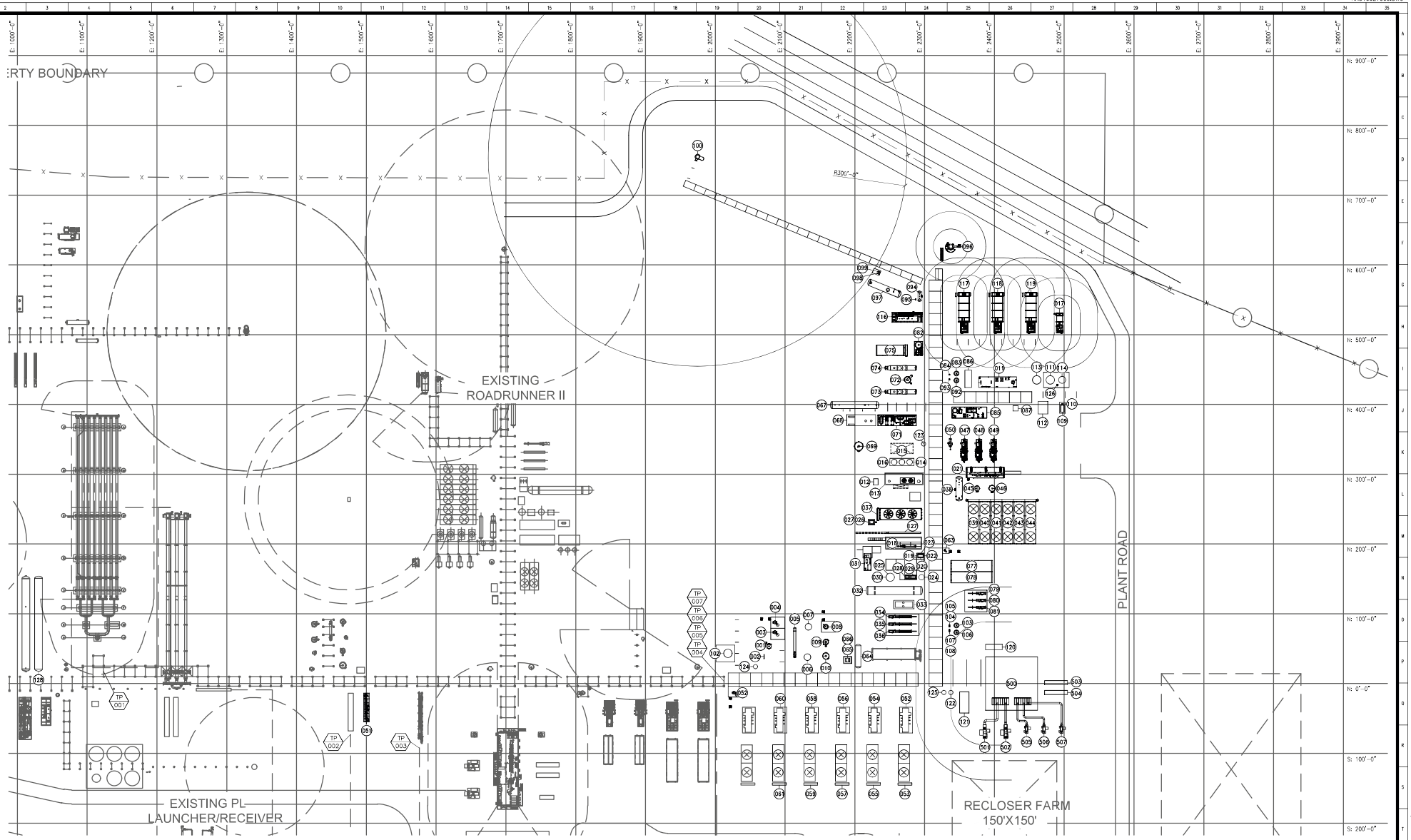

SSM
Thermal Oxidizer
Unit ID: RR3-TO-1801 and RR3-TO-1801-SSM
Diesel Generator
Unit ID: RDR-G-3 through RDR-G-12
Electric Residue Compression
Residual Gas
To Residual Pipeline
Residue Gas
Inlet Gas
Inlet Slug Catcher
Amine Treating Vent
Unit ID: RR3-AMINE
TEG Dehydration
Unit ID: RR3-TEG
Mole-Sieve Dehydration
Cryogenic Plant
Refrigeration Unit
NG Liquids
Hot Oil Heater System
Unit IDs: RR3-H-1700, RR3-H-1701, RR3-H-1703
Regen Gas Heater
Unit ID: RR3-H-4701
NG Liquids
Condensate Stabilization Process
Condensate Storage Tanks
Unit IDs: RDR-T-1 through RDR-T-5
Tank Combustor
Unit ID: RDR-FL-2850
Pipeline to LACT Skid (Primary)
Electric Flash Gas Compression
Produced Water Tank
Unit ID: RDR-T-6
NGL Offsite via Pipeline (Primary)
PW Truck Loading
Unit ID: LOAD-2
Condensate Truck Loading (Secondary)
Unit ID: RDR-LOAD
Flare
Unit ID: RR3-FL-1800
Yellow Boxes – EPNs
Grey Boxes – Equipment
Stream
Vapors
SSM Blowdowns
Unit ID: SSMB
SSM Miscellaneous
Unit ID: SSMM
Fugitive Emissions
Unit ID: RDR-FUG
Haul
Unit ID: RDR-HAUL
Tank Degassing
Unit ID: SSMT
Process Flow Diagram
Road Runner Gas Processing Plant – Train III
Targa Northern Delaware, LLC

Section 5

Plot Plan Drawn to Scale

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

A plot plan is attached.



PLOT PLAN
SCALE: 1"=60'-0"

REFERENCE DWGS.	REV	DESCRIPTION	DWN	CHKD	DATE

REV	DESCRIPTION	DWN	CHKD	DATE
C	ISSUED FOR APPROVAL	ACP	EAW	06/23/26
B	REISSUED FOR PROPOSAL REV 1	JRE	BSW	05/29/26
A	ISSUED FOR BID	MJF	ACP	05/20/26

SCALE: NONE	DATE
DWN BY: MJF	05/19/26
CHKD BY: ACP	05/19/26
FINAL CK: JRE	05/19/26
ENGR.:	
APPRV:	
APPRV:	

FACILITY NAME
ROADRUNNER III
LOVING, NM

TARGA

DRAWING NUMBER
1549-100-E1001

CAD FILE NAME
RR3100E1000

REVISION
C

GENERAL ARRANGEMENT
PLOT PLAN

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PREPARED BY: ZAP ENGINEERING AND CONSTRUCTION SERVICES, INC. 755 PARFET ST, SUITE 200 LAKEWOOD CO 80215

PROJECT NUMBER: 126106

PLOT DATE: 6/23/2026

RR3100E1000.DWG

PACHEA - 6/23/2026

D:\751122 - ROADRUNNER III_DRAWINGS\GENERAL ARRANGEMENTS - (V)RR3100E1000.DWG

EQUIPMENT LIST

ID	EQUIPMENT TAG/NAME
001	V-1407 INLET SEPARATOR
002	E-1207 HYDRATE PREVENT HEATER
003	F-2457 AMINE INLET FILTER/COALESCER
004	F-2458 AMINE INLET FILTER/COALESCER
005	E-2200 AMINE INLET/OVERHEAD EXCHANGER
006	T-2500 AMINE CONTACTOR
007	V-2400 AMINE OVERHEAD SEPARATOR
008	F-3450 TEG INLET FILTER/COALESCER
009	T-3500 GLYCOL CONTACTOR
010	V-3400 OUTLET SEPARATOR
011	SK-1165 TEG FLASH TANK SKID
012	C-4101 REGEN GAS COMPRESSOR
013	SK-0151 DEHYDRATION SKID
014	V-4401 MOL SIEVE DEHYDRATOR
015	V-4402 MOL SIEVE DEHYDRATOR
016	V-4403 MOL SIEVE DEHYDRATOR
017	H-4701 REGEN GAS HEATER
018	SK-0152 CRYO SKID
019	E-4201 WARM GAS/GAS EXHANGER
020	E-4202 REFLUX SUBCOOLER
021	SK-0256 REFRIG SKID
022	E-4207 COLD GAS/GAS EXCHANGER
023	E-4208 RSV REFLUX EXCHANGER
024	V-4408 WARM SEPARATOR
025	V-4405 COLD SEPARATOR
026	V-4801 METHANOL TANK
027	P-4611 METHANOL INJECTION PUMP
028	E-4203 BOTTOMS REBOILER
029	E-4204 SIDE REBOILER
030	T-4501 DEMETHANIZER
031	EC-4100 TURBO EXPANDER/COMPRESSOR
032	V-4406 PRODUCT SURGE DRUM
033	SK-0153 PRODUCT BOOSTER PUMP SKID
034	P-4602 PRODUCT PIPELINE PUMP
035	P-4603 PRODUCT PIPELINE PUMP
036	P-4604 PRODUCT PIPELINE PUMP
037	AC-4302 BOOSTER COMPRESSOR AFTERCOOLER
038	V-4414 REFRIGERANT ACCUMULATOR
039	AC-4303A REFRIGERANT CONDENSER
040	AC-4303B REFRIGERANT CONDENSER
041	AC-4303C REFRIGERANT CONDENSER
042	AC-4303D REFRIGERANT CONDENSER
043	AC-4303E REFRIGERANT CONDENSER
044	AC-4303F REFRIGERANT CONDENSER
045	V-4415 REFRIGERANT ECONOMIZER
046	V-4416 REFRIGERANT SUCTION SCRUBBER
047	C-4111 REFRIGERANT COMPRESSOR
048	C-4112 REFRIGERANT COMPRESSOR
049	C-4113 REFRIGERANT COMPRESSOR
050	V-4409 COLD DRAIN DRUM
051	PK-1830 NGL CHECK METER SKID
052	C-5100 RESIDUE GAS COMPRESSOR
053	AC-5300/5301 RESIDUE GAS COOLER
054	C-5110 RESIDUE GAS COMPRESSOR
055	AC-5310/5311 RESIDUE GAS COOLER
056	C-5120 RESIDUE GAS COMPRESSOR
057	AC-5320/5321 RESIDUE GAS COOLER
058	C-5130 RESIDUE GAS COMPRESSOR
059	AC-5330/5331 RESIDUE GAS COOLER
060	C-5140 RESIDUE GAS COMPRESSOR
061	AC-5340/5341 RESIDUE GAS COOLER
062	F-5450 RESIDUE GAS FILTER/COALESCER
063	F-5460 RECYCLE FILTER/COALESCER
064	V-1406 CLOSED DRAIN TANK
065	P-1604 CLOSED DRAIN PUMP
066	P-1605 CLOSED DRAIN PUMP
067	V-2401 AMINE FLASH TANK
068	SK-1151 AMINE FILTER SKID
069	F-2454 AMINE CARBON FILTER
071	SK-1153 AMINE REGEN SKID
072	T-2501 AMINE STILL
073	E-2203 AMINE REBOILER W/ SURGE
074	E-2204 AMINE REBOILER W/ SURGE
075	AC-2300A REFLUX CONDENSER
077	AC-2301 LEAN AMINE COOLER
078	AC-2302 LEAN AMINE COOLER
079	P-2604 MAIN SOLUTION PUMP
080	P-2605 MAIN SOLUTION PUMP
081	P-2606 MAIN SOLUTION PUMP
082	SK-1157 AMINE REFLUX SKID
083	TK-2901 AMINE SUMP
084	P-2610 AMINE SUMP PUMP
085	SK-1161 TEG SKID
086	AC-3300 LEAN TEG COOLER
087	AC-3301 BTEX CONDENSER
092	TK-3901 GLYCOL SUMP
093	P-3617 GLYCOL SUMP PUMP
094	V-1412 THERMAL OXIDIZER KNOCKOUT
095	P-1626 THERMAL OXIDIZER KO PUMP
096	TO-1801 THERMAL OXIDIZER
097	V-1411 FLARE KNOCKOUT DRUM

EQUIPMENT LIST

ID	EQUIPMENT TAG/NAME
098	P-1614 FLARE KNOCKOUT PUMP
099	P-1615 FLARE KNOCKOUT PUMP
100	FL-1800 FLARE
102	TK-1905 OPEN DRAIN STORAGE TANK
103	TK-1901 LUBE OIL DRAIN SUMP
104	P-1616 LUBE OIL SUMP PUMP
105	P-1617 LUBE OIL SUMP PUMP
106	TK-1902 OPEN DRAIN SUMP
107	P-1618 OPEN DRAIN PUMP
108	P-1619 OPEN DRAIN PUMP
109	TK-1906 REFRIGERATION LUBE OIL TANK
110	P-1625 LUBE OIL MAKEUP PUMP
111	TK-1909 LEAN AMINE TANK
112	SK-1912 UTILITY PUMP SKID
113	TK-1910 DEMIN WATER TANK
114	TK-1911 TEG TANK
116	SK-1020 HOT OIL PUMP SKID
117	H-1700 HOT OIL HEATER
118	H-1701 HOT OIL HEATER
119	H-1703 HOT OIL HEATER
120	G-1812 STANDBY GENERATOR
121	PK-1810 INSTRUMENT AIR PACKAGE
122	V-1414 DRY AIR RECEIVER
123	V-1415 DRY AIR RECEIVER
124	V-1416 DRY AIR RECEIVER
125	V-1417 UTILITY AIR RECEIVER
126	P-1629 TEG MAKEUP PUMP
127	E-4200 PROPANE SUBCOOLER
128	V-9070 CONDENSATE SURGE TANK
500	PDC BUILDING
501	TR-1100A 20MVA TRANSFORMER
502	TR-1100B 20MVA TRANSFORMER
503	PFCC-1200A 4.16KV PFC BANK
504	PFCC-1200B 4.16KV PFC BANK
505	TR-2100A 3750KVA TRANSFORMER
506	TR-2100B 3750KVA TRANSFORMER
507	TR-2100C 3750KVA TRANSFORMER

REFERENCE DWGS.	REV	DESCRIPTION	DWN	CHKD	DATE

REV	DESCRIPTION	DWN	CHKD	DATE
C	ISSUED FOR APPROVAL	ACP	EAM	06/23/26
B	REISSUED FOR PROPOSAL REV 1	JRE	BSW	05/29/26
A	ISSUED FOR BID	MJF	ACP	05/20/26

SCALE: NONE

	DATE
DWN BY: MJF	05/19/26
CHKD BY: ACP	05/19/26
FINAL CK: JRE	05/19/26
ENGR.:	
APPRV:	
APPRV:	

FACILITY NAME: ROADRUNNER III NEW MEXICO

TARGA

DRAWING NUMBER: 1549-100-E1001

CAD FILE NAME: RR3100E1001

REVISION: C

GENERAL ARRAGEMENT
PLOT PLAN EQUIPMENT LIST

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PREPARED BY: ZAP ENGINEERING AND CONSTRUCTION SERVICES, INC. 755 PARFET ST, SUITE 200 LAKEWOOD CO 80215

PROJECT NUMBER: 126106

PLOT DATE: 6/23/2026

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 RDR-H-2301, RDR-H-3601, and RR2-H-0801, 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). It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. SO_2 emissions are based on 100% conversion of elemental sulfur to SO_2 and a 100% conversion of combusted H_2S to SO_2 is conservatively assumed based on gas analysis records.

For units RDR-H-781, RDR-H-0901, RR2-H-781, RR3-H-1700, RR3-H-1701, RR3-H-1703, and RR3-H-4701, 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). It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. SO_2 emissions are based on 100% conversion of elemental sulfur to SO_2 and a 100% conversion of combusted H_2S to SO_2 is assumed. Emissions of nitrogen oxides (NO_x) and carbon monoxide (CO) are based on manufacturer specifications.

For unit RDR-H-1054, AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of carbon monoxide (CO), volatile organic compounds (VOC), and hazardous air pollutants (HAPs). Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. SO_2 emissions are based on 100% conversion of elemental sulfur to SO_2 and a 100% conversion of combusted H_2S to SO_2 is assumed. Emissions of nitrogen oxides (NO_x) and particulate matter (PM) are based on manufacturer specifications. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$.

For units RDR-H-741 and RR2-H-741, AP-42 Chapter 1.4 *Natural Gas Combustion* was used to determine emissions of carbon monoxide (CO) and hazardous air pollutants (HAPs). Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. SO_2 emissions are based on 100% conversion of elemental sulfur to SO_2 and a 100% conversion of combusted H_2S to SO_2 is assumed. Emissions of nitrogen oxides (NO_x), volatile organic compounds (VOC), and particulate matter (PM) are based on manufacturer specifications. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$.

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 vent and non-condensable overheads from the BTEX condenser. Emissions from RDR-TEG and RR2-TEG are controlled by a common thermal oxidizer (RDR-TO-5500) while emissions from RR3-TEG are controlled by a dedicated train 3 thermal oxidizer (RR3-TO-1801). Each thermal oxidizer is designed to achieve a destruction efficiency of 99.9%. Controlled emissions from the glycol dehydrators are represented at their respective thermal oxidizers.

Three ProMax simulations were conducted to capture the full profile of emissions across varying facility flow rates for Trains 1 and 2: a maximum gas rate throughput (265 MMSCFD), a minimum gas rate throughput (86 MMSCFD), and a median gas rate throughput (172 MMSCFD). Similarly, three simulations were performed for Train 3 with different flowrates: a maximum gas rate throughput (325 MMSCFD), a minimum gas rate throughput (249 MMSCFD), and a median gas rate throughput (287 MMSCFD). The emissions for each unit was determined by taking the maximum emission rate for each pollutant across the three simulation scenarios. The TEG recirculation rate for each unit at Train 1 and 2 was held constant at 40 gallons per minute (sgpm) in all simulations. The Train 3 glycol dehydrator recirculation rate was held constant at 75 gallons per minute (sgpm) in all simulations.

Amine Units

BR&E ProMax was used to determine emissions from the amine units. Contactor overheads are routed to the glycol dehydrators for further treatment. Regenerator overheads from Train 1 and 2 are routed to the thermal oxidizer (RDR-TO-5500), with a 99.9% destruction efficiency, or the facility flare with a 98% destruction efficiency. Regenerator overheads from Train 3 are routed to a separate thermal oxidizer (RR3-TO-1801) with a 99.9% destruction efficiency, or the facility flare with a 98% destruction efficiency. Three ProMax simulations were run to capture the full profile of emissions of the various flowrates at Train 1 and 2: a maximum gas rate throughput (265 MMSCFD), a minimum gas rate throughput (88 MMSCFD), and a median gas rate throughput (177 MMSCFD) for each amine unit. This was done for Train 3 with different flowrates: a maximum gas rate throughput (325 MMSCFD), a minimum gas rate throughput (249 MMSCFD), and a median gas rate

throughput (287 MMSCFD). The emissions for these units were determined by taking the maximum emission rate of each pollutant between the three simulations. The MDEA recirculation rate for the Train 3 amine unit was held constant at 1,000 sgpm in all simulations.

Thermal Oxidizers

The thermal oxidizer (RDR-TO-5500) will control the waste gas from the glycol dehydrators as well as the waste gas from the amine units at Train 1 and 2. Additional supplemental fuel is routed to the thermal oxidizer at a rate of 65,118.89 scf/hr. Emissions of nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) are based on manufacturer guaranteed emission factors. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. The thermal oxidizer operates with a destruction efficiency of 99.9%. Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. Mass balance of H_2S is assuming 98% combustion and 100% conversion of combusted H_2S to SO_2. Greenhouse gas emissions from the thermal oxidizer were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2.

The Train 3 thermal oxidizer (RR3-TO-1801) will control the waste gas from the glycol dehydrators as well as the waste gas from the amine unit. Additional supplemental fuel is routed to the thermal oxidizer at a rate of 10,759.30 scf/hr. Emissions of nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) are based on manufacturer guaranteed emission factors. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. The thermal oxidizer operates with a destruction efficiency of 99.9%. Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. Mass balance of H_2S is assuming 98% combustion and 100% conversion of combusted H_2S to SO_2. Greenhouse gas emissions from the thermal oxidizer were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2.

Thermal Oxidizers SSM

The facility will conduct routine maintenance on the thermal oxidizers during which the thermal oxidizers will be taken offline, and emissions from glycol dehydrator emission units RDR-TEG, RR2-TEG, along with amine units RDR-AMINE, RR2-AMINE, and RR3-AMINE, will instead be vented to atmosphere. Annual downtime for routine maintenance of the units is 20 hr/yr.

Flares

The flares at the facility (RDR-FL-5100, RR2-FL-991, and RR3-FL-1800) will flare both inlet and residue gas, including blowdown SSM emissions (SSMB). The expected composition and maximum expected volumes (~50,000 scf/hr per train, 150,000 scf/hr total) of inlet gas and residue gas were used as the basis of the flare calculation. Emissions due to malfunction flaring (Flare-M) were calculated using an inlet gas analysis as the basis of the calculation. TNRCC RG-109 flare emission factors for high 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. Fuel gas is conservatively assumed to have a sulfur content of 0.25 gr/100 scf. An assumed 98% destruction efficiency is applied to the VOC, HAP, 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 condensate storage tanks, RDR-T-1 through RDR-T-5, were determined using BR&E ProMax and a site-specific condensate analysis, dated February 3, 2022. Emissions from the condensate tanks are controlled by a combustor (RDR-FL-2850) with a 98% destruction efficiency.

Produced Water (Slop) Storage Tank

Emissions from the produced water (slop) storage tank, RDR-T-6, were determined using BR&E ProMax. Emissions from the produced water (slop) storage tank are controlled by a combustor (RDR-FL-2850) with a 98% destruction efficiency.

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 98.7% capture efficiency. Captured vapors are controlled by a combustor with 98% destruction efficiency.

Tank and Loading Combustor

The tank and loading combustor (RDR-FL-2850) controls emissions from the condensate tanks, condensate loading vapor balance, which is routed to the condensate tanks, and slop tank emissions. The combustor operates with a destruction efficiency of 98%. Emissions of nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) were calculated using AP-42 Table 1.4-1 and Table 1.4-2. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. Fuel gas is conservatively assumed to have a sulfur

content of 0.25 gr/100 scf. Greenhouse gas emissions from the tank combustor were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2.

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 and are provided in Section 7.

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 SSM (SSMM)

Miscellaneous SSM 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.

Abrasive Blasting (SSMBLAST)

PM, PM_{10}, and $PM_{2.5}$ emissions are calculated using AP-42 Section 13.2.6-1 *Abrasive Blasting* emission factors using the worst-case emission factor for PM based on 15 mph wind speed.

Surface Coating (SSMCOAT)

PM, PM_{10}, and $PM_{2.5}$ emissions are calculated using solids content, usage rates, transfer efficiency, and fallout factors. Transfer efficiency and fallout factor are referenced from TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications (November 5, 2012). The solids content is determined by the representative Safety Data Sheet (SDS). The usage rates are assumed to be 25 gallons/hr and 100 gallons/year. VOCs and HAPs are calculated using the density, VOC content, and HAP content on the representative Safety Data Sheet. Emissions associated with surface coating are represented as a total facility-wide hourly emission rate. It is presumed that surface coating will only occur at one train at a time.

SSM Blowdowns (SSMB)

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

Tank Degassing (SSMT)

Tank degassing emissions are based on degassing the five (5) condensate storage tanks at the facility, with each activity lasting one (1) hour per event. There are five (5) events per year.

Diesel Fired Generators (RR2-G-2220, RDR-G-2 through RDR-G-12)

The facility will have multiple generator units with various capacities. For unit RR2-G-2220, emissions of NO_x, CO, and PM emission factors are based on manufacturer specifications. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. EPA Final Tier I Emissions Standards for Non-Road Engines for HC were used for VOC. Emission factors for HAP emissions and SO_2 were obtained from AP- 42 Section 3.4, *Large Stationary Diesel and All Stationary Dual-Fuel Engines*, (10/96), were used to calculate potential emissions. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. Greenhouse gas emissions from the thermal oxidizer were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2. Refer to the attached calculations for detailed documentation of emission factors.

For units RDR-G-2 through RDR-G-12, Final Tier 4 Emissions Standards for Non-Road Engines for NO_x, CO, HC, and PM were used. Emission factors for HAP emissions and SO_2 were obtained from AP- 42 Section 3.3, *Gasoline and Diesel Industrial Engines*, (4/25) were used to calculate potential emissions for the new diesel generators. It is assumed that $PM_{(Total)} = PM_{10} = PM_{2.5}$. Greenhouse gas emissions from the thermal oxidizer were calculated using 40 CFR 98 Subpart C Table C-1 and Table C-2. Refer to the attached calculations for detailed documentation of emission factors.

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)

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Emission Summary

Uncontrolled Emissions

		NO_x		CO		VOC		SO_2		TSP[2]		PM_{10}[2]		$PM_{2.5}$[2]		H_2S		Total HAP	
Unit ID	Equipment Description	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
RDR-H-781	Trim Reboiler	0.42	1.84	2.55	11.19	0.13	0.56	0.017	0.074	0.18	0.77	0.18	0.77	0.18	0.77	3.16E-04	1.38E-03	0.044	0.19
RR2-H-781	Trim Reboiler	0.47	2.06	0.95	4.18	0.14	0.63	0.019	0.082	0.20	0.86	0.20	0.86	0.20	0.86	3.54E-04	1.55E-03	0.049	0.21
RDR-H-0901	Amine Reboiler	1.33	5.83	2.70	11.82	0.40	1.77	0.053	0.23	0.56	2.45	0.56	2.45	0.56	2.45	1.18E-04	1.18E-08	0.14	0.61
RDR-H-1054	Amine Reboiler	1.25	5.46	2.88	12.62	1.34	5.85	0.050	0.22	0.28	1.23	0.28	1.23	0.28	1.23	9.39E-04	4.11E-03	0.13	0.57
RDR-H-2301	Glycol Reboiler	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031
RR2-H-0801	Glycol Reboiler	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031
RDR-H-741	Regen Gas Heaters	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085
RR2-H-741	Regen Gas Heaters	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085
RDR-H-3601	Stabilizer Heater	1.95	8.55	1.64	7.18	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.66E-04	1.17E-03	0.037	0.16
RR3-H-1700	HMO Heater	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43
RR3-H-1701	HMO Heater	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43
RR3-H-1703	HMO Heater	0.34	1.49	0.34	1.51	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.67E-04	1.17E-03	0.037	0.16
RR3-H-4701	Regen Gas Heater	0.25	1.12	0.26	1.13	0.076	0.33	0.010	0.044	0.11	0.46	0.11	0.46	0.11	0.46	1.89E-04	8.30E-04	0.026	0.11
RDR-TEG	Glycol Dehydrator (99.9% Control)	-	-	-	-	200.02	876.10	-	-	-	-	-	-	-	-	4.21E-05	1.85E-04	44.54	195.09
RR2-TEG	Glycol Dehydrator (99.9% Control)	-	-	-	-	200.13	876.56	-	-	-	-	-	-	-	-	4.92E-05	2.15E-04	44.62	195.42
RR3-TEG	Glycol Dehydrator (99.9% Control)	-	-	-	-	356.72	1,562.44	-	-	-	-	-	-	-	-	3.46E-05	1.51E-04	80.16	351.11
RDR-AMINE	Amine Vent (99.9% Control)	-	-	-	-	85.17	373.06	-	-	-	-	-	-	-	-	4.94	21.62	69.59	304.81
RR2-AMINE	Amine Vent (99.9% Control)	-	-	-	-	85.17	373.06	-	-	-	-	-	-	-	-	4.94	21.62	69.59	304.81
RR3-AMINE	Amine Vent (99.9% Control)	-	-	-	-	80.73	353.59	-	-	-	-	-	-	-	-	5.77	25.29	63.77	279.30
RDR-TO-5500	Thermal Oxidizer	0.100	0.44	0.061	0.27	0.35	1.55	0.047	0.20	0.33	1.43	0.33	1.43	0.33	1.43	8.76E-04	3.83E-03	-	-
RR3-TO-1801	Thermal Oxidizer	0.018	0.077	0.011	0.047	0.058	0.26	7.69E-03	0.034	0.054	0.24	0.054	0.24	0.054	0.24	1.45E-04	6.34E-04	-	-
RDR-FL-5100	Flare (Pilot and Purge)	0.19	0.81	0.37	1.62	-	-	9.28E-03	0.041	-	-	-	-	-	-	2.65E-05	1.16E-04	-	-
RR2-FL-991	Flare (Pilot and Purge)	0.14	0.61	0.28	1.22	-	-	8.23E-03	0.036	-	-	-	-	-	-	2.00E-05	8.76E-05	-	-
RR3-FL-1800	Flare (Pilot and Purge)	0.027	0.12	0.055	0.24	-	-	1.61E-03	7.06E-03	-	-	-	-	-	-	1.40E-06	6.11E-06	-	-
RR2-G-2220	Diesel Fired Generator	5.75	1.44	0.79	0.20	0.40	0.10	6.48E-03	1.62E-03	0.034	8.40E-03	0.034	8.40E-03	0.034	8.40E-03	-	-	5.82E-03	1.46E-03
RDR-G-2	Diesel Fired Generator	2.43	0.61	2.24	0.56	0.13	0.032	0.76	0.19	0.13	0.032	0.13	0.032	0.13	0.032	-	-	9.70E-03	2.42E-03
RDR-G-3	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-4	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-5	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-6	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-7	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-8	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-9	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-10	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-11	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-G-12	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03
RDR-T-1	Condensate Storage Tank (98% Control)	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	0.52	2.26
RDR-T-2	Condensate Storage Tank (98% Control)	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	0.52	2.26
RDR-T-3	Condensate Storage Tank (98% Control)	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	0.52	2.26
RDR-T-4	Condensate Storage Tank (98% Control)	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	0.52	2.26
RDR-T-5	Condensate Storage Tank (98% Control)	-	-	-	-	4.01	17.57	-	-	-	-	-	-	-	-	-	-	0.52	2.26
RDR-T-6	Waste Water Tank (98% Control)	-	-	-	-	0.14	0.63	-	-	-	-	-	-	-	-	5.19E-03	0.010	5.00E-03	0.022
RDR-FL-2850	Tank Combustor	2.80E-03	0.012	2.35E-03	0.010	1.54E-04	6.75E-04	2.00E-05	8.76E-05	2.13E-04	9.32E-04	2.13E-04	9.32E-04	2.13E-04	9.32E-04	3.77E-07	1.65E-06	-	-
RDR-LOAD	Condensate Loading Emissions	-	-	-	-	175.29	491.92	-	-	-	-	-	-	-	-	-	-	22.55	63.28
RDR-FUG	Fugitive Emissions	-	-	-	-	23.00	100.74	-	-	-	-	-	-	-	-	0.034	0.15	2.76	12.10
RDR-TO-5500-SSM	SSM Thermal Oxidizer	-	-	-	-	392.39	3.92	-	-	-	-	-	-	-	-	9.87	0.099	215.69	2.16
RR3-TO-1800-SSM	SSM Thermal Oxidizer	-	-	-	-	80.73	0.81	-	-	-	-	-	-	-	-	5.77	0.058	63.77	0.64
SSMM	SSM Miscellaneous	-	-	-	-	122.01	3.18	-	-	-	-	-	-	-	-	0.019	4.86E-04	78.28	2.03
SSMT	Tank Degassing	-	-	-	-	42.11	0.037	-	-	-	-	-	-	-	-	-	-	42.73	8.92E-03
SSMB	SSM Blowdowns	-	-	-	-	590.82	11.82	-	-	-	-	-	-	-	-	-	-	1.17	0.012
SSMBLAST	SSM Abrasive Blasting	-	-	-	-	-	-	-	-	23.51	0.14	3.36	0.020	0.34	2.02E-03	-	-	-	-
SSMCOAT	SSM Surface Coating	-	-	-	-	73.00	0.15	-	-	0.77	1.54E-03	0.070	1.39E-04	5.36E-03	1.07E-05	-	-	13.39	0.027
Totals		**22.34**	**50.45**	**47.84**	**78.89**	**2,533.43**	**5,133.27**	**12.69**	**4.61**	**28.47**	**17.15**	**7.62**	**17.02**	**4.53**	**17.01**	**31.35**	**68.86**	**816.06**	**1,725.27**

Controlled Emissions[1]

		NO_X		CO		VOC		SO_2		TSP[2]		PM_{10}[2]		$PM_{2.5}$[2]		H_2S		Total HAP		CO_2	N_2O	CH_4	CO2e
Unit ID	**Equipment Description**	**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**	**ton/yr**	**ton/yr**	**ton/yr**	**ton/yr**
RDR-H-781	Trim Reboiler	0.42	1.84	2.55	11.19	0.13	0.56	0.017	0.074	0.18	0.77	0.18	0.77	0.18	0.77	3.16E-04	1.38E-03	0.044	0.19	10,992.65	0.021	0.21	11,003.94
RR2-H-781	Trim Reboiler	0.47	2.06	0.95	4.18	0.14	0.63	0.019	0.082	0.20	0.86	0.20	0.86	0.20	0.86	3.54E-04	1.55E-03	0.049	0.21	12,317.35	0.023	0.23	12,330.00
RDR-H-0901	Amine Reboiler	1.33	5.83	2.70	11.82	0.40	1.77	0.053	0.23	0.56	2.45	0.56	2.45	0.56	2.45	1.18E-04	1.18E-08	0.14	0.61	34,860.42	0.066	0.66	34,896.23
RDR-H-1054	Amine Reboiler	1.25	5.46	2.88	12.62	1.34	5.85	0.050	0.22	0.28	1.23	0.28	1.23	0.28	1.23	9.39E-04	4.11E-03	0.13	0.57	32,666.54	0.062	0.62	32,700.09
RDR-H-2301	Glycol Reboiler	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031	1,812.74	3.42E-03	0.034	1,814.60
RR2-H-0801	Glycol Reboiler	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031	1,812.74	3.42E-03	0.034	1,814.60
RDR-H-741	Regen Gas Heaters	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085	4,880.46	9.20E-03	0.092	4,885.47
RR2-H-741	Regen Gas Heaters	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085	4,880.46	9.20E-03	0.092	4,885.47
RDR-H-3601	Stabilizer Heater	1.95	8.55	1.64	7.18	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.66E-04	1.17E-03	0.037	0.16	9,249.63	0.017	0.17	9,259.13
RR3-H-1700	HMO Heater	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43	24,924.20	0.047	0.47	24,949.80
RR3-H-1701	HMO Heater	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43	24,924.20	0.047	0.47	24,949.80
RR3-H-1703	HMO Heater	0.34	1.49	0.34	1.51	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	0.15	0.65	2.67E-04	1.17E-03	0.037	0.16	24,924.20	0.047	0.47	24,949.80
RR3-H-4701	Regen Gas Heater	0.25	1.12	0.26	1.13	0.076	0.33	0.010	0.044	0.11	0.46	0.11	0.46	0.11	0.46	1.89E-04	8.30E-04	0.026	0.11	6,587.19	0.012	0.12	6,593.96
RDR-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																					
RR2-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																					
RR3-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																					
RDR-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																					
RR2-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																					
RR3-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																					
RDR-TO-5500	Thermal Oxidizer	0.97	4.25	0.59	2.59	0.75	3.26	18.61	81.51	0.38	1.64	0.38	1.64	0.38	1.64	0.011	0.047	0.22	0.94	34,860.42	0.066	0.66	34,896.23
RR3-TO-1801	Thermal Oxidizer	0.62	2.74	0.38	1.67	1.34	5.85	11.01	48.20	0.29	1.26	0.29	1.26	0.29	1.26	5.99E-03	0.026	0.17	0.73	26,772.80	0.050	0.50	26,800.30
RDR-FL-5100	Flare (SSM)	1,551.68	20.18	3,097.75	40.29	2,458.40	30.94	82.98	1.05	-	-	-	-	-	-	0.90	0.036	134.99	1.65	689.61	0.029	64.89	2,514.09
RR2-FL-991	Flare (SSM)	1,549.38	19.59	3,093.14	39.10	2,450.72	29.60	82.92	1.03	-	-	-	-	-	-	0.90	0.035	134.85	1.63	493.70	0.028	64.88	2,317.98
RR3-FL-1800	Flare (SSM)	1,557.23	19.17	3,108.82	38.28	2,464.16	29.73	83.05	1.01	-	-	-	-	-	-	0.90	0.035	136.83	1.65	559.16	0.028	64.89	2,383.51
	RDR-FL-5100 Malfunction Flaring	1,549.59		3,093.56		2,450.43		0.17		-	-	-	-	-	-	0.090		125.41					
Flare-M[2]	RR2-FL-991 Malfunction Flaring	1,549.59	10.00	3,093.56	10.00	2,450.43	10.00	0.17	10.00	-	-	-	-	-	-	0.090	10.00	125.41	1.00	148.08	7.28E-03	16.54	613.19
	RR3-FL-1800 Malfunction Flaring	1,549.59		3,093.56		2,450.43		0.17		-	-	-	-	-	-	0.090		125.41					
RR2-G-2220	Diesel Fired Generator	5.75	1.44	0.79	0.20	0.40	0.10	6.48E-03	1.62E-03	0.034	8.40E-03	0.034	8.40E-03	0.034	8.40E-03	-	-	5.82E-03	1.46E-03	174.24	1.41E-03	7.07E-03	174.81
RDR-G-2	Diesel Fired Generator	2.43	0.61	2.24	0.56	0.13	0.032	0.76	0.19	0.13	0.032	0.13	0.032	0.13	0.032	-	-	9.70E-03	2.42E-03	106.67	8.65E-04	4.33E-03	107.02
RDR-G-3	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-4	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-5	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-6	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-7	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-8	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-9	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-10	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-11	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-G-12	Diesel Fired Generator	0.33	0.083	2.86	0.72	0.15	0.039	1.16	0.29	0.017	4.13E-03	0.017	4.13E-03	0.017	4.13E-03	-	-	0.015	3.70E-03	162.73	1.32E-03	6.60E-03	163.26
RDR-T-1	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-T-2	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-T-3	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-T-4	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-T-5	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-T-6	Waste Water Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																					
RDR-FL-2850	Tank Combustor	0.040	0.18	0.034	0.15	3.86	11.48	9.59E-03	0.019	3.06E-03	0.013	3.06E-03	0.013	3.06E-03	0.013	1.04E-04	2.06E-04	0.50	1.48	368.98	1.14E-03	0.011	369.60
RDR-LOAD	Condensate Loading Emissions	-	-	-	-	2.28	6.39	-	-	-	-	-	-	-	-	-	-	0.29	0.82	-	-	-	-
RDR-FUG	Fugitive Emissions	-	-	-	-	23.00	100.74	-	-	-	-	-	-	-	-	0.034	0.15	2.76	12.10	9.24	-	286.35	8,026.98
RDR-TO-5500-SSM	SSM Thermal Oxidizer	-	-	-	-	392.39	3.92	-	-	-	-	-	-	-	-	9.87	0.099	215.69	2.16	612.61	-	0.62	630.07
RR3-TO-1801-SSM	SSM Thermal Oxidizer	-	-	-	-	80.73	0.81	-	-	-	-	-	-	-	-	5.77	0.058	63.77	0.64	358.56	-	0.43	370.49
SSMM	SSM Miscellaneous	-	-	-	-	122.01	3.18	-	-	-	-	-	-	-	-	0.019	4.86E-04	78.28	2.03	1.84	-	341.72	9,570.08
SSMT	Tank Degassing	-	-	-	-	42.11	0.037	-	-	-	-	-	-	-	-	-	-	42.73	8.92E-03	-	-	-	-
SSMB	SSM Blowdowns	Emissions represented at the SSM flares (Units RDR-FL-5100, RR2-FL-991, RR3-FL-1800)																					
SSMBLAST	SSM Abrasive Blasting	-	-	-	-	-	-	-	-	23.51	0.14	3.36	0.020	0.34	2.02E-03	-	-	-	-	-	-	-	-
SSMCOAT	SSM Surface Coating	-	-	-	-	73.00	0.15	-	-	-	1.54E-03	0.070	1.39E-04	5.36E-03	1.07E-05	-	-	13.39	0.027	-	-	-	-
Totals		**4,681.79**	**124.49**	**9,347.77**	**207.57**	**8,120.26**	**251.72**	**291.19**	**147.10**	**27.98**	**18.39**	**7.90**	**18.27**	**4.82**	**18.25**	**18.42**	**10.50**	**825.32**	**30.02**	**261,615.97**	**0.59**	**845.24**	**285,439.89**
Totals without Fugitives		**4,681.79**	**124.49**	**9,347.77**	**207.57**	**8,097.26**	**150.97**	**291.19**	**147.10**	**27.98**	**18.39**	**7.90**	**18.27**	**4.82**	**18.25**	**18.38**	**10.35**	**822.56**	**17.92**	**261,606.73**	**0.59**	**558.46**	**277,412.90**
																				285,459.45			

Notes

[1] Hourly emissions do not include flaring malfunction (Flare-M) as they cannot occur at the same time as other flaring emissions. Flaring malfunction emissions are included in the annual emission totals.

[2] Annual CO_2, CH_4, and N_2O emissions were scaled for Flare-M based on the proportionality of the emissions of annual CO.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Emission Summary

Controlled Emissions

Unit ID	Equipment Description	Total HAP		Formaldehyde		Hexane		Benzene		Toluene		Ethylbenzene		Xylenes		Acetaldehyde		Acrolein	
		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
RDR-H-781	Trim Reboiler	0.044	0.19	1.74E-03	7.62E-03	0.042	0.18	4.87E-05	2.13E-04	7.88E-05	3.45E-04	-	-	-	-	-	-	-	-
RR2-H-781	Trim Reboiler	0.049	0.21	1.95E-03	8.53E-03	0.047	0.20	5.46E-05	2.39E-04	8.83E-05	3.87E-04	-	-	-	-	-	-	-	-
RDR-H-0901	Amine Reboiler	0.14	0.61	5.51E-03	0.024	0.13	0.58	1.54E-04	6.76E-04	2.50E-04	1.10E-03	-	-	-	-	-	-	-	-
RDR-H-1054	Amine Reboiler	0.13	0.57	5.17E-03	0.023	0.12	0.54	1.45E-04	6.34E-04	2.34E-04	1.03E-03	-	-	-	-	-	-	-	-
RDR-H-2301	Glycol Reboiler	7.19E-03	0.031	2.87E-04	1.26E-03	6.88E-03	0.030	8.03E-06	3.52E-05	1.30E-05	5.69E-05	-	-	-	-	-	-	-	-
RR2-H-0801	Glycol Reboiler	7.19E-03	0.031	2.87E-04	1.26E-03	6.88E-03	0.030	8.03E-06	3.52E-05	1.30E-05	5.69E-05	-	-	-	-	-	-	-	-
RDR-H-741	Regen Reboiler	0.019	0.085	7.72E-04	3.38E-03	0.019	0.081	2.16E-05	9.47E-05	3.50E-05	1.53E-04	-	-	-	-	-	-	-	-
RR2-H-741	Regen Reboiler	0.019	0.085	7.72E-04	3.38E-03	0.019	0.081	2.16E-05	9.47E-05	3.50E-05	1.53E-04	-	-	-	-	-	-	-	-
RDR-H-3601	Stabilizer Heater	0.037	0.16	1.46E-03	6.41E-03	0.035	0.15	4.10E-05	1.79E-04	6.63E-05	2.91E-04	-	-	-	-	-	-	-	-
RR3-H-1700	HMO Heater	0.099	0.43	3.94E-03	0.017	0.095	0.41	1.10E-04	4.84E-04	1.79E-04	7.83E-04	-	-	-	-	-	-	-	-
RR3-H-1701	HMO Heater	0.099	0.43	3.94E-03	0.017	0.095	0.41	1.10E-04	4.84E-04	1.79E-04	7.83E-04	-	-	-	-	-	-	-	-
RR3-H-1703	HMO Heater	0.037	0.16	1.47E-03	6.43E-03	0.035	0.15	4.11E-05	1.80E-04	6.66E-05	2.92E-04	-	-	-	-	-	-	-	-
RR3-H-4701	Regen Gas Heater	0.026	0.11	1.04E-03	4.56E-03	0.025	0.11	2.92E-05	1.28E-04	4.72E-05	2.07E-04	-	-	-	-	-	-	-	-
RDR-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR2-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-TEG	Glycol Dehydrator (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR2-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RDR-TO-5500)																	
RR3-AMINE	Amine Vent (99.9% Control)	Emissions represented at the thermal oxidizer (Unit RR3-TO-1801)																	
RDR-TO-5500	Thermal Oxidizer	0.22	0.94	-	-	0.025	0.11	0.098	0.43	0.057	0.25	0.019	0.083	0.016	0.071	-	-	-	-
RR3-TO-1801	Thermal Oxidizer	0.17	0.73	-	-	0.028	0.12	0.071	0.31	0.036	0.16	0.011	0.047	8.45E-03	0.037	-	-	-	-
RDR-FL-5100	Flare (Pilot and Purge)	134.99	1.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR2-FL-991	Flare (Pilot and Purge)	134.85	1.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR3-FL-1800	Flare (Pilot and Purge)	136.83	1.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RDR-FL-5100 Malfunction Flaring	125.41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flare-M	RR2-FL-991 Malfunction Flaring	125.41	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	RR3-FL-1800 Malfunction Flaring	125.41		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RR2-G-2220	Diesel Fired Generator	5.82E-03	1.46E-03	3.37E-04	8.43E-05	-	-	3.32E-03	8.29E-04	1.20E-03	3.00E-04	-	-	8.25E-04	2.06E-04	1.08E-04	2.69E-05	3.37E-05	8.42E-06
RDR-G-2	Diesel Fired Generator	9.70E-03	2.42E-03	3.09E-03	7.72E-04	-	-	2.44E-03	6.10E-04	1.07E-03	2.68E-04	-	-	7.46E-04	1.86E-04	2.01E-03	5.02E-04	2.42E-04	6.05E-05
RDR-G-3	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-4	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-5	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-6	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-7	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-8	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-9	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-10	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-11	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-G-12	Diesel Fired Generator	0.015	3.70E-03	4.71E-03	1.18E-03	-	-	3.72E-03	9.31E-04	1.63E-03	4.08E-04	-	-	1.14E-03	2.84E-04	3.06E-03	7.65E-04	3.69E-04	9.23E-05
RDR-T-1	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-2	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-3	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-4	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-5	Condensate Storage Tank (98% Control)	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-T-6	Waste Water Tank	Emissions represented at the combustor (Unit RDR-FL-2850)																	
RDR-FL-2850	Tank Combustor	0.50	1.48	-	-	0.99	1.31	0.20	0.11	0.10	0.057	0.032	2.35E-03	0.025	0.013	-	-	-	-
RDR-LOAD	Condensate Loading Emissions	0.29	0.82	-	-	0.072	0.20	0.26	0.73	0.035	0.097	0.040	0.11	0.040	0.11	-	-	-	-
RDR-FUG	Fugitive Emissions	2.76	12.10	-	-	1.92	8.40	0.22	0.95	0.34	1.50	0.25	1.09	0.039	0.17	-	-	-	-
RDR-TO-5500-SSM	SSM Thermal Oxidizer	215.69	2.16	-	-	25.05	0.25	97.97	0.98	57.41	0.57	18.95	0.19	16.31	0.16	-	-	-	-
RR3-TO-1801-SSM	SSM Thermal Oxidizer	63.77	0.64	-	-	0.30	3.03E-03	34.22	0.34	18.12	0.18	5.86	0.059	5.26	0.053	-	-	-	-
SSMM	SSM Miscellaneous	78.28	2.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSMT	Tank Degassing	42.73	8.92E-03	-	-	1.34	1.19E-03	37.47	4.25E-03	0.64	5.66E-04	0.73	6.51E-04	0.74	6.59E-04	-	-	-	-
SSMB	SSM Blowdowns	Emissions represented at the combustor (Unit RDR-FL-2850)																	
SSMBLAST	SSM Abrasive Blasting	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSMCOAT	SSM Surface Coating	13.39	0.027	-	-	-	-	-	-	-	-	1.87	3.75E-03	10.71	0.021	-	-	-	-
Totals		**825.32**	**30.02**	**0.079**	**0.14**	**30.41**	**13.39**	**170.55**	**3.86**	**76.76**	**2.83**	**27.76**	**1.58**	**33.16**	**0.64**	**0.033**	**8.18E-03**	**3.97E-03**	**9.92E-04**
Totals without Fugitives		**822.56**	**17.92**	**0.079**	**0.14**	**28.49**	**4.98**	**170.34**	**2.91**	**76.42**	**1.33**	**27.52**	**0.50**	**33.12**	**0.47**	**0.033**	**8.18E-03**	**3.97E-03**	**9.92E-04**

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Heater & Reboiler Summary

New Unit Name	Description	Heat Input	NO_X		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		H_2S		Total HAP	
		MMBtu/hr	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy
RDR-H-781	Trim Reboiler	23.65	0.42	1.84	2.55	11.19	0.13	0.56	0.017	0.074	0.18	0.77	0.18	0.77	3.16E-04	1.38E-03	0.044	0.19
RR2-H-781	Trim Reboiler	26.5	0.47	2.06	0.95	4.18	0.14	0.63	0.019	0.082	0.20	0.86	0.20	0.86	3.54E-04	1.55E-03	0.049	0.21
RDR-H-0901	Amine Reboiler	75	1.33	5.83	2.70	11.82	0.40	1.77	0.053	0.23	0.56	2.45	0.56	2.45	1.18E-04	1.18E-08	0.14	0.61
RDR-H-1054	Amine Reboiler	70.28	1.25	5.46	2.88	12.62	1.34	5.85	0.050	0.22	0.28	1.23	0.28	1.23	9.39E-04	4.11E-03	0.13	0.57
RDR-H-2301	Glycol Reboiler	3.9	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031
RR2-H-0801	Glycol Reboiler	3.9	0.38	1.67	0.32	1.41	0.021	0.092	2.77E-03	0.012	0.029	0.13	0.029	0.13	3.36E-09	4.20E-13	7.19E-03	0.031
RDR-H-741	Regen Gas Heaters	10.5	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085
RR2-H-741	Regen Gas Heaters	10.5	0.96	4.19	0.86	3.79	0.26	1.15	7.46E-03	0.033	0.50	2.21	0.50	2.21	1.40E-04	6.15E-04	0.019	0.085
RDR-H-3601	Stabilizer Heater	19.9	1.95	8.55	1.64	7.18	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	2.66E-04	1.17E-03	0.037	0.16
RR3-H-1700	HMO Heater	53.62	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43
RR3-H-1701	HMO Heater	53.62	0.85	3.73	0.86	3.78	0.29	1.27	0.038	0.17	0.40	1.75	0.40	1.75	7.17E-04	3.14E-03	0.099	0.43
RR3-H-1703	HMO Heater	19.97	0.34	1.49	0.34	1.51	0.11	0.47	0.014	0.062	0.15	0.65	0.15	0.65	2.67E-04	1.17E-03	0.037	0.16
RR3-H-4701	Regen Gas Heater	14.17	0.25	1.12	0.26	1.13	0.076	0.33	0.010	0.044	0.11	0.46	0.11	0.46	1.89E-04	8.30E-04	0.026	0.11

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

23.65 MMBtu/hr Trim Reboilers

Unit:	RDR-H-781	
Heat Input:	23.65	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	23511.27	scf/hr
Fuel Usage:	0.024	MMscf/hr
	0.85	

Criteria Pollutant Emission Rates per Unit

	NO_x[6]	CO[6]	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	300.00	-	-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.42	2.55	0.13	0.017	3.16E-04	0.18	lb/hr[3]	lb/ MMscf * hourly fuel usage
	1.84	11.19	0.56	0.074	1.38E-03	0.77	tons/year[4]	lb/ MMscf * annual fuel usage / 2000 lb/ton

Speciated HAP Emission Rates

	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.042	4.87E-05	7.88E-05	1.74E-03	0.044	lb/hr[3]	
	0.18	2.13E-04	3.45E-04	7.62E-03	0.19	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	624.00	°F =	328.89	°C =	602.04	K

Greenhouse Emissions

	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	1254.87	0.024	2.37E-03	1256.16	kg/hr	kg/ MMBtu * hourly natural gas heat input
	10992.65	0.21	0.021	11003.94	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

26.5 MMBtu/hr Trim Reboilers

Unit:	RR2-H-781	
Heat Input:	26.50	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	26344.55	scf/hr
Fuel Usage:	0.03	MMscf/hr

Criteria Pollutant Emission Rates per Unit

	NO_x[6]	CO[6]	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	100.00	-	-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.47	0.95	0.14	0.019	3.54E-04	0.20	lb/hr[3]	lb/ MMscf * hourly fuel usage
	2.06	4.18	0.63	0.082	1.55E-03	0.86	tons/year[4]	lb/ MMscf * annual fuel usage / 2000 lb/ton

Speciated HAP Emission Rates

	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.047	5.46E-05	8.83E-05	1.95E-03	0.049	lb/hr[3]	
	0.20	2.39E-04	3.87E-04	8.53E-03	0.21	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	624.00	°F =	328.89	°C =	602.04	K

Greenhouse Emissions

	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	1406.09	0.027	2.65E-03	1407.53	kg/hr	kg/ MMBtu * hourly natural gas heat input
	12317.35	0.23	0.023	12330.00	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

75 MMBtu/hr Amine Reboiler

Unit:	RDR-H-0901	
Heat Input:	75.00	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	74560.06	scf/hr
Fuel Usage:	0.07	MMscf/hr

Criteria Pollutant Emission Rates per Unit								
	NO_x[6]	CO[6]	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	100.00	-	-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	1.33	2.70	0.40	0.053	1.18E-04	0.56	lb/hr[3]	lb/ MMscf * hourly fuel usage
	5.83	11.82	1.77	0.23	1.18E-08	2.45	tons/year[4]	lb/ MMscf * annual fuel usage / 2000 lb/ton

Speciated HAP Emission Rates							
	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.13	1.54E-04	2.50E-04	5.51E-03	0.14	lb/hr[3]	
	0.58	6.76E-04	1.10E-03	0.024	0.61	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	624.00	°F =	328.89	°C =	602.04	K

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	3979.50	0.075	7.50E-03	3983.59	kg/hr	kg/ MMBtu * hourly natural gas heat input
	34860.42	0.66	0.066	34896.23	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

70.28 MMBtu/hr Amine Reboiler

Unit:	RDR-H-1054	
Heat Input:	70.28	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	69867.74	scf/hr
Fuel Usage:	0.07	MMscf/hr

Criteria Pollutant Emission Rates per Unit

	NO_x[6]	CO[6]	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	-	-	-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	-	-	-	-	-	lb/lb-mol	Molecular Weight
	-	0.04	0.02	-	-	-	lb/MMBtu	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	-	4.00E-03	lb/MMBtu	Manufacturer specification
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	1.25	2.88	1.34	0.050	9.39E-04	0.28	lb/hr[3]	lb/ MMscf * hourly fuel usage
	5.46	12.62	5.85	0.22	4.11E-03	1.23	tons/year[4]	lb/ MMscf * annual fuel usage / 2000 lb/ton

Speciated HAP Emission Rates

	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.12	1.45E-04	2.34E-04	5.17E-03	0.13	lb/hr[3]	
	0.54	6.34E-04	1.03E-03	0.023	0.57	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	624.00	°F =	328.89	°C =	602.04	K

Greenhouse Emissions

	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	3729.06	0.070	7.03E-03	3732.89	kg/hr	kg/ MMBtu * hourly natural gas heat input
	32666.54	0.62	0.062	32700.09	mton/yr	kg/ MMBtu * annual natural gas heat input

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

3.90 MMBtu/hr Glycol Reboilers

Unit:	RDR-H-2301, RR2-H-0801
Heat Input:	3.90 MMBTU/hr
Fuel Heat Value:	1005.90 BTU/scf
Fuel Sulfur Content:	0.25 gr/100 scf
Operating Hours:	8760.00 hours/yr
Fuel Usage:	3877.12 scf/hr
Fuel Usage:	3.88E-03 MMscf/hr

Criteria Pollutant Emission Rates per Unit

	NO_x	CO	VOC	SO_2[1]	H_2S	PM^2	Units	Notes
Emission Factors	100.00	84.00	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	98.62	82.84	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.38	0.32	0.021	2.77E-03	3.36E-09	0.029	lb/hr[3]	
	1.67	1.41	0.092	0.012	4.20E-13	0.13	tons/year[4]	

HAP Emission Rates per Unit

	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	6.88E-03	8.03E-06	1.30E-05	2.87E-04	7.19E-03	lb/hr[3]	
	0.030	3.52E-05	5.69E-05	1.26E-03	0.031	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

Greenhouse Emissions

	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	206.93	3.90E-03	3.90E-04	207.15	kg/hr	kg/ MMBtu * hourly natural gas heat input
	1812.74	0.034	3.42E-03	1814.60	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

10.5 MMBtu/hr Regen Gas Heaters

Unit:	RDR-H-741, RR2-H-741
Heat Input:	10.50 MMBTU/hr
Fuel Heat Value:	1005.90 BTU/scf
Fuel Sulfur Content:	0.25 gr/100 scf
Operating Hours:	8760.00 hours/yr
Fuel Usage:	10438.41 scf/hr
Fuel Usage:	0.01 MMscf/hr

Criteria Pollutant Emission Rates per Unit

	NO_x	CO	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	0.09	-	0.03	-	-	0.05	lb/MMBtu	Manufacturer Specification Sheet
	-	84.00	-	-	-	-	lb/MMscf	AP-42 Table 1.4-1
	-	82.84	-	-	-	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-1
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.96	0.86	0.26	7.46E-03	1.40E-04	0.50	lb/hr[3]	
	4.19	3.79	1.15	0.033	6.15E-04	2.21	tons/year[4]	

HAP Emission Rates per Unit

	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.019	2.16E-05	3.50E-05	7.72E-04	0.019	lb/hr[3]	
	0.081	9.47E-05	1.53E-04	3.38E-03	0.085	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMBtu) * Rating (MMBtu/hr)

CO lb/hr) = Adjusted EF (lb/MMscf) * Heat Input (MMBtu/hr) / Fuel Heat Value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

Greenhouse Emissions

	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	557.13	0.011	1.05E-03	557.70	kg/hr	kg/ MMBtu * hourly natural gas heat input
	4880.46	0.092	9.20E-03	4885.47	mton/yr	kg/ MMBtu * annual natural gas heat input

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

19.90 MMBtu/hr Regen Reboilers

Unit:	RDR-H-3601	
Heat Input:	19.90	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Fuel Sulfur Content:	0.25	gr/100 scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	19783.27	scf/hr
Fuel Usage:	0.02	MMscf/hr

Criteria Pollutant Emission Rates per Unit								
	NO_x	CO	VOC	SO_2[1]	H_2S	PM^2	Units	Notes
Emission Factors	100.00	84.00	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	98.62	82.84	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	1.95	1.64	0.11	0.014	2.66E-04	0.15	lb/hr[3]	
	8.55	7.18	0.47	0.062	1.17E-03	0.65	tons/year[4]	

HAP Emission Rates per Unit							
	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.035	4.10E-05	6.63E-05	1.46E-03	0.037	lb/hr[3]	
	0.15	1.79E-04	2.91E-04	6.41E-03	0.16	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf). A 100% conversion of combusted H_2S to SO_2 is assumed.

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	1055.89	0.020	1.99E-03	1056.98	kg/hr	kg/ MMBtu * hourly natural gas heat input
	9249.63	0.17	0.017	9259.13	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

53.62 MMBtu/hr HMO Heaters

Unit:	RR3-H-1700, RR3-H-1701
Heat Input:	53.62 MMBTU/hr
Fuel Heat Value:	1005.90 BTU/scf
Fuel Sulfur Content:	0.25 gr/100 scf
Operating Hours:	8760.00 hours/yr
Fuel Usage:	53308.31 scf/hr
Fuel Usage:	0.05 MMscf/hr

Criteria Pollutant Emission Rates per Unit								
	NO_x	CO	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	50.00		-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.85	0.86	0.29	0.038	7.17E-04	0.40	lb/hr[3]	
	3.73	3.78	1.27	0.17	3.14E-03	1.75	tons/year[4]	
	3.19	3.24						

HAP Emission Rates per Unit							
	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.095	1.10E-04	1.79E-04	3.94E-03	0.099	lb/hr[3]	
	0.41	4.84E-04	7.83E-04	0.017	0.43	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf)

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	751.00	°F =	399.44	°C =	672.59	K

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	2845.23	0.054	5.36E-03	2848.15	kg/hr	kg/ MMBtu * hourly natural gas heat input
	24924.20	0.47	0.047	24949.80	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

19.97 MMBtu/hr HMO Heater

Unit:	RR3-H-1703
Heat Input:	19.97 MMBTU/hr
Fuel Heat Value:	1005.90 BTU/scf
Fuel Sulfur Content:	0.25 gr/100 scf
Operating Hours:	8760.00 hours/yr
Fuel Usage:	19854.45 scf/hr
Fuel Usage:	0.02 MMscf/hr

Criteria Pollutant Emission Rates per Unit								
	NO_x	CO	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	50.00		-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.34	0.34	0.11	0.014	2.67E-04	0.15	lb/hr[3]	
	1.49	1.51	0.47	0.062	1.17E-03	0.65	tons/year[4]	

HAP Emission Rates per Unit							
	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.035	4.11E-05	6.66E-05	1.47E-03	0.037	lb/hr[3]	
	0.15	1.80E-04	2.92E-04	6.43E-03	0.16	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf)

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	671.00	°F =	355.00	°C =	628.15	K

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	1059.69	0.020	2.00E-03	1060.78	kg/hr	kg/ MMBtu * hourly natural gas heat input
	9282.91	0.17	0.017	9292.45	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

14.17 MMBtu/hr Regen Gas Heater

Unit:	RR3-H-4701	
Heat Input:	14.17	MMBTU/hr
Fuel Heat Value:	1005.90	BTU/scf
Fuel Sulfur Content:	0.25	gr/100 scf
Operating Hours:	8760.00	hours/yr
Fuel Usage:	14088.80	scf/hr
Fuel Usage:	0.01	MMscf/hr

Criteria Pollutant Emission Rates per Unit								
	NO_x	CO	VOC	SO_2[1]	H_2S	PM[2]	Units	Notes
Emission Factors	30.00	50.00		-	-	-	ppmv @ 3% O_2	Manufacturer specification
	46.00	28.00	-	-	-	-	lb/lb-mol	Molecular Weight
	-	-	5.50	-	-	7.60	lb/MMscf	AP-42 Table 1.4-1 & 2
	-	-	5.42	-	-	7.49	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	-	0.25	-	gr S / 100 scf	Engineering Estimate
	-	-	-	-	-	-	Mol% H_2S	Fuel Gas Analysis
Emissions	0.25	0.26	0.076	0.010	1.89E-04	0.11	lb/hr[3]	
	1.12	1.13	0.33	0.044	8.30E-04	0.46	tons/year[4]	

HAP Emission Rates per Unit							
	n-Hexane	Benzene	Toluene	HCHO	Total HAPs[5]	Units	Notes
Emission Factors	1.80	2.10E-03	3.40E-03	0.075	-	lb/MMscf	AP-42 Table 1.4-3
	1.78	2.07E-03	3.35E-03	0.074	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	0.025	2.92E-05	4.72E-05	1.04E-03	0.026	lb/hr[3]	
	0.11	1.28E-04	2.07E-04	4.56E-03	0.11	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (0.25 gr/100 scf)

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

[3] lb/hr emissions calculated using the following methods:

Criteria and HAPs lb/hr = EF (lb/MMscf) * Rating (MMBtu/hr) / Heat value (Btu/scf)

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[4] For all pollutant calculations, tons/year = lb/hr * Operating hours * 1ton/2000lb

[5] Total HAP emissions are the sum of all individual HAPs calculated.

[6] PV= nRT = n = PV/RT

P=	1.00	ATM				
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)				
T=	610.00	°F =	321.11	°C =	594.26	K

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1.00	28.00	265.00	-	-	GWP
	53.06	1.00E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	751.96	0.014	1.42E-03	752.73	kg/hr	kg/ MMBtu * hourly natural gas heat input
	6587.19	0.12	0.012	6593.96	mton/yr	kg/ MMBtu * annual natural gas heat input

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Glycol Dehydrator

Emission Unit: RDR-TEG
Source Description: TEG Dehydrator emissions
Thermal Oxidizer Control Efficiency: 99.9%
Operating Hours: 8760 hrs/yr

	VOC		H_2S		Total HAP		Benzene		Toluene		Ethylbenzene		Xylene		Methane		Hexane	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Uncontrolled Flash Tank Emissions	89.29	391.11	1.06E-05	4.64E-05	6.31	27.65	0.66	2.90	0.35	1.53	0.14	0.62	0.089	0.39	67.86	297.24	5.07	22.22
Uncontrolled BTEX Emissions	110.73	485.00	3.15E-05	1.38E-04	38.23	167.44	15.64	68.52	7.40	32.41	1.79	7.86	1.18	5.15	4.57	20.00	12.22	53.51
Uncontrolled Emissions Per Unit	***200.02***	***876.10***	***4.21E-05***	***1.85E-04***	***44.54***	***195.09***	***16.31***	***71.42***	***7.75***	***33.94***	***1.93***	***8.47***	***1.26***	***5.54***	***72.43***	***317.24***	***17.29***	***75.72***
Controlled Flash Tank Emissions	RDR-TEG Flash Tank Emissions are routed to fuel.																	
Controlled BTEX Emissions	0.11	0.48	3.15E-08	1.38E-07	0.038	0.17	0.016	0.069	7.40E-03	0.032	1.79E-03	7.86E-03	1.18E-03	5.15E-03	2.28E-05	1.00E-04	0.012	0.054
Controlled Emissions Per Unit	***0.11***	***0.48***	***3.15E-08***	***1.38E-07***	***0.038***	***0.17***	***0.016***	***0.069***	***7.40E-03***	***0.032***	***1.79E-03***	***7.86E-03***	***1.18E-03***	***5.15E-03***	***2.28E-05***	***1.00E-04***	***0.012***	***0.054***

Note: Controlled methane based on 99.9995% destruction (based on 0.001 kg/MMBtu emission EF in 40 CFR Part 98).
Emissions estimated using BR&E ProMax.
TEG Dehydrator BTEX emissions are controlled by thermal oxidizer unit RDR-TO-5500. Flash tank emissions are routed to fuel.
TEG Dehydrator controlled emissions exit via stack RDR-TO-5500 but are listed as RDR-TEG emission unit emissions.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Glycol Dehydrator

Emission Unit: RR2-TEG
Source Description: TEG Dehydrator emissions
Thermal Oxidizer Control Efficiency: 99.9%
Operating Hours: 8760 hrs/yr

	VOC		H_2S		Total HAP		Benzene		Toluene		Ethylbenzene		Xylene		Methane		Hexane	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Uncontrolled Flash Tank Emissions	89.40	391.56	1.24E-05	5.44E-05	6.34	27.76	0.67	2.91	0.35	1.54	0.14	0.62	0.089	0.39	67.97	297.70	5.09	22.30
Uncontrolled BTEX Emissions	110.73	485.00	3.67E-05	1.61E-04	38.28	167.66	15.69	68.70	7.41	32.46	1.79	7.85	1.17	5.14	4.57	20.03	12.22	53.50
Uncontrolled Emissions Per Unit	***200.13***	***876.56***	***4.92E-05***	***2.15E-04***	***44.62***	***195.42***	***16.35***	***71.62***	***7.76***	***34.00***	***1.93***	***8.47***	***1.26***	***5.53***	***72.54***	***317.73***	***17.31***	***75.80***
Controlled Flash Tank Emissions	RR2-TEG Flash Tank Emissions are routed to fuel.																	
Controlled BTEX Emissions	0.11	0.49	3.67E-08	1.61E-07	0.038	0.17	0.016	0.069	7.41E-03	0.032	1.79E-03	7.85E-03	1.17E-03	5.14E-03	2.29E-05	1.00E-04	0.012	0.054
Controlled Emissions Per Unit	***0.11***	***0.49***	***3.67E-08***	***1.61E-07***	***0.038***	***0.17***	***0.016***	***0.069***	***7.41E-03***	***0.032***	***1.79E-03***	***7.85E-03***	***1.17E-03***	***5.14E-03***	***2.29E-05***	***1.00E-04***	***0.012***	***0.054***

Note: Controlled methane based on 99.9995% destruction (based on 0.001 kg/MMBtu emission EF in 40 CFR Part 98).
Emissions estimated using BR&E ProMax.
TEG Dehydrator BTEX emissions are controlled by thermal oxidizer unit RDR-TO-5500. Flash tank emissions are routed to fuel.
TEG Dehydrator controlled emissions exit via stack RDR-TO-5500 but are listed as RR2-TEG emission unit emissions.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Glycol Dehydrator

Emission Unit: RR3-TEG
Source Description: TEG Dehydrator emissions
Thermal Oxidizer Control Efficiency: 99.9%
Operating Hours: 8760 hrs/yr

	VOC		H_2S		Total HAP		Benzene		Toluene		Ethylbenzene		Xylene		Methane		Hexane	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Uncontrolled Flash Tank Emissions	173.23	758.73	8.92E-06	3.91E-05	11.79	51.64	1.36	5.97	0.69	3.04	0.27	1.19	0.17	0.74	129.82	568.60	9.29	40.71
Uncontrolled BTEX Emissions	183.49	803.71	2.57E-05	1.12E-04	68.37	299.47	29.39	128.71	14.01	61.35	3.41	14.92	2.22	9.74	8.64	37.86	19.35	84.75
Uncontrolled Emissions Per Unit	***356.72***	***1562.44***	***3.46E-05***	***1.51E-04***	***80.16***	***351.11***	***30.75***	***134.68***	***14.70***	***64.40***	***3.68***	***16.10***	***2.39***	***10.48***	***138.46***	***606.47***	***28.64***	***125.45***
Controlled Flash Tank Emissions	0.17	0.76	8.92E-09	3.91E-08	0.012	0.052	1.36E-03	5.97E-03	6.95E-04	3.04E-03	2.71E-04	1.19E-03	1.69E-04	7.39E-04	6.49E-04	2.84E-03	9.29E-03	0.041
Controlled BTEX Emissions	0.18	0.80	2.57E-08	1.12E-07	0.068	0.30	0.029	0.13	0.014	0.061	3.41E-03	0.015	2.22E-03	9.74E-03	4.32E-05	1.89E-04	0.019	0.085
Controlled Emissions Per Unit	***0.36***	***1.56***	***3.46E-08***	***1.51E-07***	***0.08***	***0.35***	***0.03***	***0.13***	***0.01***	***0.06***	***3.68E-03***	***0.02***	***2.39E-03***	***0.01***	***6.92E-04***	***3.03E-03***	***0.03***	***0.13***

Note: Controlled methane based on 99.9995% destruction (based on 0.001 kg/MMBtu emission EF in 40 CFR Part 98).
Emissions estimated using BR&E ProMax.
TEG Dehydrator BTEX emissions and flash tank emissions are controlled by thermal oxidizer unit RR3-TO-1801.
TEG Dehydrator controlled emissions exit via stack RR3-TO-1801 but are listed as RR3-TEG emission unit emissions.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Amine Regeneration System

Emission Unit: RDR-AMINE, RR2-AMINE
Source Description: Amine vent controlled by thermal oxidizer unit RDR-TO-5500
Thermal Oxidizer Control Efficiency: 99.9%
Operating Hours: 8760 hrs/yr

	Uncontrolled[1]			Controlled[4]	
Components	**RDR-AMINE, RR2-AMINE Vent (lb/hr)**	**RDR-AMINE, RR2-AMINE Vent (ton/yr)**	**Thermal Oxidizer Control Efficiency**	**RDR-AMINE, RR2-AMINE Vent (lb/hr)**	**RDR-AMINE, RR2-AMINE Vent (ton/yr)**
H2S[2]	9.87	43.24	99.9%	9.87E-03	0.043
SO2[3]	-	-	-	19.74	86.47
CO2	61260.81	268322.36	-	61260.81	268322.36
N2	0.076	0.33	-	0.076	0.33
C1	53.22	233.10	-	53.22	233.10
C2	43.58	190.87	99.9%	0.044	0.19
C3	18.73	82.03	99.9%	0.019	0.082
iC4	1.99	8.72	99.9%	1.99E-03	<0.01
nC4	8.85	38.76	99.9%	8.85E-03	0.039
iC5	0.55	2.42	99.9%	5.52E-04	<0.01
nC5	0.98	4.30	99.9%	9.82E-04	<0.01
nC6	0.62	2.73	99.9%	6.22E-04	<0.01
nC7	0.049	0.22	99.9%	4.92E-05	<0.01
nC8	0.012	0.055	99.9%	1.25E-05	<0.01
nC9	<0.01	<0.01	99.9%	6.80E-07	<0.01
nC10	-	-	99.9%	-	-
H2O	1800.06	7884.28	-	1800.06	7884.28
MDEA	<0.01	<0.01	99.9%	5.76E-08	<0.01
Piperazine	<0.01	<0.01	99.9%	4.98E-08	<0.01
TEG	-	-	99.9%	-	-
UCARSOL™ AP-814	-	-	99.9%	-	-
Benzene	66.64	291.89	99.9%	0.067	0.29
Toluene	42.60	186.59	99.9%	0.043	0.19
Ethylbenzene	15.36	67.27	99.9%	0.015	0.067
m-Xylene	13.96	61.14	99.9%	0.014	0.061
Cyclopentane	-	-	99.9%	-	-
Cyclohexane	-	-	99.9%	-	-
TOTALS:	**63337.97**	**277420.29**		**63134.14**	**276527.53**
TOTAL VOCs:	**170.35**	**746.11**		**0.17**	**0.75**
TOTAL HAPs:	**139.18**	**609.61**		**0.14**	**0.61**

Notes:

[1] Emissions from the amine vent are calculated using BR&E ProMax. Hourly emissions are based on the maximum emissions determined from ProMax runs conducted at varying gas flowrates.

[2]Controlled H_2S emissions assume conversion to SO_2 based on control efficiency.

[3]Controlled SO_2 emissions assumed 100% conversion of H_2S to SO_2.

[4]Controlled emissions are represented at the exit via stack RDR-TO-5500 but are listed as RDR-AMINE, RR2-AMINE emission unit emissions except for SO_2 and H_2S.

[5]Flash gas from the amine process is routed to RDR-TO-5500 as fuel.

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Amine Regeneration System

Emission Unit: RR3-AMINE
Source Description: Amine vent controlled by thermal oxidizer unit RDR-TO-5500
Thermal Oxidizer Control Efficiency: 99.9%
Operating Hours: 8760 hrs/yr

Components	Uncontrolled[1]		Thermal Oxidizer Control Efficiency	Controlled[4]	
	RR3-AMINE Vent (lb/hr)	RR3-AMINE Vent (ton/yr)		RR3-AMINE Vent (lb/hr)	RR3-AMINE Vent (ton/yr)
H2S[2]	5.77	25.29	99.9%	5.77E-03	0.025
SO2[3]	-	-	-	11.55	50.57
CO2	35856.35	157050.83	-	35856.35	157050.83
N2	0.055	0.24	-	0.055	0.24
Methane	42.61	186.63	-	42.61	186.63
Ethane	26.38	115.55	99.9%	0.026	0.12
Propane	10.59	46.39	99.9%	0.011	0.046
i-Butane	1.04	4.58	99.9%	1.04E-03	<0.01
n-Butane	4.56	19.98	99.9%	4.56E-03	0.020
i-Pentane	0.27	1.19	99.9%	2.72E-04	<0.01
n-Pentane	0.48	2.08	99.9%	4.76E-04	<0.01
n-Hexane	0.30	1.33	99.9%	3.03E-04	<0.01
n-Heptane	0.011	0.048	99.9%	1.10E-05	<0.01
n-Octane	<0.01	0.030	99.9%	6.82E-06	<0.01
n-Nonane	<0.01	<0.01	99.9%	1.30E-07	<0.01
n-Decane	-	-	99.9%	-	-
Water	1178.90	5163.60	-	1178.90	5163.60
MDEA	<0.01	<0.01	99.9%	1.80E-08	<0.01
Piperazine	<0.01	<0.01	99.9%	2.52E-08	<0.01
TEG	-	-	99.9%	-	-
UCARSOL™ AP-814	-	-	99.9%	-	-
Benzene	34.22	149.90	99.9%	0.034	0.15
Toluene	18.12	79.36	99.9%	0.018	0.079
Ethylbenzene	5.86	25.67	99.9%	5.86E-03	0.026
m-Xylene	5.26	23.04	99.9%	5.26E-03	0.023
Cyclohexane	-	-	99.9%	-	-
Cyclopentane	-	-	99.9%	-	-
TOTALS:	**37190.81**	**162895.73**		**37089.58**	**162452.36**
TOTAL VOCs:	**80.73**	**353.59**	**19.98**	**0.08**	**0.35**
TOTAL HAPs:	**63.77**	**279.30**		**0.064**	**0.279**

Notes:

[1] Emissions from the amine vent are calculated using BR&E ProMax. Hourly emissions are based on the maximum emissions determined from ProMax runs conducted at varying gas flowrates.

[2] Controlled H_2S emissions assume conversion to SO_2 based on control efficiency.

[3] Controlled SO_2 emissions assumed 100% conversion of H_2S to SO_2.

[4] Controlled emissions are represented at the exit via stack RR3-TO-1801 but is listed as RR3-AMINE emission unit emissions except for SO_2 and H_2S.

[5] Flash gas from the amine process can either be routed to RR3-TO-1801 to be combusted or to be used as fuel.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Diesel Fired Generator

Emission Unit:	RR2-G-2220
Source Description:	Diesel Fired Generator
Manufacturer:	Generac
Model:	2506C-E15TAG3
Type:	Compression Ignited

Fuel Consumption

Site horsepower	762	hp	Maximum horsepower of generator engine
Site kW	500	kW	Maximum kW of generator engine
Fuel heat value	137000	Btu/gal	Fuel heat value of typical diesel
Heat input	4.27	MMBtu/hr	Fuel consumption * Fuel heat value
Hours of Operation	500	hrs/yr	Assume ~3 weeks/yr of runtime
Fuel Consumption	5609	Btu/hp-hr	
	31	gal/hr	Manufacturer Specifications

Emission Calculations

Uncontrolled									
NO_x[1]	CO[1]	VOC[2,3]	SO_2[4]	HCHO[5]	PM_{10}[1,6]	$PM_{2.5}$[1,6]	Total HAPs[4]	Units	Notes
3.42	0.47	0.24			0.020	0.020		g/hp-hr	Per manufacturers specifications or Tier II standard
			0.001515	7.89E-05				lb/MMBtu	AP-42 Table 3.4-1,4
5.75	**0.79**	**0.40**	**6.48E-03**	**3.37E-04**	**0.034**	**0.034**	**5.82E-03**	lb/hr	
1.44	**0.20**	**0.10**	**1.62E-03**	**8.43E-05**	**8.40E-03**	**8.40E-03**	**1.46E-03**	tpy	

Acetaldehyde[5]	Acrolein[5]	Benzene[5]	Toluene[5]	Xylene[5]	
0.000025	0.0000079	0.000776	0.000281	0.000193	lb/MMBtu
1.08E-04	**3.37E-05**	**3.32E-03**	**1.20E-03**	**8.25E-04**	lb/hr
2.69E-05	**8.42E-06**	**8.29E-04**	**3.00E-04**	**2.06E-04**	tpy

Controlled									
NO_x[1]	CO[1]	VOC[2,3]	SO_2[4]	HCHO[5]	PM_{10}[1,6]	$PM_{2.5}$[1,6]	Total HAPs[4]	Units	Notes
3.42	0.47	0.24			0.020	0.020		g/hp-hr	Per manufacturers specifications or Tier II standard
0%	0%	0%			0%	0%			% Reduction
			0.001515	7.89E-05				lb/MMBtu	AP-42 Table 3.4-1,4
5.75	**0.79**	**0.40**	**6.48E-03**	**3.37E-04**	**0.034**	**0.034**	**5.82E-03**	lb/hr	
1.44	**0.20**	**0.10**	**1.62E-03**	**8.43E-05**	**8.40E-03**	**8.40E-03**	**1.46E-03**	tpy	

NOTES

[1] NO_x, CO, and PM emission factors are referenced from manufacturers specification.

[2] VOC emissions factors are referenced from EPA NSPS Tier 2 emission factors for 450 ≤ kW < 560 rated power engines converted from g/kW-hr to g/hp-hr (6.4 g/kW-hr/(1.34102 kW/hp) = 4.77 g/hp-hr

[3] VOC/NMHC are derived from NOX+NMHC based on the assumption of 5% NMHC according to Table D-25 on California Environmental Protection Agency (CARB, Revised date: Dec 18, 2011)

[4] AP-42 Table 3.4-1 Emission Factors for SO2 based on a 15 ppm sulfur content for ULSD (ultra low sulfur diesel).

[5] HAPs emissions factors are referenced from AP-42 Table 3.4-4 Specdated Organic Compound Emission Factors for Large Uncontrolled Diesel Engines.

[6] Assumes PM (Filterable + Condensable) = PM_{10} = $PM_{2.5}$

GHG Emissions							
CO_2[1]	CH_4[2]	N_2O[2]	CH_4[3]	N_2O[3]	Total CO2e	Units	Notes
73.96	0.003	0.0006			0.020	kg CO_2/MMBtu	40CFR Part 98, Table C-1
			28	265		GWP Factor	40CFR Part 98, Table A-1
696.96	**0.028**	**5.65E-03**	**0.79**	**1.50**	**699.25**	lb/hr	
174.24	**0.007**	**1.41E-03**	**0.20**	**0.37**	**174.81**	tpy	

NOTES

[1] CO_2 emission factor is referenced from Table C-1 of 40 CFR Part 98 for Distillate Oil No. 2.

[2] CH_4 and N_2O emission factors are referenced from Table C-2 of 40 CFR Part 98.

[3] GWP is referenced from Table A-1 of 40 CFR Part 98.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Diesel Fired Generator

Emission Unit:	RDR-G-2
Source Description:	Diesel Fired Generator
Manufacturer:	Generac
Model:	F2CE9685A-E
Type:	Compression Ignited

Fuel Consumption

Site horsepower	389	hp	Maximum horsepower of generator engine
Site kW	200	kW	Maximum kW of generator engine
Fuel heat value	137000	Btu/gal	Fuel heat value of typical diesel
Heat input	2.62	MMBtu/hr	Fuel consumption * Fuel heat value
Hours of Operation	500	hrs/yr	Assume ~3 weeks/yr of runtime
Fuel Consumption	6727	Btu/hp-hr	Engineering Estimate
	19.1	gal/hr	Manufactuer Specification

Emission Calculations

Uncontrolled									
NO_x[1,5]	CO[1]	VOC[1]	SO_2[2]	HCHO[4]	PM_{10}[1,4]	$PM_{2.5}$[1,4]	Total HAPs[3]	Units	Notes
2.83	2.61	0.15			0.15	0.15		g/hp-hr	Tier 3 Emissions Standards for Non-Road Engines
			0.29	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
2.43	**2.24**	**0.13**	**0.76**	**3.09E-03**	**0.13**	**0.13**	**0.010**	lb/hr	
0.61	**0.56**	**0.03**	**0.19**	**0.001**	**0.032**	**0.032**	**0.002**	tpy	

Acetaldehyde[3]	Acrolein[3]	Benzene[3]	1-3 Butadiene[3]	Toluene[3]	Xylene[3]	Units
0.000767	0.0000925	0.000933	0.0000391	0.000409	0.000285	lb/MMBtu
2.01E-03	**2.42E-04**	**2.44E-03**	**1.02E-04**	**1.07E-03**	**7.46E-04**	lb/hr
5.02E-04	**6.05E-05**	**6.10E-04**	**2.56E-05**	**2.68E-04**	**1.86E-04**	tpy

Controlled									
NO_x[1]	CO[1]	VOC[1]	SO_2[2]	HCHO[4]	PM_{10}[1,4]	$PM_{2.5}$[1,4]	Total HAPs[3]	Units	Notes
2.83	2.61	0.15			0.15	0.15		g/hp-hr	Tier 3 Emissions Standards for Non-Road Engines
0%	0%	0%			0%	0%			% Reduction
			0.29	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
2.43	**2.24**	**0.13**	**0.76**	**3.09E-03**	**0.13**	**0.13**	**0.010**	lb/hr	
0.61	**0.56**	**0.03**	**0.19**	**0.001**	**0.032**	**0.032**	**0.002**	tpy	

NOTES

[1] NO_x, CO, VOC, and PM emission factors are referenced from Final Tier 3 Emissions Standards for Non-Road Engines.

[2] AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines.

[4] Assumes PM (Filterable + Condensable) = $PM_{10} = PM_{2.5}$

[5] VOC/NMHC are derived from NOX+NMHC based on the assumption of 5% NMHC according to Table D-25 on California Environmental Protection Agency (CARB, Revised date: Dec 18, 2011)

GHG Emissions							
CO_2[1]	CH_4[2]	N_2O[2]	CH_4[3]	N_2O[3]	Total CO2e	Units	Notes
73.96	0.003	0.0006			0.020	kg CO_2/MMBtu	40CFR Part 98, Table C-1
			28	265		GWP Factor	40CFR Part 98, Table A-1
426.66	**0.017**	**3.46E-03**	**0.48**	**0.92**	**428.07**	lb/hr	
106.67	**0.0043**	**8.65E-04**	**0.121**	**0.23**	**107.02**	tpy	

NOTES

[1] CO_2 emission factor is referenced from Table C-1 of 40 CFR Part 98 for Distillate Oil No. 2.

[2] CH_4 and N_2O emission factors are referenced from Table C-2 of 40 CFR Part 98.

[3] GWP is referenced from Table A-1 of 40 CFR Part 98.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Diesel Fired Generator

Emission Unit:	RDR-G-3 through RDR-G-12
Source Description:	Diesel Fired Generator
Manufacturer:	TBD
Model:	TBD
Type:	Compression Ignited

Fuel Consumption

Site horsepower	499	hp	Maximum horsepower of generator engine
Site kW	210	kW	Maximum kW of generator engine
Fuel heat value	137000	Btu/gal	Fuel heat value of typical diesel
Heat input	3.99	MMBtu/hr	Fuel consumption * Fuel heat value
Hours of Operation	500	hrs/yr	Assume ~3 weeks/yr of runtime
Fuel Consumption	8000	Btu/hp-hr	Engineering Estimate

Emission Calculations

Uncontrolled									
NO_x[1]	CO[1]	VOC[1]	SO_2[2]	HCHO[4]	PM_{10}[1,4]	$PM_{2.5}$[1,4]	Total HAPs[3]	Units	Notes
0.30	2.60	0.14			0.015	0.015		g/hp-hr	Tier 4 Emissions Standards for Non-Road Engines
			0.29	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
0.33	**2.86**	**0.15**	**1.16**	**4.71E-03**	**0.017**	**0.017**	**0.015**	lb/hr	
0.08	**0.72**	**0.04**	**0.29**	**0.001**	**0.004**	**0.004**	**0.004**	tpy	

Acetaldehyde[3]	Acrolein[3]	Benzene[3]	1-3 Butadiene[3]	Toluene[3]	Xylene[3]	Units
0.000767	0.0000925	0.000933	0.0000391	0.000409	0.000285	lb/MMBtu
3.06E-03	**3.69E-04**	**3.72E-03**	**1.56E-04**	**1.63E-03**	**1.14E-03**	lb/hr
7.65E-04	**9.23E-05**	**9.31E-04**	**3.90E-05**	**4.08E-04**	**2.84E-04**	tpy

Controlled									
NO_x[1]	CO[1]	VOC[1]	SO_2[2]	HCHO[4]	PM_{10}[1,4]	$PM_{2.5}$[1,4]	Total HAPs[3]	Units	Notes
0.30	2.60	0.14			0.015	0.015		g/hp-hr	Tier 4 Emissions Standards for Non-Road Engines
0%	0%	0%			0%	0%			% Reduction
			0.29	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
0.33	**2.86**	**0.15**	**1.16**	**4.71E-03**	**0.017**	**0.017**	**0.015**	lb/hr	
0.08	**0.72**	**0.04**	**0.29**	**0.001**	**0.004**	**0.004**	**0.004**	tpy	

NOTES

[1] NO_x, CO, VOC, and PM emission factors are referenced from Final Tier 4 Emissions Standards for Non-Road Engines.

[2] AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines.

[4] Assumes PM (Filterable + Condensable) = PM_{10} = $PM_{2.5}$

GHG Emissions							
CO_2[1]	CH_4[2]	N_2O[2]	CH_4[3]	N_2O[3]	Total CO2e	Units	Notes
73.96	0.003	0.0006			0.020	kg CO_2/MMBtu	40CFR Part 98, Table C-1
			28	265		GWP Factor	40CFR Part 98, Table A-1
650.91	**0.026**	**5.28E-03**	**0.74**	**1.40**	**653.05**	lb/hr	
162.73	**0.0066**	**1.32E-03**	**0.18**	**0.35**	**163.26**	tpy	

NOTES

[1] CO_2 emission factor is referenced from Table C-1 of 40 CFR Part 98 for Distillate Oil No. 2.

[2] CH_4 and N_2O emission factors are referenced from Table C-2 of 40 CFR Part 98.

[3] GWP is referenced from Table A-1 of 40 CFR Part 98.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Condensate Storage Tanks

Emission unit number(s):	RDR-T-1, RDR-T-2, RDR-T-3, RDR-T-4, RDR-T-5	
Source description:	Condensate Tanks	
Annual Operating Hours:	8,760	
Control Efficiency:	98%	
Number of Tanks:	5	
Capacity of Tanks:	1,000	bbl
Hourly Throughout:	333.33	bbl/hr
Daily Throughput:	8000	bbl/d
Annual Throughput:	2920000	bbl/yr
Hourly Throughout per Tank:	67	bbl/hr
Daily Throughput per Tank:	1600	bbl/d
Annual Throughput per Tank:	584000	bbl/yr

Condensate Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Total Flash (lb/hr)	Total Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Flash (lb/hr)	Total Working and Breathing (lb/hr)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Hydrogen Sulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon Dioxide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Propane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
i-Butane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
n-Butane	0.00E+00	5.35E-01	1.07E-01	0.00E+00	5.35E-01	4.69E-01	2.14E-03	9.37E-03
i-Pentane	0.00E+00	3.16E+00	6.32E-01	0.00E+00	3.16E+00	2.77E+00	1.26E-02	5.53E-02
n-Pentane	0.00E+00	5.76E+00	1.15E+00	0.00E+00	5.76E+00	5.05E+00	2.31E-02	1.01E-01
Neohexane	0.00E+00	1.36E-01	2.73E-02	0.00E+00	1.36E-01	1.19E-01	5.45E-04	2.39E-03
Cyclopentane	0.00E+00	6.36E-01	1.27E-01	0.00E+00	6.36E-01	5.57E-01	2.54E-03	1.11E-02
2-Methylpentane	0.00E+00	1.96E+00	3.92E-01	0.00E+00	1.96E+00	1.72E+00	7.84E-03	3.43E-02
3-Methylpentane	0.00E+00	1.03E+00	2.06E-01	0.00E+00	1.03E+00	9.01E-01	4.12E-03	1.80E-02
Hexane	0.00E+00	2.28E+00	4.56E-01	0.00E+00	2.28E+00	2.00E+00	9.12E-03	3.99E-02
Methylcyclopentane	0.00E+00	9.05E-01	1.81E-01	0.00E+00	9.05E-01	7.92E-01	3.62E-03	1.58E-02
Benzene	0.00E+00	1.78E-01	3.57E-02	0.00E+00	1.78E-01	1.56E-01	7.14E-04	3.13E-03
Cyclohexane	0.00E+00	8.63E-01	1.73E-01	0.00E+00	8.63E-01	7.56E-01	3.45E-03	1.51E-02
2-Methylhexane	0.00E+00	3.04E-01	6.07E-02	0.00E+00	3.04E-01	2.66E-01	1.21E-03	5.32E-03
3-Methylhexane	0.00E+00	3.49E-01	6.99E-02	0.00E+00	3.49E-01	3.06E-01	1.40E-03	6.12E-03
Cyclopentane, 1,2-Dimethyl-, cis-	0.00E+00	3.53E-01	7.07E-02	0.00E+00	3.53E-01	3.10E-01	1.41E-03	6.19E-03
n-Heptane	0.00E+00	4.47E-01	8.93E-02	0.00E+00	4.47E-01	3.91E-01	1.79E-03	7.82E-03
Methylcyclohexane	0.00E+00	6.30E-01	1.26E-01	0.00E+00	6.30E-01	5.52E-01	2.52E-03	1.10E-02
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.00E+00	7.49E-02	1.50E-02	0.00E+00	7.49E-02	6.56E-02	2.99E-04	1.31E-03
Toluene	0.00E+00	9.74E-02	1.95E-02	0.00E+00	9.74E-02	8.53E-02	3.90E-04	1.71E-03
2-Methylheptane	0.00E+00	1.07E-01	2.14E-02	0.00E+00	1.07E-01	9.38E-02	4.28E-04	1.88E-03
3-Methylheptane	0.00E+00	3.86E-02	7.73E-03	0.00E+00	3.86E-02	3.38E-02	1.55E-04	6.77E-04
Cyclohexane, 1,3-Dimethyl-, trans-	0.00E+00	6.99E-02	1.40E-02	0.00E+00	6.99E-02	6.13E-02	2.80E-04	1.23E-03
n-Octane	0.00E+00	5.89E-02	1.18E-02	0.00E+00	5.89E-02	5.16E-02	2.36E-04	1.03E-03
Ethylbenzene	0.00E+00	2.99E-03	5.98E-04	0.00E+00	2.99E-03	2.62E-03	1.20E-05	5.24E-05
m-Xylene	0.00E+00	1.93E-02	3.86E-03	0.00E+00	1.93E-02	1.69E-02	7.71E-05	3.38E-04
o-Xylene	0.00E+00	2.44E-03	4.87E-04	0.00E+00	2.44E-03	2.13E-03	9.74E-06	4.27E-05
Ethylcyclohexane	0.00E+00	2.32E-02	4.65E-03	0.00E+00	2.32E-02	2.04E-02	9.30E-05	4.07E-04
Isononane	0.00E+00	3.15E-02	6.29E-03	0.00E+00	3.15E-02	2.76E-02	1.26E-04	5.51E-04
n-Nonane	0.00E+00	4.40E-03	8.81E-04	0.00E+00	4.40E-03	3.86E-03	1.76E-05	7.71E-05
n-Decane	0.00E+00	3.20E-04	6.41E-05	0.00E+00	3.20E-04	2.81E-04	1.28E-06	5.61E-06
Undecane	0.00E+00	1.04E-03	2.09E-04	0.00E+00	1.04E-03	9.14E-04	4.17E-06	1.83E-05
VOC	**0.00**	**20.06**	**4.01**	**0.00**	**20.06**	**17.57**	**0.08**	**0.35**
Total HAPS	**0.00**	**2.58**	**0.52**	**0.00**	**2.58**	**2.26**	**0.01**	**0.05**
H_2S	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[1] Emissions from the condensate tanks are controlled by the tank and loading combustor (RDR-FL-2850) with an assumed 98% DRE.

[2] Emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the maximum hourly throughput of the facility. Annual emissions are based on the average daily throughput of the facility.

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Produced Water (Slop) Tank

Emission unit number(s): RDR-T-6
Source description: Produced Water (Slop) Tank

Annual Operating Hours:	8,760	
Control Efficiency:	98%	
Number of Tanks:	1	
Capacity of Tanks:	400	bbl
Hourly Throughout:	50.00	bbl/hr
Daily Throughput:	1200.00	bbl/d
Annual Throughput:	72000	bbl/yr

Produced Water (Slop) Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Flash (lb/hr)	Working and Breathing (lb/hr)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Carbon Dioxide	2.29E-01	3.04E-01	5.32E-01	2.29E-01	2.91E-02	1.13E+00	5.32E-01	1.13E+00
Hydrogen Sulfide	2.08E-03	3.11E-03	5.19E-03	2.08E-03	2.58E-04	1.02E-02	1.04E-04	2.05E-04
Nitrogen	1.38E-03	5.16E-06	1.39E-03	1.38E-03	2.31E-06	6.06E-03	1.39E-03	6.06E-03
Methane	2.30E-01	3.23E-03	2.33E-01	2.30E-01	1.07E-03	1.01E+00	4.67E-03	2.03E-02
Ethane	1.92E-01	4.10E-03	1.97E-01	1.92E-01	1.05E-03	8.47E-01	3.93E-03	1.69E-02
Propane	9.70E-02	3.11E-04	9.73E-02	9.70E-02	8.98E-05	4.25E-01	1.95E-03	8.50E-03
i-Butane	1.03E-02	6.10E-06	1.03E-02	1.03E-02	2.34E-06	4.53E-02	2.07E-04	9.06E-04
n-Butane	2.40E-02	1.73E-05	2.40E-02	2.40E-02	4.85E-06	1.05E-01	4.81E-04	2.11E-03
i-Pentane	3.72E-03	5.71E-07	3.72E-03	3.72E-03	1.99E-07	1.63E-02	7.45E-05	3.26E-04
n-Pentane	1.23E-03	5.38E-08	1.23E-03	1.23E-03	1.94E-08	5.40E-03	2.47E-05	1.08E-04
Hexane	3.06E-04	2.42E-09	3.06E-04	3.06E-04	9.41E-10	1.34E-03	6.12E-06	2.68E-05
Heptane	6.65E-05	1.05E-10	6.65E-05	6.65E-05	4.39E-11	2.91E-04	1.33E-06	5.83E-06
Cyclopentane	1.07E-03	9.22E-07	1.07E-03	1.07E-03	1.53E-07	4.69E-03	2.14E-05	9.38E-05
Benzene	3.54E-03	7.15E-05	3.61E-03	3.54E-03	6.24E-06	1.55E-02	7.22E-05	3.10E-04
Cyclohexane	9.89E-04	2.48E-07	9.89E-04	9.89E-04	3.97E-08	4.33E-03	1.98E-05	8.67E-05
Methylcyclohexane	2.20E-04	7.47E-09	2.20E-04	2.20E-04	1.71E-09	9.65E-04	4.41E-06	1.93E-05
2,2,4-Trimethylpentane	1.17E-05	2.31E-11	1.17E-05	1.17E-05	1.34E-11	5.11E-05	2.33E-07	1.02E-06
Toluene	8.44E-04	3.94E-06	8.48E-04	8.44E-04	3.23E-07	3.70E-03	1.70E-05	7.40E-05
Ethylbenzene	1.44E-04	1.90E-07	1.44E-04	1.44E-04	1.66E-08	6.29E-04	2.88E-06	1.26E-05
o-Xylene	8.35E-05	1.20E-07	8.36E-05	8.35E-05	9.92E-09	3.66E-04	1.67E-06	7.31E-06
Octane	1.60E-06	3.22E-13	1.60E-06	1.60E-06	1.23E-13	7.03E-06	3.21E-08	1.41E-07
Water	1.26E-02	6.01E-01	6.14E-01	1.26E-02	6.17E-02	3.26E-01	1.23E-02	6.51E-03
VOC	**0.14**	**4.12E-04**	**0.14**	**0.14**	**1.04E-04**	**0.63**	**0.00**	**0.01**
Total HAPS	**4.93E-03**	**7.57E-05**	**5.00E-03**	**4.93E-03**	**6.59E-06**	**2.16E-02**	**1.00E-04**	**4.32E-04**
H_2S	**2.08E-03**	**3.11E-03**	**5.19E-03**	**2.08E-03**	**2.58E-04**	**1.02E-02**	**1.04E-04**	**2.05E-04**

[1] Emissions from the produced water (slop) tank are controlled and sent to the tank and loading combustor (RDR-FL-2850) with an assumed 98% DRE.

[2] Emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the maximum hourly throughput of the facility. Annual emissions are based on the average daily throughput of the facility.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Condensate Truck Loading

Equation[1]:

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

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])

																RDR-LOAD			
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{max} [3] (psia)**	**M [3] (lb/lbmol)**	**T_{max} [4] (°R)**	**L_L (lbs/1000 gal)**	**Hourly Throughput [5] (gal/hr)**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt %**	**VOC Vapor Loading Losses (lb/hr)**	**HAP Vapor Loading Losses (lb/hr)**	**H_2S Vapor Loading Losses (lb/hr)**	**Uncaptured Hourly VOC Emissions [7] (lb/hr)**	**Uncaptured Hourly HAP Emissions [3,7] (lb/hr)**	**Uncaptured Hourly H_2S Emissions [3,7] (lb/hr)**	**DRE (%)**
RDR-LOAD	Condensate	Submerged	1.0	5.61	92.12	555	11.59	15,120	98.7%	100.00%	12.86%	0.00%	175.29	22.55	--	2.28	0.29	--	98%
										TOTAL			**175.29**	**22.55**	**--**	**2.28**	**0.29**	**--**	

																RDR-LOAD			
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{avg} [3] (psia)**	**M [3] (lb/lbmol)**	**T_{avg} [4] (°R)**	**L_L (lbs/1000 gal)**	**Annual Throughput (gal/yr) [6,7]**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt %**	**VOC Vapor Loading Losses (tpy)**	**HAP Vapor Loading Losses (tpy)**	**H_2S Vapor Loading Losses (tpy)**	**Uncaptured Annual VOC Emissions [8] (tpy)**	**Uncaptured Annual HAP Emissions [3,8] (tpy)**	**Uncaptured Annual H_2S Emissions [3,8] (tpy)**	**DRE (%)**
RDR-LOAD	Condensate	Submerged	1.0	5.61	92.12	523	12.30	80,000,000	98.7%	100.00%	12.86%	0.00%	491.92	63.28	--	6.39	0.82	--	98%
										TOTAL			**491.92**	**63.28**	**--**	**6.39**	**0.8**	**--**	

[1] Loading loss equation and variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] Material loaded is 100% condensate.
[3] Vapor pressure, molecular weight, HAP content, and H_2S content is obtained from ProMax run.
[4] Maximum temperature is 95° F and the average temperature is 63.2° F.
[5] The maximum hourly throughput is based on the capability of the tank truck to load liquids in one hour.
[6] Annual throughput for each loading spot represents site-wide throughput; therefore, total annual emissions is the maximum emissions of each loading spot.
[7] Annual throughput provided by Targa.
[8] Controlled loading emissions are based on normal operations which account for a capture efficiency of 98.7% for vapor balanced loading , and a DRE of 98% at the flare. Captured vapors are balanced to the tanks which are controlled by the flare and are thus included in the flare emission totals.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Thermal Oxidizer

Emission Unit:	RDR-TO-5500
Source Description:	Thermal Oxidizer
Operating Hours:	8,760 hrs/yr
DRE:	99.9%

Emissions, Heat Input, and Flow Rate Calculation

Parameters	Value	Unit	Notes
Amine VOC Emissions	170.35	lb/hr	ProMax, Amine Overheads
Amine HAP Emissions	139.18	lb/hr	ProMax, Amine Overheads
Amine H_2S Emissions	9.87	lb/hr	ProMax, Amine Overheads
Dehy VOC Emissions	221.46	lb/hr	ProMax, Dehy Overheads
Dehy HAP Emissions	76.51	lb/hr	ProMax, Dehy Overheads
Dehy H_2S Emissions	6.83E-05	lb/hr	ProMax, Dehy Overheads
Amine Regenerator Heating Value	8.96	Btu/scf	BR&E ProMax Acid Gas Stream
Dehy Condenser Heating Value	2532.49	Btu/scf	BR&E ProMax Condenser Overheads Stream
Amine Regenerator Flow Rate	567,921.14	scf/hr	BR&E ProMax Acid Gas Stream
Dehy Condenser Flow Rate	1,741.41	scf/hr	BR&E ProMax Condenser Overheads Stream
Total Heating Value	16.67	Btu/scf	Weighted average heating value of all streams
Total Flow	569,662.55	scf/hr	Combined flow
Total Heating Value	9.50	MMBtu/hr	Btu/scf x scf/hr
Flow Rate with Safety Factor	0	%	Safety Factor
	569,662.55	scf/hr	Flow with safety factor
	4,990.24	MMscf/yr	Annual flow rate with safety factor
Heating Rate	9.50	MMBtu/hr	Btu/scf x scf/hr

Supplemental Fuel	Value	Unit	Notes
Hourly Volume Flow Rate	65,118.89	scf/hr	Goal seek to 75 MMBTU/hr
	0	%	Safety Factor
	65,118.89	scf/hr	Pilot flow with safety factor
	6.51E-02	MMscf/hr	scf/hr / 10^6 scf / MMscf
Natural Gas Heat Value	1,005.90	Btu/scf	Treated Natural Gas
Hourly Heat Rate	65.50	MMBtu/hr	Btu/scf * scf/hr
Annual Flow Rate	570.44	MMscf/yr	MMscf/hr * annual hours of operation for pilot

Emission Rates

	NOx	CO	VOC[1]	SO_2[2]	H_2S[1,3]	PM[4]	HAPs[1]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Xylene[1]	n-Hexane[1]	Units	Notes
Emission Factors	50	50											ppmv	Manufacturer Specifications
	46.01	28.01											lb/lb-mol	Molecular Weight
			5.50										lb/MMscf	AP-42 Chapter 1.4
			5.42										lb/MMscf	Adjusted for Fuel
						0.005							lb/MMBtu	Manufacturer Specifications
					0.25								gr / 100 scf	Fuel Gas Specification
			391.81		9.87		215.69	97.97	57.41	18.95	16.31	25.05	lb/hr	Hourly emissions from Amine and Dehy
Fuel Emissions	0.100	0.061	0.35	0.047	8.76E-04	0.33	-	-	-	-	-	-	lb/hr	Hourly Rate
	0.44	0.27	1.55	0.20	3.83E-03	1.43	-	-	-	-	-	-	tpy	8760 hr/yr/2000 lb/ton
Process Emissions	0.87	0.53	0.39	18.56	9.87E-03	0.047	0.22	0.098	0.057	0.019	0.016	0.025	lb/hr	Hourly Rate
	3.82	2.32	1.72	81.31	0.043	0.21	0.94	0.43	0.25	0.083	0.071	0.11	tpy	8760 hr/yr/2000 lb/ton
Total Emissions	**0.97**	**0.59**	**0.75**	**18.61**	**0.011**	**0.38**	**0.22**	**0.098**	**0.057**	**0.019**	**0.016**	**0.025**	lb/hr	Pilot Emissions + Process Emissions
	4.25	**2.59**	**3.26**	**81.51**	**0.047**	**1.64**	**0.94**	**0.43**	**0.25**	**0.083**	**0.071**	**0.11**	tpy	Pilot Emissions + Process Emissions

[1] Efficiency for combustion of VOC, H_2S and HAPs in RDR-TO-5500 is: 99.9% lb/hr emission rate based on DRE of flare: lb/hr * (1 - DRE)

[2] Fuel sulfur content is assumed to be 0.25 gr/100 Scf where fuel emissions are calculated using the following methods:
SO_2 (lb/hr) = [Sulfur Content (gr S / 100 scf) / 100 / 7000 (g / lb) * Supplemental Fuel Flow (scf / hr) * SO_2 to S Molar Ratio (64/32)]
H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[3] Mass balance of H_2S is assuming 98% combustion and 100% conversion of combusted H_2S to SO_2.

[4] Assumes PM = PM_{10} = $PM_{2.5}$

[5] PV= nRT = n = PV/RT

P=	1.00	ATM					
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)					
T=	1600.00	°F =	871.110	°C =	1144.2600	K=	2059.67 R

"-" Indicates emissions of this pollutant are not expected

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1	28	265	-	-	GWP
	53.0600	1.00E-03	0.0001	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	3,979.50	0.075	7.50E-03	3,983.59	kg/hr	kg/ MMBtu * hourly natural gas heat input
	34,860.42	0.66	0.066	34,896.23	mton/yr	kg/ MMBtu * annual natural gas heat input

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Thermal Oxidizer Downtime

Emission Unit: SSM-TO RDR-TO-5500-SSM

Source Description: Thermal Oxidizer downtime during scheduled maintenance events.

Annual Downtime: 20 hrs/yr

	Uncontrolled Emissions		Thermal Oxidizer Downtime	
	Amine Units: RDR-AMINE, RR2-Amine	Dehydrator Units: RDR-TEG, RR2-TEG	Total	
Components	**lb/hr**	**lb/hr**	**lb/hr**	**ton/yr**
$H2S^2$	9.87	6.83E-05	9.87	0.099
SO2	-	-	-	-
CO2	61,260.81	6.40E-03	61,260.82	612.61
N2	0.076	0.014	0.090	9.03E-04
C1	53.22	9.14	62.36	0.62
C2	43.58	23.74	67.31	0.67
C3	18.73	43.92	62.65	0.63
iC4	1.99	10.95	12.94	0.13
nC4	8.85	42.79	51.64	0.52
iC5	0.55	15.96	16.51	0.17
nC5	0.98	21.91	22.90	0.23
nC6	0.62	24.43	25.05	0.25
nC7	0.049	8.58	8.63	0.086
nC8	0.012	1.17	1.18	0.012
nC9	6.80E-04	0.25	0.25	2.55E-03
nC10	-	1.51E-08	1.51E-08	1.51E-10
H2O	1,800.06	10.43	1,810.49	18.10
MDEA	5.76E-05	-	5.76E-05	5.76E-07
Piperazine	4.98E-05	-	4.98E-05	4.98E-07
TEG	-	5.20E-07	5.20E-07	5.20E-09
UCARSOL™ AP-814	-	-	-	-
Benzene	66.64	31.33	97.97	0.98
Toluene	42.60	14.81	57.41	0.57
Ethylbenzene	15.36	3.59	18.95	0.19
m-Xylene	13.96	2.35	16.31	0.16
Cyclopentane	-	1.43E-06	1.43E-06	1.43E-08
Cyclohexane	-	-	-	-
Total VOC:	170.35	222.04	392.39	3.92
Total HAPs:	139.18	76.51	215.69	2.16
Total H2S:	9.87	0.00	9.87	0.10

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Thermal Oxidizer

Emission Unit:	RR3-TO-1801
Source Description:	Thermal Oxidizer
Operating Hours:	8,760 hrs/yr
DRE:	99.9%

Emissions, Heat Input, and Flow Rate Calculation

Parameters	Value	Unit	Notes
Amine Vent VOC Emissions	80.73	lb/hr	ProMax, Train 3 Amine Vent
Amine Vent HAP Emissions	63.77	lb/hr	ProMax, Train 3 Amine Vent
Amine Vent H_2S Emissions	5.77	lb/hr	ProMax, Train 3 Amine Vent
Amine Flash VOC Emissions	839.54	lb/hr	ProMax, Train 3 Amine Flash
Amine Flash HAP Emissions	22.20	lb/hr	ProMax, Train 3 Amine Flash
Amine Flash H_2S Emissions	0.08	lb/hr	ProMax, Train 3 Amine Flash
Dehy VOC Emissions	356.72	lb/hr	ProMax, Train 3 Dehy BTEX Overheads and Flash Gas
Dehy HAP Emissions	80.16	lb/hr	ProMax, Train 3 Dehy BTEX Overheads and Flash Gas
Dehy H_2S Emissions	3.46E-05	lb/hr	ProMax, Train 3 Dehy BTEX Overheads and Flash Gas
Amine Regenerator Heating Value	11.65	Btu/scf	BR&E ProMax Acid Gas Stream
Amine Flash Heating Value	1117.57	Btu/scf	BR&E ProMax Amine Flash Gas Stream
Dehy Condenser Heating Value	2544.20	Btu/scf	BR&E ProMax Condenser Overheads Stream
Dehy Flash Heating Value	1603.34	Btu/scf	BR&E ProMax Flash Overheads Stream
Amine Regenerator Flow Rate	335,585.48	scf/hr	BR&E ProMax Acid Gas Stream
Amine Flash Flow Rate	26,614.46	scf/hr	BR&E ProMax Amine Flash Gas Stream
Dehy Condenser Flow Rate	1,712.36	scf/hr	BR&E ProMax Condenser Overheads Stream
Dehy Flash Flow Rate	5,469.12	scf/hr	BR&E ProMax Flash Overheads Stream
Total Heating Value	126.64	Btu/scf	Weighted average heating value of all streams
Total Flow	369,381.42	scf/hr	Combined flow
Total Heating Value	46.78	MMBtu/hr	Btu/scf x scf/hr
Flow Rate with Safety Factor	0	%	Safety Factor
	369,381.42	scf/hr	Flow with safety factor
	2,987.64	MMscf/yr	Annual flow rate with safety factor
Heating Rate	46.78	MMBtu/hr	Btu/scf x scf/hr

Supplemental Fuel	Value	Unit	Notes
	10,759.30	scf/hr	Goal seek to 57.60 MMBTU/hr
Hourly Volume Flow Rate	0	%	Safety Factor
	10,759.30	scf/hr	Pilot flow with safety factor
	1.08E-02	MMscf/hr	scf/hr / 10^6 scf / MMscf
Natural Gas Heat Value	1,005.90	Btu/scf	Treated Natural Gas
Hourly Heat Rate	10.82	MMBtu/hr	Btu/scf * scf/hr
Annual Flow Rate	94.25	MMscf/yr	MMscf/hr * annual hours of operation for pilot

Emission Rates

	NOx	CO	VOC[1]	SO_2[2]	H_2S[1,3]	PM[4]	HAPs[1]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Xylene[1]	n-Hexane[1]	Units	Notes
	50	50											ppmv	Manufacturer Specifications
	46.01	28.01											lb/lb-mol	Molecular Weight
			5.50										lb/MMscf	AP-42 Chapter 1.4
Emission Factors			5.42										lb/MMscf	Adjusted for Fuel
						0.005							lb/MMBtu	Manufacturer Specifications
					0.25								gr / 100 scf	Fuel Gas Specification
			1276.99		5.85		166.13	71.31	36.01	10.75	8.45	27.82	lb/hr	Hourly emissions from Amine and Dehy
Fuel Emissions	0.018	0.011	0.058	7.69E-03	1.45E-04	0.054	-	-	-	-	-	-	lb/hr	hourly rate
	0.077	0.047	0.26	0.034	6.34E-04	0.24	-	-	-	-	-	-	tpy	8760 hr/yr/2000 lb/ton
Process Emissions	0.61	0.37	1.28	11.00	5.85E-03	0.23	0.17	0.071	0.036	0.011	8.45E-03	0.028	lb/hr	hourly rate
	2.66	1.62	5.59	48.17	0.026	1.02	0.73	0.31	0.16	0.047	0.037	0.12	tpy	8760 hr/yr/2000 lb/ton
Total Emissions	**0.62**	**0.38**	**1.34**	**11.01**	**5.99E-03**	**0.29**	**0.17**	**0.071**	**0.036**	**0.011**	**8.45E-03**	**0.028**	lb/hr	Pilot Emissions + Process Emissions
	2.74	**1.67**	**5.85**	**48.20**	**0.026**	**1.26**	**0.73**	**0.31**	**0.16**	**0.047**	**0.037**	**0.12**	tpy	Pilot Emissions + Process Emissions

[1] Efficiency for combustion of VOC, H_2S and HAPs in RR3-TO-1801 is: 99.9% lb/hr emission rate based on DRE of flare: lb/hr * (1 - DRE)

[2] Fuel sulfur content is assumed to be 0.25 gr/100 Scf where fuel emissions are calculated using the following methods:

SO_2 (lb/hr) = [Sulfur Content (gr S / 100 scf) / 100 / 7000 (g / lb) * Supplemental Fuel Flow (scf / hr) * SO_2 to S Molar Ratio (64/32)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[3] Mass balance of H_2S is assuming 98% combustion and 100% conversion of combusted H_2S to SO_2.

[4] Assumes PM = PM_{10} = $PM_{2.5}$

[5] PV= nRT = n = PV/RT

P=	1.00	ATM					
Gas Constant, R=	1.31	(atm*ft3)/(lb-mole*K)					
T=	1457.00	°F =	791.667	°C =	1064.8167	K=	1916.67 R

"-" Indicates emissions of this pollutant are not expected

Greenhouse Emissions						
	CO_2	CH_4	N_2O	CO_{2e}	Units	Notes
Emission Factors	1	28	265	-	-	GWP
	53.0600	1.00E-03	0.0001	-	kg/MMBtu	40 CFR 98 Subpart C, Table C-1 & C-2
Total Emissions	3,056.26	0.058	5.76E-03	3,059.40	kg/hr	kg/ MMBtu * hourly natural gas heat input
	26,772.80	0.50	0.050	26,800.30	mton/yr	kg/ MMBtu * annual natural gas heat input

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Thermal Oxidizer Downtime

Emission Unit: RR3-SSM-TO RR3-TO-1801-SSM

Source Description: Thermal Oxidizer downtime during scheduled maintenance events.

Annual Downtime: 20 hrs/yr

	Uncontrolled Emissions	Thermal Oxidizer Downtime	
	Amine Units: RR3-Amine	Total	
Components	**lb/hr**	**lb/hr**	**ton/yr**
H_2S[2]	5.77	5.77	0.058
SO2	-	-	-
CO2	35,856.35	35,856.35	358.56
N2	0.055	0.055	5.48E-04
Methane	42.61	42.61	0.43
Ethane	26.38	26.38	0.26
Propane	10.59	10.59	0.11
i-Butane	1.04	1.04	0.010
n-Butane	4.56	4.56	0.046
i-Pentane	0.27	0.27	2.72E-03
n-Pentane	0.48	0.48	4.76E-03
n-Hexane	0.30	0.30	3.03E-03
n-Heptane	0.011	0.011	1.10E-04
n-Octane	6.82E-03	6.82E-03	6.82E-05
n-Nonane	1.30E-04	1.30E-04	1.30E-06
n-Decane	-	-	-
Water	1,178.90	1,178.90	11.79
MDEA	1.80E-05	1.80E-05	1.80E-07
Piperazine	2.52E-05	2.52E-05	2.52E-07
TEG	-	-	-
UCARSOL™ AP-814	-	-	-
Benzene	34.22	34.22	0.34
Toluene	18.12	18.12	0.18
Ethylbenzene	5.86	5.86	0.059
m-Xylene	5.26	5.26	0.053
Cyclohexane	-	-	-
Cyclopentane	-	-	-
Total VOC:	80.73	80.73	0.81
Total HAPs:	63.77	63.77	0.64
Total H2S:	5.773	5.77	0.06

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Tank and Loading Combustor

Emission Unit: RDR-FL-2850
Source Description: Tank and Loading Combustor
Number of Units: 1
Hours of Operation 8760 hrs
Control Efficiency: 98% DRE
Capture Efficiency: 100%

Pilot Parameters	Value	Unit	Notes
Pilot	26.67	scf/hr	Engineering estimation (assumed)
	5%		Safety factor
	28.00	scf/hr	Pilot flow with safety factor
	2.80E-05	MMscf/hr	
Pipeline Gas Heating value	1,005.90	Btu/scf	Facility specification
Heat Input	0.028	MMBtu/hr	
	0.25	MMscf/yr	
Total Flow Rate	9,668.60	SCF/D	
Heating Rate + Pilot	1.59	MMBtu/hr	

VOC Heat Input and Flow Rate Calculation Per Unit

Process Parameters	Hourly	Unit	Annual	Unit	Notes
Condensate Tanks VOCs	20.06	lb/hr	87.85	tpy	Tanks ProMax
Slop Tank VOCs	0.14	lb/hr	0.63	tpy	Tanks ProMax
Loading VOCs	173.01	lb/hr	485.52	tpy	Loading Vapor Balance to Tanks
Total VOC Emissions	193.21	lb/hr	574.00	tpy	
Condensate Tanks HAPs	2.58	lb/hr	11.30	tpy	Tanks ProMax
Slop Tank HAPs	5.00E-03	lb/hr	0.022	tpy	Tanks ProMax
Loading HAPs	22.26	lb/hr	62.46	tpy	Loading Vapor Balance to Tanks
Total HAP Emissions	24.84	lb/hr	73.78	tpy	
Condensate Tanks H_2S	--	lb/hr	--	tpy	Tanks ProMax
Slop Tanks H_2S	5.19E-03	lb/hr	0.010	tpy	Tanks ProMax
Loading H_2S	--	lb/hr	--	tpy	Loading Vapor Balance to Tanks
Total H_2S Emissions	5.19E-03	lb/hr	0.010	tpy	
Condensate Tanks	4,336.69	Btu/scf	4,336.69	Btu/scf	Tanks ProMax
Slop Tank	54.15	Btu/scf	74.40	Btu/scf	Tanks ProMax
Loading	4,336.69	Btu/scf	4,336.69	Btu/scf	Loading Vapor Balance to Tanks
Condensate Tanks	96.30	scf/hr	0.84	MMscf/yr	Tanks ProMax
Slop Tank	15.45	scf/hr	3.35E-07	MMscf/yr	Tanks ProMax
Loading	263.11	scf/hr	1.39	MMscf/yr	Loading Vapor Balance to Tanks
Average combusted gas heating value	4,160.24	Btu/scf	4,336.69	Btu/scf	Weighted average heating value from all streams
Total combusted Gas flow rate	374.85	scf/hr	2.24	MMscf/yr	Total flow from all streams to flare
Total combusted gas heating rate	1.56	MMBtu/hr	9.70E-03	MMBtu/yr	Calculated based on heating value and steady-state flow
Combusted Gas Flow Rate with Safety	0%	%	0%	%	Safety factor
Factor	374.85	scf/hr	2.24	MMscf/yr	Flow with safety factor
	1.56	MMBtu/hr	9.70E-03	MMBtu/hr	

Emission Rates									
	NO_X	CO	VOC[1]	SO_2[2]	H_2S[4]	PM[1,4]	HAPs[1]	Units	Notes
Emission Factors	100.0	84.0	5.5			7.60		lb/MMBtu	AP 42 Chapter 1, Table 1.4-1 &1.4-2
Pilot Emissions	2.80E-03	2.35E-03	1.54E-04	2.00E-05	3.77E-07	2.13E-04	-	lb/hr	
	0.012	0.010	6.75E-04	8.76E-05	1.65E-06	9.32E-04	-	tpy	
Process Emissions	0.037	0.031	3.86	9.57E-03	1.04E-04	2.85E-03	0.50	lb/hr	
	0.16	0.14	11.48	0.019	2.05E-04	0.012	1.48	tpy	
Total Emissions	**0.040**	**0.034**	**3.86**	**9.59E-03**	**1.04E-04**	**3.06E-03**	**0.50**	lb/hr	
	0.18	**0.15**	**11.48**	**0.019**	**2.06E-04**	**0.013**	**1.48**	tpy	

[1] Flash, working and breathing emissions from the Condensate Tanks (RDR-T-1 to RDR-T-5), BD SSM, and Loading Emissions (RDR-LOAD) are controlled by RDR-FL-2850 with 100% capture efficiency and 98% DRE.

[2] Fuel sulfur content is assumed to be 0.25 gr/100 scf where pilot emissions are calculated using the following methods:

SO_2 (lb/hr) = [Heat Input (Btu/hr) * H_2S Content (mol%)* SO_2 Molecular Weight (64 lb/lb-mol)] / [Fuel Heat Value (Btu/scf) * 378.14 (scf/lb-mole)] + [Sulfur Content (gr S / 100 scf) * Fuel Usage (scf/hr) * SO_2 to S Molar Ratio (64/32)] / [(7000 g/lb)]

H_2S (lb/hr) = H_2S Content (gr H_2S / 100 scf) / (7000 g/lb) * Fuel Consumption (scf/hr) * (1 - DRE%)

[3] N_2O, CH_4, and CO_2 tpy Emission Rate= EF* Fuel Usage * Fuel Heat Value * 2.20462 lb/1 kg * 1 ton/2000 lb

[4] H_2S pilot emissions based on 0.25 g H2S/100 scf, or 0.0004 lb H2S/Mscf in fuel

0.0004 lb H2S/Mscf fuel * fuel consumption (Mscf/hr) = lb H2S/hr

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

Targa Northern Delaware LLC - Road Runner Gas Processing Plant
Flare- Inlet Gas Flare Stream Analysis

Emission Unit: RDR-FL-5100, RR2-FL-991, RR3-FL-1800
Source Description: Process Flares
Destruction Efficiency: 98%

Annual Inlet Gas Flared Gas Volume:[1]

Estimated Total Annual Gas (MSCF/yr):	240,000.0	Requested Annual Volume per Train
Manuf. Daily Gas Volume (MSCF/day):	240,000.0	Hourly Treatment Train Gas Flowrate
Max Hourly Flared Gas (MSCF/hr):	10,000.0	

Component	Mol Wt (lb/lb-mol) [2]	Component Net Heating Value (BTU/scf) [2]	Inlet Gas Analysis Date: 5/1/2025 mol%
HYDROGEN SULFIDE	34.081	587	0.00500%
NITROGEN	28.013	0	0.99401%
METHANE	16.043	909	76.07534%
CARBON DIOXIDE	44.01	0	2.40000%
ETHANE	30.069	1,619	11.61424%
PROPANE	44.096	2,315	5.44288%
ISO-BUTANE	58.122	3,000	0.74426%
N-BUTANE	58.122	3,011	1.63234%
ISO-PENTANE	72.149	3,699	0.34518%
N-PENTANE	72.149	3,707	0.36840%
NEOHEXANE	86.175	4,384	0.000%
CYCLOPENTANE	70.133	3,512	0.000%
2-METHYLPENTANE	86.175	4,395	0.000%
3-METHYLPENTANE	86.175	4,398	0.000%
N-HEXANE	86.175	4,404	0.25273%
METHYLCYCLOPENTANE	84.159	4,198	0.000%
BENZENE	78.112	3,591	0.02284%
CYCLOHEXANE	84.16	4,180	0.000%
2-METHYLHEXANE	100.202	5,049	0.000%
3-METHYLHEXANE	100.202	5,052	0.000%
DIMETHYLCYCLOPENTANES	98.186	4,840	0.000%
N-HEPTANE	100.202	5,100	0.07161%
METHYLCYCLOHEXANE	98.186	4,864	0.000%
TRIMETHYLCYCLOPENTANES	112.213	5,563	0.000%
TOLUENE	92.138	4,273	0.01196%
2-METHYLHEPTANE	114.229	5,739	0.000%
3-METHYLHEPTANE	114.229	5,742	0.000%
DIMETHYLCYCLOHEXANES	112.213	5,515	0.000%
N-OCTANE	114.229	5,796	0.01224%
ETHYLBENZENE	106.165	4,971	0.00490%
M&P XYLENES	106.165	4,905	0.00333%
O-XYLENE	106.165	4,905	0.000%
C9 NAPHTHENES	126.239	6,275	0.000%
C9 PARAFFINS	128.255	6,487	0.000%
N-NONANE	128.255	6,493	0.00324%
N-DECANE	142.282	7,190	0.000%
UNDECANE PLUS	156.308	7,886	0.000%
TOTAL =	**21.67**	**1120.93**	**100.00%**

*Hydrogen Sulfide conservatively assumed to be 50 ppm.

Targa Northern Delaware LLC - Road Runner Gas Processing Plant
Flare- Residue Gas Flare Stream Analysis

Emission Unit: RDR-FL-5100, RR2-FL-991, RR3-FL-1800
Source Description: Process Flares
Destruction Efficiency: 98%

Annual Residue Gas Flared Gas Volume:[1]

Estimated Total Annual Gas (MSCF/yr):	25.0	Requested Annual Volume per Train
Manuf. Daily Gas Volume (MSCF/day):	600.0	Hourly Treatment Train Gas Flowrate
Max Hourly Flared Gas (MSCF/hr):	25.0	

Component	Mol Wt (lb/lb-mol) [2]	Component Net Heating Value (BTU/scf) [2]	Cold Flare Gas Analysis Date: 05/05/25 mol%
HYDROGEN SULFIDE	34.081	587	0.0000%
NITROGEN	28.013	0	1.4060%
METHANE	16.043	909	93.3610%
CARBON DIOXIDE	44.01	0	0.0050%
ETHANE	30.069	1,619	3.4260%
PROPANE	44.096	2,315	0.9260%
ISO-BUTANE	58.122	3,000	0.1260%
N-BUTANE	58.122	3,011	0.2900%
ISO-PENTANE	72.149	3,699	0.0830%
N-PENTANE	72.149	3,707	0.1040%
NEOHEXANE	86.175	4,384	0.0018%
CYCLOPENTANE	70.133	3,512	0.0130%
2-METHYLPENTANE	86.175	4,395	0.0383%
3-METHYLPENTANE	86.175	4,398	0.0220%
N-HEXANE	86.175	4,404	0.0570%
METHYLCYCLOPENTANE	84.159	4,198	0.0242%
BENZENE	78.112	3,591	0.0063%
CYCLOHEXANE	84.16	4,180	0.0280%
2-METHYLHEXANE	100.202	5,049	0.0107%
3-METHYLHEXANE	100.202	5,052	0.0106%
DIMETHYLCYCLOPENTANES	98.186	4,840	0.0149%
N-HEPTANE	100.202	5,100	0.0144%
METHYLCYCLOHEXANE	98.186	4,864	0.0195%
TRIMETHYLCYCLOPENTANES	112.213	5,563	0.0000%
TOLUENE	92.138	4,273	0.0022%
2-METHYLHEPTANE	114.229	5,739	0.0052%
3-METHYLHEPTANE	114.229	5,742	0.0000%
DIMETHYLCYCLOHEXANES	112.213	5,515	0.0028%
N-OCTANE	114.229	5,796	0.0012%
ETHYLBENZENE	106.165	4,971	0.0000%
M&P XYLENES	106.165	4,905	0.0000%
O-XYLENE	106.165	4,905	0.0000%
C9 NAPHTHENES	126.239	6,275	0.0004%
C9 PARAFFINS	128.255	6,487	0.0005%
N-NONANE	128.255	6,493	0.0000%
N-DECANE	142.282	7,190	0.0000%
UNDECANE PLUS	156.308	7,886	0.0000%
TOTAL =	**17.43**	**957.26**	**100.00%**

Stream Emission Calculation:

Components	Hourly Emissions (pph)[3]	Annual Emissions (tpy)[3]	Hourly MMBTU Rate [4] MMBTU/hr	Total Net MMBTU [4] MMBTU/yr
HYDROGEN SULFIDE	44.91	0.54	0.29	7.04
NITROGEN	7339.24	88.07	0.00	0.00
METHANE	321686.00	3860.23	6915.25	165965.96
CARBON DIOXIDE	27839.75	334.08	0.00	0.00
ETHANE	92047.59	1104.57	1880.35	45128.29
PROPANE	63260.21	759.12	1260.03	30240.64
ISO-BUTANE	11401.58	136.82	223.28	5358.64
N-BUTANE	25006.62	300.08	491.50	11795.98
ISO-PENTANE	6564.21	78.77	127.68	3064.40
N-PENTANE	7005.80	84.07	136.57	3277.62
NEOHEXANE	0.00	0.00	0.00	0.00
CYCLOPENTANE	0.00	0.00	0.00	0.00
2-METHYLPENTANE	0.00	0.00	0.00	0.00
3-METHYLPENTANE	0.00	0.00	0.00	0.00
N-HEXANE	5740.28	68.88	111.30	2671.21
METHYLCYCLOPENTANE	0.00	0.00	0.00	0.00
BENZENE	470.15	5.64	8.20	196.81
CYCLOHEXANE	0.00	0.00	0.00	0.00
2-METHYLHEXANE	0.00	0.00	0.00	0.00
3-METHYLHEXANE	0.00	0.00	0.00	0.00
DIMETHYLCYCLOPENTANES	0.00	0.00	0.00	0.00
N-HEPTANE	1891.15	22.69	36.52	876.45
METHYLCYCLOHEXANE	0.00	0.00	0.00	0.00
TRIMETHYLCYCLOPENTANES	0.00	0.00	0.00	0.00
TOLUENE	290.52	3.49	5.11	122.68
2-METHYLHEPTANE	0.00	0.00	0.00	0.00
3-METHYLHEPTANE	0.00	0.00	0.00	0.00
DIMETHYLCYCLOHEXANES	0.00	0.00	0.00	0.00
N-OCTANE	368.54	4.42	7.09	170.27
ETHYLBENZENE	137.19	1.65	2.44	58.49
M&P XYLENES	93.29	1.12	1.64	39.25
O-XYLENE	0.00	0.00	0.00	0.00
C9 NAPHTHENES	0.00	0.00	0.00	0.00
C9 PARAFFINS	0.00	0.00	0.00	0.00
N-NONANE	109.55	1.31	2.10	50.50
N-DECANE	0.00	0.00	0.00	0.00
UNDECANE PLUS	0.00	0.00	0.00	0.00
		Total BTU Values =	**11,209.34**	**269,024.22**

*Hydrogen Sulfide conservatively assumed to be 50 ppm.

Gas Flaring Summary		
	pph	**tpy**
Total =	571,296.59	6,855.56
Total VOC =	122,339.09	1,468.07
Total HAP =	6,731.43	80.777
Total Hexane =	5,740.28	68.883
Total H_2S =	44.91	0.54

Controlled Flaring Stream[5]		
	pph	**tpy**
Total VOC =	2446.78	29.36
Total HAP =	134.63	1.62
Total Hexane =	114.81	1.38
Total H_2S =	0.90	0.01

Notes:
(1) Conservatively estimated annual gas volume. Max anticipated hourly volume based on manufacturer rated capacity.
(2) Component Molecular Weights from the following source: BR&E Promax
Component Net Heating Values from the following source: BR&E Promax
(3) Hourly and Annual Event gas emissions calculated as follows:
Hourly Emissions (lb/hr) = Hourly Gas Volume (scf/hr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol
Annual Emissions (tpy) = Annual Gas Volume (scf/yr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol / 2000 lb/ton
(4) Component MMBTU/hr = [Component Hourly Emissions (pph) * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Component MMBTU/yr = [Component Annual Emissions (tpy) * 2000 lb/ton * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Total Net MMBTU/event = Sum of all Individual Component MMBTU/event
(5) VOC, HAP and H2S emissions estimated based on event stream routed to flare and 98% efficiency.

Stream Emission Calculation:

Components	Hourly Emissions (pph)[3]	Annual Emissions (tpy)[3]	Hourly MMBTU Rate [4] MMBTU/hr	Total Net MMBTU [4] MMBTU/yr
HYDROGEN SULFIDE	0.00	0.00E+00	0.00E+00	0.00E+00
NITROGEN	25.95	1.30E-02	0.00E+00	0.00E+00
METHANE	986.95	4.93E-01	2.12E+01	2.12E+01
CARBON DIOXIDE	0.14	7.25E-05	0.00E+00	0.00E+00
ETHANE	67.88	3.39E-02	1.39E+00	1.39E+00
PROPANE	26.91	1.35E-02	5.36E-01	5.36E-01
ISO-BUTANE	4.83	2.41E-03	9.45E-02	9.45E-02
N-BUTANE	11.11	5.55E-03	2.18E-01	2.18E-01
ISO-PENTANE	3.95	1.97E-03	7.68E-02	7.68E-02
N-PENTANE	4.94	2.47E-03	9.64E-02	9.64E-02
NEOHEXANE	0.10	5.11E-05	1.97E-03	1.97E-03
CYCLOPENTANE	0.60	3.00E-04	1.14E-02	1.14E-02
2-METHYLPENTANE	2.17	1.09E-03	4.21E-02	4.21E-02
3-METHYLPENTANE	1.25	6.25E-04	2.42E-02	2.42E-02
N-HEXANE	3.24	1.62E-03	6.28E-02	6.28E-02
METHYLCYCLOPENTANE	1.34	6.71E-04	2.54E-02	2.54E-02
BENZENE	0.32	1.62E-04	5.66E-03	5.66E-03
CYCLOHEXANE	1.55	7.76E-04	2.93E-02	2.93E-02
2-METHYLHEXANE	0.71	3.53E-04	1.35E-02	1.35E-02
3-METHYLHEXANE	0.70	3.50E-04	1.34E-02	1.34E-02
DIMETHYLCYCLOPENTANES	0.96	4.82E-04	1.80E-02	1.80E-02
N-HEPTANE	0.95	4.75E-04	1.84E-02	1.84E-02
METHYLCYCLOHEXANE	1.26	6.31E-04	2.37E-02	2.37E-02
TRIMETHYLCYCLOPENTANES	0.00	0.00E+00	0.00E+00	0.00E+00
TOLUENE	0.13	6.68E-05	2.35E-03	2.35E-03
2-METHYLHEPTANE	0.39	1.96E-04	7.46E-03	7.46E-03
3-METHYLHEPTANE	0.00	0.00E+00	0.00E+00	0.00E+00
DIMETHYLCYCLOHEXANES	0.21	1.04E-04	3.86E-03	3.86E-03
N-OCTANE	0.09	4.52E-05	1.74E-03	1.74E-03
ETHYLBENZENE	0.00	0.00E+00	0.00E+00	0.00E+00
M&P XYLENES	0.00	0.00E+00	0.00E+00	0.00E+00
O-XYLENE	0.00	0.00E+00	0.00E+00	0.00E+00
C9 NAPHTHENES	0.03	1.66E-05	6.27E-04	6.27E-04
C9 PARAFFINS	0.04	2.11E-05	8.11E-04	8.11E-04
N-NONANE	0.00	0.00E+00	0.00E+00	0.00E+00
N-DECANE	0.00	0.00E+00	0.00E+00	0.00E+00
UNDECANE PLUS	0.00	0.00E+00	0.00E+00	0.00E+00
		Total BTU Values =	**23.93**	**23.93**

Gas Flaring Summary		
	pph	**tpy**
Total =	1,148.72	0.57
Total VOC =	67.79	0.03
Total HAP =	3.69	1.85E-03
Total Hexane =	3.24	1.62E-03
Total H_2S =	-	-

Controlled Flaring Stream[5]		
	pph	**tpy**
Total VOC =	1.36	6.78E-04
Total HAP =	0.07	3.69E-05
Total Hexane =	0.06	3.24E-05
Total H_2S =	-	-

Notes:
(1) Conservatively estimated annual gas volume. Max anticipated hourly volume based on manufacturer rated capacity.
(2) Component Molecular Weights from the following source: BR&E Promax
Component Net Heating Values from the following source: BR&E Promax
(3) Hourly and Annual Event gas emissions calculated as follows:
Hourly Emissions (lb/hr) = Hourly Gas Volume (scf/hr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol
Annual Emissions (tpy) = Annual Gas Volume (scf/yr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol / 2000 lb/ton
(4) Component MMBTU/hr = [Component Hourly Emissions (pph) * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Component MMBTU/yr = [Component Annual Emissions (tpy) * 2000 lb/ton * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Total Net MMBTU/event = Sum of all Individual Component MMBTU/event
(5) VOC, HAP and H2S emissions estimated based on event stream routed to flare and 98% efficiency.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Process Flares

Emission Units: RDR-FL-5100, RR2-FL-991, RR3-FL-1800
Source Description: Process Flares
Destruction Efficiency: 98%

Flare Information	
Unit(s):	RDR-FL-5100, RR2-FL-991, RR3-FL-1800
Unit Count:	3
Annual Operating Hours:	8,760
RR3-TO Downtime Hours:	20
Combustion Efficiency (%):	98%

Input Information [1]

Activity	Parameters	Value	Unit	Notes:
RDR-FL-5100 Pilot	Hourly Volume Flow Rate	500.0	scf/hr	Design Specification
	Natural Gas Heat Value	906.1	BTU/scf	Fuel Gas Heat Value
	Annual Volume Flow Rate	4.38	MMscf/yr	
	Hourly Heat Rate	0.453	MMBtu/hr	
	Annual Heat Rate	3968.55	MMBtu/yr	
RDR-FL-5100 Purge Gas	Hourly Volume Flow Rate	980.0	scf/hr	Design Specification
	Natural Gas Heat Value	906.1	BTU/scf	Fuel Gas Heat Value
	Annual Volume Flow Rate	8.58	MMscf/yr	
	Hourly Heat Rate	0.888	MMBtu/hr	
	Annual Heat Rate	7778.36	MMBtu/yr	
RDR-FL-5100 Alternate Scenario Amine Vent Stream	Hourly Volume Flow Rate	15282.4	scf/hr	Amine Flash Gas Stream Flow from Promax
	Stream Heat Value	1073.2	BTU/scf	Amine Flash Gas Heat Value from Promax
	Annual Operating Hours	350.0	hr/yr	
	Annual Volume Flow Rate	5.35	MMscf/yr	Amine Stream Hourly Flow (scf/hr) * 350 (hr/yr) / 10^6
	Hourly Heat Rate	16.401	MMBtu/hr	
	Annual Heat Rate	5740.28	MMBtu/yr	
	Hourly VOC Flow	384.02	lb/hr	
	Annual VOC Flow	67.20	tpy	
	Hourly H_2S Flow	0.031	lb/hr	
	Annual H_2S Flow	0.0055	tpy	
	Hourly HAP Flow	7.01	lb/hr	
	Annual HAP Flow	1.226	tpy	
BD SSM Stream to All Flares	Hourly Volume Flow Rate	50000.000	scf/hr	
	Stream Heat Value	1020.000	Btu/scf	
	Annual Operating Hours	40.000	hr/yr	
	Annual Volume Flow Rate	2.00	MMscf/yr	
	Hourly Heat Rate	51.000	MMBtu/hr	
	Annual Heat Rate	2040.00	MMBtu/yr	
	Hourly VOC Flow	590.82	lb/hr	
	Annual VOC Flow	11.82	tpy	
	Hourly H_2S Flow	0.09	lb/hr	
	Annual H_2S Flow	0.00	tpy	
	Hourly HAP Flow	32.509	lb/hr	
	Annual HAP Flow	0.650	tpy	
RR2-FL-991 Pilot	Hourly Volume Flow Rate	78.0	scf/hr	Design Specification
	Natural Gas Heat Value	906.1	BTU/scf	Fuel Gas Heat Value
	Annual Volume Flow Rate	0.68	MMscf/yr	
	Hourly Heat Rate	0.071	MMBtu/hr	
	Annual Heat Rate	619.09	MMBtu/yr	
RR2-FL-991 Purge Gas	Hourly Volume Flow Rate	1040.0	scf/hr	Design Specification
	Natural Gas Heat Value	906.1	BTU/scf	Fuel Gas Heat Value
	Annual Volume Flow Rate	9.11	MMscf/yr	
	Hourly Heat Rate	0.942	MMBtu/hr	
	Annual Heat Rate	8254.59	MMBtu/yr	
RR3-FL-1800 Pilot	Hourly Volume Flow Rate	219.0	scf/hr	Design Specification
	Natural Gas Heat Value	906.1	BTU/scf	Fuel Gas Heat Value
	Annual Volume Flow Rate	1.92	MMscf/yr	
	Hourly Heat Rate	0.198	MMBtu/hr	
	Annual Heat Rate	1738.23	MMBtu/yr	
RR3-TO Downtime	Hourly Volume Flow Rate	47103.2	scf/hr	Amine Flash, Dehydrator Flash and BTEX Overheads
	Natural Gas Heat Value	1225.8	BTU/scf	Weighted average of Amine Flash, Dehydrator Flash and BTEX Overheads
	Annual Volume Flow Rate	0.94	MMscf/yr	
	Hourly Heat Rate	57.741	MMBtu/hr	
	Annual Heat Rate	1154.81	MMBtu/yr	
	Hourly VOC Flow	672.01	lb/hr	
	Annual VOC Flow	6.72	tpy	
	Hourly H_2S Flow	7.53E-02	lb/hr	
	Annual H_2S Flow	7.53E-04	tpy	
	Hourly HAP Flow	99.018	lb/hr	
	Annual HAP Flow	0.990	tpy	

[1] Pilot and Purge rates for RDR-FL-5100, RR2-FL-991, RR3-FL-1800 based on manufacturer specification sheet for each flare.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Process Flares

Pilot Emission Calculation

Description	NO_X[1]	CO[1]	VOC	SO_2[1]	H_2S[1]	HAPs	Units	Notes
Emission Factors	0.138	0.2755					lb/MMBTU	TNRCC RG-109 (high Btu; other)
Fuel Sulfur and H_2S Content				2.0			gr S/100scf	Conservative assumption for fuel sulfur content (gr/100scf)
				0.0029			lb S/ Mscf	Gr S/100 scf * (1 lb/7000 gr) * (1000scf/Mscf)
					10		ppm	Pipeline Specification
					0.6		gr H_2S /100scf	Pilot gas H_2S content
					0.001		lb H_2S/Mscf	
RDR-FL-5100 Pilot Emissions	0.063	0.12	-	0.0037	8.95E-06	-	lb/hr	
	0.27	0.55	-	0.016	3.92E-05	-	tpy	
RR2-FL-991 Pilot Emissions	0.010	0.019	-	0.00057	1.40E-06	-	lb/hr	
	0.04	0.09	-	0.0025	6.11E-06	-	tpy	
RR3-FL-1800 Pilot Emissions	0.027	0.055	-	0.0016	1.40E-06	-	lb/hr	
	0.12	0.24	-	0.0071	6.11E-06	-	tpy	
RDR-FL-5100 Purge Emissions	0.12	0.24	-	0.0056	1.75E-05	-	lb/hr	
	0.54	1.07	-	0.025	7.68E-05	-	tpy	
RDR-FL-5100 Amine Emissions	2.26	4.52	7.68	0.059	6.23E-04	0.14	lb/hr	
	0.40	0.79	1.34	0.010	1.09E-04	0.02	tpy	
RDR-FL-5100 BD SSM Emissions	2.35	4.68	3.94	0.057	6.06E-04	0.22	lb/hr	
	0.41	0.82	0.24	0.003	2.45E-02	0.013	tpy	
RR2-FL-991 Purge Emissions	0.13	0.26	-	0.0077	1.86E-05	-	lb/hr	
	0.57	1.14	-	0.034	8.15E-05	-	tpy	
RR2-FL-991 BD SSM Emissions	2.35	4.68	3.94	0.06	6.06E-04	0.22	lb/hr	
	0.41	0.82	0.24	0.00	0.02	0.013	tpy	
RR3-FL-1800 BD SSM Emissions	2.35	4.68	3.94	0.06	6.06E-04	0.22	lb/hr	
	0.41	0.82	0.24	0.00	0.02	0.013	tpy	
RR3-FL-1800 TO SSM Emissions	7.97	15.91	13.44	0.14	1.51E-03	1.98	lb/hr	
	7.97E-02	1.59E-01	1.34E-01	1.42E-03	1.51E-05	1.98E-02	tpy	
Process Emissions per Flare	1546.89	3088.17	2446.78	82.85	0.90	134.63	lb/hr	Process emissions represent inlet and residue gas flaring when gas can not be sent to sales.
	18.56	37.06	29.36	0.99	0.011	1.62	tpy	
Total RDR-FL-5100 Flare Emissions	1551.68	3097.75	2458.40	82.98	0.90	134.99	lb/hr	
	20.18	40.29	30.94	1.05	0.04	1.65	tpy	
Total RR2-FL-991 Flare Emissions	1549.38	3093.14	2450.72	82.92	0.90	134.85	lb/hr	
	19.59	39.10	29.60	1.03	0.04	1.63	tpy	
Total RR3-FL-1800 Flare Emissions	1557.23	3108.82	2464.16	83.05	0.90	136.83	lb/hr	
	19.17	38.28	29.73	1.01	0.04	1.65	tpy	

Inlet Gas Flaring Emissions Calculations per Flare

Unit ID	Pollutant	Emission Factors (lb/MMBTU)[1]	Emissions lb/hr	Emissions tons/yr
RDR-FL-5100, RR2-FL-991, RR3-FL-1800	NO_X	0.138	1546.89	18.563
	CO	0.2755	3088.17	37.058
	VOC	Mass Balance [2]	2446.78	29.36
	HAP	Mass Balance [2]	134.63	1.616
	H_2S	Mass Balance [2]	0.90	0.011
	SO_2	Stoichiometric[1]	82.85	0.99

Flare Stream [3]: 11,209.34 Max Net Hourly MMBTU Value (MMBTU/hr)

269,024.22 Net Annual MMBTU Value (MMBTU/yr)

Residue Gas Flaring Emissions Calculations per Flare

Unit ID	Pollutant	Emission Factors (lb/MMBTU)[1]	Emissions lb/hr	Emissions tons/yr
RDR-FL-5100, RR2-FL-991, RR3-FL-1800	NO_X	0.138	3.30	1.65E-03
	CO	0.2755	6.59	3.30E-03
	VOC	Mass Balance [2]	1.36	6.78E-04
	HAP	Mass Balance [2]	0.07	3.69E-05
	H_2S	Mass Balance [2]	0.00	0.00E+00
	SO_2	Stoichiometric[1]	0.00	0.00E+00

Flare Stream [3]: 23.93 Max Net Hourly MMBTU Value (MMBTU/hr)

23.93 Net Annual MMBTU Value (MMBTU/yr)

TARGA

Aromatics and Dienes
RDR-FL-5100, RR2-FL-991, RR3-FL-1800 - Flare Malfunction Calculations

Emission Unit: RDR-FL-5100, RR2-FL-991, RR3-FL-1800
Source Description: Process Flares
Destruction Efficiency: 98%

Annual Flared Gas Volume:[1]

Max Hourly Flared Gas (MSCF/hr):	10,015.0

Component	Mol Wt (lb/lb-mol) [2]	Component Net Heating Value (BTU/scf) [2]	Road Runner (mol%)
Helium	4.003	0	0.00%
Nitrogen	28.013	0	0.99%
Carbon Dioxide	44.010	0	2.40%
Oxygen and Argon	31.999	0	0.00%
H2S	34.081	587	0.00%
Methane	16.043	909	76.08%
Ethane	30.069	1,619	11.61%
Propane	44.096	2,315	5.44%
i-Butane	58.122	3,000	0.74%
n-Butane	58.122	3,011	1.63%
i-Pentane	72.149	3,699	0.35%
n-Pentane	72.149	3,707	0.37%
benzene	78.112	3,591	0.02%
cyclohexane	84.160	4,180	0.00%
methylcyclopentane	84.160	4,198	0.00%
n-hexane	86.175	4,404	0.25%
Other Hexanes	86.175	4,404	0.00%
n-heptane	100.202	5,100	0.07%
toluene	92.138	4,273	0.01%
ethylbenzene	106.165	4,971	0.00%
m-xylene+p-xylene	106.165	4,905	0.00%
n-octane	114.229	5,796	0.01%
o-xylene	106.165	4,958	0.00%
n-nonane	128.255	6,493	0.00%
n-decane	142.282	7,190	0.00%
n-undecane	156.308	7,886	0.00%
n-dodecane	170.335	8,583	0.00%
n-tridecane	184.361	9,279	0.00%
TOTAL =	**21.67**	**1121.21**	**100.00%**

Stream Emission Calculation:

Components	Hourly Emissions (pph)[3]	Hourly MMBTU Rate [4] MMBTU/hr
Helium	0.00	0.00
Nitrogen	7350.32	0.00
Carbon Dioxide	27881.06	0.00
Oxygen and Argon	0.00	0.00
H2S	4.50	2.94E-02
Methane	322156.93	6928.64
Ethane	92185.22	1883.16
Propane	63354.22	1261.91
i-Butane	11418.67	223.61
n-Butane	25044.01	492.23
i-Pentane	6574.01	127.87
n-Pentane	7016.25	136.77
benzene	470.85	8.21
cyclohexane	0.00	0.00
methylcyclopentane	0.00	0.00
n-hexane	5748.89	111.47
Other Hexanes	0.00	0.00
n-heptane	1893.97	36.57
toluene	290.96	5.12
ethylbenzene	137.40	2.44
m-xylene+p-xylene	93.43	1.64
n-octane	369.09	7.11
o-xylene	0.00	0.00
n-nonane	109.72	2.11
n-decane	0.00	0.00
n-undecane	0.00	0.00
n-dodecane	0.00	0.00
n-tridecane	0.00	0.00
	Total BTU Values =	**11,228.89**

Malfunction Flaring Summary	
	pph
Total =	572,099.49
Total VOC =	122,521.46
Total HAP =	6,270.67
Total H_2S =	4.50

Controlled Flaring Stream[5]	
	pph
VOC =	2,450.43
HAP =	125.41
H_2S =	0.0900

Notes:
(1) Conservatively estimated annual gas volume. Hourly volume determined from historical site data.
(2) Component Molecular Weights from the following source: BR&E Promax
Component Net Heating Values from the following source: BR&E Promax
(3) Hourly and Annual Event gas emissions calculated as follows:
Hourly Emissions (lb/hr) = Hourly Gas Volume (scf/hr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol
Annual Emissions (tpy) = Annual Gas Volume (scf/yr) * Component Mol Wt (lb/lb-mol) * Component Mole% / 379.4 ft^3/lb mol / 2000 lb/ton
(4) Component BTU/hr = [Component Hourly Emissions (pph) * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Component BTU/yr = [Component Annual Emissions (tpy) * 2000 lb/ton * Component Net Heating Value (BTU/scf) * 379.4 ft^3/lb-mol] / Component Mol Wt (lb/lb-mol)
Total Net BTU/event = Sum of all Individual Component BTU/event
(5) VOC, HAP and H_2S emissions estimated based on event stream routed to flare and 98% efficiency.

Gas Flaring Emissions Calculations

Unit ID	Pollutant	Emission Factors (lb/MMBTU)[1]	Emissions lb/hr
RDR-FL-5100, RR2-FL-991, RR3-FL-1800	NO_X	0.138	1549.59
	CO	0.2755	3093.56
	VOC	Mass Balance [2]	2450.43
	HAP	Mass Balance [2]	125.41
	H_2S	Mass Balance [2]	0.09
	SO_2	Stoichiometric[1]	0.17

Flare Stream: 11,228.89 Max Net Hourly MMBTU Value (MMBTU/hr)

Notes:
(1) Flare NO_X and CO emission factors: TNRCC RG-109 (high Btu; other). SO_2: Mass balance assuming 98% combustion of H_2S and 100% conversion of combusted H_2S to SO_2:
Pilot Gas SO_2 Emissions (lb/hr) = [(Pilot Gas Flow (Mscf/hr) * Fuel Gas Sulfur Content (lb S/Mscf)*(64 lb/lbmol SO_2 / 32 lb/lbmol S)) + (Pilot Gas Flow (Mscf/yr) * Fuel Gas H_2S Content (lb H_2S/Mscf)*(64 lb/lbmol SO_2 /34 lb/lbmol H_2S)*(DRE))]
(2) VOC, HAP and H_2S emissions estimated based on event stream routed to flare and 98% efficiency.



Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Emission Summary

Facility-Wide Malfunction Emissions										
Unit ID	Equipment Description	NO_X	CO	VOC	SO_2	PM	PM_{10}	$PM_{2.5}$	H_2S	Total HAP
		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Flare-M2	RDR-FL-5100 Malfunction Flaring	1,549.59	3,093.56	2,450.43	0.17	-	-	-	0.09	125.41
	RR2-FL-991 Malfunction Flaring	1,549.59	3,093.56	2,450.43	0.17	-	-	-	0.09	125.41
	RR3-FL-1800 Malfunction Flaring	1,549.59	3,093.56	2,450.43	0.17	-	-	-	0.09	125.41
TOTAL		4,648.76	9,280.67	7,351.29	0.50	-	-	-	0.27	376.24

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Targa Northern Delaware LLC - Road Runner Gas Processing Plant

GHG Emissions from Natural Gas Combustion

Emission Source	Source Description	Heat Rate	CO_2 EF	CO_2 Emissions		CH_4 EF	CH_4 Emissions		N_2O EF	N_2O Emissions	
		mmbtu/hr	kg/mmbtu	metric TPY	short tpy	kg/mmbtu	metric TPY	short tpy	kg/mmbtu	metric TPY	short tpy
RDR-FL-5100	Flare Pilot	0.45	53.06	210.57	232.11	0.001	0.004	0.004	0.0001	0.000	0.000
RR2-FL-991 & RR3-FL-1800	Flare Pilot	0.07	53.06	32.85	36.21	0.001	0.001	0.001	0.0001	0.000	0.000
RR2-FL-991 & RR3-FL-1800	Flare Pilot	0.20	53.06	92.23	101.67	0.001	0.002	0.002	0.0001	0.000	0.000

Emission Factors (EF) from Tables C-1 and C-2 to 40 CFR 98 Subpart C

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Combuster GHG Emissions

§98.233(n) Flare stack GHG emissions.

Step 1. Calculate contribution of un-combusted CH_4 emissions

$E_{a,CH4}$ (un-combusted) = V_a * (1- η)* X_{CH4} *(Equation W-39B)*

where:

$E_{a,CH4}$ = contribution of annual un-combusted CH_4 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

η = Fraction of gas combusted by a burning flare (or regenerator), default value from Subpart W = 0.98
For gas sent to an unlit flare, η is zero.

X_{CH4} = Mole fraction of CH_4 in gas to the flare = 0.0000 (Client gas analysis)

Step 2. Calculate contribution of un-combusted CO_2 emissions

$E_{a,CO2}$ = V_a * X_{CO2} *(Equation W-20)*

where:

$E_{a,CO2}$ = contribution of annual un-combusted CO_2 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

X_{CO2} = Mole fraction of CO_2 in gas to the flare = 0.000

Step 3. Calculate contribution of combusted CO_2 emissions

$E_{a,CO2}$ (combusted) = ∑ (η * V_a * Y_j * R_j) *(Equation W-21)*

where:

η = Fraction of gas combusted by a burning flare (or regenerator) = 0.98
For gas sent to an unlit flare, η is zero.

V_a = volume of gas sent to combustion unit during the year (cf)

Y_j = mole fraction of gas hydrocarbon constituents j:

Constituent j, Methane =	0.0000	(Client gas analysis)
Constituent j, Ethane =	0.0000	
Constituent j, Propane =	0.0000	
Constituent j, Butane =	0.0363	
Constituent j, Pentanes Plus =	0.9637	

R_j = number of carbon atoms in the gas hydrocarbon constituent j:

Constituent j, Methane =	1
Constituent j, Ethane =	2
Constituent j, Propane =	3
Constituent j, Butane =	4
Constituent j, Pentanes Plus =	5

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Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Combuster GHG Emissions

Step 4. Calculate GHG volumetric emissions at standard conditions (scf).

$$E_{s,n} = \frac{E_{a,n} * (459.67 + T_s) * P_a}{(459.67 + T_a) * P_s}$$ *(Equation W-33)*

where:

$E_{s,n}$ = GHG i volumetric emissions at standard temperature and pressure (STP) in cubic feet

$E_{a,n}$ = GHG i volumetric emissions at actual conditions (cf)

T_s = Temperature at standard conditions (F) = 60 F

T_a = Temperature at actual conditions (F) = 76 F (Based on Annual Avg Max Temperature for Hobbs, NM from Western Regional Climate Center)

P_s = Absolute pressure at standard conditions (psia) = 14.7 psia

P_a = Absolute pressure at actual conditions (psia) = 12.73 psia (Assumption)

Constant = 459.67 (temperature conversion from F to R)

Step 5. Calculate annual CH_4 and CO_2 mass emissions (ton).

$Mass_{s,i} = E_{s,i} * \rho_i * 0.001 * 1.1023$ *(Equation W-36)*

where:

$Mass_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) mass emissions at standard conditions in tons (tpy)

$E_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) volumetric emissions at standard conditions (cf)

ρ_i = Density of GHG i. Use:

CH_4: 0.0192 kg/ft^3 (at 60F and 14.7 psia)

CO_2: 0.0526 kg/ft^3 (at 60F and 14.7 psia)

1×10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 6. Calculate annual N_2O emissions from portable or stationary fuel combustion sources under actual conditions (cf) using Equation W-40 .

$Mass_{N2O} = 0.001 * Fuel * HHV * EF * 1.1023$ *(Equation W-40)*

where:

$Mass_{N2O}$ = annual N_2O emissions from combustion of a particular type of fuel (tons).

Fuel = mass or volume of the fuel combusted

HHV = high heat value of the fuel

SSM flaring gas HHV = 0.00107 MMBtu/scf

EF = 1.00E-04 kg N_2O/MMBtu

1×10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 7. Calculate total annual emission from flare by summing Equations W-40, W-19, W-20, and W-21.

Gas Sent to Combuster	Gas Sent to Combuster (cf/yr)	CH_4 Un-Combusted, $E_{a,CH4}$ (cf)	CO_2 Un-Combusted, $E_{a,CO2}$ (cf)	CO_2 Combusted, $E_{a,CO2}$ (cf)	CH_4 Un-Combusted, $E_{a,CH4}$ (scf)	CO_2 Un-Combusted, $E_{a,CO2}$ (scf)	CO_2 Combusted, $E_{a,CO2}$ (scf)	CH_4 Un-Combusted, $E_{a,CH4}$ (tpy)	CO_2 Un-Combusted, $E_{a,CO2}$ (tpy)	CO_2 Combusted, $E_{a,CO2}$ (tpy)	N_2O Mass Emissions (tpy)	CO2e (tpy)
RDR-FL-2850	2,235,704	0	0	10,875,466	0	0	9,131,584	0.00	0.00	529.46	0.00026	530
Total	**2,235,704**	**0**	**0.0**	**10,875,466**	**0**	**0.0**	**9,131,584**	**0.0**	**0.0**	**529.5**	**0.00026**	**530**

	CO_2	CH_4	N_2O
GWP	1	28	265

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Emergency Flare GHG Emisssions

§98.233(n) Flare stack natural gas GHG emissions.

Step 1. Calculate contribution of un-combusted CH_4 emissions

$E_{a,CH4}$ (un-combusted) = V_a * (1- η)* X_{CH4} *(Equation W-39B)*

where:

$E_{a,CH4}$ = contribution of annual un-combusted CH_4 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

η = Fraction of gas combusted by a burning flare (or regenerator), default value from Subpart W = 0.98
For gas sent to an unlit flare, η is zero.

X_{CH4} = Mole fraction of CH_4 in gas to the flare = 0.7607 (Client gas analysis)

Step 2. Calculate contribution of un-combusted CO_2 emissions

$E_{a,CO2}$ = V_a * X_{CO2} *(Equation W-20)*

where:

$E_{a,CO2}$ = contribution of annual un-combusted CO_2 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

X_{CO2} = Mole fraction of CO_2 in gas to the flare = 0.024

Step 3. Calculate contribution of combusted CO_2 emissions

$E_{a,CO2}$ (combusted) = ∑ (η * V_a * Y_j * R_j) *(Equation W-21)*

where:

η = Fraction of gas combusted by a burning flare (or regenerator) =
For gas sent to an unlit flare, η is zero.

V_a = volume of gas sent to combustion unit during the year (cf)

Y_j = mole fraction of gas hydrocarbon constituents j:

Constituent j, Methane =	0.7607	(Client gas analysis)
Constituent j, Ethane =	0.1162	
Constituent j, Propane =	0.0544	
Constituent j, Butane =	0.0237	
Constituent j, Pentanes Plus =	0.0109	

R_j = number of carbon atoms in the gas hydrocarbon constituent j:

Constituent j, Methane =	1
Constituent j, Ethane =	2
Constituent j, Propane =	3
Constituent j, Butane =	4
Constituent j, Pentanes Plus =	5

Step 4. Calculate GHG volumetric emissions at standard conditions (scf).

$$E_{s,n} = \frac{E_{a,n} * (459.67 + T_s) * P_a}{(459.67 + T_a) * P_s}$$ *(Equation W-33)*

where:

$E_{s,n}$ = GHG i volumetric emissions at standard temperature and pressure (STP) in cubic feet

$E_{a,n}$ = GHG i volumetric emissions at actual conditions (cf)

T_s = Temperature at standard conditions (F) = 60 F

T_a = Temperature at actual conditions (F) = 76 F (Based on Annual Avg Max Temperature for Hobbs, NM from Western Regional Climate Center)

P_s = Absolute pressure at standard conditions (psia) = 14.7 psia

P_a = Absolute pressure at actual conditions (psia) = 12.73 psia (Assumption)

Constant = 459.67 (temperature conversion from F to R)

Step 5. Calculate annual CH_4 and CO_2 mass emissions (ton).

$Mass_{s,i} = E_{s,i} * \rho_i * 0.001 * 1.1023$ *(Equation W-36)*

where:

$Mass_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) mass emissions at standard conditions in tons (tpy)

$E_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) volumetric emissions at standard conditions (cf)

ρ_i = Density of GHG i. Use:

CH_4: 0.0192 kg/ft^3 (at 60F and 14.7 psia)

CO_2: 0.0526 kg/ft^3 (at 60F and 14.7 psia)

1×10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 6. Calculate annual N_2O emissions from portable or stationary fuel combustion sources under actual conditions (cf) using Equation W-40 .

$Mass_{N2O} = 0.001 * Fuel * HHV * EF * 1.1023$ *(Equation W-40)*

where:

$Mass_{N2O}$ = annual N_2O emissions from combustion of a particular type of fuel (tons).

Fuel = mass or volume of the fuel combusted

HHV = high heat value of the fuel

SSM flaring gas HHV = 0.00107 MMBtu/scf

EF = 1.00E-04 kg N_2O/MMBtu

10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 7. Calculate total annual emission from flare by summing Equations W-40, W-19, W-20, and W-21.

Gas Sent to Emergency Flare	Gas Sent to Flare (cf/yr)	CH_4 Un-Combusted, $E_{a,CH4}$ (cf)	CO_2 Un-Combusted, $E_{a,CO2}$ (cf)	CO_2 Combusted, $E_{a,CO2}$ (cf)	CH_4 Un-Combusted, $E_{a,CH4}$ (scf)	CO_2 Un-Combusted, $E_{a,CO2}$ (scf)	CO_2 Combusted, $E_{a,CO2}$ (scf)	CH_4 Un-Combusted, $E_{a,CH4}$ (tpy)	CO_2 Un-Combusted, $E_{a,CO2}$ (tpy)	CO_2 Combusted, $E_{a,CO2}$ (tpy)	N_2O Mass Emissions (tpy)	CO2e (tpy)
SSM Flaring (RDR-FL-5100, RR2-FL-991, RR3-FL-1800)	240,000,000	3,651,203	5,776,257	0	3,065,733	4,850,033	0	64.88	281.21	0.00	0.02831	2,105
Total	**240,000,000**	**3,651,203**	**5,776,256.6**	**0**	**3,065,733**	**4,850,033.2**	**0**	**64.9**	**281.2**	**0.0**	**0.02831**	**2,105**
								GWP	1	28	265	

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

§98.233(n) Flare RDR-FL-5100 stack amine vent GHG emissions.

Step 1. Calculate contribution of un-combusted CH_4 emissions

$E_{a,CH4}$ (un-combusted) = V_a * (1- η)* X_{CH4} *(Equation W-39B)*

where:

$E_{a,CH4}$ = contribution of annual un-combusted CH_4 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

η = Fraction of gas combusted by a burning flare (or regenerator), default value from Subpart W =
For gas sent to an unlit flare, η is zero.

X_{CH4} = Mole fraction of CH_4 in gas to the flare = 0.0033 (Promax Run)

Step 2. Calculate contribution of un-combusted CO_2 emissions

$E_{a,CO2}$ = V_a * X_{CO2} *(Equation W-20)*

where:

$E_{a,CO2}$ = contribution of annual un-combusted CO_2 emissions from regenerator in cubic feet under actual conditions.

V_a = volume of gas sent to combustion unit during the year (cf)

X_{CO2} = Mole fraction of CO_2 in gas to the flare = 0.677

Step 3. Calculate contribution of combusted CO_2 emissions

$E_{a,CO2}$ (combusted) = ∑ (η * V_a * Y_j * R_j) *(Equation W-21)*

where:

η = Fraction of gas combusted by a burning flare (or regenerator) =
For gas sent to an unlit flare, η is zero.

V_a = volume of gas sent to combustion unit during the year (cf)

Y_j = mole fraction of gas hydrocarbon constituents j:

Constituent j, Methane =	0.003287724	(Client gas analysis)
Constituent j, Ethane =	0.1246	
Constituent j, Propane =	0.0399	
Constituent j, Butane =	0.0146	
Constituent j, Pentanes Plus =	0.4234	

R_j = number of carbon atoms in the gas hydrocarbon constituent j:

Constituent j, Methane =	1
Constituent j, Ethane =	2
Constituent j, Propane =	3
Constituent j, Butane =	4
Constituent j, Pentanes Plus =	5

Step 4. Calculate GHG volumetric emissions at standard conditions (scf).

$$E_{s,n} = \frac{E_{a,n} * (459.67 + T_s) * P_a}{(459.67 + T_a) * P_s}$$ *(Equation W-33)*

where:

$E_{s,n}$ = GHG i volumetric emissions at standard temperature and pressure (STP) in cubic feet

$E_{a,n}$ = GHG i volumetric emissions at actual conditions (cf)

T_s = Temperature at standard conditions (F) =	60	F	
T_a = Temperature at actual conditions (F) =	76	F	(Based on Annual Avg Max Temperature for Hobbs, NM from Western Regional Climate Center)
P_s = Absolute pressure at standard conditions (psia) =	14.7	psia	
P_a = Absolute pressure at actual conditions (psia) =	12.73	psia	(Assumption)
Constant = 459.67 (temperature conversion from F to R)			

Step 5. Calculate annual CH_4 and CO_2 mass emissions (ton).

$Mass_{s,i} = E_{s,i} * \rho_i * 0.001 * 1.1023$ *(Equation W-36)*

where:

$Mass_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) mass emissions at standard conditions in tons (tpy)

$E_{s,i}$ = GHG i (CO_2, CH_4, or N_2O) volumetric emissions at standard conditions (cf)

ρ_i = Density of GHG i. Use:

CH_4:	0.0192	kg/ft^3 (at 60F and 14.7 psia)
CO_2:	0.0526	kg/ft^3 (at 60F and 14.7 psia)

1×10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 6. Calculate annual N_2O emissions from portable or stationary fuel combustion sources under actual conditions (cf) using Equation W-40 .

$Mass_{N2O} = 0.001 * Fuel * HHV * EF * 1.1023$ *(Equation W-40)*

where:

$Mass_{N2O}$ = annual N_2O emissions from combustion of a particular type of fuel (tons).

Fuel = mass or volume of the fuel combusted

HHV = high heat value of the fuel

SSM flaring gas HHV =	0.00000	MMBtu/scf
EF =	1.00E-04	kg N_2O/MMBtu

10^{-3} = conversion factor from kg to metric tons.

1.1203 = conversion factor from metric tons to short tons.

Step 7. Calculate total annual emission from flare by summing Equations W-40, W-19, W-20, and W-21.

Gas Sent to Emergency Flare	Gas Sent to Flare (cf/yr)	CH_4 Un-Combusted, $E_{a,CH4}$ (cf)	CO_2 Un-Combusted, $E_{a,CO2}$ (cf)	CO_2 Combusted, $E_{a,CO2}$ (cf)	CH_4 Un-Combusted, $E_{a,CH4}$ (scf)	CO_2 Un-Combusted, $E_{a,CO2}$ (scf)	CO_2 Combusted, $E_{a,CO2}$ (scf)	CH_4 Un-Combusted, $E_{a,CH4}$ (tpy)	CO_2 Un-Combusted, $E_{a,CO2}$ (tpy)	CO_2 Combusted, $E_{a,CO2}$ (tpy)	N_2O Mass Emissions (tpy)	CO2e (tpy)
SSM Flaring (RDR-FL-5100, RR2-FL-991, RR3-FL-1800)	5,348,829	17,585	3,621,007	0	14,766	3,040,378	0	0.31	176.28	0.00	0.00000	185
Total	**5,348,829**	**17,585**	**3,621,007.1**	**0**	**14,766**	**3,040,378.2**	**0**	**0.3**	**176.3**	**0.0**	**0.00000**	**185**
								GWP	1	28	265	

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Fugitive Emissions

Emission unit number(s): RDR-FUG
Source description: Facility-wide Fugitive Emissions
Total Operating Hours: 8,760
Number of Treatment Trains: 3

Component		Emission factor[1] (lb/hr/source)	VOC Content[2] (wt%)	HAP Content[2] (wt%)	H_2S Content[2] (wt%)	CO_2 Content[2] (wt%)	CH_4 Content[2] (wt%)	Subcomponent Count[3]	VOC Emissions[4,5] lb/hr	VOC Emissions[4,5] tpy	HAP Emissions[4,5] lb/hr	HAP Emissions[4,5] tpy	H_2S Emissions[4,5] lb/hr	H_2S Emissions[4,5] tpy	CO_2 Emissions[4,5] lb/hr	CO_2 Emissions[4,5] tpy	CH_4 Emissions[4,5] lb/hr	CH_4 Emissions[4,5] tpy
Valves	Inlet Gas	9.92E-03	21.42%	1.18%	0.0786%	4.87%	56.31%	3710	7.88	34.52	0.43	1.90	2.89E-02	1.27E-01	1.79	7.86	20.73	90.78
	Residue Gas	9.92E-03	0.02%	0.0000%	0.0000%	0.00%	95.01%	3536	0.01	0.04	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	33.33	145.98
	Light Oil	5.51E-03	100.00%	16.42%	0.0000%	0.00%	0.00%	1957	10.79	47.24	1.77	7.76	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00
Connectors	Inlet Gas	4.41E-04	21.42%	1.18%	0.0786%	4.87%	56.31%	4527	0.43	1.87	0.02	0.10	1.57E-03	6.87E-03	0.10	0.43	1.12	4.92
	Residue Gas	4.41E-04	0.02%	0.0000%	0.0000%	0.00%	95.01%	6045	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	2.53	11.09
	Light Oil	4.63E-04	100.00%	16.42%	0.0000%	0.00%	0.00%	2718	1.26	5.51	0.21	0.91	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00
Flanges	Inlet Gas	8.60E-04	21.42%	1.18%	0.0786%	4.87%	56.31%	2678	0.49	2.16	0.03	0.12	1.81E-03	7.93E-03	0.11	0.49	1.30	5.68
	Residue Gas	8.60E-04	0.02%	0.0000%	0.0000%	0.00%	95.01%	2027	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	1.66	7.25
	Light Oil	2.43E-04	100.00%	16.42%	0.0000%	0.00%	0.00%	1085	0.26	1.15	0.04	0.19	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00
Pump Seals	Inlet Gas	5.29E-03	21.42%	1.18%	0.0786%	4.87%	56.31%	6	0.01	0.03	0.00	0.00	2.50E-05	1.09E-04	0.00	0.01	0.02	0.08
	Residue Gas	5.29E-03	0.02%	0.0000%	0.0000%	0.00%	95.01%	33	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	0.17	0.73
	Light Oil	2.87E-02	100.00%	16.42%	0.0000%	0.00%	0.00%	21	0.60	2.64	0.10	0.43	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00
Other	Inlet Gas	1.94E-02	21.42%	1.18%	0.0786%	4.87%	56.31%	111	0.46	2.02	0.03	0.11	1.69E-03	7.42E-03	0.10	0.46	1.21	5.31
	Residue Gas	1.94E-02	0.02%	0.0000%	0.0000%	0.00%	95.01%	180	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00	0.00	3.32	14.53
	Light Oil	1.65E-02	100.00%	16.42%	0.0000%	0.00%	0.00%	49	0.81	3.55	0.13	0.58	0.00E+00	0.00E+00	0.00	0.00	0.00	0.00
								Total:	**23.00**	**100.74**	**2.76**	**12.10**	**0.03**	**0.15**	**2.11**	**9.24**	**65.38**	**286.35**

Component		Emission factor[1] (lb/hr/source)	Benzene Content[2] (wt%)	Toluene Content[2] (wt%)	Xylenes Content[2] (wt%)	Ethylbenzene Content[2] (wt%)	Hexane[2] (wt%)	Subcomponent Count[3]	Benzene Emissions[4,5] lb/hr	Benzene Emissions[4,5] tpy	Toluene Emissions[4,5] lb/hr	Toluene Emissions[4,5] tpy	Xylenes Emissions[4,5] lb/hr	Xylenes Emissions[4,5] tpy	Ethylbenzene Emissions[4,5] lb/hr	Ethylbenzene Emissions[4,5] tpy	Hexane Emissions[4,5] lb/hr	Hexane Emissions[4,5] tpy
Valves	Inlet Gas	9.92E-03	0.08%	0.05%	0.02%	0.02%	1.00%	3710	0.03	0.13	0.02	0.08	0.01	0.03	0.01	0.04	0.37	1.62
	Residue Gas	9.92E-03	0.00%	0.0000%	0.0000%	0.0000%	0.0000%	3536	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	5.51E-03	1.32%	2.33%	1.75%	0.2067%	10.81%	1957	0.14	0.62	0.25	1.10	0.19	0.83	0.02	0.10	1.17	5.11
Connectors	Inlet Gas	4.41E-04	0.08%	0.05%	0.02%	0.0240%	1.00%	4527	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09
	Residue Gas	4.41E-04	0.00%	0.0000%	0.0000%	0.0000%	0.0000%	6045	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	4.63E-04	1.32%	2.33%	1.75%	0.2067%	10.81%	2718	0.02	0.07	0.03	0.13	0.02	0.10	0.00	0.01	0.14	0.60
Flanges	Inlet Gas	8.60E-04	0.08%	0.05%	0.02%	0.0240%	1.00%	2678	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.10
	Residue Gas	8.60E-04	0.00%	0.0000%	0.0000%	0.0000%	0.0000%	2027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	2.43E-04	1.32%	2.33%	1.75%	0.2067%	10.81%	1085	0.00	0.02	0.01	0.03	0.00	0.02	0.00	0.00	0.03	0.12
Pump Seals	Inlet Gas	5.29E-03	0.08%	0.05%	0.02%	0.0240%	1.00%	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Residue Gas	5.29E-03	0.00%	0.0000%	0.0000%	0.0000%	0.0000%	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	2.87E-02	1.32%	2.33%	1.75%	0.2067%	10.81%	21	0.01	0.03	0.01	0.06	0.01	0.05	0.00	0.01	0.07	0.28
Other	Inlet Gas	1.94E-02	0.08%	0.05%	0.02%	0.02%	1.00%	111	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09
	Residue Gas	1.94E-02	0.00%	0.00%	0.00%	0.00%	0.0000%	180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	1.65E-02	1.32%	2.33%	1.75%	0.2067%	10.81%	49	0.01	0.05	0.02	0.08	0.01	0.06	0.00	0.01	0.09	0.38
								Total:	**0.22**	**0.95**	**0.34**	**1.50**	**0.25**	**1.09**	**0.04**	**0.17**	**1.92**	**8.40**

[1] Emission factors from Table 2-4 of EPA Protocol for Equipment Leak Emission Estimates, 1995.
[2] Weight percent of gas and liquid components from site specific liquids and gas analyses.
[3] Component counts are based on facility design.
[4] Hourly Emissions [lb/hr] = Emissions Factor [lb/hr/component] * Weight Content of Chemical Component [%] * Subcomponent Count.

[5] Annual Emissions [ton/yr] = Hourly Emissions [lb/hr] * Operating Hours [hr/yr] * 1/2000 [ton/lb].

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Planned SSM Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered. The weight percents from the Analyses tab are displayed below.

D) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

E) Make sure to answer the control device question.

F) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Emission Unit	MSSM
Identifier	MSS Pigging

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Emissions from routine pigging activities.

Sweet Inlet Gas Pigging				
REC-1 - Volume Vented =	2340	scf/event	52	events/yr
REC-2 - Volume Vented =	2340	scf/event	52	events/yr
REC-3 - Volume Vented =	2340	scf/event	52	events/yr
REC-4 - Volume Vented =	2893	scf/event	52	events/yr
Sweet Inlet Gas Pigging Total	9913	scf/event	52	events/yr

Actual Volume of the Vented Unit (scf - standard cubic feet)	9,913.40
Actual Volume of the Vented Unit (acf - actual cubic feet)	160.75
Pressure of Gas Inside the Unit Before Venting (psig)	900
Atmospheric Pressure (psia)	14.7
Pressure of Gas Inside the Unit Before Venting (psia)	914.7
Temperature of Gas Inside the Unit Before Venting (°F)	65.00
Temperature of Gas Inside the Unit Before Venting (°R)	524.67
Duration of Each Event (hours/event)	1
Frequency of Events (events/year)	52
Venting Gas Molecular Weight (lb/lb-mol)	21.70
VOC wt %	21.42
benzene wt%	0.303
H_2S wt%	0.003
HAPs wt %	13.81
CO2 wt%	12.48
CH4 wt%	56.31
Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled
VOC Control Efficiency (%)	0
H_2S Control Efficiency (%)	0

Ideal Gas Constant, [(ft3*psia)/(R*lb-mol)]

10.73159

Gas Molecular Weight and Weight Percents From Inlet Gas Stream from Amine ProMax

Molecular Weight	21.70
VOC wt %	21.42
Benzene wt %	0.303
H2S wt %	0.003
HAPs wt%	13.81
CO2 wt%	12.48
CH4 wt%	56.31

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Planned SSM Emissions

Vapors Captured by Control Device		
You need to input these values into the appropriate control device emission calculation tab.		
	Hourly Emissions (lb/hr)	**Annual Emissions (tpy)**
VOC Results:	-	-
Benzene Results:	-	-
H_2S Results:	-	-
HAPs Results:	-	-
CO2 Results:	-	-
CH4 Results:	-	-

Planned MSS Emissions			
		Hourly Emissions (lb/hr)	**Annual Emissions (tpy)**
VOC Results:		**121.37**	**3.16**
Benzene Results:		**1.72**	**0.04**
H_2S Results:		**0.02**	**<0.01**
HAPs Results:		78.25	2.035
CO2 Results:		70.72	1.84
CH4 Results:		319.12	8.30
Per Receiver Emissions			
REC-1 through REC-3	VOC Results:	**28.65**	**0.74**
	Benzene Results:	**0.41**	**0.01**
	H2S Results:	**<0.01**	**<0.01**
	HAPs Results:	18.47	0.480
	CO2 Results:	16.69	0.43
	CH4 Results:	75.33	1.96
REC-4	VOC Results:	**35.42**	**0.92**
	Benzene Results:	**0.50**	**0.01**
	H2S Results:	**<0.01**	**<0.01**
	HAPs Results:	22.84	0.594
	CO2 Results:	20.64	0.54
	CH4 Results:	93.14	2.42

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
High Pressure Periodic

Enter any notes here:	52 pigging events per year per receiver (REC-1, REC-2, REC-3, REC-4). VOC emissions per receiver (REC-1, REC-2, REC-3, REC-4) are <1 tpy.

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Planned SSM Emissions

A) Enter information into the yellow boxes.

B) VOC and H_2S control efficiencies may be entered (if applicable).

C) The vapor VOC, benzene, and H_2S weight percents may be entered. The weight percents from the Analyses tab are displayed below.

D) Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

E) Make sure to answer the control device question.

F) Make sure to select the correct *VOC Type* and *Emission Type* from the pull down menus below.

Emission Unit	MSSM
Identifier	MSS Pigging

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Emissions from routine pigging activities.

Residue Gas Pigging				
LAU-1 - Volume Vented =	5410	scf/event	1	events/hr
LAU-2 - Volume Vented =	2709	scf/event	1	events/yr
Residue Gas Pigging Total	8119	scf/event	1	events/yr

Actual Volume of the Vented Unit (scf - standard cubic feet)	8,119.00
Actual Volume of the Vented Unit (acf - actual cubic feet)	131.65
Pressure of Gas Inside the Unit Before Venting (psig)	900
Atmospheric Pressure (psia)	14.7
Pressure of Gas Inside the Unit Before Venting (psia)	914.7
Temperature of Gas Inside the Unit Before Venting (°F)	65.00
Temperature of Gas Inside the Unit Before Venting (°R)	524.67
Duration of Each Event (hours/event)	1
Frequency of Events (events/year)	1
Venting Gas Molecular Weight (lb/lb-mol)	16.41
VOC wt %	0.02
benzene wt%	0.000
H_2S wt%	0.000
HAPs wt %	0.00
CO2 wt%	0.00
CH4 wt%	95.01
Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled
VOC Control Efficiency (%)	0
H_2S Control Efficiency (%)	0

Ideal Gas Constant, [(ft3*psia)/(R*lb-mol)]

10.73159

Gas Molecular Weight and Weight Percents From Fuel Gas Analysis

Molecular Weight	16.41
VOC wt %	0.024
Benzene wt %	0.000
H2S wt %	0.000
HAPs wt%	0.00
CO2 wt%	0.00
CH4 wt%	95.01

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Planned SSM Emissions

Vapors Captured by Control Device		
You need to input these values into the appropriate control device emission calculation tab.		
	Hourly Emissions (lb/hr)	**Annual Emissions (tpy)**
VOC Results:	-	-
Benzene Results:	-	-
H_2S Results:	-	-
HAPs Results:	-	-
CO2 Results:	-	-
CH4 Results:	-	-

Planned MSS Emissions		
	Hourly Emissions (lb/hr)	**Annual Emissions (tpy)**
VOC Results:	**0.08**	**<0.01**
Benzene Results:	**-**	**-**
H_2S Results:	**-**	**-**
HAPs Results:	-	-
CO2 Results:	-	-
CH4 Results:	333.43	0.17

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
High Pressure Periodic

Enter any notes here:	One event per pig launcher (LAU-1, LAU-2) at 5,410 scf/event and 2,709 scf/event.

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Pigging Emissions

Basis of Calculation:
Emissions from pigging operations are calculated based on a mass balance as follows:

Maximum Uncontrolled Hourly Emissions for each Unit (lb/hr) = [Volume of gas in pipe (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] * [events per hour (event/hr) / [379.5 (scf/lb-mol)]

Maximum Uncontrolled Annual Emissions for each Unit (tpy) = [Volume of gas in pipe (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] x [frequency of events (events/yr)] / [379.5 (scf/lb-mol)] / [2,000 (lb/ton)]

For sites with multiple units, the total annual emissions are calculated by summing emissions for all units. It is assumed only one unit can be pigged/purged in one hour; therefore, the maximum volume of the units is used for

Pigging and Purging Emissions

Y-grade NGL				
LAU-3 - Volume Vented =	935	scf/event	1	events/yr
Y-grade NGL Total	935	scf/event	1	events/yr

Maximum Number of Hourly Pigging/Purging Events	1	events/hr
Pipelines Purged Simultaneously =	1	lines
Molecular Weight of NGL Stream =	39.48	lb/lb-mol
Control Type =	None	

Compound	Composition (wt %)	Maximum Uncontrolled Hourly Emissions (lb/hr)	Maximum Uncontrolled Annual Emissions (tpy)
NGL Stream			
VOC	57.00%	0.55	<0.01
H_2S	0.00%	<0.01	<0.01
HAP	3.05%	0.03	<0.01
Total VOC	**--**	**0.55**	**<0.01**
H_2S	**--**	**<0.01**	**<0.01**
Total HAP	**--**	**0.03**	**<0.01**

[1] This is a representative estimate of the amount of gas vented per blowdown event.

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Planned MSS - Degassing due to Passive Expansion / Thermal Expansion / Non Forced Ventilation

This section calculates planned MSS emissions due to degassing by passive / thermal expansion for both floating roof and fixed roof tanks.

Note: **1.Enter information into the yellow boxes.**

2. The tank calculations are applied to product stored at ambient temperature. For heated tanks or tanks storing hot product, please provide more explanation on the input parameters used such as vapor pressure of heated product, Antoine's constant etc., and how they are derived.

3. Use site specific analysis for input parameters such as weight percents, molecular weight, stock liquid density etc., of the liquid / product stored.

4. VOC and H2S control efficiencies may be entered (if applicable).

5. Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).

6. Make sure to answer the control device question.

7. Make sure to select the correct VOC Type and Emission Type from the pull down menus below.

Company Name:	
Site Name.:	
Emission Unit	SSMT
Name	Condensate Tanks
Tank No.:	5
Product stored:	Condensate
Type of tank roof	Fixed Roof
Tank Capacity (bbl)	1,000
Tank Diameter (ft) (D)	21.50
Vapor Molecular Wt. (lb/lb mol) (M_v)	79.03
Number of events/yr	5
Height of the roof (ft)	16.00
Saturation factor (S)	1.0

Vapor Space Volume (ft^3) (V_v)	5808.80
Height of Vapor Space under roof (ft)* (h_v)	16.00

	Max. hourly emissions lb/hr	Avg.Annual emissions tpy	
Duration of activity (hrs/event)	1	1	
True Vapor Pressure (psia) (P)	11.23	6.79	Max > Avg
Day time temperature (°F)	95.00	63.20	Max > Avg
Night time temperature (°F)	68.00	49.10	
Temperature Expansion %	4.86	2.69	
Emissions (lb/event)	865.62	555.03	
Max. Hourly Emissions (lb/hr)	42.11		
Avg. Hourly Emissions (lb/hr)		14.96	
Avg. Annual emissions (tpy)		0.04	

VOC Wt%	100.00
H_2S Wt%	-
Benzene Wt%	0.8898

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Type of Control Device	
Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled
VOC Control Efficiency	
H_2S Control Efficiency	

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly mass lb/hr	Avg. Annual mass tpy
Thermal / Passive Expansion	42.11	0.037
Planned MSS Emissions		
Air Contaminant	**Max. hourly emissions lb/hr**	**Avg.Annual emissions tpy**
Total VOC	**42.11**	**0.037**
Benzene	**37.47**	**4.25E-03**
Toluene	**6.38E-01**	**5.66E-04**
Ethylbenzene	**0.7335**	**6.51E-04**
Xylene	**0.7421**	**6.59E-04**
Hexane	**1.34**	**0.0012**
2,2,4-Trimethylpentane	**1.81E+00**	**1.61E-03**
Total H_2S	**0.00E+00**	**0.00E+00**
CH_4	**0.00E+00**	**0.00E+00**

Notes: Calculations based on five tanks being cleaned once a year for the duration of one hour. True vapor pressure calculated from Reid vapor pressur using AP-42 Figure 7.1-14a. Reid vapor pressure collected from Promax simulation.	

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

VENTING EMISSION CALCULATION (for blowdowns, starter vents, gas operated controllers, etc):

Emission Unit	SSMB
Venting Volume per Event (SCF/event):	50000 (standard cubic feet)
Number of events per hour:	1
Number of events per year:	40
Venting Gas Molecular Weight	20.94
VOC wt %	21.42
HAPs wt%	1.18
H_2S wt%	0.0033
VOC & HAP Control Efficiency (%)	98.00
H_2S Control Efficiency (%)	98.00

Constant: 379.48 scf/lb-mol

Gas Wt % From Inlet Stream from

VOC wt %	21.42
HAPs wt%	1.18
H2S wt %	0.0033
CO2 wt%	12.48
CH4 wt%	56.31
Hexane wt %	1.00
Benzene wt %	0.303
Toluene wt %	0.152
Ethylbenzene wt %	0.0576
Xylene wt %	0.0375

	lb/hr	tpy
Uncontrolled VOC Emissions:	590.82	11.82
Uncontrolled HAPs Emissions:	32.51	0.65
Uncontrolled H_2S Emissions:	0.091	1.82E-03
Uncontrolled Hexane Emissions:	27.72	0.55
Uncontrolled Benzene Emissions:	8.36	0.17
Uncontrolled Toluene Emissions:	4.18	0.084
Uncontrolled Ethylbenzene Emissions:	1.59	0.032
Uncontrolled Xylene Emissions:	1.04	0.021
VOC Results:	11.82	0.24
HAPs Results:	0.65	0.013
H_2S Results:	1.82E-03	3.64E-05
Hexane Results:	0.55	0.011
Benzene Results:	0.17	3.34E-03
Toluene Results:	0.084	1.67E-03
Ethylbenzene Results:	0.032	6.36E-04
Xylene Results:	0.021	4.14E-04

Enter any notes here:	Number of events were doubled to account for doubling of equipment 5.18.18 MD

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Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Default VOC emissions for Miscellaneous MSS activities

Company Name	Targa Midstream
Site Name	Roadrunner Gas Processing Plant

Default VOC emissions (tpy) associated with miscellaneous MSS activities	**0.250**
Add default VOC emissions from miscellaneous MSS activities to the emissions summary	Yes

#	Activity	Description / comments	Default parameters		Equation used		Input parameters		Annual emissions (tpy)
MSSM-Glycol	***(b)(2) Glycol dehydration unit*** Emissions associated with replacement of glycol solution used in dehydration unit. There are two vessels in a dehydration unit: contactor and regenerator.	-Calculations based on physical properties of mono ethylene glycol (MEG)(d) because of its low molecular weight and high vapor pressure which gives the most conservative emissions estimate. -Typically the glycol solution used in dehydration unit is not entirely replaced but it is conservatively assumed that the glycol solution is drained once per year for vessel maintenance. -Per field experience, 4000 gal of glycol solution is used in a large dehydration unit. The replacement of glycol solution used in the dehydration unit is an exempt activity pursuant 20.2.72.202.B(2). The vapor pressure of the glycol solution is less than 0.2 psi.	Temperature (°F)	68	Loading loss L_L (lb/1000 gal)	0.0015	Number of Dehy units	3	0.000032
			Vapor pressure (psia)	0.001					
			Saturation factor	1	Loading loss per activity (lb/activity)	0.0059			
			Molecular weight (lb/lbmol)	62.07					
			Glycol solution (gal/activity)	4000					
			Temperature (°F)	68	Clingage loss (lb/activity)	0.0155			
			Vapor pressure (psia)	0.001					
			Molecular weight (lb/lb-mole)	62.07					
			V_V Vessel volume (ft^3) (5 ft radii * 30 ft height)	2355					
			Ideal gas constant (psia-ft3/lb-mol-°R)	10.73					
			Number of activities per year	1	Total (lbs/yr/unit)	0.0213			
MSSM-Amine	***(b)(2) Amine unit*** Emissions associated with replacement of solution used in the amine unit. There are two vessels in an amine unit: Contactor and regenerator.	-Calculations based on physical properties of mono ethanol amine (MEA)(e) because of its low molecular weight and high vapor pressure which gives the most conservative emissions estimate. -Typically the solution used in amine unit is not entirely replaced but it is conservatively assumed that the amine solution is drained once per year for vessel maintenance. -Per field experience, 4000 gal of solution is used in a large amine unit. The replacement of solution used in the amine unit is an exempt activity pursuant 20.2.72.202.B(2). The vapor pressure of the amine solution is less than 0.2 psi.	Temperature (°F)	68	Loading loss L_L (lb/1000 gal)	0.0058	Number of Amine units	3	0.000126
			Vapor pressure (psia)	0.004					
			Saturation factor	1	Loading loss per activity (lb/activity)	0.0231			
			Molecular weight (lb/lbmol)	61.08					
			Amine solution (gal/activity)	4000					
			Temperature (°F)	68	Clingage loss (lb/activity)	0.0609			
			Vapor pressure (psia)	0.004					
			Molecular weight (lb/lb-mole)	61.08					
			V_V Vessel volume (ft^3) (5 ft radii * 30 ft height)	2355					
			Ideal gas constant (psia-ft3/lb-mol-°R)	10.73					
			Number of activities per year	1	Total (lbs/yr/unit)	0.0840			
MSSM-Aerosol	***(b)(2) Aerosol Lubricants***	The use of aerosol lubricants for the maintenance of equipment or control devices is exempt pursuant 20.2.72.202.A(2).							
MSSM-Piping	***(b)(3) Piping Components***	The repositioning or relocating of piping components within the plant that does not reposition or relocate any source of air emission or the emission points from any such source are exempt pursuant 20.2.72.202.A(15). The replacement and maintenance of piping components is exempt pursuant 20.2.72.202.A(2).							
MSSM-Cal	***(b)(2) Calibration***	Use of calibration gases is exempt under 20.2.72.202.A(10) NMAC.							
MSSM-Misc	***(b)(6)*** MSSM-Misc - Safety factor to account for MSS activities with the same character and quantity of emissions as those listed in paragraphs (b) (1) - (5) of §106.359. These activities are exempt pursuant 20.2.72.202.A(2).							1	0.028

		TPY	lbs/hr
	Total VOC emissions	**2.82E-02**	**0.006**

VOC Type: (pick from list)
Crude Oil or Condensate VOC

Emission Type: (pick from list)
Steady State (continuous)

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Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Surface Coating Emissions

Emission Unit: SSMCOAT

Basis of Calculation:

TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012

VOC calculations are based on the product usage, VOC or HAP content, and density of a general paint used for MSS. The paint chosen has the highest VOC content of all paints typically used for these activities. It has been assumed that all VOC in the solution escapes to atmosphere. Emissions are calculated using the following equations:

Hourly VOC Emissions (lb/hr) = [Usage Rate (gal/hr)] * [VOC or HAP Content (lb/gal)]

Annual VOC Emissions (tpy) = [Usage Rate (gal/yr)] * [VOC or HAP Content lb/gal)] / [2,000 (lb/ton)]

It is assumed that all surface coating products are sprayed. Particulate emissions are calculated based on the usage rate and solids content for the product, as well as a transfer efficiency and fallout factor obtained from TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications. The following equations are used to calculated particulate emissions:

Short-term PM emissions (lb/hr) = Solids Content (%) x Density (lb/gal) x Volume of Product used (gal/hr) x (1 - Transfer Efficiency (%)) x (1-Fallout Factor (%))

Potential VOC and HAP Emissions from Paint Usage (MSS)

Product	Density (lb/gal) [1]	VOC Content (lb/gal) [1]	HAP Content (wt %) [1]	Usage Rates		VOC Emissions		HAP Emissions	
				(gal/hr)	(gal/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Paint	10.71	2.92	5.0	25	100	73.00	0.15	13.39	0.027
					Totals	**73.00**	**0.15**	**13.39**	**0.027**

[1] Based on representative characteristics of common paint.

Potential PM/PM_{10}/$PM_{2.5}$ Emissions from Spray Paint Usage (MSS)

Product	Solids Content [1] (wt %)	Usage Rates		Object Coated	Transfer Efficiency [2] (%)	Fallout Factor (%) [3]			PM Emissions		PM_{10} Emissions		$PM_{2.5}$ Emissions	
		(gal/hr)	(gal/yr)			PM	PM_{10}	$PM_{2.5}$	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Paint	80	25.00	100.00	Flat Surface	75	98.56	99.87	99.99	0.77	1.54E-03	0.070	1.39E-04	0.0054	1.07E-05

[1] Per the representative Material Safety Data Sheet (MSDS)

[2] Transfer efficiency per TCEQ guidance (TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012).

[3] Fallout factors per TCEQ's Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications, November 5, 2012, Table 2.

Speciated Emissions

Composition	% by Weight	Emissions	
		(lb/hr)	(tpy)
Ethylbenzene	0.7	1.87	<0.01
Xylene	4.0	10.71	0.021
Medium Aromatic Hydrocarbons	2.0	5.36	0.011
Napthalene	0.3	0.80	<0.01
Methyl Ethyl Ketone	5.0	13.39	0.027
n-Butyl Acetate	9.0	24.10	0.048
1-methoxy-2-propanol Acetate	6.0	16.07	0.032
		72.29	**0.14**

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Abrasive Blasting

Emission Unit: SSMBLAST

Basis of Calculation:
These calculations represent emissions resulting from dry abrasive blasting. Emission factors are based on U.S. EPA AP-42, Chapter 13.2.6, Abrasive Blasting.

Dry Abrasive Blasting

Blasting Material	Usage per Event (lb/event)	Duration of Event (hr/event)	Events per Year (event/yr)	Emissions Factor [1] (lb/1000 lb abrasive)			Hourly Emissions (lb/hr)			Annual Emissions (tpy)		
				PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Sand	3,100	6.00	1.00	91	13	1.3	23.51	3.36	0.34	0.14	0.020	2.02E-03
						Total Emissions:	**23.51**	**3.36**	**0.34**	**0.14**	**0.020**	**<0.01**

[1] Worst-case emission factor for PM based on 15 mph wind speed.

[2] Emission Factors from AP-42 13.2.6-1

mph	PM Emission Factor
5	27
10	55
15	91

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Methanol Storage Tank

Emission unit number(s): T-9
Source description: Methanol Tank

Annual Operating Hours: 8,760
Control Efficiency: 0%
Number of Tanks: 1
Capacity of Tanks: 1,000 gallons
Hourly Throughout: 0.016 bbl/hr
Daily Throughput: 0.39 bbl/d
Annual Throughput: 143 bbl/yr
Annual Throughput: 6000 gallons/yr

Methanol Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Flash (lb/hr)	Working and Breathing (lb/hr)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Methanol	0.00E+00	5.42E-03	5.42E-03	0.00E+00	5.42E-03	2.37E-02	5.42E-03	2.37E-02
VOC	**0.00E+00**	**5.42E-03**	**5.42E-03**	**0.00E+00**	**5.42E-03**	**2.37E-02**	**5.42E-03**	**2.37E-02**
Total HAPS	**0.00E+00**	**5.42E-03**	**5.42E-03**	**0.00E+00**	**5.42E-03**	**2.37E-02**	**5.42E-03**	**2.37E-02**

[1] Emissions from the methanol tanks are uncontrolled.

[2] Emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the maximum hourly throughput of the facility. Annual emissions are based on the average daily throughput of the facility.

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Methanol Storage Tank

Emission unit number(s): T-10
Source description: Methanol Tank

Annual Operating Hours:	8,760	
Control Efficiency:	0%	
Number of Tanks:	1	
Capacity of Tanks:	1,500	gallons
Hourly Throughout:	0.033	bbl/hr
Daily Throughput:	0.78	bbl/d
Annual Throughput:	286	bbl/yr
Annual Throughput:	12000	gallons/yr

Methanol Tank Emissions[1,2]

Component	Uncontrolled Emissions (hourly basis)			Uncontrolled Emissions (annual basis)			Controlled Emissions	
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Flash (lb/hr)	Working and Breathing (lb/hr)	Total Emissions Per Tank (tpy)	Total Emissions per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Methanol	0.00E+00	4.30E-03	4.30E-03	0.00E+00	4.30E-03	1.88E-02	4.30E-03	1.88E-02
VOC	**0.00E+00**	**4.30E-03**	**4.30E-03**	**0.00E+00**	**4.30E-03**	**1.88E-02**	**4.30E-03**	**1.88E-02**
Total HAPS	**0.00E+00**	**4.30E-03**	**4.30E-03**	**0.00E+00**	**4.30E-03**	**1.88E-02**	**4.30E-03**	**1.88E-02**

[1] Emissions from the methanol tanks are uncontrolled.

[2] Emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the maximum hourly throughput of the facility. Annual emissions are based on the average daily throughput of the facility.

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Produced Water (Slop) Truck Loading - Exempt Pursuant 20.2.72.B.5 NMAC

Equation[1]:

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

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])

															LOAD-1			
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{max} [3] (psia)**	**M [3] (lb/lbmol)**	**T_{max} [4] (°R)**	**L_L (lbs/1000 gal)**	**Hourly Throughput [5] (gal/hr)**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt %**	**VOC Vapor Loading Losses (lb/hr)**	**HAP Vapor Loading Losses (lb/hr)**	**H_2S Vapor Loading Losses (lb/hr)**	**Uncaptured Hourly VOC Emissions [7] (lb/hr)**	**Uncaptured Hourly HAP Emissions [3,7] (lb/hr)**	**Uncaptured Hourly H_2S Emissions [3,7] (lb/hr)**	**DRE (%)**
LOAD-2	Produced Water (Slop)	Submerged	0.6	1.12	22.49	559	0.34	7,560	0.0%	0.05%	0.0083%	0.34%	1.14E-03	2.10E-04	0.01	1.14E-03	2.10E-04	0.009	0%
												TOTAL	**1.14E-03**	**2.10E-04**	**0.01**	**1.14E-03**	**2.10E-04**	**0.009**	

															LOAD-1			
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{avg} [3] (psia)**	**M [3] (lb/lbmol)**	**T_{avg} [4] (°R)**	**L_L (lbs/1000 gal)**	**Annual Throughput (gal/yr) [6]**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt %**	**VOC Vapor Loading Losses (tpy)**	**HAP Vapor Loading Losses (tpy)**	**H_2S Vapor Loading Losses (tpy)**	**Uncaptured Annual VOC Emissions [7] (tpy)**	**Uncaptured Annual HAP Emissions [3,7] (tpy)**	**Uncaptured Annual H_2S Emissions [3,7] (tpy)**	**DRE (%)**
LOAD-2	Produced Water (Slop)	Submerged	0.6	1.12	22.49	523	0.36	3,025,967	0.0%	0.05%	0.6074%	0.26%	2.44E-04	3.30E-03	1.39E-03	2.44E-04	3.30E-03	1.39E-05	0%
												TOTAL	**2.44E-04**	**3.30E-03**	**1.39E-03**	**2.44E-04**	**3.30E-03**	**1.39E-05**	

[1] Loading loss equation and variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] Material loaded is produced water (slop).
[3] Vapor pressure, molecular weight, HAP content, and H_2S content is obtained from ProMax run.
[4] Maximum temperature and the average temperature is 63.5° F.
[5] The maximum hourly throughput is based on the capability of the tank truck to load liquids in one hour.
[6] Annual throuhgput for each loading spot represents site-wide throughput; therefore, total annual emissions is the maximum emissions of each loading spot.
[7] Produced Water (Slop) Loading is uncontrolled.

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Haul Road Inputs

Site-Wide

Description	Value	Unit
Annual Operating Hours:	8,760	hr
Daily Operating Hours:	24	hr

Unpaved Haul Road

Parameter	Value	Unit
Empty Vehicle Weight[1]	16	ton
Load Size [2]	21.2	ton
Loaded Vehicle Weight[3]	37.2	ton
Mean Vehicle Weight[4]	26.6	ton
Vehicles Per Day [5]	12	VPD
Vehicles Per Year	4380	VPY
Segment Length	0.06	mile
Trips per Segment	2	-
Effective Segment Length[6]	0.12	mile
Trips per Hour[7]	1.00	-
Wet Days[8]	70	day
Surface Silt Content[9]	4.8	%
Control Efficiency	0	%

[1] Empty vehicle weight includes driver and occupants and full fuel load.

[2] Include cargo, transported materials, etc. (5.6 lb/gal RVP10 *7560 gal truck/ 2000lb/ton)

[3] Loaded vehicle weight = Empty + Load Size

[4] Mean Vehicle weight = (Loaded Weight + Empty Weight) / 2

[5] Vehicles per day = (Turnovers/year) / (365 days/year)

[6] Effective segment length = trips per segment * segment length

[7] Trips per hour = Vehicles per day * Segments per trip ÷ Hours of Operation per Day

[8] Wet days is the NM default allowed by NMED without additional justification

[9] Surface silt content based on AP-42 Section 13.2.2.2, Table 13.2.2-1

TARGA

Targa Northern Delaware LLC - Road Runner Gas Processing Plant

Unpaved Road Emission Factors (Exempt per 20.2.72.B(5) NMAC)

Route	Calculation Parameters [1]												Hourly Emission Factors			Annual Emission Factors		
	s	W	P	k			a			b			E [2]			E_{ext} [5]		
	Silt Content [1]	Mean Vehicle Weight	Wet Days	PM_{30}	PM_{10}	$PM_{2.5}$	PM_{30}	PM_{10}	$PM_{2.5}$	PM_{30}	PM_{10}	$PM_{2.5}$	PM_{30} [3]	PM_{10}	$PM_{2.5}$	PM_{30}	PM_{10}	$PM_{2.5}$
	%	tons	day	lb/VMT	lb/VMT	lb/VMT							lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT
Condensate Trucks	4.8	26.6	70	4.9	1.5	0.15	0.70	0.90	0.90	0.45	0.45	0.45	6.9	1.8	0.18	5.6	1.4	0.14

[1] Constants are from AP-42 Table 13.2.2-2 in Section 13.2.2.2, and emission factors are calculated using equation 1a.

Unpaved Road Emissions

Route	Calculation Inputs						Uncontrolled Emissions						Controlled Emissions [6]					
	Annual Operation	Segment Length	Trips per Segment	Number of Trucks per Year	Effective Segment Length	Average VMT/yr [4]	PM_{30}		PM_{10}		$PM_{2.5}$		PM_{30}		PM_{10}		$PM_{2.5}$	
	hr	mi		trucks/yr	mi	mi/yr	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Condensate Trucks	8,760	0.06	2	4380	0.12	526	0.41	1.5	0.11	0.37	0.011	0.037	0.41	1.5	0.11	0.37	0.011	0.037
						Totals	***0.41***	***1.5***	***0.11***	***0.37***	***0.011***	***0.037***	***0.41***	***1.5***	***0.11***	***0.37***	***0.011***	***0.037***

[1] Surface silt = % of 75 micron diameter and smaller particles

[2] E = k x (s/12)^a x (W/3)^b (AP-42 page 13.2.2-4 Equation 1a, November 2006)

E= Size Specific Emission Factor (lb/VMT)

s = surface material silt content (%)

k, a, b = constants from AP-42 Table 13.2.2-2

W = Weighted Mean Vehicle Weight from Haul Road Inputs (tons)

[3] PM_{30} emission factor in equation is assumed as a surrogate for TSP emissions

[4] VMT/yr = Vehicle Miles Travelled per year= Trips per year * Segment Length

[5] Wet Day Emission Factor = E * (365 - Wet Days)/365. Wet days value is the NM default allowed by NMED without additional justification.

[6] Controlled Emissions = Uncontrolled Emissions * (1 - Control Factor/100%)

Control Efficiency = 0%

Section 7

Information Used to Determine Emissions

Information Used to Determine Emissions shall include the following:

☒ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.

☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.

☒ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.

☐ If an older version of AP-42 is used, include a complete copy of the section.

☒ If an EPA document or other material is referenced, include a complete copy.

☒ Fuel specifications sheet.

☒ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

Generator (Units RR2-G-2220 through GEN-12)

- Final Tier 4 Emissions Standards for Non-Road Engines
- EPA Tier 1 Emission Standards for Non-Road Engines
- AP-42, 5th Edition, Table 3.3-1 and Table 3.3-2
- AP-42, 5th Edition, Table 3.4-1 and Table 3.4-3
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Reboilers (Units RDR-H-781, RR2-H-781, RDR-H-0901, RDR-H-1054, RDR-H-2301, RR2-H-0801)

- Inlet gas analysis
- Manufacturer specifications
- AP-42, Chapter 1.4
- 40 CFR Subpart C Table C-1 and Table C-2

Heaters (Units RDR-H-741, RR2-H-741, RDR-H-3601, RR3-H-1700, RR3-H-1701, RR3-H-1703, RR3-H-4701)

- Inlet gas analysis
- Manufacturer specifications
- AP-42, Chapter 1.4
- 40 CFR Subpart C Table C-1 and Table C-2

TEG Glycol Dehydrators (RDR-TEG, RR2-TEG, and RR3-TEG)

- BR&E ProMax
- Inlet gas analysis

Amine Units (RDR-AMINE, RR2-AMINE, RR3-AMINE)

- BR&E ProMax
- Inlet gas analysis

Thermal Oxidizers (RDR-TO-5500, RR3-TO-1801)

- Manufacturer specifications
- 40 CFR 98 Subpart C Table C-1 and Table C-2
- AP-42 Chapter 1.4

Thermal Oxidizers SSM (RDR-TO-5500-SSM, RR3-TO-1801-SSM)

- BR&E ProMax
- Manufacturer Specifications
- AP-42 Chapter 1.4
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Flares (RDR-FL-5100, RR2-FL-991, RR3-FL-1800)

- TNRCC RG-109 Emission Factors
- Inlet gas analysis
- Flare Header Cold Side analysis dated May 5, 2025
- Fuel gas analysis dated May 01, 2025
- 40 CFR 98 Subpart C Table C-1 and Table C-2
- Manufacturer specifications

Condensate Tanks (RDR-T-1 through RDR-T-5)

- BR&E ProMax
- Condensate analysis dated February 3, 2022

Produced Water Storage Tank (RDR-T-6)

- BR&E ProMax

Condensate Loading (RDR-LOAD)

- AP-42 Chapter 5.2, *Transportation and Marketing of Petroleum Liquids*
- BR&E ProMax

Tank Combustor (RDR-FL-2850)

- AP-42 Tables 1.4-1 and 1.4-2
- Manufacturer Specifications
- BR&E ProMax
- 40 CFR 98 Subpart C Table C-1 and Table C-2

Fugitives (RDR-FUG)

- Inlet gas analysis
- Fuel gas analysis dated May 01, 2025
- Condensate analysis dated February 3, 2022
- Table 2-4 of the EPA Protocol for Equipment Leak Emission Estimates, November 1995

Haul Roads (RDR-HAUL)

- AP-42 Chapter 13.2.2, *Unpaved Roads*, Table 13.2.2-2

Condensate Analysis

Road Runner Gas Plant Condensate

Date: 3/19/2026

Components	Mol %	Wt. %	LV%
HYDROGEN SULFIDE	0	0	0
NITROGEN	0	0	0
METHANE	0.00	0	0
CARBON DIOXIDE	0	0	0
ETHANE	0	0	0
PROPANE	0	0	0
ISO-BUTANE	0	0	0
N-BUTANE	0.3701	0.233	0.2844
ISO-PENTANE	4.4366	3.4676	3.956
N-PENTANE	10.7549	8.4059	9.5052
NEOHEXANE	0.3375	0.3151	0.3435
CYCLOPENTANE	1.9427	1.476	1.4028
2-METHYLPENTANE	7.2138	6.7345	7.2945
3-METHYLPENTANE	4.2187	3.9384	4.1953
N-HEXANE	11.581	10.8109	11.6111
METHYLCYCLOPENTANE	5.1841	4.7264	4.4703
BENZENE	1.5616	1.3214	1.0647
CYCLOHEXANE	6.8907	6.2824	5.7149
2-METHYLHEXANE	2.967	3.2207	3.3594
3-METHYLHEXANE	3.6466	3.9585	4.0787
DIMETHYLCYCLOPENTANES	4.8872	5.1984	4.8149
N-HEPTANE	6.2036	6.7339	6.9782
METHYLCYCLOHEXANE	8.8971	9.4636	8.7154
TRIMETHYLCYCLOPENTANES	1.2957	1.5751	1.4402
TOLUENE	2.3355	2.3312	1.9059
2-METHYLHEPTANE	2.8207	3.4905	3.5426
3-METHYLHEPTANE	1.0694	1.3233	1.3283
DIMETHYLCYCLOHEXANES	2.2016	2.6763	2.4297
N-OCTANE	2.412	2.9847	3.0128
ETHYLBENZENE	0.1797	0.2067	0.169
M&P XYLENES	1.3185	1.5164	1.2464
O-XYLENE	0.2072	0.2383	0.192
C9 NAPHTHENES	0.9947	1.3604	1.2128
C9 PARAFFINS	2.4257	3.3704	3.205
N-NONANE	0.599	0.8323	0.8219
N-DECANE	0.1549	0.2388	0.2318
UNDECANE PLUS	0.8922	1.5689	1.4723
	100.00	**100**	**100**
Sample Pressure	50	psi	
Specific Gravity	0.713		
Total Mol Wt.	92.311	lb/lb-mol	
Mol Wt. C7+	106.063	lb/lb-mol	

Fuel Gas Analysis

Road Runner Plant 1 Fuel Gas Analysis

Date: 5/01/2025

125 psi, 81 F

Components	Mol %	Wt. %	GPM
HYDROGEN SULFIDE	0	0	0
NITROGEN	1.446	2.4685249	0
METHANE	97.18	95.0060489	0
CARBON DIOXIDE	0	0	0
ETHANE	1.365	2.50124142	0.364
PROPANE	0.009	0.02418474	0.002
ISO-BUTANE	0	0	0
N-BUTANE	0	0	0
ISO-PENTANE	0	0	0
N-PENTANE	0	0	0
NEOHEXANE	0	0	0
CYCLOPENTANE	0	0	0
2-METHYLPENTANE	0	0	0
3-METHYLPENTANE	0	0	0
N-HEXANE	0	0	0
METHYLCYCLOPENTANE	0	0	0
BENZENE	0	0	0
CYCLOHEXANE	0	0	0
2-METHYLHEXANE	0	0	0
3-METHYLHEXANE	0	0	0
DIMETHYLCYCLOPENTANES	0	0	0
N-HEPTANE	0	0	0
METHYLCYCLOHEXANE	0	0	0
TRIMETHYLCYCLOPENTANES	0	0	0
TOLUENE	0	0	0
2-METHYLHEPTANE	0	0	0
3-METHYLHEPTANE	0	0	0
DIMETHYLCYCLOHEXANES	0	0	0
N-OCTANE	0	0	0
ETHYLBENZENE	0	0	0
M&P XYLENES	0	0	0
O-XYLENE	0	0	0
C9 NAPHTHENES	0	0	0
C9 PARAFFINS	0	0	0
N-NONANE	0	0	0
N-DECANE	0	0	0
UNDECANE PLUS	0	**0**	0
Total:	**100**	**100**	**0.366**
Fuel Net Heat Value:	906.062313	btu/cf	
Fuel Gross Heat Value:	1005.90051	btu/cf	
Molecular Weight:	16.4095	lb/lb-mol	

Inlet Gas Analysis		
Road Runner - Plant 1 Combined Inlet		
Date: 5/1/2025		
890 psig, 83.4F		
Components	**Mol %**	**Wt. %**
HYDROGEN SULFIDE	0.0005	0.00078625
NITROGEN	0.99400576	1.28479883
METHANE	76.0753401	56.3112638
CARBON DIOXIDE	2.4	4.8734676
ETHANE	11.6142396	16.1135322
PROPANE	5.44287966	11.0740019
ISO-BUTANE	0.74425508	1.99592519
N-BUTANE	1.63234*	4.3775821
ISO-PENTANE	0.34518308	1.14910283
N-PENTANE	0.3684043	1.22640551
NEOHEXANE	0	0
CYCLOPENTANE	0	0
2-METHYLPENTANE	0	0
3-METHYLPENTANE	0	0
N-HEXANE	0.25272536	1.00487569
METHYLCYCLOPENTANE	0	0
BENZENE	0.02283583	0.08230269
CYCLOHEXANE	0	0
2-METHYLHEXANE	0	0
3-METHYLHEXANE	0	0
DIMETHYLCYCLOPENTANES	0	0
N-HEPTANE	0.07160545	0.3310569
METHYLCYCLOHEXANE	0	0
TRIMETHYLCYCLOPENTANES	0	0
TOLUENE	0.01196296	0.05085805
2-METHYLHEPTANE	0	0
3-METHYLHEPTANE	0	0
DIMETHYLCYCLOHEXANES	0	0
N-OCTANE	0.0122406	0.06451457
ETHYLBENZENE	0.00490283	0.02401644
M&P XYLENES	0.00333393	0.0163312
O-XYLENE	0	0
C9 NAPHTHENES	0	0
C9 PARAFFINS	0	0
N-NONANE	0.00324082	0.01917828
N-DECANE	0	0
UNDECANE PLUS	0	0
***H2S conservatively increased to 50 ppm.**		
	100	
VOC	8.91591451	
HAP	0.2957609	

Cold Flare Gas Analysis

Road Runner Plant 1 Cold Flare Header Analysis					Road Runner Plant 2 Cold Flare Header Analysis			
Date: 05/05/25					Date: 05/05/25			
100 psi, 84 F					100 psi, 94 F			
Components	**Mol %**	**Wt. %**	**GPM**		**Components**	**Mol %**	**Wt. %**	**GPM**
HYDROGEN SULFIDE	0	0	0		HYDROGEN SULFIDE	0	0	0
NITROGEN	1.406	2.25939843	0		NITROGEN	2.257	3.63360393	0
METHANE	93.361	85.9168092	0		METHANE	92.7769	85.5364116	0
CARBON DIOXIDE	0.005	0.01262287	0		CARBON DIOXIDE	0	0	0
ETHANE	3.426	5.90947094	0.913		ETHANE	3.164	5.4675938	0.843
PROPANE	0.926	2.34233021	0.254		PROPANE	1.114	2.82306481	0.306
ISO-BUTANE	0.126	0.42010154	0.041		ISO-BUTANE	0.145	0.4843399	0.047
N-BUTANE	0.29	0.96690036	0.091		N-BUTANE	0.328	1.09561027	0.103
ISO-PENTANE	0.083	0.34351742	0.03		ISO-PENTANE	0.07	0.29024666	0.026
N-PENTANE	0.104	0.43043146	0.038		N-PENTANE	0.075	0.31097857	0.027
NEOHEXANE	0.0018	0.0088981	0.001		NEOHEXANE	0.0007	0.00346674	0
CYCLOPENTANE	0.013	0.05230062	0.004		CYCLOPENTANE	0.0044	0.01773433	0.001
2-METHYLPENTANE	0.0383	0.1893318	0.016		2-METHYLPENTANE	0.0114	0.05645835	0.005
3-METHYLPENTANE	0.022	0.10875456	0.009		3-METHYLPENTANE	0.006	0.02971492	0.002
N-HEXANE	0.057	0.28177317	0.023		N-HEXANE	0.0137	0.06784907	0.006
METHYLCYCLOPENTANE	0.0242	0.11683154	0.009		METHYLCYCLOPENTANE	0.0058	0.02805248	0.002
BENZENE	0.0063	0.02822923	0.002		BENZENE	0.0024	0.01077379	0.001
CYCLOHEXANE	0.028	0.13517698	0.009		CYCLOHEXANE	0.0064	0.03095446	0.002
2-METHYLHEXANE	0.0107	0.06150375	0.005		2-METHYLHEXANE	0.0019	0.01094133	0.001
3-METHYLHEXANE	0.0106	0.06092895	0.005		3-METHYLHEXANE	0.0026	0.01497234	0.001
DIMETHYLCYCLOPENTANES	0.0149	0.08392238	0.006		DIMETHYLCYCLOPENTANES	0.0025	0.01410685	0.001
N-HEPTANE	0.0144	0.0827714	0.007		N-HEPTANE	0.0029	0.01669992	0.001
METHYLCYCLOHEXANE	0.0195	0.1098313	0.008		METHYLCYCLOHEXANE	0.0045	0.02539233	0.002
TRIMETHYLCYCLOPENTANES	0	0	0		TRIMETHYLCYCLOPENTANES	0	0	0
TOLUENE	0.0022	0.011628	0.001		TOLUENE	0.0013	0.00688374	0
2-METHYLHEPTANE	0.0052	0.03407372	0.003		2-METHYLHEPTANE	0.0013	0.00853411	0.001
3-METHYLHEPTANE	0	0	0		3-METHYLHEPTANE	0.0003	0.00196941	0
DIMETHYLCYCLOHEXANES	0.0028	0.0180236	0.001		DIMETHYLCYCLOHEXANES	0.0004	0.00257954	0
N-OCTANE	0.0012	0.00786317	0.001		N-OCTANE	0.0004	0.00262588	0
ETHYLBENZENE	0	0	0		ETHYLBENZENE	0.0001	0.00061013	0
M&P XYLENES	0	0	0		M&P XYLENES	0.0002	0.00122026	0
O-XYLENE	0	0	0		O-XYLENE	0	0	0
C9 NAPHTHENES	0.0004	0.00289665	0		C9 NAPHTHENES	0.0002	0.00145099	0
C9 PARAFFINS	0.0005	0.00367863	0		C9 PARAFFINS	0.0006	0.00442248	0
N-NONANE	0	0	0		N-NONANE	0.0001	0.00073708	0
N-DECANE	0	0	0		N-DECANE	0	0	0
UNDECANE PLUS	0	0	0		UNDECANE PLUS	0	0	0
Total:	**100**	**100**	**1.477**		**Total:**	**100**	**100**	**1.378**

AP-42 Documents

1.4 Natural Gas Combustion

1.4.1 General[1-2]

Natural gas is one of the major combustion fuels used throughout the country. It is mainly used to generate industrial and utility electric power, produce industrial process steam and heat, and heat residential and commercial space. Natural gas consists of a high percentage of methane (generally above 85 percent) and varying amounts of ethane, propane, butane, and inerts (typically nitrogen, carbon dioxide, and helium). The average gross heating value of natural gas is approximately 1,020 British thermal units per standard cubic foot (Btu/scf), usually varying from 950 to 1,050 Btu/scf.

1.4.2 Firing Practices[3-5]

There are three major types of boilers used for natural gas combustion in commercial, industrial, and utility applications: watertube, firetube, and cast iron. Watertube boilers are designed to pass water through the inside of heat transfer tubes while the outside of the tubes is heated by direct contact with the hot combustion gases and through radiant heat transfer. The watertube design is the most common in utility and large industrial boilers. Watertube boilers are used for a variety of applications, ranging from providing large amounts of process steam, to providing hot water or steam for space heating, to generating high-temperature, high-pressure steam for producing electricity. Furthermore, watertube boilers can be distinguished either as field erected units or packaged units.

Field erected boilers are boilers that are constructed on site and comprise the larger sized watertube boilers. Generally, boilers with heat input levels greater than 100 MMBtu/hr, are field erected. Field erected units usually have multiple burners and, given the customized nature of their construction, also have greater operational flexibility and NO_x control options. Field erected units can also be further categorized as wall-fired or tangential-fired. Wall-fired units are characterized by multiple individual burners located on a single wall or on opposing walls of the furnace while tangential units have several rows of air and fuel nozzles located in each of the four corners of the boiler.

Package units are constructed off-site and shipped to the location where they are needed. While the heat input levels of packaged units may range up to 250 MMBtu/hr, the physical size of these units are constrained by shipping considerations and generally have heat input levels less than 100 MMBtu/hr. Packaged units are always wall-fired units with one or more individual burners. Given the size limitations imposed on packaged boilers, they have limited operational flexibility and cannot feasibly incorporate some NO_x control options.

Firetube boilers are designed such that the hot combustion gases flow through tubes, which heat the water circulating outside of the tubes. These boilers are used primarily for space heating systems, industrial process steam, and portable power boilers. Firetube boilers are almost exclusively packaged units. The two major types of firetube units are Scotch Marine boilers and the older firebox boilers. In cast iron boilers, as in firetube boilers, the hot gases are contained inside the tubes and the water being heated circulates outside the tubes. However, the units are constructed of cast iron rather than steel. Virtually all cast iron boilers are constructed as package boilers. These boilers are used to produce either low-pressure steam or hot water, and are most commonly used in small commercial applications.

Natural gas is also combusted in residential boilers and furnaces. Residential boilers and furnaces generally resemble firetube boilers with flue gas traveling through several channels or tubes with water or air circulated outside the channels or tubes.

1.4.3 Emissions[3-4]

The emissions from natural gas-fired boilers and furnaces include nitrogen oxides (NO_x), carbon monoxide (CO), and carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), volatile organic compounds (VOCs), trace amounts of sulfur dioxide (SO_2), and particulate matter (PM).

Nitrogen Oxides -

Nitrogen oxides formation occurs by three fundamentally different mechanisms. The principal mechanism of NO_x formation in natural gas combustion is thermal NO_x. The thermal NO_x mechanism occurs through the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most NO_x formed through the thermal NO_x mechanism occurs in the high temperature flame zone near the burners. The formation of thermal NO_x is affected by three furnace-zone factors: (1) oxygen concentration, (2) peak temperature, and (3) time of exposure at peak temperature. As these three factors increase, NO_x emission levels increase. The emission trends due to changes in these factors are fairly consistent for all types of natural gas-fired boilers and furnaces. Emission levels vary considerably with the type and size of combustor and with operating conditions (e.g., combustion air temperature, volumetric heat release rate, load, and excess oxygen level).

The second mechanism of NO_x formation, called prompt NO_x, occurs through early reactions of nitrogen molecules in the combustion air and hydrocarbon radicals from the fuel. Prompt NO_x reactions occur within the flame and are usually negligible when compared to the amount of NO_x formed through the thermal NO_x mechanism. However, prompt NO_x levels may become significant with ultra-low-NO_x burners.

The third mechanism of NO_x formation, called fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Due to the characteristically low fuel nitrogen content of natural gas, NO_x formation through the fuel NO_x mechanism is insignificant.

Carbon Monoxide -

The rate of CO emissions from boilers depends on the efficiency of natural gas combustion. Improperly tuned boilers and boilers operating at off-design levels decrease combustion efficiency resulting in increased CO emissions. In some cases, the addition of NO_x control systems such as low NO_x burners and flue gas recirculation (FGR) may also reduce combustion efficiency, resulting in higher CO emissions relative to uncontrolled boilers.

Volatile Organic Compounds -

The rate of VOC emissions from boilers and furnaces also depends on combustion efficiency. VOC emissions are minimized by combustion practices that promote high combustion temperatures, long residence times at those temperatures, and turbulent mixing of fuel and combustion air. Trace amounts of VOC species in the natural gas fuel (e.g., formaldehyde and benzene) may also contribute to VOC emissions if they are not completely combusted in the boiler.

Sulfur Oxides -

Emissions of SO_2 from natural gas-fired boilers are low because pipeline quality natural gas typically has sulfur levels of 2,000 grains per million cubic feet. However, sulfur-containing odorants are added to natural gas for detecting leaks, leading to small amounts of SO_2 emissions. Boilers combusting unprocessed natural gas may have higher SO_2 emissions due to higher levels of sulfur in the natural gas. For these units, a sulfur mass balance should be used to determine SO_2 emissions.

Particulate Matter -

Because natural gas is a gaseous fuel, filterable PM emissions are typically low. Particulate matter from natural gas combustion has been estimated to be less than 1 micrometer in size and has filterable and condensable fractions. Particulate matter in natural gas combustion are usually larger molecular weight hydrocarbons that are not fully combusted. Increased PM emissions may result from poor air/fuel mixing or maintenance problems.

Greenhouse Gases -[6-9]

CO_2, CH_4, and N_2O emissions are all produced during natural gas combustion. In properly tuned boilers, nearly all of the fuel carbon (99.9 percent) in natural gas is converted to CO_2 during the combustion process. This conversion is relatively independent of boiler or combustor type. Fuel carbon not converted to CO_2 results in CH_4, CO, and/or VOC emissions and is due to incomplete combustion. Even in boilers operating with poor combustion efficiency, the amount of CH_4, CO, and VOC produced is insignificant compared to CO_2 levels.

Formation of N_2O during the combustion process is affected by two furnace-zone factors. N_2O emissions are minimized when combustion temperatures are kept high (above 1475°F) and excess oxygen is kept to a minimum (less than 1 percent).

Methane emissions are highest during low-temperature combustion or incomplete combustion, such as the start-up or shut-down cycle for boilers. Typically, conditions that favor formation of N_2O also favor emissions of methane.

1.4.4 Controls[4,10]

NO_x Controls -

Currently, the two most prevalent combustion control techniques used to reduce NO_x emissions from natural gas-fired boilers are flue gas recirculation (FGR) and low NO_x burners. In an FGR system, a portion of the flue gas is recycled from the stack to the burner windbox. Upon entering the windbox, the recirculated gas is mixed with combustion air prior to being fed to the burner. The recycled flue gas consists of combustion products which act as inerts during combustion of the fuel/air mixture. The FGR system reduces NO_x emissions by two mechanisms. Primarily, the recirculated gas acts as a dilutent to reduce combustion temperatures, thus suppressing the thermal NO_x mechanism. To a lesser extent, FGR also reduces NO_x formation by lowering the oxygen concentration in the primary flame zone. The amount of recirculated flue gas is a key operating parameter influencing NO_x emission rates for these systems. An FGR system is normally used in combination with specially designed low NO_x burners capable of sustaining a stable flame with the increased inert gas flow resulting from the use of FGR. When low NO_x burners and FGR are used in combination, these techniques are capable of reducing NO_x emissions by 60 to 90 percent.

Low NO_x burners reduce NO_x by accomplishing the combustion process in stages. Staging partially delays the combustion process, resulting in a cooler flame which suppresses thermal NO_x formation. The two most common types of low NO_x burners being applied to natural gas-fired boilers are staged air burners and staged fuel burners. NO_x emission reductions of 40 to 85 percent (relative to uncontrolled emission levels) have been observed with low NO_x burners.

Other combustion control techniques used to reduce NO_x emissions include staged combustion and gas reburning. In staged combustion (e.g., burners-out-of-service and overfire air), the degree of staging is a key operating parameter influencing NO_x emission rates. Gas reburning is similar to the use of overfire in the use of combustion staging. However, gas reburning injects additional amounts of natural gas in the upper furnace, just before the overfire air ports, to provide increased reduction of NO_x to NO_2.

Two postcombustion technologies that may be applied to natural gas-fired boilers to reduce NO_x emissions are selective noncatalytic reduction (SNCR) and selective catalytic reduction (SCR). The SNCR system injects ammonia (NH_3) or urea into combustion flue gases (in a specific temperature zone) to reduce NO_x emission. The Alternative Control Techniques (ACT) document for NO_x emissions from utility boilers, maximum SNCR performance was estimated to range from 25 to 40 percent for natural gas-fired boilers.[12] Performance data available from several natural gas fired utility boilers with SNCR show a 24 percent reduction in NO_x for applications on wall-fired boilers and a 13 percent reduction in NO_x for applications on tangential-fired boilers.[11] In many situations, a boiler may have an SNCR system installed to trim NO_x emissions to meet permitted levels. In these cases, the SNCR system may not be operated to achieve maximum NO_x reduction. The SCR system involves injecting NH_3 into the flue gas in the presence of a catalyst to reduce NO_x emissions. No data were available on SCR performance on natural gas fired boilers at the time of this publication. However, the ACT Document for utility boilers estimates NO_x reduction efficiencies for SCR control ranging from 80 to 90 percent.[12]

Emission factors for natural gas combustion in boilers and furnaces are presented in Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4.[11] Tables in this section present emission factors on a volume basis ($lb/10^6$ scf). To convert to an energy basis (lb/MMBtu), divide by a heating value of 1,020 MMBtu/10^6 scf. For the purposes of developing emission factors, natural gas combustors have been organized into three general categories: large wall-fired boilers with greater than 100 MMBtu/hr of heat input, boilers and residential furnaces with less than 100 MMBtu/hr of heat input, and tangential-fired boilers. Boilers within these categories share the same general design and operating characteristics and hence have similar emission characteristics when combusting natural gas.

Emission factors are rated from A to E to provide the user with an indication of how "good" the factor is, with "A" being excellent and "E" being poor. The criteria that are used to determine a rating for an emission factor can be found in the Emission Factor Documentation for AP-42 Section 1.4 and in the introduction to the AP-42 document.

1.4.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section are summarized below. For further detail, consult the Emission Factor Documentation for this section. These and other documents can be found on the Emission Factor and Inventory Group (EFIG) home page (http://www.epa.gov/ttn/chief).

Supplement D, March 1998

- Text was revised concerning Firing Practices, Emissions, and Controls.
- All emission factors were updated based on 482 data points taken from 151 source tests. Many new emission factors have been added for speciated organic compounds, including hazardous air pollutants.

July 1998 - minor changes

- Footnote D was added to table 1.4-3 to explain why the sum of individual HAP may exceed VOC or TOC, the web address was updated, and the references were reordered.

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

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

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

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

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

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

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

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

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

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

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

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylcholanthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by l6. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020.

[b] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

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12. *Alternate Control Techniques Document - NO_x Emissions from Utility Boilers*, EPA-453/R-94-023, U. S. Environmental Protection Agency, Research Triangle Park, NC, March 1994.

3.3 Gasoline And Diesel Industrial Engines

Disclaimer: Emission factors in AP-42 are neither EPA-recommended emission limits (e.g., best available control technology or BACT, or lowest achievable emission rate or LAER) nor standards (e.g., National Emission Standard for Hazardous Air Pollutants or NESHAP, or New Source Performance Standards or NSPS). Use of these factors as source-specific permit limits and/or as emission regulation compliance determinations is **NOT** recommended by EPA. Because emission factors essentially represent an average of a range of emission rates, approximately half of the subject sources are expected to have emission rates greater than the emission factor, and the other half are expected to have emission rates less than the emission factor. As such, EPA does not recommend using emission factors as limits or standards. This could cause, for example, a permit limit using an AP-42 emission factor resulting in approximately half of the sources being in noncompliance. We recommend source testing be done for the best possible emission values. For more information on the use of emission factors, please refer to the AP-42 Introduction.

3.3.1 General

The engine category addressed by this section covers a wide variety of industrial applications of both gasoline and diesel internal combustion (IC) engines such as aerial lifts, forklifts, mobile refrigeration units, generators, pumps, industrial sweepers/scrubbers, material handling equipment (such as conveyors), and portable well-drilling equipment. The three primary fuels for reciprocating IC engines are gasoline, diesel fuel oil (No.2), and natural gas. Gasoline is used primarily for mobile and portable engines. Diesel fuel oil is the most versatile fuel and is used in IC engines of all sizes. The rated power of these engines covers a rather substantial range, up to 250 horsepower (hp) for gasoline engines and up to 600 hp for diesel engines. (Diesel engines greater than 600 hp are covered in Section 3.4, "Large Stationary Diesel And All Stationary Dual-fuel Engines".) Understandably, substantial differences in engine duty cycles exist. It was necessary, therefore, to make reasonable assumptions concerning usage in order to formulate some of the emission factors.

3.3.2 Process Description

All reciprocating IC engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 methods used for stationary reciprocating IC engines: compression ignition (CI) and spark ignition (SI). This section deals with both types of reciprocating IC engines. All diesel-fueled engines are compression ignited, and all gasoline-fueled engines are spark ignited.

In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.3.3 Emissions

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the atmosphere from the exhaust. Evaporative losses are insignificant in diesel engines due to the low volatility of diesel fuels.

The primary pollutants from internal combustion engines are oxides of nitrogen (NO_x), total organic compounds (TOC), carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants, HC, CO, and smoke, are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulfur oxides (SO_x) also appear in the exhaust from IC engines. The sulfur compounds, mainly sulfur dioxide (SO_2), are directly related to the sulfur content of the fuel.[2]

3.3.3.1 Nitrogen Oxides –

Nitrogen oxide formation occurs by two fundamentally different mechanisms. The predominant mechanism with internal combustion engines is thermal NO_x which arises from the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most thermal NO_x is formed in the high-temperature region of the flame from dissociated molecular nitrogen in the combustion air. Some NO_x, called prompt NO_x, is formed in the early part of the flame from reaction of nitrogen intermediary species, and HC radicals in the flame. The second mechanism, fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Gasoline, and most distillate oils have no chemically-bound fuel N_2 and essentially all NO_x formed is thermal NO_x.

3.3.3.2 Total Organic Compounds –

The pollutants commonly classified as hydrocarbons are composed of a wide variety of organic compounds and are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. Most unburned hydrocarbon emissions result from fuel droplets that were transported or injected into the quench layer during combustion. This is the region immediately adjacent to the combustion chamber surfaces, where heat transfer outward through the cylinder walls causes the mixture temperatures to be too low to support combustion.

Partially burned hydrocarbons can occur because of poor air and fuel homogeneity due to incomplete mixing, before or during combustion; incorrect air/fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system; excessively large fuel droplets (diesel engines); and low cylinder temperature due to excessive cooling (quenching) through the walls or early cooling of the gases by expansion of the combustion volume caused by piston motion before combustion is completed.[2]

3.3.3.3 Carbon Monoxide –

Carbon monoxide is a colorless, odorless, relatively inert gas formed as an intermediate combustion product that appears in the exhaust when the reaction of CO to CO_2 cannot proceed to completion. This situation occurs if there is a lack of available oxygen near the hydrocarbon (fuel) molecule during combustion, if the gas temperature is too low, or if the residence time in the cylinder is too short. The oxidation rate of CO is limited by reaction kinetics and, as a consequence, can be accelerated only to a certain extent by improvements in air and fuel mixing during the combustion process.[2-3]

3.3.3.4 Smoke and Particulate Matter –

White, blue, and black smoke may be emitted from IC engines. Liquid particulates appear as white smoke in the exhaust during an engine cold start, idling, or low load operation. These are formed in the quench layer adjacent to the cylinder walls, where the temperature is not high enough to ignite the fuel. Blue smoke is emitted when lubricating oil leaks, often past worn piston rings, into the combustion chamber and is partially burned. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of IC engines. The primary constituent of black smoke is agglomerated carbon particles (soot) formed in regions of the combustion mixtures that are oxygen deficient.[2]

3.3.3.5 Sulfur Oxides –

Sulfur oxides emissions are a function of only the sulfur content in the fuel rather than any combustion variables. In fact, during the combustion process, essentially all the sulfur in the fuel is oxidized to SO_2. The oxidation of SO_2 gives sulfur trioxide (SO_3), which reacts with water to give sulfuric acid (H_2SO_4), a contributor to acid precipitation. Sulfuric acid reacts with basic substances to give sulfates, which are fine particulates that contribute to PM-10 and visibility reduction. Sulfur oxide emissions also contribute to corrosion of the engine parts.[2-3]

3.3.4 Control Technologies

Control measures to date are primarily directed at limiting NO_x and CO emissions since they are the primary pollutants from these engines. From a NO_x control viewpoint, the most important distinction between different engine models and types of reciprocating engines is whether they are rich-burn or lean-burn. Rich-burn engines have an air-to-fuel ratio operating range that is near stoichiometric or fuel-rich of stoichiometric and as a result the exhaust gas has little or no excess oxygen. A lean-burn engine has an air-to-fuel operating range that is fuel-lean of stoichiometric; therefore, the exhaust from these engines is characterized by medium to high levels of O_2. The most common NO_x control technique for diesel and dual-fuel engines focuses on modifying the combustion process. However, selective

catalytic reduction (SCR) and nonselective catalytic reduction (NSCR) which are post-combustion techniques are becoming available. Controls for CO have been partly adapted from mobile sources.[4]

Combustion modifications include injection timing retard (ITR), preignition chamber combustion (PCC), air-to-fuel ratio adjustments, and derating. Injection of fuel into the cylinder of a CI engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. ITR reduces NO_x from all diesel engines; however, the effectiveness is specific to each engine model. The amount of NO_x reduction with ITR diminishes with increasing levels of retard.[4]

Improved swirl patterns promote thorough air and fuel mixing and may include a precombustion chamber (PCC). A PCC is an antechamber that ignites a fuel-rich mixture that propagates to the main combustion chamber. The high exit velocity from the PCC results in improved mixing and complete combustion of the lean air/fuel mixture which lowers combustion temperature, thereby reducing NO_x emissions.[4]

The air-to-fuel ratio for each cylinder can be adjusted by controlling the amount of fuel that enters each cylinder. At air-to-fuel ratios less than stoichiometric (fuel-rich), combustion occurs under conditions of insufficient oxygen which causes NO_x to decrease because of lower oxygen and lower temperatures. Derating involves restricting the engine operation to lower than normal levels of power production for the given application. Derating reduces cylinder pressures and temperatures, thereby lowering NO_x formation rates.[4]

SCR is an add-on NO_x control placed in the exhaust stream following the engine and involves injecting ammonia (NH_3) into the flue gas. The NH_3 reacts with NO_x in the presence of a catalyst to form water and nitrogen. The effectiveness of SCR depends on fuel quality and engine duty cycle (load fluctuations). Contaminants in the fuel may poison or mask the catalyst surface causing a reduction or termination in catalyst activity. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system.[4]

NSCR is often referred to as a three-way conversion catalyst system because the catalyst reactor simultaneously reduces NO_x, CO, and HC and involves placing a catalyst in the exhaust stream of the engine. The reaction requires that the O_2 levels be kept low and that the engine be operated at fuel-rich air-to-fuel ratios.[4]

The most accurate method for calculating such emissions is on the basis of "brake-specific" emission factors (pounds per horsepower-hour [lb/hp-hr]). Emissions are the product of the brake-specific emission factor, the usage in hours, the rated power available, and the load factor (the power actually used divided by the power available). However, for emission inventory purposes, it is often easier to assess this activity on the basis of fuel used.

Once reasonable usage and duty cycles for this category were ascertained, emission values were aggregated to arrive at the factors for criteria and organic pollutants presented. Factors in Table 3.3-1 are in pounds per million British thermal unit (lb/MMBtu). Emission data for a specific design type were weighted according to estimated material share for industrial engines. The emission factors in these tables, because of their aggregate nature, are most appropriately applied to a population of industrial

engines rather than to an individual power plant. Table 3.3-2 shows unweighted speciated organic compound and air toxic emission factors based upon only 2 engines. Their inclusion in this section is intended for rough order-of-magnitude estimates only.

Table 3.3-3 summarizes whether the various diesel emission reduction technologies (some of which may be applicable to gasoline engines) will generally increase or decrease the selected parameter. These technologies are categorized into fuel modifications, engine modifications, and exhaust after-treatments. Current data are insufficient to quantify the results of the modifications. Table 3.3-3 provides general information on the trends of changes on selected parameters.

3.3.5 Source Classification Codes

- 20100102 - Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating
- 20100105 - Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating: Crankcase Blowby
- 20100106 - Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating: Evaporative Losses (Fuel Storage and Delivery System)
- 20100107 - Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating: Exhaust
- 20200102 - Internal Combustion Engines; Industrial; Distillate Oil (Diesel); Reciprocating
- 20200104 - Internal Combustion Engines; Industrial; Distillate Oil (Diesel); Reciprocating: Cogeneration
- 20200105 - Internal Combustion Engines; Industrial; Distillate Oil (Diesel); Reciprocating: Crankcase Blowby
- 20200106 - Internal Combustion Engines; Industrial; Distillate Oil (Diesel); Reciprocating: Evaporative Losses (Fuel Storage and Delivery System)
- 20200107 - Internal Combustion Engines; Industrial; Distillate Oil (Diesel); Reciprocating: Exhaust
- 20201702 - Internal Combustion Engines; Industrial; Gasoline; Reciprocating Engine
- 20201705 - Internal Combustion Engines; Industrial; Gasoline; Reciprocating: Crankcase Blowby
- 20201706 - Internal Combustion Engines; Industrial; Gasoline; Reciprocating: Evaporative Losses (Fuel Storage and Delivery System)
- 20201707 - Internal Combustion Engines; Industrial; Gasoline; Reciprocating: Exhaust
- 20300101 - Internal Combustion Engines; Commercial/Institutional; Distillate Oil (Diesel); Reciprocating
- 20300105 - Internal Combustion Engines; Commercial/Institutional; Distillate Oil (Diesel); Reciprocating: Crankcase Blowby
- 20300106 - Internal Combustion Engines; Commercial/Institutional; Distillate Oil (Diesel); Reciprocating: Evaporative Losses (Fuel Storage and Delivery System)
- 20300107 - Internal Combustion Engines; Commercial/Institutional; Distillate Oil (Diesel); Reciprocating: Exhaust
- 20300301 - Internal Combustion Engines; Commercial/Institutional; Gasoline; Reciprocating
- 20300305 - Internal Combustion Engines; Commercial/Institutional; Gasoline; Reciprocating: Crankcase Blowby
- 20300306 - Internal Combustion Engines; Commercial/Institutional; Gasoline; Reciprocating: Evaporative Losses (Fuel Storage and Delivery System)
- 20300307 - Internal Combustion Engines; Commercial/Institutional; Gasoline; Reciprocating: Exhaust
- 20300401 - Internal Combustion Engines; Commercial/Institutional; Diesel; Large Bore Engine
- 20400401 - Internal Combustion Engines; Engine Testing; Reciprocating Engine; Gasoline
- 20400403 - Internal Combustion Engines; Engine Testing; Reciprocating Engine; Distillate Oil

3.3.6 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below.

February 1996 (Supplement A)

- No changes

October 1996 (Supplement B)

- Text was revised concerning emissions and controls.
- The CO_2 emission factor was adjusted to reflect 98.5 percent conversion efficiency.

April 2025

- Standard AP-42 disclaimer was added on the use of AP-42 emission factors.
- Added Source Classification Codes
- Benzo(g,h,l)perylene pollutant name corrected to Benzo(g,h,i)perylene in Table 3.3-2.

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

Pollutant	Gasoline Fuel (SCC 20200301, 20300301) Emission Factor (lb/hp-hr) (power output)	Gasoline Fuel (SCC 20200301, 20300301) Emission Factor (lb/MMBtu) (fuel input)	Diesel Fuel (SCC 20200102, 20300101) Emission Factor (lb/hp-hr) (power output)	Diesel Fuel (SCC 20200102, 20300101) Emission Factor (lb/MMBtu) (fuel input)	Emission Factor Rating
NO_x	0.011	1.63	0.031	4.41	D
CO	6.96 E-03[d]	0.99[d]	6.68 E-03	0.95	D
SO_x	5.91 E-04	0.084	2.05 E-03	0.29	D
PM-10[b]	7.21 E-04	0.10	2.20 E-03	0.31	D
CO_2[c]	1.08	154	1.15	164	B
Aldehydes	4.85 E-04	0.07	4.63 E-04	0.07	D
TOC - Exhaust	0.015	2.10	2.47 E-03	0.35	D
TOC - Evaporative	6.61 E-04	0.09	0.00	0.00	E
TOC - Crankcase	4.85 E-03	0.69	4.41 E-05	0.01	E
TOC - Refueling	1.08 E-03	0.15	0.00	0.00	E

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

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

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

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

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

EMISSION FACTOR RATING: E

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

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.

[b] Hazardous air pollutant listed in the *Clean Air Act*.

[c] Based on data from 1 engine.

[d] The footnote indicating that Propylene is a CAA HAP compound was deleted on 10/27/2006. This is an editorial correction.

Table 3.3-3. EFFECT OF VARIOUS EMISSION CONTROL TECHNOLOGIES ON DIESEL ENGINES[a]

Technology	Affected Parameter Increase	Affected Parameter Decrease
Fuel modifications - Sulfur content increase	PM, wear	
Fuel modifications - Aromatic content increase	PM, NO_x	
Fuel modifications - Cetane number		PM, NO_x
Fuel modifications - 10% and 90% boiling point		PM
Fuel modifications - Fuel additives		PM, NO_x
Fuel modifications - Water/Fuel emulsions		NO_x
Engine modifications - Injection timing retard	PM, BSFC	NO_x, power
Engine modifications - Fuel injection pressure	PM, NO_x	
Engine modifications - Injection rate control		NO_x, PM
Engine modifications - Rapid spill nozzles		PM
Engine modifications - Electronic timing & metering		NO_x, PM
Engine modifications - Injector nozzle geometry		PM
Engine modifications - Combustion chamber modifications		NO_x, PM
Engine modifications - Turbocharging	PM, power	NO_x
Engine modifications - Charge cooling		NO_x
Engine modifications - Exhaust gas recirculation	PM, power, wear	NO_x
Engine modifications - Oil consumption control		PM, wear
Exhaust after-treatment - Particulate traps		PM
Exhaust after-treatment - Selective catalytic reduction		NO_x
Exhaust after-treatment - Oxidation catalysts		TOC, CO, PM

[a] Reference 8. PM = particulate matter. BSFC = brake-specific fuel consumption.

References For Section 3.3

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3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines

Disclaimer: Emission factors in AP-42 are neither EPA-recommended emission limits (e.g., best available control technology or BACT, or lowest achievable emission rate or LAER) nor standards (e.g., National Emission Standard for Hazardous Air Pollutants or NESHAP, or New Source Performance Standards or NSPS). Use of these factors as source-specific permit limits and/or as emission regulation compliance determinations is **NOT** recommended by EPA. Because emission factors essentially represent an average of a range of emission rates, approximately half of the subject sources are expected to have emission rates greater than the emission factor, and the other half are expected to have emission rates less than the emission factor. As such, EPA does not recommend using emission factors as limits or standards. This could cause, for example, a permit limit using an AP-42 emission factor resulting in approximately half of the sources being in noncompliance. We recommend source testing be done for the best possible emission values. For more information on the use of emission factors, please refer to the AP-42 Introduction.

3.4.1 General

The primary domestic use of large stationary diesel engines (greater than 600 horsepower [hp]) is in oil and gas exploration and production. These engines, in groups of 3 to 5, supply mechanical power to operate drilling (rotary table), mud pumping, and hoisting equipment, and may also operate pumps or auxiliary power generators. Another frequent application of large stationary diesels is electricity generation for both base and standby service. Smaller uses include irrigation, hoisting, and nuclear power plant emergency cooling water pump operation.

Dual-fuel engines were developed to obtain compression ignition performance and the economy of natural gas, using a minimum of 5 to 6 percent diesel fuel to ignite the natural gas. Large dual-fuel engines have been used almost exclusively for prime electric power generation. This section includes all dual-fuel engines.

3.4.2 Process Description

All reciprocating internal combustion (IC) engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 ignition methods used in stationary reciprocating IC engines, compression ignition (CI) and spark ignition (SI). In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder. Although all diesel- fueled engines are compression ignited and all gasoline- and gas-fueled engines are spark ignited, gas can be used in a CI engine if a small amount of diesel fuel is injected into the compressed gas/air mixture to burn any mixture ratio of gas and diesel oil (hence the name dual fuel),

from 6 to 100 percent diesel oil.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.4.3 Emissions And Controls

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the atmosphere from the exhaust. Crankcase blowby is minor because TOCs are not present during compression of the charge. Evaporative losses are insignificant in diesel engines due to the low volatility of diesel fuels. In general, evaporative losses are also negligible in engines using gaseous fuels because these engines receive their fuel continuously from a pipe rather than via a fuel storage tank and fuel pump.

The primary pollutants from internal combustion engines are oxides of nitrogen (NO_x), hydrocarbons and other organic compounds, carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants, HC, CO, and smoke, are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulfur oxides also appear in the exhaust from IC engines. The sulfur compounds, mainly sulfur dioxide (SO_2), are directly related to the sulfur content of the fuel.[2]

3.4.3.1 Nitrogen Oxides –

Nitrogen oxide formation occurs by two fundamentally different mechanisms. The predominant mechanism with internal combustion engines is thermal NO_x which arises from the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most thermal NO_x is formed in the high-temperature region of the flame from dissociated molecular nitrogen in the combustion air. Some NO_x, called prompt NO_x, is formed in the early part of the flame from reaction of nitrogen intermediary species, and HC radicals in the flame. The second mechanism, fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Gasoline, and most distillate oils, have no chemically-bound fuel N_2 and essentially all NO_x formed is thermal NO_x.

3.4.3.2 Total Organic Compounds –

The pollutants commonly classified as hydrocarbons are composed of a wide variety of organic compounds and are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. Most unburned hydrocarbon emissions result from fuel

droplets that were transported or injected into the quench layer during combustion. This is the region immediately adjacent to the combustion chamber surfaces, where heat transfer outward through the cylinder walls causes the mixture temperatures to be too low to support combustion.

Partially burned hydrocarbons can occur because of poor air and fuel homogeneity due to incomplete mixing, before or during combustion; incorrect air/fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system; excessively large fuel droplets (diesel engines); and low cylinder temperature due to excessive cooling (quenching) through the walls or early cooling of the gases by expansion of the combustion volume caused by piston motion before combustion is completed.[2]

3.4.3.3 Carbon Monoxide –

Carbon monoxide is a colorless, odorless, relatively inert gas formed as an intermediate combustion product that appears in the exhaust when the reaction of CO to CO_2 cannot proceed to completion. This situation occurs if there is a lack of available oxygen near the hydrocarbon (fuel) molecule during combustion, if the gas temperature is too low, or if the residence time in the cylinder is too short. The oxidation rate of CO is limited by reaction kinetics and, as a consequence, can be accelerated only to a certain extent by improvements in air and fuel mixing during the combustion process.[2-3]

3.4.3.4 Smoke, Particulate Matter, and PM-10 –

White, blue, and black smoke may be emitted from IC engines. Liquid particulates appear as white smoke in the exhaust during an engine cold start, idling, or low load operation. These are formed in the quench layer adjacent to the cylinder walls, where the temperature is not high enough to ignite the fuel. Blue smoke is emitted when lubricating oil leaks, often past worn piston rings, into the combustion chamber and is partially burned. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of IC engines. The primary constituent of black smoke is agglomerated carbon particles (soot).[2]

3.4.3.5 Sulfur Oxides –

Sulfur oxide emissions are a function of only the sulfur content in the fuel rather than any combustion variables. In fact, during the combustion process, essentially all the sulfur in the fuel is oxidized to SO_2. The oxidation of SO_2 gives sulfur trioxide (SO_3), which reacts with water to give sulfuric acid (H_2SO_4), a contributor to acid precipitation. Sulfuric acid reacts with basic substances to give sulfates, which are fine particulates that contribute to PM-10 and visibility reduction. Sulfur oxide emissions also contribute to corrosion of the engine parts.[2,3]

Table 3.4-1 contains gaseous emission factors for the pollutants discussed above, expressed in units of pounds per horsepower-hour (lb/hp-hr), and pounds per million British thermal unit (lb/MMBtu). Table 3.4-2 shows the particulate and particle-sizing emission factors. Table 3.4-3 shows the speciated organic compound emission factors and Table 3.4-4 shows the emission factors for polycyclic aromatic hydrocarbons (PAH). These tables do not provide a complete speciated organic compound and PAH listing because they are based only on a single engine test; they are to be used only for rough order of magnitude comparisons.

Table 3.4-5 shows the NO_x reduction and fuel consumption penalties for diesel and dual-fueled

engines based on some of the available control techniques. The emission reductions shown are those that have been demonstrated. The effectiveness of controls on a particular engine will depend on the specific design of each engine, and the effectiveness of each technique could vary considerably. Other NO_x control techniques exist but are not included in Table 3.4-5. These techniques include internal/external exhaust gas recirculation, combustion chamber modification, manifold air cooling, and turbocharging.

3.4.4 Control Technologies

Control measures to date are primarily directed at limiting NO_x and CO emissions since they are the primary pollutants from these engines. From a NO_x control viewpoint, the most important distinction between different engine models and types of reciprocating engines is whether they are rich-burn or lean-burn. Rich-burn engines have an air-to-fuel ratio operating range that is near stoichiometric or fuel-rich of stoichiometric and as a result the exhaust gas has little or no excess oxygen. A lean-burn engine has an air-to-fuel operating range that is fuel-lean of stoichiometric; therefore, the exhaust from these engines is characterized by medium to high levels of O_2. The most common NO_x control technique for diesel and dual fuel engines focuses on modifying the combustion process. However, selective catalytic reduction (SCR) and nonselective catalytic reduction (NSCR) which are post-combustion techniques are becoming available. Control for CO have been partly adapted from mobile sources.[5]

Combustion modifications include injection timing retard (ITR), preignition chamber combustion (PCC), air-to-fuel ratio, and derating. Injection of fuel into the cylinder of a CI engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. ITR reduces NO_x from all diesel engines; however, the effectiveness is specific to each engine model. The amount of NO_x reduction with ITR diminishes with increasing levels of retard.[5]

Improved swirl patterns promote thorough air and fuel mixing and may include a precombustion chamber (PCC). A PCC is an antechamber that ignites a fuel-rich mixture that propagates to the main combustion chamber. The high exit velocity from the PCC results in improved mixing and complete combustion of the lean air/fuel mixture which lowers combustion temperature, thereby reducing NO_x emissions.[5]

The air-to-fuel ratio for each cylinder can be adjusted by controlling the amount of fuel that enters each cylinder. At air-to-fuel ratios less than stoichiometric (fuel-rich), combustion occurs under conditions of insufficient oxygen which causes NO_x to decrease because of lower oxygen and lower temperatures. Derating involves restricting engine operation to lower than normal levels of power production for the given application. Derating reduces cylinder pressures and temperatures thereby lowering NO_x formation rates.[5]

SCR is an add-on NO_x control placed in the exhaust stream following the engine and involves injecting ammonia (NH_3) into the flue gas. The NH_3 reacts with the NO_x in the presence of a catalyst to form water and nitrogen. The effectiveness of SCR depends on fuel quality and engine duty cycle (load fluctuations). Contaminants in the fuel may poison or mask the catalyst surface causing a reduction or termination in catalyst activity. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system.[5]

NSCR is often referred to as a three-way conversion catalyst system because the catalyst reactor simultaneously reduces NO_x, CO, and HC and involves placing a catalyst in the exhaust stream of the engine. The reaction requires that the O_2 levels be kept low and that the engine be operated at fuel-rich air-to-fuel ratios.[5]

3.4.5 Source Classification Codes

- 2310022051 - Industrial Processes; Oil and Gas Exploration and Production; Off-Shore Gas Production; Turbines: Natural Gas
- 20200401 - Internal Combustion Engines; Industrial; Other Fuels; Diesel: Large Bore Engine
- 20200402 - Internal Combustion Engines; Industrial; Other Fuels; Dual Fuel (Oil/Gas): Large Bore Engine
- 20200403 - Internal Combustion Engines; Industrial; Other Fuels; Dual Fuel: Large Bore Engine: Cogeneration
- 20200405 - Internal Combustion Engines; Industrial; Other Fuels; Large Bore Engine: Crankcase Blowby
- 20200406 - Internal Combustion Engines; Industrial; Other Fuels; Large Bore Engine: Evaporative Losses (Fuel Storage and Delivery System)
- 20200407 - Internal Combustion Engines; Industrial; Other Fuels; Large Bore Engine: Exhaust
- 20300401 - Internal Combustion Engines; Commercial/Institutional; Diesel; Large Bore Engine

3.4.6 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below.

February 1996 (Supplement A)

- No changes

October 1996 (Supplement B)

- The general text was updated.
- Controlled NO_x factors and PM factors were added for diesel units.
- Math errors were corrected in factors for CO from diesel units and for uncontrolled NO_x from dual fueled units.

April 2025

- Standard AP-42 disclaimer was added on the use of AP-42 emission factors.
- Source Classification Codes were added
- Benzo(g,h,l)perylene corrected to Benzo(g,h,i)perylene in Table 3.3-4.

Table 3.4-1. GASEOUS EMISSION FACTORS FOR LARGE STATIONARY DIESEL AND ALL STATIONARY DUAL-FUEL ENGINES[a]

Pollutant	Diesel Fuel (SCC 20200401) Emission Factor (lb/hp-hr) (power output)	Diesel Fuel (SCC 20200401) Emission Factor (lb/MMBtu) (fuel input)	Diesel Fuel (SCC 20200401) Emission Factor Rating	Dual Fuel[b] (SCC 20200402) Emission Factor (lb/hp-hr) (power output)	Dual Fuel[b] (SCC 20200402) Emission Factor (lb/MMBtu) (fuel input)	Dual Fuel[b] (SCC 20200402) Emission Factor Rating
NO_x - Uncontrolled	0.024	3.2	B	0.018	2.7	D
NO_x - Controlled	0.013[c]	1.9[c]	B	ND	ND	NA
CO	5.5 E-03	0.85	C	7.5 E-03	1.16	D
SO_x	8.09 E-03S_1	1.01S_1	B	4.06 E-04S_1 + 9.57E-03S_2	0.05S_1 + 0.895S_2	B
CO_2	1.16	165	B	0.772	110	B
PM	0.0007[c]	0.1[c]	B	ND	ND	NA
TOC (as CH_4)	7.05 E-04	0.09	C	5.29 E-03	0.8	D
Methane	f	f	E	3.97 E-03	0.6	E
Nonmethane	f	f	E	1.32 E-03	0.2[g]	E

[a]Based on uncontrolled levels for each fuel, from References 2,6-7. When necessary, the average heating value of diesel was assumed to be 19,300 Btu/lb with a density of 7.1 lb/gallon. The power output and fuel input values were averaged independently from each other, because of the use of actual brake-specific fuel consumption (BSFC) values for each data point and of the use of data possibly sufficient to calculate only 1 of the 2 emission factors (e. g., enough information to calculate lb/MMBtu, but not lb/hp-hr). Factors are based on averages across all manufacturers and duty cycles. The actual emissions from a particular engine or manufacturer could vary considerably from these levels. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code.

[b]Dual fuel assumes 95% natural gas and 5% diesel fuel.

[c]References 8-26. Controlled NO_x is by ignition timing retard.

[d]Assumes that all sulfur in the fuel is converted to SO_2. S_1 = % sulfur in fuel oil; S_2 = % sulfur in natural gas. For example, if sulfur content is 1.5%, then S = 1.5.

[e]Assumes 100% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 70 weight % carbon in natural gas, dual-fuel mixture of 5% diesel with 95% natural gas, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and natural gas heating value of 1050 Btu/scf.

[f]Based on data from 1 engine, TOC is by weight 9% methane and 91% nonmethane.

[g]Assumes that nonmethane organic compounds are 25% of TOC emissions from dual-fuel engines. Molecular weight of nonmethane gas stream is assumed to be that of methane.

Table 3.4-2. PARTICULATE AND PARTICLE-SIZING
EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Filterable particulate[b] (< 1 µm)	0.0478
Filterable particulate[b] (< 3 µm)	0.0479
Filterable particulate[b] (< 10 µm)	0.0496
Total filterable particulate	0.0620
Condensable particulate	0.0077
Total PM-10[c]	0.0573
Total particulate[d]	0.0697

[a] Based on 1 uncontrolled diesel engine from Reference 6. Source Classification Code 20200401. The data for the particulate emissions were collected using Method 5, and the particle size distributions were collected using a Source Assessment Sampling System. To convert from lb/MMBtu to ng/J, multiply by 430. PM-10 = particulate matter # 10 micrometers (µm) aerometric diameter.
[b] Particle size is expressed as aerodynamic diameter.
[c] Total PM-10 is the sum of filterable particulate less than 10 µm aerodynamic diameter and condensable particulate.
[d] Total particulate is the sum of the total filterable particulate and condensable particulate.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene[b]	7.76 E-04
Toluene[b]	2.81 E-04
Xylenes[b]	1.93 E-04
Propylene	2.79 E-03
Formaldehyde[b]	7.89 E-05
Acetaldehyde[b]	2.52 E-05
Acrolein[b]	7.88 E-06

[a]Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 20200401. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b]Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-4. PAH EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

PAH	Emission Factor (lb/MMBtu) (fuel input)
Naphthalene[b]	1.30 E-04
Acenaphthylene	9.23 E-06
Acenaphthene	4.68 E-06
Fluorene	1.28 E-05
Phenanthrene	4.08 E-05
Anthracene	1.23 E-06
Fluoranthene	4.03 E-06
Pyrene	3.71 E-06
Benz(a)anthracene	6.22 E-07
Chrysene	1.53 E-06
Benzo(b)fluoranthene	1.11 E-06
Benzo(k)fluoranthene	<2.18 E-07
Benzo(a)pyrene	<2.57 E-07
Indeno(1,2,3-cd)pyrene	<4.14 E-07
Dibenz(a,h)anthracene	<3.46 E-07
Benzo(g,h,i)perylene	<5.56 E-07
TOTAL PAH	<2.12 E-04

[a] Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 20200401. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.

[b] Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-5. NO_x REDUCTION AND FUEL CONSUMPTION PENALTIES FOR LARGE STATIONARY DIESEL AND DUAL-FUEL ENGINES[a]

Control Approach	Diesel (SCC 20200401) NOx Reduction (%)	Diesel (SCC 20200401) ΔBSFC (%)	Dual Fuel (SCC 20200402) NOx Reduction (%)	Dual Fuel (SCC 20200402) ΔBSFC (%)
Derate – 10%	ND	ND	<20	4
Derate – 20%	<20	4	ND	ND
Derate – 25%	5 - 23	1 - 5	1 - 33	1 - 7
Retard - 2°	<20	4	<20	3
Retard - 4°	<40	4	<40	1
Retard - 8°	28 - 45	2 - 8	50 - 73	3 - 5
Air-to-fuel – 3%	ND	ND	<20	0
Air-to-fuel - ±10%	7 - 8	3	25 - 40	1 - 3
Water injection (H_2O/fuel ratio) – 50%	25 - 35	2 - 4	ND	ND
SCR	80 - 95	0	80 - 95	0

[a] References 1,27-28. The reductions shown are typical and will vary depending on the engine and duty cycle. SCC = Source Classification Code. ΔBSFC = change in brake-specific fuel consumption. ND = no data.

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5.2 Transportation And Marketing Of Petroleum Liquids[1-3]

5.2.1 General

The transportation and marketing of petroleum liquids involve many distinct operations, each of which represents a potential source of evaporation loss. Crude oil is transported from production operations to a refinery by tankers, barges, rail tank cars, tank trucks, and pipelines. Refined petroleum products are conveyed to fuel marketing terminals and petrochemical industries by these same modes. From the fuel marketing terminals, the fuels are delivered by tank trucks to service stations, commercial accounts, and local bulk storage plants. The final destination for gasoline is usually a motor vehicle gasoline tank. Similar distribution paths exist for fuel oils and other petroleum products. A general depiction of these activities is shown in Figure 5.2-1.

5.2.2 Emissions And Controls

Evaporative emissions from the transportation and marketing of petroleum liquids may be considered, by storage equipment and mode of transportation used, in four categories:

1. Rail tank cars, tank trucks, and marine vessels: loading, transit, and ballasting losses.
2. Service stations: bulk fuel drop losses and underground tank breathing losses.
3. Motor vehicle tanks: refueling losses.
4. Large storage tanks: breathing, working, and standing storage losses. (See Chapter 7, "Liquid Storage Tanks".)

Evaporative and exhaust emissions are also associated with motor vehicle operation, and these topics are discussed in AP-42 *Volume II: Mobile Sources*.

5.2.2.1 Rail Tank Cars, Tank Trucks, And Marine Vessels -

Emissions from these sources are from loading losses, ballasting losses, and transit losses.

5.2.2.1.1 Loading Losses -

Loading losses are the primary source of evaporative emissions from rail tank car, tank truck, and marine vessel operations. Loading losses occur as organic vapors in "empty" cargo tanks are displaced to the atmosphere by the liquid being loaded into the tanks. These vapors are a composite of (1) vapors formed in the empty tank by evaporation of residual product from previous loads, (2) vapors transferred to the tank in vapor balance systems as product is being unloaded, and (3) vapors generated in the tank as the new product is being loaded. The quantity of evaporative losses from loading operations is, therefore, a function of the following parameters:

- Physical and chemical characteristics of the previous cargo;
- Method of unloading the previous cargo;
- Operations to transport the empty carrier to a loading terminal;
- Method of loading the new cargo; and
- Physical and chemical characteristics of the new cargo.

The principal methods of cargo carrier loading are illustrated in Figure 5.2-2, Figure 5.2-3, and Figure 5.2-4. In the splash loading method, the fill pipe dispensing the cargo is lowered only part way into the cargo tank. Significant turbulence and vapor/liquid contact occur during the splash

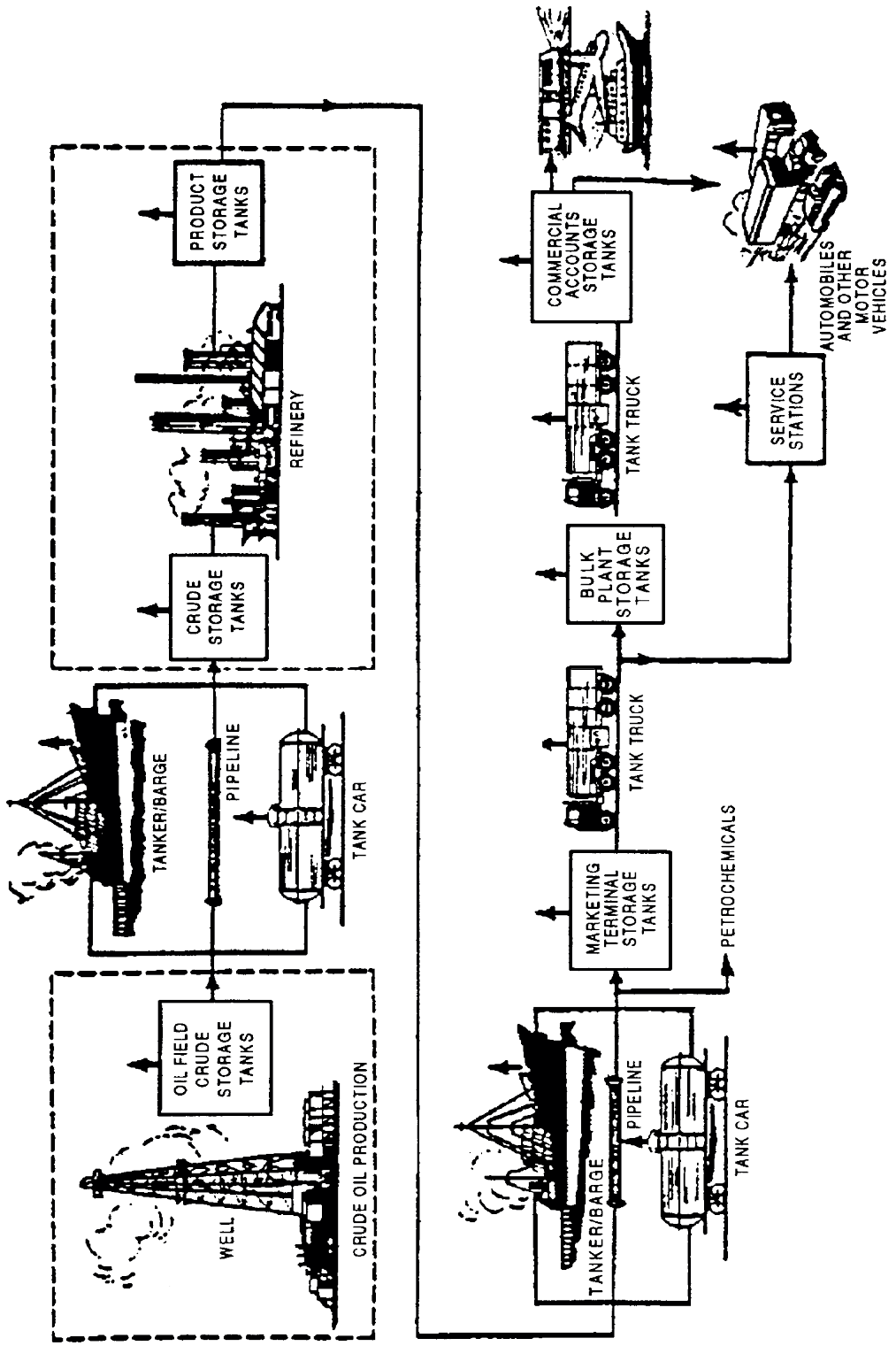


Figure 5.2-1. Flow sheet of petroleum production, refining, and distribution systems. (Points of organic emissions are indicated by vertical arrows.)

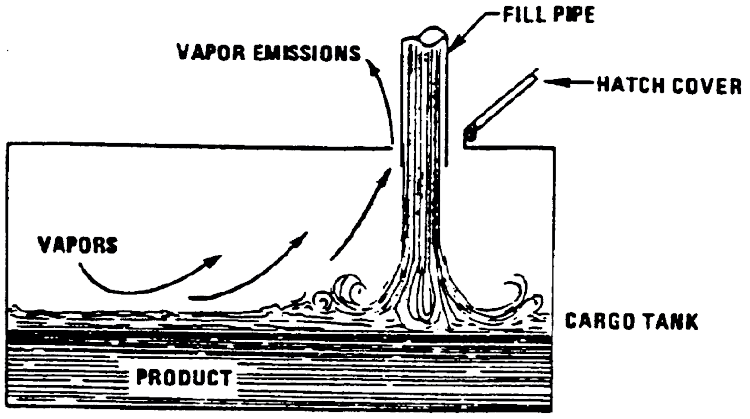


Figure 5.2-2. Splash loading method.

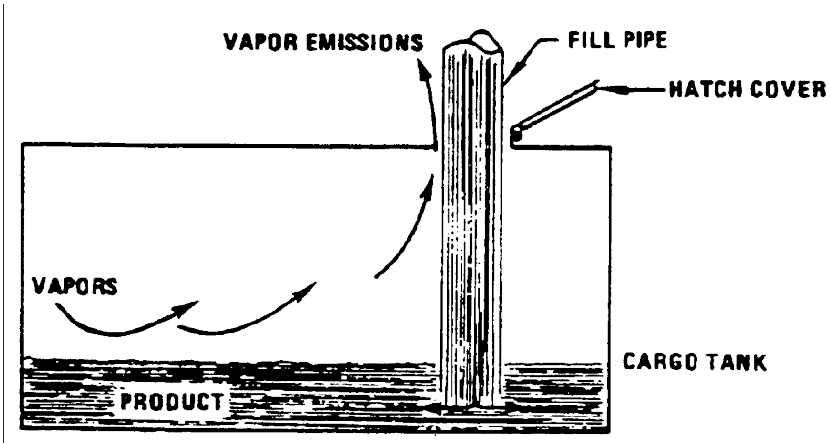


Figure 5.2-3. Submerged fill pipe.

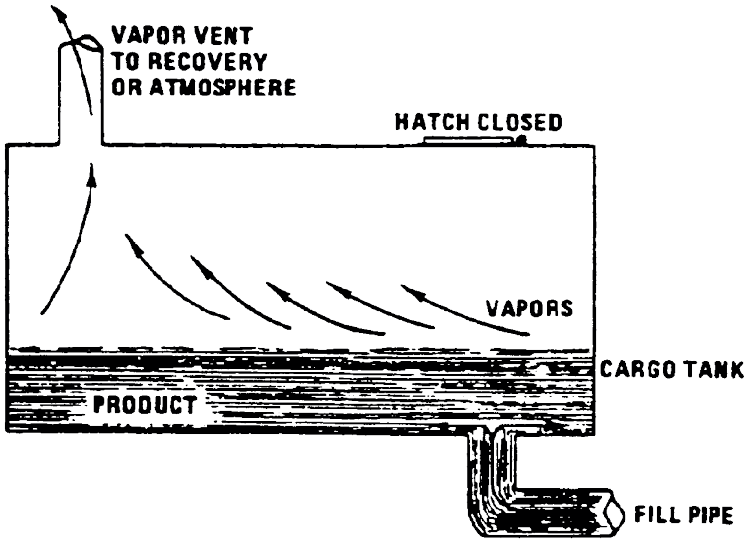


Figure 5.2-4. Bottom loading.

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

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

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

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

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

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

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

where:

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

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see Section 7.1, "Organic Liquid Storage Tanks")
M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) (see Section 7.1, "Organic Liquid Storage Tanks")
T = temperature of bulk liquid loaded, °R (°F + 460)

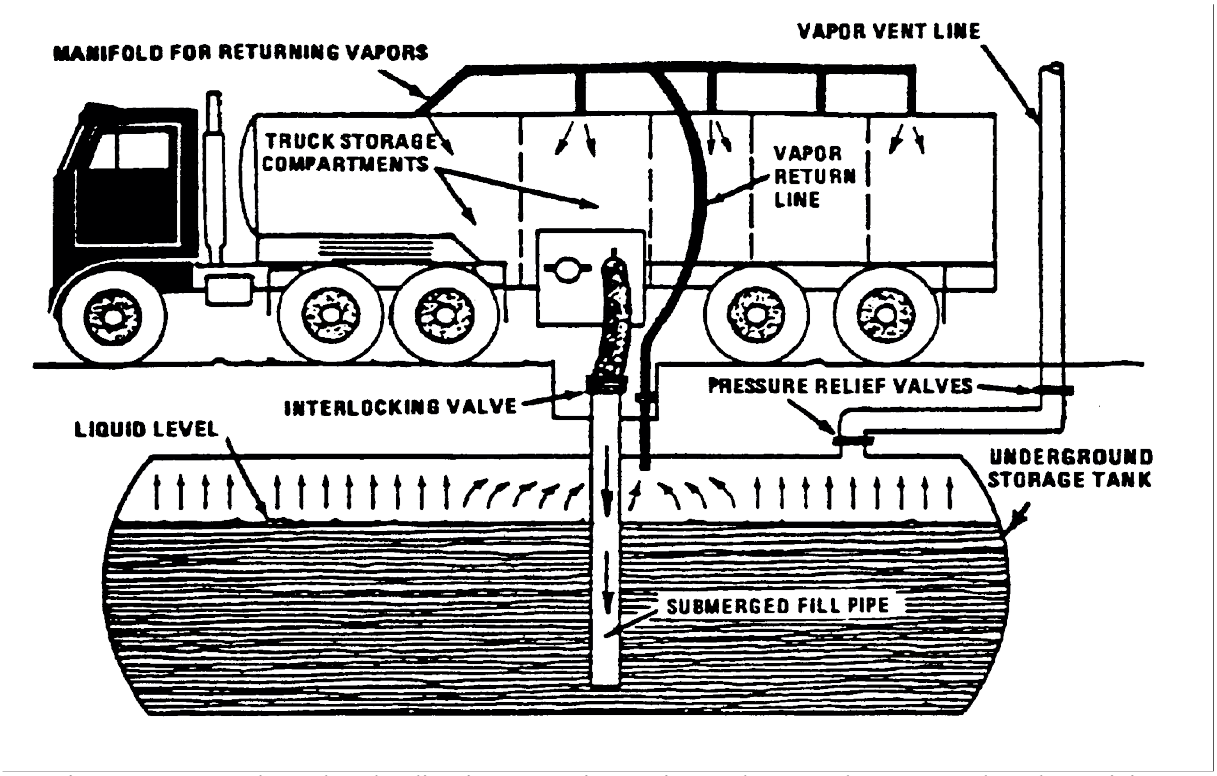


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

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

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

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

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

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

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

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

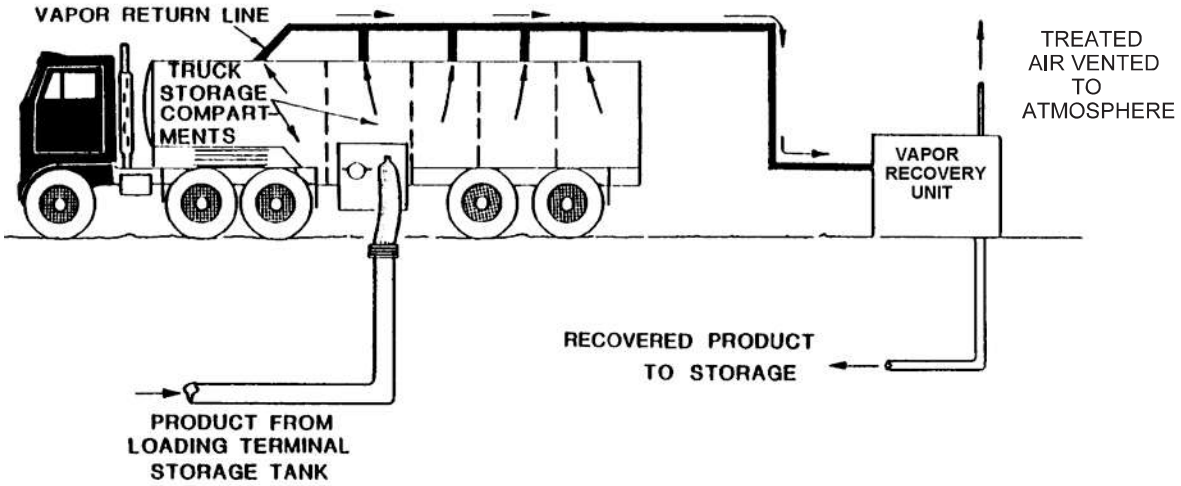


Figure 5.2-6. Tank truck loading with vapor recovery.

Sample Calculation -

Loading losses (L_L) from a gasoline tank truck in dedicated vapor balance service and practicing vapor recovery would be calculated as follows, using Equation 1:

Design basis -

Cargo tank volume is 8000 gal
Gasoline Reid vapor pressure (RVP) is 9 psia
Product temperature is 80°F
Vapor recovery efficiency is 95 percent
Vapor collection efficiency is 98.7 percent (NSPS-level annual leak test)

Loading loss equation -

$$L_L = 12.46 \frac{SPM}{T}\left(1 - \frac{eff}{100}\right)$$

where:

S = saturation factor (see Table 5.2-1) - 1.00
P = true vapor pressure of gasoline = 6.6 psia
M = molecular weight of gasoline vapors = 66
T = temperature of gasoline = 540°R
eff = overall reduction efficiency (95 percent control x 98.7 percent collection) = 94 percent

$$L_L = 12.46 \frac{(1.00)(6.6)(66)}{540}\left(1 - \frac{94}{100}\right)$$

$$= 0.60 \text{ lb}/10^3 \text{ gal}$$

Total loading losses are:

$$(0.60 \text{ lb}/10^3 \text{ gal})(8.0 \times 10^3 \text{ gal}) = 4.8 \text{ pounds (lb)}$$

Measurements of gasoline loading losses from ships and barges have led to the development of emission factors for these specific loading operations.[8] These factors are presented in Table 5.2-2 and should be used instead of Equation 1 for gasoline loading operations at marine terminals. Factors are expressed in units of milligrams per liter (mg/L) and pounds per 1000 gallons (lb/10^3 gal).

Table 5.2-2 (Metric And English Units). VOLATILE ORGANIC COMPOUND (VOC) EMISSION FACTORS FOR GASOLINE LOADING OPERATIONS AT MARINE TERMINALS[a]

Vessel Tank Condition	Previous Cargo	Ships/Ocean Barges[b]		Barges[b]	
		mg/L Transferred	lb/10^3 gal Transferred	mg/L Transferred	lb/10^3 gal Transferred
Uncleaned	Volatile[c]	315	2.6	465	3.9
Ballasted	Volatile	205	1.7	—[d]	—[d]
Cleaned	Volatile	180	1.5	ND	ND
Gas-freed	Volatile	85	0.7	ND	ND
Any condition	Nonvolatile	85	0.7	ND	ND
Gas-freed	Any cargo	ND	ND	245	2.0
Typical overall situation[e]	Any cargo	215	1.8	410	3.4

[a] References 2,9. Factors are for both VOC emissions (which excludes methane and ethane) and total organic emissions, because methane and ethane have been found to constitute a negligible weight fraction of the evaporative emissions from gasoline. ND = no data.
[b] Ocean barges (tank compartment depth about 12.2 m [40 ft]) exhibit emission levels similar to tank ships. Shallow draft barges (compartment depth 3.0 to 3.7 m [10 to 12 ft]) exhibit higher emission levels.
[c] Volatile cargoes are those with a true vapor pressure greater than 10 kilopascals (kPa) (1.5 psia).
[d] Barges are usually not ballasted.
[e] Based on observation that 41% of tested ship compartments were uncleaned, 11% ballasted, 24% cleaned, and 24% gas-freed. For barges, 76% were uncleaned.

In addition to Equation 1, which estimates emissions from the loading of petroleum liquids, Equation 2 has been developed specifically for estimating emissions from the loading of crude oil into ships and ocean barges:

$$C_L = C_A + C_G \quad (2)$$

where:

C_L = total loading loss, lb/10^3 gal of crude oil loaded
C_A = arrival emission factor, contributed by vapors in the empty tank compartment before loading, lb/10^3 gal loaded (see Note below)
C_G = generated emission factor, contributed by evaporation during loading, lb/10^3 gal loaded

Note: Values of C_A for various cargo tank conditions are listed in Table 5.2-3.

5.2-3 (English Units). AVERAGE ARRIVAL EMISSION FACTORS, C_A, FOR CRUDE OIL LOADING EMISSION EQUATION[a]

Ship/Ocean Barge Tank Condition	Previous Cargo	Arrival Emission Factor, lb/10^3 gal
Uncleaned	Volatile[b]	0.86
Ballasted	Volatile	0.46
Cleaned or gas-freed	Volatile	0.33
Any condition	Nonvolatile	0.33

[a] Arrival emission factors (C_A) to be added to generated emission factors (C_G) calculated in Equation 3 to produce total crude oil loading loss (C_L). Factors are for total organic compounds; VOC emission factors average about 15% lower, because VOC does not include methane or ethane.
[b] Volatile cargoes are those with a true vapor pressure greater than 10 kPa (1.5 psia).

This equation was developed empirically from test measurements of several vessel compartments.[8] The quantity C_G can be calculated using Equation 3:

$$C_G = 1.84\ (0.44\ P - 0.42)\ \frac{M\ G}{T} \qquad (3)$$

where:

P = true vapor pressure of loaded crude oil, psia
M = molecular weight of vapors, lb/lb-mole
G = vapor growth factor = 1.02 (dimensionless)
T = temperature of vapors, °R (°F + 460)

Emission factors derived from Equation 3 and Table 5.2-3 represent total organic compounds. Volatile organic compound (VOC) emission factors (which exclude methane and ethane because they are exempted from the regulatory definition of "VOC") for crude oil vapors have been found to range from approximately 55 to 100 weight percent of these total organic factors. When specific vapor composition information is not available, the VOC emission factor can be estimated by taking 85 percent of the total organic factor.[3]

5.2.2.1.2 Ballasting Losses -

Ballasting operations are a major source of evaporative emissions associated with the unloading of petroleum liquids at marine terminals. It is common practice to load several cargo tank compartments with sea water after the cargo has been unloaded. This water, termed "ballast", improves the stability of the empty tanker during the subsequent voyage. Although ballasting practices vary, individual cargo tanks are ballasted typically about 80 percent, and the total vessel 15 to 40 percent, of capacity. Ballasting emissions occur as vapor-laden air in the "empty" cargo tank is displaced to the atmosphere by ballast water being pumped into the tank. Upon arrival at a loading port, the ballast water is pumped from the cargo tanks before the new cargo is loaded. The ballasting of cargo tanks reduces the quantity of vapors returning in the empty tank, thereby reducing the quantity of vapors emitted during subsequent tanker loading. Regulations administered by the U. S. Coast Guard require that, at marine terminals located in ozone nonattainment areas, large tankers with crude oil washing systems contain the organic vapors from ballasting.[10] This is accomplished principally by displacing the vapors during ballasting into a cargo tank being simultaneously unloaded. In other areas, marine vessels emit organic vapors directly to the atmosphere.

Equation 4 has been developed from test data to calculate the ballasting emissions from crude oil ships and ocean barges[8]:

$$L_B = 0.31 + 0.20\ P + 0.01\ PU_A \qquad (4)$$

where:

L_B = ballasting emission factor, lb/10^3 gal of ballast water
P = true vapor pressure of discharged crude oil, psia
U_A = arrival cargo true ullage, before dockside discharge, measured from the deck, feet; (the term "ullage" here refers to the distance between the cargo surface level and the deck level)

Table 5.2-4 lists average total organic emission factors for ballasting into uncleaned crude oil cargo compartments. The first category applies to "full" compartments wherein the crude oil true ullage just before cargo discharge is less than 1.5 meters (m) (5 ft). The second category applies to lightered, or short-loaded, compartments (part of cargo previously discharged, or original load a partial fill), with an arrival true ullage greater than 1.5 m (5 ft). It should be remembered that these tabulated emission factors are examples only, based on average conditions, to be used when crude oil vapor pressure is unknown. Equation 4 should be used when information about crude oil vapor pressure and cargo compartment condition is available. The following sample calculation illustrates the use of Equation 4.

5.2-4 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS FOR CRUDE OIL BALLASTING[a]

Compartment Condition Before Cargo Discharge	Average Emission Factors			
	By Category		Typical Overall[b]	
	mg/L Ballast Water	lb/10^3 gal Ballast Water	mg/L Ballast Water	lb/10^3 gal Ballast Water
Fully loaded[c]	111	0.9	129	1.1
Lightered or previously short loaded[d]	171	1.4 ••		

[a] Assumes crude oil temperature of 16°C (60°F) and RVP of 34 kPa (5 psia). VOC emission factors average about 85% of these total organic factors, because VOCs do not include methane or ethane.
[b] Based on observation that 70% of tested compartments had been fully loaded before ballasting. May not represent average vessel practices.
[c] Assumed typical arrival ullage of 0.6 m (2 ft).
[d] Assumed typical arrival ullage of 6.1 m (20 ft).

Sample Calculation -

Ballasting emissions from a crude oil cargo ship would be calculated as follows, using Equation 4:

Design basis -

Vessel and cargo description: 80,000 dead-weight-ton tanker, crude oil capacity 500,000 barrels (bbl); 20 percent of the cargo capacity is filled with ballast water after cargo discharge. The crude oil has an RVP of 6 psia and is discharged at 75°F.

Compartment conditions: 70 percent of the ballast water is loaded into compartments that had been fully loaded to 2 ft ullage, and 30 percent is loaded into compartments that had been lightered to 15 ft ullage before arrival at dockside.

Ballasting emission equation -

$$L_B = 0.31 + 0.20\ P + 0.01\ PU_A$$

where:

P = true vapor pressure of crude oil
= 4.6 psia
U_A = true cargo ullage for the full compartments = 2 ft, and true cargo ullage for the lightered compartments = 15 ft

$$L_B = 0.70\ [0.31 + (0.20)\ (4.6) + (0.01)\ (4.6)\ (2)] + 0.30\ [0.31 + (0.20)\ (4.6) + (0.01)\ (4.6)\ (15)]$$

$$= 1.5\ lb/10^3\ gal$$

Total ballasting emissions are:

$$(1.5\ lb/10^3\ gal)\ (0.20)\ (500{,}000\ bbl)\ (42\ gal/bbl) = 6{,}300\ lb$$

Since VOC emissions average about 85 percent of these total organic emissions, emissions of VOCs are about: (0.85)(6,300 lb) = 5,360 lb

5.2.2.1.3 Transit Losses -

In addition to loading and ballasting losses, losses occur while the cargo is in transit. Transit losses are similar in many ways to breathing losses associated with petroleum storage (see Section 7.1, "Organic Liquid Storage Tanks"). Experimental tests on ships and barges[4] have indicated that transit losses can be calculated using Equation 5:

$$L_T = 0.1\ PW \qquad (5)$$

where:

L_T = transit loss from ships and barges, lb/week-10^3 gal transported
P = true vapor pressure of the transported liquid, psia
W = density of the condensed vapors, lb/gal

Emissions from gasoline truck cargo tanks during transit have been studied by a combination of theoretical and experimental techniques, and typical emission values are presented in Table 5.2-5.[11-12] Emissions depend on the extent of venting from the cargo tank during transit, which in turn depends on the vapor tightness of the tank, the pressure relief valve settings, the pressure in the tank at the start of the trip, the vapor pressure of the fuel being transported, and the degree of fuel vapor saturation of the space in the tank. The emissions are not directly proportional to the time spent in transit. If the vapor leakage rate of the tank increases, emissions increase up to a point, and then the rate changes as other determining factors take over. Truck tanks in dedicated vapor balance service usually contain saturated vapors, and this leads to lower emissions during transit because no additional fuel evaporates to raise the pressure in the tank to cause venting. Table 5.2-5 lists "typical" values for transit emissions and "extreme" values that could occur in the unlikely event that all determining factors combined to cause maximum emissions.

Table 5.2-5 (Metric And English Units). TOTAL UNCONTROLLED ORGANIC EMISSION FACTORS FOR PETROLEUM LIQUID RAIL TANK CARS AND TANK TRUCKS

Emission Source	Gasoline[a]	Crude Oil[b]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations[c]						
Submerged loading - Dedicated normal service[d]						
mg/L transferred	590	240	180	1.9	1.7	0.01
lb/10^3 gal transferred	5	2	1.5	0.016	0.014	0.0001
Submerged loading - Vapor balance service[d]						
mg/L transferred	980	400	300	—[e]	—[e]	—[e]
lb/10^3 gal transferred	8	3	2.5	—[e]	—[e]	—[e]
Splash loading - Dedicated normal service						
mg/L transferred	1,430	580	430	5	4	0.03
lb/10^3 gal transferred	12	5	4	0.04	0.03	0.0003
Splash loading - Vapor balance service						
mg/L transferred	980	400	300	—[e]	—[e]	—[e]
lb/10^3 gal transferred	8	3	2.5	—[e]	—[e]	—[e]

Table 5.2-5 (cont.).

Emission Source	Gasoline[a]	Crude Oil[b]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Transit losses						
Loaded with product						
mg/L transported						
Typical	0 - 1.0	ND	ND	ND	ND	ND
Extreme	0 - 9.0	ND	ND	ND	ND	ND
lb/10^3 gal transported						
Typical	0 - 0.01	ND	ND	ND	ND	ND
Extreme	0 - 0.08	ND	ND	ND	ND	ND
Return with vapor						
mg/L transported						
Typical	0 - 13.0	ND	ND	ND	ND	ND
Extreme	0 - 44.0	ND	ND	ND	ND	ND
lb/10^3 gal transported						
Typical	0 - 0.11	ND	ND	ND	ND	ND
Extreme	0 - 0.37	ND	ND	ND	ND	ND

[a] Reference 2. Gasoline factors represent emissions of VOC as well as total organics, because methane and ethane constitute a negligible weight fraction of the evaporative emissions from gasoline. VOC factors for crude oil can be assumed to be 15% lower than the total organic factors, to account for the methane and ethane content of crude oil evaporative emissions. All other products should be assumed to have VOC factors equal to total organics. The example gasoline has an RVP of 69 kPa (10 psia). ND = no data.
[b] The example crude oil has an RVP of 34 kPa (5 psia).
[c] Loading emission factors are calculated using Equation 1 for a dispensed product temperature of 16°C (60°F).
[d] Reference 2.
[e] Not normally used.

In the absence of specific inputs for Equations 1 through 5, the typical evaporative emission factors presented in Tables 5.2-5 and 5.2-6 should be used. It should be noted that, although the crude oil used to calculate the emission values presented in these tables has an RVP of 5, the RVP of crude oils can range from less than 1 up to 10. Similarly, the RVP of gasolines ranges from 7 to 13. In areas where loading and transportation sources are major factors affecting air quality, it is advisable to obtain the necessary parameters and to calculate emission estimates using Equations 1 through 5.

5.2.2.2 Service Stations -

Another major source of evaporative emissions is the filling of underground gasoline storage tanks at service stations. Gasoline is usually delivered to service stations in 30,000-liter (8,000-gal) tank trucks or smaller account trucks. Emissions are generated when gasoline vapors in the underground storage tank are displaced to the atmosphere by the gasoline being loaded into the tank. As with other loading losses, the quantity of loss in service station tank filling depends on several variables, including the method and rate of filling, the tank configuration, and the gasoline temperature, vapor pressure and composition. An average emission rate for submerged filling is 880 mg/L (7.3 lb/1000 gal) of transferred gasoline, and the rate for splash filling is 1380 mg/L (11.5 lb/1000 gal) transferred gasoline (see Table 5.2-7).[5]

Table 5.2-6 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS FOR PETROLEUM MARINE VESSEL SOURCES[a]

Emission Source	Gasoline[b]	Crude Oil[c]	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations						
Ships/ocean barges						
mg/L transferred	—[d]	73	60	0.63	0.55	0.004
lb/10^3 gal transferred	—[d]	0.61	0.50	0.005	0.005	0.00004
Barges						
mg/L transferred	—[d]	120	150	1.60	1.40	0.011
lb/10^3 gal transferred	—[d]	1.0	1.2	0.013	0.012	0.00009
Tanker ballasting						
mg/L ballast water	100	—[e]	ND	ND	ND	ND
lb/10^3 gal ballast water	0.8	—[e]	ND	ND	ND	ND
Transit						
mg/week-L transported	320	150	84	0.60	0.54	0.003
lb/week-10^3 gal transported	2.7	1.3	0.7	0.005	0.005	0.00003

[a] Factors are for a dispensed product of 16°C (60°F). ND = no data.
[b] Factors represent VOC as well as total organic emissions, because methane and ethane constitute a negligible fraction of gasoline evaporative emissions. All products other than crude oil can be assumed to have VOC factors equal to total organic factors. The example gasoline has an RVP of 69 kPa (10 psia).
[c] VOC emission factors for a typical crude oil are 15% lower than the total organic factors shown, in order to account for methane and ethane. The example crude oil has an RVP of 34 kPa (5 psia).
[d] See Table 5.2-2 for these factors.
[e] See Table 5.2-4 for these factors.

Emissions from underground tank filling operations at service stations can be reduced by the use of a vapor balance system such as in Figure 5.2-5 (termed Stage I vapor control). The vapor balance system employs a hose that returns gasoline vapors displaced from the underground tank to the tank truck cargo compartments being emptied. The control efficiency of the balance system ranges from 93 to 100 percent. Organic emissions from underground tank filling operations at a service station employing a vapor balance system and submerged filling are not expected to exceed 40 mg/L (0.3 lb/1000 gal) of transferred gasoline.

Table 5.2-7 (Metric And English Units). EVAPORATIVE EMISSIONS FROM GASOLINE SERVICE STATION OPERATIONS[a]

Emission Source	Emission Rate	
	mg/L Throughput	lb/10^3 gal Throughput
Filling underground tank (Stage I)		
Submerged filling	880	7.3
Splash filling	1,380	11.5
Balanced submerged filling	40	0.3
Underground tank breathing and emptying[b]	120	1.0
Vehicle refueling operations (Stage II)		
Displacement losses (uncontrolled)[c]	1,320	11.0
Displacement losses (controlled)	132	1.1
Spillage	80	0.7

[a] Factors are for VOC as well as total organic emissions, because of the methane and ethane content of gasoline evaporative emissions is negligible.
[b] Includes any vapor loss between underground tank and gas pump.
[c] Based on Equation 6, using average conditions.

A second source of vapor emissions from service stations is underground tank breathing. Breathing losses occur daily and are attributable to gasoline evaporation and barometric pressure changes. The frequency with which gasoline is withdrawn from the tank, allowing fresh air to enter to enhance evaporation, also has a major effect on the quantity of these emissions. An average breathing emission rate is 120 mg/L (1.0 lb/1000 gal) of throughput.

5.2.2.3 Motor Vehicle Refueling -

Service station vehicle refueling activity also produces evaporative emissions. Vehicle refueling emissions come from vapors displaced from the automobile tank by dispensed gasoline and from spillage. The quantity of displaced vapors depends on gasoline temperature, auto tank temperature, gasoline RVP, and dispensing rate. Equation 6 can be used to estimate uncontrolled displacement losses from vehicle refueling for a particular set of conditions.[14]

$$E_R = 264.2\ [(-5.909) - 0.0949\ (\Delta T) + 0.0884\ (T_D) + 0.485\ (RVP)] \quad (6)$$

where:

E_R = refueling emissions, mg/L
ΔT = difference between temperature of fuel in vehicle tank and temperature of dispensed fuel, °F
T_D = temperature of dispensed fuel, °F
RVP = Reid vapor pressure, psia

Note that this equation and the spillage loss factor are incorporated into the *MOBILE* model. The *MOBILE* model allows for disabling of this calculation if it is desired to include these emissions in the stationary area source portion of an inventory rather than in the mobile source portion. It is estimated that the uncontrolled emissions from vapors displaced during vehicle refueling average 1320 mg/L (11.0 lb/1000 gal) of dispensed gasoline.[5,13]

Spillage loss is made up of contributions from prefill and postfill nozzle drip and from spit-back and

overflow from the vehicles's fuel tank filler pipe during filling. The amount of spillage loss can depend on several variables, including service station business characteristics, tank configuration, and operator techniques. An average spillage loss is 80 mg/L (0.7 lb/1000 gal) of dispensed gasoline.[5,13]

Control methods for vehicle refueling emissions are based on conveying the vapors displaced from the vehicle fuel tank to the underground storage tank vapor space through the use of a special hose and nozzle, as depicted in Figure 5.2-7 (termed Stage II vapor control). In "balance" vapor control systems, the vapors are conveyed by natural pressure differentials established during refueling. In "vacuum assist" systems, the conveyance of vapors from the auto fuel tank to the underground storage tank is assisted by a vacuum pump. Tests on a few systems have indicated overall systems control efficiencies in the range of 88 to 92 percent.[5,13] When inventorying these emissions as an area source, rule penetration and rule effectiveness should also be taken into account. *Procedures For Emission Inventory Preparation, Volume IV: Mobile Sources*, EPA-450/4-81-026d, provides more detail on this.

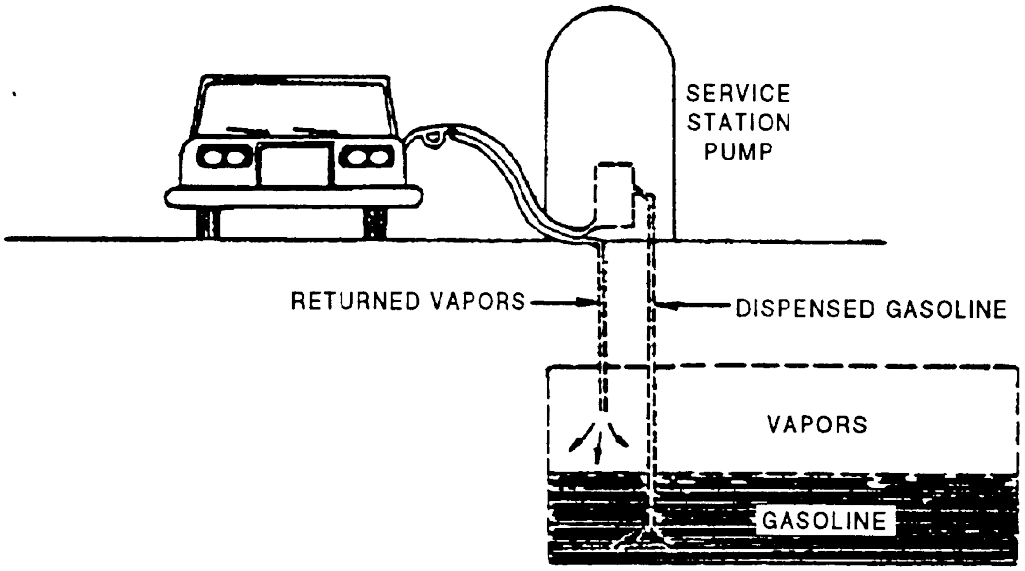


Figure 5.2-7. Automobile refueling vapor recovery system.

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13.2.2 Unpaved Roads

13.2.2.1 General

When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

The particulate emission factors presented in the previous draft version of this section of AP-42, dated October 2001, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material[25]. EPA included these sources in the emission factor equation for unpaved public roads (equation 1b in this section) since the field testing data used to develop the equation included both the direct emissions from vehicles and emissions from resuspension of road dust.

This version of the unpaved public road emission factor equation only estimates particulate emissions from resuspended road surface material [23, 26]. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOBILE6.2 [24]. This approach eliminates the possibility of double counting emissions. Double counting results when employing the previous version of the emission factor equation in this section and MOBILE6.2 to estimate particulate emissions from vehicle traffic on unpaved public roads. It also incorporates the decrease in exhaust emissions that has occurred since the unpaved public road emission factor equation was developed. The previous version of the unpaved public road emission factor equation includes estimates of emissions from exhaust, brake wear, and tire wear based on emission rates for vehicles in the 1980 calendar year fleet. The amount of PM released from vehicle exhaust has decreased since 1980 due to lower new vehicle emission standards and changes in fuel characteristics.

13.2.2.2 Emissions Calculation And Correction Parameters[1-6]

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Field investigations also have shown that emissions depend on source parameters that characterize the condition of a particular road and the associated vehicle traffic. Characterization of these source parameters allow for "correction" of emission estimates to specific road and traffic conditions present on public and industrial roadways.

Dust emissions from unpaved roads have been found to vary directly with the fraction of silt (particles smaller than 75 micrometers [μm] in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200-mesh screen, using the ASTM-C-136 method. A summary of this method is contained in Appendix C of AP-42. Table 13.2.2-1 summarizes measured silt values for industrial unpaved roads. Table 13.2.2-2 summarizes measured silt values for public unpaved roads. It should be noted that the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is strongly discouraged when it is feasible to obtain locally gathered data.

Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions. As a conservative approximation, the silt content of the parent soil in the area can be used. Tests, however, show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Other variables are important in addition to the silt content of the road surface material. For example, at industrial sites, where haul trucks and other heavy equipment are common, emissions are highly correlated with vehicle weight. On the other hand, there is far less variability in the weights of cars and pickup trucks that commonly travel publicly accessible unpaved roads throughout the United States. For those roads, the moisture content of the road surface material may be more dominant in determining differences in emission levels between, for example a hot, desert environment and a cool, moist location.

The PM-10 and TSP emission factors presented below are the outcomes from stepwise linear regressions of field emission test results of vehicles traveling over unpaved surfaces. Due to a limited amount of information available for PM-2.5, the expression for that particle size range has been scaled against the result for PM-10. Consequently, the quality rating for the PM-2.5 factor is lower than that for the PM-10 expression.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\,(s/12)^a (W/3)^b \quad (1a)$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C \quad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

as shown in Table 13.2.2-4

Table 13.2.2-4. EMISSION FACTOR FOR 1980'S VEHICLE FLEET EXHAUST, BRAKE WEAR AND TIRE WEAR

Particle Size Range[a]	*C*, Emission Factor for Exhaust, Brake Wear and Tire Wear[b] lb/VMT
$PM_{2.5}$	0.00036
PM_{10}	0.00047
PM_{30}[c]	0.00047

[a] Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x micrometers.
[b] Units shown are pounds per vehicle mile traveled (lb/VMT).
[c] PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

It is important to note that the vehicle-related source conditions refer to the average weight, speed, and number of wheels for all vehicles traveling the road. For example, if 98 percent of traffic on the road are 2-ton cars and trucks while the remaining 2 percent consists of 20-ton trucks, then the mean weight is 2.4 tons. More specifically, Equations 1a and 1b are *not* intended to be used to calculate a separate emission factor for each vehicle class within a mix of traffic on a given unpaved road. That is, in the example, one should *not* determine one factor for the 2-ton vehicles and a second factor for the 20-ton trucks. Instead, only one emission factor should be calculated that represents the "fleet" average of 2.4 tons for all vehicles traveling the road.

Moreover, to retain the quality ratings when addressing a group of unpaved roads, it is necessary that reliable correction parameter values be determined for the road in question. The field and laboratory procedures for determining road surface silt and moisture contents are given in AP-42 Appendices C.1 and C.2. Vehicle-related parameters should be developed by recording visual observations of traffic. In some cases, vehicle parameters for industrial unpaved roads can be determined by reviewing maintenance records or other information sources at the facility.

In the event that site-specific values for correction parameters cannot be obtained, then default values may be used.In the absence of site-specific silt content information, an appropriate mean value from Table 13.2.2-1 may be used as a default value, but the quality rating of the equation is reduced by two letters. Because of significant differences found between different types of road surfaces and between different areas of the country, use of the default moisture content value of 0.5 percent in Equation 1b is discouraged. The quality rating should be downgraded two letters when the default moisture content value is used. (It is assumed that readers addressing industrial roads have access to the information needed to develop average vehicle information in Equation 1a for their facility.)

The effect of routine watering to control emissions from unpaved roads is discussed below in Section 13.2.2.3, “Controls”. However, all roads are subject to some natural mitigation because of rainfall and other precipitation. The Equation 1a and 1b emission factors can be extrapolated to annual

average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual average emissions are inversely proportional to the number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation:

$$E_{ext} = E\ [(365 - P)/365] \quad (2)$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation (see below)

Figure 13.2.2-1 gives the geographical distribution for the mean annual number of "wet" days for the United States.

Equation 2 provides an estimate that accounts for precipitation on an annual average basis for the purpose of inventorying emissions. It should be noted that Equation 2 does not account for differences in the temporal distributions of the rain events, the quantity of rain during any event, or the potential for the rain to evaporate from the road surface. In the event that a finer temporal and spatial resolution is desired for inventories of public unpaved roads, estimates can be based on a more complex set of assumptions. These assumptions include:

1. The moisture content of the road surface material is increased in proportion to the quantity of water added;
2. The moisture content of the road surface material is reduced in proportion to the Class A pan evaporation rate;
3. The moisture content of the road surface material is reduced in proportion to the traffic volume; and
4. The moisture content of the road surface material varies between the extremes observed in the area. The CHIEF Web site (http://www.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html) has a file which contains a spreadsheet program for calculating emission factors which are temporally and spatially resolved. Information required for use of the spreadsheet program includes monthly Class A pan evaporation values, hourly meteorological data for precipitation, humidity and snow cover, vehicle traffic information, and road surface material information.

It is emphasized that the simple assumption underlying Equation 2 and the more complex set of assumptions underlying the use of the procedure which produces a finer temporal and spatial resolution have not been verified in any rigorous manner. For this reason, the quality ratings for either approach should be downgraded one letter from the rating that would be applied to Equation 1.

13.2.2.3 Controls[18-22]

A wide variety of options exist to control emissions from unpaved roads. Options fall into the following three groupings:

1. Vehicle restrictions that limit the speed, weight or number of vehicles on the road;

2. Surface improvement, by measures such as (a) paving or (b) adding gravel or slag to a dirt road; and
3. Surface treatment, such as watering or treatment with chemical dust suppressants.

Available control options span broad ranges in terms of cost, efficiency, and applicability. For example, traffic controls provide moderate emission reductions (often at little cost) but are difficult to enforce. Although paving is highly effective, its high initial cost is often prohibitive. Furthermore, paving is not feasible for industrial roads subject to very heavy vehicles and/or spillage of material in transport. Watering and chemical suppressants, on the other hand, are potentially applicable to most industrial roads at moderate to low costs. However, these require frequent reapplication to maintain an acceptable level of control. Chemical suppressants are generally more cost-effective than water but not in cases of temporary roads (which are common at mines, landfills, and construction sites). In summary, then, one needs to consider not only the type and volume of traffic on the road but also how long the road will be in service when developing control plans.

Vehicle restrictions. These measures seek to limit the amount and type of traffic present on the road or to lower the mean vehicle speed. For example, many industrial plants have restricted employees from driving on plant property and have instead instituted bussing programs. This eliminates emissions due to employees traveling to/from their worksites. Although the heavier average vehicle weight of the busses increases the base emission factor, the decrease in vehicle-miles-traveled results in a lower overall emission rate.

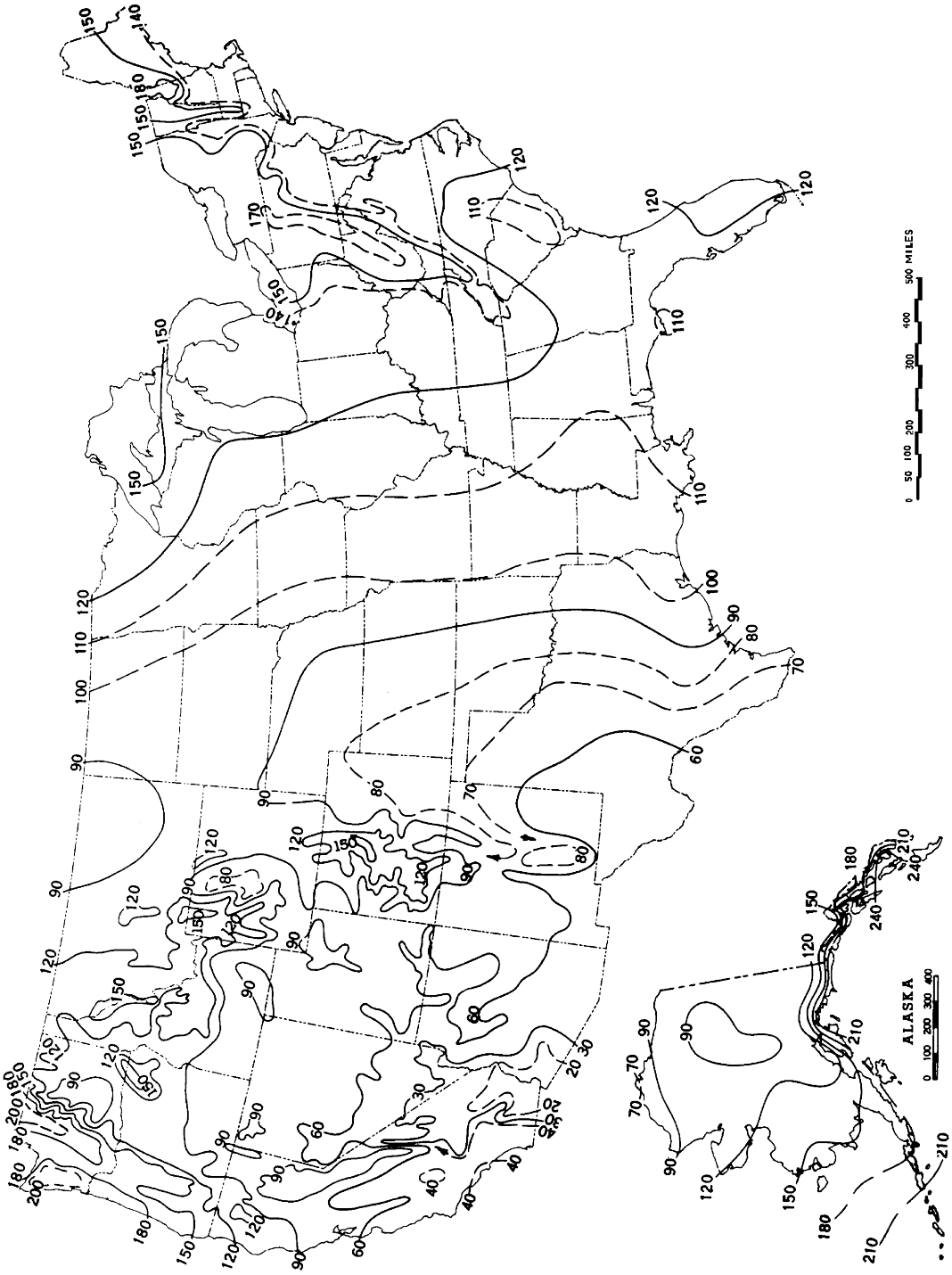


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

Surface improvements. Control options in this category alter the road surface. As opposed to the "surface treatments" discussed below, improvements are relatively "permanent" and do not require periodic retreatment.

The most obvious surface improvement is paving an unpaved road. This option is quite expensive and is probably most applicable to relatively short stretches of unpaved road with at least several hundred vehicle passes per day. Furthermore, if the newly paved road is located near unpaved areas or is used to transport material, it is essential that the control plan address routine cleaning of the newly paved road surface.

The control efficiencies achievable by paving can be estimated by comparing emission factors for unpaved and paved road conditions. The predictive emission factor equation for paved roads, given in Section 13.2.1, requires estimation of the silt loading on the traveled portion of the paved surface, which in turn depends on whether the pavement is periodically cleaned. Unless curbing is to be installed, the effects of vehicle excursion onto unpaved shoulders (berms) also must be taken into account in estimating the control efficiency of paving.

Other improvement methods cover the road surface with another material that has a lower silt content. Examples include placing gravel or slag on a dirt road. Control efficiency can be estimated by comparing the emission factors obtained using the silt contents before and after improvement. The silt content of the road surface should be determined after 3 to 6 months rather than immediately following placement. Control plans should address regular maintenance practices, such as grading, to retain larger aggregate on the traveled portion of the road.

Surface treatments refer to control options which require periodic reapplication. Treatments fall into the two main categories of (a) "wet suppression" (i. e., watering, possibly with surfactants or other additives), which keeps the road surface wet to control emissions and (b) "chemical stabilization/ treatment", which attempts to change the physical characteristics of the surface. The necessary reapplication frequency varies from several minutes for plain water under summertime conditions to several weeks or months for chemical dust suppressants.

Watering increases the moisture content, which conglomerates particles and reduces their likelihood to become suspended when vehicles pass over the surface. The control efficiency depends on how fast the road dries after water is added. This in turn depends on (a) the amount (per unit road surface area) of water added during each application; (b) the period of time between applications; (c) the weight, speed and number of vehicles traveling over the watered road during the period between applications; and (d) meteorological conditions (temperature, wind speed, cloud cover, etc.) that affect evaporation during the period.

Figure 13.2.2-2 presents a simple bilinear relationship between the instantaneous control efficiency due to watering and the resulting increase in surface moisture. The moisture ratio "M" (i.e., the x-axis in Figure 13.2.2-2) is found by dividing the surface moisture content of the watered road by the surface moisture content of the uncontrolled road. As the watered road surface dries, both the ratio M and the predicted instantaneous control efficiency (i.e., the y-axis in the figure) decrease. The figure shows that between the uncontrolled moisture content and a value twice as large, a small increase in moisture content results in a large increase in control efficiency. Beyond that, control efficiency grows slowly with increased moisture content.

Given the complicated nature of how the road dries, characterization of emissions from watered roadways is best done by collecting road surface material samples at various times between water truck passes. (Appendices C.1 and C.2 present the sampling and analysis procedures.) The moisture content measured can then be associated with a control efficiency by use of Figure 13.2.2-2. Samples that reflect average conditions during the watering cycle can take the form of either a series of samples between water applications or a single sample at the midpoint. It is essential that samples be collected during periods with active traffic on the road. Finally, because of different evaporation rates, it is recommended that samples be collected at various times during the year. If only one set of samples is to be collected, these must be collected during hot, summertime conditions.

When developing watering control plans for roads that do not yet exist, it is strongly recommended that the moisture cycle be established by sampling similar roads in the same geographic area. If the moisture cycle cannot be established by similar roads using established watering control plans, the more complex methodology used to estimate the mitigation of rainfall and other precipitation can be used to estimate the control provided by routine watering. An estimate of the maximum daytime Class A pan evaporation (based upon daily evaporation data published in the monthly Climatological Data for the state by the National Climatic Data Center) should be used to insure that adequate watering capability is available during periods of highest evaporation. The hourly precipitation values in the spreadsheet should be replaced with the equivalent inches of precipitation (where the equivalent of 1 inch of precipitation is provided by an application of 5.6 gallons of water per square yard of road). Information on the long term average annual evaporation and on the percentage that occurs between May and October was published in the Climatic Atlas (Reference 16). Figure 13.2.2-3 presents the geographical distribution for "Class A pan evaporation" throughout the United States. Figure 13.2.2-4 presents the geographical distribution of the percentage of this evaporation that occurs between May and October. The U. S. Weather Bureau Class A evaporation pan is a cylindrical metal container with a depth of 10 inches and a diameter of 48 inches. Periodic measurements are made of the changes of the water level.

The above methodology should be used only for prospective analyses and for designing watering programs for existing roadways. The quality rating of an emission factor for a watered road that is based on this methodology should be downgraded two letters. Periodic road surface samples should be collected and analyzed to verify the efficiency of the watering program.

As opposed to watering, chemical dust suppressants have much less frequent reapplication requirements. These materials suppress emissions by changing the physical characteristics of the existing road surface material. Many chemical unpaved road dust suppressants form a hardened surface that binds particles together. After several applications, a treated road often resembles a paved road except that the surface is not uniformly flat. Because the improved surface results in more grinding of small particles, the silt content of loose material on a highly controlled surface may be substantially higher than when the surface was uncontrolled. For this reason, the models presented as Equations 1a and 1b cannot be used to estimate emissions from chemically stabilized roads. Should the road be allowed to return to an

uncontrolled state with no visible signs of large-scale cementing of material, the Equation 1a and 1b emission factors could then be used to obtain conservatively high emission estimates.

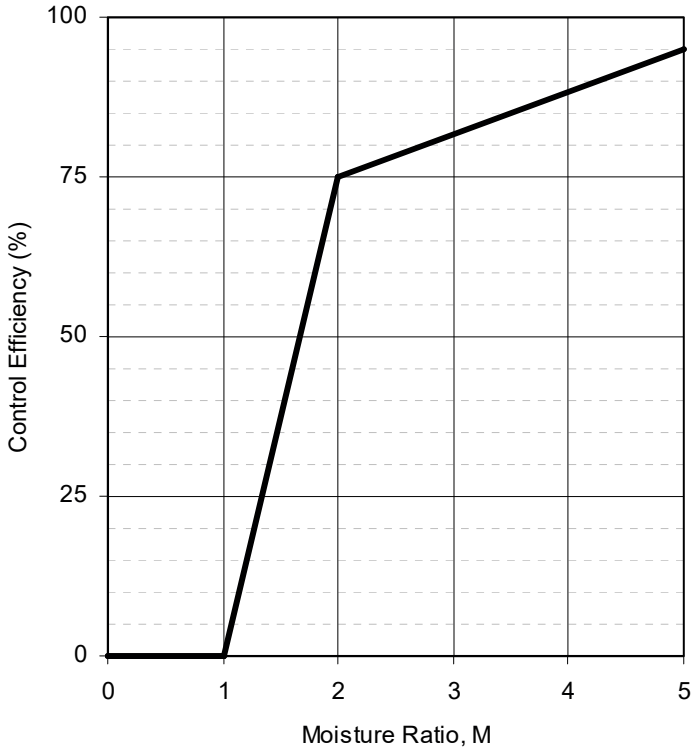


Figure 13.2.2-2. Watering control effectiveness for unpaved travel surfaces

The control effectiveness of chemical dust suppressants appears to depend on (a) the dilution rate used in the mixture; (b) the application rate (volume of solution per unit road surface area); (c) the time between applications; (d) the size, speed and amount of traffic during the period between applications; and (e) meteorological conditions (rainfall, freeze/thaw cycles, etc.) during the period. Other factors that affect the performance of dust suppressants include other traffic characteristics (e. g., cornering, track-on from unpaved areas) and road characteristics (e. g., bearing strength, grade). The variabilities in the above factors and differences between individual dust control products make the control efficiencies of chemical dust suppressants difficult to estimate. Past field testing of emissions from controlled unpaved roads has shown that chemical dust suppressants provide a PM-10 control efficiency of about 80 percent when applied at regular intervals of 2 weeks to 1 month.

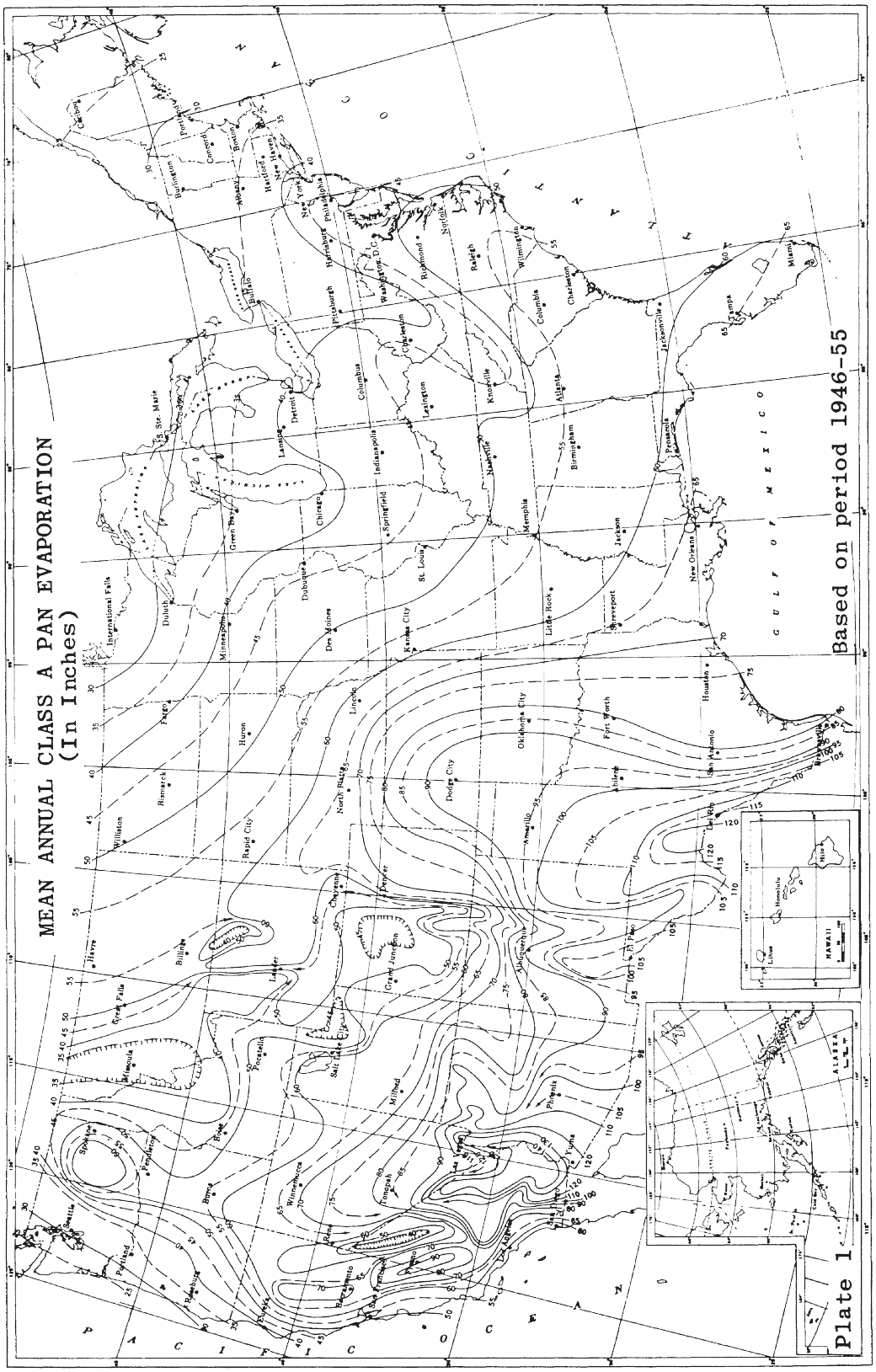


Figure 13.2.2-3. Annual evaporation data.

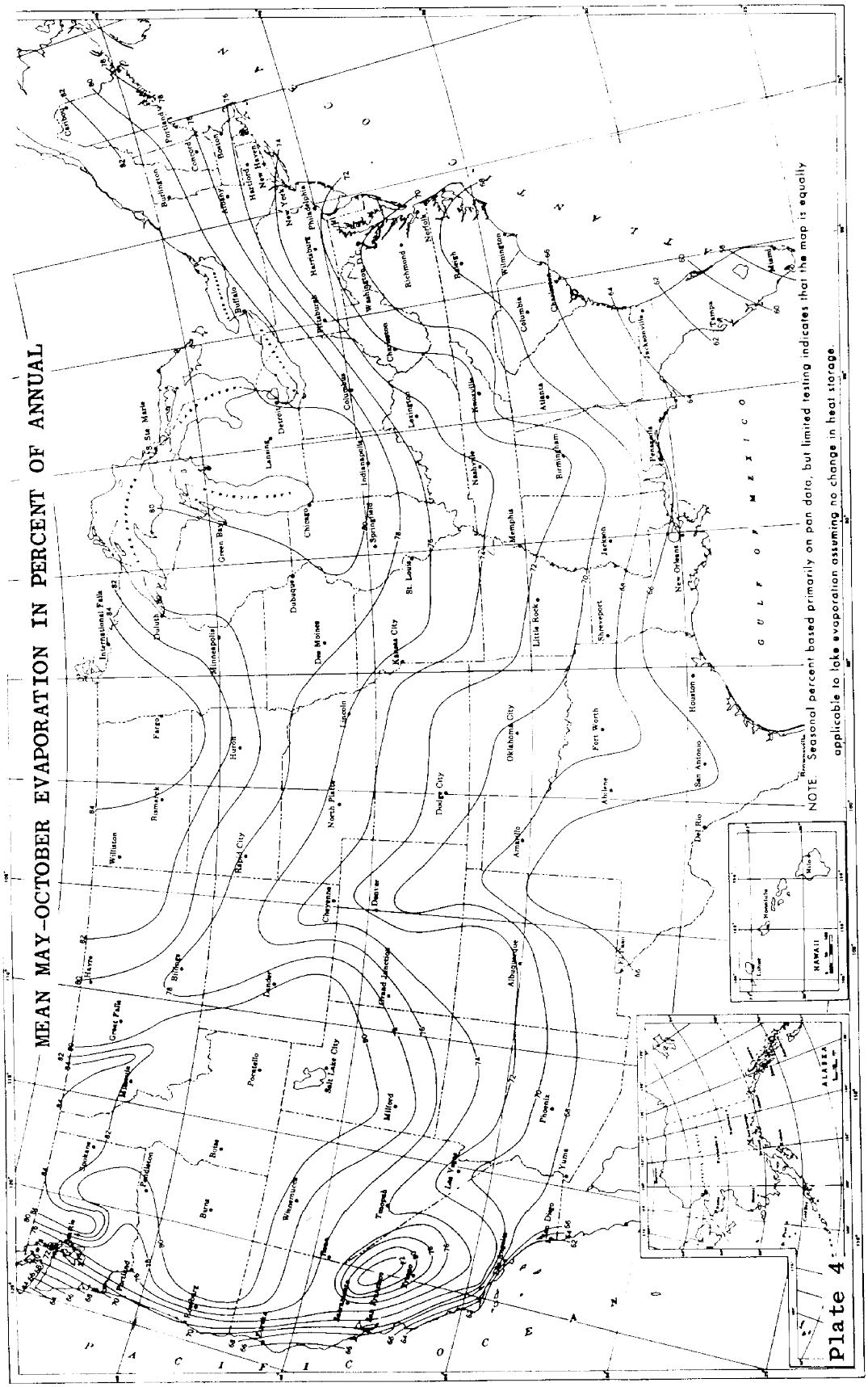


Figure 13.2.2-4. Geographical distribution of the percentage of evaporation occurring between May and October.

Petroleum resin products historically have been the dust suppressants (besides water) most widely used on industrial unpaved roads. Figure 13.2.2-5 presents a method to estimate average control efficiencies associated with petroleum resins applied to unpaved roads.[20] Several items should be noted:

1. The term "ground inventory" represents the total volume (per unit area) of petroleum resin concentrate (*not solution*) applied since the start of the dust control season.

2. Because petroleum resin products must be periodically reapplied to unpaved roads, the use of a time-averaged control efficiency value is appropriate. Figure 13.2.2-5 presents control efficiency values averaged over two common application intervals, 2 weeks and 1 month. Other application intervals will require interpolation.

3. Note that zero efficiency is assigned until the ground inventory reaches 0.05 gallon per square yard (gal/yd^2). Requiring a minimum ground inventory ensures that one must apply a reasonable amount of chemical dust suppressant to a road before claiming credit for emission control. Recall that the ground inventory refers to the amount of petroleum resin concentrate rather than the total solution.

As an example of the application of Figure 13.2.2-5, suppose that Equation 1a was used to estimate an emission factor of 7.1 lb/VMT for PM-10 from a particular road. Also, suppose that, starting on May 1, the road is treated with 0.221 gal/yd^2 of a solution (1 part petroleum resin to 5 parts water) on the first of each month through September. Then, the average controlled emission factors, shown in Table 13.2.2-5, are found.

Table 13.2-2-5. EXAMPLE OF AVERAGE CONTROLLED EMISSION FACTORS FOR SPECIFIC CONDITIONS

Period	Ground Inventory, gal/yd^2	Average Control Efficiency, %[a]	Average Controlled Emission Factor, lb/VMT
May	0.037	0	7.1
June	0.073	62	2.7
July	0.11	68	2.3
August	0.15	74	1.8
September	0.18	80	1.4

[a] From Figure 13.2.2-5, ≤10 µm. Zero efficiency assigned if ground inventory is less than 0.05 gal/yd^2. 1 lb/VMT = 281.9 g/VKT. 1 gal/yd^2 = 4.531 L/m^2.

Besides petroleum resins, other newer dust suppressants have also been successful in controlling emissions from unpaved roads. Specific test results for those chemicals, as well as for petroleum resins and watering, are provided in References 18 through 21.

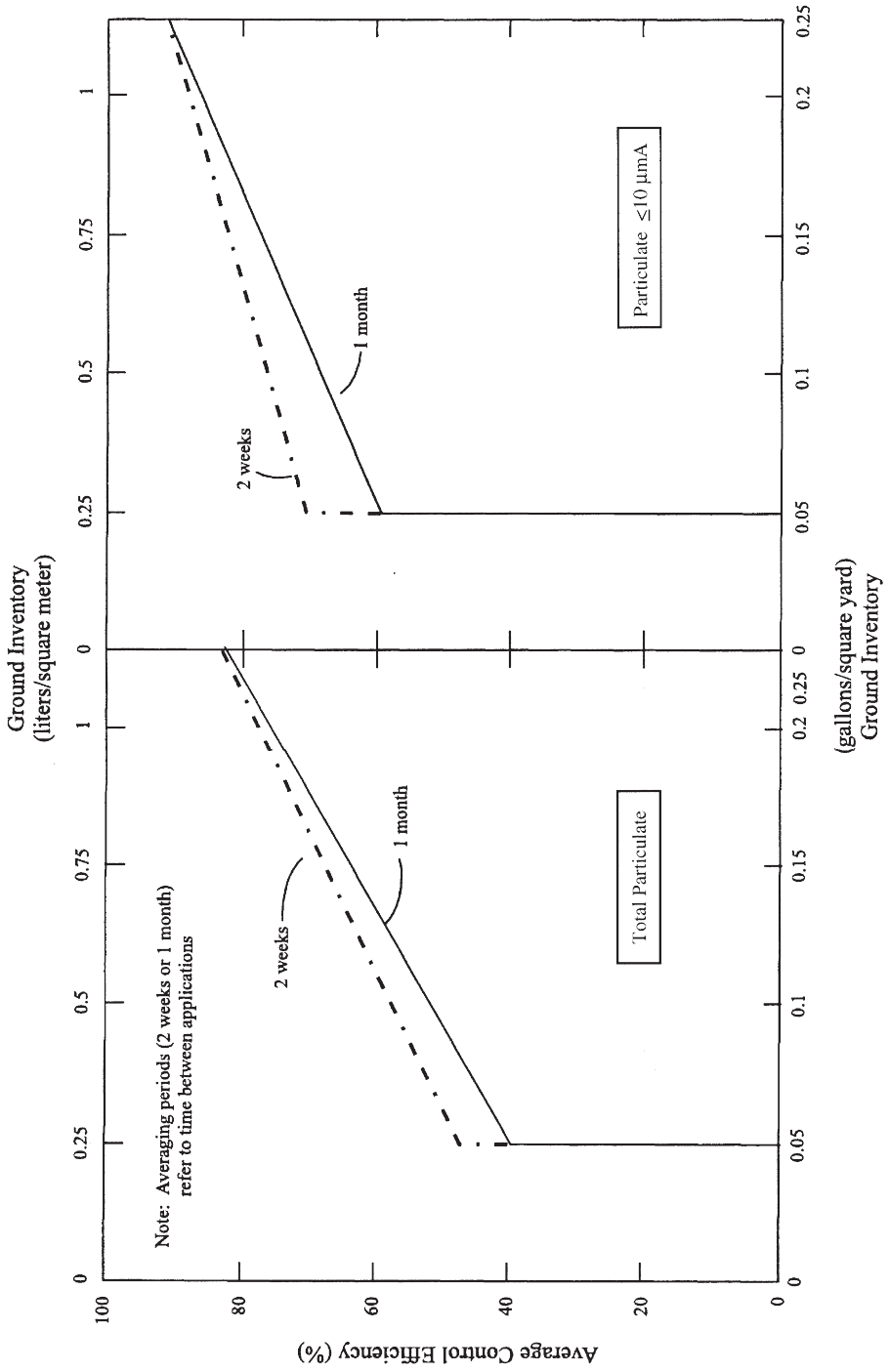


Figure 13.2.2-5. Average control efficiencies over common application intervals.

13.2.2.4 Updates Since The Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below. For further detail, consult the background report for this section (Reference 6).

October 1998 (Supplement E)– This was a major revision of this section. Significant changes to the text and the emission factor equations were made.

October 2001 – Separate emission factors for unpaved surfaces at industrial sites and publicly accessible roads were introduced. Figure 13.2.2-2 was included to provide control effectiveness estimates for watered roads.

December 2003 – The public road emission factor equation (equation 1b) was adjusted to remove the component of particulate emissions from exhaust, brake wear, and tire wear. The parameter C in the new equation varies with aerodynamic size range of the particulate matter. Table 13.2.2-4 was added to present the new coefficients.

January 2006 – The PM-2.5 particle size multipliers (i.e., factors) in Table 13.2.2-2 were modified and the quality ratings were upgraded from C to B based on the wind tunnel studies of a variety of dust emitting surface materials.

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13.2.6 Abrasive Blasting

13.2.6.1 General[1-2]

Abrasive blasting is the use of abrasive material to clean or texturize a material such as metal or masonry. Sand is the most widely used blasting abrasive. Other abrasive materials include coal slag, smelter slags, mineral abrasives, metallic abrasives, and synthetic abrasives. Industries that use abrasive blasting include the shipbuilding industry, automotive industry, and other industries that involve surface preparation and painting. The majority of shipyards no longer use sand for abrasive blasting because of concerns about silicosis, a condition caused by respiratory exposure to crystalline silica. In 1991, about 4.5 million tons of abrasives, including 2.5 million tons of sand, 1 million tons of coal slag, 500 thousand tons of smelter slag, and 500 thousand tons of other abrasives were used for domestic abrasive blasting operations.

13.2.6.2 Process Description[1-9]

Abrasive blasting systems typically include three essential components: an abrasive container (i. e., blasting pot); a propelling device; and a blasting nozzle or nozzles. The exact equipment used depends to a large extent on the specific application and type(s) of abrasive.

Three basic methods can be used to project the abrasive towards the surface being cleaned: air pressure; centrifugal wheels; or water pressure. Air blast (or dry) systems use compressed air to propel the abrasive using either a suction-type or pressure-type process. Centrifugal wheel systems use a rotating impeller to mechanically propel the abrasive by a combination of centrifugal and inertial forces. Finally, the water (or wet) blast method uses either air pressure or water pressure to propel an abrasive slurry towards the cleaned surface.

Abrasive materials used in blasting can generally be classified as sand, slag, metallic shot or grit, synthetic, or other. The cost and properties associated with the abrasive material dictate its application. The following discusses the general classes of commonly used abrasives.

Silica sand is commonly used for abrasive blasting where reclaiming is not feasible, such as in unconfined abrasive blasting operations. Sand has a rather high breakdown rate, which can result in substantial dust generation. Worker exposure to free crystalline silica is of concern when silica sand is used for abrasive blasting.

Coal and smelter slags are commonly used for abrasive blasting at shipyards. Black Beauty™, which consists of crushed slag from coal-fired utility boilers, is a commonly used slag. Slags have the advantage of low silica content, but have been documented to release other contaminants, including hazardous air pollutants (HAP), into the air.

Metallic abrasives include cast iron shot, cast iron grit, and steel shot. Cast iron shot is hard and brittle and is produced by spraying molten cast iron into a water bath. Cast iron grit is produced by crushing oversized and irregular particles formed during the manufacture of cast iron shot. Steel shot is produced by blowing molten steel. Steel shot is not as hard as cast iron shot, but is much more durable. These materials typically are reclaimed and reused.

Synthetic abrasives, such as silicon carbide and aluminum oxide, are becoming popular substitutes for sand. These abrasives are more durable and create less dust than sand. These materials typically are reclaimed and reused.

Other abrasives include mineral abrasives (such as garnet, olivine, and staurolite), cut plastic, glass beads, crushed glass, and nutshells. As with metallic and synthetic abrasives, these other abrasives are generally used in operations where the material is reclaimed. Mineral abrasives are reported to create significantly less dust than sand and slag abrasives.

The type of abrasive used in a particular application is usually specific to the blasting method. Dry blasting is usually done with sand, metallic grit or shot, aluminum oxide (alumina), or silicon carbide. Wet blasters are operated with either sand, glass beads, or other materials that remain suspended in water.

13.2.6.3 Emissions And Controls[1,3,5-11]

Emissions —

Particulate matter (PM) and particulate HAP are the major concerns relative to abrasive blasting. Table 13.2.6-1 presents total PM emission factors for abrasive blasting as a function of wind speed. Higher wind speeds increase emissions by enhanced ventilation of the process and by retardation of coarse particle deposition.

Table 13.2.6-1 also presents fine particulate emission factors for abrasive blasting. Emission factors are presented for PM-10 and PM-2.5, which denote particles equal to or smaller than 10 and 2.5 microns in aerodynamic diameter, respectively. Emissions of PM of these size fractions are not significantly wind-speed dependent. Table 13.2.6-1 also presents an emission factor for controlled emissions from an enclosed abrasive blasting operation controlled by a fabric filter; the blasting media was 30/40 mesh garnet.

Limited data from Reference 3 give a comparison of total PM emissions from abrasive blasting using various media. The study indicates that, on the basis of tons of abrasive used, total PM emissions from abrasive blasting using grit are about 24 percent of total PM emissions from abrasive blasting with sand. The study also indicates that total PM emissions from abrasive blasting using shot are about 10 percent of total PM emissions from abrasive blasting with sand.

Hazardous air pollutants, typically particulate metals, are emitted from some abrasive blasting operations. These emissions are dependent on both the abrasive material and the targeted surface.

Controls —

A number of different methods have been used to control the emissions from abrasive blasting. Theses methods include: blast enclosures; vacuum blasters; drapes; water curtains; wet blasting; and reclaim systems. Wet blasting controls include not only traditional wet blasting processes but also high pressure water blasting, high pressure water and abrasive blasting, and air and water abrasive blasting. For wet blasting, control efficiencies between 50 and 93 percent have been reported. Fabric filters are used to control emissions from enclosed abrasive blasting operations.

Table 13.2.6-1. PARTICULATE EMISSION FACTORS FOR ABRASIVE BLASTING[a]

EMISSION FACTOR RATING: E

Source	Particle size	Emission factor, lb/1,000 lb abrasive
Sand blasting of mild steel panels[b] (SCC 3-09-002-02)	Total PM	
	5 mph wind speed	27
	10 mph wind speed	55
	15 mph wind speed	91
	PM-10[c]	13
	PM-2.5[c]	1.3
Abrasive blasting of unspecified metal parts, controlled with a fabric filter[d] (SCC 3-09-002-04)	Total PM	0.69

a One lb/1,000 lb is equal to 1 kg/Mg. Factors represent uncontrolled emissions, unless noted. SCC = Source Classification Code.

b Reference 10.

c Emissions of PM-10 and PM-2.5 are not significantly wind-speed dependent.

d Reference 11. Abrasive blasting with garnet blast media.

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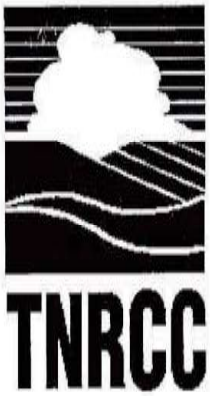
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October 2000
RG-109 (Draft)

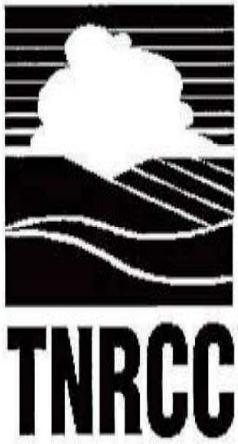
Air Permit Technical Guidance for Chemical Sources:

Flares and Vapor Oxidizers

printed on recycled paper

Air Permits Division

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION



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Technical Disclaimer

This document is intended as guidance to explain the specific requirements for new source review permitting of flares and vapor oxidizers; it does not supersede or replace any state or federal law, regulation, or rule. References to abatement equipment technologies are not intended to represent minimum or maximum levels of Best Available Control Technology (BACT). Determinations of BACT are made on a case-by-case basis as part of the New Source Review of permit applications. BACT determinations are always subject to adjustment in consideration of specific process requirements, air quality concerns, and recent developments in abatement technology. Additionally, specific health effects concerns may indicate stricter abatement than required by the BACT determination.

The represented calculation methods are intended as an aid in the completion of acceptable submittals; alternate calculation methods may be equally acceptable if they are based upon, and adequately demonstrate, sound engineering assumptions or data.

These guidelines are applicable as of this document's publication date but are subject to revision during the permit application preparation and review period. It is the responsibility of the applicants to remain abreast of any guideline or regulation developments that may affect their industries.

The electronic version of this document may not contain attachments or forms (such as the PI-1, Standard Exemptions, or tables) that can be obtained electronically elsewhere on the TNRCC Web site.

The special conditions included with these guidelines are for purposes of example only. Special conditions included in an actual permit are written by the reviewing engineer to address specific permit requirements and operating conditions.

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This document provides guidance for two classes of vapor combustion control devices: flares and vapor oxidizers. While there may be some overlap between the two, flares have generally been treated separately by the EPA and the TNRCC, in large part because flares have an open flame and often cannot be sampled, so emissions are estimated based on the results of flare testing performed in the early 1980s. Each of the two classes will be dealt with separately in each of the chapters of this document.

Combustion Control Devices NOT Discussed. This document will not cover permitting of RCRA or BIF units because the requirements for these units often go beyond the requirements for state air permitting. Incinerators used to treat solid wastes are covered in another technical guidance document, *Incinerators*. Guidance for combustion control devices associated with spray paint booths, coatings operations, and semiconductor facilities should be obtained by calling the TNRCC New Source Review Permits Division at (512) 239-1250.

Flares

Flare systems generally are open-flame control devices used for disposing of waste gas streams during both routine process and emergency or upset conditions. In addition to simple, unassisted flares, typical smokeless flare systems include, but are not limited to, the following:

- ***Enclosed Flares/Vapor Combustors.*** Enclosed flares are used in disposing of waste gas streams in instances where a visible flame is unacceptable. Applications include chemical processing, petroleum refining and production, and municipal waste gas treatment. These may be referred to as vapor combustors and can have more than one burner in the stack.

- ***Steam-Assisted Flares***. Steam-assisted flares are used in disposing of low-pressure waste gas streams when steam is available and practical to minimize smoking from the flare. Applications are similar to those of enclosed flares. Flares might also be assisted with natural gas if readily available on site; these flares would undergo a case-by-case review.

- ***Air-Assisted Flares.*** Air-assisted flares are used in disposing of low-pressure waste gas streams when practical or when steam utilities are not available to minimize smoking from the flare. Applications include chemical processing, petroleum refining and production, and pipeline transportation.

- ***Sonic Flares.*** Sonic flares are used in disposing of high-pressure waste gas streams. Applications include gas production, pipeline transportation, and treatment plants.

- ***Multipoint Flare Systems.*** Multipoint flare systems are used in disposing of both high- and low-pressure waste gas streams. Multiple burner tips in conjunction with a staged control system provide for controlled combustion. Applications are similar to those of air-assisted flares.

Vapor Oxidizers

These devices generally do not have an open flame but have an exhaust stack which allows for sampling and monitoring of exhaust emissions. The most common type, thermal, relies on the combustion heat of the waste gas and assist fuel (if required) to oxidize the waste gas air contaminants. Other types include:

- ***Recuperative.*** In this case, the waste gas is directed to a heat exchanger to be preheated by the exhaust gas, to minimize the need for additional assist fuel. Recuperative oxidizers are considered a subset of thermal oxidizers in this document.

- ***Regenerative***. Combustion takes place in a chamber with a heat sink, such as ceramic saddles, which retains the heat of combustion, allowing for combustion of more dilute vapor streams (which have a low heat of combustion) at a lower cost. These units generally have multiple chambers, which allow for the preheat of one chamber by exhaust gases while combustion takes place in another chamber.

- ***Catalytic.*** Combustion takes place over a catalyst that allows for combustion at a lower temperature (in the range of 600 to 800°F as opposed to greater than 1400°F for many thermal oxidizers). Catalytic oxidizers function best with a waste stream with constant flow and composition.

This chapter provides detailed instructions for the calculations necessary to verify BACT and estimate emissions from flares and vapor oxidizers. Flares must be checked to determine whether they will satisfy the flow and thermal requirements of 40 CFR § 60.18, and their emissions are determined by the use of emission factors. Example calculations are provided for these flare calculations.

Oxidizer emissions are determined by using previous sampling results or emission factors from the manufacturer or AP-42. These calculations are very similar to the flare calculations and are only discussed in general terms.

Flares: Introduction

Although emissions from emergency flares are not included in a permit when it is issued, emissions should be estimated for both routine process flares and emergency flares. Sometimes, emissions of routine pilot gas combustion may be included in an issued permit for emergency flares (although not required).

In this section, the *flare* emission factors and destruction efficiencies are presented first. This information is followed by sample *calculations* that demonstrate how to ensure that the requirements of 40 CFR § 60.18 are satisfied and how to estimate emissions from a flare. Flare data in Attachment B (typical refinery flare) will be used as a basis in most of the following calculations. Flare data in Attachment C (acid gas flare) will be used as a basis in the example calculations for SO_2 emissions.

Flare Emission Factors

The usual flare destruction efficiencies and emission factors are provided in Table 4. The high-Btu waste streams referred to in the table have a heating value greater than 1,000 Btu/scf.

Flare Destruction Efficiencies

Claims for destruction efficiencies greater than those listed in Table 4 will be considered on a case-by-case basis. The applicant may make one of the three following demonstrations to justify the higher destruction efficiency: (1) general method, (2) 99.5 percent justification, or (3) flare stack sampling.

Table 4. Flare Factors

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

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

EPA Documents

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EPA-453/R-95-017
November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates

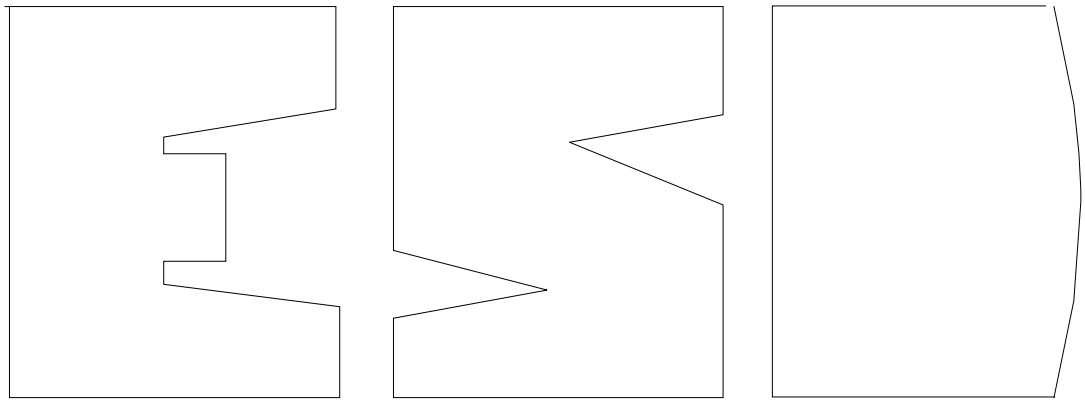


TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

TCEQ Documents

PAINTING BASICS AND EMISSION CALCULATIONS FOR TCEQ AIR QUALITY PERMIT APPLICATIONS

NOVEMBER 5, 2012

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



Protecting Texas by Reducing

And

Preventing Pollution

Presented by:

Mike Coldiron, P.E.

Texas Commission on Environmental Quality
Austin, Texas



determined through several methods such as estimation from tables or charts, the volume of coating applied to a part, or through the weighing of parts and the paint pots.

Estimation of TE from tables or charts (see References 5 and 6) is the least accurate method and is presented as Table 1.

Table 1. Transfer Efficiency as a Function of Application Equipment and Part Geometry

Application Equipment	Flat Surface	Table Leg	Bird Cage
Air Atomized	50	15	10
Airless	75-80	10	10
HVLP	65	15	10
Electrostatic Disk	95	90-95	90-95
Electrostatic Airless	80	70	70
Electrostatic Air Atomized	75	65	65

A significant improvement in the estimation of TE can be achieved through the use of the volume of coating applied to a part. This can be determined either through the use of wet or dry film thickness, coating volume solids content, the surface area of the part, the number of parts coated, and accurately weighing the application system (paint pots, hoses and gun) before and after the coating is applied.

For very large parts the method described above can be modified through the use of sheets of metal foil applied to the part that are weighed before and after the application of the coating.

The amount of overspray that falls out of the spray booth air stream before entering the overspray filter is determined by the application equipment and to a lesser extent the coating viscosity. Application equipment with a greater proportion of larger droplets in the spray pattern will have a greater portion of the overspray fall out within the booth. Application equipment with higher transfer efficiencies such as high volume low pressure (HVLP) or airless spray have large numbers of larger droplets compared to air atomized spray equipment. Droplets with a diameter of greater than 30 microns do not stay suspended in the air stream for a significant amount of time and will fall to the floor of the booth or impact the walls. Therefore, the fraction of the paint overspray that will be emitted is the fraction of the droplet sizes that are smaller than 30 microns in diameter. Determination of the fraction of the droplets smaller than PM_{10} and $PM_{2.5}$ is also necessary to determine the emission rates in these size ranges. The particle size distribution will depend on the type of application equipment used since each type of equipment has differing droplet size distributions. Particle size distribution data may be available from application equipment vendors and from References 8 through 12. The following table may be used to estimate PM, PM_{10}, and $PM_{2.5}$ emission rates for both enclosed and outdoor coating operations.

Table 2 Particle Size Distribution as a Function of Application Equipment

Application Equipment Type	Droplet Fraction Greater than PM_{30}	Droplet Fraction Greater than PM_{10}	Droplet Fraction Greater than $PM_{2.5}$
Air Atomized	0.81	0.94	0.99
Airless	0.9856	0.9987	0.9999
HVLP	0.90	0.90	0.90

Overspray filters are used in nearly all spray booths to control PM emissions and the efficiency of the filter system (dry filters or, in some older booths, water wash) is usually available from the filter system vendor. Overall PM control efficiencies (PM_{30} and smaller) may be determined by

RDR-H-781
Trim Reboiler Emissions Test

Boiler Combustion Test Report

Combustion Test Date: 08/20/2025 Q3

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 575-631-7093
201 S 4th Street
Artesia, NM 88210
Mobile:
Email:

CO: ppm*	NOx: ppm*
255.524	27.679
Pass	Pass
(400 ppm)	(30 ppm)

* Values corrected to 3% O2

PHYSICAL LOCATION

Operational Area: Targa Northern Delaware Facility Name: Road Runner Gas Plant

EQUIPMENT INFORMATION

Unit Name:	EP-2 Train 1 H-781	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Heat Tech.	Burner Make:	Faber Burner Co.	
Boiler Model:		Burner Model:	WB 1.16 SG	
Boiler Serial#:	HI14-149	Burner Serial#:	160032	

PERMIT INFORMATION

Permit #: NSR 7200M5 Permit Date: 8/28/2024 Permit CO Limit: 400
Permit Equipment #: EP-2 (H-781) Permit Units: ppm @ 3 % O2 Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial Serial #: 14698 Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

EMISSIONS TEST RESULTS

Parameter	Test 1	Test 2	Test 3	Overall Average
O2%	3.14	1.24	1.82	2.07
CO ppm @ 3% O2	138.10	279.76	348.72	255.52
NOx ppm @ 3% O2	29.01	24.84	29.18	27.68
CO mass @ 3% O2	138.097	279.757	348.717	255.524
NOx mass @ 3% O2	29.011	24.841	29.185	27.679

RampUp 1 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
15:36:51	6.10	20.00	8.30	16.00	2.00	18.00	93.70	24.16	21.74
15:37:07	6.10	19.00	8.30	17.00	2.00	19.00	93.70	22.95	22.95
15:37:22	6.10	18.00	8.30	18.00	2.00	20.00	93.70	21.74	24.16
15:37:37	6.20	16.00	8.20	19.00	2.00	21.00	93.70	19.46	25.54
15:37:52	6.20	16.00	8.20	20.00	2.00	22.00	93.70	19.46	26.76

Test 1 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
15:37:53	6.20	16.00	8.20	20.00	2.00	22.00	93.70	19.46	26.76
15:38:08	6.20	16.00	8.20	21.00	2.00	23.00	93.70	19.46	27.97
15:38:23	6.10	15.00	8.30	23.00	2.00	25.00	93.70	18.12	30.20
15:38:38	6.10	13.00	8.30	24.00	2.00	26.00	93.70	15.70	31.41
15:38:53	6.10	13.00	8.30	25.00	2.00	27.00	93.70	15.70	32.62
15:39:08	6.10	13.00	8.30	25.00	2.00	27.00	93.70	15.70	32.62
15:39:23	6.10	13.00	8.30	26.00	2.00	28.00	93.90	15.70	33.83
15:39:38	6.10	14.00	8.30	22.00	2.00	24.00	93.90	16.91	28.99
15:39:53	6.10	15.00	8.30	21.00	2.00	23.00	93.90	18.12	27.79
15:40:08	6.20	15.00	8.20	15.00	2.00	17.00	93.90	18.24	20.68
15:40:23	6.20	15.00	8.20	13.00	2.00	15.00	93.90	18.24	18.24
15:40:38	6.10	14.00	8.30	10.00	2.00	12.00	93.90	16.91	14.50
15:40:53	6.10	14.00	8.30	7.00	2.00	9.00	93.90	16.91	10.87
15:41:08	6.10	13.00	8.30	5.00	2.00	7.00	93.90	15.70	8.46
15:41:23	6.00	12.00	8.40	5.00	2.00	7.00	93.90	14.40	8.40
15:41:38	6.10	12.00	8.30	9.00	2.00	11.00	93.90	14.50	13.29
15:41:53	6.10	11.00	8.30	12.00	2.00	14.00	93.90	13.29	16.91
15:42:08	6.10	10.00	8.30	16.00	2.00	18.00	93.90	12.08	21.74
15:42:23	6.10	12.00	8.30	20.00	2.00	22.00	93.90	14.50	26.58
15:42:38	6.10	12.00	8.30	24.00	2.00	26.00	93.90	14.50	31.41
15:42:53	6.10	12.00	8.30	28.00	2.00	30.00	93.90	14.50	36.24
15:43:08	6.10	12.00	8.30	31.00	2.00	33.00	93.90	14.50	39.87
15:43:23	6.10	13.00	8.30	34.00	2.00	36.00	93.90	15.70	43.49
15:43:38	6.10	13.00	8.30	37.00	2.00	39.00	93.90	15.70	47.11
15:43:53	6.10	13.00	8.30	41.00	2.00	43.00	93.90	15.70	51.95
15:44:08	6.20	13.00	8.20	46.00	2.00	48.00	93.90	15.81	58.38
15:44:23	6.30	11.00	8.20	50.00	2.00	52.00	93.90	13.47	63.67
15:44:38	6.30	10.00	8.20	54.00	2.00	56.00	93.90	12.24	68.57
15:44:53	6.30	10.00	8.20	55.00	2.00	57.00	93.90	12.24	69.80
15:45:08	6.30	11.00	8.20	56.00	2.00	58.00	93.90	13.47	71.02
16:11:39	1.70	131.00	10.80	29.00	3.00	32.00	96.10	122.18	29.84
16:11:54	1.60	152.00	10.80	28.00	3.00	31.00	96.10	141.03	28.76
16:12:09	1.60	141.00	10.80	28.00	3.00	31.00	96.10	130.82	28.76
16:12:24	1.60	149.00	10.80	28.00	3.00	31.00	96.10	138.25	28.76
16:12:39	1.70	124.00	10.80	27.00	3.00	30.00	96.10	115.65	27.98
16:12:54	1.60	165.00	10.80	27.00	3.00	30.00	96.10	153.09	27.84
16:13:09	1.50	185.00	10.90	25.00	4.00	29.00	96.10	170.77	26.77
16:13:24	1.50	222.00	10.90	24.00	4.00	28.00	96.10	204.92	25.85
16:13:39	1.50	181.00	10.90	26.00	3.00	29.00	96.10	167.08	26.77
16:13:54	1.50	128.00	10.90	27.00	3.00	30.00	96.10	118.15	27.69
16:14:09	1.40	204.00	10.90	24.00	3.00	27.00	96.10	187.35	24.80
16:14:24	1.40	290.00	10.90	22.00	4.00	26.00	96.10	266.33	23.88

Test 1 - 08/20/25									
16:14:39	1.30	280.00	11.00	22.00	4.00	26.00	96.10	255.84	23.76
16:14:54	1.40	194.00	10.90	24.00	3.00	27.00	96.10	178.16	24.80
16:15:09	1.40	170.00	10.90	26.00	3.00	29.00	96.10	156.12	26.63
16:15:24	1.40	158.00	10.90	26.00	3.00	29.00	96.10	145.10	26.63
16:15:39	1.40	222.00	10.90	25.00	4.00	29.00	96.10	203.88	26.63
16:15:54	1.40	189.00	10.90	26.00	4.00	30.00	96.10	173.57	27.55
16:16:09	1.40	162.00	10.90	27.00	3.00	30.00	96.30	148.78	27.55
16:16:24	1.40	154.00	10.90	27.00	4.00	31.00	96.30	141.43	28.47
16:16:39	1.40	191.00	10.90	26.00	4.00	30.00	96.30	175.41	27.55
16:16:54	1.40	206.00	10.90	26.00	4.00	30.00	96.30	189.18	27.55
16:17:09	1.40	188.00	10.90	26.00	4.00	30.00	96.30	172.65	27.55
16:17:24	1.40	228.00	10.90	25.00	4.00	29.00	96.30	209.39	26.63
16:17:39	1.30	365.00	11.00	19.00	4.00	23.00	96.30	333.50	21.02
16:17:54	1.30	382.00	11.00	19.00	4.00	23.00	96.30	349.04	21.02
16:18:09	1.40	252.00	10.90	23.00	4.00	27.00	96.30	231.43	24.80
16:18:24	1.40	197.00	10.90	25.00	4.00	29.00	96.40	180.92	26.63
16:18:39	1.30	214.00	11.00	25.00	4.00	29.00	96.40	195.53	26.50
16:18:54	1.30	239.00	11.00	24.00	4.00	28.00	96.40	218.38	25.58
16:19:09	1.30	300.00	11.00	22.00	4.00	26.00	96.40	274.11	23.76
16:19:24	1.30	278.00	11.00	23.00	4.00	27.00	96.40	254.01	24.67
16:19:39	1.30	264.00	11.00	23.00	4.00	27.00	96.40	241.22	24.67
16:19:54	1.40	272.00	10.90	23.00	4.00	27.00	96.40	249.80	24.80
16:20:09	1.40	218.00	10.90	25.00	3.00	28.00	96.40	200.20	25.71
16:20:24	1.40	196.00	10.90	26.00	3.00	29.00	96.40	180.00	26.63
16:20:39	1.40	259.00	10.90	25.00	4.00	29.00	96.40	237.86	26.63
16:20:54	1.30	257.00	11.00	25.00	4.00	29.00	96.40	234.82	26.50
16:21:09	1.30	262.00	11.00	25.00	4.00	29.00	96.40	239.39	26.50
16:21:24	1.40	218.00	10.90	26.00	4.00	30.00	96.60	200.20	27.55
16:21:39	1.40	261.00	10.90	25.00	4.00	29.00	96.60	239.69	26.63
16:21:54	1.40	306.00	10.90	23.00	4.00	27.00	96.60	281.02	24.80
16:22:09	1.40	242.00	10.90	25.00	4.00	29.00	96.60	222.24	26.63
16:22:24	1.40	241.00	10.90	25.00	4.00	29.00	96.60	221.33	26.63
16:22:39	1.40	268.00	10.90	25.00	4.00	29.00	96.60	246.12	26.63
16:22:54	1.40	221.00	10.90	26.00	4.00	30.00	96.60	202.96	27.55
16:23:09	1.40	271.00	10.90	25.00	4.00	29.00	96.60	248.88	26.63
16:23:24	1.40	245.00	10.90	26.00	4.00	30.00	96.60	225.00	27.55
16:23:39	1.30	309.00	11.00	23.00	4.00	27.00	96.60	282.34	24.67
16:23:54	1.30	280.00	11.00	24.00	4.00	28.00	96.60	255.84	25.58
16:24:09	1.30	278.00	11.00	24.00	4.00	28.00	96.60	254.01	25.58
16:24:24	1.30	319.00	11.00	23.00	4.00	27.00	96.60	291.47	24.67

Average O2 =	3.14 %	Average NOx =	28.30 ppm	Average CO =	148.95 ppm
Average COmass =	138.097 ppm	Average NO =	25.22 ppm	Average NOxmass =	29.011 ppm
Average NO2 =	3.09 ppm	Average COcorr =	138.10 ppm	Average NOxcorr =	29.01 ppm

Purge 1 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
16:24:39	1.40	306.00	10.90	23.00	4.00	27.00	96.60	281.02	24.80
16:24:54	21.00	225.00	0.00	11.00	1.00	12.00	96.60		
16:25:09	21.00	65.00	0.00	10.00	0.00	10.00	96.60		
16:25:24	21.00	20.00	0.00	10.00	0.00	10.00	96.80		

Purge 1 - 08/20/25									
16:25:39	21.00	9.00	0.00	10.00	0.00	10.00	96.80		

RampUp 2 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
16:25:40	21.00	8.00	0.00	10.00	0.00	10.00	96.80		
16:25:55	2.20	74.00	10.50	22.00	2.00	24.00	96.80	70.85	22.98
16:26:10	1.60	245.00	10.80	23.00	2.00	25.00	96.80	227.32	23.20
16:26:25	1.50	256.00	10.90	25.00	3.00	28.00	96.80	236.31	25.85
16:26:40	1.40	269.00	10.90	25.00	3.00	28.00	96.80	247.04	25.71

Test 2 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
16:26:41	1.40	275.00	10.90	25.00	3.00	28.00	96.80	252.55	25.71
16:26:56	1.40	308.00	10.90	23.00	4.00	27.00	96.80	282.86	24.80
16:27:11	1.30	303.00	11.00	24.00	4.00	28.00	96.80	276.85	25.58
16:27:26	1.30	224.00	11.00	26.00	3.00	29.00	97.00	204.67	26.50
16:27:41	1.30	201.00	11.00	28.00	3.00	31.00	97.00	183.65	28.32
16:27:56	1.20	233.00	11.00	26.00	4.00	30.00	97.00	211.82	27.27
16:28:11	1.20	309.00	11.00	24.00	3.00	27.00	97.00	280.91	24.55
16:28:26	1.20	267.00	11.00	24.00	3.00	27.00	97.00	242.73	24.55
16:28:41	1.20	374.00	11.00	21.00	4.00	25.00	97.00	340.00	22.73
16:28:56	1.20	348.00	11.00	21.00	4.00	25.00	97.00	316.36	22.73
16:29:11	1.20	323.00	11.00	22.00	4.00	26.00	97.00	293.64	23.64
16:29:26	1.30	288.00	11.00	22.00	4.00	26.00	97.00	263.15	23.76
16:29:41	1.20	293.00	11.00	22.00	4.00	26.00	97.20	266.36	23.64
16:29:56	1.20	360.00	11.00	22.00	4.00	26.00	97.20	327.27	23.64
16:30:12	1.20	354.00	11.00	21.00	4.00	25.00	97.20	321.82	22.73
16:30:27	1.20	373.00	11.00	20.00	4.00	24.00	97.20	339.09	21.82
16:30:42	1.20	413.00	11.00	19.00	4.00	23.00	97.20	375.45	20.91
16:30:57	1.30	344.00	11.00	20.00	4.00	24.00	97.20	314.31	21.93
16:31:12	1.30	244.00	11.00	25.00	3.00	28.00	97.20	222.94	25.58
16:31:27	1.30	264.00	11.00	25.00	3.00	28.00	97.20	241.22	25.58
16:31:42	1.30	242.00	11.00	27.00	3.00	30.00	97.20	221.12	27.41
16:31:57	1.30	180.00	11.00	28.00	3.00	31.00	97.30	164.47	28.32
16:32:12	1.40	216.00	10.90	28.00	3.00	31.00	97.30	198.37	28.47
16:32:27	1.30	271.00	11.00	25.00	4.00	29.00	97.30	247.61	26.50
16:32:42	1.30	338.00	11.00	24.00	4.00	28.00	97.30	308.83	25.58
16:32:57	1.30	304.00	11.00	24.00	3.00	27.00	97.30	277.77	24.67
16:33:12	1.30	299.00	11.00	23.00	4.00	27.00	97.30	273.20	24.67
16:33:27	1.40	287.00	10.90	25.00	3.00	28.00	97.30	263.57	25.71
16:33:42	1.40	174.00	10.90	28.00	3.00	31.00	97.30	159.80	28.47
16:33:57	1.40	206.00	10.90	27.00	3.00	30.00	97.30	189.18	27.55
16:34:12	1.30	357.00	11.00	23.00	3.00	26.00	97.30	326.19	23.76
16:34:27	1.30	303.00	11.00	24.00	3.00	27.00	97.30	276.85	24.67
16:34:42	1.30	290.00	11.00	24.00	3.00	27.00	97.30	264.97	24.67
16:34:57	1.30	246.00	11.00	26.00	3.00	29.00	97.30	224.77	26.50
16:35:12	1.30	228.00	11.00	26.00	3.00	29.00	97.30	208.32	26.50
16:35:27	1.30	370.00	11.00	22.00	4.00	26.00	97.30	338.07	23.76
16:35:42	1.30	379.00	11.00	21.00	4.00	25.00	97.30	346.29	22.84
16:35:57	1.20	375.00	11.00	21.00	4.00	25.00	97.30	340.91	22.73

Test 2 - 08/20/25									
16:36:12	1.20	316.00	11.00	23.00	3.00	26.00	97.30	287.27	23.64
16:36:27	1.20	276.00	11.00	24.00	3.00	27.00	97.50	250.91	24.55
16:36:42	1.20	293.00	11.00	24.00	4.00	28.00	97.50	266.36	25.45
16:36:57	1.20	295.00	11.00	24.00	4.00	28.00	97.50	268.18	25.45
16:37:12	1.20	278.00	11.00	25.00	3.00	28.00	97.50	252.73	25.45
16:37:27	1.20	266.00	11.00	26.00	3.00	29.00	97.50	241.82	26.36
16:37:42	1.20	283.00	11.00	26.00	3.00	29.00	97.50	257.27	26.36
16:37:57	1.20	271.00	11.00	26.00	3.00	29.00	97.50	246.36	26.36
16:38:12	1.20	328.00	11.00	25.00	3.00	28.00	97.50	298.18	25.45
16:38:27	1.30	321.00	11.00	24.00	3.00	27.00	97.50	293.30	24.67
16:38:42	1.40	312.00	10.90	24.00	4.00	28.00	97.70	286.53	25.71
16:38:57	1.30	455.00	11.00	19.00	4.00	23.00	97.70	415.74	21.02
16:39:12	1.30	346.00	11.00	23.00	3.00	26.00	97.70	316.14	23.76
16:39:27	1.30	228.00	11.00	27.00	3.00	30.00	97.70	208.32	27.41
16:39:42	1.30	210.00	11.00	28.00	3.00	31.00	97.70	191.88	28.32
16:39:57	1.30	271.00	11.00	27.00	3.00	30.00	97.70	247.61	27.41
16:40:12	1.30	254.00	11.00	27.00	3.00	30.00	97.70	232.08	27.41
16:40:27	1.30	272.00	11.00	27.00	3.00	30.00	97.70	248.53	27.41
16:40:42	1.30	228.00	11.00	28.00	3.00	31.00	97.70	208.32	28.32
16:40:57	1.40	199.00	10.90	29.00	3.00	32.00	97.70	182.76	29.39
16:41:12	1.40	171.00	10.90	31.00	2.00	33.00	97.70	157.04	30.31
16:41:27	1.30	201.00	11.00	30.00	3.00	33.00	97.90	183.65	30.15
16:41:42	1.30	224.00	11.00	28.00	3.00	31.00	97.90	204.67	28.32
16:41:57	1.30	284.00	11.00	27.00	3.00	30.00	97.90	259.49	27.41
16:42:12	1.20	285.00	11.00	26.00	3.00	29.00	97.90	259.09	26.36
16:42:27	1.10	296.00	11.10	25.00	3.00	28.00	97.90	267.74	25.33
16:42:42	1.20	304.00	11.00	25.00	3.00	28.00	97.90	276.36	25.45
16:42:57	1.20	303.00	11.00	25.00	3.00	28.00	97.90	275.45	25.45
16:43:12	1.20	305.00	11.00	25.00	3.00	28.00	97.90	277.27	25.45
16:43:27	1.10	335.00	11.10	22.00	3.00	25.00	97.90	303.02	22.61
16:43:42	1.00	460.00	11.10	18.00	4.00	22.00	97.90	414.00	19.80
16:43:57	1.10	451.00	11.10	19.00	3.00	22.00	97.90	407.94	19.90
16:44:12	1.10	314.00	11.10	21.00	4.00	25.00	97.90	284.02	22.61
16:44:27	1.10	412.00	11.10	20.00	4.00	24.00	97.90	372.66	21.71
16:44:42	1.10	449.00	11.10	19.00	4.00	23.00	97.90	406.13	20.80
16:44:57	1.10	353.00	11.10	21.00	4.00	25.00	97.90	319.30	22.61
16:45:12	1.10	439.00	11.10	15.00	4.00	19.00	97.90	397.09	17.19
16:45:27	1.10	628.00	11.10	13.00	4.00	17.00	97.90	568.04	15.38
16:45:42	1.10	426.00	11.10	19.00	4.00	23.00	97.90	385.33	20.80
16:45:57	1.10	325.00	11.10	23.00	4.00	27.00	97.90	293.97	24.42
16:46:12	1.10	301.00	11.10	24.00	3.00	27.00	97.90	272.26	24.42
16:46:27	1.20	327.00	11.00	24.00	3.00	27.00	97.90	297.27	24.55
16:46:42	1.20	351.00	11.00	23.00	3.00	26.00	97.90	319.09	23.64
16:46:57	1.20	386.00	11.00	22.00	4.00	26.00	97.90	350.91	23.64

Average O2 =	1.24 %	Average NOx =	27.26 ppm	Average CO =	307.26 ppm
Average COmass =	279.757 ppm	Average NO =	23.87 ppm	Average NOxmass =	24.841 ppm
Average NO2 =	3.39 ppm	Average COcorr =	279.76 ppm	Average NOxcorr =	24.84 ppm

Purge 2 - 08/20/25									
Time	**O2**	**CO**	**CO2**	**NO**	**NO2**	**NOx**	**Tcell**	**COcorr**	**NOxcorr**

Purge 2 - 08/20/25									
16:47:02	1.20	389.00	11.00	22.00	4.00	26.00	97.90	353.64	23.64
16:47:17	21.00	333.00	0.00	9.00	0.00	9.00	97.90		
16:47:32	21.00	90.00	0.00	9.00	0.00	9.00	97.90		
16:47:47	21.00	28.00	0.00	10.00	0.00	10.00	97.90		
16:48:02	21.00	15.00	0.00	11.00	0.00	11.00	97.90		

RampUp 3 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
16:48:03	21.00	15.00	0.00	11.00	0.00	11.00	97.90		
16:48:18	2.20	93.00	10.50	21.00	1.00	22.00	97.90	89.04	21.06
16:48:33	1.50	276.00	10.90	24.00	2.00	26.00	97.90	254.77	24.00
16:48:48	1.30	300.00	11.00	24.00	3.00	27.00	97.90	274.11	24.67
16:49:03	1.20	434.00	11.00	19.00	4.00	23.00	97.90	394.55	20.91

Test 3 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
16:49:04	1.20	444.00	11.00	19.00	4.00	23.00	97.90	403.64	20.91
16:49:19	1.10	507.00	11.10	17.00	4.00	21.00	97.90	458.59	18.99
16:49:34	1.10	497.00	11.10	17.00	4.00	21.00	97.90	449.55	18.99
16:49:49	1.10	529.00	11.10	16.00	4.00	20.00	97.90	478.49	18.09
16:50:04	1.10	378.00	11.10	20.00	4.00	24.00	97.90	341.91	21.71
16:50:19	1.00	494.00	11.10	17.00	4.00	21.00	97.90	444.60	18.90
16:50:34	1.00	541.00	11.10	16.00	4.00	20.00	97.90	486.90	18.00
16:50:49	0.90	562.00	11.20	13.00	4.00	17.00	97.90	503.28	15.22
16:51:04	0.90	683.00	11.20	11.00	4.00	15.00	97.70	611.64	13.43
16:51:19	1.00	606.00	11.10	11.00	5.00	16.00	97.70	545.40	14.40
16:51:34	1.00	484.00	11.10	16.00	4.00	20.00	97.70	435.60	18.00
16:51:49	0.90	483.00	11.20	15.00	4.00	19.00	97.70	432.54	17.01
16:52:04	0.80	664.00	11.30	10.00	4.00	14.00	97.50	591.68	12.48
16:53:04	1.30	332.00	11.00	22.00	4.00	26.00	97.30	303.35	23.76
16:53:19	1.50	359.00	10.90	24.00	3.00	27.00	97.30	331.38	24.92
16:53:34	1.50	244.00	10.90	28.00	3.00	31.00	97.30	225.23	28.62
16:53:49	1.50	214.00	10.90	31.00	3.00	34.00	97.30	197.54	31.38
16:54:04	1.50	162.00	10.90	32.00	3.00	35.00	97.20	149.54	32.31
16:54:19	1.50	261.00	10.90	30.00	3.00	33.00	97.20	240.92	30.46
16:54:35	1.40	316.00	10.90	28.00	4.00	32.00	97.20	290.20	29.39
16:54:50	1.40	293.00	10.90	28.00	4.00	32.00	97.20	269.08	29.39
16:55:05	1.30	267.00	11.00	28.00	4.00	32.00	97.20	243.96	29.24
16:55:20	1.20	258.00	11.00	29.00	4.00	33.00	97.20	234.55	30.00
16:55:35	1.20	278.00	11.00	27.00	4.00	31.00	97.20	252.73	28.18
16:55:50	1.30	354.00	11.00	25.00	4.00	29.00	97.20	323.45	26.50
16:56:05	1.30	441.00	11.00	22.00	4.00	26.00	97.30	402.94	23.76
16:56:20	1.20	425.00	11.00	22.00	4.00	26.00	97.30	386.36	23.64
16:56:35	1.30	251.00	11.00	28.00	3.00	31.00	97.30	229.34	28.32
16:56:50	1.30	170.00	11.00	31.00	3.00	34.00	97.30	155.33	31.07
16:57:05	1.30	259.00	11.00	28.00	3.00	31.00	97.20	236.65	28.32
16:57:20	1.20	376.00	11.00	25.00	4.00	29.00	97.20	341.82	26.36
16:57:35	1.10	378.00	11.10	24.00	4.00	28.00	97.20	341.91	25.33
16:57:50	1.00	384.00	11.10	16.00	4.00	20.00	97.20	345.60	18.00
16:58:05	0.70	960.00	11.30	0.00	4.00	4.00	97.20	851.23	3.55

Test 3 - 08/20/25									
16:58:20	0.70	1277.00	11.30	0.00	4.00	4.00	97.20	1132.32	3.55
16:58:35	0.80	1257.00	11.30	0.00	4.00	4.00	97.20	1120.10	3.56
17:17:35	8.50	13.00	7.00	76.00	0.00	76.00	96.80	18.72	109.44
17:17:50	8.50	13.00	7.00	74.00	0.00	74.00	96.80	18.72	106.56
17:29:36	1.60	387.00	10.80	23.00	1.00	24.00	96.30	359.07	22.27
17:29:51	1.30	705.00	11.00	13.00	2.00	15.00	96.30	644.16	13.71
17:30:06	1.30	760.00	11.00	12.00	2.00	14.00	96.30	694.42	12.79
17:30:36	1.80	331.00	10.70	29.00	2.00	31.00	96.30	310.31	29.06
17:30:51	1.90	259.00	10.60	32.00	2.00	34.00	96.30	244.08	32.04
17:31:06	1.90	266.00	10.60	33.00	1.00	34.00	96.30	250.68	32.04
17:31:21	1.80	277.00	10.70	33.00	2.00	35.00	96.30	259.69	32.81
17:31:36	1.90	269.00	10.60	34.00	1.00	35.00	96.10	253.51	32.98
17:31:51	1.90	221.00	10.60	36.00	1.00	37.00	96.10	208.27	34.87
17:32:06	1.90	212.00	10.60	37.00	1.00	38.00	96.30	199.79	35.81
17:32:21	1.80	263.00	10.70	35.00	1.00	36.00	96.30	246.56	33.75
17:32:36	1.60	315.00	10.80	33.00	2.00	35.00	96.30	292.27	32.47
17:32:51	1.70	346.00	10.80	32.00	2.00	34.00	96.30	322.69	31.71
17:33:06	1.70	366.00	10.80	30.00	2.00	32.00	96.30	341.35	29.84
17:33:21	1.60	415.00	10.80	29.00	2.00	31.00	96.30	385.05	28.76
17:33:36	1.40	583.00	10.90	20.00	2.00	22.00	96.30	535.41	20.20
17:33:51	1.50	587.00	10.90	21.00	2.00	23.00	96.30	541.85	21.23
17:34:06	1.50	489.00	10.90	22.00	2.00	24.00	96.30	451.38	22.15
17:34:21	1.50	501.00	10.90	23.00	2.00	25.00	96.30	462.46	23.08
17:34:36	1.50	468.00	10.90	24.00	2.00	26.00	96.30	432.00	24.00
17:34:51	1.40	574.00	10.90	21.00	2.00	23.00	96.10	527.14	21.12
17:35:06	1.20	833.00	11.00	6.00	2.00	8.00	96.10	757.27	7.27
17:37:21	2.70	242.00	10.20	36.00	1.00	37.00	95.90	238.03	36.39
17:37:36	2.70	197.00	10.20	38.00	1.00	39.00	95.90	193.77	38.36
17:37:51	2.90	147.00	10.10	41.00	0.00	41.00	95.90	146.19	40.77
17:38:06	3.00	131.00	10.00	42.00	0.00	42.00	95.90	131.00	42.00
17:38:21	2.90	132.00	10.10	43.00	0.00	43.00	95.90	131.27	42.76
17:38:36	2.90	135.00	10.10	43.00	0.00	43.00	95.90	134.25	42.76
17:38:51	2.90	131.00	10.10	43.00	0.00	43.00	95.90	130.28	42.76
17:39:06	2.80	131.00	10.10	43.00	0.00	43.00	95.70	129.56	42.53
17:39:21	2.80	117.00	10.10	43.00	0.00	43.00	95.70	115.71	42.53
17:39:36	2.80	116.00	10.10	43.00	0.00	43.00	95.70	114.73	42.53
17:39:51	2.60	139.00	10.30	42.00	0.00	42.00	95.70	135.98	41.09
17:40:06	2.60	154.00	10.30	41.00	0.00	41.00	95.70	150.65	40.11
17:40:21	2.50	179.00	10.30	40.00	0.00	40.00	95.70	174.16	38.92
17:40:36	2.50	192.00	10.30	40.00	0.00	40.00	95.70	186.81	38.92
17:40:51	2.50	168.00	10.30	40.00	0.00	40.00	95.70	163.46	38.92
17:41:06	2.50	177.00	10.30	40.00	0.00	40.00	95.70	172.22	38.92
17:41:21	2.50	165.00	10.30	40.00	0.00	40.00	95.70	160.54	38.92
17:41:36	2.50	152.00	10.30	40.00	0.00	40.00	95.70	147.89	38.92
17:48:21	2.30	806.00	10.40	0.00	5.00	5.00	95.40	775.83	4.81
18:05:52	1.40	593.00	10.90	29.00	1.00	30.00	95.40	544.59	27.55
18:06:07	1.40	550.00	10.90	30.00	1.00	31.00	95.40	505.10	28.47
18:06:22	1.40	508.00	10.90	30.00	1.00	31.00	95.40	466.53	28.47

Average O2 =	1.82 %	Average NOx =	30.07 ppm	Average CO =	379.30 ppm
Average COmass =	348.717 ppm	Average NO =	27.82 ppm	Average NOxmass =	29.185 ppm
Average NO2 =	2.26 ppm	Average COcorr =	348.72 ppm	Average NOxcorr =	29.18 ppm

Purge 3 - 08/20/25									
Time	O2	CO	CO2	NO	NO2	NOx	Tcell	COcorr	NOxcorr
18:06:29	1.30	576.00	11.00	29.00	1.00	30.00	95.40	526.29	27.41
18:06:44	21.00	480.00	0.00	15.00	0.00	15.00	95.40		
18:06:59	21.00	138.00	0.00	16.00	0.00	16.00	95.40		
18:07:14	21.00	44.00	0.00	19.00	0.00	19.00	95.40		
18:07:29	21.00	19.00	0.00	20.00	0.00	20.00	95.40		

ANALYZER AVERAGE INFORMATION

Total Average O2 =	2.07 %	Total Average NOx =	28.54 ppm	Total Average CO =	278.50 ppm
Total Average COmass =	255.524 ppm	Total Average NO =	25.63 ppm	Total Average NOxmass =	27.679 ppm
Total Average NO2 =	2.91 ppm	Total Average COcorr =	255.52 ppm	Total Average NOxcorr =	27.68 ppm

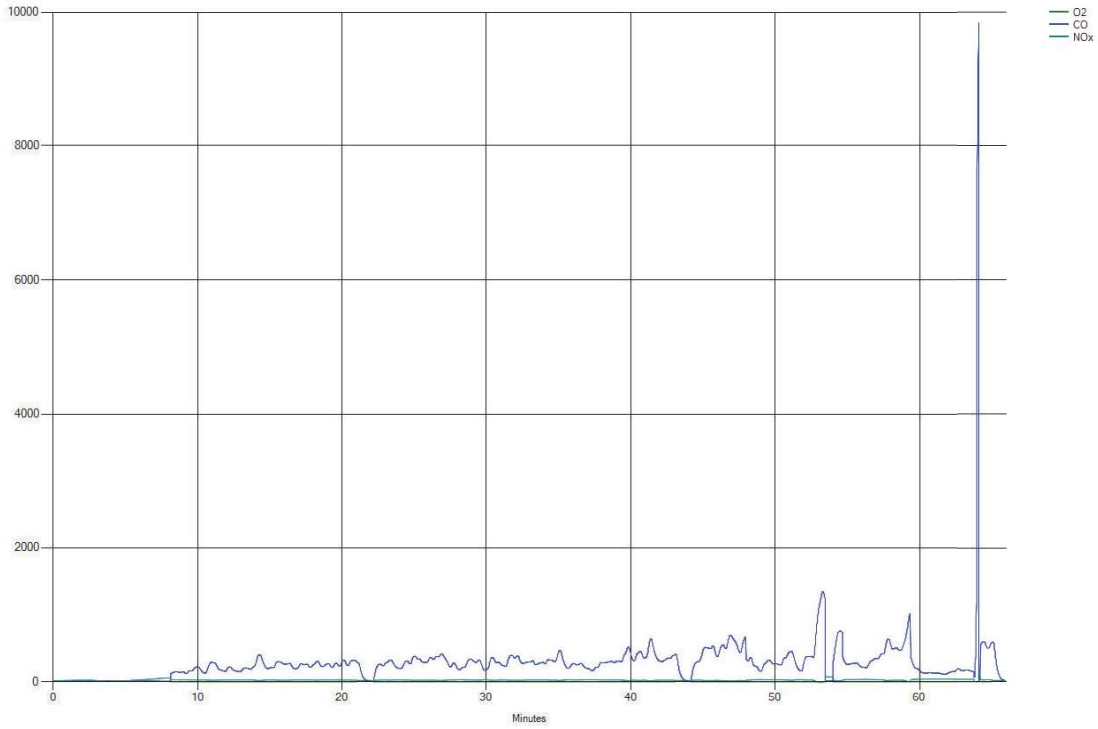
NOTES:

TEST COMPLETED BY:

Leanola Santos
Targa Resources
25 Middle Plant Ln
Eunice, NM 88231
Phone: 575-394-2534
Mobile: 575-263-1281
Email: lsantos@targaresources.com
Home Page: www.targaresources.com

MASS EMISSION CALCULATION:

Equipment Type: Boiler/Heater
Fuel Type: Gas: Natural
Fuel (F) Factor:
Based on: EPA RM-19 at 68 deg F and 14.696 psia



Technician_____ Date_____

Pre & Post Calibration Test Report

Calibration Test Date: 08/20/2025

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 575-631-7093
201 S 4th Street
Artesia, NM 88210
Mobile:
Email:

Sensor	Span Gas Value	Expiration date	Zero Error % Limit	Cal Error % Limit	Zero Drift % Limit	Span Drift % Limit
O2 %	20.9	8/6/2027	3	5	5	5
CO ppm	251	12/24/2032	3	5	5	5
NO ppm	202	12/24/2032	3	5	5	5
NO2 ppm	97	8/6/2027	3	5	5	5

PHYSICAL LOCATION

Operational Area: Targa Northern Delaware

Facility Name: Road Runner Gas Plant

EQUIPMENT INFORMATION

Unit Name:	EP-2 Train 1 H-781	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Heat Tech.	Burner Make:	Faber Burner Co.	
Boiler Model:		Burner Model:	WB 1.16 SG	
Boiler Serial#:	HI14-149	Burner Serial#:	160032	

PERMIT INFORMATION

Permit #: NSR 7200M5
Permit Equipment #: EP-2 (H-781)
Permit Date: 8/28/2024
Permit Units: ppm @ 3 % O2
Permit CO Limit: 400
Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial
Serial #: 14698
Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

Calibration Specs

	O2 %	CO ppm	NO ppm	NO2 ppm
Pre-Test Zero %	0.3	0.0	0.0	0.0
Post-Test Zero %	0.3	1	0.0	0.0
Mean Zero, Ccz	0.3	0.5	0.0	0.0
Zero Result	Pass	Pass	Pass	Pass
Pre-Test Span	11.0	244	201	98
Pre-Test Result	Pass	Pass	Pass	Pass
Post Test Span	10.7	251	202	95
Post Test Drift %	1.9	0.0	0.0	2.1
Post Test Results	Pass	Pass	Pass	Pass
Span Drift (%)	2.7	2.9	0.5	3.1
Mean Span, Ccm	10.9	247.5	201.5	96.5

Pre Test Calibration					
Time	**O2**	**CO**	**NO**	**NO2**	**IFlow**
09:04:00	21.0	0.0	0.0	0.0	1.92
09:04:01	21.0	0.0 ★1	0.0	0.0	1.92
09:04:02	21.0	0.0	0.0 ★1	0.0	1.92
09:04:02	21.0	0.0	0.0	0.0 ★1	1.92
09:04:30	21.0	0.0	0.0	0.0	1.91
09:05:00	0.9	609	156	0.0	1.80
09:05:30	0.4	277	192	0.0	1.80
09:05:34	0.3 ★1	270	195	0.0	1.81
09:05:53	0.3	244 ★2	200	0.0	1.79
09:06:00	0.2	243	202	0.0	1.79
09:06:11	0.2	242	201 ★2	0.0	1.82
09:06:30	1.8	240	197	1	1.79
09:06:38	11.1 ★2	239	95	37	1.79
09:07:00	11.8	48	16	75	1.79
09:07:35	11.9	7	4	106	1.76
09:07:54	12.0	4	3	98 ★2	1.79

Post Test Drift Check					
Time	**O2**	**CO**	**NO**	**NO2**	**IFlow**
19:33:14	21.0	1	0.0	0.0	1.89
19:33:15	21.0	1 ★1	0.0	0.0	1.89
19:33:16	21.0	1	0.0 ★1	0.0	1.89
19:33:16	21.0	1	0.0	0.0 ★1	1.89
19:33:44	21.0	1	0.0	0.0	1.89
19:34:14	3.0	10	145	0.0	1.75
19:34:44	0.4	210	180	1	1.73
19:35:01	0.3 ★1	224	183	0.0	1.71
19:35:14	0.2	227	185	0.0	1.70
19:35:17	0.2	251 ★2	185	0.0	1.70
19:35:27	0.2	252	202 ★2	0.0	1.70
19:35:44	0.2	254	204	0.0	1.69
19:35:55	10.8 ★2	253	55	51	1.67
19:36:14	11.6	70	13	86	1.66
19:36:44	11.7	12	9	95	1.65
19:36:46	11.7	11	9	95 ★2	1.65

★1 : Captured Zero

★2 : Captured Cal Response

NOTES:

TEST COMPLETED BY:

Leanola Santos

Targa Resources

25 Middle Plant Ln
Eunice, NM 88231
Phone: 575-394-2534
Mobile: 575-263-1281
Email: lsantos@targaresources.com
Home Page: www.targaresources.com

Technician_____ Date_____

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer:	TARGA MIDSTREAM SERVICES LP		
Part Number:	E03NI99E33A0093	Reference Number:	163-403214500-1
Cylinder Number:	CAL016739	Cylinder Volume:	32.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2217 PSIG
PGVP Number:	A32024	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Dec 24, 2024

Expiration Date: Dec 24, 2032

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	200.0 PPM	201.7 PPM	G1	+/- 1.0% NIST Traceable	12/17/2024, 12/24/2024
NITRIC OXIDE	200.0 PPM	201.4 PPM	G1	+/- 1.0% NIST Traceable	12/17/2024, 12/24/2024
CARBON MONOXIDE	250.0 PPM	250.8 PPM	G1	+/- 0.9% NIST Traceable	12/17/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	DCK1128202211	CC754188	248.9 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Jan 18, 2031
RGM	12425	EB0112909	250.5 PPM NITRIC OXIDE/NITROGEN	+/-0.8%	Oct 19, 2026
GMIS	1534022022410	CC518220	30.78 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Feb 17, 2026
PRM	12409	D913660	15.01 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.5%	Feb 18, 2023
NTRM	230601-15	CC745903	249.47 PPM CARBON MONOXIDE/NITROGEN	+/-0.3%	Dec 09, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-M-NICOLET iS50 AUP2010248	FTIR	Nov 19, 2024
NO-L-NICOLET iS50 AUP2010248	FTIR	Dec 04, 2024
NO2-NICOLET iS50 AUP2010248	FTIR	Dec 05, 2024

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer:	TARGA MIDSTREAM SERVICES LP		
Part Number:	E03NI99E33A0093	Reference Number:	163-403214500-1
Cylinder Number:	CAL016739	Cylinder Volume:	32.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2217 PSIG
PGVP Number:	A32024	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Dec 24, 2024

Expiration Date: Dec 24, 2032

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	200.0 PPM	201.7 PPM	G1	+/- 1.0% NIST Traceable	12/17/2024, 12/24/2024
NITRIC OXIDE	200.0 PPM	201.4 PPM	G1	+/- 1.0% NIST Traceable	12/17/2024, 12/24/2024
CARBON MONOXIDE	250.0 PPM	250.8 PPM	G1	+/- 0.9% NIST Traceable	12/17/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	DCK1128202211	CC754188	248.9 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Jan 18, 2031
RGM	12425	EB0112909	250.5 PPM NITRIC OXIDE/NITROGEN	+/-0.8%	Oct 19, 2026
GMIS	1534022022410	CC518220	30.78 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Feb 17, 2026
PRM	12409	D913660	15.01 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.5%	Feb 18, 2023
NTRM	230601-15	CC745903	249.47 PPM CARBON MONOXIDE/NITROGEN	+/-0.3%	Dec 09, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-M-NICOLET iS50 AUP2010248	FTIR	Nov 19, 2024
NO-L-NICOLET iS50 AUP2010248	FTIR	Dec 04, 2024
NO2-NICOLET iS50 AUP2010248	FTIR	Dec 05, 2024

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI89E33W0008	Reference Number:	153-403097467-1
Cylinder Number:	D233082	Cylinder Volume:	25.8 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	1800 PSIG
PGVP Number:	B72024	Valve Outlet:	660
Gas Code:	NO2,O2,BALN	Certification Date:	Aug 06, 2024

Expiration Date: Aug 06, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	100.0 PPM	97.06 PPM	G1	+/- 2.0% NIST Traceable	07/30/2024, 08/06/2024
OXYGEN	10.50 %	10.63 %	G1	+/- 0.5% NIST Traceable	07/31/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534022022507	CC517979	61.14 PPM NITROGEN DIOXIDE/NITROGEN	1.9%	Nov 09, 2025
PRM	12437	D153544	98.8 PPM NITROGEN DIOXIDE/AIR	1.0%	Nov 21, 2024
GMIS	1534022022604	CC517948	102.2 PPM NITROGEN DIOXIDE/NITROGEN	1.1%	Nov 21, 2026
PRM	12438	D153564	59.5 PPM NITROGEN DIOXIDE/AIR	1.7%	Nov 21, 2024
NTRM	11060604	CC338173	14.93 % OXYGEN/NITROGEN	0.2%	Nov 02, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018143349	FTIR	Jul 12, 2024
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (DIXON)	Jul 24, 2024

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI89E33W0008	Reference Number:	153-403097467-1
Cylinder Number:	D233082	Cylinder Volume:	25.8 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	1800 PSIG
PGVP Number:	B72024	Valve Outlet:	660
Gas Code:	NO2,O2,BALN	Certification Date:	Aug 06, 2024

Expiration Date: Aug 06, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	100.0 PPM	97.06 PPM	G1	+/- 2.0% NIST Traceable	07/30/2024, 08/06/2024
OXYGEN	10.50 %	10.63 %	G1	+/- 0.5% NIST Traceable	07/31/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534022022507	CC517979	61.14 PPM NITROGEN DIOXIDE/NITROGEN	1.9%	Nov 09, 2025
PRM	12437	D153544	98.8 PPM NITROGEN DIOXIDE/AIR	1.0%	Nov 21, 2024
GMIS	1534022022604	CC517948	102.2 PPM NITROGEN DIOXIDE/NITROGEN	1.1%	Nov 21, 2026
PRM	12438	D153564	59.5 PPM NITROGEN DIOXIDE/AIR	1.7%	Nov 21, 2024
NTRM	11060604	CC338173	14.93 % OXYGEN/NITROGEN	0.2%	Nov 02, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018143349	FTIR	Jul 12, 2024
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (DIXON)	Jul 24, 2024

Triad Data Available Upon Request

Approved for Release

RR2-H-781
Trim Reboiler Emissions Test and Spec Sheet

Boiler Combustion Test Report

Combustion Test Date: 07/23/2025 Q3

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 5756317093
201 S 4th street
Artesia , NM 88201
Mobile:
Email:

CO: ppm*	NOx: ppm*
6.388	9.349
Pass	Pass
(400 ppm)	(30 ppm)

* Values corrected to 3% O2

PHYSICAL LOCATION

Operational Area: Targa Northern Delaware Facility Name: Road Runner Gas Plant

EQUIPMENT INFORMATION

Unit Name:	2-EP-2	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Power Flame	Burner Make:		
Boiler Model:	evo0700-g-30	Burner Model:		
Boiler Serial#:	102389703	Burner Serial#:		

PERMIT INFORMATION

Permit #: 7200M5 Permit Date: 04/15/2025 Permit CO Limit: 400
Permit Equipment #: 2-EP-2 Permit Units: ppm @ 3 % O2 Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial Serial #: 14697 Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

EMISSIONS TEST RESULTS

Parameter	Test 1	Test 2	Test 3	Overall Average
O2%	8.83	8.69	6.34	7.95
CO ppm @ 3% O2	2.96	1.68	14.53	6.39
NOx ppm @ 3% O2	5.92	6.45	15.68	9.35
CO mass @ 3% O2	2.958	1.679	14.528	6.388
NOx mass @ 3% O2	5.916	6.453	15.677	9.349

RampUp 1 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:02:37	8.80	2.00	4.00	0.00	4.00	80.60	2.95	5.90
11:02:52	8.80	2.00	4.00	0.00	4.00	80.60	2.95	5.90
11:03:07	8.80	2.00	4.00	0.00	4.00	80.80	2.95	5.90
11:03:22	8.80	2.00	4.00	0.00	4.00	80.80	2.95	5.90

Test 1 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:03:38	8.80	2.00	4.00	0.00	4.00	81.00	2.95	5.90
11:03:53	8.80	2.00	4.00	0.00	4.00	81.00	2.95	5.90
11:04:08	8.80	2.00	4.00	0.00	4.00	81.00	2.95	5.90
11:04:23	8.80	2.00	4.00	0.00	4.00	81.10	2.95	5.90
11:04:38	8.80	2.00	4.00	0.00	4.00	81.10	2.95	5.90
11:04:53	8.80	2.00	4.00	0.00	4.00	81.10	2.95	5.90
11:05:08	8.80	2.00	4.00	0.00	4.00	81.10	2.95	5.90
11:05:23	8.80	2.00	4.00	0.00	4.00	81.30	2.95	5.90
11:05:38	8.80	2.00	4.00	0.00	4.00	81.30	2.95	5.90
11:05:53	8.90	2.00	4.00	0.00	4.00	81.30	2.98	5.95
11:06:08	8.80	2.00	4.00	0.00	4.00	81.50	2.95	5.90
11:06:23	8.80	2.00	4.00	0.00	4.00	81.50	2.95	5.90
11:06:38	8.80	2.00	4.00	0.00	4.00	81.50	2.95	5.90
11:06:53	8.90	2.00	4.00	0.00	4.00	81.50	2.98	5.95
11:07:08	8.90	2.00	4.00	0.00	4.00	81.70	2.98	5.95
11:07:23	8.80	2.00	4.00	0.00	4.00	81.70	2.95	5.90
11:07:38	8.80	2.00	4.00	0.00	4.00	81.90	2.95	5.90
11:07:53	8.80	2.00	4.00	0.00	4.00	81.90	2.95	5.90
11:08:08	8.80	2.00	4.00	0.00	4.00	81.90	2.95	5.90
11:08:23	8.80	2.00	4.00	0.00	4.00	81.90	2.95	5.90
11:08:38	8.80	2.00	4.00	0.00	4.00	82.00	2.95	5.90
11:08:53	8.80	2.00	4.00	0.00	4.00	82.00	2.95	5.90
11:09:08	8.80	2.00	4.00	0.00	4.00	82.00	2.95	5.90
11:09:23	8.80	2.00	4.00	0.00	4.00	82.20	2.95	5.90
11:09:38	8.80	2.00	4.00	0.00	4.00	82.20	2.95	5.90
11:09:53	8.80	2.00	4.00	0.00	4.00	82.20	2.95	5.90
11:10:08	8.80	2.00	4.00	0.00	4.00	82.20	2.95	5.90
11:10:23	8.80	2.00	4.00	0.00	4.00	82.20	2.95	5.90
11:10:38	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:10:53	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:11:08	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:11:23	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:11:38	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:11:53	8.80	2.00	4.00	0.00	4.00	82.60	2.95	5.90
11:12:08	8.90	2.00	4.00	0.00	4.00	82.60	2.98	5.95
11:12:23	8.90	2.00	4.00	0.00	4.00	82.60	2.98	5.95
11:12:38	8.80	2.00	4.00	0.00	4.00	82.60	2.95	5.90
11:12:53	8.80	2.00	4.00	0.00	4.00	82.60	2.95	5.90
11:13:08	8.90	2.00	4.00	0.00	4.00	82.60	2.98	5.95
11:13:23	8.90	2.00	4.00	0.00	4.00	82.80	2.98	5.95
11:13:38	8.90	2.00	4.00	0.00	4.00	82.80	2.98	5.95
11:13:53	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:14:08	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90

Test 1 - 07/23/25								
11:14:23	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:14:38	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:14:53	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:15:08	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:15:23	8.80	2.00	4.00	0.00	4.00	83.10	2.95	5.90
11:15:38	8.80	2.00	4.00	0.00	4.00	83.10	2.95	5.90
11:15:53	8.80	2.00	4.00	0.00	4.00	83.10	2.95	5.90
11:16:08	8.80	2.00	4.00	0.00	4.00	83.10	2.95	5.90
11:16:23	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:16:38	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:16:53	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:17:08	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:17:23	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:17:38	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:17:53	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:18:08	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:18:23	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:18:38	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:18:53	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:19:08	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:19:23	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:19:38	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:19:53	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:20:08	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:20:23	8.90	2.00	4.00	0.00	4.00	83.50	2.98	5.95
11:20:38	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:20:53	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:21:08	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:21:23	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:21:38	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:21:53	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:22:08	8.80	2.00	4.00	0.00	4.00	83.30	2.95	5.90
11:22:23	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:22:38	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:22:53	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:23:08	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:23:23	8.90	2.00	4.00	0.00	4.00	83.30	2.98	5.95
11:23:38	8.90	2.00	4.00	0.00	4.00	83.10	2.98	5.95
11:23:53	8.90	2.00	4.00	0.00	4.00	83.10	2.98	5.95

Average O2 =	8.83 %	Average NOx =	4.00 ppm	Average CO =	2.00 ppm
Average COmass =	2.958 ppm	Average NO =	4.00 ppm	Average NOxmass =	5.916 ppm
Average NO2 =	0.00 ppm	Average COcorr =	2.96 ppm	Average NOxcorr =	5.92 ppm

Purge 1 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:23:55	8.90	2.00	4.00	0.00	4.00	83.10	2.98	5.95
11:24:10	19.70	1.00	2.00	0.00	2.00	83.10	13.85	27.69
11:24:25	20.30	1.00	0.00	0.00	0.00	83.10	25.71	0.00
11:24:40	20.40	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:24:55	20.40	0.00	0.00	0.00	0.00	83.10	0.00	0.00

Purge 1 - 07/23/25								
11:25:10	20.40	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:25:25	20.40	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:25:40	20.50	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:25:55	20.50	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:26:10	20.50	0.00	0.00	0.00	0.00	83.10	0.00	0.00
11:26:25	20.50	0.00	0.00	0.00	0.00	83.30	0.00	0.00
11:26:41	20.50	0.00	0.00	0.00	0.00	83.30	0.00	0.00
11:26:56	20.50	0.00	0.00	0.00	0.00	83.30	0.00	0.00
11:27:11	20.50	0.00	0.00	0.00	0.00	83.50	0.00	0.00
11:27:26	20.50	0.00	0.00	0.00	0.00	83.50	0.00	0.00
11:27:41	20.50	0.00	0.00	0.00	0.00	83.70	0.00	0.00
11:27:56	20.50	0.00	0.00	0.00	0.00	83.70	0.00	0.00
11:28:11	20.50	0.00	0.00	0.00	0.00	83.70	0.00	0.00
11:28:26	20.50	0.00	0.00	0.00	0.00	83.80	0.00	0.00
11:28:41	20.50	0.00	0.00	0.00	0.00	83.80	0.00	0.00
11:28:56	20.50	0.00	0.00	0.00	0.00	83.80	0.00	0.00

RampUp 2 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:29:00	20.50	0.00	0.00	0.00	0.00	83.80	0.00	0.00
11:29:15	9.20	1.00	0.00	0.00	0.00	84.00	1.53	0.00
11:29:30	8.90	1.00	1.00	0.00	1.00	83.80	1.49	1.49
11:29:45	8.90	1.00	2.00	0.00	2.00	83.80	1.49	2.98

Test 2 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:30:01	8.90	2.00	3.00	0.00	3.00	83.80	2.98	4.46
11:30:16	8.80	1.00	3.00	0.00	3.00	83.70	1.48	4.43
11:30:31	8.80	2.00	4.00	0.00	4.00	83.50	2.95	5.90
11:30:46	8.80	1.00	4.00	0.00	4.00	83.50	1.48	5.90
11:31:01	8.80	1.00	4.00	0.00	4.00	83.30	1.48	5.90
11:31:16	8.70	2.00	4.00	0.00	4.00	83.10	2.93	5.85
11:31:31	8.80	2.00	4.00	0.00	4.00	82.90	2.95	5.90
11:31:46	8.90	1.00	4.00	0.00	4.00	82.80	1.49	5.95
11:32:01	8.80	1.00	4.00	0.00	4.00	82.60	1.48	5.90
11:32:16	8.80	2.00	4.00	0.00	4.00	82.40	2.95	5.90
11:32:31	8.80	1.00	4.00	0.00	4.00	82.20	1.48	5.90
11:32:46	8.80	2.00	4.00	0.00	4.00	82.00	2.95	5.90
11:33:01	8.80	2.00	4.00	0.00	4.00	81.90	2.95	5.90
11:33:16	8.80	2.00	4.00	0.00	4.00	81.70	2.95	5.90
11:33:31	8.80	1.00	4.00	0.00	4.00	81.50	1.48	5.90
11:33:46	8.80	2.00	4.00	0.00	4.00	81.50	2.95	5.90
11:34:01	8.80	1.00	4.00	0.00	4.00	81.50	1.48	5.90
11:34:16	8.80	2.00	4.00	0.00	4.00	81.30	2.95	5.90
11:34:31	8.80	2.00	4.00	0.00	4.00	81.10	2.95	5.90
11:34:46	8.80	2.00	4.00	0.00	4.00	81.00	2.95	5.90
11:35:01	8.80	1.00	4.00	0.00	4.00	81.10	1.48	5.90
11:35:16	8.80	1.00	4.00	0.00	4.00	81.10	1.48	5.90
11:35:31	8.70	1.00	4.00	0.00	4.00	81.10	1.46	5.85
11:35:46	8.70	1.00	4.00	0.00	4.00	81.10	1.46	5.85

Test 2 - 07/23/25								
11:36:01	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:36:16	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:36:31	8.70	1.00	5.00	0.00	5.00	81.30	1.46	7.32
11:36:46	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:37:01	8.70	1.00	5.00	0.00	5.00	81.30	1.46	7.32
11:37:16	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:37:31	8.70	1.00	5.00	0.00	5.00	81.30	1.46	7.32
11:37:46	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:38:01	8.70	1.00	4.00	0.00	4.00	81.30	1.46	5.85
11:38:16	8.70	1.00	4.00	0.00	4.00	81.10	1.46	5.85
11:38:31	8.70	1.00	4.00	0.00	4.00	81.10	1.46	5.85
11:38:46	8.70	1.00	4.00	0.00	4.00	81.10	1.46	5.85
11:39:01	8.70	1.00	4.00	0.00	4.00	81.00	1.46	5.85
11:39:16	8.70	1.00	4.00	0.00	4.00	81.00	1.46	5.85
11:39:31	8.70	1.00	4.00	0.00	4.00	81.00	1.46	5.85
11:39:46	8.70	1.00	4.00	0.00	4.00	81.00	1.46	5.85
11:40:01	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:40:16	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:40:31	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:40:46	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:41:01	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:41:16	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:41:31	8.70	1.00	4.00	0.00	4.00	80.60	1.46	5.85
11:41:46	8.70	1.00	4.00	0.00	4.00	80.60	1.46	5.85
11:42:01	8.70	1.00	5.00	0.00	5.00	80.60	1.46	7.32
11:42:16	8.70	1.00	4.00	0.00	4.00	80.80	1.46	5.85
11:42:31	8.60	1.00	5.00	0.00	5.00	80.80	1.45	7.26
11:42:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:43:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:43:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:43:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:43:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:44:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:44:16	8.50	1.00	5.00	0.00	5.00	80.60	1.44	7.20
11:44:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:44:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:45:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:45:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:45:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:45:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:46:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:46:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:46:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:46:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:47:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:47:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:47:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:47:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:48:01	8.70	1.00	5.00	0.00	5.00	80.60	1.46	7.32
11:48:16	8.70	1.00	5.00	0.00	5.00	80.60	1.46	7.32
11:48:31	8.70	1.00	5.00	0.00	5.00	80.60	1.46	7.32
11:48:46	8.70	1.00	5.00	0.00	5.00	80.60	1.46	7.32
11:49:01	8.60	1.00	5.00	0.00	5.00	80.80	1.45	7.26

Test 2 - 07/23/25								
11:49:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:49:31	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:49:46	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:50:01	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:50:16	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26

Average O2 =	8.69 %	Average NOx =	4.41 ppm	Average CO =	1.15 ppm
Average COmass =	1.679 ppm	Average NO =	4.41 ppm	Average NOxmass =	6.453 ppm
Average NO2 =	0.00 ppm	Average COcorr =	1.68 ppm	Average NOxcorr =	6.45 ppm

Purge 2 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:50:19	8.60	1.00	5.00	0.00	5.00	80.60	1.45	7.26
11:50:34	20.00	1.00	3.00	0.00	3.00	80.60	18.00	54.00
11:50:49	20.50	0.00	0.00	0.00	0.00	80.40	0.00	0.00
11:51:04	20.60	0.00	0.00	0.00	0.00	80.40	0.00	0.00
11:51:19	20.60	0.00	0.00	0.00	0.00	80.40	0.00	0.00
11:51:34	20.60	0.00	0.00	0.00	0.00	80.20	0.00	0.00
11:51:49	20.60	0.00	0.00	0.00	0.00	80.20	0.00	0.00
11:52:04	20.70	0.00	0.00	0.00	0.00	80.20	0.00	0.00
11:52:19	20.70	0.00	0.00	0.00	0.00	80.20	0.00	0.00
11:52:34	20.70	0.00	0.00	0.00	0.00	80.10	0.00	0.00
11:52:49	20.70	0.00	0.00	0.00	0.00	80.10	0.00	0.00
11:53:04	20.70	0.00	0.00	0.00	0.00	80.10	0.00	0.00
11:53:19	20.70	0.00	0.00	0.00	0.00	80.10	0.00	0.00
11:53:34	20.70	0.00	0.00	0.00	0.00	79.90	0.00	0.00
11:53:49	20.70	0.00	0.00	0.00	0.00	79.90	0.00	0.00
11:54:04	20.70	0.00	0.00	0.00	0.00	79.90	0.00	0.00
11:54:19	20.70	0.00	0.00	0.00	0.00	79.70	0.00	0.00
11:54:34	20.70	0.00	0.00	0.00	0.00	79.50	0.00	0.00
11:54:49	20.70	0.00	0.00	0.00	0.00	79.50	0.00	0.00
11:55:04	20.70	0.00	0.00	0.00	0.00	79.30	0.00	0.00
11:55:19	20.70	0.00	0.00	0.00	0.00	79.30	0.00	0.00
11:55:34	20.70	0.00	0.00	0.00	0.00	79.20	0.00	0.00

RampUp 3 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:55:41	20.70	0.00	0.00	0.00	0.00	79.20	0.00	0.00
11:55:56	9.00	1.00	0.00	0.00	0.00	79.00	1.50	0.00
11:56:11	8.70	1.00	2.00	0.00	2.00	79.00	1.46	2.93
11:56:26	10.00	1.00	4.00	0.00	4.00	78.80	1.64	6.55

Test 3 - 07/23/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
11:56:42	12.60	149.00	3.00	1.00	4.00	78.80	319.29	8.57
11:56:57	16.10	187.00	2.00	0.00	2.00	78.80	686.94	7.35
12:02:57	1.90	10.00	28.00	2.00	30.00	79.30	9.42	28.27
12:03:12	1.80	8.00	27.00	1.00	28.00	79.30	7.50	26.25

Test 3 - 07/23/25								
12:03:27	1.50	6.00	26.00	1.00	27.00	79.30	5.54	24.92
12:03:42	1.50	5.00	26.00	1.00	27.00	79.50	4.62	24.92
12:03:57	2.10	4.00	25.00	1.00	26.00	79.50	3.81	24.76
12:04:12	2.60	4.00	23.00	1.00	24.00	79.50	3.91	23.48
12:04:27	3.70	4.00	19.00	1.00	20.00	79.30	4.16	20.81
12:04:42	5.00	5.00	15.00	2.00	17.00	79.30	5.63	19.13
12:04:57	5.90	16.00	13.00	2.00	15.00	79.30	19.07	17.88
12:05:12	6.60	12.00	13.00	2.00	15.00	79.30	15.00	18.75
12:05:27	7.20	7.00	12.00	1.00	13.00	79.20	9.13	16.96
12:05:42	7.60	4.00	12.00	1.00	13.00	79.20	5.37	17.46
12:05:57	7.20	2.00	12.00	1.00	13.00	79.00	2.61	16.96
12:06:12	6.70	2.00	12.00	1.00	13.00	79.00	2.52	16.36
12:06:27	6.30	2.00	13.00	1.00	14.00	79.00	2.45	17.14
12:06:42	5.60	1.00	14.00	1.00	15.00	79.00	1.17	17.53
12:06:57	5.10	1.00	15.00	1.00	16.00	79.00	1.13	18.11
12:07:12	4.80	1.00	15.00	1.00	16.00	79.00	1.11	17.78
12:07:27	4.40	1.00	16.00	1.00	17.00	79.00	1.08	18.43
12:07:42	4.30	1.00	17.00	1.00	18.00	79.00	1.08	19.40
12:07:57	4.00	1.00	17.00	1.00	18.00	79.20	1.06	19.06
12:08:12	3.80	2.00	17.00	1.00	18.00	79.20	2.09	18.84
12:08:27	3.70	1.00	17.00	1.00	18.00	79.20	1.04	18.73
12:08:42	3.80	1.00	18.00	1.00	19.00	79.20	1.05	19.88
12:08:57	3.70	1.00	18.00	1.00	19.00	79.00	1.04	19.77
12:09:12	3.50	1.00	18.00	1.00	19.00	79.00	1.03	19.54
12:09:27	3.40	1.00	18.00	1.00	19.00	79.00	1.02	19.43
12:09:42	3.30	1.00	19.00	1.00	20.00	79.00	1.02	20.34
12:09:57	3.50	1.00	19.00	1.00	20.00	79.00	1.03	20.57
12:10:13	3.40	1.00	19.00	1.00	20.00	79.00	1.02	20.45
12:10:28	3.60	1.00	19.00	1.00	20.00	79.00	1.03	20.69
12:10:43	3.80	1.00	18.00	1.00	19.00	78.80	1.05	19.88
12:10:58	4.10	1.00	18.00	1.00	19.00	78.80	1.07	20.24
12:11:13	4.30	2.00	18.00	1.00	19.00	78.80	2.16	20.48
12:11:28	4.40	1.00	17.00	1.00	18.00	78.80	1.08	19.52
12:11:43	4.70	1.00	17.00	1.00	18.00	79.00	1.10	19.88
12:11:58	4.90	1.00	16.00	1.00	17.00	79.00	1.12	19.01
12:12:13	5.20	1.00	15.00	1.00	16.00	78.80	1.14	18.23
12:12:28	5.40	1.00	15.00	1.00	16.00	78.80	1.15	18.46
12:12:43	5.60	1.00	14.00	1.00	15.00	78.80	1.17	17.53
12:12:58	5.90	1.00	14.00	1.00	15.00	78.80	1.19	17.88
12:13:13	6.00	1.00	13.00	1.00	14.00	78.80	1.20	16.80
12:13:28	6.20	1.00	13.00	1.00	14.00	78.80	1.22	17.03
12:13:43	6.40	1.00	12.00	1.00	13.00	78.80	1.23	16.03
12:13:58	6.60	1.00	12.00	1.00	13.00	78.80	1.25	16.25
12:14:13	6.80	1.00	11.00	1.00	12.00	78.80	1.27	15.21
12:14:28	6.90	1.00	11.00	1.00	12.00	78.80	1.28	15.32
12:14:43	7.10	1.00	11.00	1.00	12.00	78.80	1.29	15.54
12:14:58	7.20	1.00	10.00	1.00	11.00	78.80	1.30	14.35
12:15:13	7.40	1.00	10.00	1.00	11.00	78.80	1.32	14.56
12:15:28	7.50	1.00	10.00	1.00	11.00	78.80	1.33	14.67
12:15:43	7.70	1.00	9.00	1.00	10.00	78.80	1.35	13.53
12:15:58	7.80	1.00	9.00	1.00	10.00	78.80	1.36	13.64
12:16:13	7.90	1.00	8.00	1.00	9.00	78.80	1.37	12.37
12:16:28	7.90	1.00	8.00	1.00	9.00	78.80	1.37	12.37

Test 3 - 07/23/25								
12:16:43	8.00	1.00	8.00	1.00	9.00	78.80	1.38	12.46
12:16:58	8.10	1.00	7.00	1.00	8.00	78.80	1.40	11.16
12:17:13	8.20	1.00	7.00	1.00	8.00	78.80	1.41	11.25
12:17:28	8.20	1.00	7.00	1.00	8.00	78.80	1.41	11.25
12:17:43	8.30	1.00	7.00	1.00	8.00	78.80	1.42	11.34
12:17:58	8.30	1.00	7.00	1.00	8.00	78.80	1.42	11.34
12:18:13	8.40	1.00	6.00	1.00	7.00	78.80	1.43	10.00
12:18:28	8.50	1.00	6.00	1.00	7.00	78.60	1.44	10.08
12:18:43	8.50	1.00	6.00	1.00	7.00	78.60	1.44	10.08
12:18:58	8.50	1.00	6.00	1.00	7.00	78.60	1.44	10.08
12:19:13	8.50	1.00	6.00	1.00	7.00	78.60	1.44	10.08
12:19:28	8.50	1.00	6.00	1.00	7.00	78.60	1.44	10.08
12:19:43	8.60	1.00	6.00	1.00	7.00	78.60	1.45	10.16
12:19:58	8.60	1.00	5.00	1.00	6.00	78.40	1.45	8.71
12:20:13	8.60	1.00	6.00	1.00	7.00	78.40	1.45	10.16
12:20:28	8.60	1.00	6.00	1.00	7.00	78.40	1.45	10.16
12:20:43	8.60	1.00	5.00	1.00	6.00	78.40	1.45	8.71
12:20:58	8.60	1.00	5.00	1.00	6.00	78.40	1.45	8.71
12:21:13	8.60	1.00	5.00	1.00	6.00	78.40	1.45	8.71
12:21:28	8.60	1.00	5.00	1.00	6.00	78.40	1.45	8.71
12:21:43	8.60	1.00	5.00	1.00	6.00	78.30	1.45	8.71
12:21:58	8.60	1.00	5.00	1.00	6.00	78.30	1.45	8.71
12:22:13	8.60	1.00	5.00	1.00	6.00	78.30	1.45	8.71
12:22:28	8.60	1.00	6.00	1.00	7.00	78.30	1.45	10.16
12:22:43	8.60	1.00	5.00	1.00	6.00	78.30	1.45	8.71

Average O2 =	6.34 %	Average NOx =	13.40 ppm	Average CO =	6.02 ppm
Average COmass =	14.528 ppm	Average NO =	12.37 ppm	Average NOxmass =	15.677 ppm
Average NO2 =	1.04 ppm	Average COcorr =	14.53 ppm	Average NOxcorr =	15.68 ppm

Purge 3 - 07/23/25								
Time	**O2**	**CO**	**NO**	**NO2**	**NOx**	**Tamb**	**COcorr**	**NOxcorr**
12:22:47	8.60	1.00	5.00	1.00	6.00	78.30	1.45	8.71
12:23:02	20.00	1.00	3.00	0.00	3.00	78.30	18.00	54.00
12:23:17	20.50	1.00	0.00	0.00	0.00	78.30	36.00	0.00
12:23:32	20.60	0.00	0.00	0.00	0.00	78.30	0.00	0.00
12:23:47	20.60	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:24:02	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:24:17	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:24:32	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:24:47	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:25:02	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:25:17	20.70	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:25:32	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:25:47	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:26:02	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:26:17	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:26:32	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:26:47	20.80	0.00	0.00	0.00	0.00	78.60	0.00	0.00
12:27:02	20.80	0.00	0.00	0.00	0.00	78.60	0.00	0.00
12:27:17	20.80	0.00	0.00	0.00	0.00	78.60	0.00	0.00

Purge 3 - 07/23/25								
12:27:32	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00
12:27:47	20.80	0.00	0.00	0.00	0.00	78.40	0.00	0.00

ANALYZER AVERAGE INFORMATION

Total Average O2 =	7.95 %	Total Average NOx =	7.27 ppm	Total Average CO =	3.06 ppm
Total Average COmass =	6.388 ppm	Total Average NO =	6.93 ppm	Total Average NOxmass =	9.349 ppm
Total Average NO2 =	0.35 ppm	Total Average COcorr =	6.39 ppm	Total Average NOxcorr =	9.35 ppm

NOTES:

TEST COMPLETED BY:

Jay Faulkner
Targa Resources

Alva, OK &3717
Phone: 4058806166
Mobile: 4058806166
Email:
Home Page:

MASS EMISSION CALCULATION:

Equipment Type: Boiler/Heater

Fuel Type: Gas: Natural

Fuel (F) Factor:

Based on: EPA RM-19 at 68 deg F and 14.696 psia

Mass emission unit : lb/hr

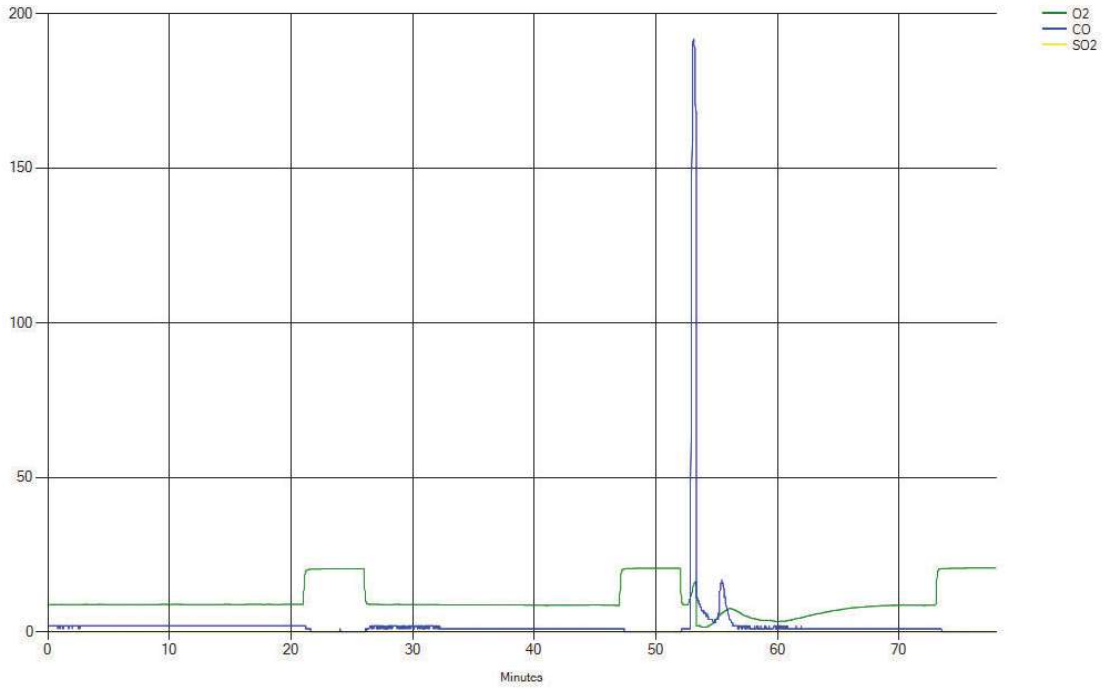
Calculation : E[lb/hr] = Fd[dscf/MMBTU] * (20.9/(20.9 - O2d%)) * Fc[lb/scf] * Cd[ppm] * Heat Rate[BTU/hr] * 1/1000000[MMBTU/BTU]

Mass emission unit : lb/mmBTU

Calculation : E[lb/MMBTU] = Fd[dscf/MMBTU] * (20.9/(20.9 - O2d%)) * Fc[lb/scf] * Cd[ppm]

Mass emission unit : tpy

Calculation : E[TPY] = E[lb/hr] * 24[hr/day] * 365[day/yr] * 1/2000[ton/lb]



Technician_____ Date_____

Pre & Post Calibration Test Report

Calibration Test Date: 07/23/2025

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 5756317093
201 S 4th street
Artesia , NM 88201
Mobile:
Email:

Sensor	Span Gas Value	Expiration date	Zero Error % Limit	Cal Error % Limit	Zero Drift % Limit	Span Drift % Limit
O2 %	20.9	4/8/2014	3	5	5	5
CO ppm	251.7	4/8/2014	3	5	5	5
NO ppm	293	4/8/2014	3	5	5	5
NO2 ppm	51.79	4/8/2014	3	5	5	5

PHYSICAL LOCATION

Operational Area: Targa Northern delaware

Facility Name: Roadrunner gas plant

EQUIPMENT INFORMATION

Unit Name:	2-EP-2	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Power Flame	Burner Make:		
Boiler Model:	evo0700-g-30	Burner Model:		
Boiler Serial#:	102389703	Burner Serial#:		

PERMIT INFORMATION

Permit #: 7200M5
Permit Equipment #: 2-EP-2
Permit Date: 04/15/2025
Permit Units: ppm @ 3 % O2
Permit CO Limit: 400
Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial
Serial #: 14697
Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

Calibration Specs

	O2 %	CO ppm	NO ppm	NO2 ppm
Pre-Test Zero %	0.0	0.0	0.0	0.0
Post-Test Zero %	0.0	1	0.0	0.0
Mean Zero, Ccz	0.0	0.5	0.0	0.0
Zero Result	Pass	Pass	Pass	Pass
Pre-Test Span	21.0	251	293	52
Pre-Test Result	Pass	Pass	Pass	Pass
Post Test Span	21.0	256	296	51
Post Test Drift %	0.5	1.7	1.0	1.5
Post Test Results	Pass	Pass	Pass	Pass
Span Drift (%)	0.0	2.0	1.0	1.9
Mean Span, Ccm	21.0	253.5	294.5	51.5

Pre Test Calibration

Time	O2	CO	NO	NO2	IFlow
08:02:35	21.0	0.0	0.0	0.0	1.73
08:02:37	21.0	0.0 ★1	0.0	0.0	1.73
08:02:40	21.0	0.0	0.0 ★1	0.0	1.73
08:02:42	21.0	0.0	0.0	0.0 ★1	1.73
08:03:05	9.0	0.0	59	21	1.89
08:03:35	0.1	212	255	6	1.87
08:03:38	0.0 ★1	219	259	5	1.87
08:04:05	0.0	238	272	2	1.88
08:04:35	0.0	243	276	1	2.60
08:05:05	0.0	245	279	1	2.60
08:05:35	0.0	251	285	1	2.60
08:06:05	0.0	251	293	1	2.60
08:06:35	0.0	252	294	1	2.60
08:06:49	0.0	251 ★2	293	1	2.60
08:06:51	0.0	251	293 ★2	0.0	2.60
08:07:04	0.0 ★1	251	294	1	2.60
08:07:05	0.0	250	294	1	2.60
08:07:08	0.0 ★1	250	294	0.0	2.60
08:07:11	0.0 ★2	251	294	0.0	2.60
08:07:35	6.6	250	237	19	2.60
08:07:58	21.0 ★2	48	35	49	2.60
08:08:05	21.0	27	25	50	2.60
08:08:35	21.0	6	10	50	2.60
08:09:05	21.0	4	9	52	2.60
08:09:16	21.0	4	9	52 ★2	2.60

Post Test Drift Check

Time	O2	CO	NO	NO2	IFlow
12:56:29	0.0	6	1	0.0	2.09
12:56:31	0.0 ★1	5	1	0.0	2.06
12:56:35	0.0	5	1	0.0 ★1	2.03
12:56:57	0.0	3	0.0 ★1	0.0	2.06
12:56:59	0.0	3	0.0	0.0	2.06
12:57:29	0.0	2	0.0	0.0	2.09
12:57:59	0.0	2	0.0	0.0	2.12
12:58:29	0.0	2	0.0	0.0	2.14
12:58:34	0.0	2 ★1	0.0	0.0	2.13
12:58:39	0.0	1 ★1	0.0	0.0	2.14
12:58:59	0.0	1	0.0	0.0	2.13
12:59:29	0.0	181	233	3	2.60
12:59:59	0.0	258	283	1	2.60
13:00:29	0.0	261	290	1	2.60
13:00:59	0.0	261	293	1	2.60
13:01:29	0.0	260	295	1	2.60
13:01:57	0.0	259	296 ★2	1	2.60

Post Test Drift Check					
13:01:59	0.0	259	296	1	2.60
13:02:29	0.0	258	297	1	2.60
13:02:59	0.0	257	298	1	2.60
13:03:25	0.0	256 ★2	299	1	2.60
13:03:29	0.0	257	299	1	2.60
13:03:59	20.9	83	50	50	2.56
13:04:14	21.0 ★2	20	21	51	2.57
13:04:18	21.0	15	18	51 ★2	2.57

★1 : Captured Zero
★2 : Captured Cal Response

NOTES:

TEST COMPLETED BY:

Jay Faulkner
Targa Resources

Alva, OK &3717
Phone: 4058806166
Mobile: 4058806166
Email:
Home Page:

Technician_____ Date_____

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E80A8N78	Reference Number:	163-402882428-1
Cylinder Number:	BLM003323	Cylinder Volume:	83.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2215 PSIG
PGVP Number:	A32023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 06, 2023

Expiration Date: Nov 06, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	300.0 PPM	293.5 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
CARBON MONOXIDE	250.0 PPM	251.7 PPM	G1	+/- 0.4% NIST Traceable	10/30/2023
NITRIC OXIDE	300.0 PPM	293.0 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010239	KAL004819	246.9 PPM CARBON MONOXIDE/NITROGEN	+/-0.2%	Oct 16, 2024
GMIS	DCK1128202238	CC754471	249.1 PPM NITRIC OXIDE/NITROGEN	+/-0.6%	Jan 18, 2031
GMIS	1534022022404	CC517867	30.84 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.6%	Nov 09, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 13, 2023
NO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023
NO2 - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E80A8N78	Reference Number:	163-402882428-1
Cylinder Number:	BLM003323	Cylinder Volume:	83.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2215 PSIG
PGVP Number:	A32023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 06, 2023

Expiration Date: Nov 06, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	300.0 PPM	293.5 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
CARBON MONOXIDE	250.0 PPM	251.7 PPM	G1	+/- 0.4% NIST Traceable	10/30/2023
NITRIC OXIDE	300.0 PPM	293.0 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010239	KAL004819	246.9 PPM CARBON MONOXIDE/NITROGEN	+/-0.2%	Oct 16, 2024
GMIS	DCK1128202238	CC754471	249.1 PPM NITRIC OXIDE/NITROGEN	+/-0.6%	Jan 18, 2031
GMIS	1534022022404	CC517867	30.84 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.6%	Nov 09, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 13, 2023
NO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023
NO2 - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI78E15W3LJ2	Reference Number:	122-403051434-1
Cylinder Number:	CC502488	Cylinder Volume:	146.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22024	Valve Outlet:	660
Gas Code:	NO2,O2,BALN	Certification Date:	Jun 25, 2024

Expiration Date: Jun 25, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	50.00 PPM	51.79 PPM	G1	+/- 2.0% NIST Traceable	06/17/2024, 06/25/2024
OXYGEN	21.00 %	21.02 %	G1	+/- 0.5% NIST Traceable	06/18/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534022022	CC517978	61.45 PPM NITROGEN DIOXIDE/NITROGEN	1.8%	Nov 21, 2026
PRM	C2392001.03	D153564	59.5 PPM NITROGEN DIOXIDE/AIR	+/- 1.7%	Nov 22, 2024
GMIS	1534002024508	CC506989	60.58 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.8%	May 01, 2027
NTRM	10010928	K021508	20.89 % OXYGEN/NITROGEN	+/- 0.5%	Mar 22, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018176583	FTIR	Jun 20, 2024
Siemens Oxymat 61 M3299 O2	Paramagnetic	Jun 12, 2024

Triad Data Available Upon Request

Signature on file

Approved for Release

HEATER DESIGN DATA

INPUT: 26,318,977 BTU/HR

OUTPUT: 19,161,995 BTU/HR

FLOW RATE: 712 GPM

TRANSFER MEDIA: 50/50 TEG/WATER

HEATING SURFACE: 1,453 SQFT

DESIGN: 150 PSIG @ 400 DEG F

ASME CODE: SECT VIII, DIV. 1 2010 EDITION w/ NO ADDENDA

OUTLET MEDIA TEMPERATURE: 255 DEG F

LIQUID FILL: 812 GALLONS

PRESSURE DROP: 20 PSIG

APPROX. SHIPPING WEIGHT:

HEATER DRY WT: 33,000 LBS
HEATER OPER. WT: 41,000 LBS

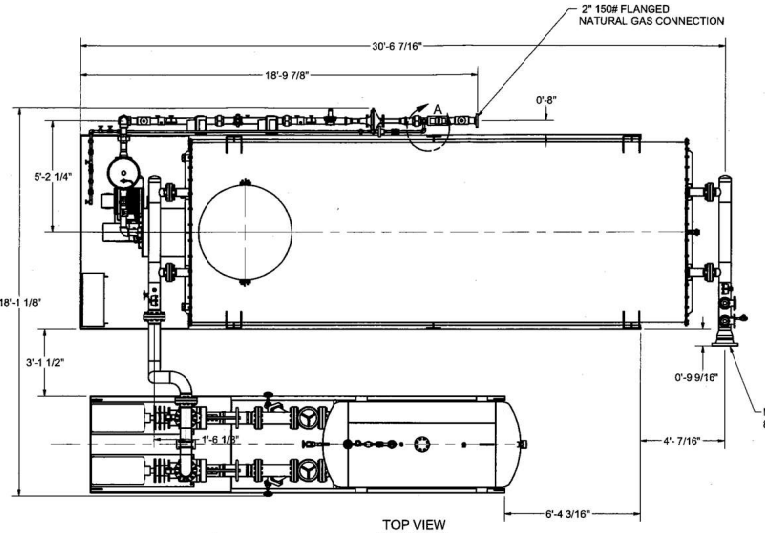
PUMP/TANK SKID DRY WT: 9,110 LBS
PUMP/TANK SKID OPER. WT: 17,000 LBS

TOTAL OPER. WEIGHT OF HEATER/PUMP SKID: 58,000 LBS

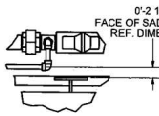
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W.O.# 11-077-151	W.O.# 11-127-151	W.O.# 11-143-151
JOB# HI 11-077	JOB# HI 11-127	JOB# HI 11-143
ISSUE DATE:	ISSUE DATE:	ISSUE DATE:
CODE: ☐ YES ☐ NO	CODE: ☐ YES ☐ NO	CODE: ☐ YES ☐ NO

HEATEC ORDER INFO	HEATEC ORDER INFO	HEATEC ORDER INFO	HEATEC ORDER INFO
W.O.# 11-041-151	W.O.# 11-095-151	W.O.# 11-129-151	W.O.# 11-145-151
JOB# HI 11-041	JOB# HI 11-095	JOB# HI 11-129	JOB# HI 11-145
ISSUE DATE:	ISSUE DATE:	ISSUE DATE:	ISSUE DATE:
CODE: ☐ YES ☐ NO	CODE: ☐ YES ☐ NO	CODE: ☐ YES ☐ NO	CODE: ☐ YES ☐ NO

	THOMAS RUSSELL CO. PO. 251-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 251 TAG NUMBER: H-78! HMO HEATER HEATEC JOB NUMBER: HI 11-077	THOMAS RUSSELL CO. PO. 157-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 257 TAG NUMBER: H-781 HMO HEATER HEATEC JOB NUMBER: HI 1 -127	THOMAS RUSSELL CO. PO. 262-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 262 TAG NUMBER: H-781 HMO HEATER HEATEC JOB NUMBER: HI 11-143
THOMAS RUSSELL CO. PO. 250-76 PROJECT NAME: TRCO JOB NUMBER: TRJ250 TAG NUMBER: H-751 HEATER HEATEC JOB NUMBER: H 11-041	THOMAS RUSSELL CO. PO. 252-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 252 TAG NUMBER: H-78! HMO HEATER HEATEC JOB NUMBER: HI 11-095	THOMAS RUSSELL CO. PO. 260-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 260 TAG NUMBER: H-781 HMO HEATER HEATEC JOB NUMBER: HI 1 -129	THOMAS RUSSELL CO. PO. 259-76 PROJECT NAME: TRCO JOB NUMBER: TRJ 259 TAG NUMBER: H-781 HMO HEATER HEATEC JOB NUMBER: HI 11-145

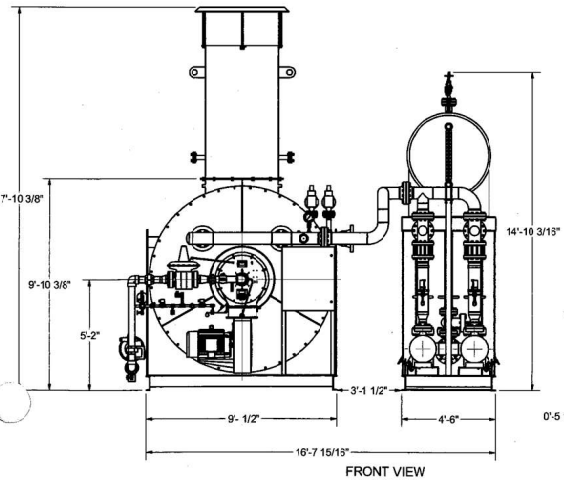


TOP VIEW
SCALE 1/35

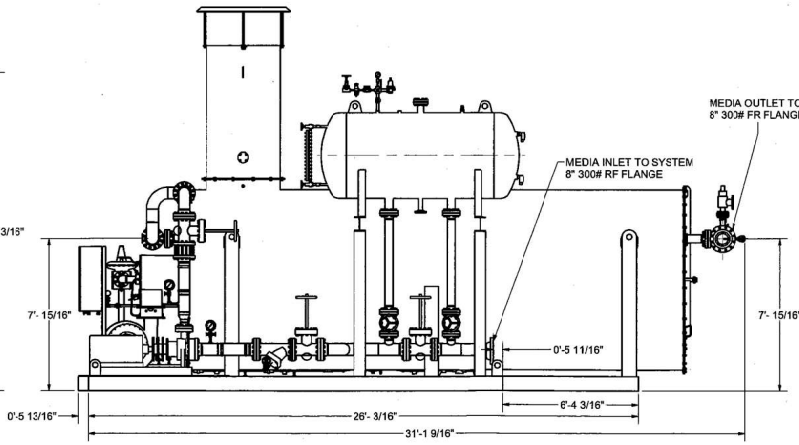


DETAIL A
SCALE 1 / 15

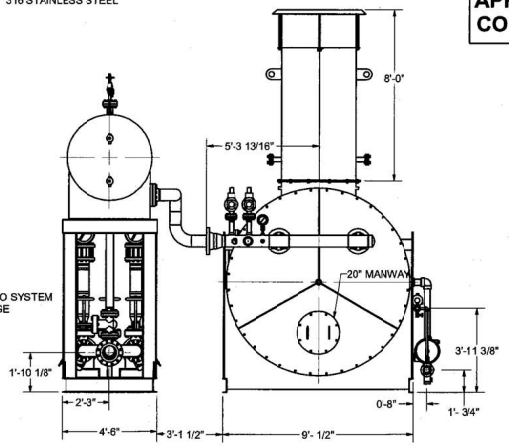
APPROVED FOR CONSTRUCTION



FRONT VIEW
SCALE 1/35



RIGHT SIDE VIEW
SCALE 1/35



REAR VIEW
SCALE 1/35

CUSTOMER: THOMAS RUSSEL	JOB#: SEE TAGS
DRAWING NAME: GENERAL ARRAVGEMENT HCI 10010-40-D-G	WO#: SEE TAGS
	ISSUEDATE:

HEATEC INC. an Aztec company
P.O. BOX 73760 CHATTANOOGA, TN 37407 PHONE: (423) 821-5200 FAX: (423) 821-7673

DWG.DATE: 06/11/11 TNM	CHK DATE:	APPR.DATE:
DWG.PART# 11077-GA	REV.: 0	SCALE: NA / WEIGHT: NOTED

TOLERANCE IS +/- .X' UNLESS OTHERWISE NOTED.

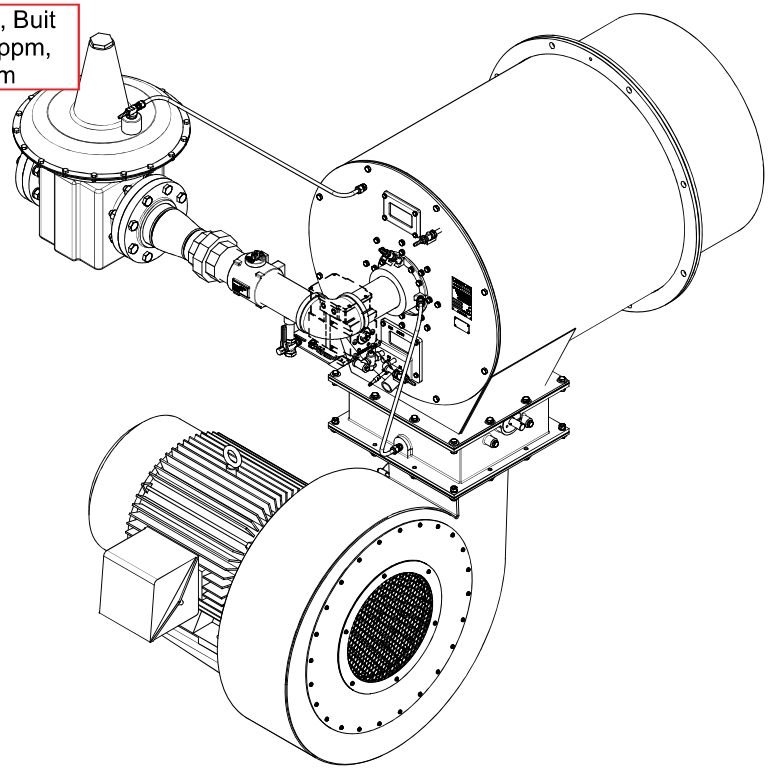
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C:\HEATEC-VAULT\Job Files\2011\077 THOMAS RUSSEL\11077-GA GENERAL ARRANGEMENT.idw

NOTES:

1. FUEL TYPE: NATURAL GAS
2. MAXIMUM BURNER INPUT: 26,5 MMBTU/hr
3. MINIMUM BURNER INPUT: 260,000 BTU/hr
4. AIR INLET PRESSURE: 22.0 " W.C.
5. MAIN GAS INLET MAX DESIGN PRESSURE: 5,0 PSI MAX.
6. VOLTAGE: 230V/460V/3Ph/60Hz

Per Heatec, Buit for Nox 75 ppm, CO 100 ppm



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
10	1	PRJ10056395	Burner, Ratiomatic, RM3000, Natural Gas, Horizontal Firing, Inverted Left Hand B

SHIPPING INFORMATION	
WEIGHT:	440 Kg [968 Lbs]
LENGTH:	1570 mm [61,8 in]
WIDTH:	1456 mm [57,3 in]
HEIGHT:	1809 mm [71,2 in]

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	MOD106469	04/04/2011	CS/HSK

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ECLIPSE

Burner, Ratiomatic, RM3000, Customer Level, Natural Gas, Horizontal Firing, Inve

THIRD ANGLE PROJECTION

SIZE	DWG NO	
A1	PRJ10056396	
SCALE: NONE	REF: PRJ10055865	UNITS: mm[in] SHEET 1 OF 2

RDR-H-0901
Amine Reboiler Spec Sheet
and Emissions Test

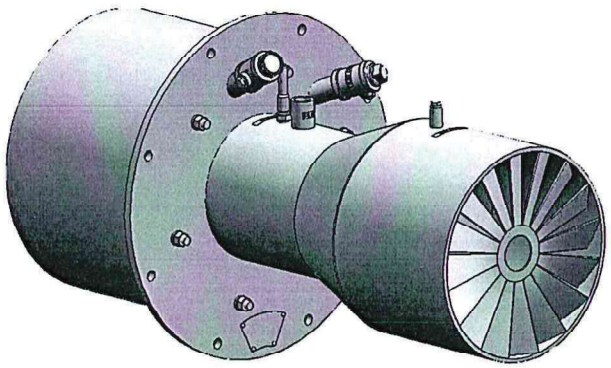
Product description

The KINEDIZER® LE burner is a nozzle-mix, medium-velocity design. Using advanced mixing technology, the burner produces low emissions with very little excess air. Ruggedly built with a reinforced refractory block and steel burner body and nozzle, it burns natural gas, propane or other gaseous fuels. Combustion air is supplied with an external blower. Accurate air and fuel modulation can be accomplished by the MAXON MICRO-RATIO® valve or SMARTLINK® technology.

Combustion air can range from 21% down to 17% O_2 if preheated and from ambient temperature up to 660°F (max. 800°F) on request. Maximum chamber temperature is 2000°F .

Turndown up to 20:1.

Contact MAXON for correct application details.



View of KINEDIZER® LE burner

Available KINEDIZER® LE sizes

Typical burner data
Fuel: natural gas at 60°F with 1000 Btu/ft^3 (st) HHV - sg = 0.6 [1]
Combustion air: 60°F - 21% O_2 - 50% humidity - sg = 1.0 [1]
Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.

KINEDIZER® LE size		1-1/2"	3"	4"	6"	8"	10"	12"	14"	16"
Maximum capacity @ n=1.3	MBtu/h	0.54	2.4	4.6	9.8	15.8	24.3	34	55	75
Air flow at maximum capacity	scfm	110	500	950	2030	3280	5050	7070	11400	15600
Advised pilot capacity	MBtu]/h	0.1	0.2	0.2	0.3	0.5	1.0	1.0	1.0	1.0
Combustion air pressure @ inlet [2] [3]	"wc	28	32	32	32	32	32	32	32	30
Natural gas inlet pressure differential	"wc	55	52	42	64	40	75	76	120	220

[1] sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft^3 (st))
[2] Combustion air pressure required at full capacity, relative to process. Add 5% safety margin + piping & control valve pressure drops for blower sizing.
[3] At minimum capacity 0.1" wc absolute minimum air pressure

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Specifications of KINEDIZER® LE burners

Typical burner data Fuel: natural gas at 60°F with 1000 Btu/ft³ (st) HHV - sg = 0.6 [1] Combustion air: 60°F - 21% O_2 - 50% humidity - sg = 1.0 [1] Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.										
KINEDIZER® LE size		1-1/2"	3"	4"	6"	8"	10"	12"	14"	16"
Max. capacity @ n=1.3 (low NOx) [2]	MBtu/h	0.54	2.4	4.6	9.8	15.8	24.3	34	55	75
Max. capacity @ n=1.1	MBtu/h	0.59	2.6	5.2	11.2	17.7	28.5	39	60	85
Min. capacity	KBtu/h	27	120	230	490	790	1215	1700	2750	3750
Turndown @ n=1.3 [2]		20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1
Turndown @ n=1.1		22:1	22:1	22:1	22:1	22:1	22:1	22:1	22:1	22:1
Air flow at max. capacity	scfm	110	500	950	2030	3280	5050	7070	11400	15600
Air flow at pilot lightoff [9] [10]	scfm	6	26	50	106	171	263	350	596	820
Air flow at minimum capacity	scfm	11	47	88	182	316	461	645	1077	1474
Advised pilot capacity [3]	MBtu/h	0.1	0.2	0.2	0.3	0.5	1.0	1.0	1.0	1.0
Pilot gas pressure [4] [10]	"wc	<0.4	1.0	<0.4	0.6	1.0	4.0	0.5	0.5	0.5
Combustion air pressure @ inlet [5] [10]	"wc	28	32	32	32	32	32	32	32	30
Combustion air pressure differential [6] [8] [10]	"wc	26	28	29	31	27	30	30	28	28
Natural gas inlet pressure differential [7] [10]	"wc	55	52	42	64	40	75	76	120	220
Flame length @ n=1.3 [2]	ft	1	1.5	2	4	6	9	9	10	10
Flame diameter @ n=1.3 [2]	ft	0.5	0.75	1	1.5	3	4	4	4	5
Flame length @ n=1.1	ft	1.5	2.5	4	6	8	10	10	11	11
Flame diameter @ n=1.1	ft	0.5	0.75	1	1.5	3	4	4	4	5

[1] sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft³ (st))
[2] n=1.3 meaning 30% excess air
[3] Installations without fuel air ratio control custom light-off position capability will require increased pilot capacities and pressures.
[4] Natural gas differential pressure at pilot burner gas inlet.
[5] Differential air pressure needed to the burner's combustion air inlet.
[6] Differential air pressure as measured at the air pressure connection port
[7] Differential natural gas pressure required at burner gas inlet (gas inlet test connection) relative to process, for the "n=1.3" maximum capacities.
[8] Minimum capacity requires not less than 0.25" wc STP differential air pressure.
[9] Pilot lightoff requires 0.07–0.10" wc STP differential air pressure.
[10] Above differential pressures are relative to combustion chamber static pressures. Chamber pressure must be measured from a chamber tap in the furnace (do not use taps on burner assembly).

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Boiler Combustion Test Report

Combustion Test Date: 07/22/2025 Q3

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 5756317093
201 S 4th street
Artesia , NM 88201
Mobile:
Email:

CO: ppm*	NOx: ppm*
1.542	28.323
Pass	Pass
(400 ppm)	(30 ppm)

* Values corrected to 3% O2

PHYSICAL LOCATION

Operational Area: Targa Northern Delaware Facility Name: Road Runner Gas Plant

EQUIPMENT INFORMATION

Unit Name:	EP-3a	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Kinedizer/Maxon	Burner Make:		
Boiler Model:	Kinedizer LE160nnb	Burner Model:		
Boiler Serial#:	1006477	Burner Serial#:		

PERMIT INFORMATION

Permit #: 7200M5 Permit Date: 04/15/2025 Permit CO Limit: 400
Permit Equipment #: EP-3a Permit Units: ppm @ 3 % O2 Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial Serial #: 14697 Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

EMISSIONS TEST RESULTS

Parameter	Test 1	Test 2	Test 3	Overall Average
O2%	7.22	7.50	7.60	7.44
CO ppm @ 3% O2	1.74	1.41	1.47	1.54
NOx ppm @ 3% O2	28.72	28.37	27.88	28.32
CO mass @ 3% O2	1.737	1.414	1.474	1.542
NOx mass @ 3% O2	28.722	28.372	27.875	28.323

RampUp 1 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
13:45:54	7.10	2.00	22.00	1.00	23.00	88.50	2.59	29.78
13:46:09	7.00	2.00	22.00	1.00	23.00	88.50	2.57	29.57
13:46:24	7.00	1.00	22.00	1.00	23.00	88.50	1.29	29.57
13:46:39	7.00	1.00	22.00	1.00	23.00	88.50	1.29	29.57
13:46:54	7.00	1.00	22.00	1.00	23.00	88.50	1.29	29.57

Test 1 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
13:46:55	7.00	1.00	22.00	1.00	23.00	88.50	1.29	29.57
13:47:11	7.10	1.00	22.00	1.00	23.00	88.50	1.29	29.78
13:47:26	7.10	2.00	22.00	1.00	23.00	88.50	2.59	29.78
13:47:41	7.10	1.00	22.00	1.00	23.00	88.50	1.29	29.78
13:47:56	7.10	2.00	22.00	1.00	23.00	88.50	2.59	29.78
13:48:11	7.10	1.00	22.00	1.00	23.00	88.50	1.29	29.78
13:48:26	7.20	1.00	21.00	1.00	22.00	88.30	1.30	28.70
13:48:41	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:48:56	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:49:11	7.20	2.00	20.00	1.00	21.00	88.30	2.61	27.39
13:49:26	7.20	2.00	20.00	1.00	21.00	88.30	2.61	27.39
13:49:41	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:49:56	7.20	1.00	20.00	1.00	21.00	88.50	1.30	27.39
13:50:11	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:50:26	7.20	2.00	20.00	1.00	21.00	88.30	2.61	27.39
13:50:41	7.20	2.00	20.00	1.00	21.00	88.30	2.61	27.39
13:50:56	7.30	1.00	20.00	1.00	21.00	88.30	1.31	27.59
13:51:11	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:51:26	7.30	1.00	20.00	1.00	21.00	88.30	1.31	27.59
13:51:41	7.30	2.00	20.00	1.00	21.00	88.30	2.63	27.59
13:51:56	7.20	2.00	20.00	1.00	21.00	88.30	2.61	27.39
13:52:11	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:52:26	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
13:52:41	7.20	2.00	20.00	1.00	21.00	88.50	2.61	27.39
13:52:56	7.20	2.00	20.00	1.00	21.00	88.50	2.61	27.39
13:53:11	7.20	1.00	20.00	1.00	21.00	88.50	1.30	27.39
13:53:26	7.10	1.00	21.00	1.00	22.00	88.50	1.29	28.49
13:53:41	7.20	2.00	20.00	1.00	21.00	88.50	2.61	27.39
13:53:56	7.20	2.00	20.00	1.00	21.00	88.70	2.61	27.39
13:54:11	7.20	1.00	20.00	1.00	21.00	88.70	1.30	27.39
13:54:26	7.20	2.00	20.00	1.00	21.00	88.70	2.61	27.39
13:54:41	7.20	2.00	20.00	1.00	21.00	88.70	2.61	27.39
13:54:56	7.30	2.00	20.00	1.00	21.00	88.70	2.63	27.59
13:55:11	7.30	1.00	20.00	1.00	21.00	88.70	1.31	27.59
13:55:26	7.30	2.00	21.00	1.00	22.00	88.70	2.63	28.91
13:55:41	7.30	1.00	21.00	1.00	22.00	88.90	1.31	28.91
13:55:56	7.30	2.00	21.00	1.00	22.00	88.90	2.63	28.91
13:56:11	7.30	2.00	21.00	1.00	22.00	89.10	2.63	28.91
13:56:26	7.30	2.00	21.00	1.00	22.00	89.10	2.63	28.91
13:56:41	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
13:56:56	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
13:57:11	7.40	1.00	21.00	1.00	22.00	89.10	1.32	29.12

Test 1 - 07/22/25								
13:57:26	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
13:57:41	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
13:57:56	7.30	1.00	21.00	1.00	22.00	89.20	1.31	28.91
13:58:11	7.30	1.00	21.00	1.00	22.00	89.20	1.31	28.91
13:58:26	7.30	2.00	21.00	1.00	22.00	89.20	2.63	28.91
13:58:41	7.30	1.00	20.00	1.00	21.00	89.20	1.31	27.59
13:58:56	7.30	1.00	21.00	1.00	22.00	89.20	1.31	28.91
13:59:11	7.30	2.00	21.00	1.00	22.00	89.20	2.63	28.91
13:59:26	7.30	1.00	21.00	1.00	22.00	89.20	1.31	28.91
13:59:41	7.20	1.00	20.00	1.00	21.00	89.20	1.30	27.39
13:59:56	7.20	1.00	21.00	1.00	22.00	89.40	1.30	28.70
14:00:11	7.20	1.00	21.00	1.00	22.00	89.20	1.30	28.70
14:00:26	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:00:41	7.30	2.00	22.00	1.00	23.00	89.20	2.63	30.22
14:00:56	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:01:11	7.10	1.00	22.00	1.00	23.00	89.20	1.29	29.78
14:01:26	7.10	1.00	22.00	1.00	23.00	89.20	1.29	29.78
14:01:41	7.10	1.00	23.00	1.00	24.00	89.20	1.29	31.08
14:01:56	7.20	1.00	23.00	1.00	24.00	89.20	1.30	31.30
14:02:11	7.20	2.00	22.00	1.00	23.00	89.20	2.61	30.00
14:02:26	7.20	1.00	22.00	1.00	23.00	89.10	1.30	30.00
14:02:41	7.10	1.00	22.00	1.00	23.00	89.10	1.29	29.78
14:02:56	7.10	1.00	22.00	1.00	23.00	89.10	1.29	29.78
14:03:11	7.10	1.00	22.00	1.00	23.00	89.10	1.29	29.78
14:03:26	7.20	1.00	22.00	1.00	23.00	89.10	1.30	30.00
14:03:41	7.20	2.00	22.00	1.00	23.00	89.10	2.61	30.00
14:03:56	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:04:11	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:04:26	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:04:41	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:04:57	7.20	1.00	22.00	1.00	23.00	89.20	1.30	30.00
14:05:12	7.20	1.00	21.00	1.00	22.00	89.20	1.30	28.70
14:05:27	7.20	1.00	21.00	1.00	22.00	89.20	1.30	28.70
14:05:42	7.30	2.00	21.00	1.00	22.00	89.20	2.63	28.91
14:05:57	7.30	1.00	21.00	1.00	22.00	89.20	1.31	28.91
14:06:12	7.30	2.00	21.00	1.00	22.00	89.20	2.63	28.91
14:06:27	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
14:06:42	7.30	2.00	21.00	1.00	22.00	89.10	2.63	28.91
14:06:57	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91
14:07:12	7.30	1.00	21.00	1.00	22.00	89.10	1.31	28.91

Average O2 =	7.22 %	Average NOx =	21.99 ppm	Average CO =	1.33 ppm
Average COmass =	1.737 ppm	Average NO =	20.99 ppm	Average NOxmass =	28.722 ppm
Average NO2 =	1.00 ppm	Average COcorr =	1.74 ppm	Average NOxcorr =	28.72 ppm

Purge 1 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:07:16	7.30	1.00	21.00	1.00	22.00	88.90	1.31	28.91
14:07:31	20.10	1.00	11.00	0.00	11.00	88.90	20.00	220.00
14:07:46	20.60	0.00	4.00	0.00	4.00	88.90	0.00	180.00
14:08:01	20.60	0.00	2.00	0.00	2.00	88.90	0.00	90.00

Purge 1 - 07/22/25								
14:08:16	20.70	0.00	0.00	0.00	0.00	88.90	0.00	0.00
14:08:31	20.70	0.00	0.00	0.00	0.00	88.90	0.00	0.00
14:08:46	20.70	0.00	0.00	0.00	0.00	88.90	0.00	0.00
14:09:01	20.70	1.00	0.00	0.00	0.00	88.90	60.00	0.00
14:09:16	20.70	0.00	0.00	0.00	0.00	88.90	0.00	0.00
14:09:31	20.70	1.00	0.00	0.00	0.00	88.90	60.00	0.00
14:09:46	20.70	0.00	0.00	0.00	0.00	88.70	0.00	0.00
14:10:01	20.70	1.00	0.00	0.00	0.00	88.70	60.00	0.00
14:10:16	20.80	1.00	0.00	0.00	0.00	88.70	90.00	0.00
14:10:31	20.80	1.00	0.00	0.00	0.00	88.70	90.00	0.00
14:10:46	20.80	0.00	0.00	0.00	0.00	88.70	0.00	0.00
14:11:01	20.80	0.00	0.00	0.00	0.00	88.50	0.00	0.00
14:11:16	20.80	1.00	0.00	0.00	0.00	88.50	90.00	0.00
14:11:31	20.80	1.00	0.00	0.00	0.00	88.50	90.00	0.00
14:11:47	20.80	1.00	0.00	0.00	0.00	88.50	90.00	0.00
14:12:02	20.80	0.00	0.00	0.00	0.00	88.50	0.00	0.00
14:12:17	20.80	1.00	0.00	0.00	0.00	88.50	90.00	0.00

RampUp 2 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:12:22	20.80	1.00	0.00	0.00	0.00	88.50	90.00	0.00
14:12:38	7.50	1.00	9.00	0.00	9.00	88.30	1.33	12.00
14:12:53	7.30	1.00	16.00	1.00	17.00	88.30	1.31	22.34
14:13:08	7.30	1.00	18.00	1.00	19.00	88.30	1.31	24.96

Test 2 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:13:24	7.20	1.00	20.00	1.00	21.00	88.30	1.30	27.39
14:13:39	7.20	1.00	21.00	1.00	22.00	88.30	1.30	28.70
14:13:54	7.20	1.00	21.00	1.00	22.00	88.30	1.30	28.70
14:14:09	7.20	1.00	22.00	1.00	23.00	88.30	1.30	30.00
14:14:24	7.20	2.00	22.00	1.00	23.00	88.30	2.61	30.00
14:14:39	7.20	1.00	22.00	1.00	23.00	88.30	1.30	30.00
14:14:54	7.20	1.00	22.00	1.00	23.00	88.50	1.30	30.00
14:15:09	7.30	2.00	22.00	1.00	23.00	88.50	2.63	30.22
14:15:24	7.20	1.00	22.00	1.00	23.00	88.70	1.30	30.00
14:15:39	7.20	1.00	22.00	1.00	23.00	88.70	1.30	30.00
14:15:54	7.30	1.00	22.00	1.00	23.00	88.70	1.31	30.22
14:16:09	7.30	1.00	22.00	1.00	23.00	88.70	1.31	30.22
14:16:24	7.30	1.00	22.00	1.00	23.00	88.70	1.31	30.22
14:16:39	7.20	1.00	21.00	1.00	22.00	88.70	1.30	28.70
14:16:54	7.20	1.00	22.00	1.00	23.00	88.70	1.30	30.00
14:17:09	7.20	1.00	22.00	1.00	23.00	88.70	1.30	30.00
14:17:24	7.20	2.00	22.00	1.00	23.00	88.70	2.61	30.00
14:17:39	7.20	1.00	22.00	1.00	23.00	88.70	1.30	30.00
14:17:54	7.10	1.00	22.00	1.00	23.00	88.70	1.29	29.78
14:18:09	6.40	1.00	26.00	1.00	27.00	88.90	1.23	33.29
14:18:54	7.60	1.00	21.00	1.00	22.00	88.90	1.34	29.55
14:19:09	7.60	1.00	20.00	1.00	21.00	89.10	1.34	28.21
14:19:24	7.60	1.00	20.00	1.00	21.00	89.10	1.34	28.21

Test 2 - 07/22/25								
14:19:39	7.60	1.00	20.00	1.00	21.00	89.10	1.34	28.21
14:19:54	7.60	1.00	20.00	1.00	21.00	89.10	1.34	28.21
14:20:09	7.50	1.00	20.00	1.00	21.00	89.10	1.33	28.00
14:20:24	7.50	1.00	20.00	1.00	21.00	89.10	1.33	28.00
14:20:39	7.60	1.00	20.00	1.00	21.00	89.20	1.34	28.21
14:20:54	7.60	1.00	20.00	1.00	21.00	89.20	1.34	28.21
14:21:09	7.50	1.00	20.00	1.00	21.00	89.20	1.33	28.00
14:21:24	7.60	1.00	20.00	1.00	21.00	89.20	1.34	28.21
14:21:39	7.60	1.00	20.00	1.00	21.00	89.20	1.34	28.21
14:21:54	7.60	1.00	19.00	1.00	20.00	89.20	1.34	26.87
14:22:09	7.60	1.00	19.00	1.00	20.00	89.20	1.34	26.87
14:22:24	7.60	1.00	20.00	1.00	21.00	89.40	1.34	28.21
14:22:39	7.60	1.00	20.00	1.00	21.00	89.40	1.34	28.21
14:22:54	7.60	1.00	20.00	1.00	21.00	89.40	1.34	28.21
14:23:09	7.70	1.00	19.00	1.00	20.00	89.40	1.35	27.07
14:23:24	7.70	1.00	19.00	1.00	20.00	89.40	1.35	27.07
14:23:39	7.70	1.00	19.00	1.00	20.00	89.40	1.35	27.07
14:23:54	7.60	2.00	19.00	1.00	20.00	89.60	2.69	26.87
14:24:09	7.60	1.00	20.00	1.00	21.00	89.60	1.34	28.21
14:24:24	7.60	2.00	20.00	1.00	21.00	89.40	2.69	28.21
14:24:39	7.60	1.00	20.00	1.00	21.00	89.40	1.34	28.21
14:24:54	7.60	1.00	20.00	1.00	21.00	89.20	1.34	28.21
14:25:09	7.60	1.00	19.00	1.00	20.00	89.20	1.34	26.87
14:25:24	7.70	1.00	19.00	1.00	20.00	89.10	1.35	27.07
14:25:39	7.70	1.00	19.00	1.00	20.00	89.10	1.35	27.07
14:25:54	7.70	1.00	19.00	1.00	20.00	88.90	1.35	27.07
14:26:09	7.70	1.00	19.00	1.00	20.00	88.70	1.35	27.07
14:26:24	7.70	1.00	19.00	1.00	20.00	88.50	1.35	27.07
14:26:39	7.70	1.00	19.00	1.00	20.00	88.50	1.35	27.07
14:26:54	7.70	1.00	19.00	1.00	20.00	88.50	1.35	27.07
14:27:09	7.70	1.00	19.00	1.00	20.00	88.30	1.35	27.07
14:27:24	7.70	1.00	19.00	1.00	20.00	88.30	1.35	27.07
14:27:39	7.70	1.00	19.00	1.00	20.00	88.20	1.35	27.07
14:27:54	7.60	1.00	19.00	1.00	20.00	88.20	1.34	26.87
14:28:09	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:28:24	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:28:39	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:28:54	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:29:09	7.50	1.00	20.00	1.00	21.00	88.50	1.33	28.00
14:29:24	7.50	1.00	20.00	1.00	21.00	88.50	1.33	28.00
14:29:39	7.50	1.00	20.00	1.00	21.00	88.50	1.33	28.00
14:29:54	7.50	1.00	20.00	1.00	21.00	88.70	1.33	28.00
14:30:09	7.50	1.00	21.00	1.00	22.00	88.70	1.33	29.33
14:30:24	7.50	1.00	20.00	1.00	21.00	88.70	1.33	28.00
14:30:39	7.50	1.00	21.00	1.00	22.00	88.70	1.33	29.33
14:30:54	7.50	1.00	21.00	1.00	22.00	88.70	1.33	29.33
14:31:09	7.60	1.00	21.00	1.00	22.00	88.70	1.34	29.55
14:31:24	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21
14:31:39	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21
14:31:54	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21
14:32:09	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21
14:32:24	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21
14:32:39	7.60	1.00	20.00	1.00	21.00	88.70	1.34	28.21

Test 2 - 07/22/25								
14:32:54	7.70	1.00	20.00	1.00	21.00	88.70	1.35	28.42
14:33:09	7.60	1.00	19.00	1.00	20.00	88.70	1.34	26.87
14:33:24	7.60	1.00	19.00	1.00	20.00	88.90	1.34	26.87
14:33:39	7.60	1.00	20.00	1.00	21.00	88.90	1.34	28.21
14:33:54	7.60	1.00	20.00	1.00	21.00	88.90	1.34	28.21
14:34:09	7.70	1.00	20.00	1.00	21.00	88.90	1.35	28.42

Average O2 =	7.50 %	Average NOx =	21.29 ppm	Average CO =	1.06 ppm
Average COmass =	1.414 ppm	Average NO =	20.29 ppm	Average NOxmass =	28.372 ppm
Average NO2 =	1.00 ppm	Average COcorr =	1.41 ppm	Average NOxcorr =	28.37 ppm

Purge 2 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:34:18	7.70	1.00	20.00	1.00	21.00	88.90	1.35	28.42
14:34:33	20.20	1.00	12.00	0.00	12.00	88.90	22.50	270.00
14:34:48	20.60	1.00	5.00	0.00	5.00	88.70	45.00	225.00
14:35:03	20.70	0.00	2.00	0.00	2.00	88.70	0.00	120.00
14:35:18	20.70	0.00	0.00	0.00	0.00	88.70	0.00	0.00
14:35:33	20.70	0.00	0.00	0.00	0.00	88.50	0.00	0.00
14:35:48	20.70	0.00	0.00	0.00	0.00	88.50	0.00	0.00
14:36:03	20.80	0.00	0.00	0.00	0.00	88.50	0.00	0.00
14:36:18	20.80	0.00	0.00	0.00	0.00	88.30	0.00	0.00
14:36:33	20.80	1.00	0.00	0.00	0.00	88.30	90.00	0.00
14:36:48	20.80	0.00	0.00	0.00	0.00	88.30	0.00	0.00
14:37:03	20.80	1.00	0.00	0.00	0.00	88.30	90.00	0.00
14:37:18	20.80	0.00	0.00	0.00	0.00	88.20	0.00	0.00
14:37:33	20.80	1.00	0.00	0.00	0.00	88.20	90.00	0.00
14:37:48	20.80	0.00	0.00	0.00	0.00	88.20	0.00	0.00
14:38:03	20.80	1.00	0.00	0.00	0.00	88.00	90.00	0.00
14:38:18	20.80	1.00	0.00	0.00	0.00	88.00	90.00	0.00
14:38:33	20.80	1.00	0.00	0.00	0.00	88.00	90.00	0.00
14:38:48	20.80	1.00	0.00	0.00	0.00	87.80	90.00	0.00
14:39:03	20.80	1.00	0.00	0.00	0.00	87.80	90.00	0.00
14:39:18	20.80	1.00	0.00	0.00	0.00	87.80	90.00	0.00

RampUp 3 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:39:24	20.80	1.00	0.00	0.00	0.00	87.80	90.00	0.00
14:39:39	7.90	1.00	8.00	0.00	8.00	87.80	1.37	10.99
14:39:54	7.70	1.00	14.00	1.00	15.00	87.60	1.35	20.30
14:40:09	7.70	2.00	16.00	1.00	17.00	87.40	2.71	23.01
14:40:24	7.70	2.00	17.00	1.00	18.00	87.40	2.71	24.36

Test 3 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
14:40:25	7.70	1.00	17.00	1.00	18.00	87.40	1.35	24.36
14:40:41	7.70	2.00	18.00	1.00	19.00	87.40	2.71	25.71
14:40:56	7.60	2.00	19.00	1.00	20.00	87.40	2.69	26.87

Test 3 - 07/22/25								
14:41:11	7.60	2.00	20.00	1.00	21.00	87.40	2.69	28.21
14:41:26	7.60	1.00	20.00	1.00	21.00	87.60	1.34	28.21
14:41:41	7.60	2.00	20.00	1.00	21.00	87.60	2.69	28.21
14:41:56	7.60	1.00	20.00	1.00	21.00	87.80	1.34	28.21
14:42:11	7.60	1.00	20.00	1.00	21.00	87.80	1.34	28.21
14:42:26	7.60	1.00	20.00	1.00	21.00	87.80	1.34	28.21
14:42:41	7.60	1.00	20.00	1.00	21.00	87.80	1.34	28.21
14:42:56	7.50	1.00	20.00	1.00	21.00	87.60	1.33	28.00
14:43:11	7.50	1.00	20.00	1.00	21.00	87.60	1.33	28.00
14:43:26	7.50	1.00	20.00	1.00	21.00	87.40	1.33	28.00
14:43:41	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:43:56	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:44:11	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:44:26	7.70	1.00	20.00	1.00	21.00	87.40	1.35	28.42
14:44:41	7.70	1.00	19.00	1.00	20.00	87.40	1.35	27.07
14:44:56	7.70	1.00	19.00	1.00	20.00	87.40	1.35	27.07
14:45:11	7.60	1.00	19.00	1.00	20.00	87.60	1.34	26.87
14:45:26	7.70	1.00	19.00	1.00	20.00	87.80	1.35	27.07
14:45:41	7.60	1.00	20.00	1.00	21.00	88.00	1.34	28.21
14:45:56	7.60	1.00	20.00	1.00	21.00	88.00	1.34	28.21
14:46:11	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:46:26	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:46:41	7.60	1.00	19.00	1.00	20.00	88.30	1.34	26.87
14:46:56	7.60	1.00	19.00	1.00	20.00	88.30	1.34	26.87
14:47:11	7.60	1.00	19.00	1.00	20.00	88.30	1.34	26.87
14:47:26	7.50	1.00	19.00	1.00	20.00	88.50	1.33	26.67
14:47:41	7.50	1.00	20.00	1.00	21.00	88.50	1.33	28.00
14:47:56	7.50	1.00	20.00	1.00	21.00	88.50	1.33	28.00
14:48:11	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:48:26	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:48:41	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:48:56	7.50	1.00	21.00	1.00	22.00	88.30	1.33	29.33
14:49:11	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:49:26	7.60	1.00	20.00	1.00	21.00	88.30	1.34	28.21
14:49:41	7.50	1.00	20.00	1.00	21.00	88.30	1.33	28.00
14:49:56	7.50	1.00	20.00	1.00	21.00	88.20	1.33	28.00
14:50:11	7.50	1.00	21.00	1.00	22.00	88.20	1.33	29.33
14:50:26	7.60	1.00	21.00	1.00	22.00	88.20	1.34	29.55
14:50:41	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:50:56	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:51:11	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:51:26	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:51:41	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:51:56	7.60	1.00	20.00	1.00	21.00	88.20	1.34	28.21
14:52:11	7.60	1.00	20.00	1.00	21.00	88.00	1.34	28.21
14:52:26	7.70	1.00	20.00	1.00	21.00	88.00	1.35	28.42
14:52:41	7.70	1.00	20.00	1.00	21.00	88.00	1.35	28.42
14:52:56	7.60	1.00	20.00	1.00	21.00	87.80	1.34	28.21
14:53:11	7.70	1.00	19.00	1.00	20.00	87.80	1.35	27.07
14:53:26	7.60	1.00	19.00	1.00	20.00	87.60	1.34	26.87
14:53:41	7.60	1.00	20.00	1.00	21.00	87.60	1.34	28.21
14:53:56	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:54:11	7.70	2.00	20.00	1.00	21.00	87.40	2.71	28.42

Test 3 - 07/22/25								
14:54:26	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:54:41	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:54:56	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:55:11	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:55:26	7.60	1.00	20.00	1.00	21.00	87.40	1.34	28.21
14:55:41	7.70	1.00	20.00	1.00	21.00	87.40	1.35	28.42
14:55:56	7.60	1.00	19.00	1.00	20.00	87.30	1.34	26.87
14:56:11	7.60	1.00	20.00	1.00	21.00	87.30	1.34	28.21
14:56:26	7.60	1.00	20.00	1.00	21.00	87.30	1.34	28.21
14:56:41	7.70	1.00	19.00	1.00	20.00	87.10	1.35	27.07
14:56:56	7.70	1.00	19.00	1.00	20.00	87.10	1.35	27.07
14:57:11	7.60	1.00	19.00	1.00	20.00	87.10	1.34	26.87
14:57:26	7.60	1.00	19.00	1.00	20.00	86.90	1.34	26.87
14:57:41	7.60	1.00	19.00	1.00	20.00	86.90	1.34	26.87
14:57:56	7.60	2.00	19.00	1.00	20.00	86.90	2.69	26.87
14:58:11	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
14:58:26	7.60	2.00	20.00	1.00	21.00	86.90	2.69	28.21
14:58:41	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
14:58:56	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
14:59:11	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
14:59:26	7.60	2.00	20.00	1.00	21.00	86.90	2.69	28.21
14:59:41	7.50	1.00	20.00	1.00	21.00	86.90	1.33	28.00
14:59:56	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
15:00:11	7.60	1.00	20.00	1.00	21.00	86.90	1.34	28.21
15:00:26	7.60	1.00	20.00	1.00	21.00	86.70	1.34	28.21
15:00:41	7.60	1.00	20.00	1.00	21.00	86.70	1.34	28.21

Average O2 =	7.60 %	Average NOx =	20.76 ppm	Average CO =	1.10 ppm
Average COmass =	1.474 ppm	Average NO =	19.76 ppm	Average NOxmass =	27.875 ppm
Average NO2 =	1.00 ppm	Average COcorr =	1.47 ppm	Average NOxcorr =	27.88 ppm

Purge 3 - 07/22/25								
Time	O2	CO	NO	NO2	NOx	Tamb	COcorr	NOxcorr
15:00:46	7.50	1.00	20.00	1.00	21.00	86.70	1.33	28.00
15:01:01	20.30	1.00	11.00	0.00	11.00	86.50	25.71	282.86
15:01:16	20.70	1.00	4.00	0.00	4.00	86.50	60.00	240.00
15:01:31	20.70	1.00	2.00	0.00	2.00	86.50	60.00	120.00
15:01:46	20.80	1.00	0.00	0.00	0.00	86.50	90.00	0.00
15:02:01	20.80	0.00	0.00	0.00	0.00	86.50	0.00	0.00
15:02:16	20.80	0.00	0.00	0.00	0.00	86.70	0.00	0.00
15:02:31	20.80	0.00	0.00	0.00	0.00	86.70	0.00	0.00
15:02:46	20.80	0.00	0.00	0.00	0.00	86.50	0.00	0.00
15:03:01	20.80	0.00	0.00	0.00	0.00	86.40	0.00	0.00
15:03:16	20.80	0.00	0.00	0.00	0.00	86.20	0.00	0.00
15:03:31	20.80	1.00	0.00	0.00	0.00	86.00	90.00	0.00
15:03:46	20.80	1.00	0.00	0.00	0.00	86.00	90.00	0.00
15:04:01	20.80	0.00	0.00	0.00	0.00	85.80	0.00	0.00
15:04:16	20.90	1.00	0.00	0.00	0.00	85.80	180.00	0.00
15:04:31	20.90	1.00	0.00	0.00	0.00	85.80	180.00	0.00
15:04:46	20.90	1.00	0.00	0.00	0.00	85.80	180.00	0.00
15:05:01	20.90	1.00	0.00	0.00	0.00	85.80	180.00	0.00

Purge 3 - 07/22/25								
15:05:16	20.90	0.00	0.00	0.00	0.00	85.80	0.00	0.00
15:05:31	20.90	1.00	0.00	0.00	0.00	86.00	180.00	0.00
15:05:46	20.90	1.00	0.00	0.00	0.00	86.00	180.00	0.00

ANALYZER AVERAGE INFORMATION

Total Average O2 =	7.44 %	Total Average NOx =	21.35 ppm	Total Average CO =	1.16 ppm
Total Average COmass =	1.542 ppm	Total Average NO =	20.35 ppm	Total Average NOxmass =	28.323 ppm
Total Average NO2 =	1.00 ppm	Total Average COcorr =	1.54 ppm	Total Average NOxcorr =	28.32 ppm

NOTES:

TEST COMPLETED BY:

Jay Faulkner

Targa Resources

Alva, OK &3717

Phone: 4058806166

Mobile: 4058806166

Email:

Home Page:

MASS EMISSION CALCULATION:

Equipment Type: Boiler/Heater

Fuel Type: Gas: Natural

Fuel (F) Factor:

Based on: EPA RM-19 at 68 deg F and 14.696 psia

Mass emission unit : lb/hr

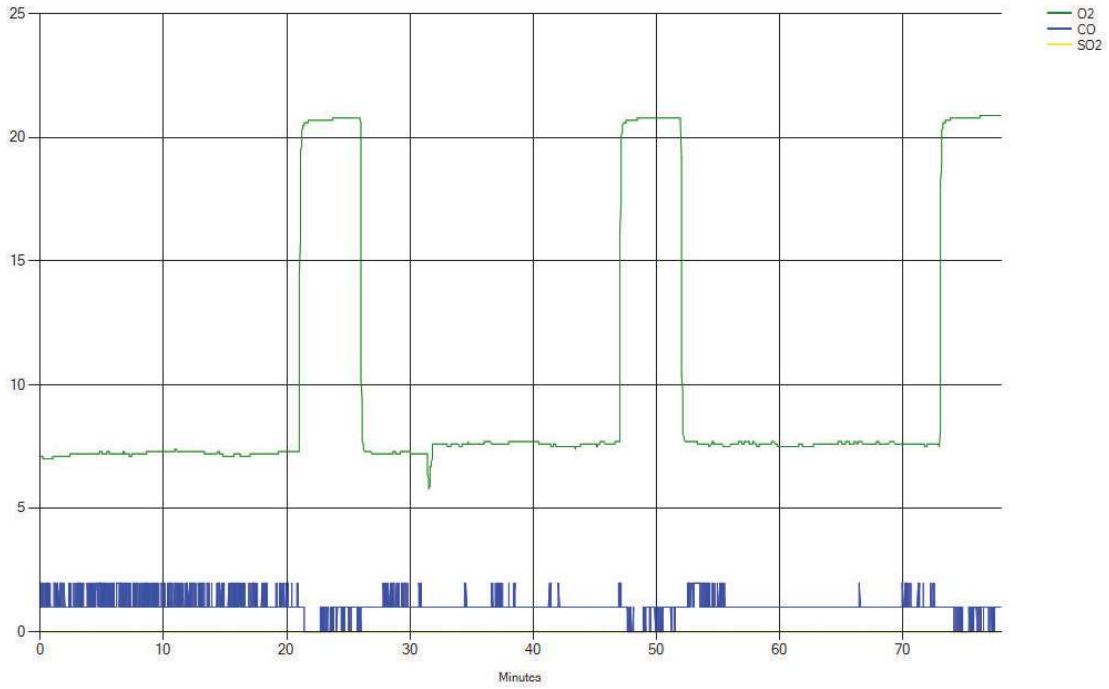
Calculation : E[lb/hr] = Fd[dscf/MMBTU] * (20.9/(20.9 - O2d%)) * Fc[lb/scf] * Cd[ppm] * Heat Rate[BTU/hr] * 1/1000000[MMBTU/BTU]

Mass emission unit : lb/mmBTU

Calculation : E[lb/MMBTU] = Fd[dscf/MMBTU] * (20.9/(20.9 - O2d%)) * Fc[lb/scf] * Cd[ppm]

Mass emission unit : tpy

Calculation : E[TPY] = E[lb/hr] * 24[hr/day] * 365[day/yr] * 1/2000[ton/lb]



Technician_____ Date_____

Pre & Post Calibration Test Report

Calibration Test Date: 07/22/2025

Targa Northern Delaware
Targa Northern Delaware LLC
Phone: 5756317093
201 S 4th street
Artesia , NM 88201
Mobile:
Email:

Sensor	Span Gas Value	Expiration date	Zero Error % Limit	Cal Error % Limit	Zero Drift % Limit	Span Drift % Limit
O2 %	20.9	4/8/2014	3	5	5	5
CO ppm	251.7	4/8/2014	3	5	5	5
NO ppm	293	4/8/2014	3	5	5	5
NO2 ppm	51.79	4/8/2014	3	5	5	5

PHYSICAL LOCATION

Operational Area: Targa Northern Delaware Facility Name: Road Runner Gas Plant

EQUIPMENT INFORMATION

Unit Name:	EP-3a	National Board#:		Boiler Parameters:
Boiler Type:				
Boiler Make:	Kinedizer/Maxon	Burner Make:		
Boiler Model:	Kinedizer LE160nnb	Burner Model:		
Boiler Serial#:	1006477	Burner Serial#:		

PERMIT INFORMATION

Permit #: 7200M5 Permit Date: 04/15/2025 Permit CO Limit: 400
Permit Equipment #: EP-3a Permit Units: ppm @ 3 % O2 Permit NOx Limit: 30

ANALYZER INFORMATION

Model: ecom-J2KNpro Industrial Serial #: 14697 Last Stability Test : 00/00/00
Last Linearity Test : 00/00/00

Calibration Specs

	O2 %	CO ppm	NO ppm	NO2 ppm
Pre-Test Zero %	0.0	1	0.0	1
Post-Test Zero %	0.0	0.0	0.0	0.0
Mean Zero, Ccz	0.0	0.5	0.0	0.5
Zero Result	Pass	Pass	Pass	Pass
Pre-Test Span	21.0	250	294	51
Pre-Test Result	Pass	Pass	Pass	Pass
Post Test Span	21.0	257	293	52
Post Test Drift %	0.5	2.1	0.0	0.4
Post Test Results	Pass	Pass	Pass	Pass
Span Drift (%)	0.0	2.8	0.3	2.0
Mean Span, Ccm	21.0	253.5	293.5	51.5

Pre Test Calibration					
Time	**O2**	**CO**	**NO**	**NO2**	**IFlow**
11:53:54	21.0	1	0.0	0.0	0.46
11:53:59	21.0	1	0.0	0.0 ★1	0.39
11:54:01	21.0	1	0.0 ★1	0.0	0.39
11:54:06	21.0	1 ★1	0.0	0.0	0.37
11:54:13	21.0 ★2	1	0.0	0.0	0.35
11:54:25	20.9	1	0.0	0.0	0.35
11:54:56	14.7	1	38	4	1.95
11:55:25	0.0	219	271	9	1.96
11:55:28	0.0 ★1	227	274	8	1.96
11:55:55	0.0	246	289	4	1.98
11:56:22	0.0	248 ★2	294	2	1.99
11:56:25	0.0	249	294 ★2	2	2.01
11:56:26	0.0	249	294	2	2.13
11:56:55	19.4	241	116	39	1.98
11:57:25	21.0	17	13	50	2.00
11:57:43	21.0	6	6	51 ★2	1.99
07:59:07	0.0 ★1	240	285	10	1.97
07:59:15	0.0 ★1	244	288	7	1.97
07:59:18	0.0 ★1	244	289	6	1.96
08:00:55	0.0	248	302	1 ★1	2.08
08:02:51	0.0	250 ★2	293	1	2.07
08:02:54	0.0	250	294 ★2	1	2.07
08:04:21	21.0	5	9	51 ★2	2.60
08:04:40	21.0 ★2	3	7	51	2.60

Post Test Drift Check					
Time	**O2**	**CO**	**NO**	**NO2**	**IFlow**
17:03:09	21.0	0.0	0.0	0.0	1.83
17:03:13	21.0	1 ★1	0.0	0.0	1.83
17:03:14	21.0	0.0	0.0 ★1	0.0	1.83
17:03:16	21.0	0.0	0.0	0.0 ★1	1.83
17:03:40	21.0	0.0	0.0	0.0	2.13
17:04:10	0.1	218	252	15	2.15
17:04:40	0.0	257	282	4	2.14
17:05:09	0.0	259	288	2	2.13
17:05:13	0.0 ★1	259	288	2	2.14
17:05:40	0.0	259	291	2	2.14
17:06:10	0.0	258	293	1	2.13
17:06:14	0.0	258	293 ★2	1	2.13
17:06:17	0.0	258	293 ★2	1	2.13
17:06:25	0.0	257 ★2	293	1	2.13
17:06:40	0.0	257	294	1	2.60
17:07:10	21.0	25	27	52	2.60
17:07:14	21.0	18	22	52 ★2	2.60
17:07:16	21.0 ★2	15	20	52	2.60

★1

: Captured Zero

★2 : Captured Cal Response

NOTES:

TEST COMPLETED BY:

Jay Faulkner
Targa Resources

Alva, OK &3717
Phone: 4058806166
Mobile: 4058806166
Email:
Home Page:

Technician_____ Date_____

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E80A8N78	Reference Number:	163-402882428-1
Cylinder Number:	BLM003323	Cylinder Volume:	83.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2215 PSIG
PGVP Number:	A32023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 06, 2023

Expiration Date: Nov 06, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	300.0 PPM	293.5 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
CARBON MONOXIDE	250.0 PPM	251.7 PPM	G1	+/- 0.4% NIST Traceable	10/30/2023
NITRIC OXIDE	300.0 PPM	293.0 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010239	KAL004819	246.9 PPM CARBON MONOXIDE/NITROGEN	+/-0.2%	Oct 16, 2024
GMIS	DCK1128202238	CC754471	249.1 PPM NITRIC OXIDE/NITROGEN	+/-0.6%	Jan 18, 2031
GMIS	1534022022404	CC517867	30.84 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.6%	Nov 09, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 13, 2023
NO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023
NO2 - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
9810 BAY AREA BLVD
Pasadena, TX 77507
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E80A8N78	Reference Number:	163-402882428-1
Cylinder Number:	BLM003323	Cylinder Volume:	83.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2215 PSIG
PGVP Number:	A32023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 06, 2023

Expiration Date: Nov 06, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	300.0 PPM	293.5 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
CARBON MONOXIDE	250.0 PPM	251.7 PPM	G1	+/- 0.4% NIST Traceable	10/30/2023
NITRIC OXIDE	300.0 PPM	293.0 PPM	G1	+/- 0.7% NIST Traceable	10/30/2023, 11/06/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010239	KAL004819	246.9 PPM CARBON MONOXIDE/NITROGEN	+/-0.2%	Oct 16, 2024
GMIS	DCK1128202238	CC754471	249.1 PPM NITRIC OXIDE/NITROGEN	+/-0.6%	Jan 18, 2031
GMIS	1534022022404	CC517867	30.84 PPM NITROGEN DIOXIDE/NITROGEN	+/-1.6%	Nov 09, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 13, 2023
NO-L - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023
NO2 - (2) NICOLET iS50 AUP1910616	FTIR	Oct 23, 2023

Triad Data Available Upon Request

Signature on file

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI78E15W3LJ2	Reference Number:	122-403051434-1
Cylinder Number:	CC502488	Cylinder Volume:	146.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22024	Valve Outlet:	660
Gas Code:	NO2,O2,BALN	Certification Date:	Jun 25, 2024

Expiration Date: Jun 25, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	50.00 PPM	51.79 PPM	G1	+/- 2.0% NIST Traceable	06/17/2024, 06/25/2024
OXYGEN	21.00 %	21.02 %	G1	+/- 0.5% NIST Traceable	06/18/2024
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534022022	CC517978	61.45 PPM NITROGEN DIOXIDE/NITROGEN	1.8%	Nov 21, 2026
PRM	C2392001.03	D153564	59.5 PPM NITROGEN DIOXIDE/AIR	+/- 1.7%	Nov 22, 2024
GMIS	1534002024508	CC506989	60.58 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.8%	May 01, 2027
NTRM	10010928	K021508	20.89 % OXYGEN/NITROGEN	+/- 0.5%	Mar 22, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018176583	FTIR	Jun 20, 2024
Siemens Oxymat 61 M3299 O2	Paramagnetic	Jun 12, 2024

Triad Data Available Upon Request

Signature on file

Approved for Release

RDR-H-1054
Hot Oil Heater Emissions and Spec Sheets

Owner:	Targa		Owner Ref.:	H-1054
Purchaser:	Targa		Purchaser Ref.:	TBD
Manufacturer:	Tulsa Heaters Midstream		THM Ref.:	MJ16-199
Service:	Hot Oil Heater		Project:	Roadrunner Plant
Number:	1		Location:	Jal, NM
SHO Duty:	55.00	MMBTU/ hr	SHO Model:	SHO5000

Guarantees:

NOx	0.0401	Lb/MMBTU	30	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0407	Lb/MMBTU	50	ppm
VOC	0.0192	Lb/MMBTU	15	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.0044	Lb/MMBTU	5	ppm

		Design Case			
Heat Release	LHV Basis	63.89	MMBTU/hr		
Products of Combustion					
	MW				
O2	32.00	1,786	Lbm/ hr		
N2 + Ar	28.15	45,262	Lbm/ hr		
CO2	44.01	8,217	Lbm/ hr		
H2O	18.02	6,961	Lbm/ hr		
NOx	46.01	2.56	Lbm/ hr /	30	ppm
SOx	64.06	0.00	Lbm/ hr /	0	ppm
CO	28.01	2.60	Lbm/ hr /	50	ppm
VOC	44.10	1.23	Lbm/ hr /	15	ppm
UHC	16.04	0.45	Lbm/ hr /	15	ppm
SPM		0.28	Lbm/ hr /	5	ppm
Total		62,234	Lbm/ hr		
Flue Gas Exit Temp.		517	°F		
Flue Gas Exit Velocity		35.9	Ft/sec		
Stack Height		34.3	ft		
Stack ID		48	in		

NOTE:
THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

revision	date	description	by	chk'd	appv'd

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Owner:	Targa		Owner Ref.:	H-1054	Ftnt
Purchaser:	Targa		Purchaser Ref.:	TBD	&
Manufacturer:	Tulsa Heaters Midstream, LLC		THM Ref.:	MJ16-199 /	Rev
Service:	Hot Oil Heater		Project:	Roadrunner Plant	
Quantity:	1		Location:	Jal, NM	
SHO Duty:	55.00	MMBTU/ hr	SHO Model:	SHO5000	
BMS Release:	70.28	MMBTU/ hr	BMS Model:	BMS8500	
SHOS Flow:	2,160	USgpm @ 196 ft TDH	SHOS.Model:	SHOS2220	

PROCESS DESIGN CONDITIONS

		Radiant / Convection	Radiant / Convection	Radiant / Convection	Radiant / Convection
Heater Section	- - -	Radiant / Convection			
Operating Case	- - -	Design			
Service	- - -	Hot Oil Heater			
Heat Absorption (R/C)	MMBTU/ hr	36.39 / 18.61			
Process Fluid	- - -	Chemtherm 550			
Process Mass Flow Rate, Total	Lb/ hr	885,000			
Process Bulk Velocity (calc. R/C)	ft/ s	8 / 8			
Process Mass Velocity (calc. R/C)	Lb/ s ft2	408 / 408			
Coking Allowance (dP calcs)	in				
Pressure Drop, Clean (allow. / calc.)	psi	30 / 16			
Pressure Drop, Fouled (allow. / calc.)	psi				
Average Heat Flux (allowable)	BTU/ hr ft2	13,000			
Average Heat Flux (calculated)	BTU/ hr ft2	12,410			
Maximum Heat Flux (allowable)	BTU/ hr ft2				
Maximum Heat Flux (calc. R/C)	BTU/ hr ft2	22,700 / 26,310			
Fouling Factor, Internal	hr ft2 °F/ BTU	0.002			
Corrosion or Erosion Characteristics	- - -				
Max. Film Temperature (allow. / calc.)	°F	635 / 518			
Inlet Conditions:					
Temperature	°F	295			
Pressure	psig	80			
Mass Flow Rate, Liquid	Lb/ hr	885,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	51.10 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	- - - / 0.0			
Viscosity, Liquid / Vapor	cp	2.046 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.5675 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.0702 / 0.000			
Outlet Conditions:					
Temperature	°F	400			
Pressure	psig	64			
Mass Flow Rate, Liquid	Lb/ hr	885,000			
Mass Flow Rate, Vapor	Lb/ hr	0			
Weight Percent, Liquid / Vapor	wt%	100% / 0%			
Density, Liquid / Vapor	Lb/ ft3	48.82 / 0.00			
Molecular Weight, Liquid / Vapor	Lb/ Lbmole	- - - / 0.0			
Viscosity, Liquid / Vapor	cp	1.001 / 0.000			
Specific Heat, Liquid / Vapor	BTU/ Lb °F	0.618 / 0.000			
Thermal Conductivity, Liq./Vap.	BTU/hr ft °F	0.068 / 0.000			

revision	date	description	by	chk'd	appv'd
A		Issued with Proposal			

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Owner Ref.: H-1054 THM Ref.: MJ16-199

Ftnt & Rev

COMBUSTION DESIGN CONDITIONS

Overall Performance:		
Operating Case	- - -	Design
Service	- - -	Hot Oil Heater
Excess Air	mol%	15.0%
Calculated Heat Release (LHV)	MMBTU/ hr	63.89
Guaranteed Efficiency	HR%	84.1%
Calculated Efficiency	HR%	86.1%
Radiation Loss	HR%	2.00%
Flow Rate, Combustion Gen./ Imp.	Lb/ hr	62,234
Flue Gas Temp. Leaving (R/C)	°F	1,520 / 517
Flue Gas Mass Velocity	Lb/ sec ft2	0.667

Fuel(s) Data:		Gas 1 Mol.Wt.	Gas 2 Mol.Wt.	Gas 3 Mol.Wt.	Design Fuel Oil
LHV	BTU/ scf	937			- - -
LHV	BTU/ Lb	21,012			
P @ Burner	psig	75			
T @ Burner	°F	100			
MW	Lb/ Lbmole	16.93			- - -
Flow @ design	lb/hr	3,041			
Flow @ design	scfh	68,172			
Atomizing Media		- - -			
Atom. Media P & T		- - -			
Components:					
N	wt%	- - -			
S	wt%	- - -			
Ash	wt%	- - -			
Ni	ppm	- - -			
Va	ppm	- - -			
Na	ppm	- - -			
Fe	ppm	- - -			
H2	mol%	0.0%			- - -
O2	mol%	0.0%			- - -
N2 + Ar	mol%	1.0%			- - -
CO	mol%	0.0%			- - -
CO2	mol%	0.1%			- - -
CH4	mol%	97.0%			- - -
C2H6	mol%	2.3%			- - -
C2H4	mol%	0.0%			- - -
C3H8	mol%	0.1%			- - -
C3H6	mol%	0.0%			- - -
C4H10	mol%	0.6%			- - -
C4H8	mol%	0.0%			- - -
C5H12	mol%	0.0%			- - -
C5H10	mol%	0.0%			- - -
C6+	mol%	0.0%			- - -
H2S	ppmv	0.0%			- - -
SO2	mol%	0.0%			- - -
NH3	mol%	0.0%			- - -
H2O	mol%	0.0%			- - -
spare	mol%	0.0%			- - -

Blower/Fan Peformance:		
Volumetric Flow	acfm	13,000
Rated Power	HP	40
Fan Speed	RPM	1,800
Sound Pressure	dBA	< 85
Area Classification	NEC	Class I, Div. II, Groups C&D

Burner Design:			
OEM	- - -	Callidus Technologies, LLC	
Type	- - -	Enhanced IFGR	
Quantities	- - -	1	ULTRA Low NOx
Model No.	- - -	CUBL-16W-HC-HZ	Cylindrical
Windbox	- - -	yes ...	
Location	- - -	EndWall Center ...	Horizontally Fired
Pilot Design:			
Type / Model		Self-Inspirating / by O.E.M.	
Ignition	- - -	Electric	requires elec.ign.system
Heat Release	- -	> 350000 BTU/ hr on ...	Gas 1

Burner Performance:		
Minimum Heat Release	MMBTU/ hr	14.06
Design Heat Release	MMBTU/ hr	63.89
Maximum Heat Release	MMBTU/ hr	70.28
Burner Turndown	Max:Min	5.00
Volumetric Ht. Release	BTU/ hr ft3	7,743
Pressure @ Arch	inH2O	1.60
Pressure @ Burner	inH2O	8.22
Combustion Air T @ Burner	°F	60
Flue Gas T @ Burner	°F	1,320

Guaranteed Emissions:			
Basis of Guarantee	- - -	3.0% O2,	dry (LHV)
NOx Emissions	Lb/MMBTU	0.040	30 ppm
SOx Emissions	Lb/MMBTU	no quote	
CO Emissions	Lb/MMBTU	0.041	50 ppm
VOC Emissions	Lb/MMBTU	0.019	15 ppm
UHC Emissions	Lb/MMBTU	0.007	15 ppm
SPM10 Emissions	Lb/MMBTU	0.004	5 ppm
Noise Emissions	dBA @ 3ft	85	

Net Flame Clearances:	
Est. Flame Size	approx. 34.5 ft L x 6 ft Diameter
Hor Clearance	3.5 ft NET Tube Clearance
Vert. Clearance	3.5 ft NET Tube Clearance
Axial Clearance	6.67 ft NET Refractory Clearance (to Target hot face)

Nominal Flame Clearances: from burner CL ...		Vertical	Horizontal
to Tube CL, API	ft	28.60	19.07
to Tube CL, calc.	ft	6.50	6.50
to Refrac., calc.	ft	n / a	41.17

Owner Ref.: H-1054 THM Ref.: MJ16-199

PRESSURE PARTS DESIGN

			RADIANT	SHIELD	CONVECTION
Coil Design:					
Service			Hot Oil Heater	Hot Oil Heater	Hot Oil Heater
Design Basis for Tube Temperature			API 530	API 530	API 530
Design Basis for Tube Wall Thickness			ASME Sec. VIII-1	ASME Sec. VIII-1	ASME Sec. VIII-1
Design Life		hr	100,000	100,000	100,000
Design Pressure (elastic / rupture)		psig	250 /	250 /	250 /
Design Fluid Temperature		°F	400	400	400
Design Temperature Allowance		°F	25	25	25
Design Corrosion Allowance (tubes/fittings)		in	0.063 / 0.063	0.063 / 0.063	0.063 / 0.063
Maximum Tube Temperature (clean)		°F	540		
Maximum Tube Temperature (fouled)		°F	590	485	588
Design Tube Temperature		°F	615	613	613
Inside Film Coefficient		BTU/ hr ft2 °F	210	164	164
Weld Inspection		RT or Other	100 of 10%	100 of 10%	100 of 10%
Weld Heat Treatment		s.rel., t.stab. or none	None	None	None
Hydrostatic Test Pressure		psig	per API	per API	per API
Coil Arrangement:			Horizontal	Horizontal	Horizontal
Coil Type		- - -	Helical	Serpentine	Serpentine
Tube Material (pipe or tube spec)		ASTM	SA106GrB	SA106GrB	SA106GrB
Supplementary Mfg Requirements		ASTM	None	None	None
Tube Outside Diameter		in	6.625	6.625	6.625
Tube Wall Thickness (aw / mw)		in	0.280 / 0.245	0.280 / 0.245	0.280 / 0.245
Number of Cells (radiant or convection)		- - -	1	1	1
Number of Flow Passes (total / cell)		- - -	3 / 3	3 / 3	3 / 3
Number of Tubes per Row (total / cell)		- - -		4 / 4	4 / 4
Overall Tube (1 turn in radiant) Length		ft	40.84	16.04	16.04
Effective Tube Length / Helix Diameter		ft	40.84 / 13.00	14.46	14.46
Number of Turns or Tubes (total / pass)			41.4 / 13.8	4.0 / 4.0	0.0 / 0.0
Total Exposed Surface		ft2	2,932	100	0
Number of Ext.Surf. Tubes (total / cell)		- - -	0 / 0.0	0 / 0.0	36 / 36.0
Total Exposed Surface		ft2	0	0	8,599
Tube Spacing (horiz. / tube centers)		in	- - - / 11.50	12.00 / 12.00	12.00 / 12.00
Tube Spacing (horiz. to refractory)		in	9.00	6.00	6.00
Coil Fluid Volume		USgal	2632	104	935
Coil Fittings:			Hot Oil Heater	Hot Oil Heater	Hot Oil Heater
Fitting Type		- - -	SR 90° Elbows	SR 180° U-Bends	SR 180° U-Bends
Fitting Material		ASTM	SA234 WPB	SA234 WPB	SA234 WPB
Supplementary Mfg Requirements		ASTM	None	None	None
Fitting Outside Diameter		in	6.625	6.625	6.625
Fitting Wall Thickness (aw / mw)		in	0.280 / 0.245	0.280 / 0.245	0.280 / 0.245
Fitting Location		internal or external	Internal	External	External
Tube Attachment		welded or rolled	Welded	Welded	Welded
Coil Terminals:			Outlet		Inlet
Terminal Type		beveled or flanged	Flanged		Flanged
Flange Material		ASTM	SA105N		SA105N
Supplementary Mfg Requirements		ASTM	None		None
Flange Size and Rating		NPS/ ASME	6" NPS / 300#		6" NPS / 300#
Flange Type		RFWN or RTJ	RFWN		RFWN
Location		- - -	Burner Endwall		Terminal End
Extended Surface:			CONVECTION	CONVECTION	CONVECTION
Service		- - -	Hot Oil Heater	Hot Oil Heater	Hot Oil Heater
Fin or Stud Row Number		starting @ bottom	No.1 / No.2-3	No.4-5 / No.6-9	/
Ext. Surface Type		seg.fins, solid fins, studs	HF Seg. Fins	HF Seg. Fins	
Fin/Stud Material		- - -	C.S. / C.S.	C.S. / C.S.	/
Fin/Stud Height		in	0.50 / 0.50	0.75 / 1.00	/
Fin/Stud Thickness		in	0.06 / 0.06	0.06 / 0.06	/
Fin/Stud Density		fin/ in	3.00 / 5.00	5.00 / 5.00	/

PRESSURE PARTS DESIGN (continued)

			RADIANT	SHIELD	CONVECTION	
Crossovers:						
Type, location / connections		- - -	External	/ Flanged	None	
Tube / Fittings Material		ASTM	SA106GrB	/ SA234 WPB		
Tube & Fitting OD / Thickness (aw)		in	6.625	/ 0.280		
Inlet Manifold(s):		type			Simple LOG	
Location		- - -			Top - Term. End	
Design Basis for Manifold Thickness		- - -			ASME B31.3	
Design Conditions (temp./press.)		°F/ psig			613 / 250	
Pipe Material		ASTM			SA106GrB	
Fittings Material		ASTM			SA234 WPB	
Flange Material / Style		ASTM			SA105N / RFWN	
Outside Diameters, each Branch		in			16" NPS	
Wall Thickness(es); aw ~~or mw~~		in			SCH40 (0.5)	
End Types (terminal/ dead)		beveled or flangec			Flanged / W.Cap	
Manifold Terminal Type		NPS/ ASME			16" NPS / 300# Flg	
Coil Connection Type		extrusion, olet, etc.			Weld-O-Let	
Coil Terminal Type		NPS/ ASME			6" NPS / 300# Flg	
Outlet Manifold(s):		type	Simple LOG			
Location		- - -	Burner Endwal			
Design Basis for Manifold Thickness		- - -	ASME B31.3			
Design Conditions (temp./press.)		°F/ psig	615 / 250			
Pipe Material		ASTM	SA106GrB			
Fittings Material		ASTM	SA234 WPB			
Flange Material / Style		ASTM	SA105N / RFWN			
Outside Diameters, each Branch		in	16" NPS			
Wall Thickness(es); aw ~~or mw~~		in	SCH40 (0.5)			
End Types (terminal/ dead)		beveled or flangec	Flanged / W.Cap			
Manifold Terminal Type		NPS/ ASME	16" NPS / 300# Flg			
Coil Connection Type		extrusion, olet, etc.	Weld-O-Let			
Coil Terminal Type		NPS/ ASME	6" NPS / 300# Flg			

COIL & MANIFOLD SUPPORTS DESIGN

			RADIANT	SHIELD	CONVECTION	
Tube Supports:						
Service			Hot Oil Heater	Hot Oil Heater	Hot Oil Heater	
Location	Top, Bottom, Ends		Bottom	Ends	Ends	
Support Type	casting, tubesht, spring, etc.		SS Pipe Rail	Welded Tbsheets	Welded Tbsheets	
Support Thicknesses		in	SCH40	0.375	0.375	
Support Materials		ASTM	A240 T304	A36 CS	A36 CS	
Support Temperatures (calc./ design)		°F / °F	951 / 1,140	628 / 780	628 / 780	
TbSht Ferrules Thickness/Materials		in/ ASTM	- - - / - - -	14 ga. / 304 SS	14 ga. / 304 SS	
Refractory & Anchor Materials & Types			none	per refrac. section	per refrac. section	
Intermediate Guides & Supports:			None	None	None	
Location		- - -				
Guide/ Support Type	casting, spring, etc.					
Material		ASTM				
Spacing, average		ft				
Tube Guides:	Top, Bottom, Ends		None	None	None	
Material		ASTM				
Manifold Supports:			Outlet Manifold		Intlet Manifold	
Material		ASTM	A36		N/A	
Materials Design & Supply		- - -	by THM			
Location	Top, Bottom, Ends		Burner Endwal			
Support Type	roller, shoe, spring, etc.		Simple Shelf			
Number of Supports		- - -	One (1)			

Owner Ref.: H-1054 THM Ref.: MJ16-199

CASING / REFRACTORY SYSTEMS DESIGN

			BURNER		SHIELDED	TARGET
Radiant Section Design:			ENDWALL		SIDEWALLS	ENDWALL
Total Refractory Thickness		in	5.0		3.0	5.0
Hot Face Temperature (design)		°F	2,000		2,000	2,000
Hot Face Temperaure (calculated)		°F	1,520		951	1,520
Hot Face Layer		in/ - - -	1/ 8# CF Blanket		1/ 8# CF Blanket	1/ 8# CF Blanket
Back-Up Layer No.1		in/ - - -	1/ 8# CF Blanket		2/ 6# CF Blanket	1/ 8# CF Blanket
Back-Up Layer No.2		in/ - - -	3/ 6# CF Blanket		None	3/ 6# CF Blanket
Foil Vapor Barrier		in/ - - -	None		None	None
Castable Reinforcement (SS Needles)		wt%	None		None	None
Anchors / Tie Backs:		- - -	Pins & Clips		Pins & Clips	Pins & Clips
Material		- - -	310 S.S.		304 S.S.	310 S.S.
Attachment		- - -	Welded		Welded	Welded
Casing:						
Material		in/ ASTM	0.1875 / A36		0.1875 / A36	0.1875 / A36
Internal Coating		- - -	None		None	None
External Temperature, Typical		°F	180		180	180
Comments / Clarifications		- - -	w/ cfb wraps		w/o cfb wraps	w/ cfb wraps
			SHOP Installed		SHOP Installed	SHOP Installed

			SIDEWALLS		ENDWALLS	
Convection Section Design			SHIELD	FINNED	TUBESHEETS	HEADER BOXES
Total Refractory Thickness		in	3.0	3.0	3.0	2.0
Hot Face Temperature (design)		°F	2,000	2,000	2,200	2,000
Hot Face Temperaure (calculated)		°F	1,019	1,019	1,019	739
Hot Face Layer		in/ - - -	1/ 8# CF Blanket	1/ 8# CF Blanket	3/ Sparlite HS	1/ 8# CF Blanket
Back-Up Layer No.1		in/ - - -	2/ 6# CF Blanket	2/ 6# CF Blanket	None	1/ 8# CF Blanket
Back-Up Layer No.2		in/ - - -	None	None	None	None
Foil Vapor Barrier		in/ - - -	None	None	None	None
Castable Reinforcement (SS Needles)		wt%	None	None	None	None
Anchors / Tie Backs:		- - -	Pins & Clips	Pins & Clips	Bullhorns	Pins & Clips
Material		- - -	310 S.S.	304 S.S.	304 S.S.	304 S.S.
Attachment		- - -	Welded	Welded	Welded	Welded
Casing:						
Material		in/ ASTM	0.1875 / A36	0.1875 / A36		0.1345 / A36
Internal Coating		- - -	None	None	None	None
External Temperature, Typical		°F	180	180		180
Comments / Clarifications		- - -	Cleaning/Sootblowing lanes: none			Bolted Assembly
		- - -	SHOP Installed	SHOP Installed	SHOP Installed	SHOP Installed

			FLUE GAS DUCTS			
Stack & Uptakes Design:			BREECHING	15° TRANSITION	DISCH. DUCT	
Quantity			One	One	One	
Type / Location		- - -	Full L / Conv	Full L / Conv	Self.Spt / Grade	
Length / Metal Outside Diameter (top)		ft/ ft	1.00 / n/ a	2.02 / n/ a	7 / 4.000	
Discharge Elev., minimum/ calculated		ft/ ft	n/ a / n/ a	n/ a / n/ a	20 / 34	
Total Refractory Thickness		in	3.0	0.0	0.0	
Hot Face Temperature (design)		°F	2,000			
Hot Face Temperaure (calculated)		°F	517	517	517	
Hot Face Layer		in/ - - -	1/ 8# CF Blanket	None	None	
Back-Up Layer No.1		in/ - - -	2/ 6# CF Blanket			
Castable Reinforcement (SS Needles)			None			
Anchors / Tie Backs:		- - -	Pins & Clips			
Material		- - -	304 S.S.			
Attachment		- - -	Welded			
Casing:						
Minimum Thickness/ Materia		in/ ASTM	0.1875 / A36	0.1875 / A36	0.1875 / A36	
Corrosion Allowance		in	None	None	None	
Internal Coating		- - -	None	None	None	
External Temperature, Typical		°F	180	517	517	
Comments / Clarifications		- - -	SHOP Installed			

Owner Ref.: H-1054 THM Ref.: MJ16-199

MECHANICAL / STRUCTURAL DESIGN BASIS

Refractory & Coatings Design:

Refractory Design	Per Std560: 180°F Avg. Casing Temperature @ Ambient Conditions of 0 MPH & 80°F
Refractory Dryout	SHOP dryout = None // FIELD dryout per THM standard.
Coating, Internal	None
Coating, External	Base Coat: 3-4 PPG Dimetcote 9 IOZ Silicate - Flat Green on SP-6
	Int. Coat: None
	Top Coat: 1.5-2 PPG Pitt-Therm 97-724 Series Air Dry Silicone - Federal Standard 595B #16132 Gray

Applicable Standards:

API	~~Std 560 (ISO 13705); Fired Heaters for ...~~	AISC	Specification for Design, ... Steel for Buildings
API	Std 530 (ISO 13704); Calc. of Heater Tube ...	AWS	D 1.1; Structural Welding Code
ASME	B31.3, Chemical Plant and ... Piping	ASTM	tube/ smls pipe/ fitting spec's noted hereir
ASME	Sections I, II, VIII, IX; ASME B&PV Code	ASTM	refractories per C27, C155, C401 & C612
ASME	Section V; Non Destructive Examinatior	NFPA	NFPA 70; National Electrical Code

Wind Design:

Spec. or Standard	ASCE 7-10
Velocity/ Imp. Factor	120 mph / 1
Site Exposure	"C"

Seismic Design:

Spec. or Standard	ASCE 7-10
Risck Cat./Imp. Factor	III / 1.25
Ss/S1/Soil Class	0.5 / 0.15 / D

Physical Design:

Plot Limitations	None
Tube Limitations	None
Firebox Pressure	Positive; approximately +1.0 inH2O
Ambient Temp's	-20 °F Min/ 60 °F Dsn/ 105 °F Max

Site Design Basis:

Site Elevation	25	ft AMSL
Stack Design Temp.	90	°F
FG Discharge Elev.	34	ft AG
Area Classification	Class I, Div. II, Groups C&D	

MAJOR SUBSYSTEMS & ACCESSORIES

Major Services & Subsystems

Process Design	INCLUDED in base pricing
Mechanical Design	INCLUDED in base pricing
Structural Design	INCLUDED in base pricing
Radiant Section	INCLUDED in base pricing
Convection Section	INCLUDED in base pricing
Burner Mgmt	INCLUDED in base pricing
Burner Piping	INCLUDED in base pricing
Forced Draft System	INCLUDED in base pricing

Major Accessories:

Casing/ Tube Seals	12	TubeSox; Radiant & Conv.
Observation Doors	2	4 in Dia. w/ H.T. glass
Observation Doors	1	4 in Dia. w/ HT glass on Arch
Access Doors	1	Std 24" x 24"
Expansion Joints	None	
Ladders & Platforms	Not Included	
L&P Coating	N/A	

Casing Penetrations

Fbox Purge/ Snuff	None	
CA Temp/Pres	None	
FG Temperature	2	1.5"NPS 3000# Coupling
FG Pressure	2	1.5"NPS 3000# Coupling
FG Comp. (Sample)	2	1.5"NPS 3000# Coupling
FG Sample	2	4"NPS 150# RFWN's
O2 Analyzer Port	None	

Pressure Part Penetrations

Coil TSTC's, Radiant	None	
Coil TSTC's, Convection	None	
Process TI conn's	3	1.5" NPS 300# RFWN
Process PI conn's	1	1.5" NPS 300# RFWN
spare		
spare		
spare		

Dampers

	FD Fan (blower) qty = 0	Uptake Ducts	Stack qty = 0
Function	Note:		Note:
Design	Fan inlet damper is inappropriate		Stack Damper (which provides draft
Materials	for forced draft SHO's where O2		control) is inappropriate for forced
Bearings	Control is provided by the BMS O2		draft SHO's where the combustion
Operator	Trim Module which controls the fan		conditions are controlled real-time
Positioner	(blower) motor's VFD/ VSD.		via the BMS.
Instruments			

Sootblowers:	Qty.	Type	Location	FG T	Material	Steam T & P	O.E.M. / Ref.
Lane 1:	None						
Lane 2 :	None						

ARIZONA BOILER CO.

SALES, SERVICE, INSTALLATION, & REPAIR
8282 N. 75th Avenue Peoria, Arizona 85345
(623) 979-3301 FAX 486-4564
www.azboiler.com email: marty@azboiler.com

Targa / Roadrunner Plant
1090-1098 Bounds Rd.
Loving, NM 88256

August 29, 2025

Attn: Nick
nmeans@targaresources.com
903 920-4651

RFQ: Burner derate / combustion

We are pleased to quote the following scope of work including labor and materials.

1. To fire the burner to hi fire and derate the burner firing rate from 22Mbtu/hr to 19.9 MBtu/hr.
2. To fire the oil heater and check combustion from low fire to high fire using a combustion analyzer.
3. To test all safety operating controls for proper operation.

The cost for the above work is: $ 8,440.00

Payment Terms: The full amount of this quote must be paid in full before the technician can be scheduled.

This quote is for 2 days travel time and 1 day of onsite service.
If more time is required there will be a change order required for the extra costs.

* DUE TO CONSTANT CHANGE OF MATERIAL COSTS QUOTES ARE ONLY VALID FOR 15 DAYS*

* LEAD TIMES SUBJECT TO CHANGE WITHOUT NOTICE *

**** All credit cards are subject to a 3% processing fee. ****

The above price does not include any permits, engineered drawings or hazardous waste removal.

IT IS UNDERSTOOD AND AGREED THAT ARIZONA BOILER CO. INC.'S LIABILITY, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE OR OTHERWISE, SHALL NOT EXCEED THE COST OF REPAIR OR REPLACEMENT, F.O.B. SHIPPING POINTS OF DEFECTIVE PARTS. UNDER NO CIRCUMSTANCES SHALL ARIZONA BOILER CO. BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTIAL, OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE EQUIPMENT IS CONSIDERATION IN LIMITING ARIZONA BOILER CO.'S LIABILITY. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THE TRANSACTIONS OF THIS AGREEMENT MAY BE BROUGHT BY PURCHASER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED. THE WARRANTY FOR THIS EQUIPMENT OR SERVICE PROPOSED IN THIS QUOTATION IS AS STATED IN THE AFOREMENTIONED PARAGRAPHS. IT IS NOT RESTATED NOR DOES IT APPEAR IN ANY OTHER FORM.

Thank you for the opportunity to quote on this work. Please call if you have any questions.

Yours truly,

Marty Salazar

ARIZONA BOILER COMPANY, INC
8282 N. 75th Avenue | Peoria, AZ 85345
t 623-979-3301 | f 623-979-3666
marty@azboiler.com

PO #_____
Print Name_____Date_____
Accepted by_____

RR3-H-1700, RR3-H-1701,
RR3-H-1703, RR3-H-4701 Spec Sheets

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

April 20, 2026

ASTEC PROPOSAL #: HI 26-15942

THE WORLD LEADER IN INTEGRATED PROCESS SOLUTIONS

SUPPORT•TECHNOLOGY•TRAINING

A PROPOSAL TO PROVIDE A

THERMAL FLUID HEATING SYSTEM

FOR

H-1700, and H-1701 for Targa's Roadrunner 3 Gas Plant

PREPARED EXCLUSIVELY FOR

Daniel Lacy
TARGA RESOURCES
811 Louisiana Street
Houston, TX 77002
(432) 559-8639
daniel.lacy@targaresources.com

Presented by:

Edly Lima, Regional Sales Manager
Cell: (423) 645-8374
tmfraney@astecindustries.com

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

BUILT TO CONNECT

April 20, 2026 ASTEC PROPOSAL #: HI 26-15942

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 18010-50-T-G	Thermal Fluid Heater x 1	$Included
Burner	Low NOx Burner x 1	$Included
Blower	Blower for burner x 1	$Included
Control Panel	Panel with PLC 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-1700	$540,018.00
	Total for Heating Unit #2 - H-1701	$540,018.00
Total Incoterms® 2020	Total for Two (2) Identical Heating Units	$1,080,036.00

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
1st Heater Ready to Ship after All Drawings Approved	18 ARAD

ARO = After receipt of written purchase order
ARAD = After receipt of approved drawings from the customer
NOTE: Please allow 1 week for shipment of subsequent heaters

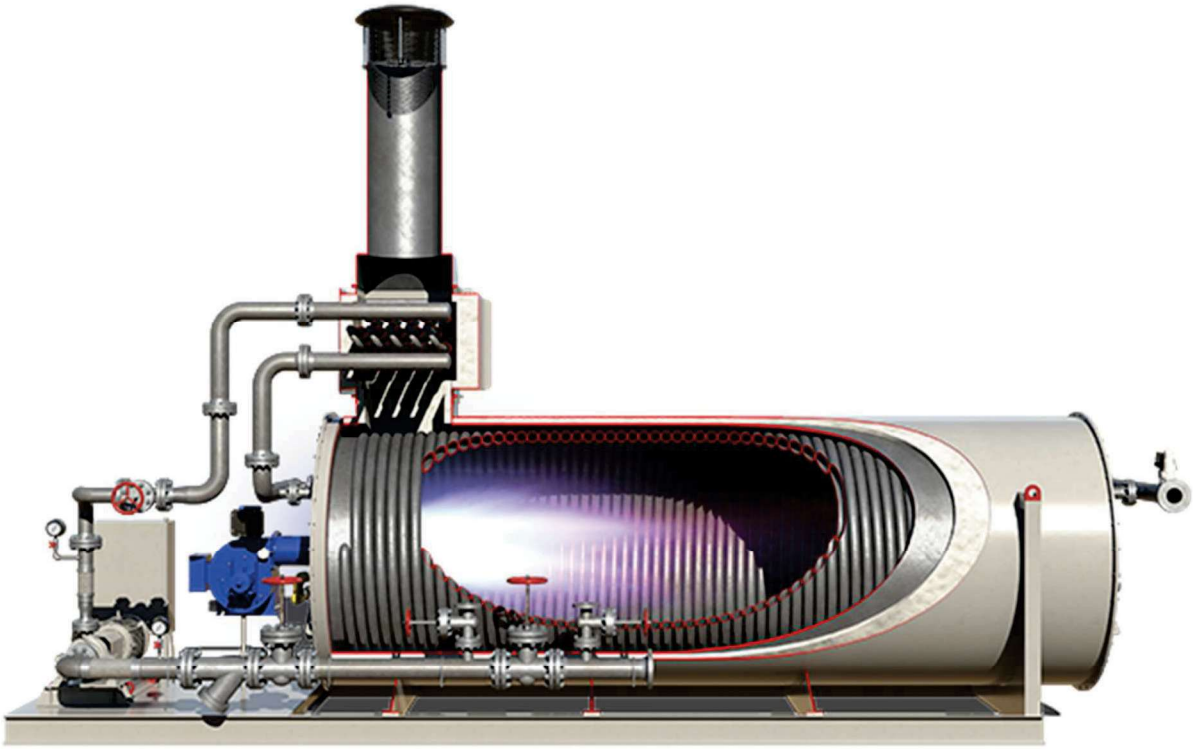
OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

Model	Description	Investment (U.S. $)
5 Days Service On-site	Estimate (1 Man, 1 Trip, 2 Weeks Notice)	See Page 26
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 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 18010-50-T-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	39,289,013	11.51
Firing Rate (HHV) (Btu/hr) (MW)	53,622,852	15.72
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	645,000	292,490
Heater Circulation Rate (Gal/min) (m^3/hr) {Constant}	1,557	354
Minimum Allowable Circulation Rate (Gal/min) (m^3/hr)	1,246	283
Heater Inlet Temperature (°F) (°C)	270	132
Heater Outlet Temperature (°F) (°C)	375	191
Stack Temperature (°F) (°C)	751	400
Calculated Heater Efficiency (%) (LHV) [See Note 1]	81.4	81.4
Calculated ΔP through Heater (psid) (Bar) (Clean)	17.4	1.2
Heater Volume (Gallons) (m^3)	1,958	7.4
Total Coil Surface Area (ft^2) (m^2)	3,934	365.6
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	9,988	31.5
Radiant Surface Area (ft^2) (m^2)	1,277	118.7
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	16,596	52.3
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	22,405	70.6
Maximum Metal Temperature (°F) (°C) AICHE	544	284
Maximum Calculated Film Temperature (°F) (°C) AICHE	527	275
Average Thermal Fluid Velocity (ft/s) (m/s)	8.5	2.6
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	666,851	18,886
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	54,704	1,549
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	731,288	20,711
Flue Gas Pressure Drop (" WC) (mmHg)	1.73	89.52

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.

SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,114
Heater location	Outdoor
Ambient Temperature (ºF)	0 to 110
Burner turndown	8:1 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
Area Classification	Class 1 Div. 2 Group C & D
Thermal fluid (Not Included)	Chemtherm 550 or Equal

	FUEL TABLE	MOL %
N_2	Nitrogen	3.43
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.000000
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	95.96
C_2H_6	Ethane	0.57
C_3H_8	Propane	0.03
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)	270
Inlet Density (lb/ft^3)	51.64
Inlet Heat Capacity (Btu/(lb*°F))	0.558
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.072
Inlet Dynamic Viscosity (cP)	4.80
Outlet Temperature (°F)	375
Outlet Density (lb/ft^3)	49.33
Outlet Heat Capacity (Btu/(lb*°F))	0.603
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.068
Outlet Dynamic Viscosity (cP)	2.51

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	39.6	12.1	12.4	70,733	Skid
Economizer	10.7	3.4	3.5	6,105	Top of Heater
Exhaust Stack		3.0	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
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 T3
NEMA 4X (316 Stainless Steel) with “Z” type purging
Junction Box Enclosure:
NEMA 4X (316 Stainless Steel)
Ignition Transformer Enclosure:
NEMA 4X (316 Stainless Steel)

PAINTING:
Customer specified paint system per Targa Paint Spec, 8-8-24.

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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15942

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 10" 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

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)
- Low and high pressure switches
- Fuel Modulation via modulation valves with linkage-less system
- Double block (one with proof of closure switch) safety shutdown valves
- Heat tracing, if necessary, is by customer

Heatec/Astec Heater Emissions	
Design Firing Rate (MMBTU/hr) (HHV):	53,622,852
NOx Emission Guarantee (ppmw):	30
CO Emission Guarantee (ppmw):	50
VOC Emission Guarantee (ppmw):	2.5
UHC Emission Guarantee (ppmw):	5
Nox Emission Guarantee (lb/mmbtu):	0.0365
CO Emission Guarantee (lb/mmbtu):	0.037
VOC Emission Guarantee (lb/mmbtu):	0.0028
UHC Emission Guarantee (lb/mmbtu):	0.0056
Stack Height (From ground, ft):	23.9
Stack Diamter (ID, ft):	3.0
Flue Gas Flow Rate (SCFH):	731,288
Flue Gas Flow Rate (ACFM):	28,388

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 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.
- Vortex cooler and 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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15942

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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15942

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.

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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: _____

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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

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

April 20, 2026

ASTEC PROPOSAL #: HI 26-15943

THE WORLD LEADER IN INTEGRATED PROCESS SOLUTIONS

SUPPORT•TECHNOLOGY•TRAINING

A PROPOSAL TO PROVIDE A

THERMAL FLUID HEATING SYSTEM

FOR

H-1703 for Targa's Roadrunner 3 Gas Plant

PREPARED EXCLUSIVELY FOR

Daniel Lacy
TARGA RESOURCES
811 Louisiana Street
Houston, TX 77002
(432) 559-8639
daniel.lacy@targaresources.com

Presented by:

Edly Lima, Regional Sales Manager
Cell: (423) 645-8374
tmfraney@astecindustries.com

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

BUILT TO CONNECT

April 20, 2026 ASTEC PROPOSAL #: HI 26-15943

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 8010-40-S-G	Thermal Fluid Heater x 1	$Included
Burner	Low NOx Burner x 1	$Included
Blower	Blower for burner x 1	$Included
Control Panel	Panel with PLC x 1	$Included
Fuel Train	Gas Train x 1	$Included
Economizer	Economizer x 1	$Included
Stack	Exhaust Stack x 1	$Included
Total Incoterms® 2020	Total for H-1703 Heating Unit	$357,073.00

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	18 ARAD

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

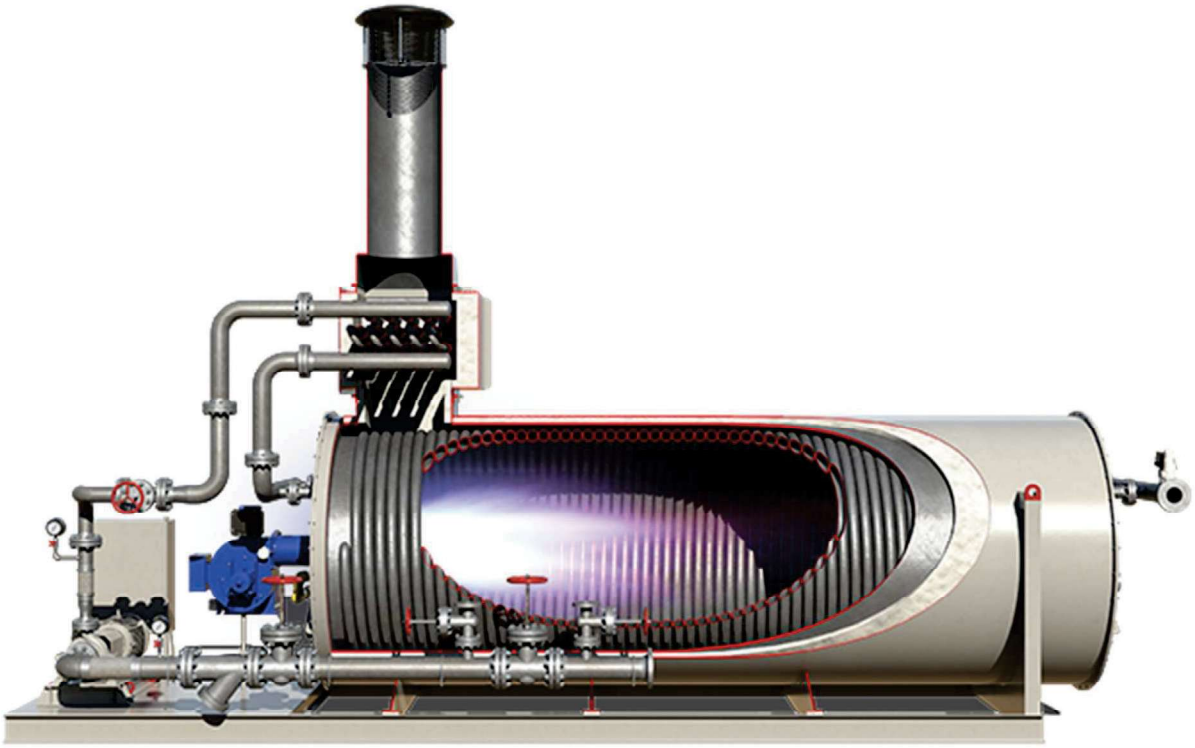
OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

Model	Description	Investment (U.S. $)
5 Days Service On-site	Estimate (1 Man, 1 Trip, 2 Weeks Notice)	See Page 25
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

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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 8010-40-S-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	14,839,133	4.35
Firing Rate (HHV) (Btu/hr) (MW)	19,971,599	5.85
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	120,135	54,478
Heater Circulation Rate (Gal/min) (m^3/hr) {Constant}	290	66
Minimum Allowable Circulation Rate (Gal/min) (m^3/hr)	232	53
Heater Inlet Temperature (°F) (°C)	270	132
Heater Outlet Temperature (°F) (°C)	475	246
Stack Temperature (°F) (°C)	671	355
Calculated Heater Efficiency (%) (LHV) [See Note 1]	82.5	82.5
Calculated ΔP through Heater (psid) (Bar) (Clean)	24.7	1.7
Heater Volume (Gallons) (m^3)	666	2.5
Total Coil Surface Area (ft^2) (m^2)	1,555	144.5
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	9,542	30.1
Radiant Surface Area (ft^2) (m^2)	572	53.1
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	15,486	48.8
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	20,906	65.9
Maximum Metal Temperature (°F) (°C) AICHE	620	327
Maximum Calculated Film Temperature (°F) (°C) AICHE	605	318
Average Thermal Fluid Velocity (ft/s) (m/s)	7.7	2.3
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	219,708	6,222
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	20,374	577
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	241,038	6,826
Flue Gas Pressure Drop (" WC) (mmHg)	0.74	38.34

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.

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SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,114
Heater location	Outdoor
Ambient Temperature (ºF)	0 to 110
Burner turndown	5:1 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
Area Classification	Class 1 Div. 2 Group C & D
Thermal fluid (Not Included)	Chemtherm 550 or Equal

	FUEL TABLE	MOL %
N_2	Nitrogen	3.43
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.000000
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	95.96
C_2H_6	Ethane	0.57
C_3H_8	Propane	0.03
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)	270
Inlet Density (lb/ft^3)	51.64
Inlet Heat Capacity (Btu/(lb*°F))	0.558
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.072
Inlet Dynamic Viscosity (cP)	4.80
Outlet Temperature (°F)	475
Outlet Density (lb/ft^3)	47.15
Outlet Heat Capacity (Btu/(lb*°F))	0.650
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.066
Outlet Dynamic Viscosity (cP)	1.681

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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	28.9	8.4	8.7	28,902	Skid
Economizer	6.3	3.1	2.8	2,281	Top of Heater
Exhaust Stack		2.5	8.0	643	Top of Economizer
Blower (HP)	25	TEFC			Front Cover of Heater
Pilot Gas Train	NPT	0.5	Inch		Side of Heater
Main Gas Train	NPT	3.0	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

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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
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 T3
NEMA 4X (316 Stainless Steel) with “Z” type purging
Junction Box Enclosure:
NEMA 4X (316 Stainless Steel)
Ignition Transformer Enclosure:
NEMA 4X (316 Stainless Steel)

PAINTING:
Customer specified paint system.

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

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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 4" 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

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GAS TRAIN:

- Pilot train: regulator, electric double block safety shutdown valves, manual valve, 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)
- Low and high pressure switches
- 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

Heatec/Astec Heater Emissions	
Design Firing Rate (MMBTU/hr) (HHV):	19,971,599
NOx Emission Guarantee (ppmw):	30
CO Emission Guarantee (ppmw):	50
VOC Emission Guarantee (ppmw):	2.5
UHC Emission Guarantee (ppmw):	5
Nox Emission Guarantee (lb/mmbtu):	0.0365
CO Emission Guarantee (lb/mmbtu):	0.037
VOC Emission Guarantee (lb/mmbtu):	0.0028
UHC Emission Guarantee (lb/mmbtu):	0.0056
Stack Height (From ground, ft):	19.5
Stack Diamter (ID, ft):	2.5
Flue Gas Flow Rate (SCFH):	241,038
Flue Gas Flow Rate (ACFM):	8,741

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 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.
- Vortex cooler and 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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15943

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 "**Notice**") 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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www.astecindustries.com
Office: 423.821.5200
5200 Wilson Rd
Chattanooga, TN 37410 USA

April 20, 2026 ASTEC PROPOSAL #: HI 26-15943

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.

April 20, 2026 ASTEC PROPOSAL #: HI 26-15943

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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15943

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

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

April 20, 2026

ASTEC PROPOSAL #: HI 26-15944

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 Roadrunner 3 Gas Plant

PREPARED EXCLUSIVELY FOR

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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 with PLC x 1	$Included
Fuel Train	Gas Train x 1	$Included
Stack	Exhaust Stack x 1	$Included
Total Incoterms® 2020	Total for H-4701 Regen Gas Heating Unit	$414,112.00

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	18 ARAD

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

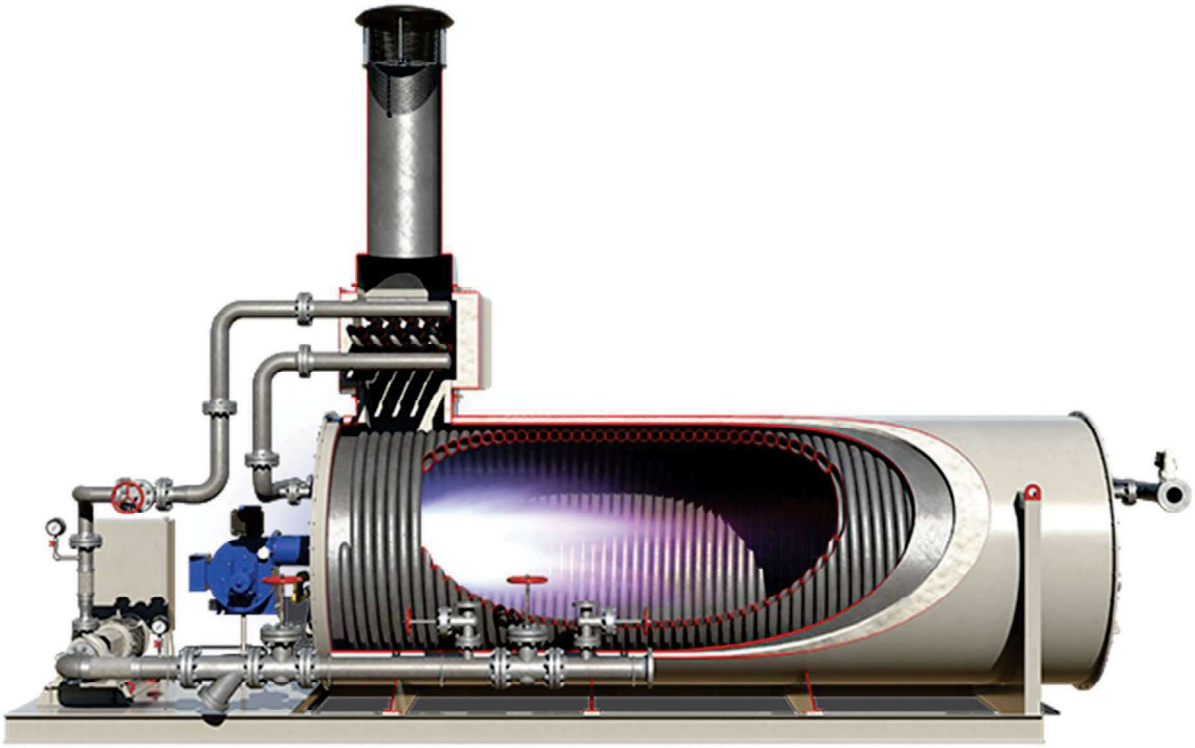
OPTIONAL ITEMS: (NOT REQUIRED FOR HEATER OPERATION)

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
2 Years Spare Parts	Estimate, Class 1 Div 2	$19,750.00

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

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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.

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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

EQUIPMENT DESIGN DATA:

HCI 10010-40-D-G	IP UNITS	SI UNITS
Heater Capacity (Btu/hr) (MW)	10,800,397	3.17
Firing Rate (HHV) (Btu/hr) (MW)	14,171,928	4.15
Heater Circulation Rate (lb/hr) (kg/hr) {Constant}	31,295	14,191
Heater Circulation Rate (MMSCFD) (Nm^3/hr) {Constant}	12.68	14,934
Minimum Allowable Circulation Rate (MMSCFD) (Nm^3/hr)	10.14	11,947
Heater Inlet Pressure (psig) (Barg)	900	62.1
Heater Outlet Pressure (psig) (Barg)	893.2	61.6
Heater Inlet Temperature (°F) (°C)	80	26
Heater Outlet Temperature (°F) (°C)	575	302
Stack Temperature (°F) (°C)	610	321
Calculated Heater Efficiency (%) (LHV) [See Note 1]	84.6	84.6
Calculated ΔP through Heater (psid) (Bar) (Clean)	6.8	0.5
Heater Volume (Gallons) (m^3)	756	2.9
Total Coil Surface Area (ft^2) (m^2)	1,453	135.0
Overall Flux Rate (Btu/hr-ft^2) (kW/m^2)	7,433	23.4
Radiant Surface Area (ft^2) (m^2)	726	67.5
Average Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2)	9,919	31.3
Maximum Radiant Flux Rate (Btu/hr-ft^2) (kW/m^2) AICHE	13,391	42.2
Maximum Metal Temperature (°F) (°C) AICHE	647	341
Maximum Calculated Film Temperature (°F) (°C) AICHE	632	334
Average Fluid Velocity (ft/s) (m/s)	21.2	6.5
Combustion Air Flow Rate (sFt^3/hr) (Nm^3/hr)	155,906	4,415
Combustion Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	14,458	409
Flue Gas Flow Rate (sFt^3/hr) (Nm^3/hr)	171,042	4,844
Flue Gas Pressure Drop (" WC) (mmHg)	0.30	15.55

Note 1: Based on HHV of typical natural gas. Guaranteed efficiency is 1% less.
Note 2: Average Vapor Relative Molecular Mass = 22.467

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SYSTEM PARAMETERS:

The following system parameters are incorporated into this proposal.

Plant location	New Mexico
Plant elevation (fasl)	3,114
Heater location	Outdoor
Ambient Temperature (ºF)	0 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
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	3.43
H_2O	Water	0.00
H_2	Hydrogen	0.00
H_2S	Hydrogen Sulfide	0.000000
CO_2	Carbon Dioxide	0.00
CO	Carbon Monoxide	0.00
CH_4	Methane	95.96
C_2H_6	Ethane	0.57
C_3H_8	Propane	0.03
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)	79.5
Inlet Density (lb/ft^3)	4.56
Inlet Heat Capacity (Btu/(lb*°F))	0.660
Inlet Thermal Conductivity (Btu/(h*ft*°F))	0.021
Inlet Dynamic Viscosity (cP)	0.01
Outlet Temperature (°F)	575
Outlet Density (lb/ft^3)	1.79
Outlet Heat Capacity (Btu/(lb*°F))	0.733
Outlet Thermal Conductivity (Btu/(h*ft*°F))	0.044
Outlet Dynamic Viscosity (cP)	0.02

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	43,521	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	3.0	Inch		Side of Heater
Control Panel	3.0	1.0	4.0	500	Front of Heater Skid

PAINTING:
Customer specified paint system per Targa Paint Spec, 8-8-24.

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

DRAWINGS / ENGINEERING:
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 0 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 0 ºF / UL 508 A / NFPA 87 & 70 / NEMA 4X (316 Stainless Steel)
NEC Class I Division 2 Group C & D T3
NEMA 4X (316 Stainless Steel) with "Z" type purging
Junction Box Enclosure:
NEMA 4X (316 Stainless Steel)
Ignition Transformer Enclosure:
NEMA 4X (316 Stainless Steel)

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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 6" 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

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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)
- Low and high pressure switches
- Fuel Modulation via modulation valves with linkage-less system
- Double block (one with proof of closure switch) safety shutdown valves
- Heat tracing, if necessary, is by customer

Design Firing Rate (MMBTU/hr) (HHV):	14,171,928
NOx Emission Guarantee (ppmw):	30
CO Emission Guarantee (ppmw):	50
VOC Emission Guarantee (ppmw):	2.5
UHC Emission Guarantee (ppmw):	5
Nox Emission Guarantee (lb/mmbtu):	0.0365
CO Emission Guarantee (lb/mmbtu):	0.037
VOC Emission Guarantee (lb/mmbtu):	0.0028
UHC Emission Guarantee (lb/mmbtu):	0.0056
Stack Height (From ground, ft):	17.6
Stack Diamter (ID, ft):	2.5
Flue Gas Flow Rate (SCFH):	171,042
Flue Gas Flow Rate (ACFM):	5,868

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 (1/4DIN) 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.
- Vortex cooler and 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

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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 "**Notice**") 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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www.astecindustries.com
Office: 423.821.5200
5200 Wilson Rd
Chattanooga, TN 37410 USA

April 20, 2026 ASTEC PROPOSAL #: HI 26-15944

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.

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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15944

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

April 20, 2026 ASTEC PROPOSAL #: HI 26-15944

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

* * * *

Generators

EPA Tier II and Tier IV Emission Standards &
CARB Emission Factors

Nonroad Compression-Ignition Engines: Exhaust Emission Standards

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Smoke [a] (Percentage)	Useful Life (hours /years) [b]	Warranty Period (hours /years) [b]
Federal	kW < 8	1	2000-2004	-	10.5	-	1.0	8.0	20/15/50	3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	8.0			
		4	2008+	-	7.5	-	0.40 [c]	8.0			
	8 ≤ kW < 19	1	2000-2004	-	9.5	-	0.80	6.6		3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	6.6			
		4	2008+	-	7.5	-	0.40	6.6			
	19 ≤ kW < 37	1	1999-2003	-	9.5	-	0.80	5.5		5,000/7 [d]	3,000/5 [e]
		2	2004-2007	-	7.5	-	0.60	5.5			
		4	2008-2012	-	7.5	-	0.30	5.5			
			2013+	-	4.7	-	0.03	5.5			
	37 ≤ kW < 56	1	1998-2003	-	-	9.2	-	-		8,000/10	3,000/5
		2	2004-2007	-	7.5	-	0.40	5.0			
		3 [f]	2008-2011	-	4.7	-	0.40	5.0			
		4 (Option 1) [g]	2008-2012	-	4.7	-	0.30	5.0			
		4 (Option 2) [g]	2012	-	4.7	-	0.03	5.0			
		4	2013+	-	4.7	-	0.03	5.0			
	56 ≤ kW < 75	1	1998-2003	-	-	9.2	-	-			
		2	2004-2007	-	7.5	-	0.40	5.0			
		3	2008-2011	-	4.7	-	0.40	5.0			
		4	2012-2013 [h]	-	4.7	-	0.02	5.0			
			2014+ [i]	0.19	-	0.40	0.02	5.0			
	75 ≤ kW < 130	1	1997-2002	-	-	9.2	-	-			
		2	2003-2006	-	6.6	-	0.30	5.0			
		3	2007-2011	-	4.0	-	0.30	5.0			
		4	2012-2013 [h]	-	4.0	-	0.02	5.0			
			2014+	0.19	-	0.40	0.02	5.0			

Continued

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr	NOx (g/kW-hr	PM (g/kW-hr	CO (g/kW-hr)	Smoke [a] (Percentage)	Useful Life (hours /years) [b]	Warranty Period (hours /years) [b]
Federal	130 ≤ kW < 225	1	1996-2002	1.3 [j]	-	9.2	0.54	11.4	RDR-G-2 RDR-G-3 through RDR-G-12	8,000/10	3,000/5
		2	2003-2005	-	6.6	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	225 ≤ kW < 450	1	1996-2000	1.3 [j]	-	9.2	0.54	11.4			
		2	2001-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	450 ≤ kW < 560 RR2-G-2220	1	1996-2001	1.3 [j]	-	9.2	0.54	11.4	20/15/50		
		2	2002-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	560 ≤ kW < 900	1	2000-2005	1.3 [j]	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5	0.10	3.5			
			2015+ [i]	0.19	-	3.5 [k]	0.04 [l]	3.5			
	kW > 900	1	2000-2005	1.3 [j]	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5 [k]	0.10	3.5			
			2015+ [i]	0.19	-	3.5 [k]	0.04 [l]	3.5			

Notes on following page.

Notes:

- For Tier 1, 2, and 3 standards, exhaust emissions of nitrogen oxides (NOx), carbon monoxide (CO), hydrocarbons (HC), and non-methane hydrocarbons (NMHC) are measured using the procedures in 40 Code of Federal Regulations (CFR) Part 89 Subpart E. For Tier 1, 2, and 3 standards, particulate matter (PM) exhaust emissions are measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines.
- For Tier 4 standards, engines are tested for transient and steady-state exhaust emissions using the procedures in 40 CFR Part 1039 Subpart F. Transient standards do not apply to engines below 37 kilowatts (kW) before the 2013 model year, constant-speed engines, engines certified to Option 1, and engines above 560 kW.
- Tier 2 and later model naturally aspirated nonroad engines shall not discharge crankcase emissions into the atmosphere unless these emissions are permanently routed into the exhaust. This prohibition does not apply to engines using turbochargers, pumps, blowers, or superchargers.
- In lieu of the Tier 1, 2, and 3 standards for NOX, NMHC + NOX, and PM, manufacturers may elect to participate in the averaging, banking, and trading (ABT) program described in 40 CFR Part 89 Subpart C.

a Smoke emissions may not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either mode. Smoke emission standards do not apply to single-cylinder engines, constant-speed engines, or engines certified to a PM emission standard of 0.07 grams per kilowatt-hour (g/kW-hr) or lower. Smoke emissions are measured using procedures in 40 CFR Part 86 Subpart I.

b Useful life and warranty period are expressed hours and years, whichever comes first.

c Hand-startable air-cooled direct injection engines may optionally meet a PM standard of 0.60 g/kW-hr. These engines may optionally meet Tier 2 standards through the 2009 model years. In 2010 these engines are required to meet a PM standard of 0.60 g/kW-hr.

d Useful life for constant speed engines with rated speed 3,000 revolutions per minute (rpm) or higher is 5 years or 3,000 hours, whichever comes first.

e Warranty period for constant speed engines with rated speed 3,000 rpm or higher is 2 years or 1,500 hours, whichever comes first.

f These Tier 3 standards apply only to manufacturers selecting Tier 4 Option 2. Manufacturers selecting Tier 4 Option 1 will be meeting those standards in lieu of Tier 3 standards.

g A manufacturer may certify all their engines to either Option 1 or Option 2 sets of standards starting in the indicated model year. Manufacturers selecting Option 2 must meet Tier 3 standards in the 2008-2011 model years.

h These standards are phase-out standards. Not more than 50 percent of a manufacturer's engine production is allowed to meet these standards in each model year of the phase out period. Engines not meeting these standards must meet the final Tier 4 standards.

i These standards are phased in during the indicated years. At least 50 percent of a manufacturer's engine production must meet these standards during each year of the phase in. Engines not meeting these standards must meet the applicable phase-out standards.

j For Tier 1 engines the standard is for total hydrocarbons.

k The NOx standard for generator sets is 0.67 g/kW-hr.

l The PM standard for generator sets is 0.03 g/kW-hr.

Citations: Code of Federal Regulations (CFR) citations:

- 40 CFR 89.112 = Exhaust emission standards
- 40 CFR 1039.101 = Exhaust emission standards for after 2014 model year
- 40 CFR 1039.102 = Exhaust emission standards for model year 2014 and earlier
- 40 CFR 1039 Subpart F = Exhaust emissions transient and steady state test procedures
- 40 CFR 86 Subpart I = Smoke emission test procedures
- 40 CFR 1065 = Test equipment and emissions measurement procedures

olicy: CARB Emission Factors for CI Diesel Engines – ercent HC in Relation to NMHC + NOx

Policy

When the non-methane hydrocarbon (NMHC) and nitrogen oxide (NOx) emission factor is combined, assume a breakdown of 5% and 95%, respectively.

Effective date

June 28, 2004

Definitions

The following is a list of associated definitions.

- ***CI Engine*** – Compression Ignition Engine is an internal combustion engine with operating characteristics significantly similar to the theoretical diesel combustion cycle.
- ***HC*** – Organic compound consistently entirely of hydrogen and carbon.
- ***NMHC*** – Non-Methane Hydrocarbon is the sum of all hydrocarbon air pollutants except methane.
- ***NOx*** – Nitrogen Oxides are compounds of nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen, which are typically created during combustion processes.

Contact

Randy Frazier, x4672

Document Control

Version	Revised By	Description	Date
1.1	HL	New Policy: CARB Emission Factors – Percent HC in Relation to NMHC + NOx	06/28/04
1.2	MCL	Mapping of Policy	3/13/08

Approval

Name & Title	Signature	Date
Brian Bateman, Director of Engineering	**Signed by Brian Bateman**	2/28/2008

SB500 | 15.2L | 500 kW

INDUSTRIAL BI-FUEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC® | INDUSTRIAL POWER

OPERATING DATA

POWER RATINGS

	Standby
Three-Phase 120/208 VAC @0.8pf	500 kW/625 kVA Amps: 1,735
Three-Phase 120/240 VAC @0.8pf	500 kW/625 kVA Amps: 1,504
Three-Phase 277/480 VAC @0.8pf	500 kW/625 kVA Amps: 752
Three-Phase 346/600 VAC @0.8pf	500 kW/625 kVA Amps: 601

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	208/240 VAC	30%
K0500124Y23	1,020	K0600124Y23	1,120
K0600124Y23	1,560	K0792124Y23	2,130
K0832124Y23	2,800	K0832124Y23	2,090

FUEL CONSUMPTION RATES*

Fuel Pump Lift - ft (m)
12 (3.7)

Total Fuel Pump Flow (Combustion + Return) - gph (Lph)
121 (457)

Diesel Only – gph (Lph)**

Percent Load	Standby
25%	10.5 (39.7)
50%	19.5 (73.8)
75%	23.7 (89.7)
100%	31.2 (118.1)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.
** Natural Gas substitution may vary based on the application and load conditions Please contact factory for additional details on fuel consumption

COOLING

		Standby
Coolant Flow	gpm (Lpm)	114.1 (432)
Coolant System Capacity	gal (L)	13 (49)
Heat Rejection to Coolant	BTU/hr	1,198,080
Air Flow (Fan Air Flow Across Radiator)	cfm (m^3/min)	30,582 (866)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin No. 0199270SSD	
Maximum Additional Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power - cfm (m^3/min)	1,483 (42)

ENGINE

		Standby
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	835
Piston Speed	ft/min (m/min)	2,020 (616)
BMEP	psi (kPa)	366 (2,523)

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	3,401 (96.3)
Maximum Allowable Backpressure	inHg (kPa)	2.94 (9.96)
Exhaust Temperature (Rated Output - Post Silencer)	°F (°C)	1,047 (564)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Prime - See Bulletin 0187510SSB

GENERAC | INDUSTRIAL POWER

STATEMENT OF EXHAUST EMISSIONS
2022 Perkins Bi-Fuel Fueled Generator

The measured emissions values provided here are proprietary to Generac and it's authorized dealers. This information may only be disseminated upon request to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.. The data provided shall not be meant to include information made public by Generac.

Generator Model:	**SB/MB500**	EPA Certificate Number:	**NCPXL15.2NZS-002**
kW_e Rating:	**500**	CARB Certificate Number:	**Not Applicable**
Engine Family:	**NCPXL15.2NZS**	SCAQMD CEP Number:	**Not Applicable**
Engine Model:	**2506C-E15TAG3**	Emission Standard Category:	**Tier 2**
Rated Engine Power (BHP)*:	**762**	Certification Type:	**Stationary Emergency CI (40 CFR Part 60 Subpart IIII)**
Fuel Type	**Diesel/Natural Gas**		
Aspiration:	**Turbocharged/Aftercooled**		
Rated RPM:	**1,800**		

*Engine power and fuel consumption are declared by the engine manufacturer of record and the U.S EPA.

EMISSIONS BASED ON ENGINE POWER OF SPECIFIC ENGINE MODEL

These Values Are Actual Composite Weighted Exhaust Emissions Results Over the EPA 5-Mode Test Cycle

CO	NOx + NMHC	PM	
0.27	**4.30**	**0.18**	Grams/kW-hr
0.20	**3.21**	**0.13**	Grams/bhp-hr

These values are 100% load data exhaust emissions results.

CO	NOx + NMHC	PM	
0.63	**4.58**	**0.03**	Grams/kW-hr
0.47	**3.42**	**0.02**	Grams/bhp-hr

- The stated values are actual exhaust emission test measurements obtained from an engine representative of the type described above.
- Values based on 5-Mode testing are official data of record as submitted to regulatory agencies for certification purposes. Testing was conducted in accordance with prevailing EPA protocol, which is typically accepted by SCAQMD and other regional authorities.
- No emissions values provided above are to be construed as guarantees of emission levels for any given Generac generator unit.
- Generac Power Systems, Inc. reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emission performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and local agencies must be consulted by the permit application/ equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems Inc. cannot be construed as a guarantee of installability of the generating set.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2022 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION
AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

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

Certificate Number: NCPXL15.2NZS-002

Effective Date: 06/01/2021

Expiration Date: 12/31/2022

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/01/2021

Revision Date: N/A

Model Year: 2022
Manufacturer Type: Original Engine Manufacturer
Engine Family: NCPXL15.2NZS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 560<kW<=2237
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Engine Design Modification

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

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

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

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

SD200 | 8.7L | 200 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

OPERATING DATA

POWER RATINGS

		Standby
Single-Phase 120/240 VAC @1.0pf	200 kW	Amps: 833
Three-Phase 120/208 VAC @0.8pf	200 kW	Amps: 694
Three-Phase 120/240 VAC @0.8pf	200 kW	Amps: 601
Three-Phase 277/480 VAC @0.8pf	200 kW	Amps: 301
Three-Phase 346/600 VAC @0.8pf	200 kW	Amps: 241

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

277/480 VAC							
Alternator	kW	10%	15%	20%	25%	30%	35%
Standard	200	187	280	373	467	560	653
Upsize 1	300	303	454	605	757	908	1,059
Upsize 2	350	383	575	767	958	1,150	1,342

208/240 VAC							
Alternator	kW	10%	15%	20%	25%	30%	35%
Standard	200	140	210	280	350	420	490
Upsize 1	300	277	341	454	568	681	794
Upsize 2	350	280	410	535	640	770	900

FUEL CONSUMPTION RATES*

Fuel Pump Lift- ft (m)
3 (1)

Total Fuel Pump Flow (Combustion + Return) - gal/hr (l/hr)
26 (98)

Diesel - gal/hr (l/hr)

Percent Load	Standby
25%	4.4 (16.7)
50%	8.3 (31.4)
75%	11.9 (45)
100%	14.8 (56)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Coolant Flow per Minute	gal/min (l/min)	63.3 (240)
Coolant System Capacity	gal (l)	12.7 (49.2)
Heat Rejection to Coolant	BTU/hr	545,646
Inlet Air	cfm (m^3/hr)	8,872 (251)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin No. 0199280SSD	
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm (m^3/min)	595 (16.8)

ENGINE

		Standby
Rated Engine Speed	rpm	1,800
Horsepower at Rated kW**	hp	320
Piston Speed	ft/min	1,593
BMEP	psi	265

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	1,345 (38.1)
Max. Backpressure (Post Silencer)	inHg (Kpa)	1.5 (5.1)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	920 (493)

** Refer to “Emissions Data Sheet” for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Prime - See Bulletin 0187510SSB

GENERAC | INDUSTRIAL POWER

STATEMENT OF EXHAUST EMISSIONS
2022 FPT Diesel Fueled Generator

The measured emissions values provided here are proprietary to Generac and it's authorized dealers. This information may only be disseminated upon request to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing. This information is not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.. The data provided shall not be meant to include information made public by Generac.

Generator Model:	**SD200**	EPA Certificate Number:	**NFPXL08.7TR3-013**
kW_e Rating:	**200**	CARB Certificate Number:	**Not Applicable**
Engine Family:	**NFPXL08.7TR3**	SCAQMD CEP Number:	**511712**
Engine Model:	**F2CE9685A-E**	Emission Standard Category:	**Tier 3**
Rated Engine Power (BHP)*:	**389**	Certification Type:	**Stationary Emergency CI (40 CFR Part 60 Subpart IIII)**
Fuel Consumption (gal/hr)*:	**19.1**		
Aspiration:	**Turbocharged/Aftercooled**		
Rated RPM:	**1,800**		

*Engine power and fuel consumption are declared by the engine manufacturer of record and the U.S EPA.

EMISSIONS BASED ON ENGINE POWER OF SPECIFIC ENGINE MODEL

These Values Are Actual Composite Weighted Exhaust Emissions Results Over the EPA 5-Mode Test Cycle

CO	NOx + NMHC	PM	
0.50	**3.50**	**0.13**	Grams/kW-hr
0.37	**2.61**	**0.097**	Grams/bhp-hr

These values are 100% load data exhaust emissions results.

CO	NOx + NMHC	PM	
0.44	**4.42**	**0.01**	Grams/kW-hr
0.33	**3.30**	**0.01**	Grams/bhp-hr

- The stated values are actual exhaust emission test measurements obtained from an engine representative of the type described above.
- Values based on 5-Mode testing are official data of record as submitted to regulatory agencies for certification purposes. Testing was conducted in accordance with prevailing EPA protocol, which is typically accepted by SCAQMD and other regional authorities.
- No emissions values provided above are to be construed as guarantees of emission levels for any given Generac generator unit.
- Generac Power Systems, Inc. reserves the right to revise this information without prior notice.
- Consult state and local regulatory agencies for specific permitting requirements.
- The emission performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulations may vary on a case-by-case basis and local agencies must be consulted by the permit application/ equipment owner prior to equipment purchase or installation. The data supplied herein by Generac Power Systems Inc. cannot be construed as a guarantee of installability of the generating set.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2022 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **FPT Industrial S.p.A.**
(U.S. Manufacturer or Importer)

Certificate Number: NFPXL08.7TR3-013

Effective Date: 04/29/2021

Expiration Date: 12/31/2022

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 04/29/2021

Revision Date: N/A

Model Year: 2022
Manufacturer Type: Original Engine Manufacturer
Engine Family: NFPXL08.7TR3

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: No Non-After Treatment Devices Installed

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

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

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

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

RDR-TO-5500

Thermal Oxidizer Spec Sheet

1.0 INTRODUCTION

1.1 Summary of Scope of Supply

The vertical thermal oxidizer is intended to oxidize the combustibles present in the specified waste stream. This is understood to apply only when the system is operated in accordance with the operating conditions stipulated in the design summary and for the waste(s) in Section 1.2.1 below.

The firing rate of the system is controlled by maintaining a specified operating temperature inside of the thermal oxidizer while the waste gas flow rates fluctuate. Efficient destruction of the waste is achieved at a thermal oxidizer operating temperature set point controlled at approximately 1,600 °F. The temperature works in conjunction with the thermal oxidizer volume and its associated residence time to achieve the efficient destruction of the waste gas stream.

The thermal oxidizer design includes internal shop installed refractory insulation. The selected materials are designed for a long, trouble-free operating lifetime. The list below summarizes the services and equipment provided in Zeeco's supply.

One (1) Thermal Oxidizer Package Including:

- One (1) Vertical Thermal Oxidizer w/ Integral Stack (10'-0" O.D. x 76'-0" OAH)
- Shop Installed and dried to 500°F Refractory Lining
- One (1) GB Style Burner
- One (1) Fuel Control Rack w/ Local Control Panel
- One (1) Combustion Air Fan w/ Ducting

1.2 Process Description

The vertical forced draft thermal oxidizer is equipped with one (1) forced draft fuel gas GB-Series burner. When the purge cycle is complete, the burner pilot is ignited via electric ignition. Once the burner pilot flame is proven, the main burner flame is ignited. The thermal oxidizer is then allowed to achieve a waste permissive temperature of 1,600 °F, following the recommended field cure procedures and schedule in APPENDIX D. Waste gas is then injected around the burner via the inlet nozzle. This high temperature accompanied with thermal oxidizer volume, known as residence time, destroys the hydrocarbon constituents of the waste gas stream. The flue gases from the thermal oxidizer then exit to atmosphere.

A temperature controller (supplied by others in DCS) monitors the combustion product's temperature through a thermocouple input and modulates both the fuel gas and combustion air flows into the burner. This ensures that sufficient temperature is maintained to provide complete destruction of varying waste gas compositions.

The fuel gas alone is used for start-up, burner stability, and refractory cure. The normal heat release for burner stability on fuel gas is ~44.8 MM BTU/HR. When more heat is needed for refractory curing, or if the heat produced by the combustion of the waste gas during operation is not sufficient to maintain a thermal oxidizer temperature of 1,600 °F, a maximum fuel gas heat release of 75 MM BTU/HR is available from the burner.

Combustion air is supplied by the blower. All air enters the thermal oxidizer through the burner via the combustion air nozzle (N9) located on the thermal oxidizer. The flue gas exits the vent stack at an elevation of 76 feet.

1.2.1 Process Design Conditions for Waste Streams

Acid Gas Stream: Normal Operating Conditions (note 4)			Glycol System OVHD Stream		
Temperature	120	°F	Temperature	120	°F
Pressure (at Still Column)	3	psig	Pressure (at Still Column)	1	psig
Flow Rate	15.52	MMSCFD	Flow Rate	0.03	MMSCFD
	646,716.7	SCFH		1,175.0	SCFH
Mol. Wt.	41.2074		Mol. Wt.	49.7237	
Mass Flow Rate	74,750	lb/hr	Mass Flow Rate	154.10	lb/hr
Gross Heating Value (HHV)	38.63	BTU/SCF	Gross Heating Value (HHV)	2,585	BTU/SCF
Net Heating Value (LHV)	31.29	BTU/SCF	Net Heating Value (LHV)	2397	BTU/SCF
Gas Composition			Gas Composition		
Carbon Dioxide	88.74	mol%	Carbon Dioxide	0.17605	mol%
Hydrogen Sulfide	0.354	mol%	Hydrogen Sulfide	0.00483	mol%
Nitrogen	0.00940	mol%	Nitrogen	0.00820	mol%
Methane	2.0149	mol%	Methane	9.80494	mol%
Ethane	0.3716	mol%	Ethane	14.09657	mol%
Propane	0.1227	mol%	Propane	18.96782	mol%
i-Butane	0.0098	mol%	i-Butane	2.56932	mol%
n-Butane	0.02933	mol%	n-Butane	9.91378	mol%
i-Pentane	0.00224	mol%	i-Pentane	3.61200	mol%
n-Pentane	0.00300	mol%	n-Pentane	4.83441	mol%
Hexane	0.0007231	mol%	Hexane	3.17734	mol%
Heptane	0.000088	mol%	Heptane	1.60118	mol%
Cyclopentane	0.000665	mol%	Cyclopentane	1.96478	mol%
Cyclohexane	0.000743	mol%	Cyclohexane	1.87261	mol%
Methylcyclohexane	0.000133	mol%	Methylcyclohexane	1.01041	mol%
2,2,4-Trimethylpentane	0.000006	mol%	2,2,4-Trimethylpentane	0.09706	mol%
n-Octane	0.0000054	mol%	n-Octane	0.13357	mol%
Water	8.32375	mol%	Water	12.72109	mol%
Benzene	0.01188	mol%	Benzene	8.93524	mol%
Toluene	0.00250	mol%	Toluene	3.43888	mol%
Ethylbenzene	0.00026	mol%	Ethylbenzene	0.61876	mol%
p-Xylene	0.00000	mol%	m-Xylene	0.00000	mol%
o-Xylene	0.00018	mol%	o-Xylene	0.43941	mol%

Location:

Site Elevation	3070	FASL
Max Ambient	105	F
Min Ambient	0	F
Wind Speed	100	mph

Notes:

1. Above information is applicable to the request for quote for a Thermal Oxidizer.
2. Unit to achieve best destruction efficiency possible, 99% minimum if possible
3. Unit to be designed with two separate connections; one connection to be designated for the amine acid gas stream and one connection to be designated for the glycol system OVHD stream
4. Amine Acid Gas Stream is the amine OVHD gas combined with the Amine Flash Gas, to increase the heating value
5. Fuel gas is avaliable
6. Excess capacity of 10% requested

Zeeco has considered that the Amine Flash Gas and Amine OVHD Gas will be introduced to the unit on separate connections. While the above composition does not cause a combustion instability problem, injecting the Flash Gas and OVHD Gas together can cause combustion instability during start-up or process upset conditions, when the heating value fluctuates. We will be happy to discuss this point in additional detail if necessary. Please contact us.

1.2.2 System Performance @ 1600°F

Stack Emission	Expected Performance
Destruction Efficiency	> 99.9% of all Hydrocarbons
NOx, ppm_{vd} @ 3% O2	50
CO, ppm_{vd} @ 3% O2	50

Note: These values are understood to apply only when the system is operated in accordance with the above operating conditions and waste(s) stipulated in section 1.2.1 above, and design temperature.

1.2.3 Combustion Air Performance

Reference AirPro Fan vendor literature in APPENDIX G for combustion air blower performance curve information.

1.2.4 Burner Performance

Reference the burner capacity curve (32339-G009A-001) in APPENDIX D for burner performance information.

1.3 Equipment Description

The forced draft thermal oxidizer system is described below.

1.3.1 Burner (Reference Zeeco Drawing 32339-G006A-001)

The forced draft burner assembly consists of one (1) GB Series gas burner. The burner is complete with the following features:

- One (1) GB Series (75 MM BTU/HR) forced draft burner with 10:1 fuel gas turndown.
- AR/GS-1 HEI electric spark ignited pilot assembly (85,000 BTU/HR Intermittent Pilot) NOTE: During normal operation, the purge air to cool the pilot must remain on even when pilot is not in operation.
- One (1) 42-3/4” fabricated plate flange burner mounting connection.
- One (1) 4” 150# RFWN fuel gas connection.
- One (1) 2” 150# RFWN glycol vent connection.
- One (1) 1-1/2” 150# RFWN pilot mounting connection.
- One (1) 2” NPS sight port assembly with purge connection.
- Two (2) 2” FNPT swivel scanner mount assemblies with purge connection.
- One (1) 1-1/2” 150# RFWN drain connection w/ blind.
- A-36 carbon steel construction.
- 60% Al_2O_3 burner tile, shipped in eight (8) loose segments.
- Paint per Zeeco document 32339-4030 (See APPENDIX E).

1.3.2 Thermal Oxidizer (Reference Zeeco Drawing 32339-G064A-001)

The thermal oxidizer design is a vertically fired unit supported by legs, and is designed to operate at 1600 °F. The thermal oxidizer is designed and furnished with the following companion features for the Zeeco burner design:

- Nominal 10’-0” O.D. integral stack x 76’-0” overall height.
- One (1) 42-3/4” fabricated plate flange burner mounting connection
- One (1) 30” 150# RFWN Amine waste gas connection.

- One (1) 40" fabricated plate flange combustion air connection.
- Two (2) 1-1/2" RFWN thermocouple connections.
- Two (2) 4" RFWN sample connections w/ blind.
- One (1) 4" RFWN O_2 analyzer connection.
- One (1) 4" sight port connection w/ purge and blast gate.
- Two (2) 2" RFWN spare scanner connections w/ blind.
- One (1) 1-1/2" RFWN drain connection w/ blind.
- One (1) 36" fabricated plate flange manway w/ davit.
- A-36 carbon steel shell with 1/8" corrosion allowance.
- Two (2) lifting trunnions for use with spreader beam and tailing lug.
- One (1) lot of ladders & platforms consisting of two (2) service platforms and one (1) step off platform. Ladders & platforms are trial fit in the shop, then shipped loose to prevent damage. All safety gates are the same size and interchangeable.
- Shop fit stack strakes (shipped loose to prevent damage)
- Shop installed castable refractory lining dried out to 500 °F.
- One (1) lot of rainshield material (shipped loose to prevent damage)
- One (1) 304SS leg mounted grounding lug.
- Paint per Zeeco document 32339-4030 (See APPENDIX E).

1.3.3 Refractory Lining (Reference Zeeco Drawing 32339-R064A-001)

The refractory supplied includes insulating castable and medium weight castable. The castable refractory is held in place using 310 stainless steel anchors located on 9" centers. Refractory anchors and castable are shop installed and dried to 500°F.

Thermal Oxidizer Floor
4" thick 3000 °F, medium weight castable, backed with 2" thick 2300 °F light weight insulating castable with 310 SS Hanlock HL-201-4 (or equal) anchors on 9" centers.

Combustion Zone (First ~ 10' of Thermal Oxidizer Vessel)
4" thick 3000 °F, medium weight castable, backed with 2" thick 2300 °F light weight insulating castable with 310 SS Hanlock HL-201-4 (or equal) 3" tall anchors on 9" centers.

Mixing Zone (Final ~ 51'-9" of Thermal Oxidizer Vessel)
4" thick 2300 °F, light weight insulating castable, with 310 SS Hanlock HL-208-7 (or equal) anchors on 8" centers.

Additional details may be seen in the general arrangement drawings included in APPENDIX D.

1.3.4 Instrumentation & Controls

The Zeeco supplied Control System includes all field-mounted instrumentation and valves, along with controls and rack mounted piping for the burner management system (BMS). Interconnecting conduit, wiring, tubing, and piping between the rack and the Thermal Oxidizer is supplied and field installed by others. For more information, please see Zeeco P&ID drawings 32339-04-11001-001 and 32339-04-11001-002 in APPENDIX D.

Zeeco has supplied a Burner Ignition System, one (1) temperature transmitter (TT-5500), five (5) Pressure Gauges (PI-5501A, -5501B, -5502A, -5503A, -5503B), two (2) Flame Scanners (BE/BSL-5501/5502), two (2) thermocouples (TE-5500 & TE-5504), and the burner controls rack. Refer

to the Zeeco Shipping List located in APPENDIX F for reference to shipped loose items. The Zeeco supplied instruments and controls (above) are certified to Class I Div. II Group C & D operation.

The P & ID drawing series is included in APPENDIX D (for the Zeeco supplied controls and instruments) to provide detailed information on the instrumentation and mounting. Detailed instrument specification sheets and selected vendors are included in APPENDIX E (documents) and APPENDIX G (vendors).

1.3.5 Combustion Air Blower (Reference AirPro fan drawing in Appendix G)

One (1) Combustion air blower complete with the following features:

- Designed for 23,238 CFM @ 3.5" w.c.
- AirPro Model BIHS290, Arrangement 4 Fan Assembly
- 30 hp., 1760 rpm, 460/60/3 Premium Eff. TEFC Motor
- Silencer w/ bird screen
- Flanged inlet/outlet connections
- Outlet Flex Connector
- Bolted Access Door
- Drain Connection with plug

RR3-TO-1801 Spec Sheet

ZEECO QUOTATION

CLIENT: Targa Resources

END USER: Targa Resources

ZEECO QUOTE #: 2026-04353IN-01

QUOTE REV #: 1

DATE OF ISSUE: July 10th, 2026

APPLICATION ENGINEER: Lance Nagy

Zeeco, Inc.
4700 S Garnett Rd
Tulsa, OK 74146 USA

Tel: +1 918 258-8551
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zeeco.com

Date: July 10th, 2026

Customer: Targa Resources

Attention: Daniel Lacy

Reference: Targa Resources, Roadrunner 3 Thermal Oxidizer

Zeeco Proposal No.: 2026-04353IN-01 R1

Dear Daniel:

Thank you for your inquiry. We appreciate this opportunity to provide our proposal for this package.

- One (1) Zeeco Standard Thermal Oxidizer Package

Zeeco is providing the following Thermal Oxidizer Package fabricated in our own Zeeco China Facility, delivered to North America, that will deliver the same quality product that you have purchased from us in the past.

The attached proposal describes specific features and performance of the system.

Zeeco's design incorporates a proven thermal process to effectively treat the waste streams from your process. The design and materials of construction were chosen to maximize on-line time and operational life. We are confident we have designed and estimated a system that meets your requirements.

Again, we appreciate the opportunity to quote on your combustion equipment requirements. After you have had an opportunity to review our proposal, should you have any questions or require additional information, please contact me at (918) 893-8395 or email me at lance_nagy@zeeco.com.

Best regards,

Lance Nagy

Lance Nagy | Applications Engineer

+1 (918) 893-8395 | lance_nagy@zeeco.com

Cc: Gianluca Tanda | Applications Manager, Thermal Oxidizer & Combustion Systems

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1.0 INTRODUCTION

Since 1979 Zeeco has been committed to providing robust and world-class combustion systems and pollution control equipment to a wide range of markets. The following is a partial selection of these worldwide markets:

- Refining and Petrochemical
- Ammonia and Fertilizer Refining
- Midstream and Downstream Gas Processing
- LNG
- Power and Steam Generation
- Wellsite Production
- Marine and Offshore
- Pharmaceutical
- Renewables

With 25+ Global Locations and 7 Manufacturing Facilities on 3 continents, and 4 Combustion Test Facilities worldwide, we have the flexibility to be a single source solution for all your combustion and pollution control needs. Zeeco employees over 3000+ personnel worldwide, and the majority of our staff are engineers. Our engineering staff worldwide offers over 1000+ years of experience in providing combustion systems and helping to solve any issues that arise in these projects.

For our Midstream Gas Processing customers, Zeeco has several different mechanical equipment packages we can offer to help meet your production and safety needs.

- Flare systems – Air Assisted, Steam Assisted, Utility, High and Low Pressure, Staged, Sonic, Ground and Enclosed Models
- Auxiliary Flare equipment – Purge Reduction Devices, Liquid Seals, Knock-Out Drums, and Pilot Retrofits
- Thermal Oxidizers and Waste Heat Recovery systems – Horizontal and Vertical Systems that allow for disposal of a wide range of hydrocarbon waste streams and heat recovery.
- Fired Heaters – Hot Oil and Gas Regeneration heaters with or without convection sections.
- Auxiliary Fired Heater and Thermal Oxidizer equipment – Expansion Tanks, Pumps, Fuel Skids, Burner and Pilot Retrofits, and Instrumentation Upgrades.
- Global Field Services – Installation, Commissioning, Start-Up and Optimization services for all Zeeco and other OEM equipment and systems.

From project planning through design, procurement, manufacturing, installation, and even start-up, Zeeco will provide project management and support to ensure the success of the project. It is our world-class, HANDS-ON type design skills, quality products, experienced staff, and especially our responsiveness to our customers' needs that truly set Zeeco apart from our competition.

2.0 SCOPE OF SUPPLY

In response to your RFQ, Zeeco will provide one (1) Zeeco Standard Thermal Oxidizer Packages. A more detailed description of this equipment is included in Section 4.0 entitled: EQUIPMENT DESCRIPTION.

Item. No	Description	Unit	Qty	Zeeco		Customer	
				Design	Supply	Design	Supply
1	Forced Draft Burner Assembly	set	1	✓	✓	-	-
2	Flame Scanner – Zeeco Pro-Flame	no	2	✓	✓	-	-
3	HEI (High Energy Igniter)	no	1	✓	✓	-	-
4	Fuel Gas Skid	set	1	✓	✓	-	-
5	BMS Panel – Zeeco Standard SIL-2 PLC – Mounted on Fuel Rack	set	1	✓	✓	-	-
7	Vertical Combustion Chamber/Stack	set	1	✓	✓	-	-
8	Refractory (Shop installed)	set	1	✓	✓	-	-
9	Combustion Air Blower and Ducting	set	1	✓	✓	-	-
10	Zeeco Standard Documentation and Drawing Package, Information Only	set	1	✓	✓	-	-
11	Required Inspection and Testing to Zeeco Standard	set	1	✓	✓	-	-
12	Paint System – Zeeco Standard	set	1	✓	✓	-	-
13	Oxygen Analyzer	set	1	✓	✓	-	-
13	Ladder and Platforms as required	set	1	✓	✓	-	-
14	Process Control System (DCS)	set	1	✓	✓	-	-
15	3D Model for Customer Review and Approval (can be provided as optional price)	set	1	-	-	✓	✓
16	Interconnecting Piping, Conduit and Wiring between the Control Panel and Instruments not located on the Fuel Rack	set	1	-	-	✓	✓
17	MCC, Motor Starters - VFD	set	1	-	-	✓	✓
18	Field Installation and/or Erection; available upon request	set	1	-	-	✓	✓
19	Heat Tracing and External Insulation	set	1	-	-	✓	✓
20	Environmental Licensing and Registration and/or Associated Testing	set	1	-	-	✓	✓
21	Other Start-Up/site activities (per diem basis)	set	1	-	-	✓	✓
22	Foundations or Foundation Design	set	1	-	-	✓	✓
23	Waste Gas Piping and Isolation Valves (can be provided as optional price)	set	1	-	-	✓	✓
24	Equipment Anchor Bolts, Templates or Slide Plates	set	1	-	-	✓	✓
25	Delivery to Jobsite	set	1	-	-	✓	✓
26	Storage of Equipment after Completion	set	1	-	-	✓	✓
27	Partial Refractory Dryout in the Shop (can be provided as optional price)	set	1	-	-	✓	✓
28	Knock Out Drum	set	1	-	-	✓	✓
29	Flame Arrestor (can be provided as optional price)	set	1	-	-	✓	✓

3.0 DESIGN BASIS

3.1 Site Conditions

Barometric Pressure, psia	14.7
Temperature, °F	0 / 110
Design Relative Humidity, %	90
Wind Design	ASCE/SEI 7-16
Seismic Design	ASCE/SEI 7-16

3.2 Waste Stream Summary

No margin has been included in the design of the system.

Waste stream is assumed to be in vapor phase; no liquid has been considered in the design.

1	TO Scenarios								
2	Gas Composition (Mole %)		Max Design	Alternative Low Rate	BTEX	Flash Gas			Fuel Gas
3	Hydrogen Sulfide	H_2S	0.046	0.046	0.00	0.00			
4	Carbon Dioxide	CO_2	92.203	92.354	0.00	4.64			
5	Nitrogen	N_2	0.000	0.000	0.01	0.34			2.67
6	Methane	CH_4	0.256	0.173	11.05	70.78			96.79
7	Ethane	C_2H_6	0.078	0.048	14.62	14.06			0.52
8	Propane	C_3H_8	0.029	0.017	17.61	5.37			0.03
9	i-Butane	$^iC_4H_{10}$	0.001	0.001	3.26	0.57			
10	n-Butane	$^nC_4H_{10}$	0.010	0.005	12.85	1.63			
11	i-Pentane	$^iC_5H_{12}$	0.000	0.000	3.82	0.23			
12	n-Pentane	$^nC_5H_{12}$	0.001	0.000	5.16	0.28			
13	C-6	C_6	0.000	0.000	5.03	0.16			
14	C-7	C_7	0.000	0.000	1.45	0.03			
15	C-8	C_8	0.000	0.000	0.17	0.05			
16	C-9	C_9	0.000	0.000	0.03	0.00			
17	C-10	C_{10}							
18	Benzene				8.19	0.08			
19	Toluene				3.44	0.03			
20	EB				0.75	0.01			
21	m-xylene		0.000	0.000	0.46	0.01			
22	Water	H_2O	7.320	0.000	12.04	1.78			
23	TEG	$C_6H_{14}O_4$	0.000	0.000					
24									
25	Lower Heating Value (LHV)	BTU/SCF	7.2	4.67	2373.0	1095.00			890.0
26	Std. Gas Flowrate	MMSCFD	8.0000	3.3000	0.0377	0.8000			
27	Molecular Weight	LB/LB-MOL	42.05	42.00	48.80	22.33			16.44
28	Gas Temperature	°F	120.0	120.0	120.0	120.0			120.0
29	Destruction Efficiency	-	99.50%	99.50%	99.50%	99.50%			

Page 2

3.3 Fuel Stream Summary

Assumed 100% Methane.

3.4 Operating Conditions

Thermal Oxidizer Temperature	1,500 °F / 1,800 °F
Thermal Oxidizer Residence Time	1.0 s minimum
Excess Air, O2 % Vol Wet	3.0 minimum

3.5 Design Summary

Waste Stream Flow		Max Design	All Streams – Max	All Streams – Min	Min Design
	lb/hr	36,909.0	39,077.0	17,393.0	15,224.9
Flue Gas Composition	wet vol %				
Argon		0.00	0.00	0.00	0.00
Carbon Dioxide		40.87	33.37	15.63	33.58
Water Vapor		15.29	16.08	15.57	15.38
Nitrogen		40.82	47.23	61.06	46.52
Hydrogen Chloride		0.00	0.00	0.00	0.00
Sulfur Dioxide		0.02	0.01	0.01	0.01
Oxygen		3.00	3.31	7.73	4.49
Total	%	100.00	100.00	100.00	100.00
Flue Gas Temperature	°F	1,500	1,800	1,800	1,500
Flue Gas Flow	lb/hr	72,673.5	91,475.2	89,607.8	36,085.2
Flue Gas MW	lb/lb-mol	33.15	31.88	29.27	32.03
Flue Gas Flow	ACFS	908.6	1,371.1	1,463.1	466.9
Fuel Gas Flow	lb/hr	1,357.8	195.0	195.0	706.9
Fuel Gas Heat Release	MM Btu/hr	27.85	4.00	4.00	14.50
Waste Stream Heat Release	MM Btu/hr	1.63	41.88	40.92	0.67
Total Heat Release	MM Btu/hr	29.48	45.88	44.92	15.17
Combustion Air Flow	lb/hr	34,406.7	38,397.5	37,587.8	17,524.0
Quench Air Flow	lb/hr	0.0	13,805.7	34,432.1	2,629.4
Total Air Flow	lb/hr	34,406.7	52,203.2	72,019.8	20,153.4

3.6 Preliminary Utilities

Electrical Power	460V / 3 Phase / 60 Hz
Connected CAB Power Blower, HP	35
Instrument Air, SCFH	2000 – 4000
Fuel Gas Required, MMBtu/hr	*see above design summary

3.7 System Performance

Stack Emission	Expected Performance	Units
Destruction Efficiency, VOC	99.9	%
NOx	0.120	lb/MMBtu
CO	0.102	lb/MMBtu

These values are understood to apply only when the system is operated in accordance with the operating conditions stipulated in the design summary and for the waste stipulated in the design basis sections of this proposal. VOC is defined as non-methane non-ethane hydrocarbons. Every mol of H2S is expected to convert into SO2 in the flue gas.

4.0 EQUIPMENT DESCRIPTION

4.1 Thermal Oxidizer

One (1) standard thermal oxidizer is offered. Zeeco standard units are designed and constructed using Zeeco standard materials and manufacturers. It is designed to operate at 1500°F / 1,800°F with excess air to ensure complete combustion of the waste gas combustible components. The thermal oxidizer has the following features:

- Chamber: Nominal 7'-6" H x 6'-6" W x 30'- 0" L
- Stack: Nominal 4'-3" L x 4'-0" W x 21'-0" elevation
- *OPTION: Stack to 30' elevation to follow.*
- Shell Material: SA-36
- Painted per Zeeco Standard
- Rainshield

4.2 Burner

One (1) Forced Draft Zeeco, GB Burner is offered with the following features:

- 30 MMBtu/hr maximum release rating
- High Energy Ignition System
- A-36 Carbon Steel Construction
- 10:1 Fuel Gas Turndown
- Painted per Zeeco Standard

4.3 Combustion Air Blowers

One (1) Combustion Air Fan is offered and has the following features:

- Preliminary Design Rate: 17,945 ACFM
- TEFC Motor HP: 35
- Manufacturer's standard design
- Painted per Manufacturer's Standard
- VFD by others

4.4 Refractory

The thermal oxidizer chamber and stack are lined with ceramic fiber material. Refractory will be shop installed by Zeeco.

4.5 Instrumentation and Controls

Zeeco's Standard Burner Management System and Instrumentation scope is offered by Zeeco Standard Suppliers. **Zeeco Standard AVL** has been quoted in the proposal for all instrumentation and controls.

- Pre-assembled fuel gas and instrument air control rack, skid mounted
- NFPA 86, Allen-Bradley SIL-2 compliant BMS PLC, mounted and pre-wired to the skid
- Process Control Package
- Factory Functionality Acceptance Test included
- One (1) Oxygen Analyzer
- Instrument/piping connections from rack to field instruments and other field equipment by others

Zeeco has not offered the waste gas piping or isolation valves. These items can be offered at an optional price.

5.0 PERFORMANCE WARRANTY

Zeeco warranties the system performance stated in this proposal. These values are understood to apply only when the system is operated in accordance with the operating conditions stipulated in the DESIGN SUMMARY for the waste (s) stipulated in the DESIGN BASIS sections of this proposal.

The purchaser, at his option and cost, may conduct a performance test to determine if the performance warranties are being met. The purchaser shall provide sufficient written notice to Zeeco so that a representative of Zeeco can witness the test. Additionally, Zeeco will be given access to all operating data and laboratory analysis that would bear on the final determination of performance. All analysis of operating data will be done in accordance with generally accepted engineering practice and only published physical data will be used.

Attachments:

A Clarifications, Comments and Exceptions

ATTACHMENT A
CLARIFICATIONS, COMMENTS AND EXCEPTIONS

Our quotation is in accordance with the specifications, drawings, terms and conditions and other requirements of this request for quotation with no exceptions or comments other than those listed below.

ZEECO STANDARD COMMENTS AND EXCEPTIONS:

1. Our proposal is made with the understanding that mutually agreeable terms and conditions can be negotiated before a purchase order is issued. Zeeco's Standard Terms and Conditions of Sale are the commercial basis of this proposal and are attached for your reference.
2. Three (3) copies of the operation manual are included in our pricing basis. Additional copies can be provided at an extra cost, if required.
3. All documentation and correspondence shall be supplied in the English language only.
4. Unless otherwise stated within this proposal, field installation of all equipment shall be by others.
5. Unless otherwise stated within this proposal, all field assistance associated with erection, start-up, commissioning, and performance testing shall be supplied extra as per the per diem rates noted in Attachment C of this proposal.
6. Buyer's employees and/or representatives of Buyer shall be allowed to inspect/observe the equipment fabrication from this inquiry and to review agreed to documents and qualifications as outlined in this quotation at Zeeco Inc. premises.
7. The mechanical warranty on materials and workmanship is valid for 12 months from the start-up of the equipment or 18 months from delivery of the equipment; whichever is earlier.
8. Unless otherwise stated within this proposal, all steel plate and piping materials shall originate from Zeeco standard steel suppliers.
9. All proprietary burner components shall be from Zeeco standard material suppliers.
10. Refractory material brand names that may be listed within this proposal are indicative of general properties and performance only. All refractory materials shall be sourced by Zeeco from our standard refractory manufacturers, and actual brand names may vary from those stated in this proposal.
11. Unless specifically stated within this proposal, Zeeco's pricing is exclusive of all taxes, duties, and associated fees.
12. 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 goods to the port of export, this is understood to mean the port nearest to the point of manufacture of the goods, unless an alternate port of export is clearly defined in the inquiry documents.
13. In any instance where the name of a particular manufacturer appears herein, such shall be interpreted to mean the product of that manufacturer or its equivalent (unless purchase of a particular manufacturer's product shown is mandatory).
14. Please note that we have received only process data in RFQ. Any additional specification and requirement will have cost and delivery implication.
15. Welding of proprietary components shall be per ASME Section IX and/or AWS standards unless otherwise mentioned within this proposal. Structural design shall be as per ASCE 7-98 standards.
16. If included in our proposal, ladders & platforms are to Zeeco's standards and shall meet or exceed OSHA standards.
17. If required, heat tracing, external insulation, and instrument insulation boxes are most economically supplied and installed by the field contractor. Unless otherwise stated within this proposal, Zeeco's offered price does not include materials or labor associated with these items.
18. If included in this proposal, Zeeco's fuel metering rack shall be shipped as a pre-piped and pre-wired assembly, complete with all conduit, cable trays, and junction boxes associated with the "on-rack" instruments. All interconnecting piping, wiring, conduit, and cable trays between this rack and other equipment items are most economically supplied and installed by the field contractor. Unless otherwise stated within this proposal, Zeeco's offered price does not include materials or labor associated with these items.
19. Unless otherwise stated within this proposal, hydrotest, postweld heat treatment, and charpy impact testing of materials are not included. Unless otherwise stated within this proposal, our pricing includes spot radiography only. Unless otherwise stated in the project specifications, system manufacturing, inspection and testing shall be as per Zeeco Inc. QA/QC manual.

20. Radiographic examination shall be performed by gamma radiation, utilizing only fine grain film. The radiographic sensitivity and quality shall be equal to or exceed that specified in the ASME Boiler & Pressure Vessel Code, Section VIII-1 and B31.3.
21. Allowable nozzle loads shall be as stated within or extrapolated from API 560 Third Edition.
22. Instrumentation not specifically included within this proposal shall be furnished and installed by others.
23. Unless stated otherwise within this proposal, Zeeco's scope of supply does not include: Equipment Anchor Bolts; Foundations and Detailed Foundation Design; Slide Plates; Interconnecting Piping, Conduit, Wire, Cables, and Cable Trays; Motor Starters or MCC; Vibration Monitoring Systems; Heat Tracing, External Insulation, and Instrument Insulation Boxes.
24. Unless otherwise stated within this proposal, combustion air ducting shall not be subject to piping material specifications.
25. Particulate emissions guarantees are valid for *combustion-generated* particulate emissions only.
26. Nozzles are quoted assuming loads, per table 25.1, are to be applied. If we are supplied with the loads that will be applied to the nozzles, Zeeco will be happy to requote based on the provided loads.

Table 25.1

Nozzle SIZE (inches)	FX lb	FY lb	FZ lb	MX lb-ft	MY lb-ft	MZ lb-ft
2	100	200	200	350	250	250
3	150	300	300	450	350	350
4	200	400	400	600	450	450
5	225	450	450	660	500	500
6	250	500	500	730	550	550
8	300	600	600	860	650	650
10	350	650	650	930	700	700
12	400	700	700	1000	750	750
14	403	747	747	1055	797	797
16	425	784	784	1105	834	834
18	444	818	818	1149	868	868
20	461	848	848	1189	898	898
24	491	899	899	1257	949	949
30	527	962	962	1340	1012	1012
36	557	1014	1014	1408	1064	1064
42	582	1058	1058	1466	1108	1108

PROJECT CLARIFICATIONS AND EXCEPTIONS:

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 **zeeco.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.

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NSF REGISTERED ISO 9001: 2015

Certification applies to Zeeco Headquarters.

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• Burners
• Flares
• Incinerators
• Combustion Systems

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July 17th, 2026

Targa Northern Delaware LLC

Attention: acardin@targaresources.com

Reference: **Targa P.O. 566510 Zeeco SO 85542**

Dear Mr. Cardin,

Targa Northern Delaware LLC has requested that Zeeco provide the cost impact to modify the thermal oxidizer stack height to 30' elevation.

Zeeco can provide the requested changes for the commercial impact shown in the table below.

ITEM	DESCRIPTION	PRICE – USD
1	Design modification to add an additional stack height of Thermal Oxidizer to elevation of 30' as detailed below: • Design and Engineering • Model and Drawing Revisions • Additional Materials and Fabrication	$15,815

Please note that no specification has been considered for design.

Zeeco's payment terms and terms and conditions will follow original purchase order.

Please let me know if you have any questions or require additional information.

Best regards,

Joia Traver

Joia Traver
Project Engineer
Phone: 918-893-8868
Email:Joia_Traver@zeeco.com

RDR-FL-5100

Flare Spec Sheets

Appendix A: Flare Design Basis

FLARE

BY: EMG | JOB NO: 10231 | PAGE 1 OF 2

DATE: 5/3/2017 | ITEM NO.: FL-5100 FLARE

CUSTOMER: Lucid Energy

PLANT: Roadrunner

SERVICE: Flare

QUANTITY: 1 SIZE: 4' - 10" DIA X 100' - 0" OAH

SAULSBURY INDUSTRIES

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: REV. 0

REV.	DATE	BY	APPR.	NO.	FIRM
Issue for Construction	5/3/2017	EMG	DLS	0	SI
Request for Quotation	3/7/2017	EMG	DLS	A	SI

Design Cases	Cold Flare Riser (Case #1)	Cold Flare Riser (Case #2)	Warm Flare Riser (Case #1)	Warm Flare Riser (Case #2)
Flow Rate (Lb/Hr)	392,000	267,780	221,526	355,000
Relief Scenario	JT-Valve Failure	Fire - NGL Surge Tank	Refrigeration Comp. Blocked Flow	Condensate Surge Tank & Stabilizer PSVs
Controlling Point Sources	PSV-501	PSV-404	PSV-161,162,163	PSV-1301 and Others
Molecular Weight	17.6446	38.602	44.17	50.46
Temperature at Inlet Nozzle, ºF	-127	170	140 -190	255
Pressure at Inlet Nozzle, PSIG	25	15	10	25
Smokeless Operation Required (Yes/No)	Yes	Yes, Note 3	Yes, Note 3	
Lower Heating Value, BTU/SCF	979	2039	2318	2553
Composition (Mol %)				
Nitrogen	0.656%	0.000%		0.023%
Carbon Dioxide	0.021%	0.077%		2.9830%
Methane	89.660%	0.497%		10.210%
Ethane	8.589%	57.194%	0.25%	15.643%
Propane	0.995%	27.995%	99.00%	25.187%
i-Butane	0.031%	3.312%	0.75%	6.070%
n-Butane	0.043%	7.146%		17.287%
i-Pentane	0.002%	1.423%		6.200%
n-Pentane	0.001%	1.438%		7.288%
Hexane	0.000%	0.510%		5.938%
Heptane	0.000%	0.142%		2.254%
Benzene	0.000%	0.038%		0.425%
Toluene	0.000%	0.009%		0.193%
O-Xylene	0.000%	0.001%		0.037%
P-Xylene	0.000%	0.000%		0.000%
Octanes+	0.000%	0.008%		0.2522%
Water	0.000%	0.000%		0.000%
Hydrogren Sulfide	0.000045%	0.00032%		0.0098%
Flare Riser Diameter & Inlet Nozzle Size, Note 2	By Vendor		By Vendor	
Radiation Design Parameters: Temp, F / Wind, MPH	90 / 30		90 / 30	

Notes
1) Elevated, self-supported flare.
2) Vendor to propose optimum size of two risers
3) Smokeless rate is 20% of the warm flare design rate.
4) Flare shall be of one-piece lift/erection design for site installation.
5) Instrument air available at 85 to 125 psig.
6) Provide radiation shielding for any JB's, panels, boxes, or other electrical equipment if required to prevent operating temperature out of spec during extended release.
7) Supply heavy duty vaneaxial blower for air assist with VFD control.
8) Pressure at flare base for majority of other cases will be 5 psig or less.

FLARE

BY:	EMG	JOB NO:	10231	PAGE	2	OF 2
DATE:	3/7/2017	ITEM NO.:	FL-5100 FLARE			
CUSTOMER:	Lucid Energy					
PLANT:	Roadrunner					
SERVICE:	Flare					
QUANTITY:	1	SIZE:	*			

SAULSBURY INDUSTRIES

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: REV. 0

Power Available	460Vac 3 P 60 Hz		
Control Power	120 Vac 1 P 60 Hz		
Electric Classification Area	Class 1, Div 2, Grp C,D, Temp T2B		
Pilot Gas	Pipeline gas, 100 psia		
Utility Gas	Pipeline Gas, 100 psia		
Purge Reduction	Pipeline Gas, 100 psia		
Flare Tip	By Vendor		
Maximum Allowable Thermal Radiation, BTU/Hr/SqFt	1750 - Note 6		
At Grade, Specify Distance from Flare Base, Ft	100		
Stack Support	Self Supported		
Structural Design Wind Velocity, MPH	120		
Seismic Zone	1		
Flare Knockout Drum	Supplied by Others		
Design Pressure, PSIG / Temperature, F / MDMT, F	50 / 350 / -150		
ASME Code Stamp / National Board Registration	No		
Ignition Device	HEI		
Enclosure	Class 1 Div 2, Grp C,D, T2B		
Ladder Platforms	No		
Special Instrumentation	Air Assist Flow switch		

Notes:
1) Applicable specifications: NEC NEMA AISC
2) Specifications: Piping - ASME B31.3; Welding - AWS 1.1; Structural - ASCE 7-05 / ASME STS-1-2011
3) Use pressure transmitters for all pressure instrumentation.
4) Ignition system: Manual with automatic re-light; provide temperature or optical pilot monitoring
5) Ignition device: HEI - high energy spark ignition; FFG - flame front generator
6) General documentation to include general arrangement drawings, detail flare stack drawings, ASME STS-1-2011 analysis and required foundation loads.
7) Preferred base design is a base plate, top plate and intermediate gussets.

Process Conditions -- English Units

Client:	Saulsbury	Zeeco Ref.: 2017-01312FL-01		Date:	16-Mar-17
Location:	Loving, NM	Client Ref.: 0		Rev.	0

	Mol %					
	Cold Case 1	Cold Case 2	Warm Case 1	Warm Case 2	Case K	Case L
METHANE	89.66	0.50		10.21		
ETHANE	8.59	57.19	0.25	15.64		
PROPANE	1.00	28.00	99.00	25.19		
BUTANE	0.07	10.46	0.75	25.36		
PENTANE	0.00	2.86		13.49		
HEXANE		0.51		5.94		
HEPTANE		0.14		2.25		
OCTANE		0.01		0.25		
NONANE						
DECANE						
DODECANE						
TRIDECANE						
CYCLOPENTANE						
ETHYLENE						
PROPYLENE						
BUTYLENE						
ACETYLENE						
BENZENE		0.04		0.43		
TOLUENE		0.01		0.19		
XYLENE		0.00		0.04		
CARBON MONOXIDE						
CARBON DIOXIDE	0.02	0.08		0.98		
HYDROGEN SULFIDE				0.01		
SULFUR DIOXIDE						
AMMONIA						
AIR						
HYDROGEN						
OXYGEN						
NITROGEN	0.66			0.02		
WATER						
BUTADIENE						
METHANOL						
Total	**100**	**100**	**100**	**100**		
Mol. Wt.	17.64	38.43	44.17	50.57		
L. H. V. (BTU/SCF):	979	2,030	2,319	2,606		
Temperature (Deg. F):	-127.0	170.0	190.0	255.0		
Avail. Static Pressure (psig):	25.00	15.00	10.00	25.00		
Flow Rate (lbs/hr):	392,000	267,780	221,526	355,000		
Smokeless Rate (lbs/hr):				71,000		

Confidential and Proprietary

Saulsbury Industries
SAULSBURY Corporate Office: 2951 E Interstate 20, Odessa, TX 79766 · P: 432-366-3686 · F: 432-368-0061

10231: Lucid Energy – Road Runner Flare Study

Background

The purpose of the flare and relief valve study performed by Saulsbury Industries was to evaluate the hydraulics in both the main flare header system and the inlet/outlet piping on the individual relief devices. Several different scenarios were considered when evaluating the flare header system hydraulics and flare stack/tip specifications for maximum relieving loads. Some of these scenarios include, but are not limited to:

- Point-source failure of an instrument or controller (i.e. control valve failure into 100% open position)
- External pool fire around an area containing single or multiple pieces of equipment whose relief valves discharge into the flare header. Per API 521 guidelines, a fire circle area of 2500 ft^2 was used to determine which pieces of equipment could be subjected to a common pool fire.
- Blocked-in flow of single or multiple pieces of rotating equipment, causing the equipment to deadhead and reach the designated relieving pressure.
- Heat exchanger tube rupture
- Process control vents to flare, whose purpose is to provide "pre-relief" on equipment before a relief valve opens during operating pressure upsets.

The flare system consists of both a carbon steel "warm" flare header and a stainless steel "cold" flare header. Each of these individual flare headers are routed to dedicated flare risers on the main flare stack, where they are combined into a single flare-tip at the top of the stack. The stainless steel flare header is designed to collect and handle relief valve discharges from the cryo plant area (routed to/from the UOP-provided V-403 Cold Drain Tank). Some relief valves in the cryo plant area have relieving temperatures far below the 0°F minimum temperature limit for standard carbon steel piping and would otherwise potentially result in significant thermal stress or shock if they are routed to the carbon steel "warm" flare header piping. Only relief valves from the cryo plant equipment will be routed into the stainless steel "cold" flare header. All other relief valves in the plant that are routed to flare and have a relieving temperature comfortably above 0°F are discharged into the warm flare header.

The Aspen Flare System Analyzer v10 software was used to evaluate and confirm flare header hydraulics once the location and arrangement of the plant relief devices was known. The software utilizes isothermal compressible flow models to predict pressure drop throughout the flare system, as well as the Peng-Robinson equation of state to approximate outlet temperatures from relief valve discharges based on the composition of the relieving fluid.

Assumptions

1) Inlet and outlet piping configurations are an approximation based on information available at the time the flare study was performed. However, small changes in pipe routing/distance will not affect the overall operation of the flare system or adversely affect the reported results.
2) Residue and flash gas compressor blowdown (manual operation) do not discharge into the flare header, and therefore the flare system analysis excludes this scenario.
3) Bypass valves around control valve stations are assumed, via standard plant operating procedures, to be normally closed during plant operation. Inadvertent opening to full 100% trim capacity in these bypass globes valves are not considered.
4) Mach number in sub-headers and main header is limited to 90% of sonic velocity. The exception this is when a "sonic break" occurs during a sudden size change at a tie-point between a relief valve discharge lateral into the larger main flare header or sub-header.
5) Conventional PSV backpressure limit: 10% of PSV set pressure for non-fire scenario
6) Conventional PSV backpressure limit: 21% of PSV set pressure for fire scenario
7) Balanced Bellow PSV backpressure limit: 40% of PSV set pressure
8) Pilot-Operated PSV backpressure limit: 80% of PSV set pressure
9) Relief valve inlet piping pressure drop limit: 3% of PSV set pressure

Flare Headers

The carbon steel "warm" flare header/system at the Lucid Energy Road Runner gas plant consists of the following:

- 12" plant flare header up to the warm flare KO drum with the following sub-headers:
    - 8" flare header branch in the mol sieve dehydration area rack
    - 10" flare header branch in refrigeration area rack
    - 12" flare header branch in amine and TEG regeneration area rack
    - 12" flare header branch in stabilizer area rack
- 72" OD x 30'-0" S/S warm flare knockout drum, 100 psig @ 350°F design
- 12" flare header from the warm flare KO drum up to the flare stack inlet

The stainless steel "cold" flare header/system at the Lucid Energy RoadRunner gas plant consists of the following:

- 12" plant flare header up to the cold drain tank
- 54" ID x 30'-0" S/S cold drain tank, 150 psig @ 150/-200°F design
- 14" flare header from the cold drain tank to the flare stack inlet

Flare Stack/Tip Design

The flare tip is an air-assisted, sonic-tip flare that contains two, staged vane-axial blowers that allow the flare to achieve smokeless combustion for all relieving flow rates at 20% or less of the maximum design case outlined in the flare datasheet. The sonic-tip flare is designed to take as much pressure drop at the tip as possible because this not only improves performance, it also increases longevity of the tip itself. The reasoning behind this is that at a higher pressure, and thus higher exit velocity, the flame is more erect and does not lean on the tip and create a hot spot, which over time could cause failure. In addition to improved lifespan, the smokeless performance of the flare is aided by the higher exit velocity – so at full flow rates the flare will likely be 100% smokeless because the air mixes in better at the tip than it would if the flare gas was exiting at lower velocities. By sizing the flare to take the max pressure drop allowable, the flare riser piping is smaller, the tip is smaller and this leads to a more economical flare system.

Each flare riser also contains a velocity seal to reduce the amount of purge gas required to prevent oxygen intrusion into the flare header systems. Furthermore, each dead-leg in the overall plant flare header system contains a purge gas connection at the very end of these headers to ensure that all areas of the flare header maintain a constant sweep and positive pressure.

The flare contains a variable-speed vane axial blower (150 HP) operating on a VFD, where the blower speed ramps up and down depending on the flare gas header flow rate that is present. The blower on the flare is mostly required for lower flowrates where the velocity and operating pressure of the relieving fluids in the flare stack are much lower than the maximum relieving cases by which the tip and flare system were designed for. During these lower flow rate scenarios, much less air is induced by turbulent mixing at the flare tip due to the low pressure drop at the tip, and therefore the blower is needed to help keep the flare smokeless at reduced rates. The blower speed, and thus air flow capacity is controlled via flare header gas pressure vs. air flow control curves provided by Zeeco. These curves relate pressure in the flare gas header to the % Blower VFD that should be applied.

If the event that a simultaneous flaring event should occur in both gas headers (cold and warm flare headers), then the flow rate that is measured in each header is converted into its equivalent %VFD per the charts provided by Zeeco. These percentages are then summed together to give the final applied %VFD.

Summary of Maximum Flare Relief System Cases

The attached plant flare datasheet summarizes the maximum flow cases by which the flare stack and blower were sized for. The two controlling cases for the cold flare header were wide-open failure of the JT-valve (327,800 lb/hr flow) and an external pool fire around the NGL Surge Tank (200,756 lb/hr flow). Likewise, the controlling case for the warm flare header was an external fire around the Condensate Surge Tank (364,824 lb/hr flow) one of the Amine Contactor level control valves failure (210,253 lb/hr). The initial main flare header hydraulics was evaluated using these estimated relief loads to determine the required flare header diameters.

The process data identified on the flare stack datasheet was an up-front estimate of expected maximum relieving loads at the time of the flare stack purchase. However, the actual maximum relieving cases/loads that were analysed during detailed design were less than or very close to the capacity loads used to design the flare stack, thus confirming the flare stack and blowers contain adequate capacity to handle all relieving cases in the plant.

The following table is a summary of some of the largest relieving loads into the warm and cold flare headers that were determined during detailed design. The results of all cases that were evaluated will be included in the appendix of this report.

System	Relieving Case	Relieving Rate
Warm Flare	FIRE: Mole-Sieve Area	89,656 lb/hr
Warm Flare	FIRE: Amine HMO Heater	109,693 lb/hr
Warm Flare	Fire: Condensate Surge Tank Area	461,914 lb/hr
Warm Flare	Fire: Stabilizer Skid Area	221,816 lb/hr
Warm Flare	OPER: Refrig. Compressor Blocked Flow	221,526 lb/hr
Warm Flare	OPER: LV-1201 (or) LV-1202 Control Failure	210,253 lb/hr
Warm Flare	OPER: Demethanizer Overpressure CV Open	345,000 lb/hr
Cold Flare	OPER: PCV-402B (JT-Valve) Control Failure	327,800 lb/hr
Cold Flare	FIRE: NGL Product Surge Tank	268,265 lb/hr
Cold Flare	FIRE: UOP Process Skids Area	212,722 lb/hr

The flare header hydraulics of both main flare headers, all flare sub-headers, and individual relief valve discharge piping laterals were evaluated utilizing all expected relief loads to verify that the backpressure induced by a single or multiple relief valves of various types (conventional, balanced, pilot-operated) would not cause backpressure issues on the operation of the relief valves. Based on the reported flare study results, all sections of the warm and cold flare headers contain adequate hydraulic capacity to handle all of the relief loads from the various emergency scenarios that were evaluated. The flare header diameters and relief valve discharge piping laterals are of adequate diameter to prevent backpressure in the system from building up that would either exceed the backpressure limitations set forth by the relief valve type and/or the design/test pressures of the flare knockout drums, the main flare header piping, and the individual relief valve discharge piping laterals.

The maximum backpressure seen in the cold flare header at the Cold Drain Tank, V-403, occurs during a JT-Valve failure scenario (PCV-402B wide-open) that would overpressure the demethanizer tower. The backpressure at the Cold Drain Tank inlet nozzle is 8 psig, which is well below the 150 psig design pressure of this vessel. Likewise, the maximum backpressure seen in the warm flare header at the Warm Flare KO Drum, V-5000, occurs during a fire near the Condensate Surge Tan. The backpressure at the Warm Flare KO Drum inlet nozzle is 86 psig, which is below the 100 psig design pressure of this vessel.

Warm and Cold Flare Knockout Drum Performance

The primary and critical function of the flare knockout drums on the cold and warm flare headers is to separate and remove any incoming liquid streams in the flare header that are present during relieving events or if condensation occurs in the flare header during cold ambient temperatures. The main flare headers and all plant sub-headers contain a slope of 1” per 100 ft to ensure that the main headers remain devoid of liquid inventory that would cause liquid slugs and/or water hammer during high-load relieving events.

Per API 521, flare knockout drums are sized to remove a maximum droplet size of between 300-600 microns from the incoming fluid stream to prevent large quantities of liquid carryover to the flare tack/tip in the form of liquid droplets. Utilizing the terminal liquid velocity and horizontal gas flowing velocity equations outlined in API 521 and the GPSA Engineering databook, the attached results indicate that both the Warm Flare KO Drum, V-5000, and the Cold Drain Tank, V-403, are sufficiently sized to achieve separation of liquid droplets below the 600 micron limit established by API 521.

When the Warm Flare KO Drum contains a liquid level above its secondary high level switch alarm point (67% full), the vessel is still capable of removing 300 micron and larger diameter liquid droplets from the incoming fluid stream. The incoming fluid streams that were analysed for the liquid level vs. droplet removal for the Warm Flare KO Drum were the 364,824 lb/hr relieving flow created during an external fire near the Condensate Surge Tank. When the Cold Drain Tank contains a liquid level above its high level alarm point (67% full), the vessel is still capable of removing 500 micron and larger diameter liquid

droplets from the incoming fluid stream. The incoming fluid stream that was analysed for the liquid level vs. droplet removal for the Warm Flare KO Drum was the 327,800 lb/hr relieving flow created during a JT-valve failure.

Radiation Levels

During evaluation of the maximum design cases for flaring events, Zeeco was instructed to design the height of the flare to be such that a maximum radiation exposure level of 1,750 BTU/hr-ft^2 would be encountered at a ground-level point 100 feet away from the base of the flare. This specification takes into account a radiation intensity of 250 BTU/hr-ft^2 for solar radiation, and 1,500 BTU/hr-ft^2 radiation intensity for combustion at the flare tip during maximum relieving scenarios.

Based on the attached radiation isopleths supplied by Zeeco, there will be no relieving cases where radiation intensity in excess of 1,750 BTU/hr-ft^2 will be encountered at any point further than 100 feet away from the flare stack. Since the nearest piece of equipment to the flare stack is ~200 feet away (flare flow meters and platform), the radiation isopleths indicate that excessive radiation exposure will not be encountered during normal maintenance and routine operator rounds, with exception to inspecting the blower at the base of the flare.

Appendix B: Warm and Cold Flare Relieving Scenario Summary Sheets

SAULSBURY INDUSTRIES
2951 EAST INTERSTATE 20, ODESSA, TX 79766
TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.:	10231	REVISION:	1
CLIENT:	LUCID ENERGY GROUP	DATE:	8/30/2017
PROJECT:	ROADRUNNER GAS PLANT		
LOCATION:	EDDY COUNTY, NM	BY:	EMG/APL

COLD FLARE RELIEVING SCENARIOS SUMMARY

FIRE: NGL Product Surge Tank

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-404	Pilot	V-404 NGL Product Surge Tank	400	4" P 6"	268,265	301,251	6.360	6.380	1	200**	89	46	32	8.5

FIRE: UOP Process Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-202A	Pilot	E-202 Gas/Product Exchanger	1100	2" J 3"	10,000	189,012	0.145	1.287	0.005	200**	36	34	20	5
PSV-202B	Balanced	E-202 Gas/Product Exchanger	1440	1" D 1"	4,888	32,780	0.034	0.110	0.751	200**	35	34	20	5
PSV-206	Pilot	E-206 Reflux Condenser	1100	1" F 2"	28,804	31,852	0.296	0.307	5.589	200**	100	30	20	5
PSV-203	Pilot	E-203 Chiller	270	4" N 6"	83,326	157,460	2.153	4.340	0.016	200**	40	34	20	5
PSV-402	Pilot	V-402 Cold Separator	1100	2" J 3"	85,704	156,018	0.947	1.287	1.208	200**	120	32	20	5

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

OPER: PCV-402B (JT-Valve) Control Valve Failure

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-501	Pilot	T-501 Demethanizer	400	6" Q 8"	327,800	349,749	11.500	12.270	0.23	200**	29	20	8	2

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

OPER: E-203 Tube Rupture

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-203	Pilot	E-203 Chiller	270	4" N 6"	88,033	89,267	4.280	4.340	0.047	200**	31	9	5	0.6

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

OPER: E-202 Tube Rupture

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-202A	Pilot	E-202 Gas/Product Exchanger	1100	2" J 3"	87,224	91,044	1.233	1.287	0.574	200**	108	38	1	0.3

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

SAULSBURY INDUSTRIES
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TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.:	10231	REVISION:	1
CLIENT:	LUCID ENERGY GROUP	DATE:	
PROJECT:	ROAD RUNNER 200MMSCD CRYO		
LOCATION:	EDDY COUNTY, NM	BY:	APL/EMG

WARM FLARE RELIEVING SCENARIOS SUMMARY - FIRE CASES

FIRE: Refrigeration Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-462	Pilot	V-462 Refrigerant Economizer	270	1.5" F 2"	6,313	10,486	0.185	0.307	4.175	200**	10	6	4	0.7
PSV-463	Pilot	V-463 Refrigerant Accumulator	325	3" K 4"	44,846	65,617	1.256	1.838	1.728	200**	43	7	4	0.7

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

FIRE: Mole-Sieve Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-441	Conv.	F-441 Inlet Filter Coalescer	1100	1" D 1"	8,628	8,768	0.123	0.125	10.267	231	262	157	13	2.9
PSV-442	Balanced	V-442 Mole Sieve Dehydrator	1095	1.5" G 3"	23,891	29,672	0.405	0.503	4.975	200**	36	29	13	2.9
PSV-443	Balanced	V-443 Mole Sieve Dehydrator	1095	1.5" G 3"	23,891	29,672	0.405	0.503	4.975	200**	37	29	13	2.9
PSV-444	Balanced	V-444 Mole Sieve Dehydrator	1095	1.5" G 3"	23,891	29,672	0.405	0.503	4.975	200**	36	28	13	2.9
PSV-445	Conv.	F-445 Mole Sieve Dust Filter	1100	1" D 1"	3,638	7,656	0.059	0.125	0.255	231	182	168	13	2.9
PSV-446	Conv.	F-446 Mole Sieve Dust Filter	1100	1" D 1"	3,638	7,656	0.059	0.125	0.255	231	183	166	13	2.9
PSV-447	Pilot	V-447 Regen Gas Scrubber	1100	2" J 3"	2,079	84,749	0.032	1.287	10.273	260	43	40	13	2.9

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

FIRE: Amine HMO Heater

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-0801	Balanced	V-0801 Hot Oil Expansion Tank	150	4" M 6"	109,693	133,496	2.958	3.6	0.039	68	11	7	3	0.6

FIRE: Cryo HMO Heater

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-781	Pilot	H-781 HMO Expansion Tank	150	1.5" H 3"	29,658	39,398	0.591	0.785	3.069	150	39	38	1	0.2

FIRE: Inlet High Pressure Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-1225	Pilot	F-1225 Inlet Filter Coalescer	1100	1" E 2"	21,620	21,645	0.140	0.196	0.318	200**	48	3	1	0.1

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

SAULSBURY INDUSTRIES
2951 EAST INTERSTATE 20, ODESSA, TX 79766
TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.: 10231 REVISION: 1
CLIENT: LUCID ENERGY GROUP DATE:
PROJECT: ROAD RUNNER 200MMSCD CRYO
LOCATION: EDDY COUNTY, NM BY: APL/EMG

WARM FLARE RELIEVING SCENARIOS SUMMARY - FIRE CASES

FIRE: TEG Treating High Pressure Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-1275	Pilot	F-1275 TEG Filter Coalescer	1100	1" E 2"	12,771	14,034	0.161	0.196	0.464	200**	6	3	1	0.08

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

FIRE: Condensate Surge Tank

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-9060	Pilot	V-9060 Condensate Surge Tank	325	6" R 8"	364,824	291,076	12.0137	16.000	0.26365	200**	181	183	86	84
PSV-1403	Pilot	V-1403 Off-Spec Condensate Drum	325	2" J 3"	53,194	64,296	1.152	1.287	0.3582	200**	176	183	86	84
PSV-1001A	Pilot	F-1001A Condensate Filter	1100	1" D 2"	11,223	19,219	0.051	0.110	0.12693	200**	184	183	86	84
PSV-1001B	Pilot	F-1001B Condensate Filter	1100	1" D 2"	11,223	19,219	0.051	0.110	0.12693	200**	184	183	86	84
PSV-9501	Pilot	F-9500 Flash Gas Filter Coalescer	1200	1 1/2" F 2"	21,450	33,568	0.2002	0.307	0.792	200**	186	183	86	84

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

461,914

FIRE: Stabilizer Area

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-3101	Balanced	F-3101 Filter	325	1" D 2"	5,430	7,905	0.045	0.110	3.587	100	84	78	38	30
PSV-3102	Balanced	F-3102 Filter	325	1" D 2"	5,430	7,905	0.045	0.110	3.528	100	84	78	38	30
PSV-3202	Balanced	T-3202 Deethanizer Tower	325	3" J 4"	27,268	31,730	0.942	1.287	2.180	100	81	78	38	30
PSV-3201A	Balanced	E-3201 Feed/Bottoms Exchanger	325	1 1/2" F 2"	28,345	22,061	0.285	0.307	2.557	100	97	78	38	30
PSV-3201B	Balanced	E-3201 Feed/Bottoms Exchanger	325	1 1/2" F 2"	28,345	14,471	0.218	0.307	3.257	100	85	78	38	30
PSV-3301	Pilot	T-3301 Stabilizer Tower	325	4" L 6"	90,664	58,064	2.612	2.853	0.883	100	78	81	38	30
PSV-3702	Balanced	Stabilizer Feed Separator	325	3" J 4"	36,333	38,586	1.231	1.287	0.699	100	85	78	38	30

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

FIRE: Stabilizer HMO Expansion Tank

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-3501	Balanced	V-3501 Hot Oil Expansion Tank	150	2" H 3"	15,617	52,715	0.563	0.785	0.839	100	0.304	-1.316	0.5	0.1

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

FIRE: LPG Surge Tank

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2951 EAST INTERSTATE 20, ODESSA, TX 79766
TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.:	10231	REVISION:	1
CLIENT:	LUCID ENERGY GROUP	DATE:	
PROJECT:	ROAD RUNNER 200MMSCD CRYO		
LOCATION:	EDDY COUNTY, NM	BY:	APL/EMG

WARM FLARE RELIEVING SCENARIOS SUMMARY - FIRE CASES

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-3801	Pilot	V-3801 LPG Surge Tank	325	4" L 6"	88,783	105,217	2.39	2.853	1.461	100	17	18.2074	6.844	5.31
**Note: Backpressure limit set by design pressure of PSV discharge piping lateral														

FIRE: Flash Gas Compressors

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-9300	Pilot	C-9300 Flash Gas Compressor	400	1 1/2" H 3"	22,325	20,808	0.5744	0.785	0.323	100	36	8.9	2.47	2
PSV-9400	Pilot	C-9400 Flash Gas Compressor	400	1 1/2" H 3"	22,325	20,690	0.5744	0.785	0.326	100	42	8.9	2.47	2
**Note: Backpressure limit set by design pressure of PSV discharge piping lateral														

SAULSBURY INDUSTRIES
2951 EAST INTERSTATE 20, ODESSA, TX 79766
TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.: 10231 REVISION: 0
CLIENT: LUCID ENERGY GROUP DATE:
PROJECT: ROAD RUNNER 200MMSCD CRYO
LOCATION: EDDY COUNTY, NM BY: APL/EMG

WARM FLARE RELIEVING SCENARIOS SUMMARY - OPERATING CASES

OPER: E-207 Tube Rupture

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-207	Pilot	E-207 Trim Reboiler	150	4" P 6"	68,964	70,966	6.200	6.380	1.050	120	31	10	7	1.4

OPER: Refrigeration Compressor Blocked Flow

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-161	Pilot	C-161 Refrigerant Compressor	325	3" L 4"	73,842	79,506	2.552	2.853	1.779	200**	79	58	39	13
PSV-162	Pilot	C-162 Refrigerant Compressor	325	3" L 4"	73,842	79,506	2.552	2.853	1.913	200**	80	60	39	13
PSV-163	Pilot	C-163 Refrigerant Compressor	325	3" L 4"	73,842	79,506	2.552	2.853	2.086	200**	75	61	39	13

**Note: Backpressure limit set by design pressure of PSV discharge piping lateral

OPER: LV-1201/1202 Control Valve Failure**

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-0101	Pilot	V-0101 Amine Flash Tank	150	FB, 6" x 8"	210,253	268,644	16.099	20.570	0.432	120	91	70	48	18

**Note: The sizing scenario only considers one of the Amine Contactor Level Control Valves (LV-1201 OR LV-1202) to fail open, allowing gas blow-by. Accounting for failure of both valves would be considered a double jeopardy scenario and therefore invalid.

OPER: LV-2701 Control Valve Failure

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-2101	Pilot	V-2101 Glycol Flash Separator	150	3" J 4"	9,675	14,781	0.936	1.287	0.108	120	2.5	0.8	0.3	0.1

OPER: Regen Gas Heater Thermal

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-741	Conv.	H-741 Regen Gas Heater	1095	1" D 1"	6,000	6,637	0.113	0.125	5.321	110	112	6.8	0.1	0.1

OPER: PV-481 Control Valve Failure (Fuel Gas Scrubber Overpressure)

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-481	Balanced	V-481 Fuel Gas Scrubber	265	1.5" D 3"	1,062	2,081	0.056	0.110	0.159	132	1	0.1	0.1	0.1

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TEXAS REGISTERED ENGINEERING FIRM F-518

FLARE STUDY

JOB NO.:	10231	REVISION:	0
CLIENT:	LUCID ENERGY GROUP	DATE:	
PROJECT:	ROAD RUNNER 200MMSCD CRYO		
LOCATION:	EDDY COUNTY, NM	BY:	APL/EMG

WARM FLARE RELIEVING SCENARIOS SUMMARY - OPERATING CASES

OPER: A-361 Bay Shutdown

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
1" Gate Valves	N/A	A-361 Refrigerant Condenser	230	1" GV	355	N/A	N/A	N/A	1.459	210	114	0.1	0.1	0.1

OPER: V-9060 OH Blocked

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PV-9060B	N/A	V-9060 Condensate Surge Tank	275	3" bv	355	N/A	N/A	N/A	0.018	210	114	0.1	0.1	0.1

OPER: Flash Gas Compressors Blocked Flow (Control Failure)

PSV	PSV Type	Equipment	Set Pressure (psig)	Size	Required Rate (lb/hr)	PSV Capacity (lb/hr)	Required Orifice (in^2)	Installed Orifice (in^2)	Inlet Piping DP (psi)	Back Pressure Limit (psig)	Back Pressure at PSV (psig)	Back Pressure at Header (psig)	Back Pressure at KO Drum (psig)	Back Pressure at Flare Base (psig)
PSV-9301	Pilot	Flash Gas Compressors Header	400	3" K 4"	54,205	31,353	1.546	1.828	0.052	320	51	39.2	15.7	4.5

Saulsbury Industries
SAULSBURY Corporate Office: 2951 E Interstate 20, Odessa, TX 79766 · P: 432-366-3686 · F: 432-368-0061

Appendix C: Warm and Cold Flare Knockout Drum Sizing Sheets

Separator Design	Flare KO Drum					
Unit	OPER: LV-1201 Control Failure					
Basis	Highest Individual Flow Plus			0%	Overdesign	
Flow Rates	Gas	110	mmscfd		Vessel ID	72 Inch
	Oil	1000	bpd		Vessel S/S	30.000 Ft
	Water	1000	bpd			
	Total Liq	2000	bpd			
Operating Pressure		48	psig			
Gas Compressibility		0.808				
Gas MW		23.0017				
Gas Temperature		90	F			
Bulk Liquid Retention		20	Minutes			
Surge Capacity (NLL to HLL)		0%	of Design Liquid Capacity including Overdesign			
Oil SpGr		1.024				
Liquid Volume (Percentage)		67%		Liquid Flow	58.3	GPM
Vessel Crossectional Area		28.274	SqFt	Bulk Liquid Volume	1166.7	Gallons
Available Crossectional Area		9.331	SqFt	Bulk Liquid Volume	156.0	CuFt
Gas Density		0.302	Lb/CuFt	Minimum Liquid Area	5.198	SqFt
Gas Flow		277798	Lb/Hr	Surge Area Required	0.000	SqFt
Gas ACFS		255.269	Ft3/Sec at TP			
Droplet Size	300	Micron				
	0.0009843	ft				
Gas Viscosity	0.0134	cP				
Drag Coefficient						
"X" Axis on Fig 5-19 GPSA	9.700					
From Chart, Drag Coef, C	2.00		**Figure 5-19 to determine droplet drag coefficient			
Drop Terminal Velocity	2.0998	ft/s	**Eq. 7-1 GPSA			
Distance for Droplet to Fall	23.76	Inches				
Time for Droplet to Fall	0.94	Seconds				
Gas Horizontal Velocity	9.03	ft/s				
Horiz. Distance for Gas Travel	28.00	ft	**Seam to seam length of vessel minus 2 feet			
Time for Gas to Travel	3.10	Seconds	**This number must be GREATER THAN "time for droplet to fall from mist eliminator" value so gas can fall into liquid phase before reaching the end of the vessel where gas outlet nozzle is located			

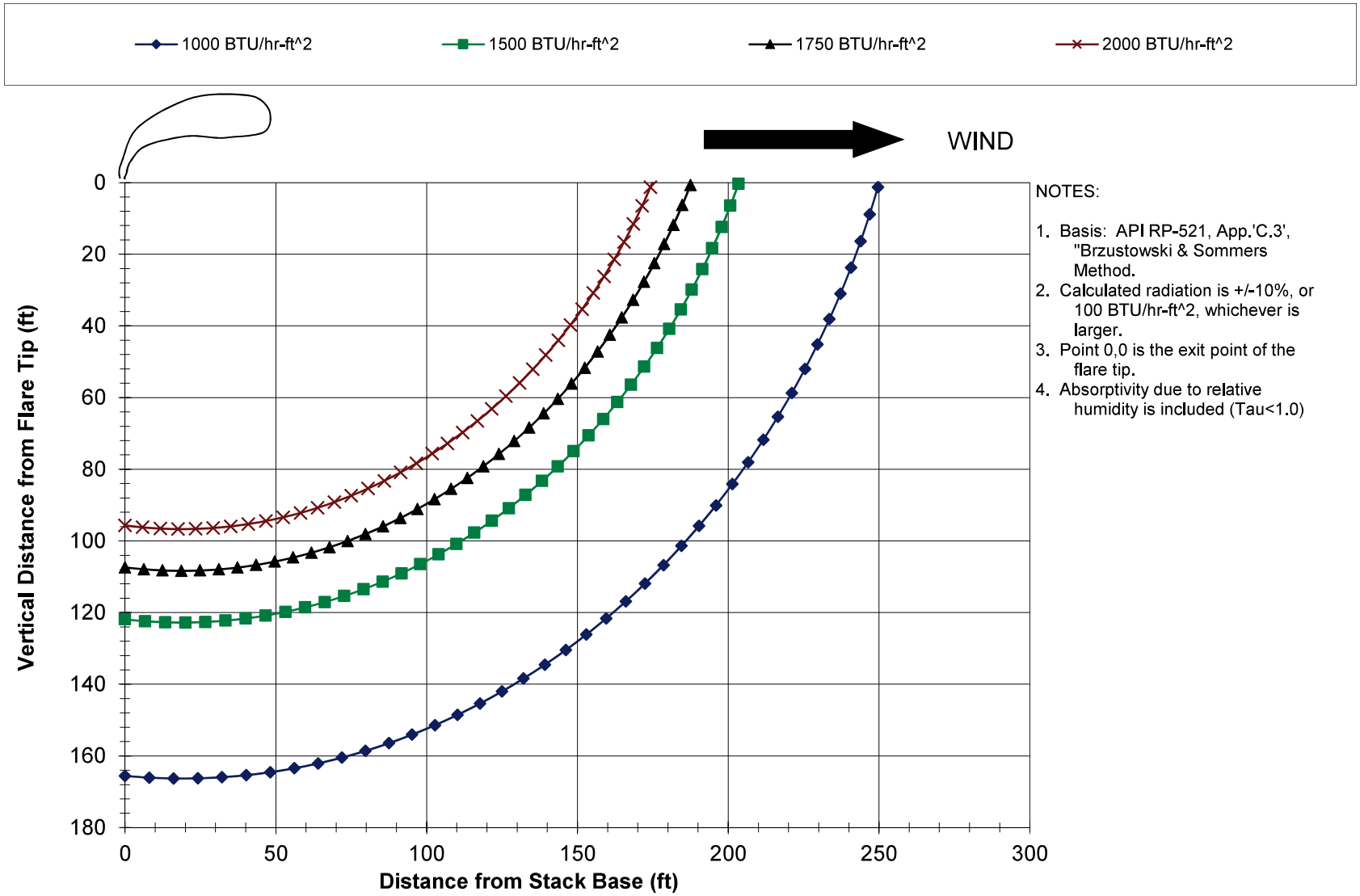
If the Horizontal Time Exceeds Vertical Time, Design is met or exceeded.

Separator Design	Cold Flare KO Drum					
Unit	OPER: PCV-402B JT-Valve Failure					
Basis	Highest Individual Flow Plus			0%	Overdesign	
Flow Rates	Gas	101.643	mmscfd		Vessel ID	54 Inch
	Oil	1616	bpd		Vessel S/S	30.000 Ft
	Water	0	bpd			
	Total Liq	1616	bpd			
Operating Pressure		32	psig			
Gas Compressibility		0.808				
Gas MW		18.16				
Gas Temperature		-88	F			
Bulk Liquid Retention		24.2	Minutes			
Surge Capacity (NLL to HLL)		0%	of Design Liquid Capacity including Overdesign			
Oil SpGr		0.537				
Liquid Volume (Percentage)		63%			Liquid Flow	47.1 GPM
Vessel Crossectional Area		15.904	SqFt		Bulk Liquid Volume	1140.6 Gallons
Available Crossectional Area		5.885	SqFt		Bulk Liquid Volume	152.5 CuFt
Gas Density		0.263	Lb/CuFt		Minimum Liquid Area	5.082 SqFt
Gas Flow		202661	Lb/Hr		Surge Area Required	0.000 SqFt
Gas ACFS		214.197	Ft3/Sec at TP			
Droplet Size	300	Micron				
	0.0009843	ft				
Gas Viscosity	0.012	cP				
Drag Coefficient						
"X" Axis on Fig 5-19 GPSA	5.497					
From Chart, Drag Coef, C	1.20		**Figure 5-19 to determine droplet drag coefficient			
Drop Terminal Velocity	2.1020	ft/s	**Eq. 7-1 GPSA			
Distance for Droplet to Fall	18	Inches				
Time for Droplet to Fall	0.71	Seconds				
Gas Horizontal Velocity	36.40	ft/s				
Horiz. Distance for Gas Travel	28.00	ft	**Seam to seam length of vessel minus 2 feet			
Time for Gas to Travel	0.77	Seconds	**This number must be GREATER THAN "time for droplet to fall from mist eliminator" value so gas can fall into liquid phase before reaching the end of the vessel where gas outlet nozzle is located			

If the Horizontal Time Exceeds Vertical Time, Design is met or exceeded.

Appendix D: Flare Radiation Isopleths

Zeeco Ref: SO 31927 Rev. 1
Flare Radiation Isopleths
Solar Radiation Included = 0 BTU/hr-ft2; Wind Speed = 30 ft/s; Rel. Humidity = 85%
Flare Tag No. = FL-5100 ; Operating Case = Cold Case 1

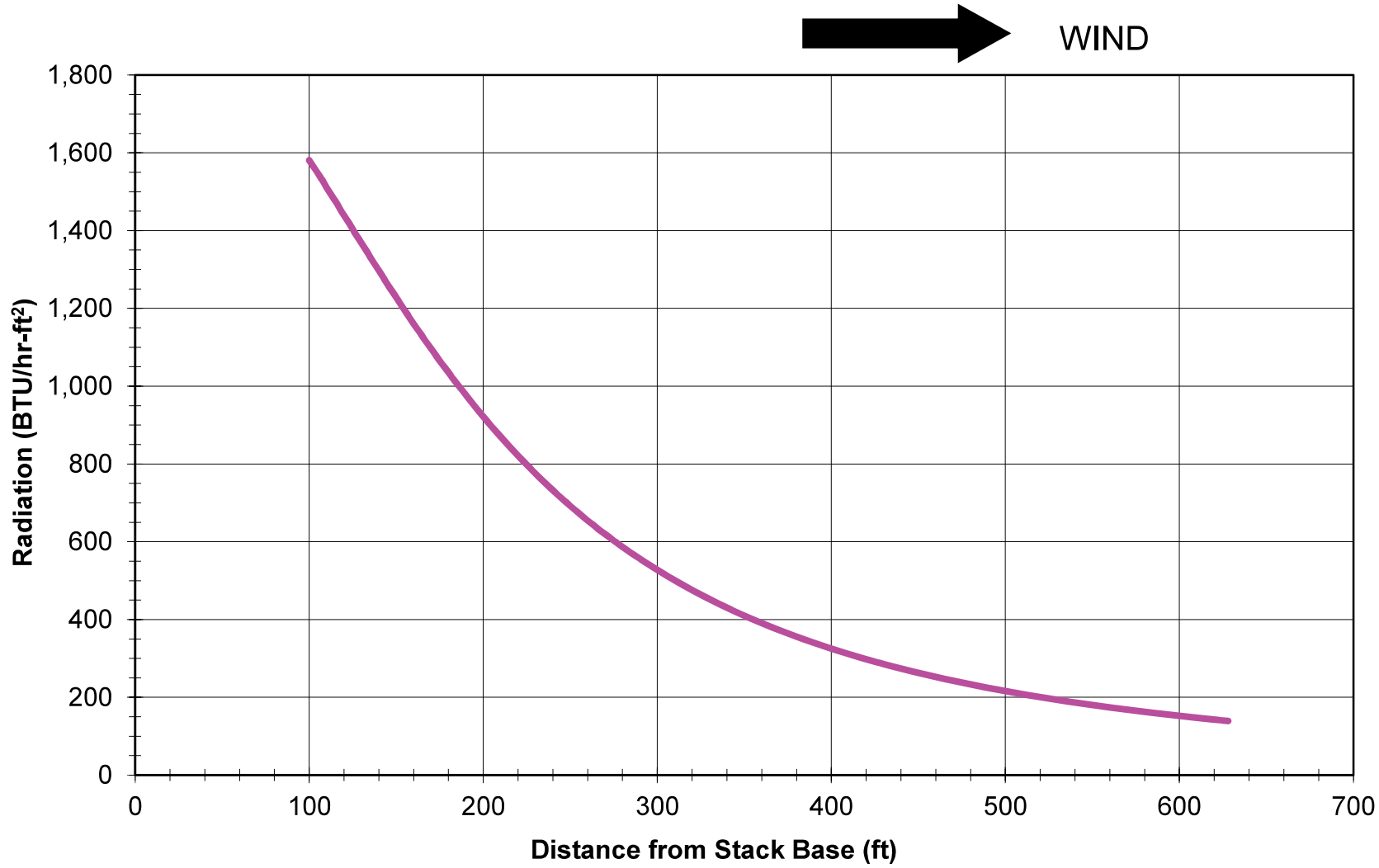


NOTES:

1. Basis: API RP-521, App.'C.3', "Brzustowski & Sommers Method.
2. Calculated radiation is +/-10%, or 100 BTU/hr-ft^2, whichever is larger.
3. Point 0,0 is the exit point of the flare tip.
4. Absorptivity due to relative humidity is included (Tau<1.0)

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Zeeco Ref: SO 31927 Rev. 1
Radiation At Grade Versus Distance From Stack Base
Stack Height = 100 ft ; Relative Humidity = 85%
Solar Radiation Included = 0 BTU/hr-ft^2 ; Wind Speed = 30 ft/s
Flare Tag No. = FL-5100 ; Operating Case = Cold Case 1



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Appendix E: Misc. Flare Information

Air Assisted Flare Tip Specification Sheet

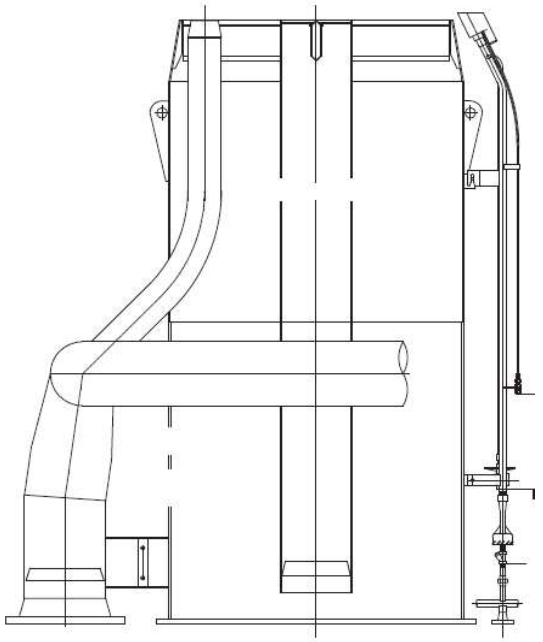
Client:	Saulsbury	Zeeco Ref.:	2017-01312FL-01	Date:	16-Mar-17
Location:	Loving, NM	Client Ref.:	0	Rev.	0

General Information:

Tag No.:	FL-5100		
Model:	AFDSMJ-16-14/58	Type:	Air-Assisted
Length:	10'- 0 "		
Weight:	5000 lbs		
No. of Pilots:	3		

Design Case:

Governing Case:	Cold Case 1	
Molecular weight:	17.6	
L. H. V. :	979	BTU/SCF
Temperature:	-127	Deg. F
Available Static Pressure:	25.0	psig
Design Flow Rate:	392,000	lbs/hr
Governing Smokeless Case:	Warm Case 1	
Design Smokeless Rate:	0	lbs/hr
Approximate Exit Velocity:	1133	ft/s
Mach No.:	1.00	
Approx. Tip Press. Drop:	29.50	psig



(Typical drawing only)

Construction:

Upper Section:	310 SS	Windshield:	YES
Lower Section:	Carbon Steel	Flame retention Ring:	310 SS
		Lifting Lugs:	YES - C.S. Type

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 - Cold Gas Inlet:	1	16 "	150# RFWN	304 SS
N2 - Combustion Air Inlet:	1	58 "	Fab. Plate Flange	Carbon Steel
N3 - Warm Gas Inlet:	1	14 "	Beveled ; Weld	Carbon Steel
N4 - Pilot Gas Manifold:	1	1 "	150# RFSW	Carbon Steel

Miscellaneous Notes:

1. Includes Integral Purge Reducing Velocity Seal.
2. Warm Flare Required Fuel Gas Purge Rate = 290 SCFH.
3. Cold Flare Required Fuel Gas Purge Rate = 980 SCFH.

Note: Please refer to process conditions for all flare design conditions.

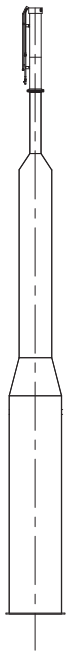
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Self-supported Flare Stack Specification Sheet

Client:	Saulsbury	Zeeco Ref.:	2017-01312FL-01	Date:	16-Mar-17
Location:	Loving, NM	Client Ref.:	0	Rev.:	0

General Information:

Tag No.:	FL-5100
Overall Height:	100'- 0 "



(Typical drawing only)

Design Criteria:

Wind Design Code:	ASCE 7-05	
Seismic Design Code:	UBC	
Importance Factor:	1.00	
Structural Design Code:	AISC	
Wind Speed (Structural):	120	mph
Seismic Zone:	1	
Warm Min/Max. Design Temp:	-20 / 350	Deg. F
Cold Min/Max. Design Temp:	-150 / 350	Deg. F
Design Pressure:	50	psig
Riser Corrosion Allow.:	0.063	in.

Construction:

Air Riser Diameter:	58"	Ladders & Step-offs:	None
Cold Riser Diameter:	16"	Platform at Tip:	None
Warm Riser Diameter:	14"	Additional Platforms:	None
Air / Warm Riser Material:	CS	ACWL:	None
Cold Riser Material:	304 SS		

Surface Finish (Carbon Steel Surfaces):

Surface Preparation:	SSPC-SP-6	Primer:	Inorganic Zinc
Int. Coat:	None	Finish Paint:	None

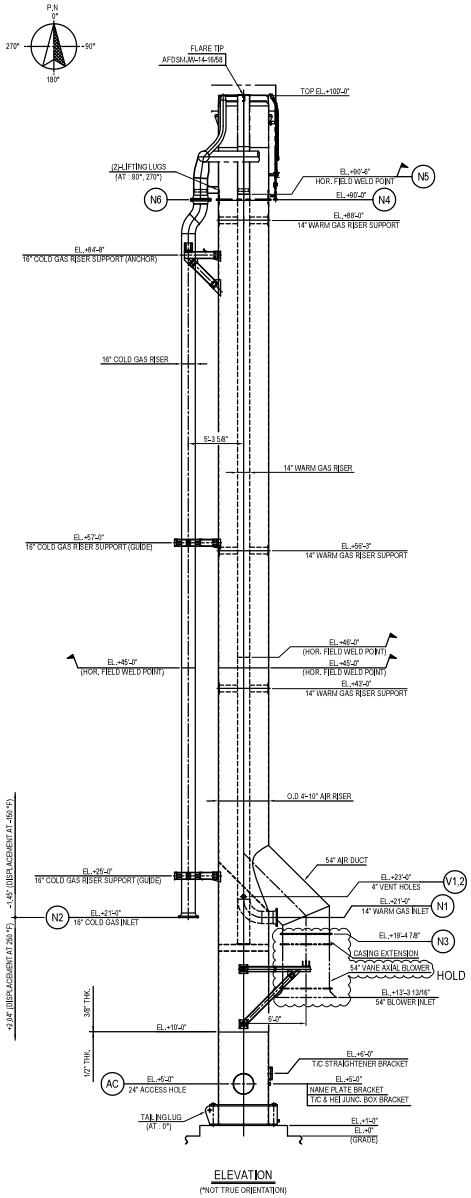
Utility Piping:

Per Attached Utility Piping Scope of Supply

Miscellaneous Notes:

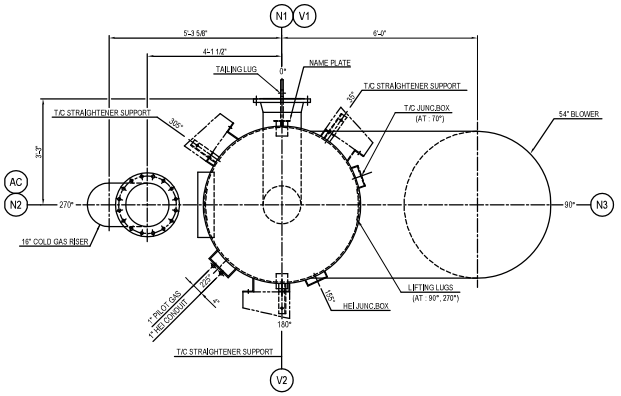
1. Vane Axial blower mounted at base of stack
2. Blower Power Available: 460 V, 3 Ph, 60 Hz
3. Elevation considered for blower sizing: 3,051 feet. Ambient temp considered: 20 / 100 F
4. See GA attached for duplicate flare system.

Confidential and Proprietary



ELEVATION

(*NOT TRUE ORIENTATION)

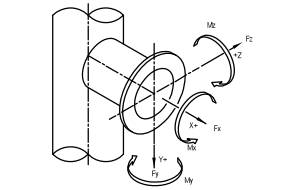


PLAN LAYOUT

TEMPERATURE	DISPLACEMENT
COLD (-150 °F)	1.45"
HOT (250 °F)	2.04"

NOZZLE THERMAL DISPLACEMENT

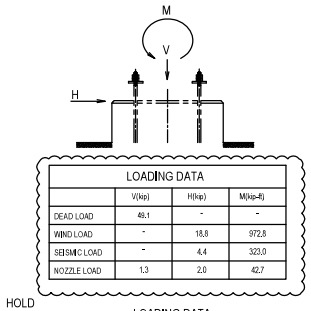
(FOR N2 NOZZLE)



NOZZLE MARK	Fx	Fy	Fz	Mx	My	Mz
	lb	lb	lb	lb-ft	lb-ft	lb-ft
14	315	9	-687	2112.3	340.0	651.9
16	500	800	800	1140	850	850

MAX. ALLOWABLE INLET NOZZLE LOAD

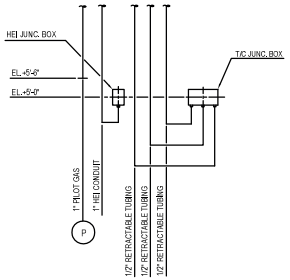
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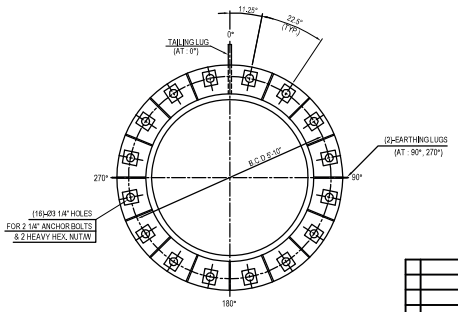
LOADING DATA	V(kip)	H(kip)	M(kip-ft)
DEAD LOAD	48.1	-	-
WIND LOAD	-	18.8	972.8
SEISMIC LOAD	-	4.4	323.0
NOZZLE LOAD	1.3	2.0	42.7

LOADING DATA

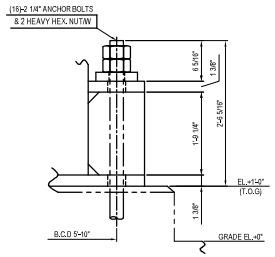
(FOR STACK RISER)



DETAIL OF UTILITY PIPING



ANCHOR PLAN



ANCHOR PROJECTION

MATERIAL SPECIFICATIONS	
WARM GAS RISER	A53-B ERW.
COLD GAS RISER	A312-TP304
AIR RISER	A36
FLARE TIP	SEE FLARE TIP DWG.
WARM GAS RISER FLANGE	A105
COLD GAS RISER FLANGE	A182-F304
AIR RISER FLANGE	A36
RISER GASKET	C4401
BASE PLATE	A36
EARTHING LUG	304 S.S
UTILITY LINE	A106-B
CONDUIT	C.S + GALV.
RETRACTABLE T/C TUBING	316L S.S
NAME PLATE	304 S.S
NAME PLATE BRACKET	A36
LIFTING LUG	A36
TAILING LUG	A36
STRAIGHTENER SUPPORT	A36
ANCHOR BOLT	A307-C
BOLT/NUT (C.S)	A193-B7 / A194-2H
BOLT/NUT (S.S)	A320-B8 / A194-8

DESIGN DATA			
TYPE		SELF SUPPORTED	
STRUCTURAL DESIGN CODE		ASME STS-1 / AISC	
WIND LOAD	CODE	ASCE 7-05	
	V	120	m
	EXP.	C	
	I.F	1.0	
SEISMIC LOAD	CODE	UBC-97	
	ZONE	1	
	SOIL TYPE	SD	
	I.F	1.25	
DESIGN PRESS.	WARM	50	P.I
	COLD	50	P.I
	AIR	ATM	
DESIGN TEMP.	WARM	-20 ~ 350	
	COLD	-150 ~ 350	
	AIR	AMB	
OPERATING PRESS.	WARM	10 ~ 20	P.I
	COLD	15 ~ 25	P.I
	AIR	ATM	
OPERATING TEMP.	WARM	140 ~ 300	
	COLD	-127 ~ 91	
	AIR	AMB	
NDE		AS PER ITP	
CORROSION ALLOWANCE	C.S	1/16	inc
	S.S	N/A	
PAINTING		SEE NOTE 2	

NOZZLE AND CONNECTIONS

MARK	QTY	SIZE	SCH.	RATING	FACING	FLG. MATL	MATERIAL NOZZLE	SERVICE
N1	1	14"	STD.	ASME 150#	RF, WN	A105	A53-B ERW	WARM GAS INLET
N2	1	16"	10S	ASME 150#	RF, WN	A182-F304	A312-TP304	COLD GAS INLET
N3	1	54"	3/8" THK.	3/4" THK. PLATE FLG	FF	A36	A36	AIR INLET
N4	1	58"	3/8" THK.	3/4" THK. PLATE FLG	FF	A36	A36	AIR OUTLET
N5	1	14"	STD.	PIPE END	B.W	-	A53-B ERW.	WARM GAS OUTL
N6	1	16"	10S	ASME 150#	RF, WN	A182-F304	A312-TP304	COLD GAS OUTLE
V1,2	2	4"	40	-	-	-	A53-B ERW.	VENT HOLE
AC	1	24"	3/8" THK.	-	-	-	A36	ACCESS HOLE
P	1	1"	STD.	ASME 150#	RF, SW	A105	A106-B	PILOT GAS

NOTE

1. FLANGE BOLTING TO STRADDLE CENTERLINES INDICATED BY CENTERLINE UNLESS NOTED OTHERWISE.
2. PAINTING
   1) AIR RISER (EXTERNAL CARBON STEEL SURFACE)
      - SURFACE PREPARATION : SSPC-SP6
      - PRIMER : INORGANIC ZINC (DFT : 2-4 MILS)
      - FINISH : HIGH HEAT ALUMINUM (DFT : 1-1.5 MILS)
   2) AIR RISER SKIRT (INTERNAL CARBON STEEL SURFACE)- PRIMER ONLY
      - SURFACE PREPARATION : SSPC-SP6
      - PRIMER : INORGANIC ZINC (DFT : 3-4 MILS)
   3) WARM GAS RISER (EXTERNAL CARBON STEEL SURFACE)- PRIMER ONLY
      - SURFACE PREPARATION : SSPC-SP6
      - PRIMER : INORGANIC ZINC (DFT : 2-4 MILS)
   4) COLD GAS RISER : NO PAINT
   5) UTILITY (EXTERNAL CARBON STEEL SURFACE)- PRIMER ONLY
      - SURFACE PREPARATION : SSPC-SP6
      - PRIMER : INORGANIC ZINC (DFT : 2-4 MILS)
3. ALL PIPING 2" & SMALLER WILL BE SUPPLIED IN RANDOM LENGTH FOR FIELD ASSEMBLY.

REFERENCE DRAWING NO.	DESCRIPTION
SD-6776	AFDSMJW-14-16/58 TIP ASSEMBLY
SD-6783	RETRACTABLE T/C TUBING DETAIL
SD-6782	CONDUIT DETAIL
SD-6781	PIPING DETAIL
SD-6780	PIPING ARRANGEMENT
SD-6779	RISER DETAIL
SD-6778	TEMPLATE

NO.	DATE	REVISION DESCRIPTION	BY	CKD	APP.

ZEECO, INC.
2740 EAST 51st STREET
BROKEN ARROW, OK 74014
PHONE (918) 258-8822
FAX (918) 251-4519

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JOBSITE: LOVING, NM

END USER: SAULSBURY INDUSTRIES

S.O. NO.: 31927 | P.O. NO.: 10231-78352 | APP: AMZ

SELF SUPPORTED FLARE STACK GENERAL ARRANGEMENT & LOADING DATA

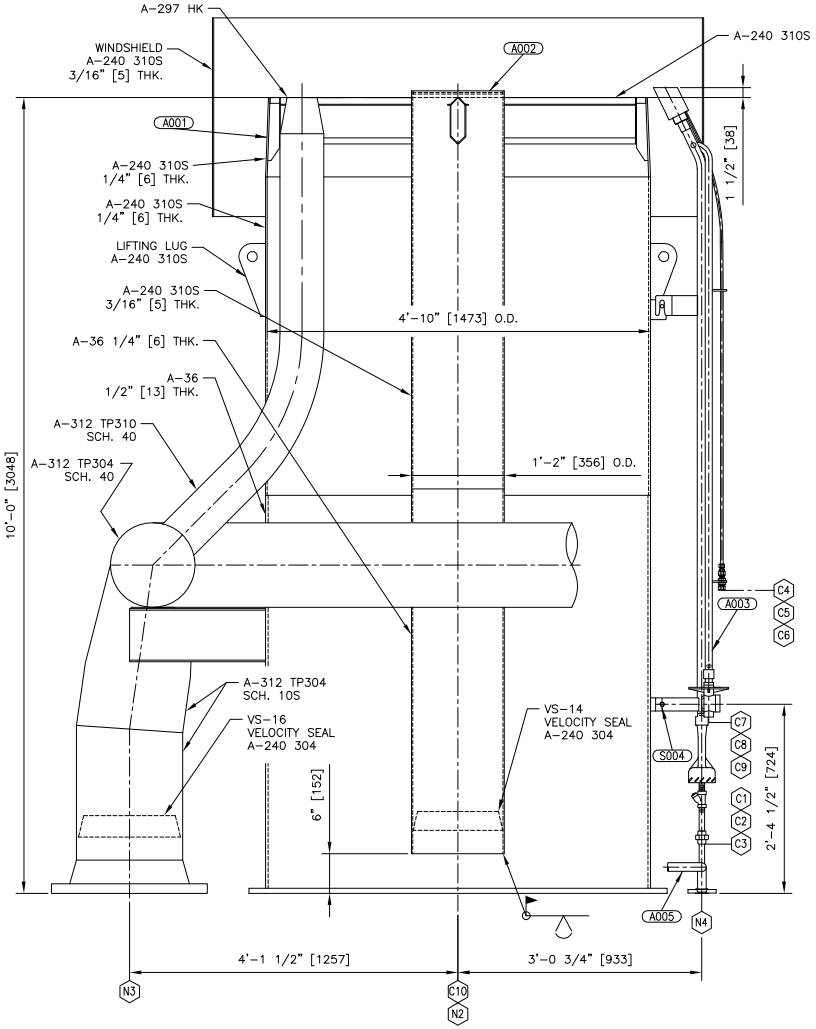
(TAG: FL-5100)

FOR: LUCID ROAD RUNNER

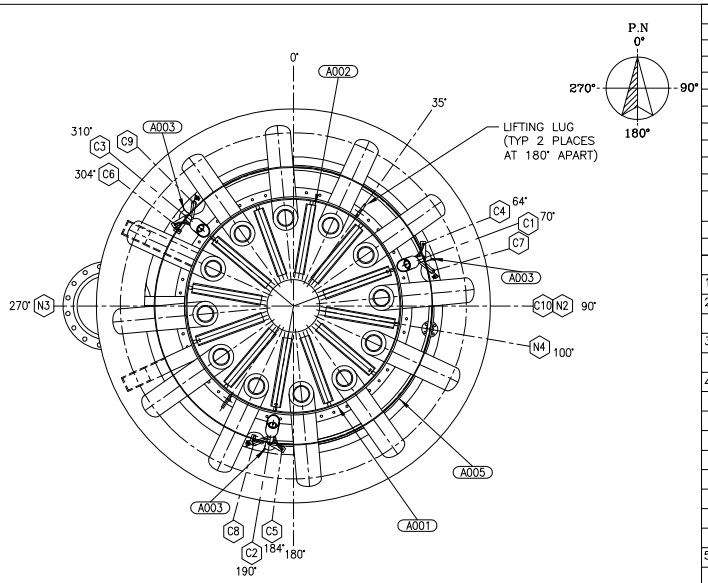
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CHK	APP
KJL	CJ
SCALE	REV
NONE	0

DRAWING NUMBER: SD-5777

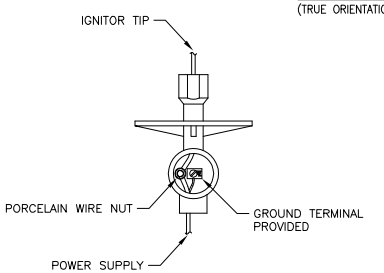
SHT. 1 OF 1



ELEVATION VIEW
(PORTIONS ROTATED FOR CLARITY)



PLAN VIEW
(TRUE ORIENTATION)



HEI CONNECTION

ZEECO, INC.
Tulsa, Oklahoma USA
Combustion and Environmental Solutions. Pure and Simple.®

AFDSMJW-14-16/58 FLARE TIP ASSEMBLY
TAG: FL-5100
P.O. 10231-78352
2017 — YEAR BUILT
31927 — S.O. NUMBER
For parts & service: +1-918-258-8551 / sales@zeeco.com

ZEECO NAMEPLATE

Item	QTY	Description	P/N
A001	1	AFDSMJW-14-16/58 PLENUM ASS'Y	KC-6504-A001
A002	1	AFDSMJW-14-16/58 CENTER ASS'Y	KC-6505-A002
A003	3	HSLF-Z-HEI-RT/C PILOT ASS'Y	MB-4280-A003
		COMPLETE WITH:	
		HEI IGNITION PROBE	
		THERMOCOUPLE (SEE DATASHEET)	
		HSLF-Z MIXER BODY (A-743 CF3M)	
		HSLF-Z MIXER SPUD (316 SS)	
		STRAINER W/PLUG (A-743 CF8M)	
S004	3	HEAVY HEX BOLT: 1/2-13UNC X 1 1/2" LG. (A-193 B8M)	080-001-0069
		W/ HEAVY HEX NUT: 1/2-13 UNC (A-194 GR. 8M)	081-001-0135
A005	1	PILOT MANIFOLD ASS'Y	KC-6506-A005

– NOTES –

1. PILOT MIXER ORIFICE DRILLED: 3/64"ø [1.19 mm]
2. PILOT GAS CONSUMPTION: 65 SCFH @ 15 PSIG PER PILOT [1.74 Nm^3/HR @ 1.05 kg/cm^2 g]
3. PILOT ORIFICE DRILLING BASED ON 1000 BTU/SCF (LHV) [9407 $kcal/Nm^3$] GAS WITH 0.6 SP. GR.
4. WARM GAS FLARE REQUIRES A MINIMUM CONTINUOUS PURGE RATE OF 290 SCFH [7.77 Nm^3/HR] AND THE COLD GAS FLARE REQUIRES A MINIMUM CONTINUOUS PURGE RATE OF 980 SCFH [26.25 Nm^3/HR] OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES TO ENSURE AIR DOES NOT MIGRATE DOWN THE FLARE STACK. IT SHOULD BE NOTED THAT DEPENDING UPON THE TURNDOWN OPERATION OF THE FAN AND THE TYPE OF PURGE GAS USED IT MAY BE NECESSARY TO INCREASE THIS MINIMUM PURGE RATE TO ENSURE PROPER COMBUSTION OF THE PURGE GAS DURING IDLE OPERATION.
5. ALL FLARE TIP LIFTING LUGS ARE DESIGNED FOR VERTICAL LIFTS ONLY, NO HORIZONTAL LIFTS OR SIDE LOADS ARE PERMITTED. LUGS ARE INTENDED FOR THE INITIAL INSTALLATION OF ALL FLARE TIPS AND PILOTS ONLY. LIFT LUGS ARE IN THE HEAT AFFECTED ZONE OF ALL FLARE TIPS AND ARE INTENDED TO BE REMOVED BEFORE OPERATION. IF LIFT LUGS ARE USED FOR SUBSEQUENT LIFTS, THEY SHOULD BE THOROUGHLY INSPECTED BY A QUALIFIED INSPECTOR AND DYE PENETRANT TESTS OF 100% OF THE WELDS ATTACHING THE LUGS TO THE FLARE TIP SHELL SHOULD BE PERFORMED
6. ALL FLANGE BOLTING TO STRADDLE NORMAL CENTERLINES.
7. ALL EXTERNAL CARBON STEEL SURFACES TO BE PREPARED PER SSPC-SP6. PRIME WITH ONE COAT INORGANIC ZINC AMERON DIMETCOTE 9 (2-4 MILS DFT MIN.). PAINT ONE COAT SILICONE ENAMEL ALUMINUM (LASTER CASTER LOCK-COAT 9814 ALUMINUM) (1-1.5 MILS DFT MIN.). FINISH COLOR: ALUMINUM
8. ALL TESTING PER INSPECTION TEST PLAN DOCUMENT NO. 31927-4010
9. THE PILOT THERMOCOUPLE IS FOR ON/OFF INDICATION ONLY, NOT FOR ACCURATE MEASUREMENT OF THE PILOT FLAME TEMPERATURE.
10. WHEN INSTALLING THE CENTER ASSEMBLY THE GAS EXIT ARMS MUST BE CENTERED ON THE PILOT AS PER THE PLAN VIEW.
11. APPROXIMATE WEIGHT FOR FLARE TIP ASS'Y: 7,039 LBS [3193 KG]
12. APPROXIMATE WEIGHT FOR EACH PILOT: 100 LBS. [45 KG]

– REFERENCE DRAWINGS –

SD-5777	GENERAL ARRANGEMENT
WC-9055	HEIC-3-T/S IGNITION SYSTEM
YA-2821	P & I DIAGRAM FOR FLARE SYSTEM

– NOZZLE LEGEND –

ITEM	SERVICE	SIZE	RATING	TYPE	SCH/BORE	FLG. MAT'L
C10	WARM GAS INLET	14"	N/A	BW	13 1/2"	A-36
N2	PLENUM AIR INLET	63" O.D. X 3/4" THK. X 58 1/4" I.D. W/ (52) 7/8"ø HOLES ON A 60 1/2" B.C. EQU. SPCD.				A-36
N3	COLD GAS INLET	16"	150#	RFWN	S/10S	304 SS
N4	PILOT GAS MANIFOLD INLET	1"	150#	RFSW	S/40	A-105
C1/C2/C3	PILOT GAS INLET	1/2"	3000#	SW UNION	S/40	304 SS
C4/C5/C6	RT/C CONNECTION	1/2"	N/A	TUBING	N/A	316L SS
C7/C8/C9	HEI CONNECTION	3/4"	N/A	FNPT	N/A	CF3M

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
0	02JUN17	ISSUED FOR APPROVAL	MKN	GDH	BP

JOBSITE: LOVING, NM
END USER: LUCID ENERGY
S.O. NO.: 31927 | P.O. NO.: 10231-78352 | APP AMZ

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
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www.zeeco.com
sales@zeeco.com

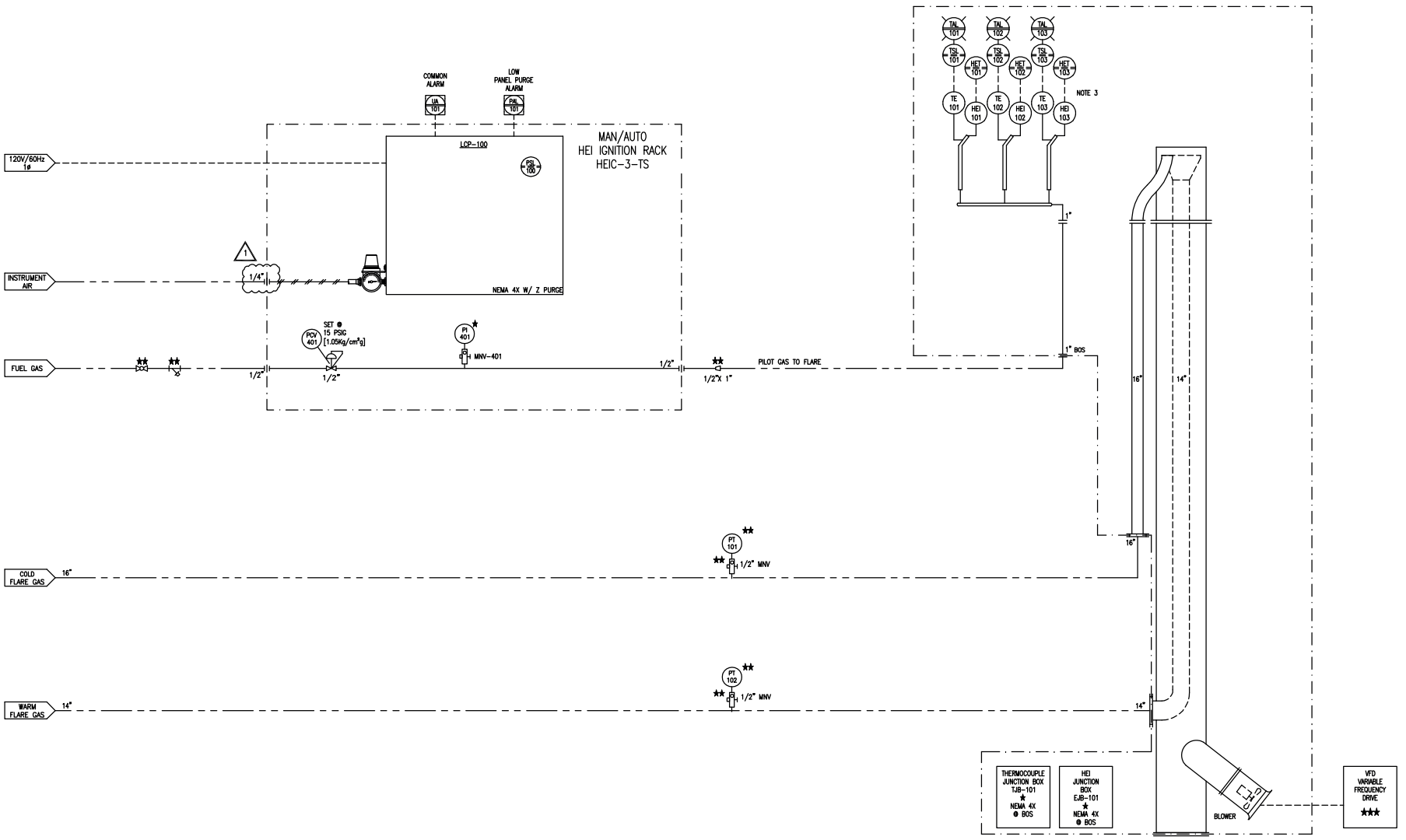
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AFDSMJW-14-16/58
FLARE TIP ASSEMBLY
TAG: FL-5100

FOR: SAULSBURY INDUSTRIES

DRAWN MKN | DATE 02JUN17
CHK GDH | APP BP
SCALE NONE | REV 0
DRAWING NUMBER SD-5776 SHT. 1 OF 1

6/6/2017 7:39:50 AM
Mkn
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6/6/2017 11:48:53 AM
Doug M. Wade



LEGEND

- ELECTRICAL SIGNAL
- PIPING / DUCTING (BY OTHERS)
- BY ZECO
- 316SS TUBING & FITTINGS (HOKE OR EQUAL) 1/4" UNLESS NOTED OTHERWISE
- ★ ITEMS SHIPPED LOOSE
- ★★ ITEMS SUPPLIED BY OTHERS
- ★★★ MOTOR CONTROL CENTER AND MOTOR STARTER BY OTHERS

- DCS-DISTRIBUTED CONTROL SYSTEM
- LOCAL MOUNTED
- MOUNTED ON LOCAL PANEL
- MOUNTED INSIDE LOCAL PANEL
- LOGIC DEVICE/PLC

NOTES:

1. CLASSIFICATION 1, DIVISION 2 GROUP C,D T2B.
2. THERMOCOUPLES ARE TYPE K, RETRACTABLE.
3. THERMOCOUPLE/HEI WIRING BETWEEN JUNCTION BOXES AT BASE OF 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.

FOR INFORMATION ONLY

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
1	08JUN17	PER ENGINEERING	MCM	BGB	MAA
0	30MAY17	ISSUED FOR APPROVAL	DWB	BGB	MAA

JOBSITE: LOVING, NEW MEXICO
END USER: LUCID ENERGY
S.O. NO.: 31927 | P.O. NO.: 10231-78352 | APP AMZ

ZECO, INC.
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PIPING AND INSTRUMENT DIAGRAM

FOR: SAULSBURY INDUSTRIES

DRAWN DWB | DATE 30MAY17
CHK BGB | APP MAA
SCALE NONE | REV 1
DRAWING NUMBER YA-2821 SHT. 1 OF 1

RR2-FL-991

Flare Spec Sheets

Appendix A

Customer Process Data Sheets

PRIMARY FLARE

BY: GLM | JOB NO: 6353 | PAGE 1 OF 2

DATE: 7/28/2011 | ITEM NO.: FL-991

CUSTOMER: Southcross Energy

PLANT: Woodsboro Plant

SERVICE: PRIMARY FLARE

QUANTITY: 1 SIZE: By Mfgr

SAULSBURY INDUSTRIES

SAULSBURY Engineering & Construction

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: Rev RFQ

REV.	DATE	BY	APPR.	NO.	FIRM
				RFQ	SE&C
	7/29/2011	GLM	WST		

Request for Quotation

Design Cases	Cold Flare Riser	Warm Flare Riser	
Flow Rate (Lb/Hr)	392,000	180,000	
Controlling Point Sources	PSV-501	PSV-361,161,162,163	
Molecular Weight	18-19	44	
Temperature, ºF at inlet to Riser	-50 to -100	+250	
Maximum Pressure at Inlet Nozzle, PSIG	50	50	
Smokeless Operation Required (Yes/No)		Yes, Note 3	
Lower Heating Value, BTU/SCF			
Composition (Mol % / Weight %)			
Nirtogen			
Carbon Dioxide			
Methane	80-85 Mol%		
Ethane			
Propane		Essentially 100%	
Butanes			
Pentanes			
Hexanes Plus			
Hydrogen			
Oxygen			
TOTAL			
Flare Riser Diameter & Inlet Nozzle Size, Note 2	16"	10"	
Max Wind During Flaring Operation, MPH	30	30	

Notes 1) Elevated, Self-Supported Flare

2) Flare will consist of 2 risers with sizes as shown. As an option, vendor may propose different size with rationale.

3) Smokeless Rate - 20% of Warm Flare Rate

4) Features not specifically identified should be similar to the Zeeco SO 17716 or Ref T80793F.

5) Instrument Air available at 85-125 psig.

6) Provide radiation shielding for any JB's, panels, boxes, or other electrical equipment if required to prevent operating temp out of spec during extended release.

7) Supply heavy duty vaneaxial blower air assist, non-overloading two speed TEAO motor and manually adjustable prop.

PRIMARY FLARE

BY: GLM | JOB NO: 6353 | PAGE 2 OF 2

DATE: 6/1/2011 | ITEM NO.: FL-991

CUSTOMER: Southcross Energy

PLANT: Woodsboro Plant

SERVICE: PRIMARY FLARE

QUANTITY: 1 SIZE: By Mfgr

SAULSBURY INDUSTRIES

SAULSBURY Engineering & Construction

Texas Registered Engineering Firm F-518

Work by Saulsbury Engineering: Rev RFQ

REV.	DATE	BY	APPR.	NO.	FIRM
Request for Quotation	7/29/2011	GLM	WST	RFQ	SE&C

Power Available	460Vac 3 P 60 Hz	120 Vac 1 P 60 Hz	
Control Power	120 Vac 1 P 60 Hz		
Electric Classification Area	Class 1, Div 2, Grp C,D, Temp T2B		
Pilot Gas	Pipeline gas, 100 psia		
Utility Gas	Pipeline Gas, 100 psia		
Purge Reduction	Pipeline Gas, 100 psia		
Flare Tip	304SS		
Maximum Allowable Thermal Radiation, BTU/Hr/SqFt	1750 - Note 6		
At Grade, Specify Distance from Flare Base, Ft	100		
Stack Support	Self Supported		
Structural Design Wind Velocity, MPH	100		
Seismic Zone	1		
Flare Knockout Drum	NO		
Design Pressure, PSIG / Temperature, F / Corr Allow	50 psig		
ASME Code Stamp / National Board Registration	NO		
Ignition Device (Note 8)	FFG		
Enclosure	Class 1 Div 2, Grp C,D, T2B		
Ladder Platforms	No		
Special Instrumentation	Air Assist Flow switch		

NOTES:

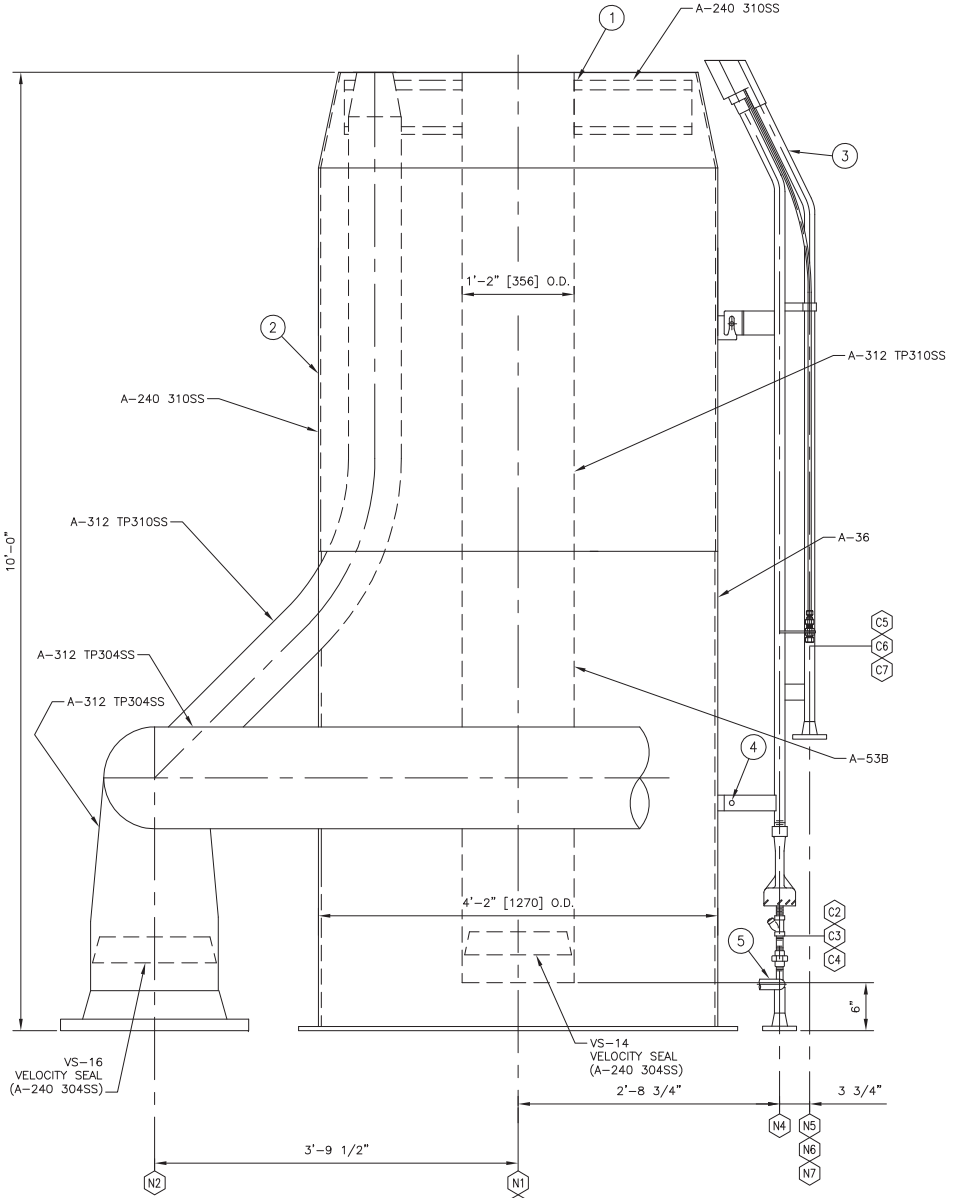
1) Applicable specifications: NEC NEMA AISC
2) ASME B31.3 Piping and Shell, AWS 1.1 Welding , and ASCE 7-05 Structural specs are required.
3) Use Rosemount 3051 pressure transmitters for all pressure insrumentation, Rosemount as applicable elsewhere.
5) Ignition system: Manual with Automatic relight Pilot status monitors
6) No point on the ground is to receive more than 2000 BTU/hr/sq ft under any condition.
7) Specify freight charges with proposal, and include drawings, schedules and deliveries.
8) FFG = Flame Front Generator type.
9) Direct high energy spark ignition HEI with optical pilot monitoring device.

Appendix B

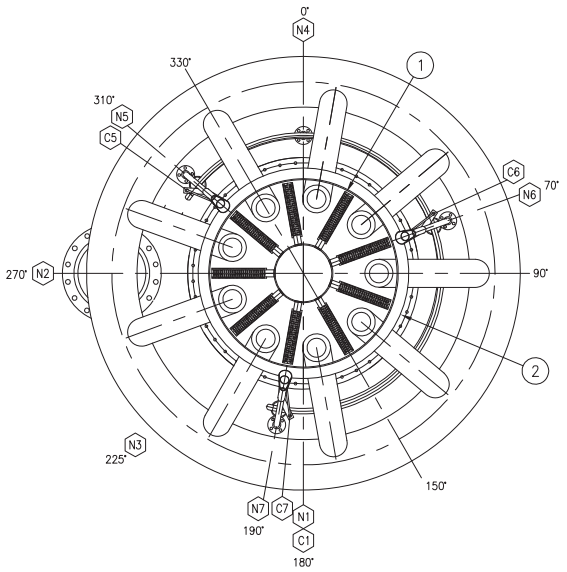
Drawings

ZEECO Drawing List

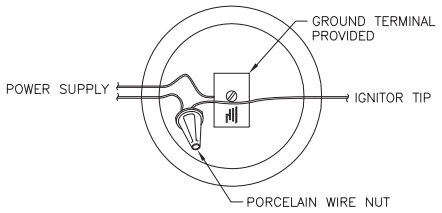
Drawing Number	Rev	Description
SC-6349	0	AFDSGA-14/50 Flare Tip Assembly
SC-6355	3	General Arrangement
SC-6356	1	Loading Data
SC-6357	1	Template & Anchor Bolt Drawing
SC-6358 s1-6	2	Riser Detail
SC-6359	0	Piping Arrangement
SC-6360 s1-3	0	Piping Detail
WC-3790 s1-4	0	Control Panel Schematic & Assembly
WC-3791	0	T/C Junction Box Control Panel Schematic & Assembly
WC-3792	0	LMC-3-T/S FFG Ignition Rack Assembly
YA-1491 s1-2	0	P & I Diagram



ELEVATION VIEW
(PORTIONS ROTATED FOR CLARITY)



PLAN VIEW
(TRUE ORIENTATION)



HEI CUSTOMER CONNECTION

– NOZZLE LEGEND –

ITEM	SERVICE	SIZE	RATING	TYPE	SCH/BORE	FLG. MAT'L
N1	FLARE GAS INLET	55" O.D. X 1/2" THK. X 50 1/4" I.D. W/ (44) 5/8"ø HOLES ON A 52 1/2" B.C. EQ. SPCD.				A-36
C1	WARM GAS INLET	14"	N/A	BW	S/10	A-53B
N2	COLD GAS INLET	16"	150#	RFWN	S/10S	A-182 F304
N4	PILOT MANIFOLD GAS INLET	1"	150#	RFWN	S/40	A-105
N5–N7	IGNITION GAS INLET	1"	150#	RFWN	S/40	A-182 F310
C2–C4	PILOT GAS INLET	1/2"	N/A	FNPT	N/A	CF8M
C5–C7	T/C GUIDE TUBE	1/2"	N/A	TUBE	N/A	N/A

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
0	23AUG11	ISSUED FOR APPROVAL			KAL

– PARTS LIST –

ITEM	QTY	DESCRIPTION	PART NO	MATERIAL
1	1	AFDSGA-14/50 CENTER ASS'Y	KC-2207	310SS/CS
2	1	AFDSGA-14/50 PLENUM ASS'Y	KC-2208	310SS/CS
3	3	HSLF-Z-RT/C PILOT NIPPLE ASSEMBLY	MB-1562	310SS
		COMPLETE WITH:		
		HSLF-Z MIXER BODY		A-743 CF3M
		HSLF-Z MIXER SPUD		F837 18-8
		PIPE		A-312 TP316
		STRAINER W/ PLUG		A-743 CF8M
4	3	MACHINE BOLT	1/2"ø X 1 1/4" LG	A-193 B8
		W/ HEAVY HEX NUT		A-194 Gr 8
5	1	PILOT MANIFOLD ASS'Y	KC-2209	CS

– NOTES –

1. PILOT MIXER ORIFICE DRILLED: #55ø [1.32 mm]
2. [redacted]
3. [redacted]
4. [redacted]
5. [redacted]
6. [redacted]
7. [redacted]
8. [redacted]
9. [redacted]
10. [redacted]
11. [redacted]

JOBSITE: SOUTHCROSS, TX
END USER: ENOGEX
S.O. NO.: 20238 | P.O. NO.: 6353-004 | APP SKS

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

PROPRIETARY DATA IS INCLUDED IN THE INFORMATION DISCLOSED HEREIN AND IS THE PROPERTY OF ZEECO,INC. THIS INFORMATION IS SUBMITTED IN CONFIDENCE AND MUST BE USED IN CONNECTION WITH WORK DONE FOR ZEECO, INC. AND ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED. UNAUTHORIZED DISCLOSURE OR USE IS PROHIBITED BY LAW.

AFDSGA-14/50 FLARE TIP ASSEMBLY (TAG: FL-991)

FOR: SE & C

DRAWN | DATE 23AUG11
CHK | APP KAL
SCALE NONE | REV 0
DRAWING NUMBER B-SC-6349 SHT. 1 OF 1

KAL 8/24/2011 9:39:37 AM
Q:\Job-Information\Trares\20000\20238 Saulsbury Engineering\Drafting\Customer\SC-6349-S1R0.dwg 8/24/2011 11:29:27 AM
Kristin R. Long

RR3-FL-1800

Flare Spec Sheets

ZEECO®

QUOTATION

CLIENT: Targa

END USER: Targa

ZEECO REF: 2026-04344FL-01

REV: 0

DATE OF ISSUE: 30/06/26

ENGINEER: Kendall Konrade



Zeeco, Inc.
4700 S Garnett Road
Tulsa, OK 74146 USA

+1(918) 258 8551 | sales@zeeco.com | zeeco.com

Tuesday, June 30, 2026

Targa
811 Louisiana Street,
Houston, TX 77002
USA

Attention: Daniel Lacy
Ph: 432-559-8639
Email: Daniel.lacy@targaresources.com

Subject: Client Ref: Roadrunner 3
Zeeco Reference: 2026-04344FL-01 - Rev. 0
End User: Targa
Location: Midland, TX

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. 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

Kendall Konrade
Flare Applications Engineer

(reach me by email at: kendall_konrade@zeeco.com)

AVAILABLE ATTACHMENTS

Attachment A	**Company Introduction**
Attachment B	**Commercial Proposal**
Attachment C	**Process Conditions**
Attachment D	**Specification Sheets**
	Elevated Flare Tip AFTA-28/56 (FLR-1)
	HSLF Pilot (FP-1)
	Manual/Automatic HEI Pilot Ignition System (HEIC-1)
	Self-Supported Stack (STK-1)
Attachment E	**Spare Parts List**
Attachment F	**Clarifications and Exceptions**
Attachment G	**Start-up & Maintenance Services**
Attachment H	**Radiation Profile**
Attachment I	**Typical GA Drawing**

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 C

Process Conditions

Process Conditions Summary

By	Date	Rev
KK	30-Jun-2026	0

Client: Targa | ZEECO Ref.: 2026-04344FL-01

Location: Midland, TX | Client Ref.: Roadrunner 3

Cases:						
Components	Scenario 1- PV-1402B FO	Scenario 2 - PV-4501 FO	Scenario 3- PV-4302 FO	Scenario 4 - Cryo Fire Circle	Scenario 5 - Refrg Fire Circle	Scenario 6 - PSV-1404
Defined by:	mol	mol	mol	mol	mol	mol
METHANE	70.5	96.0	98.8	26.1		3.1
ETHANE	12.1	0.6	0.7	44.6	1.1	9.8
PROPANE	8.7	0.0	0.0	21.3	96.1	25.5
N-BUTANE	3.6			5.8	2.8	26.2
N-PENTANE	1.4					18.6
N-HEXANE	0.4					10.3
N-HEPTANE	0.1					4.9
N-OCTANE	0.0					1.1
N-NONANE						0.2
N-DECANE						
N-DODECANE						
N-TRIDECANE						
CYCLOPROPANE						
ETHYLENE						
PROPYLENE						
BUTYLENE						
ACETYLENE						
BENZENE						
TOLUENE						
O-XYLENE						
CARBON MONOXIDE						
CARBON DIOXIDE	0.4					0.1
HYDROGEN SULFIDE						
WATER	0.3					0.2
AMMONIA						
AIR						
HYDROGEN						
OXYGEN						
NITROGEN	2.5	3.4	0.5			
METHANOL						
1,2-BUTADIENE						
Mass Flow, lbm/h	704,322	363,294	356,005	165,882	234,020	125,702
Smokeless Rate, lbm/h	66,000	363,294	356,005	57,000	53,500	51,500
Std. Vol Flow, SCFM	191,014	138,905	138,905	33,806	33,382	13,539
Temperature, °F	66.7	101.1	90.8	14.2	110.2	228.7
Mol. Wt., lb/lbmol	23.3	16.5	16.2	31.0	44.3	58.7
LHV, Mass, Btu/lbm	19,924	20,243	21,314	20,333	19,914	19,541
LHV, Vol., Btu/scf	1,224	882	910	1,663	2,327	3,024
Available Pressure, psig	10.00	10.00	10.00	10.00	10.00	10

*Smokeless rates are estimated based on a 150HP blower capacity.

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Process Conditions Summary

By	Date	Rev
KK	30-Jun-2026	0

Client: Targa | ZEECO Ref.: 2026-04344FL-01

Location: Midland, TX | Client Ref.: Roadrunner 3

Cases:						
Components	Scenario 7 - PSV-5100	Scenario 8- PSV-1455B	Scenario 9 - PSV-2401A			
Defined by:	mol	mol	mol			
METHANE	96.0	96.0	71.0			
ETHANE	0.6	0.6	12.2			
PROPANE	0.0	0.0	8.7			
N-BUTANE			3.6			
N-PENTANE			1.4			
N-HEXANE			0.4			
N-HEPTANE			0.1			
N-OCTANE			0.0			
N-NONANE						
N-DECANE						
N-DODECANE						
N-TRIDECANE						
CYCLOPROPANE						
ETHYLENE						
PROPYLENE						
BUTYLENE						
ACETYLENE						
BENZENE						
TOLUENE						
O-XYLENE						
CARBON MONOXIDE						
CARBON DIOXIDE						
HYDROGEN SULFIDE						
WATER						
AMMONIA						
AIR						
HYDROGEN						
OXYGEN						
NITROGEN	3.4	3.4	2.5			
METHANOL			0.2			
1,2-BUTADIENE						
Mass Flow, lbm/h	155,490	109,170	188,686			
Smokeless Rate, lbm/h	155,490	109,170	66,500			
Std. Vol Flow, SCFM	59,452	41,741	51,611			
Temperature, °F	42.8	42.8	48.4			
Mol. Wt., lb/lbmol	16.5	16.5	23.1			
LHV, Mass, Btu/lbm	20,243	20,243	20,082			
LHV, Vol., Btu/scf	882.41	882	1,224			
Available Pressure, psig	10.00	10	10			

*Smokeless rates are estimated based on a 150HP blower capacity.

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Attachment D

Specification Sheets

Elevated Flare Tip AFTA-28/56 (FLR-1)
HSLF Pilot (FP-1)
Manual/Automatic HEI Pilot Ignition System (HEIC-1)
Self-Supported Stack (STK-1)

Elevated Flare Tip AFTA-28/56 (FLR-1)

By	Date	Rev
KK	30-Jun-2026	0

Client: Targa | Zeeco Ref.: 2026-04344FL-01

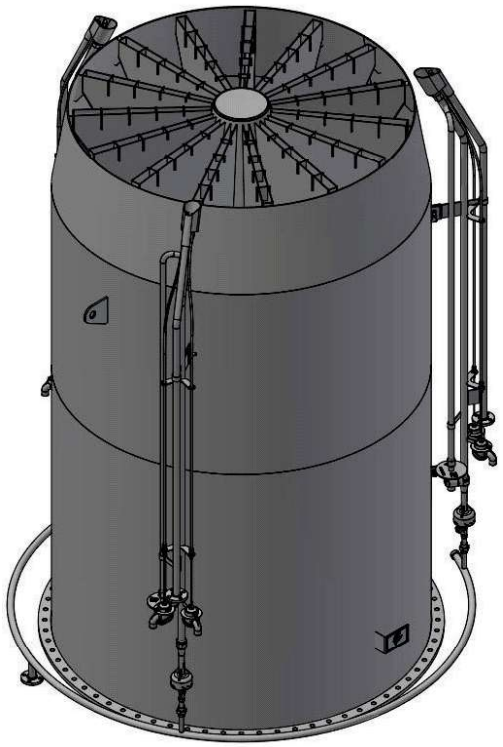
Location: Midland, TX | Client Ref.: Roadrunner 3

General Information:

Tag No.:	FLR-1	
Model:	AFTA	
Type	AFTA-28/56	
Length:	10.0	ft
Weight (Approx):	1,855.0	lbm
No. of pilots:	3.0	

Design Case:

Governing Hydraulic Flow Case:	Scenario 1- PV-1402B FO	
Design Flow Rate:	704,322	lbm/h
Molecular Weight:	23.3	
L. H. V. :	1,224.4	Btu/scf
Temperature:	66.7	°F
Available Static Pressure:	10	psig
Approx. Tip Press. Drop:	6.3	psi
Exit Mach Number:	0.9	
Governing Smokeless Case :	Scenario 2 - PV- 4501 FO	
Design Smokeless Rate:	363,294	lbm/h
Mounting Angle to Horizon	90° to Horiz.	



(Typical Representation Only)

Construction:

Upper Section:	310S	Windshield:	n/a
Lower Section:	304/304L	Flame Retention Ring	n/a
Refractory:	N/A	Anti-Static Ring:	n/a
Refractory Thk, in:	N/A	Lifting Lugs	Carbon Steel

Paint System (Carbon Steel Surfaces)

	Surface Prep	Primer	Intermediate	Finish
Flare Tip:	SSPC-SP10	Inorganic Zinc	None	t-Flex Hi-Temp 1000

**IMM: Inert Multipolymeric Matrix*

Connections:	Qty.	Size (NPS)	Type	Material
Flare Gas Inlet:	1	28	n/a	Carbon Steel
Comb. Air Inlet:	1	56	Fab. Plate Flange	Carbon Steel
Pilot Gas Manifold:	1	1	150# RFSW	Carbon Steel

Misc Notes

Includes Integral Purge Reducing Velocity Seal

Required Fuel Gas Purge Rate (Vel. Seal): 1180 SCFH

Lower Section of Air Riser to be constructed out of Carbon Steel material.

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HSLF Pilot (FP-1)

By	Date	Rev
KK	30-Jun-2026	0

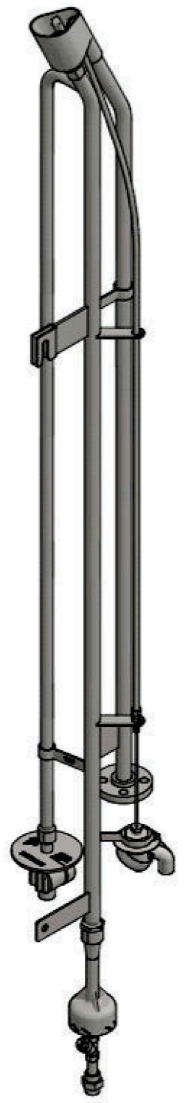
Client: Targa | Zeeco Ref.: 2026-04344FL-01

Location: Midland, TX | Client Ref.: Roadrunner 3

General Information:		
Tag No.:	FP-1	
Model:	HSLF	
Length:	110	in
Weight:	68.0	lbm
Pilot Type:	Pre-Mix	
Ignition Type:	HEI Ignition	

Process Design Data:		
Design Heat Release:	65,000	Btu/h
Fuel Gas MW:	18.00	
Fuel Gas LHV:	1,000	Btu/scf
Fuel Gas Temperature:	60	°F
Fuel Gas Inlet Pressure:	15.00	psig
Fuel Gas Flow rate:	65.00	SCFH
Design Wind Velocity:	170	mph
Design Rainfall:	50	in/h
Mounting Position:	Vertical	
Thermocouple Type:	K	Ungrounded

Construction:	
Pilot Firing Tip:	CK-20
Windshield Assembly:	CK-20
Integral Thermowell:	CK-20
Mounting Brackets:	CK-20
Premix Fuel Line:	310S
Thermocouple Sheath:	310S
Thermocouple Head:	CF-3M w/Ceramic Term
Fuel Mixer / Spud Assembly:	CK-20
Fuel Strainer Assembly:	CF-8M
HEI Probe and Support:	310S
HEI Junction Head:	CF-8M



(Typical Representation Only)

Connections:	Qty.	Size (NPS)	Type	Material
Pilot Gas Inlet	1	1/2	SW	A-105
Thermocouple	1	1/2	Conduit	310S
HEI Ignition	1	1	FNPT	310S

Misc. Notes: (see ignition system datasheet for type applicable to this quote)

Upper mounting bracket is reinforced hook type for pilot removal from platform.

Pilot mounting brackets and thermocouple mounting brackets are investment cast assemblies.

Pilot mixer assembly is investment cast, high efficiency computer modeled venturi section.

Thermocouples are duplex retractable type.

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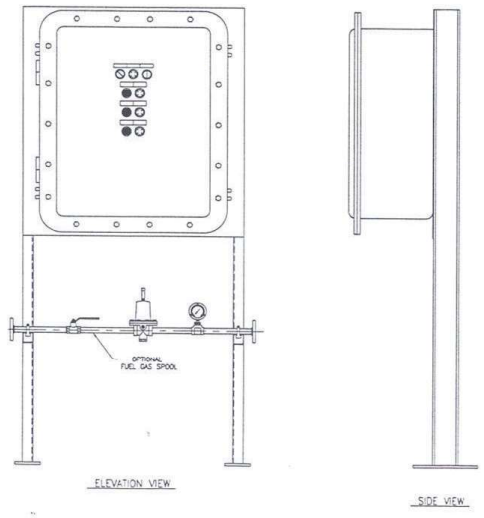
ZEECO	Manual/Automatic HEI Pilot Ignition System (HEIC-1)	By	Date	Rev
		KK	30-Jun-2026	0
	Client: Targa	Zeeco Ref.: 2026-04344FL-01		
	Location: Midland, TX	Client Ref.: Roadrunner 3		

General Information:

Tag No.:	HEIC-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
Power Available:	120 Volt, 1 Phase, 60 Hertz
Control Type:	Relay Logic

Design Data

Please See Pilot Data Sheet for Fuel Consumption of the Pilot



(Typical Drawing Only)

Construction:

Pilot Gas Piping Material:	Carbon Steel
Rack Material:	Carbon Steel
Sun / Rain Sheild	No
Ignition Probe Mat'l:	310S
Ignition Probes Per Pilot:	1
No. Thermocouples/Pilot:	1
Thermocouple Type:	Duplex
Pilot Gas PCV:	No
Tropicalization	No
Enclosure	NEMA 4X/7

Paint System (Carbon Steel Surfaces)

	Surface Prep	Primer	Intermediate Coat	Top Coat
Support Rack	SSPC-SP10	uild Epoxy; 1 Coat (5~	urethane; 1 Coat (3~4	W-4031 Structural Gray
C.S Fuel Piping	SSPC-SP10	uild Epoxy; 1 Coat (5~	urethane; 1 Coat (3~4	W-4031 Structural Gray
Enclosure	Mfg. 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

Misc. Notes:

Pilot Fuel Train Ship Loose
Local Control Panel to utilize relay logic.
Pilot Gas Piping to be Schedule 80

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Self-Supported Stack (STK-1)

By	Date	Rev
KK	30-Jun-2026	0

Client: Targa | Zeeco Ref.: 2026-04344FL-01

Location: Midland, TX | Client Ref.: Roadrunner 3

General Information:

Tag No.:	STK-1
Overall Height:	150.0 ft



(Typical Representation Only)

Design Criteria:

Wind Design Code:	ASCE 7-10
Wind Speed:	120 mph
Seismic Design Code:	ASCE 7-10
Risk Category	1.25
Soil Class	D
Structural Design Code:	ASME STS-1-2021

Riser Design

	Riser #1	Riser #2
Designation	Air	Flare Gas
Material	Carbon Steel	Carbon Steel
Design Temp. (Max), °F	-20	-20
Design Temp. (Min), °F	120.0	400
Corrosion Allow., in	0.063	0.1
Design Prs., psig	2.0	50.0
Top Diameter, in	56.0	28
Middle Diameter, in		
Base Diameter, in		

Construction:

Drum in Base:	No	Ladders & Step-offs:	None
Drum Outside Diameter:	n/a	Platform at Tip:	None
Drum Overall Height:	n/a	Additional Platforms:	None
		ACWL:	per Client Specs

Paint System (Carbon Steel Surfaces)

	Surface Prep	Primer	Intermediate	Finish
Stack	SSPC-SP-10	SW Zinc Clad II	N/A	eat-Flex HI-Temp 1000

Miscellaneous Notes:

For Utility Piping Information Refer to Quote

Flare Stack will be designed for single piece lift with flare tip.

Vane Axial blower to be suitable for installation directly to flare stack.

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Utility Piping Summary Form

Client:	Targa	Zeeco Ref:	2026-04344FL-01	Rev	0
Client Ref.:	Roadrunner 3	Location	Midland, TX	Date	6/30/2026

Flare No.	Description	Qty	Pipe Size	Pipe Sch.	Pipe Material	Origination Point	Termination Point	Termination Rating	Termination Type	Termination Material	Paint	Insulation
FLR-1	Pilot Gas Manifold:	1	1"	Sch 80	Carbon Steel	Base of Stack	Flare Tip	3000#	Thrd. Union	A-105	Inorganic Zinc	n/a
FLR-1	TC Tubing	3	1/2"	n/a	316 SS	Near Grade	Flare Tip	n/a	Tubing	316SS	n/a	n/a
FLR-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 F

Clarifications and Exceptions

ZEECO	Clarification and Exception Summary		Rev: 0
	Client:	Targa	By: KK
	Location:	Midland, TX	
	ZEECO Reference	2026-04344FL-01	Date: 30-Jun-2026
	Client Reference	Roadrunner 3	

No.	Specification	Item	Clarification / Exception	
-	*General*	-	*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.*	
1	General	Applicable Specifications	Zeeco is not responsible for specifications, direct or indirectly referenced, 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.	
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 shall 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.	

ZEECO	Clarification and Exception Summary		Rev: 0
	Client:	Targa	By: KK
	Location:	Midland, TX	
	ZEECO Reference	2026-04344FL-01	Date: 30-Jun-2026
	Client Reference	Roadrunner 3	

No.	Specification	Item	Clarification / Exception	
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".	
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 testing, PWHT or impact testing of the stack risers in the shop is not required and has not been included.	
20	General	Ground Flare Structural Designs	Ground Flares are considered proprietary equipment designed with the runners being open to atmosphere and therefore are not considered as piping or pressure vessels. Hydrostatic testing, PWHT or impact testing of the flare system in the shop is not required and has not been included. Any piping specification, applicable pipe class to the flare header or pressure vessel specification is only applied to the flare manifold inlet flange for the ground flare inlet flange to mate to the flare header outlet flange. The manifold and runner equipment downstream of the inlet flange will follow Zeeco's design and inspection practices for Ground Flare Equipment.	
21	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.	
22	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.	
23	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 pilot.	
24	General	Motor Starters	Our proposal does not include for any motor starters, variable frequency drives, or motor controls unless specifically stated otherwise.	
25	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 and lifting lugs. 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.	
26	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.	
27	Structural	Stack Design	Zeeco's design uses the allowable stack stress criteria defined in ASME STS-1 in lieu of the allowable stack deflections listed in API 537.	
28	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.	
29	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.	

ZEECO	Clarification and Exception Summary		Rev:
			0
	Client:	Targa	By:
	Location:	Midland, TX	KK
	ZEECO Reference	2026-04344FL-01	Date:
	Client Reference	Roadrunner 3	30-Jun-2026

No.	Specification	Item	Clarification / Exception	
30	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.	
31	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.	
32	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.	
33	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 preflashbacks 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.	
34	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).	
35	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.	
36	Structural	Derrick Support Structures	Zeeco will design the structural connections considering the actual design loads acting on the connection, taken from the structural calculation, rather than any loads derived from section capacities.	
37	Structural	General Guy-Supported Stack Design	1. Zeeco design for guy-supported flares will be based on initial guy wire tension not less than 2% and not greater than 12.5% of the maximum guy wire breaking strength. 2. Stack design temperatures are used to set the allowable stresses of the material and to determine the thickness of stack due to the design pressure. 3. Stack process operating temperatures are used to determine thermal expansion and contraction and the resulting thermal loads.	
38	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.	
39	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.	
40	Clarification	Flare Design	The Flare Design is based on the same design as the Copperhead Gas Plant Flare (SO 74236). Any associated drawings and documentation will be submitted for information only.	
41	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.	
42	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.	

ZEECO	Clarification and Exception Summary		Rev:
			0
	Client:	Targa	By:
	Location:	Midland, TX	KK
	ZEECO Reference	2026-04344FL-01	Date:
	Client Reference	Roadrunner 3	30-Jun-2026

No.	Specification	Item	Clarification / Exception	
43	Clarification	Case 6 Smokeless	Zeeco cannot guarantee R1 smokeless through the entire flowrate of Case 6. Zeeco provided our estimated smokeless capacity based on a 150 hp blower, shown in the Gas Case Summary of the proposal.	

Attachment H

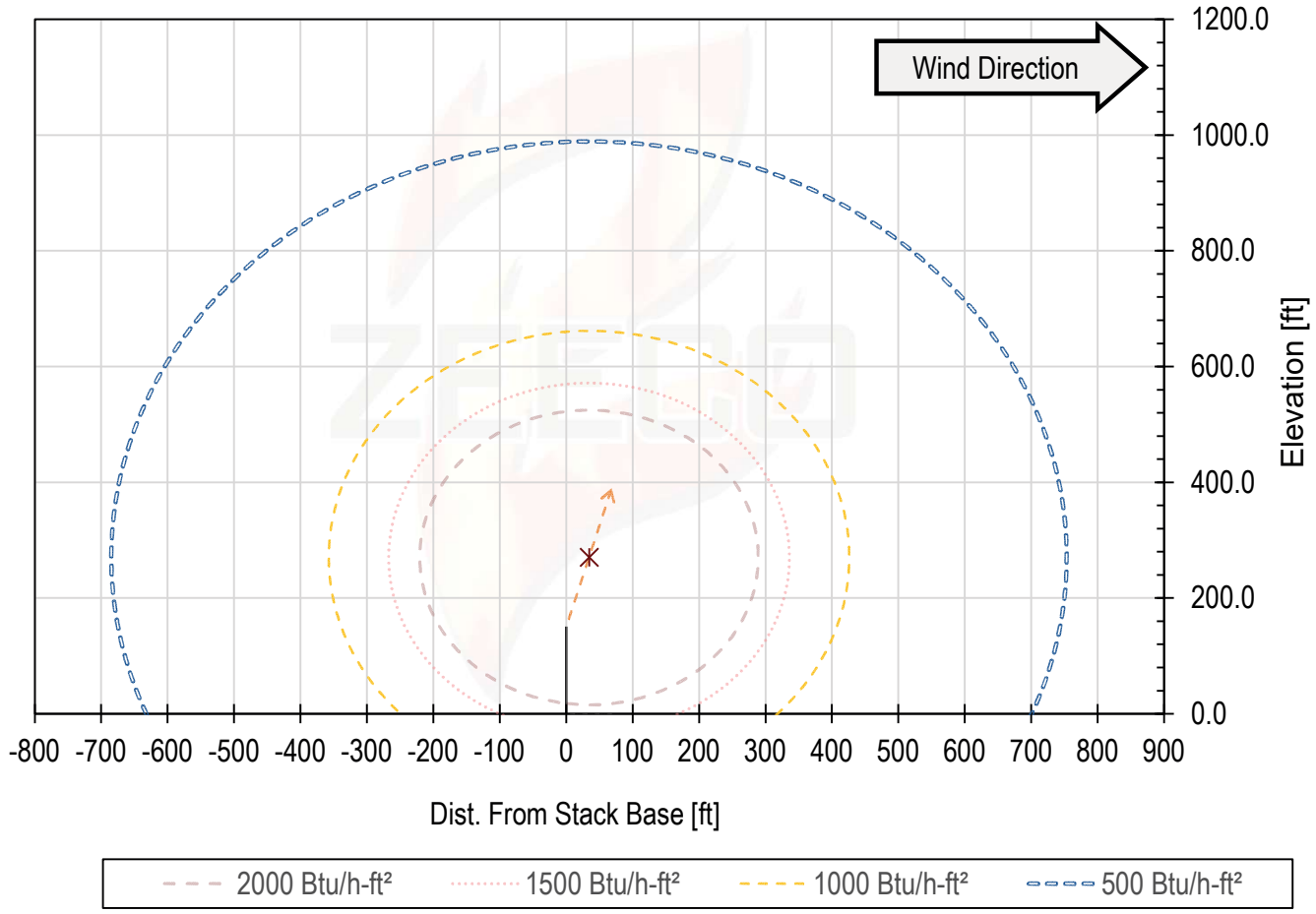
Radiation Profile

ZEECO	Single Flare Radiation Isopleth	By	Date	Rev
		KK	30-Jun-2026	0

Client:	Targa	ZEECO Ref.:	2026-04344FL-01
Location:	Midland, TX	Client Ref.:	Roadrunner 3

Case Information

Flare Stack Tag	F-1		Operating Case	Scenario 1- PV-1402B FO	
Stack Height	150.0	ft	Mass Flow	704,322	lbm/h
Method	Brzustowski & Sommers		L.H.V. (60 °F Basis)	1,224	Btu/scf
Solar Radiation	300	Btu/h-ft²	Heat Release	14,033	MMBtu/h
Wind Speed	30.0	ft/s	Gas Mol Wt.	23.3	
Relative Humidity	50.0	%			
Ambient Temperature	90	°F			
Ambient Pressure	13.90	psia			



Misc Notes

1) Calculated Radiation is +/- 10%, or 100 Btu/h-ft², whichever is larger
2) Coordinate of stack base is (0,0)
3) Absorptivity due to relative humidity is included (Tau<1.0)

Confidential and Proprietary

Single Flare Radiation Elevation Plot

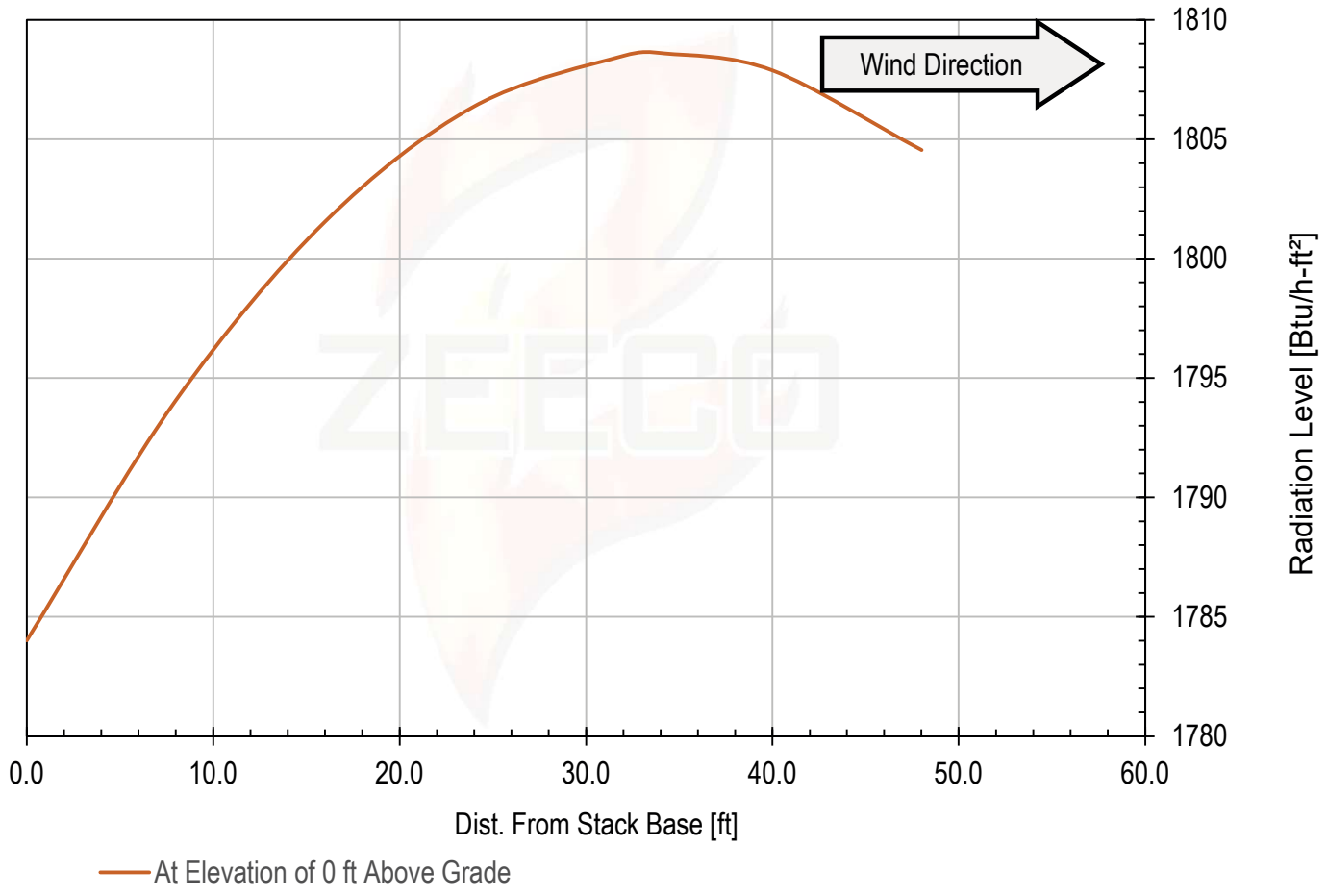
By	Date	Rev
KK	30-Jun-2026	0

Client: Targa | ZEECO Ref.: 2026-04344FL-01

Location: Midland, TX | Client Ref.: Roadrunner 3

Case Information

Flare Stack Tag	F-1		Operating Case	Scenario 1- PV-1402B FO	
Stack Height	150.0	ft	Mass Flow	704,322	lbm/h
Method	Brzustowski & Sommers		L.H.V. (60 °F Basis)	1,224	Btu/scf
Solar Radiation	300	Btu/h-ft²	Heat Release	14,033	MMBtu/h
Wind Speed	30.0	ft/s	Gas Mol Wt.	23.3	
Relative Humidity	50.0	%			
Ambient Temperature	90	°F			
Ambient Pressure	13.90	psia			



Misc Notes

1) Calculated Radiation is +/- 10%, or 100 Btu/h-ft², whichever is larger

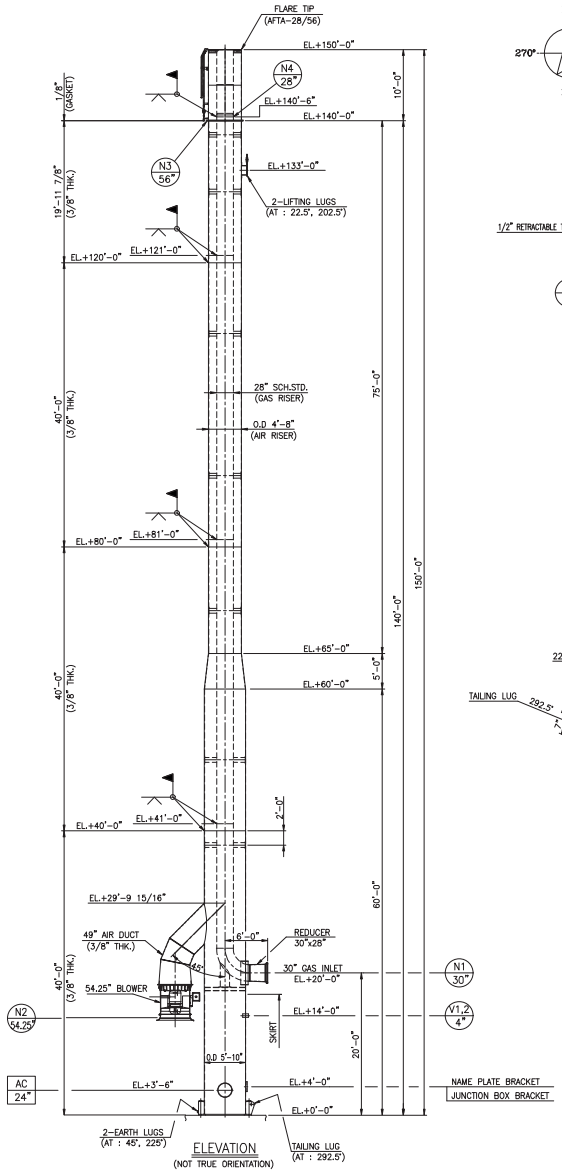
2) Coordinate of stack base is (0,0)

3) Absorptivity due to relative humidity is included (Tau<1.0)

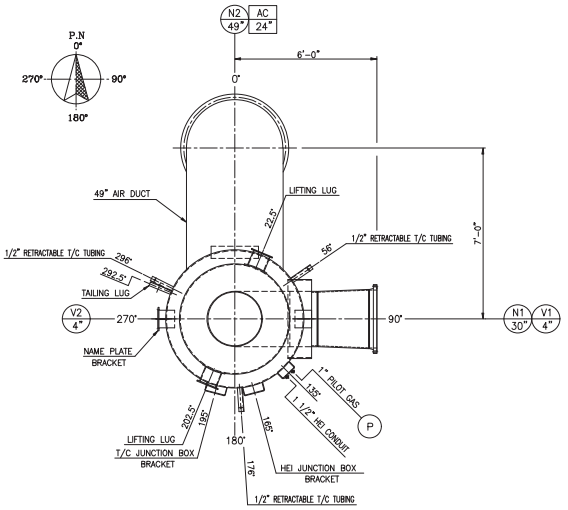
Confidential and Proprietary

Attachment I

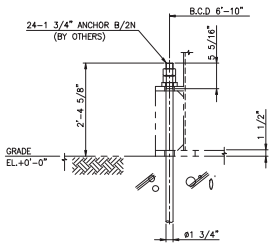
Typical GA Drawing



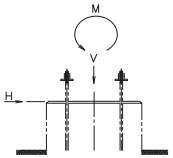
ELEVATION
(NOT TRUE ORIENTATION)



NOZZLE ORIENTATION
(SCALE : 1/30)

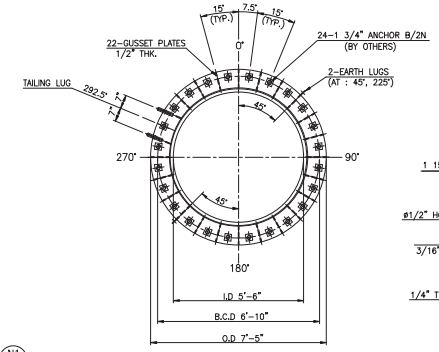


ANCHOR BOLT
(SCALE : NONE)

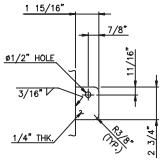


LOADING DATA			
LOAD CASE	VERTICAL (KIPS)	SHEAR (KIPS)	MOMENT (KIP-FT)
DEAD LOAD	72.1	0.0	0.0
WIND LOAD	0.0	22.0	1668.8
SEISMIC LOAD	1.5	1.0	108.7
NOZZLE LOAD	1.3	1.6	33.7

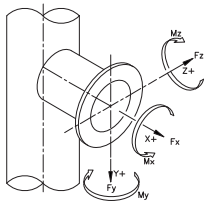
LOADING DATA
(FOR STACK)



ANCHOR PLAN
(SCALE : 1/30)

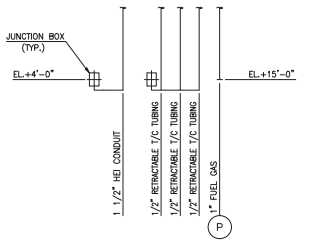


EARTH LUG
(AT : 45°, 225°)
(SCALE : 1/5)



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)



UTILITY PIPING ELEVATION
(SCALE : NONE)

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	54.25"	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.

NO.	DATE	REVISION DESCRIPTION	DRAWN	CKD.	APP.
0	21JAN25	ISSUED FOR INFORMATION	SMW	MMC	EZ

REFERENCE DRAWING: N/A
CUSTOMER: TARGA NORTHERN DELAWARE
JOBSITE: LEA COUNTY, NM
END USER: TARGA NORTHERN DELAWARE
P.O.NO.: TAR429899

TOLERANCES PER ZQS-QUA-IV-010 (LATEST REVISION), UNLESS OTHERWISE NOTED
3 RD ANGLE PROJ
DIMS IN INCHES (MM), UNLESS OTHERWISE STATED.

SCAN TO ORDER SPARE PARTS

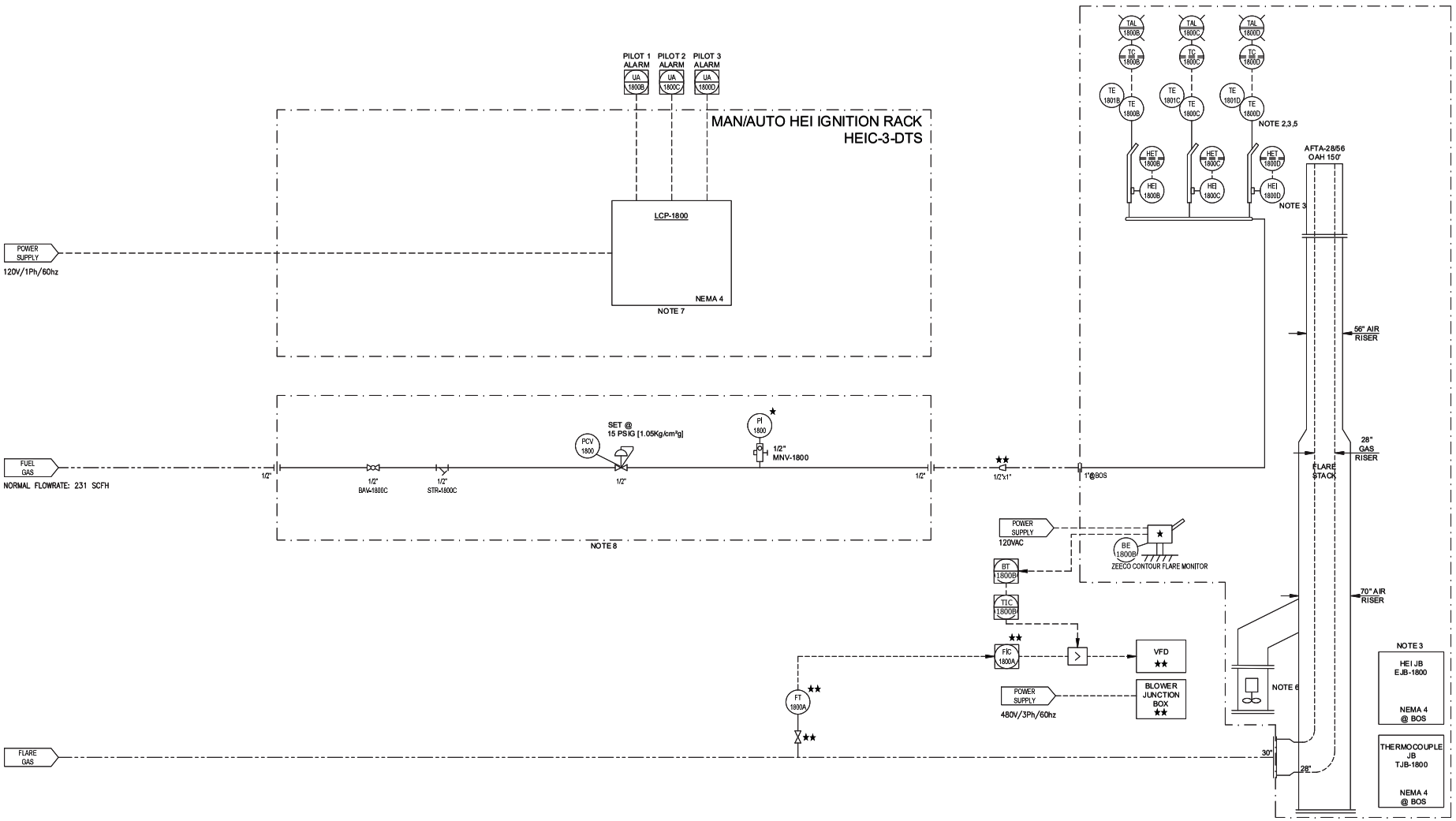
ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sal-ei@zeeco.com

PROPRIETARY DATA IS INCLUDED IN THE INFORMATION DESCRIBED HEREIN AND IS THE PROPERTY OF ZEECO,INC. THIS INFORMATION IS SUBMITTED IN CONFIDENCE AND MUST BE USED IN CONNECTION WITH WORK DONE FOR ZEECO, INC. OR ITS CLIENTS. IT MUST NOT BE COPIED FOR USE BY OTHERS WITH UNAUTHORIZED DISCLOSURE OR USE IS PROHIBITED BY LAW.

GENERAL ARRANGEMENT WITH LOADING DATA
TAG NO.: FL-1800

DRAWN	DATE
SMW	21JAN25
CHK	APP
MMC	EZ
SCALE	SHEET NO.
None	1 OF 1

S.O. NO. 74236
DWG NO. SE-5907
REV. NO. 0



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	24JAN25	ISSUED FOR APPROVAL	HC	MSB	EZ

CUSTOMER: TARGA NORTHERN DELAWARE LLC
JOBSITE: COPPERHEAD GAS PLANT (LEA COUNTY, NM)
END USER: TARGA NORTHERN DELAWARE LLC
P.O. NO.: TAR429899

SCAN TO ORDER SPARE PARTS

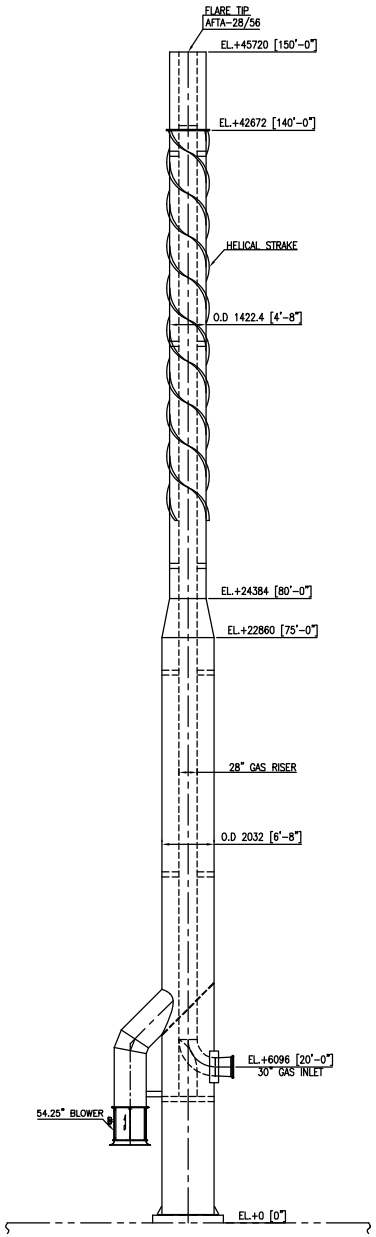
ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

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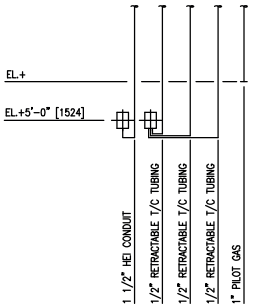
PIPING AND INSTRUMENT DIAGRAM
FL-1800

DRAWN	DATE
HC	24JAN25
CHK	APP
MSB	EZ
SCALE	SHEET NO.
NTS	1 OF 1

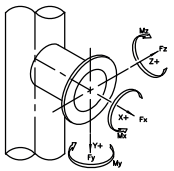
S.O. NO.	DWG. NO.	REV. NO.
74236	YA-4745	0



OPTIONAL - Helical Strakes



DETAIL OF UTILITY PIPING



PIPE SIZE (IN)	Fx	Fy	Fz	Mx	My	Mz
	N	N	N	N-M	N-M	N-M
30	3781	5115	5115	2210	1627	1627

MAX. ALLOWABLE INLET NOZZLE LOAD
(PER API 560/537)

NOTE

1. MATERIAL
   - GAS RISER : A53-B OR EQ.
   - AIR RISER : A36 OR EQ.
   - UTILITY PIPING : A106-B
   - CONDUIT : GALVANIZED C.S

2. COATING AS PER SPECIFICATION

3. DESIGN CODE
   - STRUCTURAL CODE : ASME STS-1 / AISC
   - WIND CODE : ASCE 7-10
   - SEISMIC CODE : ASCE 7-10

4. DESIGN DATA
   - WIND DATA : V=120 mph, EXP.=C
   - SEISMIC DATA : Ss=0.098, S1=0.031, SITE CLASS=D, I.F=1.25
   - DESIGN TEMPERATURE : -20°F / 400°F
   - DESIGN PRESSURE : 50 psig
   - CORROSION ALLOWANCE : 1/16 inch

5. MISCELLANEOUS
   - ALL DIMENSIONS ARE PRELIMINARY ONLY
   - RIGID FOUNDATION

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

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SELF SUPPORTED FLARE STACK SYSTEM GENERAL ASSEMBLY DWG.

FOR: TARGA

DRAWN	DATE
JK	11NOV25
CHK	APP
JK	KK
SCALE	REV
NONE	0

DRAWING NUMBER
2025-12309FL-01
SHT. 1 OF 1

Attachment J

fc X+Yi c P h+c G) 9gfff+u AkG+u GKS(s) SGV

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

Authorized Registration and /or Accreditation Marks. This certificate is property of NSF-ISR and must be returned upon request.
*Company is audited for conformance at regular intervals. To verify registrations call (888) NSF-9000 or visit our web site at www.nsf-isr.org

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 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

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

The American Society of Mechanical Engineers

Attachment L

FGG) A+a GdS l+4 kA) JUKG

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.

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BURNERS FLARES THERMAL OXIDIZERS VAPOR CONTROL RENTALS AFTERMARKET

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+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 **zeeco.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

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Certifications apply to Zeeco Headquarters.

NSF REGISTERED ISO 9001: 2015

UB20 Rev 1

RDR-FL-2850

Tank and Truck Loading Combustor Spec Sheets

Truck Loading Combustor

BY: APL JOB NO: 10231 PAGE 1 OF 2
DATE: 4/11/2017 ITEM NO.: FL-2850
CUSTOMER: Lucid Energy
PLANT: Roadrunner
SERVICE: FL-2850 Enclosed Combustor / P04-206A
QUANTITY: 1 SIZE: 7.5' DIA X 40' - 0" OAH By Mfgr Zeeco

SAULSBURY INDUSTRIES

Texas Registered Engineering Firm F-518
Work by Saulsbury Engineering: Rev. 1

REV: IFC — Request for Quotation
DATE: 5/26/2017 — 4/11/2017
BY: DLS — APL
APPR: SH — DLS
NO: 0 — A
FIRM: SI — SI
REV: As Built
DATE: 11/28/2017
BY: CSK
APPR: DLS
NO: 1
FIRM: SI

Combustors Inlets	INLET		
Design Cases	Scenario #1 (Note 6)	Scenario #2 (Note 6,7)	Scenario #3 (Note 7, 8)
Flow Rate (lbs/hr)	1101	191	1740
Flow Rate (SCFM)	97	75	166
Controlling Point Sources	(5) - 1000 bbl Condensate Storage Tanks (Note 3)	Blanket Gas (Note 5)	Off-Spec Condensate
Molecular Weight	72.10	16.27	66.16
Temperature, ºF at inlet to Riser	120	75	90
Operating Pressure at Inlet Nozzle, oz.	12	12	12
Smokeless Operation Required (Yes/No)	Yes	Yes	Yes
Higher Heating Value, BTU/SCF	3987.5	998.9	3678.9
Lower Heating Value, BTU/SCF	3690.7	899.5	3401.1
Composition (Mol %)			
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.0000	1.3967	0.0000
Carbon Dioxide	0.0000	0.0044	0.0000
Methane	0.0000	98.2036	0.0000
Ethane	0.0000	0.3845	0.0000
Propane	0.0298	0.0105	0.4559
i-Butane	1.9002	0.0059	8.9920
n-Butane	25.5828	0.0001	42.6376
i-Pentane	22.2515	0.0000	16.3011
n-Pentane	25.9660	0.0000	17.6974
Hexane	13.6591	0.0000	7.8708
Heptane	3.7670	0.0000	2.0082
Octane+	0.2360	0.0000	0.1182
Benzene	1.1649	0.0000	Unknown
Toluene	0.3182	0.0000	Unknown
Ethylbenzene	0.0567	0.0000	Unknown
m-Xylene	Unknown	0.0000	Unknown
p-Xylene	Unknown	0.0000	Unknown
o-Xylene	Unknown	0.0000	Unknown
Water	0.0000	0.0000	0.0000
TOTAL			
Destruction Efficiency	98+%	98+%	98+%
Retention Time			

Notes:
1 Enclosed Flare, forced or natural draft acceptable
2 Instrument Air available at 85-125 psig.
3 Tanks normally hold RVP=8-10 psia stabilized product
4 Location: Eddy County, NM (2970 ft elevation)
5 Scenario #2 is truck loading (2 trucks simultaneously) at 300 GPM apiece displacing blanket gas and truck vapor returns
6 Scenarios #1 and #2 shall be at the same combustor feed point and could occur simutaneously.
7 Scenarios #2 and #3 shall be at the same combustor feed point and could occur simutaneously (max design case)
8 Scenario #3 is vapor flash from condensate storage tanks receiving 14 psia RVP condensate product
9 Design of combustor shall be such that the pilot stays lit 100% of the time for each riser
10 Include remote BMS panel to be installed at 100' distance from combustor
11 Flame arrestors supplied with the unit shall contain high temperature shutdown transmitters to indicate combustion backflow.
12 Combustor control system shall be Allen-Bradley

Truck Loading Combustor

BY: APL JOB NO: 10231 PAGE 2 OF 2
DATE: 4/11/2017 ITEM NO.: FL-2850
CUSTOMER: Lucid Energy
PLANT: Roadrunner
SERVICE: FL-2850 Enclosed Combustor / P04-206A
QUANTITY: 1 SIZE: 7.5' DIA X 40' - 0" OAH By Mfgr Zeeco

SAULSBURY INDUSTRIES

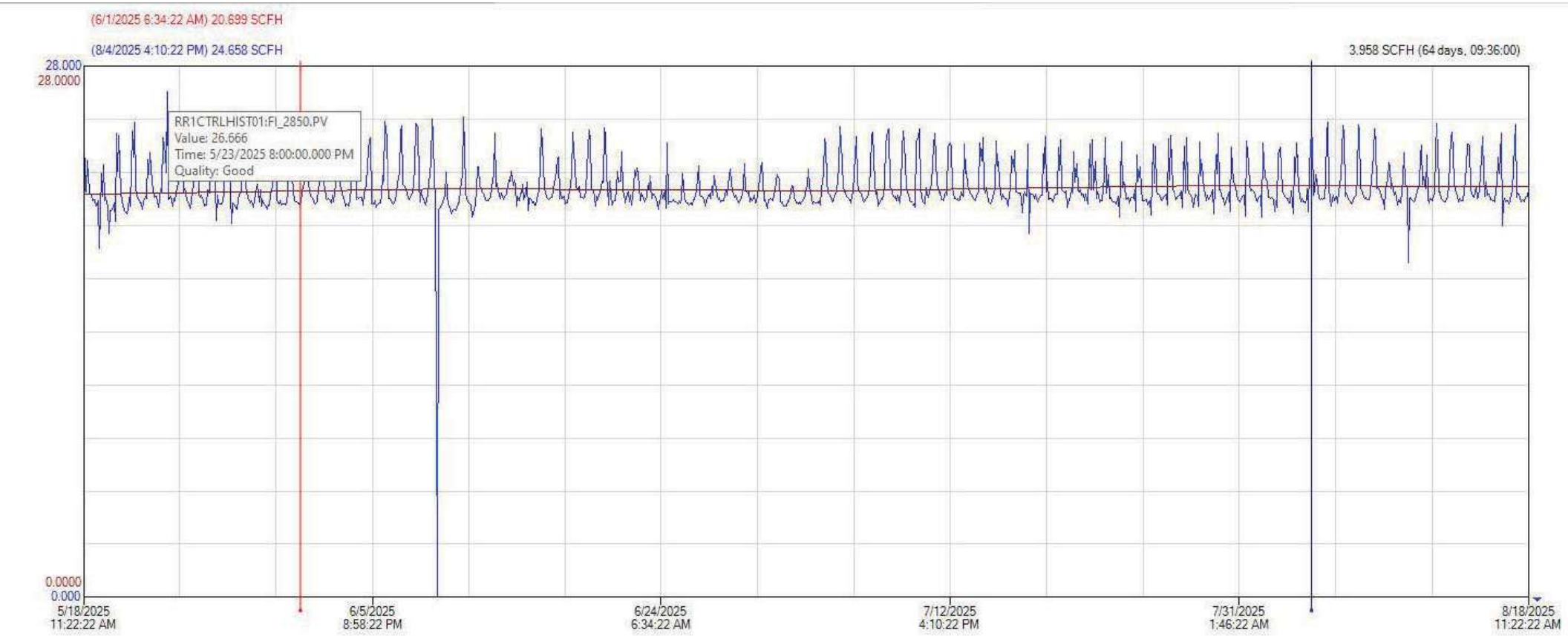
Texas Registered Engineering Firm F-518
Work by Saulsbury Engineering: Rev. 1

Power Available	120 VAC / 20 amp		
Control Power	120 VAC / 1 PH / 60 Hz		
Electric Classification Area			
Pilot Gas	Residue Gas, 10 psig		
Utility Gas	Residue Gas, 10 psig		
Purge Reduction	Residue Gas, 10 psig		
Flare Tip			
Maximum Allowable Thermal Radiation, BTU/Hr/SqFt	1750		
At Grade, Specify Distance from Flare Base, Ft	Note 6		
Stack Support	Self Supported		
Structural Design Wind Velocity, MPH	120		
Seismic Zone	1		
Flare Knockout Drum	By others		
Design Pressure, PSIG / Temperature, F / Corr Allow	15 psig / 2200 deg F		
ASME Code Stamp / National Board Registration	NO		
Ignition Device (Note 8)	HEI		
Enclosure	Class 1 Div 2, Grp C,D, T2B		
Stack Material	Stainless Steel (Note 4)		
Special Instrumentation	Note 10		
Ambient Temperature	0 / 110°F		

NOTES:

1) Applicable specifications: NEC NEMA AISC
2) ASME B31.3 Piping and Shell, AWS 1.1 Welding , and ASCE 7-10 Structural specs are required.
3) Use Rosemount 3051 pressure transmitters for all pressure insrumentation, Rosemount as applicable elsewhere.
4) Vendor may quote coated CS if design requirements are met and there is a cost/delivery advantage.
5) Ignition system: Manual with Automatic relight Pilot status monitors
6) No point on the ground is to receive more than 1750 BTU/hr/sq ft under any condition.
7) Specify freight charges with proposal, and include drawings, schedules and deliveries.
8) FFG = Flame Front Generator type. HEI = direct High Energy spark Ignition with optical pilot monitoring device.
9) Direct high energy spark ignition with Optical pilot monitoring device
10) Instrumentation/Specialty Items Required:
    - Flame arrestors for each inlet line to combustor
    - Temperature transmitters near flame arrestors with high temperature shutdown to detect backflash (including pilot line)
    - Auto control system to monitor flare operation with integrated control panel and NEMA 4 cabinet

REV.	DATE	BY	APPR.	NO.	FIRM
IFC	5/26/2017	DLS	SH	0	SI
Request for Quotation	4/11/2017	APL	DLS	A	SI
As Built	11/28/2017	CSK	DLS	1	SI



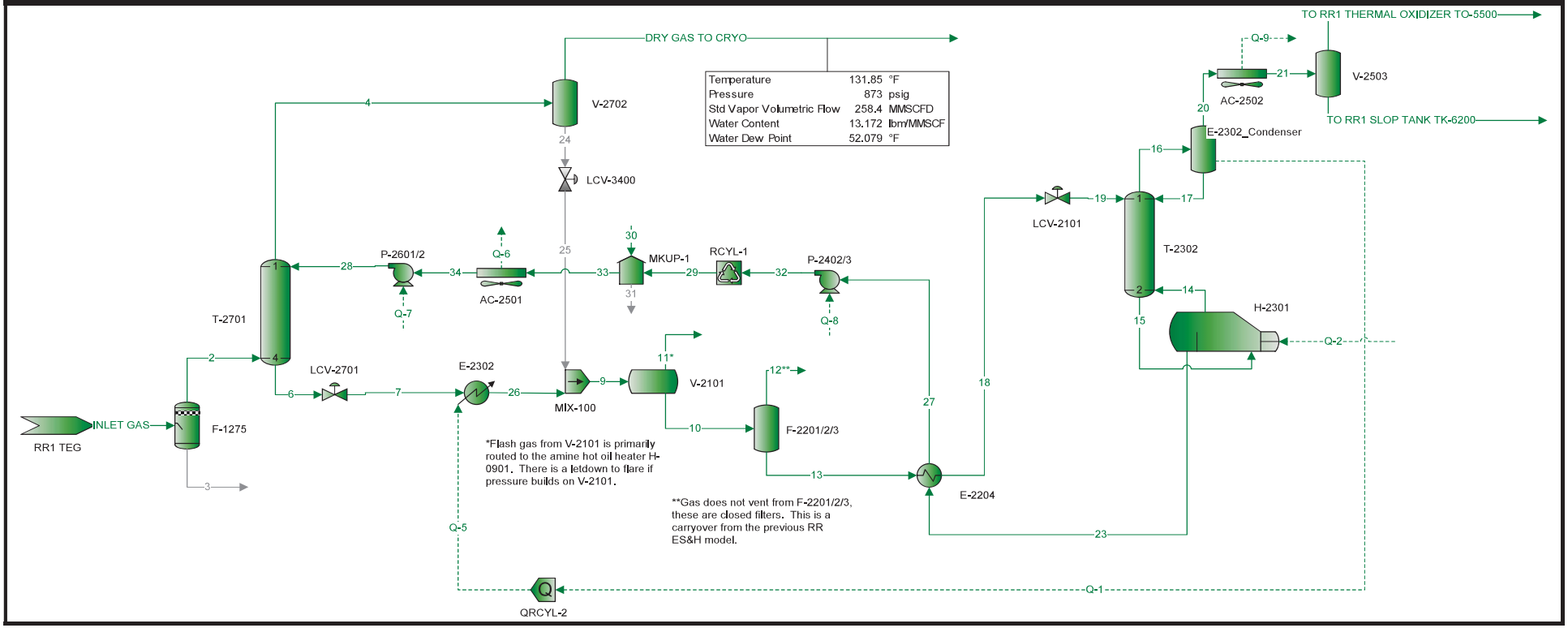
RR1CTRLHIST01:FI_2850.PV [Cyclic - 00 01:39:23.153]

Description	Server	Color	Max Raw	Display U...	Minimum	Origi...	Maximum	IO Addr...	Time Offset	Min Raw	Precision	Format	Number	Source Tag	Source Server	Value at X1	Value at X2	Tag
FL-2850 FUEL FL...	RR1CTRLHIST01		156.000	SCFH	0.000	SCFH	28.000	\\RR1...	0:00:00.000	0.000	3	Decimal	1			20.699	24.658	☑
FL-2850 FUEL FL...	RR1CTRLHIST01		156.0000	SCFH	0.0000	SCFH	28.0000	\\RR1...	0:00:00.000	0.0000	4	Decimal	2			21.2709	21.7189	☑

Train 1 and 2 ProMax Reports

RR1&3 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	



* User Specified Values
? Extrapolated or Approximate Values

ProMax 7.0.26169.0
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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-2702	RR1 TEG	V-2503	V-2503	F-1275
To Block	--	F-1275	--	--	T-2701

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	6.29778E-07	6.32638E-07	6.21992E-08	4.20618E-05	6.32638E-07
CO2	0.000301345	0.000301003	1.24258E-06	0.00264084	0.000301003
N2	1.01912	1.0162	2.33843E-07	0.0110051	1.0162
C1	77.9412	77.7287	0.000777526	12.3959	77.7287
C2	11.8918	11.8635	0.00405677	15.5504	11.8635
C3	5.5728	5.56126	0.0126013	18.0831	5.56126
iC4	0.762038	0.76055	0.00509153	3.30638	0.76055
nC4	1.67016	1.66764	0.0294567	12.9332	1.66764
iC5	0.353105	0.352694	0.0202587	3.82503	0.352694
nC5	0.376658	0.376347	0.0335117	4.9903	0.376347
nC6	0.257866	0.257977	0.10124	4.91673	0.257977
nC7	0.0728351	0.0729777	0.0750559	1.30337	0.0729777
nC8	0.0123778	0.0124247	0.0241692	0.148778	0.0124247
nC9	0.00323611	0.00325728	0.010228	0.028134	0.00325728
nC10	4.00528E-09	0	5.01387E-09	4.6201E-09	0
H2O	0.0277384	0.284074	98.6642	10.919	0.284074
TEG	0.000153386	0	0.00287928	1.79884E-08	0
Benzene	0.0209106	0.0222743	0.309197	7.3466	0.0222743
Toluene	0.0106169	0.0117259	0.337415	3.0995	0.0117259
Ethylbenzene	0.00418727	0.00483434	0.22535	0.68952	0.00483434
m-Xylene	0.00284254	0.0032538	0.144505	0.450369	0.0032538
Cyclopentane	1.12131E-07	0	1.16234E-08	8.88109E-07	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.0165E-06	1.02121E-06	1.1161E-07	2.98882E-05	1.02121E-06
CO2	0.000628089	0.000627433	2.87924E-06	0.0024232	0.000627433
N2	1.35208	1.34832	3.44903E-07	0.00642775	1.34832
C1	59.2174	59.0612	0.000656739	4.14619	59.0612
C2	16.9347	16.896	0.00642255	9.74907	16.896
C3	11.638	11.615	0.0292561	16.6253	11.615
iC4	2.09763	2.09372	0.0155811	4.00678	2.09372
nC4	4.5974	4.59086	0.0901432	15.6729	4.59086
iC5	1.20655	1.20525	0.0769569	5.75394	1.20525
nC5	1.28703	1.28608	0.127301	7.50683	1.28608
nC6	1.05242	1.05296	0.459349	8.83406	1.05296
nC7	0.345643	0.346351	0.395975	2.72298	0.346351
nC8	0.0669621	0.0672216	0.145359	0.354335	0.0672216
nC9	0.0196566	0.019787	0.0690674	0.0752327	0.019787
nC10	2.69894E-08	0	3.75603E-08	1.37057E-08	0
H2O	0.0236665	0.242395	93.5853	4.10131	0.242395
TEG	0.00109091	0	0.0227657	5.63229E-08	0
Benzene	0.077356	0.0824084	1.27162	11.9648	0.0824084
Toluene	0.0463285	0.0511724	1.63686	5.95433	0.0511724

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.0210535	0.0243091	1.25964	1.52626	0.0243091
m-Xylene	0.0142922	0.0163615	0.80774	0.996896	0.0163615
Cyclopentane	3.72441E-07	0	4.29202E-08	1.29864E-06	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.00608959	0.00613524	1.56037E-06	3.29233E-05	0.00613524
CO2	3.7627	3.76949	4.02534E-05	0.00266928	3.76949
N2	8099.95	8100.45	4.82193E-06	0.00708047	8100.45
C1	354755	354828	0.00918157	4.56723	354828
C2	101451	101508	0.0897907	10.7391	101508
C3	69720.3	69780.6	0.409016	18.3136	69780.6
iC4	12566.3	12578.7	0.217832	4.41366	12578.7
nC4	27541.7	27581	1.26025	17.2644	27581
iC5	7228.09	7240.9	1.0759	6.33824	7240.9
nC5	7710.21	7726.5	1.77974	8.26914	7726.5
nC6	6304.73	6326	6.42195	9.73114	6326
nC7	2070.65	2080.81	5.53595	2.99949	2080.81
nC8	401.151	403.854	2.0322	0.390317	403.854
nC9	117.757	118.876	0.9656	0.0828725	118.876
nC10	0.000161686	0	5.25113E-07	1.50975E-08	0
H2O	141.779	1456.26	1308.37	4.51779	1456.26
TEG	6.53535	0	0.318278	6.20425E-08	0
Benzene	463.418	495.093	17.778	13.1798	495.093
Toluene	277.541	307.434	22.8842	6.55898	307.434
Ethylbenzene	126.125	146.044	17.6104	1.68125	146.044
m-Xylene	85.6207	98.2966	11.2926	1.09813	98.2966
Cyclopentane	0.00223119	0	6.00048E-07	1.43052E-06	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	131.855	128.504	120	120	128.385
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.1149	21.113	18.993	47.9622	21.113
Mass Density	lb/ft^3	3.45014	3.5103	60.7083	0.121433	3.50252
Mass Flow	lb/h	599072	600780	1398.05	110.155	600780
Std Vapor Volumetric Flow	MMSCFD	258.402	259.161	0.670403	0.0209175	259.161
Std Liquid Volumetric Flow	sgpm	3444.5	3448.74	2.8353	0.383725	3448.74
Specific Gravity		0.729042	0.728977	0.973377	1.65601	0.728977
API Gravity				11.9437		
Gross Ideal Gas Heating Value	Btu/ft^3	1265.28	1262.48	110.492	2533.04	1262.48
Gross Liquid Heating Value	Btu/lb	22678.4	22627.8	1204.63	19847.3	22627.8

Warnings

ProMax:ProMax!Project!Flowsheets!RR1&3 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point
Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	3	4	6	7	9
From Block	F-1275	T-2701	T-2701	LCV-2701	MIX-100
To Block	--	V-2702	LCV-2701	E-2302	V-2101

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	9 %
H2S		6.29778E-07	5.46876E-07	5.46876E-07	5.46876E-07
CO2		0.000301345	6.29887E-05	6.29887E-05	6.29887E-05
N2		1.01912	0.00727152	0.00727152	0.00727152
C1		77.9412	1.85589	1.85589	1.85589
C2		11.8918	0.763917	0.763917	0.763917
C3		5.5728	0.558332	0.558332	0.558332
iC4		0.762038	0.0866738	0.0866738	0.0866738
nC4		1.67016	0.275769	0.275769	0.275769
iC5		0.353105	0.0724852	0.0724852	0.0724852
nC5		0.376658	0.0921859	0.0921859	0.0921859
nC6		0.257866	0.100786	0.100786	0.100786
nC7		0.0728351	0.0413885	0.0413885	0.0413885
nC8		0.0123778	0.00966342	0.00966342	0.00966342
nC9		0.00323611	0.0035675	0.0035675	0.0035675
nC10		4.00528E-09	1.6168E-09	1.6168E-09	1.6168E-09
H2O		0.0277384	34.9685	34.9685	34.9685
TEG		0.000153386	60.7376	60.7376	60.7376
Benzene		0.0209106	0.166044	0.166044	0.166044
Toluene		0.0106169	0.133599	0.133599	0.133599
Ethylbenzene		0.00418727	0.0768291	0.0768291	0.0768291
m-Xylene		0.00284254	0.0493859	0.0493859	0.0493859
Cyclopentane		1.12131E-07	1.36349E-08	1.36349E-08	1.36349E-08
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	9 %
H2S		1.0165E-06	1.87983E-07	1.87983E-07	1.87983E-07
CO2		0.000628089	2.79595E-05	2.79595E-05	2.79595E-05
N2		1.35208	0.00205452	0.00205452	0.00205452
C1		59.2174	0.300292	0.300292	0.300292
C2		16.9347	0.231679	0.231679	0.231679
C3		11.638	0.248318	0.248318	0.248318
iC4		2.09763	0.0508101	0.0508101	0.0508101
nC4		4.5974	0.161662	0.161662	0.161662
iC5		1.20655	0.0527471	0.0527471	0.0527471
nC5		1.28703	0.0670832	0.0670832	0.0670832
nC6		1.05242	0.0875999	0.0875999	0.0875999
nC7		0.345643	0.0418288	0.0418288	0.0418288
nC8		0.0669621	0.0111333	0.0111333	0.0111333
nC9		0.0196566	0.00461486	0.00461486	0.00461486
nC10		2.69894E-08	2.3202E-09	2.3202E-09	2.3202E-09
H2O		0.0236665	6.35388	6.35388	6.35388
TEG		0.00109091	91.9962	91.9962	91.9962
Benzene		0.077356	0.130816	0.130816	0.130816
Toluene		0.0463285	0.124155	0.124155	0.124155
Ethylbenzene		0.0210535	0.0822673	0.0822673	0.0822673
m-Xylene		0.0142922	0.0528816	0.0528816	0.0528816
Cyclopentane		3.72441E-07	9.64481E-09	9.64481E-09	9.64481E-09
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	9 lb/h
H2S	0	0.00608959	4.56435E-05	4.56435E-05	4.56435E-05
CO2	0	3.7627	0.00678874	0.00678874	0.00678874
N2	0	8099.95	0.498851	0.498851	0.498851
C1	0	354755	72.9128	72.9128	72.9128
C2	0	101451	56.253	56.253	56.253
C3	0	69720.3	60.2931	60.2931	60.2931
iC4	0	12566.3	12.337	12.337	12.337
nC4	0	27541.7	39.2526	39.2526	39.2526
iC5	0	7228.09	12.8073	12.8073	12.8073
nC5	0	7710.21	16.2882	16.2882	16.2882
nC6	0	6304.73	21.2698	21.2698	21.2698
nC7	0	2070.65	10.1563	10.1563	10.1563
nC8	0	401.151	2.70324	2.70324	2.70324
nC9	0	117.757	1.12052	1.12052	1.12052
nC10	0	0.000161686	5.63359E-07	5.63359E-07	5.63359E-07
H2O	0	141.779	1542.76	1542.76	1542.76
TEG	0	6.53535	22337.2	22337.2	22337.2
Benzene	0	463.418	31.7628	31.7628	31.7628
Toluene	0	277.541	30.1455	30.1455	30.1455
Ethylbenzene	0	126.125	19.975	19.975	19.975
m-Xylene	0	85.6207	12.84	12.84	12.84
Cyclopentane	0	0.00223119	2.34182E-06	2.34182E-06	2.34182E-06
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	9
Temperature	°F		131.973	131.359	134.323	144.864
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	3.00586	3.06723
Molecular Weight	lb/lbmol		21.1149	99.147	99.147	99.147
Mass Density	lb/ft^3		3.45784	66.8185	26.7061	25.4322
Mass Flow	lb/h	0	599072	24280.6	24280.6	24280.6
Std Vapor Volumetric Flow	MMSCFD	0	258.402	2.23041	2.23041	2.23041
Std Liquid Volumetric Flow	sgpm	0	3444.5	44.2467	44.2467	44.2467
Specific Gravity			0.729042	1.07135		
API Gravity				-3.42045		
Gross Ideal Gas Heating Value	Btu/ft^3		1265.28	2616.74	2616.74	2616.74
Gross Liquid Heating Value	Btu/lb		22678.4	9707.12	9707.12	9707.12

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	10	11*	12**	13	14
From Block	V-2101	V-2101	F-2201/2/3	F-2201/2/3	H-2301
To Block	F-2201/2/3	--	--	E-2204	T-2302

Stream Composition

Mole Fraction	10 %	11* %	12** %	13 %	14 %
H2S	4.27302E-07	4.32572E-06	4.59631E-06	4.26366E-07	6.80046E-09
CO2	2.62256E-05	0.0012248	0.00129097	2.59416E-05	8.91375E-08
N2	0.00014693	0.232428	0.179881	0.000106571	2.89761E-08
C1	0.13241	56.3226	54.5126	0.120199	8.58426E-05
C2	0.156342	19.9649	20.6328	0.151744	0.000289868
C3	0.181791	12.458	13.0402	0.178904	0.00061818
iC4	0.0339815	1.75189	1.83943	0.0335761	0.000160121
nC4	0.135381	4.71242	4.96677	0.134296	0.000909917
iC5	0.043525	0.987705	1.04272	0.0433006	0.00047139
nC5	0.0589466	1.14264	1.20732	0.0586887	0.000727182
nC6	0.0791678	0.783979	0.82932	0.0789994	0.00246372
nC7	0.0359436	0.213461	0.225784	0.035901	0.00130144
nC8	0.00894609	0.0323329	0.0341804	0.00894042	0.00050832
nC9	0.00344914	0.00730776	0.00771867	0.00344818	0.000308283
nC10	1.6039E-09	2.02457E-09	2.13626E-09	1.60378E-09	2.44491E-10
H2O	36.0371	1.1976	1.27693	36.045	92.6004
TEG	62.6595	0.000343978	0.00036332	62.6736	7.20182
Benzene	0.167746	0.112247	0.119105	0.167757	0.0378058
Toluene	0.136238	0.0501906	0.0532059	0.136256	0.0578312
Ethylbenzene	0.0787027	0.0176164	0.0186574	0.0787162	0.056653
m-Xylene	0.0505979	0.0110827	0.011733	0.0506066	0.0376946
Cyclopentane	1.22155E-08	5.84926E-08	6.20345E-08	1.22043E-08	5.27723E-10
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	10 %	11* %	12** %	13 %	14 %
H2S	1.43585E-07	5.4183E-06	5.65011E-06	1.43247E-07	8.37102E-09
CO2	1.13798E-05	0.0019811	0.00204927	1.12547E-05	1.41689E-07
N2	4.05825E-05	0.239303	0.181755	2.94304E-05	2.93181E-08
C1	0.0209437	33.2084	31.5432	0.0190092	4.97397E-05
C2	0.0463507	22.0639	22.3777	0.0449802	0.000314811
C3	0.0790369	20.1901	20.7405	0.0777689	0.000984555
iC4	0.0194736	3.74235	3.85623	0.0192382	0.000336139
nC4	0.077582	10.0666	10.4125	0.0769477	0.00191018
iC5	0.030962	2.61909	2.71354	0.0307974	0.0012284
nC5	0.0419324	3.02992	3.14187	0.0417421	0.00189497
nC6	0.0672657	2.48303	2.57776	0.0671116	0.00766838
nC7	0.0355107	0.78612	0.816031	0.0354628	0.0047101
nC8	0.0100756	0.135742	0.140828	0.0100675	0.00209721
nC9	0.00436162	0.0344472	0.0357071	0.0043597	0.00142809
nC10	2.25002E-09	1.05871E-08	1.09633E-08	2.24949E-09	1.25644E-09
H2O	6.40108	0.792954	0.829744	6.40142	60.2536
TEG	92.7771	0.00189853	0.00196797	92.7828	39.0628
Benzene	0.129191	0.322244	0.33557	0.129178	0.106661
Toluene	0.123766	0.169964	0.176823	0.123762	0.192457
Ethylbenzene	0.0823822	0.0687374	0.0714449	0.0823828	0.217237
m-Xylene	0.0529634	0.0432436	0.044929	0.0529639	0.144541
Cyclopentane	8.44683E-09	1.50771E-07	1.56925E-07	8.43772E-09	1.33677E-09
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	10 lb/h	11* lb/h	12** lb/h	13 lb/h	14 lb/h
H2S	3.45698E-05	1.10738E-05	8.34804E-08	3.44863E-05	1.2628E-07
CO2	0.00273982	0.00404891	3.02779E-05	0.00270954	2.13744E-06
N2	0.00977073	0.48908	0.00268544	0.00708529	4.42275E-07
C1	5.04246	67.8704	0.46605	4.57641	0.000750345
C2	11.1595	45.0935	0.33063	10.8289	0.00474906
C3	19.0291	41.264	0.30644	18.7227	0.0148524
iC4	4.68851	7.6485	0.0569757	4.63154	0.0050708
nC4	18.6788	20.5737	0.153844	18.525	0.0288158
iC5	7.45449	5.35282	0.0400925	7.4144	0.0185309
nC5	10.0957	6.19246	0.0464211	10.0493	0.0285864
nC6	16.195	5.07475	0.0380864	16.157	0.115681
nC7	8.54965	1.60665	0.0120568	8.53759	0.0710539
nC8	2.42582	0.277426	0.00208074	2.42374	0.0316373
nC9	1.05011	0.0704021	0.000527572	1.04959	0.0215433
nC10	5.41721E-07	2.16375E-08	1.61982E-10	5.41559E-07	1.89539E-08
H2O	1541.14	1.62062	0.0122595	1541.13	908.952
TEG	22337.2	0.00388015	2.90768E-05	22337.2	589.279
Benzene	31.1042	0.658593	0.00495805	31.0993	1.60902
Toluene	29.7981	0.347368	0.00261255	29.7955	2.90329
Ethylbenzene	19.8345	0.140483	0.0010556	19.8335	3.27711
m-Xylene	12.7516	0.08838	0.000663826	12.7509	2.18046
Cyclopentane	2.03368E-06	3.08141E-07	2.31857E-09	2.03136E-06	2.01658E-08
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	10	11*	12**	13	14
Temperature	°F	144.864	144.864	144.881	144.881	400 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	16.6959
Mole Fraction Vapor	%	0	100	100	0	100
Molecular Weight	lb/lbmol	101.423	27.2086	27.7244	101.44	27.6866
Mass Density	lb/ft^3	67.3088	0.342328	0.326739	67.315	0.0504784
Mass Flow	lb/h	24076.2	204.377	1.4775	24074.8	1508.54
Std Vapor Volumetric Flow	MMSCFD	2.162	0.0684119	0.000485366	2.16151	0.49624
Std Liquid Volumetric Flow	sgpm	43.2161	1.03064	0.00738357	43.2087	2.88381
Specific Gravity		1.07921	0.939441	0.957252	1.07931	0.955948
API Gravity		-5.04943			-5.0614	
Gross Ideal Gas Heating Value	Btu/ft^3	2649.17	1591.78	1619.4	2649.4	353.189
Gross Liquid Heating Value	Btu/lb	9602.01	22089.2	22051.1	9601.25	4099.77

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	15	16	17	18	19
From Block	T-2302	T-2302	E-2302_Condenser	E-2204	LCV-2101
To Block	H-2301	E-2302_Condenser	T-2302	LCV-2101	T-2302

Stream Composition

Mole Fraction	15 %	16 %	17 %	18 %	19 %
H2S	1.75197E-09	1.2456E-06	2.75999E-09	4.26366E-07	4.26366E-07
CO2	2.26532E-08	7.57843E-05	4.67628E-08	2.59416E-05	2.59416E-05
N2	7.32021E-09	0.00031132	9.57542E-09	0.000106571	0.000106571
C1	2.17125E-05	0.351132	2.43491E-05	0.120199	0.120199
C2	7.34837E-05	0.443283	4.82392E-05	0.151744	0.151744
C3	0.000157066	0.522622	6.42196E-05	0.178904	0.178904
iC4	4.07556E-05	0.0980835	8.80302E-06	0.0335761	0.0335761
nC4	0.000231996	0.392308	6.64827E-05	0.134296	0.134296
iC5	0.000120643	0.126488	1.78368E-05	0.0433006	0.0433006
nC5	0.000186336	0.171438	2.53337E-05	0.0586887	0.0586887
nC6	0.000642541	0.230723	3.60949E-05	0.0789994	0.0789994
nC7	0.000338365	0.10485	1.40623E-05	0.035901	0.035901
nC8	0.000133204	0.0261043	3.67312E-06	0.00894042	0.00894042
nC9	8.18167E-05	0.0100624	8.9845E-07	0.00344818	0.00344818
nC10	6.60878E-11	4.67338E-09	3.52223E-13	1.60378E-09	1.60378E-09
H2O	29.2359	95.8609	93.7513	36.045	36.045
TEG	70.7075	0.41251	6.23951	62.6736	62.6736
Benzene	0.0103797	0.488025	0.00299106	0.167757	0.167757
Toluene	0.0163649	0.393529	0.00301149	0.136256	0.136256
Ethylbenzene	0.0166603	0.223783	0.00175857	0.0787162	0.0787162
m-Xylene	0.0110836	0.143735	0.00115858	0.0506066	0.0506066
Cyclopentane	1.38441E-10	3.56388E-08	1.7273E-11	1.22043E-08	1.22043E-08
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	15 %	16 %	17 %	18 %	19 %
H2S	5.35482E-10	2.09224E-06	3.58089E-09	1.43247E-07	1.43247E-07
CO2	8.94092E-09	0.000164379	7.83466E-08	1.12547E-05	1.12547E-05
N2	1.83906E-09	0.000429828	1.02117E-08	2.94304E-05	2.94304E-05
C1	3.12383E-06	0.277627	1.48706E-05	0.0190092	0.0190092
C2	1.9816E-05	0.656934	5.52195E-05	0.0449802	0.0449802
C3	6.21131E-05	1.13581	0.000107804	0.0777689	0.0777689
iC4	2.1244E-05	0.28097	1.94781E-05	0.0192382	0.0192382
nC4	0.000120929	1.1238	0.000147104	0.0769477	0.0769477
iC5	7.80616E-05	0.44978	4.89913E-05	0.0307974	0.0307974
nC5	0.000120568	0.609617	6.95825E-05	0.0417421	0.0417421
nC6	0.000496581	0.979931	0.000118414	0.0671116	0.0671116
nC7	0.000304066	0.517804	5.36421E-05	0.0354628	0.0354628
nC8	0.000136457	0.146963	1.59729E-05	0.0100675	0.0100675
nC9	9.41073E-05	0.0636056	4.38674E-06	0.0043597	0.0043597
nC10	8.43289E-11	3.27718E-08	1.90783E-12	2.24949E-09	2.24949E-09
H2O	4.7235	85.1146	64.2971	6.40142	6.40142
TEG	95.2278	3.05314	35.671	92.7828	92.7828
Benzene	0.0072712	1.8788	0.00889438	0.129178	0.129178
Toluene	0.0135226	1.78706	0.0105632	0.123762	0.123762
Ethylbenzene	0.0158625	1.17093	0.00710744	0.0823828	0.0823828
m-Xylene	0.0105529	0.75208	0.00468252	0.0529639	0.0529639
Cyclopentane	8.70746E-11	1.23187E-07	4.61173E-11	8.43772E-09	8.43772E-09
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	15 lb/h	16 lb/h	17 lb/h	18 lb/h	19 lb/h
H2S	1.28918E-07	3.44887E-05	5.02033E-09	3.44863E-05	3.44863E-05
CO2	2.15253E-06	0.00270964	1.0984E-07	0.00270954	0.00270954
N2	4.42755E-07	0.00708531	1.43165E-08	0.00708529	0.00708529
C1	0.000752066	4.57643	2.08482E-05	4.57641	4.57641
C2	0.00477073	10.8289	7.74166E-05	10.8289	10.8289
C3	0.0149538	18.7227	0.000151139	18.7227	18.7227
iC4	0.0051145	4.63152	2.73079E-05	4.63154	4.63154
nC4	0.0291137	18.5249	0.000206236	18.525	18.525
iC5	0.0187934	7.41421	6.86847E-05	7.4144	7.4144
nC5	0.0290269	10.049	9.75532E-05	10.0493	10.0493
nC6	0.119552	16.1533	0.000166013	16.157	16.157
nC7	0.0732043	8.53551	7.52051E-05	8.53759	8.53759
nC8	0.0328522	2.42254	2.23936E-05	2.42374	2.42374
nC9	0.0226564	1.04848	6.15012E-06	1.04959	1.04959
nC10	2.03023E-08	5.40213E-07	2.67474E-12	5.41559E-07	5.41559E-07
H2O	1137.19	1403.03	90.1431	1541.13	1541.13
TEG	22926.2	50.3283	50.01	22337.2	22337.2
Benzene	1.75055	30.9702	0.0124697	31.0993	31.0993
Toluene	3.25559	29.458	0.0148094	29.7955	29.7955
Ethylbenzene	3.8189	19.3016	0.00996448	19.8335	19.8335
m-Xylene	2.54061	12.3973	0.00656479	12.7509	12.7509
Cyclopentane	2.09633E-08	2.03063E-06	6.46555E-11	2.03136E-06	2.03136E-06
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	15	16	17	18	19
Temperature	°F	297.078	288.738	215	315 *	287.917
Pressure	psia	16.6959	15.6959	15.6959	73.6959	15.6959 *
Mole Fraction Vapor	%	0	100	0	0.467703	11.6726
Molecular Weight	lb/lbmol	111.505	20.2899	26.268	101.44	101.44
Mass Density	lb/ft^3	62.2924	0.0399298	62.5431	46.8022	1.66728
Mass Flow	lb/h	24075.1	1648.41	140.198	24074.8	24074.8
Std Vapor Volumetric Flow	MMSCFD	1.96643	0.73993	0.0486093	2.16151	2.16151
Std Liquid Volumetric Flow	sgpm	42.8735	3.48784	0.26881	43.2087	43.2087
Specific Gravity		0.998775	0.700556	1.0028		
API Gravity		-5.86256		2.50104		
Gross Ideal Gas Heating Value	Btu/ft^3	2936.75	191.767	305.193	2649.4	2649.4
Gross Liquid Heating Value	Btu/lb	9697.24	2657.12	3634.94	9601.25	9601.25

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	20	21	23	24	25
From Block	E-2302_Condenser	AC-2502	H-2301	V-2702	LCV-3400
To Block	AC-2502	V-2503	E-2204	LCV-3400	MIX-100

Stream Composition

Mole Fraction	20 %	21 %	23 %	24 %	25 %
H2S	1.33299E-06	1.33299E-06	4.79387E-11		
CO2	8.11097E-05	8.11097E-05	2.12471E-10		
N2	0.00033321	0.00033321	1.06149E-11		
C1	0.37582	0.37582	6.64503E-08		
C2	0.474448	0.474448	4.46493E-07		
C3	0.559365	0.559365	1.42375E-06		
iC4	0.10498	0.10498	4.65793E-07		
nC4	0.419888	0.419888	3.17461E-06		
iC5	0.135381	0.135381	2.25379E-06		
nC5	0.183491	0.183491	3.78189E-06		
nC6	0.246944	0.246944	2.78311E-05		
nC7	0.112221	0.112221	1.32946E-05		
nC8	0.0279395	0.0279395	6.58912E-06		
nC9	0.0107698	0.0107698	5.37643E-06		
nC10	5.00195E-09	5.00195E-09	5.87056E-12		
H2O	96.0093	96.0093	7.84827		
TEG	0.00279216	0.00279216	92.1429		
Benzene	0.522129	0.522129	0.00112241		
Toluene	0.420988	0.420988	0.00236864		
Ethylbenzene	0.239394	0.239394	0.00316141		
m-Xylene	0.15376	0.15376	0.00210154		
Cyclopentane	3.81435E-08	3.81435E-08	7.04418E-12		
Cyclohexane	0	0	0		
SO2	0	0	0		

Mass Fraction	20 %	21 %	23 %	24 %	25 %
H2S	2.2864E-06	2.2864E-06	1.16869E-11		
CO2	0.000179652	0.000179652	6.68882E-11		
N2	0.000469782	0.000469782	2.1271E-12		
C1	0.303433	0.303433	7.62557E-09		
C2	0.717995	0.717995	9.60369E-08		
C3	1.24138	1.24138	4.49091E-07		
iC4	0.307086	0.307086	1.9366E-07		
nC4	1.22826	1.22826	1.31989E-06		
iC5	0.491586	0.491586	1.16318E-06		
nC5	0.666279	0.666279	1.95183E-06		
nC6	1.07101	1.07101	1.71561E-05		
nC7	0.565932	0.565932	9.52917E-06		
nC8	0.160622	0.160622	5.38401E-06		
nC9	0.0695177	0.0695177	4.93256E-06		
nC10	3.5818E-08	3.5818E-08	5.97493E-12		
H2O	87.0497	87.0497	1.01139		
TEG	0.021103	0.021103	98.9824		
Benzene	2.05262	2.05262	0.000627153		
Toluene	1.9522	1.9522	0.00156115		
Ethylbenzene	1.27911	1.27911	0.00240086		
m-Xylene	0.821555	0.821555	0.00159597		
Cyclopentane	1.34634E-07	1.34634E-07	3.53392E-12		
Cyclohexane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	20 lb/h	21 lb/h	23 lb/h	24 lb/h	25 lb/h
H2S	3.44836E-05	3.44836E-05	2.63734E-09	0	0
CO2	0.00270953	0.00270953	1.50944E-08	0	0
N2	0.00708529	0.00708529	4.80012E-10	0	0
C1	4.57641	4.57641	1.72083E-06	0	0
C2	10.8289	10.8289	2.16722E-05	0	0
C3	18.7226	18.7226	0.000101344	0	0
iC4	4.63149	4.63149	4.37023E-05	0	0
nC4	18.5247	18.5247	0.000297853	0	0
iC5	7.41414	7.41414	0.000262489	0	0
nC5	10.0489	10.0489	0.000440461	0	0
nC6	16.1531	16.1531	0.00387153	0	0
nC7	8.53544	8.53544	0.0021504	0	0
nC8	2.42252	2.42252	0.00121499	0	0
nC9	1.04847	1.04847	0.00111311	0	0
nC10	5.40211E-07	5.40211E-07	1.34834E-09	0	0
H2O	1312.89	1312.89	228.236	0	0
TEG	0.318278	0.318278	22336.9	0	0
Benzene	30.9577	30.9577	0.141527	0	0
Toluene	29.4432	29.4432	0.352297	0	0
Ethylbenzene	19.2917	19.2917	0.541791	0	0
m-Xylene	12.3908	12.3908	0.360155	0	0
Cyclopentane	2.03056E-06	2.03056E-06	7.97483E-10	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	20	21	23	24	25
Temperature	°F	215 *	120 *	400		
Pressure	psia	15.6959	15.4959	16.6959	887.696	79.6959 *
Mole Fraction Vapor	%	100	3.02573	0		
Molecular Weight	lb/lbmol	19.8695	19.8695	139.796		
Mass Density	lb/ft^3	0.0434634	1.62147	58.0756		
Mass Flow	lb/h	1508.21	1508.21	22566.5	0	0
Std Vapor Volumetric Flow	MMSCFD	0.69132	0.69132	1.47019	0	0
Std Liquid Volumetric Flow	sgpm	3.21903	3.21903	39.9897	0	0
Specific Gravity		0.686043		0.931165		
API Gravity				-6.67569		
Gross Ideal Gas Heating Value	Btu/ft^3	183.792	183.792	3808.79		
Gross Liquid Heating Value	Btu/lb	2566.23	2566.23	10071.4		

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	26	27	28	29	30
From Block	E-2302	E-2204	P-2601/2	RCYL-1	--
To Block	MIX-100	P-2402/3	T-2701	MKUP-1	MKUP-1

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	5.46876E-07	4.79387E-11	0	6.63175E-11	0
CO2	6.29887E-05	2.12471E-10	0	0	0
N2	0.00727152	1.06149E-11	0	1.69249E-11	0
C1	1.85589	6.64503E-08	9.41636E-08	9.41962E-08	0
C2	0.763917	4.46493E-07	5.97333E-07	5.97539E-07	0
C3	0.558332	1.42375E-06	1.84157E-06	1.8422E-06	0
iC4	0.0866738	4.65793E-07	5.97499E-07	5.97706E-07	0
nC4	0.275769	3.17461E-06	4.16588E-06	4.16733E-06	0
iC5	0.0724852	2.25379E-06	3.20863E-06	3.20974E-06	0
nC5	0.0921859	3.78189E-06	5.44983E-06	5.45171E-06	0
nC6	0.100786	2.78311E-05	1.22147E-05	1.22189E-05	0
nC7	0.0413885	1.32946E-05	4.28007E-06	4.28155E-06	0
nC8	0.00966342	6.58912E-06	1.68951E-06	1.69009E-06	0
nC9	0.0035675	5.37643E-06	8.63322E-06	8.6362E-06	0
nC10	1.6168E-09	5.87056E-12	7.06247E-07	7.06491E-07	0
H2O	34.9685	7.84827	7.84788	7.85031	0.827516
TEG	60.7376	92.1429	92.1484	92.1459	99.1725
Benzene	0.166044	0.00112241	0.000697841	0.000698083	0
Toluene	0.133599	0.00236864	0.00169878	0.00169937	0
Ethylbenzene	0.0768291	0.00316141	0.000329449	0.000329563	0
m-Xylene	0.0493859	0.00210154	0.000957192	0.000957523	0
Cyclopentane	1.36349E-08	7.04418E-12	1.97239E-05	1.97307E-05	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	1.87983E-07	1.16869E-11	0	1.61675E-11	0
CO2	2.79595E-05	6.68882E-11	0	0	0
N2	0.00205452	2.1271E-12	0	3.39154E-12	0
C1	0.300292	7.62557E-09	1.08056E-08	1.08096E-08	0
C2	0.231679	9.60369E-08	1.28479E-07	1.28526E-07	0
C3	0.248318	4.49091E-07	5.80868E-07	5.81082E-07	0
iC4	0.0508101	1.9366E-07	2.48413E-07	2.48505E-07	0
nC4	0.161662	1.31989E-06	1.73199E-06	1.73262E-06	0
iC5	0.0527471	1.16318E-06	1.65594E-06	1.65655E-06	0
nC5	0.0670832	1.95183E-06	2.81259E-06	2.81363E-06	0
nC6	0.0875999	1.71561E-05	7.52939E-06	7.53217E-06	0
nC7	0.0418288	9.52917E-06	3.06777E-06	3.0689E-06	0
nC8	0.0111333	5.38401E-06	1.38048E-06	1.38099E-06	0
nC9	0.00461486	4.93256E-06	7.92031E-06	7.92323E-06	0
nC10	2.3202E-09	5.97493E-12	7.18788E-07	7.19053E-07	0
H2O	6.35388	1.01139	1.01132	1.01166	0.1
TEG	91.9962	98.9824	98.9862	98.9858	99.9
Benzene	0.130816	0.000627153	0.000389914	0.000390058	0
Toluene	0.124155	0.00156115	0.00111963	0.00112004	0
Ethylbenzene	0.0822673	0.00240086	0.000250187	0.000250279	0
m-Xylene	0.0528816	0.00159597	0.000726901	0.000727169	0
Cyclopentane	9.64481E-09	3.53392E-12	9.89487E-06	9.89852E-06	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	4.56435E-05	2.63734E-09	0	3.64809E-09	0
CO2	0.00678874	1.50944E-08	0	0	0
N2	0.498851	4.80012E-10	0	7.65276E-10	0
C1	72.9128	1.72083E-06	2.43911E-06	2.43911E-06	0
C2	56.253	2.16722E-05	2.9001E-05	2.9001E-05	0
C3	60.2931	0.000101344	0.000131117	0.000131117	0
iC4	12.337	4.37023E-05	5.60733E-05	5.60733E-05	0
nC4	39.2526	0.000297853	0.000390954	0.000390954	0
iC5	12.8073	0.000262489	0.000373788	0.000373788	0
nC5	16.2882	0.000440461	0.000634875	0.000634875	0
nC6	21.2698	0.00387153	0.00169958	0.00169958	0
nC7	10.1563	0.0021504	0.000692475	0.000692475	0
nC8	2.70324	0.00121499	0.00031161	0.00031161	0
nC9	1.12052	0.00111311	0.00178782	0.00178782	0
nC10	5.63359E-07	1.34834E-09	0.000162249	0.000162249	0
H2O	1542.76	228.236	228.281	228.273	0.0083206
TEG	22337.2	22336.9	22343.8	22335.4	8.31228
Benzene	31.7628	0.141527	0.0880137	0.0880137	0
Toluene	30.1455	0.352297	0.252729	0.252729	0
Ethylbenzene	19.975	0.541791	0.0564737	0.0564737	0
m-Xylene	12.84	0.360155	0.164081	0.164081	0
Cyclopentane	2.34182E-06	7.97483E-10	0.00223353	0.00223353	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	144.864	214.27	126.413	216.5	120 *
Pressure	psia	79.6959 *	11.6959	1004.7 *	64.6959	139.696 *
Mole Fraction Vapor	%	3.06723	0	0	0	0
Molecular Weight	lb/lbmol	99.147	139.796	139.799	139.796	149.079
Mass Density	lb/ft^3	25.4322	65.1907	68.4597	65.1147	68.731
Mass Flow	lb/h	24280.6	22566.5	22572.6	22564.3	8.3206
Std Vapor Volumetric Flow	MMSCFD	2.23041	1.47019	1.47056	1.47005	0.000508325
Std Liquid Volumetric Flow	sgpm	44.2467	39.9897	40	39.9853	0.0147271
Specific Gravity			1.04525	1.09766	1.04403	1.10201
API Gravity			-6.67498	-6.81785	-6.68428	-7.10018
Gross Ideal Gas Heating Value	Btu/ft^3	2616.74	3808.79	3808.77	3808.67	4095.08
Gross Liquid Heating Value	Btu/lb	9707.12	10071.4	10071.1	10071.1	10163.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	31	32	33	34	
From Block	MKUP-1	P-2402/3	MKUP-1	AC-2501	
To Block	--	RCYL-1	AC-2501	P-2601/2	

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	
H2S	6.63175E-11	4.79387E-11	0	0	
CO2	0	2.12471E-10	0	0	
N2	1.69249E-11	1.06149E-11	0	0	
C1	9.41962E-08	6.64503E-08	9.41636E-08	9.41636E-08	
C2	5.97539E-07	4.46493E-07	5.97333E-07	5.97333E-07	
C3	1.8422E-06	1.42375E-06	1.84157E-06	1.84157E-06	
iC4	5.97706E-07	4.65793E-07	5.97499E-07	5.97499E-07	
nC4	4.16733E-06	3.17461E-06	4.16588E-06	4.16588E-06	
iC5	3.20974E-06	2.25379E-06	3.20863E-06	3.20863E-06	
nC5	5.45171E-06	3.78189E-06	5.44983E-06	5.44983E-06	
nC6	1.22189E-05	2.78311E-05	1.22147E-05	1.22147E-05	
nC7	4.28155E-06	1.32946E-05	4.28007E-06	4.28007E-06	
nC8	1.69009E-06	6.58912E-06	1.68951E-06	1.68951E-06	
nC9	8.6362E-06	5.37643E-06	8.63322E-06	8.63322E-06	
nC10	7.06491E-07	5.87056E-12	7.06247E-07	7.06247E-07	
H2O	7.85031	7.84827	7.84788	7.84788	
TEG	92.1459	92.1429	92.1484	92.1484	
Benzene	0.000698083	0.00112241	0.000697841	0.000697841	
Toluene	0.00169937	0.00236864	0.00169878	0.00169878	
Ethylbenzene	0.000329563	0.00316141	0.000329449	0.000329449	
m-Xylene	0.000957523	0.00210154	0.000957192	0.000957192	
Cyclopentane	1.97307E-05	7.04418E-12	1.97239E-05	1.97239E-05	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

Mass Fraction	31 %	32 %	33 %	34 %	
H2S	1.61675E-11	1.16869E-11	0	0	
CO2	0	6.68882E-11	0	0	
N2	3.39154E-12	2.1271E-12	0	0	
C1	1.08096E-08	7.62557E-09	1.08056E-08	1.08056E-08	
C2	1.28526E-07	9.60369E-08	1.28479E-07	1.28479E-07	
C3	5.81082E-07	4.49091E-07	5.80868E-07	5.80868E-07	
iC4	2.48505E-07	1.9366E-07	2.48413E-07	2.48413E-07	
nC4	1.73262E-06	1.31989E-06	1.73199E-06	1.73199E-06	
iC5	1.65655E-06	1.16318E-06	1.65594E-06	1.65594E-06	
nC5	2.81363E-06	1.95183E-06	2.81259E-06	2.81259E-06	
nC6	7.53217E-06	1.71561E-05	7.52939E-06	7.52939E-06	
nC7	3.0689E-06	9.52917E-06	3.06777E-06	3.06777E-06	
nC8	1.38099E-06	5.38401E-06	1.38048E-06	1.38048E-06	
nC9	7.92323E-06	4.93256E-06	7.92031E-06	7.92031E-06	
nC10	7.19053E-07	5.97493E-12	7.18788E-07	7.18788E-07	
H2O	1.01166	1.01139	1.01132	1.01132	
TEG	98.9858	98.9824	98.9862	98.9862	
Benzene	0.000390058	0.000627153	0.000389914	0.000389914	
Toluene	0.00112004	0.00156115	0.00111963	0.00111963	
Ethylbenzene	0.000250279	0.00240086	0.000250187	0.000250187	
m-Xylene	0.000727169	0.00159597	0.000726901	0.000726901	
Cyclopentane	9.89852E-06	3.53392E-12	9.89487E-06	9.89487E-06	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h
H2S	0	2.63734E-09	0	0
CO2	0	1.50944E-08	0	0
N2	0	4.80012E-10	0	0
C1	0	1.72083E-06	2.43911E-06	2.43911E-06
C2	0	2.16722E-05	2.9001E-05	2.9001E-05
C3	0	0.000101344	0.000131117	0.000131117
iC4	0	4.37023E-05	5.60733E-05	5.60733E-05
nC4	0	0.000297853	0.000390954	0.000390954
iC5	0	0.000262489	0.000373788	0.000373788
nC5	0	0.000440461	0.000634875	0.000634875
nC6	0	0.00387153	0.00169958	0.00169958
nC7	0	0.0021504	0.000692475	0.000692475
nC8	0	0.00121499	0.00031161	0.00031161
nC9	0	0.00111311	0.00178782	0.00178782
nC10	0	1.34834E-09	0.000162249	0.000162249
H2O	0	228.236	228.281	228.281
TEG	0	22336.9	22343.8	22343.8
Benzene	0	0.141527	0.0880137	0.0880137
Toluene	0	0.352297	0.252729	0.252729
Ethylbenzene	0	0.541791	0.0564737	0.0564737
m-Xylene	0	0.360155	0.164081	0.164081
Cyclopentane	0	7.97483E-10	0.00223353	0.00223353
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

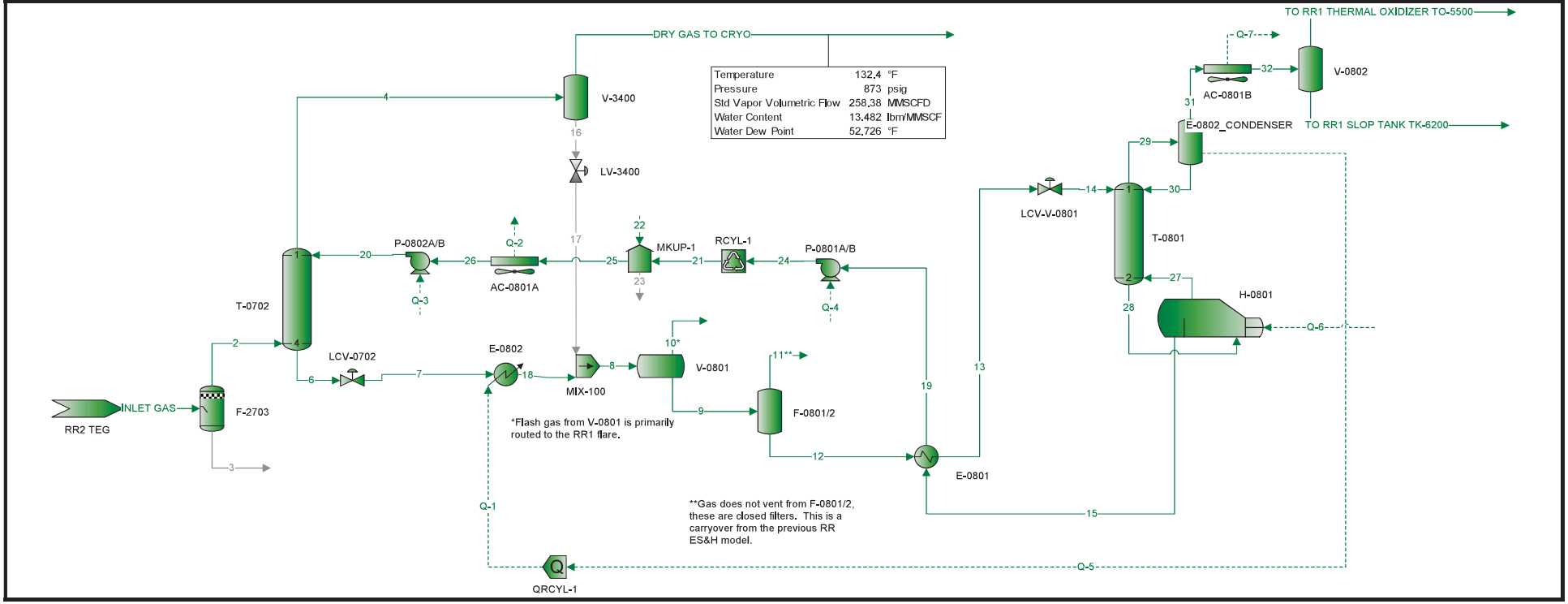
Property	Units	31	32	33	34
Temperature	°F	216.5	214.371	216.466	125 *
Pressure	psia	64.6959	64.6959 *	64.6959	59.6959
Mole Fraction Vapor	%	0	0	0	0
Molecular Weight	lb/lbmol	139.796	139.796	139.799	139.799
Mass Density	lb/ft^3	65.1147	65.1922	65.1159	68.4277
Mass Flow	lb/h	0	22566.5	22572.6	22572.6
Std Vapor Volumetric Flow	MMSCFD	0	1.47019	1.47056	1.47056
Std Liquid Volumetric Flow	sgpm	0	39.9897	40 *	40
Specific Gravity			1.04527	1.04405	1.09715
API Gravity			-6.68254	-6.6844	-6.68369
Gross Ideal Gas Heating Value	Btu/ft^3	3808.67	3808.79	3808.77	3808.77
Gross Liquid Heating Value	Btu/lb	10071.1	10071.4	10071.1	10071.1

Remarks

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RR2 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-3400	RR2 TEG	V-0802	V-0802	F-2703
To Block	--	F-2703	--	--	T-0702

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	7.41392E-07	7.44722E-07	7.26722E-08	4.94504E-05	7.44722E-07
CO2	0.00051033	0.000509734	2.08942E-06	0.00446646	0.000509734
N2	1.01911	1.01615	2.33557E-07	0.0111103	1.01615
C1	77.9405	77.7256	0.000770092	12.4485	77.7256
C2	11.8917	11.863	0.00398305	15.5539	11.863
C3	5.57275	5.56104	0.0123371	18.0631	5.56104
iC4	0.762033	0.760519	0.00498053	3.30109	0.760519
nC4	1.67015	1.66757	0.0288195	12.9147	1.66757
iC5	0.353103	0.352679	0.0198233	3.82063	0.352679
nC5	0.376656	0.376331	0.0327769	4.98242	0.376331
nC6	0.257865	0.257966	0.0993091	4.92299	0.257966
nC7	0.072836	0.0729748	0.0735641	1.30406	0.0729748
nC8	0.0123781	0.0124242	0.0237088	0.148974	0.0124242
nC9	0.00323625	0.00325715	0.0100303	0.0281578	0.00325715
nC10	0	0	0	0	0
H2O	0.0283902	0.287898	98.6912	10.9191	0.287898
TEG	0.000156529	0	0.00284908	1.77948E-08	0
Benzene	0.0209194	0.0222704	0.302701	7.33673	0.0222704
Toluene	0.0106271	0.0117237	0.330512	3.099	0.0117237
Ethylbenzene	0.00420701	0.00483328	0.220965	0.690306	0.00483328
m-Xylene	0.00285102	0.00325265	0.141661	0.450711	0.00325265
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.19665E-06	1.20214E-06	1.30538E-07	3.51543E-05	1.20214E-06
CO2	0.00106367	0.00106253	4.8465E-06	0.00410022	0.00106253
N2	1.35206	1.34827	3.44837E-07	0.00649214	1.34827
C1	59.2167	59.059	0.000651133	4.16568	59.059
C2	16.9345	16.8953	0.00631235	9.75567	16.8953
C3	11.6379	11.6146	0.0286724	16.6144	11.6146
iC4	2.09761	2.09365	0.0152572	4.00219	2.09365
nC4	4.59735	4.59069	0.0882847	15.6576	4.59069
iC5	1.20654	1.2052	0.0753809	5.74992	1.2052
nC5	1.28702	1.28603	0.124639	7.49838	1.28603
nC6	1.05241	1.05293	0.451054	8.84932	1.05293
nC7	0.345646	0.346338	0.388507	2.72566	0.346338
nC8	0.0669636	0.0672191	0.142738	0.354962	0.0672191
nC9	0.0196574	0.0197862	0.0678022	0.0753306	0.0197862
nC10	0	0	0	0	0
H2O	0.0242225	0.245658	93.7078	4.10321	0.245658
TEG	0.00111326	0	0.0225503	5.57419E-08	0
Benzene	0.0773885	0.0823943	1.2462	11.9541	0.0823943
Toluene	0.0463728	0.051163	1.60504	5.95607	0.051163

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.0211526	0.0243038	1.2364	1.52869	0.0243038
m-Xylene	0.0143348	0.0163558	0.792663	0.998108	0.0163558
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.00716832	0.00722192	1.84511E-06	3.85979E-05	0.00722192
CO2	6.37171	6.38319	6.85038E-05	0.00450187	6.38319
N2	8099.28	8099.78	4.87417E-06	0.00712809	8099.78
C1	354726	354799	0.00920357	4.57374	354799
C2	101443	101499	0.0892232	10.7113	101499
C3	69714.6	69774.9	0.405276	18.2419	69774.9
iC4	12565.3	12577.7	0.215655	4.39423	12577.7
nC4	27539.5	27578.7	1.24788	17.1914	27578.7
iC5	7227.51	7240.3	1.06549	6.31316	7240.3
nC5	7709.61	7725.86	1.76173	8.23289	7725.86
nC6	6304.26	6325.48	6.37552	9.71616	6325.48
nC7	2070.53	2080.64	5.49143	2.99265	2080.64
nC8	401.132	403.821	2.01756	0.389733	403.821
nC9	117.754	118.866	0.958363	0.0827097	118.866
nC10	0	0	0	0	0
H2O	145.1	1475.8	1324.53	4.50515	1475.8
TEG	6.66875	0	0.318742	6.12022E-08	0
Benzene	463.58	494.986	17.6146	13.1251	494.986
Toluene	277.787	307.363	22.6867	6.53951	307.363
Ethylbenzene	126.711	146.006	17.4762	1.67844	146.006
m-Xylene	85.8698	98.2577	11.204	1.09588	98.2577
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	132.397	129.018	120	120	128.899
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.115	21.1129	18.9733	47.9404	21.1129
Mass Density	lb/ft^3	3.44486	3.50509	60.7267	0.121376	3.49732
Mass Flow	lb/h	599030	600753	1413.47	109.796	600753
Std Vapor Volumetric Flow	MMSCFD	258.383	259.151	0.678497	0.0208587	259.151
Std Liquid Volumetric Flow	sgpm	3444.23	3448.51	2.86578	0.382549	3448.51
Specific Gravity		0.729045	0.728975	0.973672	1.65526	0.728975
API Gravity				11.9061		
Gross Ideal Gas Heating Value	Btu/ft^3	1265.27	1262.43	109.281	2531.88	1262.43
Gross Liquid Heating Value	Btu/lb	22678.1	22627	1181.61	19847.3	22627

Warnings

ProMax:ProMax!Project!Flowsheets!RR2 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point
Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	3	4	6	7	8
From Block	F-2703	T-0702	T-0702	LCV-0702	MIX-100
To Block	--	V-3400	LCV-0702	E-0802	V-0801

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	8 %
H2S		7.41392E-07	6.39903E-07	6.39903E-07	6.39903E-07
CO2		0.00051033	0.000106125	0.000106125	0.000106125
N2		1.01911	0.00727041	0.00727041	0.00727041
C1		77.9405	1.85201	1.85201	1.85201
C2		11.8917	0.760993	0.760993	0.760993
C3		5.57275	0.55577	0.55577	0.55577
iC4		0.762033	0.0862473	0.0862473	0.0862473
nC4		1.67015	0.274339	0.274339	0.274339
iC5		0.353103	0.0720861	0.0720861	0.0720861
nC5		0.376656	0.0916174	0.0916174	0.0916174
nC6		0.257865	0.10022	0.10022	0.10022
nC7		0.072836	0.041061	0.041061	0.041061
nC8		0.0123781	0.00958004	0.00958004	0.00958004
nC9		0.00323625	0.00353266	0.00353266	0.00353266
nC10		0	0	0	0
H2O		0.0283902	35.2083	35.2083	35.2083
TEG		0.000156529	60.5157	60.5157	60.5157
Benzene		0.0209194	0.164309	0.164309	0.164309
Toluene		0.0106271	0.132128	0.132128	0.132128
Ethylbenzene		0.00420701	0.0759785	0.0759785	0.0759785
m-Xylene		0.00285102	0.0488271	0.0488271	0.0488271
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	8 %
H2S		1.19665E-06	2.20627E-07	2.20627E-07	2.20627E-07
CO2		0.00106367	4.72496E-05	4.72496E-05	4.72496E-05
N2		1.35206	0.00206044	0.00206044	0.00206044
C1		59.2167	0.300572	0.300572	0.300572
C2		16.9345	0.231491	0.231491	0.231491
C3		11.6379	0.247928	0.247928	0.247928
iC4		2.09761	0.0507134	0.0507134	0.0507134
nC4		4.59735	0.161311	0.161311	0.161311
iC5		1.20654	0.0526157	0.0526157	0.0526157
nC5		1.28702	0.0668716	0.0668716	0.0668716
nC6		1.05241	0.0873723	0.0873723	0.0873723
nC7		0.345646	0.0416237	0.0416237	0.0416237
nC8		0.0669636	0.0110707	0.0110707	0.0110707
nC9		0.0196574	0.00458365	0.00458365	0.00458365
nC10		0	0	0	0
H2O		0.0242225	6.41683	6.41683	6.41683
TEG		0.00111326	91.9379	91.9379	91.9379
Benzene		0.0773885	0.129841	0.129841	0.129841
Toluene		0.0463728	0.12316	0.12316	0.12316
Ethylbenzene		0.0211526	0.0816031	0.0816031	0.0816031
m-Xylene		0.0143348	0.0524418	0.0524418	0.0524418
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	8 lb/h
H2S	0	0.00716832	5.36009E-05	5.36009E-05	5.36009E-05
CO2	0	6.37171	0.0114792	0.0114792	0.0114792
N2	0	8099.28	0.500579	0.500579	0.500579
C1	0	354726	73.0232	73.0232	73.0232
C2	0	101443	56.2403	56.2403	56.2403
C3	0	69714.6	60.2334	60.2334	60.2334
iC4	0	12565.3	12.3207	12.3207	12.3207
nC4	0	27539.5	39.1901	39.1901	39.1901
iC5	0	7227.51	12.7829	12.7829	12.7829
nC5	0	7709.61	16.2463	16.2463	16.2463
nC6	0	6304.26	21.2269	21.2269	21.2269
nC7	0	2070.53	10.1124	10.1124	10.1124
nC8	0	401.132	2.68961	2.68961	2.68961
nC9	0	117.754	1.11359	1.11359	1.11359
nC10	0	0	0	0	0
H2O	0	145.1	1558.95	1558.95	1558.95
TEG	0	6.66875	22336.1	22336.1	22336.1
Benzene	0	463.58	31.5446	31.5446	31.5446
Toluene	0	277.787	29.9214	29.9214	29.9214
Ethylbenzene	0	126.711	19.8253	19.8253	19.8253
m-Xylene	0	85.8698	12.7406	12.7406	12.7406
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	8
Temperature	°F		132.514	131.899	134.859	145.521
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	2.99901	3.0607
Molecular Weight	lb/lbmol		21.115	98.8474	98.8474	98.8474
Mass Density	lb/ft^3		3.45255	66.8056	26.6759	25.3968
Mass Flow	lb/h	0	599030	24294.8	24294.8	24294.8
Std Vapor Volumetric Flow	MMSCFD	0	258.383	2.23847	2.23847	2.23847
Std Liquid Volumetric Flow	sgpm	0	3444.23	44.2751	44.2751	44.2751
Specific Gravity			0.729045	1.07114		
API Gravity				-3.42183		
Gross Ideal Gas Heating Value	Btu/ft^3		1265.27	2607.19	2607.19	2607.19
Gross Liquid Heating Value	Btu/lb		22678.1	9700.29	9700.29	9700.29

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	9	10*	11**	12	13
From Block	V-0801	V-0801	F-0801/2	F-0801/2	E-0801
To Block	F-0801/2	--	--	E-0801	LCV-V-0801

Stream Composition

Mole Fraction	9 %	10* %	11** %	12 %	13 %
H2S	4.99314E-07	5.09267E-06	5.4112E-06	4.98214E-07	4.98214E-07
CO2	4.40761E-05	0.00207135	0.00218316	4.35971E-05	4.35971E-05
N2	0.000147258	0.232877	0.180372	0.000106894	0.000106894
C1	0.132109	56.325	54.5165	0.119929	0.119929
C2	0.155372	19.9424	20.6081	0.150791	0.150791
C3	0.180406	12.4444	13.0252	0.17753	0.17753
iC4	0.0337009	1.75051	1.83789	0.0332968	0.0332968
nC4	0.134268	4.71069	4.96479	0.133186	0.133186
iC5	0.0431591	0.988268	1.0433	0.0429351	0.0429351
nC5	0.058415	1.14321	1.20791	0.0581576	0.0581576
nC6	0.0785783	0.785671	0.831111	0.0784098	0.0784098
nC7	0.0355965	0.214133	0.226496	0.0355538	0.0355538
nC8	0.00885724	0.0324728	0.0343288	0.00885153	0.00885153
nC9	0.00341218	0.00734854	0.0077619	0.0034112	0.0034112
nC10	0	0	0	0	0
H2O	36.2811	1.22868	1.31006	36.2889	36.2889
TEG	62.4263	0.000353435	0.000373319	62.4403	62.4403
Benzene	0.165939	0.112684	0.11957	0.165949	0.165949
Toluene	0.134707	0.0504295	0.0534601	0.134725	0.134725
Ethylbenzene	0.0778179	0.0177208	0.0187685	0.0778311	0.0778311
m-Xylene	0.0500168	0.0111463	0.0118006	0.0500254	0.0500254
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	9 %	10* %	11** %	12 %	13 %
H2S	1.68303E-07	6.37996E-06	6.653E-06	1.67905E-07	1.67905E-07
CO2	1.91849E-05	0.0033509	0.00346614	1.89732E-05	1.89732E-05
N2	4.07993E-05	0.239802	0.182284	2.96113E-05	2.96113E-05
C1	0.020961	33.215	31.551	0.0190253	0.0190253
C2	0.0462062	22.0423	22.3548	0.0448367	0.0448367
C3	0.0786784	20.1711	20.7202	0.0774112	0.0774112
iC4	0.0193728	3.73998	3.85367	0.0191374	0.0191374
nC4	0.0771831	10.0644	10.4101	0.0765488	0.0765488
iC5	0.0307971	2.62099	2.71551	0.0306323	0.0306323
nC5	0.0416833	3.03192	3.14395	0.0414928	0.0414928
nC6	0.0669721	2.48877	2.58378	0.0668176	0.0668176
nC7	0.035277	0.788718	0.818749	0.0352289	0.0352289
nC8	0.0100065	0.13635	0.141464	0.00999841	0.00999841
nC9	0.00432827	0.0346447	0.0359133	0.00432634	0.00432634
nC10	0	0	0	0	0
H2O	6.46443	0.813655	0.851423	6.46477	6.46477
TEG	92.7189	0.00195102	0.00202248	92.7246	92.7246
Benzene	0.128196	0.323549	0.33694	0.128183	0.128183
Toluene	0.122755	0.1708	0.177699	0.122752	0.122752
Ethylbenzene	0.0817089	0.0691556	0.0718825	0.0817095	0.0817095
m-Xylene	0.0525178	0.0434985	0.0451957	0.0525182	0.0525182
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	9 lb/h	10* lb/h	11** lb/h	12 lb/h	13 lb/h
H2S	4.05445E-05	1.30564E-05	9.83851E-08	4.04461E-05	4.04461E-05
CO2	0.00462165	0.00685753	5.12576E-05	0.00457039	0.00457039
N2	0.0098286	0.49075	0.00269564	0.00713296	0.00713296
C1	5.04952	67.9737	0.466578	4.58294	4.58294
C2	11.1311	45.1091	0.330584	10.8005	10.8005
C3	18.9537	41.2797	0.306412	18.6473	18.6473
iC4	4.66692	7.65377	0.0569885	4.60993	4.60993
nC4	18.5935	20.5966	0.153946	18.4396	18.4396
iC5	7.41905	5.3638	0.0401572	7.3789	7.3789
nC5	10.0415	6.20475	0.046493	9.99505	9.99505
nC6	16.1337	5.09322	0.0382092	16.0955	16.0955
nC7	8.49828	1.61409	0.0121077	8.48617	8.48617
nC8	2.41057	0.279038	0.00209198	2.40848	2.40848
nC9	1.04269	0.0708997	0.00053109	1.04215	1.04215
nC10	0	0	0	0	0
H2O	1557.29	1.66513	0.0125909	1557.27	1557.27
TEG	22336.1	0.00399273	2.99087E-05	22336.1	22336.1
Benzene	30.8824	0.662136	0.0049827	30.8775	30.8775
Toluene	29.5719	0.349538	0.00262782	29.5693	29.5693
Ethylbenzene	19.6838	0.141525	0.001063	19.6827	19.6827
m-Xylene	12.6516	0.0890186	0.000668358	12.6509	12.6509
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	9	10*	11**	12	13
Temperature	°F	145.521	145.521	145.538	145.538	315 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	73.6959
Mole Fraction Vapor	%	0	100	100	0	0.467861
Molecular Weight	lb/lbmol	101.109	27.2043	27.7196	101.126	101.126
Mass Density	lb/ft^3	67.2916	0.341871	0.326297	67.2978	46.7661
Mass Flow	lb/h	24090.1	204.648	1.47881	24088.6	24088.6
Std Vapor Volumetric Flow	MMSCFD	2.16996	0.0685131	0.000485881	2.16948	2.16948
Std Liquid Volumetric Flow	sgpm	43.2433	1.03185	0.00738897	43.2359	43.2359
Specific Gravity		1.07893	0.939295	0.957085	1.07903	
API Gravity		-5.04906			-5.061	
Gross Ideal Gas Heating Value	Btu/ft^3	2639.26	1591.18	1618.75	2639.49	2639.49
Gross Liquid Heating Value	Btu/lb	9595.09	22084.1	22045.9	9594.33	9594.33

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	14	15	16	17	18
From Block	LCV-V-0801	H-0801	V-3400	LV-3400	E-0802
To Block	T-0801	E-0801	LV-3400	MIX-100	MIX-100

Stream Composition

Mole Fraction	14 %	15 %	16 %	17 %	18 %
H2S	4.98214E-07	5.50823E-11			6.39903E-07
CO2	4.35971E-05	3.51356E-10			0.000106125
N2	0.000106894	1.04597E-11			0.00727041
C1	0.119929	6.51575E-08			1.85201
C2	0.150791	4.36055E-07			0.760993
C3	0.17753	1.38835E-06			0.55577
iC4	0.0332968	4.53725E-07			0.0862473
nC4	0.133186	3.09559E-06			0.274339
iC5	0.0429351	2.19668E-06			0.0720861
nC5	0.0581576	3.68408E-06			0.0916174
nC6	0.0784098	2.7125E-05			0.10022
nC7	0.0355538	1.29397E-05			0.041061
nC8	0.00885153	6.41271E-06			0.00958004
nC9	0.0034112	5.2263E-06			0.00353266
nC10	0	0			0
H2O	36.2889	7.8487			35.2083
TEG	62.4403	92.1427			60.5157
Benzene	0.165949	0.00109263			0.164309
Toluene	0.134725	0.00230659			0.132128
Ethylbenzene	0.0778311	0.00308131			0.0759785
m-Xylene	0.0500254	0.00204815			0.0488271
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

Mass Fraction	14 %	15 %	16 %	17 %	18 %
H2S	1.67905E-07	1.34285E-11			2.20627E-07
CO2	1.89732E-05	1.10611E-10			4.72496E-05
N2	2.96113E-05	2.096E-12			0.00206044
C1	0.0190253	7.47723E-09			0.300572
C2	0.0448367	9.37922E-08			0.231491
C3	0.0774112	4.37924E-07			0.247928
iC4	0.0191374	1.88643E-07			0.0507134
nC4	0.0765488	1.28704E-06			0.161311
iC5	0.0306323	1.13371E-06			0.0526157
nC5	0.0414928	1.90136E-06			0.0668716
nC6	0.0668176	1.67209E-05			0.0873723
nC7	0.0352289	9.27484E-06			0.0416237
nC8	0.00999841	5.23989E-06			0.0110707
nC9	0.00432634	4.79484E-06			0.00458365
nC10	0	0			0
H2O	6.46477	1.01145			6.41683
TEG	92.7246	98.9825			91.9379
Benzene	0.128183	0.000610512			0.129841
Toluene	0.122752	0.00152025			0.12316
Ethylbenzene	0.0817095	0.00234003			0.0816031
m-Xylene	0.0525182	0.00155542			0.0524418
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	14 lb/h	15 lb/h	16 lb/h	17 lb/h	18 lb/h
H2S	4.04461E-05	3.0302E-09	0	0	5.36009E-05
CO2	0.00457039	2.49598E-08	0	0	0.0114792
N2	0.00713296	4.72971E-10	0	0	0.500579
C1	4.58294	1.68726E-06	0	0	73.0232
C2	10.8005	2.11645E-05	0	0	56.2403
C3	18.6473	9.88191E-05	0	0	60.2334
iC4	4.60993	4.2568E-05	0	0	12.3207
nC4	18.4396	0.000290424	0	0	39.1901
iC5	7.3789	0.000255825	0	0	12.7829
nC5	9.99505	0.000429048	0	0	16.2463
nC6	16.0955	0.00377312	0	0	21.2269
nC7	8.48617	0.0020929	0	0	10.1124
nC8	2.40848	0.0011824	0	0	2.68961
nC9	1.04215	0.00108197	0	0	1.11359
nC10	0	0	0	0	0
H2O	1557.27	228.237	0	0	1558.95
TEG	22336.1	22335.8	0	0	22336.1
Benzene	30.8775	0.137764	0	0	31.5446
Toluene	29.5693	0.343051	0	0	29.9214
Ethylbenzene	19.6827	0.528037	0	0	19.8253
m-Xylene	12.6509	0.350987	0	0	12.7406
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	14	15	16	17	18
Temperature	°F	287.573	400			145.521
Pressure	psia	15.6959 *	16.6959	887.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	11.7739	0			3.0607
Molecular Weight	lb/lbmol	101.126	139.796			98.8474
Mass Density	lb/ft^3	1.64909	58.0756			25.3968
Mass Flow	lb/h	24088.6	22565.4	0	0	24294.8
Std Vapor Volumetric Flow	MMSCFD	2.16948	1.47012	0	0	2.23847
Std Liquid Volumetric Flow	sgpm	43.2359	39.9876	0	0	44.2751
Specific Gravity			0.931165			
API Gravity			-6.67575			
Gross Ideal Gas Heating Value	Btu/ft^3	2639.49	3808.77			2607.19
Gross Liquid Heating Value	Btu/lb	9594.33	10071.4			9700.29

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	19	20	21	22	23
From Block	E-0801	P-0802A/B	RCYL-1	--	MKUP-1
To Block	P-0801A/B	T-0702	MKUP-1	MKUP-1	--

Stream Composition

Mole Fraction	19 %	20 %	21 %	22 %	23 %
H2S	5.50823E-11	0	5.25107E-11	0	5.25107E-11
CO2	3.51356E-10	0	3.13867E-10	0	3.13867E-10
N2	1.04597E-11	0	1.04862E-11	0	1.04862E-11
C1	6.51575E-08	6.52572E-08	6.52729E-08	0	6.52729E-08
C2	4.36055E-07	4.36524E-07	4.36629E-07	0	4.36629E-07
C3	1.38835E-06	1.38974E-06	1.39008E-06	0	1.39008E-06
iC4	4.53725E-07	4.54199E-07	4.54309E-07	0	4.54309E-07
nC4	3.09559E-06	3.09882E-06	3.09957E-06	0	3.09957E-06
iC5	2.19668E-06	2.19924E-06	2.19977E-06	0	2.19977E-06
nC5	3.68408E-06	3.68889E-06	3.68978E-06	0	3.68978E-06
nC6	2.7125E-05	2.71717E-05	2.71782E-05	0	2.71782E-05
nC7	1.29397E-05	1.2962E-05	1.29652E-05	0	1.29652E-05
nC8	6.41271E-06	6.42414E-06	6.42569E-06	0	6.42569E-06
nC9	5.2263E-06	5.23457E-06	5.23584E-06	0	5.23584E-06
nC10	0	0	3.79342E-12	0	3.79342E-12
H2O	7.8487	7.84692	7.84861	0.827516	7.84861
TEG	92.1427	92.1444	92.1428	99.1725	92.1428
Benzene	0.00109263	0.00110163	0.00110189	0	0.00110189
Toluene	0.00230659	0.0023208	0.00232136	0	0.00232136
Ethylbenzene	0.00308131	0.00309302	0.00309377	0	0.00309377
m-Xylene	0.00204815	0.00205757	0.00205807	0	0.00205807
Cyclopentane	0	0	4.62266E-12	0	4.62266E-12
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	19 %	20 %	21 %	22 %	23 %
H2S	1.34285E-11	0	1.28016E-11	0	1.28016E-11
CO2	1.10611E-10	0	9.88094E-11	0	9.88094E-11
N2	2.096E-12	0	2.10131E-12	0	2.10131E-12
C1	7.47723E-09	7.48855E-09	7.49047E-09	0	7.49047E-09
C2	9.37922E-08	9.38914E-08	9.39156E-08	0	9.39156E-08
C3	4.37924E-07	4.38357E-07	4.3847E-07	0	4.3847E-07
iC4	1.88643E-07	1.88837E-07	1.88885E-07	0	1.88885E-07
nC4	1.28704E-06	1.28836E-06	1.28869E-06	0	1.28869E-06
iC5	1.13371E-06	1.13501E-06	1.1353E-06	0	1.1353E-06
nC5	1.90136E-06	1.90381E-06	1.9043E-06	0	1.9043E-06
nC6	1.67209E-05	1.67494E-05	1.67537E-05	0	1.67537E-05
nC7	9.27484E-06	9.29068E-06	9.29307E-06	0	9.29307E-06
nC8	5.23989E-06	5.24914E-06	5.25049E-06	0	5.25049E-06
nC9	4.79484E-06	4.80235E-06	4.80359E-06	0	4.80359E-06
nC10	0	0	3.86087E-12	0	3.86087E-12
H2O	1.01145	1.0112	1.01144	0.1	1.01144
TEG	98.9825	98.9827	98.9825	99.9	98.9825
Benzene	0.000610512	0.000615532	0.00061569	0	0.00061569
Toluene	0.00152025	0.0015296	0.00152999	0	0.00152999
Ethylbenzene	0.00234003	0.00234889	0.00234949	0	0.00234949
m-Xylene	0.00155542	0.00156255	0.00156295	0	0.00156295
Cyclopentane	0	0	2.3191E-12	0	2.3191E-12
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	19 lb/h	20 lb/h	21 lb/h	22 lb/h	23 lb/h
H2S	3.0302E-09	0	2.88888E-09	0	0
CO2	2.49598E-08	0	2.22979E-08	0	0
N2	4.72971E-10	0	4.74194E-10	0	0
C1	1.68726E-06	1.69034E-06	1.69034E-06	0	0
C2	2.11645E-05	2.11935E-05	2.11935E-05	0	0
C3	9.88191E-05	9.89477E-05	9.89477E-05	0	0
iC4	4.2568E-05	4.2625E-05	4.2625E-05	0	0
nC4	0.000290424	0.000290813	0.000290813	0	0
iC5	0.000255825	0.000256199	0.000256199	0	0
nC5	0.000429048	0.000429735	0.000429735	0	0
nC6	0.00377312	0.00378073	0.00378073	0	0
nC7	0.0020929	0.00209713	0.00209713	0	0
nC8	0.0011824	0.00118486	0.00118486	0	0
nC9	0.00108197	0.00108401	0.00108401	0	0
nC10	0	0	8.71266E-10	0	0
H2O	228.237	228.253	228.247	0.00580987	0
TEG	22335.8	22342.7	22336.9	5.80406	0
Benzene	0.137764	0.13894	0.13894	0	0
Toluene	0.343051	0.345267	0.345267	0	0
Ethylbenzene	0.528037	0.5302	0.5302	0	0
m-Xylene	0.350987	0.352705	0.352705	0	0
Cyclopentane	0	0	5.23341E-10	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	19	20	21	22	23
Temperature	°F	214.716	126.413	215.164	120 *	215.164
Pressure	psia	11.6959	1004.7 *	64.6959	139.696 *	64.6959
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	139.796	139.798	139.796	149.079	139.796
Mass Density	lb/ft^3	65.1743	68.4587	65.163	68.731	65.163
Mass Flow	lb/h	22565.4	22572.4	22566.6	5.80987	0
Std Vapor Volumetric Flow	MMSCFD	1.47012	1.47055	1.4702	0.000354939	0
Std Liquid Volumetric Flow	sgpm	39.9876	40	39.9897	0.0102832	0
Specific Gravity		1.04498	1.09764	1.0448	1.10201	
API Gravity		-6.67504	-6.81614	-6.68259	-7.10018	
Gross Ideal Gas Heating Value	Btu/ft^3	3808.77	3808.85	3808.78	4095.08	3808.78
Gross Liquid Heating Value	Btu/lb	10071.4	10071.4	10071.4	10163.6	10071.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	24	25	26	27	28
From Block	P-0801A/B	MKUP-1	AC-0801A	H-0801	T-0801
To Block	RCYL-1	AC-0801A	P-0802A/B	T-0801	H-0801

Stream Composition

Mole Fraction	24 %	25 %	26 %	27 %	28 %
H2S	5.50823E-11	0	0	7.81386E-09	2.02738E-09
CO2	3.51356E-10	0	0	1.47404E-07	3.77324E-08
N2	1.04597E-11	0	0	2.85526E-08	7.26592E-09
C1	6.51575E-08	6.52572E-08	6.52572E-08	8.41728E-05	2.14455E-05
C2	4.36055E-07	4.36524E-07	4.36524E-07	0.000283094	7.22881E-05
C3	1.38835E-06	1.38974E-06	1.38974E-06	0.000602811	0.000154271
iC4	4.53725E-07	4.54199E-07	4.54199E-07	0.000155973	3.99871E-05
nC4	3.09559E-06	3.09882E-06	3.09882E-06	0.000887272	0.000227855
iC5	2.19668E-06	2.19924E-06	2.19924E-06	0.000459449	0.000118431
nC5	3.68408E-06	3.68889E-06	3.68889E-06	0.000708379	0.000182819
nC6	2.7125E-05	2.71717E-05	2.71717E-05	0.00240123	0.000630626
nC7	1.29397E-05	1.2962E-05	1.2962E-05	0.00126671	0.000331651
nC8	6.41271E-06	6.42414E-06	6.42414E-06	0.000494715	0.00013054
nC9	5.2263E-06	5.23457E-06	5.23457E-06	0.000299678	8.00765E-05
nC10	0	0	0	0	0
H2O	7.8487	7.84692	7.84692	92.6055	29.394
TEG	92.1427	92.1444	92.1444	7.2018	70.5506
Benzene	0.00109263	0.00110163	0.00110163	0.0368027	0.0101702
Toluene	0.00230659	0.0023208	0.0023208	0.0563165	0.016036
Ethylbenzene	0.00308131	0.00309302	0.00309302	0.0552179	0.0163345
m-Xylene	0.00204815	0.00205757	0.00205757	0.0367371	0.0108661
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	24 %	25 %	26 %	27 %	28 %
H2S	1.34285E-11	0	0	9.61986E-09	6.20818E-10
CO2	1.10611E-10	0	0	2.34341E-07	1.49204E-08
N2	2.096E-12	0	0	2.88937E-08	1.82884E-09
C1	7.47723E-09	7.48855E-09	7.48855E-09	4.87792E-05	3.09119E-06
C2	9.37922E-08	9.38914E-08	9.38914E-08	0.000307498	1.95301E-05
C3	4.37924E-07	4.38357E-07	4.38357E-07	0.000960215	6.11221E-05
iC4	1.88643E-07	1.88837E-07	1.88837E-07	0.00032748	2.08824E-05
nC4	1.28704E-06	1.28836E-06	1.28836E-06	0.00186291	0.000118992
iC5	1.13371E-06	1.13501E-06	1.13501E-06	0.00119745	7.67737E-05
nC5	1.90136E-06	1.90381E-06	1.90381E-06	0.00184624	0.000118514
nC6	1.67209E-05	1.67494E-05	1.67494E-05	0.00747496	0.000488285
nC7	9.27484E-06	9.29068E-06	9.29068E-06	0.00458507	0.00029859
nC8	5.23989E-06	5.24914E-06	5.24914E-06	0.00204137	0.000133979
nC9	4.79484E-06	4.80235E-06	4.80235E-06	0.00138842	9.2278E-05
nC10	0	0	0	0	0
H2O	1.01145	1.0112	1.0112	60.2657	4.75794
TEG	98.9825	98.9827	98.9827	39.0683	95.1943
Benzene	0.000610512	0.000615532	0.000615532	0.103846	0.00713781
Toluene	0.00152025	0.0015296	0.0015296	0.187443	0.0132756
Ethylbenzene	0.00234003	0.00234889	0.00234889	0.211765	0.0155814
m-Xylene	0.00155542	0.00156255	0.00156255	0.140889	0.0103651
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	24 lb/h	25 lb/h	26 lb/h	27 lb/h	28 lb/h
H2S	3.0302E-09	0	0	1.46515E-07	1.49545E-07
CO2	2.49598E-08	0	0	3.56912E-06	3.59408E-06
N2	4.72971E-10	0	0	4.40065E-07	4.40538E-07
C1	1.68726E-06	1.69034E-06	1.69034E-06	0.00074293	0.000744617
C2	2.11645E-05	2.11935E-05	2.11935E-05	0.00468333	0.0047045
C3	9.88191E-05	9.89477E-05	9.89477E-05	0.0146245	0.0147233
iC4	4.2568E-05	4.2625E-05	4.2625E-05	0.00498767	0.00503023
nC4	0.000290424	0.000290813	0.000290813	0.0283729	0.0286633
iC5	0.000255825	0.000256199	0.000256199	0.0182377	0.0184936
nC5	0.000429048	0.000429735	0.000429735	0.028119	0.0285481
nC6	0.00377312	0.00378073	0.00378073	0.113847	0.11762
nC7	0.0020929	0.00209713	0.00209713	0.0698328	0.0719257
nC8	0.0011824	0.00118486	0.00118486	0.031091	0.0322734
nC9	0.00108197	0.00108401	0.00108401	0.0211463	0.0222283
nC10	0	0	0	0	0
H2O	228.237	228.253	228.253	917.874	1146.11
TEG	22335.8	22342.7	22342.7	595.029	22930.8
Benzene	0.137764	0.13894	0.13894	1.58162	1.71938
Toluene	0.343051	0.345267	0.345267	2.85484	3.19789
Ethylbenzene	0.528037	0.5302	0.5302	3.22527	3.75331
m-Xylene	0.350987	0.352705	0.352705	2.14581	2.4968
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	24	25	26	27	28
Temperature	°F	214.817	215.141	125 *	400 *	296.704
Pressure	psia	64.6959 *	64.6959	59.6959	16.6959	16.6959
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	139.796	139.798	139.798	27.6826	111.296
Mass Density	lb/ft^3	65.1758	65.1638	68.4267	0.0504711	62.3086
Mass Flow	lb/h	22565.4	22572.4	22572.4	1523.05	24088.4
Std Vapor Volumetric Flow	MMSCFD	1.47012	1.47055	1.47055	0.501084	1.9712
Std Liquid Volumetric Flow	sgpm	39.9876	40 *	40	2.91143	42.899
Specific Gravity		1.04501	1.04482	1.09713	0.95581	0.999035
API Gravity		-6.6826	-6.68268	-6.68196		-5.85901
Gross Ideal Gas Heating Value	Btu/ft^3	3808.77	3808.85	3808.85	352.952	2930.3
Gross Liquid Heating Value	Btu/lb	10071.4	10071.4	10071.4	4097.11	9693.66

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	29	30	31	32	
From Block	T-0801	E-0802_CONDENSER	E-0802_CONDENSER	AC-0801B	
To Block	E-0802_CONDENSER	T-0801	AC-0801B	V-0802	

Stream Composition

Mole Fraction	29 %	30 %	31 %	32 %	
H2S	1.44336E-06	3.15252E-09	1.5454E-06	1.5454E-06	
CO2	0.000126299	7.68983E-08	0.000135242	0.000135242	
N2	0.000309659	9.3895E-09	0.000331597	0.000331597	
C1	0.347419	2.36914E-05	0.372032	0.372032	
C2	0.436825	4.64747E-05	0.46777	0.46777	
C3	0.514281	6.14708E-05	0.550713	0.550713	
iC4	0.0964561	8.36796E-06	0.103289	0.103289	
nC4	0.38582	6.33581E-05	0.413151	0.413151	
iC5	0.124374	1.68903E-05	0.133185	0.133185	
nC5	0.168469	2.39518E-05	0.180403	0.180403	
nC6	0.227092	3.3934E-05	0.243178	0.243178	
nC7	0.10297	1.3119E-05	0.110264	0.110264	
nC8	0.0256294	3.40828E-06	0.0274449	0.0274449	
nC9	0.00987161	8.25392E-07	0.0105709	0.0105709	
nC10	0	0	0	0	
H2O	95.9279	93.8752	96.0733	96.0733	
TEG	0.407222	6.11603	0.0027641	0.0027641	
Benzene	0.478777	0.0028517	0.512495	0.512495	
Toluene	0.385943	0.00285791	0.413084	0.413084	
Ethylbenzene	0.219528	0.00166087	0.234963	0.234963	
m-Xylene	0.140969	0.00109369	0.150879	0.150879	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

Mass Fraction	29 %	30 %	31 %	32 %	
H2S	2.42895E-06	4.1158E-09	2.65502E-06	2.65502E-06	
CO2	0.000274461	1.29643E-07	0.000300038	0.000300038	
N2	0.000428335	1.00761E-08	0.000468268	0.000468268	
C1	0.275206	1.45595E-05	0.300863	0.300863	
C2	0.648575	5.3533E-05	0.709037	0.709037	
C3	1.11977	0.000103837	1.22416	1.22416	
iC4	0.276825	1.86315E-05	0.302632	0.302632	
nC4	1.10729	0.000141068	1.21051	1.21051	
iC5	0.443091	4.66823E-05	0.484396	0.484396	
nC5	0.600182	6.61991E-05	0.656131	0.656131	
nC6	0.966314	0.000112022	1.05639	1.05639	
nC7	0.509472	5.03574E-05	0.556966	0.556966	
nC8	0.144559	1.49141E-05	0.158035	0.158035	
nC9	0.0625167	4.05527E-06	0.0683448	0.0683448	
nC10	0	0	0	0	
H2O	85.3335	64.7854	87.2492	87.2492	
TEG	3.01965	35.1841	0.0209249	0.0209249	
Benzene	1.84664	0.00853308	2.01801	2.01801	
Toluene	1.75589	0.0100873	1.91865	1.91865	
Ethylbenzene	1.15081	0.00675465	1.25747	1.25747	
m-Xylene	0.738989	0.00444796	0.807471	0.807471	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	29 lb/h	30 lb/h	31 lb/h	32 lb/h
H2S	4.04489E-05	5.84508E-09	4.0443E-05	4.0443E-05
CO2	0.00457055	1.84113E-07	0.00457037	0.00457037
N2	0.00713298	1.43097E-08	0.00713296	0.00713296
C1	4.58296	2.06768E-05	4.58294	4.58294
C2	10.8006	7.60252E-05	10.8005	10.8005
C3	18.6474	0.000147464	18.6472	18.6472
iC4	4.60991	2.64596E-05	4.60989	4.60989
nC4	18.4395	0.000200339	18.4393	18.4393
iC5	7.37871	6.62961E-05	7.37864	7.37864
nC5	9.99472	9.4013E-05	9.99462	9.99462
nC6	16.0918	0.000159089	16.0917	16.0917
nC7	8.48415	7.15154E-05	8.48408	8.48408
nC8	2.40732	2.11803E-05	2.4073	2.4073
nC9	1.04108	5.75913E-06	1.04107	1.04107
nC10	0	0	0	0
H2O	1421.04	92.0055	1329.04	1329.04
TEG	50.2857	49.9669	0.318742	0.318742
Benzene	30.7518	0.0121183	30.7397	30.7397
Toluene	29.2405	0.0143255	29.2262	29.2262
Ethylbenzene	19.1642	0.00959267	19.1547	19.1547
m-Xylene	12.3062	0.0063168	12.2999	12.2999
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

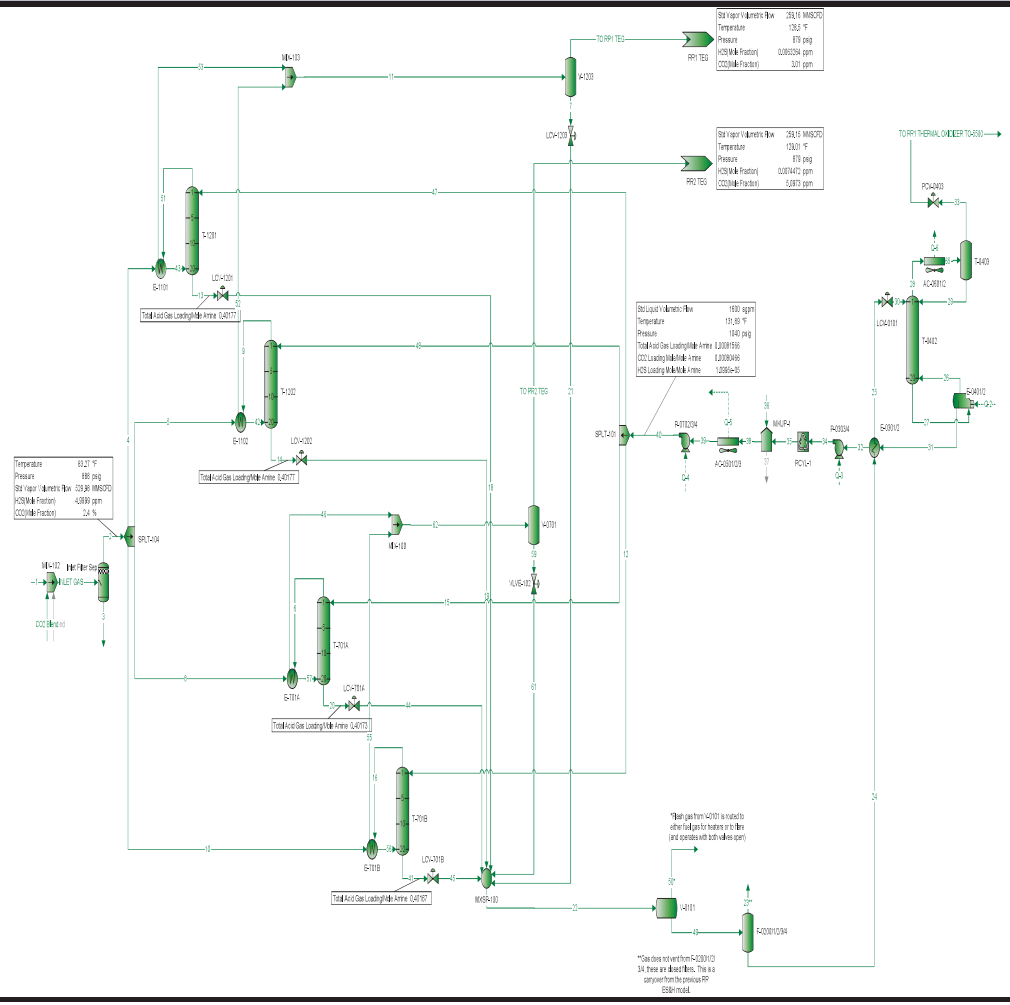
Property	Units	29	30	31	32
Temperature	°F	288.347	215	215 *	120 *
Pressure	psia	15.6959	15.6959	15.6959	15.4959
Mole Fraction Vapor	%	100	0	100	2.98256
Molecular Weight	lb/lbmol	20.2519	26.1044	19.8373	19.8373
Mass Density	lb/ft^3	0.0398764	62.5066	0.043393	1.64169
Mass Flow	lb/h	1665.28	142.016	1523.27	1523.27
Std Vapor Volumetric Flow	MMSCFD	0.748904	0.049548	0.699356	0.699356
Std Liquid Volumetric Flow	sgpm	3.52078	0.272453	3.24833	3.24833
Specific Gravity		0.699247	1.00221	0.68493	
API Gravity			2.59695		
Gross Ideal Gas Heating Value	Btu/ft^3	189.383	300.136	181.537	181.537
Gross Liquid Heating Value	Btu/lb	2617.25	3585.13	2527.01	2527.01

Remarks

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2 - Amine
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
From Block	--	--	MIX-102	V-1203	PCV-0403
To Block	MIX-102	MIX-102	Inlet Filter Sep	RR1 TEG	--

Stream Composition

Mole Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
H2S	0 *	100 *	0.0005	6.32637E-07	0.019342
CO2	100 *	0 *	2.4	0.000301003	92.9604
N2	0 *	0 *	0.994006	1.0162	0.000144854
C1	0 *	0 *	76.0753	77.7287	0.193216
C2	0 *	0 *	11.6142	11.8635	0.0631386
C3	0 *	0 *	5.44288	5.56126	0.0165708
iC4	0 *	0 *	0.744255	0.760549	0.00113546
nC4	0 *	0 *	1.63234	1.66764	0.00534465
iC5	0 *	0 *	0.345183	0.352694	0.000271957
nC5	0 *	0 *	0.368404	0.376347	0.000471367
nC6	0 *	0 *	0.252725	0.257977	0.000195813
nC7	0 *	0 *	0.0716055	0.0729777	7.72717E-06
nC8	0 *	0 *	0.0122406	0.0124246	2.83053E-06
nC9	0 *	0 *	0.00324082	0.00325728	5.25474E-08
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0.284074	6.67653
MDEA	0 *	0 *	0	1.98972E-06	3.23352E-08
Piperazine	0 *	0 *	0	4.02904E-05	3.26255E-08
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0228358	0.0222743	0.037037
Toluene	0 *	0 *	0.011963	0.0117259	0.0165687
Ethylbenzene	0 *	0 *	0.00490283	0.00483433	0.0050031
m-Xylene	0 *	0 *	0.00333393	0.0032538	0.00463794
Cyclopentane	0 *	0 *	0	0	0
Cyclohexane	0 *	0 *	0	0	0

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
H2S	0 *	100 *	0.000786251	1.02121E-06	0.015607
CO2	100 *	0 *	4.87347	0.000627432	96.8614
N2	0 *	0 *	1.2848	1.34832	9.60733E-05
C1	0 *	0 *	56.3113	59.0611	0.0733872
C2	0 *	0 *	16.1135	16.8959	0.0449491
C3	0 *	0 *	11.074	11.615	0.0173
iC4	0 *	0 *	1.99593	2.09372	0.0015625
nC4	0 *	0 *	4.37758	4.59085	0.00735476
iC5	0 *	0 *	1.1491	1.20525	0.000464554
nC5	0 *	0 *	1.22641	1.28608	0.000805183
nC6	0 *	0 *	1.00488	1.05296	0.000399514
nC7	0 *	0 *	0.331057	0.34635	1.83317E-05
nC8	0 *	0 *	0.0645146	0.0672215	7.65506E-06
nC9	0 *	0 *	0.0191783	0.0197869	1.59563E-07
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0.242394	2.84773
MDEA	0 *	0 *	0	1.123E-05	9.12264E-08

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
Piperazine	0 *	0 *	0	0.000164374	6.65344E-08
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0823027	0.0824082	0.068495
Toluene	0 *	0 *	0.0508581	0.0511723	0.0361439
Ethylbenzene	0 *	0 *	0.0240164	0.024309	0.0125755
m-Xylene	0 *	0 *	0.0163312	0.0163615	0.0116577
Cyclopentane	0 *	0 *	0	0	0
Cyclohexane	0 *	0 *	0	0	0

Mass Flow	CO2 Blend lb/h	H2S Blend lb/h	INLET GAS lb/h	TO RR1 TEG lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h
H2S	0 *	0	9.91635	0.00613524	9.86494
CO2	1.15266E-07 *	0	61465.1	3.76949	61224.7
N2	0 *	0	16204.1	8100.45	0.0607265
C1	0 *	0	710209	354828	46.387
C2	0 *	0	203227	101508	28.4117
C3	0 *	0	139667	69780.6	10.9351
iC4	0 *	0	25173	12578.7	0.987632
nC4	0 *	0	55210.9	27581	4.64883
iC5	0 *	0	14492.7	7240.9	0.293638
nC5	0 *	0	15467.7	7726.5	0.508944
nC6	0 *	0	12673.7	6326	0.252527
nC7	0 *	0	4175.35	2080.81	0.0115872
nC8	0 *	0	813.67	403.854	0.00483865
nC9	0 *	0	241.88	118.876	0.000100857
nC10	0 *	0	0	0	0
H2O	0 *	0	0	1456.26	1800.01
MDEA	0 *	0	0	0.0674676	5.76628E-05
Piperazine	0 *	0	0	0.987529	4.20554E-05
TEG	0 *	0	0	0	0
UCARSOL™ AP-814	0 *	0	0	0	0
Benzene	0 *	0	1038.02	495.093	43.2947
Toluene	0 *	0	641.432	307.434	22.846
Ethylbenzene	0 *	0	302.9	146.044	7.94881
m-Xylene	0 *	0	205.972	98.2966	7.36866
Cyclopentane	0 *	0	0	0	0
Cyclohexane	0 *	0	0	0	0

Stream Properties

Property	Units	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
Temperature	°F	83.4 *	83.4 *	83.4	128.5	119.507
Pressure	psia	907.696 *	907.696 *	904.696	893.696	21.6959 *
Mole Fraction Vapor	%	100	0	100	100	100
Molecular Weight	lb/lbmol	44.0095	34.0809	21.673	21.113	42.237
Mass Density	lb/ft^3	12.4344	47.8529	4.24623	3.51036	0.148447
Mass Flow	lb/h	1.15266E-07	6.82562E-12	1.26122E+06	600781	63208.5
Std Vapor Volumetric Flow	MMSCFD	2.3854E-11 *	1.82405E-15 *	530	259.162	13.6297
Std Liquid Volumetric Flow	sgpm	2.81981E-10	1.70806E-14	7047.99	3448.75	154.119
Specific Gravity		1.51953		0.748313	0.728978	1.45834
API Gravity						

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources
Location:	DOU
Flowsheet:	2 - Amine
	Job: Wildcat II - Refrigeration - Recovery

Stream Properties

Property	Units	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
Gross Ideal Gas Heating Value	Btu/ft^3	0	637.1	1235.65	1262.48	9.84663
Gross Liquid Heating Value	Btu/lb	-74.8536	6892.4	21573.5	22627.8	-14.5955

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	TO RR2 TEG	1	2	3	4
From Block	V-0701	--	Inlet Filter Sep	Inlet Filter Sep	SPLT-104
To Block	RR2 TEG	MIX-102	SPLT-104	--	E-1101

Stream Composition

Mole Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
H2S	7.44722E-07	0.0005 *	0.000499992	0.000687974	0.000499992
CO2	0.000509734	2.4 *	2.40004	1.50323	2.40004
N2	1.01615	0.994006 *	0.994041	0.126783	0.994041
C1	77.7255	76.0753 *	76.0775	23.8347	76.0775
C2	11.863	11.6142 *	11.6142	13.2188	11.6142
C3	5.56104	5.44288 *	5.4425	14.5579	5.4425
iC4	0.760519	0.744255 *	0.744124	3.93134	0.744124
nC4	1.66757	1.63234 *	1.63195	11.1586	1.63195
iC5	0.352679	0.345183 *	0.345021	4.29077	0.345021
nC5	0.376331	0.368404 *	0.368188	5.62507	0.368188
nC6	0.257966	0.252725 *	0.252357	9.20642	0.252357
nC7	0.0729747	0.0716055 *	0.0713762	5.64304	0.0713762
nC8	0.0124241	0.0122406 *	0.0121523	2.15891	0.0121523
nC9	0.00325714	0.00324082 *	0.00318561	1.34524	0.00318561
nC10	0	0 *	0	0	0
H2O	0.287898	0 *	0	0	0
MDEA	2.04562E-06	0 *	0	0	0
Piperazine	3.84576E-05	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	0.0222704	0.0228358 *	0.0228023	0.836626	0.0228023
Toluene	0.0117237	0.011963 *	0.011922	1.00818	0.011922
Ethylbenzene	0.00483327	0.00490283 *	0.00486589	0.902719	0.00486589
m-Xylene	0.00325265	0.00333393 *	0.00330729	0.650932	0.00330729
Cyclopentane	0	0 *	0	0	0
Cyclohexane	0	0 *	0	0	0

Mass Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
H2S	1.20214E-06	0.000786251 *	0.000786284	0.000452192	0.000786284
CO2	0.00106253	4.87347 *	4.87382	1.27589	4.87382
N2	1.34827	1.2848 *	1.28492	0.0684964	1.28492
C1	59.0589	56.3113 *	56.3161	7.3743	56.3161
C2	16.8953	16.1135 *	16.1144	7.66572	16.1144
C3	11.6146	11.074 *	11.0739	12.3804	11.0739
iC4	2.09365	1.99593 *	1.99569	4.4068	1.99569
nC4	4.59069	4.37758 *	4.37678	12.5081	4.37678
iC5	1.2052	1.1491 *	1.14863	5.97041	1.14863
nC5	1.28603	1.22641 *	1.22576	7.82703	1.22576
nC6	1.05292	1.00488 *	1.00347	15.3008	1.00347
nC7	0.346338	0.331057 *	0.330016	10.9051	0.330016
nC8	0.067219	0.0645146 *	0.0640528	4.75608	0.0640528
nC9	0.0197862	0.0191783 *	0.0188526	3.32748	0.0188526
nC10	0	0 *	0	0	0
H2O	0.245658	0 *	0	0	0
MDEA	1.15456E-05	0 *	0	0	0
Piperazine	0.000156898	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	0.0823942	0.0823027 *	0.0821867	1.26034	0.0821867
Toluene	0.0511629	0.0508581 *	0.0506867	1.7915	0.0506867
Ethylbenzene	0.0243038	0.0240164 *	0.0238369	1.84831	0.0238369
m-Xylene	0.0163557	0.0163312 *	0.0162016	1.33278	0.0162016
Cyclopentane	0	0 *	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
Cyclohexane	0	0 *	0	0	0

Mass Flow	TO RR2 TEG lb/h	1 lb/h	2 lb/h	3 lb/h	4 lb/h
H2S	0.00722192	9.91635 *	9.91579	0.000561313	2.47905
CO2	6.38319	61465.1 *	61463.5	1.58378	15366.5
N2	8099.78	16204.1 *	16204	0.0850256	4051.18
C1	354799	710209 *	710199	9.15384	177557
C2	101499	203227 *	203217	9.51558	50806.5
C3	69774.9	139667 *	139652	15.368	34914.5
iC4	12577.7	25173 *	25167.5	5.47023	6292.14
nC4	27578.7	55210.9 *	55195.4	15.5265	13799.4
iC5	7240.3	14492.7 *	14485.3	7.41116	3621.47
nC5	7725.86	15467.7 *	15457.9	9.71581	3864.65
nC6	6325.48	12673.7 *	12654.7	18.9931	3163.8
nC7	2080.64	4175.35 *	4161.82	13.5367	1040.5
nC8	403.821	813.67 *	807.767	5.90379	201.95
nC9	118.866	241.88 *	237.75	4.13045	59.4399
nC10	0	0 *	0	0	0
H2O	1475.8	0 *	0	0	0
MDEA	0.0693605	0 *	0	0	0
Piperazine	0.942568	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	494.986	1038.02 *	1036.45	1.56448	259.124
Toluene	307.363	641.432 *	639.208	2.22382	159.809
Ethylbenzene	146.006	302.9 *	300.606	2.29433	75.1545
m-Xylene	98.2577	205.972 *	204.318	1.6544	51.0816
Cyclopentane	0	0 *	0	0	0
Cyclohexane	0	0 *	0	0	0

Stream Properties

Property	Units	TO RR2 TEG	1	2	3	4
Temperature	°F	129.013	83.4 *	83.2696	83.2696	83.2696
Pressure	psia	893.696	904.696 *	902.696	902.696	902.696
Mole Fraction Vapor	%	100	100	100	0	100
Molecular Weight	lb/lbmol	21.113	21.673	21.6718	51.8513	21.6718
Mass Density	lb/ft^3	3.50514	4.24623	4.23639	34.6443	4.23639
Mass Flow	lb/h	600754	1.26122E+06	1.2611E+06	124.132	315287
Std Vapor Volumetric Flow	MMSCFD	259.151	530 *	529.978	0.0218036	132.5 *
Std Liquid Volumetric Flow	sgpm	3448.51	7047.99	7047.54	0.448465	1761.96
Specific Gravity		0.728976	0.748313	0.748271	0.555475	0.748271
API Gravity					115.555	
Gross Ideal Gas Heating Value	Btu/ft^3	1262.43	1235.65	1235.58	2864.51	1235.58
Gross Liquid Heating Value	Btu/lb	22627	21573.5	21573.6	20817.3	21573.6

Remarks

1:

Composition from Mobile Laboratories analysis 5/1/25. Normalized based on 0% CO2 and 0% H2S.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	5	6	7	8	9
From Block	SPLT-104	T-701A	V-1203	SPLT-104	T-1202
To Block	E-1102	E-701A	LCV-1203	E-701A	E-1102

Stream Composition

Mole Fraction	5 %	6 %	7 %	8 %	9 %
H2S	0.000499992	8.29598E-07	4.39009E-05	0.000499992	7.22068E-07
CO2	2.40004	0.000617132	0.0408199	2.40004	0.000384751
N2	0.994041	1.01403	0.000560756	0.994041	1.0141
C1	76.0775	77.563	0.0725454	76.0775	77.5682
C2	11.6142	11.8382	0.00904977	11.6142	11.839
C3	5.4425	5.54941	0.00255597	5.4425	5.54977
iC4	0.744124	0.758928	0.00018474	0.744124	0.758978
nC4	1.63195	1.66408	0.000590934	1.63195	1.66419
iC5	0.345021	0.351941	4.70441E-05	0.345021	0.351965
nC5	0.368188	0.375544	6.37234E-05	0.368188	0.375569
nC6	0.252357	0.257427	1.94142E-05	0.252357	0.257444
nC7	0.0713762	0.072822	2.39207E-06	0.0713762	0.0728268
nC8	0.0121523	0.0123981	3.10282E-07	0.0121523	0.012399
nC9	0.00318561	0.00325033	2.4086E-08	0.00318561	0.00325054
nC10	0	0	0	0	0
H2O	0	0.495245	99.3938	0	0.488923
MDEA	0	0.00041022	0.192739	0	0.000400355
Piperazine	0	0.000639598	0.286168	0	0.000631684
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0222251	0.00052473	0.0228023	0.0222294
Toluene	0.011922	0.0116995	0.000162676	0.011922	0.011702
Ethylbenzene	0.00486589	0.00482327	4.42682E-05	0.00486589	0.00482443
m-Xylene	0.00330729	0.00324594	4.0275E-05	0.00330729	0.00324716
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	5 %	6 %	7 %	8 %	9 %
H2S	0.000786284	1.33951E-06	8.12389E-05	0.000786284	1.16588E-06
CO2	4.87382	0.00128674	0.0975435	4.87382	0.000802214
N2	1.28492	1.34581	0.000852942	1.28492	1.34589
C1	56.3161	58.9512	0.0631918	56.3161	58.9547
C2	16.1144	16.8645	0.0147753	16.1144	16.8655
C3	11.0739	11.5933	0.00611972	11.0739	11.594
iC4	1.99569	2.08982	0.000583018	1.99569	2.08995
nC4	4.37678	4.58231	0.00186492	4.37678	4.58257
iC5	1.14863	1.203	0.000184295	1.14863	1.20307
nC5	1.22576	1.28368	0.000249636	1.22576	1.28376
nC6	1.00347	1.051	9.08411E-05	1.00347	1.05106
nC7	0.330016	0.345705	1.30146E-05	0.330016	0.345726
nC8	0.0640528	0.0670962	1.92447E-06	0.0640528	0.0671002
nC9	0.0188526	0.0197501	1.67733E-07	0.0188526	0.0197513
nC10	0	0	0	0	0
H2O	0	0.422696	97.2255	0	0.417297
MDEA	0	0.00231592	1.24706	0	0.00226021
Piperazine	0	0.0026101	1.33839	0	0.00257778
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.0822482	0.00222552	0.0821867	0.0822636
Toluene	0.0506867	0.0510712	0.000813851	0.0506867	0.0510815
Ethylbenzene	0.0238369	0.0242599	0.000255183	0.0238369	0.0242656
m-Xylene	0.0162016	0.0163264	0.000232165	0.0162016	0.0163324
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Cyclohexane	0	0	0	0	0

Mass Flow	5 lb/h	6 lb/h	7 lb/h	8 lb/h	9 lb/h
H2S	2.47905	0.00403127	0.00088179	2.47905	0.00350851
CO2	15366.5	3.87246	1.05876	15366.5	2.41413
N2	4051.18	4050.23	0.00925808	4051.18	4050.23
C1	177557	177414	0.685902	177557	177414
C2	50806.5	50753.9	0.160375	50806.5	50753.9
C3	34914.5	34890.3	0.0664252	34914.5	34890.3
iC4	6292.14	6289.35	0.00632824	6292.14	6289.34
nC4	13799.4	13790.5	0.0202424	13799.4	13790.5
iC5	3621.47	3620.45	0.00200039	3621.47	3620.45
nC5	3864.65	3863.25	0.00270962	3864.65	3863.25
nC6	3163.8	3163	0.000986015	3163.8	3163
nC7	1040.5	1040.4	0.000141264	1040.5	1040.4
nC8	201.95	201.927	2.08887E-05	201.95	201.927
nC9	59.4399	59.4381	1.82062E-06	59.4399	59.4381
nC10	0	0	0	0	0
H2O	0	1272.11	1055.31	0	1255.79
MDEA	0	6.96978	13.536	0	6.80171
Piperazine	0	7.85512	14.5273	0	7.75741
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	259.124	247.527	0.0241565	259.124	247.559
Toluene	159.809	153.7	0.00883377	159.809	153.721
Ethylbenzene	75.1545	73.0106	0.00276983	75.1545	73.0234
m-Xylene	51.0816	49.1344	0.00251998	51.0816	49.1495
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	5	6	7	8	9
Temperature	°F	83.2696	154.877	128.5	83.2696	154.392
Pressure	psia	902.696	896.696	893.696	902.696	896.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.6718	21.1073	18.4171	21.6718	21.1075
Mass Density	lb/ft^3	4.23639	3.27813	61.6747	4.23639	3.28226
Mass Flow	lb/h	315287	300951	1085.43	315287	300933
Std Vapor Volumetric Flow	MMSCFD	132.5 *	129.858	0.536767	132.5 *	129.849
Std Liquid Volumetric Flow	sgpm	1761.96	1725.5	2.18444	1761.96	1725.47
Specific Gravity		0.748271	0.728781	0.988871	0.748271	0.728786
API Gravity				9.67337		
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1259.93	68.3768	1235.58	1260.01
Gross Liquid Heating Value	Btu/lb	21573.6	22586.3	370.82	21573.6	22587.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	10	11	12	13	14
From Block	SPLT-104	MIX-103	SPLT-101	T-1201	T-1202
To Block	E-701B	V-1203	T-701B	LCV-1201	LCV-1202

Stream Composition

Mole Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000499992	7.22068E-07	0.000149202	0.0012253	0.0012253
CO2	2.40004	0.000384751	0.0109194	5.21347	5.21347
N2	0.994041	1.0141	0	0.000505293	0.000505293
C1	76.0775	77.5682	0	0.132688	0.132688
C2	11.6142	11.839	0	0.0260654	0.0260654
C3	5.4425	5.54977	0	0.00815897	0.00815897
iC4	0.744124	0.758978	0	0.000717219	0.000717219
nC4	1.63195	1.66419	0	0.00228774	0.00228774
iC5	0.345021	0.351965	0	0.000211518	0.000211518
nC5	0.368188	0.375569	0	0.000288208	0.000288208
nC6	0.252357	0.257444	0	0.000138688	0.000138688
nC7	0.0713762	0.0728268	0	1.38755E-05	1.38755E-05
nC8	0.0121523	0.012399	0	2.9996E-06	2.9996E-06
nC9	0.00318561	0.00325054	0	2.09959E-07	2.09959E-07
nC10	0	0	0	0	0
H2O	0	0.488923	86.4187	81.6311	81.6311
MDEA	0	0.000400355	11.7622	11.2511	11.2511
Piperazine	0	0.000631684	1.80801	1.72824	1.72824
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0222294	0	0.00220667	0.00220667
Toluene	0.011922	0.011702	0	0.000984629	0.000984629
Ethylbenzene	0.00486589	0.00482443	0	0.000299171	0.000299171
m-Xylene	0.00330729	0.00324716	0	0.000271222	0.000271222
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000786284	1.16588E-06	0.000163257	0.00130763	0.00130763
CO2	4.87382	0.000802214	0.0154288	7.18467	7.18467
N2	1.28492	1.34589	0	0.000443244	0.000443244
C1	56.3161	58.9547	0	0.0666555	0.0666555
C2	16.1144	16.8655	0	0.0245424	0.0245424
C3	11.0739	11.594	0	0.0112659	0.0112659
iC4	1.99569	2.08995	0	0.00130535	0.00130535
nC4	4.37678	4.58257	0	0.00416373	0.00416373
iC5	1.14863	1.20307	0	0.00047787	0.00047787
nC5	1.22576	1.28376	0	0.00065113	0.00065113
nC6	1.00347	1.05106	0	0.000374244	0.000374244
nC7	0.330016	0.345726	0	4.35369E-05	4.35369E-05
nC8	0.0640528	0.0671002	0	1.07293E-05	1.07293E-05
nC9	0.0188526	0.0197513	0	8.43224E-07	8.43224E-07
nC10	0	0	0	0	0
H2O	0	0.417297	49.9844	46.0501	46.0501
MDEA	0	0.00226021	45	41.9824	41.9824
Piperazine	0	0.00257778	5	4.66145	4.66145
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.0822636	0	0.00539743	0.00539743
Toluene	0.0506867	0.0510815	0	0.00284084	0.00284084
Ethylbenzene	0.0238369	0.0242656	0	0.000994569	0.000994569
m-Xylene	0.0162016	0.0163324	0	0.000901652	0.000901652
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	10 %	11 %	12 %	13 %	14 %
Cyclohexane	0	0	0	0	0

Mass Flow	10 lb/h	11 lb/h	12 lb/h	13 lb/h	14 lb/h
H2S	2.47864	0.00701703	0.326386	2.80193	2.80193
CO2	15364	4.82826	30.8454	15394.9	15394.9
N2	4050.51	8100.46	0	0.949761	0.949761
C1	177528	354829	0	142.826	142.826
C2	50798.1	101508	0	52.5882	52.5882
C3	34908.7	69780.6	0	24.1399	24.1399
iC4	6291.1	12578.7	0	2.79704	2.79704
nC4	13797.1	27581	0	8.92182	8.92182
iC5	3620.88	7240.9	0	1.02396	1.02396
nC5	3864.01	7726.5	0	1.39521	1.39521
nC6	3163.28	6326	0	0.80191	0.80191
nC7	1040.33	2080.81	0	0.0932886	0.0932886
nC8	201.917	403.854	0	0.0229902	0.0229902
nC9	59.4301	118.876	0	0.00180682	0.00180682
nC10	0	0	0	0	0
H2O	0	2511.57	99929.5	98673.7	98673.7
MDEA	0	13.6034	89964.6	89957.8	89957.8
Piperazine	0	15.5148	9996.07	9988.31	9988.31
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	259.081	495.117	0	11.5653	11.5653
Toluene	159.782	307.443	0	6.08721	6.08721
Ethylbenzene	75.1421	146.047	0	2.13111	2.13111
m-Xylene	51.0732	98.2991	0	1.93201	1.93201
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	10	11	12	13	14
Temperature	°F	83.2696	128.557	131.89	133.526	133.526
Pressure	psia	902.696	894.696	1054.7	898.696	898.696
Mole Fraction Vapor	%	100	99.7935	0	0	0
Molecular Weight	lb/lbmol	21.6718	21.1075	31.1469	31.935	31.935
Mass Density	lb/ft^3	4.23639	3.52025	63.9246	69.6979	69.6979
Mass Flow	lb/h	315235	601867	199921	214275	214275
Std Vapor Volumetric Flow	MMSCFD	132.478	259.698	58.4588	61.1096	61.1096
Std Liquid Volumetric Flow	sgpm	1761.67	3450.93	400	436.492	436.492
Specific Gravity		0.748271		1.02495	1.11751	1.11751
API Gravity				3.7923	-6.04673	-6.04673
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1260.01	564.961	542.147	542.147
Gross Liquid Heating Value	Btu/lb	21573.6	22587.7	6187.12	5793.57	5793.57

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	15	16	18	19	20
From Block	SPLT-101	T-701B	LCV-1201	LCV-1202	T-701A
To Block	T-701A	E-701B	MXSP-100	MXSP-100	LCV-701A

Stream Composition

Mole Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.000149202	8.28853E-07	0.0012253	0.0012253	0.00122524
CO2	0.0109194	0.000615775	5.21347	5.21347	5.21371
N2	0	1.01403	0.000505293	0.000505293	0.000506199
C1	0	77.5631	0.132688	0.132688	0.132672
C2	0	11.8382	0.0260654	0.0260654	0.0260772
C3	0	5.54941	0.00815897	0.00815897	0.00815463
iC4	0	0.758929	0.000717219	0.000717219	0.000715774
nC4	0	1.66409	0.00228774	0.00228774	0.00228458
iC5	0	0.351942	0.000211518	0.000211518	0.00021206
nC5	0	0.375544	0.000288208	0.000288208	0.000288645
nC6	0	0.257427	0.000138688	0.000138688	0.00013865
nC7	0	0.0728221	1.38755E-05	1.38755E-05	1.38884E-05
nC8	0	0.0123982	2.9996E-06	2.9996E-06	2.99392E-06
nC9	0	0.00325033	2.09959E-07	2.09959E-07	2.09682E-07
nC10	0	0	0	0	0
H2O	86.4187	0.495161	81.6311	81.6311	81.6291
MDEA	11.7622	0.000410114	11.2511	11.2511	11.2527
Piperazine	1.80801	0.000639487	1.72824	1.72824	1.72847
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0222248	0.00220667	0.00220667	0.00221299
Toluene	0	0.0116994	0.000984629	0.000984629	0.000988283
Ethylbenzene	0	0.00482324	0.000299171	0.000299171	0.000301006
m-Xylene	0	0.00324592	0.000271222	0.000271222	0.000273389
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.000163257	1.3383E-06	0.00130763	0.00130763	0.0013075
CO2	0.0154288	0.00128391	7.18467	7.18467	7.18459
N2	0	1.34581	0.000443244	0.000443244	0.000444014
C1	0	58.9512	0.0666555	0.0666555	0.0666439
C2	0	16.8645	0.0245424	0.0245424	0.0245522
C3	0	11.5934	0.0112659	0.0112659	0.0112592
iC4	0	2.08982	0.00130535	0.00130535	0.00130265
nC4	0	4.58231	0.00416373	0.00416373	0.00415774
iC5	0	1.203	0.00047787	0.00047787	0.000479069
nC5	0	1.28368	0.00065113	0.00065113	0.000652081
nC6	0	1.051	0.000374244	0.000374244	0.000374122
nC7	0	0.345705	4.35369E-05	4.35369E-05	4.3575E-05
nC8	0	0.0670963	1.07293E-05	1.07293E-05	1.07084E-05
nC9	0	0.0197501	8.43224E-07	8.43224E-07	8.42062E-07
nC10	0	0	0	0	0
H2O	49.9844	0.422624	46.0501	46.0501	46.0463
MDEA	45	0.00231532	41.9824	41.9824	41.9859
Piperazine	5	0.00260964	4.66145	4.66145	4.66179
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0822473	0.00539743	0.00539743	0.00541258
Toluene	0	0.0510707	0.00284084	0.00284084	0.00285122
Ethylbenzene	0	0.0242598	0.000994569	0.000994569	0.00100061
m-Xylene	0	0.0163262	0.000901652	0.000901652	0.000908805
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	15 %	16 %	18 %	19 %	20 %
Cyclohexane	0	0	0	0	0

Mass Flow	15 lb/h	16 lb/h	18 lb/h	19 lb/h	20 lb/h
H2S	0.326386	0.00402698	2.80193	2.80193	2.8014
CO2	30.8454	3.86331	15394.9	15394.9	15393.5
N2	0	4049.56	0.949761	0.949761	0.95133
C1	0	177385	142.826	142.826	142.789
C2	0	50745.5	52.5882	52.5882	52.6047
C3	0	34884.6	24.1399	24.1399	24.1237
iC4	0	6288.31	2.79704	2.79704	2.79101
nC4	0	13788.2	8.92182	8.92182	8.90825
iC5	0	3619.85	1.02396	1.02396	1.02644
nC5	0	3862.61	1.39521	1.39521	1.39713
nC6	0	3162.48	0.80191	0.80191	0.801582
nC7	0	1040.23	0.0932886	0.0932886	0.0933624
nC8	0	201.894	0.0229902	0.0229902	0.0229435
nC9	0	59.4283	0.00180682	0.00180682	0.00180418
nC10	0	0	0	0	0
H2O	99929.5	1271.68	98673.7	98673.7	98657.4
MDEA	89964.6	6.96682	89957.8	89957.8	89957.7
Piperazine	9996.07	7.85245	9988.31	9988.31	9988.21
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	247.483	11.5653	11.5653	11.5968
Toluene	0	153.673	6.08721	6.08721	6.10894
Ethylbenzene	0	72.998	2.13111	2.13111	2.14388
m-Xylene	0	49.1258	1.93201	1.93201	1.94718
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	15	16	18	19	20
Temperature	°F	131.89	154.871	135.982	135.982	132.822
Pressure	psia	1054.7	896.696	79.6959 *	79.6959 *	898.696
Mole Fraction Vapor	%	0	100	0.17828	0.17828	0
Molecular Weight	lb/lbmol	31.1469	21.1073	31.935	31.935	31.9368
Mass Density	lb/ft^3	63.9246	3.27819	53.3527	53.3527	69.7071
Mass Flow	lb/h	199921	300901	214275	214275	214257
Std Vapor Volumetric Flow	MMSCFD	58.4588	129.836	61.1096	61.1096	61.101
Std Liquid Volumetric Flow	sgpm	400	1725.22	436.492	436.492	436.455
Specific Gravity		1.02495	0.728781			1.11766
API Gravity		3.7923				-6.04778
Gross Ideal Gas Heating Value	Btu/ft^3	564.961	1259.93	542.147	542.147	542.215
Gross Liquid Heating Value	Btu/lb	6187.12	22586.3	5793.57	5793.57	5794.04

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	21	22	23**	24	25
From Block	LCV-1203	MXSP-100	F-0200/1/2/3/4	F-0200/1/2/3/4	E-0301/2
To Block	MXSP-100	V-0101	--	E-0301/2	LCV-0101

Stream Composition

Mole Fraction	21 %	22 %	23** %	24 %	25 %
H2S	4.39009E-05	0.00122002	0.00250866	0.00121814	0.00121814
CO2	0.0408199	5.19065	11.884	5.18068	5.18068
N2	0.000560756	0.000505985	0.198533	8.05647E-06	8.05647E-06
C1	0.0725454	0.132418	66.0123	0.0107463	0.0107463
C2	0.00904977	0.025997	12.7986	0.00351164	0.00351164
C3	0.00255597	0.0081324	4.03522	0.000921635	0.000921635
iC4	0.00018474	0.000714187	0.354761	6.31518E-05	6.31518E-05
nC4	0.000590934	0.00227879	1.12066	0.000297258	0.000297258
iC5	4.70441E-05	0.00021107	0.10395	1.51257E-05	1.51257E-05
nC5	6.37234E-05	0.000287447	0.142558	2.62164E-05	2.62164E-05
nC6	1.94142E-05	0.000138151	0.0681989	1.08907E-05	1.08907E-05
nC7	2.39207E-06	1.3832E-05	0.00618544	4.29769E-07	4.29769E-07
nC8	3.10282E-07	2.98512E-06	0.00143054	1.57428E-07	1.57428E-07
nC9	2.4086E-08	2.09016E-07	7.83315E-05	2.92257E-09	2.92257E-09
nC10	0	0	0	0	0
H2O	99.3938	81.7084	3.12164	81.8504	81.8504
MDEA	0.192739	11.2033	0.000265031	11.2234	11.2234
Piperazine	0.286168	1.72202	1.33915E-05	1.72512	1.72512
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00052473	0.00220246	0.0893665	0.00205992	0.00205992
Toluene	0.000162676	0.00098286	0.0384327	0.000921514	0.000921514
Ethylbenzene	4.42682E-05	0.00029897	0.0129156	0.000278262	0.000278262
m-Xylene	4.0275E-05	0.000271288	0.00840131	0.000257952	0.000257952
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	21 %	22 %	23** %	24 %	25 %
H2S	8.12389E-05	0.0013044	0.00366988	0.00130172	0.00130172
CO2	0.0975435	7.16637	22.4497	7.14899	7.14899
N2	0.000852942	0.000444666	0.238725	7.07656E-06	7.07656E-06
C1	0.0631918	0.0666419	45.4565	0.00540555	0.00540555
C2	0.0147753	0.0245231	16.5189	0.00331086	0.00331086
C3	0.00611972	0.0112498	7.6377	0.00127428	0.00127428
iC4	0.000583018	0.00130222	0.885071	0.00011509	0.00011509
nC4	0.00186492	0.00415506	2.79586	0.000541736	0.000541736
iC5	0.000184295	0.000477735	0.321923	3.42181E-05	3.42181E-05
nC5	0.000249636	0.000650605	0.44149	5.93081E-05	5.93081E-05
nC6	9.08411E-05	0.000373481	0.252267	2.94274E-05	2.94274E-05
nC7	1.30146E-05	4.34802E-05	0.026604	1.35028E-06	1.35028E-06
nC8	1.92447E-06	1.06971E-05	0.00701415	5.63856E-07	5.63856E-07
nC9	1.67733E-07	8.4098E-07	0.000431232	1.17531E-08	1.17531E-08
nC10	0	0	0	0	0
H2O	97.2255	46.1784	2.41392	46.2353	46.2353
MDEA	1.24706	41.8807	0.00135562	41.9349	41.9349
Piperazine	1.33839	4.65319	4.95121E-05	4.65921	4.65921
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00222552	0.00539705	0.299635	0.0050452	0.0050452
Toluene	0.000813851	0.00284095	0.152	0.00266228	0.00266228
Ethylbenzene	0.000255183	0.000995727	0.0588569	0.000926289	0.000926289
m-Xylene	0.000232165	0.000903533	0.038285	0.000858682	0.000858682
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	21 %	22 %	23** %	24 %	25 %
Cyclohexane	0	0	0	0	0

Mass Flow	21 lb/h	22 lb/h	23** lb/h	24 lb/h	25 lb/h
H2S	0.00088179	11.208	0.000519569	11.1705	11.1705
CO2	1.05876	61576.8	3.17834	61348	61348
N2	0.00925808	3.82078	0.0337978	0.0607265	0.0607265
C1	0.685902	572.618	6.43557	46.387	46.387
C2	0.160375	210.713	2.33869	28.4117	28.4117
C3	0.0664252	96.6636	1.08132	10.9351	10.9351
iC4	0.00632824	11.1893	0.125305	0.987632	0.987632
nC4	0.0202424	35.7022	0.395828	4.64883	4.64883
iC5	0.00200039	4.10492	0.0455767	0.293638	0.293638
nC5	0.00270962	5.5903	0.0625045	0.508944	0.508944
nC6	0.000986015	3.20912	0.0357151	0.252527	0.252527
nC7	0.000141264	0.373602	0.0037665	0.0115872	0.0115872
nC8	2.08887E-05	0.0919147	0.000993038	0.00483865	0.00483865
nC9	1.82062E-06	0.00722609	6.10523E-05	0.000100857	0.000100857
nC10	0	0	0	0	0
H2O	1055.31	396786	0.341755	396761	396761
MDEA	13.536	359858	0.000191923	359858	359858
Piperazine	14.5273	39982.3	7.00975E-06	39982.3	39982.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0241565	46.3739	0.0424212	43.2947	43.2947
Toluene	0.00883377	24.4108	0.0215196	22.846	22.846
Ethylbenzene	0.00276983	8.55575	0.00833275	7.94881	7.94881
m-Xylene	0.00251998	7.76357	0.00542026	7.36866	7.36866
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	21	22	23**	24	25
Temperature	°F	130.433	135.633	135.655	135.655	210 *
Pressure	psia	79.6959 *	79.6959	71.6959	71.6959	68.6959
Mole Fraction Vapor	%	0.0787244	0.17746	100	0	1.02218
Molecular Weight	lb/lbmol	18.4171	31.8764	23.297	31.8925	31.8925
Mass Density	lb/ft^3	51.1164	53.3783	0.264838	69.6759	21.0062
Mass Flow	lb/h	1085.43	859246	14.1576	858135	858135
Std Vapor Volumetric Flow	MMSCFD	0.536767	245.501	0.00553472	245.06	245.06
Std Liquid Volumetric Flow	sgpm	2.18444	1750.29	0.0712736	1744.6	1744.6
Specific Gravity				0.804384	1.11716	
API Gravity					-6.06074	
Gross Ideal Gas Heating Value	Btu/ft^3	68.3768	540.097	1064.17	539.134	539.134
Gross Liquid Heating Value	Btu/lb	370.82	5780.03	17246.2	5764.59	5764.59

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	26	27	28	29	30
From Block	E-0401/2	T-0402	T-0402	T-0403	LCV-0101
To Block	T-0402	E-0401/2	AC-0601/2	T-0402	T-0402

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	0.000116663	0.000144431	0.0100873	5.95259E-05	0.00121814
CO2	0.0371976	0.0158898	48.401	0.119548	5.18068
N2	0	0	7.53317E-05	2.3693E-09	8.05647E-06
C1	0	0	0.100484	6.11629E-06	0.0107463
C2	0	0	0.032836	2.23056E-06	0.00351164
C3	0	0	0.0086178	4.49225E-07	0.000921635
iC4	0	0	0.000590499	1.94026E-08	6.31518E-05
nC4	0	0	0.00277953	1.3759E-07	0.000297258
iC5	0	0	0.000141432	3.53041E-09	1.51257E-05
nC5	0	0	0.000245136	7.55368E-09	2.62164E-05
nC6	0	0	0.000101833	1.7763E-09	1.08907E-05
nC7	0	0	4.0185E-06	0	4.29769E-07
nC8	0	0	1.47201E-06	0	1.57428E-07
nC9	0	0	2.73271E-08	0	2.92257E-09
nC10	0	0	0	0	0
H2O	99.7901	88.7858	51.3805	99.8186	81.8504
MDEA	0.0710392	9.69163	0.0202365	0.0421634	11.2234
Piperazine	0.101531	1.50649	0.00934314	0.0194667	1.72512
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.0193042	9.0178E-05	0.00205992
Toluene	0	0	0.00863101	3.03259E-05	0.000921514
Ethylbenzene	0	0	0.00260541	7.45231E-06	0.000278262
m-Xylene	0	0	0.0024169	1.03486E-05	0.000257952
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	0.000218869	0.000170628	0.0112152	0.000112068	0.00130172
CO2	0.090116	0.0242405	69.4898	0.290638	7.14899
N2	0	0	6.88436E-05	3.6665E-09	7.07656E-06
C1	0	0	0.0525881	5.42031E-06	0.00540555
C2	0	0	0.0322099	3.70508E-06	0.00331086
C3	0	0	0.0123969	1.09427E-06	0.00127428
iC4	0	0	0.00111965	6.2297E-08	0.00011509
nC4	0	0	0.00527028	4.41767E-07	0.000541736
iC5	0	0	0.000332887	1.40708E-08	3.42181E-05
nC5	0	0	0.000576973	3.01059E-08	5.93081E-05
nC6	0	0	0.00028628	8.45598E-09	2.94274E-05
nC7	0	0	1.31359E-05	0	1.35028E-06
nC8	0	0	5.48536E-06	0	5.63856E-07
nC9	0	0	1.14337E-07	0	1.17531E-08
nC10	0	0	0	0	0
H2O	98.9623	55.445	30.1967	99.3384	46.2353
MDEA	0.465991	40.0325	0.0786674	0.277548	41.9349
Piperazine	0.481416	4.49806	0.026254	0.0926273	4.65921
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.0491913	0.000389119	0.0050452
Toluene	0	0	0.0259431	0.000154354	0.00266228
Ethylbenzene	0	0	0.00902356	4.37056E-05	0.000926289
m-Xylene	0	0	0.00837068	6.06915E-05	0.000858682
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	26 %	27 %	28 %	29 %	30 %
Cyclohexane	0	0	0	0	0

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	0.230278	1.53589	9.89296	0.0280193	11.1705
CO2	94.8136	218.198	61297.3	72.6656	61348
N2	0	0	0.0607274	9.16701E-07	0.0607265
C1	0	0	46.3883	0.00135519	46.387
C2	0	0	28.4126	0.000926348	28.4117
C3	0	0	10.9353	0.00027359	10.9351
iC4	0	0	0.987648	1.55755E-05	0.987632
nC4	0	0	4.64894	0.000110451	4.64883
iC5	0	0	0.293641	3.518E-06	0.293638
nC5	0	0	0.508952	7.52711E-06	0.508944
nC6	0	0	0.252529	2.11417E-06	0.252527
nC7	0	0	0.0115873	0	0.0115872
nC8	0	0	0.00483867	0	0.00483865
nC9	0	0	0.000100858	0	0.000100857
nC10	0	0	0	0	0
H2O	104121	499082	26636.7	24836.7	396761
MDEA	490.282	360349	69.393	69.3929	359858
Piperazine	506.512	40488.9	23.1588	23.1588	39982.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	43.3919	0.0972879	43.2947
Toluene	0	0	22.8846	0.0385918	22.846
Ethylbenzene	0	0	7.95974	0.0109273	7.94881
m-Xylene	0	0	7.38383	0.0151742	7.36866
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	255.837	254.33	214.678	120	194.098
Pressure	psia	28.6959	28.6959	26.6959	25.6959	26.6959 *
Mole Fraction Vapor	%	100	0	100	0	2.67104
Molecular Weight	lb/lbmol	18.166	28.8484	30.6535	18.1024	31.8925
Mass Density	lb/ft^3	0.0688816	60.2761	0.114058	61.7322	4.29327
Mass Flow	lb/h	105213	900140	88210.6	25002.1	858135
Std Vapor Volumetric Flow	MMSCFD	52.749	284.179	26.2087	12.579	245.06
Std Liquid Volumetric Flow	sgpm	210.723	1801.21	204.145	50.0258	1744.6
Specific Gravity		0.627224	0.966448	1.05839	0.989794	
API Gravity			4.42914		9.85094	
Gross Ideal Gas Heating Value	Btu/ft^3	56.4654	474.927	30.3375	52.54	539.134
Gross Liquid Heating Value	Btu/lb	127.924	5511.57	2.93696	47.2613	5764.59

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	31	32	33	34	35
From Block	E-0401/2	E-0301/2	T-0403	P-0303/4	RCYL-1
To Block	E-0301/2	P-0303/4	PCV-0403	RCYL-1	MKUP-1

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.00015076	0.00015076	0.019342	0.00015076	0.000150753
CO2	0.0110332	0.0110332	92.9604	0.0110332	0.0110329
N2	0	0	0.000144854	0	0
C1	0	0	0.193216	0	0
C2	0	0	0.0631386	0	0
C3	0	0	0.0165708	0	0
iC4	0	0	0.00113546	0	0
nC4	0	0	0.00534465	0	0
iC5	0	0	0.000271957	0	0
nC5	0	0	0.000471367	0	0
nC6	0	0	0.000195813	0	0
nC7	0	0	7.72717E-06	0	0
nC8	0	0	2.83053E-06	0	0
nC9	0	0	5.25474E-08	0	0
nC10	0	0	0	0	0
H2O	86.2777	86.2777	6.67653	86.2777	86.2776
MDEA	11.8844	11.8844	3.23352E-08	11.8844	11.8845
Piperazine	1.82671	1.82671	3.26255E-08	1.82671	1.82672
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.037037	0	0
Toluene	0	0	0.0165687	0	0
Ethylbenzene	0	0	0.0050031	0	0
m-Xylene	0	0	0.00463794	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.000164243	0.000164243	0.015607	0.000164243	0.000164235
CO2	0.0155215	0.0155215	96.8614	0.0155215	0.0155212
N2	0	0	9.60733E-05	0	0
C1	0	0	0.0733872	0	0
C2	0	0	0.0449491	0	0
C3	0	0	0.0173	0	0
iC4	0	0	0.0015625	0	0
nC4	0	0	0.00735476	0	0
iC5	0	0	0.000464554	0	0
nC5	0	0	0.000805183	0	0
nC6	0	0	0.000399514	0	0
nC7	0	0	1.83317E-05	0	0
nC8	0	0	7.65506E-06	0	0
nC9	0	0	1.59563E-07	0	0
nC10	0	0	0	0	0
H2O	49.6853	49.6853	2.84773	49.6853	49.6852
MDEA	45.2694	45.2694	9.12264E-08	45.2694	45.2695
Piperazine	5.02969	5.02969	6.65344E-08	5.02969	5.0297
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.068495	0	0
Toluene	0	0	0.0361439	0	0
Ethylbenzene	0	0	0.0125755	0	0
m-Xylene	0	0	0.0116577	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	31 %	32 %	33 %	34 %	35 %
Cyclohexane	0	0	0	0	0

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h	35 lb/h
H2S	1.30561	1.30561	9.86494	1.30561	1.30554
CO2	123.385	123.385	61224.7	123.385	123.382
N2	0	0	0.0607265	0	0
C1	0	0	46.387	0	0
C2	0	0	28.4117	0	0
C3	0	0	10.9351	0	0
iC4	0	0	0.987632	0	0
nC4	0	0	4.64883	0	0
iC5	0	0	0.293638	0	0
nC5	0	0	0.508944	0	0
nC6	0	0	0.252527	0	0
nC7	0	0	0.0115872	0	0
nC8	0	0	0.00483865	0	0
nC9	0	0	0.000100857	0	0
nC10	0	0	0	0	0
H2O	394961	394961	1800.01	394961	394960
MDEA	359858	359858	5.76628E-05	359858	359858
Piperazine	39982.3	39982.3	4.20554E-05	39982.3	39982.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	43.2947	0	0
Toluene	0	0	22.846	0	0
Ethylbenzene	0	0	7.94881	0	0
m-Xylene	0	0	7.36866	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	31	32	33	34	35
Temperature	°F	255.837	179.915	120	179.998	179.996
Pressure	psia	28.6959	25.6959	25.6959	64.6959 *	64.6959
Mole Fraction Vapor	%	0	0	100	0	0
Molecular Weight	lb/lbmol	31.2833	31.2833	42.237	31.2833	31.2833
Mass Density	lb/ft^3	60.2968	62.642	0.175886	62.6441	62.6442
Mass Flow	lb/h	794927	794927	63208.5	794927	794925
Std Vapor Volumetric Flow	MMSCFD	231.43	231.43	13.6297	231.43	231.429
Std Liquid Volumetric Flow	sgpm	1590.49	1590.49	154.119	1590.49	1590.48
Specific Gravity		0.966779	1.00438	1.45834	1.00442	1.00442
API Gravity		3.94735	3.94788		3.94102	3.94102
Gross Ideal Gas Heating Value	Btu/ft^3	570.305	570.305	9.84663	570.305	570.307
Gross Liquid Heating Value	Btu/lb	6224.12	6224.12	-14.5955	6224.12	6224.13

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	36	37	38	39	40
From Block	--	MKUP-1	MKUP-1	AC-0501/2/3	P-0702/3/4
To Block	MKUP-1	--	AC-0501/2/3	P-0702/3/4	SPLT-101

Stream Composition

Mole Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000150753	0.000149202	0.000149202	0.000149202
CO2	0	0.0110329	0.0109194	0.0109194	0.0109194
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.991	86.2776	86.4187	86.4187	86.4187
MDEA	0.000487605	11.8845	11.7622	11.7622	11.7622
Piperazine	0.00853986	1.82672	1.80801	1.80801	1.80801
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000164235	0.000163257	0.000163257	0.000163257
CO2	0	0.0155212	0.0154288	0.0154288	0.0154288
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.956	49.6852	49.9844	49.9844	49.9844
MDEA	0.00322414	45.2695	45	45	45
Piperazine	0.0408169	5.0297	5	5	5
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	36 %	37 %	38 %	39 %	40 %
Cyclohexane	0	0	0	0	0

Mass Flow	36 lb/h	37 lb/h	38 lb/h	39 lb/h	40 lb/h
H2S	0	0	1.30554	1.30554	1.30554
CO2	0	0	123.382	123.382	123.382
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	4758.1	0	399718	399718	399718
MDEA	0.153475	0	359859	359859	359859
Piperazine	1.94296	0	39984.3	39984.3	39984.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	36	37	38	39	40
Temperature	°F	120 *	179.996	179.599	130 *	131.89
Pressure	psia	134.696 *	64.6959	64.6959	59.6959	1054.7 *
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	18.0216	31.2833	31.1469	31.1469	31.1469
Mass Density	lb/ft^3	61.6832	62.6442	62.649	63.868	63.9246
Mass Flow	lb/h	4760.2	0	799686	799686	799686
Std Vapor Volumetric Flow	MMSCFD	2.40567	0	233.835	233.835	233.835
Std Liquid Volumetric Flow	sgpm	9.51747	0	1600 *	1600	1600
Specific Gravity		0.989008		1.00449	1.02404	1.02495
API Gravity		9.97906		3.9648	3.96568	3.7923
Gross Ideal Gas Heating Value	Btu/ft^3	50.6177	570.307	564.961	564.961	564.961
Gross Liquid Heating Value	Btu/lb	6.4613	6224.13	6187.12	6187.12	6187.12

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	41	42	43	44	45
From Block	T-701B	E-1102	E-1101	LCV-701A	LCV-701B
To Block	LCV-701B	T-1202	T-1201	MXSP-100	MXSP-100

Stream Composition

Mole Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.00122507	0.000499992	0.000499992	0.00122524	0.00122507
CO2	5.21288	2.40004	2.40004	5.21371	5.21288
N2	0.000506191	0.994041	0.994041	0.000506199	0.000506191
C1	0.132681	76.0775	76.0775	0.132672	0.132681
C2	0.0260799	11.6142	11.6142	0.0260772	0.0260799
C3	0.00815567	5.4425	5.4425	0.00815463	0.00815567
iC4	0.000715894	0.744124	0.744124	0.000715774	0.000715894
nC4	0.00228494	1.63195	1.63195	0.00228458	0.00228494
iC5	0.000212084	0.345021	0.345021	0.00021206	0.000212084
nC5	0.000288682	0.368188	0.368188	0.000288645	0.000288682
nC6	0.000138677	0.252357	0.252357	0.00013865	0.000138677
nC7	1.38908E-05	0.0713762	0.0713762	1.38884E-05	1.38908E-05
nC8	2.99464E-06	0.0121523	0.0121523	2.99392E-06	2.99464E-06
nC9	2.09734E-07	0.00318561	0.00318561	2.09682E-07	2.09734E-07
nC10	0	0	0	0	0
H2O	81.6298	0	0	81.6291	81.6298
MDEA	11.2527	0	0	11.2527	11.2527
Piperazine	1.72848	0	0	1.72847	1.72848
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0022132	0.0228023	0.0228023	0.00221299	0.0022132
Toluene	0.000988406	0.011922	0.011922	0.000988283	0.000988406
Ethylbenzene	0.000301036	0.00486589	0.00486589	0.000301006	0.000301036
m-Xylene	0.000273408	0.00330729	0.00330729	0.000273389	0.000273408
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.00130732	0.000786284	0.000786284	0.0013075	0.00130732
CO2	7.18349	4.87382	4.87382	7.18459	7.18349
N2	0.000444009	1.28492	1.28492	0.000444014	0.000444009
C1	0.0666487	56.3161	56.3161	0.0666439	0.0666487
C2	0.0245548	16.1144	16.1144	0.0245522	0.0245548
C3	0.0112607	11.0739	11.0739	0.0112592	0.0112607
iC4	0.00130287	1.99569	1.99569	0.00130265	0.00130287
nC4	0.00415842	4.37678	4.37678	0.00415774	0.00415842
iC5	0.000479125	1.14863	1.14863	0.000479069	0.000479125
nC5	0.000652168	1.22576	1.22576	0.000652081	0.000652168
nC6	0.000374197	1.00347	1.00347	0.000374122	0.000374197
nC7	4.35829E-05	0.330016	0.330016	4.3575E-05	4.35829E-05
nC8	1.0711E-05	0.0640528	0.0640528	1.07084E-05	1.0711E-05
nC9	8.42276E-07	0.0188526	0.0188526	8.42062E-07	8.42276E-07
nC10	0	0	0	0	0
H2O	46.047	0	0	46.0463	46.047
MDEA	41.9863	0	0	41.9859	41.9863
Piperazine	4.66184	0	0	4.66179	4.66184
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00541314	0.0821867	0.0821867	0.00541258	0.00541314
Toluene	0.00285159	0.0506867	0.0506867	0.00285122	0.00285159
Ethylbenzene	0.00100072	0.0238369	0.0238369	0.00100061	0.00100072
m-Xylene	0.000908874	0.0162016	0.0162016	0.000908805	0.000908874
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	41 %	42 %	43 %	44 %	45 %
Cyclohexane	0	0	0	0	0

Mass Flow	41 lb/h	42 lb/h	43 lb/h	44 lb/h	45 lb/h
H2S	2.801	2.47905	2.47905	2.8014	2.801
CO2	15391	15366.5	15366.5	15393.5	15391
N2	0.95131	4051.18	4051.18	0.95133	0.95131
C1	142.798	177557	177557	142.789	142.798
C2	52.6099	50806.5	50806.5	52.6047	52.6099
C3	24.1266	34914.5	34914.5	24.1237	24.1266
iC4	2.79147	6292.14	6292.14	2.79101	2.79147
nC4	8.90961	13799.4	13799.4	8.90825	8.90961
iC5	1.02655	3621.47	3621.47	1.02644	1.02655
nC5	1.3973	3864.65	3864.65	1.39713	1.3973
nC6	0.801735	3163.8	3163.8	0.801582	0.801735
nC7	0.0933784	1040.5	1040.5	0.0933624	0.0933784
nC8	0.0229489	201.95	201.95	0.0229435	0.0229489
nC9	0.00180462	59.4399	59.4399	0.00180418	0.00180462
nC10	0	0	0	0	0
H2O	98657.8	0	0	98657.4	98657.8
MDEA	89957.7	0	0	89957.7	89957.7
Piperazine	9988.22	0	0	9988.21	9988.22
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	11.5979	259.124	259.124	11.5968	11.5979
Toluene	6.10967	159.809	159.809	6.10894	6.10967
Ethylbenzene	2.14409	75.1545	75.1545	2.14388	2.14409
m-Xylene	1.94731	51.0816	51.0816	1.94718	1.94731
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	41	42	43	44	45
Temperature	°F	132.833	110 *	110 *	135.285	135.296
Pressure	psia	898.696	898.696	898.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	0	100	100	0.177569	0.177583
Molecular Weight	lb/lbmol	31.9366	21.6718	21.6718	31.9368	31.9366
Mass Density	lb/ft^3	69.7062	3.84156	3.84156	53.424	53.4222
Mass Flow	lb/h	214255	315287	315287	214257	214255
Std Vapor Volumetric Flow	MMSCFD	61.1007	132.5	132.5	61.101	61.1007
Std Liquid Volumetric Flow	sgpm	436.45	1761.96	1761.96	436.455	436.45
Specific Gravity		1.11765	0.748271	0.748271		
API Gravity		-6.04656				
Gross Ideal Gas Heating Value	Btu/ft^3	542.218	1235.58	1235.58	542.215	542.218
Gross Liquid Heating Value	Btu/lb	5794.1	21573.6	21573.6	5794.04	5794.1

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	46	47	48	49	50*
From Block	E-701A	SPLT-101	SPLT-101	V-0101	V-0101
To Block	MIX-100	T-1201	T-1202	F-0200/1/2/3/4	--

Stream Composition

Mole Fraction	46 %	47 %	48 %	49 %	50* %
H2S	8.29598E-07	0.000149202	0.000149202	0.00121817	0.00226437
CO2	0.000617132	0.0109194	0.0109194	5.18083	10.7134
N2	1.01403	0	0	1.25401E-05	0.278072
C1	77.563	0	0	0.0122369	67.7348
C2	11.8382	0	0	0.00380061	12.5116
C3	5.54941	0	0	0.00101275	4.01299
iC4	0.758928	0	0	7.11625E-05	0.36242
nC4	1.66408	0	0	0.000322561	1.10267
iC5	0.351941	0	0	1.7473E-05	0.109111
nC5	0.375544	0	0	2.94355E-05	0.14542
nC6	0.257427	0	0	1.24307E-05	0.0708566
nC7	0.072822	0	0	5.69455E-07	0.00747409
nC8	0.0123981	0	0	1.89733E-07	0.00157541
nC9	0.00325033	0	0	4.6916E-09	0.000115143
nC10	0	0	0	0	0
H2O	0.495245	86.4187	86.4187	81.8487	2.81114
MDEA	0.00041022	11.7622	11.7622	11.2232	0.000241506
Piperazine	0.000639598	1.80801	1.80801	1.72508	1.21403E-05
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0222251	0	0	0.00206189	0.081275
Toluene	0.0116995	0	0	0.000922361	0.035014
Ethylbenzene	0.00482327	0	0	0.000278547	0.0117871
m-Xylene	0.00324594	0	0	0.000258136	0.0076695
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	46 %	47 %	48 %	49 %	50* %
H2S	1.33951E-06	0.000163257	0.000163257	0.00130176	0.00336694
CO2	0.00128674	0.0154288	0.0154288	7.14925	20.5708
N2	1.34581	0	0	1.10149E-05	0.33986
C1	58.9512	0	0	0.0061554	47.409
C2	16.8645	0	0	0.00358333	16.4139
C3	11.5933	0	0	0.00140027	7.72041
iC4	2.08982	0	0	0.00012969	0.919033
nC4	4.58231	0	0	0.000587853	2.79618
iC5	1.203	0	0	3.95286E-05	0.343458
nC5	1.28368	0	0	6.65908E-05	0.457754
nC6	1.051	0	0	3.35888E-05	0.266404
nC7	0.345705	0	0	1.78916E-06	0.0326747
nC8	0.0670962	0	0	6.79566E-07	0.00785137
nC9	0.0197501	0	0	1.88673E-08	0.000644302
nC10	0	0	0	0	0
H2O	0.422696	49.9844	49.9844	46.2346	2.20953
MDEA	0.00231592	45	45	41.9342	0.00125558
Piperazine	0.0026101	5	5	4.65914	4.56237E-05
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0822482	0	0	0.00505006	0.276982
Toluene	0.0510712	0	0	0.00266475	0.140754
Ethylbenzene	0.0242599	0	0	0.000927245	0.0545966
m-Xylene	0.0163264	0	0	0.0008593	0.0355243
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	46 %	47 %	48 %	49 %	50* %
Cyclohexane	0	0	0	0	0

Mass Flow	46 lb/h	47 lb/h	48 lb/h	49 lb/h	50* lb/h
H2S	0.00403127	0.326386	0.326386	11.1711	0.0369153
CO2	3.87246	30.8454	30.8454	61351.2	225.54
N2	4050.23	0	0	0.0945243	3.72625
C1	177414	0	0	52.8225	519.796
C2	50753.9	0	0	30.7503	179.963
C3	34890.3	0	0	12.0164	84.6472
iC4	6289.35	0	0	1.11294	10.0763
nC4	13790.5	0	0	5.04466	30.6576
iC5	3620.45	0	0	0.339215	3.7657
nC5	3863.25	0	0	0.571449	5.01885
nC6	3163	0	0	0.288242	2.92088
nC7	1040.4	0	0	0.0153537	0.358248
nC8	201.927	0	0	0.00583169	0.086083
nC9	59.4381	0	0	0.00016191	0.00706418
nC10	0	0	0	0	0
H2O	1272.11	99929.5	99929.5	396762	24.2255
MDEA	6.96978	89964.6	89964.6	359858	0.0137663
Piperazine	7.85512	9996.07	9996.07	39982.3	0.000500221
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	247.527	0	0	43.3371	3.03685
Toluene	153.7	0	0	22.8675	1.54323
Ethylbenzene	73.0106	0	0	7.95714	0.598601
m-Xylene	49.1344	0	0	7.37408	0.389491
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	46	47	48	49	50*
Temperature	°F	129.074	131.89	131.89	135.633	135.633
Pressure	psia	894.696	1054.7	1054.7	79.6959	79.6959
Mole Fraction Vapor	%	99.7909	0	0	0	100
Molecular Weight	lb/lbmol	21.1073	31.1469	31.1469	31.8923	22.9204
Mass Density	lb/ft^3	3.51506	63.9246	63.9246	69.6756	0.289984
Mass Flow	lb/h	300951	199921	199921	858150	1096.41
Std Vapor Volumetric Flow	MMSCFD	129.858	58.4588	58.4588	245.065	0.435667
Std Liquid Volumetric Flow	sgpm	1725.5	400	400	1744.68	5.60964
Specific Gravity			1.02495	1.02495	1.11716	0.791383
API Gravity			3.7923	3.7923	-6.05972	
Gross Ideal Gas Heating Value	Btu/ft^3	1259.93	564.961	564.961	539.146	1075.41
Gross Liquid Heating Value	Btu/lb	22586.3	6187.12	6187.12	5764.78	17720.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	51	52	53	55	56
From Block	T-1201	E-1102	E-1101	E-701B	E-701B
To Block	E-1101	MIX-103	MIX-103	MIX-100	T-701B

Stream Composition

Mole Fraction	51 %	52 %	53 %	55 %	56 %
H2S	7.22068E-07	7.22068E-07	7.22068E-07	8.28853E-07	0.000499992
CO2	0.000384751	0.000384751	0.000384751	0.000615775	2.40004
N2	1.0141	1.0141	1.0141	1.01403	0.994041
C1	77.5682	77.5682	77.5682	77.5631	76.0775
C2	11.839	11.839	11.839	11.8382	11.6142
C3	5.54977	5.54977	5.54977	5.54941	5.4425
iC4	0.758978	0.758978	0.758978	0.758929	0.744124
nC4	1.66419	1.66419	1.66419	1.66409	1.63195
iC5	0.351965	0.351965	0.351965	0.351942	0.345021
nC5	0.375569	0.375569	0.375569	0.375544	0.368188
nC6	0.257444	0.257444	0.257444	0.257427	0.252357
nC7	0.0728268	0.0728268	0.0728268	0.0728221	0.0713762
nC8	0.012399	0.012399	0.012399	0.0123982	0.0121523
nC9	0.00325054	0.00325054	0.00325054	0.00325033	0.00318561
nC10	0	0	0	0	0
H2O	0.488923	0.488923	0.488923	0.495161	0
MDEA	0.000400355	0.000400355	0.000400355	0.000410114	0
Piperazine	0.000631684	0.000631684	0.000631684	0.000639487	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0222294	0.0222294	0.0222294	0.0222248	0.0228023
Toluene	0.011702	0.011702	0.011702	0.0116994	0.011922
Ethylbenzene	0.00482443	0.00482443	0.00482443	0.00482324	0.00486589
m-Xylene	0.00324716	0.00324716	0.00324716	0.00324592	0.00330729
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	51 %	52 %	53 %	55 %	56 %
H2S	1.16588E-06	1.16588E-06	1.16588E-06	1.3383E-06	0.000786284
CO2	0.000802214	0.000802214	0.000802214	0.00128391	4.87382
N2	1.34589	1.34589	1.34589	1.34581	1.28492
C1	58.9547	58.9547	58.9547	58.9512	56.3161
C2	16.8655	16.8655	16.8655	16.8645	16.1144
C3	11.594	11.594	11.594	11.5934	11.0739
iC4	2.08995	2.08995	2.08995	2.08982	1.99569
nC4	4.58257	4.58257	4.58257	4.58231	4.37678
iC5	1.20307	1.20307	1.20307	1.203	1.14863
nC5	1.28376	1.28376	1.28376	1.28368	1.22576
nC6	1.05106	1.05106	1.05106	1.051	1.00347
nC7	0.345726	0.345726	0.345726	0.345705	0.330016
nC8	0.0671002	0.0671002	0.0671002	0.0670963	0.0640528
nC9	0.0197513	0.0197513	0.0197513	0.0197501	0.0188526
nC10	0	0	0	0	0
H2O	0.417297	0.417297	0.417297	0.422624	0
MDEA	0.00226021	0.00226021	0.00226021	0.00231532	0
Piperazine	0.00257778	0.00257778	0.00257778	0.00260964	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0822636	0.0822636	0.0822636	0.0822473	0.0821867
Toluene	0.0510815	0.0510815	0.0510815	0.0510707	0.0506867
Ethylbenzene	0.0242656	0.0242656	0.0242656	0.0242598	0.0238369
m-Xylene	0.0163324	0.0163324	0.0163324	0.0163262	0.0162016
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	51 %	52 %	53 %	55 %	56 %
Cyclohexane	0	0	0	0	0

Mass Flow	51 lb/h	52 lb/h	53 lb/h	55 lb/h	56 lb/h
H2S	0.00350851	0.00350851	0.00350851	0.00402698	2.47864
CO2	2.41413	2.41413	2.41413	3.86331	15364
N2	4050.23	4050.23	4050.23	4049.56	4050.51
C1	177414	177414	177414	177385	177528
C2	50753.9	50753.9	50753.9	50745.5	50798.1
C3	34890.3	34890.3	34890.3	34884.6	34908.7
iC4	6289.34	6289.34	6289.34	6288.31	6291.1
nC4	13790.5	13790.5	13790.5	13788.2	13797.1
iC5	3620.45	3620.45	3620.45	3619.85	3620.88
nC5	3863.25	3863.25	3863.25	3862.61	3864.01
nC6	3163	3163	3163	3162.48	3163.28
nC7	1040.4	1040.4	1040.4	1040.23	1040.33
nC8	201.927	201.927	201.927	201.894	201.917
nC9	59.4381	59.4381	59.4381	59.4283	59.4301
nC10	0	0	0	0	0
H2O	1255.79	1255.79	1255.79	1271.68	0
MDEA	6.80171	6.80171	6.80171	6.96682	0
Piperazine	7.75741	7.75741	7.75741	7.85245	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	247.559	247.559	247.559	247.483	259.081
Toluene	153.721	153.721	153.721	153.673	159.782
Ethylbenzene	73.0234	73.0234	73.0234	72.998	75.1421
m-Xylene	49.1495	49.1495	49.1495	49.1258	51.0732
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	51	52	53	55	56
Temperature	°F	154.392	128.557	128.557	129.067	110 *
Pressure	psia	896.696	894.696	894.696	894.696	898.696
Mole Fraction Vapor	%	100	99.7935	99.7935	99.791	100
Molecular Weight	lb/lbmol	21.1075	21.1075	21.1075	21.1073	21.6718
Mass Density	lb/ft^3	3.28226	3.52025	3.52025	3.51513	3.84156
Mass Flow	lb/h	300933	300933	300933	300901	315235
Std Vapor Volumetric Flow	MMSCFD	129.849	129.849	129.849	129.836	132.478
Std Liquid Volumetric Flow	sgpm	1725.47	1725.47	1725.47	1725.22	1761.67
Specific Gravity		0.728786				0.748271
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1260.01	1260.01	1260.01	1259.93	1235.58
Gross Liquid Heating Value	Btu/lb	22587.7	22587.7	22587.7	22586.3	21573.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	57	59	61	62	65
From Block	E-701A	V-0701	VLVE-102	MIX-100	AC-0601/2
To Block	T-701A	VLVE-102	MXSP-100	V-0701	T-0403

Stream Composition

Mole Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000499992	4.11375E-05	4.11375E-05	8.29226E-07	0.0100873
CO2	2.40004	0.0515218	0.0515218	0.000616454	48.401
N2	0.994041	0.000560048	0.000560048	1.01403	7.53317E-05
C1	76.0775	0.07241	0.07241	77.5631	0.100484
C2	11.6142	0.00902638	0.00902638	11.8382	0.032836
C3	5.4425	0.00254965	0.00254965	5.54941	0.0086178
iC4	0.744124	0.000184645	0.000184645	0.758928	0.000590499
nC4	1.63195	0.00059047	0.00059047	1.66408	0.00277953
iC5	0.345021	4.69433E-05	4.69433E-05	0.351941	0.000141432
nC5	0.368188	6.36297E-05	6.36297E-05	0.375544	0.000245136
nC6	0.252357	1.93584E-05	1.93584E-05	0.257427	0.000101833
nC7	0.0713762	2.38626E-06	2.38626E-06	0.0728221	4.0185E-06
nC8	0.0121523	3.10362E-07	3.10362E-07	0.0123982	1.47201E-06
nC9	0.00318561	2.40645E-08	2.40645E-08	0.00325033	2.73271E-08
nC10	0	0	0	0	0
H2O	0	99.3798	99.3798	0.495203	51.3805
MDEA	0	0.195084	0.195084	0.000410167	0.0202365
Piperazine	0	0.287357	0.287357	0.000639542	0.00934314
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.000522355	0.000522355	0.0222249	0.0193042
Toluene	0.011922	0.000161794	0.000161794	0.0116995	0.00863101
Ethylbenzene	0.00486589	4.4052E-05	4.4052E-05	0.00482325	0.00260541
m-Xylene	0.00330729	4.0019E-05	4.0019E-05	0.00324593	0.0024169
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000786284	7.61006E-05	7.61006E-05	1.33891E-06	0.0112152
CO2	4.87382	0.123077	0.123077	0.00128533	69.4898
N2	1.28492	0.000851589	0.000851589	1.34581	6.88436E-05
C1	56.3161	0.0630534	0.0630534	58.9512	0.0525881
C2	16.1144	0.0147324	0.0147324	16.8645	0.0322099
C3	11.0739	0.00610261	0.00610261	11.5934	0.0123969
iC4	1.99569	0.000582531	0.000582531	2.08982	0.00111965
nC4	4.37678	0.00186286	0.00186286	4.58231	0.00527028
iC5	1.14863	0.000183841	0.000183841	1.203	0.000332887
nC5	1.22576	0.000249189	0.000249189	1.28368	0.000576973
nC6	1.00347	9.05505E-05	9.05505E-05	1.051	0.00028628
nC7	0.330016	1.29788E-05	1.29788E-05	0.345705	1.31359E-05
nC8	0.0640528	1.92434E-06	1.92434E-06	0.0670963	5.48536E-06
nC9	0.0188526	1.67529E-07	1.67529E-07	0.0197501	1.14337E-07
nC10	0	0	0	0	0
H2O	0	97.1803	97.1803	0.42266	30.1967
MDEA	0	1.26183	1.26183	0.00231562	0.0786674
Piperazine	0	1.34352	1.34352	0.00260987	0.026254
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.00221473	0.00221473	0.0822478	0.0491913
Toluene	0.0506867	0.000809174	0.000809174	0.051071	0.0259431
Ethylbenzene	0.0238369	0.000253855	0.000253855	0.0242599	0.00902356
m-Xylene	0.0162016	0.000230615	0.000230615	0.0163263	0.00837068
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	57 %	59 %	61 %	62 %	65 %
Cyclohexane	0	0	0	0	0

Mass Flow	57 lb/h	59 lb/h	61 lb/h	62 lb/h	65 lb/h
H2S	2.47905	0.00083633	0.00083633	0.00805825	9.89296
CO2	15366.5	1.35259	1.35259	7.73578	61297.3
N2	4051.18	0.00935879	0.00935879	8099.79	0.0607274
C1	177557	0.692944	0.692944	354800	46.3883
C2	50806.5	0.161906	0.161906	101499	28.4126
C3	34914.5	0.0670665	0.0670665	69774.9	10.9353
iC4	6292.14	0.00640189	0.00640189	12577.7	0.987648
nC4	13799.4	0.0204724	0.0204724	27578.7	4.64894
iC5	3621.47	0.00202037	0.00202037	7240.3	0.293641
nC5	3864.65	0.00273853	0.00273853	7725.86	0.508952
nC6	3163.8	0.000995132	0.000995132	6325.48	0.252529
nC7	1040.5	0.000142634	0.000142634	2080.64	0.0115873
nC8	201.95	2.11481E-05	2.11481E-05	403.821	0.00483867
nC9	59.4399	1.84111E-06	1.84111E-06	118.866	0.000100858
nC10	0	0	0	0	0
H2O	0	1067.99	1067.99	2543.79	26636.7
MDEA	0	13.8672	13.8672	13.9366	69.393
Piperazine	0	14.765	14.765	15.7076	23.1588
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	259.124	0.0243395	0.0243395	495.01	43.3919
Toluene	159.809	0.00889265	0.00889265	307.372	22.8846
Ethylbenzene	75.1545	0.00278981	0.00278981	146.009	7.95974
m-Xylene	51.0816	0.00253441	0.00253441	98.2602	7.38383
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

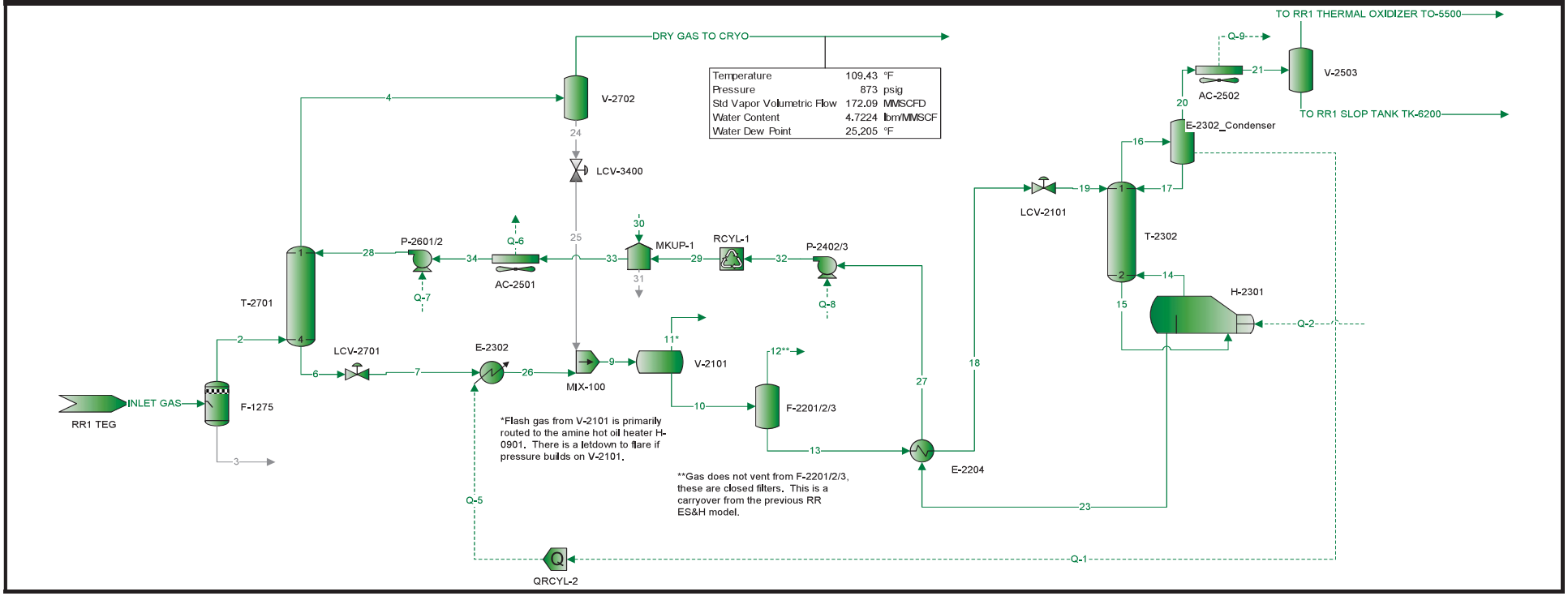
Property	Units	57	59	61	62	65
Temperature	°F	110 *	129.013	130.947	129.071	120 *
Pressure	psia	898.696	893.696	79.6959 *	894.696	25.6959
Mole Fraction Vapor	%	100	0	0.0786114	99.791	52.0045
Molecular Weight	lb/lbmol	21.6718	18.423	18.423	21.1073	30.6535
Mass Density	lb/ft^3	3.84156	61.6722	51.122	3.5151	0.245181
Mass Flow	lb/h	315287	1098.98	1098.98	601853	88210.6
Std Vapor Volumetric Flow	MMSCFD	132.5	0.543292	0.543292	259.694	26.2087
Std Liquid Volumetric Flow	sgpm	1761.96	2.21186	2.21186	3450.72	204.145
Specific Gravity		0.748271	0.988833			
API Gravity			9.65938			
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	68.5	68.5	1259.93	30.3375
Gross Liquid Heating Value	Btu/lb	21573.6	373.299	373.299	22586.3	2.93696

Remarks

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RR1&3 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-2702	RR1 TEG	V-2503	V-2503	F-1275
To Block	--	F-1275	--	--	T-2701

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.58354E-07	1.59993E-07	2.81608E-08	1.10835E-05	1.59993E-07
CO2	1.08117E-06	1.08203E-06	7.71698E-09	9.79535E-06	1.08203E-06
N2	1.02003	1.01805	3.33392E-07	0.00694267	1.01805
C1	77.968	77.8323	0.00164817	10.0534	77.8323
C2	11.8898	11.8756	0.0125181	15.2012	11.8756
C3	5.57205	5.56823	0.0439278	18.9108	5.56823
iC4	0.762003	0.761635	0.0183966	3.53308	0.761635
nC4	1.6693	1.66971	0.10585	13.7583	1.66971
iC5	0.352991	0.353286	0.0724315	4.03142	0.353286
nC5	0.37637	0.376944	0.123765	5.4297	0.376944
nC6	0.257492	0.258392	0.334465	4.79634	0.258392
nC7	0.0726081	0.0731111	0.263292	1.34483	0.0731111
nC8	0.0123141	0.0124467	0.0837879	0.151975	0.0124467
nC9	0.00320915	0.00326343	0.0360623	0.0293065	0.00326343
nC10	0	0	0	0	0
H2O	0.00994662	0.156544	95.5274	10.9138	0.156544
TEG	6.41603E-05	0	0.00594008	3.83243E-08	0
Benzene	0.0187324	0.0213807	1.05639	7.66613	0.0213807
Toluene	0.00914224	0.0112732	1.1282	3.09073	0.0112732
Ethylbenzene	0.00353251	0.00471762	0.723414	0.654272	0.00471762
m-Xylene	0.00239896	0.00315745	0.462472	0.427814	0.00315745
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	2.55661E-07	2.58232E-07	4.5115E-08	7.70202E-06	2.58232E-07
CO2	2.25406E-06	2.25519E-06	1.59646E-08	8.78992E-06	2.25519E-06
N2	1.35365	1.35061	4.39022E-07	0.00396562	1.35061
C1	59.2533	59.1326	0.00124291	3.28854	59.1326
C2	16.9364	16.9111	0.0176939	9.31998	16.9111
C3	11.6395	11.6281	0.0910542	17.0029	11.6281
iC4	2.09809	2.09645	0.0502624	4.18711	2.09645
nC4	4.59623	4.596	0.289201	16.3052	4.596
iC5	1.20647	1.20713	0.245653	5.93069	1.20713
nC5	1.28638	1.28796	0.419753	7.98773	1.28796
nC6	1.05117	1.05453	1.35487	8.42775	1.05453
nC7	0.344656	0.346941	1.24016	2.74764	0.346941
nC8	0.0666351	0.0673323	0.449905	0.35397	0.0673323
nC9	0.019498	0.0198219	0.217417	0.0766403	0.0198219
nC10	0	0	0	0	0
H2O	0.00848871	0.133559	80.8973	4.00898	0.133559
TEG	0.000456439	0	0.0419324	1.1735E-07	0
Benzene	0.0693162	0.0790924	3.87888	12.2099	0.0790924
Toluene	0.0399042	0.0491907	4.88644	5.80659	0.0491907

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.017766	0.0237192	3.61022	1.41631	0.0237192
m-Xylene	0.0120651	0.015875	2.30798	0.926094	0.015875
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.00101971	0.00103236	2.75834E-07	9.8029E-06	0.00103236
CO2	0.00899041	0.00901584	9.76084E-08	1.11875E-05	0.00901584
N2	5399.09	5399.5	2.6842E-06	0.00504732	5399.5
C1	236334	236401	0.00759918	4.18555	236401
C2	67551.6	67607.3	0.108181	11.8622	67607.3
C3	46424.9	46487	0.556709	21.6408	46487
iC4	8368.33	8381.23	0.307306	5.32922	8381.23
nC4	18332.3	18373.9	1.76819	20.7527	18373.9
iC5	4812.07	4825.86	1.50193	7.5484	4825.86
nC5	5130.79	5149.02	2.56638	10.1665	5149.02
nC6	4192.63	4215.81	8.28375	10.7266	4215.81
nC7	1374.68	1387.01	7.58241	3.49712	1387.01
nC8	265.777	269.182	2.75074	0.450522	269.182
nC9	77.7686	79.2442	1.32929	0.0975454	79.2442
nC10	0	0	0	0	0
H2O	33.8576	533.945	494.609	5.10251	533.945
TEG	1.82053	0	0.256376	1.4936E-07	0
Benzene	276.471	316.197	23.7156	15.5404	316.197
Toluene	159.16	196.655	29.8759	7.39045	196.655
Ethylbenzene	70.8605	94.8251	22.073	1.80264	94.8251
m-Xylene	48.1221	63.4654	14.1111	1.1787	63.4654
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	109.435	106.634	120	120	106.503
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.1093	21.1156	21.2733	49.0435	21.1156
Mass Density	lb/ft^3	3.68847	3.75315	58.8258	0.124263	3.74484
Molar Flow	lbmol/h	18894.7	18933	28.7404	2.59519	18933
Mass Flow	lb/h	398855	399781	611.404	127.277	399781
Std Vapor Volumetric Flow	MMSCFD	172.086	172.434	0.261757	0.023636	172.434
Std Liquid Volumetric Flow	sgpm	2293.97	2296.64	1.27576	0.439185	2296.64
Specific Gravity		0.728851	0.729067	0.943194	1.69334	0.729067
API Gravity				15.9275		
Gross Ideal Gas Heating Value	Btu/ft^3	1265.2	1263.96	251.351	2589.58	1263.96
Gross Liquid Heating Value	Btu/lb	22683.1	22652.8	3592.9	19842.3	22652.8

Warnings
ProMax:ProMax!Project!Flowsheets!RR1&3 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	3	4	6	7	9
From Block	F-1275	T-2701	T-2701	LCV-2701	MIX-100
To Block	--	V-2702	LCV-2701	E-2302	V-2101

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	9 %
H2S		1.58354E-07	1.85861E-07	1.85861E-07	1.85861E-07
CO2		1.08117E-06	2.89446E-07	2.89446E-07	2.89446E-07
N2		1.02003	0.0074433	0.0074433	0.0074433
C1		77.968	2.08088	2.08088	2.08088
C2		11.8898	0.928344	0.928344	0.928344
C3		5.57205	0.705581	0.705581	0.705581
iC4		0.762003	0.111154	0.111154	0.111154
nC4		1.6693	0.358973	0.358973	0.358973
iC5		0.352991	0.0957446	0.0957446	0.0957446
nC5		0.37637	0.12656	0.12656	0.12656
nC6		0.257492	0.134843	0.134843	0.134843
nC7		0.0726081	0.0616852	0.0616852	0.0616852
nC8		0.0123141	0.0149604	0.0149604	0.0149604
nC9		0.00320915	0.00578829	0.00578829	0.00578829
nC10		0	0	0	0
H2O		0.00994662	20.1947	20.1947	20.1947
TEG		6.41603E-05	74.496	74.496	74.496
Benzene		0.0187324	0.259463	0.259463	0.259463
Toluene		0.00914224	0.213237	0.213237	0.213237
Ethylbenzene		0.00353251	0.124651	0.124651	0.124651
m-Xylene		0.00239896	0.080005	0.080005	0.080005
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	9 %
H2S		2.55661E-07	5.38221E-08	5.38221E-08	5.38221E-08
CO2		2.25406E-06	1.08237E-07	1.08237E-07	1.08237E-07
N2		1.35365	0.00177171	0.00177171	0.00177171
C1		59.2533	0.283648	0.283648	0.283648
C2		16.9364	0.237187	0.237187	0.237187
C3		11.6395	0.264365	0.264365	0.264365
iC4		2.09809	0.0548943	0.0548943	0.0548943
nC4		4.59623	0.177282	0.177282	0.177282
iC5		1.20647	0.0586955	0.0586955	0.0586955
nC5		1.28638	0.0775865	0.0775865	0.0775865
nC6		1.05117	0.0987353	0.0987353	0.0987353
nC7		0.344656	0.0525192	0.0525192	0.0525192
nC8		0.0666351	0.0145204	0.0145204	0.0145204
nC9		0.019498	0.00630792	0.00630792	0.00630792
nC10		0	0	0	0
H2O		0.00848871	3.09129	3.09129	3.09129
TEG		0.000456439	95.0574	95.0574	95.0574
Benzene		0.0693162	0.172208	0.172208	0.172208
Toluene		0.0399042	0.166942	0.166942	0.166942
Ethylbenzene		0.017766	0.112444	0.112444	0.112444
m-Xylene		0.0120651	0.0721705	0.0721705	0.0721705
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	9 lb/h
H2S	0	0.00101971	1.2647E-05	1.2647E-05	1.2647E-05
CO2	0	0.00899041	2.54332E-05	2.54332E-05	2.54332E-05
N2	0	5399.09	0.416312	0.416312	0.416312
C1	0	236334	66.651	66.651	66.651
C2	0	67551.6	55.7335	55.7335	55.7335
C3	0	46424.9	62.1198	62.1198	62.1198
iC4	0	8368.33	12.8989	12.8989	12.8989
nC4	0	18332.3	41.6573	41.6573	41.6573
iC5	0	4812.07	13.7921	13.7921	13.7921
nC5	0	5130.79	18.2311	18.2311	18.2311
nC6	0	4192.63	23.2006	23.2006	23.2006
nC7	0	1374.68	12.3408	12.3408	12.3408
nC8	0	265.777	3.41197	3.41197	3.41197
nC9	0	77.7686	1.48222	1.48222	1.48222
nC10	0	0	0	0	0
H2O	0	33.8576	726.384	726.384	726.384
TEG	0	1.82053	22336.4	22336.4	22336.4
Benzene	0	276.471	40.465	40.465	40.465
Toluene	0	159.16	39.2276	39.2276	39.2276
Ethylbenzene	0	70.8605	26.4219	26.4219	26.4219
m-Xylene	0	48.1221	16.9584	16.9584	16.9584
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	9
Temperature	°F		109.564	108.49	111.685	117.074
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	3.40774	3.45995
Molecular Weight	lb/lbmol		21.1093	117.69	117.69	117.69
Mass Density	lb/ft^3		3.69669	67.3737	28.2572	27.1928
Molar Flow	lbmol/h	0	18894.7	199.658	199.658	199.658
Mass Flow	lb/h	0	398855	23497.8	23497.8	23497.8
Std Vapor Volumetric Flow	MMSCFD	0	172.086	1.81841	1.81841	1.81841
Std Liquid Volumetric Flow	sgpm	0	2293.97	42.675	42.675	42.675
Specific Gravity			0.728851	1.08025		
API Gravity				-3.43389		
Gross Ideal Gas Heating Value	Btu/ft^3		1265.2	3206.43	3206.43	3206.43
Gross Liquid Heating Value	Btu/lb		22683.1	10056.8	10056.8	10056.8

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	10	11*	12**	13	14
From Block	V-2101	V-2101	F-2201/2/3	F-2201/2/3	H-2301
To Block	F-2201/2/3	--	--	E-2204	T-2302

Stream Composition

Mole Fraction	10 %	11* %	12** %	13 %	14 %
H2S	1.53776E-07	1.0811E-06	1.14903E-06	1.53517E-07	8.65634E-09
CO2	1.34306E-07	4.61816E-06	4.87473E-06	1.33073E-07	1.53478E-09
N2	0.000134375	0.211378	0.157009	9.355E-05	9.15517E-08
C1	0.149672	55.9658	54.0681	0.13564	0.00034255
C2	0.212175	20.911	21.6725	0.20659	0.00139739
C3	0.264721	13.0065	13.646	0.261238	0.00322456
iC4	0.0508058	1.79499	1.88839	0.0503276	0.000877533
nC4	0.202337	4.72946	4.99109	0.20109	0.00460288
iC5	0.0653484	0.943863	0.99712	0.0651059	0.00250902
nC5	0.0918781	1.09425	1.15692	0.0916009	0.00400364
nC6	0.114767	0.694998	0.735062	0.114606	0.0134237
nC7	0.0574782	0.179069	0.189323	0.0574439	0.00742482
nC8	0.0145782	0.0256235	0.0270666	0.014575	0.0029109
nC9	0.00580017	0.00545681	0.00575764	0.00580018	0.00184334
nC10	0	0	0	0	0
H2O	20.908	0.292056	0.311393	20.9134	91.8491
TEG	77.1659	0.0001069	0.000112769	77.186	7.20548
Benzene	0.265619	0.087689	0.0929899	0.265664	0.195523
Toluene	0.219541	0.0373544	0.0395679	0.219588	0.282498
Ethylbenzene	0.128667	0.0125837	0.0133149	0.128697	0.256395
m-Xylene	0.0825909	0.00785323	0.00830597	0.0826102	0.168488
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	10 %	11* %	12** %	13 %	14 %
H2S	4.33382E-08	1.34888E-06	1.40589E-06	4.32565E-08	1.04371E-08
CO2	4.8878E-08	7.44066E-06	7.70205E-06	4.84193E-08	2.3896E-09
N2	3.11283E-05	0.216781	0.157906	2.16667E-05	9.07332E-08
C1	0.0198555	32.8692	31.1402	0.0179905	0.000194415
C2	0.0527575	23.0192	23.3958	0.0513586	0.00148652
C3	0.0965282	20.9968	21.6028	0.0952393	0.00503037
iC4	0.0244189	3.81944	3.94042	0.0241842	0.00180443
nC4	0.0972494	10.0635	10.4147	0.0966311	0.00946467
iC5	0.0389883	2.49307	2.58277	0.0388359	0.00640424
nC5	0.0548165	2.8903	2.99668	0.0546402	0.0102192
nC6	0.0817845	2.19262	2.27414	0.0816531	0.0409252
nC7	0.0476266	0.656889	0.681064	0.0475887	0.0263206
nC8	0.0137705	0.107154	0.110999	0.0137647	0.0117635
nC9	0.00615157	0.0256218	0.0265111	0.00615035	0.00836399
nC10	0	0	0	0	0
H2O	3.11476	0.192621	0.2014	3.11493	58.5396
TEG	95.827	0.000587715	0.000607984	95.8327	38.2815
Benzene	0.171572	0.25076	0.260772	0.171567	0.540318
Toluene	0.167273	0.126002	0.130886	0.167275	0.920851
Ethylbenzene	0.112959	0.0489088	0.0507492	0.112962	0.962995
m-Xylene	0.0725077	0.0305229	0.0316578	0.0725101	0.632826
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	10 lb/h	11* lb/h	12** lb/h	13 lb/h	14 lb/h
H2S	1.01017E-05	2.54527E-06	1.96382E-08	1.00821E-05	8.9981E-08
CO2	1.1393E-05	1.40402E-05	1.07586E-07	1.12854E-05	2.06014E-08
N2	0.00725572	0.409056	0.00220571	0.00505	7.82237E-07
C1	4.62814	62.0228	0.434982	4.19316	0.0016761
C2	12.2973	43.4362	0.326805	11.9705	0.0128157
C3	22.4998	39.62	0.301759	22.1981	0.0433683
iC4	5.69181	7.20711	0.0550418	5.63677	0.0155565
nC4	22.6679	18.9894	0.145478	22.5224	0.0815977
iC5	9.08781	4.70431	0.0360775	9.05173	0.0552128
nC5	12.7772	5.45388	0.0418591	12.7354	0.0881029
nC6	19.0632	4.13737	0.0317663	19.0314	0.352827
nC7	11.1013	1.23952	0.00951346	11.0918	0.226917
nC8	3.20977	0.202195	0.00155049	3.20822	0.101416
nC9	1.43387	0.0483473	0.000370321	1.4335	0.0721084
nC10	0	0	0	0	0
H2O	726.02	0.363467	0.00281325	726.017	504.686
TEG	22336.4	0.00110899	8.49264E-06	22336.4	330.036
Benzene	39.9919	0.473173	0.00364261	39.9882	4.65823
Toluene	38.9898	0.237761	0.00182828	38.988	7.93892
Ethylbenzene	26.3296	0.0922887	0.000708891	26.3289	8.30226
m-Xylene	16.9009	0.0575954	0.000442213	16.9004	5.45577
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	10	11*	12**	13	14
Temperature	°F	117.074	117.074	117.093	117.093	400 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	16.6959
Mole Fraction Vapor	%	0	100	100	0	100
Molecular Weight	lb/lbmol	120.929	27.3152	27.8542	120.953	28.2661
Mass Density	lb/ft^3	68.0518	0.361765	0.345522	68.0586	0.0515366
Molar Flow	lbmol/h	192.75	6.90809	0.0501487	192.7	30.5004
Mass Flow	lb/h	23309.1	188.696	1.39685	23307.7	862.129
Std Vapor Volumetric Flow	MMSCFD	1.7555	0.0629163	0.000456735	1.75504	0.277786
Std Liquid Volumetric Flow	sgpm	41.7182	0.956734	0.00701913	41.7112	1.65655
Specific Gravity		1.09112	0.943122	0.961734	1.09123	0.975956
API Gravity		-5.17574			-5.1889	
Gross Ideal Gas Heating Value	Btu/ft^3	3263.72	1607.92	1637.48	3264.14	387.653
Gross Liquid Heating Value	Btu/lb	9958.23	22231.7	22199.3	9957.5	4478.97

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	15	16	17	18	19
From Block	T-2302	T-2302	E-2302_Condenser	E-2204	LCV-2101
To Block	H-2301	E-2302_Condenser	T-2302	LCV-2101	T-2302

Stream Composition

Mole Fraction	15 %	16 %	17 %	18 %	19 %
H2S	1.42742E-09	8.92242E-07	4.10784E-09	1.53517E-07	1.53517E-07
CO2	2.47059E-10	7.73514E-07	9.38824E-10	1.33073E-07	1.33073E-07
N2	1.4582E-08	0.000543758	3.43859E-08	9.355E-05	9.355E-05
C1	5.46777E-05	0.788409	0.000127354	0.13564	0.13564
C2	0.000223951	1.20081	0.000399097	0.20659	0.20659
C3	0.000518854	1.51844	0.000713788	0.261238	0.261238
iC4	0.000141649	0.292522	0.000133752	0.0503276	0.0503276
nC4	0.00074523	1.1688	0.000889154	0.20109	0.20109
iC5	0.000408954	0.378385	0.000317971	0.0651059	0.0651059
nC5	0.000653981	0.532353	0.000490199	0.0916009	0.0916009
nC6	0.00226161	0.665452	0.000903233	0.114606	0.114606
nC7	0.00124417	0.333548	0.000492486	0.0574439	0.0574439
nC8	0.000494514	0.0845415	0.00016282	0.014575	0.014575
nC9	0.000320107	0.0335601	6.27969E-05	0.00580018	0.00580018
nC10	0	0	0	0	0
H2O	21.1483	88.2982	84.4776	20.9134	20.9134
TEG	78.6665	0.848585	15.3866	77.186	77.186
Benzene	0.0359678	1.51787	0.0361874	0.265664	0.265664
Toluene	0.054647	1.22237	0.0434677	0.219588	0.219588
Ethylbenzene	0.0528024	0.680045	0.0309868	0.128697	0.128697
m-Xylene	0.0346914	0.435533	0.0205147	0.0826102	0.0826102
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	15 %	16 %	17 %	18 %	19 %
H2S	3.98352E-10	1.24682E-06	3.64092E-09	4.32565E-08	4.32565E-08
CO2	8.90328E-11	1.3958E-06	1.07453E-09	4.84193E-08	4.84193E-08
N2	3.34493E-09	0.00062457	2.50515E-08	2.16667E-05	2.16667E-05
C1	7.18265E-06	0.5186	5.31338E-05	0.0179905	0.0179905
C2	5.51412E-05	1.48048	0.000312094	0.0513586	0.0513586
C3	0.000187346	2.74539	0.000818562	0.0952393	0.0952393
iC4	6.74152E-05	0.697125	0.000202176	0.0241842	0.0241842
nC4	0.000354679	2.78543	0.00134402	0.0966311	0.0966311
iC5	0.000241605	1.11937	0.000596628	0.0388359	0.0388359
nC5	0.000386364	1.57485	0.000919789	0.0546402	0.0546402
nC6	0.00159589	2.35131	0.00202428	0.0816531	0.0816531
nC7	0.00102085	1.37039	0.00128338	0.0475887	0.0475887
nC8	0.000462548	0.395963	0.000483693	0.0137647	0.0137647
nC9	0.000336181	0.176485	0.000209459	0.00615035	0.00615035
nC10	0	0	0	0	0
H2O	3.11975	65.2233	39.5794	3.11493	3.11493
TEG	96.7352	5.22513	60.0925	95.8327	95.8327
Benzene	0.0230056	4.86141	0.0735124	0.171567	0.171567
Toluene	0.0412297	4.61798	0.104158	0.167275	0.167275
Ethylbenzene	0.0459027	2.96026	0.085555	0.112962	0.112962
m-Xylene	0.0301582	1.89589	0.0566413	0.0725101	0.0725101
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	15 lb/h	16 lb/h	17 lb/h	18 lb/h	19 lb/h
H2S	9.33383E-08	1.00813E-05	2.54423E-09	1.00821E-05	1.00821E-05
CO2	2.08614E-08	1.12859E-05	7.50866E-10	1.12854E-05	1.12854E-05
N2	7.83754E-07	0.00505002	1.75057E-08	0.00505	0.00505
C1	0.00168297	4.19319	3.71293E-05	4.19316	4.19316
C2	0.0129202	11.9706	0.000218087	11.9705	11.9705
C3	0.0438971	22.1981	0.000572001	22.1981	22.1981
iC4	0.0157961	5.63667	0.000141278	5.63677	5.63677
nC4	0.0831052	22.5219	0.000939185	22.5224	22.5224
iC5	0.0566108	9.05075	0.000416916	9.05173	9.05173
nC5	0.0905294	12.7336	0.000642737	12.7354	12.7354
nC6	0.373935	19.0117	0.00141454	19.0314	19.0314
nC7	0.239196	11.0804	0.000896814	11.0918	11.0918
nC8	0.10838	3.2016	0.000337999	3.20822	3.20822
nC9	0.078771	1.42699	0.000146367	1.4335	1.4335
nC10	0	0	0	0	0
H2O	730.992	527.369	27.6576	726.017	726.017
TEG	22666.1	42.2483	41.9919	22336.4	22336.4
Benzene	5.39047	39.3074	0.0513695	39.9882	39.9882
Toluene	9.66058	37.3391	0.0727845	38.988	38.988
Ethylbenzene	10.7555	23.9354	0.0597848	26.3289	26.3289
m-Xylene	7.0664	15.3294	0.0395803	16.9004	16.9004
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	15	16	17	18	19
Temperature	°F	318.953	311.193	215	315 *	306.343
Pressure	psia	16.6959	15.6959	15.6959	73.6959	15.6959 *
Mole Fraction Vapor	%	0	100	0	0.440304	5.23013
Molecular Weight	lb/lbmol	122.123	24.3888	38.4515	120.953	120.953
Mass Density	lb/ft^3	61.3421	0.0465755	64.2688	49.1118	4.14797
Molar Flow	lbmol/h	191.865	33.1529	1.81732	192.7	192.7
Mass Flow	lb/h	23431.1	808.559	69.8788	23307.7	23307.7
Std Vapor Volumetric Flow	MMSCFD	1.74743	0.301944	0.0165515	1.75504	1.75504
Std Liquid Volumetric Flow	sgpm	41.6528	1.84508	0.130134	41.7112	41.7112
Specific Gravity		0.983539	0.842081	1.03046		
API Gravity		-6.05036		-1.94574		
Gross Ideal Gas Heating Value	Btu/ft^3	3267.3	458.098	683.937	3264.14	3264.14
Gross Liquid Heating Value	Btu/lb	9868.3	6373.81	6173.82	9957.5	9957.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	20	21	23	24	25
From Block	E-2302_Condenser	AC-2502	H-2301	V-2702	LCV-3400
To Block	AC-2502	V-2503	E-2204	LCV-3400	MIX-100

Stream Composition

Mole Fraction	20 %	21 %	23 %	24 %	25 %
H2S	9.4375E-07	9.4375E-07	6.10464E-11		
CO2	8.1832E-07	8.1832E-07	3.66015E-12		
N2	0.000575291	0.000575291	3.35605E-11		
C1	0.834126	0.834126	2.65344E-07		
C2	1.27043	1.27043	2.15416E-06		
C3	1.60646	1.60646	7.43302E-06		
iC4	0.309479	0.309479	2.55528E-06		
nC4	1.23653	1.23653	1.60736E-05		
iC5	0.400311	0.400311	1.20082E-05		
nC5	0.563198	0.563198	2.08423E-05		
nC6	0.703993	0.703993	0.000151795		
nC7	0.352864	0.352864	7.59362E-05		
nC8	0.0894351	0.0894351	3.77795E-05		
nC9	0.0355028	0.0355028	3.21929E-05		
nC10	0	0	0		
H2O	88.5198	88.5198	7.78477		
TEG	0.00544813	0.00544813	92.1738		
Benzene	1.6038	1.6038	0.00580932		
Toluene	1.29074	1.29074	0.0115797		
Ethylbenzene	0.717688	0.717688	0.0143203		
m-Xylene	0.459602	0.459602	0.00940171		
Cyclopentane	0	0	0		
Cyclohexane	0	0	0		
SO2	0	0	0		

Mass Fraction	20 %	21 %	23 %	24 %	25 %
H2S	1.36442E-06	1.36442E-06	1.48753E-11		
CO2	1.52774E-06	1.52774E-06	1.15171E-12		
N2	0.000683652	0.000683652	6.72189E-12		
C1	0.567654	0.567654	3.04353E-08		
C2	1.62051	1.62051	4.63121E-07		
C3	3.00502	3.00502	2.34346E-06		
iC4	0.763054	0.763054	1.06188E-06		
nC4	3.04881	3.04881	6.67961E-06		
iC5	1.2252	1.2252	6.19447E-06		
nC5	1.72374	1.72374	1.07515E-05		
nC6	2.57355	2.57355	9.35267E-05		
nC7	1.49991	1.49991	5.44028E-05		
nC8	0.433375	0.433375	3.08551E-05		
nC9	0.193161	0.193161	2.9521E-05		
nC10	0	0	0		
H2O	67.6492	67.6492	1.00273		
TEG	0.0347073	0.0347073	98.9682		
Benzene	5.31434	5.31434	0.00324443		
Toluene	5.04498	5.04498	0.00762842		
Ethylbenzene	3.2322	3.2322	0.01087		
m-Xylene	2.06988	2.06988	0.00713649		
Cyclopentane	0	0	0		
Cyclohexane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	20 lb/h	21 lb/h	23 lb/h	24 lb/h	25 lb/h
H2S	1.00787E-05	1.00787E-05	3.35721E-09	0	0
CO2	1.12852E-05	1.12852E-05	2.59928E-10	0	0
N2	0.00505	0.00505	1.51706E-09	0	0
C1	4.19315	4.19315	6.86893E-06	0	0
C2	11.9704	11.9704	0.000104522	0	0
C3	22.1975	22.1975	0.000528894	0	0
iC4	5.63653	5.63653	0.000239656	0	0
nC4	22.5209	22.5209	0.00150752	0	0
iC5	9.05033	9.05033	0.00139803	0	0
nC5	12.7329	12.7329	0.00242651	0	0
nC6	19.0103	19.0103	0.021108	0	0
nC7	11.0795	11.0795	0.0122782	0	0
nC8	3.20126	3.20126	0.00696369	0	0
nC9	1.42684	1.42684	0.00666259	0	0
nC10	0	0	0	0	0
H2O	499.712	499.712	226.306	0	0
TEG	0.256376	0.256376	22336.1	0	0
Benzene	39.256	39.256	0.732235	0	0
Toluene	37.2663	37.2663	1.72166	0	0
Ethylbenzene	23.8756	23.8756	2.45325	0	0
m-Xylene	15.2898	15.2898	1.61063	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	20	21	23	24	25
Temperature	°F	215 *	120 *	400		
Pressure	psia	15.6959	15.4959	16.6959	887.696	79.6959 *
Mole Fraction Vapor	%	100	8.28191	0		
Molecular Weight	lb/lbmol	23.5732	23.5732	139.863		
Mass Density	lb/ft^3	0.0515582	0.713942	58.0695		
Molar Flow	lbmol/h	31.3356	31.3356	161.365	0	0
Mass Flow	lb/h	738.681	738.681	22569	0	0
Std Vapor Volumetric Flow	MMSCFD	0.285393	0.285393	1.46965	0	0
Std Liquid Volumetric Flow	sgpm	1.71495	1.71495	39.9963	0	0
Specific Gravity		0.813922		0.931067		
API Gravity				-6.66717		
Gross Ideal Gas Heating Value	Btu/ft^3	445.001	445.001	3811.6		
Gross Liquid Heating Value	Btu/lb	6392.73	6392.73	10074.2		

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	26	27	28	29	30
From Block	E-2302	E-2204	P-2601/2	RCYL-1	--
To Block	MIX-100	P-2402/3	T-2701	MKUP-1	MKUP-1

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	1.85861E-07	6.10464E-11	0	6.10002E-11	0
CO2	2.89446E-07	3.66015E-12	0	3.4816E-12	0
N2	0.0074433	3.35605E-11	0	3.34938E-11	0
C1	2.08088	2.65344E-07	2.64779E-07	2.64802E-07	0
C2	0.928344	2.15416E-06	2.14942E-06	2.1496E-06	0
C3	0.705581	7.43302E-06	7.41569E-06	7.41632E-06	0
iC4	0.111154	2.55528E-06	2.54919E-06	2.54941E-06	0
nC4	0.358973	1.60736E-05	1.60363E-05	1.60377E-05	0
iC5	0.0957446	1.20082E-05	1.19795E-05	1.19806E-05	0
nC5	0.12656	2.08423E-05	2.07921E-05	2.07939E-05	0
nC6	0.134843	0.000151795	0.00015145	0.000151463	0
nC7	0.0616852	7.59362E-05	7.57424E-05	7.57489E-05	0
nC8	0.0149604	3.77795E-05	3.76816E-05	3.76848E-05	0
nC9	0.00578829	3.21929E-05	3.20936E-05	3.20963E-05	0
nC10	0	0	0	0	0
H2O	20.1947	7.78477	7.7838	7.7844	0.827516
TEG	74.496	92.1738	92.1746	92.174	99.1725
Benzene	0.259463	0.00580932	0.00586403	0.00586453	0
Toluene	0.213237	0.0115797	0.0116493	0.0116503	0
Ethylbenzene	0.124651	0.0143203	0.0143427	0.0143439	0
m-Xylene	0.080005	0.00940171	0.00942739	0.0094282	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	5.38221E-08	1.48753E-11	0	1.4864E-11	0
CO2	1.08237E-07	1.15171E-12	0	1.09552E-12	0
N2	0.00177171	6.72189E-12	0	6.7085E-12	0
C1	0.283648	3.04353E-08	3.03702E-08	3.03729E-08	0
C2	0.237187	4.63121E-07	4.62097E-07	4.62139E-07	0
C3	0.264365	2.34346E-06	2.33797E-06	2.33819E-06	0
iC4	0.0548943	1.06188E-06	1.05934E-06	1.05944E-06	0
nC4	0.177282	6.67961E-06	6.66406E-06	6.66467E-06	0
iC5	0.0586955	6.19447E-06	6.17962E-06	6.18018E-06	0
nC5	0.0775865	1.07515E-05	1.07256E-05	1.07265E-05	0
nC6	0.0987353	9.35267E-05	9.33137E-05	9.33222E-05	0
nC7	0.0525192	5.44028E-05	5.42635E-05	5.42685E-05	0
nC8	0.0145204	3.08551E-05	3.07749E-05	3.07777E-05	0
nC9	0.00630792	2.9521E-05	2.94297E-05	2.94324E-05	0
nC10	0	0	0	0	0
H2O	3.09129	1.00273	1.0026	1.00268	0.1
TEG	95.0574	98.9682	98.9682	98.9681	99.9
Benzene	0.172208	0.00324443	0.00327496	0.00327526	0
Toluene	0.166942	0.00762842	0.00767418	0.00767488	0
Ethylbenzene	0.112444	0.01087	0.0108869	0.0108879	0
m-Xylene	0.0721705	0.00713649	0.00715592	0.00715658	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	1.2647E-05	3.35721E-09	0	3.35467E-09	0
CO2	2.54332E-05	2.59928E-10	0	2.47248E-10	0
N2	0.416312	1.51706E-09	0	1.51404E-09	0
C1	66.651	6.86893E-06	6.85487E-06	6.85487E-06	0
C2	55.7335	0.000104522	0.0001043	0.0001043	0
C3	62.1198	0.000528894	0.000527706	0.000527706	0
iC4	12.8989	0.000239656	0.000239106	0.000239106	0
nC4	41.6573	0.00150752	0.00150415	0.00150415	0
iC5	13.7921	0.00139803	0.00139481	0.00139481	0
nC5	18.2311	0.00242651	0.00242087	0.00242087	0
nC6	23.2006	0.021108	0.0210619	0.0210619	0
nC7	12.3408	0.0122782	0.0122479	0.0122479	0
nC8	3.41197	0.00696369	0.00694622	0.00694622	0
nC9	1.48222	0.00666259	0.00664259	0.00664259	0
nC10	0	0	0	0	0
H2O	726.384	226.306	226.297	226.294	0.00206235
TEG	22336.4	22336.1	22338.2	22336.1	2.06028
Benzene	40.465	0.732235	0.739194	0.739194	0
Toluene	39.2276	1.72166	1.73214	1.73214	0
Ethylbenzene	26.4219	2.45325	2.45729	2.45729	0
m-Xylene	16.9584	1.61063	1.61517	1.61517	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	117.074	200.098	126.413	200.205	120 *
Pressure	psia	79.6959 *	11.6959	1004.7 *	64.6959	139.696 *
Mole Fraction Vapor	%	3.45995	0	0	0	0
Molecular Weight	lb/lbmol	117.69	139.863	139.864	139.864	149.079
Mass Density	lb/ft^3	27.1928	65.7054	68.4529	65.7066	68.731
Molar Flow	lbmol/h	199.658	161.365	161.378	161.364	0.0138339
Mass Flow	lb/h	23497.8	22569	22571.1	22569	2.06235
Std Vapor Volumetric Flow	MMSCFD	1.81841	1.46965	1.46977	1.46965	0.000125994
Std Liquid Volumetric Flow	sgpm	42.675	39.9963	40	39.9963	0.00365026
Specific Gravity			1.0535	1.09755	1.05352	1.10201
API Gravity			-6.66645	-6.80748	-6.67397	-7.10018
Gross Ideal Gas Heating Value	Btu/ft^3	3206.43	3811.6	3811.64	3811.61	4095.08
Gross Liquid Heating Value	Btu/lb	10056.8	10074.2	10074.2	10074.2	10163.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	31	32	33	34	
From Block	MKUP-1	P-2402/3	MKUP-1	AC-2501	
To Block	--	RCYL-1	AC-2501	P-2601/2	

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	
H2S	6.10002E-11	6.10464E-11	0	0	
CO2	3.4816E-12	3.66015E-12	0	0	
N2	3.34938E-11	3.35605E-11	0	0	
C1	2.64802E-07	2.65344E-07	2.64779E-07	2.64779E-07	
C2	2.1496E-06	2.15416E-06	2.14942E-06	2.14942E-06	
C3	7.41632E-06	7.43302E-06	7.41569E-06	7.41569E-06	
iC4	2.54941E-06	2.55528E-06	2.54919E-06	2.54919E-06	
nC4	1.60377E-05	1.60736E-05	1.60363E-05	1.60363E-05	
iC5	1.19806E-05	1.20082E-05	1.19795E-05	1.19795E-05	
nC5	2.07939E-05	2.08423E-05	2.07921E-05	2.07921E-05	
nC6	0.000151463	0.000151795	0.00015145	0.00015145	
nC7	7.57489E-05	7.59362E-05	7.57424E-05	7.57424E-05	
nC8	3.76848E-05	3.77795E-05	3.76816E-05	3.76816E-05	
nC9	3.20963E-05	3.21929E-05	3.20936E-05	3.20936E-05	
nC10	0	0	0	0	
H2O	7.7844	7.78477	7.7838	7.7838	
TEG	92.174	92.1738	92.1746	92.1746	
Benzene	0.00586453	0.00580932	0.00586403	0.00586403	
Toluene	0.0116503	0.0115797	0.0116493	0.0116493	
Ethylbenzene	0.0143439	0.0143203	0.0143427	0.0143427	
m-Xylene	0.0094282	0.00940171	0.00942739	0.00942739	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

Mass Fraction	31 %	32 %	33 %	34 %	
H2S	1.4864E-11	1.48753E-11	0	0	
CO2	1.09552E-12	1.15171E-12	0	0	
N2	6.7085E-12	6.72189E-12	0	0	
C1	3.03729E-08	3.04353E-08	3.03702E-08	3.03702E-08	
C2	4.62139E-07	4.63121E-07	4.62097E-07	4.62097E-07	
C3	2.33819E-06	2.34346E-06	2.33797E-06	2.33797E-06	
iC4	1.05944E-06	1.06188E-06	1.05934E-06	1.05934E-06	
nC4	6.66467E-06	6.67961E-06	6.66406E-06	6.66406E-06	
iC5	6.18018E-06	6.19447E-06	6.17962E-06	6.17962E-06	
nC5	1.07265E-05	1.07515E-05	1.07256E-05	1.07256E-05	
nC6	9.33222E-05	9.35267E-05	9.33137E-05	9.33137E-05	
nC7	5.42685E-05	5.44028E-05	5.42635E-05	5.42635E-05	
nC8	3.07777E-05	3.08551E-05	3.07749E-05	3.07749E-05	
nC9	2.94324E-05	2.9521E-05	2.94297E-05	2.94297E-05	
nC10	0	0	0	0	
H2O	1.00268	1.00273	1.0026	1.0026	
TEG	98.9681	98.9682	98.9682	98.9682	
Benzene	0.00327526	0.00324443	0.00327496	0.00327496	
Toluene	0.00767488	0.00762842	0.00767418	0.00767418	
Ethylbenzene	0.0108879	0.01087	0.0108869	0.0108869	
m-Xylene	0.00715658	0.00713649	0.00715592	0.00715592	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h
H2S	0	3.35721E-09	0	0
CO2	0	2.59928E-10	0	0
N2	0	1.51706E-09	0	0
C1	0	6.86893E-06	6.85487E-06	6.85487E-06
C2	0	0.000104522	0.0001043	0.0001043
C3	0	0.000528894	0.000527706	0.000527706
iC4	0	0.000239656	0.000239106	0.000239106
nC4	0	0.00150752	0.00150415	0.00150415
iC5	0	0.00139803	0.00139481	0.00139481
nC5	0	0.00242651	0.00242087	0.00242087
nC6	0	0.021108	0.0210619	0.0210619
nC7	0	0.0122782	0.0122479	0.0122479
nC8	0	0.00696369	0.00694622	0.00694622
nC9	0	0.00666259	0.00664259	0.00664259
nC10	0	0	0	0
H2O	0	226.306	226.297	226.297
TEG	0	22336.1	22338.2	22338.2
Benzene	0	0.732235	0.739194	0.739194
Toluene	0	1.72166	1.73214	1.73214
Ethylbenzene	0	2.45325	2.45729	2.45729
m-Xylene	0	1.61063	1.61517	1.61517
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

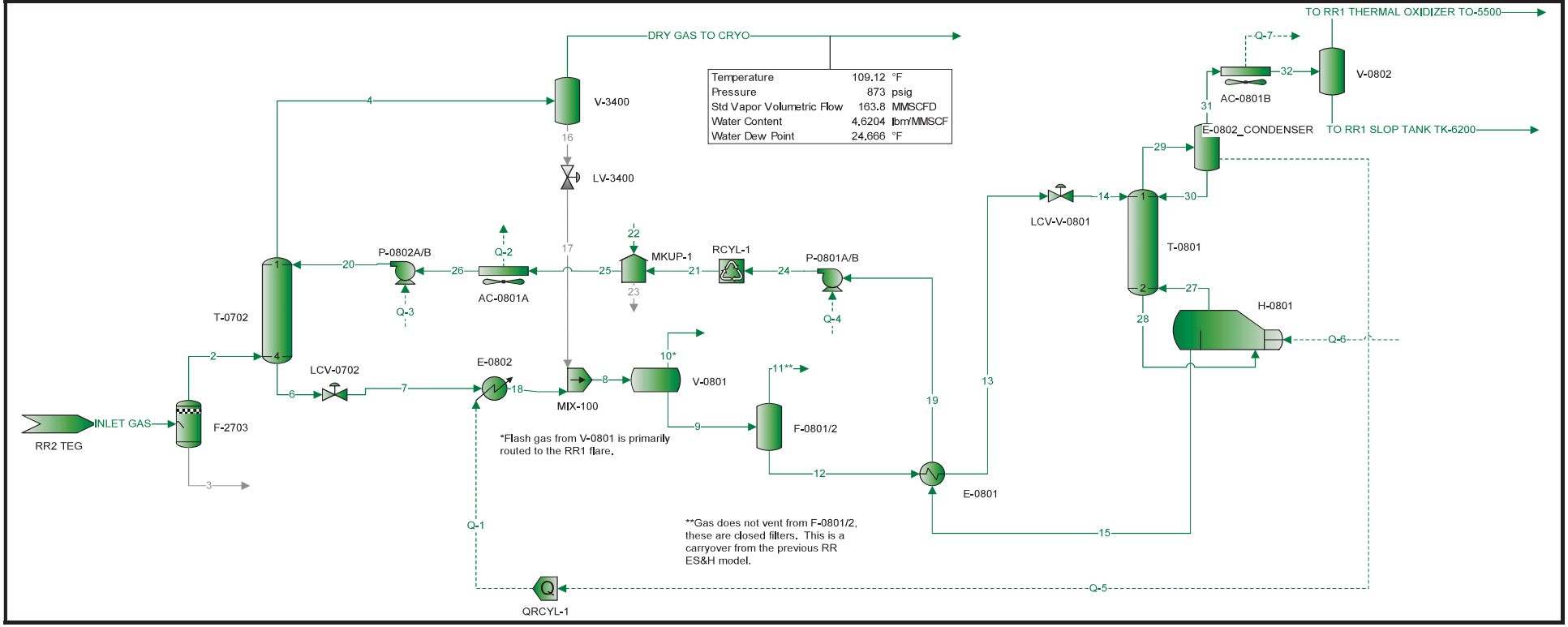
Property	Units	31	32	33	34
Temperature	°F	200.205	200.196	200.198	125 *
Pressure	psia	64.6959	64.6959 *	64.6959	59.6959
Mole Fraction Vapor	%	0	0	0	0
Molecular Weight	lb/lbmol	139.864	139.863	139.864	139.864
Mass Density	lb/ft^3	65.7066	65.7069	65.7068	68.421
Molar Flow	lbmol/h	0	161.365	161.378	161.378
Mass Flow	lb/h	0	22569	22571.1	22571.1
Std Vapor Volumetric Flow	MMSCFD	0	1.46965	1.46977	1.46977
Std Liquid Volumetric Flow	sgpm	0	39.9963	40 *	40
Specific Gravity			1.05352	1.05352	1.09704
API Gravity			-6.67401	-6.674	-6.67329
Gross Ideal Gas Heating Value	Btu/ft^3	3811.61	3811.6	3811.64	3811.64
Gross Liquid Heating Value	Btu/lb	10074.2	10074.2	10074.2	10074.2

Remarks

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RR2 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery	
Location:	DOU		
Flowsheet:	RR2 TEG		

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-3400	RR2 TEG	V-0802	V-0802	F-2703
To Block	--	F-2703	--	--	T-0702

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.56598E-07	1.58317E-07	2.86519E-08	1.09583E-05	1.58317E-07
CO2	1.03879E-06	1.03975E-06	7.61546E-09	9.39909E-06	1.03975E-06
N2	1.02014	1.01815	3.42518E-07	0.00685422	1.01815
C1	77.9699	77.8342	0.00171026	9.98872	77.8342
C2	11.8892	11.8753	0.0131082	15.1742	11.8753
C3	5.57182	5.56829	0.0461562	18.918	5.56829
iC4	0.761986	0.761667	0.0193616	3.53792	0.761667
nC4	1.66915	1.66973	0.11139	13.7783	1.66973
iC5	0.352968	0.353311	0.0763076	4.04186	0.353311
nC5	0.376326	0.376965	0.13061	5.45281	0.376965
nC6	0.257437	0.258408	0.353335	4.82187	0.258408
nC7	0.0725805	0.0731182	0.279401	1.35774	0.0731182
nC8	0.0123066	0.0124478	0.0891242	0.153789	0.0124478
nC9	0.0032061	0.00326378	0.0384027	0.0296697	0.00326378
nC10	0	0	0	0	0
H2O	0.00973172	0.154935	95.308	10.9135	0.154935
TEG	6.34244E-05	0	0.00618837	4.0017E-08	0
Benzene	0.0184446	0.0212117	1.10603	7.6603	0.0212117
Toluene	0.00896373	0.0111836	1.18135	3.08604	0.0111836
Ethylbenzene	0.00346029	0.00469129	0.756536	0.652486	0.00469129
m-Xylene	0.0023472	0.00313391	0.482953	0.425915	0.00313391
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	2.52835E-07	2.55528E-07	4.55598E-08	7.60762E-06	2.55528E-07
CO2	2.16578E-06	2.16709E-06	1.56372E-08	8.42609E-06	2.16709E-06
N2	1.35384	1.35076	4.47678E-07	0.00391127	1.35076
C1	59.2569	59.1347	0.00128012	3.26419	59.1347
C2	16.9361	16.9108	0.0183899	9.29434	16.9108
C3	11.6395	11.6284	0.0949605	16.9928	11.6284
iC4	2.09812	2.09656	0.0525049	4.18874	2.09656
nC4	4.59597	4.59609	0.302069	16.313	4.59609
iC5	1.20644	1.20722	0.256871	5.94024	1.20722
nC5	1.28628	1.28804	0.439664	8.01389	1.28804
nC6	1.05098	1.05461	1.42065	8.46434	1.05461
nC7	0.344538	0.346978	1.30624	2.77132	0.346978
nC8	0.0665967	0.0673389	0.474993	0.357845	0.0673389
nC9	0.0194801	0.0198242	0.229802	0.0775144	0.0198242
nC10	0	0	0	0	0
H2O	0.00830561	0.132188	80.1102	4.00497	0.132188
TEG	0.000451221	0	0.0433596	1.22414E-07	0
Benzene	0.0682539	0.0784679	4.03088	12.1887	0.0784679
Toluene	0.0391264	0.0488004	5.0785	5.7921	0.0488004

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.0174034	0.0235871	3.74739	1.41106	0.0235871
m-Xylene	0.0118052	0.0157568	2.39224	0.921081	0.0157568
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.000959847	0.000972361	2.65025E-07	9.71934E-06	0.000972361
CO2	0.00822201	0.00824642	9.09633E-08	1.0765E-05	0.00824642
N2	5139.62	5140.04	2.60419E-06	0.00499696	5140.04
C1	224959	225025	0.00744658	4.17026	225025
C2	64294.9	64350.5	0.106976	11.8743	64350.5
C3	44187.3	44249.4	0.552394	21.7096	44249.4
iC4	7965.15	7978.04	0.305426	5.35145	7978.04
nC4	17447.8	17489.5	1.75716	20.8411	17489.5
iC5	4580.04	4593.84	1.49424	7.58913	4593.84
nC5	4883.13	4901.39	2.55757	10.2384	4901.39
nC6	3989.87	4013.09	8.26406	10.8139	4013.09
nC7	1307.98	1320.36	7.5985	3.54059	1320.36
nC8	252.823	256.245	2.76308	0.457176	256.245
nC9	73.953	75.437	1.33678	0.0990308	75.437
nC10	0	0	0	0	0
H2O	31.5308	503.014	466.008	5.11667	503.014
TEG	1.71298	0	0.252227	1.56393E-07	0
Benzene	259.114	298.594	23.448	15.572	298.594
Toluene	148.537	185.7	29.5421	7.39987	185.7
Ethylbenzene	66.0691	89.7558	21.7989	1.80275	89.7558
m-Xylene	44.8163	59.9594	13.9159	1.17675	59.9594
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	109.12	106.271	120	120	106.14
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.1086	21.1154	21.433	49.0915	21.1154
Mass Density	lb/ft^3	3.69196	3.7575	58.7061	0.124388	3.74918
Molar Flow	lbmol/h	17984.8	18021.4	27.1408	2.60245	18021.4
Mass Flow	lb/h	379633	380530	581.709	127.758	380530
Std Vapor Volumetric Flow	MMSCFD	163.798	164.132	0.247188	0.0237021	164.132
Std Liquid Volumetric Flow	sgpm	2183.47	2186.08	1.21605	0.44069	2186.08
Specific Gravity		0.728825	0.72906	0.941274	1.695	0.72906
API Gravity				16.1909		
Gross Ideal Gas Heating Value	Btu/ft^3	1265.16	1263.97	261.262	2592.23	1263.97
Gross Liquid Heating Value	Btu/lb	22683.2	22653.2	3741.94	19843.3	22653.2

Warnings
ProMax:ProMax!Project!Flowsheets!RR2 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	3	4	6	7	8
From Block	F-2703	T-0702	T-0702	LCV-0702	MIX-100
To Block	--	V-3400	LCV-0702	E-0802	V-0801

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	8 %
H2S		1.56598E-07	1.8542E-07	1.8542E-07	1.8542E-07
CO2		1.03879E-06	2.80076E-07	2.80076E-07	2.80076E-07
N2		1.02014	0.00746018	0.00746018	0.00746018
C1		77.9699	2.09002	2.09002	2.09002
C2		11.8892	0.934181	0.934181	0.934181
C3		5.57182	0.71085	0.71085	0.71085
iC4		0.761986	0.112037	0.112037	0.112037
nC4		1.66915	0.361937	0.361937	0.361937
iC5		0.352968	0.0965905	0.0965905	0.0965905
nC5		0.376326	0.12784	0.12784	0.12784
nC6		0.257437	0.136187	0.136187	0.136187
nC7		0.0725805	0.0624406	0.0624406	0.0624406
nC8		0.0123066	0.0151604	0.0151604	0.0151604
nC9		0.0032061	0.00587112	0.00587112	0.00587112
nC10		0	0	0	0
H2O		0.00973172	19.5538	19.5538	19.5538
TEG		6.34244E-05	75.1061	75.1061	75.1061
Benzene		0.0184446	0.260359	0.260359	0.260359
Toluene		0.00896373	0.213824	0.213824	0.213824
Ethylbenzene		0.00346029	0.125084	0.125084	0.125084
m-Xylene		0.0023472	0.0801771	0.0801771	0.0801771
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	8 %
H2S		2.52835E-07	5.33253E-08	5.33253E-08	5.33253E-08
CO2		2.16578E-06	1.04013E-07	1.04013E-07	1.04013E-07
N2		1.35384	0.00176353	0.00176353	0.00176353
C1		59.2569	0.282936	0.282936	0.282936
C2		16.9361	0.237038	0.237038	0.237038
C3		11.6395	0.264509	0.264509	0.264509
iC4		2.09812	0.0549504	0.0549504	0.0549504
nC4		4.59597	0.177518	0.177518	0.177518
iC5		1.20644	0.0588072	0.0588072	0.0588072
nC5		1.28628	0.0778325	0.0778325	0.0778325
nC6		1.05098	0.0990343	0.0990343	0.0990343
nC7		0.344538	0.0527971	0.0527971	0.0527971
nC8		0.0665967	0.0146134	0.0146134	0.0146134
nC9		0.0194801	0.00635422	0.00635422	0.00635422
nC10		0	0	0	0
H2O		0.00830561	2.97262	2.97262	2.97262
TEG		0.000451221	95.1775	95.1775	95.1775
Benzene		0.0682539	0.171616	0.171616	0.171616
Toluene		0.0391264	0.166251	0.166251	0.166251
Ethylbenzene		0.0174034	0.11206	0.11206	0.11206
m-Xylene		0.0118052	0.0718288	0.0718288	0.0718288
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	8 lb/h
H2S	0	0.000959847	1.25143E-05	1.25143E-05	1.25143E-05
CO2	0	0.00822201	2.44097E-05	2.44097E-05	2.44097E-05
N2	0	5139.62	0.413862	0.413862	0.413862
C1	0	224959	66.3989	66.3989	66.3989
C2	0	64294.9	55.6277	55.6277	55.6277
C3	0	44187.3	62.0745	62.0745	62.0745
iC4	0	7965.15	12.8957	12.8957	12.8957
nC4	0	17447.8	41.6595	41.6595	41.6595
iC5	0	4580.04	13.8008	13.8008	13.8008
nC5	0	4883.13	18.2656	18.2656	18.2656
nC6	0	3989.87	23.2412	23.2412	23.2412
nC7	0	1307.98	12.3903	12.3903	12.3903
nC8	0	252.823	3.42945	3.42945	3.42945
nC9	0	73.953	1.4912	1.4912	1.4912
nC10	0	0	0	0	0
H2O	0	31.5308	697.611	697.611	697.611
TEG	0	1.71298	22336.1	22336.1	22336.1
Benzene	0	259.114	40.2745	40.2745	40.2745
Toluene	0	148.537	39.0156	39.0156	39.0156
Ethylbenzene	0	66.0691	26.298	26.298	26.298
m-Xylene	0	44.8163	16.8567	16.8567	16.8567
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	8
Temperature	°F		109.249	108.119	111.322	116.499
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	3.4239	3.47557
Molecular Weight	lb/lbmol		21.1086	118.504	118.504	118.504
Mass Density	lb/ft^3		3.70019	67.3844	28.307	27.2527
Molar Flow	lbmol/h	0	17984.8	198.034	198.034	198.034
Mass Flow	lb/h	0	379633	23467.8	23467.8	23467.8
Std Vapor Volumetric Flow	MMSCFD	0	163.798	1.80362	1.80362	1.80362
Std Liquid Volumetric Flow	sgpm	0	2183.47	42.6136	42.6136	42.6136
Specific Gravity			0.728825	1.08042		
API Gravity				-3.44401		
Gross Ideal Gas Heating Value	Btu/ft^3		1265.16	3232.05	3232.05	3232.05
Gross Liquid Heating Value	Btu/lb		22683.2	10068.7	10068.7	10068.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	9	10*	11**	12	13
From Block	V-0801	V-0801	F-0801/2	F-0801/2	E-0801
To Block	F-0801/2	--	--	E-0801	LCV-V-0801

Stream Composition

Mole Fraction	9 %	10* %	11** %	12 %	13 %
H2S	1.53614E-07	1.06874E-06	1.13591E-06	1.53357E-07	1.53357E-07
CO2	1.30275E-07	4.44039E-06	4.68722E-06	1.29083E-07	1.29083E-07
N2	0.000134297	0.210917	0.15649	9.33905E-05	9.33905E-05
C1	0.150375	55.9583	54.0583	0.136271	0.136271
C2	0.214128	20.9317	21.6955	0.208508	0.208508
C3	0.267693	13.0183	13.6591	0.26419	0.26419
iC4	0.0514128	1.79571	1.88924	0.050932	0.050932
nC4	0.204722	4.72813	4.98984	0.20347	0.20347
iC5	0.0661343	0.942427	0.995618	0.0658911	0.0658911
nC5	0.0931038	1.09253	1.15511	0.092826	0.092826
nC6	0.116148	0.692718	0.732648	0.115987	0.115987
nC7	0.0582753	0.178121	0.188319	0.0582413	0.0582413
nC8	0.01479	0.0254475	0.0268803	0.0147868	0.0147868
nC9	0.00588771	0.00541041	0.00570854	0.00588775	0.00588775
nC10	0	0	0	0	0
H2O	20.2479	0.277068	0.295413	20.2532	20.2532
TEG	77.8105	0.000104624	0.000110365	77.8309	77.8309
Benzene	0.266625	0.0863647	0.0915843	0.26667	0.26667
Toluene	0.220202	0.0366964	0.0388702	0.22025	0.22025
Ethylbenzene	0.129143	0.0123531	0.0130706	0.129173	0.129173
m-Xylene	0.082787	0.00769638	0.0081399	0.0828065	0.0828065
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	9 %	10* %	11** %	12 %	13 %
H2S	4.29871E-08	1.33348E-06	1.38984E-06	4.29065E-08	4.29065E-08
CO2	4.70766E-08	7.15436E-06	7.40579E-06	4.66364E-08	4.66364E-08
N2	3.08908E-05	0.216312	0.157384	2.14772E-05	2.14772E-05
C1	0.0198081	32.8654	31.1346	0.0179467	0.0179467
C2	0.0528676	23.0424	23.4207	0.0514697	0.0514697
C3	0.0969238	21.0162	21.6236	0.095636	0.095636
iC4	0.0245364	3.82104	3.9422	0.024302	0.024302
nC4	0.0977022	10.0609	10.4121	0.0970852	0.0970852
iC5	0.039179	2.48932	2.57888	0.039027	0.039027
nC5	0.0551561	2.8858	2.992	0.0549804	0.0549804
nC6	0.0821848	2.18546	2.26667	0.0820541	0.0820541
nC7	0.0479466	0.653423	0.677453	0.047909	0.047909
nC8	0.013872	0.10642	0.110235	0.0138662	0.0138662
nC9	0.00620038	0.0254044	0.0262851	0.00619918	0.00619918
nC10	0	0	0	0	0
H2O	2.99515	0.182739	0.191065	2.99532	2.99532
TEG	95.9461	0.000575208	0.000595021	95.9518	95.9518
Benzene	0.171007	0.246977	0.256831	0.171002	0.171002
Toluene	0.166594	0.123785	0.128578	0.166596	0.166596
Ethylbenzene	0.112577	0.0480132	0.0498181	0.112581	0.112581
m-Xylene	0.0721673	0.0299138	0.0310249	0.0721698	0.0721698
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	9 lb/h	10* lb/h	11** lb/h	12 lb/h	13 lb/h
H2S	1.00073E-05	2.50698E-06	1.93551E-08	9.98797E-06	9.98797E-06
CO2	1.09594E-05	1.34503E-05	1.03134E-07	1.08562E-05	1.08562E-05
N2	0.00719133	0.406671	0.00219176	0.00499957	0.00499957
C1	4.61129	61.7876	0.433585	4.17771	4.17771
C2	12.3075	43.3202	0.32616	11.9813	11.9813
C3	22.5637	39.5108	0.301134	22.2626	22.2626
iC4	5.71204	7.18363	0.0548996	5.65714	5.65714
nC4	22.7449	18.9146	0.145001	22.5999	22.5999
iC5	9.1208	4.67997	0.0359139	9.08489	9.08489
nC5	12.8403	5.42536	0.0416671	12.7986	12.7986
nC6	19.1325	4.10871	0.031566	19.1009	19.1009
nC7	11.1619	1.22845	0.00943431	11.1525	11.1525
nC8	3.22938	0.200072	0.00153515	3.22784	3.22784
nC9	1.44344	0.0477607	0.00036605	1.44307	1.44307
nC10	0	0	0	0	0
H2O	697.267	0.343553	0.0026608	697.265	697.265
TEG	22336.1	0.0010814	8.28635E-06	22336.1	22336.1
Benzene	39.8102	0.464322	0.00357667	39.8066	39.8066
Toluene	38.7829	0.232718	0.0017906	38.7811	38.7811
Ethylbenzene	26.2077	0.0902658	0.000693775	26.207	26.207
m-Xylene	16.8004	0.0562385	0.000432057	16.8	16.8
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	9	10*	11**	12	13
Temperature	°F	116.499	116.499	116.518	116.518	315 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	73.6959
Mole Fraction Vapor	%	0	100	100	0	0.436698
Molecular Weight	lb/lbmol	121.787	27.3147	27.8542	121.812	121.812
Mass Density	lb/ft^3	68.0706	0.362153	0.345897	68.0774	49.253
Molar Flow	lbmol/h	191.151	6.88281	0.0499967	191.101	191.101
Mass Flow	lb/h	23279.8	188.002	1.39262	23278.4	23278.4
Std Vapor Volumetric Flow	MMSCFD	1.74093	0.062686	0.000455351	1.74048	1.74048
Std Liquid Volumetric Flow	sgpm	41.6602	0.953366	0.00699895	41.6532	41.6532
Specific Gravity		1.09142	0.943106	0.961732	1.09153	
API Gravity		-5.19099			-5.2042	
Gross Ideal Gas Heating Value	Btu/ft^3	3290.53	1608.08	1637.68	3290.96	3290.96
Gross Liquid Heating Value	Btu/lb	9970.5	22234.4	22202.1	9969.77	9969.77

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	14	15	16	17	18
From Block	LCV-V-0801	H-0801	V-3400	LV-3400	E-0802
To Block	T-0801	E-0801	LV-3400	MIX-100	MIX-100

Stream Composition

Mole Fraction	14 %	15 %	16 %	17 %	18 %
H2S	1.53357E-07	6.56034E-11			1.8542E-07
CO2	1.29083E-07	3.80669E-12			2.80076E-07
N2	9.33905E-05	3.59602E-11			0.00746018
C1	0.136271	2.86029E-07			2.09002
C2	0.208508	2.33394E-06			0.934181
C3	0.26419	8.07416E-06			0.71085
iC4	0.050932	2.78033E-06			0.112037
nC4	0.20347	1.74779E-05			0.361937
iC5	0.0658911	1.30543E-05			0.0965905
nC5	0.092826	2.26863E-05			0.12784
nC6	0.115987	0.000165454			0.136187
nC7	0.0582413	8.27355E-05			0.0624406
nC8	0.0147868	4.11568E-05			0.0151604
nC9	0.00588775	3.50926E-05			0.00587112
nC10	0	0			0
H2O	20.2532	7.77937			19.5538
TEG	77.8309	92.1764			75.1061
Benzene	0.26667	0.00624095			0.260359
Toluene	0.22025	0.0123702			0.213824
Ethylbenzene	0.129173	0.0152091			0.125084
m-Xylene	0.0828065	0.00996696			0.0801771
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

Mass Fraction	14 %	15 %	16 %	17 %	18 %
H2S	4.29065E-08	1.59851E-11			5.33253E-08
CO2	4.66364E-08	1.19777E-12			1.04013E-07
N2	2.14772E-05	7.20223E-12			0.00176353
C1	0.0179467	3.28065E-08			0.282936
C2	0.0514697	5.0175E-07			0.237038
C3	0.095636	2.54549E-06			0.264509
iC4	0.024302	1.15536E-06			0.0549504
nC4	0.0970852	7.26289E-06			0.177518
iC5	0.039027	6.73381E-06			0.0588072
nC5	0.0549804	1.17023E-05			0.0778325
nC6	0.0820541	0.000101939			0.0990343
nC7	0.047909	5.92716E-05			0.0527971
nC8	0.0138662	3.36121E-05			0.0146134
nC9	0.00619918	3.21787E-05			0.00635422
nC10	0	0			0
H2O	2.99532	1.00199			2.97262
TEG	95.9518	98.967			95.1775
Benzene	0.171002	0.00348535			0.171616
Toluene	0.166596	0.00814887			0.166251
Ethylbenzene	0.112581	0.0115442			0.11206
m-Xylene	0.0721698	0.00756524			0.0718288
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	14 lb/h	15 lb/h	16 lb/h	17 lb/h	18 lb/h
H2S	9.98797E-06	3.60768E-09	0	0	1.25143E-05
CO2	1.08562E-05	2.70324E-10	0	0	2.44097E-05
N2	0.00499957	1.62547E-09	0	0	0.413862
C1	4.17771	7.40409E-06	0	0	66.3989
C2	11.9813	0.00011324	0	0	55.6277
C3	22.2626	0.000574491	0	0	62.0745
iC4	5.65714	0.000260753	0	0	12.8957
nC4	22.5999	0.00163916	0	0	41.6595
iC5	9.08489	0.00151975	0	0	13.8008
nC5	12.7986	0.00264109	0	0	18.2656
nC6	19.1009	0.0230065	0	0	23.2412
nC7	11.1525	0.013377	0	0	12.3903
nC8	3.22784	0.0075859	0	0	3.42945
nC9	1.44307	0.00726241	0	0	1.4912
nC10	0	0	0	0	0
H2O	697.265	226.139	0	0	697.611
TEG	22336.1	22335.8	0	0	22336.1
Benzene	39.8066	0.786608	0	0	40.2745
Toluene	38.7811	1.83912	0	0	39.0156
Ethylbenzene	26.207	2.60541	0	0	26.298
m-Xylene	16.8	1.7074	0	0	16.8567
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	14	15	16	17	18
Temperature	°F	306.947	400			116.499
Pressure	psia	15.6959 *	16.6959	887.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	4.9786	0			3.47557
Molecular Weight	lb/lbmol	121.812	139.869			118.504
Mass Density	lb/ft^3	4.36807	58.069			27.2527
Molar Flow	lbmol/h	191.101	161.358	0	0	198.034
Mass Flow	lb/h	23278.4	22569	0	0	23467.8
Std Vapor Volumetric Flow	MMSCFD	1.74048	1.46959	0	0	1.80362
Std Liquid Volumetric Flow	sgpm	41.6532	39.9965	0	0	42.6136
Specific Gravity			0.931059			
API Gravity			-6.66647			
Gross Ideal Gas Heating Value	Btu/ft^3	3290.96	3811.83			3232.05
Gross Liquid Heating Value	Btu/lb	9969.77	10074.4			10068.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	19	20	21	22	23
From Block	E-0801	P-0802A/B	RCYL-1	--	MKUP-1
To Block	P-0801A/B	T-0702	MKUP-1	MKUP-1	--

Stream Composition

Mole Fraction	19 %	20 %	21 %	22 %	23 %
H2S	6.56034E-11	0	6.55548E-11	0	6.55548E-11
CO2	3.80669E-12	0	3.62017E-12	0	3.62017E-12
N2	3.59602E-11	0	3.58888E-11	0	3.58888E-11
C1	2.86029E-07	2.85436E-07	2.85459E-07	0	2.85459E-07
C2	2.33394E-06	2.32903E-06	2.32922E-06	0	2.32922E-06
C3	8.07416E-06	8.05625E-06	8.0569E-06	0	8.0569E-06
iC4	2.78033E-06	2.77404E-06	2.77427E-06	0	2.77427E-06
nC4	1.74779E-05	1.74395E-05	1.74409E-05	0	1.74409E-05
iC5	1.30543E-05	1.30246E-05	1.30257E-05	0	1.30257E-05
nC5	2.26863E-05	2.26346E-05	2.26364E-05	0	2.26364E-05
nC6	0.000165454	0.000165102	0.000165115	0	0.000165115
nC7	8.27355E-05	8.25361E-05	8.25428E-05	0	8.25428E-05
nC8	4.11568E-05	4.10568E-05	4.10601E-05	0	4.10601E-05
nC9	3.50926E-05	3.49902E-05	3.4993E-05	0	3.4993E-05
nC10	0	0	0	0	0
H2O	7.77937	7.77834	7.7789	0.827516	7.7789
TEG	92.1764	92.1773	92.1767	99.1725	92.1767
Benzene	0.00624095	0.00630829	0.0063088	0	0.0063088
Toluene	0.0123702	0.0124584	0.0124594	0	0.0124594
Ethylbenzene	0.0152091	0.0152422	0.0152434	0	0.0152434
m-Xylene	0.00996696	0.010002	0.0100028	0	0.0100028
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	19 %	20 %	21 %	22 %	23 %
H2S	1.59851E-11	0	1.59732E-11	0	1.59732E-11
CO2	1.19777E-12	0	1.13908E-12	0	1.13908E-12
N2	7.20223E-12	0	7.18789E-12	0	7.18789E-12
C1	3.28065E-08	3.27382E-08	3.2741E-08	0	3.2741E-08
C2	5.0175E-07	5.00692E-07	5.00735E-07	0	5.00735E-07
C3	2.54549E-06	2.53982E-06	2.54004E-06	0	2.54004E-06
iC4	1.15536E-06	1.15274E-06	1.15284E-06	0	1.15284E-06
nC4	7.26289E-06	7.24688E-06	7.24751E-06	0	7.24751E-06
iC5	6.73381E-06	6.71846E-06	6.71904E-06	0	6.71904E-06
nC5	1.17023E-05	1.16755E-05	1.16765E-05	0	1.16765E-05
nC6	0.000101939	0.000101721	0.00010173	0	0.00010173
nC7	5.92716E-05	5.91282E-05	5.91333E-05	0	5.91333E-05
nC8	3.36121E-05	3.353E-05	3.35329E-05	0	3.35329E-05
nC9	3.21787E-05	3.20846E-05	3.20873E-05	0	3.20873E-05
nC10	0	0	0	0	0
H2O	1.00199	1.00185	1.00193	0.1	1.00193
TEG	98.967	98.967	98.9669	99.9	98.9669
Benzene	0.00348535	0.00352293	0.00352323	0	0.00352323
Toluene	0.00814887	0.00820686	0.00820757	0	0.00820757
Ethylbenzene	0.0115442	0.0115692	0.0115702	0	0.0115702
m-Xylene	0.00756524	0.00759178	0.00759243	0	0.00759243
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	19 lb/h	20 lb/h	21 lb/h	22 lb/h	23 lb/h
H2S	3.60768E-09	0	3.605E-09	0	0
CO2	2.70324E-10	0	2.57079E-10	0	0
N2	1.62547E-09	0	1.62224E-09	0	0
C1	7.40409E-06	7.38934E-06	7.38934E-06	0	0
C2	0.00011324	0.000113011	0.000113011	0	0
C3	0.000574491	0.000573262	0.000573262	0	0
iC4	0.000260753	0.000260184	0.000260184	0	0
nC4	0.00163916	0.00163569	0.00163569	0	0
iC5	0.00151975	0.00151642	0.00151642	0	0
nC5	0.00264109	0.00263528	0.00263528	0	0
nC6	0.0230065	0.0229594	0.0229594	0	0
nC7	0.013377	0.0133458	0.0133458	0	0
nC8	0.0075859	0.00756806	0.00756806	0	0
nC9	0.00726241	0.0072418	0.0072418	0	0
nC10	0	0	0	0	0
H2O	226.139	226.127	226.125	0.00194298	0
TEG	22335.8	22337.8	22335.9	1.94104	0
Benzene	0.786608	0.795158	0.795158	0	0
Toluene	1.83912	1.85237	1.85237	0	0
Ethylbenzene	2.60541	2.61128	2.61128	0	0
m-Xylene	1.7074	1.71354	1.71354	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	19	20	21	22	23
Temperature	°F	200.107	126.414	200.21	120 *	200.21
Pressure	psia	11.6959	1004.7 *	64.6959	139.696 *	64.6959
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	139.869	139.87	139.869	149.079	139.869
Mass Density	lb/ft^3	65.7046	68.4525	65.7059	68.731	65.7059
Molar Flow	lbmol/h	161.358	161.371	161.358	0.0130332	0
Mass Flow	lb/h	22569	22571	22569	1.94298	0
Std Vapor Volumetric Flow	MMSCFD	1.46959	1.4697	1.46959	0.000118702	0
Std Liquid Volumetric Flow	sgpm	39.9965	40	39.9966	0.00343899	0
Specific Gravity		1.05349	1.09754	1.05351	1.10201	
API Gravity		-6.66575	-6.80677	-6.67326	-7.10018	
Gross Ideal Gas Heating Value	Btu/ft^3	3811.83	3811.88	3811.85	4095.08	3811.85
Gross Liquid Heating Value	Btu/lb	10074.4	10074.4	10074.4	10163.6	10074.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	24	25	26	27	28
From Block	P-0801A/B	MKUP-1	AC-0801A	H-0801	T-0801
To Block	RCYL-1	AC-0801A	P-0802A/B	T-0801	H-0801

Stream Composition

Mole Fraction	24 %	25 %	26 %	27 %	28 %
H2S	6.56034E-11	0	0	9.30221E-09	1.50271E-09
CO2	3.80669E-12	0	0	1.59616E-09	2.51558E-10
N2	3.59602E-11	0	0	9.80925E-08	1.52924E-08
C1	2.86029E-07	2.85436E-07	2.85436E-07	0.000369233	5.76899E-05
C2	2.33394E-06	2.32903E-06	2.32903E-06	0.0015139	0.000237516
C3	8.07416E-06	8.05625E-06	8.05625E-06	0.00350245	0.000551758
iC4	2.78033E-06	2.77404E-06	2.77404E-06	0.000954743	0.000150895
nC4	1.74779E-05	1.74395E-05	1.74395E-05	0.00500464	0.000793422
iC5	1.30543E-05	1.30246E-05	1.30246E-05	0.00272736	0.000435368
nC5	2.26863E-05	2.26346E-05	2.26346E-05	0.00435751	0.000697134
nC6	0.000165454	0.000165102	0.000165102	0.0146305	0.00241604
nC7	8.27355E-05	8.25361E-05	8.25361E-05	0.00808884	0.00132839
nC8	4.11568E-05	4.10568E-05	4.10568E-05	0.0031708	0.000528092
nC9	3.50926E-05	3.49902E-05	3.49902E-05	0.00200914	0.000342231
nC10	0	0	0	0	0
H2O	7.77937	7.77834	7.77834	91.7852	20.8497
TEG	92.1764	92.1773	92.1773	7.2058	78.956
Benzene	0.00624095	0.00630829	0.00630829	0.210037	0.0379493
Toluene	0.0123702	0.0124584	0.0124584	0.301764	0.0573965
Ethylbenzene	0.0152091	0.0152422	0.0152422	0.272288	0.0552076
m-Xylene	0.00996696	0.010002	0.010002	0.178605	0.0362051
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	24 %	25 %	26 %	27 %	28 %
H2S	1.59851E-11	0	0	1.11965E-08	4.18029E-10
CO2	1.19777E-12	0	0	2.48089E-09	9.03659E-11
N2	7.20223E-12	0	0	9.70482E-08	3.49673E-09
C1	3.28065E-08	3.27382E-08	3.27382E-08	0.000209198	7.55423E-06
C2	5.0175E-07	5.00692E-07	5.00692E-07	0.00160769	5.82952E-05
C3	2.54549E-06	2.53982E-06	2.53982E-06	0.00545447	0.000198593
iC4	1.15536E-06	1.15274E-06	1.15274E-06	0.00195981	7.15872E-05
nC4	7.26289E-06	7.24688E-06	7.24688E-06	0.0102731	0.000376415
iC5	6.73381E-06	6.71846E-06	6.71846E-06	0.00694955	0.000256393
nC5	1.17023E-05	1.16755E-05	1.16755E-05	0.0111033	0.000410549
nC6	0.000101939	0.000101721	0.000101721	0.0445273	0.00169944
nC7	5.92716E-05	5.91282E-05	5.91282E-05	0.0286252	0.00108648
nC8	3.36121E-05	3.353E-05	3.353E-05	0.0127917	0.000492384
nC9	3.21787E-05	3.20846E-05	3.20846E-05	0.00910061	0.000358273
nC10	0	0	0	0	0
H2O	1.00199	1.00185	1.00185	58.3982	3.06592
TEG	98.967	98.967	98.967	38.2173	96.7825
Benzene	0.00348535	0.00352293	0.00352293	0.579427	0.0241958
Toluene	0.00814887	0.00820686	0.00820686	0.981959	0.0431664
Ethylbenzene	0.0115442	0.0115692	0.0115692	1.02093	0.047841
m-Xylene	0.00756524	0.00759178	0.00759178	0.669669	0.031374
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	24 lb/h	25 lb/h	26 lb/h	27 lb/h	28 lb/h
H2S	3.60768E-09	0	0	9.42563E-08	9.7864E-08
CO2	2.70324E-10	0	0	2.08851E-08	2.11554E-08
N2	1.62547E-09	0	0	8.16987E-07	8.18612E-07
C1	7.40409E-06	7.38934E-06	7.38934E-06	0.0017611	0.00176851
C2	0.00011324	0.000113011	0.000113011	0.0135341	0.0136474
C3	0.000574491	0.000573262	0.000573262	0.0459177	0.0464922
iC4	0.000260753	0.000260184	0.000260184	0.0164984	0.0167592
nC4	0.00163916	0.00163569	0.00163569	0.0864826	0.0881217
iC5	0.00151975	0.00151642	0.00151642	0.0585039	0.0600236
nC5	0.00264109	0.00263528	0.00263528	0.0934718	0.0961129
nC6	0.0230065	0.0229594	0.0229594	0.374847	0.397854
nC7	0.013377	0.0133458	0.0133458	0.240977	0.254354
nC8	0.0075859	0.00756806	0.00756806	0.107685	0.115271
nC9	0.00726241	0.0072418	0.0072418	0.0766123	0.0838747
nC10	0	0	0	0	0
H2O	226.139	226.127	226.127	491.617	717.756
TEG	22335.8	22337.8	22337.8	321.727	22657.6
Benzene	0.786608	0.795158	0.795158	4.87783	5.66444
Toluene	1.83912	1.85237	1.85237	8.26649	10.1056
Ethylbenzene	2.60541	2.61128	2.61128	8.59455	11.2
m-Xylene	1.7074	1.71354	1.71354	5.63752	7.34492
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	24	25	26	27	28
Temperature	°F	200.205	200.203	125 *	400 *	319.868
Pressure	psia	64.6959 *	64.6959	59.6959	16.6959	16.6959
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	139.869	139.87	139.87	28.3149	122.512
Mass Density	lb/ft^3	65.7061	65.7061	68.4205	0.0516256	61.302
Molar Flow	lbmol/h	161.358	161.371	161.371	29.7313	191.089
Mass Flow	lb/h	22569	22571	22571	841.836	23410.8
Std Vapor Volumetric Flow	MMSCFD	1.46959	1.4697	1.4697	0.270781	1.74037
Std Liquid Volumetric Flow	sgpm	39.9965	40 *	40	1.61826	41.6147
Specific Gravity		1.05351	1.05351	1.09703	0.977639	0.982896
API Gravity		-6.67331	-6.67329	-6.67257		-6.05704
Gross Ideal Gas Heating Value	Btu/ft^3	3811.83	3811.88	3811.88	390.56	3279.52
Gross Liquid Heating Value	Btu/lb	10074.4	10074.4	10074.4	4510.28	9874.32

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	29	30	31	32	
From Block	T-0801	E-0802_CONDENSER	E-0802_CONDENSER	AC-0801B	
To Block	E-0802_CONDENSER	T-0801	AC-0801B	V-0802	

Stream Composition

Mole Fraction	29 %	30 %	31 %	32 %	
H2S	9.31595E-07	4.41891E-09	9.84965E-07	9.84965E-07	
CO2	7.84254E-07	9.78306E-10	8.29341E-07	8.29341E-07	
N2	0.000567379	3.69391E-08	0.000600036	0.000600036	
C1	0.827896	0.00013838	0.875543	0.875543	
C2	1.26676	0.000440059	1.33965	1.33965	
C3	1.60504	0.000794871	1.69738	1.69738	
iC4	0.309422	0.0001506	0.327224	0.327224	
nC4	1.23611	0.000995835	1.30721	1.30721	
iC5	0.400262	0.000359877	0.423281	0.423281	
nC5	0.563861	0.000556451	0.596286	0.596286	
nC6	0.703863	0.00103626	0.744319	0.744319	
nC7	0.353441	0.000570652	0.373753	0.373753	
nC8	0.0896337	0.000190123	0.0947822	0.0947822	
nC9	0.035594	7.45125E-05	0.0376386	0.0376386	
nC10	0	0	0	0	
H2O	87.7055	83.9136	87.9238	87.9238	
TEG	0.872704	15.9359	0.00564691	0.00564691	
Benzene	1.59027	0.0399251	1.67951	1.67951	
Toluene	1.27725	0.0480983	1.348	1.348	
Ethylbenzene	0.708626	0.034453	0.747432	0.747432	
m-Xylene	0.453188	0.0227794	0.477963	0.477963	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

Mass Fraction	29 %	30 %	31 %	32 %	
H2S	1.28605E-06	3.84297E-09	1.40731E-06	1.40731E-06	
CO2	1.39805E-06	1.09866E-09	1.53016E-06	1.53016E-06	
N2	0.000643811	2.64054E-08	0.000704693	0.000704693	
C1	0.53798	5.66482E-05	0.588851	0.588851	
C2	1.54289	0.000337654	1.68876	1.68876	
C3	2.86682	0.000894403	3.13785	3.13785	
iC4	0.728472	0.000223362	0.797342	0.797342	
nC4	2.91018	0.00147697	3.18525	3.18525	
iC5	1.16975	0.000662558	1.28031	1.28031	
nC5	1.64786	0.00102447	1.8036	1.8036	
nC6	2.45692	0.00227873	2.68905	2.68905	
nC7	1.43454	0.00145911	1.57006	1.57006	
nC8	0.41473	0.000554179	0.453898	0.453898	
nC9	0.184915	0.000243863	0.202379	0.202379	
nC10	0	0	0	0	
H2O	64.0011	38.5758	66.4055	66.4055	
TEG	5.30857	61.0673	0.0355516	0.0355516	
Benzene	5.0316	0.07958	5.4999	5.4999	
Toluene	4.7669	0.113087	5.207	5.207	
Ethylbenzene	3.04732	0.0933362	3.32667	3.32667	
m-Xylene	1.94885	0.0617114	2.12732	2.12732	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	29 lb/h	30 lb/h	31 lb/h	32 lb/h
H2S	9.98694E-06	2.57838E-09	9.98437E-06	9.98437E-06
CO2	1.08567E-05	7.37126E-10	1.0856E-05	1.0856E-05
N2	0.00499958	1.77163E-08	0.00499956	0.00499956
C1	4.17774	3.80072E-05	4.1777	4.1777
C2	11.9815	0.000226543	11.9812	11.9812
C3	22.2626	0.000600084	22.262	22.262
iC4	5.65703	0.000149861	5.65688	5.65688
nC4	22.5993	0.000990946	22.5983	22.5983
iC5	9.08381	0.000444532	9.08337	9.08337
nC5	12.7966	0.000687347	12.796	12.796
nC6	19.0794	0.00152887	19.0779	19.0779
nC7	11.1401	0.000978966	11.1391	11.1391
nC8	3.22063	0.000371817	3.22026	3.22026
nC9	1.43597	0.000163615	1.43581	1.43581
nC10	0	0	0	0
H2O	497.007	25.8817	471.125	471.125
TEG	41.2243	40.972	0.252227	0.252227
Benzene	39.0734	0.0533928	39.02	39.02
Toluene	37.0178	0.0758736	36.942	36.942
Ethylbenzene	23.6643	0.0626223	23.6016	23.6016
m-Xylene	15.134	0.0414042	15.0926	15.0926
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

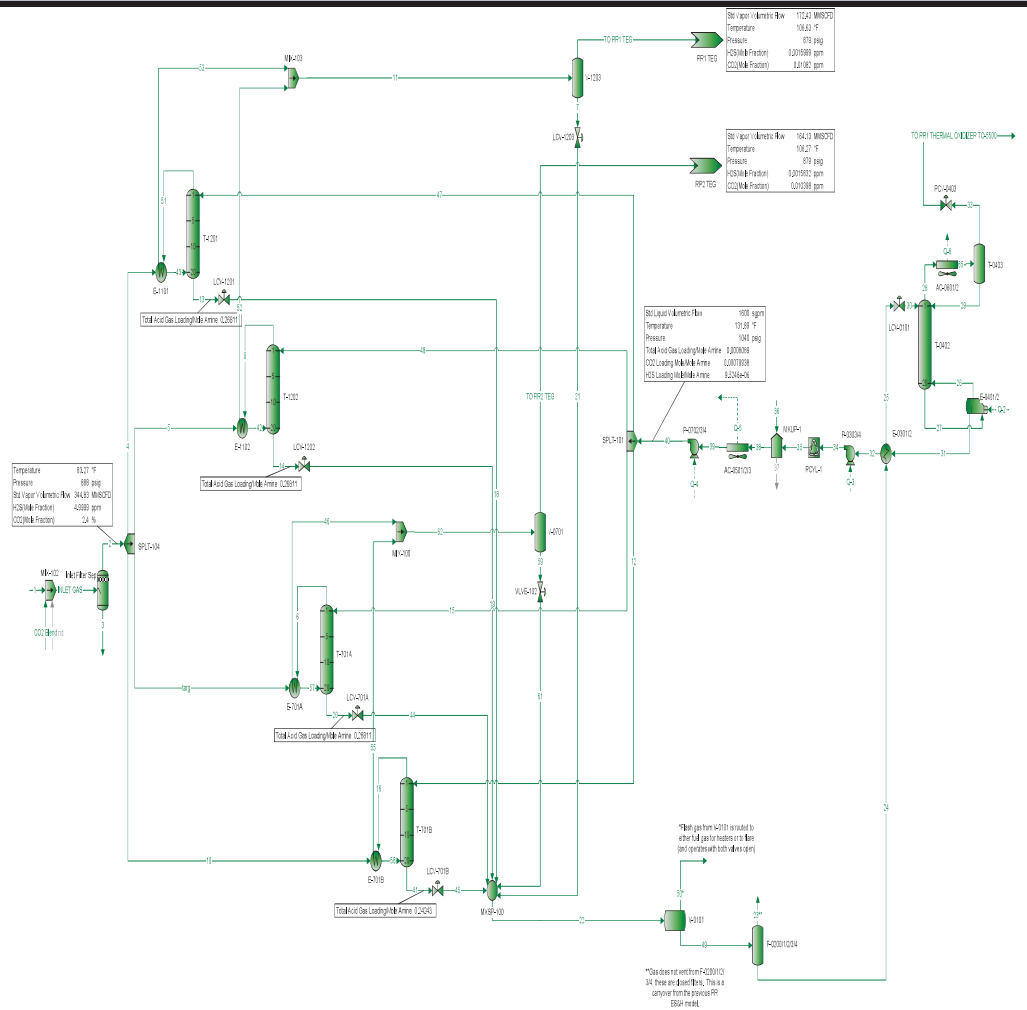
Property	Units	29	30	31	32
Temperature	°F	312.082	215	215 *	120 *
Pressure	psia	15.6959	15.6959	15.6959	15.4959
Mole Fraction Vapor	%	100	0	100	8.7497
Molecular Weight	lb/lbmol	24.6877	39.1885	23.853	23.853
Mass Density	lb/ft^3	0.0470911	64.3307	0.0521697	0.684154
Molar Flow	lbmol/h	31.4553	1.71207	29.7433	29.7433
Mass Flow	lb/h	776.56	67.0933	709.467	709.467
Std Vapor Volumetric Flow	MMSCFD	0.286483	0.0155928	0.27089	0.27089
Std Liquid Volumetric Flow	sgpm	1.78155	0.124803	1.65674	1.65674
Specific Gravity		0.852402	1.03146	0.823583	
API Gravity			-2.10277		
Gross Ideal Gas Heating Value	Btu/ft^3	478.374	707.002	465.214	465.214
Gross Liquid Heating Value	Btu/lb	6610.03	6278.29	6641.4	6641.4

Remarks

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2 - Amine
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	CO2 Blend	H2S Blend	INLET GAS	targ	TO RR1 TEG
From Block	--	--	MIX-102	SPLT-104	V-1203
To Block	MIX-102	MIX-102	Inlet Filter Sep	E-701A	RR1 TEG

Stream Composition

Mole Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	targ %	TO RR1 TEG %
H2S	0 *	100 *	0.0005	0.000499992	1.59993E-07
CO2	100 *	0 *	2.4	2.40004	1.08203E-06
N2	0 *	0 *	0.994006	0.994041	1.01805
C1	0 *	0 *	76.0753	76.0775	77.8322
C2	0 *	0 *	11.6142	11.6142	11.8756
C3	0 *	0 *	5.44288	5.4425	5.56823
iC4	0 *	0 *	0.744255	0.744124	0.761635
nC4	0 *	0 *	1.63234	1.63195	1.66971
iC5	0 *	0 *	0.345183	0.345021	0.353286
nC5	0 *	0 *	0.368404	0.368188	0.376944
nC6	0 *	0 *	0.252725	0.252357	0.258392
nC7	0 *	0 *	0.0716055	0.0713762	0.0731111
nC8	0 *	0 *	0.0122406	0.0121523	0.0124467
nC9	0 *	0 *	0.00324082	0.00318561	0.00326343
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0	0.156544
MDEA	0 *	0 *	0	0	4.99269E-07
Piperazine	0 *	0 *	0	0	1.84558E-05
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0228358	0.0228023	0.0213807
Toluene	0 *	0 *	0.011963	0.011922	0.0112732
Ethylbenzene	0 *	0 *	0.00490283	0.00486589	0.00471762
m-Xylene	0 *	0 *	0.00333393	0.00330729	0.00315745
Cyclopentane	0 *	0 *	0	0	0
Cyclohexane	0 *	0 *	0	0	0

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	targ %	TO RR1 TEG %
H2S	0 *	100 *	0.000786251	0.000786284	2.58231E-07
CO2	100 *	0 *	4.87347	4.87382	2.25519E-06
N2	0 *	0 *	1.2848	1.28492	1.35061
C1	0 *	0 *	56.3113	56.3161	59.1326
C2	0 *	0 *	16.1135	16.1144	16.9111
C3	0 *	0 *	11.074	11.0739	11.6281
iC4	0 *	0 *	1.99593	1.99569	2.09645
nC4	0 *	0 *	4.37758	4.37678	4.59599
iC5	0 *	0 *	1.1491	1.14863	1.20712
nC5	0 *	0 *	1.22641	1.22576	1.28796
nC6	0 *	0 *	1.00488	1.00347	1.05453
nC7	0 *	0 *	0.331057	0.330016	0.346941
nC8	0 *	0 *	0.0645146	0.0640528	0.0673323
nC9	0 *	0 *	0.0191783	0.0188526	0.0198219
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0	0.133559
MDEA	0 *	0 *	0	0	2.81754E-06
Piperazine	0 *	0 *	0	0	7.52857E-05
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0823027	0.0821867	0.0790924
Toluene	0 *	0 *	0.0508581	0.0506867	0.0491906
Ethylbenzene	0 *	0 *	0.0240164	0.0238369	0.0237192
m-Xylene	0 *	0 *	0.0163312	0.0162016	0.015875
Cyclopentane	0 *	0 *	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	targ %	TO RR1 TEG %
Cyclohexane	0 *	0 *	0	0	0

Mass Flow	CO2 Blend lb/h	H2S Blend lb/h	INLET GAS lb/h	targ lb/h	TO RR1 TEG lb/h
H2S	0 *	0	6.45214	1.65264	0.00103236
CO2	1.15253E-07 *	0	39992.7	10244	0.00901584
N2	0 *	0	10543.3	2700.68	5399.5
C1	0 *	0	462102	118367	236401
C2	0 *	0	132231	33869.7	67607.3
C3	0 *	0	90875.6	23275.4	46487
iC4	0 *	0	16379	4194.6	8381.23
nC4	0 *	0	35923.3	9199.26	18373.9
iC5	0 *	0	9429.78	2414.22	4825.86
nC5	0 *	0	10064.1	2576.33	5149.02
nC6	0 *	0	8246.22	2109.12	4215.81
nC7	0 *	0	2716.72	693.639	1387.01
nC8	0 *	0	529.42	134.628	269.182
nC9	0 *	0	157.381	39.6251	79.2442
nC10	0 *	0	0	0	0
H2O	0 *	0	0	0	533.945
MDEA	0 *	0	0	0	0.011264
Piperazine	0 *	0	0	0	0.300978
TEG	0 *	0	0	0	0
UCARSOL™ AP-814	0 *	0	0	0	0
Benzene	0 *	0	675.393	172.743	316.197
Toluene	0 *	0	417.352	106.535	196.655
Ethylbenzene	0 *	0	197.084	50.1011	94.8251
m-Xylene	0 *	0	134.017	34.0531	63.4654
Cyclopentane	0 *	0	0	0	0
Cyclohexane	0 *	0	0	0	0

Stream Properties

Property	Units	CO2 Blend	H2S Blend	INLET GAS	targ	TO RR1 TEG
Temperature	°F	83.4 *	83.4 *	83.4	83.2696	106.631
Pressure	psia	907.696 *	907.696 *	904.696	902.696	893.696
Mole Fraction Vapor	%	100	0	100	100	100
Molecular Weight	lb/lbmol	44.0095	34.0809	21.673	21.6718	21.1156
Mass Density	lb/ft^3	12.4344	47.8529	4.24623	4.23639	3.75318
Molar Flow	lbmol/h	2.61883E-09	2.60021E-13	37863.7	9698.47	18933
Mass Flow	lb/h	1.15253E-07	8.86173E-12	820621	210183	399782
Std Vapor Volumetric Flow	MMSCFD	2.38513E-11 *	2.36817E-15 *	344.848	88.33 *	172.434
Std Liquid Volumetric Flow	sgpm	2.81949E-10	2.21758E-14	4585.82	1174.59	2296.64
Specific Gravity		1.51953		0.748313	0.748271	0.729068
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	0	637.1	1235.65	1235.58	1263.96
Gross Liquid Heating Value	Btu/lb	-74.8536	6892.4	21573.5	21573.6	22652.8

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	TO RR1 THERMAL OXIDIZER TO-5500	TO RR2 TEG	1	2	3
From Block	PCV-0403	V-0701	--	Inlet Filter Sep	Inlet Filter Sep
To Block	--	RR2 TEG	MIX-102	SPLT-104	--

Stream Composition

Mole Fraction	TO RR1 THERMAL OXIDIZER TO-5500 %	TO RR2 TEG %	1 %	2 %	3 %
H2S	0.0192937	1.58317E-07	0.0005 *	0.000499992	0.000687974
CO2	92.6482	1.03975E-06	2.4 *	2.40004	1.50323
N2	0.000174369	1.01815	0.994006 *	0.994041	0.126783
C1	0.347565	77.8342	76.0753 *	76.0775	23.8347
C2	0.129244	11.8753	11.6142 *	11.6142	13.2188
C3	0.0370134	5.56829	5.44288 *	5.4425	14.5579
iC4	0.00291292	0.761667	0.744255 *	0.744124	3.93134
nC4	0.0126324	1.66973	1.63234 *	1.63195	11.1586
iC5	0.000533025	0.353311	0.345183 *	0.345021	4.29077
nC5	0.000990813	0.376965	0.368404 *	0.368188	5.62507
nC6	0.000551282	0.258408	0.252725 *	0.252357	9.20642
nC7	1.97602E-05	0.0731182	0.0716055 *	0.0713762	5.64304
nC8	8.78851E-06	0.0124478	0.0122406 *	0.0121523	2.15891
nC9	1.79604E-07	0.00326378	0.00324082 *	0.00318561	1.34524
nC10	0	0	0 *	0	0
H2O	6.67464	0.154935	0 *	0	0
MDEA	4.27862E-08	4.86849E-07	0 *	0	0
Piperazine	5.91996E-08	1.81276E-05	0 *	0	0
TEG	0	0	0 *	0	0
UCARSOL™ AP-814	0	0	0 *	0	0
Benzene	0.072803	0.0212117	0.0228358 *	0.0228023	0.836626
Toluene	0.0349362	0.0111836	0.011963 *	0.011922	1.00818
Ethylbenzene	0.00982451	0.00469128	0.00490283 *	0.00486589	0.902719
m-Xylene	0.0086579	0.00313391	0.00333393 *	0.00330729	0.650932
Cyclopentane	0	0	0 *	0	0
Cyclohexane	0	0	0 *	0	0

Mass Fraction	TO RR1 THERMAL OXIDIZER TO-5500 %	TO RR2 TEG %	1 %	2 %	3 %
H2S	0.0155767	2.55528E-07	0.000786251 *	0.000786284	0.000452192
CO2	96.5903	2.16709E-06	4.87347 *	4.87382	1.27589
N2	0.000115714	1.35076	1.2848 *	1.28492	0.0684964
C1	0.132086	59.1346	56.3113 *	56.3161	7.3743
C2	0.0920618	16.9108	16.1135 *	16.1144	7.66572
C3	0.0386638	11.6283	11.074 *	11.0739	12.3804
iC4	0.00401071	2.09656	1.99593 *	1.99569	4.4068
nC4	0.0173931	4.59608	4.37758 *	4.37678	12.5081
iC5	0.000911017	1.20722	1.1491 *	1.14863	5.97041
nC5	0.00169344	1.28804	1.22641 *	1.22576	7.82703
nC6	0.0011254	1.0546	1.00488 *	1.00347	15.3008
nC7	4.69048E-05	0.346978	0.331057 *	0.330016	10.9051
nC8	2.37815E-05	0.0673389	0.0645146 *	0.0640528	4.75608
nC9	5.45684E-07	0.0198242	0.0191783 *	0.0188526	3.32748
nC10	0	0	0 *	0	0
H2O	2.84852	0.132188	0 *	0	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	TO RR1 THERMAL OXIDIZER TO-5500 %	TO RR2 TEG %	1 %	2 %	3 %
MDEA	1.20779E-07	2.74747E-06	0 *	0	0
Piperazine	1.20796E-07	7.39473E-05	0 *	0	0
TEG	0	0	0 *	0	0
UCARSOL™ AP-814	0	0	0 *	0	0
Benzene	0.134715	0.0784678	0.0823027 *	0.0821867	1.26034
Toluene	0.0762547	0.0488004	0.0508581 *	0.0506867	1.7915
Ethylbenzene	0.0247083	0.023587	0.0240164 *	0.0238369	1.84831
m-Xylene	0.0217743	0.0157568	0.0163312 *	0.0162016	1.33278
Cyclopentane	0	0	0 *	0	0
Cyclohexane	0	0	0 *	0	0

Mass Flow	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	TO RR2 TEG lb/h	1 lb/h	2 lb/h	3 lb/h
H2S	6.42498	0.000972361	6.45214 *	6.45177	0.000365222
CO2	39840.9	0.00824642	39992.7 *	39991.7	1.0305
N2	0.0477289	5140.04	10543.3 *	10543.3	0.0553225
C1	54.482	225025	462102 *	462096	5.95601
C2	37.973	64350.5	132231 *	132225	6.19138
C3	15.9478	44249.4	90875.6 *	90865.6	9.9993
iC4	1.65431	7978.04	16379 *	16375.4	3.55924
nC4	7.17418	17489.5	35923.3 *	35913.2	10.1024
iC5	0.37577	4593.84	9429.78 *	9424.95	4.82212
nC5	0.698501	4901.39	10064.1 *	10057.8	6.32166
nC6	0.464197	4013.09	8246.22 *	8233.86	12.358
nC7	0.019347	1320.36	2716.72 *	2707.91	8.80773
nC8	0.00980925	256.245	529.42 *	525.579	3.84134
nC9	0.00022508	75.437	157.381 *	154.693	2.6875
nC10	0	0	0 *	0	0
H2O	1174.94	503.014	0 *	0	0
MDEA	4.98182E-05	0.010455	0 *	0	0
Piperazine	4.9825E-05	0.281392	0 *	0	0
TEG	0	0	0 *	0	0
UCARSOL™ AP-814	0	0	0 *	0	0
Benzene	55.5664	298.594	675.393 *	674.375	1.01794
Toluene	31.453	185.7	417.352 *	415.905	1.44694
Ethylbenzene	10.1915	89.7558	197.084 *	195.591	1.49282
m-Xylene	8.98131	59.9594	134.017 *	132.941	1.07644
Cyclopentane	0	0	0 *	0	0
Cyclohexane	0	0	0 *	0	0

Stream Properties

Property	Units	TO RR1 THERMAL OXIDIZER TO-5500	TO RR2 TEG	1	2	3
Temperature	°F	119.508	106.269	83.4 *	83.2696	83.2696
Pressure	psia	21.6959 *	893.696	904.696 *	902.696	902.696
Mole Fraction Vapor	%	100	100	100	100	0
Molecular Weight	lb/lbmol	42.2133	21.1154	21.673	21.6718	51.8513
Mass Density	lb/ft^3	0.148365	3.75753	4.24623	4.23639	34.6443
Molar Flow	lbmol/h	977.116	18021.4	37863.7	37862.1	1.55767
Mass Flow	lb/h	41247.3	380530	820621	820540	80.767
Std Vapor Volumetric Flow	MMSCFD	8.8992	164.132	344.848 *	344.834	0.0141866
Std Liquid Volumetric Flow	sgpm	100.746	2186.09	4585.82	4585.53	0.291797

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources
Location:	DOU
Flowsheet:	2 - Amine
	Job: Wildcat II - Refrigeration - Recovery

Stream Properties

Property	Units	TO RR1 THERMAL OXIDIZER TO-5500	TO RR2 TEG	1	2	3
Specific Gravity		1.45752	0.729061	0.748313	0.748271	0.555475
API Gravity						115.555
Gross Ideal Gas Heating Value	Btu/ft^3	16.0525	1263.97	1235.65	1235.58	2864.51
Gross Liquid Heating Value	Btu/lb	41.0732	22653.2	21573.5	21573.6	20817.3

Remarks

1:

Composition from Mobile Laboratories analysis 5/1/25. Normalized based on 0% CO2 and 0% H2S.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	4	5	6	7	9
From Block	SPLT-104	SPLT-104	T-701A	V-1203	T-1202
To Block	E-1101	E-1102	E-701A	LCV-1203	E-1102

Stream Composition

Mole Fraction	4 %	5 %	6 %	7 %	9 %
H2S	0.000499992	0.000499992	2.54838E-07	7.53669E-05	2.54466E-07
CO2	2.40004	2.40004	4.73003E-06	0.00285968	4.67291E-06
N2	0.994041	0.994041	1.01677	0.00061255	1.01677
C1	76.0775	76.0775	77.7343	0.0797914	77.7346
C2	11.6142	11.6142	11.8606	0.0102659	11.8607
C3	5.4425	5.4425	5.56121	0.00289305	5.56124
iC4	0.744124	0.744124	0.760675	0.000193849	0.760678
nC4	1.63195	1.63195	1.66761	0.000613942	1.66761
iC5	0.345021	0.345021	0.352841	5.18094E-05	0.352843
nC5	0.368188	0.368188	0.376469	6.86201E-05	0.37647
nC6	0.252357	0.252357	0.258066	2.22946E-05	0.258068
nC7	0.0713762	0.0713762	0.0730189	2.74126E-06	0.0730193
nC8	0.0121523	0.0121523	0.012431	3.02984E-07	0.012431
nC9	0.00318561	0.00318561	0.00325931	2.58447E-08	0.00325933
nC10	0	0	0	0	0
H2O	0	0	0.281821	99.5671	0.28142
MDEA	0	0	0.000144729	0.114489	0.000144316
Piperazine	0	0	0.000295526	0.220082	0.000294892
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0228023	0.0213576	0.000616932	0.0213546
Toluene	0.011922	0.011922	0.0112609	0.000201038	0.0112593
Ethylbenzene	0.00486589	0.00486589	0.00471206	5.37595E-05	0.00471176
m-Xylene	0.00330729	0.00330729	0.00315386	5.16522E-05	0.00315355
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	4 %	5 %	6 %	7 %	9 %
H2S	0.000786284	0.000786284	4.11381E-07	0.000140488	4.10781E-07
CO2	4.87382	4.87382	9.86006E-06	0.00688351	9.741E-06
N2	1.28492	1.28492	1.34914	0.000938542	1.34915
C1	56.3161	56.3161	59.0681	0.0700121	59.0683
C2	16.1144	16.1144	16.8926	0.0168835	16.8927
C3	11.0739	11.0739	11.6154	0.00697746	11.6155
iC4	1.99569	1.99569	2.09416	0.000616244	2.09417
nC4	4.37678	4.37678	4.59098	0.00195171	4.591
iC5	1.14863	1.14863	1.20581	0.000204448	1.20581
nC5	1.22576	1.22576	1.28655	0.000270786	1.28656
nC6	1.00347	1.00347	1.05338	0.000105082	1.05338
nC7	0.330016	0.330016	0.346562	1.50236E-05	0.346564
nC8	0.0640528	0.0640528	0.0672588	1.89296E-06	0.067259
nC9	0.0188526	0.0188526	0.0198002	1.81298E-07	0.0198003
nC10	0	0	0	0	0
H2O	0	0	0.240483	98.1077	0.240141
MDEA	0	0	0.000816889	0.746188	0.000814558
Piperazine	0	0	0.00120572	1.03684	0.00120314
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.0821867	0.0790203	0.00263573	0.0790092
Toluene	0.0506867	0.0506867	0.0491455	0.00101313	0.0491382
Ethylbenzene	0.0238369	0.0238369	0.0236953	0.000312164	0.0236938
m-Xylene	0.0162016	0.0162016	0.0158596	0.000299928	0.0158581
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources
Location:	DOU
Flowsheet:	2 - Amine
Job:	Wildcat II - Refrigeration - Recovery

Mass Fraction	4 %	5 %	6 %	7 %	9 %
Cyclohexane	0	0	0	0	0

Mass Flow	4 lb/h	5 lb/h	6 lb/h	7 lb/h	9 lb/h
H2S	1.65264	1.65264	0.000823212	0.000611652	0.000822007
CO2	10244	10244	0.0197309	0.0299693	0.0194926
N2	2700.68	2700.68	2699.75	0.0040862	2699.75
C1	118367	118367	118201	0.304817	118201
C2	33869.7	33869.7	33803.7	0.0735069	33803.7
C3	23275.4	23275.4	23243.5	0.0303783	23243.5
iC4	4194.6	4194.6	4190.62	0.00268299	4190.61
nC4	9199.26	9199.26	9186.98	0.00849732	9186.97
iC5	2414.22	2414.22	2412.93	0.000890123	2412.93
nC5	2576.33	2576.33	2574.51	0.00117894	2574.51
nC6	2109.12	2109.12	2107.91	0.000457505	2107.91
nC7	693.639	693.639	693.503	6.54093E-05	693.503
nC8	134.628	134.628	134.591	8.24151E-06	134.591
nC9	39.6251	39.6251	39.6221	7.8933E-07	39.6221
nC10	0	0	0	0	0
H2O	0	0	481.229	427.139	480.542
MDEA	0	0	1.63467	3.24874	1.63
Piperazine	0	0	2.41277	4.51418	2.40758
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	172.743	172.743	158.127	0.0114754	158.104
Toluene	106.535	106.535	98.3447	0.00441094	98.3298
Ethylbenzene	50.1011	50.1011	47.4164	0.00135909	47.4132
m-Xylene	34.0531	34.0531	31.7366	0.00130582	31.7333
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	4	5	6	7	9
Temperature	°F	83.2696	83.2696	133.479	106.631	133.425
Pressure	psia	902.696	902.696	896.696	893.696	896.696
Mole Fraction Vapor	%	100	100	100	0	100
Molecular Weight	lb/lbmol	21.6718	21.6718	21.1121	18.2833	21.1121
Mass Density	lb/ft^3	4.23639	4.23639	3.47375	61.9315	3.47428
Molar Flow	lbmol/h	9698.47	9698.47	9478.44	23.8129	9478.39
Mass Flow	lb/h	210183	210183	200109	435.378	200108
Std Vapor Volumetric Flow	MMSCFD	88.33 *	88.33 *	86.326	0.216879	86.3256
Std Liquid Volumetric Flow	sgpm	1174.59	1174.59	1148.76	0.87537	1148.76
Specific Gravity		0.748271	0.748271	0.728945	0.99299	0.728945
API Gravity					9.83372	
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1235.58	1262.45	63.2501	1262.46
Gross Liquid Heating Value	Btu/lb	21573.6	21573.6	22628.4	267.902	22628.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	10	11	12	13	14
From Block	SPLT-104	MIX-103	SPLT-101	T-1201	T-1202
To Block	E-701B	V-1203	T-701B	LCV-1201	LCV-1202

Stream Composition

Mole Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000499992	2.54466E-07	0.00012925	0.000855034	0.000855034
CO2	2.40004	4.67291E-06	0.0108477	3.51666	3.51666
N2	0.994041	1.01677	0	0.000500097	0.000500097
C1	76.0775	77.7346	0	0.156147	0.156147
C2	11.6142	11.8607	0	0.0330568	0.0330568
C3	5.4425	5.56124	0	0.0109057	0.0109057
iC4	0.744124	0.760678	0	0.00103332	0.00103332
nC4	1.63195	1.66761	0	0.00318587	0.00318587
iC5	0.345021	0.352843	0	0.000270038	0.000270038
nC5	0.368188	0.37647	0	0.000380613	0.000380613
nC6	0.252357	0.258068	0	0.000212675	0.000212675
nC7	0.0713762	0.0730193	0	2.03326E-05	2.03326E-05
nC8	0.0121523	0.012431	0	4.90056E-06	4.90056E-06
nC9	0.00318561	0.00325933	0	3.53623E-07	3.53623E-07
nC10	0	0	0	0	0
H2O	0	0.28142	86.4188	83.1522	83.1522
MDEA	0	0.000144316	11.7622	11.372	11.372
Piperazine	0	0.000294892	1.80801	1.74765	1.74765
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0213546	0	0.00282292	0.00282292
Toluene	0.011922	0.0112593	0	0.00134141	0.00134141
Ethylbenzene	0.00486589	0.00471176	0	0.000381364	0.000381364
m-Xylene	0.00330729	0.00315355	0	0.000329135	0.000329135
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000786284	4.10781E-07	0.000141426	0.000921233	0.000921233
CO2	4.87382	9.741E-06	0.0153274	4.89275	4.89275
N2	1.28492	1.34915	0	0.00044289	0.00044289
C1	56.3161	59.0683	0	0.079192	0.079192
C2	16.1144	16.8927	0	0.0314235	0.0314235
C3	11.0739	11.6155	0	0.0152028	0.0152028
iC4	1.99569	2.09417	0	0.00189868	0.00189868
nC4	4.37678	4.591	0	0.0058539	0.0058539
iC5	1.14863	1.20581	0	0.000615926	0.000615926
nC5	1.22576	1.28656	0	0.000868136	0.000868136
nC6	1.00347	1.05338	0	0.000579395	0.000579395
nC7	0.330016	0.346564	0	6.44087E-05	6.44087E-05
nC8	0.0640528	0.067259	0	1.76968E-05	1.76968E-05
nC9	0.0188526	0.0198003	0	1.43381E-06	1.43381E-06
nC10	0	0	0	0	0
H2O	0	0.240141	49.9845	47.3576	47.3576
MDEA	0	0.000814558	45	42.8403	42.8403
Piperazine	0	0.00120314	5	4.75897	4.75897
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.0790092	0	0.00697093	0.00697093
Toluene	0.0506867	0.0491382	0	0.00390732	0.00390732
Ethylbenzene	0.0238369	0.0236938	0	0.00127996	0.00127996
m-Xylene	0.0162016	0.0158581	0	0.00110466	0.00110466
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	10 %	11 %	12 %	13 %	14 %
Cyclohexane	0	0	0	0	0

Mass Flow	10 lb/h	11 lb/h	12 lb/h	13 lb/h	14 lb/h
H2S	1.49386	0.00164401	0.28274	1.93456	1.93456
CO2	9259.78	0.0389851	30.6429	10274.6	10274.6
N2	2441.22	5399.51	0	0.930052	0.930052
C1	106995	236401	0	166.3	166.3
C2	30615.7	67607.4	0	65.9883	65.9883
C3	21039.3	46487	0	31.9252	31.9252
iC4	3791.61	8381.23	0	3.98715	3.98715
nC4	8315.46	18373.9	0	12.293	12.293
iC5	2182.28	4825.86	0	1.29342	1.29342
nC5	2328.82	5149.02	0	1.82305	1.82305
nC6	1906.49	4215.81	0	1.21671	1.21671
nC7	626.998	1387.01	0	0.135256	0.135256
nC8	121.694	269.182	0	0.0371627	0.0371627
nC9	35.8182	79.2442	0	0.00301094	0.00301094
nC10	0	0	0	0	0
H2O	0	961.084	99929.8	99449.3	99449.3
MDEA	0	3.26	89964.7	89963	89963
Piperazine	0	4.81516	9996.07	9993.67	9993.67
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	156.147	316.208	0	14.6387	14.6387
Toluene	96.2998	196.66	0	8.20522	8.20522
Ethylbenzene	45.2877	94.8265	0	2.68787	2.68787
m-Xylene	30.7815	63.4667	0	2.31975	2.31975
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	10	11	12	13	14
Temperature	°F	83.2696	106.695	131.89	154.063	154.063
Pressure	psia	902.696	894.696	1054.7	898.696	898.696
Mole Fraction Vapor	%	100	99.8745	0	0	0
Molecular Weight	lb/lbmol	21.6718	21.1121	31.1468	31.6319	31.6319
Mass Density	lb/ft^3	4.23639	3.76119	63.9245	67.7172	67.7172
Molar Flow	lbmol/h	8766.71	18956.8	6418.68	6638.76	6638.76
Mass Flow	lb/h	189990	400217	199921	209996	209996
Std Vapor Volumetric Flow	MMSCFD	79.8438	172.651	58.4589	60.4633	60.4633
Std Liquid Volumetric Flow	sgpm	1061.75	2297.52	400	425.835	425.835
Specific Gravity		0.748271		1.02494	1.08576	1.08576
API Gravity				3.79251	-3.33779	-3.33779
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1262.46	564.96	548.825	548.825
Gross Liquid Heating Value	Btu/lb	21573.6	22628.5	6187.12	5920.07	5920.07

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	15	16	18	19	20
From Block	SPLT-101	T-701B	LCV-1201	LCV-1202	T-701A
To Block	T-701A	E-701B	MXSP-100	MXSP-100	LCV-701A

Stream Composition

Mole Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.00012925	2.49013E-07	0.000855034	0.000855034	0.00085504
CO2	0.0108477	4.32628E-06	3.51666	3.51666	3.51669
N2	0	1.017	0.000500097	0.000500097	0.000499952
C1	0	77.7407	0.156147	0.156147	0.156059
C2	0	11.8603	0.0330568	0.0330568	0.0330378
C3	0	5.56151	0.0109057	0.0109057	0.0108974
iC4	0	0.760764	0.00103332	0.00103332	0.00103228
nC4	0	1.66769	0.00318587	0.00318587	0.00318336
iC5	0	0.352904	0.000270038	0.000270038	0.000269963
nC5	0	0.376525	0.000380613	0.000380613	0.000380437
nC6	0	0.258108	0.000212675	0.000212675	0.000212498
nC7	0	0.0730361	2.03326E-05	2.03326E-05	2.03198E-05
nC8	0	0.0124337	4.90056E-06	4.90056E-06	4.89601E-06
nC9	0	0.00326015	3.53623E-07	3.53623E-07	3.53282E-07
nC10	0	0	0	0	0
H2O	86.4188	0.275531	83.1522	83.1522	83.1522
MDEA	11.7622	0.00013841	11.372	11.372	11.3721
Piperazine	1.80801	0.000285718	1.74765	1.74765	1.74766
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0209961	0.00282292	0.00282292	0.00281852
Toluene	0	0.0110692	0.00134141	0.00134141	0.00133899
Ethylbenzene	0	0.00465612	0.000381364	0.000381364	0.000380914
m-Xylene	0	0.00310375	0.000329135	0.000329135	0.00032867
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.000141426	4.01984E-07	0.000921233	0.000921233	0.000921237
CO2	0.0153274	9.01858E-06	4.89275	4.89275	4.89277
N2	0	1.34948	0.00044289	0.00044289	0.00044276
C1	0	59.074	0.079192	0.079192	0.0791468
C2	0	16.8924	0.0314235	0.0314235	0.0314055
C3	0	11.6162	0.0152028	0.0152028	0.0151912
iC4	0	2.09445	0.00189868	0.00189868	0.00189676
nC4	0	4.59129	0.0058539	0.0058539	0.00584927
iC5	0	1.20604	0.000615926	0.000615926	0.000615755
nC5	0	1.28676	0.000868136	0.000868136	0.000867733
nC6	0	1.05356	0.000579395	0.000579395	0.000578911
nC7	0	0.346649	6.44087E-05	6.44087E-05	6.43681E-05
nC8	0	0.0672745	1.76968E-05	1.76968E-05	1.76804E-05
nC9	0	0.0198056	1.43381E-06	1.43381E-06	1.43242E-06
nC10	0	0	0	0	0
H2O	49.9845	0.235119	47.3576	47.3576	47.3575
MDEA	45	0.000781234	42.8403	42.8403	42.8405
Piperazine	5	0.00116573	4.75897	4.75897	4.75899
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0776841	0.00697093	0.00697093	0.00696005
Toluene	0	0.0483098	0.00390732	0.00390732	0.00390023
Ethylbenzene	0	0.0234144	0.00127996	0.00127996	0.00127845
m-Xylene	0	0.0156079	0.00110466	0.00110466	0.0011031
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	15 %	16 %	18 %	19 %	20 %
Cyclohexane	0	0	0	0	0

Mass Flow	15 lb/h	16 lb/h	18 lb/h	19 lb/h	20 lb/h
H2S	0.28274	0.000726916	1.93456	1.93456	1.93455
CO2	30.6429	0.0163085	10274.6	10274.6	10274.6
N2	0	2440.29	0.930052	0.930052	0.929774
C1	0	106825	166.3	166.3	166.205
C2	0	30546.9	65.9883	65.9883	65.95
C3	0	21005.9	31.9252	31.9252	31.9007
iC4	0	3787.43	3.98715	3.98715	3.9831
nC4	0	8302.52	12.293	12.293	12.2832
iC5	0	2180.91	1.29342	1.29342	1.29306
nC5	0	2326.88	1.82305	1.82305	1.8222
nC6	0	1905.18	1.21671	1.21671	1.21569
nC7	0	626.852	0.135256	0.135256	0.13517
nC8	0	121.654	0.0371627	0.0371627	0.0371279
nC9	0	35.8149	0.00301094	0.00301094	0.00300801
nC10	0	0	0	0	0
H2O	99929.8	425.17	99449.3	99449.3	99448.6
MDEA	89964.7	1.41272	89963	89963	89963
Piperazine	9996.07	2.10801	9993.67	9993.67	9993.66
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	140.478	14.6387	14.6387	14.6158
Toluene	0	87.3596	8.20522	8.20522	8.19031
Ethylbenzene	0	42.3407	2.68787	2.68787	2.68468
m-Xylene	0	28.224	2.31975	2.31975	2.31646
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	15	16	18	19	20
Temperature	°F	131.89	132.624	156.369	156.369	154.018
Pressure	psia	1054.7	896.696	79.6959 *	79.6959 *	898.696
Mole Fraction Vapor	%	0	100	0.208252	0.208252	0
Molecular Weight	lb/lbmol	31.1468	21.1117	31.6319	31.6319	31.6319
Mass Density	lb/ft^3	63.9245	3.48208	49.6655	49.6655	67.7181
Molar Flow	lbmol/h	6418.68	8565.48	6638.76	6638.76	6638.71
Mass Flow	lb/h	199921	180832	209996	209996	209995
Std Vapor Volumetric Flow	MMSCFD	58.4589	78.0112	60.4633	60.4633	60.4628
Std Liquid Volumetric Flow	sgpm	400	1038.15	425.835	425.835	425.832
Specific Gravity		1.02494	0.728932			1.08577
API Gravity		3.79251				-3.338
Gross Ideal Gas Heating Value	Btu/ft^3	564.96	1262.5	548.825	548.825	548.827
Gross Liquid Heating Value	Btu/lb	6187.12	22629.7	5920.07	5920.07	5920.08

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	21	22	23**	24	25
From Block	LCV-1203	MXSP-100	F-0200/1/2/3/4	F-0200/1/2/3/4	E-0301/2
To Block	MXSP-100	V-0101	--	E-0301/2	LCV-0101

Stream Composition

Mole Fraction	21 %	22 %	23** %	24 %	25 %
H2S	7.53669E-05	0.000836769	0.00163554	0.000835414	0.000835414
CO2	0.00285968	3.42892	6.76964	3.42325	3.42325
N2	0.00061255	0.000501124	0.158971	6.42299E-06	6.42299E-06
C1	0.0797914	0.157072	66.8548	0.0128028	0.0128028
C2	0.0102659	0.0333951	13.9686	0.00476078	0.00476078
C3	0.00289305	0.0110243	4.651	0.00136341	0.00136341
iC4	0.000193849	0.00104515	0.443212	0.000107299	0.000107299
nC4	0.000613942	0.00322463	1.34291	0.000465321	0.000465321
iC5	5.18094E-05	0.000274064	0.115308	1.96343E-05	1.96343E-05
nC5	6.86201E-05	0.000386075	0.163551	3.64972E-05	3.64972E-05
nC6	2.22946E-05	0.000216517	0.0915766	2.03068E-05	2.03068E-05
nC7	2.74126E-06	2.07069E-05	0.00807848	7.27879E-07	7.27879E-07
nC8	3.02984E-07	4.99573E-06	0.0020807	3.2373E-07	3.2373E-07
nC9	2.58447E-08	3.61157E-07	0.000123877	6.61583E-09	6.61583E-09
nC10	0	0	0	0	0
H2O	99.5671	83.2513	5.25721	83.4172	83.4172
MDEA	0.114489	11.3605	0.000805349	11.3845	11.3845
Piperazine	0.220082	1.74625	0.000127293	1.74994	1.74994
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.000616932	0.0028696	0.100868	0.00268174	0.00268174
Toluene	0.000201038	0.00136978	0.0445474	0.0012869	0.0012869
Ethylbenzene	5.37595E-05	0.000390136	0.015072	0.000361892	0.000361892
m-Xylene	5.16522E-05	0.000337191	0.00984045	0.000318919	0.000318919
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	21 %	22 %	23** %	24 %	25 %
H2S	0.000140488	0.00090256	0.00248575	0.00090053	0.00090053
CO2	0.00688351	4.77599	13.2862	4.76509	4.76509
N2	0.000938542	0.000444294	0.198596	5.691E-06	5.691E-06
C1	0.0700121	0.0797496	47.8289	0.00649622	0.00649622
C2	0.0168835	0.0317806	18.731	0.00452776	0.00452776
C3	0.00697746	0.0153853	9.14595	0.00190155	0.00190155
iC4	0.000616244	0.00192256	1.14879	0.000197253	0.000197253
nC4	0.00195171	0.00593174	3.48078	0.000855421	0.000855421
iC5	0.000204448	0.000625807	0.371002	4.48053E-05	4.48053E-05
nC5	0.000270786	0.000881578	0.526222	8.32864E-05	8.32864E-05
nC6	0.000105082	0.000590521	0.351929	5.53491E-05	5.53491E-05
nC7	1.50236E-05	6.56676E-05	0.0360988	2.30686E-06	2.30686E-06
nC8	1.89296E-06	1.80607E-05	0.0105992	1.16962E-06	1.16962E-06
nC9	1.81298E-07	1.46599E-06	0.000708519	2.68377E-08	2.68377E-08
nC10	0	0	0	0	0
H2O	98.1077	47.467	4.22361	47.5316	47.5316
MDEA	0.746188	42.8447	0.00427967	42.9081	42.9081
Piperazine	1.03684	4.76045	0.000488963	4.7675	4.7675
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00263573	0.00709412	0.351363	0.00662551	0.00662551
Toluene	0.00101313	0.0039944	0.183042	0.00375033	0.00375033
Ethylbenzene	0.000312164	0.00131086	0.0713573	0.00121519	0.00121519
m-Xylene	0.000299928	0.00113297	0.046589	0.0010709	0.0010709
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	21 %	22 %	23** %	24 %	25 %
Cyclohexane	0	0	0	0	0

Mass Flow	21 lb/h	22 lb/h	23** lb/h	24 lb/h	25 lb/h
H2S	0.000611652	7.58073	0.000386474	7.5525	7.5525
CO2	0.0299693	40114.2	2.06567	39963.5	39963.5
N2	0.0040862	3.73169	0.0308768	0.0477289	0.0477289
C1	0.304817	669.828	7.43623	54.482	54.482
C2	0.0735069	266.93	2.91221	37.973	37.973
C3	0.0303783	129.224	1.42197	15.9478	15.9478
iC4	0.00268299	16.1479	0.178609	1.65431	1.65431
nC4	0.00849732	49.8215	0.541176	7.17418	7.17418
iC5	0.000890123	5.25624	0.0576817	0.37577	0.37577
nC5	0.00117894	7.4045	0.0818146	0.698501	0.698501
nC6	0.000457505	4.95986	0.0547164	0.464197	0.464197
nC7	6.54093E-05	0.551552	0.00561248	0.019347	0.019347
nC8	8.24151E-06	0.151694	0.00164791	0.00980925	0.00980925
nC9	7.8933E-07	0.012313	0.000110157	0.00022508	0.00022508
nC10	0	0	0	0	0
H2O	427.139	398682	0.656668	398634	398634
MDEA	3.24874	359859	0.000665384	359859	359859
Piperazine	4.51418	39983.7	7.60218E-05	39983.7	39983.7
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0114754	59.5845	0.0546284	55.5664	55.5664
Toluene	0.00441094	33.5495	0.0284586	31.453	31.453
Ethylbenzene	0.00135909	11.0101	0.0110943	10.1915	10.1915
m-Xylene	0.00130582	9.51594	0.00724345	8.98131	8.98131
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	21	22	23**	24	25
Temperature	°F	108.56	156.035	156.057	156.057	210 *
Pressure	psia	79.6959 *	79.6959	71.6959	71.6959	68.6959
Mole Fraction Vapor	%	0.0854505	0.208223	100	0	0.0230998
Molecular Weight	lb/lbmol	18.2833	31.5966	22.424	31.6165	31.6165
Mass Density	lb/ft^3	50.8578	49.6104	0.246196	67.638	63.422
Molar Flow	lbmol/h	23.8129	26582.4	0.693345	26526.4	26526.4
Mass Flow	lb/h	435.378	839914	15.5476	838673	838673
Std Vapor Volumetric Flow	MMSCFD	0.216879	242.103	0.00631472	241.592	241.592
Std Liquid Volumetric Flow	sgpm	0.87537	1702.8	0.0813116	1696.23	1696.23
Specific Gravity				0.774242	1.08449	
API Gravity					-3.2804	
Gross Ideal Gas Heating Value	Btu/ft^3	63.2501	548.401	1123.54	547.173	547.173
Gross Liquid Heating Value	Btu/lb	267.902	5921.24	18905.7	5901.51	5901.51

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	26	27	28	29	30
From Block	E-0401/2	T-0402	T-0402	T-0403	LCV-0101
To Block	T-0402	E-0401/2	AC-0601/2	T-0402	T-0402

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	9.96787E-05	0.000123981	0.00692211	6.4267E-05	0.000835414
CO2	0.0365424	0.01564	33.1285	0.135422	3.42325
N2	0	0	6.21876E-05	2.85156E-09	6.42299E-06
C1	0	0	0.12396	1.10129E-05	0.0128028
C2	0	0	0.0460956	4.57072E-06	0.00476078
C3	0	0	0.0132008	1.00447E-06	0.00136341
iC4	0	0	0.00103888	4.98305E-08	0.000107299
nC4	0	0	0.00450532	3.25557E-07	0.000465321
iC5	0	0	0.000190099	6.92728E-09	1.96343E-05
nC5	0	0	0.000353367	1.58958E-08	3.64972E-05
nC6	0	0	0.000196608	5.00838E-09	2.03068E-05
nC7	0	0	7.0472E-06	1.03182E-10	7.27879E-07
nC8	0	0	3.1343E-06	0	3.2373E-07
nC9	0	0	6.4053E-08	0	6.61583E-09
nC10	0	0	0	0	0
H2O	99.7916	88.8359	66.5798	99.7866	83.4172
MDEA	0.0705904	9.64851	0.030267	0.0470447	11.3845
Piperazine	0.101147	1.49978	0.0196978	0.0306167	1.74994
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.0260781	0.000177409	0.00268174
Toluene	0	0	0.0125006	6.39892E-05	0.0012869
Ethylbenzene	0	0	0.00351317	1.46419E-05	0.000361892
m-Xylene	0	0	0.00310013	1.93287E-05	0.000318919
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	0.000187015	0.000146713	0.00883169	0.000120882	0.00090053
CO2	0.0885332	0.0238994	54.5813	0.328927	4.76509
N2	0	0	6.52175E-05	4.40871E-09	5.691E-06
C1	0	0	0.0744472	9.75069E-06	0.00649622
C2	0	0	0.0518888	7.5852E-06	0.00452776
C3	0	0	0.0217917	2.44454E-06	0.00190155
iC4	0	0	0.00226048	1.59845E-07	0.000197253
nC4	0	0	0.00980309	1.04432E-06	0.000855421
iC5	0	0	0.000513455	2.75838E-08	4.48053E-05
nC5	0	0	0.000954442	6.32957E-08	8.32864E-05
nC6	0	0	0.000634279	2.38201E-08	5.53491E-05
nC7	0	0	2.64355E-05	5.70616E-10	2.30686E-06
nC8	0	0	1.34032E-05	0	1.16962E-06
nC9	0	0	3.07545E-07	0	2.68377E-08
nC10	0	0	0	0	0
H2O	98.9686	55.5692	44.9033	99.2147	47.5316
MDEA	0.46307	39.9212	0.135022	0.309394	42.9081
Piperazine	0.479621	4.48553	0.0635177	0.145547	4.7675
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.0762584	0.000764813	0.00662551
Toluene	0	0	0.0431187	0.000325395	0.00375033
Ethylbenzene	0	0	0.0139629	8.57908E-05	0.00121519
m-Xylene	0	0	0.0123213	0.000113252	0.0010709
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	26 %	27 %	28 %	29 %	30 %
Cyclohexane	0	0	0	0	0

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	0.196772	1.3243	6.46359	0.0386084	7.5525
CO2	93.1523	215.726	39946	105.056	39963.5
N2	0	0	0.0477303	1.40809E-06	0.0477289
C1	0	0	54.4851	0.00311427	54.482
C2	0	0	37.9755	0.00242263	37.973
C3	0	0	15.9486	0.00078076	15.9478
iC4	0	0	1.65436	5.10529E-05	1.65431
nC4	0	0	7.17452	0.000333543	7.17418
iC5	0	0	0.375779	8.80999E-06	0.37577
nC5	0	0	0.698521	2.0216E-05	0.698501
nC6	0	0	0.464205	7.60788E-06	0.464197
nC7	0	0	0.0193472	1.82249E-07	0.019347
nC8	0	0	0.00980933	0	0.00980925
nC9	0	0	0.000225081	0	0.00022508
nC10	0	0	0	0	0
H2O	104132	501592	32863.1	31688.1	398634
MDEA	487.23	360346	98.8172	98.8172	359859
Piperazine	504.645	40488.3	46.4862	46.4862	39983.7
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	55.8106	0.244273	55.5664
Toluene	0	0	31.5569	0.103928	31.453
Ethylbenzene	0	0	10.2189	0.0274007	10.1915
m-Xylene	0	0	9.01748	0.0361716	8.98131
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	255.793	254.301	228.253	120	202.556
Pressure	psia	28.6959	28.6959	26.6959	25.6959	26.6959 *
Mole Fraction Vapor	%	100	0	100	0	0.797516
Molecular Weight	lb/lbmol	18.1651	28.8002	26.7119	18.1191	31.6165
Mass Density	lb/ft^3	0.0688826	60.2745	0.0975544	61.7418	12.2557
Molar Flow	lbmol/h	5792.28	31341.6	2739.84	1762.72	26526.4
Mass Flow	lb/h	105217	902643	73186.3	31938.9	838673
Std Vapor Volumetric Flow	MMSCFD	52.7539	285.447	24.9534	16.0542	241.592
Std Liquid Volumetric Flow	sgpm	210.73	1806.21	164.669	63.9233	1696.23
Specific Gravity		0.627194	0.966422	0.922293	0.989948	
API Gravity			4.44115		9.82694	
Gross Ideal Gas Heating Value	Btu/ft^3	56.4353	473.038	39.8896	53.1031	547.173
Gross Liquid Heating Value	Btu/lb	127.303	5496.23	48.9295	59.0754	5901.51

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	31	32	33	34	35
From Block	E-0401/2	E-0301/2	T-0403	P-0303/4	RCYL-1
To Block	E-0301/2	P-0303/4	PCV-0403	RCYL-1	MKUP-1

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.00012949	0.00012949	0.0192937	0.00012949	0.000129884
CO2	0.0109011	0.0109011	92.6482	0.0109011	0.0109009
N2	0	0	0.000174369	0	0
C1	0	0	0.347565	0	0
C2	0	0	0.129244	0	0
C3	0	0	0.0370134	0	0
iC4	0	0	0.00291292	0	0
nC4	0	0	0.0126324	0	0
iC5	0	0	0.000533025	0	0
nC5	0	0	0.000990813	0	0
nC6	0	0	0.000551282	0	0
nC7	0	0	1.97602E-05	0	0
nC8	0	0	8.78851E-06	0	0
nC9	0	0	1.79604E-07	0	0
nC10	0	0	0	0	0
H2O	86.3522	86.3522	6.67464	86.3522	86.3522
MDEA	11.8199	11.8199	4.27862E-08	11.8199	11.8199
Piperazine	1.81686	1.81686	5.91996E-08	1.81686	1.81686
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.072803	0	0
Toluene	0	0	0.0349362	0	0
Ethylbenzene	0	0	0.00982451	0	0
m-Xylene	0	0	0.0086579	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.000141396	0.000141396	0.0155767	0.000141396	0.000141826
CO2	0.0153712	0.0153712	96.5903	0.0153712	0.0153709
N2	0	0	0.000115714	0	0
C1	0	0	0.132086	0	0
C2	0	0	0.0920618	0	0
C3	0	0	0.0386638	0	0
iC4	0	0	0.00401071	0	0
nC4	0	0	0.0173931	0	0
iC5	0	0	0.000911017	0	0
nC5	0	0	0.00169344	0	0
nC6	0	0	0.0011254	0	0
nC7	0	0	4.69048E-05	0	0
nC8	0	0	2.37815E-05	0	0
nC9	0	0	5.45684E-07	0	0
nC10	0	0	0	0	0
H2O	49.8428	49.8428	2.84852	49.8428	49.8429
MDEA	45.1276	45.1276	1.20779E-07	45.1276	45.1275
Piperazine	5.0141	5.0141	1.20796E-07	5.0141	5.01409
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.134715	0	0
Toluene	0	0	0.0762547	0	0
Ethylbenzene	0	0	0.0247083	0	0
m-Xylene	0	0	0.0217743	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	31 %	32 %	33 %	34 %	35 %
Cyclohexane	0	0	0	0	0

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h	35 lb/h
H2S	1.12753	1.12753	6.42498	1.12753	1.13096
CO2	122.574	122.574	39840.9	122.574	122.571
N2	0	0	0.0477289	0	0
C1	0	0	54.482	0	0
C2	0	0	37.973	0	0
C3	0	0	15.9478	0	0
iC4	0	0	1.65431	0	0
nC4	0	0	7.17418	0	0
iC5	0	0	0.37577	0	0
nC5	0	0	0.698501	0	0
nC6	0	0	0.464197	0	0
nC7	0	0	0.019347	0	0
nC8	0	0	0.00980925	0	0
nC9	0	0	0.00022508	0	0
nC10	0	0	0	0	0
H2O	397459	397459	1174.94	397459	397460
MDEA	359859	359859	4.98182E-05	359859	359859
Piperazine	39983.7	39983.7	4.9825E-05	39983.7	39983.7
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	55.5664	0	0
Toluene	0	0	31.453	0	0
Ethylbenzene	0	0	10.1915	0	0
m-Xylene	0	0	8.98131	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	31	32	33	34	35
Temperature	°F	255.793	206.638	120	206.726	206.755
Pressure	psia	28.6959	25.6959	25.6959	64.6959 *	64.6959
Mole Fraction Vapor	%	0	0	100	0	0
Molecular Weight	lb/lbmol	31.2113	31.2113	42.2133	31.2113	31.2113
Mass Density	lb/ft^3	60.2965	61.8773	0.175789	61.8793	61.8785
Molar Flow	lbmol/h	25549.3	25549.3	977.116	25549.3	25549.3
Mass Flow	lb/h	797425	797425	41247.3	797425	797426
Std Vapor Volumetric Flow	MMSCFD	232.693	232.693	8.8992	232.693	232.693
Std Liquid Volumetric Flow	sgpm	1595.48	1595.48	100.746	1595.48	1595.48
Specific Gravity		0.966774	0.99212	1.45752	0.992153	0.992139
API Gravity		3.96004	3.96057		3.95372	3.95373
Gross Ideal Gas Heating Value	Btu/ft^3	567.486	567.486	16.0525	567.486	567.485
Gross Liquid Heating Value	Btu/lb	6204.65	6204.65	41.0732	6204.65	6204.64

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	36	37	38	39	40
From Block	--	MKUP-1	MKUP-1	AC-0501/2/3	P-0702/3/4
To Block	MKUP-1	--	AC-0501/2/3	P-0702/3/4	SPLT-101

Stream Composition

Mole Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000129884	0.00012925	0.00012925	0.00012925
CO2	0	0.0109009	0.0108477	0.0108477	0.0108477
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.9943	86.3522	86.4188	86.4188	86.4188
MDEA	0.000254125	11.8199	11.7622	11.7622	11.7622
Piperazine	0.00541043	1.81686	1.80801	1.80801	1.80801
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000141826	0.000141426	0.000141426	0.000141426
CO2	0	0.0153709	0.0153274	0.0153274	0.0153274
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.9725	49.8429	49.9845	49.9845	49.9845
MDEA	0.00168055	45.1275	45	45	45
Piperazine	0.025863	5.01409	5	5	5
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	36 %	37 %	38 %	39 %	40 %
Cyclohexane	0	0	0	0	0

Mass Flow	36 lb/h	37 lb/h	38 lb/h	39 lb/h	40 lb/h
H2S	0	0	1.13096	1.13096	1.13096
CO2	0	0	122.571	122.571	122.571
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	2258.91	0	399719	399719	399719
MDEA	0.0379725	0	359859	359859	359859
Piperazine	0.584382	0	39984.3	39984.3	39984.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	36	37	38	39	40
Temperature	°F	120 *	206.755	206.486	130 *	131.89
Pressure	psia	134.696 *	64.6959	64.6959	59.6959	1054.7 *
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	18.0192	31.2113	31.1468	31.1468	31.1468
Mass Density	lb/ft^3	61.6825	61.8785	61.8841	63.8679	63.9245
Molar Flow	lbmol/h	125.396	0	25674.7	25674.7	25674.7
Mass Flow	lb/h	2259.53	0	799686	799686	799686
Std Vapor Volumetric Flow	MMSCFD	1.14205	0	233.835	233.835	233.835
Std Liquid Volumetric Flow	sgpm	4.51742	0	1600 *	1600	1600
Specific Gravity		0.988997		0.99223	1.02404	1.02494
API Gravity		9.98081		3.96501	3.96589	3.79251
Gross Ideal Gas Heating Value	Btu/ft^3	50.5028	567.485	564.96	564.96	564.96
Gross Liquid Heating Value	Btu/lb	4.05026	6204.64	6187.12	6187.12	6187.12

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	41	42	43	44	45
From Block	T-701B	E-1102	E-1101	LCV-701A	LCV-701B
To Block	LCV-701B	T-1202	T-1201	MXSP-100	MXSP-100

Stream Composition

Mole Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.000787137	0.000499992	0.000499992	0.00085504	0.000787137
CO2	3.18887	2.40004	2.40004	3.51669	3.18887
N2	0.000503574	0.994041	0.994041	0.000499952	0.000503574
C1	0.160481	76.0775	76.0775	0.156059	0.160481
C2	0.0345937	11.6142	11.6142	0.0330378	0.0345937
C3	0.0114465	5.4425	5.4425	0.0108974	0.0114465
iC4	0.00108775	0.744124	0.744124	0.00103228	0.00108775
nC4	0.00336203	1.63195	1.63195	0.00318336	0.00336203
iC5	0.000287805	0.345021	0.345021	0.000269963	0.000287805
nC5	0.000404906	0.368188	0.368188	0.000380437	0.000404906
nC6	0.000229612	0.252357	0.252357	0.000212498	0.000229612
nC7	2.19714E-05	0.0713762	0.0713762	2.03198E-05	2.19714E-05
nC8	5.31943E-06	0.0121523	0.0121523	4.89601E-06	5.31943E-06
nC9	3.86509E-07	0.00318561	0.00318561	3.53282E-07	3.86509E-07
nC10	0	0	0	0	0
H2O	83.4355	0	0	83.1522	83.4355
MDEA	11.4045	0	0	11.3721	11.4045
Piperazine	1.75268	0	0	1.74766	1.75268
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00303022	0.0228023	0.0228023	0.00281852	0.00303022
Toluene	0.00146573	0.011922	0.011922	0.00133899	0.00146573
Ethylbenzene	0.00041933	0.00486589	0.00486589	0.000380914	0.00041933
m-Xylene	0.000363891	0.00330729	0.00330729	0.00032867	0.000363891
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.000849377	0.000786284	0.000786284	0.000921237	0.000849377
CO2	4.44348	4.87382	4.87382	4.89277	4.44348
N2	0.000446651	1.28492	1.28492	0.00044276	0.000446651
C1	0.0815143	56.3161	56.3161	0.0791468	0.0815143
C2	0.0329348	16.1144	16.1144	0.0314055	0.0329348
C3	0.0159811	11.0739	11.0739	0.0151912	0.0159811
iC4	0.00200175	1.99569	1.99569	0.00189676	0.00200175
nC4	0.00618704	4.37678	4.37678	0.00584927	0.00618704
iC5	0.000657457	1.14863	1.14863	0.000615755	0.000657457
nC5	0.000924959	1.22576	1.22576	0.000867733	0.000924959
nC6	0.000626494	1.00347	1.00347	0.000578911	0.000626494
nC7	6.97067E-05	0.330016	0.330016	6.43681E-05	6.97067E-05
nC8	1.92389E-05	0.0640528	0.0640528	1.76804E-05	1.92389E-05
nC9	1.56954E-06	0.0188526	0.0188526	1.43242E-06	1.56954E-06
nC10	0	0	0	0	0
H2O	47.5917	0	0	47.3575	47.5917
MDEA	43.0282	0	0	42.8405	43.0282
Piperazine	4.77998	0	0	4.75899	4.77998
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00749429	0.0821867	0.0821867	0.00696005	0.00749429
Toluene	0.00427597	0.0506867	0.0506867	0.00390023	0.00427597
Ethylbenzene	0.00140954	0.0238369	0.0238369	0.00127845	0.00140954
m-Xylene	0.00122319	0.0162016	0.0162016	0.0011031	0.00122319
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	41 %	42 %	43 %	44 %	45 %
Cyclohexane	0	0	0	0	0

Mass Flow	41 lb/h	42 lb/h	43 lb/h	44 lb/h	45 lb/h
H2S	1.77588	1.65264	1.65264	1.93455	1.77588
CO2	9290.41	10244	10244	10274.6	9290.41
N2	0.933857	2700.68	2700.68	0.929774	0.933857
C1	170.43	118367	118367	166.205	170.43
C2	68.8601	33869.7	33869.7	65.95	68.8601
C3	33.4133	23275.4	23275.4	31.9007	33.4133
iC4	4.18525	4194.6	4194.6	3.9831	4.18525
nC4	12.9358	9199.26	9199.26	12.2832	12.9358
iC5	1.37461	2414.22	2414.22	1.29306	1.37461
nC5	1.9339	2576.33	2576.33	1.8222	1.9339
nC6	1.30987	2109.12	2109.12	1.21569	1.30987
nC7	0.145742	693.639	693.639	0.13517	0.145742
nC8	0.0402246	134.628	134.628	0.0371279	0.0402246
nC9	0.0032816	39.6251	39.6251	0.00300801	0.0032816
nC10	0	0	0	0	0
H2O	99504.6	0	0	99448.6	99504.6
MDEA	89963.2	0	0	89963	89963.2
Piperazine	9993.96	0	0	9993.66	9993.96
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	15.669	172.743	172.743	14.6158	15.669
Toluene	8.94019	106.535	106.535	8.19031	8.94019
Ethylbenzene	2.94706	50.1011	50.1011	2.68468	2.94706
m-Xylene	2.55743	34.0531	34.0531	2.31646	2.55743
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	41	42	43	44	45
Temperature	°F	152.96	110 *	110 *	156.324	155.284
Pressure	psia	898.696	898.696	898.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	0	100	100	0.208078	0.209663
Molecular Weight	lb/lbmol	31.5835	21.6718	21.6718	31.6319	31.5835
Mass Density	lb/ft^3	67.3785	3.84156	3.84156	49.6781	49.3999
Molar Flow	lbmol/h	6619.9	9698.47	9698.47	6638.71	6619.9
Mass Flow	lb/h	209080	210183	210183	209995	209080
Std Vapor Volumetric Flow	MMSCFD	60.2915	88.33	88.33	60.4628	60.2915
Std Liquid Volumetric Flow	sgpm	423.597	1174.59	1174.59	425.832	423.597
Specific Gravity		1.08032	0.748271	0.748271		
API Gravity		-2.76254				
Gross Ideal Gas Heating Value	Btu/ft^3	550.518	1235.58	1235.58	548.827	550.518
Gross Liquid Heating Value	Btu/lb	5947.65	21573.6	21573.6	5920.08	5947.65

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	46	47	48	49	50*
From Block	E-701A	SPLT-101	SPLT-101	V-0101	V-0101
To Block	MIX-100	T-1201	T-1202	F-0200/1/2/3/4	--

Stream Composition

Mole Fraction	46 %	47 %	48 %	49 %	50* %
H2S	2.54838E-07	0.00012925	0.00012925	0.000835435	0.00147596
CO2	4.73003E-06	0.0108477	0.0108477	3.42334	6.10193
N2	1.01677	0	0	1.05779E-05	0.235597
C1	77.7343	0	0	0.0145498	68.4613
C2	11.8606	0	0	0.00512575	13.5816
C3	5.56121	0	0	0.00148494	4.58282
iC4	0.760675	0	0	0.000118881	0.444964
nC4	1.66761	0	0	0.000500408	1.30882
iC5	0.352841	0	0	2.26476E-05	0.120766
nC5	0.376469	0	0	4.0771E-05	0.165875
nC6	0.258066	0	0	2.26998E-05	0.0931043
nC7	0.0730189	0	0	9.39009E-07	0.00949457
nC8	0.012431	0	0	3.78106E-07	0.00221801
nC9	0.00325931	0	0	9.85346E-09	0.000168725
nC10	0	0	0	0	0
H2O	0.281821	86.4188	86.4188	83.4152	4.73407
MDEA	0.000144729	11.7622	11.7622	11.3842	0.000733287
Piperazine	0.000295526	1.80801	1.80801	1.74989	0.000115346
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0213576	0	0	0.00268431	0.0916724
Toluene	0.0112609	0	0	0.00128803	0.0405501
Ethylbenzene	0.00471206	0	0	0.000362277	0.0137419
m-Xylene	0.00315386	0	0	0.000319168	0.00897472
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	46 %	47 %	48 %	49 %	50* %
H2S	4.11381E-07	0.000141426	0.000141426	0.000900559	0.00227148
CO2	9.86006E-06	0.0153274	0.0153274	4.76525	12.1265
N2	1.34914	0	0	9.37246E-06	0.29803
C1	59.0681	0	0	0.00738275	49.5952
C2	16.8926	0	0	0.00487491	18.4414
C3	11.6154	0	0	0.00207106	9.12539
iC4	2.09416	0	0	0.000218546	1.16786
nC4	4.59098	0	0	0.000919932	3.43515
iC5	1.20581	0	0	5.16821E-05	0.393458
nC5	1.28655	0	0	9.304E-05	0.540422
nC6	1.05338	0	0	6.18721E-05	0.362307
nC7	0.346562	0	0	2.97601E-06	0.042961
nC8	0.0672588	0	0	1.36608E-06	0.011441
nC9	0.0198002	0	0	3.99717E-08	0.000977185
nC10	0	0	0	0	0
H2O	0.240483	49.9845	49.9845	47.5308	3.85123
MDEA	0.000816889	45	45	42.9073	0.00394581
Piperazine	0.00120572	5	5	4.76741	0.000448652
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0790203	0	0	0.0066319	0.323354
Toluene	0.0491455	0	0	0.00375366	0.168716
Ethylbenzene	0.0236953	0	0	0.0012165	0.0658795
m-Xylene	0.0158596	0	0	0.00107174	0.0430255
Cyclopentane	0	0	0	0	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	46 %	47 %	48 %	49 %	50* %
Cyclohexane	0	0	0	0	0

Mass Flow	46 lb/h	47 lb/h	48 lb/h	49 lb/h	50* lb/h
H2S	0.000823212	0.28274	0.28274	7.55289	0.0278425
CO2	0.0197309	30.6429	30.6429	39965.6	148.64
N2	2699.75	0	0	0.0786057	3.65308
C1	118201	0	0	61.9183	607.91
C2	33803.7	0	0	40.8853	226.044
C3	23243.5	0	0	17.3698	111.854
iC4	4190.62	0	0	1.83292	14.315
nC4	9186.98	0	0	7.71536	42.1062
iC5	2412.93	0	0	0.433452	4.82279
nC5	2574.51	0	0	0.780315	6.62419
nC6	2107.91	0	0	0.518914	4.44095
nC7	693.503	0	0	0.0249595	0.526592
nC8	134.591	0	0	0.0114572	0.140237
nC9	39.6221	0	0	0.000335238	0.0119778
nC10	0	0	0	0	0
H2O	481.229	99929.8	99929.8	398635	47.2062
MDEA	1.63467	89964.7	89964.7	359859	0.0483655
Piperazine	2.41277	9996.07	9996.07	39983.7	0.00549933
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	158.127	0	0	55.621	3.9635
Toluene	98.3447	0	0	31.4815	2.06803
Ethylbenzene	47.4164	0	0	10.2026	0.807514
m-Xylene	31.7366	0	0	8.98856	0.527382
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	46	47	48	49	50*
Temperature	°F	106.75	131.89	131.89	156.035	156.035
Pressure	psia	894.696	1054.7	1054.7	79.6959	79.6959
Mole Fraction Vapor	%	99.8744	0	0	0	100
Molecular Weight	lb/lbmol	21.1121	31.1468	31.1468	31.6163	22.145
Mass Density	lb/ft^3	3.76053	63.9245	63.9245	67.6376	0.270555
Molar Flow	lbmol/h	9478.44	6418.68	6418.68	26527.1	55.3507
Mass Flow	lb/h	200109	199921	199921	838688	1225.74
Std Vapor Volumetric Flow	MMSCFD	86.326	58.4589	58.4589	241.598	0.504113
Std Liquid Volumetric Flow	sgpm	1148.76	400	400	1696.31	6.49258
Specific Gravity			1.02494	1.02494	1.08448	0.764611
API Gravity			3.79251	3.79251	-3.27893	
Gross Ideal Gas Heating Value	Btu/ft^3	1262.45	564.96	564.96	547.188	1129.72
Gross Liquid Heating Value	Btu/lb	22628.4	6187.12	6187.12	5901.75	19256.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	51	52	53	55	56
From Block	T-1201	E-1102	E-1101	E-701B	E-701B
To Block	E-1101	MIX-103	MIX-103	MIX-100	T-701B

Stream Composition

Mole Fraction	51 %	52 %	53 %	55 %	56 %
H2S	2.54466E-07	2.54466E-07	2.54466E-07	2.49013E-07	0.000499992
CO2	4.67291E-06	4.67291E-06	4.67291E-06	4.32628E-06	2.40004
N2	1.01677	1.01677	1.01677	1.017	0.994041
C1	77.7346	77.7346	77.7346	77.7407	76.0775
C2	11.8607	11.8607	11.8607	11.8603	11.6142
C3	5.56124	5.56124	5.56124	5.56151	5.4425
iC4	0.760678	0.760678	0.760678	0.760764	0.744124
nC4	1.66761	1.66761	1.66761	1.66769	1.63195
iC5	0.352843	0.352843	0.352843	0.352904	0.345021
nC5	0.37647	0.37647	0.37647	0.376525	0.368188
nC6	0.258068	0.258068	0.258068	0.258108	0.252357
nC7	0.0730193	0.0730193	0.0730193	0.0730361	0.0713762
nC8	0.012431	0.012431	0.012431	0.0124337	0.0121523
nC9	0.00325933	0.00325933	0.00325933	0.00326015	0.00318561
nC10	0	0	0	0	0
H2O	0.28142	0.28142	0.28142	0.275531	0
MDEA	0.000144316	0.000144316	0.000144316	0.00013841	0
Piperazine	0.000294892	0.000294892	0.000294892	0.000285718	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0213546	0.0213546	0.0213546	0.0209961	0.0228023
Toluene	0.0112593	0.0112593	0.0112593	0.0110692	0.011922
Ethylbenzene	0.00471176	0.00471176	0.00471176	0.00465612	0.00486589
m-Xylene	0.00315355	0.00315355	0.00315355	0.00310375	0.00330729
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	51 %	52 %	53 %	55 %	56 %
H2S	4.10781E-07	4.10781E-07	4.10781E-07	4.01984E-07	0.000786284
CO2	9.741E-06	9.741E-06	9.741E-06	9.01858E-06	4.87382
N2	1.34915	1.34915	1.34915	1.34948	1.28492
C1	59.0683	59.0683	59.0683	59.074	56.3161
C2	16.8927	16.8927	16.8927	16.8924	16.1144
C3	11.6155	11.6155	11.6155	11.6162	11.0739
iC4	2.09417	2.09417	2.09417	2.09445	1.99569
nC4	4.591	4.591	4.591	4.59129	4.37678
iC5	1.20581	1.20581	1.20581	1.20604	1.14863
nC5	1.28656	1.28656	1.28656	1.28676	1.22576
nC6	1.05338	1.05338	1.05338	1.05356	1.00347
nC7	0.346564	0.346564	0.346564	0.346649	0.330016
nC8	0.067259	0.067259	0.067259	0.0672745	0.0640528
nC9	0.0198003	0.0198003	0.0198003	0.0198056	0.0188526
nC10	0	0	0	0	0
H2O	0.240141	0.240141	0.240141	0.235119	0
MDEA	0.000814558	0.000814558	0.000814558	0.000781234	0
Piperazine	0.00120314	0.00120314	0.00120314	0.00116573	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0790092	0.0790092	0.0790092	0.0776841	0.0821867
Toluene	0.0491382	0.0491382	0.0491382	0.0483098	0.0506867
Ethylbenzene	0.0236938	0.0236938	0.0236938	0.0234144	0.0238369
m-Xylene	0.0158581	0.0158581	0.0158581	0.0156079	0.0162016
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	51 %	52 %	53 %	55 %	56 %
Cyclohexane	0	0	0	0	0

Mass Flow	51 lb/h	52 lb/h	53 lb/h	55 lb/h	56 lb/h
H2S	0.000822007	0.000822007	0.000822007	0.000726916	1.49386
CO2	0.0194926	0.0194926	0.0194926	0.0163085	9259.78
N2	2699.75	2699.75	2699.75	2440.29	2441.22
C1	118201	118201	118201	106825	106995
C2	33803.7	33803.7	33803.7	30546.9	30615.7
C3	23243.5	23243.5	23243.5	21005.9	21039.3
iC4	4190.61	4190.61	4190.61	3787.43	3791.61
nC4	9186.97	9186.97	9186.97	8302.52	8315.46
iC5	2412.93	2412.93	2412.93	2180.91	2182.28
nC5	2574.51	2574.51	2574.51	2326.88	2328.82
nC6	2107.91	2107.91	2107.91	1905.18	1906.49
nC7	693.503	693.503	693.503	626.852	626.998
nC8	134.591	134.591	134.591	121.654	121.694
nC9	39.6221	39.6221	39.6221	35.8149	35.8182
nC10	0	0	0	0	0
H2O	480.542	480.542	480.542	425.17	0
MDEA	1.63	1.63	1.63	1.41272	0
Piperazine	2.40758	2.40758	2.40758	2.10801	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	158.104	158.104	158.104	140.478	156.147
Toluene	98.3298	98.3298	98.3298	87.3596	96.2998
Ethylbenzene	47.4132	47.4132	47.4132	42.3407	45.2877
m-Xylene	31.7333	31.7333	31.7333	28.224	30.7815
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	51	52	53	55	56
Temperature	°F	133.425	106.695	106.695	105.869	110 *
Pressure	psia	896.696	894.696	894.696	894.696	898.696
Mole Fraction Vapor	%	100	99.8745	99.8745	99.8768	100
Molecular Weight	lb/lbmol	21.1121	21.1121	21.1121	21.1117	21.6718
Mass Density	lb/ft^3	3.47428	3.76119	3.76119	3.77106	3.84156
Molar Flow	lbmol/h	9478.39	9478.39	9478.39	8565.48	8766.71
Mass Flow	lb/h	200108	200108	200108	180832	189990
Std Vapor Volumetric Flow	MMSCFD	86.3256	86.3256	86.3256	78.0112	79.8438
Std Liquid Volumetric Flow	sgpm	1148.76	1148.76	1148.76	1038.15	1061.75
Specific Gravity		0.728945				0.748271
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1262.46	1262.46	1262.46	1262.5	1235.58
Gross Liquid Heating Value	Btu/lb	22628.5	22628.5	22628.5	22629.7	21573.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	57	59	61	62	65
From Block	E-701A	V-0701	VLVE-102	MIX-100	AC-0601/2
To Block	T-701A	VLVE-102	MXSP-100	V-0701	T-0403

Stream Composition

Mole Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000499992	7.53856E-05	7.53856E-05	2.52073E-07	0.00692211
CO2	2.40004	0.00280825	0.00280825	4.53837E-06	33.1285
N2	0.994041	0.000613732	0.000613732	1.01688	6.21876E-05
C1	76.0775	0.0799498	0.0799498	77.7373	0.12396
C2	11.6142	0.0102912	0.0102912	11.8605	0.0460956
C3	5.4425	0.00290033	0.00290033	5.56136	0.0132008
iC4	0.744124	0.000194128	0.000194128	0.760718	0.00103888
nC4	1.63195	0.000614474	0.000614474	1.66765	0.00450532
iC5	0.345021	5.19075E-05	5.19075E-05	0.352871	0.000190099
nC5	0.368188	6.87314E-05	6.87314E-05	0.376495	0.000353367
nC6	0.252357	2.23592E-05	2.23592E-05	0.258086	0.000196608
nC7	0.0713762	2.74881E-06	2.74881E-06	0.0730271	7.0472E-06
nC8	0.0121523	3.02946E-07	3.02946E-07	0.0124322	3.1343E-06
nC9	0.00318561	2.58878E-08	2.58878E-08	0.00325971	6.4053E-08
nC10	0	0	0	0	0
H2O	0	99.5693	99.5693	0.278835	66.5798
MDEA	0	0.11333	0.11333	0.000141729	0.030267
Piperazine	0	0.21886	0.21886	0.00029087	0.0196978
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.000614348	0.000614348	0.021186	0.0260781
Toluene	0.011922	0.000200377	0.000200377	0.0111699	0.0125006
Ethylbenzene	0.00486589	5.36716E-05	5.36716E-05	0.0046855	0.00351317
m-Xylene	0.00330729	5.15246E-05	5.15246E-05	0.00313007	0.00310013
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000786284	0.000140538	0.000140538	4.0692E-07	0.00883169
CO2	4.87382	0.00676046	0.00676046	9.46061E-06	54.5813
N2	1.28492	0.000940457	0.000940457	1.3493	6.52175E-05
C1	56.3161	0.0701589	0.0701589	59.0709	0.0744472
C2	16.1144	0.0169271	0.0169271	16.8925	0.0518888
C3	11.0739	0.00699579	0.00699579	11.6158	0.0217917
iC4	1.99569	0.000617197	0.000617197	2.0943	0.00226048
nC4	4.37678	0.00195362	0.00195362	4.59113	0.00980309
iC5	1.14863	0.000204858	0.000204858	1.20592	0.000513455
nC5	1.22576	0.000271256	0.000271256	1.28665	0.000954442
nC6	1.00347	0.000105398	0.000105398	1.05347	0.000634279
nC7	0.330016	1.50666E-05	1.50666E-05	0.346603	2.64355E-05
nC8	0.0640528	1.89293E-06	1.89293E-06	0.0672662	1.34032E-05
nC9	0.0188526	1.8162E-07	1.8162E-07	0.0198028	3.07545E-07
nC10	0	0	0	0	0
H2O	0	98.1207	98.1207	0.237937	44.9033
MDEA	0	0.738716	0.738716	0.000799964	0.135022
Piperazine	0	1.0312	1.0312	0.00118674	0.0635177
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.00262498	0.00262498	0.078386	0.0762584
Toluene	0.0506867	0.00100991	0.00100991	0.0487488	0.0431187
Ethylbenzene	0.0238369	0.000311688	0.000311688	0.0235619	0.0139629
m-Xylene	0.0162016	0.00029922	0.00029922	0.0157401	0.0123213
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	57 %	59 %	61 %	62 %	65 %
Cyclohexane	0	0	0	0	0

Mass Flow	57 lb/h	59 lb/h	61 lb/h	62 lb/h	65 lb/h
H2S	1.65264	0.000577766	0.000577766	0.00155013	6.46359
CO2	10244	0.0277929	0.0277929	0.0360394	39946
N2	2700.68	0.00386632	0.00386632	5140.04	0.0477303
C1	118367	0.288431	0.288431	225025	54.4851
C2	33869.7	0.069589	0.069589	64350.6	37.9755
C3	23275.4	0.0287604	0.0287604	44249.4	15.9486
iC4	4194.6	0.00253736	0.00253736	7978.04	1.65436
nC4	9199.26	0.00803154	0.00803154	17489.5	7.17452
iC5	2414.22	0.000842193	0.000842193	4593.84	0.375779
nC5	2576.33	0.00111516	0.00111516	4901.39	0.698521
nC6	2109.12	0.000433303	0.000433303	4013.09	0.464205
nC7	693.639	6.19403E-05	6.19403E-05	1320.36	0.0193472
nC8	134.628	7.78203E-06	7.78203E-06	256.245	0.00980933
nC9	39.6251	7.4666E-07	7.4666E-07	75.437	0.000225081
nC10	0	0	0	0	0
H2O	0	403.385	403.385	906.399	32863.1
MDEA	0	3.03694	3.03694	3.04739	98.8172
Piperazine	0	4.23939	4.23939	4.52078	46.4862
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	172.743	0.0107916	0.0107916	298.605	55.8106
Toluene	106.535	0.00415184	0.00415184	185.704	31.5569
Ethylbenzene	50.1011	0.00128138	0.00128138	89.7571	10.2189
m-Xylene	34.0531	0.00123012	0.00123012	59.9607	9.01748
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

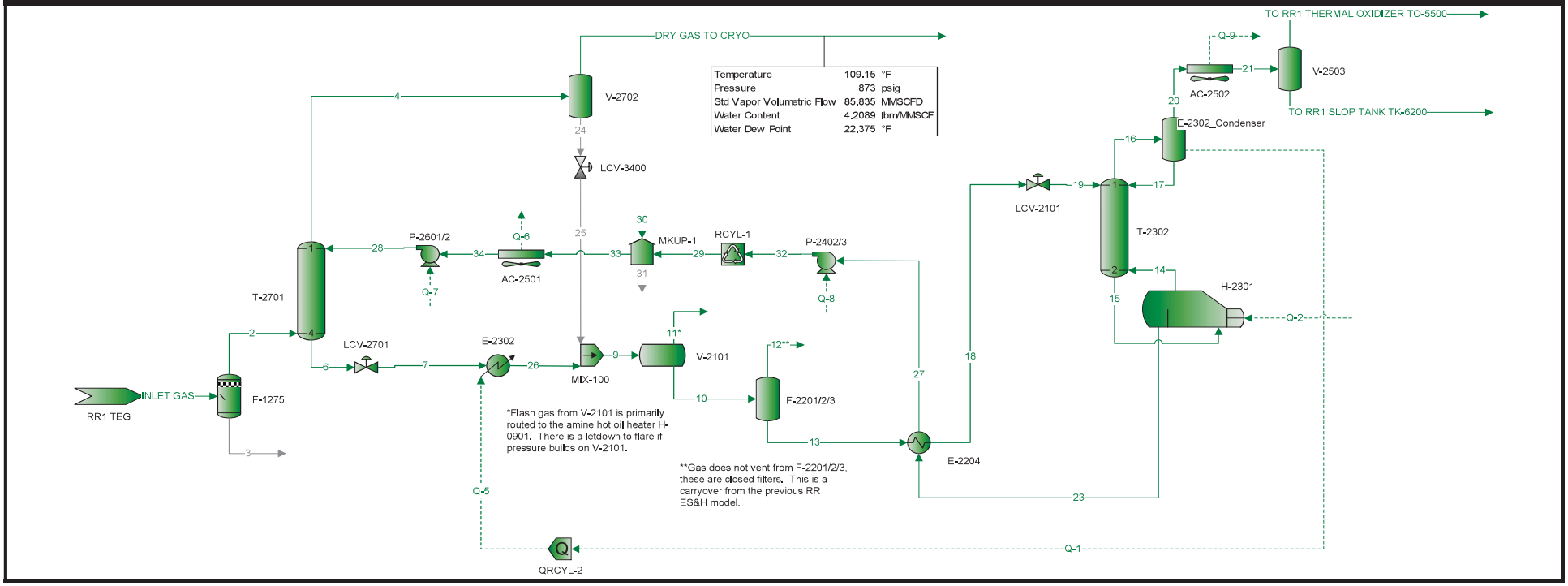
Property	Units	57	59	61	62	65
Temperature	°F	110 *	106.269	108.196	106.332	120 *
Pressure	psia	898.696	893.696	79.6959 *	894.696	25.6959
Mole Fraction Vapor	%	100	0	0.0856056	99.8755	35.6633
Molecular Weight	lb/lbmol	21.6718	18.2812	18.2812	21.1119	26.7119
Mass Density	lb/ft^3	3.84156	61.9356	50.8493	3.76552	0.311221
Molar Flow	lbmol/h	9698.47	22.4881	22.4881	18043.9	2739.84
Mass Flow	lb/h	210183	411.11	411.11	380941	73186.3
Std Vapor Volumetric Flow	MMSCFD	88.33	0.204813	0.204813	164.337	24.9534
Std Liquid Volumetric Flow	sgpm	1174.59	0.826567	0.826567	2186.91	164.669
Specific Gravity		0.748271	0.993055			
API Gravity			9.83582			
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	63.1662	63.1662	1262.47	39.8896
Gross Liquid Heating Value	Btu/lb	21573.6	266.206	266.206	22629	48.9295

Remarks

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RR1&3 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-2702	RR1 TEG	V-2503	V-2503	F-1275
To Block	--	F-1275	--	--	T-2701

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.33E-07	1.35949E-07	3.00516E-08	9.21731E-06	1.35949E-07
CO2	8.57696E-07	8.60306E-07	7.66576E-09	7.54844E-06	8.60306E-07
N2	1.0221	1.01972	4.3482E-07	0.00627384	1.01972
C1	78.0025	77.8518	0.00228541	9.48471	77.8518
C2	11.8758	11.8655	0.018485	14.8089	11.8655
C3	5.56719	5.56806	0.066852	18.7815	5.56806
iC4	0.761636	0.762069	0.0286732	3.55634	0.762069
nC4	1.66622	1.66959	0.164813	13.8986	1.66959
iC5	0.352525	0.353662	0.115699	4.1859	0.353662
nC5	0.37549	0.377242	0.201848	5.75215	0.377242
nC6	0.256404	0.25863	0.580312	5.39961	0.25863
nC7	0.0720855	0.0732305	0.497929	1.64449	0.0732305
nC8	0.0121724	0.0124648	0.168301	0.196946	0.0124648
nC9	0.00315255	0.00326945	0.0742736	0.0382347	0.00326945
nC10	0	0	0	0	0
H2O	0.00886498	0.150758	93.35	10.91	0.150758
TEG	6.4491E-05	0	0.00982324	6.48508E-08	0
Benzene	0.0136042	0.0178608	1.47332	7.34461	0.0178608
Toluene	0.00616579	0.00935653	1.59242	2.96443	0.00935653
Ethylbenzene	0.0024209	0.00412238	1.02838	0.635058	0.00412238
m-Xylene	0.00157369	0.00260938	0.626543	0.392221	0.00260938
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	2.14869E-07	2.19478E-07	4.47819E-08	6.32406E-06	2.19478E-07
CO2	1.78933E-06	1.79351E-06	1.47511E-08	6.68782E-06	1.79351E-06
N2	1.35728	1.35317	5.32598E-07	0.00353818	1.35317
C1	59.3186	59.1622	0.00160309	3.0632	59.1622
C2	16.9276	16.9009	0.0243031	8.96446	16.9009
C3	11.6371	11.6306	0.128894	16.6727	11.6306
iC4	2.09846	2.09817	0.0728688	4.16127	2.09817
nC4	4.59077	4.5968	0.418849	16.2628	4.5968
iC5	1.20568	1.20871	0.36499	6.07994	1.20871
nC5	1.28422	1.2893	0.636761	8.35487	1.2893
nC6	1.04742	1.05576	2.18659	9.36755	1.05576
nC7	0.342401	0.347594	2.18156	3.31733	0.347594
nC8	0.0659116	0.0674474	0.840591	0.452901	0.0674474
nC9	0.0191668	0.0198634	0.416517	0.0987218	0.0198634
nC10	0	0	0	0	0
H2O	0.0075706	0.128655	73.5325	3.9568	0.128655
TEG	0.000459095	0	0.0645015	1.96059E-07	0
Benzene	0.0503735	0.0660878	5.03196	11.5496	0.0660878
Toluene	0.0269303	0.0408376	6.41539	5.49873	0.0408376

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.0121834	0.0207316	4.77374	1.3573	0.0207316
m-Xylene	0.00791976	0.0131227	2.90841	0.838287	0.0131227
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.000427193	0.000437749	1.43739E-07	8.3302E-06	0.000437749
CO2	0.00355748	0.00357715	4.73474E-08	8.80936E-06	0.00357715
N2	2698.49	2698.89	1.70951E-06	0.00466058	2698.89
C1	117935	117999	0.00514552	4.03493	117999
C2	33654.6	33708.9	0.078007	11.8082	33708.9
C3	23136.3	23197.3	0.413718	21.9617	23197.3
iC4	4172.07	4184.79	0.233891	5.48132	4184.79
nC4	9127.18	9168.3	1.3444	21.4217	9168.3
iC5	2397.07	2410.77	1.17153	8.00864	2410.77
nC5	2553.23	2571.51	2.04384	11.0052	2571.51
nC6	2082.43	2105.72	7.01842	12.3392	2105.72
nC7	680.747	693.276	7.00225	4.36966	693.276
nC8	131.043	134.524	2.69809	0.596572	134.524
nC9	38.1065	39.6176	1.33692	0.130039	39.6176
nC10	0	0	0	0	0
H2O	15.0515	256.602	236.021	5.212	256.602
TEG	0.912753	0	0.207034	2.58254E-07	0
Benzene	100.15	131.812	16.1513	15.2134	131.812
Toluene	53.5416	81.4505	20.5918	7.24306	81.4505
Ethylbenzene	24.2225	41.3492	15.3225	1.78787	41.3492
m-Xylene	15.7457	26.1732	9.33526	1.10421	26.1732
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	109.15	105.314	120	120	105.183
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.0954	21.1104	22.8705	49.6729	21.1104
Mass Density	lb/ft^3	3.68817	3.76779	57.5767	0.125912	3.75945
Molar Flow	lbmol/h	9424.58	9447.96	14.0344	2.6518	9447.96
Mass Flow	lb/h	198816	199450	320.975	131.722	199450
Std Vapor Volumetric Flow	MMSCFD	85.8355	86.0484	0.12782	0.0241516	86.0484
Std Liquid Volumetric Flow	sgpm	1143.95	1146.01	0.683089	0.45293	1146.01
Specific Gravity		0.728371	0.728886	0.923166	1.71508	0.728886
API Gravity				18.756		
Gross Ideal Gas Heating Value	Btu/ft^3	1264.49	1263.76	351.541	2626.17	1263.76
Gross Liquid Heating Value	Btu/lb	22685.5	22654.8	5007.57	19868.4	22654.8

Warnings
ProMax:ProMax!Project!Flowsheets!RR1&3 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	3	4	6	7	9
From Block	F-1275	T-2701	T-2701	LCV-2701	MIX-100
To Block	--	V-2702	LCV-2701	E-2302	V-2101

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	9 %
H2S		1.33E-07	1.67732E-07	1.67732E-07	1.67732E-07
CO2		8.57696E-07	2.421E-07	2.421E-07	2.421E-07
N2		1.0221	0.0076463	0.0076463	0.0076463
C1		78.0025	2.16495	2.16495	2.16495
C2		11.8758	0.977014	0.977014	0.977014
C3		5.56719	0.749401	0.749401	0.749401
iC4		0.761636	0.118576	0.118576	0.118576
nC4		1.66622	0.383221	0.383221	0.383221
iC5		0.352525	0.102826	0.102826	0.102826
nC5		0.37549	0.137239	0.137239	0.137239
nC6		0.256404	0.146675	0.146675	0.146675
nC7		0.0720855	0.0678794	0.0678794	0.0678794
nC8		0.0121724	0.0165876	0.0165876	0.0165876
nC9		0.00315255	0.00645217	0.00645217	0.00645217
nC10		0	0	0	0
H2O		0.00886498	14.0004	14.0004	14.0004
TEG		6.4491E-05	80.5331	80.5331	80.5331
Benzene		0.0136042	0.230007	0.230007	0.230007
Toluene		0.00616579	0.182876	0.182876	0.182876
Ethylbenzene		0.0024209	0.108612	0.108612	0.108612
m-Xylene		0.00157369	0.0665344	0.0665344	0.0665344
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	9 %
H2S		2.14869E-07	4.5493E-08	4.5493E-08	4.5493E-08
CO2		1.78933E-06	8.4793E-08	8.4793E-08	8.4793E-08
N2		1.35728	0.00170465	0.00170465	0.00170465
C1		59.3186	0.2764	0.2764	0.2764
C2		16.9276	0.233797	0.233797	0.233797
C3		11.6371	0.262983	0.262983	0.262983
iC4		2.09846	0.0548476	0.0548476	0.0548476
nC4		4.59077	0.17726	0.17726	0.17726
iC5		1.20568	0.0590406	0.0590406	0.0590406
nC5		1.28422	0.0788001	0.0788001	0.0788001
nC6		1.04742	0.100591	0.100591	0.100591
nC7		0.342401	0.0541294	0.0541294	0.0541294
nC8		0.0659116	0.0150791	0.0150791	0.0150791
nC9		0.0191668	0.00658565	0.00658565	0.00658565
nC10		0	0	0	0
H2O		0.0075706	2.00725	2.00725	2.00725
TEG		0.000459095	96.2465	96.2465	96.2465
Benzene		0.0503735	0.14298	0.14298	0.14298
Toluene		0.0269303	0.134096	0.134096	0.134096
Ethylbenzene		0.0121834	0.0917652	0.0917652	0.0917652
m-Xylene		0.00791976	0.0562143	0.0562143	0.0562143
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	9 lb/h
H2S	0	0.000427193	1.05562E-05	1.05562E-05	1.05562E-05
CO2	0	0.00355748	1.96754E-05	1.96754E-05	1.96754E-05
N2	0	2698.49	0.395548	0.395548	0.395548
C1	0	117935	64.136	64.136	64.136
C2	0	33654.6	54.2504	54.2504	54.2504
C3	0	23136.3	61.0228	61.0228	61.0228
iC4	0	4172.07	12.7269	12.7269	12.7269
nC4	0	9127.18	41.1314	41.1314	41.1314
iC5	0	2397.07	13.6998	13.6998	13.6998
nC5	0	2553.23	18.2848	18.2848	18.2848
nC6	0	2082.43	23.3411	23.3411	23.3411
nC7	0	680.747	12.5602	12.5602	12.5602
nC8	0	131.043	3.49897	3.49897	3.49897
nC9	0	38.1065	1.52814	1.52814	1.52814
nC10	0	0	0	0	0
H2O	0	15.0515	465.762	465.762	465.762
TEG	0	0.912753	22333.1	22333.1	22333.1
Benzene	0	100.15	33.1772	33.1772	33.1772
Toluene	0	53.5416	31.1158	31.1158	31.1158
Ethylbenzene	0	24.2225	21.2932	21.2932	21.2932
m-Xylene	0	15.7457	13.044	13.044	13.044
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	9
Temperature	°F		109.279	107.226	110.496	113.702
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	3.55419	3.59944
Molecular Weight	lb/lbmol		21.0954	125.655	125.655	125.655
Mass Density	lb/ft^3		3.69639	67.4402	28.7005	27.748
Molar Flow	lbmol/h	0	9424.58	184.664	184.664	184.664
Mass Flow	lb/h	0	198816	23204	23204	23204
Std Vapor Volumetric Flow	MMSCFD	0	85.8355	1.68185	1.68185	1.68185
Std Liquid Volumetric Flow	sgpm	0	1143.95	42.0617	42.0617	42.0617
Specific Gravity			0.728371	1.08131		
API Gravity				-3.60564		
Gross Ideal Gas Heating Value	Btu/ft^3		1264.49	3454.19	3454.19	3454.19
Gross Liquid Heating Value	Btu/lb		22685.5	10158.2	10158.2	10158.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	10	11*	12**	13	14
From Block	V-2101	V-2101	F-2201/2/3	F-2201/2/3	H-2301
To Block	F-2201/2/3	--	--	E-2204	T-2302

Stream Composition

Mole Fraction	10 %	11* %	12** %	13 %	14 %
H2S	1.40055E-07	9.0896E-07	9.6612E-07	1.3983E-07	1.86475E-08
CO2	1.14109E-07	3.66996E-06	3.87456E-06	1.13085E-07	2.93652E-09
N2	0.000135381	0.208805	0.153888	9.35169E-05	2.04391E-07
C1	0.156181	55.9641	54.0523	0.141506	0.000798679
C2	0.227999	21.0372	21.8144	0.222121	0.00338631
C3	0.288801	13.0852	13.7343	0.28514	0.00799251
iC4	0.0557586	1.80096	1.89532	0.0552577	0.00220855
nC4	0.221423	4.7165	4.97853	0.220128	0.0115317
iC5	0.0717719	0.93452	0.987372	0.0715226	0.00627989
nC5	0.101958	1.08214	1.14425	0.101675	0.0101387
nC6	0.126739	0.680601	0.719836	0.126577	0.0349423
nC7	0.0639785	0.172354	0.182214	0.0639463	0.0190442
nC8	0.016297	0.0243703	0.0257402	0.0162944	0.00745563
nC9	0.00650171	0.00512524	0.00540701	0.00650201	0.00474237
nC10	0	0	0	0	0
H2O	14.5166	0.177348	0.189092	14.5205	91.0848
TEG	83.54	9.72605E-05	0.000102586	83.5628	7.20932
Benzene	0.236056	0.0679858	0.0720901	0.236101	0.388897
Toluene	0.188672	0.027663	0.0292993	0.188715	0.510216
Ethylbenzene	0.112317	0.0093788	0.00992259	0.112345	0.430044
m-Xylene	0.0688108	0.00556726	0.00588749	0.068828	0.268232
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	10 %	11* %	12** %	13 %	14 %
H2S	3.69078E-08	1.13492E-06	1.18283E-06	3.68406E-08	2.20369E-08
CO2	3.88307E-08	5.91721E-06	6.12562E-06	3.8474E-08	4.48122E-09
N2	2.93244E-05	0.214296	0.154864	2.02521E-05	1.98539E-07
C1	0.0193735	32.8919	31.1506	0.0175494	0.000444285
C2	0.0530102	23.1749	23.5638	0.0516326	0.00353073
C3	0.0984694	21.1391	21.7562	0.0972004	0.0122207
iC4	0.0250588	3.83491	3.95737	0.0248284	0.00445111
nC4	0.0995114	10.0432	10.395	0.0989082	0.023241
iC5	0.0400397	2.47017	2.55912	0.0398921	0.0157108
nC5	0.0568799	2.86037	2.96573	0.0567095	0.0253647
nC6	0.0844501	2.14874	2.22842	0.0843245	0.104413
nC7	0.0495699	0.632713	0.655901	0.0495344	0.0661692
nC8	0.0143943	0.101987	0.105625	0.0143889	0.0295309
nC9	0.00644777	0.0240823	0.0249123	0.00644669	0.0210906
nC10	0	0	0	0	0
H2O	2.02214	0.117051	0.122376	2.02225	56.899
TEG	97.0049	0.000535103	0.000553429	97.0106	37.5408
Benzene	0.142574	0.194556	0.20229	0.14257	1.05334
Toluene	0.134417	0.0933788	0.0969794	0.13442	1.63009
Ethylbenzene	0.0922009	0.0364785	0.0378432	0.0922041	1.58311
m-Xylene	0.0564866	0.0216537	0.022454	0.0564886	0.987437
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	10 lb/h	11* lb/h	12** lb/h	13 lb/h	14 lb/h
H2S	8.49713E-06	2.05908E-06	1.59552E-08	8.48117E-06	1.50002E-07
CO2	8.93983E-06	1.07356E-05	8.26282E-08	8.8572E-06	3.05031E-08
N2	0.00675125	0.388797	0.00208896	0.00466229	1.35143E-06
C1	4.46028	59.6757	0.420189	4.04009	0.00302418
C2	12.2043	42.046	0.317851	11.8865	0.0240332
C3	22.6702	38.3525	0.293468	22.3767	0.0831846
iC4	5.7692	6.95765	0.0533808	5.71582	0.0302981
nC4	22.9101	18.2213	0.140218	22.7699	0.158198
iC5	9.21819	4.48161	0.0345199	9.18367	0.106941
nC5	13.0952	5.18955	0.0400046	13.0552	0.172654
nC6	19.4426	3.89846	0.0300591	19.4126	0.710722
nC7	11.4123	1.14793	0.00884742	11.4034	0.450405
nC8	3.31393	0.185034	0.00142477	3.31251	0.201013
nC9	1.48444	0.0436924	0.00033604	1.48411	0.143561
nC10	0	0	0	0	0
H2O	465.55	0.212365	0.00165072	465.548	387.304
TEG	22333.1	0.000970834	7.46518E-06	22333.1	255.535
Benzene	32.8242	0.352982	0.00272868	32.8215	7.16995
Toluene	30.9464	0.169417	0.00130815	30.9451	11.0958
Ethylbenzene	21.227	0.0661828	0.000510465	21.2265	10.776
m-Xylene	13.0047	0.0392862	0.00030288	13.0044	6.72134
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	10	11*	12**	13	14
Temperature	°F	113.702	113.702	113.721	113.721	400 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	16.6959
Mole Fraction Vapor	%	0	100	100	0	100
Molecular Weight	lb/lbmol	129.328	27.2955	27.8368	129.356	28.8391
Mass Density	lb/ft^3	68.2038	0.363815	0.347509	68.2107	0.0525829
Molar Flow	lbmol/h	178.017	6.64687	0.0484573	177.969	23.6029
Mass Flow	lb/h	23022.6	181.43	1.3489	23021.3	680.686
Std Vapor Volumetric Flow	MMSCFD	1.62131	0.0605371	0.000441331	1.62087	0.214966
Std Liquid Volumetric Flow	sgpm	41.1404	0.921297	0.00678866	41.1337	1.31474
Specific Gravity		1.09356	0.942443	0.961131	1.09367	0.99574
API Gravity		-5.39697			-5.41058	
Gross Ideal Gas Heating Value	Btu/ft^3	3523.11	1608.36	1638.15	3523.62	422.039
Gross Liquid Heating Value	Btu/lb	10062.9	22254.7	22223.1	10062.2	4843.12

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	15	16	17	18	19
From Block	T-2302	T-2302	E-2302_Condenser	E-2204	LCV-2101
To Block	H-2301	E-2302_Condenser	T-2302	LCV-2101	T-2302

Stream Composition

Mole Fraction	15 %	16 %	17 %	18 %	19 %
H2S	2.49535E-09	1.41811E-06	8.91928E-09	1.3983E-07	1.3983E-07
CO2	3.80994E-10	1.14752E-06	1.85239E-09	1.13085E-07	1.13085E-07
N2	2.61585E-08	0.000948934	8.11026E-08	9.35169E-05	9.35169E-05
C1	0.000102501	1.4359	0.000330607	0.141506	0.141506
C2	0.000436862	2.25391	0.00118186	0.222121	0.222121
C3	0.00103643	2.8933	0.00231834	0.28514	0.28514
iC4	0.000287564	0.560673	0.000484182	0.0552577	0.0552577
nC4	0.00150732	2.23345	0.00304124	0.220128	0.220128
iC5	0.000827949	0.725534	0.00120871	0.0715226	0.0715226
nC5	0.00134041	1.03131	0.00191479	0.101675	0.101675
nC6	0.00480583	1.28096	0.00395102	0.126577	0.126577
nC7	0.00260132	0.647195	0.00234808	0.0639463	0.0639463
nC8	0.00103631	0.164492	0.000832932	0.0162944	0.0162944
nC9	0.000677767	0.0652325	0.00037552	0.00650201	0.00650201
nC10	0	0	0	0	0
H2O	18.3627	80.105	77.2949	14.5205	14.5205
TEG	81.3563	1.09445	22.3537	83.5628	83.5628
Benzene	0.0597345	2.29392	0.0925235	0.236101	0.236101
Toluene	0.083393	1.72778	0.109492	0.188715	0.188715
Ethylbenzene	0.0758708	0.922842	0.0806122	0.112345	0.112345
m-Xylene	0.0473104	0.563131	0.0508665	0.068828	0.068828
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	15 %	16 %	17 %	18 %	19 %
H2S	6.76295E-10	1.71776E-06	6.35673E-09	3.68406E-08	3.68406E-08
CO2	1.33339E-10	1.79494E-06	1.70479E-09	3.8474E-08	3.8474E-08
N2	5.82736E-09	0.000944809	4.7511E-08	2.02521E-05	2.02521E-05
C1	1.30766E-05	0.818723	0.000110911	0.0175494	0.0175494
C2	0.000104462	2.40878	0.000743154	0.0516326	0.0516326
C3	0.000363435	4.53452	0.00213779	0.0972004	0.0972004
iC4	0.000132914	1.15823	0.000588497	0.0248284	0.0248284
nC4	0.000696695	4.61382	0.00369645	0.0989082	0.0989082
iC5	0.000475036	1.8605	0.00182366	0.0398921	0.0398921
nC5	0.000769062	2.64461	0.00288897	0.0567095	0.0567095
nC6	0.00329341	3.92337	0.00712008	0.0843245	0.0843245
nC7	0.00207283	2.30491	0.00492019	0.0495344	0.0495344
nC8	0.000941366	0.667822	0.00198965	0.0143889	0.0143889
nC9	0.000691272	0.297359	0.00100716	0.00644669	0.00644669
nC10	0	0	0	0	0
H2O	2.63071	51.2912	29.1196	2.02225	2.02225
TEG	97.1575	5.84159	70.1994	97.0106	97.0106
Benzene	0.0371053	6.3685	0.151134	0.14257	0.14257
Toluene	0.0611032	5.65811	0.210967	0.13442	0.13442
Ethylbenzene	0.0640545	3.48218	0.178968	0.0922041	0.0922041
m-Xylene	0.0399422	2.12487	0.112929	0.0564886	0.0564886
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	15 lb/h	16 lb/h	17 lb/h	18 lb/h	19 lb/h
H2S	1.57233E-07	8.47653E-06	2.59154E-09	8.48117E-06	8.48117E-06
CO2	3.10004E-08	8.8574E-06	6.95017E-10	8.8572E-06	8.8572E-06
N2	1.35482E-06	0.00466231	1.93695E-08	0.00466229	0.00466229
C1	0.0030402	4.04012	4.52168E-05	4.04009	4.04009
C2	0.0242865	11.8865	0.000302972	11.8865	11.8865
C3	0.084496	22.3763	0.000871543	22.3767	22.3767
iC4	0.0309015	5.71545	0.000239921	5.71582	5.71582
nC4	0.161976	22.7676	0.00150699	22.7699	22.7699
iC5	0.110442	9.18091	0.000743477	9.18367	9.18367
nC5	0.178801	13.0503	0.00117779	13.0552	13.0552
nC6	0.765692	19.3605	0.00290275	19.4126	19.4126
nC7	0.481917	11.3739	0.00200588	11.4034	11.4034
nC8	0.21886	3.29547	0.00081115	3.31251	3.31251
nC9	0.160715	1.46736	0.000410605	1.48411	1.48411
nC10	0	0	0	0	0
H2O	611.619	253.104	11.8716	465.548	465.548
TEG	22588.4	28.8262	28.6192	22333.1	22333.1
Benzene	8.62669	31.4264	0.061615	32.8215	32.8215
Toluene	14.206	27.9208	0.086008	30.9451	30.9451
Ethylbenzene	14.8922	17.1833	0.0729625	21.2265	21.2265
m-Xylene	9.28626	10.4855	0.0460395	13.0044	13.0044
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	15	16	17	18	19
Temperature	°F	327.678	319.114	215	315 *	311.176
Pressure	psia	16.6959	15.6959	15.6959	73.6959	15.6959 *
Mole Fraction Vapor	%	0	100	0	0.390554	3.09554
Molecular Weight	lb/lbmol	125.75	28.1357	47.8197	129.356	129.356
Mass Density	lb/ft^3	60.9585	0.0531719	64.8543	50.7686	7.06653
Molar Flow	lbmol/h	184.885	17.5388	0.852545	177.969	177.969
Mass Flow	lb/h	23249.2	493.466	40.7684	23021.3	23021.3
Std Vapor Volumetric Flow	MMSCFD	1.68386	0.159736	0.00776465	1.62087	1.62087
Std Liquid Volumetric Flow	sgpm	41.3124	1.21104	0.0750256	41.1337	41.1337
Specific Gravity		0.977389	0.971453	1.03985		
API Gravity		-6.11235		-3.44348		
Gross Ideal Gas Heating Value	Btu/ft^3	3381.33	725.896	977.743	3523.62	3523.62
Gross Liquid Heating Value	Btu/lb	9923.58	9161.08	7267.02	10062.2	10062.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	20	21	23	24	25
From Block	E-2302_Condenser	AC-2502	H-2301	V-2702	LCV-3400
To Block	AC-2502	V-2503	E-2204	LCV-3400	MIX-100

Stream Composition

Mole Fraction	20 %	21 %	23 %	24 %	25 %
H2S	1.4901E-06	1.4901E-06	1.31559E-10		
CO2	1.20606E-06	1.20606E-06	7.00637E-12		
N2	0.000997414	0.000997414	7.4972E-11		
C1	1.50925	1.50925	6.19067E-07		
C2	2.369	2.369	5.22425E-06		
C3	3.04101	3.04101	1.8439E-05		
iC4	0.589294	0.589294	6.43713E-06		
nC4	2.34741	2.34741	4.03044E-05		
iC5	0.762541	0.762541	3.00848E-05		
nC5	1.08391	1.08391	5.28293E-05		
nC6	1.3462	1.3462	0.000395509		
nC7	0.680142	0.680142	0.000194989		
nC8	0.172853	0.172853	9.68767E-05		
nC9	0.0685463	0.0685463	8.29328E-05		
nC10	0	0	0		
H2O	80.2485	80.2485	7.72025		
TEG	0.00826213	0.00826213	92.2073		
Benzene	2.40639	2.40639	0.0115632		
Toluene	1.81046	1.81046	0.0209298		
Ethylbenzene	0.965874	0.965874	0.0240394		
m-Xylene	0.589304	0.589304	0.0149797		
Cyclopentane	0	0	0		
Cyclohexane	0	0	0		
SO2	0	0	0		

Mass Fraction	20 %	21 %	23 %	24 %	25 %
H2S	1.87188E-06	1.87188E-06	3.20417E-11		
CO2	1.95643E-06	1.95643E-06	2.20355E-12		
N2	0.00102989	0.00102989	1.50089E-11		
C1	0.892445	0.892445	7.09728E-08		
C2	2.62564	2.62564	1.1226E-06		
C3	4.94269	4.94269	5.81052E-06		
iC4	1.26248	1.26248	2.67373E-06		
nC4	5.02899	5.02899	1.67408E-05		
iC5	2.02788	2.02788	1.55117E-05		
nC5	2.88252	2.88252	2.72388E-05		
nC6	4.27605	4.27605	0.00024357		
nC7	2.51204	2.51204	0.000139627		
nC8	0.727784	0.727784	7.90819E-05		
nC9	0.324047	0.324047	7.60124E-05		
nC10	0	0	0		
H2O	53.2879	53.2879	0.99393		
TEG	0.0457334	0.0457334	98.9556		
Benzene	6.92841	6.92841	0.00645474		
Toluene	6.14866	6.14866	0.0137812		
Ethylbenzene	3.77965	3.77965	0.0182384		
m-Xylene	2.30606	2.30606	0.011365		
Cyclopentane	0	0	0		
Cyclohexane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	20 lb/h	21 lb/h	23 lb/h	24 lb/h	25 lb/h
H2S	8.47394E-06	8.47394E-06	7.23136E-09	0	0
CO2	8.8567E-06	8.8567E-06	4.97309E-10	0	0
N2	0.00466229	0.00466229	3.38729E-09	0	0
C1	4.04007	4.04007	1.60175E-05	0	0
C2	11.8862	11.8862	0.000253356	0	0
C3	22.3754	22.3754	0.00131135	0	0
iC4	5.71521	5.71521	0.000603423	0	0
nC4	22.7661	22.7661	0.00377817	0	0
iC5	9.18017	9.18017	0.00350076	0	0
nC5	13.0491	13.0491	0.0061474	0	0
nC6	19.3576	19.3576	0.0549701	0	0
nC7	11.3719	11.3719	0.0315119	0	0
nC8	3.29466	3.29466	0.0178476	0	0
nC9	1.46695	1.46695	0.0171549	0	0
nC10	0	0	0	0	0
H2O	241.233	241.233	224.316	0	0
TEG	0.207034	0.207034	22332.9	0	0
Benzene	31.3647	31.3647	1.45674	0	0
Toluene	27.8348	27.8348	3.11023	0	0
Ethylbenzene	17.1104	17.1104	4.11615	0	0
m-Xylene	10.4395	10.4395	2.56491	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	20	21	23	24	25
Temperature	°F	215 *	120 *	400		
Pressure	psia	15.6959	15.4959	16.6959	887.696	79.6959 *
Mole Fraction Vapor	%	100	15.8921	0		
Molecular Weight	lb/lbmol	27.13	27.13	139.932		
Mass Density	lb/ft^3	0.0593274	0.430436	58.0636		
Molar Flow	lbmol/h	16.6862	16.6862	161.282	0	0
Mass Flow	lb/h	452.697	452.697	22568.6	0	0
Std Vapor Volumetric Flow	MMSCFD	0.151972	0.151972	1.4689	0	0
Std Liquid Volumetric Flow	sgpm	1.13602	1.13602	39.9976	0	0
Specific Gravity		0.936729		0.930973		
API Gravity				-6.65927		
Gross Ideal Gas Heating Value	Btu/ft^3	713.029	713.029	3814.41		
Gross Liquid Heating Value	Btu/lb	9331.66	9331.66	10076.8		

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	26	27	28	29	30
From Block	E-2302	E-2204	P-2601/2	RCYL-1	--
To Block	MIX-100	P-2402/3	T-2701	MKUP-1	MKUP-1

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	1.67732E-07	1.31559E-10	0	1.30198E-10	0
CO2	2.421E-07	7.00637E-12	0	6.67336E-12	0
N2	0.0076463	7.4972E-11	0	7.46493E-11	0
C1	2.16495	6.19067E-07	6.16509E-07	6.16529E-07	0
C2	0.977014	5.22425E-06	5.20412E-06	5.20429E-06	0
C3	0.749401	1.8439E-05	1.8366E-05	1.83666E-05	0
iC4	0.118576	6.43713E-06	6.41183E-06	6.41204E-06	0
nC4	0.383221	4.03044E-05	4.01539E-05	4.01552E-05	0
iC5	0.102826	3.00848E-05	2.997E-05	2.9971E-05	0
nC5	0.137239	5.28293E-05	5.26311E-05	5.26328E-05	0
nC6	0.146675	0.000395509	0.000394227	0.00039424	0
nC7	0.0678794	0.000194989	0.000194285	0.000194291	0
nC8	0.0165876	9.68767E-05	9.65599E-05	9.65631E-05	0
nC9	0.00645217	8.29328E-05	8.26255E-05	8.26282E-05	0
nC10	0	0	0	0	0
H2O	14.0004	7.72025	7.71648	7.7167	0.827516
TEG	80.5331	92.2073	92.2094	92.2091	99.1725
Benzene	0.230007	0.0115632	0.0120301	0.0120305	0
Toluene	0.182876	0.0209298	0.0215798	0.0215805	0
Ethylbenzene	0.108612	0.0240394	0.024333	0.0243338	0
m-Xylene	0.0665344	0.0149797	0.0152807	0.0152812	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	4.5493E-08	3.20417E-11	0	3.17093E-11	0
CO2	8.4793E-08	2.20355E-12	0	2.09876E-12	0
N2	0.00170465	1.50089E-11	0	1.49439E-11	0
C1	0.2764	7.09728E-08	7.06775E-08	7.068E-08	0
C2	0.233797	1.1226E-06	1.11825E-06	1.11829E-06	0
C3	0.262983	5.81052E-06	5.78736E-06	5.78756E-06	0
iC4	0.0548476	2.67373E-06	2.66315E-06	2.66324E-06	0
nC4	0.17726	1.67408E-05	1.66779E-05	1.66785E-05	0
iC5	0.0590406	1.55117E-05	1.54521E-05	1.54526E-05	0
nC5	0.0788001	2.72388E-05	2.71358E-05	2.71367E-05	0
nC6	0.100591	0.00024357	0.000242773	0.000242782	0
nC7	0.0541294	0.000139627	0.000139119	0.000139124	0
nC8	0.0150791	7.90819E-05	7.88211E-05	7.88238E-05	0
nC9	0.00658565	7.60124E-05	7.57285E-05	7.57312E-05	0
nC10	0	0	0	0	0
H2O	2.00725	0.99393	0.993416	0.993447	0.1
TEG	96.2465	98.9556	98.955	98.955	99.9
Benzene	0.14298	0.00645474	0.00671517	0.00671541	0
Toluene	0.134096	0.0137812	0.0142089	0.0142094	0
Ethylbenzene	0.0917652	0.0182384	0.0184607	0.0184613	0
m-Xylene	0.0562143	0.011365	0.011593	0.0115934	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	1.05562E-05	7.23136E-09	0	7.15649E-09	0
CO2	1.96754E-05	4.97309E-10	0	4.7367E-10	0
N2	0.395548	3.38729E-09	0	3.37269E-09	0
C1	64.136	1.60175E-05	1.59518E-05	1.59518E-05	0
C2	54.2504	0.000253356	0.000252387	0.000252387	0
C3	61.0228	0.00131135	0.0013062	0.0013062	0
iC4	12.7269	0.000603423	0.000601068	0.000601068	0
nC4	41.1314	0.00377817	0.00376417	0.00376417	0
iC5	13.6998	0.00350076	0.00348751	0.00348751	0
nC5	18.2848	0.0061474	0.0061245	0.0061245	0
nC6	23.3411	0.0549701	0.0547935	0.0547935	0
nC7	12.5602	0.0315119	0.0313989	0.0313989	0
nC8	3.49897	0.0178476	0.0177898	0.0177898	0
nC9	1.52814	0.0171549	0.0170918	0.0170918	0
nC10	0	0	0	0	0
H2O	465.762	224.316	224.212	224.211	0.000791848
TEG	22333.1	22332.9	22334	22333.2	0.791056
Benzene	33.1772	1.45674	1.5156	1.5156	0
Toluene	31.1158	3.11023	3.20692	3.20692	0
Ethylbenzene	21.2932	4.11615	4.16654	4.16654	0
m-Xylene	13.044	2.56491	2.61652	2.61652	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	113.702	202.256	126.414	202.373	120 *
Pressure	psia	79.6959 *	11.6959	1004.7 *	64.6959	139.696 *
Mole Fraction Vapor	%	3.59944	0	0	0	0
Molecular Weight	lb/lbmol	125.655	139.932	139.936	139.936	149.079
Mass Density	lb/ft^3	27.748	65.6204	68.4473	65.6209	68.731
Molar Flow	lbmol/h	184.664	161.282	161.287	161.282	0.00531159
Mass Flow	lb/h	23204	22568.6	22569.8	22569	0.791848
Std Vapor Volumetric Flow	MMSCFD	1.68185	1.4689	1.46894	1.46889	4.83759E-05
Std Liquid Volumetric Flow	sgpm	42.0617	39.9976	40	39.9986	0.00140154
Specific Gravity			1.05214	1.09746	1.05214	1.10201
API Gravity			-6.65856	-6.79919	-6.6657	-7.10018
Gross Ideal Gas Heating Value	Btu/ft^3	3454.19	3814.41	3814.57	3814.56	4095.08
Gross Liquid Heating Value	Btu/lb	10158.2	10076.8	10077	10076.9	10163.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Connections

	31	32	33	34	
From Block	MKUP-1	P-2402/3	MKUP-1	AC-2501	
To Block	--	RCYL-1	AC-2501	P-2601/2	

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	
H2S	1.30198E-10	1.31559E-10	0	0	
CO2	6.67336E-12	7.00637E-12	0	0	
N2	7.46493E-11	7.4972E-11	0	0	
C1	6.16529E-07	6.19067E-07	6.16509E-07	6.16509E-07	
C2	5.20429E-06	5.22425E-06	5.20412E-06	5.20412E-06	
C3	1.83666E-05	1.8439E-05	1.8366E-05	1.8366E-05	
iC4	6.41204E-06	6.43713E-06	6.41183E-06	6.41183E-06	
nC4	4.01552E-05	4.03044E-05	4.01539E-05	4.01539E-05	
iC5	2.9971E-05	3.00848E-05	2.997E-05	2.997E-05	
nC5	5.26328E-05	5.28293E-05	5.26311E-05	5.26311E-05	
nC6	0.00039424	0.000395509	0.000394227	0.000394227	
nC7	0.000194291	0.000194989	0.000194285	0.000194285	
nC8	9.65631E-05	9.68767E-05	9.65599E-05	9.65599E-05	
nC9	8.26282E-05	8.29328E-05	8.26255E-05	8.26255E-05	
nC10	0	0	0	0	
H2O	7.7167	7.72025	7.71648	7.71648	
TEG	92.2091	92.2073	92.2094	92.2094	
Benzene	0.0120305	0.0115632	0.0120301	0.0120301	
Toluene	0.0215805	0.0209298	0.0215798	0.0215798	
Ethylbenzene	0.0243338	0.0240394	0.024333	0.024333	
m-Xylene	0.0152812	0.0149797	0.0152807	0.0152807	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

Mass Fraction	31 %	32 %	33 %	34 %	
H2S	3.17093E-11	3.20417E-11	0	0	
CO2	2.09876E-12	2.20355E-12	0	0	
N2	1.49439E-11	1.50089E-11	0	0	
C1	7.068E-08	7.09728E-08	7.06775E-08	7.06775E-08	
C2	1.11829E-06	1.1226E-06	1.11825E-06	1.11825E-06	
C3	5.78756E-06	5.81052E-06	5.78736E-06	5.78736E-06	
iC4	2.66324E-06	2.67373E-06	2.66315E-06	2.66315E-06	
nC4	1.66785E-05	1.67408E-05	1.66779E-05	1.66779E-05	
iC5	1.54526E-05	1.55117E-05	1.54521E-05	1.54521E-05	
nC5	2.71367E-05	2.72388E-05	2.71358E-05	2.71358E-05	
nC6	0.000242782	0.00024357	0.000242773	0.000242773	
nC7	0.000139124	0.000139627	0.000139119	0.000139119	
nC8	7.88238E-05	7.90819E-05	7.88211E-05	7.88211E-05	
nC9	7.57312E-05	7.60124E-05	7.57285E-05	7.57285E-05	
nC10	0	0	0	0	
H2O	0.993447	0.99393	0.993416	0.993416	
TEG	98.955	98.9556	98.955	98.955	
Benzene	0.00671541	0.00645474	0.00671517	0.00671517	
Toluene	0.0142094	0.0137812	0.0142089	0.0142089	
Ethylbenzene	0.0184613	0.0182384	0.0184607	0.0184607	
m-Xylene	0.0115934	0.011365	0.011593	0.011593	
Cyclopentane	0	0	0	0	
Cyclohexane	0	0	0	0	
SO2	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR1&3 TEG	

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h
H2S	0	7.23136E-09	0	0
CO2	0	4.97309E-10	0	0
N2	0	3.38729E-09	0	0
C1	0	1.60175E-05	1.59518E-05	1.59518E-05
C2	0	0.000253356	0.000252387	0.000252387
C3	0	0.00131135	0.0013062	0.0013062
iC4	0	0.000603423	0.000601068	0.000601068
nC4	0	0.00377817	0.00376417	0.00376417
iC5	0	0.00350076	0.00348751	0.00348751
nC5	0	0.0061474	0.0061245	0.0061245
nC6	0	0.0549701	0.0547935	0.0547935
nC7	0	0.0315119	0.0313989	0.0313989
nC8	0	0.0178476	0.0177898	0.0177898
nC9	0	0.0171549	0.0170918	0.0170918
nC10	0	0	0	0
H2O	0	224.316	224.212	224.212
TEG	0	22332.9	22334	22334
Benzene	0	1.45674	1.5156	1.5156
Toluene	0	3.11023	3.20692	3.20692
Ethylbenzene	0	4.11615	4.16654	4.16654
m-Xylene	0	2.56491	2.61652	2.61652
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

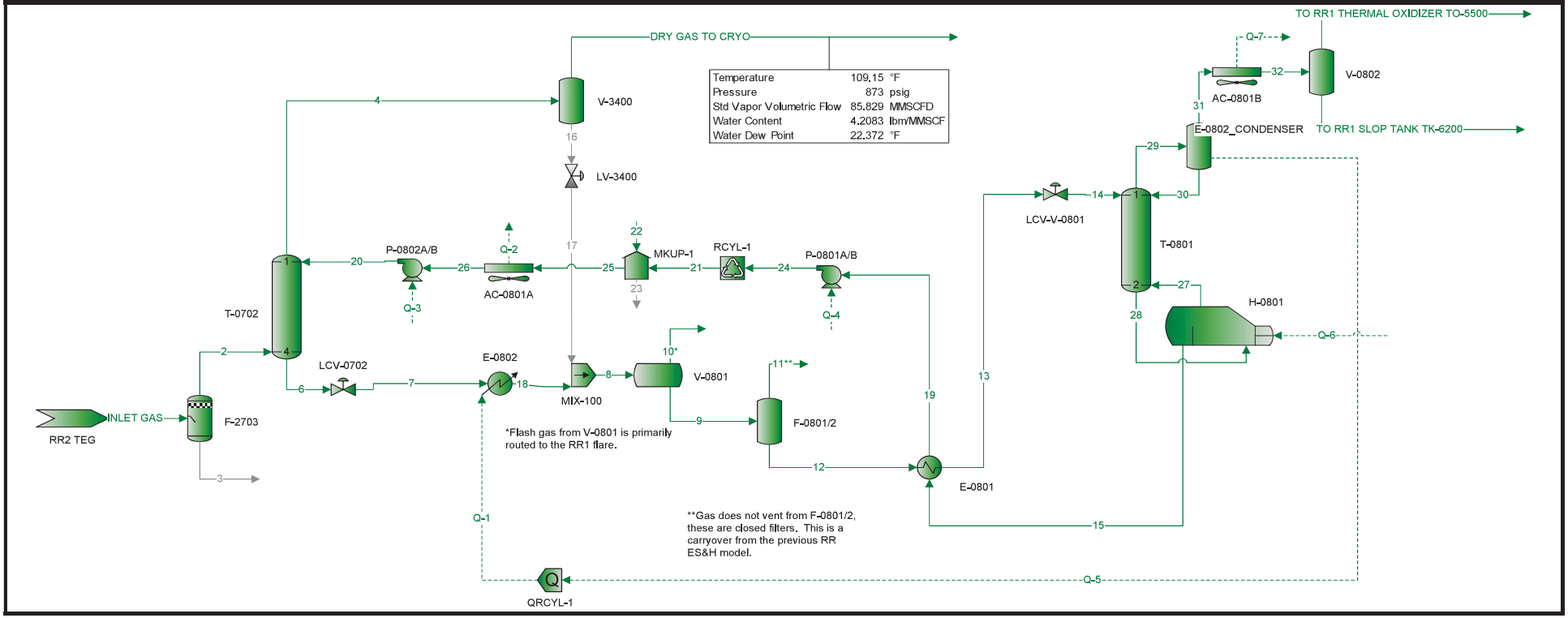
Property	Units	31	32	33	34
Temperature	°F	202.373	202.354	202.37	125 *
Pressure	psia	64.6959	64.6959 *	64.6959	59.6959
Mole Fraction Vapor	%	0	0	0	0
Molecular Weight	lb/lbmol	139.936	139.932	139.936	139.936
Mass Density	lb/ft^3	65.6209	65.6219	65.621	68.4154
Molar Flow	lbmol/h	0	161.282	161.287	161.287
Mass Flow	lb/h	0	22568.6	22569.8	22569.8
Std Vapor Volumetric Flow	MMSCFD	0	1.4689	1.46894	1.46894
Std Liquid Volumetric Flow	sgpm	0	39.9976	40 *	40
Specific Gravity			1.05216	1.05215	1.09695
API Gravity			-6.66612	-6.66571	-6.665
Gross Ideal Gas Heating Value	Btu/ft^3	3814.56	3814.41	3814.57	3814.57
Gross Liquid Heating Value	Btu/lb	10076.9	10076.8	10077	10077

Remarks

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RR2 TEG
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	



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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
From Block	V-3400	RR2 TEG	V-0802	V-0802	F-2703
To Block	--	F-2703	--	--	T-0702

Stream Composition

Mole Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	1.32981E-07	1.3593E-07	3.00578E-08	9.21615E-06	1.3593E-07
CO2	8.57101E-07	8.5971E-07	7.66302E-09	7.54338E-06	8.5971E-07
N2	1.0221	1.01972	4.34958E-07	0.00627346	1.01972
C1	78.0025	77.8518	0.00228631	9.48451	77.8518
C2	11.8758	11.8655	0.0184933	14.809	11.8655
C3	5.56719	5.56806	0.0668829	18.7817	5.56806
iC4	0.761636	0.762069	0.0286862	3.55637	0.762069
nC4	1.66622	1.66959	0.164888	13.8987	1.66959
iC5	0.352525	0.353662	0.115749	4.18583	0.353662
nC5	0.37549	0.377243	0.201935	5.75204	0.377243
nC6	0.256404	0.25863	0.58052	5.39912	0.25863
nC7	0.0720853	0.0732305	0.498082	1.64426	0.0732305
nC8	0.0121723	0.0124648	0.168344	0.196909	0.0124648
nC9	0.00315254	0.00326945	0.0742908	0.0382272	0.00326945
nC10	0	0	0	0	0
H2O	0.00886381	0.150741	93.3469	10.91	0.150741
TEG	6.44808E-05	0	0.00982543	6.48673E-08	0
Benzene	0.0136065	0.0178645	1.47415	7.3452	0.0178645
Toluene	0.00616708	0.00935903	1.59327	2.96456	0.00935903
Ethylbenzene	0.00242132	0.00412329	1.02881	0.635006	0.00412329
m-Xylene	0.00157424	0.00261043	0.626914	0.392263	0.00261043
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
H2S	2.14838E-07	2.19447E-07	4.47867E-08	6.32327E-06	2.19447E-07
CO2	1.78809E-06	1.79227E-06	1.47444E-08	6.68335E-06	1.79227E-06
N2	1.35728	1.35316	5.32713E-07	0.00353798	1.35316
C1	59.3186	59.1621	0.00160356	3.06315	59.1621
C2	16.9276	16.9009	0.0243117	8.96454	16.9009
C3	11.6371	11.6306	0.128941	16.673	11.6306
iC4	2.09846	2.09817	0.0728946	4.16131	2.09817
nC4	4.59077	4.5968	0.418998	16.2629	4.5968
iC5	1.20567	1.20871	0.365113	6.07985	1.20871
nC5	1.28422	1.2893	0.636973	8.35473	1.2893
nC6	1.04742	1.05576	2.18716	9.36672	1.05576
nC7	0.3424	0.347594	2.18201	3.31686	0.347594
nC8	0.0659114	0.0674474	0.840722	0.452816	0.0674474
nC9	0.0191667	0.0198634	0.416572	0.0987026	0.0198634
nC10	0	0	0	0	0
H2O	0.0075696	0.12864	73.5227	3.95681	0.12864
TEG	0.000459022	0	0.0645095	1.9611E-07	0
Benzene	0.050382	0.0661016	5.03429	11.5505	0.0661016
Toluene	0.0269359	0.0408485	6.41816	5.49899	0.0408485

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Fraction	DRY GAS TO CRYO %	INLET GAS %	TO RR1 SLOP TANK TK-6200 %	TO RR1 THERMAL OXIDIZER TO-5500 %	2 %
Ethylbenzene	0.0121855	0.0207362	4.77524	1.35719	0.0207362
m-Xylene	0.00792251	0.013128	2.90984	0.838379	0.013128
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Flow	DRY GAS TO CRYO lb/h	INLET GAS lb/h	TO RR1 SLOP TANK TK-6200 lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h	2 lb/h
H2S	0.000427097	0.000437652	1.43745E-07	8.3293E-06	0.000437652
CO2	0.00355472	0.00357439	4.73227E-08	8.8036E-06	0.00357439
N2	2698.27	2698.67	1.70976E-06	0.00466038	2698.67
C1	117925	117989	0.0051467	4.03491	117989
C2	33652	33706.2	0.0780293	11.8085	33706.2
C3	23134.4	23195.5	0.413841	21.9624	23195.5
iC4	4171.73	4184.46	0.233958	5.48146	4184.46
nC4	9126.45	9167.58	1.34479	21.4222	9167.58
iC5	2396.88	2410.58	1.17184	8.00865	2410.58
nC5	2553.02	2571.3	2.04439	11.0052	2571.3
nC6	2082.26	2105.55	7.01978	12.3383	2105.55
nC7	680.691	693.221	7.00326	4.36912	693.221
nC8	131.032	134.513	2.69833	0.596469	134.513
nC9	38.1033	39.6144	1.337	0.130015	39.6144
nC10	0	0	0	0	0
H2O	15.0484	256.552	235.974	5.21209	256.552
TEG	0.912535	0	0.207046	2.58325E-07	0
Benzene	100.159	131.829	16.1577	15.2149	131.829
Toluene	53.5486	81.4657	20.5993	7.24351	81.4657
Ethylbenzene	24.2248	41.355	15.3263	1.78775	41.355
m-Xylene	15.7499	26.1816	9.33926	1.10435	26.1816
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	DRY GAS TO CRYO	INLET GAS	TO RR1 SLOP TANK TK-6200	TO RR1 THERMAL OXIDIZER TO-5500	2
Temperature	°F	109.146	105.31	120	120	105.179
Pressure	psia	887.696	893.696	15.4959	15.4959	891.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.0954	21.1104	22.8728	49.6728	21.1104
Mass Density	lb/ft^3	3.68822	3.76784	57.5754	0.125912	3.75951
Molar Flow	lbmol/h	9423.83	9447.2	14.0321	2.65184	9447.2
Mass Flow	lb/h	198800	199434	320.954	131.724	199434
Std Vapor Volumetric Flow	MMSCFD	85.8286	86.0415	0.127799	0.024152	86.0415
Std Liquid Volumetric Flow	sgpm	1143.85	1145.92	0.683058	0.452936	1145.92
Specific Gravity		0.728371	0.728886	0.923145	1.71507	0.728886
API Gravity				18.7589		
Gross Ideal Gas Heating Value	Btu/ft^3	1264.49	1263.76	351.681	2626.16	1263.76
Gross Liquid Heating Value	Btu/lb	22685.5	22654.8	5009.4	19868.4	22654.8

Warnings
ProMax:ProMax!Project!Flowsheets!RR2 TEG!PStreams!DRY GAS TO CRYO!Analyses!Freeze 1!Properties!Water Dew Point

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Warning: Water dew point temperature is thermodynamically unstable as other phases will form instead of a free aqueous liquid phase.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	3	4	6	7	8
From Block	F-2703	T-0702	T-0702	LCV-0702	MIX-100
To Block	--	V-3400	LCV-0702	E-0802	V-0801

Stream Composition

Mole Fraction	3 %	4 %	6 %	7 %	8 %
H2S		1.32981E-07	1.67715E-07	1.67715E-07	1.67715E-07
CO2		8.57101E-07	2.41941E-07	2.41941E-07	2.41941E-07
N2		1.0221	0.00764626	0.00764626	0.00764626
C1		78.0025	2.16497	2.16497	2.16497
C2		11.8758	0.977035	0.977035	0.977035
C3		5.56719	0.749421	0.749421	0.749421
iC4		0.761636	0.118579	0.118579	0.118579
nC4		1.66622	0.383233	0.383233	0.383233
iC5		0.352525	0.102829	0.102829	0.102829
nC5		0.37549	0.137244	0.137244	0.137244
nC6		0.256404	0.146679	0.146679	0.146679
nC7		0.0720853	0.0678826	0.0678826	0.0678826
nC8		0.0121723	0.0165884	0.0165884	0.0165884
nC9		0.00315254	0.00645253	0.00645253	0.00645253
nC10		0	0	0	0
H2O		0.00886381	13.9991	13.9991	13.9991
TEG		6.44808E-05	80.5341	80.5341	80.5341
Benzene		0.0136065	0.23007	0.23007	0.23007
Toluene		0.00616708	0.182936	0.182936	0.182936
Ethylbenzene		0.00242132	0.108642	0.108642	0.108642
m-Xylene		0.00157424	0.0665645	0.0665645	0.0665645
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	3 %	4 %	6 %	7 %	8 %
H2S		2.14838E-07	4.54878E-08	4.54878E-08	4.54878E-08
CO2		1.78809E-06	8.47362E-08	8.47362E-08	8.47362E-08
N2		1.35728	0.00170462	0.00170462	0.00170462
C1		59.3186	0.276399	0.276399	0.276399
C2		16.9276	0.233799	0.233799	0.233799
C3		11.6371	0.262987	0.262987	0.262987
iC4		2.09846	0.0548484	0.0548484	0.0548484
nC4		4.59077	0.177263	0.177263	0.177263
iC5		1.20567	0.0590417	0.0590417	0.0590417
nC5		1.28422	0.078802	0.078802	0.078802
nC6		1.04742	0.100592	0.100592	0.100592
nC7		0.3424	0.0541313	0.0541313	0.0541313
nC8		0.0659114	0.0150797	0.0150797	0.0150797
nC9		0.0191667	0.00658595	0.00658595	0.00658595
nC10		0	0	0	0
H2O		0.0075696	2.00704	2.00704	2.00704
TEG		0.000459022	96.2465	96.2465	96.2465
Benzene		0.050382	0.143018	0.143018	0.143018
Toluene		0.0269359	0.134138	0.134138	0.134138
Ethylbenzene		0.0121855	0.091789	0.091789	0.091789
m-Xylene		0.00792251	0.056239	0.056239	0.056239
Cyclopentane		0	0	0	0
Cyclohexane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	3 lb/h	4 lb/h	6 lb/h	7 lb/h	8 lb/h
H2S	0	0.000427097	1.0555E-05	1.0555E-05	1.0555E-05
CO2	0	0.00355472	1.96622E-05	1.96622E-05	1.96622E-05
N2	0	2698.27	0.395541	0.395541	0.395541
C1	0	117925	64.1357	64.1357	64.1357
C2	0	33652	54.2508	54.2508	54.2508
C3	0	23134.4	61.0236	61.0236	61.0236
iC4	0	4171.73	12.727	12.727	12.727
nC4	0	9126.45	41.1322	41.1322	41.1322
iC5	0	2396.88	13.7	13.7	13.7
nC5	0	2553.02	18.2852	18.2852	18.2852
nC6	0	2082.26	23.3414	23.3414	23.3414
nC7	0	680.691	12.5606	12.5606	12.5606
nC8	0	131.032	3.4991	3.4991	3.4991
nC9	0	38.1033	1.52821	1.52821	1.52821
nC10	0	0	0	0	0
H2O	0	15.0484	465.713	465.713	465.713
TEG	0	0.912535	22333.1	22333.1	22333.1
Benzene	0	100.159	33.1859	33.1859	33.1859
Toluene	0	53.5486	31.1255	31.1255	31.1255
Ethylbenzene	0	24.2248	21.2987	21.2987	21.2987
m-Xylene	0	15.7499	13.0497	13.0497	13.0497
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	3	4	6	7	8
Temperature	°F		109.275	107.222	110.492	113.698
Pressure	psia	891.696	889.696	891.696	82.6959	79.6959
Mole Fraction Vapor	%		100	0	3.55422	3.59947
Molecular Weight	lb/lbmol		21.0954	125.657	125.657	125.657
Mass Density	lb/ft^3		3.69644	67.4403	28.7007	27.7482
Molar Flow	lbmol/h	0	9423.83	184.662	184.662	184.662
Mass Flow	lb/h	0	198800	23204	23204	23204
Std Vapor Volumetric Flow	MMSCFD	0	85.8286	1.68183	1.68183	1.68183
Std Liquid Volumetric Flow	sgpm	0	1143.85	42.0617	42.0617	42.0617
Specific Gravity			0.728371	1.08132		
API Gravity				-3.60559		
Gross Ideal Gas Heating Value	Btu/ft^3		1264.49	3454.24	3454.24	3454.24
Gross Liquid Heating Value	Btu/lb		22685.5	10158.2	10158.2	10158.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	9	10*	11**	12	13
From Block	V-0801	V-0801	F-0801/2	F-0801/2	E-0801
To Block	F-0801/2	--	--	E-0801	LCV-V-0801

Stream Composition

Mole Fraction	9 %	10* %	11** %	12 %	13 %
H2S	1.40042E-07	9.0883E-07	9.65981E-07	1.39817E-07	1.39817E-07
CO2	1.14036E-07	3.66746E-06	3.87191E-06	1.13013E-07	1.13013E-07
N2	0.000135378	0.208801	0.153884	9.35142E-05	9.35142E-05
C1	0.156183	55.964	54.0522	0.141508	0.141508
C2	0.228007	21.0374	21.8146	0.22213	0.22213
C3	0.288815	13.0853	13.7343	0.285154	0.285154
iC4	0.0557613	1.80096	1.89532	0.0552604	0.0552604
nC4	0.221435	4.71649	4.97851	0.220139	0.220139
iC5	0.0717754	0.934506	0.987357	0.0715261	0.0715261
nC5	0.101964	1.08212	1.14423	0.10168	0.10168
nC6	0.126744	0.680582	0.719815	0.126582	0.126582
nC7	0.063982	0.172347	0.182207	0.0639499	0.0639499
nC8	0.0162979	0.0243691	0.025739	0.0162954	0.0162954
nC9	0.00650211	0.00512495	0.0054067	0.0065024	0.0065024
nC10	0	0	0	0	0
H2O	14.5152	0.177305	0.189047	14.5191	14.5191
TEG	83.5411	9.72375E-05	0.000102562	83.5639	83.5639
Benzene	0.236121	0.0679971	0.0721021	0.236166	0.236166
Toluene	0.188733	0.0276686	0.0293053	0.188777	0.188777
Ethylbenzene	0.112348	0.00938013	0.009924	0.112376	0.112376
m-Xylene	0.068842	0.00556906	0.00588939	0.0688591	0.0688591
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	9 %	10* %	11** %	12 %	13 %
H2S	3.69039E-08	1.13476E-06	1.18266E-06	3.68367E-08	3.68367E-08
CO2	3.88054E-08	5.91317E-06	6.12144E-06	3.8449E-08	3.8449E-08
N2	2.93234E-05	0.214293	0.154861	2.02513E-05	2.02513E-05
C1	0.0193734	32.8919	31.1506	0.0175493	0.0175493
C2	0.0530115	23.175	23.5639	0.0516339	0.0516339
C3	0.0984729	21.1392	21.7563	0.0972039	0.0972039
iC4	0.0250598	3.8349	3.95737	0.0248294	0.0248294
nC4	0.0995153	10.0431	10.395	0.0989121	0.0989121
iC5	0.0400412	2.47013	2.55908	0.0398936	0.0398936
nC5	0.0568823	2.86032	2.96569	0.0567118	0.0567118
nC6	0.0844522	2.14868	2.22836	0.0843266	0.0843266
nC7	0.049572	0.632689	0.655876	0.0495365	0.0495365
nC8	0.0143949	0.101982	0.10562	0.0143896	0.0143896
nC9	0.00644808	0.0240809	0.0249108	0.006447	0.006447
nC10	0	0	0	0	0
H2O	2.02193	0.117023	0.122347	2.02204	2.02204
TEG	97.005	0.000534976	0.000553298	97.0107	97.0107
Benzene	0.142611	0.194588	0.202323	0.142608	0.142608
Toluene	0.134459	0.0933979	0.0969991	0.134461	0.134461
Ethylbenzene	0.0922249	0.0364837	0.0378486	0.0922281	0.0922281
m-Xylene	0.0565115	0.0216607	0.0224612	0.0565135	0.0565135
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	9 lb/h	10* lb/h	11** lb/h	12 lb/h	13 lb/h
H2S	8.49623E-06	2.05878E-06	1.59529E-08	8.48027E-06	8.48027E-06
CO2	8.934E-06	1.07282E-05	8.25719E-08	8.85142E-06	8.85142E-06
N2	0.00675101	0.38879	0.00208891	0.00466209	0.00466209
C1	4.46026	59.6754	0.420189	4.04008	4.04008
C2	12.2046	42.0462	0.317853	11.8868	11.8868
C3	22.671	38.3526	0.29347	22.3775	22.3775
iC4	5.76941	6.95763	0.0533808	5.71603	5.71603
nC4	22.911	18.2212	0.140217	22.7708	22.7708
iC5	9.21851	4.48154	0.0345194	9.18399	9.18399
nC5	13.0958	5.18946	0.0400041	13.0558	13.0558
nC6	19.4431	3.89834	0.0300583	19.413	19.413
nC7	11.4128	1.14788	0.0088471	11.4039	11.4039
nC8	3.31408	0.185025	0.00142471	3.31265	3.31265
nC9	1.48452	0.0436898	0.000336021	1.48418	1.48418
nC10	0	0	0	0	0
H2O	465.501	0.212314	0.00165033	465.499	465.499
TEG	22333.1	0.000970602	7.46343E-06	22333.1	22333.1
Benzene	32.8328	0.353039	0.00272914	32.8301	32.8301
Toluene	30.956	0.169451	0.00130842	30.9547	30.9547
Ethylbenzene	21.2325	0.0661921	0.000510538	21.232	21.232
m-Xylene	13.0104	0.0392988	0.000302978	13.0101	13.0101
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	9	10*	11**	12	13
Temperature	°F	113.698	113.698	113.716	113.716	315 *
Pressure	psia	79.6959	79.6959	74.6959	74.6959	73.6959
Mole Fraction Vapor	%	0	100	100	0	0.390577
Molecular Weight	lb/lbmol	129.33	27.2955	27.8368	129.357	129.357
Mass Density	lb/ft^3	68.2039	0.363818	0.347512	68.2108	50.7682
Molar Flow	lbmol/h	178.015	6.64685	0.0484574	177.966	177.966
Mass Flow	lb/h	23022.6	181.429	1.3489	23021.2	23021.2
Std Vapor Volumetric Flow	MMSCFD	1.62129	0.060537	0.000441332	1.62085	1.62085
Std Liquid Volumetric Flow	sgpm	41.1404	0.921295	0.00678868	41.1336	41.1336
Specific Gravity		1.09356	0.942443	0.961131	1.09367	
API Gravity		-5.39693			-5.41054	
Gross Ideal Gas Heating Value	Btu/ft^3	3523.17	1608.36	1638.15	3523.68	3523.68
Gross Liquid Heating Value	Btu/lb	10062.9	22254.7	22223.1	10062.2	10062.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	14	15	16	17	18
From Block	LCV-V-0801	H-0801	V-3400	LV-3400	E-0802
To Block	T-0801	E-0801	LV-3400	MIX-100	MIX-100

Stream Composition

Mole Fraction	14 %	15 %	16 %	17 %	18 %
H2S	1.39817E-07	1.31574E-10			1.67715E-07
CO2	1.13013E-07	7.00317E-12			2.41941E-07
N2	9.35142E-05	7.49824E-11			0.00764626
C1	0.141508	6.1918E-07			2.16497
C2	0.22213	5.22538E-06			0.977035
C3	0.285154	1.84432E-05			0.749421
iC4	0.0552604	6.43864E-06			0.118579
nC4	0.220139	4.0314E-05			0.383233
iC5	0.0715261	3.00919E-05			0.102829
nC5	0.10168	5.28422E-05			0.137244
nC6	0.126582	0.000395605			0.146679
nC7	0.0639499	0.00019504			0.0678826
nC8	0.0162954	9.69023E-05			0.0165884
nC9	0.0065024	8.29555E-05			0.00645253
nC10	0	0			0
H2O	14.5191	7.72018			13.9991
TEG	83.5639	92.2073			80.5341
Benzene	0.236166	0.0115688			0.23007
Toluene	0.188777	0.0209406			0.182936
Ethylbenzene	0.112376	0.0240499			0.108642
m-Xylene	0.0688591	0.014989			0.0665645
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

Mass Fraction	14 %	15 %	16 %	17 %	18 %
H2S	3.68367E-08	3.20454E-11			4.54878E-08
CO2	3.8449E-08	2.20254E-12			8.47362E-08
N2	2.02513E-05	1.5011E-11			0.00170462
C1	0.0175493	7.09857E-08			0.276399
C2	0.0516339	1.12285E-06			0.233799
C3	0.0972039	5.81186E-06			0.262987
iC4	0.0248294	2.67436E-06			0.0548484
nC4	0.0989121	1.67448E-05			0.177263
iC5	0.0398936	1.55153E-05			0.0590417
nC5	0.0567118	2.72454E-05			0.078802
nC6	0.0843266	0.000243629			0.100592
nC7	0.0495365	0.000139663			0.0541313
nC8	0.0143896	7.91028E-05			0.0150797
nC9	0.006447	7.60331E-05			0.00658595
nC10	0	0			0
H2O	2.02204	0.99392			2.00704
TEG	97.0107	98.9556			96.2465
Benzene	0.142608	0.00645787			0.143018
Toluene	0.134461	0.0137884			0.134138
Ethylbenzene	0.0922281	0.0182464			0.091789
m-Xylene	0.0565135	0.011372			0.056239
Cyclopentane	0	0			0
Cyclohexane	0	0			0
SO2	0	0			0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	14 lb/h	15 lb/h	16 lb/h	17 lb/h	18 lb/h
H2S	8.48027E-06	7.23218E-09	0	0	1.0555E-05
CO2	8.85142E-06	4.97082E-10	0	0	1.96622E-05
N2	0.00466209	3.38776E-09	0	0	0.395541
C1	4.04008	1.60204E-05	0	0	64.1357
C2	11.8868	0.00025341	0	0	54.2508
C3	22.3775	0.00131165	0	0	61.0236
iC4	5.71603	0.000603564	0	0	12.727
nC4	22.7708	0.00377907	0	0	41.1322
iC5	9.18399	0.00350159	0	0	13.7
nC5	13.0558	0.00614889	0	0	18.2852
nC6	19.413	0.0549835	0	0	23.3414
nC7	11.4039	0.03152	0	0	12.5606
nC8	3.31265	0.0178524	0	0	3.4991
nC9	1.48418	0.0171596	0	0	1.52821
nC10	0	0	0	0	0
H2O	465.499	224.313	0	0	465.713
TEG	22333.1	22332.9	0	0	22333.1
Benzene	32.8301	1.45745	0	0	33.1859
Toluene	30.9547	3.11184	0	0	31.1255
Ethylbenzene	21.232	4.11795	0	0	21.2987
m-Xylene	13.0101	2.5665	0	0	13.0497
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	14	15	16	17	18
Temperature	°F	311.176	400			113.698
Pressure	psia	15.6959 *	16.6959	887.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	3.09541	0			3.59947
Molecular Weight	lb/lbmol	129.357	139.932			125.657
Mass Density	lb/ft^3	7.06686	58.0636			27.7482
Molar Flow	lbmol/h	177.966	161.282	0	0	184.662
Mass Flow	lb/h	23021.2	22568.6	0	0	23204
Std Vapor Volumetric Flow	MMSCFD	1.62085	1.4689	0	0	1.68183
Std Liquid Volumetric Flow	sgpm	41.1336	39.9976	0	0	42.0617
Specific Gravity			0.930973			
API Gravity			-6.65927			
Gross Ideal Gas Heating Value	Btu/ft^3	3523.68	3814.41			3454.24
Gross Liquid Heating Value	Btu/lb	10062.2	10076.8			10158.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	19	20	21	22	23
From Block	E-0801	P-0802A/B	RCYL-1	--	MKUP-1
To Block	P-0801A/B	T-0702	MKUP-1	MKUP-1	--

Stream Composition

Mole Fraction	19 %	20 %	21 %	22 %	23 %
H2S	1.31574E-10	0	1.30214E-10	0	1.30214E-10
CO2	7.00317E-12	0	6.67012E-12	0	6.67012E-12
N2	7.49824E-11	0	7.46607E-11	0	7.46607E-11
C1	6.1918E-07	6.16624E-07	6.16645E-07	0	6.16645E-07
C2	5.22538E-06	5.20525E-06	5.20543E-06	0	5.20543E-06
C3	1.84432E-05	1.83702E-05	1.83708E-05	0	1.83708E-05
iC4	6.43864E-06	6.41333E-06	6.41355E-06	0	6.41355E-06
nC4	4.0314E-05	4.01634E-05	4.01647E-05	0	4.01647E-05
iC5	3.00919E-05	2.9977E-05	2.99781E-05	0	2.99781E-05
nC5	5.28422E-05	5.26437E-05	5.26455E-05	0	5.26455E-05
nC6	0.000395605	0.000394324	0.000394337	0	0.000394337
nC7	0.00019504	0.000194334	0.000194341	0	0.000194341
nC8	9.69023E-05	9.65849E-05	9.65882E-05	0	9.65882E-05
nC9	8.29555E-05	8.26475E-05	8.26503E-05	0	8.26503E-05
nC10	0	0	0	0	0
H2O	7.72018	7.7164	7.71664	0.827516	7.71664
TEG	92.2073	92.2094	92.2092	99.1725	92.2092
Benzene	0.0115688	0.012035	0.0120354	0	0.0120354
Toluene	0.0209406	0.0215892	0.02159	0	0.02159
Ethylbenzene	0.0240499	0.0243446	0.0243454	0	0.0243454
m-Xylene	0.014989	0.0152897	0.0152902	0	0.0152902
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	19 %	20 %	21 %	22 %	23 %
H2S	3.20454E-11	0	3.17132E-11	0	3.17132E-11
CO2	2.20254E-12	0	2.09774E-12	0	2.09774E-12
N2	1.5011E-11	0	1.49462E-11	0	1.49462E-11
C1	7.09857E-08	7.06907E-08	7.06933E-08	0	7.06933E-08
C2	1.12285E-06	1.11849E-06	1.11853E-06	0	1.11853E-06
C3	5.81186E-06	5.78868E-06	5.78888E-06	0	5.78888E-06
iC4	2.67436E-06	2.66377E-06	2.66386E-06	0	2.66386E-06
nC4	1.67448E-05	1.66818E-05	1.66824E-05	0	1.66824E-05
iC5	1.55153E-05	1.54557E-05	1.54562E-05	0	1.54562E-05
nC5	2.72454E-05	2.71423E-05	2.71433E-05	0	2.71433E-05
nC6	0.000243629	0.000242833	0.000242841	0	0.000242841
nC7	0.000139663	0.000139154	0.000139159	0	0.000139159
nC8	7.91028E-05	7.88415E-05	7.88443E-05	0	7.88443E-05
nC9	7.60331E-05	7.57487E-05	7.57514E-05	0	7.57514E-05
nC10	0	0	0	0	0
H2O	0.99392	0.993406	0.993438	0.1	0.993438
TEG	98.9556	98.955	98.955	99.9	98.955
Benzene	0.00645787	0.00671788	0.00671812	0	0.00671812
Toluene	0.0137884	0.0142151	0.0142156	0	0.0142156
Ethylbenzene	0.0182464	0.0184695	0.0184701	0	0.0184701
m-Xylene	0.011372	0.0115998	0.0116002	0	0.0116002
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	19 lb/h	20 lb/h	21 lb/h	22 lb/h	23 lb/h
H2S	7.23218E-09	0	7.15737E-09	0	0
CO2	4.97082E-10	0	4.73439E-10	0	0
N2	3.38776E-09	0	3.3732E-09	0	0
C1	1.60204E-05	1.59548E-05	1.59548E-05	0	0
C2	0.00025341	0.000252441	0.000252441	0	0
C3	0.00131165	0.00130649	0.00130649	0	0
iC4	0.000603564	0.000601208	0.000601208	0	0
nC4	0.00377907	0.00376505	0.00376505	0	0
iC5	0.00350159	0.00348832	0.00348832	0	0
nC5	0.00614889	0.00612597	0.00612597	0	0
nC6	0.0549835	0.0548069	0.0548069	0	0
nC7	0.03152	0.0314068	0.0314068	0	0
nC8	0.0178524	0.0177944	0.0177944	0	0
nC9	0.0171596	0.0170963	0.0170963	0	0
nC10	0	0	0	0	0
H2O	224.313	224.21	224.209	0.000810663	0
TEG	22332.9	22334	22333.2	0.809852	0
Benzene	1.45745	1.51621	1.51621	0	0
Toluene	3.11184	3.20832	3.20832	0	0
Ethylbenzene	4.11795	4.16853	4.16853	0	0
m-Xylene	2.5665	2.61805	2.61805	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	19	20	21	22	23
Temperature	°F	202.252	126.414	202.37	120 *	202.37
Pressure	psia	11.6959	1004.7 *	64.6959	139.696 *	64.6959
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	139.932	139.936	139.936	149.079	139.936
Mass Density	lb/ft^3	65.6205	68.4473	65.621	68.731	65.621
Molar Flow	lbmol/h	161.282	161.287	161.281	0.00543779	0
Mass Flow	lb/h	22568.6	22569.8	22569	0.810663	0
Std Vapor Volumetric Flow	MMSCFD	1.4689	1.46894	1.46889	4.95253E-05	0
Std Liquid Volumetric Flow	sgpm	39.9976	40	39.9986	0.00143484	0
Specific Gravity		1.05214	1.09746	1.05215	1.10201	
API Gravity		-6.65855	-6.79918	-6.66569	-7.10018	
Gross Ideal Gas Heating Value	Btu/ft^3	3814.41	3814.57	3814.56	4095.08	3814.56
Gross Liquid Heating Value	Btu/lb	10076.8	10077	10077	10163.6	10077

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	24	25	26	27	28
From Block	P-0801A/B	MKUP-1	AC-0801A	H-0801	T-0801
To Block	RCYL-1	AC-0801A	P-0802A/B	T-0801	H-0801

Stream Composition

Mole Fraction	24 %	25 %	26 %	27 %	28 %
H2S	1.31574E-10	0	0	1.86497E-08	2.49551E-09
CO2	7.00317E-12	0	0	2.93517E-09	3.80801E-10
N2	7.49824E-11	0	0	2.0442E-07	2.61608E-08
C1	6.1918E-07	6.16624E-07	6.16624E-07	0.000798824	0.000102515
C2	5.22538E-06	5.20525E-06	5.20525E-06	0.00338704	0.000436934
C3	1.84432E-05	1.83702E-05	1.83702E-05	0.00799434	0.00103661
iC4	6.43864E-06	6.41333E-06	6.41333E-06	0.00220907	0.000287617
nC4	4.0314E-05	4.01634E-05	4.01634E-05	0.0115345	0.00150761
iC5	3.00919E-05	2.9977E-05	2.9977E-05	0.00628137	0.000828103
nC5	5.28422E-05	5.26437E-05	5.26437E-05	0.0101412	0.00134067
nC6	0.000395605	0.000394324	0.000394324	0.0349508	0.00480677
nC7	0.00019504	0.000194334	0.000194334	0.0190491	0.00260186
nC8	9.69023E-05	9.65849E-05	9.65849E-05	0.00745759	0.00103654
nC9	8.29555E-05	8.26475E-05	8.26475E-05	0.00474366	0.000677921
nC10	0	0	0	0	0
H2O	7.72018	7.7164	7.7164	91.0839	18.362
TEG	92.2073	92.2094	92.2094	7.20933	81.3569
Benzene	0.0115688	0.012035	0.012035	0.389085	0.059761
Toluene	0.0209406	0.0215892	0.0215892	0.510479	0.083433
Ethylbenzene	0.0240499	0.0243446	0.0243446	0.430232	0.0759014
m-Xylene	0.014989	0.0152897	0.0152897	0.268397	0.047338
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	24 %	25 %	26 %	27 %	28 %
H2S	3.20454E-11	0	0	2.20389E-08	6.76335E-10
CO2	2.20254E-12	0	0	4.47908E-09	1.33271E-10
N2	1.5011E-11	0	0	1.98562E-07	5.82783E-09
C1	7.09857E-08	7.06907E-08	7.06907E-08	0.000444355	1.30782E-05
C2	1.12285E-06	1.11849E-06	1.11849E-06	0.00353141	0.000104478
C3	5.81186E-06	5.78868E-06	5.78868E-06	0.0122232	0.000363498
iC4	2.67436E-06	2.66377E-06	2.66377E-06	0.00445205	0.000132937
nC4	1.67448E-05	1.66818E-05	1.66818E-05	0.023246	0.000696821
iC5	1.55153E-05	1.54557E-05	1.54557E-05	0.0157142	0.000475121
nC5	2.72454E-05	2.71423E-05	2.71423E-05	0.0253703	0.000769206
nC6	0.000243629	0.000242833	0.000242833	0.104436	0.00329403
nC7	0.000139663	0.000139154	0.000139154	0.0661847	0.00207325
nC8	7.91028E-05	7.88415E-05	7.88415E-05	0.029538	0.000941564
nC9	7.60331E-05	7.57487E-05	7.57487E-05	0.0210958	0.000691424
nC10	0	0	0	0	0
H2O	0.99392	0.993406	0.993406	56.8972	2.63059
TEG	98.9556	98.955	98.955	37.54	97.1576
Benzene	0.00645787	0.00671788	0.00671788	1.05383	0.0371215
Toluene	0.0137884	0.0142151	0.0142151	1.6309	0.0611321
Ethylbenzene	0.0182464	0.0184695	0.0184695	1.58377	0.0640799
m-Xylene	0.011372	0.0115998	0.0115998	0.988024	0.0399652
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	24 lb/h	25 lb/h	26 lb/h	27 lb/h	28 lb/h
H2S	7.23218E-09	0	0	1.5001E-07	1.57242E-07
CO2	4.97082E-10	0	0	3.04873E-08	3.09844E-08
N2	3.38776E-09	0	0	1.35154E-06	1.35492E-06
C1	1.60204E-05	1.59548E-05	1.59548E-05	0.00302455	0.00304057
C2	0.00025341	0.000252441	0.000252441	0.024037	0.0242904
C3	0.00131165	0.00130649	0.00130649	0.0831988	0.0845105
iC4	0.000603564	0.000601208	0.000601208	0.0303034	0.0309069
nC4	0.00377907	0.00376505	0.00376505	0.158226	0.162005
iC5	0.00350159	0.00348832	0.00348832	0.10696	0.110462
nC5	0.00614889	0.00612597	0.00612597	0.172685	0.178834
nC6	0.0549835	0.0548069	0.0548069	0.710852	0.765836
nC7	0.03152	0.0314068	0.0314068	0.450494	0.482014
nC8	0.0178524	0.0177944	0.0177944	0.201054	0.218906
nC9	0.0171596	0.0170963	0.0170963	0.143591	0.160751
nC10	0	0	0	0	0
H2O	224.313	224.21	224.21	387.277	611.591
TEG	22332.9	22334	22334	255.52	22588.4
Benzene	1.45745	1.51621	1.51621	7.173	8.63045
Toluene	3.11184	3.20832	3.20832	11.1009	14.2127
Ethylbenzene	4.11795	4.16853	4.16853	10.7801	14.8981
m-Xylene	2.5665	2.61805	2.61805	6.72509	9.29159
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	24	25	26	27	28
Temperature	°F	202.35	202.367	125 *	400 *	327.679
Pressure	psia	64.6959 *	64.6959	59.6959	16.6959	16.6959
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	139.932	139.936	139.936	28.8398	125.75
Mass Density	lb/ft^3	65.622	65.6211	68.4154	0.0525841	60.9584
Molar Flow	lbmol/h	161.282	161.287	161.287	23.6015	184.884
Mass Flow	lb/h	22568.6	22569.8	22569.8	680.661	23249.2
Std Vapor Volumetric Flow	MMSCFD	1.4689	1.46894	1.46894	0.214953	1.68385
Std Liquid Volumetric Flow	sgpm	39.9976	40 *	40	1.3147	41.3123
Specific Gravity		1.05216	1.05215	1.09695	0.995762	0.977387
API Gravity		-6.66611	-6.6657	-6.66499		-6.11233
Gross Ideal Gas Heating Value	Btu/ft^3	3814.41	3814.57	3814.57	422.077	3381.36
Gross Liquid Heating Value	Btu/lb	10076.8	10077	10077	4843.51	9923.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Connections

	29	30	31	32
From Block	T-0801	E-0802_CONDENSER	E-0802_CONDENSER	AC-0801B
To Block	E-0802_CONDENSER	T-0801	AC-0801B	V-0802

Stream Composition

Mole Fraction	29 %	30 %	31 %	32 %
H2S	1.41816E-06	8.92081E-09	1.49015E-06	1.49015E-06
CO2	1.14694E-06	1.85167E-09	1.20543E-06	1.20543E-06
N2	0.000949029	8.11214E-08	0.000997506	0.000997506
C1	1.4361	0.000330704	1.50945	1.50945
C2	2.25429	0.00118229	2.36939	2.36939
C3	2.89382	0.00231929	3.04153	3.04153
iC4	0.560773	0.000484403	0.589396	0.589396
nC4	2.23386	0.00304255	2.34782	2.34782
iC5	0.725663	0.00120928	0.762672	0.762672
nC5	1.0315	0.00191572	1.0841	1.0841
nC6	1.28117	0.00395308	1.34642	1.34642
nC7	0.647314	0.00234942	0.680262	0.680262
nC8	0.164522	0.000833434	0.172884	0.172884
nC9	0.0652448	0.000375772	0.0685586	0.0685586
nC10	0	0	0	0
H2O	80.1004	77.291	80.2439	80.2439
TEG	1.09449	22.3573	0.00826373	0.00826373
Benzene	2.29482	0.0925811	2.40733	2.40733
Toluene	1.72853	0.109566	1.81123	1.81123
Ethylbenzene	0.923173	0.0806638	0.966213	0.966213
m-Xylene	0.563434	0.0509082	0.589617	0.589617
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Mass Fraction	29 %	30 %	31 %	32 %
H2S	1.71766E-06	6.35715E-09	1.87176E-06	1.87176E-06
CO2	1.79386E-06	1.70396E-09	1.95523E-06	1.95523E-06
N2	0.000944818	4.7517E-08	0.00102989	0.00102989
C1	0.818763	0.000110932	0.892479	0.892479
C2	2.40897	0.000743349	2.62582	2.62582
C3	4.53492	0.00213844	4.94307	4.94307
iC4	1.15833	0.000588703	1.26258	1.26258
nC4	4.61424	0.00369767	5.0294	5.0294
iC5	1.86066	0.00182433	2.02804	2.02804
nC5	2.64486	0.00289007	2.88275	2.88275
nC6	3.92367	0.00712305	4.27633	4.27633
nC7	2.30512	0.00492248	2.51224	2.51224
nC8	0.667885	0.00199064	0.727846	0.727846
nC9	0.297388	0.00100773	0.324075	0.324075
nC10	0	0	0	0
H2O	51.2836	29.115	53.2798	53.2798
TEG	5.84124	70.2036	0.045738	0.045738
Benzene	6.37044	0.151212	6.93044	6.93044
Toluene	5.66004	0.211088	6.15069	6.15069
Ethylbenzene	3.48311	0.179064	3.78063	3.78063
m-Xylene	2.12583	0.11301	2.30707	2.30707
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	RR2 TEG	

Mass Flow	29 lb/h	30 lb/h	31 lb/h	32 lb/h
H2S	8.47563E-06	2.59127E-09	8.47304E-06	8.47304E-06
CO2	8.85162E-06	6.94556E-10	8.85093E-06	8.85093E-06
N2	0.00466211	1.93686E-08	0.00466209	0.00466209
C1	4.0401	4.52176E-05	4.04006	4.04006
C2	11.8868	0.000303	11.8865	11.8865
C3	22.3771	0.000871659	22.3762	22.3762
iC4	5.71566	0.000239964	5.71542	5.71542
nC4	22.7685	0.00150722	22.767	22.767
iC5	9.18123	0.000743624	9.18049	9.18049
nC5	13.0508	0.00117803	13.0496	13.0496
nC6	19.3609	0.00290345	19.358	19.358
nC7	11.3744	0.00200647	11.3724	11.3724
nC8	3.29561	0.000811414	3.2948	3.2948
nC9	1.46743	0.000410767	1.46702	1.46702
nC10	0	0	0	0
H2O	253.054	11.8677	241.186	241.186
TEG	28.823	28.616	0.207046	0.207046
Benzene	31.4343	0.0616362	31.3726	31.3726
Toluene	27.9289	0.0860426	27.8429	27.8429
Ethylbenzene	17.1871	0.0729889	17.1141	17.1141
m-Xylene	10.4897	0.0460644	10.4436	10.4436
Cyclopentane	0	0	0	0
Cyclohexane	0	0	0	0
SO2	0	0	0	0

Stream Properties

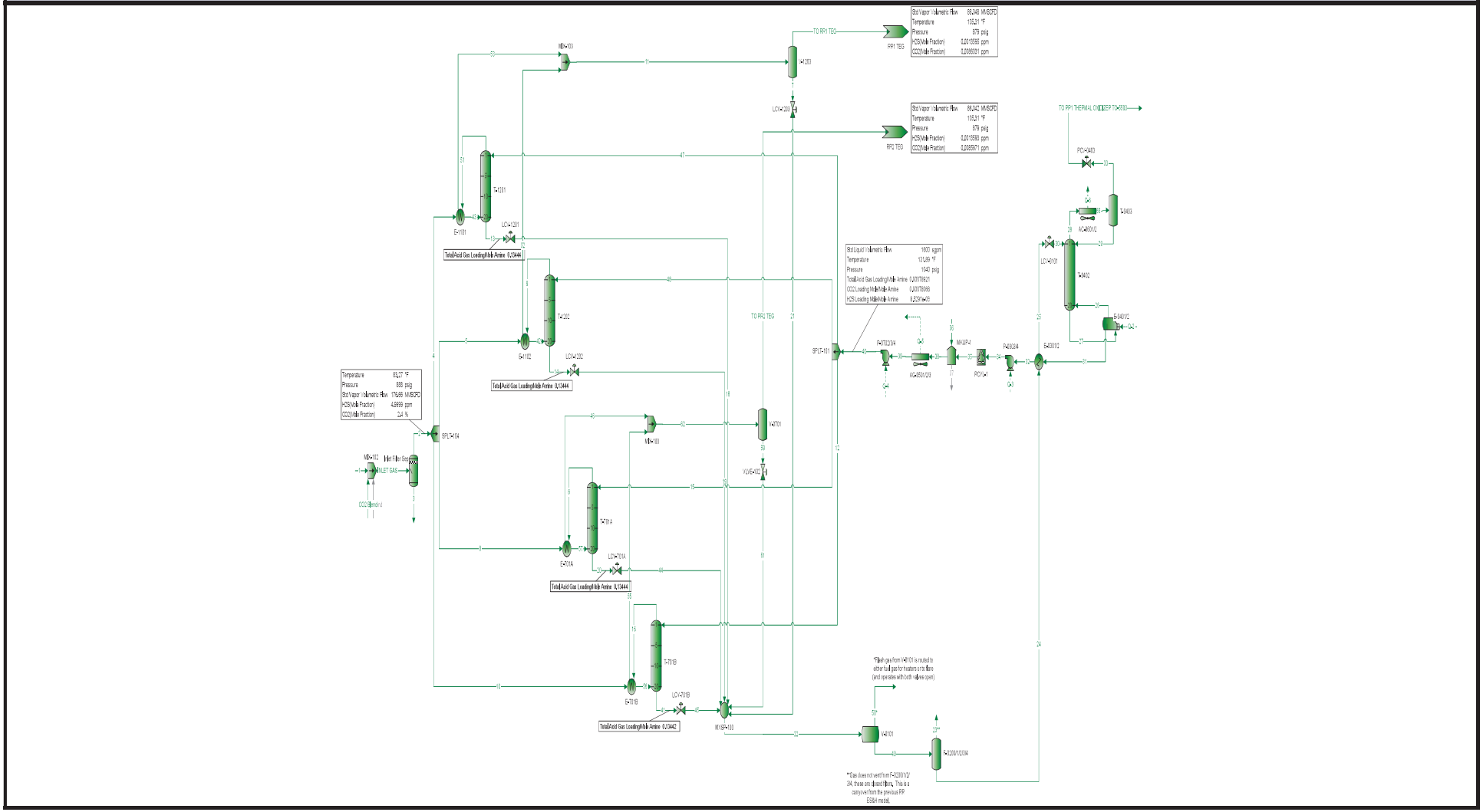
Property	Units	29	30	31	32
Temperature	°F	319.115	215	215 *	120 *
Pressure	psia	15.6959	15.6959	15.6959	15.4959
Mole Fraction Vapor	%	100	0	100	15.8946
Molecular Weight	lb/lbmol	28.1382	47.8247	27.1326	27.1326
Mass Density	lb/ft^3	0.0531767	64.8545	0.059333	0.43041
Molar Flow	lbmol/h	17.5363	0.852308	16.684	16.684
Mass Flow	lb/h	493.44	40.7614	452.679	452.679
Std Vapor Volumetric Flow	MMSCFD	0.159714	0.0077625	0.151951	0.151951
Std Liquid Volumetric Flow	sgpm	1.21101	0.0750124	1.13599	1.13599
Specific Gravity		0.971541	1.03986	0.936817	
API Gravity			-3.44402		
Gross Ideal Gas Heating Value	Btu/ft^3	726.066	977.903	713.2	713.2
Gross Liquid Heating Value	Btu/lb	9162.55	7267.51	9333.19	9333.19

Remarks

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2 - Amine
Plant Schematic

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	



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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
From Block	--	--	MIX-102	V-1203	PCV-0403
To Block	MIX-102	MIX-102	Inlet Filter Sep	RR1 TEG	--

Stream Composition

Mole Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
H2S	0 *	100 *	0.0005	1.35949E-07	0.0190812
CO2	100 *	0 *	2.4	8.60306E-07	91.6678
N2	0 *	0 *	0.994006	1.01972	0.000323092
C1	0 *	0 *	76.0753	77.8518	0.784994
C2	0 *	0 *	11.6142	11.8655	0.345391
C3	0 *	0 *	5.44288	5.56806	0.101389
iC4	0 *	0 *	0.744255	0.762069	0.00821429
nC4	0 *	0 *	1.63234	1.66959	0.0364912
iC5	0 *	0 *	0.345183	0.353662	0.00184542
nC5	0 *	0 *	0.368404	0.377242	0.00327969
nC6	0 *	0 *	0.252725	0.25863	0.00204735
nC7	0 *	0 *	0.0716055	0.0732305	7.91732E-05
nC8	0 *	0 *	0.0122406	0.0124648	3.58848E-05
nC9	0 *	0 *	0.00324082	0.00326945	8.39298E-07
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0.150758	6.67176
MDEA	0 *	0 *	0	4.54708E-07	5.65271E-08
Piperazine	0 *	0 *	0	1.72802E-05	1.14625E-07
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0228358	0.0178608	0.195759
Toluene	0 *	0 *	0.011963	0.00935653	0.102513
Ethylbenzene	0 *	0 *	0.00490283	0.00412238	0.0308577
m-Xylene	0 *	0 *	0.00333393	0.00260938	0.0281659
Cyclopentane	0 *	0 *	0	0	0
Cyclohexane	0 *	0 *	0	0	0

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
H2S	0 *	100 *	0.000786251	2.19478E-07	0.0154221
CO2	100 *	0 *	4.87347	1.79351E-06	95.6729
N2	0 *	0 *	1.2848	1.35316	0.000214643
C1	0 *	0 *	56.3113	59.1621	0.29865
C2	0 *	0 *	16.1135	16.9009	0.246295
C3	0 *	0 *	11.074	11.6306	0.106026
iC4	0 *	0 *	1.99593	2.09817	0.0113224
nC4	0 *	0 *	4.37758	4.59679	0.0502986
iC5	0 *	0 *	1.1491	1.20871	0.00315756
nC5	0 *	0 *	1.22641	1.2893	0.00561162
nC6	0 *	0 *	1.00488	1.05576	0.0041841
nC7	0 *	0 *	0.331057	0.347594	0.00018814
nC8	0 *	0 *	0.0645146	0.0674473	9.721E-05
nC9	0 *	0 *	0.0191783	0.0198634	2.5528E-06
nC10	0 *	0 *	0	0	0
H2O	0 *	0 *	0	0.128655	2.85041
MDEA	0 *	0 *	0	2.5667E-06	1.59743E-07

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	CO2 Blend %	H2S Blend %	INLET GAS %	TO RR1 TEG %	TO RR1 THERMAL OXIDIZER TO-5500 %
Piperazine	0 *	0 *	0	7.05077E-05	2.34148E-07
TEG	0 *	0 *	0	0	0
UCARSOL™ AP-814	0 *	0 *	0	0	0
Benzene	0 *	0 *	0.0823027	0.0660877	0.362631
Toluene	0 *	0 *	0.0508581	0.0408376	0.223998
Ethylbenzene	0 *	0 *	0.0240164	0.0207316	0.0776909
m-Xylene	0 *	0 *	0.0163312	0.0131227	0.0709137
Cyclopentane	0 *	0 *	0	0	0
Cyclohexane	0 *	0 *	0	0	0

Mass Flow	CO2 Blend lb/h	H2S Blend lb/h	INLET GAS lb/h	TO RR1 TEG lb/h	TO RR1 THERMAL OXIDIZER TO-5500 lb/h
H2S	0 *	0	3.30546	0.000437749	3.29974
CO2	1.15266E-07 *	0	20488.4	0.00357715	20470.4
N2	0 *	0	5401.39	2698.89	0.0459255
C1	0 *	0	236737	117999	63.8999
C2	0 *	0	67742.5	33708.9	52.6978
C3	0 *	0	46555.9	23197.3	22.6856
iC4	0 *	0	8391.01	4184.79	2.42256
nC4	0 *	0	18403.7	9168.3	10.762
iC5	0 *	0	4830.91	2410.77	0.675597
nC5	0 *	0	5155.9	2571.51	1.20067
nC6	0 *	0	4224.57	2105.72	0.895238
nC7	0 *	0	1391.79	693.276	0.0402547
nC8	0 *	0	271.224	134.524	0.0207993
nC9	0 *	0	80.6269	39.6176	0.000546202
nC10	0 *	0	0	0	0
H2O	0 *	0	0	256.602	609.88
MDEA	0 *	0	0	0.00511929	3.41789E-05
Piperazine	0 *	0	0	0.140628	5.00987E-05
TEG	0 *	0	0	0	0
UCARSOL™ AP-814	0 *	0	0	0	0
Benzene	0 *	0	346.006	131.812	77.5893
Toluene	0 *	0	213.811	81.4505	47.9271
Ethylbenzene	0 *	0	100.967	41.3492	16.6229
m-Xylene	0 *	0	68.6575	26.1732	15.1728
Cyclopentane	0 *	0	0	0	0
Cyclohexane	0 *	0	0	0	0

Stream Properties

Property	Units	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
Temperature	°F	83.4 *	83.4 *	83.4	105.312	119.508
Pressure	psia	907.696 *	907.696 *	904.696	893.696	21.6959 *
Mole Fraction Vapor	%	100	0	100	100	100
Molecular Weight	lb/lbmol	44.0095	34.0809	21.673	21.1104	42.1671
Mass Density	lb/ft^3	12.4344	47.8529	4.24623	3.76782	0.148208
Molar Flow	lbmol/h	2.61912E-09	2.00277E-13	19397.7	9447.96	507.414
Mass Flow	lb/h	1.15266E-07	6.82562E-12	420407	199450	21396.2
Std Vapor Volumetric Flow	MMSCFD	2.3854E-11 *	1.82405E-15 *	176.667	86.0484	4.62133
Std Liquid Volumetric Flow	sgpm	2.81981E-10	1.70806E-14	2349.33	1146.01	52.5287
Specific Gravity		1.51953		0.748313	0.728886	1.45592

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources
Location:	DOU
Flowsheet:	2 - Amine
Job:	Wildcat II - Refrigeration - Recovery

Stream Properties

Property	Units	CO2 Blend	H2S Blend	INLET GAS	TO RR1 TEG	TO RR1 THERMAL OXIDIZER TO-5500
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	0	637.1	1235.65	1263.76	36.8128
Gross Liquid Heating Value	Btu/lb	-74.8536	6892.4	21573.5	22654.8	227.437

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	TO RR2 TEG	1	2	3	4
From Block	V-0701	--	Inlet Filter Sep	Inlet Filter Sep	SPLT-104
To Block	RR2 TEG	MIX-102	SPLT-104	--	E-1101

Stream Composition

Mole Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
H2S	1.3593E-07	0.0005 *	0.000499992	0.000687974	0.000499992
CO2	8.59709E-07	2.4 *	2.40004	1.50323	2.40004
N2	1.01972	0.994006 *	0.994041	0.126783	0.994041
C1	77.8518	76.0753 *	76.0775	23.8347	76.0775
C2	11.8655	11.6142 *	11.6142	13.2188	11.6142
C3	5.56806	5.44288 *	5.4425	14.5579	5.4425
iC4	0.762069	0.744255 *	0.744124	3.93134	0.744124
nC4	1.66959	1.63234 *	1.63195	11.1586	1.63195
iC5	0.353662	0.345183 *	0.345021	4.29077	0.345021
nC5	0.377242	0.368404 *	0.368188	5.62507	0.368188
nC6	0.25863	0.252725 *	0.252357	9.20642	0.252357
nC7	0.0732305	0.0716055 *	0.0713762	5.64304	0.0713762
nC8	0.0124648	0.0122406 *	0.0121523	2.15891	0.0121523
nC9	0.00326945	0.00324082 *	0.00318561	1.34524	0.00318561
nC10	0	0 *	0	0	0
H2O	0.150741	0 *	0	0	0
MDEA	4.54623E-07	0 *	0	0	0
Piperazine	1.7278E-05	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	0.0178645	0.0228358 *	0.0228023	0.836626	0.0228023
Toluene	0.00935903	0.011963 *	0.011922	1.00818	0.011922
Ethylbenzene	0.00412329	0.00490283 *	0.00486589	0.902719	0.00486589
m-Xylene	0.00261043	0.00333393 *	0.00330729	0.650932	0.00330729
Cyclopentane	0	0 *	0	0	0
Cyclohexane	0	0 *	0	0	0

Mass Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
H2S	2.19447E-07	0.000786251 *	0.000786284	0.000452192	0.000786284
CO2	1.79226E-06	4.87347 *	4.87382	1.27589	4.87382
N2	1.35316	1.2848 *	1.28492	0.0684964	1.28492
C1	59.1621	56.3113 *	56.3161	7.3743	56.3161
C2	16.9009	16.1135 *	16.1144	7.66572	16.1144
C3	11.6306	11.074 *	11.0739	12.3804	11.0739
iC4	2.09817	1.99593 *	1.99569	4.4068	1.99569
nC4	4.59679	4.37758 *	4.37678	12.5081	4.37678
iC5	1.20871	1.1491 *	1.14863	5.97041	1.14863
nC5	1.2893	1.22641 *	1.22576	7.82703	1.22576
nC6	1.05576	1.00488 *	1.00347	15.3008	1.00347
nC7	0.347594	0.331057 *	0.330016	10.9051	0.330016
nC8	0.0674473	0.0645146 *	0.0640528	4.75608	0.0640528
nC9	0.0198634	0.0191783 *	0.0188526	3.32748	0.0188526
nC10	0	0 *	0	0	0
H2O	0.12864	0 *	0	0	0
MDEA	2.56622E-06	0 *	0	0	0
Piperazine	7.04985E-05	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	0.0661015	0.0823027 *	0.0821867	1.26034	0.0821867
Toluene	0.0408484	0.0508581 *	0.0506867	1.7915	0.0506867
Ethylbenzene	0.0207362	0.0240164 *	0.0238369	1.84831	0.0238369
m-Xylene	0.0131279	0.0163312 *	0.0162016	1.33278	0.0162016
Cyclopentane	0	0 *	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	TO RR2 TEG %	1 %	2 %	3 %	4 %
Cyclohexane	0	0 *	0	0	0

Mass Flow	TO RR2 TEG lb/h	1 lb/h	2 lb/h	3 lb/h	4 lb/h
H2S	0.000437652	3.30546 *	3.30527	0.000187105	0.82635
CO2	0.00357439	20488.4 *	20487.9	0.527927	5122.18
N2	2698.67	5401.39 *	5401.36	0.0283419	1350.39
C1	117989	236737 *	236734	3.05129	59185.8
C2	33706.2	67742.5 *	67739.3	3.17187	16935.5
C3	23195.5	46555.9 *	46550.8	5.12268	11638.2
iC4	4184.46	8391.01 *	8389.19	1.82341	2097.38
nC4	9167.58	18403.7 *	18398.5	5.17551	4599.81
iC5	2410.58	4830.91 *	4828.44	2.47039	1207.16
nC5	2571.3	5155.9 *	5152.66	3.23861	1288.22
nC6	2105.55	4224.57 *	4218.24	6.33105	1054.6
nC7	693.221	1391.79 *	1387.28	4.51223	346.833
nC8	134.513	271.224 *	269.256	1.96794	67.3167
nC9	39.6144	80.6269 *	79.2501	1.37682	19.8133
nC10	0	0 *	0	0	0
H2O	256.552	0 *	0	0	0
MDEA	0.00511792	0 *	0	0	0
Piperazine	0.140598	0 *	0	0	0
TEG	0	0 *	0	0	0
UCARSOL™ AP-814	0	0 *	0	0	0
Benzene	131.829	346.006 *	345.485	0.521496	86.3747
Toluene	81.4657	213.811 *	213.07	0.741275	53.2695
Ethylbenzene	41.355	100.967 *	100.202	0.764779	25.0515
m-Xylene	26.1816	68.6575 *	68.1061	0.551466	17.0272
Cyclopentane	0	0 *	0	0	0
Cyclohexane	0	0 *	0	0	0

Stream Properties

Property	Units	TO RR2 TEG	1	2	3	4
Temperature	°F	105.308	83.4 *	83.2696	83.2696	83.2696
Pressure	psia	893.696	904.696 *	902.696	902.696	902.696
Mole Fraction Vapor	%	100	100	100	0	100
Molecular Weight	lb/lbmol	21.1104	21.673	21.6718	51.8513	21.6718
Mass Density	lb/ft^3	3.76787	4.24623	4.23639	34.6443	4.23639
Molar Flow	lbmol/h	9447.21	19397.7	19396.9	0.797999	4849.42
Mass Flow	lb/h	199434	420407	420366	41.3773	105096
Std Vapor Volumetric Flow	MMSCFD	86.0415	176.667 *	176.66	0.00726787	44.1667 *
Std Liquid Volumetric Flow	sgpm	1145.92	2349.33	2349.19	0.149489	587.32
Specific Gravity		0.728887	0.748313	0.748271	0.555475	0.748271
API Gravity					115.555	
Gross Ideal Gas Heating Value	Btu/ft^3	1263.76	1235.65	1235.58	2864.51	1235.58
Gross Liquid Heating Value	Btu/lb	22654.8	21573.5	21573.6	20817.3	21573.6

Remarks

1:

Composition from Mobile Laboratories analysis 5/1/25. Normalized based on 0% CO2 and 0% H2S.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	5	6	7	8	9
From Block	SPLT-104	T-701A	V-1203	SPLT-104	T-1202
To Block	E-1102	E-701A	LCV-1203	E-701A	E-1102

Stream Composition

Mole Fraction	5 %	6 %	7 %	8 %	9 %
H2S	0.000499992	2.18559E-07	6.76787E-05	0.000499992	2.18581E-07
CO2	2.40004	3.94121E-06	0.00252069	2.40004	3.94305E-06
N2	0.994041	1.01847	0.000617644	0.994041	1.01847
C1	76.0775	77.7567	0.080383	76.0775	77.7567
C2	11.6142	11.851	0.0103518	11.6142	11.851
C3	5.4425	5.56125	0.00291992	5.4425	5.56125
iC4	0.744124	0.761137	0.000194996	0.744124	0.761136
nC4	1.63195	1.66755	0.000615942	1.63195	1.66754
iC5	0.345021	0.353229	5.22233E-05	0.345021	0.353229
nC5	0.368188	0.376781	6.90875E-05	0.368188	0.376781
nC6	0.252357	0.258314	2.25551E-05	0.252357	0.258314
nC7	0.0713762	0.0731409	2.77369E-06	0.0713762	0.0731409
nC8	0.0121523	0.0124496	3.03341E-07	0.0121523	0.0124496
nC9	0.00318561	0.00326545	2.60562E-08	0.00318561	0.00326545
nC10	0	0	0	0	0
H2O	0	0.272367	99.5758	0	0.272394
MDEA	0	0.000135233	0.11018	0	0.000135247
Piperazine	0	0.000280776	0.215418	0	0.0002808
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0178438	0.000522602	0.0228023	0.0178395
Toluene	0.011922	0.00934809	0.000169797	0.011922	0.00934529
Ethylbenzene	0.00486589	0.0041184	4.76816E-05	0.00486589	0.00411739
m-Xylene	0.00330729	0.00260738	4.34928E-05	0.00330729	0.00260624
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	5 %	6 %	7 %	8 %	9 %
H2S	0.000786284	3.52902E-07	0.00012621	0.000786284	3.52937E-07
CO2	4.87382	8.21772E-06	0.0060701	4.87382	8.22157E-06
N2	1.28492	1.35173	0.000946747	1.28492	1.35173
C1	56.3161	59.0995	0.070561	56.3161	59.0995
C2	16.1144	16.883	0.0170319	16.1144	16.883
C3	11.0739	11.6183	0.00704525	11.0739	11.6183
iC4	1.99569	2.09595	0.000620151	1.99569	2.09595
nC4	4.37678	4.59193	0.0019589	4.37678	4.59193
iC5	1.14863	1.20743	0.000206169	1.14863	1.20743
nC5	1.22576	1.28793	0.000272746	1.22576	1.28793
nC6	1.00347	1.05464	0.000106355	1.00347	1.05464
nC7	0.330016	0.347225	1.52077E-05	0.330016	0.347226
nC8	0.0640528	0.0673759	1.89599E-06	0.0640528	0.0673759
nC9	0.0188526	0.0198423	1.82858E-07	0.0188526	0.0198424
nC10	0	0	0	0	0
H2O	0	0.232472	98.1577	0	0.232495
MDEA	0	0.000763477	0.718405	0	0.000763559
Piperazine	0	0.00114582	1.0153	0	0.00114592
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.066036	0.00223366	0.0821867	0.0660201
Toluene	0.0506867	0.0408074	0.000856055	0.0506867	0.0407952
Ethylbenzene	0.0238369	0.020715	0.000276988	0.0238369	0.02071
m-Xylene	0.0162016	0.0131148	0.000252655	0.0162016	0.013109
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Cyclohexane	0	0	0	0	0

Mass Flow	5 lb/h	6 lb/h	7 lb/h	8 lb/h	9 lb/h
H2S	0.82635	0.000352305	0.000266931	0.82635	0.00035234
CO2	5122.18	0.00820382	0.0128381	5122.18	0.00820765
N2	1350.39	1349.44	0.00200235	1350.39	1349.44
C1	59185.8	58999.5	0.149235	59185.8	58999.5
C2	16935.5	16854.5	0.0360223	16935.5	16854.5
C3	11638.2	11598.7	0.0149006	11638.2	11598.7
iC4	2097.38	2092.4	0.00131161	2097.38	2092.4
nC4	4599.81	4584.16	0.00414303	4599.81	4584.15
iC5	1207.16	1205.38	0.000436044	1207.16	1205.38
nC5	1288.22	1285.75	0.000576853	1288.22	1285.75
nC6	1054.6	1052.86	0.000224939	1054.6	1052.86
nC7	346.833	346.638	3.21641E-05	346.833	346.638
nC8	67.3167	67.2619	4.00998E-06	67.3167	67.2619
nC9	19.8133	19.8088	3.86742E-07	19.8133	19.8088
nC10	0	0	0	0	0
H2O	0	232.078	207.602	0	232.102
MDEA	0	0.762185	1.51941	0	0.762266
Piperazine	0	1.14389	2.14734	0	1.14398
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	86.3747	65.9242	0.00472416	86.3747	65.9083
Toluene	53.2695	40.7384	0.00181054	53.2695	40.7261
Ethylbenzene	25.0515	20.68	0.000585826	25.0515	20.6749
m-Xylene	17.0272	13.0926	0.000534361	17.0272	13.0869
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	5	6	7	8	9
Temperature	°F	83.2696	132.186	105.312	83.2696	132.19
Pressure	psia	902.696	896.696	893.696	902.696	896.696
Mole Fraction Vapor	%	100	100	0	100	100
Molecular Weight	lb/lbmol	21.6718	21.1069	18.2755	21.6718	21.1069
Mass Density	lb/ft^3	4.23639	3.48527	61.946	4.23639	3.48523
Molar Flow	lbmol/h	4849.42	4729.77	11.5727	4849.42	4729.77
Mass Flow	lb/h	105096	99830.8	211.498	105096	99830.7
Std Vapor Volumetric Flow	MMSCFD	44.1667 *	43.0769	0.1054	44.1667 *	43.0769
Std Liquid Volumetric Flow	sgpm	587.32	573.217	0.425214	587.32	573.216
Specific Gravity		0.748271	0.728767	0.993221	0.748271	0.728767
API Gravity				9.84176		
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1262.29	62.9287	1235.58	1262.29
Gross Liquid Heating Value	Btu/lb	21573.6	22631.1	261.402	21573.6	22631.1

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	10	11	12	13	14
From Block	SPLT-104	MIX-103	SPLT-101	T-1201	T-1202
To Block	E-701B	V-1203	T-701B	LCV-1201	LCV-1202

Stream Composition

Mole Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000499992	2.18581E-07	0.000115741	0.000484303	0.000484303
CO2	2.40004	3.94305E-06	0.0105939	1.79047	1.79047
N2	0.994041	1.01847	0	0.000518708	0.000518708
C1	76.0775	77.7567	0	0.177593	0.177593
C2	11.6142	11.851	0	0.0412175	0.0412175
C3	5.4425	5.56125	0	0.0137023	0.0137023
iC4	0.744124	0.761136	0	0.00131152	0.00131152
nC4	1.63195	1.66754	0	0.00411927	0.00411927
iC5	0.345021	0.353229	0	0.000376175	0.000376175
nC5	0.368188	0.376781	0	0.000522157	0.000522157
nC6	0.252357	0.258314	0	0.000309357	0.000309357
nC7	0.0713762	0.0731409	0	2.97158E-05	2.97158E-05
nC8	0.0121523	0.0124496	0	7.34378E-06	7.34378E-06
nC9	0.00318561	0.00326545	0	5.41039E-07	5.41039E-07
nC10	0	0	0	0	0
H2O	0	0.272394	86.4192	84.6406	84.6406
MDEA	0	0.000135247	11.7621	11.5468	11.5468
Piperazine	0	0.0002808	1.808	1.77471	1.77471
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.0178395	0	0.00400733	0.00400733
Toluene	0.011922	0.00934529	0	0.00208212	0.00208212
Ethylbenzene	0.00486589	0.00411739	0	0.000630504	0.000630504
m-Xylene	0.00330729	0.00260624	0	0.000567654	0.000567654
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	10 %	11 %	12 %	13 %	14 %
H2S	0.000786284	3.52937E-07	0.000126645	0.000525955	0.000525955
CO2	4.87382	8.22157E-06	0.0149689	2.51093	2.51093
N2	1.28492	1.35173	0	0.00046303	0.00046303
C1	56.3161	59.0995	0	0.0907855	0.0907855
C2	16.1144	16.883	0	0.0394931	0.0394931
C3	11.0739	11.6183	0	0.0192534	0.0192534
iC4	1.99569	2.09595	0	0.00242906	0.00242906
nC4	4.37678	4.59193	0	0.00762926	0.00762926
iC5	1.14863	1.20743	0	0.000864847	0.000864847
nC5	1.22576	1.28793	0	0.00120047	0.00120047
nC6	1.00347	1.05464	0	0.000849501	0.000849501
nC7	0.330016	0.347226	0	9.48819E-05	9.48819E-05
nC8	0.0640528	0.0673759	0	2.6731E-05	2.6731E-05
nC9	0.0188526	0.0198424	0	2.21118E-06	2.21118E-06
nC10	0	0	0	0	0
H2O	0	0.232495	49.9849	48.5892	48.5892
MDEA	0	0.000763559	45	43.845	43.845
Piperazine	0	0.00114592	5	4.87115	4.87115
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.0660201	0	0.00997452	0.00997452
Toluene	0.0506867	0.0407952	0	0.00611317	0.00611317
Ethylbenzene	0.0238369	0.02071	0	0.00213299	0.00213299
m-Xylene	0.0162016	0.013109	0	0.00192037	0.00192037
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	10 %	11 %	12 %	13 %	14 %
Cyclohexane	0	0	0	0	0

Mass Flow	10 lb/h	11 lb/h	12 lb/h	13 lb/h	14 lb/h
H2S	0.826218	0.00070468	0.25319	1.07919	1.07919
CO2	5121.36	0.0164153	29.9261	5152.09	5152.09
N2	1350.18	2698.89	0	0.950075	0.950075
C1	59176.3	117999	0	186.28	186.28
C2	16932.8	33708.9	0	81.0346	81.0346
C3	11636.3	23197.3	0	39.5055	39.5055
iC4	2097.05	4184.8	0	4.9841	4.9841
nC4	4599.07	9168.31	0	15.6542	15.6542
iC5	1206.97	2410.77	0	1.77455	1.77455
nC5	1288.01	2571.51	0	2.4632	2.4632
nC6	1054.43	2105.72	0	1.74306	1.74306
nC7	346.777	693.276	0	0.194685	0.194685
nC8	67.3059	134.524	0	0.0548484	0.0548484
nC9	19.8101	39.6176	0	0.00453704	0.00453704
nC10	0	0	0	0	0
H2O	0	464.203	99930.6	99698.5	99698.5
MDEA	0	1.52453	89964.7	89964	89964
Piperazine	0	2.28797	9996.08	9994.94	9994.94
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	86.3609	131.817	0	20.4664	20.4664
Toluene	53.261	81.4523	0	12.5434	12.5434
Ethylbenzene	25.0475	41.3498	0	4.37662	4.37662
m-Xylene	17.0245	26.1737	0	3.94035	3.94035
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	10	11	12	13	14
Temperature	°F	83.2696	105.375	131.89	144.807	144.807
Pressure	psia	902.696	894.696	1054.7	898.696	898.696
Mole Fraction Vapor	%	100	99.8778	0	0	0
Molecular Weight	lb/lbmol	21.6718	21.1069	31.1467	31.3819	31.3819
Mass Density	lb/ft^3	4.23639	3.77576	63.9241	65.8859	65.8859
Molar Flow	lbmol/h	4848.65	9459.53	6418.71	6538.37	6538.37
Mass Flow	lb/h	105079	199661	199922	205187	205187
Std Vapor Volumetric Flow	MMSCFD	44.1596	86.1538	58.4591	59.5489	59.5489
Std Liquid Volumetric Flow	sgpm	587.226	1146.43	400	414.103	414.103
Specific Gravity		0.748271		1.02494	1.05639	1.05639
API Gravity				3.7932	-0.057316	-0.057316
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	1262.29	564.958	557.914	557.914
Gross Liquid Heating Value	Btu/lb	21573.6	22631.1	6187.12	6067.4	6067.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	15	16	18	19	20
From Block	SPLT-101	T-701B	LCV-1201	LCV-1202	T-701A
To Block	T-701A	E-701B	MXSP-100	MXSP-100	LCV-701A

Stream Composition

Mole Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.000115741	2.18558E-07	0.000484303	0.000484303	0.000484303
CO2	0.0105939	3.9412E-06	1.79047	1.79047	1.79048
N2	0	1.01847	0.000518708	0.000518708	0.000518597
C1	0	77.7567	0.177593	0.177593	0.177557
C2	0	11.851	0.0412175	0.0412175	0.041207
C3	0	5.56125	0.0137023	0.0137023	0.0136984
iC4	0	0.761137	0.00131152	0.00131152	0.00131111
nC4	0	1.66755	0.00411927	0.00411927	0.00411797
iC5	0	0.35323	0.000376175	0.000376175	0.000376038
nC5	0	0.376781	0.000522157	0.000522157	0.000521968
nC6	0	0.258314	0.000309357	0.000309357	0.000309241
nC7	0	0.0731409	2.97158E-05	2.97158E-05	2.97037E-05
nC8	0	0.0124496	7.34378E-06	7.34378E-06	7.34069E-06
nC9	0	0.00326545	5.41039E-07	5.41039E-07	5.408E-07
nC10	0	0	0	0	0
H2O	86.4192	0.272367	84.6406	84.6406	84.6406
MDEA	11.7621	0.000135233	11.5468	11.5468	11.5468
Piperazine	1.808	0.000280776	1.77471	1.77471	1.77471
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0178427	0.00400733	0.00400733	0.00400421
Toluene	0	0.00934748	0.00208212	0.00208212	0.00208009
Ethylbenzene	0	0.0041182	0.000630504	0.000630504	0.000629774
m-Xylene	0	0.00260719	0.000567654	0.000567654	0.000566829
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	15 %	16 %	18 %	19 %	20 %
H2S	0.000126645	3.52902E-07	0.000525955	0.000525955	0.000525955
CO2	0.0149689	8.2177E-06	2.51093	2.51093	2.51093
N2	0	1.35173	0.00046303	0.00046303	0.000462931
C1	0	59.0995	0.0907855	0.0907855	0.0907672
C2	0	16.883	0.0394931	0.0394931	0.039483
C3	0	11.6183	0.0192534	0.0192534	0.019248
iC4	0	2.09595	0.00242906	0.00242906	0.0024283
nC4	0	4.59193	0.00762926	0.00762926	0.00762686
iC5	0	1.20743	0.000864847	0.000864847	0.000864531
nC5	0	1.28793	0.00120047	0.00120047	0.00120003
nC6	0	1.05464	0.000849501	0.000849501	0.000849183
nC7	0	0.347226	9.48819E-05	9.48819E-05	9.48432E-05
nC8	0	0.0673759	2.6731E-05	2.6731E-05	2.67197E-05
nC9	0	0.0198424	2.21118E-06	2.21118E-06	2.2102E-06
nC10	0	0	0	0	0
H2O	49.9849	0.232472	48.5892	48.5892	48.5892
MDEA	45	0.000763477	43.845	43.845	43.845
Piperazine	5	0.00114582	4.87115	4.87115	4.87115
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0.0660318	0.00997452	0.00997452	0.00996677
Toluene	0	0.0408047	0.00611317	0.00611317	0.00610722
Ethylbenzene	0	0.020714	0.00213299	0.00213299	0.00213052
m-Xylene	0	0.0131138	0.00192037	0.00192037	0.00191758
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	15 %	16 %	18 %	19 %	20 %
Cyclohexane	0	0	0	0	0

Mass Flow	15 lb/h	16 lb/h	18 lb/h	19 lb/h	20 lb/h
H2S	0.25319	0.000352248	1.07919	1.07919	1.07919
CO2	29.9261	0.00820248	5152.09	5152.09	5152.09
N2	0	1349.23	0.950075	0.950075	0.949871
C1	0	58990.1	186.28	186.28	186.242
C2	0	16851.8	81.0346	81.0346	81.0139
C3	0	11596.8	39.5055	39.5055	39.4943
iC4	0	2092.06	4.9841	4.9841	4.98254
nC4	0	4583.42	15.6542	15.6542	15.6493
iC5	0	1205.19	1.77455	1.77455	1.7739
nC5	0	1285.55	2.4632	2.4632	2.46231
nC6	0	1052.69	1.74306	1.74306	1.74241
nC7	0	346.583	0.194685	0.194685	0.194605
nC8	0	67.2511	0.0548484	0.0548484	0.0548253
nC9	0	19.8056	0.00453704	0.00453704	0.00453503
nC10	0	0	0	0	0
H2O	99930.6	232.041	99698.5	99698.5	99698.6
MDEA	89964.7	0.762063	89964	89964	89964
Piperazine	9996.08	1.1437	9994.94	9994.94	9994.94
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	65.9095	20.4664	20.4664	20.4505
Toluene	0	40.7291	12.5434	12.5434	12.5312
Ethylbenzene	0	20.6757	4.37662	4.37662	4.37155
m-Xylene	0	13.0896	3.94035	3.94035	3.93462
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	15	16	18	19	20
Temperature	°F	131.89	132.186	147.125	147.125	144.809
Pressure	psia	1054.7	896.696	79.6959 *	79.6959 *	898.696
Mole Fraction Vapor	%	0	100	0.222499	0.222499	0
Molecular Weight	lb/lbmol	31.1467	21.1069	31.3819	31.3819	31.3819
Mass Density	lb/ft^3	63.9241	3.48527	47.9307	47.9307	65.8859
Molar Flow	lbmol/h	6418.71	4729.01	6538.37	6538.37	6538.36
Mass Flow	lb/h	199922	99814.8	205187	205187	205186
Std Vapor Volumetric Flow	MMSCFD	58.4591	43.07	59.5489	59.5489	59.5489
Std Liquid Volumetric Flow	sgpm	400	573.125	414.103	414.103	414.103
Specific Gravity		1.02494	0.728767			1.05639
API Gravity		3.7932				-0.057379
Gross Ideal Gas Heating Value	Btu/ft^3	564.958	1262.29	557.914	557.914	557.913
Gross Liquid Heating Value	Btu/lb	6187.12	22631.1	6067.4	6067.4	6067.39

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	21	22	23**	24	25
From Block	LCV-1203	MXSP-100	F-0200/1/2/3/4	F-0200/1/2/3/4	E-0301/2
To Block	MXSP-100	V-0101	--	E-0301/2	LCV-0101

Stream Composition

Mole Fraction	21 %	22 %	23** %	24 %	25 %
H2S	6.76787E-05	0.00048392	0.00041406	0.000484168	0.000484168
CO2	0.00252069	1.78882	0.747945	1.79134	1.79134
N2	0.000617644	0.000518741	0.15187	6.27703E-06	6.27703E-06
C1	0.080383	0.17749	70.8547	0.0152509	0.0152509
C2	0.0103518	0.0411853	15.9061	0.00671026	0.00671026
C3	0.00291992	0.0136909	5.34994	0.00196979	0.00196979
iC4	0.000194996	0.00131034	0.51741	0.000159587	0.000159587
nC4	0.000615942	0.00411556	1.57226	0.000708951	0.000708951
iC5	5.22233E-05	0.000375825	0.149091	3.58529E-05	3.58529E-05
nC5	6.90875E-05	0.000521668	0.205583	6.3718E-05	6.3718E-05
nC6	2.25551E-05	0.00030905	0.121211	3.9776E-05	3.9776E-05
nC7	2.77369E-06	2.96863E-05	0.0113901	1.53818E-06	1.53818E-06
nC8	3.03341E-07	7.33612E-06	0.00289633	6.97171E-07	6.97171E-07
nC9	2.60562E-08	5.40472E-07	0.000192106	1.63059E-08	1.63059E-08
nC10	0	0	0	0	0
H2O	99.5758	84.6538	4.23596	84.8362	84.8362
MDEA	0.11018	11.5367	0.000648039	11.5627	11.5627
Piperazine	0.215418	1.77334	0.000442943	1.77734	1.77734
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.000522602	0.00400274	0.101564	0.00380321	0.00380321
Toluene	0.000169797	0.00207944	0.0449847	0.00199162	0.00199162
Ethylbenzene	4.76816E-05	0.000629635	0.015318	0.000599503	0.000599503
m-Xylene	4.34928E-05	0.00056679	0.0101238	0.000547207	0.000547207
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	21 %	22 %	23** %	24 %	25 %
H2S	0.00012621	0.000525733	0.000659956	0.000525618	0.000525618
CO2	0.0060701	2.50954	1.53942	2.51123	2.51123
N2	0.000946747	0.00046323	0.198966	5.60123E-06	5.60123E-06
C1	0.070561	0.0907663	53.1594	0.00779344	0.00779344
C2	0.0170319	0.0394768	22.3679	0.0064272	0.0064272
C3	0.00704525	0.0192446	11.0328	0.00276681	0.00276681
iC4	0.000620151	0.00242777	1.40643	0.000295463	0.000295463
nC4	0.0019589	0.00762521	4.27372	0.00131257	0.00131257
iC5	0.000206169	0.000864361	0.503063	8.23981E-05	8.23981E-05
nC5	0.000272746	0.00119979	0.693677	0.000146438	0.000146438
nC6	0.000106355	0.00084897	0.488503	0.000109186	0.000109186
nC7	1.52077E-05	9.48228E-05	0.053376	4.9096E-06	4.9096E-06
nC8	1.89599E-06	2.67129E-05	0.0154726	2.53675E-06	2.53675E-06
nC9	1.82858E-07	2.20968E-06	0.00115228	6.66167E-08	6.66167E-08
nC10	0	0	0	0	0
H2O	98.1577	48.6148	3.56889	48.6839	48.6839
MDEA	0.718405	43.8228	0.00361144	43.8896	43.8896
Piperazine	1.0153	4.86917	0.00178431	4.87658	4.87658
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00223366	0.00996678	0.371021	0.00946305	0.00946305
Toluene	0.000856055	0.00610758	0.193842	0.00584535	0.00584535
Ethylbenzene	0.000276988	0.00213084	0.0760544	0.00202738	0.00202738
m-Xylene	0.000252655	0.00191816	0.0502649	0.00185053	0.00185053
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	21 %	22 %	23** %	24 %	25 %
Cyclohexane	0	0	0	0	0

Mass Flow	21 lb/h	22 lb/h	23** lb/h	24 lb/h	25 lb/h
H2S	0.000266931	4.31716	0.000102443	4.30964	4.30964
CO2	0.0128381	20607.6	0.238959	20590.1	20590.1
N2	0.00200235	3.8039	0.0308847	0.0459255	0.0459255
C1	0.149235	745.344	8.25175	63.8999	63.8999
C2	0.0360223	324.171	3.47208	52.6978	52.6978
C3	0.0149006	158.03	1.71258	22.6856	22.6856
iC4	0.00131161	19.9361	0.218315	2.42256	2.42256
nC4	0.00414303	62.6158	0.663395	10.762	10.762
iC5	0.000436044	7.09786	0.0780887	0.675597	0.675597
nC5	0.000576853	9.85226	0.107677	1.20067	1.20067
nC6	0.000224939	6.97148	0.0758286	0.895238	0.895238
nC7	3.21641E-05	0.778654	0.00828537	0.0402547	0.0402547
nC8	4.00998E-06	0.219358	0.00240176	0.0207993	0.0207993
nC9	3.86742E-07	0.0181452	0.000178864	0.000546202	0.000546202
nC10	0	0	0	0	0
H2O	207.602	399209	0.553987	399169	399169
MDEA	1.51941	359859	0.000560591	359859	359859
Piperazine	2.14734	39984	0.000276973	39984	39984
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00472416	81.844	0.0575923	77.5893	77.5893
Toluene	0.00181054	50.1535	0.0300894	47.9271	47.9271
Ethylbenzene	0.000585826	17.4978	0.0118057	16.6229	16.6229
m-Xylene	0.000534361	15.7513	0.00780244	15.1728	15.1728
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	21	22	23**	24	25
Temperature	°F	107.239	147.1	147.122	147.122	210 *
Pressure	psia	79.6959 *	79.6959	71.6959	71.6959	68.6959
Mole Fraction Vapor	%	0.0860114	0.222365	100	0	0.00380194
Molecular Weight	lb/lbmol	18.2755	31.3703	21.3825	31.3933	31.3933
Mass Density	lb/ft^3	50.8268	47.9327	0.238412	65.9083	64.0022
Molar Flow	lbmol/h	11.5727	26176.6	0.72595	26117.7	26117.7
Mass Flow	lb/h	211.498	821168	15.5227	819919	819919
Std Vapor Volumetric Flow	MMSCFD	0.1054	238.406	0.00661168	237.87	237.87
Std Liquid Volumetric Flow	sgpm	0.425214	1657.26	0.0871544	1650.2	1650.2
Specific Gravity				0.738283	1.05675	
API Gravity					-0.1909	
Gross Ideal Gas Heating Value	Btu/ft^3	62.9287	557.476	1229.95	555.969	555.969
Gross Liquid Heating Value	Btu/lb	261.402	6064.41	21725	6040.37	6040.37

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	26	27	28	29	30
From Block	E-0401/2	T-0402	T-0402	T-0403	LCV-0101
To Block	T-0402	E-0401/2	AC-0601/2	T-0402	T-0402

Stream Composition

Mole Fraction	26 %	27 %	28 %	29 %	30 %
H2S	8.83108E-05	0.000110653	0.00325844	7.04828E-05	0.000484168
CO2	0.0352942	0.015172	15.5044	0.1591	1.79134
N2	0	0	5.41844E-05	5.28239E-09	6.27703E-06
C1	0	0	0.131658	2.49156E-05	0.0152509
C2	0	0	0.0579296	1.22362E-05	0.00671026
C3	0	0	0.0170045	2.75627E-06	0.00196979
iC4	0	0	0.00137759	1.40765E-07	0.000159587
nC4	0	0	0.00612008	9.42072E-07	0.000708951
iC5	0	0	0.000309484	2.40252E-08	3.58529E-05
nC5	0	0	0.000550024	5.27083E-08	6.3718E-05
nC6	0	0	0.000343341	1.86432E-08	3.9776E-05
nC7	0	0	1.32771E-05	4.13297E-10	1.53818E-06
nC8	0	0	6.01775E-06	1.62396E-10	6.97171E-07
nC9	0	0	1.40745E-07	0	1.63059E-08
nC10	0	0	0	0	0
H2O	99.7932	88.8582	84.1316	99.7381	84.8362
MDEA	0.0703953	9.62965	0.042621	0.0512082	11.5627
Piperazine	0.100989	1.49683	0.0421789	0.050677	1.77734
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.0332249	0.000477615	0.00380321
Toluene	0	0	0.017347	0.000187931	0.00199162
Ethylbenzene	0	0	0.00521289	4.60133E-05	0.000599503
m-Xylene	0	0	0.00477557	6.29138E-05	0.000547207
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	26 %	27 %	28 %	29 %	30 %
H2S	0.000165692	0.000131038	0.00500857	0.000132396	0.000525618
CO2	0.085512	0.0232014	30.7748	0.385919	2.51123
N2	0	0	6.84595E-05	8.15596E-09	5.60123E-06
C1	0	0	0.0952605	2.20304E-05	0.00779344
C2	0	0	0.0785622	2.02789E-05	0.0064272
C3	0	0	0.0338184	6.6988E-06	0.00276681
iC4	0	0	0.00361124	4.50936E-07	0.000295463
nC4	0	0	0.0160433	3.0179E-06	0.00131257
iC5	0	0	0.00100707	9.55378E-08	8.23981E-05
nC5	0	0	0.0017898	2.09598E-07	0.000146438
nC6	0	0	0.00133445	8.8549E-08	0.000109186
nC7	0	0	6.0003E-05	2.28253E-09	4.9096E-06
nC8	0	0	3.10029E-05	1.02242E-09	2.53675E-06
nC9	0	0	8.14146E-07	0	6.66167E-08
nC10	0	0	0	0	0
H2O	98.9736	55.6241	68.3587	99.0333	48.6839
MDEA	0.461806	39.8725	0.229063	0.336324	43.8896
Piperazine	0.478889	4.48003	0.163859	0.240587	4.87658
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.117051	0.00205624	0.00946305
Toluene	0	0	0.0720874	0.000954372	0.00584535
Ethylbenzene	0	0	0.0249605	0.000269243	0.00202738
m-Xylene	0	0	0.0228665	0.000368135	0.00185053
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	26 %	27 %	28 %	29 %	30 %
Cyclohexane	0	0	0	0	0

Mass Flow	26 lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
H2S	0.174341	1.18425	3.36023	0.0604961	4.30964
CO2	89.9754	209.681	20646.7	176.34	20590.1
N2	0	0	0.0459293	3.72674E-06	0.0459255
C1	0	0	63.9099	0.0100664	63.8999
C2	0	0	52.7071	0.00926611	52.6978
C3	0	0	22.6887	0.00306091	22.6856
iC4	0	0	2.42277	0.000206048	2.42256
nC4	0	0	10.7634	0.00137898	10.762
iC5	0	0	0.675641	4.36545E-05	0.675597
nC5	0	0	1.20077	9.57726E-05	1.20067
nC6	0	0	0.895279	4.04611E-05	0.895238
nC7	0	0	0.0402558	1.04297E-06	0.0402547
nC8	0	0	0.0207997	4.67179E-07	0.0207993
nC9	0	0	0.000546208	0	0.000546202
nC10	0	0	0	0	0
H2O	104140	502699	45861.6	45251.7	399169
MDEA	485.91	360345	153.678	153.678	359859
Piperazine	503.885	40487.9	109.933	109.933	39984
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	78.5289	0.939567	77.5893
Toluene	0	0	48.3632	0.436086	47.9271
Ethylbenzene	0	0	16.7459	0.123026	16.6229
m-Xylene	0	0	15.3411	0.168213	15.1728
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	26	27	28	29	30
Temperature	°F	255.774	254.289	240.953	120	209.756
Pressure	psia	28.6959	28.6959	26.6959	25.6959	26.6959 *
Mole Fraction Vapor	%	100	0	100	0	0.0657636
Molecular Weight	lb/lbmol	18.1645	28.779	22.1721	18.1435	31.3933
Mass Density	lb/ft^3	0.0688821	60.2731	0.0796543	61.7561	47.417
Molar Flow	lbmol/h	5792.61	31402.8	3025.86	2518.45	26117.7
Mass Flow	lb/h	105220	903742	67089.6	45693.4	819919
Std Vapor Volumetric Flow	MMSCFD	52.7569	286.005	27.5584	22.9371	237.87
Std Liquid Volumetric Flow	sgpm	210.733	1808.41	144.025	91.4965	1650.2
Specific Gravity		0.627172	0.9664	0.765544	0.990178	
API Gravity			4.44731		9.79162	
Gross Ideal Gas Heating Value	Btu/ft^3	56.423	472.211	51.0771	53.951	555.969
Gross Liquid Heating Value	Btu/lb	127.042	5489.53	124.884	76.8626	6040.37

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	31	32	33	34	35
From Block	E-0401/2	E-0301/2	T-0403	P-0303/4	RCYL-1
To Block	E-0301/2	P-0303/4	PCV-0403	RCYL-1	MKUP-1

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.000115706	0.000115706	0.0190812	0.000115706	0.000116033
CO2	0.0106207	0.0106207	91.6678	0.0106207	0.0106206
N2	0	0	0.000323092	0	0
C1	0	0	0.784994	0	0
C2	0	0	0.345391	0	0
C3	0	0	0.101389	0	0
iC4	0	0	0.00821429	0	0
nC4	0	0	0.0364912	0	0
iC5	0	0	0.00184542	0	0
nC5	0	0	0.00327969	0	0
nC6	0	0	0.00204735	0	0
nC7	0	0	7.91732E-05	0	0
nC8	0	0	3.58848E-05	0	0
nC9	0	0	8.39298E-07	0	0
nC10	0	0	0	0	0
H2O	86.3849	86.3849	6.67176	86.3849	86.3849
MDEA	11.7918	11.7918	5.65271E-08	11.7918	11.7918
Piperazine	1.81255	1.81255	1.14625E-07	1.81255	1.81255
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.195759	0	0
Toluene	0	0	0.102513	0	0
Ethylbenzene	0	0	0.0308577	0	0
m-Xylene	0	0	0.0281659	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	31 %	32 %	33 %	34 %	35 %
H2S	0.000126472	0.000126472	0.0154221	0.000126472	0.000126829
CO2	0.0149909	0.0149909	95.6729	0.0149909	0.0149907
N2	0	0	0.000214643	0	0
C1	0	0	0.29865	0	0
C2	0	0	0.246295	0	0
C3	0	0	0.106026	0	0
iC4	0	0	0.0113224	0	0
nC4	0	0	0.0502986	0	0
iC5	0	0	0.00315756	0	0
nC5	0	0	0.00561162	0	0
nC6	0	0	0.0041841	0	0
nC7	0	0	0.00018814	0	0
nC8	0	0	9.721E-05	0	0
nC9	0	0	2.5528E-06	0	0
nC10	0	0	0	0	0
H2O	49.912	49.912	2.85041	49.912	49.9121
MDEA	45.0656	45.0656	1.59743E-07	45.0656	45.0656
Piperazine	5.00725	5.00725	2.34148E-07	5.00725	5.00725
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0.362631	0	0
Toluene	0	0	0.223998	0	0
Ethylbenzene	0	0	0.0776909	0	0
m-Xylene	0	0	0.0709137	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	31 %	32 %	33 %	34 %	35 %
Cyclohexane	0	0	0	0	0

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h	35 lb/h
H2S	1.00991	1.00991	3.29974	1.00991	1.01276
CO2	119.705	119.705	20470.4	119.705	119.704
N2	0	0	0.0459255	0	0
C1	0	0	63.8999	0	0
C2	0	0	52.6978	0	0
C3	0	0	22.6856	0	0
iC4	0	0	2.42256	0	0
nC4	0	0	10.762	0	0
iC5	0	0	0.675597	0	0
nC5	0	0	1.20067	0	0
nC6	0	0	0.895238	0	0
nC7	0	0	0.0402547	0	0
nC8	0	0	0.0207993	0	0
nC9	0	0	0.000546202	0	0
nC10	0	0	0	0	0
H2O	398559	398559	609.88	398559	398559
MDEA	359859	359859	3.41789E-05	359859	359859
Piperazine	39984	39984	5.00987E-05	39984	39984
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	77.5893	0	0
Toluene	0	0	47.9271	0	0
Ethylbenzene	0	0	16.6229	0	0
m-Xylene	0	0	15.1728	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	31	32	33	34	35
Temperature	°F	255.774	197.141	120	197.226	197.246
Pressure	psia	28.6959	25.6959	25.6959	64.6959 *	64.6959
Mole Fraction Vapor	%	0	0	100	0	0
Molecular Weight	lb/lbmol	31.1798	31.1798	42.1671	31.1798	31.1798
Mass Density	lb/ft^3	60.2959	62.1543	0.175605	62.1564	62.1558
Molar Flow	lbmol/h	25610.2	25610.2	507.414	25610.2	25610.3
Mass Flow	lb/h	798523	798523	21396.2	798523	798523
Std Vapor Volumetric Flow	MMSCFD	233.248	233.248	4.62133	233.248	233.248
Std Liquid Volumetric Flow	sgpm	1597.67	1597.67	52.5287	1597.67	1597.67
Specific Gravity		0.966765	0.996562	1.45592	0.996595	0.996586
API Gravity		3.96622	3.96675		3.9599	3.9599
Gross Ideal Gas Heating Value	Btu/ft^3	566.255	566.255	36.8128	566.255	566.255
Gross Liquid Heating Value	Btu/lb	6196.13	6196.13	227.437	6196.13	6196.13

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	36	37	38	39	40
From Block	--	MKUP-1	MKUP-1	AC-0501/2/3	P-0702/3/4
To Block	MKUP-1	--	AC-0501/2/3	P-0702/3/4	SPLT-101

Stream Composition

Mole Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000116033	0.000115741	0.000115741	0.000115741
CO2	0	0.0106206	0.0105939	0.0105939	0.0105939
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.9939	86.3849	86.4192	86.4192	86.4192
MDEA	0.000654174	11.7918	11.7621	11.7621	11.7621
Piperazine	0.00541391	1.81255	1.808	1.808	1.808
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	36 %	37 %	38 %	39 %	40 %
H2S	0	0.000126829	0.000126645	0.000126645	0.000126645
CO2	0	0.0149907	0.0149689	0.0149689	0.0149689
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	99.9698	49.9121	49.9849	49.9849	49.9849
MDEA	0.00432599	45.0656	45	45	45
Piperazine	0.025879	5.00725	5	5	5
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	36 %	37 %	38 %	39 %	40 %
Cyclohexane	0	0	0	0	0

Mass Flow	36 lb/h	37 lb/h	38 lb/h	39 lb/h	40 lb/h
H2S	0	0	1.01276	1.01276	1.01276
CO2	0	0	119.704	119.704	119.704
N2	0	0	0	0	0
C1	0	0	0	0	0
C2	0	0	0	0	0
C3	0	0	0	0	0
iC4	0	0	0	0	0
nC4	0	0	0	0	0
iC5	0	0	0	0	0
nC5	0	0	0	0	0
nC6	0	0	0	0	0
nC7	0	0	0	0	0
nC8	0	0	0	0	0
nC9	0	0	0	0	0
nC10	0	0	0	0	0
H2O	1163.18	0	399723	399723	399723
MDEA	0.0503342	0	359859	359859	359859
Piperazine	0.30111	0	39984.3	39984.3	39984.3
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	36	37	38	39	40
Temperature	°F	120 *	197.246	197.122	130 *	131.89
Pressure	psia	134.696 *	64.6959	64.6959	59.6959	1054.7 *
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	18.0196	31.1798	31.1467	31.1467	31.1467
Mass Density	lb/ft^3	61.6826	62.1558	62.1581	63.8675	63.9241
Molar Flow	lbmol/h	64.5701	0	25674.8	25674.8	25674.8
Mass Flow	lb/h	1163.53	0	799686	799686	799686
Std Vapor Volumetric Flow	MMSCFD	0.58808	0	233.837	233.837	233.837
Std Liquid Volumetric Flow	sgpm	2.32621	0	1600 *	1600	1600
Specific Gravity		0.988999		0.996623	1.02403	1.02494
API Gravity		9.98041		3.96571	3.96659	3.7932
Gross Ideal Gas Heating Value	Btu/ft^3	50.5183	566.255	564.958	564.958	564.958
Gross Liquid Heating Value	Btu/lb	4.37265	6196.13	6187.12	6187.12	6187.12

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	41	42	43	44	45
From Block	T-701B	E-1102	E-1101	LCV-701A	LCV-701B
To Block	LCV-701B	T-1202	T-1201	MXSP-100	MXSP-100

Stream Composition

Mole Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.000484245	0.000499992	0.000499992	0.000484303	0.000484245
CO2	1.79019	2.40004	2.40004	1.79048	1.79019
N2	0.000518599	0.994041	0.994041	0.000518597	0.000518599
C1	0.17756	76.0775	76.0775	0.177557	0.17756
C2	0.0412082	11.6142	11.6142	0.041207	0.0412082
C3	0.0136988	5.4425	5.4425	0.0136984	0.0136988
iC4	0.00131115	0.744124	0.744124	0.00131111	0.00131115
nC4	0.00411811	1.63195	1.63195	0.00411797	0.00411811
iC5	0.000376056	0.345021	0.345021	0.000376038	0.000376056
nC5	0.000521992	0.368188	0.368188	0.000521968	0.000521992
nC6	0.000309257	0.252357	0.252357	0.000309241	0.000309257
nC7	2.97052E-05	0.0713762	0.0713762	2.97037E-05	2.97052E-05
nC8	7.34111E-06	0.0121523	0.0121523	7.34069E-06	7.34111E-06
nC9	5.4083E-07	0.00318561	0.00318561	5.408E-07	5.4083E-07
nC10	0	0	0	0	0
H2O	84.6409	0	0	84.6406	84.6409
MDEA	11.5468	0	0	11.5468	11.5468
Piperazine	1.77472	0	0	1.77471	1.77472
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0040044	0.0228023	0.0228023	0.00400421	0.0040044
Toluene	0.00208021	0.011922	0.011922	0.00208009	0.00208021
Ethylbenzene	0.000629819	0.00486589	0.00486589	0.000629774	0.000629819
m-Xylene	0.000566874	0.00330729	0.00330729	0.000566829	0.000566874
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	41 %	42 %	43 %	44 %	45 %
H2S	0.000525892	0.000786284	0.000786284	0.000525955	0.000525892
CO2	2.51054	4.87382	4.87382	2.51093	2.51054
N2	0.000462933	1.28492	1.28492	0.000462931	0.000462933
C1	0.0907688	56.3161	56.3161	0.0907672	0.0907688
C2	0.0394843	16.1144	16.1144	0.039483	0.0394843
C3	0.0192486	11.0739	11.0739	0.019248	0.0192486
iC4	0.00242838	1.99569	1.99569	0.0024283	0.00242838
nC4	0.00762713	4.37678	4.37678	0.00762686	0.00762713
iC5	0.000864574	1.14863	1.14863	0.000864531	0.000864574
nC5	0.00120009	1.22576	1.22576	0.00120003	0.00120009
nC6	0.000849228	1.00347	1.00347	0.000849183	0.000849228
nC7	9.48482E-05	0.330016	0.330016	9.48432E-05	9.48482E-05
nC8	2.67213E-05	0.0640528	0.0640528	2.67197E-05	2.67213E-05
nC9	2.21033E-06	0.0188526	0.0188526	2.2102E-06	2.21033E-06
nC10	0	0	0	0	0
H2O	48.5894	0	0	48.5892	48.5894
MDEA	43.8451	0	0	43.845	43.8451
Piperazine	4.87117	0	0	4.87115	4.87117
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00996724	0.0821867	0.0821867	0.00996677	0.00996724
Toluene	0.00610758	0.0506867	0.0506867	0.00610722	0.00610758
Ethylbenzene	0.00213068	0.0238369	0.0238369	0.00213052	0.00213068
m-Xylene	0.00191774	0.0162016	0.0162016	0.00191758	0.00191774
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	41 %	42 %	43 %	44 %	45 %
Cyclohexane	0	0	0	0	0

Mass Flow	41 lb/h	42 lb/h	43 lb/h	44 lb/h	45 lb/h
H2S	1.07906	0.82635	0.82635	1.07919	1.07906
CO2	5151.27	5122.18	5122.18	5152.09	5151.27
N2	0.949873	1350.39	1350.39	0.949871	0.949873
C1	186.245	59185.8	59185.8	186.242	186.245
C2	81.0161	16935.5	16935.5	81.0139	81.0161
C3	39.4953	11638.2	11638.2	39.4943	39.4953
iC4	4.98269	2097.38	2097.38	4.98254	4.98269
nC4	15.6498	4599.81	4599.81	15.6493	15.6498
iC5	1.77398	1207.16	1207.16	1.7739	1.77398
nC5	2.46241	1288.22	1288.22	2.46231	2.46241
nC6	1.74249	1054.6	1054.6	1.74241	1.74249
nC7	0.194615	346.833	346.833	0.194605	0.194615
nC8	0.0548283	67.3167	67.3167	0.0548253	0.0548283
nC9	0.00453527	19.8133	19.8133	0.00453503	0.00453527
nC10	0	0	0	0	0
H2O	99698.6	0	0	99698.6	99698.6
MDEA	89964	0	0	89964	89964
Piperazine	9994.94	0	0	9994.94	9994.94
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	20.4514	86.3747	86.3747	20.4505	20.4514
Toluene	12.5319	53.2695	53.2695	12.5312	12.5319
Ethylbenzene	4.37185	25.0515	25.0515	4.37155	4.37185
m-Xylene	3.93492	17.0272	17.0272	3.93462	3.93492
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	41	42	43	44	45
Temperature	°F	144.807	110 *	110 *	147.126	147.124
Pressure	psia	898.696	898.696	898.696	79.6959 *	79.6959 *
Mole Fraction Vapor	%	0	100	100	0.222445	0.222448
Molecular Weight	lb/lbmol	31.3819	21.6718	21.6718	31.3819	31.3819
Mass Density	lb/ft^3	65.8856	3.84156	3.84156	47.9339	47.9335
Molar Flow	lbmol/h	6538.35	4849.42	4849.42	6538.36	6538.35
Mass Flow	lb/h	205186	105096	105096	205186	205186
Std Vapor Volumetric Flow	MMSCFD	59.5488	44.1667	44.1667	59.5489	59.5488
Std Liquid Volumetric Flow	sgpm	414.101	587.32	587.32	414.103	414.101
Specific Gravity		1.05639	0.748271	0.748271		
API Gravity		-0.0567908				
Gross Ideal Gas Heating Value	Btu/ft^3	557.915	1235.58	1235.58	557.913	557.915
Gross Liquid Heating Value	Btu/lb	6067.41	21573.6	21573.6	6067.39	6067.41

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	46	47	48	49	50*
From Block	E-701A	SPLT-101	SPLT-101	V-0101	V-0101
To Block	MIX-100	T-1201	T-1202	F-0200/1/2/3/4	--

Stream Composition

Mole Fraction	46 %	47 %	48 %	49 %	50* %
H2S	2.18559E-07	0.000115741	0.000115741	0.000484166	0.000373646
CO2	3.94121E-06	0.0105939	0.0105939	1.79131	0.674031
N2	1.01847	0	0	1.0498E-05	0.228573
C1	77.7567	0	0	0.0172198	72.0924
C2	11.851	0	0	0.00715217	15.3122
C3	5.56125	0	0	0.00211844	5.20639
iC4	0.761137	0	0	0.000173964	0.511215
nC4	1.66755	0	0	0.000752631	1.5131
iC5	0.353229	0	0	3.99959E-05	0.151066
nC5	0.376781	0	0	6.94303E-05	0.203446
nC6	0.258314	0	0	4.31439E-05	0.119624
nC7	0.0731409	0	0	1.85472E-06	0.012518
nC8	0.0124496	0	0	7.77654E-07	0.00295019
nC9	0.00326545	0	0	2.1645E-08	0.000233344
nC10	0	0	0	0	0
H2O	0.272367	86.4192	86.4192	84.834	3.81444
MDEA	0.000135233	11.7621	11.7621	11.5624	0.000590275
Piperazine	0.000280776	1.808	1.808	1.77729	0.000401534
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0178438	0	0	0.00380593	0.0923119
Toluene	0.00934809	0	0	0.00199281	0.0409519
Ethylbenzene	0.0041184	0	0	0.000599912	0.0139668
m-Xylene	0.00260738	0	0	0.000547473	0.00923444
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	46 %	47 %	48 %	49 %	50* %
H2S	3.52902E-07	0.000126645	0.000126645	0.000525621	0.000600652
CO2	8.21772E-06	0.0149689	0.0149689	2.51122	1.3992
N2	1.35173	0	0	9.36786E-06	0.302025
C1	59.0995	0	0	0.00879968	54.5523
C2	16.883	0	0	0.00685054	21.7175
C3	11.6183	0	0	0.00297563	10.8289
iC4	2.09595	0	0	0.000322084	1.40152
nC4	4.59193	0	0	0.00139345	4.14822
iC5	1.20743	0	0	9.19203E-05	0.514101
nC5	1.28793	0	0	0.000159568	0.692357
nC6	1.05464	0	0	0.000118432	0.486244
nC7	0.347225	0	0	5.92E-06	0.0591649
nC8	0.0673759	0	0	2.82962E-06	0.0158956
nC9	0.0198423	0	0	8.84298E-08	0.00141164
nC10	0	0	0	0	0
H2O	0.232472	49.9849	49.9849	48.6831	3.24134
MDEA	0.000763477	45	45	43.8887	0.00331777
Piperazine	0.00114582	5	5	4.87649	0.00163139
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.066036	0	0	0.00946989	0.340116
Toluene	0.0408074	0	0	0.00584891	0.177979
Ethylbenzene	0.020715	0	0	0.00202879	0.0699409
m-Xylene	0.0131148	0	0	0.00185145	0.0462428
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	46 %	47 %	48 %	49 %	50* %
Cyclohexane	0	0	0	0	0

Mass Flow	46 lb/h	47 lb/h	48 lb/h	49 lb/h	50* lb/h
H2S	0.000352305	0.25319	0.25319	4.30974	0.00741224
CO2	0.00820382	29.9261	29.9261	20590.3	17.2665
N2	1349.44	0	0	0.0768103	3.72709
C1	58999.5	0	0	72.1516	673.193
C2	16854.5	0	0	56.1699	268.001
C3	11598.7	0	0	24.3982	133.632
iC4	2092.4	0	0	2.64088	17.2952
nC4	4584.16	0	0	11.4254	51.1904
iC5	1205.38	0	0	0.753686	6.34417
nC5	1285.75	0	0	1.30835	8.54391
nC6	1052.86	0	0	0.971067	6.00041
nC7	346.638	0	0	0.0485401	0.730114
nC8	67.2619	0	0	0.023201	0.196157
nC9	19.8088	0	0	0.000725066	0.0174201
nC10	0	0	0	0	0
H2O	232.078	99930.6	99930.6	399169	39.9992
MDEA	0.762185	89964.7	89964.7	359859	0.0409423
Piperazine	1.14389	9996.08	9996.08	39984	0.0201319
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	65.9242	0	0	77.6469	4.19714
Toluene	40.7384	0	0	47.9572	2.19631
Ethylbenzene	20.68	0	0	16.6347	0.863093
m-Xylene	13.0926	0	0	15.1807	0.570652
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	46	47	48	49	50*
Temperature	°F	105.371	131.89	131.89	147.1	147.1
Pressure	psia	894.696	1054.7	1054.7	79.6959	79.6959
Mole Fraction Vapor	%	99.8778	0	0	0	100
Molecular Weight	lb/lbmol	21.1069	31.1467	31.1467	31.393	21.2006
Mass Density	lb/ft^3	3.77581	63.9241	63.9241	65.9077	0.26306
Molar Flow	lbmol/h	4729.77	6418.71	6418.71	26118.4	58.2075
Mass Flow	lb/h	99830.8	199922	199922	819934	1234.03
Std Vapor Volumetric Flow	MMSCFD	43.0769	58.4591	58.4591	237.876	0.530132
Std Liquid Volumetric Flow	sgpm	573.217	400	400	1650.29	6.97255
Specific Gravity			1.02494	1.02494	1.05674	0.732
API Gravity			3.7932	3.7932	-0.188875	
Gross Ideal Gas Heating Value	Btu/ft^3	1262.29	564.958	564.958	555.988	1225.33
Gross Liquid Heating Value	Btu/lb	22631.1	6187.12	6187.12	6040.67	21834.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	51	52	53	55	56
From Block	T-1201	E-1102	E-1101	E-701B	E-701B
To Block	E-1101	MIX-103	MIX-103	MIX-100	T-701B

Stream Composition

Mole Fraction	51 %	52 %	53 %	55 %	56 %
H2S	2.18581E-07	2.18581E-07	2.18581E-07	2.18558E-07	0.000499992
CO2	3.94305E-06	3.94305E-06	3.94305E-06	3.9412E-06	2.40004
N2	1.01847	1.01847	1.01847	1.01847	0.994041
C1	77.7567	77.7567	77.7567	77.7567	76.0775
C2	11.851	11.851	11.851	11.851	11.6142
C3	5.56125	5.56125	5.56125	5.56125	5.4425
iC4	0.761136	0.761136	0.761136	0.761137	0.744124
nC4	1.66754	1.66754	1.66754	1.66755	1.63195
iC5	0.353229	0.353229	0.353229	0.35323	0.345021
nC5	0.376781	0.376781	0.376781	0.376781	0.368188
nC6	0.258314	0.258314	0.258314	0.258314	0.252357
nC7	0.0731409	0.0731409	0.0731409	0.0731409	0.0713762
nC8	0.0124496	0.0124496	0.0124496	0.0124496	0.0121523
nC9	0.00326545	0.00326545	0.00326545	0.00326545	0.00318561
nC10	0	0	0	0	0
H2O	0.272394	0.272394	0.272394	0.272367	0
MDEA	0.000135247	0.000135247	0.000135247	0.000135233	0
Piperazine	0.0002808	0.0002808	0.0002808	0.000280776	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0178395	0.0178395	0.0178395	0.0178427	0.0228023
Toluene	0.00934529	0.00934529	0.00934529	0.00934748	0.011922
Ethylbenzene	0.00411739	0.00411739	0.00411739	0.0041182	0.00486589
m-Xylene	0.00260624	0.00260624	0.00260624	0.00260719	0.00330729
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	51 %	52 %	53 %	55 %	56 %
H2S	3.52937E-07	3.52937E-07	3.52937E-07	3.52902E-07	0.000786284
CO2	8.22157E-06	8.22157E-06	8.22157E-06	8.2177E-06	4.87382
N2	1.35173	1.35173	1.35173	1.35173	1.28492
C1	59.0995	59.0995	59.0995	59.0995	56.3161
C2	16.883	16.883	16.883	16.883	16.1144
C3	11.6183	11.6183	11.6183	11.6183	11.0739
iC4	2.09595	2.09595	2.09595	2.09595	1.99569
nC4	4.59193	4.59193	4.59193	4.59193	4.37678
iC5	1.20743	1.20743	1.20743	1.20743	1.14863
nC5	1.28793	1.28793	1.28793	1.28793	1.22576
nC6	1.05464	1.05464	1.05464	1.05464	1.00347
nC7	0.347226	0.347226	0.347226	0.347226	0.330016
nC8	0.0673759	0.0673759	0.0673759	0.0673759	0.0640528
nC9	0.0198424	0.0198424	0.0198424	0.0198424	0.0188526
nC10	0	0	0	0	0
H2O	0.232495	0.232495	0.232495	0.232472	0
MDEA	0.000763559	0.000763559	0.000763559	0.000763477	0
Piperazine	0.00114592	0.00114592	0.00114592	0.00114582	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0660201	0.0660201	0.0660201	0.0660318	0.0821867
Toluene	0.0407952	0.0407952	0.0407952	0.0408047	0.0506867
Ethylbenzene	0.02071	0.02071	0.02071	0.020714	0.0238369
m-Xylene	0.013109	0.013109	0.013109	0.0131138	0.0162016
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	51 %	52 %	53 %	55 %	56 %
Cyclohexane	0	0	0	0	0

Mass Flow	51 lb/h	52 lb/h	53 lb/h	55 lb/h	56 lb/h
H2S	0.00035234	0.00035234	0.00035234	0.000352248	0.826218
CO2	0.00820765	0.00820765	0.00820765	0.00820248	5121.36
N2	1349.44	1349.44	1349.44	1349.23	1350.18
C1	58999.5	58999.5	58999.5	58990.1	59176.3
C2	16854.5	16854.5	16854.5	16851.8	16932.8
C3	11598.7	11598.7	11598.7	11596.8	11636.3
iC4	2092.4	2092.4	2092.4	2092.06	2097.05
nC4	4584.15	4584.15	4584.15	4583.42	4599.07
iC5	1205.38	1205.38	1205.38	1205.19	1206.97
nC5	1285.75	1285.75	1285.75	1285.55	1288.01
nC6	1052.86	1052.86	1052.86	1052.69	1054.43
nC7	346.638	346.638	346.638	346.583	346.777
nC8	67.2619	67.2619	67.2619	67.2511	67.3059
nC9	19.8088	19.8088	19.8088	19.8056	19.8101
nC10	0	0	0	0	0
H2O	232.102	232.102	232.102	232.041	0
MDEA	0.762266	0.762266	0.762266	0.762063	0
Piperazine	1.14398	1.14398	1.14398	1.1437	0
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	65.9083	65.9083	65.9083	65.9095	86.3609
Toluene	40.7261	40.7261	40.7261	40.7291	53.261
Ethylbenzene	20.6749	20.6749	20.6749	20.6757	25.0475
m-Xylene	13.0869	13.0869	13.0869	13.0896	17.0245
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	51	52	53	55	56
Temperature	°F	132.19	105.375	105.375	105.371	110 *
Pressure	psia	896.696	894.696	894.696	894.696	898.696
Mole Fraction Vapor	%	100	99.8778	99.8778	99.8778	100
Molecular Weight	lb/lbmol	21.1069	21.1069	21.1069	21.1069	21.6718
Mass Density	lb/ft^3	3.48523	3.77576	3.77576	3.77581	3.84156
Molar Flow	lbmol/h	4729.77	4729.77	4729.77	4729.01	4848.65
Mass Flow	lb/h	99830.7	99830.7	99830.7	99814.8	105079
Std Vapor Volumetric Flow	MMSCFD	43.0769	43.0769	43.0769	43.07	44.1596
Std Liquid Volumetric Flow	sgpm	573.216	573.216	573.216	573.125	587.226
Specific Gravity		0.728767				0.748271
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1262.29	1262.29	1262.29	1262.29	1235.58
Gross Liquid Heating Value	Btu/lb	22631.1	22631.1	22631.1	22631.1	21573.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Connections

	57	59	61	62	65
From Block	E-701A	V-0701	VLVE-102	MIX-100	AC-0601/2
To Block	T-701A	VLVE-102	MXSP-100	V-0701	T-0403

Stream Composition

Mole Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000499992	6.7682E-05	6.7682E-05	2.18558E-07	0.00325844
CO2	2.40004	0.00251988	0.00251988	3.94121E-06	15.5044
N2	0.994041	0.000617657	0.000617657	1.01847	5.41844E-05
C1	76.0775	0.0803849	0.0803849	77.7567	0.131658
C2	11.6142	0.0103521	0.0103521	11.851	0.0579296
C3	5.4425	0.00292001	0.00292001	5.56125	0.0170045
iC4	0.744124	0.000195	0.000195	0.761137	0.00137759
nC4	1.63195	0.00061595	0.00061595	1.66755	0.00612008
iC5	0.345021	5.22246E-05	5.22246E-05	0.353229	0.000309484
nC5	0.368188	6.9089E-05	6.9089E-05	0.376781	0.000550024
nC6	0.252357	2.25559E-05	2.25559E-05	0.258314	0.000343341
nC7	0.0713762	2.77378E-06	2.77378E-06	0.0731409	1.32771E-05
nC8	0.0121523	3.03342E-07	3.03342E-07	0.0124496	6.01775E-06
nC9	0.00318561	2.60566E-08	2.60566E-08	0.00326545	1.40745E-07
nC10	0	0	0	0	0
H2O	0	99.5758	99.5758	0.272367	84.1316
MDEA	0	0.110177	0.110177	0.000135233	0.042621
Piperazine	0	0.215418	0.215418	0.000280776	0.0421789
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0228023	0.000522735	0.000522735	0.0178433	0.0332249
Toluene	0.011922	0.000169852	0.000169852	0.00934778	0.017347
Ethylbenzene	0.00486589	4.76943E-05	4.76943E-05	0.0041183	0.00521289
m-Xylene	0.00330729	4.35127E-05	4.35127E-05	0.00260729	0.00477557
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Mass Fraction	57 %	59 %	61 %	62 %	65 %
H2S	0.000786284	0.000126216	0.000126216	3.52902E-07	0.00500857
CO2	4.87382	0.00606815	0.00606815	8.21771E-06	30.7748
N2	1.28492	0.000946766	0.000946766	1.35173	6.84595E-05
C1	56.3161	0.0705627	0.0705627	59.0995	0.0952605
C2	16.1144	0.0170325	0.0170325	16.883	0.0785622
C3	11.0739	0.00704547	0.00704547	11.6183	0.0338184
iC4	1.99569	0.000620163	0.000620163	2.09595	0.00361124
nC4	4.37678	0.00195892	0.00195892	4.59193	0.0160433
iC5	1.14863	0.000206174	0.000206174	1.20743	0.00100707
nC5	1.22576	0.000272752	0.000272752	1.28793	0.0017898
nC6	1.00347	0.000106359	0.000106359	1.05464	0.00133445
nC7	0.330016	1.52082E-05	1.52082E-05	0.347226	6.0003E-05
nC8	0.0640528	1.89599E-06	1.89599E-06	0.0673759	3.10029E-05
nC9	0.0188526	1.82862E-07	1.82862E-07	0.0198424	8.14146E-07
nC10	0	0	0	0	0
H2O	0	98.1577	98.1577	0.232472	68.3587
MDEA	0	0.718389	0.718389	0.000763477	0.229063
Piperazine	0	1.0153	1.0153	0.00114582	0.163859
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0821867	0.00223423	0.00223423	0.0660339	0.117051
Toluene	0.0506867	0.000856329	0.000856329	0.0408061	0.0720874
Ethylbenzene	0.0238369	0.000277062	0.000277062	0.0207145	0.0249605
m-Xylene	0.0162016	0.000252771	0.000252771	0.0131143	0.0228665
Cyclopentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: Wildcat II - Refrigeration - Recovery
Location:	DOU	
Flowsheet:	2 - Amine	

Mass Fraction	57 %	59 %	61 %	62 %	65 %
Cyclohexane	0	0	0	0	0

Mass Flow	57 lb/h	59 lb/h	61 lb/h	62 lb/h	65 lb/h
H2S	0.82635	0.0002669	0.0002669	0.000704553	3.36023
CO2	5122.18	0.0128319	0.0128319	0.0164063	20646.7
N2	1350.39	0.00200206	0.00200206	2698.67	0.0459293
C1	59185.8	0.149214	0.149214	117990	63.9099
C2	16935.5	0.0360175	0.0360175	33706.3	52.7071
C3	11638.2	0.0148986	0.0148986	23195.5	22.6887
iC4	2097.38	0.00131142	0.00131142	4184.46	2.42277
nC4	4599.81	0.0041424	0.0041424	9167.58	10.7634
iC5	1207.16	0.000435982	0.000435982	2410.58	0.675641
nC5	1288.22	0.00057677	0.00057677	2571.3	1.20077
nC6	1054.6	0.00022491	0.00022491	2105.55	0.895279
nC7	346.833	3.21598E-05	3.21598E-05	693.221	0.0402558
nC8	67.3167	4.00933E-06	4.00933E-06	134.513	0.0207997
nC9	19.8133	3.86686E-07	3.86686E-07	39.6144	0.000546208
nC10	0	0	0	0	0
H2O	0	207.568	207.568	464.12	45861.6
MDEA	0	1.51913	1.51913	1.52425	153.678
Piperazine	0	2.14699	2.14699	2.28759	109.933
TEG	0	0	0	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	86.3747	0.00472458	0.00472458	131.834	78.5289
Toluene	53.2695	0.00181082	0.00181082	81.4675	48.3632
Ethylbenzene	25.0515	0.000585886	0.000585886	41.3556	16.7459
m-Xylene	17.0272	0.000534518	0.000534518	26.1821	15.3411
Cyclopentane	0	0	0	0	0
Cyclohexane	0	0	0	0	0

Stream Properties

Property	Units	57	59	61	62	65
Temperature	°F	110 *	105.308	107.235	105.371	120 *
Pressure	psia	898.696	893.696	79.6959 *	894.696	25.6959
Mole Fraction Vapor	%	100	0	0.0860134	99.8778	16.7692
Molecular Weight	lb/lbmol	21.6718	18.2755	18.2755	21.1069	22.1721
Mass Density	lb/ft^3	3.84156	61.946	50.8267	3.77581	0.5473
Molar Flow	lbmol/h	4849.42	11.5708	11.5708	9458.78	3025.86
Mass Flow	lb/h	105096	211.463	211.463	199646	67089.6
Std Vapor Volumetric Flow	MMSCFD	44.1667	0.105383	0.105383	86.1469	27.5584
Std Liquid Volumetric Flow	sgpm	587.32	0.425144	0.425144	1146.34	144.025
Specific Gravity		0.748271	0.993222			
API Gravity			9.84177			
Gross Ideal Gas Heating Value	Btu/ft^3	1235.58	62.9286	62.9286	1262.29	51.0771
Gross Liquid Heating Value	Btu/lb	21573.6	261.402	261.402	22631.1	124.884

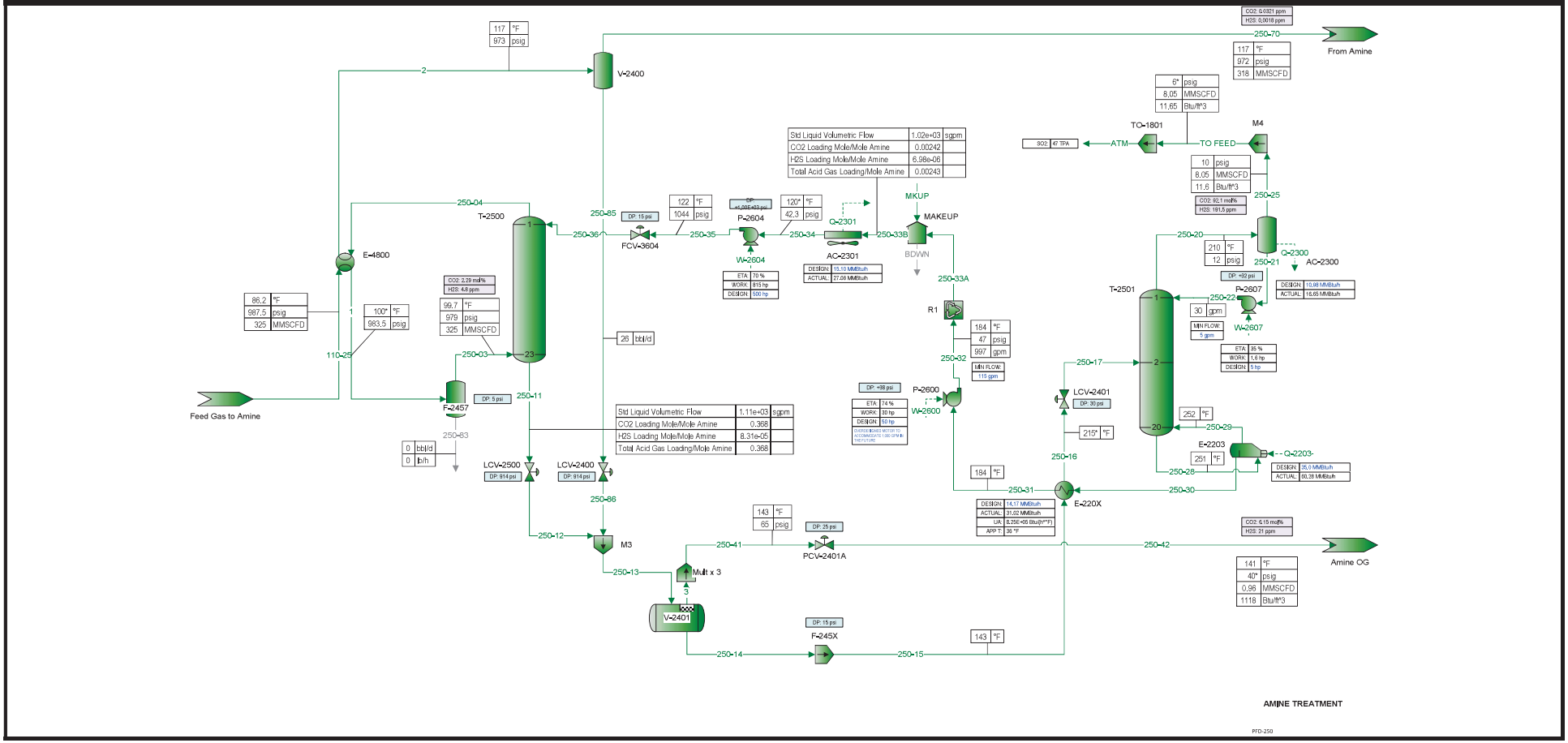
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Train 3 ProMax Reports

Amine
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127	
Location:	Midland, TX		
Flowsheet:	Amine		

Connections

	ATM	BDWN	MKUP	TO FEED	1
From Block	TO-1801	MAKEUP	--	M4	E-4800
To Block	--	--	MAKEUP	TO-1801	F-2457

Stream Composition

Mole Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.019155	9.71846E-05	0	0.019155	0.000476587
CO2	92.1319	0.0337184	0	92.1319	2.28758
N2	0.000221178	0	0	0.000221178	0.994457
Methane	0.269832	0	0	0.269832	76.1072
Ethane	0.0805896	0	0	0.0805896	11.6187
Propane	0.0212258	0	0	0.0212258	5.44491
i-Butane	0.00149899	0	0	0.00149899	0.744534
n-Butane	0.00667442	0	0	0.00667442	1.63288
i-Pentane	0.000324635	0	0	0.000324635	0.345293
n-Pentane	0.000561137	0	0	0.000561137	0.368509
n-Hexane	0.000259357	0	0	0.000259357	0.252772
n-Heptane	8.335E-06	0	0	8.335E-06	0.0716083
n-Octane	4.17904E-06	0	0	4.17904E-06	0.0122387
n-Nonane	6.80299E-08	0	0	6.80299E-08	0.00323923
n-Decane	0	0	0	0	0
Water	7.39994	86.0387	99.9698	7.39994	0.0728484
MDEA	1.70497E-08	11.0228	0.00024083	1.70497E-08	0
Piperazine	3.31175E-08	2.90442	0.0299497	3.31175E-08	0
TEG	0	0.00021539	0	0	5.55797E-06
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0409536	0	0	0.0409536	0.0226898
Toluene	0.0174478	0	0	0.0174478	0.0118601
Ethylbenzene	0.00492091	0	0	0.00492091	0.0048508
m-Xylene	0.0044724	0	0	0.0044724	0.00329926
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.0155333	0.000106321	0	0.0155333	0.000750421
CO2	96.4779	0.0476349	0	96.4779	4.6513
N2	0.000147428	0	0	0.000147428	1.28708
Methane	0.103	0	0	0.103	56.4091
Ethane	0.0576594	0	0	0.0576594	16.1409
Propane	0.0222705	0	0	0.0222705	11.0927
i-Butane	0.00207306	0	0	0.00207306	1.9993
n-Butane	0.00923053	0	0	0.00923053	4.3848
i-Pentane	0.000557308	0	0	0.000557308	1.15098
n-Pentane	0.000963317	0	0	0.000963317	1.22837
n-Hexane	0.000531805	0	0	0.000531805	1.00639
n-Heptane	1.98725E-05	0	0	1.98725E-05	0.331506
n-Octane	1.13585E-05	0	0	1.13585E-05	0.0645895
n-Nonane	2.07609E-07	0	0	2.07609E-07	0.0191941
n-Decane	0	0	0	0	0
Water	3.17205	49.7563	99.8554	3.17205	0.0606335
MDEA	4.83423E-08	42.1642	0.00159115	4.83423E-08	0
Piperazine	6.78752E-08	8.03072	0.143033	6.78752E-08	0
TEG	0	0.00103832	0	0	3.85621E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0761167	0	0	0.0761167	0.0818842
Toluene	0.0382519	0	0	0.0382519	0.0504872
Ethylbenzene	0.0124308	0	0	0.0124308	0.0237929
m-Xylene	0.0112978	0	0	0.0112978	0.0161826
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
Cyclopentane	0	0	0	0	0

Mass Flow	ATM lb/h	BDWN lb/h	MKUP lb/h	TO FEED lb/h	1 lb/h
H2S	5.773	0	0	5.773	5.80023
CO2	35856.4	0	0	35856.4	35951.3
N2	0.054792	0	0	0.054792	9948.18
Methane	38.2802	0	0	38.2802	436002
Ethane	21.4293	0	0	21.4293	124758
Propane	8.27692	0	0	8.27692	85739
i-Butane	0.770462	0	0	0.770462	15453.2
n-Butane	3.43056	0	0	3.43056	33891.4
i-Pentane	0.207126	0	0	0.207126	8896.28
n-Pentane	0.35802	0	0	0.35802	9494.43
n-Hexane	0.197647	0	0	0.197647	7778.65
n-Heptane	0.00738569	0	0	0.00738569	2562.31
n-Octane	0.00422144	0	0	0.00422144	499.231
n-Nonane	7.71585E-05	0	0	7.71585E-05	148.357
n-Decane	0	0	0	0	0
Water	1178.9	0	1951.86	1178.9	468.654
MDEA	1.79666E-05	0	0.0311019	1.79666E-05	0
Piperazine	2.52261E-05	0	2.79584	2.52261E-05	0
TEG	0	0	0	0	0.298058
UCARSOL™ AP-814	0	0	0	0	0
Benzene	28.289	0	0	28.289	632.907
Toluene	14.2164	0	0	14.2164	390.231
Ethylbenzene	4.61995	0	0	4.61995	183.902
m-Xylene	4.19886	0	0	4.19886	125.08
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	ATM	BDWN	MKUP	TO FEED	1
Temperature	°F	118.761	183.746	100 *	119.505	100 *
Pressure	psig	0 *	47.2809	65 *	6 *	983.5
Mole Fraction Vapor	%	100	0	0	100	100
Molecular Weight	lb/lbmol	42.027	31.1521	18.0359	42.027	21.6445
Mass Density	lb/ft^3	0.0894718	62.4799	61.9603	0.130344	4.4878
Molar Flow	lbmol/h	884.32	0	108.377	884.32	35710.2
Mass Flow	lb/h	37165.4	0	1954.68	37165.4	772929
Std Vapor Volumetric Flow	MMSCFD	8.05405	0	0.987058	8.05405	325.234
Std Liquid Volumetric Flow	sgpm	90.6299	0	3.90972	90.6299	4323.29
Specific Gravity		1.45108		0.993451	1.45108	0.747329
API Gravity				9.97581		
Gross Ideal Gas Heating Value	Btu/ft^3	11.6463	573.539	51.3324	11.6463	1236.16
Gross Liquid Heating Value	Btu/lb	-1.10218	6294.98	21.4678	-1.10218	21610.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	2	3	110-25	250-03	250-04
From Block	E-4800	V-2401	Feed Gas to Amine	F-2457	T-2500
To Block	V-2400	Mult x 3	E-4800	T-2500	E-4800

Stream Composition

Mole Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	2.36117E-07	0.00209862	0.000476587	0.000476587	2.36117E-07
CO2	1.06792E-05	6.15369	2.28758	2.28758	1.06792E-05
N2	1.0167	0.26345	0.994457	0.994457	1.0167
Methane	77.7521	71.3084	76.1072	76.1072	77.7521
Ethane	11.8669	12.8192	11.6187	11.6187	11.8669
Propane	5.56359	4.05078	5.44491	5.44491	5.56359
i-Butane	0.760989	0.363571	0.744534	0.744534	0.760989
n-Butane	1.66859	1.09854	1.63288	1.63288	1.66859
i-Pentane	0.353	0.102177	0.345293	0.345293	0.353
n-Pentane	0.3767	0.138029	0.368509	0.368509	0.3767
n-Hexane	0.258419	0.0695405	0.252772	0.252772	0.258419
n-Heptane	0.0732233	0.0061278	0.0716083	0.0716083	0.0732233
n-Octane	0.0125141	0.00156817	0.0122387	0.0122387	0.0125141
n-Nonane	0.00331248	9.28151E-05	0.00323923	0.00323923	0.00331248
n-Decane	0	0	0	0	0
Water	0.25152	3.483	0.0728484	0.0728484	0.25152
MDEA	0.000142514	0.000344309	0	0	0.000142514
Piperazine	0.00051934	7.41378E-05	0	0	0.00051934
TEG	2.21519E-10	4.92744E-10	5.55797E-06	5.55797E-06	2.21519E-10
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0220822	0.084192	0.0226898	0.0226898	0.0220822
Toluene	0.0116511	0.0356944	0.0118601	0.0118601	0.0116511
Ethylbenzene	0.00482421	0.0117826	0.0048508	0.0048508	0.00482421
m-Xylene	0.00325302	0.00767068	0.00329926	0.00329926	0.00325302
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	3.811E-07	0.00329576	0.000750421	0.000750421	3.811E-07
CO2	2.2258E-05	12.4794	4.6513	4.6513	2.2258E-05
N2	1.34884	0.340074	1.28708	1.28708	1.34884
Methane	59.0723	52.7135	56.4091	56.4091	59.0723
Ethane	16.8988	17.7619	16.1409	16.1409	16.8988
Propane	11.6185	8.23084	11.0927	11.0927	11.6185
i-Butane	2.0947	0.973735	1.9993	1.9993	2.0947
n-Butane	4.59294	2.94217	4.3848	4.3848	4.59294
i-Pentane	1.20616	0.339698	1.15098	1.15098	1.20616
n-Pentane	1.28714	0.458891	1.22837	1.22837	1.28714
n-Hexane	1.05465	0.276141	1.00639	1.00639	1.05465
n-Heptane	0.347477	0.0282937	0.331506	0.331506	0.347477
n-Octane	0.067698	0.00825423	0.0645895	0.0645895	0.067698
n-Nonane	0.02012	0.000548534	0.0191941	0.0191941	0.02012
n-Decane	0	0	0	0	0
Water	0.214593	2.89137	0.0606335	0.0606335	0.214593
MDEA	0.000804259	0.00189059	0	0	0.000804259
Piperazine	0.00211853	0.000294261	0	0	0.00211853
TEG	1.57544E-09	3.40976E-09	3.85621E-05	3.85621E-05	1.57544E-09
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0816884	0.303038	0.0818842	0.0818842	0.0816884
Toluene	0.0508401	0.151548	0.0504872	0.0504872	0.0508401
Ethylbenzene	0.0242554	0.0576411	0.0237929	0.0237929	0.0242554
m-Xylene	0.0163557	0.0375254	0.0161826	0.0161826	0.0163557

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Flow	2 lb/h	3 lb/h	110-25 lb/h	250-03 lb/h	250-04 lb/h
H2S	0.00281	0.0250807	5.80023	5.80023	0.00281
CO2	0.164117	94.9678	35951.3	35951.3	0.164117
N2	9945.55	2.58796	9948.18	9948.18	9945.55
Methane	435563	401.149	436002	436002	435563
Ethane	124601	135.168	124758	124758	124601
Propane	85668.1	62.6366	85739	85739	85668.1
i-Butane	15445	7.41011	15453.2	15453.2	15445
n-Butane	33865.6	22.3899	33891.4	33891.4	33865.6
i-Pentane	8893.49	2.5851	8896.28	8896.28	8893.49
n-Pentane	9490.58	3.49215	9494.43	9494.43	9490.58
n-Hexane	7776.35	2.10143	7778.65	7778.65	7776.35
n-Heptane	2562.08	0.215315	2562.31	2562.31	2562.08
n-Octane	499.164	0.0628146	499.231	499.231	499.164
n-Nonane	148.353	0.00417434	148.357	148.357	148.353
n-Decane	0	0	0	0	0
Water	1582.28	22.0033	468.654	468.654	1582.28
MDEA	5.93012	0.0143874	0	0	5.93012
Piperazine	15.6208	0.00223932	0	0	15.6208
TEG	1.16164E-05	2.59482E-08	0.298058	0.298058	1.16164E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	602.321	2.30612	632.907	632.907	602.321
Toluene	374.864	1.15328	390.231	390.231	374.864
Ethylbenzene	178.844	0.438648	183.902	183.902	178.844
m-Xylene	120.597	0.285568	125.08	125.08	120.597
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	2	3	110-25	250-03	250-04
Temperature	°F	117.417	142.92	86.1581	99.6754	131.954
Pressure	psig	972.5	65	987.5	978.5	976.5
Mole Fraction Vapor	%	99.942	100	100	100	100
Molecular Weight	lb/lbmol	21.1154	21.7015	21.6445	21.6445	21.1154
Mass Density	lb/ft^3	4.06891	0.265691	4.75039	4.46589	3.90652
Molar Flow	lbmol/h	34919.5	35.0666	35710.2	35710.2	34919.5
Mass Flow	lb/h	737339	760.999	772929	772929	737339
Std Vapor Volumetric Flow	MMSCFD	318.033	0.319374	325.234	325.234	318.033
Std Liquid Volumetric Flow	sgpm	4233.25	4.10137	4323.29	4323.29	4233.25
Specific Gravity			0.749297	0.747329	0.747329	0.72906
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1262.94	1117.57	1236.16	1236.16	1262.94
Gross Liquid Heating Value	Btu/lb	22633.9	19453.5	21610.4	21610.4	22633.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-11	250-12	250-13	250-14	250-15
From Block	T-2500	LCV-2500	M3	V-2401	F-245X
To Block	LCV-2500	M3	V-2401	F-245X	E-220X

Stream Composition

Mole Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.00109593	0.00109593	0.00109473	0.00109265	0.00109265
CO2	4.85287	4.85287	4.84708	4.84437	4.84437
N2	0.000555985	0.000555985	0.000556079	1.1553E-05	1.1553E-05
Methane	0.16155	0.16155	0.16146	0.0140944	0.0140944
Ethane	0.030722	0.030722	0.030698	0.00420953	0.00420953
Propane	0.00948722	0.00948722	0.00947938	0.00110871	0.00110871
i-Butane	0.000830391	0.000830391	0.000829636	7.82985E-05	7.82985E-05
n-Butane	0.00262097	0.00262097	0.00261859	0.000348632	0.000348632
i-Pentane	0.000228334	0.000228334	0.000228122	1.6957E-05	1.6957E-05
n-Pentane	0.000314851	0.000314851	0.000314556	2.93105E-05	2.93105E-05
n-Hexane	0.000157422	0.000157422	0.000157259	1.35473E-05	1.35473E-05
n-Heptane	1.31135E-05	1.31135E-05	1.31006E-05	4.35371E-07	4.35371E-07
n-Octane	3.463E-06	3.463E-06	3.45923E-06	2.18288E-07	2.18288E-07
n-Nonane	1.95602E-07	1.95602E-07	1.95395E-07	3.55348E-09	3.55348E-09
n-Decane	0	0	0	0	0
Water	81.7484	81.7484	81.7689	81.931	81.931
MDEA	10.4377	10.4377	10.4255	10.4471	10.4471
Piperazine	2.74944	2.74944	2.74703	2.75272	2.75272
TEG	0.000215675	0.000215675	0.000215418	0.000215864	0.000215864
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00231085	0.00231085	0.00230878	0.00213917	0.00213917
Toluene	0.00098423	0.00098423	0.000983266	0.00091137	0.00091137
Ethylbenzene	0.000281143	0.000281143	0.000280863	0.00025704	0.00025704
m-Xylene	0.00024923	0.00024923	0.000248984	0.000233612	0.000233612
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.00117768	0.00117768	0.00117697	0.00117396	0.00117396
CO2	6.73412	6.73412	6.72937	6.72122	6.72122
N2	0.000491094	0.000491094	0.000491417	1.0203E-05	1.0203E-05
Methane	0.081717	0.081717	0.0817114	0.00712824	0.00712824
Ethane	0.0291276	0.0291276	0.0291191	0.00399041	0.00399041
Propane	0.0131908	0.0131908	0.0131863	0.00154127	0.00154127
i-Butane	0.00152181	0.00152181	0.00152117	0.00014347	0.00014347
n-Butane	0.0048033	0.0048033	0.00480129	0.000638813	0.000638813
i-Pentane	0.00051944	0.00051944	0.000519211	3.85694E-05	3.85694E-05
n-Pentane	0.000716257	0.000716257	0.000715936	6.66679E-05	6.66679E-05
n-Hexane	0.000427745	0.000427745	0.000427511	3.68044E-05	3.68044E-05
n-Heptane	4.14314E-05	4.14314E-05	4.1411E-05	1.37531E-06	1.37531E-06
n-Octane	1.24728E-05	1.24728E-05	1.24653E-05	7.86084E-07	7.86084E-07
n-Nonane	7.91013E-07	7.91013E-07	7.90561E-07	1.43679E-08	1.43679E-08
n-Decane	0	0	0	0	0
Water	46.4361	46.4361	46.4705	46.5322	46.5322
MDEA	39.2174	39.2174	39.1907	39.2463	39.2463
Piperazine	7.46728	7.46728	7.46438	7.47496	7.47496
TEG	0.00102124	0.00102124	0.00102052	0.00102196	0.00102196
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00569146	0.00569146	0.00568914	0.00526777	0.00526777
Toluene	0.00285939	0.00285939	0.00285798	0.00264728	0.00264728
Ethylbenzene	0.000941119	0.000941119	0.00094064	0.000860291	0.000860291
m-Xylene	0.000834291	0.000834291	0.000833875	0.000781881	0.000781881
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-11 lb/h	250-12 lb/h	250-13 lb/h	250-14 lb/h	250-15 lb/h
H2S	6.32887	6.32887	6.32951	6.30443	6.30443
CO2	36189.2	36189.2	36189.3	36094.4	36094.4
N2	2.63915	2.63915	2.64275	0.054792	0.054792
Methane	439.148	439.148	439.429	38.2802	38.2802
Ethane	156.532	156.532	156.597	21.4293	21.4293
Propane	70.8873	70.8873	70.9136	8.27692	8.27692
i-Butane	8.17822	8.17822	8.18058	0.770462	0.770462
n-Butane	25.813	25.813	25.8205	3.43056	3.43056
i-Pentane	2.79148	2.79148	2.79222	0.207126	0.207126
n-Pentane	3.84918	3.84918	3.85017	0.35802	0.35802
n-Hexane	2.29871	2.29871	2.29908	0.197647	0.197647
n-Heptane	0.222653	0.222653	0.222701	0.00738569	0.00738569
n-Octane	0.0670288	0.0670288	0.067036	0.00422144	0.00422144
n-Nonane	0.00425092	0.00425092	0.0042515	7.71585E-05	7.71585E-05
n-Decane	0	0	0	0	0
Water	249548	249548	249910	249888	249888
MDEA	210755	210755	210761	210761	210761
Piperazine	40129.3	40129.3	40142.1	40142.1	40142.1
TEG	5.48815	5.48815	5.48817	5.48817	5.48817
UCARSOL™ AP-814	0	0	0	0	0
Benzene	30.586	30.586	30.5952	28.289	28.289
Toluene	15.3664	15.3664	15.3697	14.2164	14.2164
Ethylbenzene	5.05759	5.05759	5.05859	4.61995	4.61995
m-Xylene	4.48349	4.48349	4.48443	4.19886	4.19886
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-11	250-12	250-13	250-14	250-15
Temperature	°F	140.182	142.939	142.92	142.92	142.963
Pressure	psig	978.5	65	65 *	65	50
Mole Fraction Vapor	%	0	0.20685	0.2067	0	0.00457318
Molecular Weight	lb/lbmol	31.715	31.715	31.6995	31.7202	31.7202
Mass Density	lb/ft^3	69.8472	50.9722	50.9713	69.8658	69.1633
Molar Flow	lbmol/h	16944.7	16944.7	16965	16929.9	16929.9
Mass Flow	lb/h	537401	537401	537782	537021	537021
Std Vapor Volumetric Flow	MMSCFD	154.326	154.326	154.511	154.191	154.191
Std Liquid Volumetric Flow	sgpm	1107.05	1107.05	1107.82	1103.72	1103.72
Specific Gravity		1.11991			1.12021	
API Gravity		-6.29947			-6.3903	
Gross Ideal Gas Heating Value	Btu/ft^3	545.927	545.927	545.376	544.191	544.191
Gross Liquid Heating Value	Btu/lb	5882.16	5882.16	5878.5	5859.26	5859.26

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-16	250-17	250-20	250-21	250-22
From Block	E-220X	LCV-2401	T-2501	AC-2300	P-2607
To Block	LCV-2401	T-2501	AC-2300	P-2607	T-2501

Stream Composition

Mole Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.00109265	0.00109265	0.00988756	4.94513E-05	4.94513E-05
CO2	4.84437	4.84437	47.4888	0.0965389	0.0965389
N2	1.1553E-05	1.1553E-05	0.000113894	3.26109E-09	3.26109E-09
Methane	0.0140944	0.0140944	0.13895	7.70083E-06	7.70083E-06
Ethane	0.00420953	0.00420953	0.0414997	2.5681E-06	2.5681E-06
Propane	0.00110871	0.00110871	0.0109302	5.19392E-07	5.19392E-07
i-Butane	7.82985E-05	7.82985E-05	0.000771896	2.31331E-08	2.31331E-08
n-Butane	0.000348632	0.000348632	0.00343697	1.55188E-07	1.55188E-07
i-Pentane	1.6957E-05	1.6957E-05	0.000167168	3.80819E-09	3.80819E-09
n-Pentane	2.93105E-05	2.93105E-05	0.000288953	8.12677E-09	8.12677E-09
n-Hexane	1.35473E-05	1.35473E-05	0.000133553	2.12759E-09	2.12759E-09
n-Heptane	4.35371E-07	4.35371E-07	4.29201E-06	0	0
n-Octane	2.18288E-07	2.18288E-07	2.15194E-06	0	0
n-Nonane	3.55348E-09	3.55348E-09	3.50311E-08	0	0
n-Decane	0	0	0	0	0
Water	81.931	81.931	52.2486	99.8591	99.8591
MDEA	10.4471	10.4471	0.0115833	0.0238798	0.0238798
Piperazine	2.75272	2.75272	0.00985798	0.020323	0.020323
TEG	0.000215864	0.000215864	2.82404E-08	5.82198E-08	5.82198E-08
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00213917	0.00213917	0.0211322	9.0154E-05	9.0154E-05
Toluene	0.00091137	0.00091137	0.0089985	2.88862E-05	2.88862E-05
Ethylbenzene	0.00025704	0.00025704	0.00253717	6.63418E-06	6.63418E-06
m-Xylene	0.000233612	0.000233612	0.00230738	9.03287E-06	9.03287E-06
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.00117396	0.00117396	0.011081	9.32238E-05	9.32238E-05
CO2	6.72122	6.72122	68.725	0.23501	0.23501
N2	1.0203E-05	1.0203E-05	0.000104917	5.0532E-09	5.0532E-09
Methane	0.00712824	0.00712824	0.0733003	6.83356E-06	6.83356E-06
Ethane	0.00399041	0.00399041	0.0410338	4.27139E-06	4.27139E-06
Propane	0.00154127	0.00154127	0.0158489	1.26686E-06	1.26686E-06
i-Butane	0.00014347	0.00014347	0.00147529	7.43727E-08	7.43727E-08
n-Butane	0.000638813	0.000638813	0.00656893	4.98929E-07	4.98929E-07
i-Pentane	3.85694E-05	3.85694E-05	0.000396606	1.5198E-08	1.5198E-08
n-Pentane	6.66679E-05	6.66679E-05	0.000685542	3.24329E-08	3.24329E-08
n-Hexane	3.68044E-05	3.68044E-05	0.000378456	1.01417E-08	1.01417E-08
n-Heptane	1.37531E-06	1.37531E-06	1.41421E-05	0	0
n-Octane	7.86084E-07	7.86084E-07	8.08318E-06	0	0
n-Nonane	1.43679E-08	1.43679E-08	1.47742E-07	0	0
n-Decane	0	0	0	0	0
Water	46.5322	46.5322	30.9523	99.51	99.51
MDEA	39.2463	39.2463	0.0453886	0.157401	0.157401
Piperazine	7.47496	7.47496	0.0279221	0.0968297	0.0968297
TEG	0.00102196	0.00102196	1.39457E-07	4.83616E-07	4.83616E-07
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00526777	0.00526777	0.0542798	0.000389529	0.000389529
Toluene	0.00264728	0.00264728	0.0272639	0.000147221	0.000147221
Ethylbenzene	0.000860291	0.000860291	0.00885745	3.89589E-05	3.89589E-05
m-Xylene	0.000781881	0.000781881	0.00805522	5.30451E-05	5.30451E-05
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-16 lb/h	250-17 lb/h	250-20 lb/h	250-21 lb/h	250-22 lb/h
H2S	6.30443	6.30443	5.78704	0.0140393	0.0140393
CO2	36094.4	36094.4	35891.7	35.392	35.392
N2	0.054792	0.054792	0.0547928	7.61E-07	7.61E-07
Methane	38.2802	38.2802	38.2812	0.00102912	0.00102912
Ethane	21.4293	21.4293	21.43	0.000643261	0.000643261
Propane	8.27692	8.27692	8.27711	0.000190786	0.000190786
i-Butane	0.770462	0.770462	0.770473	1.12003E-05	1.12003E-05
n-Butane	3.43056	3.43056	3.43063	7.51374E-05	7.51374E-05
i-Pentane	0.207126	0.207126	0.207128	2.28878E-06	2.28878E-06
n-Pentane	0.35802	0.35802	0.358025	4.88431E-06	4.88431E-06
n-Hexane	0.197647	0.197647	0.197649	1.52731E-06	1.52731E-06
n-Heptane	0.00738569	0.00738569	0.00738573	0	0
n-Octane	0.00422144	0.00422144	0.00422145	0	0
n-Nonane	7.71585E-05	7.71585E-05	7.71587E-05	0	0
n-Decane	0	0	0	0	0
Water	249888	249888	16164.9	14986	14986
MDEA	210761	210761	23.7043	23.7043	23.7043
Piperazine	40142.1	40142.1	14.5823	14.5823	14.5823
TEG	5.48817	5.48817	7.28315E-05	7.28314E-05	7.28314E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	28.289	28.289	28.3477	0.0586622	0.0586622
Toluene	14.2164	14.2164	14.2386	0.0221711	0.0221711
Ethylbenzene	4.61995	4.61995	4.62581	0.00586712	0.00586712
m-Xylene	4.19886	4.19886	4.20685	0.00798847	0.00798847
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-16	250-17	250-20	250-21	250-22
Temperature	°F	215 *	203.087	209.668	120 *	120.191
Pressure	psig	45	15 *	12	10	42.12
Mole Fraction Vapor	%	0.399369	1.61215	100	0	0
Molecular Weight	lb/lbmol	31.7202	31.7202	30.4104	18.0785	18.0785
Mass Density	lb/ft^3	33.3338	7.0524	0.107417	61.7177	61.7168
Molar Flow	lbmol/h	16929.9	16929.9	1717.34	833.022	833.022
Mass Flow	lb/h	537021	537021	52225.1	15059.8	15059.8
Std Vapor Volumetric Flow	MMSCFD	154.191	154.191	15.6409	7.58684	7.58684
Std Liquid Volumetric Flow	sgpm	1103.72	1103.72	120.761	30.1308	30.1308
Specific Gravity				1.04999	0.989561	0.989547
API Gravity					9.88738	9.88347
Gross Ideal Gas Heating Value	Btu/ft^3	544.191	544.191	31.16	51.8754	51.8754
Gross Liquid Heating Value	Btu/lb	5859.26	5859.26	8.84413	33.3902	33.3902

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-25	250-28	250-29	250-30	250-31
From Block	AC-2300	T-2501	E-2203	E-2203	E-220X
To Block	M4	E-2203	T-2501	E-220X	P-2600

Stream Composition

Mole Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.019155	9.85511E-05	0.000104873	9.71803E-05	9.71803E-05
CO2	92.1319	0.0464616	0.105286	0.0337072	0.0337072
N2	0.000221178	0	0	0	0
Methane	0.269832	0	0	0	0
Ethane	0.0805896	0	0	0	0
Propane	0.0212258	0	0	0	0
i-Butane	0.00149899	0	0	0	0
n-Butane	0.00667442	0	0	0	0
i-Pentane	0.000324635	0	0	0	0
n-Pentane	0.000561137	0	0	0	0
n-Hexane	0.000259357	0	0	0	0
n-Heptane	8.335E-06	0	0	0	0
n-Octane	4.17904E-06	0	0	0	0
n-Nonane	6.80299E-08	0	0	0	0
n-Decane	0	0	0	0	0
Water	7.39994	88.4668	99.6658	86.0387	86.0387
MDEA	1.70497E-08	9.06949	0.0603059	11.0229	11.0229
Piperazine	3.31175E-08	2.41692	0.168481	2.90443	2.90443
TEG	0	0.000187209	1.79987E-07	0.000227761	0.000227761
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0409536	0	0	0	0
Toluene	0.0174478	0	0	0	0
Ethylbenzene	0.00492091	0	0	0	0
m-Xylene	0.0044724	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.0155333	0.00011643	0.000196185	0.000106317	0.000106317
CO2	96.4779	0.0708813	0.254336	0.0476191	0.0476191
N2	0.000147428	0	0	0	0
Methane	0.103	0	0	0	0
Ethane	0.0576594	0	0	0	0
Propane	0.0222705	0	0	0	0
i-Butane	0.00207306	0	0	0	0
n-Butane	0.00923053	0	0	0	0
i-Pentane	0.000557308	0	0	0	0
n-Pentane	0.000963317	0	0	0	0
n-Hexane	0.000531805	0	0	0	0
n-Heptane	1.98725E-05	0	0	0	0
n-Octane	1.13585E-05	0	0	0	0
n-Nonane	2.07609E-07	0	0	0	0
n-Decane	0	0	0	0	0
Water	3.17205	55.2475	98.5545	49.7561	49.7561
MDEA	4.83423E-08	37.4639	0.394446	42.1643	42.1643
Piperazine	6.78752E-08	7.21666	0.796566	8.03074	8.03074
TEG	0	0.000974563	1.48362E-06	0.00109795	0.00109795
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0761167	0	0	0	0
Toluene	0.0382519	0	0	0	0
Ethylbenzene	0.0124308	0	0	0	0
m-Xylene	0.0112978	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-25 lb/h	250-28 lb/h	250-29 lb/h	250-30 lb/h	250-31 lb/h
H2S	5.773	0.655775	0.124346	0.531429	0.531429
CO2	35856.4	399.23	161.203	238.027	238.027
N2	0.054792	0	0	0	0
Methane	38.2802	0	0	0	0
Ethane	21.4293	0	0	0	0
Propane	8.27692	0	0	0	0
i-Butane	0.770462	0	0	0	0
n-Butane	3.43056	0	0	0	0
i-Pentane	0.207126	0	0	0	0
n-Pentane	0.35802	0	0	0	0
n-Hexane	0.197647	0	0	0	0
n-Heptane	0.00738569	0	0	0	0
n-Octane	0.00422144	0	0	0	0
n-Nonane	7.71585E-05	0	0	0	0
n-Decane	0	0	0	0	0
Water	1178.9	311175	62466	248709	248709
MDEA	1.79666E-05	211011	250.009	210761	210761
Piperazine	2.52261E-05	40647	504.881	40142.1	40142.1
TEG	0	5.48911	0.000940351	5.48817	5.48817
UCARSOL™ AP-814	0	0	0	0	0
Benzene	28.289	0	0	0	0
Toluene	14.2164	0	0	0	0
Ethylbenzene	4.61995	0	0	0	0
m-Xylene	4.19886	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-25	250-28	250-29	250-30	250-31
Temperature	°F	120	251.103	252.498	252.498	183.663
Pressure	psig	10	14	14	14	9
Mole Fraction Vapor	%	100	0	100	0	0
Molecular Weight	lb/lbmol	42.027	28.8475	18.2184	31.1522	31.1522
Mass Density	lb/ft^3	0.157619	60.3752	0.0656497	60.3696	62.4778
Molar Flow	lbmol/h	884.32	19524.6	3479.01	16045.6	16045.6
Mass Flow	lb/h	37165.4	563238	63382.2	499856	499856
Std Vapor Volumetric Flow	MMSCFD	8.05405	177.823	31.6855	146.137	146.137
Std Liquid Volumetric Flow	sgpm	90.6299	1140.24	127.149	1013.09	1013.09
Specific Gravity		1.45108	0.968036	0.629035	0.967946	1.00175
API Gravity			4.52981		4.13042	4.1313
Gross Ideal Gas Heating Value	Btu/ft^3	11.6463	481.729	58.2819	573.541	573.541
Gross Liquid Heating Value	Btu/lb	-1.10218	5605.29	166.022	6294.99	6294.99

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-32	250-33A	250-33B	250-34	250-35
From Block	P-2600	R1	MAKEUP	AC-2301	P-2604
To Block	R1	MAKEUP	AC-2301	P-2604	FCV-3604

Stream Composition

Mole Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	9.71803E-05	9.71846E-05	9.65326E-05	9.65326E-05	9.65326E-05
CO2	0.0337072	0.0337184	0.0334921	0.0334921	0.0334921
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	86.0387	86.0387	86.1322	86.1322	86.1322
MDEA	11.0229	11.0228	10.9489	10.9489	10.9489
Piperazine	2.90443	2.90442	2.88513	2.88513	2.88513
TEG	0.000227761	0.00021539	0.000213945	0.000213945	0.000213945
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	0.000106317	0.000106321	0.000105907	0.000105907	0.000105907
CO2	0.0476191	0.0476349	0.0474494	0.0474494	0.0474494
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	49.7561	49.7563	49.9514	49.9514	49.9514
MDEA	42.1643	42.1642	42	42	42
Piperazine	8.03074	8.03072	8	8	8
TEG	0.00109795	0.00103832	0.00103427	0.00103427	0.00103427
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-32 lb/h	250-33A lb/h	250-33B lb/h	250-34 lb/h	250-35 lb/h
H2S	0.531429	0.531455	0.531455	0.531455	0.531455
CO2	238.027	238.106	238.106	238.106	238.106
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	248709	248710	250662	250662	250662
MDEA	210761	210761	210761	210761	210761
Piperazine	40142.1	40142.1	40144.9	40144.9	40144.9
TEG	5.48817	5.19011	5.19011	5.19011	5.19011
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-32	250-33A	250-33B	250-34	250-35
Temperature	°F	183.747	183.746	183.384	120 *	122.196
Pressure	psig	47.2809	47.2809	47.2809	42.2809	1043.5
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	31.1522	31.1521	31.0641	31.0641	31.0641
Mass Density	lb/ft^3	62.4799	62.4799	62.4862	64.0098	64.061
Molar Flow	lbmol/h	16045.6	16045.7	16154.1	16154.1	16154.1
Mass Flow	lb/h	499856	499857	501811	501811	501811
Std Vapor Volumetric Flow	MMSCFD	146.137	146.138	147.125	147.125	147.125
Std Liquid Volumetric Flow	sgpm	1013.09	1013.09	1017 *	1017	1017
Specific Gravity		1.00178	1.00178	1.00188	1.02631	1.02713
API Gravity		4.12454	4.12452	4.13915	4.14003	3.96456
Gross Ideal Gas Heating Value	Btu/ft^3	573.541	573.539	570.035	570.035	570.035
Gross Liquid Heating Value	Btu/lb	6294.99	6294.98	6270.54	6270.54	6270.54

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-36	250-41	250-42	250-70	250-83
From Block	FCV-3604	Mult x 3	PCV-2401A	V-2400	F-2457
To Block	T-2500	PCV-2401A	Amine OG	From Amine	--

Stream Composition

Mole Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	9.65326E-05	0.00209862	0.00209862	1.82242E-07	
CO2	0.0334921	6.15369	6.15369	3.21399E-06	
N2	0	0.26345	0.26345	1.0173	
Methane	0	71.3084	71.3084	77.7973	
Ethane	0	12.8192	12.8192	11.8737	
Propane	0	4.05078	4.05078	5.56683	
i-Butane	0	0.363571	0.363571	0.761431	
n-Butane	0	1.09854	1.09854	1.66955	
i-Pentane	0	0.102177	0.102177	0.353206	
n-Pentane	0	0.138029	0.138029	0.376919	
n-Hexane	0	0.0695405	0.0695405	0.258569	
n-Heptane	0	0.0061278	0.0061278	0.0732659	
n-Octane	0	0.00156817	0.00156817	0.0125214	
n-Nonane	0	9.28151E-05	9.28151E-05	0.00331441	
n-Decane	0	0	0	0	
Water	86.1322	3.483	3.483	0.194163	
MDEA	10.9489	0.000344309	0.000344309	1.76635E-06	
Piperazine	2.88513	7.41378E-05	7.41378E-05	9.35534E-05	
TEG	0.000213945	4.92744E-10	4.92744E-10	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.084192	0.084192	0.0220947	
Toluene	0	0.0356944	0.0356944	0.0116577	
Ethylbenzene	0	0.0117826	0.0117826	0.00482699	
m-Xylene	0	0.00767068	0.00767068	0.00325489	
Cyclohexane	0	0	0	0	
Cyclopentane	0	0	0	0	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	0.000105907	0.00329576	0.00329576	2.94126E-07	
CO2	0.0474494	12.4794	12.4794	6.69829E-06	
N2	0	0.340074	0.340074	1.34954	
Methane	0	52.7135	52.7135	59.1027	
Ethane	0	17.7619	17.7619	16.9075	
Propane	0	8.23084	8.23084	11.6245	
i-Butane	0	0.973735	0.973735	2.09578	
n-Butane	0	2.94217	2.94217	4.59531	
i-Pentane	0	0.339698	0.339698	1.20678	
n-Pentane	0	0.458891	0.458891	1.2878	
n-Hexane	0	0.276141	0.276141	1.05519	
n-Heptane	0	0.0282937	0.0282937	0.347656	
n-Octane	0	0.00825423	0.00825423	0.067733	
n-Nonane	0	0.000548534	0.000548534	0.0201304	
n-Decane	0	0	0	0	
Water	49.9514	2.89137	2.89137	0.165646	
MDEA	42	0.00189059	0.00189059	9.96752E-06	
Piperazine	8	0.000294261	0.000294261	0.000381605	
TEG	0.00103427	3.40976E-09	3.40976E-09	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.303038	0.303038	0.0817294	
Toluene	0	0.151548	0.151548	0.050866	
Ethylbenzene	0	0.0576411	0.0576411	0.0242678	
m-Xylene	0	0.0375254	0.0375254	0.016364	
Cyclohexane	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
Cyclopentane	0	0	0	0	

Mass Flow	250-36 lb/h	250-41 lb/h	250-42 lb/h	250-70 lb/h	250-83 lb/h
H2S	0.531455	0.075242	0.075242	0.00216758	0
CO2	238.106	284.903	284.903	0.0493636	0
N2	0	7.76388	7.76388	9945.54	0
Methane	0	1203.45	1203.45	435563	0
Ethane	0	405.504	405.504	124601	0
Propane	0	187.91	187.91	85668	0
i-Butane	0	22.2303	22.2303	15445	0
n-Butane	0	67.1698	67.1698	33865.6	0
i-Pentane	0	7.75529	7.75529	8893.49	0
n-Pentane	0	10.4765	10.4765	9490.58	0
n-Hexane	0	6.30429	6.30429	7776.35	0
n-Heptane	0	0.645946	0.645946	2562.08	0
n-Octane	0	0.188444	0.188444	499.164	0
n-Nonane	0	0.012523	0.012523	148.353	0
n-Decane	0	0	0	0	0
Water	250662	66.0099	66.0099	1220.74	0
MDEA	210761	0.0431621	0.0431621	0.0734565	0
Piperazine	40144.9	0.00671797	0.00671797	2.81227	0
TEG	5.19011	7.78447E-08	7.78447E-08	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	6.91836	6.91836	602.312	0
Toluene	0	3.45984	3.45984	374.861	0
Ethylbenzene	0	1.31594	1.31594	178.843	0
m-Xylene	0	0.856704	0.856704	120.596	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-36	250-41	250-42	250-70	250-83
Temperature	°F	122.238	142.92	141.237	117.388	
Pressure	psig	1028.5 *	65	40 *	972	978.5
Mole Fraction Vapor	%	0	100	100	100	
Molecular Weight	lb/lbmol	31.0641	21.7015	21.7015	21.1168	
Mass Density	lb/ft^3	64.0586	0.265691	0.180486	4.06492	
Molar Flow	lbmol/h	16154.1	105.2	105.2	34899.2	0
Mass Flow	lb/h	501811	2283	2283	736959	0
Std Vapor Volumetric Flow	MMSCFD	147.125	0.958121	0.958121	317.849	0
Std Liquid Volumetric Flow	sgpm	1017	12.3041	12.3041	4232.48	0
Specific Gravity		1.0271	0.749297	0.749297	0.729107	
API Gravity		3.96717				
Gross Ideal Gas Heating Value	Btu/ft^3	570.035	1117.57	1117.57	1263.63	
Gross Liquid Heating Value	Btu/lb	6270.54	19453.5	19453.5	22645.2	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-85	250-86			
From Block	V-2400	LCV-2400			
To Block	LCV-2400	M3			

Stream Composition

Mole Fraction	250-85 %	250-86 %			
H2S	9.29049E-05	9.29049E-05			
CO2	0.0128514	0.0128514			
N2	0.000634709	0.000634709			
Methane	0.0863899	0.0863899			
Ethane	0.0106545	0.0106545			
Propane	0.00293077	0.00293077			
i-Butane	0.000199609	0.000199609			
n-Butane	0.000636498	0.000636498			
i-Pentane	5.08553E-05	5.08553E-05			
n-Pentane	6.81498E-05	6.81498E-05			
n-Hexane	2.13281E-05	2.13281E-05			
n-Heptane	2.37204E-06	2.37204E-06			
n-Octane	3.13094E-07	3.13094E-07			
n-Nonane	2.22973E-08	2.22973E-08			
n-Decane	0	0			
Water	98.9095	98.9095			
MDEA	0.242238	0.242238			
Piperazine	0.732904	0.732904			
TEG	3.80974E-07	3.80974E-07			
UCARSOL™ AP-814	0	0			
Benzene	0.000580013	0.000580013			
Toluene	0.000178933	0.000178933			
Ethylbenzene	4.67624E-05	4.67624E-05			
m-Xylene	4.35323E-05	4.35323E-05			
Cyclohexane	0	0			
Cyclopentane	0	0			

Mass Fraction	250-85 %	250-86 %			
H2S	0.00016874	0.00016874			
CO2	0.0301415	0.0301415			
N2	0.000947563	0.000947563			
Methane	0.0738587	0.0738587			
Ethane	0.0170734	0.0170734			
Propane	0.00688724	0.00688724			
i-Butane	0.000618288	0.000618288			
n-Butane	0.00197155	0.00197155			
i-Pentane	0.000195539	0.000195539			
n-Pentane	0.000262036	0.000262036			
n-Hexane	9.79496E-05	9.79496E-05			
n-Heptane	1.26668E-05	1.26668E-05			
n-Octane	1.90598E-06	1.90598E-06			
n-Nonane	1.52404E-07	1.52404E-07			
n-Decane	0	0			
Water	94.9613	94.9613			
MDEA	1.53833	1.53833			
Piperazine	3.36432	3.36432			
TEG	3.04898E-06	3.04898E-06			
UCARSOL™ AP-814	0	0			
Benzene	0.00241447	0.00241447			
Toluene	0.000878616	0.000878616			
Ethylbenzene	0.000264573	0.000264573			
m-Xylene	0.000246298	0.000246298			
Cyclohexane	0	0			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-85 %	250-86 %			
Cyclopentane	0	0			

Mass Flow	250-85 lb/h	250-86 lb/h			
H2S	0.00064242	0.00064242			
CO2	0.114753	0.114753			
N2	0.00360753	0.00360753			
Methane	0.281192	0.281192			
Ethane	0.0650011	0.0650011			
Propane	0.0262209	0.0262209			
i-Butane	0.00235392	0.00235392			
n-Butane	0.007506	0.007506			
i-Pentane	0.000744448	0.000744448			
n-Pentane	0.000997615	0.000997615			
n-Hexane	0.00037291	0.00037291			
n-Heptane	4.82245E-05	4.82245E-05			
n-Octane	7.25636E-06	7.25636E-06			
n-Nonane	5.80226E-07	5.80226E-07			
n-Decane	0	0			
Water	361.533	361.533			
MDEA	5.85667	5.85667			
Piperazine	12.8085	12.8085			
TEG	1.1608E-05	1.1608E-05			
UCARSOL™ AP-814	0	0			
Benzene	0.00919229	0.00919229			
Toluene	0.00334504	0.00334504			
Ethylbenzene	0.00100727	0.00100727			
m-Xylene	0.000937697	0.000937697			
Cyclohexane	0	0			
Cyclopentane	0	0			

Stream Properties

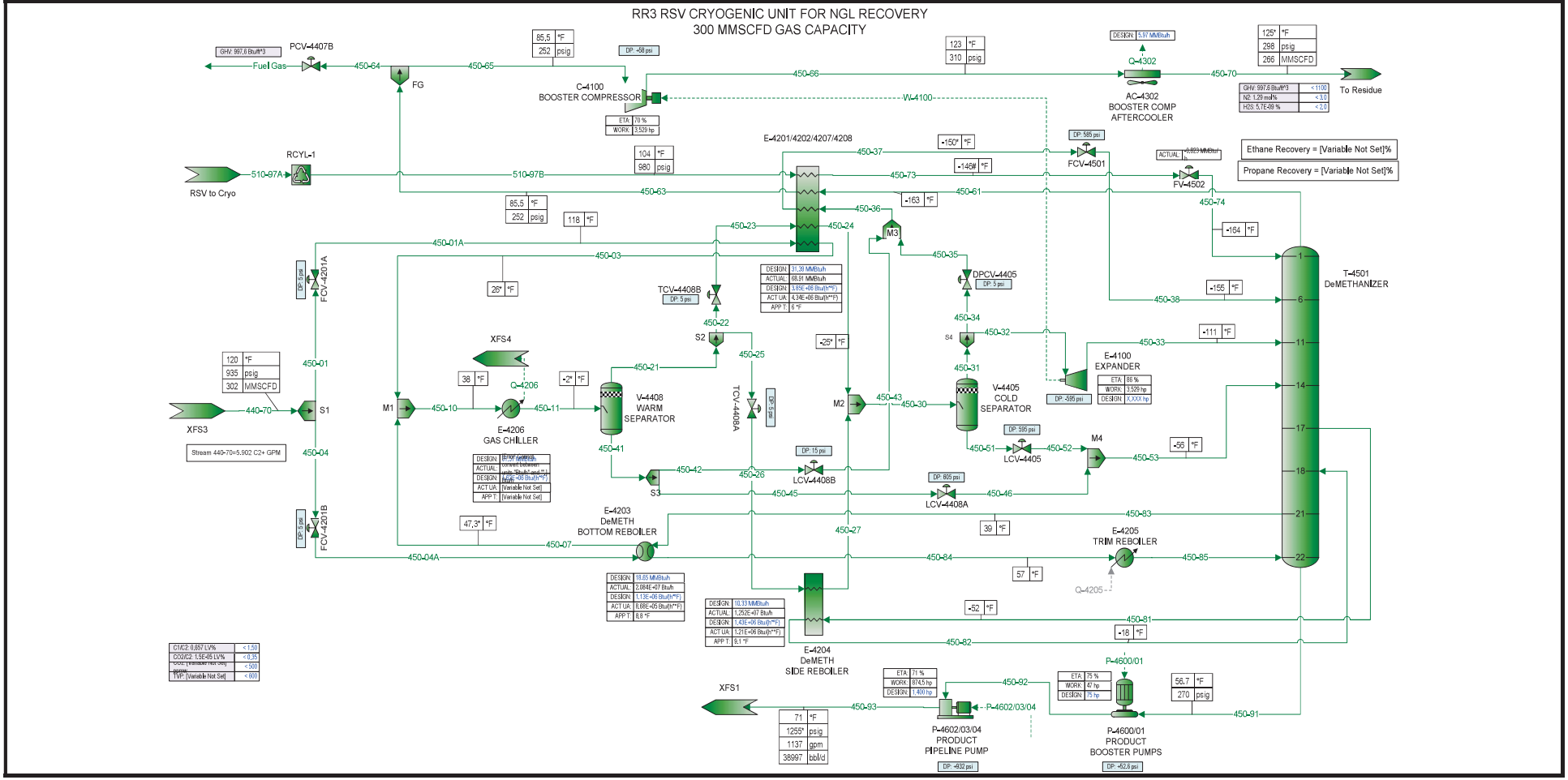
Property	Units	250-85	250-86			
Temperature	°F	117.388	119.557			
Pressure	psig	972	65	*		
Mole Fraction Vapor	%	0	0.0935889			
Molecular Weight	lb/lbmol	18.7643	18.7643			
Mass Density	lb/ft^3	61.9267	49.8611			
Molar Flow	lbmol/h	20.2894	20.2894			
Mass Flow	lb/h	380.716	380.716			
Std Vapor Volumetric Flow	MMSCFD	0.184788	0.184788			
Std Liquid Volumetric Flow	sgpm	0.772198	0.772198			
Specific Gravity		0.992913				
API Gravity		9.47032				
Gross Ideal Gas Heating Value	Btu/ft^3	85.5863	85.5863			
Gross Liquid Heating Value	Btu/lb	710.765	710.765			

Remarks

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Cryo
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127	
Location:	Midland, TX		
Flowsheet:	Cryo		

Connections

	Fuel Gas	13	14	440-70	450-01
From Block	PCV-4407B	DVDR-1	DVDR-1	XFS3	S1
To Block	--	--	--	S1	FCV-4201A

Stream Composition

Mole Fraction	Fuel Gas %	13 %	14 %	440-70 %	450-01 %
H2S	5.74103E-09			1.80448E-07	1.80448E-07
CO2	6.59608E-07			3.2127E-06	3.2127E-06
N2	1.29185			1.01977	1.01977
Methane	98.6293			77.9691	77.9691
Ethane	0.0788042			11.8934	11.8934
Propane	2.28581E-07			5.5733	5.5733
i-Butane	6.40508E-13			0.762185	0.762185
n-Butane	2.91434E-13			1.67004	1.67004
i-Pentane	0			0.353131	0.353131
n-Pentane	0			0.376607	0.376607
n-Hexane	0			0.25788	0.25788
n-Heptane	0			0.0728787	0.0728787
n-Octane	0			0.012419	0.012419
n-Nonane	0			0.00327271	0.00327271
n-Decane	0			0	0
Undecane	0			0	0
Benzene	0			0.019753	0.019753
Toluene	0			0.00980818	0.00980818
Ethylbenzene	0			0.00381947	0.00381947
m-Xylene	0			0.00261095	0.00261095
Water	1.85909E-09			1.53748E-09	1.53748E-09
MDEA	0			0	0
Piperazine	0			0	0
Phosphoric Acid	0			0	0
TEG	0			0	0
O2	0			0	0

Mass Fraction	Fuel Gas %	13 %	14 %	440-70 %	450-01 %
H2S	1.20717E-08			2.91285E-07	2.91285E-07
CO2	1.79101E-06			6.69687E-06	6.69687E-06
N2	2.23276			1.35308	1.35308
Methane	97.621			59.2447	59.2447
Ethane	0.146196			16.9387	16.9387
Propane	6.21873E-07			11.6403	11.6403
i-Butane	2.29685E-12			2.09825	2.09825
n-Butane	1.04508E-12			4.59753	4.59753
i-Pentane	0			1.20676	1.20676
n-Pentane	0			1.28698	1.28698
n-Hexane	0			1.05258	1.05258
n-Heptane	0			0.345885	0.345885
n-Octane	0			0.0671916	0.0671916
n-Nonane	0			0.019881	0.019881
n-Decane	0			0	0
Undecane	0			0	0
Benzene	0			0.0730812	0.0730812
Toluene	0			0.042804	0.042804
Ethylbenzene	0			0.0192061	0.0192061
m-Xylene	0			0.0131291	0.0131291
Water	2.06637E-09			1.31192E-09	1.31192E-09
MDEA	0			0	0
Piperazine	0			0	0
Phosphoric Acid	0			0	0
TEG	0			0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	Fuel Gas %	13 %	14 %	440-70 %	450-01 %
O2	0			0	0

Mass Flow	Fuel Gas lb/h	13 lb/h	14 lb/h	440-70 lb/h	450-01 lb/h
H2S	6.44491E-07			0.00203956	0.000856614
CO2	9.56201E-05			0.046891	0.0196942
N2	119.205			9474.2	3979.17
Methane	5211.87			414827	174227
Ethane	7.80523			118604	49813.5
Propane	3.3201E-05			81504.3	34231.8
i-Butane	1.22626E-10			14691.8	6170.57
n-Butane	5.57955E-11			32191.6	13520.5
i-Pentane	0			8449.63	3548.84
n-Pentane	0			9011.36	3784.77
n-Hexane	0			7370.12	3095.45
n-Heptane	0			2421.86	1017.18
n-Octane	0			470.471	197.598
n-Nonane	0			139.205	58.4662
n-Decane	0			0	0
Undecane	0			0	0
Benzene	0			511.71	214.918
Toluene	0			299.711	125.879
Ethylbenzene	0			134.48	56.4816
m-Xylene	0			91.9291	38.6102
Water	1.10321E-07			9.18595E-06	3.8581E-06
MDEA	0			0	0
Piperazine	0			0	0
Phosphoric Acid	0			0	0
TEG	0			0	0
O2	0			0	0

Stream Properties

Property	Units	Fuel Gas	13	14	440-70	450-01
Temperature	°F	79.2827			120.009	118.175
Pressure	psig	150.09 *			935	905
Mole Fraction Vapor	%	100			100	100
Molecular Weight	lb/lbmol	16.2082			21.1127	21.1127
Mass Density	lb/ft^3	0.468031			3.85414	3.73399
Molar Flow	lbmol/h	329.395			33164.5	13929.1
Mass Flow	lb/h	5338.88			700193	294081
Std Vapor Volumetric Flow	MMSCFD	3			302.049	126.861
Std Liquid Volumetric Flow	sgpm	35.0849			4026.93	1691.31
Specific Gravity		0.559626			0.728968	0.728968
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	997.551			1265.48	1265.48
Gross Liquid Heating Value	Btu/lb	23355.6			22684.5	22684.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-01A	450-03	450-04	450-04A	450-07
From Block	FCV-4201A	E-4201/4202/4207/4208	S1	FCV-4201B	E-4203 DeMETH BOTTOM REBOILER
To Block	E-4201/4202/4207/4208	M1	FCV-4201B	E-4203 DeMETH BOTTOM REBOILER	M1

Stream Composition

Mole Fraction	450-01A %	450-03 %	450-04 %	450-04A %	450-07 %
H2S	1.80448E-07	1.80448E-07	1.80448E-07	1.80448E-07	1.80448E-07
CO2	3.2127E-06	3.2127E-06	3.2127E-06	3.2127E-06	3.2127E-06
N2	1.01977	1.01977	1.01977	1.01977	1.01977
Methane	77.9691	77.9691	77.9691	77.9691	77.9691
Ethane	11.8934	11.8934	11.8934	11.8934	11.8934
Propane	5.5733	5.5733	5.5733	5.5733	5.5733
i-Butane	0.762185	0.762185	0.762185	0.762185	0.762185
n-Butane	1.67004	1.67004	1.67004	1.67004	1.67004
i-Pentane	0.353131	0.353131	0.353131	0.353131	0.353131
n-Pentane	0.376607	0.376607	0.376607	0.376607	0.376607
n-Hexane	0.25788	0.25788	0.25788	0.25788	0.25788
n-Heptane	0.0728787	0.0728787	0.0728787	0.0728787	0.0728787
n-Octane	0.012419	0.012419	0.012419	0.012419	0.012419
n-Nonane	0.00327271	0.00327271	0.00327271	0.00327271	0.00327271
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.019753	0.019753	0.019753	0.019753	0.019753
Toluene	0.00980818	0.00980818	0.00980818	0.00980818	0.00980818
Ethylbenzene	0.00381947	0.00381947	0.00381947	0.00381947	0.00381947
m-Xylene	0.00261095	0.00261095	0.00261095	0.00261095	0.00261095
Water	1.53748E-09	1.53748E-09	1.53748E-09	1.53748E-09	1.53748E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-01A %	450-03 %	450-04 %	450-04A %	450-07 %
H2S	2.91285E-07	2.91285E-07	2.91285E-07	2.91285E-07	2.91285E-07
CO2	6.69687E-06	6.69687E-06	6.69687E-06	6.69687E-06	6.69687E-06
N2	1.35308	1.35308	1.35308	1.35308	1.35308
Methane	59.2447	59.2447	59.2447	59.2447	59.2447
Ethane	16.9387	16.9387	16.9387	16.9387	16.9387
Propane	11.6403	11.6403	11.6403	11.6403	11.6403
i-Butane	2.09825	2.09825	2.09825	2.09825	2.09825
n-Butane	4.59753	4.59753	4.59753	4.59753	4.59753
i-Pentane	1.20676	1.20676	1.20676	1.20676	1.20676
n-Pentane	1.28698	1.28698	1.28698	1.28698	1.28698
n-Hexane	1.05258	1.05258	1.05258	1.05258	1.05258
n-Heptane	0.345885	0.345885	0.345885	0.345885	0.345885
n-Octane	0.0671916	0.0671916	0.0671916	0.0671916	0.0671916
n-Nonane	0.019881	0.019881	0.019881	0.019881	0.019881
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.0730812	0.0730812	0.0730812	0.0730812	0.0730812
Toluene	0.042804	0.042804	0.042804	0.042804	0.042804
Ethylbenzene	0.0192061	0.0192061	0.0192061	0.0192061	0.0192061

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-01A %	450-03 %	450-04 %	450-04A %	450-07 %
m-Xylene	0.0131291	0.0131291	0.0131291	0.0131291	0.0131291
Water	1.31192E-09	1.31192E-09	1.31192E-09	1.31192E-09	1.31192E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-01A lb/h	450-03 lb/h	450-04 lb/h	450-04A lb/h	450-07 lb/h
H2S	0.000856614	0.000856614	0.00118294	0.00118294	0.00118294
CO2	0.0196942	0.0196942	0.0271968	0.0271968	0.0271968
N2	3979.17	3979.17	5495.04	5495.04	5495.04
Methane	174227	174227	240600	240600	240600
Ethane	49813.5	49813.5	68790.1	68790.1	68790.1
Propane	34231.8	34231.8	47272.5	47272.5	47272.5
i-Butane	6170.57	6170.57	8521.26	8521.26	8521.26
n-Butane	13520.5	13520.5	18671.1	18671.1	18671.1
i-Pentane	3548.84	3548.84	4900.78	4900.78	4900.78
n-Pentane	3784.77	3784.77	5226.59	5226.59	5226.59
n-Hexane	3095.45	3095.45	4274.67	4274.67	4274.67
n-Heptane	1017.18	1017.18	1404.68	1404.68	1404.68
n-Octane	197.598	197.598	272.873	272.873	272.873
n-Nonane	58.4662	58.4662	80.7391	80.7391	80.7391
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	214.918	214.918	296.792	296.792	296.792
Toluene	125.879	125.879	173.832	173.832	173.832
Ethylbenzene	56.4816	56.4816	77.9984	77.9984	77.9984
m-Xylene	38.6102	38.6102	53.3189	53.3189	53.3189
Water	3.8581E-06	3.8581E-06	5.32785E-06	5.32785E-06	5.32785E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-01A	450-03	450-04	450-04A	450-07
Temperature	°F	117.866	26 *	118.175	117.866	47.2858 *
Pressure	psig	900	890	905	900	895
Mole Fraction Vapor	%	100	92.9161	100	100	96.7198
Molecular Weight	lb/lbmol	21.1127	21.1127	21.1127	21.1127	21.1127
Mass Density	lb/ft^3	3.71392	5.32082	3.73399	3.71392	4.81626
Molar Flow	lbmol/h	13929.1	13929.1	19235.4	19235.4	19235.4
Mass Flow	lb/h	294081	294081	406112	406112	406112
Std Vapor Volumetric Flow	MMSCFD	126.861	126.861	175.189	175.189	175.189
Std Liquid Volumetric Flow	sgpm	1691.31	1691.31	2335.62	2335.62	2335.62
Specific Gravity		0.728968		0.728968	0.728968	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.48	1265.48	1265.48	1265.48	1265.48
Gross Liquid Heating Value	Btu/lb	22684.5	22684.5	22684.5	22684.5	22684.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-10	450-11	450-21	450-22	450-23
From Block	M1	E-4206 GAS CHILLER	V-4408 WARM SEPARATOR	S2	TCV-4408B
To Block	E-4206 GAS CHILLER	V-4408 WARM SEPARATOR	S2	TCV-4408B	E-4201/4202/4207/4208

Stream Composition

Mole Fraction	450-10 %	450-11 %	450-21 %	450-22 %	450-23 %
H2S	1.80448E-07	1.80448E-07	1.53409E-07	1.53409E-07	1.53409E-07
CO2	3.2127E-06	3.2127E-06	3.20056E-06	3.20056E-06	3.20056E-06
N2	1.01977	1.01977	1.15384	1.15384	1.15384
Methane	77.9691	77.9691	84.1169	84.1169	84.1169
Ethane	11.8934	11.8934	10.3616	10.3616	10.3616
Propane	5.5733	5.5733	3.38024	3.38024	3.38024
i-Butane	0.762185	0.762185	0.295686	0.295686	0.295686
n-Butane	1.67004	1.67004	0.550229	0.550229	0.550229
i-Pentane	0.353131	0.353131	0.063359	0.063359	0.063359
n-Pentane	0.376607	0.376607	0.0582968	0.0582968	0.0582968
n-Hexane	0.25788	0.25788	0.0157643	0.0157643	0.0157643
n-Heptane	0.0728787	0.0728787	0.00200253	0.00200253	0.00200253
n-Octane	0.012419	0.012419	0.000135208	0.000135208	0.000135208
n-Nonane	0.00327271	0.00327271	1.16761E-05	1.16761E-05	1.16761E-05
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.019753	0.019753	0.00149352	0.00149352	0.00149352
Toluene	0.00980818	0.00980818	0.000306393	0.000306393	0.000306393
Ethylbenzene	0.00381947	0.00381947	4.90283E-05	4.90283E-05	4.90283E-05
m-Xylene	0.00261095	0.00261095	3.02308E-05	3.02308E-05	3.02308E-05
Water	1.53748E-09	1.53748E-09	1.59258E-09	1.59258E-09	1.59258E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-10 %	450-11 %	450-21 %	450-22 %	450-23 %
H2S	2.91285E-07	2.91285E-07	2.74877E-07	2.74877E-07	2.74877E-07
CO2	6.69687E-06	6.69687E-06	7.40542E-06	7.40542E-06	7.40542E-06
N2	1.35308	1.35308	1.69937	1.69937	1.69937
Methane	59.2447	59.2447	70.9465	70.9465	70.9465
Ethane	16.9387	16.9387	16.3804	16.3804	16.3804
Propane	11.6403	11.6403	7.83645	7.83645	7.83645
i-Butane	2.09825	2.09825	0.903543	0.903543	0.903543
n-Butane	4.59753	4.59753	1.68137	1.68137	1.68137
i-Pentane	1.20676	1.20676	0.240333	0.240333	0.240333
n-Pentane	1.28698	1.28698	0.221131	0.221131	0.221131
n-Hexane	1.05258	1.05258	0.0714225	0.0714225	0.0714225
n-Heptane	0.345885	0.345885	0.0105495	0.0105495	0.0105495
n-Octane	0.0671916	0.0671916	0.000811993	0.000811993	0.000811993
n-Nonane	0.019881	0.019881	7.87313E-05	7.87313E-05	7.87313E-05
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.0730812	0.0730812	0.00613344	0.00613344	0.00613344
Toluene	0.042804	0.042804	0.00148421	0.00148421	0.00148421
Ethylbenzene	0.0192061	0.0192061	0.000273656	0.000273656	0.000273656
m-Xylene	0.0131291	0.0131291	0.000168736	0.000168736	0.000168736
Water	1.31192E-09	1.31192E-09	1.50841E-09	1.50841E-09	1.50841E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-10 %	450-11 %	450-21 %	450-22 %	450-23 %
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-10 lb/h	450-11 lb/h	450-21 lb/h	450-22 lb/h	450-23 lb/h
H2S	0.00203956	0.00203956	0.00148526	0.000742631	0.000742631
CO2	0.046891	0.046891	0.0400142	0.0200071	0.0200071
N2	9474.2	9474.2	9182.3	4591.15	4591.15
Methane	414827	414827	383350	191675	191675
Ethane	118604	118604	88509.3	44254.6	44254.6
Propane	81504.3	81504.3	42343.2	21171.6	21171.6
i-Butane	14691.8	14691.8	4882.17	2441.09	2441.09
n-Butane	32191.6	32191.6	9085.04	4542.52	4542.52
i-Pentane	8449.63	8449.63	1298.61	649.304	649.304
n-Pentane	9011.36	9011.36	1194.85	597.427	597.427
n-Hexane	7370.12	7370.12	385.922	192.961	192.961
n-Heptane	2421.86	2421.86	57.0027	28.5013	28.5013
n-Octane	470.471	470.471	4.3875	2.19375	2.19375
n-Nonane	139.205	139.205	0.425414	0.212707	0.212707
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	511.71	511.71	33.1412	16.5706	16.5706
Toluene	299.711	299.711	8.01975	4.00988	4.00988
Ethylbenzene	134.48	134.48	1.47866	0.739331	0.739331
m-Xylene	91.9291	91.9291	0.911741	0.45587	0.45587
Water	9.18595E-06	9.18595E-06	8.15047E-06	4.07524E-06	4.07524E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-10	450-11	450-21	450-22	450-23
Temperature	°F	37.9582	-2 *	-2	-2	-2.37663
Pressure	psig	890	880	880	880	875
Mole Fraction Vapor	%	95.2385	85.658	100	100	99.9579
Molecular Weight	lb/lbmol	21.1127	21.1127	19.0206	19.0206	19.0206
Mass Density	lb/ft^3	5.0006	6.2126	5.03914	5.03914	5.01006
Molar Flow	lbmol/h	33164.5	33164.5	28408	14204	14204
Mass Flow	lb/h	700193	700193	540337	270168	270168
Std Vapor Volumetric Flow	MMSCFD	302.049	302.049	258.729	129.365	129.365
Std Liquid Volumetric Flow	sgpm	4026.93	4026.93	3299.74	1649.87	1649.87
Specific Gravity				0.656731	0.656731	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.48	1265.48	1151.38	1151.38	1151.38
Gross Liquid Heating Value	Btu/lb	22684.5	22684.5	22929.3	22929.3	22929.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-24	450-25	450-26	450-27	450-30
From Block	E-4201/4202/4207/4208	S2	TCV-4408A	E-4204 DeMETH SIDE REBOILER	M2
To Block	M2	TCV-4408A	E-4204 DeMETH SIDE REBOILER	M2	V-4405 COLD SEPARATOR

Stream Composition

Mole Fraction	450-24 %	450-25 %	450-26 %	450-27 %	450-30 %
H2S	1.53409E-07	1.53409E-07	1.53409E-07	1.53409E-07	1.53409E-07
CO2	3.20056E-06	3.20056E-06	3.20056E-06	3.20056E-06	3.20056E-06
N2	1.15384	1.15384	1.15384	1.15384	1.15384
Methane	84.1169	84.1169	84.1169	84.1169	84.1169
Ethane	10.3616	10.3616	10.3616	10.3616	10.3616
Propane	3.38024	3.38024	3.38024	3.38024	3.38024
i-Butane	0.295686	0.295686	0.295686	0.295686	0.295686
n-Butane	0.550229	0.550229	0.550229	0.550229	0.550229
i-Pentane	0.063359	0.063359	0.063359	0.063359	0.063359
n-Pentane	0.0582968	0.0582968	0.0582968	0.0582968	0.0582968
n-Hexane	0.0157643	0.0157643	0.0157643	0.0157643	0.0157643
n-Heptane	0.00200253	0.00200253	0.00200253	0.00200253	0.00200253
n-Octane	0.000135208	0.000135208	0.000135208	0.000135208	0.000135208
n-Nonane	1.16761E-05	1.16761E-05	1.16761E-05	1.16761E-05	1.16761E-05
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.00149352	0.00149352	0.00149352	0.00149352	0.00149352
Toluene	0.000306393	0.000306393	0.000306393	0.000306393	0.000306393
Ethylbenzene	4.90283E-05	4.90283E-05	4.90283E-05	4.90283E-05	4.90283E-05
m-Xylene	3.02308E-05	3.02308E-05	3.02308E-05	3.02308E-05	3.02308E-05
Water	1.59258E-09	1.59258E-09	1.59258E-09	1.59258E-09	1.59258E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-24 %	450-25 %	450-26 %	450-27 %	450-30 %
H2S	2.74877E-07	2.74877E-07	2.74877E-07	2.74877E-07	2.74877E-07
CO2	7.40542E-06	7.40542E-06	7.40542E-06	7.40542E-06	7.40542E-06
N2	1.69937	1.69937	1.69937	1.69937	1.69937
Methane	70.9465	70.9465	70.9465	70.9465	70.9465
Ethane	16.3804	16.3804	16.3804	16.3804	16.3804
Propane	7.83645	7.83645	7.83645	7.83645	7.83645
i-Butane	0.903543	0.903543	0.903543	0.903543	0.903543
n-Butane	1.68137	1.68137	1.68137	1.68137	1.68137
i-Pentane	0.240333	0.240333	0.240333	0.240333	0.240333
n-Pentane	0.221131	0.221131	0.221131	0.221131	0.221131
n-Hexane	0.0714225	0.0714225	0.0714225	0.0714225	0.0714225
n-Heptane	0.0105495	0.0105495	0.0105495	0.0105495	0.0105495
n-Octane	0.000811993	0.000811993	0.000811993	0.000811993	0.000811993
n-Nonane	7.87313E-05	7.87313E-05	7.87313E-05	7.87313E-05	7.87313E-05
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.00613344	0.00613344	0.00613344	0.00613344	0.00613344
Toluene	0.00148421	0.00148421	0.00148421	0.00148421	0.00148421
Ethylbenzene	0.000273656	0.000273656	0.000273656	0.000273656	0.000273656
m-Xylene	0.000168736	0.000168736	0.000168736	0.000168736	0.000168736
Water	1.50841E-09	1.50841E-09	1.50841E-09	1.50841E-09	1.50841E-09

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-24 %	450-25 %	450-26 %	450-27 %	450-30 %
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-24 lb/h	450-25 lb/h	450-26 lb/h	450-27 lb/h	450-30 lb/h
H2S	0.000742631	0.000742631	0.000742631	0.000742631	0.00148526
CO2	0.0200071	0.0200071	0.0200071	0.0200071	0.0400142
N2	4591.15	4591.15	4591.15	4591.15	9182.3
Methane	191675	191675	191675	191675	383350
Ethane	44254.6	44254.6	44254.6	44254.6	88509.3
Propane	21171.6	21171.6	21171.6	21171.6	42343.2
i-Butane	2441.09	2441.09	2441.09	2441.09	4882.17
n-Butane	4542.52	4542.52	4542.52	4542.52	9085.04
i-Pentane	649.304	649.304	649.304	649.304	1298.61
n-Pentane	597.427	597.427	597.427	597.427	1194.85
n-Hexane	192.961	192.961	192.961	192.961	385.922
n-Heptane	28.5013	28.5013	28.5013	28.5013	57.0027
n-Octane	2.19375	2.19375	2.19375	2.19375	4.3875
n-Nonane	0.212707	0.212707	0.212707	0.212707	0.425414
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	16.5706	16.5706	16.5706	16.5706	33.1412
Toluene	4.00988	4.00988	4.00988	4.00988	8.01975
Ethylbenzene	0.739331	0.739331	0.739331	0.739331	1.47866
m-Xylene	0.45587	0.45587	0.45587	0.45587	0.911741
Water	4.07524E-06	4.07524E-06	4.07524E-06	4.07524E-06	8.15047E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-24	450-25	450-26	450-27	450-30
Temperature	°F	-25 *	-2	-2.37663	-42.5 *	-34.1532
Pressure	psig	870	880	875	871	870
Mole Fraction Vapor	%	95.3223	100	99.9579	88.0651	92.0594
Molecular Weight	lb/lbmol	19.0206	19.0206	19.0206	19.0206	19.0206
Mass Density	lb/ft^3	5.83018	5.03914	5.01006	6.89515	6.31717
Molar Flow	lbmol/h	14204	14204	14204	14204	28408
Mass Flow	lb/h	270168	270168	270168	270168	540337
Std Vapor Volumetric Flow	MMSCFD	129.365	129.365	129.365	129.365	258.729
Std Liquid Volumetric Flow	sgpm	1649.87	1649.87	1649.87	1649.87	3299.74
Specific Gravity			0.656731			
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1151.38	1151.38	1151.38	1151.38	1151.38
Gross Liquid Heating Value	Btu/lb	22929.3	22929.3	22929.3	22929.3	22929.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-31	450-32	450-33	450-34	450-35
From Block	V-4405 COLD SEPARATOR	S4	E-4100 EXPANDER	S4	DPCV-4405
To Block	S4	E-4100 EXPANDER	T-4501 DeMETHANIZER	DPCV-4405	M3

Stream Composition

Mole Fraction	450-31 %	450-32 %	450-33 %	450-34 %	450-35 %
H2S	1.36882E-07	1.36882E-07	1.36882E-07	1.36882E-07	1.36882E-07
CO2	3.13183E-06	3.13183E-06	3.13183E-06	3.13183E-06	3.13183E-06
N2	1.22638	1.22638	1.22638	1.22638	1.22638
Methane	86.741	86.741	86.741	86.741	86.741
Ethane	9.28397	9.28397	9.28397	9.28397	9.28397
Propane	2.33566	2.33566	2.33566	2.33566	2.33566
i-Butane	0.143717	0.143717	0.143717	0.143717	0.143717
n-Butane	0.239194	0.239194	0.239194	0.239194	0.239194
i-Pentane	0.0152965	0.0152965	0.0152965	0.0152965	0.0152965
n-Pentane	0.0130443	0.0130443	0.0130443	0.0130443	0.0130443
n-Hexane	0.0014714	0.0014714	0.0014714	0.0014714	0.0014714
n-Heptane	8.86869E-05	8.86869E-05	8.86869E-05	8.86869E-05	8.86869E-05
n-Octane	2.42435E-06	2.42435E-06	2.42435E-06	2.42435E-06	2.42435E-06
n-Nonane	7.0017E-08	7.0017E-08	7.0017E-08	7.0017E-08	7.0017E-08
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.000186442	0.000186442	0.000186442	0.000186442	0.000186442
Toluene	1.7007E-05	1.7007E-05	1.7007E-05	1.7007E-05	1.7007E-05
Ethylbenzene	1.12453E-06	1.12453E-06	1.12453E-06	1.12453E-06	1.12453E-06
m-Xylene	6.10044E-07	6.10044E-07	6.10044E-07	6.10044E-07	6.10044E-07
Water	1.61103E-09	1.61103E-09	1.61103E-09	1.61103E-09	1.61103E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-31 %	450-32 %	450-33 %	450-34 %	450-35 %
H2S	2.54574E-07	2.54574E-07	2.54574E-07	2.54574E-07	2.54574E-07
CO2	7.52143E-06	7.52143E-06	7.52143E-06	7.52143E-06	7.52143E-06
N2	1.87477	1.87477	1.87477	1.87477	1.87477
Methane	75.9367	75.9367	75.9367	75.9367	75.9367
Ethane	15.2339	15.2339	15.2339	15.2339	15.2339
Propane	5.62032	5.62032	5.62032	5.62032	5.62032
i-Butane	0.455833	0.455833	0.455833	0.455833	0.455833
n-Butane	0.758663	0.758663	0.758663	0.758663	0.758663
i-Pentane	0.0602251	0.0602251	0.0602251	0.0602251	0.0602251
n-Pentane	0.0513577	0.0513577	0.0513577	0.0513577	0.0513577
n-Hexane	0.00691942	0.00691942	0.00691942	0.00691942	0.00691942
n-Heptane	0.000484944	0.000484944	0.000484944	0.000484944	0.000484944
n-Octane	1.51122E-05	1.51122E-05	1.51122E-05	1.51122E-05	1.51122E-05
n-Nonane	4.90043E-07	4.90043E-07	4.90043E-07	4.90043E-07	4.90043E-07
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.000794727	0.000794727	0.000794727	0.000794727	0.000794727
Toluene	8.55114E-05	8.55114E-05	8.55114E-05	8.55114E-05	8.55114E-05
Ethylbenzene	6.5149E-06	6.5149E-06	6.5149E-06	6.5149E-06	6.5149E-06
m-Xylene	3.53426E-06	3.53426E-06	3.53426E-06	3.53426E-06	3.53426E-06
Water	1.5838E-09	1.5838E-09	1.5838E-09	1.5838E-09	1.5838E-09
MDEA	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-31 %	450-32 %	450-33 %	450-34 %	450-35 %
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-31 lb/h	450-32 lb/h	450-33 lb/h	450-34 lb/h	450-35 lb/h
H2S	0.00122002	0.000854015	0.000854015	0.000366006	0.000366006
CO2	0.0360457	0.025232	0.025232	0.0108137	0.0108137
N2	8984.63	6289.24	6289.24	2695.39	2695.39
Methane	363919	254743	254743	109176	109176
Ethane	73006.7	51104.7	51104.7	21902	21902
Propane	26934.8	18854.4	18854.4	8080.44	8080.44
i-Butane	2184.53	1529.17	1529.17	655.359	655.359
n-Butane	3635.82	2545.07	2545.07	1090.74	1090.74
i-Pentane	288.623	202.036	202.036	86.5868	86.5868
n-Pentane	246.127	172.289	172.289	73.838	73.838
n-Hexane	33.1606	23.2124	23.2124	9.94818	9.94818
n-Heptane	2.32405	1.62683	1.62683	0.697214	0.697214
n-Octane	0.0724235	0.0506964	0.0506964	0.021727	0.021727
n-Nonane	0.00234848	0.00164394	0.00164394	0.000704545	0.000704545
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	3.80865	2.66605	2.66605	1.14259	1.14259
Toluene	0.409805	0.286863	0.286863	0.122941	0.122941
Ethylbenzene	0.031222	0.0218554	0.0218554	0.00936659	0.00936659
m-Xylene	0.0169376	0.0118563	0.0118563	0.00508128	0.00508128
Water	7.59021E-06	5.31315E-06	5.31315E-06	2.27706E-06	2.27706E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-31	450-32	450-33	450-34	450-35
Temperature	°F	-34.1532	-34.1532	-110.624	-34.1532	-34.5333
Pressure	psig	870	870	275.471 *	870	865
Mole Fraction Vapor	%	100	100	88.0716	100	99.8891
Molecular Weight	lb/lbmol	18.325	18.325	18.325	18.325	18.325
Mass Density	lb/ft^3	5.7628	5.7628	1.95442	5.7628	5.727
Molar Flow	lbmol/h	26152.3	18306.6	18306.6	7845.68	7845.68
Mass Flow	lb/h	479240	335468	335468	143772	143772
Std Vapor Volumetric Flow	MMSCFD	238.185	166.729	166.729	71.4554	71.4554
Std Liquid Volumetric Flow	sgpm	2986.2	2090.34	2090.34	895.861	895.861
Specific Gravity		0.632714	0.632714		0.632714	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1112.84	1112.84	1112.84	1112.84	1112.84
Gross Liquid Heating Value	Btu/lb	23011.4	23011.4	23011.4	23011.4	23011.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-36	450-37	450-38	450-41	450-42
From Block	M3	E-4201/4202/4207/4208	FCV-4501	V-4408 WARM SEPARATOR	S3
To Block	E-4201/4202/4207/4208	FCV-4501	T-4501 DeMETHANIZER	S3	LCV-4408B

Stream Composition

Mole Fraction	450-36 %	450-37 %	450-38 %	450-41 %	450-42 %
H2S	1.53975E-07	1.53975E-07	1.53975E-07	3.41939E-07	3.41939E-07
CO2	3.14461E-06	3.14461E-06	3.14461E-06	3.28518E-06	3.28518E-06
N2	1.14241	1.14241	1.14241	0.219075	0.219075
Methane	82.9491	82.9491	82.9491	41.2514	41.2514
Ethane	10.2641	10.2641	10.2641	21.0418	21.0418
Propane	3.69736	3.69736	3.69736	18.6714	18.6714
i-Butane	0.427519	0.427519	0.427519	3.54836	3.54836
n-Butane	0.915968	0.915968	0.915968	8.35814	8.35814
i-Pentane	0.187721	0.187721	0.187721	2.0838	2.0838
n-Pentane	0.201822	0.201822	0.201822	2.27772	2.27772
n-Hexane	0.143383	0.143383	0.143383	1.70392	1.70392
n-Heptane	0.0414422	0.0414422	0.0414422	0.496188	0.496188
n-Octane	0.00715295	0.00715295	0.00715295	0.0857839	0.0857839
n-Nonane	0.00189639	0.00189639	0.00189639	0.0227493	0.0227493
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.010908	0.010908	0.010908	0.128808	0.128808
Toluene	0.00556367	0.00556367	0.00556367	0.0665578	0.0665578
Ethylbenzene	0.00219654	0.00219654	0.00219654	0.0263385	0.0263385
m-Xylene	0.00150302	0.00150302	0.00150302	0.0180243	0.0180243
Water	1.57747E-09	1.57747E-09	1.57747E-09	1.20841E-09	1.20841E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-36 %	450-37 %	450-38 %	450-41 %	450-42 %
H2S	2.6775E-07	2.6775E-07	2.6775E-07	3.46747E-07	3.46747E-07
CO2	7.06122E-06	7.06122E-06	7.06122E-06	4.30189E-06	4.30189E-06
N2	1.63289	1.63289	1.63289	0.182605	0.182605
Methane	67.8968	67.8968	67.8968	19.6908	19.6908
Ethane	15.7473	15.7473	15.7473	18.8259	18.8259
Propane	8.31868	8.31868	8.31868	24.4977	24.4977
i-Butane	1.26784	1.26784	1.26784	6.13654	6.13654
n-Butane	2.71637	2.71637	2.71637	14.4546	14.4546
i-Pentane	0.69105	0.69105	0.69105	4.4734	4.4734
n-Pentane	0.742958	0.742958	0.742958	4.88971	4.88971
n-Hexane	0.630447	0.630447	0.630447	4.36905	4.36905
n-Heptane	0.211878	0.211878	0.211878	1.47937	1.47937
n-Octane	0.0416895	0.0416895	0.0416895	0.291564	0.291564
n-Nonane	0.0124099	0.0124099	0.0124099	0.0868154	0.0868154
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.043474	0.043474	0.043474	0.299374	0.299374
Toluene	0.0261559	0.0261559	0.0261559	0.182471	0.182471
Ethylbenzene	0.0118984	0.0118984	0.0118984	0.0832006	0.0832006
m-Xylene	0.00814167	0.00814167	0.00814167	0.056937	0.056937
Water	1.45E-09	1.45E-09	1.45E-09	6.47753E-10	6.47753E-10
MDEA	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-36 %	450-37 %	450-38 %	450-41 %	450-42 %
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-36 lb/h	450-37 lb/h	450-38 lb/h	450-41 lb/h	450-42 lb/h
H2S	0.000449151	0.000449151	0.000449151	0.000554297	8.31445E-05
CO2	0.0118452	0.0118452	0.0118452	0.00687684	0.00103153
N2	2739.18	2739.18	2739.18	291.905	43.7858
Methane	113897	113897	113897	31477	4721.55
Ethane	26416.2	26416.2	26416.2	30094.4	4514.15
Propane	13954.6	13954.6	13954.6	39161.1	5874.17
i-Butane	2126.81	2126.81	2126.81	9809.65	1471.45
n-Butane	4556.73	4556.73	4556.73	23106.5	3465.98
i-Pentane	1159.24	1159.24	1159.24	7151.02	1072.65
n-Pentane	1246.31	1246.31	1246.31	7816.51	1172.48
n-Hexane	1057.58	1057.58	1057.58	6984.2	1047.63
n-Heptane	355.426	355.426	355.426	2364.86	354.729
n-Octane	69.9343	69.9343	69.9343	466.084	69.9125
n-Nonane	20.8177	20.8177	20.8177	138.78	20.817
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	72.9279	72.9279	72.9279	478.569	71.7853
Toluene	43.8766	43.8766	43.8766	291.691	43.7536
Ethylbenzene	19.9596	19.9596	19.9596	133.001	19.9502
m-Xylene	13.6577	13.6577	13.6577	91.0173	13.6526
Water	2.43238E-06	2.43238E-06	2.43238E-06	1.03547E-06	1.55321E-07
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-36	450-37	450-38	450-41	450-42
Temperature	°F	-28.7132	-150 *	-155.295	-2	-2
Pressure	psig	865	860	275.09 *	880	880
Mole Fraction Vapor	%	88.6908	0	3.74288	0	0
Molecular Weight	lb/lbmol	19.599	19.599	19.599	33.6083	33.6083
Mass Density	lb/ft^3	6.27313	25.1475	18.3053	29.1847	29.1847
Molar Flow	lbmol/h	8559.15	8559.15	8559.15	4756.46	713.468
Mass Flow	lb/h	167750	167750	167750	159856	23978.4
Std Vapor Volumetric Flow	MMSCFD	77.9534	77.9534	77.9534	43.32	6.498
Std Liquid Volumetric Flow	sgpm	1004.94	1004.94	1004.94	727.194	109.079
Specific Gravity			0.403207		0.467938	0.467938
API Gravity			2176 ?		230.834 ?	230.834 ?
Gross Ideal Gas Heating Value	Btu/ft^3	1182.37	1182.37	1182.37	1946.93	1946.93
Gross Liquid Heating Value	Btu/lb	22846.4	22846.4	22846.4	21857.1	21857.1

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-43	450-45	450-46	450-51	450-52
From Block	LCV-4408B	S3	LCV-4408A	V-4405 COLD SEPARATOR	LCV-4405
To Block	M3	LCV-4408A	M4	LCV-4405	M4

Stream Composition

Mole Fraction	450-43 %	450-45 %	450-46 %	450-51 %	450-52 %
H2S	3.41939E-07	3.41939E-07	3.41939E-07	3.45011E-07	3.45011E-07
CO2	3.28518E-06	3.28518E-06	3.28518E-06	3.99748E-06	3.99748E-06
N2	0.219075	0.219075	0.219075	0.312803	0.312803
Methane	41.2514	41.2514	41.2514	53.6952	53.6952
Ethane	21.0418	21.0418	21.0418	22.8554	22.8554
Propane	18.6714	18.6714	18.6714	15.4906	15.4906
i-Butane	3.54836	3.54836	3.54836	2.05754	2.05754
n-Butane	8.35814	8.35814	8.35814	4.15621	4.15621
i-Pentane	2.0838	2.0838	2.0838	0.620571	0.620571
n-Pentane	2.27772	2.27772	2.27772	0.582932	0.582932
n-Hexane	1.70392	1.70392	1.70392	0.181469	0.181469
n-Heptane	0.496188	0.496188	0.496188	0.0241906	0.0241906
n-Octane	0.0857839	0.0857839	0.0857839	0.00167463	0.00167463
n-Nonane	0.0227493	0.0227493	0.0227493	0.00014623	0.00014623
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.128808	0.128808	0.128808	0.0166471	0.0166471
Toluene	0.0665578	0.0665578	0.0665578	0.00366139	0.00366139
Ethylbenzene	0.0263385	0.0263385	0.0263385	0.0006044	0.0006044
m-Xylene	0.0180243	0.0180243	0.0180243	0.000373638	0.000373638
Water	1.20841E-09	1.20841E-09	1.20841E-09	1.37865E-09	1.37865E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-43 %	450-45 %	450-46 %	450-51 %	450-52 %
H2S	3.46747E-07	3.46747E-07	3.46747E-07	4.34129E-07	4.34129E-07
CO2	4.30189E-06	4.30189E-06	4.30189E-06	6.49544E-06	6.49544E-06
N2	0.182605	0.182605	0.182605	0.323529	0.323529
Methane	19.6908	19.6908	19.6908	31.804	31.804
Ethane	18.8259	18.8259	18.8259	25.3737	25.3737
Propane	24.4977	24.4977	24.4977	25.2196	25.2196
i-Butane	6.13654	6.13654	6.13654	4.41535	4.41535
n-Butane	14.4546	14.4546	14.4546	8.91897	8.91897
i-Pentane	4.4734	4.4734	4.4734	1.65309	1.65309
n-Pentane	4.88971	4.88971	4.88971	1.55282	1.55282
n-Hexane	4.36905	4.36905	4.36905	0.57738	0.57738
n-Heptane	1.47937	1.47937	1.47937	0.0894949	0.0894949
n-Octane	0.291564	0.291564	0.291564	0.00706266	0.00706266
n-Nonane	0.0868154	0.0868154	0.0868154	0.000692449	0.000692449
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.299374	0.299374	0.299374	0.0480098	0.0480098
Toluene	0.182471	0.182471	0.182471	0.0124555	0.0124555
Ethylbenzene	0.0832006	0.0832006	0.0832006	0.00236909	0.00236909
m-Xylene	0.056937	0.056937	0.056937	0.00146456	0.00146456
Water	6.47753E-10	6.47753E-10	6.47753E-10	9.17002E-10	9.17002E-10
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-43 %	450-45 %	450-46 %	450-51 %	450-52 %
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-43 lb/h	450-45 lb/h	450-46 lb/h	450-51 lb/h	450-52 lb/h
H2S	8.31445E-05	0.000471152	0.000471152	0.00026524	0.00026524
CO2	0.00103153	0.00584531	0.00584531	0.00396851	0.00396851
N2	43.7858	248.119	248.119	197.666	197.666
Methane	4721.55	26755.4	26755.4	19431.3	19431.3
Ethane	4514.15	25580.2	25580.2	15502.6	15502.6
Propane	5874.17	33287	33287	15408.4	15408.4
i-Butane	1471.45	8338.2	8338.2	2697.64	2697.64
n-Butane	3465.98	19640.6	19640.6	5449.22	5449.22
i-Pentane	1072.65	6078.36	6078.36	1009.99	1009.99
n-Pentane	1172.48	6644.03	6644.03	948.728	948.728
n-Hexane	1047.63	5936.57	5936.57	352.762	352.762
n-Heptane	354.729	2010.13	2010.13	54.6787	54.6787
n-Octane	69.9125	396.171	396.171	4.31507	4.31507
n-Nonane	20.817	117.963	117.963	0.423065	0.423065
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	71.7853	406.783	406.783	29.3326	29.3326
Toluene	43.7536	247.937	247.937	7.60995	7.60995
Ethylbenzene	19.9502	113.051	113.051	1.44744	1.44744
m-Xylene	13.6526	77.3647	77.3647	0.894803	0.894803
Water	1.55321E-07	8.80153E-07	8.80153E-07	5.60261E-07	5.60261E-07
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-43	450-45	450-46	450-51	450-52
Temperature	°F	-2.67947	-2	-41.2618	-34.1532	-83.7408
Pressure	psig	865	880	275.185 *	870	275.185 *
Mole Fraction Vapor	%	1.12265	0	35.3749	0	40.7988
Molecular Weight	lb/lbmol	33.6083	33.6083	33.6083	27.0847	27.0847
Mass Density	lb/ft^3	28.4376	29.1847	6.05649	25.7382	5.01975
Molar Flow	lbmol/h	713.468	4042.99	4042.99	2255.77	2255.77
Mass Flow	lb/h	23978.4	135878	135878	61097	61097
Std Vapor Volumetric Flow	MMSCFD	6.498	36.822	36.822	20.5447	20.5447
Std Liquid Volumetric Flow	sgpm	109.079	618.115	618.115	313.536	313.536
Specific Gravity			0.467938		0.412678	
API Gravity			230.834 ?		817.667 ?	
Gross Ideal Gas Heating Value	Btu/ft^3	1946.93	1946.93	1946.93	1598.16	1598.16
Gross Liquid Heating Value	Btu/lb	21857.1	21857.1	21857.1	22285.5	22285.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-53	450-61	450-63	450-64	450-65
From Block	M4	T-4501 DeMETHANIZER	E-4201/4202/4207/4208	FG	FG
To Block	T-4501 DeMETHANIZER	E-4201/4202/4207/4208	FG	PCV-4407B	C-4100 BOOSTER COMPRESSOR

Stream Composition

Mole Fraction	450-53 %	450-61 %	450-63 %	450-64 %	450-65 %
H2S	3.43039E-07	5.74103E-09	5.74103E-09	5.74103E-09	5.74103E-09
CO2	3.54028E-06	6.59608E-07	6.59608E-07	6.59608E-07	6.59608E-07
N2	0.252642	1.29185	1.29185	1.29185	1.29185
Methane	45.7079	98.6293	98.6293	98.6293	98.6293
Ethane	21.6913	0.0788042	0.0788042	0.0788042	0.0788042
Propane	17.5322	2.28581E-07	2.28581E-07	2.28581E-07	2.28581E-07
i-Butane	3.01445	6.40508E-13	6.40508E-13	6.40508E-13	6.40508E-13
n-Butane	6.8533	2.91434E-13	2.91434E-13	2.91434E-13	2.91434E-13
i-Pentane	1.55977	0	0	0	0
n-Pentane	1.67077	0	0	0	0
n-Hexane	1.15869	0	0	0	0
n-Heptane	0.327152	0	0	0	0
n-Octane	0.0556619	0	0	0	0
n-Nonane	0.0146545	0	0	0	0
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.0886401	0	0	0	0
Toluene	0.0440327	0	0	0	0
Ethylbenzene	0.0171224	0	0	0	0
m-Xylene	0.0117031	0	0	0	0
Water	1.26938E-09	1.85909E-09	1.85909E-09	1.85909E-09	1.85909E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-53 %	450-61 %	450-63 %	450-64 %	450-65 %
H2S	3.73851E-07	1.20717E-08	1.20717E-08	1.20717E-08	1.20717E-08
CO2	4.98227E-06	1.79101E-06	1.79101E-06	1.79101E-06	1.79101E-06
N2	0.226316	2.23276	2.23276	2.23276	2.23276
Methane	23.448	97.621	97.621	97.621	97.621
Ethane	20.8569	0.146196	0.146196	0.146196	0.146196
Propane	24.7216	6.21873E-07	6.21873E-07	6.21873E-07	6.21873E-07
i-Butane	5.60267	2.29685E-12	2.29685E-12	2.29685E-12	2.29685E-12
n-Butane	12.7376	1.04508E-12	1.04508E-12	1.04508E-12	1.04508E-12
i-Pentane	3.59861	0	0	0	0
n-Pentane	3.85469	0	0	0	0
n-Hexane	3.19296	0	0	0	0
n-Heptane	1.04826	0	0	0	0
n-Octane	0.203318	0	0	0	0
n-Nonane	0.0601021	0	0	0	0
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.221407	0	0	0	0
Toluene	0.129736	0	0	0	0
Ethylbenzene	0.0581285	0	0	0	0
m-Xylene	0.0397307	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-53 %	450-61 %	450-63 %	450-64 %	450-65 %
Water	7.31268E-10	2.06637E-09	2.06637E-09	2.06637E-09	2.06637E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-53 lb/h	450-61 lb/h	450-63 lb/h	450-64 lb/h	450-65 lb/h
H2S	0.000736392	5.77908E-05	5.77908E-05	6.44491E-07	5.71464E-05
CO2	0.00981383	0.00857415	0.00857415	9.56201E-05	0.00847853
N2	445.786	10689	10689	119.205	10569.7
Methane	46186.7	467343	467343	5211.87	462131
Ethane	41082.8	699.887	699.887	7.80523	692.081
Propane	48695.4	0.0029771	0.0029771	3.3201E-05	0.0029439
i-Butane	11035.8	1.09958E-08	1.09958E-08	1.22626E-10	1.08731E-08
n-Butane	25089.8	5.00312E-09	5.00312E-09	5.57955E-11	4.94733E-09
i-Pentane	7088.35	0	0	0	0
n-Pentane	7592.76	0	0	0	0
n-Hexane	6289.33	0	0	0	0
n-Heptane	2064.81	0	0	0	0
n-Octane	400.486	0	0	0	0
n-Nonane	118.386	0	0	0	0
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	436.116	0	0	0	0
Toluene	255.547	0	0	0	0
Ethylbenzene	114.499	0	0	0	0
m-Xylene	78.2595	0	0	0	0
Water	1.44041E-06	9.89238E-06	9.89238E-06	1.10321E-07	9.78206E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-53	450-61	450-63	450-64	450-65
Temperature	°F	-55.9815	-163.243	85.5387	85.5387	85.5387
Pressure	psig	275.185	265.09	252.09	252.09	252.09
Mole Fraction Vapor	%	38.0667	100	100	100	100
Molecular Weight	lb/lbmol	31.272	16.2082	16.2082	16.2082	16.2082
Mass Density	lb/ft^3	5.56397	1.98124	0.76108	0.76108	0.76108
Molar Flow	lbmol/h	6298.76	29536.5	29536.5	329.395	29207.1
Mass Flow	lb/h	196975	478732	478732	5338.88	473393
Std Vapor Volumetric Flow	MMSCFD	57.3667	269.007	269.007	3 *	266.007
Std Liquid Volumetric Flow	sgpm	931.651	3146.03	3146.03	35.0849	3110.94
Specific Gravity			0.559626	0.559626	0.559626	0.559626
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1822.03	997.551	997.551	997.551	997.551
Gross Liquid Heating Value	Btu/lb	21990	23355.6	23355.6	23355.6	23355.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-66	450-70	450-73	450-74	450-81
From Block	C-4100 BOOSTER COMPRESSOR	AC-4302 BOOSTER COMP AFTERCOOLER	E-4201/4202/4207/4208	FV-4502	T-4501 DeMETHANIZER
To Block	AC-4302 BOOSTER COMP AFTERCOOLER	To Residue	FV-4502	T-4501 DeMETHANIZER	E-4204 DeMETH SIDE REBOILER

Stream Composition

Mole Fraction	450-66 %	450-70 %	450-73 %	450-74 %	450-81 %
H2S	5.74103E-09	5.74103E-09	2.08791E-09	2.08791E-09	7.51391E-07
CO2	6.59608E-07	6.59608E-07	6.71061E-07	6.71061E-07	2.87894E-05
N2	1.29185	1.29185	1.29046	1.29046	9.79158E-05
Methane	98.6293	98.6293	98.6291	98.6291	18.6166
Ethane	0.0788042	0.0788042	0.0804756	0.0804756	51.3562
Propane	2.28581E-07	2.28581E-07	2.37211E-07	2.37211E-07	18.768
i-Butane	6.40508E-13	6.40508E-13	6.66102E-13	6.66102E-13	2.4422
n-Butane	2.91434E-13	2.91434E-13	3.03597E-13	3.03597E-13	5.32247
i-Pentane	0	0	0	0	1.1121
n-Pentane	0	0	0	0	1.18423
n-Hexane	0	0	0	0	0.807974
n-Heptane	0	0	0	0	0.228168
n-Octane	0	0	0	0	0.0388717
n-Nonane	0	0	0	0	0.0102429
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0	0	0	0	0.061934
Toluene	0	0	0	0	0.030712
Ethylbenzene	0	0	0	0	0.0119555
m-Xylene	0	0	0	0	0.00817253
Water	1.85909E-09	1.85909E-09	1.74079E-09	1.74079E-09	2.29873E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-66 %	450-70 %	450-73 %	450-74 %	450-81 %
H2S	1.20717E-08	1.20717E-08	4.39022E-09	4.39022E-09	7.54176E-07
CO2	1.79101E-06	1.79101E-06	1.8221E-06	1.8221E-06	3.73142E-05
N2	2.23276	2.23276	2.23036	2.23036	8.0782E-05
Methane	97.621	97.621	97.6203	97.6203	8.79564
Ethane	0.146196	0.146196	0.149296	0.149296	45.4787
Propane	6.21873E-07	6.21873E-07	6.4535E-07	6.4535E-07	24.373
i-Butane	2.29685E-12	2.29685E-12	2.38862E-12	2.38862E-12	4.18041
n-Butane	1.04508E-12	1.04508E-12	1.08869E-12	1.08869E-12	9.11069
i-Pentane	0	0	0	0	2.36302
n-Pentane	0	0	0	0	2.51629
n-Hexane	0	0	0	0	2.05058
n-Heptane	0	0	0	0	0.673327
n-Octane	0	0	0	0	0.130769
n-Nonane	0	0	0	0	0.0386897
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0	0	0	0	0.142476

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-66 %	450-70 %	450-73 %	450-74 %	450-81 %
Toluene	0	0	0	0	0.0833384
Ethylbenzene	0	0	0	0	0.0373805
m-Xylene	0	0	0	0	0.0255525
Water	2.06637E-09	2.06637E-09	1.93487E-09	1.93487E-09	1.21962E-09
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-66 lb/h	450-70 lb/h	450-73 lb/h	450-74 lb/h	450-81 lb/h
H2S	5.71464E-05	5.71464E-05	2.3911E-06	2.3911E-06	0.0026867
CO2	0.00847853	0.00847853	0.000992394	0.000992394	0.132929
N2	10569.7	10569.7	1214.75	1214.75	0.28778
Methane	462131	462131	53168.1	53168.1	31333.9
Ethane	692.081	692.081	81.3128	81.3128	162015
Propane	0.0029439	0.0029439	0.000351485	0.000351485	86827.1
i-Butane	1.08731E-08	1.08731E-08	1.30094E-09	1.30094E-09	14892.4
n-Butane	4.94733E-09	4.94733E-09	5.92945E-10	5.92945E-10	32456.2
i-Pentane	0	0	0	0	8418.09
n-Pentane	0	0	0	0	8964.12
n-Hexane	0	0	0	0	7305.04
n-Heptane	0	0	0	0	2398.68
n-Octane	0	0	0	0	465.855
n-Nonane	0	0	0	0	137.829
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0	0	0	0	507.561
Toluene	0	0	0	0	296.887
Ethylbenzene	0	0	0	0	133.166
m-Xylene	0	0	0	0	91.0291
Water	9.78206E-06	9.78206E-06	1.05381E-06	1.05381E-06	4.34482E-06
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-66	450-70	450-73	450-74	450-81
Temperature	°F	122.564	125 *	-146 *	-163.826	-52.1399
Pressure	psig	310.478	298.478	974.09	275.09 *	268.9
Mole Fraction Vapor	%	100	100	0	10.8015	0
Molecular Weight	lb/lbmol	16.2082	16.2082	16.2082	16.2082	33.955
Mass Density	lb/ft^3	0.867376	0.830317	20.0352 ?	10.4664	32.2073
Molar Flow	lbmol/h	29207.1	29207.1	3360.28	3360.28	10491.6
Mass Flow	lb/h	473393	473393	54464.2	54464.2	356243
Std Vapor Volumetric Flow	MMSCFD	266.007	266.007	30.6041	30.6041	95.5536
Std Liquid Volumetric Flow	sgpm	3110.94	3110.94	357.92	357.92	1712.46
Specific Gravity		0.559626	0.559626	0.321238 ?		0.516401
API Gravity				2525.79 ?		234.89
Gross Ideal Gas Heating Value	Btu/ft^3	997.551	997.551	997.577	997.577	1972.98
Gross Liquid Heating Value	Btu/lb	23355.6	23355.6	23356.1	23356.1	21908.7

Remarks

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-82	450-83	450-84	450-85	450-91
From Block	E-4204 DeMETH SIDE REBOILER	T-4501 DeMETHANIZER	E-4203 DeMETH BOTTOM REBOILER	E-4205 TRIM REBOILER	T-4501 DeMETHANIZER
To Block	T-4501 DeMETHANIZER	E-4203 DeMETH BOTTOM REBOILER	E-4205 TRIM REBOILER	T-4501 DeMETHANIZER	P-4600/01 PRODUCT BOOSTER PUMPS

Stream Composition

Mole Fraction	450-82 %	450-83 %	450-84 %	450-85 %	450-91 %
H2S	7.51391E-07	9.41102E-07	9.41102E-07	9.41102E-07	8.33094E-07
CO2	2.87894E-05	2.27791E-05	2.27791E-05	2.27791E-05	1.27814E-05
N2	9.79158E-05	1.16992E-07	1.16992E-07	1.16992E-07	1.7501E-08
Methane	18.6166	1.69741	1.69741	1.69741	0.581699
Ethane	51.3562	64.7097	64.7097	64.7097	56.1482
Propane	18.768	21.7851	21.7851	21.7851	26.4493
i-Butane	2.4422	2.62685	2.62685	2.62685	3.61712
n-Butane	5.32247	5.64223	5.64223	5.64223	7.92554
i-Pentane	1.1121	1.1383	1.1383	1.1383	1.67586
n-Pentane	1.18423	1.20488	1.20488	1.20488	1.78727
n-Hexane	0.807974	0.807458	0.807458	0.807458	1.22383
n-Heptane	0.228168	0.226716	0.226716	0.226716	0.345862
n-Octane	0.0388717	0.0385277	0.0385277	0.0385277	0.0589369
n-Nonane	0.0102429	0.010141	0.010141	0.010141	0.0155314
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.061934	0.0621305	0.0621305	0.0621305	0.0937423
Toluene	0.030712	0.030551	0.030551	0.030551	0.0465469
Ethylbenzene	0.0119555	0.0118545	0.0118545	0.0118545	0.0181261
m-Xylene	0.00817253	0.00810198	0.00810198	0.00810198	0.0123908
Water	2.29873E-09	6.10119E-10	6.10119E-10	6.10119E-10	2.75923E-10
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Fraction	450-82 %	450-83 %	450-84 %	450-85 %	450-91 %
H2S	7.54176E-07	8.68948E-07	8.68948E-07	8.68948E-07	7.19092E-07
CO2	3.73142E-05	2.71599E-05	2.71599E-05	2.71599E-05	1.42463E-05
N2	8.0782E-05	8.87905E-08	8.87905E-08	8.87905E-08	1.24168E-08
Methane	8.79564	0.737741	0.737741	0.737741	0.236346
Ethane	45.4787	52.7152	52.7152	52.7152	42.7598
Propane	24.373	26.0256	26.0256	26.0256	29.5385
i-Butane	4.18041	4.13641	4.13641	4.13641	5.32456
n-Butane	9.11069	8.88463	8.88463	8.88463	11.6668
i-Pentane	2.36302	2.22501	2.22501	2.22501	3.06229
n-Pentane	2.51629	2.35515	2.35515	2.35515	3.26587
n-Hexane	2.05058	1.88516	1.88516	1.88516	2.67105
n-Heptane	0.673327	0.615468	0.615468	0.615468	0.877724
n-Octane	0.130769	0.119232	0.119232	0.119232	0.170507
n-Nonane	0.0386897	0.0352372	0.0352372	0.0352372	0.0504503
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	0.142476	0.131483	0.131483	0.131483	0.185452
Toluene	0.0833384	0.0762629	0.0762629	0.0762629	0.10862
Ethylbenzene	0.0373805	0.0340965	0.0340965	0.0340965	0.0487378

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-82 %	450-83 %	450-84 %	450-85 %	450-91 %
m-Xylene	0.0255525	0.0233034	0.0233034	0.0233034	0.0333166
Water	1.21962E-09	2.97784E-10	2.97784E-10	2.97784E-10	1.25895E-10
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Mass Flow	450-82 lb/h	450-83 lb/h	450-84 lb/h	450-85 lb/h	450-91 lb/h
H2S	0.0026867	0.00340035	0.00340035	0.00340035	0.00198416
CO2	0.132929	0.106282	0.106282	0.106282	0.0393093
N2	0.28778	0.000347453	0.000347453	0.000347453	3.4261E-05
Methane	31333.9	2886.92	2886.92	2886.92	652.14
Ethane	162015	206284	206284	206284	117985
Propane	86827.1	101843	101843	101843	81504.3
i-Butane	14892.4	16186.5	16186.5	16186.5	14691.8
n-Butane	32456.2	34767.2	34767.2	34767.2	32191.6
i-Pentane	8418.09	8706.87	8706.87	8706.87	8449.63
n-Pentane	8964.12	9216.11	9216.11	9216.11	9011.36
n-Hexane	7305.04	7376.99	7376.99	7376.99	7370.12
n-Heptane	2398.68	2408.44	2408.44	2408.44	2421.86
n-Octane	465.855	466.578	466.578	466.578	470.471
n-Nonane	137.829	137.889	137.889	137.889	139.205
n-Decane	0	0	0	0	0
Undecane	0	0	0	0	0
Benzene	507.561	514.515	514.515	514.515	511.71
Toluene	296.887	298.43	298.43	298.43	299.711
Ethylbenzene	133.166	133.426	133.426	133.426	134.48
m-Xylene	91.0291	91.1903	91.1903	91.1903	91.9291
Water	4.34482E-06	1.16528E-06	1.16528E-06	1.16528E-06	3.47376E-07
MDEA	0	0	0	0	0
Piperazine	0	0	0	0	0
Phosphoric Acid	0	0	0	0	0
TEG	0	0	0	0	0
O2	0	0	0	0	0

Stream Properties

Property	Units	450-82	450-83	450-84	450-85	450-91
Temperature	°F	-17.5038	38.5134	56.7743	56.7743	56.6541
Pressure	psig	268.9	269.852	269.852	269.852	270.09
Mole Fraction Vapor	%	14.6004	0	35.1058	35.1058	0
Molecular Weight	lb/lbmol	33.955	36.9108	36.9108	36.9108	39.4839
Mass Density	lb/ft^3	11.2177	29.308	6.02532	6.02532	29.6902
Molar Flow	lbmol/h	10491.6	10601.7	10601.7	10601.7	6988.29
Mass Flow	lb/h	356243	391318	391318	391318	275925
Std Vapor Volumetric Flow	MMSCFD	95.5536	96.5564	96.5564	96.5564	63.6467
Std Liquid Volumetric Flow	sgpm	1712.46	1844.89	1844.89	1844.89	1238.82
Specific Gravity			0.469915			0.476044
API Gravity			185.979			167.921
Gross Ideal Gas Heating Value	Btu/ft^3	1972.98	2132.5	2132.5	2132.5	2269.08
Gross Liquid Heating Value	Btu/lb	21908.7	21770.8	21770.8	21770.8	21652.8

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Connections

	450-92	450-93	510-97A	510-97B
From Block	P-4600/01 PRODUCT BOOSTER PUMPS	P-4602/03/04 PRODUCT PIPELINE PUMP	RSV to Cryo	RCYL-1
To Block	P-4602/03/04 PRODUCT PIPELINE PUMP	XFS1	RCYL-1	E-4201/4202/4207/4208

Stream Composition

Mole Fraction	450-92 %	450-93 %	510-97A %	510-97B %
H2S	8.33094E-07	8.33094E-07	5.74103E-09	2.08791E-09
CO2	1.27814E-05	1.27814E-05	6.59608E-07	6.71061E-07
N2	1.7501E-08	1.7501E-08	1.29185	1.29046
Methane	0.581699	0.581699	98.6293	98.6291
Ethane	56.1482	56.1482	0.0788042	0.0804756
Propane	26.4493	26.4493	2.28581E-07	2.37211E-07
i-Butane	3.61712	3.61712	6.40508E-13	6.66102E-13
n-Butane	7.92554	7.92554	2.91434E-13	3.03597E-13
i-Pentane	1.67586	1.67586	0	0
n-Pentane	1.78727	1.78727	0	0
n-Hexane	1.22383	1.22383	0	0
n-Heptane	0.345862	0.345862	0	0
n-Octane	0.0589369	0.0589369	0	0
n-Nonane	0.0155314	0.0155314	0	0
n-Decane	0	0	0	0
Undecane	0	0	0	0
Benzene	0.0937423	0.0937423	0	0
Toluene	0.0465469	0.0465469	0	0
Ethylbenzene	0.0181261	0.0181261	0	0
m-Xylene	0.0123908	0.0123908	0	0
Water	2.75923E-10	2.75923E-10	1.85909E-09	1.74079E-09
MDEA	0	0	0	0
Piperazine	0	0	0	0
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0
O2	0	0	0	0

Mass Fraction	450-92 %	450-93 %	510-97A %	510-97B %
H2S	7.19092E-07	7.19092E-07	1.20717E-08	4.39022E-09
CO2	1.42463E-05	1.42463E-05	1.79101E-06	1.8221E-06
N2	1.24168E-08	1.24168E-08	2.23276	2.23036
Methane	0.236346	0.236346	97.621	97.6203
Ethane	42.7598	42.7598	0.146196	0.149296
Propane	29.5385	29.5385	6.21873E-07	6.4535E-07
i-Butane	5.32456	5.32456	2.29685E-12	2.38862E-12
n-Butane	11.6668	11.6668	1.04508E-12	1.08869E-12
i-Pentane	3.06229	3.06229	0	0
n-Pentane	3.26587	3.26587	0	0
n-Hexane	2.67105	2.67105	0	0
n-Heptane	0.877724	0.877724	0	0
n-Octane	0.170507	0.170507	0	0
n-Nonane	0.0504503	0.0504503	0	0
n-Decane	0	0	0	0
Undecane	0	0	0	0
Benzene	0.185452	0.185452	0	0
Toluene	0.10862	0.10862	0	0
Ethylbenzene	0.0487378	0.0487378	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Cryo	

Mass Fraction	450-92 %	450-93 %	510-97A %	510-97B %
m-Xylene	0.0333166	0.0333166	0	0
Water	1.25895E-10	1.25895E-10	2.06637E-09	1.93487E-09
MDEA	0	0	0	0
Piperazine	0	0	0	0
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0
O2	0	0	0	0

Mass Flow	450-92 lb/h	450-93 lb/h	510-97A lb/h	510-97B lb/h
H2S	0.00198416	0.00198416	6.57183E-06	2.3911E-06
CO2	0.0393093	0.0393093	0.000975031	0.000992394
N2	3.4261E-05	3.4261E-05	1215.52	1214.75
Methane	652.14	652.14	53145.1	53168.1
Ethane	117985	117985	79.5893	81.3128
Propane	81504.3	81504.3	0.000338549	0.000351485
i-Butane	14691.8	14691.8	1.25041E-09	1.30094E-09
n-Butane	32191.6	32191.6	5.68943E-10	5.92945E-10
i-Pentane	8449.63	8449.63	0	0
n-Pentane	9011.36	9011.36	0	0
n-Hexane	7370.12	7370.12	0	0
n-Heptane	2421.86	2421.86	0	0
n-Octane	470.471	470.471	0	0
n-Nonane	139.205	139.205	0	0
n-Decane	0	0	0	0
Undecane	0	0	0	0
Benzene	511.71	511.71	0	0
Toluene	299.711	299.711	0	0
Ethylbenzene	134.48	134.48	0	0
m-Xylene	91.9291	91.9291	0	0
Water	3.47376E-07	3.47376E-07	1.12494E-06	1.05381E-06
MDEA	0	0	0	0
Piperazine	0	0	0	0
Phosphoric Acid	0	0	0	0
TEG	0	0	0	0
O2	0	0	0	0

Stream Properties

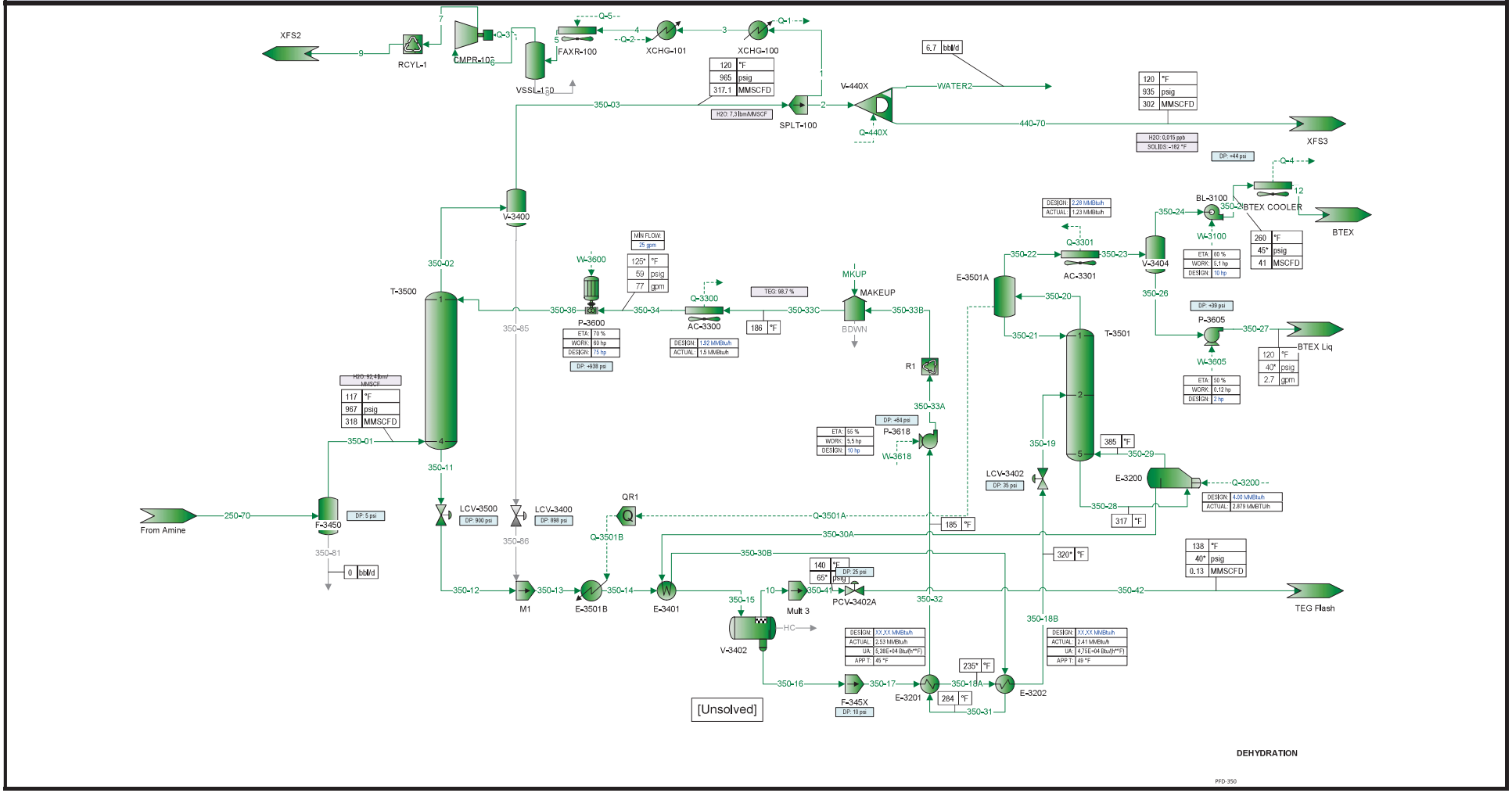
Property	Units	450-92	450-93	510-97A	510-97B
Temperature	°F	57.4476	71.0282	103.55	103.55
Pressure	psig	322.666	1255.09 *	980.09	980.09
Mole Fraction Vapor	%	0	0	100	100
Molecular Weight	lb/lbmol	39.4839	39.4839	16.2082	16.2082
Mass Density	lb/ft^3	29.7234	30.2448	2.95216	2.9522
Molar Flow	lbmol/h	6988.29	6988.29	3358.81	3360.28
Mass Flow	lb/h	275925	275925	54440.2	54464.2
Std Vapor Volumetric Flow	MMSCFD	63.6467	63.6467	30.5908	30.6041
Std Liquid Volumetric Flow	sgpm	1238.82	1238.82	357.759	357.92
Specific Gravity		0.476576	0.484935	0.559626	0.559628
API Gravity		167.042	154.863		
Gross Ideal Gas Heating Value	Btu/ft^3	2269.08	2269.08	997.551	997.577
Gross Liquid Heating Value	Btu/lb	21652.8	21652.8	23355.6	23356.1

Remarks

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Dehydration
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	BDWN	HC	MKUP	WATER2	1
From Block	MAKEUP	V-3402	--	V-440X	SPLT-100
To Block	--	--	MAKEUP	--	XCHG-100

Stream Composition

Mole Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	1.09876E-11		0 *	0	1.8042E-07
CO2	1.46604E-12		0 *	0	3.2122E-06
N2	7.93046E-12		0 *	0	1.01962
Methane	4.35872E-08		0 *	0	77.9571
Ethane	3.46335E-07		0 *	0	11.8915
Propane	1.29039E-06		0 *	0	5.57243
i-Butane	4.79394E-07		0 *	0	0.762067
n-Butane	3.04478E-06		0 *	0	1.66978
i-Pentane	2.75889E-06		0 *	0	0.353076
n-Pentane	4.74348E-06		0 *	0	0.376549
n-Hexane	4.08048E-05		0 *	0	0.25784
n-Heptane	2.08749E-05		0 *	0	0.0728674
n-Octane	1.12228E-05		0 *	0	0.012417
n-Nonane	1.02973E-05		0 *	0	0.00327221
n-Decane	0		0 *	0	0
Water	9.65144		0.827516 *	99.2705	0.0153724
TEG	90.3269		99.1725 *	0.729488	0.000112964
Benzene	0.00220287		0 *	0	0.01975
Toluene	0.0055318		0 *	0	0.00980666
Ethylbenzene	0.00828488		0 *	0	0.00381888
m-Xylene	0.00551392		0 *	0	0.00261054
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

Mass Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	2.72524E-12		0 *	0	2.91245E-07
CO2	4.69553E-13		0 *	0	6.69594E-06
N2	1.6168E-12		0 *	0	1.3529
Methane	5.08887E-09		0 *	0	59.2364
Ethane	7.57891E-08		0 *	0	16.9363
Propane	4.14101E-07		0 *	0	11.6386
i-Butane	2.02781E-07		0 *	0	2.09796
n-Butane	1.28792E-06		0 *	0	4.59689
i-Pentane	1.44862E-06		0 *	0	1.20659
n-Pentane	2.49068E-06		0 *	0	1.2868
n-Hexane	2.55909E-05		0 *	0	1.05244
n-Heptane	1.52227E-05		0 *	0	0.345837
n-Octane	9.32972E-06		0 *	0	0.0671823
n-Nonane	9.61142E-06		0 *	0	0.0198782
n-Decane	0		0 *	0	0
Water	1.26539		0.1 *	94.228	0.0131173
TEG	98.7189		99.9 *	5.77203	0.000803516
Benzene	0.00125227		0 *	0	0.0730711
Toluene	0.00370936		0 *	0	0.0427981
Ethylbenzene	0.00640117		0 *	0	0.0192035
m-Xylene	0.00426023		0 *	0	0.0131273
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	BDWN lb/h	HC lb/h	MKUP lb/h	WATER2 lb/h	1 lb/h
H2S	0	0	0 *	0	0.00010127
CO2	0	0	0 *	0	0.00232828
N2	0	0	0 *	0	470.423
Methane	0	0	0 *	0	20597.4
Ethane	0	0	0 *	0	5889.03
Propane	0	0	0 *	0	4046.94
i-Butane	0	0	0 *	0	729.494
n-Butane	0	0	0 *	0	1598.41
i-Pentane	0	0	0 *	0	419.55
n-Pentane	0	0	0 *	0	447.442
n-Hexane	0	0	0 *	0	365.949
n-Heptane	0	0	0 *	0	120.253
n-Octane	0	0	0 *	0	23.3603
n-Nonane	0	0	0 *	0	6.91197
n-Decane	0	0	0 *	0	0
Water	0	0	0.00668814 *	91.8595	4.5611
TEG	0	0	6.68146 *	5.62694	0.279395
Benzene	0	0	0 *	0	25.408
Toluene	0	0	0 *	0	14.8816
Ethylbenzene	0	0	0 *	0	6.67734
m-Xylene	0	0	0 *	0	4.56456
Cyclohexane	0	0	0 *	0	0
Cyclopentane	0	0	0 *	0	0
SO2	0	0	0 *	0	0

Stream Properties

Property	Units	BDWN	HC	MKUP	WATER2	1
Temperature	°F	186.304	140	80 *	120 *	120.009
Pressure	psig	64.4329	65	70 *	965	965
Mole Fraction Vapor	%	0		0	0	100
Molecular Weight	lb/lbmol	137.407		149.079	18.9794	21.1124
Mass Density	lb/ft^3	66.2163		70.2029	62.2615	3.99621
Molar Flow	lbmol/h	0	0	0.044863	5.13644	1646.97
Mass Flow	lb/h	0	0	6.68814	97.4864	34771.6
Std Vapor Volumetric Flow	MMSCFD	0	0	0.000408595	0.0467808	15 *
Std Liquid Volumetric Flow	sgpm	0	0	0.0118377	0.193592	199.959
Specific Gravity				1.12561	0.99828	0.728957
API Gravity				-7.09278	8.60966	
Gross Ideal Gas Heating Value	Btu/ft^3	3735.35		4095.08	80.0623	1265.3
Gross Liquid Heating Value	Btu/lb	10046.4		10163.6	587.235	22681.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	2	3	4	5	6
From Block	SPLT-100	XCHG-100	XCHG-101	FAXR-100	VSSL-100
To Block	V-440X	XCHG-101	FAXR-100	VSSL-100	CMPR-100

Stream Composition

Mole Fraction	2 %	3 %	4 %	5 %	6 %
H2S	1.8042E-07	1.8042E-07	1.8042E-07	1.8042E-07	1.8042E-07
CO2	3.2122E-06	3.2122E-06	3.2122E-06	3.2122E-06	3.2122E-06
N2	1.01962	1.01962	1.01962	1.01962	1.01962
Methane	77.9571	77.9571	77.9571	77.9571	77.9571
Ethane	11.8915	11.8915	11.8915	11.8915	11.8915
Propane	5.57243	5.57243	5.57243	5.57243	5.57243
i-Butane	0.762067	0.762067	0.762067	0.762067	0.762067
n-Butane	1.66978	1.66978	1.66978	1.66978	1.66978
i-Pentane	0.353076	0.353076	0.353076	0.353076	0.353076
n-Pentane	0.376549	0.376549	0.376549	0.376549	0.376549
n-Hexane	0.25784	0.25784	0.25784	0.25784	0.25784
n-Heptane	0.0728674	0.0728674	0.0728674	0.0728674	0.0728674
n-Octane	0.012417	0.012417	0.012417	0.012417	0.012417
n-Nonane	0.00327221	0.00327221	0.00327221	0.00327221	0.00327221
n-Decane	0	0	0	0	0
Water	0.0153724	0.0153724	0.0153724	0.0153724	0.0153724
TEG	0.000112964	0.000112964	0.000112964	0.000112964	0.000112964
Benzene	0.01975	0.01975	0.01975	0.01975	0.01975
Toluene	0.00980666	0.00980666	0.00980666	0.00980666	0.00980666
Ethylbenzene	0.00381888	0.00381888	0.00381888	0.00381888	0.00381888
m-Xylene	0.00261054	0.00261054	0.00261054	0.00261054	0.00261054
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	2 %	3 %	4 %	5 %	6 %
H2S	2.91245E-07	2.91245E-07	2.91245E-07	2.91245E-07	2.91245E-07
CO2	6.69594E-06	6.69594E-06	6.69594E-06	6.69594E-06	6.69594E-06
N2	1.3529	1.3529	1.3529	1.3529	1.3529
Methane	59.2364	59.2364	59.2364	59.2364	59.2364
Ethane	16.9363	16.9363	16.9363	16.9363	16.9363
Propane	11.6386	11.6386	11.6386	11.6386	11.6386
i-Butane	2.09796	2.09796	2.09796	2.09796	2.09796
n-Butane	4.59689	4.59689	4.59689	4.59689	4.59689
i-Pentane	1.20659	1.20659	1.20659	1.20659	1.20659
n-Pentane	1.2868	1.2868	1.2868	1.2868	1.2868
n-Hexane	1.05244	1.05244	1.05244	1.05244	1.05244
n-Heptane	0.345837	0.345837	0.345837	0.345837	0.345837
n-Octane	0.0671823	0.0671823	0.0671823	0.0671823	0.0671823
n-Nonane	0.0198782	0.0198782	0.0198782	0.0198782	0.0198782
n-Decane	0	0	0	0	0
Water	0.0131173	0.0131173	0.0131173	0.0131173	0.0131173
TEG	0.000803516	0.000803516	0.000803516	0.000803516	0.000803516
Benzene	0.0730711	0.0730711	0.0730711	0.0730711	0.0730711
Toluene	0.0427981	0.0427981	0.0427981	0.0427981	0.0427981
Ethylbenzene	0.0192035	0.0192035	0.0192035	0.0192035	0.0192035
m-Xylene	0.0131273	0.0131273	0.0131273	0.0131273	0.0131273
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	2 lb/h	3 lb/h	4 lb/h	5 lb/h	6 lb/h
H2S	0.00203956	0.00010127	0.00010127	0.00010127	0.00010127
CO2	0.046891	0.00232828	0.00232828	0.00232828	0.00232828
N2	9474.2	470.423	470.423	470.423	470.423
Methane	414827	20597.4	20597.4	20597.4	20597.4
Ethane	118604	5889.03	5889.03	5889.03	5889.03
Propane	81504.3	4046.94	4046.94	4046.94	4046.94
i-Butane	14691.8	729.494	729.494	729.494	729.494
n-Butane	32191.6	1598.41	1598.41	1598.41	1598.41
i-Pentane	8449.63	419.55	419.55	419.55	419.55
n-Pentane	9011.36	447.442	447.442	447.442	447.442
n-Hexane	7370.12	365.949	365.949	365.949	365.949
n-Heptane	2421.86	120.253	120.253	120.253	120.253
n-Octane	470.471	23.3603	23.3603	23.3603	23.3603
n-Nonane	139.205	6.91197	6.91197	6.91197	6.91197
n-Decane	0	0	0	0	0
Water	91.8595	4.5611	4.5611	4.5611	4.5611
TEG	5.62694	0.279395	0.279395	0.279395	0.279395
Benzene	511.71	25.408	25.408	25.408	25.408
Toluene	299.711	14.8816	14.8816	14.8816	14.8816
Ethylbenzene	134.48	6.67734	6.67734	6.67734	6.67734
m-Xylene	91.9291	4.56456	4.56456	4.56456	4.56456
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	2	3	4	5	6
Temperature	°F	120.009	100 *	575 *	120 *	120
Pressure	psig	965	965	945	940	940
Mole Fraction Vapor	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.1124	21.1124	21.1124	21.1124	21.1124
Mass Density	lb/ft^3	3.99621	4.27132	1.81582	3.8778	3.8778
Molar Flow	lbmol/h	33169.6	1646.97	1646.97	1646.97	1646.97
Mass Flow	lb/h	700291	34771.6	34771.6	34771.6	34771.6
Std Vapor Volumetric Flow	MMSCFD	302.096	15	15	15	15
Std Liquid Volumetric Flow	sgpm	4027.13	199.959	199.959	199.959	199.959
Specific Gravity		0.728957	0.728957	0.728957	0.728957	0.728957
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.3	1265.3	1265.3	1265.3	1265.3
Gross Liquid Heating Value	Btu/lb	22681.4	22681.4	22681.4	22681.4	22681.4

Warnings

ProMax:ProMax!Project!Flowsheets!Dehydration!PStreams!3

Warning: Initial guess algorithms predicted multiple phases.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	7	8	9	10	12
From Block	CMPR-100	VSSL-100	RCYL-1	V-3402	BTEX COOLER
To Block	RCYL-1	--	XFS2	Mult 3	BTEX

Stream Composition

Mole Fraction	7 %	8 %	9 %	10 %	12 %
H2S	1.8042E-07		1.79679E-07	1.38155E-06	1.26398E-05
CO2	3.2122E-06		3.33687E-06	1.40217E-05	2.76462E-05
N2	1.01962		1.01934	0.222508	0.012261
Methane	77.9571		77.9565	56.1487	11.9422
Ethane	11.8915		11.8923	20.3797	14.9749
Propane	5.57243		5.57206	12.7251	17.6769
i-Butane	0.762067		0.761931	1.76491	3.24743
n-Butane	1.66978		1.66958	4.76919	12.7172
i-Pentane	0.353076		0.352964	0.973644	3.76019
n-Pentane	0.376549		0.376431	1.14393	5.07947
n-Hexane	0.25784		0.257691	0.748312	4.92349
n-Heptane	0.0728674		0.0727865	0.203873	1.37704
n-Octane	0.012417		0.0123907	0.0301029	0.159532
n-Nonane	0.00327221		0.00325707	0.00663999	0.0308072
n-Decane	0		0	0	0
Water	0.0153724		0.0162357	0.687462	11.5417
TEG	0.000112964		0.00012051	0.000334246	3.86983E-08
Benzene	0.01975		0.0200273	0.11685	8.04418
Toluene	0.00980666		0.00992022	0.0507514	3.33725
Ethylbenzene	0.00381888		0.00385139	0.0172293	0.711008
m-Xylene	0.00261054		0.00263428	0.0107641	0.464405
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

Mass Fraction	7 %	8 %	9 %	10 %	12 %
H2S	2.91245E-07		2.90051E-07	1.72351E-06	8.89968E-06
CO2	6.69594E-06		6.95588E-06	2.25883E-05	2.51366E-05
N2	1.3529		1.35254	0.228164	0.00709604
Methane	59.2364		59.2365	32.9722	3.95802
Ethane	16.9363		16.9376	22.4313	9.30267
Propane	11.6386		11.638	20.5397	16.1037
i-Butane	2.09796		2.09761	3.75493	3.89947
n-Butane	4.59689		4.59636	10.1467	15.2707
i-Pentane	1.20659		1.20622	2.57138	5.60483
n-Pentane	1.2868		1.28641	3.02112	7.57132
n-Hexane	1.05244		1.05184	2.3605	8.76557
n-Heptane	0.345837		0.345456	0.747779	2.85067
n-Octane	0.0671823		0.0670403	0.125869	0.376483
n-Nonane	0.0198782		0.0197865	0.031173	0.0816302
n-Decane	0		0	0	0
Water	0.0131173		0.0138541	0.453343	4.2957
TEG	0.000803516		0.000857195	0.00183737	1.20062E-07
Benzene	0.0730711		0.0740977	0.334105	12.9814
Toluene	0.0427981		0.043294	0.171169	6.35262
Ethylbenzene	0.0192035		0.0193671	0.0669555	1.55948
m-Xylene	0.0131273		0.0132467	0.0418309	1.0186
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	7 lb/h	8 lb/h	9 lb/h	10 lb/h	12 lb/h
H2S	0.00010127	0	0.000100854	6.78579E-06	1.9438E-05
CO2	0.00232828	0	0.00241865	8.89347E-05	5.49013E-05
N2	470.423	0	470.295	0.898328	0.0154986
Methane	20597.4	0	20597.3	129.818	8.6448
Ethane	5889.03	0	5889.41	88.3164	20.3181
Propane	4046.94	0	4046.67	80.8687	35.1724
i-Butane	729.494	0	729.364	14.7839	8.51691
n-Butane	1598.41	0	1598.21	39.9494	33.353
i-Pentane	419.55	0	419.417	10.124	12.2416
n-Pentane	447.442	0	447.302	11.8947	16.5367
n-Hexane	365.949	0	365.737	9.29373	19.145
n-Heptane	120.253	0	120.119	2.94415	6.2262
n-Octane	23.3603	0	23.3107	0.495572	0.822285
n-Nonane	6.91197	0	6.88001	0.122734	0.17829
n-Decane	0	0	0	0	0
Water	4.5611	0	4.81725	1.7849	9.38231
TEG	0.279395	0	0.298058	0.00723406	2.62231E-07
Benzene	25.408	0	25.7647	1.31544	28.353
Toluene	14.8816	0	15.0539	0.673927	13.8749
Ethylbenzene	6.67734	0	6.73418	0.263617	3.40609
m-Xylene	4.56456	0	4.60606	0.164696	2.22474
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	7	8	9	10	12
Temperature	°F	129.833	120	129.833	140	120 *
Pressure	psig	1000 *	940	1000	65	45
Mole Fraction Vapor	%	100		100	100	67.1204
Molecular Weight	lb/lbmol	21.1124		21.1122	27.3189	48.4034
Mass Density	lb/ft^3	4.03768		4.03764	0.339958	0.704692
Molar Flow	lbmol/h	1646.97	0	1646.97	14.412	4.51232
Mass Flow	lb/h	34771.6	0	34771.3	393.719	218.412
Std Vapor Volumetric Flow	MMSCFD	15	0	15	0.131259	0.0410965
Std Liquid Volumetric Flow	sgpm	199.959	0	199.958	1.9886	0.752369
Specific Gravity		0.728957		0.72895	0.94325	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.3		1265.28	1603.34	2544.2
Gross Liquid Heating Value	Btu/lb	22681.4		22681.3	22162.8	19749.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	250-70	350-01	350-02	350-03	350-11
From Block	From Amine	F-3450	T-3500	V-3400	T-3500
To Block	F-3450	T-3500	V-3400	SPLT-100	LCV-3500

Stream Composition

Mole Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	1.82243E-07	1.82243E-07	1.8042E-07	1.8042E-07	2.01052E-07
CO2	3.214E-06	3.214E-06	3.2122E-06	3.2122E-06	8.39703E-07
N2	1.0173	1.0173	1.01962	1.01962	0.008354
Methane	77.7973	77.7973	77.9571	77.9571	2.21053
Ethane	11.8738	11.8738	11.8915	11.8915	0.926496
Propane	5.56683	5.56683	5.57243	5.57243	0.678144
i-Butane	0.761432	0.761432	0.762067	0.762067	0.104394
n-Butane	1.66956	1.66956	1.66978	1.66978	0.332999
i-Pentane	0.353206	0.353206	0.353076	0.353076	0.0863107
n-Pentane	0.376919	0.376919	0.376549	0.376549	0.11278
n-Hexane	0.25857	0.25857	0.25784	0.25784	0.119744
n-Heptane	0.0732659	0.0732659	0.0728674	0.0728674	0.0510487
n-Octane	0.0125214	0.0125214	0.012417	0.012417	0.0119644
n-Nonane	0.00331441	0.00331441	0.00327221	0.00327221	0.00447198
n-Decane	0	0	0	0	0
Water	0.194164	0.194164	0.0153724	0.0153724	23.5916
TEG	0	0	0.000112964	0.000112964	71.2139
Benzene	0.0220948	0.0220948	0.01975	0.01975	0.215475
Toluene	0.0116577	0.0116577	0.00980666	0.00980666	0.171873
Ethylbenzene	0.00482699	0.00482699	0.00381888	0.00381888	0.0974377
m-Xylene	0.00325489	0.00325489	0.00261054	0.00261054	0.0624865
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	2.94127E-07	2.94127E-07	2.91245E-07	2.91245E-07	6.05319E-08
CO2	6.69831E-06	6.69831E-06	6.69594E-06	6.69594E-06	3.26466E-07
N2	1.34954	1.34954	1.3529	1.3529	0.00206741
Methane	59.103	59.103	59.2364	59.2364	0.313281
Ethane	16.9076	16.9076	16.9363	16.9363	0.24611
Propane	11.6246	11.6246	11.6386	11.6386	0.26417
i-Butane	2.09579	2.09579	2.09796	2.09796	0.0536025
n-Butane	4.59533	4.59533	4.59689	4.59689	0.170982
i-Pentane	1.20679	1.20679	1.20659	1.20659	0.0550123
n-Pentane	1.28781	1.28781	1.2868	1.2868	0.0718829
n-Hexane	1.0552	1.0552	1.05244	1.05244	0.0911597
n-Heptane	0.347658	0.347658	0.345837	0.345837	0.0451884
n-Octane	0.0677332	0.0677332	0.0671823	0.0671823	0.0120734
n-Nonane	0.0201305	0.0201305	0.0198782	0.0198782	0.00506688
n-Decane	0	0	0	0	0
Water	0.165647	0.165647	0.0131173	0.0131173	3.75461
TEG	0	0	0.000803516	0.000803516	94.4762
Benzene	0.0817297	0.0817297	0.0730711	0.0730711	0.14869
Toluene	0.0508661	0.0508661	0.0427981	0.0427981	0.139899
Ethylbenzene	0.0242679	0.0242679	0.0192035	0.0192035	0.0913849
m-Xylene	0.0163641	0.0163641	0.0131273	0.0131273	0.0586049
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	250-70 lb/h	350-01 lb/h	350-02 lb/h	350-03 lb/h	350-11 lb/h
H2S	0.00216758	0.00216758	0.00214083	0.00214083	2.67563E-05
CO2	0.0493636	0.0493636	0.0492193	0.0492193	0.000144304
N2	9945.54	9945.54	9944.63	9944.63	0.913833
Methane	435563	435563	435424	435424	138.476
Ethane	124601	124601	124493	124493	108.785
Propane	85668	85668	85551.3	85551.3	116.768
i-Butane	15445	15445	15421.3	15421.3	23.6933
n-Butane	33865.6	33865.6	33790	33790	75.5774
i-Pentane	8893.49	8893.49	8869.18	8869.18	24.3165
n-Pentane	9490.58	9490.58	9458.8	9458.8	31.7736
n-Hexane	7776.35	7776.35	7736.07	7736.07	40.2943
n-Heptane	2562.08	2562.08	2542.12	2542.12	19.9741
n-Octane	499.164	499.164	493.831	493.831	5.33667
n-Nonane	148.353	148.353	146.117	146.117	2.23966
n-Decane	0	0	0	0	0
Water	1220.74	1220.74	96.4206	96.4206	1659.61
TEG	0	0	5.90634	5.90634	41760.3
Benzene	602.312	602.312	537.118	537.118	65.7236
Toluene	374.861	374.861	314.592	314.592	61.8379
Ethylbenzene	178.843	178.843	141.157	141.157	40.3939
m-Xylene	120.596	120.596	96.4936	96.4936	25.9045
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	250-70	350-01	350-02	350-03	350-11
Temperature	°F	117.398	117.096	120.039	120.009	119.397
Pressure	psig	972	967	965.5	965	967
Mole Fraction Vapor	%	100	100	100	100	0
Molecular Weight	lb/lbmol	21.1167	21.1167	21.1124	21.1124	113.197
Mass Density	lb/ft^3	4.06477	4.04458	3.99821	3.99621	67.0158
Molar Flow	lbmol/h	34899.2	34899.2	34816.6	34816.6	390.487
Mass Flow	lb/h	736956	736956	735062	735062	44201.9
Std Vapor Volumetric Flow	MMSCFD	317.848	317.848	317.096	317.096	3.55641
Std Liquid Volumetric Flow	sgpm	4232.47	4232.47	4227.08	4227.08	80.3824
Specific Gravity		0.729105	0.729105	0.728957	0.728957	1.07451
API Gravity						-3.35273
Gross Ideal Gas Heating Value	Btu/ft^3	1263.63	1263.63	1265.3	1265.3	3063.81
Gross Liquid Heating Value	Btu/lb	22645.2	22645.2	22681.4	22681.4	9983.72

Remarks

350-02:

The "A" on the Process Stream name, indicates that an Analysis Block is present for this stream. To get to the analysis information, simply select the Analyses Tab on this screen.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-12	350-13	350-14	350-15	350-16
From Block	LCV-3500	M1	E-3501B	E-3401	V-3402
To Block	M1	E-3501B	E-3401	V-3402	F-345X

Stream Composition

Mole Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	2.01052E-07	2.01052E-07	2.01052E-07	2.01052E-07	1.55813E-07
CO2	8.39703E-07	8.39703E-07	8.39703E-07	8.39703E-07	3.34541E-07
N2	0.008354	0.008354	0.008354	0.008354	0.000147182
Methane	2.21053	2.21053	2.21053	2.21053	0.143509
Ethane	0.926496	0.926496	0.926496	0.926496	0.181009
Propane	0.678144	0.678144	0.678144	0.678144	0.216479
i-Butane	0.104394	0.104394	0.104394	0.104394	0.0407597
n-Butane	0.332999	0.332999	0.332999	0.332999	0.162995
i-Pentane	0.0863107	0.0863107	0.0863107	0.0863107	0.0523063
n-Pentane	0.11278	0.11278	0.11278	0.11278	0.0732636
n-Hexane	0.119744	0.119744	0.119744	0.119744	0.0956559
n-Heptane	0.0510487	0.0510487	0.0510487	0.0510487	0.0451922
n-Octane	0.0119644	0.0119644	0.0119644	0.0119644	0.0112692
n-Nonane	0.00447198	0.00447198	0.00447198	0.00447198	0.0043889
n-Decane	0	0	0	0	0
Water	23.5916	23.5916	23.5916	23.5916	24.4693
TEG	71.2139	71.2139	71.2139	71.2139	73.9429
Benzene	0.215475	0.215475	0.215475	0.215475	0.219255
Toluene	0.171873	0.171873	0.171873	0.171873	0.176514
Ethylbenzene	0.0974377	0.0974377	0.0974377	0.0974377	0.100511
m-Xylene	0.0624865	0.0624865	0.0624865	0.0624865	0.0644686
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	6.05319E-08	6.05319E-08	6.05319E-08	6.05319E-08	4.55862E-08
CO2	3.26466E-07	3.26466E-07	3.26466E-07	3.26466E-07	1.26391E-07
N2	0.00206741	0.00206741	0.00206741	0.00206741	3.53949E-05
Methane	0.313281	0.313281	0.313281	0.313281	0.0197637
Ethane	0.24611	0.24611	0.24611	0.24611	0.0467239
Propane	0.26417	0.26417	0.26417	0.26417	0.0819467
i-Butane	0.0536025	0.0536025	0.0536025	0.0536025	0.0203373
n-Butane	0.170982	0.170982	0.170982	0.170982	0.0813272
i-Pentane	0.0550123	0.0550123	0.0550123	0.0550123	0.0323968
n-Pentane	0.0718829	0.0718829	0.0718829	0.0718829	0.0453771
n-Hexane	0.0911597	0.0911597	0.0911597	0.0911597	0.0707643
n-Heptane	0.0451884	0.0451884	0.0451884	0.0451884	0.038874
n-Octane	0.0120734	0.0120734	0.0120734	0.0120734	0.0110507
n-Nonane	0.00506688	0.00506688	0.00506688	0.00506688	0.00483225
n-Decane	0	0	0	0	0
Water	3.75461	3.75461	3.75461	3.75461	3.78428
TEG	94.4762	94.4762	94.4762	94.4762	95.3253
Benzene	0.14869	0.14869	0.14869	0.14869	0.147023
Toluene	0.139899	0.139899	0.139899	0.139899	0.139618
Ethylbenzene	0.0913849	0.0913849	0.0913849	0.0913849	0.0916045
m-Xylene	0.0586049	0.0586049	0.0586049	0.0586049	0.0587556
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-12 lb/h	350-13 lb/h	350-14 lb/h	350-15 lb/h	350-16 lb/h
H2S	2.67563E-05	2.67563E-05	2.67563E-05	2.67563E-05	1.99705E-05
CO2	0.000144304	0.000144304	0.000144304	0.000144304	5.53695E-05
N2	0.913833	0.913833	0.913833	0.913833	0.0155058
Methane	138.476	138.476	138.476	138.476	8.65813
Ethane	108.785	108.785	108.785	108.785	20.4689
Propane	116.768	116.768	116.768	116.768	35.8993
i-Butane	23.6933	23.6933	23.6933	23.6933	8.9094
n-Butane	75.5774	75.5774	75.5774	75.5774	35.628
i-Pentane	24.3165	24.3165	24.3165	24.3165	14.1925
n-Pentane	31.7736	31.7736	31.7736	31.7736	19.8789
n-Hexane	40.2943	40.2943	40.2943	40.2943	31.0006
n-Heptane	19.9741	19.9741	19.9741	19.9741	17.03
n-Octane	5.33667	5.33667	5.33667	5.33667	4.8411
n-Nonane	2.23966	2.23966	2.23966	2.23966	2.11692
n-Decane	0	0	0	0	0
Water	1659.61	1659.61	1659.61	1659.61	1657.82
TEG	41760.3	41760.3	41760.3	41760.3	41760.3
Benzene	65.7236	65.7236	65.7236	65.7236	64.4082
Toluene	61.8379	61.8379	61.8379	61.8379	61.164
Ethylbenzene	40.3939	40.3939	40.3939	40.3939	40.1302
m-Xylene	25.9045	25.9045	25.9045	25.9045	25.7398
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-12	350-13	350-14	350-15	350-16
Temperature	°F	122.909	122.909	126.895	140 *	140
Pressure	psig	67 *	67	65	65	65
Mole Fraction Vapor	%	3.60603	3.60603	3.64015	3.69077	0
Molecular Weight	lb/lbmol	113.197	113.197	113.197	113.197	116.488
Mass Density	lb/ft^3	25.7762	25.7762	25.0829	24.4437	67.3797
Molar Flow	lbmol/h	390.487	390.487	390.487	390.487	376.075
Mass Flow	lb/h	44201.9	44201.9	44201.9	44201.9	43808.2
Std Vapor Volumetric Flow	MMSCFD	3.55641	3.55641	3.55641	3.55641	3.42515
Std Liquid Volumetric Flow	sgpm	80.3824	80.3824	80.3824	80.3824	78.3938
Specific Gravity						1.08034
API Gravity						-5.22393
Gross Ideal Gas Heating Value	Btu/ft^3	3063.81	3063.81	3063.81	3063.81	3119.78
Gross Liquid Heating Value	Btu/lb	9983.72	9983.72	9983.72	9983.72	9874.27

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-17	350-18A	350-18B	350-19	350-20
From Block	F-345X	E-3201	E-3202	LCV-3402	T-3501
To Block	E-3201	E-3202	LCV-3402	T-3501	E-3501A

Stream Composition

Mole Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	1.55813E-07	1.55813E-07	1.55813E-07	1.55813E-07	8.25988E-07
CO2	3.34541E-07	3.34541E-07	3.34541E-07	3.34541E-07	1.77334E-06
N2	0.000147182	0.000147182	0.000147182	0.000147182	0.000780155
Methane	0.143509	0.143509	0.143509	0.143509	0.760687
Ethane	0.181009	0.181009	0.181009	0.181009	0.959465
Propane	0.216479	0.216479	0.216479	0.216479	1.14748
i-Butane	0.0407597	0.0407597	0.0407597	0.0407597	0.216052
n-Butane	0.162995	0.162995	0.162995	0.162995	0.86398
i-Pentane	0.0523063	0.0523063	0.0523063	0.0523063	0.27725
n-Pentane	0.0732636	0.0732636	0.0732636	0.0732636	0.388332
n-Hexane	0.0956559	0.0956559	0.0956559	0.0956559	0.506873
n-Heptane	0.0451922	0.0451922	0.0451922	0.0451922	0.239463
n-Octane	0.0112692	0.0112692	0.0112692	0.0112692	0.059687
n-Nonane	0.0043889	0.0043889	0.0043889	0.0043889	0.0232188
n-Decane	0	0	0	0	0
Water	24.4693	24.4693	24.4693	24.4693	91.1239
TEG	73.9429	73.9429	73.9429	73.9429	0.553559
Benzene	0.219255	0.219255	0.219255	0.219255	1.15329
Toluene	0.176514	0.176514	0.176514	0.176514	0.911977
Ethylbenzene	0.100511	0.100511	0.100511	0.100511	0.496433
m-Xylene	0.0644686	0.0644686	0.0644686	0.0644686	0.317572
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	4.55862E-08	4.55862E-08	4.55862E-08	4.55862E-08	1.24272E-06
CO2	1.26391E-07	1.26391E-07	1.26391E-07	1.26391E-07	3.4453E-06
N2	3.53949E-05	3.53949E-05	3.53949E-05	3.53949E-05	0.000964796
Methane	0.0197637	0.0197637	0.0197637	0.0197637	0.538723
Ethane	0.0467239	0.0467239	0.0467239	0.0467239	1.27361
Propane	0.0819467	0.0819467	0.0819467	0.0819467	2.23373
i-Butane	0.0203373	0.0203373	0.0203373	0.0203373	0.554357
n-Butane	0.0813272	0.0813272	0.0813272	0.0813272	2.21684
i-Pentane	0.0323968	0.0323968	0.0323968	0.0323968	0.883059
n-Pentane	0.0453771	0.0453771	0.0453771	0.0453771	1.23686
n-Hexane	0.0707643	0.0707643	0.0707643	0.0707643	1.92829
n-Heptane	0.038874	0.038874	0.038874	0.038874	1.05926
n-Octane	0.0110507	0.0110507	0.0110507	0.0110507	0.300984
n-Nonane	0.00483225	0.00483225	0.00483225	0.00483225	0.131463
n-Decane	0	0	0	0	0
Water	3.78428	3.78428	3.78428	3.78428	72.4706
TEG	95.3253	95.3253	95.3253	95.3253	3.66982
Benzene	0.147023	0.147023	0.147023	0.147023	3.97689
Toluene	0.139618	0.139618	0.139618	0.139618	3.70948
Ethylbenzene	0.0916045	0.0916045	0.0916045	0.0916045	2.32665
m-Xylene	0.0587556	0.0587556	0.0587556	0.0587556	1.48837
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-17 lb/h	350-18A lb/h	350-18B lb/h	350-19 lb/h	350-20 lb/h
H2S	1.99705E-05	1.99705E-05	1.99705E-05	1.99705E-05	1.99726E-05
CO2	5.53695E-05	5.53695E-05	5.53695E-05	5.53695E-05	5.53718E-05
N2	0.0155058	0.0155058	0.0155058	0.0155058	0.0155059
Methane	8.65813	8.65813	8.65813	8.65813	8.65818
Ethane	20.4689	20.4689	20.4689	20.4689	20.4691
Propane	35.8993	35.8993	35.8993	35.8993	35.8998
i-Butane	8.9094	8.9094	8.9094	8.9094	8.90944
n-Butane	35.628	35.628	35.628	35.628	35.6283
i-Pentane	14.1925	14.1925	14.1925	14.1925	14.1922
n-Pentane	19.8789	19.8789	19.8789	19.8789	19.8784
n-Hexane	31.0006	31.0006	31.0006	31.0006	30.9908
n-Heptane	17.03	17.03	17.03	17.03	17.0241
n-Octane	4.8411	4.8411	4.8411	4.8411	4.83731
n-Nonane	2.11692	2.11692	2.11692	2.11692	2.11283
n-Decane	0	0	0	0	0
Water	1657.82	1657.82	1657.82	1657.82	1164.72
TEG	41760.3	41760.3	41760.3	41760.3	58.9801
Benzene	64.4082	64.4082	64.4082	64.4082	63.9152
Toluene	61.164	61.164	61.164	61.164	59.6176
Ethylbenzene	40.1302	40.1302	40.1302	40.1302	37.3931
m-Xylene	25.7398	25.7398	25.7398	25.7398	23.9206
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-17	350-18A	350-18B	350-19	350-20
Temperature	°F	140.035	235 *	320 *	314.476	282.51
Pressure	psig	55	50	45	10 *	3
Mole Fraction Vapor	%	0.0517164	0.21397	0.706129	3.66725	100
Molecular Weight	lb/lbmol	116.488	116.488	116.488	116.488	22.6522
Mass Density	lb/ft^3	65.591	56.4967	40.1237	7.80453	0.0462972
Molar Flow	lbmol/h	376.075	376.075	376.075	376.075	70.9496
Mass Flow	lb/h	43808.2	43808.2	43808.2	43808.2	1607.17
Std Vapor Volumetric Flow	MMSCFD	3.42515	3.42515	3.42515	3.42515	0.646181
Std Liquid Volumetric Flow	sgpm	78.3938	78.3938	78.3938	78.3938	3.59304
Specific Gravity						0.782123
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	3119.78	3119.78	3119.78	3119.78	353.005
Gross Liquid Heating Value	Btu/lb	9874.27	9874.27	9874.27	9874.27	5096.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-21	350-22	350-23	350-24	350-25
From Block	E-3501A	E-3501A	AC-3301	V-3404	BL-3100
To Block	T-3501	AC-3301	V-3404	BL-3100	BTEX COOLER

Stream Composition

Mole Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	3.56645E-09	8.58885E-07	8.58885E-07	1.26398E-05	1.26398E-05
CO2	2.03131E-09	1.84419E-06	1.84419E-06	2.76462E-05	2.76462E-05
N2	4.70959E-08	0.000811359	0.000811359	0.012261	0.012261
Methane	0.000115423	0.79111	0.79111	11.9422	11.9422
Ethane	0.000291219	0.997832	0.997832	14.9749	14.9749
Propane	0.000483673	1.19336	1.19336	17.6769	17.6769
i-Butane	8.63814E-05	0.224691	0.224691	3.24743	3.24743
n-Butane	0.000581675	0.898516	0.898516	12.7172	12.7172
i-Pentane	0.00020107	0.288332	0.288332	3.76019	3.76019
n-Pentane	0.000308619	0.403853	0.403853	5.07947	5.07947
n-Hexane	0.000578274	0.527125	0.527125	4.92349	4.92349
n-Heptane	0.000290238	0.24903	0.24903	1.37704	1.37704
n-Octane	9.29204E-05	0.0620707	0.0620707	0.159532	0.159532
n-Nonane	3.3683E-05	0.0241462	0.0241462	0.0308072	0.0308072
n-Decane	0	0	0	0	0
Water	85.6552	91.3426	91.3426	11.5417	11.5417
TEG	14.2574	0.00540646	0.00540646	3.86983E-08	3.86983E-08
Benzene	0.0241914	1.19845	1.19845	8.04418	8.04418
Toluene	0.0281507	0.94733	0.94733	3.33725	3.33725
Ethylbenzene	0.0192611	0.51552	0.51552	0.711008	0.711008
m-Xylene	0.0127575	0.329764	0.329764	0.464405	0.464405
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	3.29197E-09	1.32562E-06	1.32562E-06	8.89968E-06	8.89968E-06
CO2	2.42119E-09	3.67558E-06	3.67558E-06	2.51366E-05	2.51366E-05
N2	3.5732E-08	0.00102932	0.00102932	0.00709604	0.00709604
Methane	5.01499E-05	0.574752	0.574752	3.95802	3.95802
Ethane	0.000237163	1.35878	1.35878	9.30267	9.30267
Propane	0.000577637	2.38309	2.38309	16.1037	16.1037
i-Butane	0.000135979	0.591426	0.591426	3.89947	3.89947
n-Butane	0.000915653	2.36505	2.36505	15.2707	15.2707
i-Pentane	0.000392901	0.942095	0.942095	5.60483	5.60483
n-Pentane	0.000603058	1.31955	1.31955	7.57132	7.57132
n-Hexane	0.00134966	2.05717	2.05717	8.76557	8.76557
n-Heptane	0.000787659	1.13006	1.13006	2.85067	2.85067
n-Octane	0.000287471	0.321096	0.321096	0.376483	0.376483
n-Nonane	0.000117002	0.140248	0.140248	0.0816302	0.0816302
n-Decane	0	0	0	0	0
Water	41.7929	74.5225	74.5225	4.2957	4.2957
TEG	57.9881	0.0367687	0.0367687	1.20062E-07	1.20062E-07
Benzene	0.0511783	4.23945	4.23945	12.9814	12.9814
Toluene	0.0702487	3.95289	3.95289	6.35262	6.35262
Ethylbenzene	0.0553822	2.47856	2.47856	1.55948	1.55948
m-Xylene	0.0366822	1.58547	1.58547	1.0186	1.0186
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-21 lb/h	350-22 lb/h	350-23 lb/h	350-24 lb/h	350-25 lb/h
H2S	3.31683E-09	1.99693E-05	1.99693E-05	1.9438E-05	1.9438E-05
CO2	2.43948E-09	5.53693E-05	5.53693E-05	5.49013E-05	5.49013E-05
N2	3.60019E-08	0.0155058	0.0155058	0.0154986	0.0154986
Methane	5.05287E-05	8.65813	8.65813	8.6448	8.6448
Ethane	0.000238954	20.4688	20.4688	20.3181	20.3181
Propane	0.000582001	35.8992	35.8992	35.1724	35.1724
i-Butane	0.000137006	8.90931	8.90931	8.51691	8.51691
n-Butane	0.00092257	35.6274	35.6274	33.353	33.353
i-Pentane	0.000395869	14.1918	14.1918	12.2416	12.2416
n-Pentane	0.000607614	19.8778	19.8778	16.5367	16.5367
n-Hexane	0.00135986	30.9894	30.9894	19.145	19.145
n-Heptane	0.000793609	17.0233	17.0233	6.2262	6.2262
n-Octane	0.000289642	4.83702	4.83702	0.822285	0.822285
n-Nonane	0.000117886	2.11271	2.11271	0.17829	0.17829
n-Decane	0	0	0	0	0
Water	42.1086	1122.62	1122.62	9.38231	9.38231
TEG	58.4262	0.553887	0.553887	2.62231E-07	2.62231E-07
Benzene	0.0515649	63.8636	63.8636	28.353	28.353
Toluene	0.0707794	59.5468	59.5468	13.8749	13.8749
Ethylbenzene	0.0558006	37.3373	37.3373	3.40609	3.40609
m-Xylene	0.0369593	23.8837	23.8837	2.22474	2.22474
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-21	350-22	350-23	350-24	350-25
Temperature	°F	217.387	217.387	120 *	120	260.279
Pressure	psig	3	3	1.5	1.5	45 *
Mole Fraction Vapor	%	0	100	6.6143	100	100
Molecular Weight	lb/lbmol	36.9226	22.0814	22.0814	48.4034	48.4034
Mass Density	lb/ft^3	64.0555	0.0495572	0.790117	0.115869	0.37691
Molar Flow	lbmol/h	2.72883	68.2207	68.2207	4.51232	4.51232
Mass Flow	lb/h	100.755	1506.41	1506.41	218.412	218.412
Std Vapor Volumetric Flow	MMSCFD	0.0248531	0.621328	0.621328	0.0410965	0.0410965
Std Liquid Volumetric Flow	sgpm	0.188087	3.40495	3.40495	0.752369	0.752369
Specific Gravity		1.02704	0.762414		1.67124	1.67124
API Gravity		-1.59985				
Gross Ideal Gas Heating Value	Btu/ft^3	635.696	341.698	341.698	2544.2	2544.2
Gross Liquid Heating Value	Btu/lb	5939.71	5040.21	5040.21	19749.7	19749.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-26	350-27	350-28	350-29	350-30A
From Block	V-3404	P-3605	T-3501	E-3200	E-3200
To Block	P-3605	BTEX Liq	E-3200	T-3501	E-3401

Stream Composition

Mole Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	2.44697E-08	2.44697E-08	2.40306E-10	1.50694E-09	1.1476E-11
CO2	1.66924E-08	1.66924E-08	9.53546E-11	6.14722E-10	1.52555E-12
N2	4.06633E-07	4.06633E-07	3.49515E-09	2.27968E-08	8.1167E-12
Methane	0.00130467	0.00130467	8.9059E-06	5.79547E-05	4.47264E-08
Ethane	0.00786728	0.00786728	3.50498E-05	0.000227086	3.56329E-07
Propane	0.0258691	0.0258691	8.68981E-05	0.000560541	1.3295E-06
i-Butane	0.0105971	0.0105971	2.55904E-05	0.000164504	4.94278E-07
n-Butane	0.0614224	0.0614224	0.000134808	0.00086362	3.13993E-06
i-Pentane	0.0424282	0.0424282	8.94141E-05	0.000568604	2.84349E-06
n-Pentane	0.0726893	0.0726893	0.000141119	0.000895158	4.89347E-06
n-Hexane	0.21574	0.21574	0.000577571	0.0035416	4.20883E-05
n-Heptane	0.169136	0.169136	0.000319371	0.00196773	2.15777E-05
n-Octane	0.0551678	0.0551678	0.000135911	0.000823968	1.16062E-05
n-Nonane	0.0236744	0.0236744	9.45447E-05	0.000558847	1.06637E-05
n-Decane	0	0	0	0	0
Water	96.9948	96.9948	22.6392	94.5368	9.65016
TEG	0.00578939	0.00578939	77.2771	5.03964	90.3275
Benzene	0.713583	0.713583	0.0123291	0.0680385	0.0022646
Toluene	0.778058	0.778058	0.0235899	0.122608	0.00570121
Ethylbenzene	0.501673	0.501673	0.0277197	0.133854	0.00854546
m-Xylene	0.320228	0.320228	0.0183943	0.0887767	0.00567898
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	4.12497E-08	4.12497E-08	6.81297E-11	2.05346E-09	2.84634E-12
CO2	3.63368E-08	3.63368E-08	3.49099E-11	1.08169E-09	4.88607E-13
N2	5.63443E-07	5.63443E-07	8.14504E-10	2.5534E-08	1.65475E-12
Methane	0.00103527	0.00103527	1.18853E-06	3.7174E-05	5.22182E-09
Ethane	0.0117011	0.0117011	8.7673E-06	0.000273017	7.79754E-08
Propane	0.0564233	0.0564233	3.18762E-05	0.000988286	4.2665E-07
i-Butane	0.0304657	0.0304657	1.23731E-05	0.000382294	2.09074E-07
n-Butane	0.176583	0.176583	6.51804E-05	0.00200699	1.32815E-06
i-Pentane	0.151414	0.151414	5.36656E-05	0.00164028	1.49303E-06
n-Pentane	0.259406	0.259406	8.46982E-05	0.00258231	2.56941E-06
n-Hexane	0.919593	0.919593	0.000414047	0.0122029	2.63956E-05
n-Heptane	0.838286	0.838286	0.000266215	0.00788354	1.5735E-05
n-Octane	0.311703	0.311703	0.000129149	0.00376326	9.64828E-06
n-Nonane	0.150188	0.150188	0.000100872	0.00286581	9.95332E-06
n-Decane	0	0	0	0	0
Water	86.4312	86.4312	3.39284	68.096	1.26521
TEG	0.0430037	0.0430037	96.5392	30.2602	98.7186
Benzene	2.75704	2.75704	0.0080114	0.212496	0.00128735
Toluene	3.54596	3.54596	0.0180813	0.45169	0.00382292
Ethylbenzene	2.63441	2.63441	0.0244811	0.568188	0.00660243
m-Xylene	1.6816	1.6816	0.0162452	0.376842	0.00438772
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-26 lb/h	350-27 lb/h	350-28 lb/h	350-29 lb/h	350-30A lb/h
H2S	5.31296E-07	5.31296E-07	2.97678E-08	2.85637E-08	1.20405E-09
CO2	4.68018E-07	4.68018E-07	1.52531E-08	1.50464E-08	2.06689E-10
N2	7.25714E-06	7.25714E-06	3.55879E-07	3.55179E-07	6.99989E-10
Methane	0.0133343	0.0133343	0.000519301	0.000517092	2.20892E-06
Ethane	0.15071	0.15071	0.00383067	0.00379769	3.29849E-05
Propane	0.726732	0.726732	0.0139276	0.0137471	0.00018048
i-Butane	0.392398	0.392398	0.00540617	0.00531773	8.8442E-05
n-Butane	2.27439	2.27439	0.0284791	0.0279173	0.000561833
i-Pentane	1.95021	1.95021	0.023448	0.0228164	0.000631577
n-Pentane	3.34115	3.34115	0.037007	0.0359201	0.00108691
n-Hexane	11.8444	11.8444	0.180909	0.169743	0.0111658
n-Heptane	10.7971	10.7971	0.116317	0.109661	0.0066562
n-Octane	4.01474	4.01474	0.0564286	0.0523472	0.00408139
n-Nonane	1.93442	1.93442	0.044074	0.0398635	0.00421043
n-Decane	0	0	0	0	0
Water	1113.23	1113.23	1482.43	947.22	535.206
TEG	0.553887	0.553887	42180.6	420.921	41759.7
Benzene	35.5106	35.5106	3.5004	2.95583	0.544571
Toluene	45.6719	45.6719	7.9002	6.28304	1.61716
Ethylbenzene	33.9312	33.9312	10.6965	7.90353	2.79294
m-Xylene	21.6589	21.6589	7.09798	5.2419	1.85608
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-26	350-27	350-28	350-29	350-30A
Temperature	°F	120	120.149	317.481	385	385
Pressure	psig	1.5	40 *	4	4	4
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	20.2171	20.2171	120.21	25.0104	137.408
Mass Density	lb/ft^3	59.6788	59.682	61.4339	0.0476897	58.6827
Molar Flow	lbmol/h	63.7084	63.7084	363.472	55.6171	307.855
Mass Flow	lb/h	1288	1288	43692.8	1391.01	42301.8
Std Vapor Volumetric Flow	MMSCFD	0.580232	0.580232	3.31036	0.50654	2.80382
Std Liquid Volumetric Flow	sgpm	2.65258	2.65258	77.6801	2.69122	74.9889
Specific Gravity		0.956871	0.956921	0.985011	0.863544	0.9409
API Gravity		14.0846	14.0727	-6.03887		-6.57975
Gross Ideal Gas Heating Value	Btu/ft^3	185.699	185.699	3206.02	275.718	3735.41
Gross Liquid Heating Value	Btu/lb	2545.85	2545.85	9834.19	3380.35	10046.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-30B	350-31	350-32	350-33A	350-33B
From Block	E-3401	E-3202	E-3201	P-3618	R1
To Block	E-3202	E-3201	P-3618	R1	MAKEUP

Stream Composition

Mole Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	1.1476E-11	1.1476E-11	1.1476E-11	1.1476E-11	1.09876E-11
CO2	1.52555E-12	1.52555E-12	1.52555E-12	1.52555E-12	1.46604E-12
N2	8.1167E-12	8.1167E-12	8.1167E-12	8.1167E-12	7.93046E-12
Methane	4.47264E-08	4.47264E-08	4.47264E-08	4.47264E-08	4.35872E-08
Ethane	3.56329E-07	3.56329E-07	3.56329E-07	3.56329E-07	3.46335E-07
Propane	1.3295E-06	1.3295E-06	1.3295E-06	1.3295E-06	1.29039E-06
i-Butane	4.94278E-07	4.94278E-07	4.94278E-07	4.94278E-07	4.79394E-07
n-Butane	3.13993E-06	3.13993E-06	3.13993E-06	3.13993E-06	3.04478E-06
i-Pentane	2.84349E-06	2.84349E-06	2.84349E-06	2.84349E-06	2.75889E-06
n-Pentane	4.89347E-06	4.89347E-06	4.89347E-06	4.89347E-06	4.74348E-06
n-Hexane	4.20883E-05	4.20883E-05	4.20883E-05	4.20883E-05	4.08048E-05
n-Heptane	2.15777E-05	2.15777E-05	2.15777E-05	2.15777E-05	2.08749E-05
n-Octane	1.16062E-05	1.16062E-05	1.16062E-05	1.16062E-05	1.12228E-05
n-Nonane	1.06637E-05	1.06637E-05	1.06637E-05	1.06637E-05	1.02973E-05
n-Decane	0	0	0	0	0
Water	9.65016	9.65016	9.65016	9.65016	9.65144
TEG	90.3275	90.3275	90.3275	90.3275	90.3269
Benzene	0.0022646	0.0022646	0.0022646	0.0022646	0.00220287
Toluene	0.00570121	0.00570121	0.00570121	0.00570121	0.0055318
Ethylbenzene	0.00854546	0.00854546	0.00854546	0.00854546	0.00828488
m-Xylene	0.00567898	0.00567898	0.00567898	0.00567898	0.00551392
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	2.84634E-12	2.84634E-12	2.84634E-12	2.84634E-12	2.72524E-12
CO2	4.88607E-13	4.88607E-13	4.88607E-13	4.88607E-13	4.69553E-13
N2	1.65475E-12	1.65475E-12	1.65475E-12	1.65475E-12	1.6168E-12
Methane	5.22182E-09	5.22182E-09	5.22182E-09	5.22182E-09	5.08887E-09
Ethane	7.79754E-08	7.79754E-08	7.79754E-08	7.79754E-08	7.57891E-08
Propane	4.2665E-07	4.2665E-07	4.2665E-07	4.2665E-07	4.14101E-07
i-Butane	2.09074E-07	2.09074E-07	2.09074E-07	2.09074E-07	2.02781E-07
n-Butane	1.32815E-06	1.32815E-06	1.32815E-06	1.32815E-06	1.28792E-06
i-Pentane	1.49303E-06	1.49303E-06	1.49303E-06	1.49303E-06	1.44862E-06
n-Pentane	2.56941E-06	2.56941E-06	2.56941E-06	2.56941E-06	2.49068E-06
n-Hexane	2.63956E-05	2.63956E-05	2.63956E-05	2.63956E-05	2.55909E-05
n-Heptane	1.5735E-05	1.5735E-05	1.5735E-05	1.5735E-05	1.52227E-05
n-Octane	9.64828E-06	9.64828E-06	9.64828E-06	9.64828E-06	9.32972E-06
n-Nonane	9.95332E-06	9.95332E-06	9.95332E-06	9.95332E-06	9.61142E-06
n-Decane	0	0	0	0	0
Water	1.26521	1.26521	1.26521	1.26521	1.26539
TEG	98.7186	98.7186	98.7186	98.7186	98.7189
Benzene	0.00128735	0.00128735	0.00128735	0.00128735	0.00125227
Toluene	0.00382292	0.00382292	0.00382292	0.00382292	0.00370936
Ethylbenzene	0.00660243	0.00660243	0.00660243	0.00660243	0.00640117
m-Xylene	0.00438772	0.00438772	0.00438772	0.00438772	0.00426023
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-30B lb/h	350-31 lb/h	350-32 lb/h	350-33A lb/h	350-33B lb/h
H2S	1.20405E-09	1.20405E-09	1.20405E-09	1.20405E-09	1.15282E-09
CO2	2.06689E-10	2.06689E-10	2.06689E-10	2.06689E-10	1.98627E-10
N2	6.99989E-10	6.99989E-10	6.99989E-10	6.99989E-10	6.83928E-10
Methane	2.20892E-06	2.20892E-06	2.20892E-06	2.20892E-06	2.15266E-06
Ethane	3.29849E-05	3.29849E-05	3.29849E-05	3.29849E-05	3.20599E-05
Propane	0.00018048	0.00018048	0.00018048	0.00018048	0.000175171
i-Butane	8.8442E-05	8.8442E-05	8.8442E-05	8.8442E-05	8.5779E-05
n-Butane	0.000561833	0.000561833	0.000561833	0.000561833	0.000544808
i-Pentane	0.000631577	0.000631577	0.000631577	0.000631577	0.000612788
n-Pentane	0.00108691	0.00108691	0.00108691	0.00108691	0.00105359
n-Hexane	0.0111658	0.0111658	0.0111658	0.0111658	0.0108253
n-Heptane	0.0066562	0.0066562	0.0066562	0.0066562	0.00643944
n-Octane	0.00408139	0.00408139	0.00408139	0.00408139	0.0039466
n-Nonane	0.00421043	0.00421043	0.00421043	0.00421043	0.00406577
n-Decane	0	0	0	0	0
Water	535.206	535.206	535.206	535.206	535.278
TEG	41759.7	41759.7	41759.7	41759.7	41759.5
Benzene	0.544571	0.544571	0.544571	0.544571	0.529726
Toluene	1.61716	1.61716	1.61716	1.61716	1.56911
Ethylbenzene	2.79294	2.79294	2.79294	2.79294	2.70778
m-Xylene	1.85608	1.85608	1.85608	1.85608	1.80214
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-30B	350-31	350-32	350-33A	350-33B
Temperature	°F	372.758	283.89	185.449	185.712	186.304
Pressure	psig	2	1	-2.11058E-15	64.4574	64.4329
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	137.408	137.408	137.408	137.408	137.407
Mass Density	lb/ft^3	59.1668	62.5982	66.2409	66.2376	66.2163
Molar Flow	lbmol/h	307.855	307.855	307.855	307.855	307.855
Mass Flow	lb/h	42301.8	42301.8	42301.8	42301.8	42301.4
Std Vapor Volumetric Flow	MMSCFD	2.80382	2.80382	2.80382	2.80382	2.80383
Std Liquid Volumetric Flow	sgpm	74.9889	74.9889	74.9889	74.9889	74.9882
Specific Gravity		0.948662	1.00368	1.06209	1.06203	1.06169
API Gravity		-6.57946	-6.57931	-6.57917	-6.58855	-6.58873
Gross Ideal Gas Heating Value	Btu/ft^3	3735.41	3735.41	3735.41	3735.41	3735.35
Gross Liquid Heating Value	Btu/lb	10046.4	10046.4	10046.4	10046.4	10046.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-33C	350-34	350-36	350-41	350-42
From Block	MAKEUP	AC-3300	P-3600	Mult 3	PCV-3402A
To Block	AC-3300	P-3600	T-3500	PCV-3402A	TEG Flash

Stream Composition

Mole Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	1.38155E-06	1.38155E-06
CO2	0	0	0	1.40217E-05	1.40217E-05
N2	0	0	0	0.222508	0.222508
Methane	4.35809E-08	4.35809E-08	4.35809E-08	56.1487	56.1487
Ethane	3.46284E-07	3.46284E-07	3.46284E-07	20.3797	20.3797
Propane	1.2902E-06	1.2902E-06	1.2902E-06	12.7251	12.7251
i-Butane	4.79324E-07	4.79324E-07	4.79324E-07	1.76491	1.76491
n-Butane	3.04433E-06	3.04433E-06	3.04433E-06	4.76919	4.76919
i-Pentane	2.75849E-06	2.75849E-06	2.75849E-06	0.973644	0.973644
n-Pentane	4.74279E-06	4.74279E-06	4.74279E-06	1.14393	1.14393
n-Hexane	4.07989E-05	4.07989E-05	4.07989E-05	0.748312	0.748312
n-Heptane	2.08719E-05	2.08719E-05	2.08719E-05	0.203873	0.203873
n-Octane	1.12212E-05	1.12212E-05	1.12212E-05	0.0301029	0.0301029
n-Nonane	1.02958E-05	1.02958E-05	1.02958E-05	0.00663999	0.00663999
n-Decane	0	0	0	0	0
Water	9.65015	9.65015	9.65015	0.687462	0.687462
TEG	90.3282	90.3282	90.3282	0.000334246	0.000334246
Benzene	0.00220255	0.00220255	0.00220255	0.11685	0.11685
Toluene	0.005531	0.005531	0.005531	0.0507514	0.0507514
Ethylbenzene	0.00828368	0.00828368	0.00828368	0.0172293	0.0172293
m-Xylene	0.00551311	0.00551311	0.00551311	0.0107641	0.0107641
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	1.72351E-06	1.72351E-06
CO2	0	0	0	2.25883E-05	2.25883E-05
N2	0	0	0	0.228164	0.228164
Methane	5.08807E-09	5.08807E-09	5.08807E-09	32.9722	32.9722
Ethane	7.57771E-08	7.57771E-08	7.57771E-08	22.4313	22.4313
Propane	4.14036E-07	4.14036E-07	4.14036E-07	20.5397	20.5397
i-Butane	2.02748E-07	2.02748E-07	2.02748E-07	3.75493	3.75493
n-Butane	1.28772E-06	1.28772E-06	1.28772E-06	10.1467	10.1467
i-Pentane	1.44839E-06	1.44839E-06	1.44839E-06	2.57138	2.57138
n-Pentane	2.49028E-06	2.49028E-06	2.49028E-06	3.02112	3.02112
n-Hexane	2.55869E-05	2.55869E-05	2.55869E-05	2.3605	2.3605
n-Heptane	1.52203E-05	1.52203E-05	1.52203E-05	0.747779	0.747779
n-Octane	9.32824E-06	9.32824E-06	9.32824E-06	0.125869	0.125869
n-Nonane	9.6099E-06	9.6099E-06	9.6099E-06	0.031173	0.031173
n-Decane	0	0	0	0	0
Water	1.26521	1.26521	1.26521	0.453343	0.453343
TEG	98.7191	98.7191	98.7191	0.00183737	0.00183737
Benzene	0.00125207	0.00125207	0.00125207	0.334105	0.334105
Toluene	0.00370877	0.00370877	0.00370877	0.171169	0.171169
Ethylbenzene	0.00640016	0.00640016	0.00640016	0.0669555	0.0669555
m-Xylene	0.00425956	0.00425956	0.00425956	0.0418309	0.0418309
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-33C lb/h	350-34 lb/h	350-36 lb/h	350-41 lb/h	350-42 lb/h
H2S	0	0	0	6.78579E-06	6.78579E-06
CO2	0	0	0	8.89347E-05	8.89347E-05
N2	0	0	0	0.898328	0.898328
Methane	2.15266E-06	2.15266E-06	2.15266E-06	129.818	129.818
Ethane	3.20599E-05	3.20599E-05	3.20599E-05	88.3164	88.3164
Propane	0.000175171	0.000175171	0.000175171	80.8687	80.8687
i-Butane	8.5779E-05	8.5779E-05	8.5779E-05	14.7839	14.7839
n-Butane	0.000544808	0.000544808	0.000544808	39.9494	39.9494
i-Pentane	0.000612788	0.000612788	0.000612788	10.124	10.124
n-Pentane	0.00105359	0.00105359	0.00105359	11.8947	11.8947
n-Hexane	0.0108253	0.0108253	0.0108253	9.29373	9.29373
n-Heptane	0.00643944	0.00643944	0.00643944	2.94415	2.94415
n-Octane	0.0039466	0.0039466	0.0039466	0.495572	0.495572
n-Nonane	0.00406577	0.00406577	0.00406577	0.122734	0.122734
n-Decane	0	0	0	0	0
Water	535.285	535.285	535.285	1.7849	1.7849
TEG	41766.2	41766.2	41766.2	0.00723406	0.00723406
Benzene	0.529726	0.529726	0.529726	1.31544	1.31544
Toluene	1.56911	1.56911	1.56911	0.673927	0.673927
Ethylbenzene	2.70778	2.70778	2.70778	0.263617	0.263617
m-Xylene	1.80214	1.80214	1.80214	0.164696	0.164696
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-33C	350-34	350-36	350-41	350-42
Temperature	°F	186.288	125 *	126.832	140	137.762
Pressure	psig	64.4329	59.4329	997 *	65 *	40 *
Mole Fraction Vapor	%	0	0	0	100	100
Molecular Weight	lb/lbmol	137.409	137.409	137.409	27.3189	27.3189
Mass Density	lb/ft^3	66.2169	68.4032	68.422	0.339958	0.230318
Molar Flow	lbmol/h	307.9	307.9	307.9	14.412	14.412
Mass Flow	lb/h	42308.1	42308.1	42308.1	393.719	393.719
Std Vapor Volumetric Flow	MMSCFD	2.80423	2.80423	2.80423	0.131259	0.131259
Std Liquid Volumetric Flow	sgpm	75 *	75	75	1.9886	1.9886
Specific Gravity		1.0617	1.09675	1.09706	0.94325	0.94325
API Gravity		-6.58879	-6.58806	-6.72395		
Gross Ideal Gas Heating Value	Btu/ft^3	3735.4	3735.4	3735.4	1603.34	1603.34
Gross Liquid Heating Value	Btu/lb	10046.4	10046.4	10046.4	22162.8	22162.8

Remarks

350-33C:

The flow rate of this stream is set by a calculator which depends on the amount of water being fed into the absorber in the Wet Gas stream. The Glycol Flow Control calculator sets the flow rate of this stream to be 3 gallons of glycol solution per lb of water fed to the Contactor. Since the water amount does not change based on anything in the unit, this can be a SPECIFIER rather than a SOLVER.

350-36:

The stream coming out of the recycle block needs to have initial guesses for the temperature, pressure, flowrate, and composition in order to have a starting point to begin the calculations. While these will initially appear similar to specifications (white with blue numbers), these are guesses. Once the flowsheet is executed, the data blocks on the Properties and Composition tabs will become light grey with black numbers and not white with blue numbers, indicating which values are passed/iterated through the recycle block.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-81	350-85	350-86	440-70
From Block	F-3450	V-3400	LCV-3400	V-440X
To Block	--	LCV-3400	M1	XFS3

Stream Composition

Mole Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				1.80448E-07
CO2				3.2127E-06
N2				1.01977
Methane				77.9691
Ethane				11.8934
Propane				5.5733
i-Butane				0.762185
n-Butane				1.67004
i-Pentane				0.353131
n-Pentane				0.376607
n-Hexane				0.25788
n-Heptane				0.0728787
n-Octane				0.012419
n-Nonane				0.00327271
n-Decane				0
Water				1.53748E-09
TEG				0
Benzene				0.019753
Toluene				0.00980818
Ethylbenzene				0.00381947
m-Xylene				0.00261095
Cyclohexane				0
Cyclopentane				0
SO2				0

Mass Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				2.91285E-07
CO2				6.69687E-06
N2				1.35308
Methane				59.2447
Ethane				16.9387
Propane				11.6403
i-Butane				2.09825
n-Butane				4.59753
i-Pentane				1.20676
n-Pentane				1.28698
n-Hexane				1.05258
n-Heptane				0.345885
n-Octane				0.0671916
n-Nonane				0.019881
n-Decane				0
Water				1.31192E-09
TEG				0
Benzene				0.0730812
Toluene				0.042804
Ethylbenzene				0.0192061
m-Xylene				0.0131291
Cyclohexane				0
Cyclopentane				0
SO2				0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-81 lb/h	350-85 lb/h	350-86 lb/h	440-70 lb/h
H2S	0	0	0	0.00203956
CO2	0	0	0	0.046891
N2	0	0	0	9474.2
Methane	0	0	0	414827
Ethane	0	0	0	118604
Propane	0	0	0	81504.3
i-Butane	0	0	0	14691.8
n-Butane	0	0	0	32191.6
i-Pentane	0	0	0	8449.63
n-Pentane	0	0	0	9011.36
n-Hexane	0	0	0	7370.12
n-Heptane	0	0	0	2421.86
n-Octane	0	0	0	470.471
n-Nonane	0	0	0	139.205
n-Decane	0	0	0	0
Water	0	0	0	9.18595E-06
TEG	0	0	0	0
Benzene	0	0	0	511.71
Toluene	0	0	0	299.711
Ethylbenzene	0	0	0	134.48
m-Xylene	0	0	0	91.9291
Cyclohexane	0	0	0	0
Cyclopentane	0	0	0	0
SO2	0	0	0	0

Stream Properties

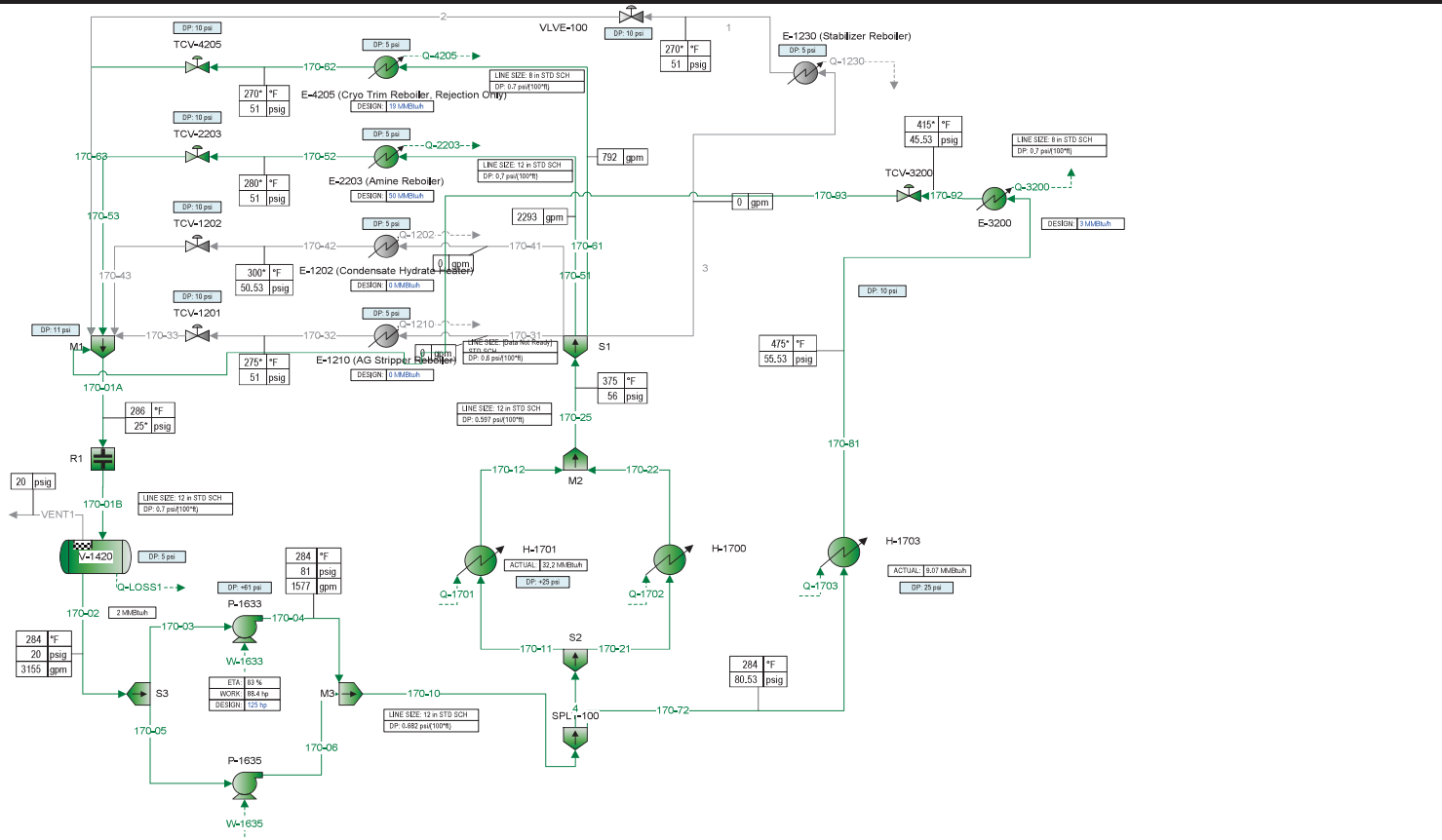
Property	Units	350-81	350-85	350-86	440-70
Temperature	°F				120.009
Pressure	psig	967	965	67	935
Mole Fraction Vapor	%				100
Molecular Weight	lb/lbmol				21.1127
Mass Density	lb/ft^3				3.85414
Molar Flow	lbmol/h	0	0	0	33164.5
Mass Flow	lb/h	0	0	0	700193
Std Vapor Volumetric Flow	MMSCFD	0	0	0	302.049
Std Liquid Volumetric Flow	sgpm	0	0	0	4026.93
Specific Gravity					0.728968
API Gravity					
Gross Ideal Gas Heating Value	Btu/ft^3				1265.48
Gross Liquid Heating Value	Btu/lb				22684.5

Remarks

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HMO
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127	
Location:	Midland, TX		
Flowsheet:	HMO		

Connections

	VENT1	1	2	3	4
From Block	V-1420	E-1230 (Stabilizer Reboiler)	VLVE-100	S1	SPLT-100
To Block	--	VLVE-100	M1	E-1230 (Stabilizer Reboiler)	S2

Stream Composition

Mole Fraction	VENT1 %	1 %	2 %	3 %	4 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	VENT1 %	1 %	2 %	3 %	4 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	VENT1 lb/h	1 lb/h	2 lb/h	3 lb/h	4 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	0	0	0	0	1.22054E+06

Stream Properties

Property	Units	VENT1	1	2	3	4
Temperature	°F		270 *		375.01	283.955
Pressure	psig	20	50.5296	40.5296	55.5296	80.5296
Mole Fraction Vapor	%		0		0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3		51.6356		49.3334	51.3364
Molar Flow	lbmol/h	0	0	0	0	4211.65
Mass Flow	lb/h	0	0	0	0	1.22054E+06
Std Vapor Volumetric Flow	MMSCFD	0	0	0	0	38.3581
Std Liquid Volumetric Flow	sgpm	0	0	0	0	2706.07
Specific Gravity						0.823111
API Gravity						25.3936
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-01A	170-01B	170-02	170-03	170-04
From Block	M1	R1	V-1420	S3	P-1633
To Block	R1	V-1420	S3	P-1633	M3

Stream Composition

Mole Fraction	170-01A %	170-01B %	170-02 %	170-03 %	170-04 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	170-01A %	170-01B %	170-02 %	170-03 %	170-04 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	170-01A lb/h	170-01B lb/h	170-02 lb/h	170-03 lb/h	170-04 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	1.29894E+06	1.29907E+06	1.29907E+06	649533	649533

Stream Properties

Property	Units	170-01A	170-01B	170-02	170-03	170-04
Temperature	°F	286.329	286.331	283.602	283.602	283.955
Pressure	psig	25 *	25	20	20	80.5296
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3	51.2714	51.2714	51.3301	51.3301	51.3364
Molar Flow	lbmol/h	4482.18	4482.63	4482.63	2241.31	2241.31
Mass Flow	lb/h	1.29894E+06	1.29907E+06	1.29907E+06	649533	649533
Std Vapor Volumetric Flow	MMSCFD	40.822	40.826	40.826	20.413	20.413
Std Liquid Volumetric Flow	sgpm	2879.9	2880.18	2880.18	1440.09	1440.09
Specific Gravity		0.822069	0.822068	0.82301	0.82301	0.823111
API Gravity		25.4207	25.4207	25.4231	25.4231	25.3936
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-05	170-06	170-10	170-11	170-12
From Block	S3	P-1635	M3	S2	H-1701
To Block	P-1635	M3	SPLT-100	H-1701	M2

Stream Composition

Mole Fraction	170-05 %	170-06 %	170-10 %	170-11 %	170-12 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	170-05 %	170-06 %	170-10 %	170-11 %	170-12 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	170-05 lb/h	170-06 lb/h	170-10 lb/h	170-11 lb/h	170-12 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	649533	649533	1.29907E+06	610268	610268

Stream Properties

Property	Units	170-05	170-06	170-10	170-11	170-12
Temperature	°F	283.602	283.955	283.955	283.955	375 *
Pressure	psig	20	80.5296	80.5296	80.5296	55.5296
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3	51.3301	51.3364	51.3364	51.3364	49.3336
Molar Flow	lbmol/h	2241.31	2241.31	4482.63	2105.83	2105.83
Mass Flow	lb/h	649533	649533	1.29907E+06	610268	610268
Std Vapor Volumetric Flow	MMSCFD	20.413	20.413	40.826	19.1791	19.1791
Std Liquid Volumetric Flow	sgpm	1440.09	1440.09	2880.18	1353.04	1353.04
Specific Gravity		0.82301	0.823111	0.823111	0.823111	0.790998
API Gravity		25.4231	25.3936	25.3936	25.3936	25.4058
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-21	170-22	170-25	170-31	170-32
From Block	S2	H-1700	M2	S1	E-1210 (AG Stripper Reboiler)
To Block	H-1700	M2	S1	E-1210 (AG Stripper Reboiler)	TCV-1201

Stream Composition

Mole Fraction	170-21 %	170-22 %	170-25 %	170-31 %	170-32 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	170-21 %	170-22 %	170-25 %	170-31 %	170-32 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	170-21 lb/h	170-22 lb/h	170-25 lb/h	170-31 lb/h	170-32 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	610268	610268	1.22054E+06	0	0

Stream Properties

Property	Units	170-21	170-22	170-25	170-31	170-32
Temperature	°F	283.955	375 *	375.01	375.01	275 *
Pressure	psig	80.5296	60.5296	55.5296	55.5296	50.5296
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3	51.3364	49.3349	49.3334	49.3334	51.5259
Molar Flow	lbmol/h	2105.83	2105.83	4211.65	0	0
Mass Flow	lb/h	610268	610268	1.22054E+06	0	0
Std Vapor Volumetric Flow	MMSCFD	19.1791	19.1791	38.3581	0	0
Std Liquid Volumetric Flow	sgpm	1353.04	1353.04	2706.07	0	0
Specific Gravity		0.823111	0.79102	0.790995		
API Gravity		25.3936	25.4033	25.4058		
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Warnings

ProMax:ProMax!Project!Flowsheets!HMO!PStreams!170-31!Analyses!Line Sizing 1
Error: The calculation of Viscosity (Light Liquid) failed to converge.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-33	170-41	170-42	170-43	170-51
From Block	TCV-1201	S1	E-1202 (Condensate Hydrate Heater)	TCV-1202	S1
To Block	M1	E-1202 (Condensate Hydrate Heater)	TCV-1202	M1	E-2203 (Amine Reboiler)

Stream Composition

Mole Fraction	170-33 %	170-41 %	170-42 %	170-43 %	170-51 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	170-33 %	170-41 %	170-42 %	170-43 %	170-51 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	170-33 lb/h	170-41 lb/h	170-42 lb/h	170-43 lb/h	170-51 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	0	0	0	0	907199

Stream Properties

Property	Units	170-33	170-41	170-42	170-43	170-51
Temperature	°F		375.01	300 *		375.01
Pressure	psig	40.5296	55.5296	50.5296	40.5296	55.5296
Mole Fraction Vapor	%		0	0		0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3		49.3334	50.9774		49.3334
Molar Flow	lbmol/h	0	0	0	0	3130.43
Mass Flow	lb/h	0	0	0	0	907199
Std Vapor Volumetric Flow	MMSCFD	0	0	0	0	28.5108
Std Liquid Volumetric Flow	sgpm	0	0	0	0	2011.37
Specific Gravity						0.790995
API Gravity						25.4058
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-52	170-53	170-61	170-62	170-63
From Block	E-2203 (Amine Reboiler)	TCV-2203	S1	E-4205 (Cryo Trim Reboiler, Rejection Only)	TCV-4205
To Block	TCV-2203	M1	E-4205 (Cryo Trim Reboiler, Rejection Only)	TCV-4205	M1

Stream Composition

Mole Fraction	170-52 %	170-53 %	170-61 %	170-62 %	170-63 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Fraction	170-52 %	170-53 %	170-61 %	170-62 %	170-63 %
Therminol 55	0	0	0	0	0
CHEMTHERM 550	100	100	100	100	100

Mass Flow	170-52 lb/h	170-53 lb/h	170-61 lb/h	170-62 lb/h	170-63 lb/h
Therminol 55	0	0	0	0	0
CHEMTHERM 550	907199	907199	313208	313208	313208

Stream Properties

Property	Units	170-52	170-53	170-61	170-62	170-63
Temperature	°F	280 *	280.044	375.01	270 *	270.045
Pressure	psig	50.5296	40.5296	55.5296	50.5296	40.5296
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3	51.4162	51.4129	49.3334	51.6356	51.6323
Molar Flow	lbmol/h	3130.43	3130.43	1080.77	1080.77	1080.77
Mass Flow	lb/h	907199	907199	313208	313208	313208
Std Vapor Volumetric Flow	MMSCFD	28.5108	28.5108	9.84327	9.84327	9.84327
Std Liquid Volumetric Flow	sgpm	2011.37	2011.37	694.42	694.42	694.42
Specific Gravity		0.824391	0.824338	0.790995	0.827908	0.827856
API Gravity		25.4082	25.4131	25.4058	25.4082	25.4131
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278	-107.278

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HMO	

Connections

	170-72	170-81	170-92	170-93
From Block	SPLT-100	H-1703	E-3200	TCV-3200
To Block	H-1703	E-3200	TCV-3200	M1

Stream Composition

Mole Fraction	170-72 %	170-81 %	170-92 %	170-93 %
Therminol 55	0	0	0	0
CHEMTHERM 550	100	100	100	100

Mass Fraction	170-72 %	170-81 %	170-92 %	170-93 %
Therminol 55	0	0	0	0
CHEMTHERM 550	100	100	100	100

Mass Flow	170-72 lb/h	170-81 lb/h	170-92 lb/h	170-93 lb/h
Therminol 55	0	0	0	0
CHEMTHERM 550	78528.8	78528.8	78528.8	78528.8

Stream Properties

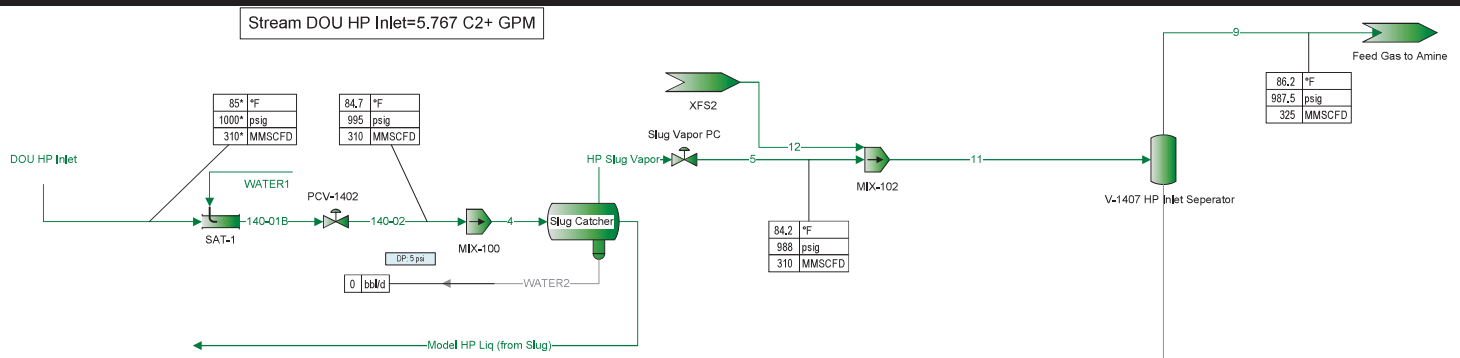
Property	Units	170-72	170-81	170-92	170-93
Temperature	°F	283.955	475 *	415 *	415.037
Pressure	psig	80.5296	55.5296	45.5296	35.5296
Mole Fraction Vapor	%	0	0	0	0
Molecular Weight	lb/lbmol	289.8	289.8	289.8	289.8
Mass Density	lb/ft^3	51.3364	47.1411	48.4536	48.4499
Molar Flow	lbmol/h	270.976	270.976	270.976	270.976
Mass Flow	lb/h	78528.8	78528.8	78528.8	78528.8
Std Vapor Volumetric Flow	MMSCFD	2.46795	2.46795	2.46795	2.46795
Std Liquid Volumetric Flow	sgpm	174.108	174.108	174.108	174.108
Specific Gravity		0.823111	0.755845	0.776889	0.776829
API Gravity		25.3936	25.4058	25.4107	25.4155
Gross Ideal Gas Heating Value	Btu/ft^3	0	0	0	0
Gross Liquid Heating Value	Btu/lb	-107.278	-107.278	-107.278	-107.278

Remarks

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HP Inlet
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	



HEATER SUMMARY		
MAIN HEATER	32.2 MMBtu/h	66.1 MMBtu/h
TEG HEATER	9.07 MMBtu/h	4.40 MMBtu/h
REGEN HEATER	8.50 MMBtu/h	9.76 MMBtu/h

PERFORMANCE SUMMARY	
C2 RECOVERY	[Variable Not Set]
C3 RECOVERY	[Variable Not Set]
FG SHRINK	[Data Not Readv]
H2O BALANCE	+6.69 bbl/d

PRODUCTS SUMMARY	
RESIDUE	[Variable Not Set]
NGL	[Variable Not Set]
RVP	[Variable Not Set]

COMPRESSION SUMMARY		
RESIDUE	[Data Not Readv]	20,000 hp
REFRIGERATION	7,488 hp	9,000 hp

INTERMEDIATE PRESSURE INLET

PFD-140

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127	
Location:	Midland, TX		
Flowsheet:	HP Inlet		

Connections

	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
From Block	--	V-1407 HP Inlet Seperator	Slug Catcher	Slug Catcher	--
To Block	SAT-1	--	Slug Vapor PC	--	SAT-1

Stream Composition

Mole Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.0005 *		0.000499622	2.72054E-05	0 *
CO2	2.4 *		2.39819	0.0506964	0 *
N2	0.994006 *		0.993254	0.00080624	0 *
Methane	76.0753 *		76.0178	0.0997489	0 *
Ethane	11.6142 *		11.6055	0.0141982	0 *
Propane	5.44288 *		5.43877	0.00329503	0 *
i-Butane	0.744255 *		0.743693	0.000220629	0 *
n-Butane	1.63234 *		1.63111	0.000640861	0 *
i-Pentane	0.345183 *		0.344922	6.26431E-05	0 *
n-Pentane	0.368404 *		0.368126	2.93423E-05	0 *
n-Hexane	0.252725 *		0.252534	9.47235E-06	0 *
n-Heptane	0.0716055 *		0.0715513	1.35741E-06	0 *
n-Octane	0.0122406 *		0.0122314	7.09578E-08	0 *
n-Nonane	0.00324082 *		0.00323837	1.16021E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0755856	99.8292	100 *
TEG	0 *		0	0	0 *
Benzene	0.0228358 *		0.0228186	0.000762765	0 *
Toluene	0.011963 *		0.0119539	0.000215837	0 *
Ethylbenzene	0.00490283 *		0.00489912	5.53645E-05	0 *
m-Xylene	0.00333393 *		0.00333141	2.27053E-05	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *
SO2	0 *		0	0	0 *

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.000786251 *		0.000785757	5.14238E-05	0 *
CO2	4.87347 *		4.8704	0.123743	0 *
N2	1.2848 *		1.28399	0.00125265	0 *
Methane	56.3113 *		56.2759	0.0887519	0 *
Ethane	16.1135 *		16.1034	0.0236784	0 *
Propane	11.074 *		11.067	0.00805849	0 *
i-Butane	1.99593 *		1.99467	0.00071122	0 *
n-Butane	4.37758 *		4.37483	0.00206588	0 *
i-Pentane	1.1491 *		1.14838	0.000250669	0 *
n-Pentane	1.22641 *		1.22563	0.000117414	0 *
n-Hexane	1.00488 *		1.00424	4.5273E-05	0 *
n-Heptane	0.331057 *		0.330849	7.54373E-06	0 *
n-Octane	0.0645146 *		0.064474	4.49545E-07	0 *
n-Nonane	0.0191783 *		0.0191662	8.25297E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0628371	99.7464	100 *
TEG	0 *		0	0	0 *
Benzene	0.0823027 *		0.0822509	0.0033045	0 *
Toluene	0.0508581 *		0.0508261	0.00110297	0 *
Ethylbenzene	0.0240164 *		0.0240013	0.000325995	0 *
m-Xylene	0.0163312 *		0.0163209	0.000133693	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
SO2	0 *		0	0	0 *

Mass Flow	DOU HP Inlet lb/h	HP IS Liq lb/h	HP Slug Vapor lb/h	Model HP Liq (from Slug) lb/h	WATER1 lb/h
H2S	5.80013 *	0	5.80013	3.25467E-06	0 *
CO2	35951.3 *	0	35951.3	0.00783186	0 *
N2	9477.89 *	0	9477.89	7.92814E-05	0 *
Methane	415405 *	0	415405	0.00561721	0 *
Ethane	118869 *	0	118869	0.00149863	0 *
Propane	81692.3 *	0	81692.3	0.000510031	0 *
i-Butane	14723.8 *	0	14723.8	4.50139E-05	0 *
n-Butane	32293.2 *	0	32293.2	0.000130752	0 *
i-Pentane	8476.87 *	0	8476.87	1.58651E-05	0 *
n-Pentane	9047.12 *	0	9047.12	7.43129E-06	0 *
n-Hexane	7412.91 *	0	7412.91	2.86538E-06	0 *
n-Heptane	2442.19 *	0	2442.19	4.77451E-07	0 *
n-Octane	475.92 *	0	475.92	2.84522E-08	0 *
n-Nonane	141.477 *	0	141.477	5.22339E-09	0 *
n-Decane	0 *	0	0	0	0 *
Water	0 *	0	463.837	6.31306	470.15 *
TEG	0 *	0	0	0	0 *
Benzene	607.142 *	0	607.142	0.000209146	0 *
Toluene	375.177 *	0	375.177	6.98085E-05	0 *
Ethylbenzene	177.168 *	0	177.168	2.06326E-05	0 *
m-Xylene	120.474 *	0	120.474	8.46156E-06	0 *
Cyclohexane	0 *	0	0	0	0 *
Cyclopentane	0 *	0	0	0	0 *
SO2	0 *	0	0	0	0 *

Stream Properties

Property	Units	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
Temperature	°F	85 *		84.3292	84.3292	545.867
Pressure	psig	1000 *	987.5	990	990	1000
Mole Fraction Vapor	%	100		100	0	74.7393
Molecular Weight	lb/lbmol	21.673		21.6703	18.0302	18.0153
Mass Density	lb/ft^3	4.85327		4.80612	62.115	2.87975
Molar Flow	lbmol/h	34037.4	0	34063.2	0.351028	26.0973
Mass Flow	lb/h	737694	0	738158	6.32911	470.15
Std Vapor Volumetric Flow	MMSCFD	310 *	0	310.234	0.00319702	0.237684
Std Liquid Volumetric Flow	sgpm	4122.41	0	4123.34	0.0126889	0.939864
Specific Gravity		0.748313		0.748218	0.995931	
API Gravity					10.0465	
Gross Ideal Gas Heating Value	Btu/ft^3	1235.65		1234.76	51.6404	50.31
Gross Liquid Heating Value	Btu/lb	21573.5		21559.9	29.655	0

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	WATER2	4	5	9	11
From Block	Slug Catcher	MIX-100	Slug Vapor PC	V-1407 HP Inlet Seperator	MIX-102
To Block	--	Slug Catcher	MIX-102	Feed Gas to Amine	V-1407 HP Inlet Seperator

Stream Composition

Mole Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.000499617	0.000499622	0.000476587	0.000476587
CO2		2.39816	2.39819	2.28758	2.28758
N2		0.993244	0.993254	0.994457	0.994457
Methane		76.0171	76.0178	76.1072	76.1072
Ethane		11.6053	11.6055	11.6187	11.6187
Propane		5.43871	5.43877	5.44491	5.44491
i-Butane		0.743685	0.743693	0.744534	0.744534
n-Butane		1.63109	1.63111	1.63288	1.63288
i-Pentane		0.344919	0.344922	0.345293	0.345293
n-Pentane		0.368122	0.368126	0.368509	0.368509
n-Hexane		0.252532	0.252534	0.252772	0.252772
n-Heptane		0.0715506	0.0715513	0.0716083	0.0716083
n-Octane		0.0122312	0.0122314	0.0122387	0.0122387
n-Nonane		0.00323834	0.00323837	0.00323923	0.00323923
n-Decane		0	0	0	0
Water		0.0766136	0.0755856	0.0728484	0.0728484
TEG		0	0	5.55797E-06	5.55797E-06
Benzene		0.0228183	0.0228186	0.0226898	0.0226898
Toluene		0.0119538	0.0119539	0.0118601	0.0118601
Ethylbenzene		0.00489907	0.00489912	0.0048508	0.0048508
m-Xylene		0.00333137	0.00333141	0.00329926	0.00329926
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.00078575	0.000785757	0.000750421	0.000750421
CO2		4.87036	4.8704	4.6513	4.6513
N2		1.28398	1.28399	1.28708	1.28708
Methane		56.2754	56.2759	56.4091	56.4091
Ethane		16.1033	16.1034	16.1409	16.1409
Propane		11.0669	11.067	11.0927	11.0927
i-Butane		1.99465	1.99467	1.9993	1.9993
n-Butane		4.37479	4.37483	4.3848	4.3848
i-Pentane		1.14837	1.14838	1.15098	1.15098
n-Pentane		1.22562	1.22563	1.22837	1.22837
n-Hexane		1.00424	1.00424	1.00639	1.00639
n-Heptane		0.330846	0.330849	0.331506	0.331506
n-Octane		0.0644735	0.064474	0.0645895	0.0645895
n-Nonane		0.0191661	0.0191662	0.0191941	0.0191941
n-Decane		0	0	0	0
Water		0.0636918	0.0628371	0.0606335	0.0606335
TEG		0	0	3.85621E-05	3.85621E-05
Benzene		0.0822503	0.0822509	0.0818842	0.0818842
Toluene		0.0508257	0.0508261	0.0504872	0.0504872
Ethylbenzene		0.0240011	0.0240013	0.0237929	0.0237929
m-Xylene		0.0163208	0.0163209	0.0161826	0.0161826
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	WATER2 lb/h	4 lb/h	5 lb/h	9 lb/h	11 lb/h
H2S	0	5.80013	5.80013	5.80023	5.80023
CO2	0	35951.3	35951.3	35951.3	35951.3
N2	0	9477.89	9477.89	9948.18	9948.18
Methane	0	415405	415405	436002	436002
Ethane	0	118869	118869	124758	124758
Propane	0	81692.3	81692.3	85739	85739
i-Butane	0	14723.8	14723.8	15453.2	15453.2
n-Butane	0	32293.2	32293.2	33891.4	33891.4
i-Pentane	0	8476.87	8476.87	8896.28	8896.28
n-Pentane	0	9047.12	9047.12	9494.43	9494.43
n-Hexane	0	7412.91	7412.91	7778.65	7778.65
n-Heptane	0	2442.19	2442.19	2562.31	2562.31
n-Octane	0	475.92	475.92	499.231	499.231
n-Nonane	0	141.477	141.477	148.357	148.357
n-Decane	0	0	0	0	0
Water	0	470.15	463.837	468.654	468.654
TEG	0	0	0	0.298058	0.298058
Benzene	0	607.142	607.142	632.907	632.907
Toluene	0	375.177	375.177	390.231	390.231
Ethylbenzene	0	177.168	177.168	183.902	183.902
m-Xylene	0	120.474	120.474	125.08	125.08
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	WATER2	4	5	9	11
Temperature	°F		84.6652	84.1918	86.1581	86.1922
Pressure	psig	990	995	988	987.5	988
Mole Fraction Vapor	%		99.9995	100	100	100
Molecular Weight	lb/lbmol		21.6702	21.6703	21.6445	21.6445
Mass Density	lb/ft^3		4.82939	4.79686	4.75039	4.75268
Molar Flow	lbmol/h	0	34063.5	34063.2	35710.2	35710.2
Mass Flow	lb/h	0	738165	738158	772929	772929
Std Vapor Volumetric Flow	MMSCFD	0	310.238	310.234	325.234	325.234
Std Liquid Volumetric Flow	sgpm	0	4123.35	4123.34	4323.29	4323.29
Specific Gravity				0.748218	0.747329	0.747329
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3		1234.74	1234.76	1236.16	1236.16
Gross Liquid Heating Value	Btu/lb		21559.7	21559.9	21610.4	21610.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	12	140-01B	140-02		
From Block	XFS2	SAT-1	PCV-1402		
To Block	MIX-102	PCV-1402	MIX-100		

Stream Composition

Mole Fraction	12 %	140-01B %	140-02 %		
H2S	1.79679E-07	0.000499617	0.000499617		
CO2	3.33687E-06	2.39816	2.39816		
N2	1.01934	0.993244	0.993244		
Methane	77.9565	76.0171	76.0171		
Ethane	11.8923	11.6053	11.6053		
Propane	5.57206	5.43871	5.43871		
i-Butane	0.761931	0.743685	0.743685		
n-Butane	1.66958	1.63109	1.63109		
i-Pentane	0.352964	0.344919	0.344919		
n-Pentane	0.376431	0.368122	0.368122		
n-Hexane	0.257691	0.252532	0.252532		
n-Heptane	0.0727865	0.0715506	0.0715506		
n-Octane	0.0123907	0.0122312	0.0122312		
n-Nonane	0.00325707	0.00323834	0.00323834		
n-Decane	0	0	0		
Water	0.0162357	0.0766136	0.0766136		
TEG	0.00012051	0	0		
Benzene	0.0200273	0.0228183	0.0228183		
Toluene	0.00992022	0.0119538	0.0119538		
Ethylbenzene	0.00385139	0.00489907	0.00489907		
m-Xylene	0.00263428	0.00333137	0.00333137		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Mass Fraction	12 %	140-01B %	140-02 %		
H2S	2.90051E-07	0.00078575	0.00078575		
CO2	6.95588E-06	4.87036	4.87036		
N2	1.35254	1.28398	1.28398		
Methane	59.2365	56.2754	56.2754		
Ethane	16.9376	16.1033	16.1033		
Propane	11.638	11.0669	11.0669		
i-Butane	2.09761	1.99465	1.99465		
n-Butane	4.59636	4.37479	4.37479		
i-Pentane	1.20622	1.14837	1.14837		
n-Pentane	1.28641	1.22562	1.22562		
n-Hexane	1.05184	1.00424	1.00424		
n-Heptane	0.345456	0.330846	0.330846		
n-Octane	0.0670403	0.0644735	0.0644735		
n-Nonane	0.0197865	0.0191661	0.0191661		
n-Decane	0	0	0		
Water	0.0138541	0.0636918	0.0636918		
TEG	0.000857195	0	0		
Benzene	0.0740977	0.0822503	0.0822503		
Toluene	0.043294	0.0508257	0.0508257		
Ethylbenzene	0.0193671	0.0240011	0.0240011		
m-Xylene	0.0132467	0.0163208	0.0163208		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	12 lb/h	140-01B lb/h	140-02 lb/h		
H2S	0.000100854	5.80013	5.80013		
CO2	0.00241865	35951.3	35951.3		
N2	470.295	9477.89	9477.89		
Methane	20597.3	415405	415405		
Ethane	5889.41	118869	118869		
Propane	4046.67	81692.3	81692.3		
i-Butane	729.364	14723.8	14723.8		
n-Butane	1598.21	32293.2	32293.2		
i-Pentane	419.417	8476.87	8476.87		
n-Pentane	447.302	9047.12	9047.12		
n-Hexane	365.737	7412.91	7412.91		
n-Heptane	120.119	2442.19	2442.19		
n-Octane	23.3107	475.92	475.92		
n-Nonane	6.88001	141.477	141.477		
n-Decane	0	0	0		
Water	4.81725	470.15	470.15		
TEG	0.298058	0	0		
Benzene	25.7647	607.142	607.142		
Toluene	15.0539	375.177	375.177		
Ethylbenzene	6.73418	177.168	177.168		
m-Xylene	4.60606	120.474	120.474		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Stream Properties

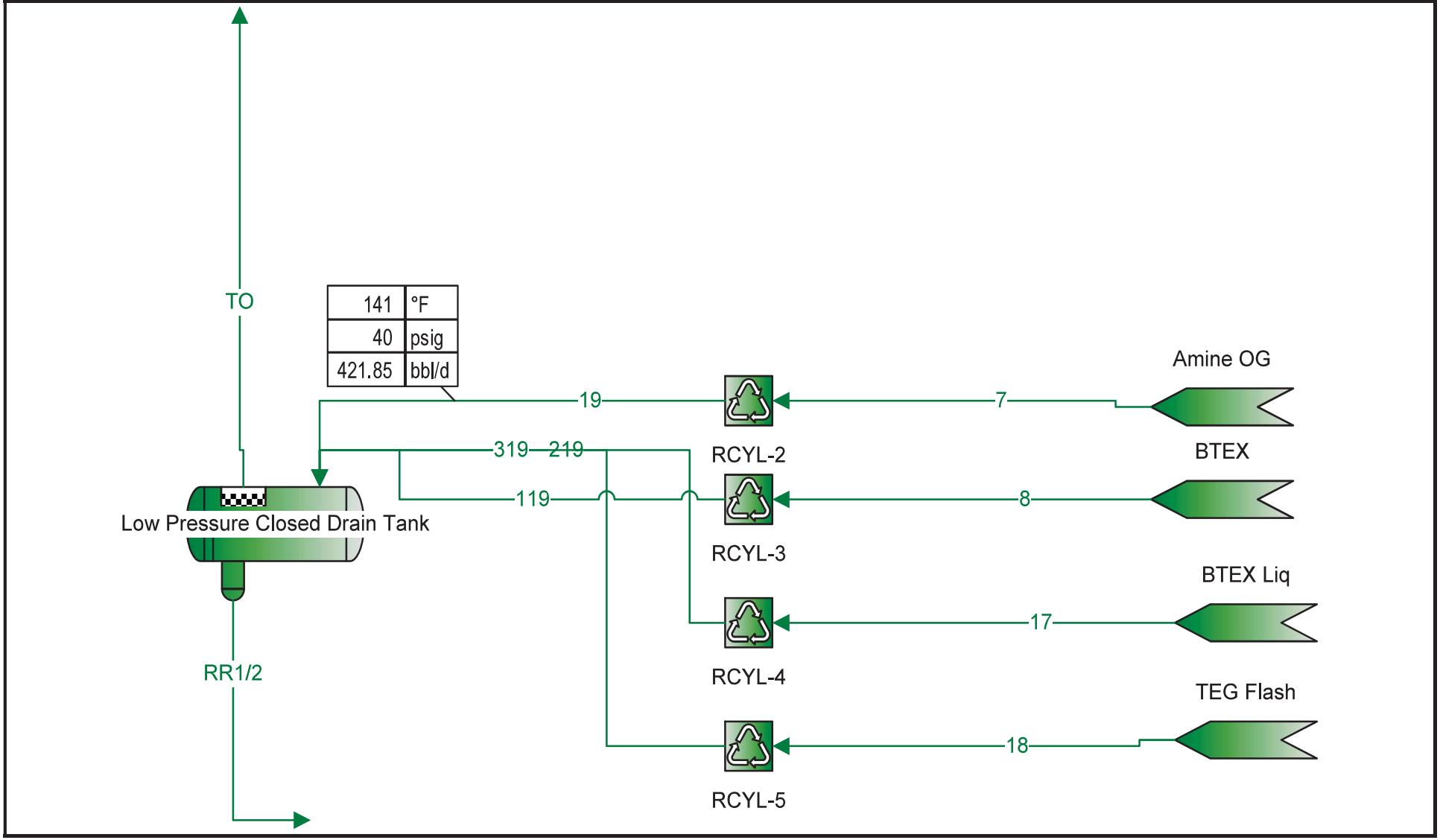
Property	Units	12	140-01B	140-02		
Temperature	°F	129.833	85	84.6652		
Pressure	psig	1000	1000	995		
Mole Fraction Vapor	%	100	100	99.9995		
Molecular Weight	lb/lbmol	21.1122	21.6702	21.6702		
Mass Density	lb/ft^3	4.03764	4.8526	4.82939		
Molar Flow	lbmol/h	1646.97	34063.5	34063.5		
Mass Flow	lb/h	34771.3	738165	738165		
Std Vapor Volumetric Flow	MMSCFD	15	310.238	310.238		
Std Liquid Volumetric Flow	sgpm	199.958	4123.35	4123.35		
Specific Gravity		0.72895	0.748217			
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.28	1234.74	1234.74		
Gross Liquid Heating Value	Btu/lb	22681.3	21559.7	21559.7		

Remarks

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LP Flash
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	LP Flash	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	LP Flash	

Connections

	RR1/2	TO	7	8	17
From Block	Low Pressure Closed Drain Tank	Low Pressure Closed Drain Tank	Amine OG	BTEX	BTEX Liq
To Block	--	--	RCYL-2	RCYL-3	RCYL-4

Stream Composition

Mole Fraction	RR1/2 %	TO %	7 %	8 %	17 %
H2S	6.25958E-06	0.00175854	0.00209863	1.26398E-05	2.44697E-08
CO2	0.00603118	5.1608	6.15372	2.76462E-05	1.66924E-08
N2	8.56378E-06	0.247087	0.263451	0.012261	4.06633E-07
Methane	0.00466653	66.7206	71.3087	11.9422	0.00130467
Ethane	0.00119623	13.6423	12.8192	14.9749	0.00786728
Propane	0.000331016	5.51126	4.0508	17.6769	0.0258691
i-Butane	2.12239E-05	0.630238	0.363572	3.24743	0.0105971
n-Butane	0.000108257	1.95898	1.09855	12.7172	0.0614224
i-Pentane	1.17745E-05	0.354565	0.102177	3.76019	0.0424282
n-Pentane	8.55633E-06	0.467091	0.13803	5.07947	0.0726893
n-Hexane	4.90111E-06	0.431222	0.0695408	4.92349	0.21574
n-Heptane	1.18618E-06	0.164093	0.00612782	1.37704	0.169136
n-Octane	1.35443E-07	0.0385535	0.00156817	0.159532	0.0551678
n-Nonane	3.04997E-08	0.0139808	9.28155E-05	0.0308072	0.0236744
n-Decane	0	0	0	0	0
Water	99.9741	2.89418	3.48301	11.5417	96.9948
TEG	0.00598167	8.55998E-09	4.92746E-10	3.86983E-08	0.00578939
Benzene	0.003892	0.734303	0.0841923	8.04418	0.713583
Toluene	0.00223193	0.550183	0.0356945	3.33725	0.778058
Ethylbenzene	0.000919567	0.29194	0.0117826	0.711008	0.501673
m-Xylene	0.000445534	0.1869	0.00767072	0.464405	0.320228
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	RR1/2 %	TO %	7 %	8 %	17 %
H2S	1.1832E-05	0.00245797	0.00329583	8.89968E-06	4.12497E-08
CO2	0.0147214	9.31486	12.4796	2.51366E-05	3.63368E-08
N2	1.33055E-05	0.283876	0.340082	0.00709604	5.63443E-07
Methane	0.00415208	43.8979	52.7146	3.95802	0.00103527
Ethane	0.00199496	16.8236	17.7623	9.30267	0.0117011
Propane	0.000809552	9.96687	8.23102	16.1037	0.0564233
i-Butane	6.84176E-05	1.50231	0.973756	3.89947	0.0304657
n-Butane	0.00034898	4.66966	2.94224	15.2707	0.176583
i-Pentane	4.71165E-05	1.04915	0.339705	5.60483	0.151414
n-Pentane	3.42387E-05	1.38211	0.458901	7.57132	0.259406
n-Hexane	2.34249E-05	1.52404	0.276147	8.76557	0.919593
n-Heptane	6.59216E-06	0.674341	0.0282944	2.85067	0.838286
n-Octane	8.58085E-07	0.180614	0.00825441	0.376483	0.311703
n-Nonane	2.16955E-07	0.0735395	0.000548546	0.0816302	0.150188
n-Decane	0	0	0	0	0
Water	99.8916	2.13835	2.89143	4.2957	86.4312
TEG	0.0498213	5.27202E-08	3.40983E-09	1.20062E-07	0.0430037
Benzene	0.0168612	2.35237	0.303045	12.9814	2.75704
Toluene	0.0114057	2.07903	0.151552	6.35262	3.54596
Ethylbenzene	0.00541458	1.27112	0.0576423	1.55948	2.63441
m-Xylene	0.00262339	0.813773	0.0375262	1.0186	1.6816
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	LP Flash	

Mass Flow	RR1/2 lb/h	TO lb/h	7 lb/h	8 lb/h	17 lb/h
H2S	0.000133259	0.0751355	0.075242	1.9438E-05	5.31296E-07
CO2	0.165802	284.738	284.903	5.49013E-05	4.68018E-07
N2	0.000149855	8.67757	7.76388	0.0154986	7.25714E-06
Methane	0.0467634	1341.88	1203.45	8.6448	0.0133343
Ethane	0.0224685	514.266	405.504	20.3181	0.15071
Propane	0.0091177	304.669	187.91	35.1724	0.726732
i-Butane	0.000770563	45.9228	22.2303	8.51691	0.392398
n-Butane	0.00393044	142.743	67.1698	33.353	2.27439
i-Pentane	0.000530657	32.0706	7.75529	12.2416	1.95021
n-Pentane	0.000385618	42.2486	10.4765	16.5367	3.34115
n-Hexane	0.000263827	46.5871	6.30429	19.145	11.8444
n-Heptane	7.42452E-05	20.6133	0.645946	6.2262	10.7971
n-Octane	9.66431E-06	5.52103	0.188444	0.822285	4.01474
n-Nonane	2.44349E-06	2.24797	0.012523	0.17829	1.93442
n-Decane	0	0	0	0	0
Water	1125.04	65.3654	66.0099	9.38231	1113.23
TEG	0.56112	1.61156E-06	7.78447E-08	2.62231E-07	0.553887
Benzene	0.189902	71.9075	6.91836	28.353	35.5106
Toluene	0.128458	63.5521	3.45984	13.8749	45.6719
Ethylbenzene	0.0609826	38.8559	1.31594	3.40609	33.9312
m-Xylene	0.0295463	24.8755	0.856704	2.22474	21.6589
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	RR1/2	TO	7	8	17
Temperature	°F	115.76	115.76	141.278	120	120.149
Pressure	psig	39.5	39.5	40	45	40
Mole Fraction Vapor	%	0	100	100	67.1204	0
Molecular Weight	lb/lbmol	18.0302	24.383	21.7011	48.4034	20.2171
Mass Density	lb/ft^3	61.7414	0.210699	0.18047	0.704692	59.682
Molar Flow	lbmol/h	62.4656	125.367	105.199	4.51232	63.7084
Mass Flow	lb/h	1126.27	3056.81	2282.95	218.412	1288
Std Vapor Volumetric Flow	MMSCFD	0.568913	1.14179	0.958117	0.0410965	0.580232
Std Liquid Volumetric Flow	sgpm	2.25187	15.4457	12.304	0.752369	2.65258
Specific Gravity		0.989941	0.841882	0.749284		0.956921
API Gravity		9.98493				14.0727
Gross Ideal Gas Heating Value	Btu/ft^3	50.9425	1282.66	1117.56	2544.2	185.699
Gross Liquid Heating Value	Btu/lb	13.3737	19862.2	19453.6	19749.7	2545.85

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	LP Flash	

Connections

	18	19	119	219	319
From Block	TEG Flash	RCYL-2	RCYL-3	RCYL-4	RCYL-5
To Block	RCYL-5	Low Pressure Closed Drain Tank	Low Pressure Closed Drain Tank	Low Pressure Closed Drain Tank	Low Pressure Closed Drain Tank

Stream Composition

Mole Fraction	18 %	19 %	119 %	219 %	319 %
H2S	1.38155E-06	0.00209863	1.26398E-05	2.44697E-08	1.38155E-06
CO2	1.40217E-05	6.15372	2.76462E-05	1.66924E-08	1.40217E-05
N2	0.222508	0.263451	0.012261	4.06633E-07	0.222508
Methane	56.1487	71.3087	11.9422	0.00130467	56.1487
Ethane	20.3797	12.8192	14.9749	0.00786728	20.3797
Propane	12.7251	4.0508	17.6769	0.0258691	12.7251
i-Butane	1.76491	0.363572	3.24743	0.0105971	1.76491
n-Butane	4.76919	1.09855	12.7172	0.0614224	4.76919
i-Pentane	0.973644	0.102177	3.76019	0.0424282	0.973644
n-Pentane	1.14393	0.13803	5.07947	0.0726893	1.14393
n-Hexane	0.748312	0.0695408	4.92349	0.21574	0.748312
n-Heptane	0.203873	0.00612782	1.37704	0.169136	0.203873
n-Octane	0.0301029	0.00156817	0.159532	0.0551678	0.0301029
n-Nonane	0.00663999	9.28155E-05	0.0308072	0.0236744	0.00663999
n-Decane	0	0	0	0	0
Water	0.687462	3.48301	11.5417	96.9948	0.687462
TEG	0.000334246	4.92746E-10	3.86983E-08	0.00578939	0.000334246
Benzene	0.11685	0.0841923	8.04418	0.713583	0.11685
Toluene	0.0507514	0.0356945	3.33725	0.778058	0.0507514
Ethylbenzene	0.0172293	0.0117826	0.711008	0.501673	0.0172293
m-Xylene	0.0107641	0.00767072	0.464405	0.320228	0.0107641
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	18 %	19 %	119 %	219 %	319 %
H2S	1.72351E-06	0.00329583	8.89968E-06	4.12497E-08	1.72351E-06
CO2	2.25883E-05	12.4796	2.51366E-05	3.63368E-08	2.25883E-05
N2	0.228164	0.340082	0.00709604	5.63443E-07	0.228164
Methane	32.9722	52.7146	3.95802	0.00103527	32.9722
Ethane	22.4313	17.7623	9.30267	0.0117011	22.4313
Propane	20.5397	8.23102	16.1037	0.0564233	20.5397
i-Butane	3.75493	0.973756	3.89947	0.0304657	3.75493
n-Butane	10.1467	2.94224	15.2707	0.176583	10.1467
i-Pentane	2.57138	0.339705	5.60483	0.151414	2.57138
n-Pentane	3.02112	0.458901	7.57132	0.259406	3.02112
n-Hexane	2.3605	0.276147	8.76557	0.919593	2.3605
n-Heptane	0.747779	0.0282944	2.85067	0.838286	0.747779
n-Octane	0.125869	0.00825441	0.376483	0.311703	0.125869
n-Nonane	0.031173	0.000548546	0.0816302	0.150188	0.031173
n-Decane	0	0	0	0	0
Water	0.453343	2.89143	4.2957	86.4312	0.453343
TEG	0.00183737	3.40983E-09	1.20062E-07	0.0430037	0.00183737
Benzene	0.334105	0.303045	12.9814	2.75704	0.334105
Toluene	0.171169	0.151552	6.35262	3.54596	0.171169
Ethylbenzene	0.0669555	0.0576423	1.55948	2.63441	0.0669555
m-Xylene	0.0418309	0.0375262	1.0186	1.6816	0.0418309
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	LP Flash	

Mass Flow	18 lb/h	19 lb/h	119 lb/h	219 lb/h	319 lb/h
H2S	6.78579E-06	0.075242	1.9438E-05	5.31296E-07	6.78579E-06
CO2	8.89347E-05	284.903	5.49013E-05	4.68018E-07	8.89347E-05
N2	0.898328	7.76388	0.0154986	7.25714E-06	0.898328
Methane	129.818	1203.45	8.6448	0.0133343	129.818
Ethane	88.3164	405.504	20.3181	0.15071	88.3164
Propane	80.8687	187.91	35.1724	0.726732	80.8687
i-Butane	14.7839	22.2303	8.51691	0.392398	14.7839
n-Butane	39.9494	67.1698	33.353	2.27439	39.9494
i-Pentane	10.124	7.75529	12.2416	1.95021	10.124
n-Pentane	11.8947	10.4765	16.5367	3.34115	11.8947
n-Hexane	9.29373	6.30429	19.145	11.8444	9.29373
n-Heptane	2.94415	0.645946	6.2262	10.7971	2.94415
n-Octane	0.495572	0.188444	0.822285	4.01474	0.495572
n-Nonane	0.122734	0.012523	0.17829	1.93442	0.122734
n-Decane	0	0	0	0	0
Water	1.7849	66.0099	9.38231	1113.23	1.7849
TEG	0.00723406	7.78447E-08	2.62231E-07	0.553887	0.00723406
Benzene	1.31544	6.91836	28.353	35.5106	1.31544
Toluene	0.673927	3.45984	13.8749	45.6719	0.673927
Ethylbenzene	0.263617	1.31594	3.40609	33.9312	0.263617
m-Xylene	0.164696	0.856704	2.22474	21.6589	0.164696
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

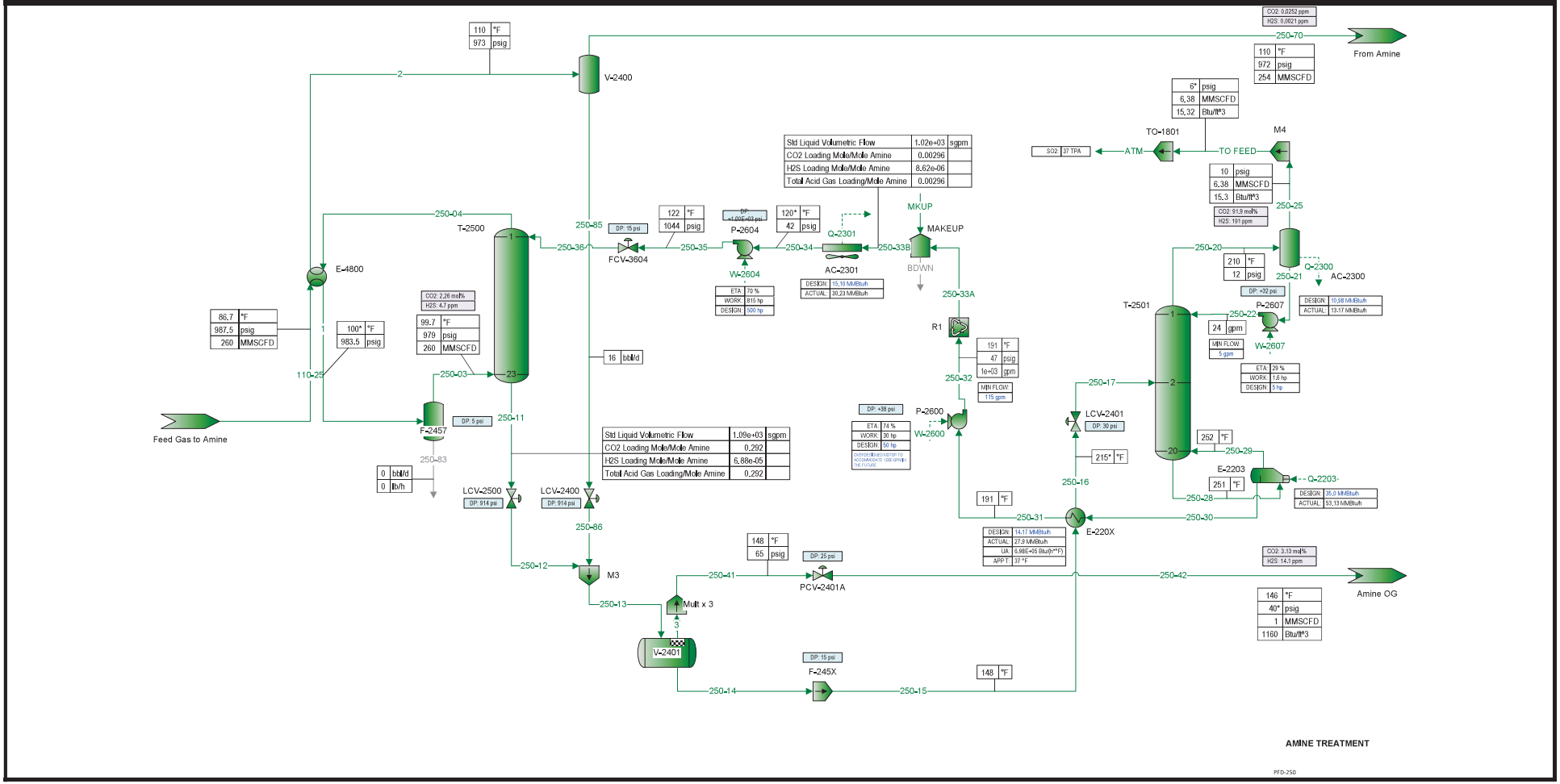
Property	Units	18	19	119	219	319
Temperature	°F	137.762	141.278	120	120.149	137.762
Pressure	psig	40	40	45	40	40
Mole Fraction Vapor	%	100	100	67.1204	0	100
Molecular Weight	lb/lbmol	27.3189	21.7011	48.4034	20.2171	27.3189
Mass Density	lb/ft^3	0.230318	0.18047	0.704692	59.682	0.230318
Molar Flow	lbmol/h	14.412	105.199	4.51232	63.7084	14.412
Mass Flow	lb/h	393.719	2282.95	218.412	1288	393.719
Std Vapor Volumetric Flow	MMSCFD	0.131259	0.958117	0.0410965	0.580232	0.131259
Std Liquid Volumetric Flow	sgpm	1.9886	12.304	0.752369	2.65258	1.9886
Specific Gravity		0.94325	0.749284		0.956921	0.94325
API Gravity					14.0727	
Gross Ideal Gas Heating Value	Btu/ft^3	1603.34	1117.56	2544.2	185.699	1603.34
Gross Liquid Heating Value	Btu/lb	22162.8	19453.6	19749.7	2545.85	22162.8

Remarks

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Amine
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	ATM	BDWN	MKUP	TO FEED	1
From Block	TO-1801	MAKEUP	--	M4	E-4800
To Block	--	--	MAKEUP	TO-1801	F-2457

Stream Composition

Mole Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.0190982	0.000119807	0	0.0190982	0.00047083
CO2	91.9359	0.0410934	0	91.9359	2.25993
N2	0.000260669	0	0	0.000260669	0.994803
Methane	0.373106	0	0	0.373106	76.1303
Ethane	0.121267	0	0	0.121267	11.6218
Propane	0.0330702	0	0	0.0330702	5.44642
i-Butane	0.00246219	0	0	0.00246219	0.744747
n-Butane	0.01075	0	0	0.01075	1.6333
i-Pentane	0.000511645	0	0	0.000511645	0.345385
n-Pentane	0.000897393	0	0	0.000897393	0.368598
n-Hexane	0.000471637	0	0	0.000471637	0.252825
n-Heptane	1.46764E-05	0	0	1.46764E-05	0.0716188
n-Octane	7.94117E-06	0	0	7.94117E-06	0.0122398
n-Nonane	1.33715E-07	0	0	1.33715E-07	0.00323942
n-Decane	0	0	0	0	0
Water	7.40015	86.0567	99.9722	7.40015	0.0719045
MDEA	1.61646E-08	11.0027	0.0017004	1.61646E-08	0
Piperazine	2.94873E-08	2.89918	0.0261367	2.94873E-08	0
TEG	0	0.00023969	0	0	4.92804E-06
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0606564	0	0	0.0606564	0.0225664
Toluene	0.0270025	0	0	0.0270025	0.011782
Ethylbenzene	0.00755602	0	0	0.00755602	0.00481691
m-Xylene	0.00678095	0	0	0.00678095	0.00327634
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.0154944	0.000131164	0	0.0154944	0.000741583
CO2	96.3168	0.058095	0	96.3168	4.59648
N2	0.00017383	0	0	0.00017383	1.28792
Methane	0.142486	0	0	0.142486	56.4434
Ethane	0.0868024	0	0	0.0868024	16.1502
Propane	0.0347138	0	0	0.0347138	11.0992
i-Butane	0.0034067	0	0	0.0034067	2.00049
n-Butane	0.0148737	0	0	0.0148737	4.38725
i-Pentane	0.000878755	0	0	0.000878755	1.15164
n-Pentane	0.00154128	0	0	0.00154128	1.22904
n-Hexane	0.000967522	0	0	0.000967522	1.0069
n-Heptane	3.50079E-05	0	0	3.50079E-05	0.331656
n-Octane	2.15938E-05	0	0	2.15938E-05	0.0646152
n-Nonane	4.0825E-07	0	0	4.0825E-07	0.0192011
n-Decane	0	0	0	0	0
Water	3.17359	49.8019	99.8639	3.17359	0.0598662
MDEA	4.58535E-08	42.1168	0.0112352	4.58535E-08	0
Piperazine	6.04627E-08	8.02191	0.124831	6.04627E-08	0
TEG	0	0.00115628	0	0	3.42019E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.112788	0	0	0.112788	0.0814635
Toluene	0.0592264	0	0	0.0592264	0.0501702
Ethylbenzene	0.0190961	0	0	0.0190961	0.0236338
m-Xylene	0.0171373	0	0	0.0171373	0.0160752
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
Cyclopentane	0	0	0	0	0

Mass Flow	ATM lb/h	BDWN lb/h	MKUP lb/h	TO FEED lb/h	1 lb/h
H2S	4.56251	0	0	4.56251	4.58409
CO2	28361.7	0	0	28361.7	28413.1
N2	0.0511865	0	0	0.0511865	7961.24
Methane	41.9569	0	0	41.9569	348904
Ethane	25.56	0	0	25.56	99832.5
Propane	10.2219	0	0	10.2219	68609.5
i-Butane	1.00315	0	0	1.00315	12366
n-Butane	4.37976	0	0	4.37976	27119.8
i-Pentane	0.25876	0	0	0.25876	7118.87
n-Pentane	0.453849	0	0	0.453849	7597.31
n-Hexane	0.284899	0	0	0.284899	6224.16
n-Heptane	0.0103085	0	0	0.0103085	2050.13
n-Octane	0.00635856	0	0	0.00635856	399.418
n-Nonane	0.000120214	0	0	0.000120214	118.692
n-Decane	0	0	0	0	0
Water	934.504	0	1390.56	934.504	370.062
MDEA	1.35021E-05	0	0.156445	1.35021E-05	0
Piperazine	1.7804E-05	0	1.73822	1.7804E-05	0
TEG	0	0	0	0	0.211419
UCARSOL™ AP-814	0	0	0	0	0
Benzene	33.2119	0	0	33.2119	503.566
Toluene	17.4399	0	0	17.4399	310.127
Ethylbenzene	5.62308	0	0	5.62308	146.092
m-Xylene	5.04629	0	0	5.04629	99.3684
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	ATM	BDWN	MKUP	TO FEED	1
Temperature	°F	118.762	190.9	100 *	119.505	100 *
Pressure	psig	0 *	47.0111	65 *	6 *	983.5
Mole Fraction Vapor	%	100	0	0	100	100
Molecular Weight	lb/lbmol	42.0078	31.1301	18.0348	42.0078	21.6379
Mass Density	lb/ft^3	0.0894309	62.2957	61.9602	0.130284	4.48628
Molar Flow	lbmol/h	700.971	0	77.2094	700.971	28567.9
Mass Flow	lb/h	29446.2	0	1392.46	29446.2	618149
Std Vapor Volumetric Flow	MMSCFD	6.38418	0	0.703194	6.38418	260.185
Std Liquid Volumetric Flow	sgpm	71.8867	0	2.78496	71.8867	3458.72
Specific Gravity		1.45042		0.993449	1.45042	0.747101
API Gravity				9.97618		
Gross Ideal Gas Heating Value	Btu/ft^3	15.3243	572.581	51.2597	15.3243	1236.51
Gross Liquid Heating Value	Btu/lb	32.0706	6287.94	19.927	32.0706	21623.1

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	2	3	110-25	250-03	250-04
From Block	E-4800	V-2401	Feed Gas to Amine	F-2457	T-2500
To Block	V-2400	Mult x 3	E-4800	T-2500	E-4800

Stream Composition

Mole Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	2.70381E-07	0.00141403	0.00047083	0.00047083	2.70381E-07
CO2	8.79332E-06	3.13249	2.25993	2.25993	8.79332E-06
N2	1.01756	0.247371	0.994803	0.994803	1.01756
Methane	77.7917	72.5579	76.1303	76.1303	77.7917
Ethane	11.8705	13.6105	11.6218	11.6218	11.8705
Propane	5.56618	4.38773	5.44642	5.44642	5.56618
i-Butane	0.761435	0.405393	0.744747	0.744747	0.761435
n-Butane	1.66933	1.21242	1.6333	1.6333	1.66933
i-Pentane	0.353242	0.112281	0.345385	0.345385	0.353242
n-Pentane	0.37693	0.152593	0.368598	0.368598	0.37693
n-Hexane	0.258573	0.0819657	0.252825	0.252825	0.258573
n-Heptane	0.0732717	0.00715997	0.0716188	0.0716188	0.0732717
n-Octane	0.0125213	0.00190481	0.0122398	0.0122398	0.0125213
n-Nonane	0.00331447	0.000115362	0.00323942	0.00323942	0.00331447
n-Decane	0	0	0	0	0
Water	0.204331	3.94279	0.0719045	0.0719045	0.204331
MDEA	0.000100308	0.00048576	0	0	0.000100308
Piperazine	0.000395006	0.000202152	0	0	0.000395006
TEG	1.57305E-10	6.99271E-10	4.92804E-06	4.92804E-06	1.57305E-10
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.021451	0.0874533	0.0225664	0.0225664	0.021451
Toluene	0.0113279	0.0373882	0.011782	0.011782	0.0113279
Ethylbenzene	0.00472253	0.0123874	0.00481691	0.00481691	0.00472253
m-Xylene	0.00317142	0.00806657	0.00327634	0.00327634	0.00317142
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	4.36395E-07	0.00227717	0.000741583	0.000741583	4.36395E-07
CO2	1.8327E-05	6.51421	4.59648	4.59648	1.8327E-05
N2	1.34996	0.327447	1.28792	1.28792	1.34996
Methane	59.1012	55.0023	56.4434	56.4434	59.1012
Ethane	16.9036	19.3384	16.1502	16.1502	16.9036
Propane	11.6237	9.14242	11.0992	11.0992	11.6237
i-Butane	2.09589	1.11338	2.00049	2.00049	2.09589
n-Butane	4.59492	3.32982	4.38725	4.38725	4.59492
i-Pentane	1.20696	0.382791	1.15164	1.15164	1.20696
n-Pentane	1.2879	0.520222	1.22904	1.22904	1.2879
n-Hexane	1.05526	0.333765	1.0069	1.0069	1.05526
n-Heptane	0.3477	0.033901	0.331656	0.331656	0.3477
n-Octane	0.0677353	0.0102814	0.0646152	0.0646152	0.0677353
n-Nonane	0.0201317	0.00069914	0.0192011	0.0192011	0.0201317
n-Decane	0	0	0	0	0
Water	0.174328	3.35637	0.0598662	0.0598662	0.174328
MDEA	0.000566068	0.00273518	0	0	0.000566068
Piperazine	0.00161131	0.000822783	0	0	0.00161131
TEG	1.11873E-09	4.96207E-09	3.42019E-05	3.42019E-05	1.11873E-09
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.079352	0.322789	0.0814635	0.0814635	0.079352
Toluene	0.0494289	0.16278	0.0501702	0.0501702	0.0494289
Ethylbenzene	0.0237437	0.0621423	0.0236338	0.0236338	0.0237437
m-Xylene	0.0159451	0.0404665	0.0160752	0.0160752	0.0159451

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Flow	2 lb/h	3 lb/h	110-25 lb/h	250-03 lb/h	250-04 lb/h
H2S	0.00257275	0.0179442	4.58409	4.58409	0.00257275
CO2	0.108046	51.3323	28413.1	28413.1	0.108046
N2	7958.61	2.5803	7961.24	7961.24	7958.61
Methane	348429	433.421	348904	348904	348429
Ethane	99654.6	152.387	99832.5	99832.5	99654.6
Propane	68527.3	72.0427	68609.5	68609.5	68527.3
i-Butane	12356.2	8.77351	12366	12366	12356.2
n-Butane	27089.1	26.2392	27119.8	27119.8	27089.1
i-Pentane	7115.59	3.01641	7118.87	7118.87	7115.59
n-Pentane	7592.76	4.09938	7597.31	7597.31	7592.76
n-Hexane	6221.24	2.63008	6224.16	6224.16	6221.24
n-Heptane	2049.85	0.267142	2050.13	2050.13	2049.85
n-Octane	399.331	0.0810177	399.418	399.418	399.331
n-Nonane	118.686	0.00550925	118.692	118.692	118.686
n-Decane	0	0	0	0	0
Water	1027.75	26.4484	370.062	370.062	1027.75
MDEA	3.33723	0.0215534	0	0	3.33723
Piperazine	9.49942	0.00648357	0	0	9.49942
TEG	6.59544E-06	3.91013E-08	0.211419	0.211419	6.59544E-06
UCARSOL™ AP-814	0	0	0	0	0
Benzene	467.816	2.54359	503.566	503.566	467.816
Toluene	291.406	1.28272	310.127	310.127	291.406
Ethylbenzene	139.98	0.489684	146.092	146.092	139.98
m-Xylene	94.0038	0.318878	99.3684	99.3684	94.0038
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	2	3	110-25	250-03	250-04
Temperature	°F	110.208	147.742	86.6593	99.6754	124.289
Pressure	psig	972.5	65	987.5	978.5	976.5
Mole Fraction Vapor	%	99.9544	100	100	100	100
Molecular Weight	lb/lbmol	21.1158	21.1629	21.6379	21.6379	21.1158
Mass Density	lb/ft^3	4.16539	0.256983	4.73941	4.46438	3.99844
Molar Flow	lbmol/h	27919.7	37.2353	28567.9	28567.9	27919.7
Mass Flow	lb/h	589546	788.005	618149	618149	589546
Std Vapor Volumetric Flow	MMSCFD	254.282	0.339125	260.185	260.185	254.282
Std Liquid Volumetric Flow	sgpm	3385.73	4.37648	3458.72	3458.72	3385.73
Specific Gravity			0.730699	0.747101	0.747101	0.729074
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1263.46	1159.89	1236.51	1236.51	1263.46
Gross Liquid Heating Value	Btu/lb	22643.2	20704.3	21623.1	21623.1	22643.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-11	250-12	250-13	250-14	250-15
From Block	T-2500	LCV-2500	M3	V-2401	F-245X
To Block	LCV-2500	M3	V-2401	F-245X	E-220X

Stream Composition

Mole Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.00091481	0.00091481	0.000914209	0.000913099	0.000913099
CO2	3.88221	3.88221	3.87927	3.88093	3.88093
N2	0.000558644	0.000558644	0.000558717	1.08921E-05	1.08921E-05
Methane	0.176315	0.176315	0.176248	0.0155902	0.0155902
Ethane	0.0352172	0.0352172	0.0351989	0.00506713	0.00506713
Propane	0.0111023	0.0111023	0.0110962	0.00138184	0.00138184
i-Butane	0.00100108	0.00100108	0.00100047	0.000102883	0.000102883
n-Butane	0.00313522	0.00313522	0.00313332	0.000449188	0.000449188
i-Pentane	0.000270165	0.000270165	0.000269999	2.13791E-05	2.13791E-05
n-Pentane	0.000375592	0.000375592	0.00037536	3.74976E-05	3.74976E-05
n-Hexane	0.000201328	0.000201328	0.000201192	1.97073E-05	1.97073E-05
n-Heptane	1.64796E-05	1.64796E-05	1.6469E-05	6.13253E-07	6.13253E-07
n-Octane	4.55285E-06	4.55285E-06	4.54963E-06	3.31822E-07	3.31822E-07
n-Nonane	2.61247E-07	2.61247E-07	2.61066E-07	5.5873E-09	5.5873E-09
n-Decane	0	0	0	0	0
Water	82.583	82.583	82.5954	82.77	82.77
MDEA	10.5274	10.5274	10.5196	10.5429	10.5429
Piperazine	2.77346	2.77346	2.77189	2.77805	2.77805
TEG	0.00023772	0.00023772	0.00023754	0.000238067	0.000238067
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00272421	0.00272421	0.0027226	0.00253453	0.00253453
Toluene	0.00120938	0.00120938	0.0012086	0.0011283	0.0011283
Ethylbenzene	0.000342686	0.000342686	0.000342463	0.000315728	0.000315728
m-Xylene	0.000300772	0.000300772	0.000300579	0.000283342	0.000283342
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.000987527	0.000987527	0.000987183	0.000985265	0.000985265
CO2	5.41169	5.41169	5.40926	5.40762	5.40762
N2	0.000495688	0.000495688	0.000495906	9.66051E-06	9.66051E-06
Methane	0.0895914	0.0895914	0.0895855	0.00791858	0.00791858
Ethane	0.0335415	0.0335415	0.0335344	0.00482399	0.00482399
Propane	0.0155066	0.0155066	0.0155029	0.0019292	0.0019292
i-Butane	0.00184297	0.00184297	0.00184242	0.000189325	0.000189325
n-Butane	0.00577187	0.00577187	0.00577017	0.000826598	0.000826598
i-Pentane	0.000617398	0.000617398	0.000617211	4.88362E-05	4.88362E-05
n-Pentane	0.000858327	0.000858327	0.000858061	8.56556E-05	8.56556E-05
n-Hexane	0.000549533	0.000549533	0.000549332	5.37694E-05	5.37694E-05
n-Heptane	5.23034E-05	5.23034E-05	5.22858E-05	1.94554E-06	1.94554E-06
n-Octane	1.64727E-05	1.64727E-05	1.64662E-05	1.20006E-06	1.20006E-06
n-Nonane	1.06129E-06	1.06129E-06	1.06088E-06	2.26882E-08	2.26882E-08
n-Decane	0	0	0	0	0
Water	47.1237	47.1237	47.1453	47.2104	47.2104
MDEA	39.7345	39.7345	39.7172	39.7763	39.7763
Piperazine	7.5668	7.5668	7.56486	7.57611	7.57611
TEG	0.00113075	0.00113075	0.00113024	0.00113192	0.00113192
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00674007	0.00674007	0.00673816	0.00626813	0.00626813
Toluene	0.00352948	0.00352948	0.00352831	0.00329147	0.00329147
Ethylbenzene	0.00115235	0.00115235	0.00115196	0.00106125	0.00106125
m-Xylene	0.00101141	0.00101141	0.00101107	0.000952393	0.000952393
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-11 lb/h	250-12 lb/h	250-13 lb/h	250-14 lb/h	250-15 lb/h
H2S	5.23787	5.23787	5.2384	5.22046	5.22046
CO2	28703.7	28703.7	28703.8	28652.5	28652.5
N2	2.62914	2.62914	2.63148	0.0511865	0.0511865
Methane	475.195	475.195	475.378	41.9569	41.9569
Ethane	177.905	177.905	177.947	25.56	25.56
Propane	82.2475	82.2475	82.2646	10.2219	10.2219
i-Butane	9.77515	9.77515	9.77665	1.00315	1.00315
n-Butane	30.6142	30.6142	30.6189	4.37976	4.37976
i-Pentane	3.27469	3.27469	3.27517	0.25876	0.25876
n-Pentane	4.55259	4.55259	4.55323	0.453849	0.453849
n-Hexane	2.91474	2.91474	2.91498	0.284899	0.284899
n-Heptane	0.277419	0.277419	0.27745	0.0103085	0.0103085
n-Octane	0.0873718	0.0873718	0.0873763	0.00635856	0.00635856
n-Nonane	0.0056291	0.0056291	0.00562947	0.000120214	0.000120214
n-Decane	0	0	0	0	0
Water	249945	249945	250173	250146	250146
MDEA	210753	210753	210756	210756	210756
Piperazine	40134.5	40134.5	40142.3	40142.3	40142.3
TEG	5.99751	5.99751	5.99752	5.99752	5.99752
UCARSOL™ AP-814	0	0	0	0	0
Benzene	35.7495	35.7495	35.7555	33.2119	33.2119
Toluene	18.7204	18.7204	18.7227	17.4399	17.4399
Ethylbenzene	6.1121	6.1121	6.11276	5.62308	5.62308
m-Xylene	5.36454	5.36454	5.36516	5.04629	5.04629
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-11	250-12	250-13	250-14	250-15
Temperature	°F	145.042	147.762	147.742	147.742	147.785
Pressure	psig	978.5	65	65 *	65	50
Mole Fraction Vapor	%	0	0.221566	0.221468	0	0.00485411
Molecular Weight	lb/lbmol	31.5713	31.5713	31.5616	31.5846	31.5846
Mass Density	lb/ft^3	68.7494	49.2701	49.2699	68.779	68.0479
Molar Flow	lbmol/h	16800.1	16800.1	16812.9	16775.7	16775.7
Mass Flow	lb/h	530402	530402	530641	529853	529853
Std Vapor Volumetric Flow	MMSCFD	153.009	153.009	153.125	152.786	152.786
Std Liquid Volumetric Flow	sgpm	1089.99	1089.99	1090.48	1086.1	1086.1
Specific Gravity		1.1023			1.10278	
API Gravity		-4.65791			-4.77894	
Gross Ideal Gas Heating Value	Btu/ft^3	551.005	551.005	550.65	549.298	549.298
Gross Liquid Heating Value	Btu/lb	5964.59	5964.59	5962.21	5940.28	5940.28

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-16	250-17	250-20	250-21	250-22
From Block	E-220X	LCV-2401	T-2501	AC-2300	P-2607
To Block	LCV-2401	T-2501	AC-2300	P-2607	T-2501

Stream Composition

Mole Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.000913099	0.000913099	0.00986923	4.86801E-05	4.86801E-05
CO2	3.88093	3.88093	47.4411	0.0943071	0.0943071
N2	1.08921E-05	1.08921E-05	0.000134384	3.84346E-09	3.84346E-09
Methane	0.0155902	0.0155902	0.192351	1.06467E-05	1.06467E-05
Ethane	0.00506713	0.00506713	0.0625182	3.86369E-06	3.86369E-06
Propane	0.00138184	0.00138184	0.017049	8.09084E-07	8.09084E-07
i-Butane	0.000102883	0.000102883	0.00126934	3.79905E-08	3.79905E-08
n-Butane	0.000449188	0.000449188	0.00554203	2.49904E-07	2.49904E-07
i-Pentane	2.13791E-05	2.13791E-05	0.000263769	6.00076E-09	6.00076E-09
n-Pentane	3.74976E-05	3.74976E-05	0.000462636	1.29941E-08	1.29941E-08
n-Hexane	1.97073E-05	1.97073E-05	0.000243143	3.86801E-09	3.86801E-09
n-Heptane	6.13253E-07	6.13253E-07	7.5661E-06	0	0
n-Octane	3.31822E-07	3.31822E-07	4.0939E-06	0	0
n-Nonane	5.5873E-09	5.5873E-09	6.8934E-08	0	0
n-Decane	0	0	0	0	0
Water	82.77	82.77	52.1961	99.8633	99.8633
MDEA	10.5429	10.5429	0.0113582	0.0234445	0.0234445
Piperazine	2.77805	2.77805	0.00904486	0.0186694	0.0186694
TEG	0.000238067	0.000238067	2.97581E-08	6.14234E-08	6.14234E-08
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00253453	0.00253453	0.0313347	0.000133507	0.000133507
Toluene	0.0011283	0.0011283	0.0139422	4.46988E-05	4.46988E-05
Ethylbenzene	0.000315728	0.000315728	0.00390026	1.01855E-05	1.01855E-05
m-Xylene	0.000283342	0.000283342	0.00350239	1.36938E-05	1.36938E-05
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.000985265	0.000985265	0.0110592	9.17807E-05	9.17807E-05
CO2	5.40762	5.40762	68.6488	0.229604	0.229604
N2	9.66051E-06	9.66051E-06	0.000123778	5.9563E-09	5.9563E-09
Methane	0.00791858	0.00791858	0.101461	9.44873E-06	9.44873E-06
Ethane	0.00482399	0.00482399	0.0618098	6.42704E-06	6.42704E-06
Propane	0.0019292	0.0019292	0.0247187	1.97368E-06	1.97368E-06
i-Butane	0.000189325	0.000189325	0.00242579	1.22154E-07	1.22154E-07
n-Butane	0.000826598	0.000826598	0.0105911	8.03533E-07	8.03533E-07
i-Pentane	4.88362E-05	4.88362E-05	0.000625727	2.3951E-08	2.3951E-08
n-Pentane	8.56556E-05	8.56556E-05	0.00109749	5.18637E-08	5.18637E-08
n-Hexane	5.37694E-05	5.37694E-05	0.000688932	1.84399E-08	1.84399E-08
n-Heptane	1.94554E-06	1.94554E-06	2.49276E-05	0	0
n-Octane	1.20006E-06	1.20006E-06	1.5376E-05	0	0
n-Nonane	2.26882E-08	2.26882E-08	2.90696E-07	0	0
n-Decane	0	0	0	0	0
Water	47.2104	47.2104	30.9179	99.5258	99.5258
MDEA	39.7763	39.7763	0.0445021	0.15455	0.15455
Piperazine	7.57611	7.57611	0.0256163	0.0889617	0.0889617
TEG	0.00113192	0.00113192	1.46936E-07	5.10287E-07	5.10287E-07
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00626813	0.00626813	0.0804773	0.000576914	0.000576914
Toluene	0.00329147	0.00329147	0.0422379	0.000227837	0.000227837
Ethylbenzene	0.00106125	0.00106125	0.0136147	5.98211E-05	5.98211E-05
m-Xylene	0.000952393	0.000952393	0.0122258	8.04257E-05	8.04257E-05
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-16 lb/h	250-17 lb/h	250-20 lb/h	250-21 lb/h	250-22 lb/h
H2S	5.22046	5.22046	4.57344	0.010929	0.010929
CO2	28652.5	28652.5	28389	27.3407	27.3407
N2	0.0511865	0.0511865	0.0511873	7.09262E-07	7.09262E-07
Methane	41.9569	41.9569	41.958	0.00112513	0.00112513
Ethane	25.56	25.56	25.5608	0.000765316	0.000765316
Propane	10.2219	10.2219	10.2222	0.000235021	0.000235021
i-Butane	1.00315	1.00315	1.00316	1.45458E-05	1.45458E-05
n-Butane	4.37976	4.37976	4.37985	9.56827E-05	9.56827E-05
i-Pentane	0.25876	0.25876	0.258763	2.85203E-06	2.85203E-06
n-Pentane	0.453849	0.453849	0.453855	6.17581E-06	6.17581E-06
n-Hexane	0.284899	0.284899	0.284901	2.19578E-06	2.19578E-06
n-Heptane	0.0103085	0.0103085	0.0103085	0	0
n-Octane	0.00635856	0.00635856	0.00635859	0	0
n-Nonane	0.000120214	0.000120214	0.000120215	0	0
n-Decane	0	0	0	0	0
Water	250146	250146	12785.8	11851.3	11851.3
MDEA	210756	210756	18.4034	18.4034	18.4034
Piperazine	40142.3	40142.3	10.5934	10.5933	10.5933
TEG	5.99752	5.99752	6.07639E-05	6.07637E-05	6.07637E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	33.2119	33.2119	33.2806	0.0686975	0.0686975
Toluene	17.4399	17.4399	17.4671	0.0271303	0.0271303
Ethylbenzene	5.62308	5.62308	5.6302	0.00712335	0.00712335
m-Xylene	5.04629	5.04629	5.05586	0.0095769	0.0095769
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-16	250-17	250-20	250-21	250-22
Temperature	°F	215 *	208.78	209.713	120 *	120.251
Pressure	psig	45	15 *	12	10	42.4104
Mole Fraction Vapor	%	0.0453857	0.689146	100	0	0
Molecular Weight	lb/lbmol	31.5846	31.5846	30.4137	18.0764	18.0764
Mass Density	lb/ft^3	60.4369	14.3131	0.10742	61.7164	61.7147
Molar Flow	lbmol/h	16775.7	16775.7	1359.72	658.747	658.747
Mass Flow	lb/h	529853	529853	41354	11907.8	11907.8
Std Vapor Volumetric Flow	MMSCFD	152.786	152.786	12.3838	5.99962	5.99962
Std Liquid Volumetric Flow	sgpm	1086.1	1086.1	95.7101	23.8234	23.8234
Specific Gravity				1.0501	0.989541	0.989513
API Gravity					9.89047	9.88652
Gross Ideal Gas Heating Value	Btu/ft^3	549.298	549.298	32.999	51.8066	51.8066
Gross Liquid Heating Value	Btu/lb	5940.28	5940.28	32.0323	31.9375	31.9375

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-25	250-28	250-29	250-30	250-31
From Block	AC-2300	T-2501	E-2203	E-2203	E-220X
To Block	M4	E-2203	T-2501	E-220X	P-2600

Stream Composition

Mole Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.0190982	0.000124192	0.000145665	0.000120098	0.000120098
CO2	91.9359	0.0575199	0.143632	0.0411059	0.0411059
N2	0.000260669	0	0	0	0
Methane	0.373106	0	0	0	0
Ethane	0.121267	0	0	0	0
Propane	0.0330702	0	0	0	0
i-Butane	0.00246219	0	0	0	0
n-Butane	0.01075	0	0	0	0
i-Pentane	0.000511645	0	0	0	0
n-Pentane	0.000897393	0	0	0	0
n-Hexane	0.000471637	0	0	0	0
n-Heptane	1.46764E-05	0	0	0	0
n-Octane	7.94117E-06	0	0	0	0
n-Nonane	1.33715E-07	0	0	0	0
n-Decane	0	0	0	0	0
Water	7.40015	88.2294	99.6284	86.0567	86.0567
MDEA	1.61646E-08	9.25083	0.0601737	11.0027	11.0027
Piperazine	2.94873E-08	2.46189	0.167688	2.89919	2.89919
TEG	0	0.000208705	1.96073E-07	0.000248449	0.000248449
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0606564	0	0	0	0
Toluene	0.0270025	0	0	0	0
Ethylbenzene	0.00755602	0	0	0	0
m-Xylene	0.00678095	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.0154944	0.000145626	0.000272354	0.000131482	0.000131482
CO2	96.3168	0.0870967	0.346789	0.0581125	0.0581125
N2	0.00017383	0	0	0	0
Methane	0.142486	0	0	0	0
Ethane	0.0868024	0	0	0	0
Propane	0.0347138	0	0	0	0
i-Butane	0.0034067	0	0	0	0
n-Butane	0.0148737	0	0	0	0
i-Pentane	0.000878755	0	0	0	0
n-Pentane	0.00154128	0	0	0	0
n-Hexane	0.000967522	0	0	0	0
n-Heptane	3.50079E-05	0	0	0	0
n-Octane	2.15938E-05	0	0	0	0
n-Nonane	4.0825E-07	0	0	0	0
n-Decane	0	0	0	0	0
Water	3.17359	54.688	98.4671	49.8018	49.8018
MDEA	4.58535E-08	37.9277	0.39338	42.1169	42.1169
Piperazine	6.04627E-08	7.29605	0.792412	8.02192	8.02192
TEG	0	0.00107835	1.61539E-06	0.00119853	0.00119853
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.112788	0	0	0	0
Toluene	0.0592264	0	0	0	0
Ethylbenzene	0.0190961	0	0	0	0
m-Xylene	0.0171373	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-25 lb/h	250-28 lb/h	250-29 lb/h	250-30 lb/h	250-31 lb/h
H2S	4.56251	0.810058	0.152111	0.657947	0.657947
CO2	28361.7	484.482	193.683	290.799	290.799
N2	0.0511865	0	0	0	0
Methane	41.9569	0	0	0	0
Ethane	25.56	0	0	0	0
Propane	10.2219	0	0	0	0
i-Butane	1.00315	0	0	0	0
n-Butane	4.37976	0	0	0	0
i-Pentane	0.25876	0	0	0	0
n-Pentane	0.453849	0	0	0	0
n-Hexane	0.284899	0	0	0	0
n-Heptane	0.0103085	0	0	0	0
n-Octane	0.00635856	0	0	0	0
n-Nonane	0.000120214	0	0	0	0
n-Decane	0	0	0	0	0
Water	934.504	304206	54994.2	249212	249212
MDEA	1.35021E-05	210976	219.704	210756	210756
Piperazine	1.7804E-05	40584.8	442.565	40142.3	40142.3
TEG	0	5.99842	0.000902202	5.99752	5.99752
UCARSOL™ AP-814	0	0	0	0	0
Benzene	33.2119	0	0	0	0
Toluene	17.4399	0	0	0	0
Ethylbenzene	5.62308	0	0	0	0
m-Xylene	5.04629	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-25	250-28	250-29	250-30	250-31
Temperature	°F	120	251.199	252.467	252.467	190.81
Pressure	psig	10	14	14	14	9
Mole Fraction Vapor	%	100	0	100	0	0
Molecular Weight	lb/lbmol	42.0078	29.0645	18.2277	31.1301	31.1301
Mass Density	lb/ft^3	0.157547	60.4031	0.0656858	60.3868	62.2939
Molar Flow	lbmol/h	700.971	19138.7	3064.03	16074.7	16074.7
Mass Flow	lb/h	29446.2	556257	55850.3	500407	500407
Std Vapor Volumetric Flow	MMSCFD	6.38418	174.308	27.906	146.402	146.402
Std Liquid Volumetric Flow	sgpm	71.8867	1126.28	112.061	1014.21	1014.21
Specific Gravity		1.45042	0.968484	0.629356	0.968222	0.9988
API Gravity			4.45065		4.11097	4.11185
Gross Ideal Gas Heating Value	Btu/ft^3	15.3243	490.237	58.2309	572.583	572.583
Gross Liquid Heating Value	Btu/lb	32.0706	5673.2	165.211	6287.95	6287.95

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-32	250-33A	250-33B	250-34	250-35
From Block	P-2600	R1	MAKEUP	AC-2301	P-2604
To Block	R1	MAKEUP	AC-2301	P-2604	FCV-3604

Stream Composition

Mole Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	0.000120098	0.000119807	0.000119234	0.000119234	0.000119234
CO2	0.0411059	0.0410934	0.040897	0.040897	0.040897
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	86.0567	86.0567	86.1232	86.1232	86.1232
MDEA	11.0027	11.0027	10.9501	10.9501	10.9501
Piperazine	2.89919	2.89918	2.88545	2.88545	2.88545
TEG	0.000248449	0.00023969	0.000238545	0.000238545	0.000238545
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	0.000131482	0.000131164	0.0001308	0.0001308	0.0001308
CO2	0.0581125	0.058095	0.0579338	0.0579338	0.0579338
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	49.8018	49.8019	49.9408	49.9408	49.9408
MDEA	42.1169	42.1168	42	42	42
Piperazine	8.02192	8.02191	8	8	8
TEG	0.00119853	0.00115628	0.00115307	0.00115307	0.00115307
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-32 lb/h	250-33A lb/h	250-33B lb/h	250-34 lb/h	250-35 lb/h
H2S	0.657947	0.656352	0.656352	0.656352	0.656352
CO2	290.799	290.712	290.712	290.712	290.712
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	249212	249212	250603	250603	250603
MDEA	210756	210756	210756	210756	210756
Piperazine	40142.3	40142.2	40144	40144	40144
TEG	5.99752	5.7861	5.7861	5.7861	5.7861
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-32	250-33A	250-33B	250-34	250-35
Temperature	°F	190.895	190.9	190.621	120 *	122.195
Pressure	psig	47.0113	47.0111	47.0111	42.0111	1043.5
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	31.1301	31.1301	31.0675	31.0675	31.0675
Mass Density	lb/ft^3	62.2959	62.2957	62.301	64.0225	64.0736
Molar Flow	lbmol/h	16074.7	16074.7	16151.9	16151.9	16151.9
Mass Flow	lb/h	500407	500407	501800	501800	501800
Std Vapor Volumetric Flow	MMSCFD	146.402	146.402	147.106	147.106	147.106
Std Liquid Volumetric Flow	sgpm	1014.21	1014.22	1017 *	1017	1017
Specific Gravity		0.998833	0.99883	0.998914	1.02652	1.02734
API Gravity		4.10515	4.1052	4.11578	4.11666	3.94135
Gross Ideal Gas Heating Value	Btu/ft^3	572.583	572.581	570.089	570.089	570.089
Gross Liquid Heating Value	Btu/lb	6287.95	6287.94	6270.54	6270.54	6270.54

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-36	250-41	250-42	250-70	250-83
From Block	FCV-3604	Mult x 3	PCV-2401A	V-2400	F-2457
To Block	T-2500	PCV-2401A	Amine OG	From Amine	--

Stream Composition

Mole Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	0.000119234	0.00141403	0.00141403	2.14465E-07	
CO2	0.040897	3.13249	3.13249	2.51562E-06	
N2	0	0.247371	0.247371	1.01803	
Methane	0	72.5579	72.5579	77.8272	
Ethane	0	13.6105	13.6105	11.8759	
Propane	0	4.38773	4.38773	5.56873	
i-Butane	0	0.405393	0.405393	0.761784	
n-Butane	0	1.21242	1.21242	1.6701	
i-Pentane	0	0.112281	0.112281	0.353403	
n-Pentane	0	0.152593	0.152593	0.377102	
n-Hexane	0	0.0819657	0.0819657	0.258692	
n-Heptane	0	0.00715997	0.00715997	0.0733052	
n-Octane	0	0.00190481	0.00190481	0.012527	
n-Nonane	0	0.000115362	0.000115362	0.00331599	
n-Decane	0	0	0	0	
Water	86.1232	3.94279	3.94279	0.159177	
MDEA	10.9501	0.00048576	0.00048576	1.1911E-06	
Piperazine	2.88545	0.000202152	0.000202152	7.10544E-05	
TEG	0.000238545	6.99271E-10	6.99271E-10	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.0874533	0.0874533	0.0214606	
Toluene	0	0.0373882	0.0373882	0.011333	
Ethylbenzene	0	0.0123874	0.0123874	0.00472467	
m-Xylene	0	0.00806657	0.00806657	0.00317285	
Cyclohexane	0	0	0	0	
Cyclopentane	0	0	0	0	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	0.0001308	0.00227717	0.00227717	3.46129E-07	
CO2	0.0579338	6.51421	6.51421	5.24278E-06	
N2	0	0.327447	0.327447	1.3505	
Methane	0	55.0023	55.0023	59.1252	
Ethane	0	19.3384	19.3384	16.9105	
Propane	0	9.14242	9.14242	11.6284	
i-Butane	0	1.11338	1.11338	2.09674	
n-Butane	0	3.32982	3.32982	4.59678	
i-Pentane	0	0.382791	0.382791	1.20745	
n-Pentane	0	0.520222	0.520222	1.28842	
n-Hexane	0	0.333765	0.333765	1.05569	
n-Heptane	0	0.033901	0.033901	0.347841	
n-Octane	0	0.0102814	0.0102814	0.0677628	
n-Nonane	0	0.00069914	0.00069914	0.0201399	
n-Decane	0	0	0	0	
Water	49.9408	3.35637	3.35637	0.135797	
MDEA	42	0.00273518	0.00273518	6.72138E-06	
Piperazine	8	0.000822783	0.000822783	0.00028983	
TEG	0.00115307	4.96207E-09	4.96207E-09	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.322789	0.322789	0.0793831	
Toluene	0	0.16278	0.16278	0.0494486	
Ethylbenzene	0	0.0621423	0.0621423	0.0237532	
m-Xylene	0	0.0404665	0.0404665	0.0159515	
Cyclohexane	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
Cyclopentane	0	0	0	0	

Mass Flow	250-36 lb/h	250-41 lb/h	250-42 lb/h	250-70 lb/h	250-83 lb/h
H2S	0.656352	0.0538326	0.0538326	0.00203976	0
CO2	290.712	153.997	153.997	0.0308961	0
N2	0	7.74089	7.74089	7958.61	0
Methane	0	1300.26	1300.26	348429	0
Ethane	0	457.162	457.162	99654.5	0
Propane	0	216.128	216.128	68527.2	0
i-Butane	0	26.3205	26.3205	12356.2	0
n-Butane	0	78.7175	78.7175	27089.1	0
i-Pentane	0	9.04924	9.04924	7115.59	0
n-Pentane	0	12.2981	12.2981	7592.76	0
n-Hexane	0	7.89025	7.89025	6221.24	0
n-Heptane	0	0.801425	0.801425	2049.85	0
n-Octane	0	0.243053	0.243053	399.331	0
n-Nonane	0	0.0165278	0.0165278	118.686	0
n-Decane	0	0	0	0	0
Water	250603	79.3451	79.3451	800.263	0
MDEA	210756	0.0646601	0.0646601	0.0396096	0
Piperazine	40144	0.0194507	0.0194507	1.70799	0
TEG	5.7861	1.17304E-07	1.17304E-07	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	7.63077	7.63077	467.81	0
Toluene	0	3.84815	3.84815	291.404	0
Ethylbenzene	0	1.46905	1.46905	139.98	0
m-Xylene	0	0.956634	0.956634	94.0032	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-36	250-41	250-42	250-70	250-83
Temperature	°F	122.237	147.742	146.09	110.178	
Pressure	psig	1028.5 *	65	40 *	972	978.5
Mole Fraction Vapor	%	0	100	100	100	
Molecular Weight	lb/lbmol	31.0675	21.1629	21.1629	21.1169	
Mass Density	lb/ft^3	64.0713	0.256983	0.17457	4.16174	
Molar Flow	lbmol/h	16151.9	111.706	111.706	27906.9	0
Mass Flow	lb/h	501800	2364.01	2364.01	589307	0
Std Vapor Volumetric Flow	MMSCFD	147.106	1.01737	1.01737	254.165	0
Std Liquid Volumetric Flow	sgpm	1017	13.1294	13.1294	3385.24	0
Specific Gravity		1.0273	0.730699	0.730699	0.729112	
API Gravity		3.94396				
Gross Ideal Gas Heating Value	Btu/ft^3	570.089	1159.89	1159.89	1264	
Gross Liquid Heating Value	Btu/lb	6270.54	20704.3	20704.3	22652.1	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-85	250-86			
From Block	V-2400	LCV-2400			
To Block	LCV-2400	M3			

Stream Composition

Mole Fraction	250-85 %	250-86 %			
H2S	0.000122556	0.000122556			
CO2	0.0137378	0.0137378			
N2	0.000655439	0.000655439			
Methane	0.0892309	0.0892309			
Ethane	0.0110999	0.0110999			
Propane	0.00304812	0.00304812			
i-Butane	0.000202499	0.000202499			
n-Butane	0.000641888	0.000641888			
i-Pentane	5.22261E-05	5.22261E-05			
n-Pentane	6.95271E-05	6.95271E-05			
n-Hexane	2.21477E-05	2.21477E-05			
n-Heptane	2.46599E-06	2.46599E-06			
n-Octane	3.07617E-07	3.07617E-07			
n-Nonane	2.26254E-08	2.26254E-08			
n-Decane	0	0			
Water	98.9545	98.9545			
MDEA	0.216865	0.216865			
Piperazine	0.708862	0.708862			
TEG	3.43953E-07	3.43953E-07			
UCARSOL™ AP-814	0	0			
Benzene	0.000599511	0.000599511			
Toluene	0.000188038	0.000188038			
Ethylbenzene	4.88576E-05	4.88576E-05			
m-Xylene	4.62055E-05	4.62055E-05			
Cyclohexane	0	0			
Cyclopentane	0	0			

Mass Fraction	250-85 %	250-86 %			
H2S	0.00022309	0.00022309			
CO2	0.0322923	0.0322923			
N2	0.000980694	0.000980694			
Methane	0.0764577	0.0764577			
Ethane	0.0178268	0.0178268			
Propane	0.00717898	0.00717898			
i-Butane	0.000628636	0.000628636			
n-Butane	0.00199267	0.00199267			
i-Pentane	0.000201257	0.000201257			
n-Pentane	0.000267928	0.000267928			
n-Hexane	0.000101941	0.000101941			
n-Heptane	1.31978E-05	1.31978E-05			
n-Octane	1.87681E-06	1.87681E-06			
n-Nonane	1.54991E-07	1.54991E-07			
n-Decane	0	0			
Water	95.2164	95.2164			
MDEA	1.38027	1.38027			
Piperazine	3.26122	3.26122			
TEG	2.75883E-06	2.75883E-06			
UCARSOL™ AP-814	0	0			
Benzene	0.00250121	0.00250121			
Toluene	0.000925382	0.000925382			
Ethylbenzene	0.000277044	0.000277044			
m-Xylene	0.000262005	0.000262005			
Cyclohexane	0	0			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-85 %	250-86 %			
Cyclopentane	0	0			

Mass Flow	250-85 lb/h	250-86 lb/h			
H2S	0.000532989	0.000532989			
CO2	0.0771501	0.0771501			
N2	0.00234299	0.00234299			
Methane	0.182666	0.182666			
Ethane	0.0425902	0.0425902			
Propane	0.0171514	0.0171514			
i-Butane	0.00150188	0.00150188			
n-Butane	0.00476073	0.00476073			
i-Pentane	0.000480827	0.000480827			
n-Pentane	0.000640111	0.000640111			
n-Hexane	0.000243548	0.000243548			
n-Heptane	3.15312E-05	3.15312E-05			
n-Octane	4.48391E-06	4.48391E-06			
n-Nonane	3.70291E-07	3.70291E-07			
n-Decane	0	0			
Water	227.483	227.483			
MDEA	3.29762	3.29762			
Piperazine	7.79143	7.79143			
TEG	6.59117E-06	6.59117E-06			
UCARSOL™ AP-814	0	0			
Benzene	0.00597567	0.00597567			
Toluene	0.00221085	0.00221085			
Ethylbenzene	0.00066189	0.00066189			
m-Xylene	0.000625961	0.000625961			
Cyclohexane	0	0			
Cyclopentane	0	0			

Stream Properties

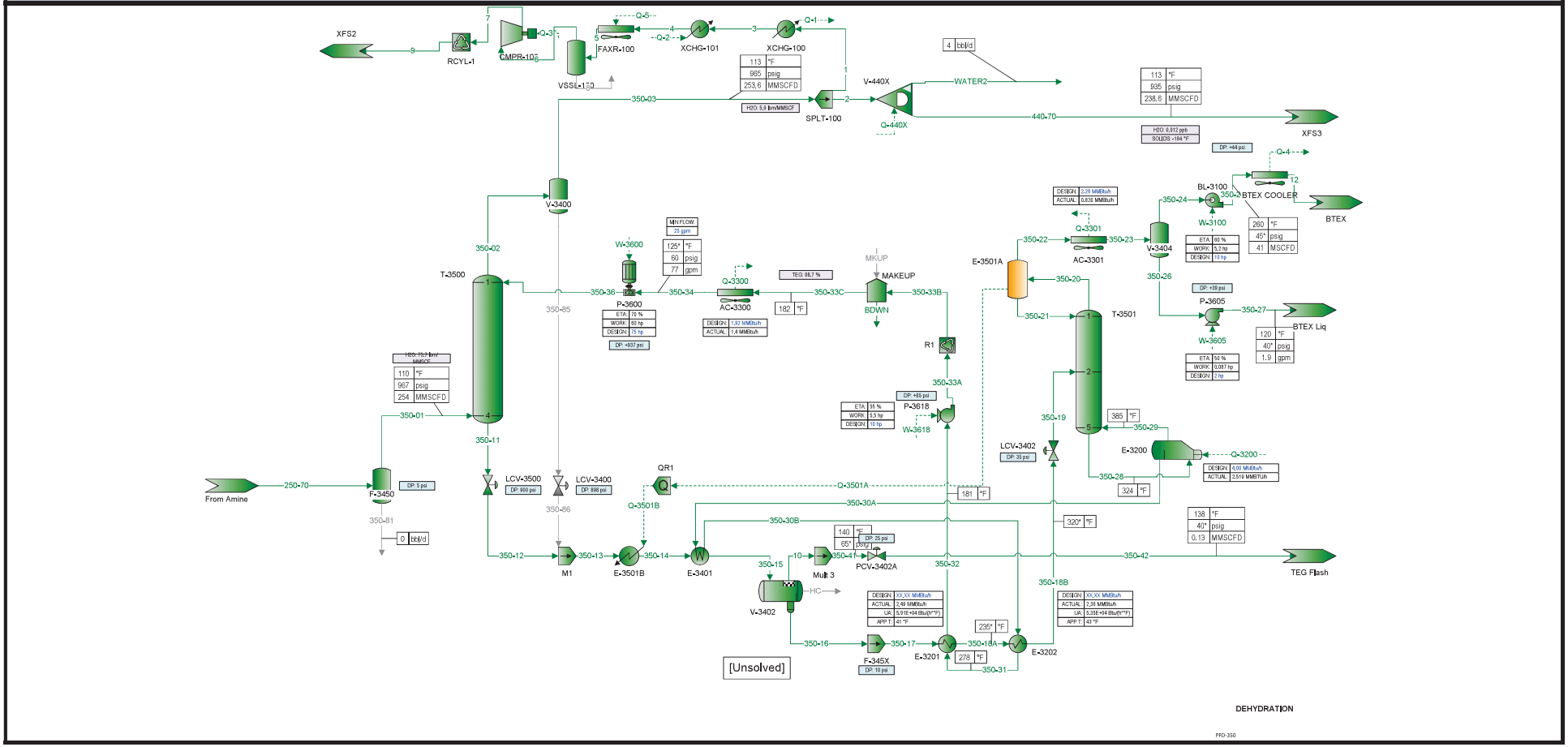
Property	Units	250-85	250-86			
Temperature	°F	110.178	112.344			
Pressure	psig	972	65	*		
Mole Fraction Vapor	%	0	0.0962567			
Molecular Weight	lb/lbmol	18.7225	18.7225			
Mass Density	lb/ft^3	62.0157	49.7537			
Molar Flow	lbmol/h	12.7606	12.7606			
Mass Flow	lb/h	238.912	238.912			
Std Vapor Volumetric Flow	MMSCFD	0.116219	0.116219			
Std Liquid Volumetric Flow	sgpm	0.484459	0.484459			
Specific Gravity		0.994339				
API Gravity		9.50884				
Gross Ideal Gas Heating Value	Btu/ft^3	83.8342	83.8342			
Gross Liquid Heating Value	Btu/lb	677.202	677.202			

Remarks

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Dehydration
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	BDWN	HC	MKUP	WATER2	1
From Block	MAKEUP	V-3402	--	V-440X	SPLT-100
To Block	--	--	MAKEUP	--	XCHG-100

Stream Composition

Mole Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	2.54056E-11		0 *	0	2.11513E-07
CO2	2.11676E-12		0 *	0	2.51176E-06
N2	1.32682E-11		0 *	0	1.02016
Methane	7.58123E-08		0 *	0	77.9682
Ethane	6.27492E-07		0 *	0	11.8891
Propane	2.39198E-06		0 *	0	5.57142
i-Butane	9.01116E-07		0 *	0	0.761986
n-Butane	5.73036E-06		0 *	0	1.66904
i-Pentane	5.13975E-06		0 *	0	0.352954
n-Pentane	8.96902E-06		0 *	0	0.37631
n-Hexane	7.82109E-05		0 *	0	0.257562
n-Heptane	4.06576E-05		0 *	0	0.0727181
n-Octane	2.20332E-05		0 *	0	0.0123776
n-Nonane	2.06122E-05		0 *	0	0.00325656
n-Decane	0		0 *	0	0
Water	9.61454		0.827516 *	99.2768	0.0117327
TEG	90.3452		99.1725 *	0.723248	8.54751E-05
Benzene	0.00439453		0 *	0	0.0183701
Toluene	0.0107045		0 *	0	0.00893196
Ethylbenzene	0.0150579		0 *	0	0.00345818
m-Xylene	0.00993391		0 *	0	0.00236599
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

Mass Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	6.29952E-12		0 *	0	3.41496E-07
CO2	6.77774E-13		0 *	0	5.23675E-06
N2	2.70425E-12		0 *	0	1.35385
Methane	8.84867E-09		0 *	0	59.2551
Ethane	1.37276E-07		0 *	0	16.9358
Propane	7.67398E-07		0 *	0	11.6386
i-Butane	3.81057E-07		0 *	0	2.0981
n-Butane	2.42321E-06		0 *	0	4.59566
i-Pentane	2.69798E-06		0 *	0	1.20638
n-Pentane	4.70805E-06		0 *	0	1.28621
n-Hexane	4.90363E-05		0 *	0	1.05149
n-Heptane	2.96405E-05		0 *	0	0.345188
n-Octane	1.83113E-05		0 *	0	0.0669808
n-Nonane	1.92339E-05		0 *	0	0.0197866
n-Decane	0		0 *	0	0
Water	1.26019		0.1 *	94.2749	0.0100133
TEG	98.7107		99.9 *	5.72515	0.000608091
Benzene	0.00249745		0 *	0	0.0679774
Toluene	0.00717586		0 *	0	0.0389875
Ethylbenzene	0.0116309		0 *	0	0.0173927
m-Xylene	0.00767307		0 *	0	0.0118996
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	BDWN lb/h	HC lb/h	MKUP lb/h	WATER2 lb/h	1 lb/h
H2S	5.813E-14	0	0	0	0.000118723
CO2	6.25429E-15	0	0	0	0.00182058
N2	2.4954E-14	0	0	0	470.672
Methane	8.16528E-11	0	0	0	20600.4
Ethane	1.26674E-09	0	0	0	5887.81
Propane	7.08132E-09	0	0	0	4046.21
i-Butane	3.51628E-09	0	0	0	729.416
n-Butane	2.23606E-08	0	0	0	1597.7
i-Pentane	2.48961E-08	0	0	0	419.405
n-Pentane	4.34445E-08	0	0	0	447.159
n-Hexane	4.52492E-07	0	0	0	365.554
n-Heptane	2.73513E-07	0	0	0	120.007
n-Octane	1.68971E-07	0	0	0	23.2862
n-Nonane	1.77485E-07	0	0	0	6.87893
n-Decane	0	0	0	0	0
Water	0.0116287	0	0	55.3759	3.48118
TEG	0.910872	0	0	3.36288	0.211406
Benzene	2.30457E-05	0	0	0	23.6327
Toluene	6.62167E-05	0	0	0	13.5542
Ethylbenzene	0.000107326	0	0	0	6.04665
m-Xylene	7.08047E-05	0	0	0	4.13696
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	BDWN	HC	MKUP	WATER2	1
Temperature	°F	182.371	140	80 *	120 *	112.904
Pressure	psig	64.5914	65	70 *	965	965
Mole Fraction Vapor	%	0		0	0	100
Molecular Weight	lb/lbmol	137.446		149.079	18.9711	21.1087
Mass Density	lb/ft^3	66.3551		70.2029	62.2572	4.08721
Molar Flow	lbmol/h	0.00671368	0	0	3.09622	1646.97
Mass Flow	lb/h	0.922769	0	0	58.7387	34765.5
Std Vapor Volumetric Flow	MMSCFD	6.11456E-05	0	0	0.0281992	15 *
Std Liquid Volumetric Flow	sgpm	0.00163586	0	0	0.116652	199.952
Specific Gravity		1.06392		1.12561	0.998211	0.72883
API Gravity		-6.58384		-7.09278	8.61992	
Gross Ideal Gas Heating Value	Btu/ft^3	3736.98		4095.08	79.8078	1265.15
Gross Liquid Heating Value	Btu/lb	10048		10163.6	582.466	22682.8

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	2	3	4	5	6
From Block	SPLT-100	XCHG-100	XCHG-101	FAXR-100	VSSL-100
To Block	V-440X	XCHG-101	FAXR-100	VSSL-100	CMPR-100

Stream Composition

Mole Fraction	2 %	3 %	4 %	5 %	6 %
H2S	2.11513E-07	2.11513E-07	2.11513E-07	2.11513E-07	2.11513E-07
CO2	2.51176E-06	2.51176E-06	2.51176E-06	2.51176E-06	2.51176E-06
N2	1.02016	1.02016	1.02016	1.02016	1.02016
Methane	77.9682	77.9682	77.9682	77.9682	77.9682
Ethane	11.8891	11.8891	11.8891	11.8891	11.8891
Propane	5.57142	5.57142	5.57142	5.57142	5.57142
i-Butane	0.761986	0.761986	0.761986	0.761986	0.761986
n-Butane	1.66904	1.66904	1.66904	1.66904	1.66904
i-Pentane	0.352954	0.352954	0.352954	0.352954	0.352954
n-Pentane	0.37631	0.37631	0.37631	0.37631	0.37631
n-Hexane	0.257562	0.257562	0.257562	0.257562	0.257562
n-Heptane	0.0727181	0.0727181	0.0727181	0.0727181	0.0727181
n-Octane	0.0123776	0.0123776	0.0123776	0.0123776	0.0123776
n-Nonane	0.00325656	0.00325656	0.00325656	0.00325656	0.00325656
n-Decane	0	0	0	0	0
Water	0.0117327	0.0117327	0.0117327	0.0117327	0.0117327
TEG	8.54751E-05	8.54751E-05	8.54751E-05	8.54751E-05	8.54751E-05
Benzene	0.0183701	0.0183701	0.0183701	0.0183701	0.0183701
Toluene	0.00893196	0.00893196	0.00893196	0.00893196	0.00893196
Ethylbenzene	0.00345818	0.00345818	0.00345818	0.00345818	0.00345818
m-Xylene	0.00236599	0.00236599	0.00236599	0.00236599	0.00236599
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	2 %	3 %	4 %	5 %	6 %
H2S	3.41496E-07	3.41496E-07	3.41496E-07	3.41496E-07	3.41496E-07
CO2	5.23675E-06	5.23675E-06	5.23675E-06	5.23675E-06	5.23675E-06
N2	1.35385	1.35385	1.35385	1.35385	1.35385
Methane	59.2551	59.2551	59.2551	59.2551	59.2551
Ethane	16.9358	16.9358	16.9358	16.9358	16.9358
Propane	11.6386	11.6386	11.6386	11.6386	11.6386
i-Butane	2.0981	2.0981	2.0981	2.0981	2.0981
n-Butane	4.59566	4.59566	4.59566	4.59566	4.59566
i-Pentane	1.20638	1.20638	1.20638	1.20638	1.20638
n-Pentane	1.28621	1.28621	1.28621	1.28621	1.28621
n-Hexane	1.05149	1.05149	1.05149	1.05149	1.05149
n-Heptane	0.345188	0.345188	0.345188	0.345188	0.345188
n-Octane	0.0669808	0.0669808	0.0669808	0.0669808	0.0669808
n-Nonane	0.0197866	0.0197866	0.0197866	0.0197866	0.0197866
n-Decane	0	0	0	0	0
Water	0.0100133	0.0100133	0.0100133	0.0100133	0.0100133
TEG	0.000608091	0.000608091	0.000608091	0.000608091	0.000608091
Benzene	0.0679774	0.0679774	0.0679774	0.0679774	0.0679774
Toluene	0.0389875	0.0389875	0.0389875	0.0389875	0.0389875
Ethylbenzene	0.0173927	0.0173927	0.0173927	0.0173927	0.0173927
m-Xylene	0.0118996	0.0118996	0.0118996	0.0118996	0.0118996
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	2 lb/h	3 lb/h	4 lb/h	5 lb/h	6 lb/h
H2S	0.00188855	0.000118723	0.000118723	0.000118723	0.000118723
CO2	0.0289604	0.00182058	0.00182058	0.00182058	0.00182058
N2	7487.07	470.672	470.672	470.672	470.672
Methane	327694	20600.4	20600.4	20600.4	20600.4
Ethane	93658.6	5887.81	5887.81	5887.81	5887.81
Propane	64363.8	4046.21	4046.21	4046.21	4046.21
i-Butane	11603	729.416	729.416	729.416	729.416
n-Butane	25415	1597.7	1597.7	1597.7	1597.7
i-Pentane	6671.56	419.405	419.405	419.405	419.405
n-Pentane	7113.04	447.159	447.159	447.159	447.159
n-Hexane	5814.94	365.554	365.554	365.554	365.554
n-Heptane	1908.97	120.007	120.007	120.007	120.007
n-Octane	370.418	23.2862	23.2862	23.2862	23.2862
n-Nonane	109.424	6.87893	6.87893	6.87893	6.87893
n-Decane	0	0	0	0	0
Water	55.3759	3.48118	3.48118	3.48118	3.48118
TEG	3.36288	0.211406	0.211406	0.211406	0.211406
Benzene	375.93	23.6327	23.6327	23.6327	23.6327
Toluene	215.609	13.5542	13.5542	13.5542	13.5542
Ethylbenzene	96.1852	6.04665	6.04665	6.04665	6.04665
m-Xylene	65.8074	4.13696	4.13696	4.13696	4.13696
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	2	3	4	5	6
Temperature	°F	112.904	100 *	575 *	120 *	120
Pressure	psig	965	965	945	940	940
Mole Fraction Vapor	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.1087	21.1087	21.1087	21.1087	21.1087
Mass Density	lb/ft^3	4.08721	4.27013	1.81549	3.87679	3.87679
Molar Flow	lbmol/h	26198.7	1646.97	1646.97	1646.97	1646.97
Mass Flow	lb/h	553022	34765.5	34765.5	34765.5	34765.5
Std Vapor Volumetric Flow	MMSCFD	238.608	15	15	15	15
Std Liquid Volumetric Flow	sgpm	3180.67	199.952	199.952	199.952	199.952
Specific Gravity		0.72883	0.72883	0.72883	0.72883	0.72883
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.15	1265.15	1265.15	1265.15	1265.15
Gross Liquid Heating Value	Btu/lb	22682.8	22682.8	22682.8	22682.8	22682.8

Warnings

ProMax:ProMax!Project!Flowsheets!Dehydration!PStreams!3

Warning: Initial guess algorithms predicted multiple phases.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	7	8	9	10	12
From Block	CMPR-100	VSSL-100	RCYL-1	V-3402	BTEX COOLER
To Block	RCYL-1	--	XFS2	Mult 3	BTEX

Stream Composition

Mole Fraction	7 %	8 %	9 %	10 %	12 %
H2S	2.11513E-07		2.1158E-07	1.70925E-06	1.53063E-05
CO2	2.51176E-06		2.51304E-06	1.14243E-05	2.1859E-05
N2	1.02016		1.02011	0.214313	0.0113856
Methane	77.9682		77.9678	55.5971	11.4849
Ethane	11.8891		11.8893	20.6195	14.8385
Propane	5.57142		5.57147	12.9718	17.7531
i-Butane	0.761986		0.761985	1.79706	3.27257
n-Butane	1.66904		1.66908	4.87967	12.8499
i-Pentane	0.352954		0.352956	0.991938	3.79693
n-Pentane	0.37631		0.376318	1.17437	5.19143
n-Hexane	0.257562		0.25757	0.751029	4.92067
n-Heptane	0.0727181		0.072722	0.209875	1.40572
n-Octane	0.0123776		0.0123784	0.0310331	0.163123
n-Nonane	0.00325656		0.00325659	0.00686064	0.0317464
n-Decane	0		0	0	0
Water	0.0117327		0.0117333	0.548522	11.5404
TEG	8.54751E-05		8.54802E-05	0.000356973	4.82236E-08
Benzene	0.0183701		0.018444	0.123592	8.25956
Toluene	0.00893196		0.00897268	0.053521	3.34513
Ethylbenzene	0.00345818		0.00347302	0.0181088	0.686748
m-Xylene	0.00236599		0.0023762	0.0112715	0.448195
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

Mass Fraction	7 %	8 %	9 %	10 %	12 %
H2S	3.41496E-07		3.41601E-07	2.11666E-06	1.07148E-05
CO2	5.23675E-06		5.23939E-06	1.82688E-05	1.97597E-05
N2	1.35385		1.35378	0.218147	0.00655124
Methane	59.2551		59.2544	32.4085	3.78441
Ethane	16.9358		16.9359	22.5285	9.16457
Propane	11.6386		11.6386	20.7841	16.0795
i-Butane	2.0981		2.09808	3.79525	3.9069
n-Butane	4.59566		4.59571	10.3055	15.3406
i-Pentane	1.20638		1.20638	2.60045	5.62682
n-Pentane	1.28621		1.28623	3.07871	7.69339
n-Hexane	1.05149		1.05151	2.35166	8.70983
n-Heptane	0.345188		0.345204	0.764137	2.8932
n-Octane	0.0669808		0.0669842	0.128806	0.38273
n-Nonane	0.0197866		0.0197866	0.0319723	0.0836317
n-Decane	0		0	0	0
Water	0.0100133		0.0100137	0.359062	4.27036
TEG	0.000608091		0.000608123	0.00194788	1.48749E-07
Benzene	0.0679774		0.0682506	0.350785	13.2518
Toluene	0.0389875		0.0391649	0.179184	6.33077
Ethylbenzene	0.0173927		0.0174672	0.0698563	1.49755
m-Xylene	0.0118996		0.0119508	0.043481	0.97735
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	7 lb/h	8 lb/h	9 lb/h	10 lb/h	12 lb/h
H2S	0.000118723	0	0.00011876	8.2432E-06	2.36995E-05
CO2	0.00182058	0	0.00182152	7.11467E-05	4.37056E-05
N2	470.672	0	470.653	0.84956	0.0144904
Methane	20600.4	0	20600.3	126.213	8.37059
Ethane	5887.81	0	5887.92	87.7358	20.2707
Propane	4046.21	0	4046.24	80.9423	35.5655
i-Butane	729.416	0	729.415	14.7803	8.64152
n-Butane	1597.7	0	1597.74	40.134	33.9312
i-Pentane	419.405	0	419.407	10.1273	12.4457
n-Pentane	447.159	0	447.168	11.9898	17.0167
n-Hexane	365.554	0	365.565	9.15839	19.2649
n-Heptane	120.007	0	120.013	2.97588	6.39935
n-Octane	23.2862	0	23.2876	0.501625	0.846544
n-Nonane	6.87893	0	6.87898	0.124514	0.184981
n-Decane	0	0	0	0	0
Water	3.48118	0	3.48135	1.39834	9.44543
TEG	0.211406	0	0.211419	0.00758588	3.29011E-07
Benzene	23.6327	0	23.7279	1.36611	29.3112
Toluene	13.5542	0	13.616	0.697821	14.0028
Ethylbenzene	6.04665	0	6.0726	0.272051	3.31236
m-Xylene	4.13696	0	4.1548	0.169334	2.16176
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	7	8	9	10	12
Temperature	°F	129.834	120	129.834	140	120 *
Pressure	psig	1000 *	940	1000	65	45
Mole Fraction Vapor	%	100		100	100	66.5411
Molecular Weight	lb/lbmol	21.1087		21.1089	27.5211	48.6853
Mass Density	lb/ft^3	4.03663		4.03668	0.342607	0.715193
Molar Flow	lbmol/h	1646.97	0	1646.97	14.1507	4.54317
Mass Flow	lb/h	34765.5	0	34765.8	389.443	221.186
Std Vapor Volumetric Flow	MMSCFD	15	0	15	0.12888	0.0413775
Std Liquid Volumetric Flow	sgpm	199.952	0	199.952	1.96154	0.759594
Specific Gravity		0.72883		0.728836	0.950231	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.15		1265.16	1615.73	2558.23
Gross Liquid Heating Value	Btu/lb	22682.8		22682.8	22170	19743.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	250-70	350-01	350-02	350-03	350-11
From Block	From Amine	F-3450	T-3500	V-3400	T-3500
To Block	F-3450	T-3500	V-3400	SPLT-100	LCV-3500

Stream Composition

Mole Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	2.14465E-07	2.14465E-07	2.11513E-07	2.11513E-07	2.58375E-07
CO2	2.51562E-06	2.51562E-06	2.51176E-06	2.51176E-06	7.09141E-07
N2	1.01803	1.01803	1.02016	1.02016	0.00835864
Methane	77.8273	77.8273	77.9682	77.9682	2.27363
Ethane	11.8759	11.8759	11.8891	11.8891	0.974777
Propane	5.56873	5.56873	5.57142	5.57142	0.720667
i-Butane	0.761784	0.761784	0.761986	0.761986	0.111125
n-Butane	1.6701	1.6701	1.66904	1.66904	0.356489
i-Pentane	0.353403	0.353403	0.352954	0.352954	0.092499
n-Pentane	0.377102	0.377102	0.37631	0.37631	0.122326
n-Hexane	0.258692	0.258692	0.257562	0.257562	0.128195
n-Heptane	0.0733052	0.0733052	0.0727181	0.0727181	0.0564967
n-Octane	0.012527	0.012527	0.0123776	0.0123776	0.0133661
n-Nonane	0.00331599	0.00331599	0.00325656	0.00325656	0.00505146
n-Decane	0	0	0	0	0
Water	0.159177	0.159177	0.0117327	0.0117327	19.1724
TEG	0	0	8.54751E-05	8.54751E-05	75.3536
Benzene	0.0214606	0.0214606	0.0183701	0.0183701	0.240438
Toluene	0.011333	0.011333	0.00893196	0.00893196	0.191989
Ethylbenzene	0.00472468	0.00472468	0.00345818	0.00345818	0.108914
m-Xylene	0.00317285	0.00317285	0.00236599	0.00236599	0.0696983
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	3.4613E-07	3.4613E-07	3.41496E-07	3.41496E-07	7.41448E-08
CO2	5.2428E-06	5.2428E-06	5.23675E-06	5.23675E-06	2.62784E-07
N2	1.35051	1.35051	1.35385	1.35385	0.00197161
Methane	59.1253	59.1253	59.2551	59.2551	0.307122
Ethane	16.9105	16.9105	16.9358	16.9358	0.2468
Propane	11.6285	11.6285	11.6386	11.6386	0.267578
i-Butane	2.09674	2.09674	2.0981	2.0981	0.0543844
n-Butane	4.59679	4.59679	4.59566	4.59566	0.174465
i-Pentane	1.20745	1.20745	1.20638	1.20638	0.0561935
n-Pentane	1.28843	1.28843	1.28621	1.28621	0.0743137
n-Hexane	1.05569	1.05569	1.05149	1.05149	0.0930197
n-Heptane	0.347842	0.347842	0.345188	0.345188	0.0476672
n-Octane	0.067763	0.067763	0.0669808	0.0669808	0.0128558
n-Nonane	0.02014	0.02014	0.0197866	0.0197866	0.00545521
n-Decane	0	0	0	0	0
Water	0.135798	0.135798	0.0100133	0.0100133	2.90829
TEG	0	0	0.000608091	0.000608091	95.2831
Benzene	0.0793834	0.0793834	0.0679774	0.0679774	0.158139
Toluene	0.0494487	0.0494487	0.0389875	0.0389875	0.148949
Ethylbenzene	0.0237533	0.0237533	0.0173927	0.0173927	0.0973613
m-Xylene	0.0159515	0.0159515	0.0118996	0.0118996	0.0623052
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	250-70 lb/h	350-01 lb/h	350-02 lb/h	350-03 lb/h	350-11 lb/h
H2S	0.00203976	0.00203976	0.00200727	0.00200727	3.24938E-05
CO2	0.0308961	0.0308961	0.0307809	0.0307809	0.000115165
N2	7958.61	7958.61	7957.75	7957.75	0.864056
Methane	348429	348429	348294	348294	134.596
Ethane	99654.5	99654.5	99546.4	99546.4	108.16
Propane	68527.2	68527.2	68410	68410	117.266
i-Butane	12356.2	12356.2	12332.4	12332.4	23.8339
n-Butane	27089.1	27089.1	27012.7	27012.7	76.4591
i-Pentane	7115.59	7115.59	7090.97	7090.97	24.6267
n-Pentane	7592.76	7592.76	7560.2	7560.2	32.5678
n-Hexane	6221.24	6221.24	6180.5	6180.5	40.7657
n-Heptane	2049.85	2049.85	2028.97	2028.97	20.8901
n-Octane	399.331	399.331	393.705	393.705	5.63402
n-Nonane	118.686	118.686	116.303	116.303	2.39074
n-Decane	0	0	0	0	0
Water	800.263	800.263	58.8571	58.8571	1274.55
TEG	0	0	3.57428	3.57428	41757.7
Benzene	467.81	467.81	399.563	399.563	69.3042
Toluene	291.404	291.404	229.163	229.163	65.2766
Ethylbenzene	139.98	139.98	102.232	102.232	42.6684
m-Xylene	94.0032	94.0032	69.9443	69.9443	27.3051
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	250-70	350-01	350-02	350-03	350-11
Temperature	°F	110.186	109.875	112.934	112.904	111.853
Pressure	psig	972	967	965.5	965	967
Mole Fraction Vapor	%	100	100	100	100	0
Molecular Weight	lb/lbmol	21.1168	21.1168	21.1087	21.1087	118.763
Mass Density	lb/ft^3	4.16162	4.14098	4.08925	4.08721	67.2286
Molar Flow	lbmol/h	27906.9	27906.9	27845.7	27845.7	369.012
Mass Flow	lb/h	589306	589306	587787	587787	43824.8
Std Vapor Volumetric Flow	MMSCFD	254.165	254.165	253.608	253.608	3.36082
Std Liquid Volumetric Flow	sgpm	3385.24	3385.24	3380.62	3380.62	79.6173
Specific Gravity		0.72911	0.72911	0.72883	0.72883	1.07792
API Gravity						-3.38968
Gross Ideal Gas Heating Value	Btu/ft^3	1264	1264	1265.15	1265.15	3240.32
Gross Liquid Heating Value	Btu/lb	22652.1	22652.1	22682.8	22682.8	10073.2

Remarks

350-02:

The "A" on the Process Stream name, indicates that an Analysis Block is present for this stream. To get to the analysis information, simply select the Analyses Tab on this screen.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-12	350-13	350-14	350-15	350-16
From Block	LCV-3500	M1	E-3501B	E-3401	V-3402
To Block	M1	E-3501B	E-3401	V-3402	F-345X

Stream Composition

Mole Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	2.58375E-07	2.58375E-07	2.58375E-07	2.58375E-07	2.00518E-07
CO2	7.09141E-07	7.09141E-07	7.09141E-07	7.09141E-07	2.81855E-07
N2	0.00835864	0.00835864	0.00835864	0.00835864	0.00014583
Methane	2.27363	2.27363	2.27363	2.27363	0.147257
Ethane	0.974777	0.974777	0.974777	0.974777	0.191407
Propane	0.720667	0.720667	0.720667	0.720667	0.23213
i-Butane	0.111125	0.111125	0.111125	0.111125	0.0438953
n-Butane	0.356489	0.356489	0.356489	0.356489	0.176119
i-Pentane	0.092499	0.092499	0.092499	0.092499	0.0566322
n-Pentane	0.122326	0.122326	0.122326	0.122326	0.0803741
n-Hexane	0.128195	0.128195	0.128195	0.128195	0.103359
n-Heptane	0.0564967	0.0564967	0.0564967	0.0564967	0.0503805
n-Octane	0.0133661	0.0133661	0.0133661	0.0133661	0.0126616
n-Nonane	0.00505146	0.00505146	0.00505146	0.00505146	0.00497931
n-Decane	0	0	0	0	0
Water	19.1724	19.1724	19.1724	19.1724	19.915
TEG	75.3536	75.3536	75.3536	75.3536	78.3584
Benzene	0.240438	0.240438	0.240438	0.240438	0.245097
Toluene	0.191989	0.191989	0.191989	0.191989	0.197511
Ethylbenzene	0.108914	0.108914	0.108914	0.108914	0.112535
m-Xylene	0.0696983	0.0696983	0.0696983	0.0696983	0.0720282
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	7.41448E-08	7.41448E-08	7.41448E-08	7.41448E-08	5.58315E-08
CO2	2.62784E-07	2.62784E-07	2.62784E-07	2.62784E-07	1.01341E-07
N2	0.00197161	0.00197161	0.00197161	0.00197161	3.33754E-05
Methane	0.307122	0.307122	0.307122	0.307122	0.0193002
Ethane	0.2468	0.2468	0.2468	0.2468	0.047021
Propane	0.267578	0.267578	0.267578	0.267578	0.083626
i-Butane	0.0543844	0.0543844	0.0543844	0.0543844	0.0208437
n-Butane	0.174465	0.174465	0.174465	0.174465	0.0836302
i-Pentane	0.0561935	0.0561935	0.0561935	0.0561935	0.0333816
n-Pentane	0.0743137	0.0743137	0.0743137	0.0743137	0.0473762
n-Hexane	0.0930197	0.0930197	0.0930197	0.0930197	0.0727687
n-Heptane	0.0476672	0.0476672	0.0476672	0.0476672	0.0412433
n-Octane	0.0128558	0.0128558	0.0128558	0.0128558	0.0118162
n-Nonane	0.00545521	0.00545521	0.00545521	0.00545521	0.00521746
n-Decane	0	0	0	0	0
Water	2.90829	2.90829	2.90829	2.90829	2.93114
TEG	95.2831	95.2831	95.2831	95.2831	96.1374
Benzene	0.158139	0.158139	0.158139	0.158139	0.156412
Toluene	0.148949	0.148949	0.148949	0.148949	0.148678
Ethylbenzene	0.0973613	0.0973613	0.0973613	0.0973613	0.0976079
m-Xylene	0.0623052	0.0623052	0.0623052	0.0623052	0.0624739
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-12 lb/h	350-13 lb/h	350-14 lb/h	350-15 lb/h	350-16 lb/h
H2S	3.24938E-05	3.24938E-05	3.24938E-05	3.24938E-05	2.42506E-05
CO2	0.000115165	0.000115165	0.000115165	0.000115165	4.4018E-05
N2	0.864056	0.864056	0.864056	0.864056	0.0144967
Methane	134.596	134.596	134.596	134.596	8.3831
Ethane	108.16	108.16	108.16	108.16	20.4238
Propane	117.266	117.266	117.266	117.266	36.3233
i-Butane	23.8339	23.8339	23.8339	23.8339	9.05354
n-Butane	76.4591	76.4591	76.4591	76.4591	36.3251
i-Pentane	24.6267	24.6267	24.6267	24.6267	14.4994
n-Pentane	32.5678	32.5678	32.5678	32.5678	20.578
n-Hexane	40.7657	40.7657	40.7657	40.7657	31.6073
n-Heptane	20.8901	20.8901	20.8901	20.8901	17.9142
n-Octane	5.63402	5.63402	5.63402	5.63402	5.1324
n-Nonane	2.39074	2.39074	2.39074	2.39074	2.26622
n-Decane	0	0	0	0	0
Water	1274.55	1274.55	1274.55	1274.55	1273.15
TEG	41757.7	41757.7	41757.7	41757.7	41757.6
Benzene	69.3042	69.3042	69.3042	69.3042	67.9381
Toluene	65.2766	65.2766	65.2766	65.2766	64.5788
Ethylbenzene	42.6684	42.6684	42.6684	42.6684	42.3963
m-Xylene	27.3051	27.3051	27.3051	27.3051	27.1358
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-12	350-13	350-14	350-15	350-16
Temperature	°F	115.444	115.444	118.577	140 *	140
Pressure	psig	67 *	67	65	65	65
Mole Fraction Vapor	%	3.71572	3.71572	3.74832	3.83477	0
Molecular Weight	lb/lbmol	118.763	118.763	118.763	118.763	122.401
Mass Density	lb/ft^3	26.3253	26.3253	25.662	24.5987	67.3536
Molar Flow	lbmol/h	369.012	369.012	369.012	369.012	354.861
Mass Flow	lb/h	43824.8	43824.8	43824.8	43824.8	43435.4
Std Vapor Volumetric Flow	MMSCFD	3.36082	3.36082	3.36082	3.36082	3.23194
Std Liquid Volumetric Flow	sgpm	79.6173	79.6173	79.6173	79.6173	77.6557
Specific Gravity						1.07992
API Gravity						-5.313
Gross Ideal Gas Heating Value	Btu/ft^3	3240.32	3240.32	3240.32	3240.32	3305.11
Gross Liquid Heating Value	Btu/lb	10073.2	10073.2	10073.2	10073.2	9964.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-17	350-18A	350-18B	350-19	350-20
From Block	F-345X	E-3201	E-3202	LCV-3402	T-3501
To Block	E-3201	E-3202	LCV-3402	T-3501	E-3501A

Stream Composition

Mole Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	2.00518E-07	2.00518E-07	2.00518E-07	2.00518E-07	1.45321E-06
CO2	2.81855E-07	2.81855E-07	2.81855E-07	2.81855E-07	2.0426E-06
N2	0.00014583	0.00014583	0.00014583	0.00014583	0.00105678
Methane	0.147257	0.147257	0.147257	0.147257	1.06713
Ethane	0.191407	0.191407	0.191407	0.191407	1.38708
Propane	0.23213	0.23213	0.23213	0.23213	1.68219
i-Butane	0.0438953	0.0438953	0.0438953	0.0438953	0.318096
n-Butane	0.176119	0.176119	0.176119	0.176119	1.27629
i-Pentane	0.0566322	0.0566322	0.0566322	0.0566322	0.410379
n-Pentane	0.0803741	0.0803741	0.0803741	0.0803741	0.582415
n-Hexane	0.103359	0.103359	0.103359	0.103359	0.748564
n-Heptane	0.0503805	0.0503805	0.0503805	0.0503805	0.364862
n-Octane	0.0126616	0.0126616	0.0126616	0.0126616	0.0916246
n-Nonane	0.00497931	0.00497931	0.00497931	0.00497931	0.0359572
n-Decane	0	0	0	0	0
Water	19.915	19.915	19.915	19.915	87.0673
TEG	78.3584	78.3584	78.3584	78.3584	0.66764
Benzene	0.245097	0.245097	0.245097	0.245097	1.75041
Toluene	0.197511	0.197511	0.197511	0.197511	1.36628
Ethylbenzene	0.112535	0.112535	0.112535	0.112535	0.722252
m-Xylene	0.0720282	0.0720282	0.0720282	0.0720282	0.460458
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	5.58315E-08	5.58315E-08	5.58315E-08	5.58315E-08	2.00476E-06
CO2	1.01341E-07	1.01341E-07	1.01341E-07	1.01341E-07	3.63875E-06
N2	3.33754E-05	3.33754E-05	3.33754E-05	3.33754E-05	0.00119832
Methane	0.0193002	0.0193002	0.0193002	0.0193002	0.692964
Ethane	0.047021	0.047021	0.047021	0.047021	1.68828
Propane	0.083626	0.083626	0.083626	0.083626	3.00257
i-Butane	0.0208437	0.0208437	0.0208437	0.0208437	0.748381
n-Butane	0.0836302	0.0836302	0.0836302	0.0836302	3.00271
i-Pentane	0.0333816	0.0333816	0.0333816	0.0333816	1.1985
n-Pentane	0.0473762	0.0473762	0.0473762	0.0473762	1.70092
n-Hexane	0.0727687	0.0727687	0.0727687	0.0727687	2.61116
n-Heptane	0.0412433	0.0412433	0.0412433	0.0412433	1.47988
n-Octane	0.0118162	0.0118162	0.0118162	0.0118162	0.423652
n-Nonane	0.00521746	0.00521746	0.00521746	0.00521746	0.186673
n-Decane	0	0	0	0	0
Water	2.93114	2.93114	2.93114	2.93114	63.4919
TEG	96.1374	96.1374	96.1374	96.1374	4.05842
Benzene	0.156412	0.156412	0.156412	0.156412	5.53451
Toluene	0.148678	0.148678	0.148678	0.148678	5.09569
Ethylbenzene	0.0976079	0.0976079	0.0976079	0.0976079	3.10379
m-Xylene	0.0624739	0.0624739	0.0624739	0.0624739	1.97876
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-17 lb/h	350-18A lb/h	350-18B lb/h	350-19 lb/h	350-20 lb/h
H2S	2.42506E-05	2.42506E-05	2.42506E-05	2.42506E-05	2.42527E-05
CO2	4.4018E-05	4.4018E-05	4.4018E-05	4.4018E-05	4.402E-05
N2	0.0144967	0.0144967	0.0144967	0.0144967	0.0144968
Methane	8.3831	8.3831	8.3831	8.3831	8.38316
Ethane	20.4238	20.4238	20.4238	20.4238	20.424
Propane	36.3233	36.3233	36.3233	36.3233	36.3237
i-Butane	9.05354	9.05354	9.05354	9.05354	9.05357
n-Butane	36.3251	36.3251	36.3251	36.3251	36.3254
i-Pentane	14.4994	14.4994	14.4994	14.4994	14.4989
n-Pentane	20.578	20.578	20.578	20.578	20.5769
n-Hexane	31.6073	31.6073	31.6073	31.6073	31.5887
n-Heptane	17.9142	17.9142	17.9142	17.9142	17.9029
n-Octane	5.1324	5.1324	5.1324	5.1324	5.12514
n-Nonane	2.26622	2.26622	2.26622	2.26622	2.25829
n-Decane	0	0	0	0	0
Water	1273.15	1273.15	1273.15	1273.15	768.096
TEG	41757.6	41757.6	41757.6	41757.6	49.0969
Benzene	67.9381	67.9381	67.9381	67.9381	66.9539
Toluene	64.5788	64.5788	64.5788	64.5788	61.6453
Ethylbenzene	42.3963	42.3963	42.3963	42.3963	37.5482
m-Xylene	27.1358	27.1358	27.1358	27.1358	23.9381
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-17	350-18A	350-18B	350-19	350-20
Temperature	°F	140.035	235 *	320 *	316.731	289.377
Pressure	psig	55	50	45	10 *	3
Mole Fraction Vapor	%	0.0540973	0.21932	0.634514	2.66127	100
Molecular Weight	lb/lbmol	122.401	122.401	122.401	122.401	24.7046
Mass Density	lb/ft^3	65.5753	56.6129	42.1904	10.6614	0.0500196
Molar Flow	lbmol/h	354.861	354.861	354.861	354.861	48.9688
Mass Flow	lb/h	43435.4	43435.4	43435.4	43435.4	1209.75
Std Vapor Volumetric Flow	MMSCFD	3.23194	3.23194	3.23194	3.23194	0.445989
Std Liquid Volumetric Flow	sgpm	77.6557	77.6557	77.6557	77.6557	2.80582
Specific Gravity						0.852985
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	3305.11	3305.11	3305.11	3305.11	492.781
Gross Liquid Heating Value	Btu/lb	9964.7	9964.7	9964.7	9964.7	6832.17

Remarks

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Process Streams Report
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Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-21	350-22	350-23	350-24	350-25
From Block	E-3501A	E-3501A	AC-3301	V-3404	BL-3100
To Block	T-3501	AC-3301	V-3404	BL-3100	BTEX COOLER

Stream Composition

Mole Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	7.39351E-09	1.51105E-06	1.51105E-06	1.53063E-05	1.53063E-05
CO2	2.72162E-09	2.1242E-06	2.1242E-06	2.1859E-05	2.1859E-05
N2	7.46865E-08	0.00109905	0.00109905	0.0113856	0.0113856
Methane	0.000194947	1.10981	1.10981	11.4849	11.4849
Ethane	0.000535681	1.44254	1.44254	14.8385	14.8385
Propane	0.000941229	1.74944	1.74944	17.7531	17.7531
i-Butane	0.000178567	0.330813	0.330813	3.27257	3.27257
n-Butane	0.00117306	1.32729	1.32729	12.8499	12.8499
i-Pentane	0.000429586	0.426777	0.426777	3.79693	3.79693
n-Pentane	0.00067326	0.605684	0.605684	5.19143	5.19143
n-Hexane	0.00132493	0.778453	0.778453	4.92067	4.92067
n-Heptane	0.000717377	0.379428	0.379428	1.40572	1.40572
n-Octane	0.000240341	0.0952799	0.0952799	0.163123	0.163123
n-Nonane	9.57831E-05	0.0373916	0.0373916	0.0317464	0.0317464
n-Decane	0	0	0	0	0
Water	82.622	87.2451	87.2451	11.5404	11.5404
TEG	17.1984	0.00640904	0.00640904	4.82236E-08	4.82236E-08
Benzene	0.0488136	1.81847	1.81847	8.25956	8.25956
Toluene	0.0577887	1.41862	1.41862	3.34513	3.34513
Ethylbenzene	0.0400148	0.749541	0.749541	0.686748	0.686748
m-Xylene	0.0264132	0.477819	0.477819	0.448195	0.448195
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	6.16409E-09	2.1406E-06	2.1406E-06	1.07148E-05	1.07148E-05
CO2	2.93009E-09	3.88587E-06	3.88587E-06	1.97597E-05	1.97597E-05
N2	5.11818E-08	0.00127977	0.00127977	0.00655124	0.00655124
Methane	7.65057E-05	0.740058	0.740058	3.78441	3.78441
Ethane	0.000394033	1.803	1.803	9.16457	9.16457
Propane	0.00101531	3.20658	3.20658	16.0795	16.0795
i-Butane	0.000253893	0.799229	0.799229	3.9069	3.9069
n-Butane	0.0016679	3.20668	3.20668	15.3406	15.3406
i-Pentane	0.000758205	1.2799	1.2799	5.62682	5.62682
n-Pentane	0.00118828	1.81645	1.81645	7.69339	7.69339
n-Hexane	0.00279308	2.78845	2.78845	8.70983	8.70983
n-Heptane	0.00175845	1.58035	1.58035	2.8932	2.8932
n-Octane	0.000671598	0.452401	0.452401	0.38273	0.38273
n-Nonane	0.000300518	0.199341	0.199341	0.0836317	0.0836317
n-Decane	0	0	0	0	0
Water	36.412	65.3325	65.3325	4.27036	4.27036
TEG	63.1811	0.0400066	0.0400066	1.48749E-07	1.48749E-07
Benzene	0.0932748	5.90433	5.90433	13.2518	13.2518
Toluene	0.130254	5.43318	5.43318	6.33077	6.33077
Ethylbenzene	0.103922	3.30768	3.30768	1.49755	1.49755
m-Xylene	0.0685976	2.10859	2.10859	0.97735	0.97735
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
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Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-21 lb/h	350-22 lb/h	350-23 lb/h	350-24 lb/h	350-25 lb/h
H2S	4.74578E-09	2.4248E-05	2.4248E-05	2.36995E-05	2.36995E-05
CO2	2.2559E-09	4.40177E-05	4.40177E-05	4.37056E-05	4.37056E-05
N2	3.94053E-08	0.0144967	0.0144967	0.0144904	0.0144904
Methane	5.89024E-05	8.3831	8.3831	8.37059	8.37059
Ethane	0.00030337	20.4237	20.4237	20.2707	20.2707
Propane	0.000781694	36.3229	36.3229	35.5655	35.5655
i-Butane	0.000195475	9.05338	9.05338	8.64152	8.64152
n-Butane	0.00128413	36.3241	36.3241	33.9312	33.9312
i-Pentane	0.000583749	14.4983	14.4983	12.4457	12.4457
n-Pentane	0.000914867	20.576	20.576	17.0167	17.0167
n-Hexane	0.00215042	31.5865	31.5865	19.2649	19.2649
n-Heptane	0.00135385	17.9016	17.9016	6.39935	6.39935
n-Octane	0.000517069	5.12463	5.12463	0.846544	0.846544
n-Nonane	0.000231372	2.25806	2.25806	0.184981	0.184981
n-Decane	0	0	0	0	0
Water	28.0339	740.062	740.062	9.44543	9.44543
TEG	48.6437	0.45318	0.45318	3.29011E-07	3.29011E-07
Benzene	0.0718131	66.8821	66.8821	29.3112	29.3112
Toluene	0.100284	61.545	61.545	14.0028	14.0028
Ethylbenzene	0.0800107	37.4682	37.4682	3.31236	3.31236
m-Xylene	0.0528138	23.8853	23.8853	2.16176	2.16176
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-21	350-22	350-23	350-24	350-25
Temperature	°F	216.887	216.887	120 *	120	259.622
Pressure	psig	3	3	1.5	1.5	45 *
Mole Fraction Vapor	%	0	100	9.6488	100	100
Molecular Weight	lb/lbmol	40.8783	24.0576	24.0576	48.6853	48.6853
Mass Density	lb/ft^3	64.3994	0.0540305	0.592127	0.116565	0.379647
Molar Flow	lbmol/h	1.88342	47.0854	47.0854	4.54317	4.54317
Mass Flow	lb/h	76.9908	1132.76	1132.76	221.186	221.186
Std Vapor Volumetric Flow	MMSCFD	0.0171534	0.428836	0.428836	0.0413775	0.0413775
Std Liquid Volumetric Flow	sgpm	0.142853	2.66296	2.66296	0.759594	0.759594
Specific Gravity		1.03256	0.830648		1.68098	1.68098
API Gravity		-2.43584				
Gross Ideal Gas Heating Value	Btu/ft^3	759.771	482.101	482.101	2558.23	2558.23
Gross Liquid Heating Value	Btu/lb	6502.5	6854.57	6854.57	19743.4	19743.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-26	350-27	350-28	350-29	350-30A
From Block	V-3404	P-3605	T-3501	E-3200	E-3200
To Block	P-3605	BTEX Liq	E-3200	T-3501	E-3401

Stream Composition

Mole Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	3.78257E-08	3.78257E-08	4.57376E-10	3.34567E-09	2.54848E-11
CO2	1.66705E-08	1.66705E-08	1.1306E-10	8.5496E-10	2.12235E-12
N2	5.28854E-07	5.28854E-07	4.87224E-09	3.73666E-08	1.33093E-11
Methane	0.00183344	0.00183344	1.28797E-05	9.85051E-05	7.60506E-08
Ethane	0.011957	0.011957	5.271E-05	0.000401001	6.29519E-07
Propane	0.040376	0.040376	0.000133642	0.00101133	2.39992E-06
i-Butane	0.0166565	0.0166565	3.99081E-05	0.000300749	9.04174E-07
n-Butane	0.0967723	0.0967723	0.000210599	0.00158054	5.74957E-06
i-Pentane	0.066872	0.066872	0.000138544	0.00103058	5.15686E-06
n-Pentane	0.115963	0.115963	0.000221843	0.00164525	8.99917E-06
n-Hexane	0.336097	0.336097	0.000926833	0.00660021	7.84849E-05
n-Heptane	0.269828	0.269828	0.000519085	0.00371766	4.07959E-05
n-Octane	0.0880348	0.0880348	0.00022325	0.00156839	2.21084E-05
n-Nonane	0.0379945	0.0379945	0.000158885	0.0010831	2.06848E-05
n-Decane	0	0	0	0	0
Water	95.3298	95.3298	20.6156	94.1865	9.61449
TEG	0.00709347	0.00709347	79.2488	5.04109	90.3452
Benzene	1.13062	1.13062	0.0209798	0.131908	0.00439247
Toluene	1.21288	1.21288	0.0392194	0.229958	0.010698
Ethylbenzene	0.756247	0.756247	0.0438347	0.236119	0.0150822
m-Xylene	0.480983	0.480983	0.0288719	0.155428	0.00994781
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	6.01623E-08	6.01623E-08	1.26878E-10	4.50951E-09	6.31915E-12
CO2	3.4239E-08	3.4239E-08	4.05002E-11	1.48808E-09	6.79565E-13
N2	6.91398E-07	6.91398E-07	1.11096E-09	4.13985E-08	2.71261E-12
Methane	0.00137267	0.00137267	1.68183E-06	6.24978E-05	8.87649E-09
Ethane	0.016779	0.016779	1.29008E-05	0.000476871	1.3772E-07
Propane	0.0830894	0.0830894	4.7967E-05	0.0017637	7.69944E-07
i-Butane	0.0451807	0.0451807	1.88802E-05	0.000691323	3.8235E-07
n-Butane	0.262494	0.262494	9.96324E-05	0.00363314	2.43133E-06
i-Pentane	0.225164	0.225164	8.13616E-05	0.00294066	2.70696E-06
n-Pentane	0.390457	0.390457	0.00013028	0.00469457	4.72388E-06
n-Hexane	1.35168	1.35168	0.000650111	0.0224945	4.92081E-05
n-Heptane	1.2618	1.2618	0.000423367	0.0147327	2.97413E-05
n-Octane	0.469305	0.469305	0.000207572	0.00708541	1.83738E-05
n-Nonane	0.227416	0.227416	0.000165867	0.00549388	1.93016E-05
n-Decane	0	0	0	0	0
Water	80.1487	80.1487	3.02302	67.1065	1.26019
TEG	0.0497138	0.0497138	96.8696	29.94	98.7107
Benzene	4.12153	4.12153	0.0133389	0.407497	0.00249628
Toluene	5.21539	5.21539	0.0294133	0.837961	0.00717149
Ethylbenzene	3.7469	3.7469	0.0378794	0.991395	0.0116497
m-Xylene	2.38308	2.38308	0.0249494	0.652597	0.0076838
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-26 lb/h	350-27 lb/h	350-28 lb/h	350-29 lb/h	350-30A lb/h
H2S	5.48425E-07	5.48425E-07	5.51493E-08	5.24761E-08	2.67316E-09
CO2	3.12115E-07	3.12115E-07	1.76039E-08	1.73165E-08	2.87474E-10
N2	6.30262E-06	6.30262E-06	4.82892E-07	4.81744E-07	1.1475E-09
Methane	0.0125129	0.0125129	0.000731027	0.000727272	3.75499E-06
Ethane	0.152954	0.152954	0.00560749	0.00554923	5.82589E-05
Propane	0.757424	0.757424	0.0208495	0.0205238	0.000325707
i-Butane	0.411857	0.411857	0.0082065	0.00804476	0.000161744
n-Butane	2.39284	2.39284	0.0433065	0.042278	0.00102852
i-Pentane	2.05255	2.05255	0.0353649	0.0342198	0.00114511
n-Pentane	3.55932	3.55932	0.0566279	0.0546295	0.00199832
n-Hexane	12.3216	12.3216	0.282579	0.261763	0.0208163
n-Heptane	11.5022	11.5022	0.184022	0.171441	0.0125814
n-Octane	4.27808	4.27808	0.0902238	0.0824512	0.00777261
n-Nonane	2.07308	2.07308	0.0720961	0.063931	0.00816509
n-Decane	0	0	0	0	0
Water	730.617	730.617	1313.99	780.902	533.091
TEG	0.45318	0.45318	42105.6	348.404	41757.2
Benzene	37.5709	37.5709	5.79794	4.74195	1.05599
Toluene	47.5423	47.5423	12.7849	9.75115	3.03373
Ethylbenzene	34.1559	34.1559	16.4648	11.5366	4.92813
m-Xylene	21.7236	21.7236	10.8446	7.59411	3.25045
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-26	350-27	350-28	350-29	350-30A
Temperature	°F	120	120.159	323.896	385	385
Pressure	psig	1.5	40 *	4	4	4
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	21.4276	21.4276	122.856	25.2851	137.446
Mass Density	lb/ft^3	58.7757	58.78	61.1556	0.0482142	58.6793
Molar Flow	lbmol/h	42.5422	42.5422	353.798	46.0222	307.776
Mass Flow	lb/h	911.577	911.577	43466.3	1163.68	42302.6
Std Vapor Volumetric Flow	MMSCFD	0.387458	0.387458	3.22226	0.419153	2.8031
Std Liquid Volumetric Flow	sgpm	1.90337	1.90337	77.2497	2.25694	74.9928
Specific Gravity		0.942391	0.942459	0.980549	0.873029	0.940845
API Gravity		16.0282	16.0129	-6.08668		-6.57501
Gross Ideal Gas Heating Value	Btu/ft^3	260.387	260.387	3288.86	291.988	3736.99
Gross Liquid Heating Value	Btu/lb	3727.21	3727.21	9875.04	3588.08	10048

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-30B	350-31	350-32	350-33A	350-33B
From Block	E-3401	E-3202	E-3201	P-3618	R1
To Block	E-3202	E-3201	P-3618	R1	MAKEUP

Stream Composition

Mole Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	2.54848E-11	2.54848E-11	2.54848E-11	2.54848E-11	2.54056E-11
CO2	2.12235E-12	2.12235E-12	2.12235E-12	2.12235E-12	2.11676E-12
N2	1.33093E-11	1.33093E-11	1.33093E-11	1.33093E-11	1.32682E-11
Methane	7.60506E-08	7.60506E-08	7.60506E-08	7.60506E-08	7.58123E-08
Ethane	6.29519E-07	6.29519E-07	6.29519E-07	6.29519E-07	6.27492E-07
Propane	2.39992E-06	2.39992E-06	2.39992E-06	2.39992E-06	2.39198E-06
i-Butane	9.04174E-07	9.04174E-07	9.04174E-07	9.04174E-07	9.01116E-07
n-Butane	5.74957E-06	5.74957E-06	5.74957E-06	5.74957E-06	5.73036E-06
i-Pentane	5.15686E-06	5.15686E-06	5.15686E-06	5.15686E-06	5.13975E-06
n-Pentane	8.99917E-06	8.99917E-06	8.99917E-06	8.99917E-06	8.96902E-06
n-Hexane	7.84849E-05	7.84849E-05	7.84849E-05	7.84849E-05	7.82109E-05
n-Heptane	4.07959E-05	4.07959E-05	4.07959E-05	4.07959E-05	4.06576E-05
n-Octane	2.21084E-05	2.21084E-05	2.21084E-05	2.21084E-05	2.20332E-05
n-Nonane	2.06848E-05	2.06848E-05	2.06848E-05	2.06848E-05	2.06122E-05
n-Decane	0	0	0	0	0
Water	9.61449	9.61449	9.61449	9.61449	9.61454
TEG	90.3452	90.3452	90.3452	90.3452	90.3452
Benzene	0.00439247	0.00439247	0.00439247	0.00439247	0.00439453
Toluene	0.010698	0.010698	0.010698	0.010698	0.0107045
Ethylbenzene	0.0150822	0.0150822	0.0150822	0.0150822	0.0150579
m-Xylene	0.00994781	0.00994781	0.00994781	0.00994781	0.00993391
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	6.31915E-12	6.31915E-12	6.31915E-12	6.31915E-12	6.29952E-12
CO2	6.79565E-13	6.79565E-13	6.79565E-13	6.79565E-13	6.77774E-13
N2	2.71261E-12	2.71261E-12	2.71261E-12	2.71261E-12	2.70425E-12
Methane	8.87649E-09	8.87649E-09	8.87649E-09	8.87649E-09	8.84867E-09
Ethane	1.3772E-07	1.3772E-07	1.3772E-07	1.3772E-07	1.37276E-07
Propane	7.69944E-07	7.69944E-07	7.69944E-07	7.69944E-07	7.67398E-07
i-Butane	3.8235E-07	3.8235E-07	3.8235E-07	3.8235E-07	3.81057E-07
n-Butane	2.43133E-06	2.43133E-06	2.43133E-06	2.43133E-06	2.42321E-06
i-Pentane	2.70696E-06	2.70696E-06	2.70696E-06	2.70696E-06	2.69798E-06
n-Pentane	4.72388E-06	4.72388E-06	4.72388E-06	4.72388E-06	4.70805E-06
n-Hexane	4.92081E-05	4.92081E-05	4.92081E-05	4.92081E-05	4.90363E-05
n-Heptane	2.97413E-05	2.97413E-05	2.97413E-05	2.97413E-05	2.96405E-05
n-Octane	1.83738E-05	1.83738E-05	1.83738E-05	1.83738E-05	1.83113E-05
n-Nonane	1.93016E-05	1.93016E-05	1.93016E-05	1.93016E-05	1.92339E-05
n-Decane	0	0	0	0	0
Water	1.26019	1.26019	1.26019	1.26019	1.26019
TEG	98.7107	98.7107	98.7107	98.7107	98.7107
Benzene	0.00249628	0.00249628	0.00249628	0.00249628	0.00249745
Toluene	0.00717149	0.00717149	0.00717149	0.00717149	0.00717586
Ethylbenzene	0.0116497	0.0116497	0.0116497	0.0116497	0.0116309
m-Xylene	0.0076838	0.0076838	0.0076838	0.0076838	0.00767307
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-30B lb/h	350-31 lb/h	350-32 lb/h	350-33A lb/h	350-33B lb/h
H2S	2.67316E-09	2.67316E-09	2.67316E-09	2.67316E-09	2.66517E-09
CO2	2.87474E-10	2.87474E-10	2.87474E-10	2.87474E-10	2.8675E-10
N2	1.1475E-09	1.1475E-09	1.1475E-09	1.1475E-09	1.1441E-09
Methane	3.75499E-06	3.75499E-06	3.75499E-06	3.75499E-06	3.74366E-06
Ethane	5.82589E-05	5.82589E-05	5.82589E-05	5.82589E-05	5.80783E-05
Propane	0.000325707	0.000325707	0.000325707	0.000325707	0.000324668
i-Butane	0.000161744	0.000161744	0.000161744	0.000161744	0.000161216
n-Butane	0.00102852	0.00102852	0.00102852	0.00102852	0.0010252
i-Pentane	0.00114511	0.00114511	0.00114511	0.00114511	0.00114145
n-Pentane	0.00199832	0.00199832	0.00199832	0.00199832	0.00199187
n-Hexane	0.0208163	0.0208163	0.0208163	0.0208163	0.0207461
n-Heptane	0.0125814	0.0125814	0.0125814	0.0125814	0.0125402
n-Octane	0.00777261	0.00777261	0.00777261	0.00777261	0.00774709
n-Nonane	0.00816509	0.00816509	0.00816509	0.00816509	0.00813741
n-Decane	0	0	0	0	0
Water	533.091	533.091	533.091	533.091	533.157
TEG	41757.2	41757.2	41757.2	41757.2	41762.1
Benzene	1.05599	1.05599	1.05599	1.05599	1.05661
Toluene	3.03373	3.03373	3.03373	3.03373	3.03594
Ethylbenzene	4.92813	4.92813	4.92813	4.92813	4.92075
m-Xylene	3.25045	3.25045	3.25045	3.25045	3.24629
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-30B	350-31	350-32	350-33A	350-33B
Temperature	°F	365.406	278.044	181.163	181.426	182.371
Pressure	psig	2	1	-2.11058E-15	64.6323	64.5914
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	137.446	137.446	137.446	137.446	137.446
Mass Density	lb/ft^3	59.4528	62.8155	66.3925	66.3892	66.3551
Molar Flow	lbmol/h	307.776	307.776	307.776	307.776	307.812
Mass Flow	lb/h	42302.6	42302.6	42302.6	42302.6	42307.6
Std Vapor Volumetric Flow	MMSCFD	2.8031	2.8031	2.8031	2.8031	2.80344
Std Liquid Volumetric Flow	sgpm	74.9928	74.9928	74.9928	74.9928	75.0016
Specific Gravity		0.953247	1.00716	1.06452	1.06446	1.06392
API Gravity		-6.57472	-6.57457	-6.57443	-6.58384	-6.58384
Gross Ideal Gas Heating Value	Btu/ft^3	3736.99	3736.99	3736.99	3736.99	3736.98
Gross Liquid Heating Value	Btu/lb	10048	10048	10048	10048	10048

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-33C	350-34	350-36	350-41	350-42
From Block	MAKEUP	AC-3300	P-3600	Mult 3	PCV-3402A
To Block	AC-3300	P-3600	T-3500	PCV-3402A	TEG Flash

Stream Composition

Mole Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	1.70925E-06	1.70925E-06
CO2	0	0	0	1.14243E-05	1.14243E-05
N2	0	0	0	0.214313	0.214313
Methane	7.58123E-08	7.58123E-08	7.58123E-08	55.5971	55.5971
Ethane	6.27492E-07	6.27492E-07	6.27492E-07	20.6195	20.6195
Propane	2.39198E-06	2.39198E-06	2.39198E-06	12.9718	12.9718
i-Butane	9.01116E-07	9.01116E-07	9.01116E-07	1.79706	1.79706
n-Butane	5.73036E-06	5.73036E-06	5.73036E-06	4.87967	4.87967
i-Pentane	5.13975E-06	5.13975E-06	5.13975E-06	0.991938	0.991938
n-Pentane	8.96902E-06	8.96902E-06	8.96902E-06	1.17437	1.17437
n-Hexane	7.82109E-05	7.82109E-05	7.82109E-05	0.751029	0.751029
n-Heptane	4.06576E-05	4.06576E-05	4.06576E-05	0.209875	0.209875
n-Octane	2.20332E-05	2.20332E-05	2.20332E-05	0.0310331	0.0310331
n-Nonane	2.06122E-05	2.06122E-05	2.06122E-05	0.00686064	0.00686064
n-Decane	0	0	0	0	0
Water	9.61454	9.61454	9.61454	0.548522	0.548522
TEG	90.3452	90.3452	90.3452	0.000356973	0.000356973
Benzene	0.00439453	0.00439453	0.00439453	0.123592	0.123592
Toluene	0.0107045	0.0107045	0.0107045	0.053521	0.053521
Ethylbenzene	0.0150579	0.0150579	0.0150579	0.0181088	0.0181088
m-Xylene	0.00993391	0.00993391	0.00993391	0.0112715	0.0112715
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	2.11666E-06	2.11666E-06
CO2	0	0	0	1.82688E-05	1.82688E-05
N2	0	0	0	0.218147	0.218147
Methane	8.84867E-09	8.84867E-09	8.84867E-09	32.4085	32.4085
Ethane	1.37276E-07	1.37276E-07	1.37276E-07	22.5285	22.5285
Propane	7.67398E-07	7.67398E-07	7.67398E-07	20.7841	20.7841
i-Butane	3.81057E-07	3.81057E-07	3.81057E-07	3.79525	3.79525
n-Butane	2.42321E-06	2.42321E-06	2.42321E-06	10.3055	10.3055
i-Pentane	2.69798E-06	2.69798E-06	2.69798E-06	2.60045	2.60045
n-Pentane	4.70805E-06	4.70805E-06	4.70805E-06	3.07871	3.07871
n-Hexane	4.90363E-05	4.90363E-05	4.90363E-05	2.35166	2.35166
n-Heptane	2.96405E-05	2.96405E-05	2.96405E-05	0.764137	0.764137
n-Octane	1.83113E-05	1.83113E-05	1.83113E-05	0.128806	0.128806
n-Nonane	1.92339E-05	1.92339E-05	1.92339E-05	0.0319723	0.0319723
n-Decane	0	0	0	0	0
Water	1.26019	1.26019	1.26019	0.359062	0.359062
TEG	98.7107	98.7107	98.7107	0.00194788	0.00194788
Benzene	0.00249745	0.00249745	0.00249745	0.350785	0.350785
Toluene	0.00717586	0.00717586	0.00717586	0.179184	0.179184
Ethylbenzene	0.0116309	0.0116309	0.0116309	0.0698563	0.0698563
m-Xylene	0.00767307	0.00767307	0.00767307	0.043481	0.043481
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-33C lb/h	350-34 lb/h	350-36 lb/h	350-41 lb/h	350-42 lb/h
H2S	0	0	0	8.2432E-06	8.2432E-06
CO2	0	0	0	7.11467E-05	7.11467E-05
N2	0	0	0	0.84956	0.84956
Methane	3.74358E-06	3.74358E-06	3.74358E-06	126.213	126.213
Ethane	5.8077E-05	5.8077E-05	5.8077E-05	87.7358	87.7358
Propane	0.000324661	0.000324661	0.000324661	80.9423	80.9423
i-Butane	0.000161213	0.000161213	0.000161213	14.7803	14.7803
n-Butane	0.00102518	0.00102518	0.00102518	40.134	40.134
i-Pentane	0.00114142	0.00114142	0.00114142	10.1273	10.1273
n-Pentane	0.00199182	0.00199182	0.00199182	11.9898	11.9898
n-Hexane	0.0207456	0.0207456	0.0207456	9.15839	9.15839
n-Heptane	0.0125399	0.0125399	0.0125399	2.97588	2.97588
n-Octane	0.00774692	0.00774692	0.00774692	0.501625	0.501625
n-Nonane	0.00813723	0.00813723	0.00813723	0.124514	0.124514
n-Decane	0	0	0	0	0
Water	533.146	533.146	533.146	1.39834	1.39834
TEG	41761.2	41761.2	41761.2	0.00758588	0.00758588
Benzene	1.05659	1.05659	1.05659	1.36611	1.36611
Toluene	3.03587	3.03587	3.03587	0.697821	0.697821
Ethylbenzene	4.92064	4.92064	4.92064	0.272051	0.272051
m-Xylene	3.24622	3.24622	3.24622	0.169334	0.169334
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-33C	350-34	350-36	350-41	350-42
Temperature	°F	182.371	125 *	126.832	140	137.745
Pressure	psig	64.5914	59.5914	997 *	65 *	40 *
Mole Fraction Vapor	%	0	0	0	100	100
Molecular Weight	lb/lbmol	137.446	137.446	137.446	27.5211	27.5211
Mass Density	lb/ft^3	66.3551	68.3999	68.4187	0.342607	0.232091
Molar Flow	lbmol/h	307.806	307.806	307.806	14.1507	14.1507
Mass Flow	lb/h	42306.7	42306.7	42306.7	389.443	389.443
Std Vapor Volumetric Flow	MMSCFD	2.80338	2.80338	2.80338	0.12888	0.12888
Std Liquid Volumetric Flow	sgpm	75 *	75	75	1.96154	1.96154
Specific Gravity		1.06392	1.0967	1.097	0.950231	0.950231
API Gravity		-6.58384	-6.58311	-6.71899		
Gross Ideal Gas Heating Value	Btu/ft^3	3736.98	3736.98	3736.98	1615.73	1615.73
Gross Liquid Heating Value	Btu/lb	10048	10048	10048	22170	22170

Remarks

350-33C:

The flow rate of this stream is set by a calculator which depends on the amount of water being fed into the absorber in the Wet Gas stream. The Glycol Flow Control calculator sets the flow rate of this stream to be 3 gallons of glycol solution per lb of water fed to the Contactor. Since the water amount does not change based on anything in the unit, this can be a SPECIFIER rather than a SOLVER.

350-36:

The stream coming out of the recycle block needs to have initial guesses for the temperature, pressure, flowrate, and composition in order to have a starting point to begin the calculations. While these will initially appear similar to specifications (white with blue numbers), these are guesses. Once the flowsheet is executed, the data blocks on the Properties and Composition tabs will become light grey with black numbers and not white with blue numbers, indicating which values are passed/iterated through the recycle block.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-81	350-85	350-86	440-70
From Block	F-3450	V-3400	LCV-3400	V-440X
To Block	--	LCV-3400	M1	XFS3

Stream Composition

Mole Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				2.11538E-07
CO2				2.51205E-06
N2				1.02028
Methane				77.9774
Ethane				11.8905
Propane				5.57208
i-Butane				0.762076
n-Butane				1.66924
i-Pentane				0.352996
n-Pentane				0.376355
n-Hexane				0.257593
n-Heptane				0.0727267
n-Octane				0.0123791
n-Nonane				0.00325695
n-Decane				0
Water				1.17341E-09
TEG				0
Benzene				0.0183722
Toluene				0.00893301
Ethylbenzene				0.00345858
m-Xylene				0.00236627
Cyclohexane				0
Cyclopentane				0
SO2				0

Mass Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				3.41532E-07
CO2				5.2373E-06
N2				1.35399
Methane				59.2614
Ethane				16.9376
Propane				11.6398
i-Butane				2.09832
n-Butane				4.59614
i-Pentane				1.20651
n-Pentane				1.28635
n-Hexane				1.0516
n-Heptane				0.345225
n-Octane				0.0669879
n-Nonane				0.0197887
n-Decane				0
Water				1.00144E-09
TEG				0
Benzene				0.0679847
Toluene				0.0389916
Ethylbenzene				0.0173945
m-Xylene				0.0119009
Cyclohexane				0
Cyclopentane				0
SO2				0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-81 lb/h	350-85 lb/h	350-86 lb/h	440-70 lb/h
H2S	0	0	0	0.00188855
CO2	0	0	0	0.0289604
N2	0	0	0	7487.07
Methane	0	0	0	327694
Ethane	0	0	0	93658.6
Propane	0	0	0	64363.8
i-Butane	0	0	0	11603
n-Butane	0	0	0	25415
i-Pentane	0	0	0	6671.56
n-Pentane	0	0	0	7113.04
n-Hexane	0	0	0	5814.94
n-Heptane	0	0	0	1908.97
n-Octane	0	0	0	370.418
n-Nonane	0	0	0	109.424
n-Decane	0	0	0	0
Water	0	0	0	5.53759E-06
TEG	0	0	0	0
Benzene	0	0	0	375.93
Toluene	0	0	0	215.609
Ethylbenzene	0	0	0	96.1852
m-Xylene	0	0	0	65.8074
Cyclohexane	0	0	0	0
Cyclopentane	0	0	0	0
SO2	0	0	0	0

Stream Properties

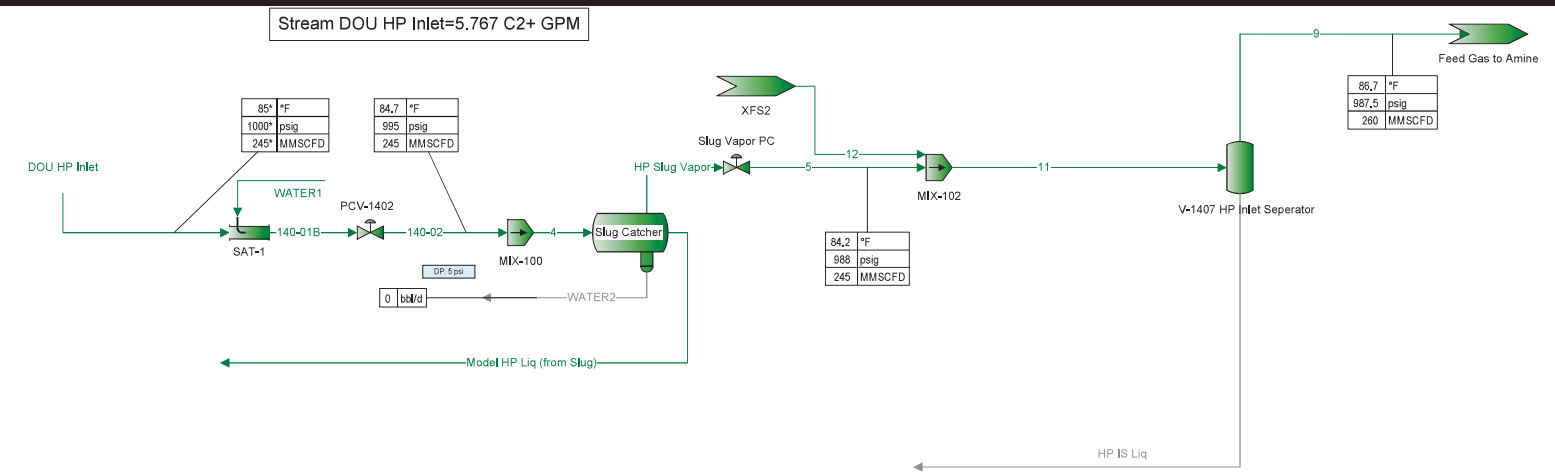
Property	Units	350-81	350-85	350-86	440-70
Temperature	°F				112.904
Pressure	psig	967	965	67	935
Mole Fraction Vapor	%				100
Molecular Weight	lb/lbmol				21.109
Mass Density	lb/ft^3				3.94052
Molar Flow	lbmol/h	0	0	0	26195.6
Mass Flow	lb/h	0	0	0	552963
Std Vapor Volumetric Flow	MMSCFD	0	0	0	238.58
Std Liquid Volumetric Flow	sgpm	0	0	0	3180.55
Specific Gravity					0.728839
API Gravity					
Gross Ideal Gas Heating Value	Btu/ft^3				1265.29
Gross Liquid Heating Value	Btu/lb				22685.1

Remarks

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HP Inlet
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	



HEATER SUMMARY		
MAIN HEATER	32,2 MMBtu/h	66,1 MMBtu/h
TEG HEATER	9,07 MMBtu/h	4,40 MMBtu/h
REGEN HEATER	8,50 MMBtu/h	9,76 MMBtu/h

PERFORMANCE SUMMARY	
C2 RECOVERY	[Variable Not Set]
C3 RECOVERY	[Variable Not Set]
FG SHRINK	[Data Not Ready]
H2O BALANCE	+4,03 bbl/d

PRODUCTS SUMMARY	
RESIDUE	[Variable Not Set]
NGL	[Variable Not Set]
RVP	[Variable Not Set]

COMPRESSION SUMMARY		
RESIDUE	[Data Not Ready]	20,000 hp
REFRIGERATION	5,939 hp	9,000 hp

INTERMEDIATE PRESSURE INLET

PFD-140

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
From Block	--	V-1407 HP Inlet Seperator	Slug Catcher	Slug Catcher	--
To Block	SAT-1	--	Slug Vapor PC	--	SAT-1

Stream Composition

Mole Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.0005 *		0.000499622	2.72054E-05	0 *
CO2	2.4 *		2.39819	0.0506964	0 *
N2	0.994006 *		0.993254	0.00080624	0 *
Methane	76.0753 *		76.0178	0.0997489	0 *
Ethane	11.6142 *		11.6055	0.0141982	0 *
Propane	5.44288 *		5.43877	0.00329503	0 *
i-Butane	0.744255 *		0.743693	0.000220629	0 *
n-Butane	1.63234 *		1.63111	0.000640861	0 *
i-Pentane	0.345183 *		0.344922	6.26431E-05	0 *
n-Pentane	0.368404 *		0.368126	2.93423E-05	0 *
n-Hexane	0.252725 *		0.252534	9.47235E-06	0 *
n-Heptane	0.0716055 *		0.0715513	1.35741E-06	0 *
n-Octane	0.0122406 *		0.0122314	7.09578E-08	0 *
n-Nonane	0.00324082 *		0.00323837	1.16021E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0755856	99.8292	100 *
TEG	0 *		0	0	0 *
Benzene	0.0228358 *		0.0228186	0.000762765	0 *
Toluene	0.011963 *		0.0119539	0.000215837	0 *
Ethylbenzene	0.00490283 *		0.00489912	5.53645E-05	0 *
m-Xylene	0.00333393 *		0.00333141	2.27053E-05	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *
SO2	0 *		0	0	0 *

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.000786251 *		0.000785757	5.14238E-05	0 *
CO2	4.87347 *		4.8704	0.123743	0 *
N2	1.2848 *		1.28399	0.00125265	0 *
Methane	56.3113 *		56.2759	0.0887519	0 *
Ethane	16.1135 *		16.1034	0.0236784	0 *
Propane	11.074 *		11.067	0.00805849	0 *
i-Butane	1.99593 *		1.99467	0.00071122	0 *
n-Butane	4.37758 *		4.37483	0.00206588	0 *
i-Pentane	1.1491 *		1.14838	0.000250669	0 *
n-Pentane	1.22641 *		1.22563	0.000117414	0 *
n-Hexane	1.00488 *		1.00424	4.5273E-05	0 *
n-Heptane	0.331057 *		0.330849	7.54373E-06	0 *
n-Octane	0.0645146 *		0.064474	4.49545E-07	0 *
n-Nonane	0.0191783 *		0.0191662	8.25297E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0628371	99.7464	100 *
TEG	0 *		0	0	0 *
Benzene	0.0823027 *		0.0822509	0.0033045	0 *
Toluene	0.0508581 *		0.0508261	0.00110297	0 *
Ethylbenzene	0.0240164 *		0.0240013	0.000325995	0 *
m-Xylene	0.0163312 *		0.0163209	0.000133693	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
SO2	0 *		0	0	0 *

Mass Flow	DOU HP Inlet lb/h	HP IS Liq lb/h	HP Slug Vapor lb/h	Model HP Liq (from Slug) lb/h	WATER1 lb/h
H2S	4.58397 *	0	4.58397	2.57224E-06	0 *
CO2	28413.1 *	0	28413.1	0.00618969	0 *
N2	7490.59 *	0	7490.59	6.26579E-05	0 *
Methane	328304 *	0	328304	0.0044394	0 *
Ethane	93944.6 *	0	93944.6	0.0011844	0 *
Propane	64563.3 *	0	64563.3	0.000403089	0 *
i-Butane	11636.6 *	0	11636.6	3.55755E-05	0 *
n-Butane	25522 *	0	25522	0.000103336	0 *
i-Pentane	6699.46 *	0	6699.46	1.25386E-05	0 *
n-Pentane	7150.15 *	0	7150.15	5.87312E-06	0 *
n-Hexane	5858.59 *	0	5858.59	2.26457E-06	0 *
n-Heptane	1930.12 *	0	1930.12	3.7734E-07	0 *
n-Octane	376.131 *	0	376.131	2.24864E-08	0 *
n-Nonane	111.813 *	0	111.813	4.12817E-09	0 *
n-Decane	0 *	0	0	0	0 *
Water	0 *	0	366.581	4.98935	371.57 *
TEG	0 *	0	0	0	0 *
Benzene	479.838 *	0	479.838	0.000165292	0 *
Toluene	296.511 *	0	296.511	5.51712E-05	0 *
Ethylbenzene	140.02 *	0	140.02	1.63064E-05	0 *
m-Xylene	95.2136 *	0	95.2136	6.68736E-06	0 *
Cyclohexane	0 *	0	0	0	0 *
Cyclopentane	0 *	0	0	0	0 *
SO2	0 *	0	0	0	0 *

Stream Properties

Property	Units	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
Temperature	°F	85 *		84.3292	84.3292	545.867
Pressure	psig	1000 *	987.5	990	990	1000
Mole Fraction Vapor	%	100		100	0	74.7393
Molecular Weight	lb/lbmol	21.673		21.6703	18.0302	18.0153
Mass Density	lb/ft^3	4.85327		4.80612	62.115	2.87975
Molar Flow	lbmol/h	26900.6	0	26920.9	0.277425	20.6253
Mass Flow	lb/h	583017	0	583383	5.00204	371.57
Std Vapor Volumetric Flow	MMSCFD	245 *	0	245.185	0.00252668	0.187847
Std Liquid Volumetric Flow	sgpm	3258.03	0	3258.77	0.0100283	0.742796
Specific Gravity		0.748313		0.748218	0.995931	
API Gravity					10.0465	
Gross Ideal Gas Heating Value	Btu/ft^3	1235.65		1234.76	51.6404	50.31
Gross Liquid Heating Value	Btu/lb	21573.5		21559.9	29.655	0

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	WATER2	4	5	9	11
From Block	Slug Catcher	MIX-100	Slug Vapor PC	V-1407 HP Inlet Seperator	MIX-102
To Block	--	Slug Catcher	MIX-102	Feed Gas to Amine	V-1407 HP Inlet Seperator

Stream Composition

Mole Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.000499617	0.000499622	0.00047083	0.00047083
CO2		2.39816	2.39819	2.25993	2.25993
N2		0.993244	0.993254	0.994803	0.994803
Methane		76.0171	76.0178	76.1303	76.1303
Ethane		11.6053	11.6055	11.6218	11.6218
Propane		5.43871	5.43877	5.44642	5.44642
i-Butane		0.743685	0.743693	0.744747	0.744747
n-Butane		1.63109	1.63111	1.6333	1.6333
i-Pentane		0.344919	0.344922	0.345385	0.345385
n-Pentane		0.368122	0.368126	0.368598	0.368598
n-Hexane		0.252532	0.252534	0.252825	0.252825
n-Heptane		0.0715506	0.0715513	0.0716188	0.0716188
n-Octane		0.0122312	0.0122314	0.0122398	0.0122398
n-Nonane		0.00323834	0.00323837	0.00323942	0.00323942
n-Decane		0	0	0	0
Water		0.0766136	0.0755856	0.0719045	0.0719045
TEG		0	0	4.92804E-06	4.92804E-06
Benzene		0.0228183	0.0228186	0.0225664	0.0225664
Toluene		0.0119538	0.0119539	0.011782	0.011782
Ethylbenzene		0.00489907	0.00489912	0.00481691	0.00481691
m-Xylene		0.00333137	0.00333141	0.00327634	0.00327634
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.00078575	0.000785757	0.000741583	0.000741583
CO2		4.87036	4.8704	4.59648	4.59648
N2		1.28398	1.28399	1.28792	1.28792
Methane		56.2754	56.2759	56.4434	56.4434
Ethane		16.1033	16.1034	16.1502	16.1502
Propane		11.0669	11.067	11.0992	11.0992
i-Butane		1.99465	1.99467	2.00049	2.00049
n-Butane		4.37479	4.37483	4.38725	4.38725
i-Pentane		1.14837	1.14838	1.15164	1.15164
n-Pentane		1.22562	1.22563	1.22904	1.22904
n-Hexane		1.00424	1.00424	1.0069	1.0069
n-Heptane		0.330846	0.330849	0.331656	0.331656
n-Octane		0.0644735	0.064474	0.0646152	0.0646152
n-Nonane		0.0191661	0.0191662	0.0192011	0.0192011
n-Decane		0	0	0	0
Water		0.0636918	0.0628371	0.0598662	0.0598662
TEG		0	0	3.42019E-05	3.42019E-05
Benzene		0.0822503	0.0822509	0.0814635	0.0814635
Toluene		0.0508257	0.0508261	0.0501702	0.0501702
Ethylbenzene		0.0240011	0.0240013	0.0236338	0.0236338
m-Xylene		0.0163208	0.0163209	0.0160752	0.0160752
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	WATER2 lb/h	4 lb/h	5 lb/h	9 lb/h	11 lb/h
H2S	0	4.58397	4.58397	4.58409	4.58409
CO2	0	28413.1	28413.1	28413.1	28413.1
N2	0	7490.59	7490.59	7961.24	7961.24
Methane	0	328304	328304	348904	348904
Ethane	0	93944.6	93944.6	99832.5	99832.5
Propane	0	64563.3	64563.3	68609.5	68609.5
i-Butane	0	11636.6	11636.6	12366	12366
n-Butane	0	25522	25522	27119.8	27119.8
i-Pentane	0	6699.46	6699.46	7118.87	7118.87
n-Pentane	0	7150.15	7150.15	7597.31	7597.31
n-Hexane	0	5858.59	5858.59	6224.16	6224.16
n-Heptane	0	1930.12	1930.12	2050.13	2050.13
n-Octane	0	376.131	376.131	399.418	399.418
n-Nonane	0	111.813	111.813	118.692	118.692
n-Decane	0	0	0	0	0
Water	0	371.57	366.581	370.062	370.062
TEG	0	0	0	0.211419	0.211419
Benzene	0	479.838	479.838	503.566	503.566
Toluene	0	296.511	296.511	310.127	310.127
Ethylbenzene	0	140.02	140.02	146.092	146.092
m-Xylene	0	95.2136	95.2136	99.3684	99.3684
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	WATER2	4	5	9	11
Temperature	°F		84.6652	84.1918	86.6593	86.6933
Pressure	psig	990	995	988	987.5	988
Mole Fraction Vapor	%		99.9995	100	100	100
Molecular Weight	lb/lbmol		21.6702	21.6703	21.6379	21.6379
Mass Density	lb/ft^3		4.82939	4.79686	4.73941	4.7417
Molar Flow	lbmol/h	0	26921.2	26920.9	28567.9	28567.9
Mass Flow	lb/h	0	583388	583383	618149	618149
Std Vapor Volumetric Flow	MMSCFD	0	245.188	245.185	260.185	260.185
Std Liquid Volumetric Flow	sgpm	0	3258.78	3258.77	3458.72	3458.72
Specific Gravity				0.748218	0.747101	0.747101
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3		1234.74	1234.76	1236.51	1236.51
Gross Liquid Heating Value	Btu/lb		21559.7	21559.9	21623.1	21623.1

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	12	140-01B	140-02		
From Block	XFS2	SAT-1	PCV-1402		
To Block	MIX-102	PCV-1402	MIX-100		

Stream Composition

Mole Fraction	12 %	140-01B %	140-02 %		
H2S	2.1158E-07	0.000499617	0.000499617		
CO2	2.51304E-06	2.39816	2.39816		
N2	1.02011	0.993244	0.993244		
Methane	77.9678	76.0171	76.0171		
Ethane	11.8893	11.6053	11.6053		
Propane	5.57147	5.43871	5.43871		
i-Butane	0.761985	0.743685	0.743685		
n-Butane	1.66908	1.63109	1.63109		
i-Pentane	0.352956	0.344919	0.344919		
n-Pentane	0.376318	0.368122	0.368122		
n-Hexane	0.25757	0.252532	0.252532		
n-Heptane	0.072722	0.0715506	0.0715506		
n-Octane	0.0123784	0.0122312	0.0122312		
n-Nonane	0.00325659	0.00323834	0.00323834		
n-Decane	0	0	0		
Water	0.0117333	0.0766136	0.0766136		
TEG	8.54802E-05	0	0		
Benzene	0.018444	0.0228183	0.0228183		
Toluene	0.00897268	0.0119538	0.0119538		
Ethylbenzene	0.00347302	0.00489907	0.00489907		
m-Xylene	0.0023762	0.00333137	0.00333137		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Mass Fraction	12 %	140-01B %	140-02 %		
H2S	3.41601E-07	0.00078575	0.00078575		
CO2	5.23939E-06	4.87036	4.87036		
N2	1.35378	1.28398	1.28398		
Methane	59.2544	56.2754	56.2754		
Ethane	16.9359	16.1033	16.1033		
Propane	11.6386	11.0669	11.0669		
i-Butane	2.09808	1.99465	1.99465		
n-Butane	4.59571	4.37479	4.37479		
i-Pentane	1.20638	1.14837	1.14837		
n-Pentane	1.28623	1.22562	1.22562		
n-Hexane	1.05151	1.00424	1.00424		
n-Heptane	0.345204	0.330846	0.330846		
n-Octane	0.0669842	0.0644735	0.0644735		
n-Nonane	0.0197866	0.0191661	0.0191661		
n-Decane	0	0	0		
Water	0.0100137	0.0636918	0.0636918		
TEG	0.000608123	0	0		
Benzene	0.0682506	0.0822503	0.0822503		
Toluene	0.0391649	0.0508257	0.0508257		
Ethylbenzene	0.0174672	0.0240011	0.0240011		
m-Xylene	0.0119508	0.0163208	0.0163208		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	12 lb/h	140-01B lb/h	140-02 lb/h		
H2S	0.00011876	4.58397	4.58397		
CO2	0.00182152	28413.1	28413.1		
N2	470.653	7490.59	7490.59		
Methane	20600.3	328304	328304		
Ethane	5887.92	93944.6	93944.6		
Propane	4046.24	64563.3	64563.3		
i-Butane	729.415	11636.6	11636.6		
n-Butane	1597.74	25522	25522		
i-Pentane	419.407	6699.46	6699.46		
n-Pentane	447.168	7150.15	7150.15		
n-Hexane	365.565	5858.59	5858.59		
n-Heptane	120.013	1930.12	1930.12		
n-Octane	23.2876	376.131	376.131		
n-Nonane	6.87898	111.813	111.813		
n-Decane	0	0	0		
Water	3.48135	371.57	371.57		
TEG	0.211419	0	0		
Benzene	23.7279	479.838	479.838		
Toluene	13.616	296.511	296.511		
Ethylbenzene	6.0726	140.02	140.02		
m-Xylene	4.1548	95.2136	95.2136		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Stream Properties

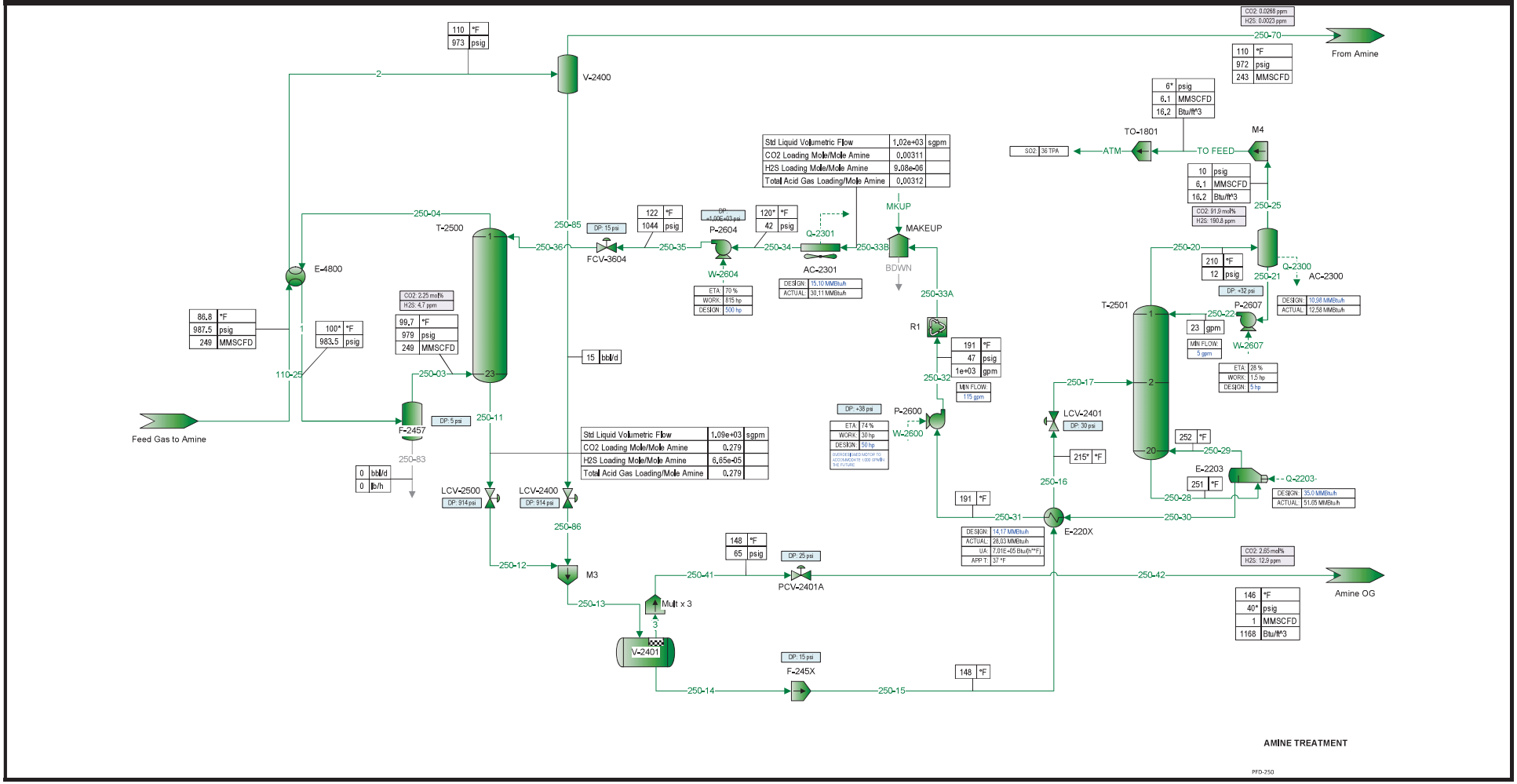
Property	Units	12	140-01B	140-02		
Temperature	°F	129.834	85	84.6652		
Pressure	psig	1000	1000	995		
Mole Fraction Vapor	%	100	100	99.9995		
Molecular Weight	lb/lbmol	21.1089	21.6702	21.6702		
Mass Density	lb/ft^3	4.03668	4.8526	4.82939		
Molar Flow	lbmol/h	1646.97	26921.2	26921.2		
Mass Flow	lb/h	34765.8	583388	583388		
Std Vapor Volumetric Flow	MMSCFD	15	245.188	245.188		
Std Liquid Volumetric Flow	sgpm	199.952	3258.78	3258.78		
Specific Gravity		0.728836	0.748217			
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.16	1234.74	1234.74		
Gross Liquid Heating Value	Btu/lb	22682.8	21559.7	21559.7		

Remarks

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Amine
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	ATM	BDWN	MKUP	TO FEED	1
From Block	TO-1801	MAKEUP	--	M4	E-4800
To Block	--	--	MAKEUP	TO-1801	F-2457

Stream Composition

Mole Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.0190833	0.000126235	0	0.0190833	0.000469559
CO2	91.8903	0.0432434	0	91.8903	2.25382
N2	0.000270873	0	0	0.000270873	0.994877
Methane	0.396443	0	0	0.396443	76.1353
Ethane	0.130956	0	0	0.130956	11.6225
Propane	0.0358512	0	0	0.0358512	5.44674
i-Butane	0.00268257	0	0	0.00268257	0.744793
n-Butane	0.0117131	0	0	0.0117131	1.63339
i-Pentane	0.000562024	0	0	0.000562024	0.345404
n-Pentane	0.000984652	0	0	0.000984652	0.368616
n-Hexane	0.000525663	0	0	0.000525663	0.252834
n-Heptane	1.63644E-05	0	0	1.63644E-05	0.07162
n-Octane	8.9182E-06	0	0	8.9182E-06	0.0122397
n-Nonane	1.51181E-07	0	0	1.51181E-07	0.00323928
n-Decane	0	0	0	0	0
Water	7.4002	86.0576	99.972	7.4002	0.0717257
MDEA	1.59439E-08	11.0003	0.00209771	1.59439E-08	0
Piperazine	2.8713E-08	2.89857	0.0259378	2.8713E-08	0
TEG	0	0.000227295	0	0	5.03657E-06
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0653985	0	0	0.0653985	0.0225393
Toluene	0.0293501	0	0	0.0293501	0.0117647
Ethylbenzene	0.00823836	0	0	0.00823836	0.00480942
m-Xylene	0.00739714	0	0	0.00739714	0.00327122
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
H2S	0.0154837	0.00013821	0	0.0154837	0.000739632
CO2	96.2784	0.0611389	0	96.2784	4.58437
N2	0.000180653	0	0	0.000180653	1.2881
Methane	0.151413	0	0	0.151413	56.451
Ethane	0.0937474	0	0	0.0937474	16.1523
Propane	0.0376367	0	0	0.0376367	11.1006
i-Butane	0.00371198	0	0	0.00371198	2.00075
n-Butane	0.0162078	0	0	0.0162078	4.38779
i-Pentane	0.000965375	0	0	0.000965375	1.15178
n-Pentane	0.00169131	0	0	0.00169131	1.22919
n-Hexane	0.00107846	0	0	0.00107846	1.00701
n-Heptane	3.90381E-05	0	0	3.90381E-05	0.331684
n-Octane	2.42529E-05	0	0	2.42529E-05	0.0646191
n-Nonane	4.61621E-07	0	0	4.61621E-07	0.0192016
n-Decane	0	0	0	0	0
Water	3.17393	49.806	99.8623	3.17393	0.0597215
MDEA	4.52319E-08	42.1108	0.0138601	4.52319E-08	0
Piperazine	5.88808E-08	8.02079	0.123879	5.88808E-08	0
TEG	0	0.00109656	0	0	3.49575E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.121618	0	0	0.121618	0.0813714
Toluene	0.0643818	0	0	0.0643818	0.0500998
Ethylbenzene	0.0208226	0	0	0.0208226	0.0235987
m-Xylene	0.0186964	0	0	0.0186964	0.0160511
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	ATM %	BDWN %	MKUP %	TO FEED %	1 %
Cyclopentane	0	0	0	0	0

Mass Flow	ATM lb/h	BDWN lb/h	MKUP lb/h	TO FEED lb/h	1 lb/h
H2S	4.35726	0	0	4.35726	4.37829
CO2	27093.6	0	0	27093.6	27137.4
N2	0.0508372	0	0	0.0508372	7624.98
Methane	42.609	0	0	42.609	334165
Ethane	26.3813	0	0	26.3813	95614.3
Propane	10.5913	0	0	10.5913	65710.6
i-Butane	1.04458	0	0	1.04458	11843.5
n-Butane	4.56103	0	0	4.56103	25973.7
i-Pentane	0.271665	0	0	0.271665	6818.04
n-Pentane	0.47595	0	0	0.47595	7276.23
n-Hexane	0.303487	0	0	0.303487	5961.03
n-Heptane	0.0109857	0	0	0.0109857	1963.42
n-Octane	0.00682498	0	0	0.00682498	382.516
n-Nonane	0.000129904	0	0	0.000129904	113.665
n-Decane	0	0	0	0	0
Water	893.17	0	1319.44	893.17	353.524
MDEA	1.27286E-05	0	0.183128	1.27286E-05	0
Piperazine	1.65696E-05	0	1.63676	1.65696E-05	0
TEG	0	0	0	0	0.206933
UCARSOL™ AP-814	0	0	0	0	0
Benzene	34.2243	0	0	34.2243	481.682
Toluene	18.1176	0	0	18.1176	296.569
Ethylbenzene	5.85966	0	0	5.85966	139.694
m-Xylene	5.26133	0	0	5.26133	95.0155
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	ATM	BDWN	MKUP	TO FEED	1
Temperature	°F	118.762	190.618	100 *	119.505	100 *
Pressure	psig	0 *	47.0206	65 *	6 *	983.5
Mole Fraction Vapor	%	100	0	0	100	100
Molecular Weight	lb/lbmol	42.0037	31.1278	18.0351	42.0037	21.6364
Mass Density	lb/ft^3	0.0894222	62.3078	61.9603	0.130272	4.48594
Molar Flow	lbmol/h	669.961	0	73.2605	669.961	27359.2
Mass Flow	lb/h	28140.9	0	1321.26	28140.9	591955
Std Vapor Volumetric Flow	MMSCFD	6.10175	0	0.667229	6.10175	249.177
Std Liquid Volumetric Flow	sgpm	68.7175	0	2.64255	68.7175	3312.4
Specific Gravity		1.45028		0.993451	1.45028	0.74705
API Gravity				9.97588		
Gross Ideal Gas Heating Value	Btu/ft^3	16.1981	572.468	51.2683	16.1981	1236.58
Gross Liquid Heating Value	Btu/lb	39.9538	6287.04	20.1029	39.9538	21625.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	2	3	110-25	250-03	250-04
From Block	E-4800	V-2401	Feed Gas to Amine	F-2457	T-2500
To Block	V-2400	Mult x 3	E-4800	T-2500	E-4800

Stream Composition

Mole Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	2.89294E-07	0.00128784	0.000469559	0.000469559	2.89294E-07
CO2	9.13721E-06	2.65003	2.25382	2.25382	9.13721E-06
N2	1.01768	0.245624	0.994877	0.994877	1.01768
Methane	77.7954	72.8263	76.1353	76.1353	77.7954
Ethane	11.8705	13.7601	11.6225	11.6225	11.8705
Propane	5.56639	4.44409	5.44674	5.44674	5.56639
i-Butane	0.761484	0.411646	0.744793	0.744793	0.761484
n-Butane	1.66939	1.23061	1.63339	1.63339	1.66939
i-Pentane	0.353269	0.114458	0.345404	0.345404	0.353269
n-Pentane	0.376953	0.155442	0.368616	0.368616	0.376953
n-Hexane	0.258588	0.0841071	0.252834	0.252834	0.258588
n-Heptane	0.0732764	0.00735426	0.07162	0.07162	0.0732764
n-Octane	0.0125217	0.00196214	0.0122397	0.0122397	0.0125217
n-Nonane	0.00331451	0.000119316	0.00323928	0.00323928	0.00331451
n-Decane	0	0	0	0	0
Water	0.200413	3.92074	0.0717257	0.0717257	0.200413
MDEA	9.7032E-05	0.00049087	0	0	9.7032E-05
Piperazine	0.000384555	0.00023029	0	0	0.000384555
TEG	1.42969E-10	6.55554E-10	5.03657E-06	5.03657E-06	1.42969E-10
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0213026	0.0875253	0.0225393	0.0225393	0.0213026
Toluene	0.0112506	0.0374298	0.0117647	0.0117647	0.0112506
Ethylbenzene	0.00469753	0.0124059	0.00480942	0.00480942	0.00469753
m-Xylene	0.00315069	0.00807793	0.00327122	0.00327122	0.00315069
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
H2S	4.66923E-07	0.0020822	0.000739632	0.000739632	4.66923E-07
CO2	1.90439E-05	5.53283	4.58437	4.58437	1.90439E-05
N2	1.35012	0.326427	1.2881	1.2881	1.35012
Methane	59.1044	55.4254	56.451	56.451	59.1044
Ethane	16.9037	19.6286	16.1523	16.1523	16.9037
Propane	11.6242	9.29669	11.1006	11.1006	11.6242
i-Butane	2.09603	1.13505	2.00075	2.00075	2.09603
n-Butane	4.59509	3.39321	4.38779	4.38779	4.59509
i-Pentane	1.20706	0.391764	1.15178	1.15178	1.20706
n-Pentane	1.28799	0.532042	1.22919	1.22919	1.28799
n-Hexane	1.05532	0.343847	1.00701	1.00701	1.05532
n-Heptane	0.347724	0.0349595	0.331684	0.331684	0.347724
n-Octane	0.0677378	0.010633	0.0646191	0.0646191	0.0677378
n-Nonane	0.0201321	0.000725978	0.0192016	0.0192016	0.0201321
n-Decane	0	0	0	0	0
Water	0.170987	3.35088	0.0597215	0.0597215	0.170987
MDEA	0.000547581	0.00277495	0	0	0.000547581
Piperazine	0.00156869	0.000941038	0	0	0.00156869
TEG	1.01678E-09	4.67035E-09	3.49575E-05	3.49575E-05	1.01678E-09
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0788032	0.32434	0.0813714	0.0813714	0.0788032
Toluene	0.0490922	0.163609	0.0500998	0.0500998	0.0490922
Ethylbenzene	0.0236182	0.0624828	0.0235987	0.0235987	0.0236182
m-Xylene	0.015841	0.0406847	0.0160511	0.0160511	0.015841

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	2 %	3 %	110-25 %	250-03 %	250-04 %
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Flow	2 lb/h	3 lb/h	110-25 lb/h	250-03 lb/h	250-04 lb/h
H2S	0.00263609	0.0164778	4.37829	4.37829	0.00263609
CO2	0.107515	43.785	27137.4	27137.4	0.107515
N2	7622.35	2.58323	7624.98	7624.98	7622.35
Methane	333683	438.619	334165	334165	333683
Ethane	95432.6	155.334	95614.3	95614.3	95432.6
Propane	65626.4	73.5709	65710.6	65710.6	65626.4
i-Butane	11833.5	8.98242	11843.5	11843.5	11833.5
n-Butane	25942.3	26.8527	25973.7	25973.7	25942.3
i-Pentane	6814.67	3.10029	6818.04	6818.04	6814.67
n-Pentane	7271.54	4.2104	7276.23	7276.23	7271.54
n-Hexane	5958.01	2.72109	5961.03	5961.03	5958.01
n-Heptane	1963.13	0.276658	1963.42	1963.42	1963.13
n-Octane	382.425	0.084146	382.516	382.516	382.425
n-Nonane	113.659	0.00574515	113.665	113.665	113.659
n-Decane	0	0	0	0	0
Water	965.333	26.5178	353.524	353.524	965.333
MDEA	3.09146	0.02196	0	0	3.09146
Piperazine	8.85628	0.00744707	0	0	8.85628
TEG	5.74041E-06	3.69596E-08	0.206933	0.206933	5.74041E-06
UCARSOL™ AP-814	0	0	0	0	0
Benzene	444.896	2.56672	481.682	481.682	444.896
Toluene	277.158	1.29475	296.569	296.569	277.158
Ethylbenzene	133.34	0.494468	139.694	139.694	133.34
m-Xylene	89.4327	0.321965	95.0155	95.0155	89.4327
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	2	3	110-25	250-03	250-04
Temperature	°F	109.61	147.506	86.77	99.6754	123.582
Pressure	psig	972.5	65	987.5	978.5	976.5
Mole Fraction Vapor	%	99.9557	100	100	100	100
Molecular Weight	lb/lbmol	21.1157	21.079	21.6364	21.6364	21.1157
Mass Density	lb/ft^3	4.17362	0.256074	4.73699	4.46404	4.00718
Molar Flow	lbmol/h	26736.8	37.5429	27359.2	27359.2	26736.8
Mass Flow	lb/h	564566	791.367	591955	591955	564566
Std Vapor Volumetric Flow	MMSCFD	243.509	0.341926	249.177	249.177	243.509
Std Liquid Volumetric Flow	sgpm	3242.36	4.41924	3312.4	3312.4	3242.36
Specific Gravity			0.727804	0.74705	0.74705	0.72907
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1263.5	1167.78	1236.58	1236.58	1263.5
Gross Liquid Heating Value	Btu/lb	22644	20928.9	21625.9	21625.9	22644

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-11	250-12	250-13	250-14	250-15
From Block	T-2500	LCV-2500	M3	V-2401	F-245X
To Block	LCV-2500	M3	V-2401	F-245X	E-220X

Stream Composition

Mole Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.000886426	0.000886426	0.000885891	0.00088499	0.00088499
CO2	3.71759	3.71759	3.71497	3.71736	3.71736
N2	0.000560109	0.000560109	0.000560178	1.08356E-05	1.08356E-05
Methane	0.178771	0.178771	0.178708	0.0158587	0.0158587
Ethane	0.0360205	0.0360205	0.0360029	0.00523858	0.00523858
Propane	0.0113765	0.0113765	0.0113707	0.00143413	0.00143413
i-Butane	0.00102835	0.00102835	0.00102776	0.000107309	0.000107309
n-Butane	0.00322172	0.00322172	0.0032199	0.000468551	0.000468551
i-Pentane	0.000278591	0.000278591	0.000278431	2.24823E-05	2.24823E-05
n-Pentane	0.000387188	0.000387188	0.000386964	3.93885E-05	3.93885E-05
n-Hexane	0.000209229	0.000209229	0.000209096	2.10278E-05	2.10278E-05
n-Heptane	1.71122E-05	1.71122E-05	1.71018E-05	6.54616E-07	6.54616E-07
n-Octane	4.74766E-06	4.74766E-06	4.74452E-06	3.5675E-07	3.5675E-07
n-Nonane	2.73076E-07	2.73076E-07	2.72899E-07	6.04762E-09	6.04762E-09
n-Decane	0	0	0	0	0
Water	82.7229	82.7229	82.7344	82.911	82.911
MDEA	10.5439	10.5439	10.5366	10.5603	10.5603
Piperazine	2.77786	2.77786	2.7764	2.78262	2.78262
TEG	0.000226083	0.000226083	0.000225924	0.00022643	0.00022643
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00280757	0.00280757	0.00280601	0.0026161	0.0026161
Toluene	0.00125592	0.00125592	0.00125517	0.00117408	0.00117408
Ethylbenzene	0.000356783	0.000356783	0.000356565	0.000329555	0.000329555
m-Xylene	0.000313498	0.000313498	0.000313309	0.000295904	0.000295904
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
H2S	0.000957578	0.000957578	0.000957276	0.000955591	0.000955591
CO2	5.18596	5.18596	5.18379	5.18327	5.18327
N2	0.000497347	0.000497347	0.000497551	9.61704E-06	9.61704E-06
Methane	0.0909053	0.0909053	0.0908993	0.00806048	0.00806048
Ethane	0.0343313	0.0343313	0.0343244	0.00499064	0.00499064
Propane	0.0159011	0.0159011	0.0158974	0.00200359	0.00200359
i-Butane	0.00189454	0.00189454	0.00189401	0.000197607	0.000197607
n-Butane	0.00593542	0.00593542	0.00593376	0.000862824	0.000862824
i-Pentane	0.000637113	0.000637113	0.00063693	5.13917E-05	5.13917E-05
n-Pentane	0.000885467	0.000885467	0.000885208	9.00371E-05	9.00371E-05
n-Hexane	0.000571511	0.000571511	0.000571314	5.74116E-05	5.74116E-05
n-Heptane	5.43504E-05	5.43504E-05	5.43331E-05	2.07819E-06	2.07819E-06
n-Octane	1.719E-05	1.719E-05	1.71835E-05	1.2911E-06	1.2911E-06
n-Nonane	1.11014E-06	1.11014E-06	1.10974E-06	2.45744E-08	2.45744E-08
n-Decane	0	0	0	0	0
Water	47.2376	47.2376	47.2577	47.3235	47.3235
MDEA	39.8256	39.8256	39.8095	39.8691	39.8691
Piperazine	7.58428	7.58428	7.58246	7.59381	7.59381
TEG	0.00107617	0.00107617	0.00107572	0.00107733	0.00107733
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00695135	0.00695135	0.00694947	0.00647432	0.00647432
Toluene	0.00366796	0.00366796	0.00366681	0.00342736	0.00342736
Ethylbenzene	0.00120062	0.00120062	0.00120023	0.00110849	0.00110849
m-Xylene	0.00105496	0.00105496	0.00105463	0.000995302	0.000995302
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-11 %	250-12 %	250-13 %	250-14 %	250-15 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-11 lb/h	250-12 lb/h	250-13 lb/h	250-14 lb/h	250-15 lb/h
H2S	5.06736	5.06736	5.06789	5.05141	5.05141
CO2	27443.3	27443.3	27443.4	27399.6	27399.6
N2	2.63188	2.63188	2.63407	0.0508372	0.0508372
Methane	481.057	481.057	481.228	42.609	42.609
Ethane	181.676	181.676	181.716	26.3813	26.3813
Propane	84.1462	84.1462	84.1622	10.5913	10.5913
i-Butane	10.0256	10.0256	10.027	1.04458	1.04458
n-Butane	31.4093	31.4093	31.4138	4.56103	4.56103
i-Pentane	3.37151	3.37151	3.37196	0.271665	0.271665
n-Pentane	4.68576	4.68576	4.68635	0.47595	0.47595
n-Hexane	3.02435	3.02435	3.02458	0.303487	0.303487
n-Heptane	0.287614	0.287614	0.287644	0.0109857	0.0109857
n-Octane	0.0909668	0.0909668	0.0909709	0.00682498	0.00682498
n-Nonane	0.00587471	0.00587471	0.00587506	0.000129904	0.000129904
n-Decane	0	0	0	0	0
Water	249974	249974	250186	250159	250159
MDEA	210751	210751	210754	210754	210754
Piperazine	40134.9	40134.9	40142.1	40142.1	40142.1
TEG	5.69494	5.69494	5.69494	5.69494	5.69494
UCARSOL™ AP-814	0	0	0	0	0
Benzene	36.7855	36.7855	36.791	34.2243	34.2243
Toluene	19.4103	19.4103	19.4123	18.1176	18.1176
Ethylbenzene	6.35351	6.35351	6.35412	5.85966	5.85966
m-Xylene	5.58271	5.58271	5.58329	5.26133	5.26133
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-11	250-12	250-13	250-14	250-15
Temperature	°F	144.808	147.525	147.506	147.506	147.55
Pressure	psig	978.5	65	65 *	65	50
Mole Fraction Vapor	%	0	0.223753	0.223662	0	0.00489664
Molecular Weight	lb/lbmol	31.5485	31.5485	31.5394	31.5629	31.5629
Mass Density	lb/ft^3	68.5668	49.0358	49.0357	68.5981	67.8643
Molar Flow	lbmol/h	16773.7	16773.7	16785.6	16748	16748
Mass Flow	lb/h	529185	529185	529407	528616	528616
Std Vapor Volumetric Flow	MMSCFD	152.768	152.768	152.876	152.535	152.535
Std Liquid Volumetric Flow	sgpm	1087.04	1087.04	1087.49	1083.08	1083.08
Specific Gravity		1.09938			1.09988	
API Gravity		-4.36156			-4.48746	
Gross Ideal Gas Heating Value	Btu/ft^3	551.929	551.929	551.598	550.217	550.217
Gross Liquid Heating Value	Btu/lb	5979.09	5979.09	5976.87	5954.48	5954.48

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-16	250-17	250-20	250-21	250-22
From Block	E-220X	LCV-2401	T-2501	AC-2300	P-2607
To Block	LCV-2401	T-2501	AC-2300	P-2607	T-2501

Stream Composition

Mole Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.00088499	0.00088499	0.00986404	4.84968E-05	4.84968E-05
CO2	3.71736	3.71736	47.43	0.0937958	0.0937958
N2	1.08356E-05	1.08356E-05	0.000139682	3.99393E-09	3.99393E-09
Methane	0.0158587	0.0158587	0.204437	1.13122E-05	1.13122E-05
Ethane	0.00523858	0.00523858	0.0675316	4.17226E-06	4.17226E-06
Propane	0.00143413	0.00143413	0.0184876	8.77088E-07	8.77088E-07
i-Butane	0.000107309	0.000107309	0.00138332	4.13892E-08	4.13892E-08
n-Butane	0.000468551	0.000468551	0.00604014	2.72281E-07	2.72281E-07
i-Pentane	2.24823E-05	2.24823E-05	0.000289819	6.59133E-09	6.59133E-09
n-Pentane	3.93885E-05	3.93885E-05	0.000507757	1.4257E-08	1.4257E-08
n-Hexane	2.10278E-05	2.10278E-05	0.000271068	4.31085E-09	4.31085E-09
n-Heptane	6.54616E-07	6.54616E-07	8.43858E-06	0	0
n-Octane	3.5675E-07	3.5675E-07	4.59882E-06	0	0
n-Nonane	6.04762E-09	6.04762E-09	7.7959E-08	0	0
n-Decane	0	0	0	0	0
Water	82.911	82.911	52.1838	99.8643	99.8643
MDEA	10.5603	10.5603	0.0112939	0.0233183	0.0233183
Piperazine	2.78262	2.78262	0.00887122	0.0183162	0.0183162
TEG	0.00022643	0.00022643	2.79722E-08	5.77536E-08	5.77536E-08
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0026161	0.0026161	0.0337934	0.00014394	0.00014394
Toluene	0.00117408	0.00117408	0.0151583	4.85834E-05	4.85834E-05
Ethylbenzene	0.000329555	0.000329555	0.00425361	1.1105E-05	1.1105E-05
m-Xylene	0.000295904	0.000295904	0.00382168	1.49378E-05	1.49378E-05
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
H2S	0.000955591	0.000955591	0.0110531	9.14375E-05	9.14375E-05
CO2	5.18327	5.18327	68.6305	0.228365	0.228365
N2	9.61704E-06	9.61704E-06	0.000128654	6.18967E-09	6.18967E-09
Methane	0.00806048	0.00806048	0.107832	1.00397E-05	1.00397E-05
Ethane	0.00499064	0.00499064	0.0667644	6.94051E-06	6.94051E-06
Propane	0.00200359	0.00200359	0.0268037	2.13963E-06	2.13963E-06
i-Butane	0.000197607	0.000197607	0.00264353	1.33085E-07	1.33085E-07
n-Butane	0.000862824	0.000862824	0.0115427	8.75508E-07	8.75508E-07
i-Pentane	5.13917E-05	5.13917E-05	0.000687501	2.63089E-08	2.63089E-08
n-Pentane	9.00371E-05	9.00371E-05	0.00120449	5.69058E-08	5.69058E-08
n-Hexane	5.74116E-05	5.74116E-05	0.000768031	2.05516E-08	2.05516E-08
n-Heptane	2.07819E-06	2.07819E-06	2.78012E-05	0	0
n-Octane	1.2911E-06	1.2911E-06	1.72718E-05	0	0
n-Nonane	2.45744E-08	2.45744E-08	3.28745E-07	0	0
n-Decane	0	0	0	0	0
Water	47.3235	47.3235	30.9097	99.5295	99.5295
MDEA	39.8691	39.8691	0.0442486	0.153722	0.153722
Piperazine	7.59381	7.59381	0.0251237	0.0872809	0.0872809
TEG	0.00107733	0.00107733	1.38113E-07	4.79812E-07	4.79812E-07
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.00647432	0.00647432	0.0867894	0.000622013	0.000622013
Toluene	0.00342736	0.00342736	0.0459209	0.000247645	0.000247645
Ethylbenzene	0.00110849	0.00110849	0.0148476	6.52232E-05	6.52232E-05
m-Xylene	0.000995302	0.000995302	0.0133399	8.7734E-05	8.7734E-05
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-16 %	250-17 %	250-20 %	250-21 %	250-22 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-16 lb/h	250-17 lb/h	250-20 lb/h	250-21 lb/h	250-22 lb/h
H2S	5.05141	5.05141	4.36766	0.0104005	0.0104005
CO2	27399.6	27399.6	27119.5	25.9752	25.9752
N2	0.0508372	0.0508372	0.0508379	7.04037E-07	7.04037E-07
Methane	42.609	42.609	42.6101	0.00114195	0.00114195
Ethane	26.3813	26.3813	26.3821	0.000789442	0.000789442
Propane	10.5913	10.5913	10.5915	0.00024337	0.00024337
i-Butane	1.04458	1.04458	1.0446	1.51376E-05	1.51376E-05
n-Butane	4.56103	4.56103	4.56112	9.95837E-05	9.95837E-05
i-Pentane	0.271665	0.271665	0.271668	2.99248E-06	2.99248E-06
n-Pentane	0.47595	0.47595	0.475957	6.47269E-06	6.47269E-06
n-Hexane	0.303487	0.303487	0.303489	2.33762E-06	2.33762E-06
n-Heptane	0.0109857	0.0109857	0.0109857	0	0
n-Octane	0.00682498	0.00682498	0.00682501	0	0
n-Nonane	0.000129904	0.000129904	0.000129904	0	0
n-Decane	0	0	0	0	0
Water	250159	250159	12214.1	11320.9	11320.9
MDEA	210754	210754	17.4849	17.4849	17.4849
Piperazine	40142.1	40142.1	9.9277	9.92768	9.92768
TEG	5.69494	5.69494	5.45759E-05	5.45758E-05	5.45758E-05
UCARSOL™ AP-814	0	0	0	0	0
Benzene	34.2243	34.2243	34.2951	0.0707502	0.0707502
Toluene	18.1176	18.1176	18.1458	0.0281681	0.0281681
Ethylbenzene	5.85966	5.85966	5.86707	0.00741875	0.00741875
m-Xylene	5.26133	5.26133	5.27131	0.00997922	0.00997922
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-16	250-17	250-20	250-21	250-22
Temperature	°F	215 *	209.964	209.715	120 *	120.265
Pressure	psig	45	15 *	12	10	42.454
Mole Fraction Vapor	%	0.0375715	0.565893	100	0	0
Molecular Weight	lb/lbmol	31.5629	31.5629	30.4146	18.0759	18.0759
Mass Density	lb/ft^3	61.3947	16.6202	0.107423	61.7162	61.7142
Molar Flow	lbmol/h	16748	16748	1299.22	629.258	629.258
Mass Flow	lb/h	528616	528616	39515.3	11374.4	11374.4
Std Vapor Volumetric Flow	MMSCFD	152.535	152.535	11.8328	5.73105	5.73105
Std Liquid Volumetric Flow	sgpm	1083.08	1083.08	91.4737	22.7562	22.7562
Specific Gravity				1.05014	0.989537	0.989505
API Gravity					9.89119	9.88723
Gross Ideal Gas Heating Value	Btu/ft^3	550.217	550.217	33.4369	51.7907	51.7907
Gross Liquid Heating Value	Btu/lb	5954.48	5954.48	37.5499	31.6026	31.6026

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-25	250-28	250-29	250-30	250-31
From Block	AC-2300	T-2501	E-2203	E-2203	E-220X
To Block	M4	E-2203	T-2501	E-220X	P-2600

Stream Composition

Mole Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.0190833	0.000131657	0.000158526	0.000126681	0.000126681
CO2	91.8903	0.0608222	0.155699	0.0432508	0.0432508
N2	0.000270873	0	0	0	0
Methane	0.396443	0	0	0	0
Ethane	0.130956	0	0	0	0
Propane	0.0358512	0	0	0	0
i-Butane	0.00268257	0	0	0	0
n-Butane	0.0117131	0	0	0	0
i-Pentane	0.000562024	0	0	0	0
n-Pentane	0.000984652	0	0	0	0
n-Hexane	0.000525663	0	0	0	0
n-Heptane	1.63644E-05	0	0	0	0
n-Octane	8.9182E-06	0	0	0	0
n-Nonane	1.51181E-07	0	0	0	0
n-Decane	0	0	0	0	0
Water	7.4002	88.1763	99.6165	86.0575	86.0575
MDEA	1.59439E-08	9.29076	0.0601555	11.0003	11.0003
Piperazine	2.8713E-08	2.47181	0.167496	2.89857	2.89857
TEG	0	0.000199037	1.86086E-07	0.000235865	0.000235865
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.0653985	0	0	0	0
Toluene	0.0293501	0	0	0	0
Ethylbenzene	0.00823836	0	0	0	0
m-Xylene	0.00739714	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
H2S	0.0154837	0.000154126	0.000296351	0.000138699	0.000138699
CO2	96.2784	0.0919452	0.375861	0.0611493	0.0611493
N2	0.000180653	0	0	0	0
Methane	0.151413	0	0	0	0
Ethane	0.0937474	0	0	0	0
Propane	0.0376367	0	0	0	0
i-Butane	0.00371198	0	0	0	0
n-Butane	0.0162078	0	0	0	0
i-Pentane	0.000965375	0	0	0	0
n-Pentane	0.00169131	0	0	0	0
n-Hexane	0.00107846	0	0	0	0
n-Heptane	3.90381E-05	0	0	0	0
n-Octane	2.42529E-05	0	0	0	0
n-Nonane	4.61621E-07	0	0	0	0
n-Decane	0	0	0	0	0
Water	3.17393	54.5649	98.4393	49.8059	49.8059
MDEA	4.52319E-08	38.0286	0.393197	42.1109	42.1109
Piperazine	5.88808E-08	7.31337	0.791379	8.0208	8.0208
TEG	0	0.00102671	1.53286E-06	0.00113791	0.00113791
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0.121618	0	0	0	0
Toluene	0.0643818	0	0	0	0
Ethylbenzene	0.0208226	0	0	0	0
m-Xylene	0.0186964	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-25 %	250-28 %	250-29 %	250-30 %	250-31 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-25 lb/h	250-28 lb/h	250-29 lb/h	250-30 lb/h	250-31 lb/h
H2S	4.35726	0.85503	0.160876	0.694154	0.694154
CO2	27093.6	510.076	204.039	306.037	306.037
N2	0.0508372	0	0	0	0
Methane	42.609	0	0	0	0
Ethane	26.3813	0	0	0	0
Propane	10.5913	0	0	0	0
i-Butane	1.04458	0	0	0	0
n-Butane	4.56103	0	0	0	0
i-Pentane	0.271665	0	0	0	0
n-Pentane	0.47595	0	0	0	0
n-Hexane	0.303487	0	0	0	0
n-Heptane	0.0109857	0	0	0	0
n-Octane	0.00682498	0	0	0	0
n-Nonane	0.000129904	0	0	0	0
n-Decane	0	0	0	0	0
Water	893.17	302705	53438.5	249266	249266
MDEA	1.27286E-05	210968	213.45	210754	210754
Piperazine	1.65696E-05	40571.7	429.606	40142.1	40142.1
TEG	0	5.69577	0.000832124	5.69494	5.69494
UCARSOL™ AP-814	0	0	0	0	0
Benzene	34.2243	0	0	0	0
Toluene	18.1176	0	0	0	0
Ethylbenzene	5.85966	0	0	0	0
m-Xylene	5.26133	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-25	250-28	250-29	250-30	250-31
Temperature	°F	120	251.217	252.459	252.459	190.528
Pressure	psig	10	14	14	14	9
Mole Fraction Vapor	%	100	0	100	0	0
Molecular Weight	lb/lbmol	42.0037	29.1125	18.2307	31.1278	31.1278
Mass Density	lb/ft^3	0.157532	60.4111	0.0656971	60.3918	62.3059
Molar Flow	lbmol/h	669.961	19055.8	2977.71	16078.1	16078.1
Mass Flow	lb/h	28140.9	554761	54285.7	500475	500475
Std Vapor Volumetric Flow	MMSCFD	6.10175	173.553	27.1198	146.433	146.433
Std Liquid Volumetric Flow	sgpm	68.7175	1123.29	108.928	1014.36	1014.36
Specific Gravity		1.45028	0.968612	0.62946	0.968302	0.998993
API Gravity			4.43084		4.1047	4.10559
Gross Ideal Gas Heating Value	Btu/ft^3	16.1981	492.11	58.2178	572.469	572.469
Gross Liquid Heating Value	Btu/lb	39.9538	5687.98	165.015	6287.05	6287.05

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-32	250-33A	250-33B	250-34	250-35
From Block	P-2600	R1	MAKEUP	AC-2301	P-2604
To Block	R1	MAKEUP	AC-2301	P-2604	FCV-3604

Stream Composition

Mole Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	0.000126681	0.000126235	0.000125662	0.000125662	0.000125662
CO2	0.0432508	0.0432434	0.0430473	0.0430473	0.0430473
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	86.0575	86.0576	86.1207	86.1207	86.1207
MDEA	11.0003	11.0003	10.9504	10.9504	10.9504
Piperazine	2.89857	2.89857	2.88554	2.88554	2.88554
TEG	0.000235865	0.000227295	0.000226264	0.000226264	0.000226264
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
H2S	0.000138699	0.00013821	0.000137846	0.000137846	0.000137846
CO2	0.0611493	0.0611389	0.060978	0.060978	0.060978
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	49.8059	49.806	49.9378	49.9378	49.9378
MDEA	42.1109	42.1108	42	42	42
Piperazine	8.0208	8.02079	8	8	8
TEG	0.00113791	0.00109656	0.00109367	0.00109367	0.00109367
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-32 %	250-33A %	250-33B %	250-34 %	250-35 %
Cyclopentane	0	0	0	0	0

Mass Flow	250-32 lb/h	250-33A lb/h	250-33B lb/h	250-34 lb/h	250-35 lb/h
H2S	0.694154	0.691708	0.691708	0.691708	0.691708
CO2	306.037	305.985	305.985	305.985	305.985
N2	0	0	0	0	0
Methane	0	0	0	0	0
Ethane	0	0	0	0	0
Propane	0	0	0	0	0
i-Butane	0	0	0	0	0
n-Butane	0	0	0	0	0
i-Pentane	0	0	0	0	0
n-Pentane	0	0	0	0	0
n-Hexane	0	0	0	0	0
n-Heptane	0	0	0	0	0
n-Octane	0	0	0	0	0
n-Nonane	0	0	0	0	0
n-Decane	0	0	0	0	0
Water	249266	249267	250586	250586	250586
MDEA	210754	210754	210754	210754	210754
Piperazine	40142.1	40142.1	40143.7	40143.7	40143.7
TEG	5.69494	5.48801	5.48801	5.48801	5.48801
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	0	0	0	0
Toluene	0	0	0	0	0
Ethylbenzene	0	0	0	0	0
m-Xylene	0	0	0	0	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-32	250-33A	250-33B	250-34	250-35
Temperature	°F	190.613	190.618	190.354	120 *	122.195
Pressure	psig	47.0208	47.0206	47.0206	42.0206	1043.5
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	31.1278	31.1278	31.0684	31.0684	31.0684
Mass Density	lb/ft^3	62.3079	62.3078	62.3127	64.0261	64.0773
Molar Flow	lbmol/h	16078.1	16078.1	16151.3	16151.3	16151.3
Mass Flow	lb/h	500475	500475	501796	501796	501796
Std Vapor Volumetric Flow	MMSCFD	146.433	146.433	147.1	147.1	147.1
Std Liquid Volumetric Flow	sgpm	1014.36	1014.36	1017 *	1017	1017
Specific Gravity		0.999025	0.999022	0.999101	1.02657	1.02739
API Gravity		4.09888	4.09891	4.109	4.10988	3.93463
Gross Ideal Gas Heating Value	Btu/ft^3	572.469	572.468	570.103	570.103	570.103
Gross Liquid Heating Value	Btu/lb	6287.05	6287.04	6270.54	6270.54	6270.54

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-36	250-41	250-42	250-70	250-83
From Block	FCV-3604	Mult x 3	PCV-2401A	V-2400	F-2457
To Block	T-2500	PCV-2401A	Amine OG	From Amine	--

Stream Composition

Mole Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	0.000125662	0.00128784	0.00128784	2.31527E-07	
CO2	0.0430473	2.65003	2.65003	2.67954E-06	
N2	0	0.245624	0.245624	1.01814	
Methane	0	72.8263	72.8263	77.8299	
Ethane	0	13.7601	13.7601	11.8757	
Propane	0	4.44409	4.44409	5.56886	
i-Butane	0	0.411646	0.411646	0.761822	
n-Butane	0	1.23061	1.23061	1.67013	
i-Pentane	0	0.114458	0.114458	0.353426	
n-Pentane	0	0.155442	0.155442	0.377121	
n-Hexane	0	0.0841071	0.0841071	0.258703	
n-Heptane	0	0.00735426	0.00735426	0.0733089	
n-Octane	0	0.00196214	0.00196214	0.0125272	
n-Nonane	0	0.000119316	0.000119316	0.00331598	
n-Decane	0	0	0	0	
Water	86.1207	3.92074	3.92074	0.156529	
MDEA	10.9504	0.00049087	0.00049087	1.15753E-06	
Piperazine	2.88554	0.00023029	0.00023029	6.95562E-05	
TEG	0.000226264	6.55554E-10	6.55554E-10	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.0875253	0.0875253	0.0213118	
Toluene	0	0.0374298	0.0374298	0.0112556	
Ethylbenzene	0	0.0124059	0.0124059	0.0046996	
m-Xylene	0	0.00807793	0.00807793	0.00315207	
Cyclohexane	0	0	0	0	
Cyclopentane	0	0	0	0	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
H2S	0.000137846	0.0020822	0.0020822	3.73668E-07	
CO2	0.060978	5.53283	5.53283	5.58444E-06	
N2	0	0.326427	0.326427	1.35066	
Methane	0	55.4254	55.4254	59.1276	
Ethane	0	19.6286	19.6286	16.9104	
Propane	0	9.29669	9.29669	11.6288	
i-Butane	0	1.13505	1.13505	2.09686	
n-Butane	0	3.39321	3.39321	4.5969	
i-Pentane	0	0.391764	0.391764	1.20754	
n-Pentane	0	0.532042	0.532042	1.28849	
n-Hexane	0	0.343847	0.343847	1.05574	
n-Heptane	0	0.0349595	0.0349595	0.347861	
n-Octane	0	0.010633	0.010633	0.0677645	
n-Nonane	0	0.000725978	0.000725978	0.02014	
n-Decane	0	0	0	0	
Water	49.9378	3.35088	3.35088	0.133539	
MDEA	42	0.00277495	0.00277495	6.53195E-06	
Piperazine	8	0.000941038	0.000941038	0.000283721	
TEG	0.00109367	4.67035E-09	4.67035E-09	0	
UCARSOL™ AP-814	0	0	0	0	
Benzene	0	0.32434	0.32434	0.0788333	
Toluene	0	0.163609	0.163609	0.0491112	
Ethylbenzene	0	0.0624828	0.0624828	0.0236274	
m-Xylene	0	0.0406847	0.0406847	0.0158471	
Cyclohexane	0	0	0	0	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-36 %	250-41 %	250-42 %	250-70 %	250-83 %
Cyclopentane	0	0	0	0	

Mass Flow	250-36 lb/h	250-41 lb/h	250-42 lb/h	250-70 lb/h	250-83 lb/h
H2S	0.691708	0.0494335	0.0494335	0.00210877	0
CO2	305.985	131.355	131.355	0.0315155	0
N2	0	7.7497	7.7497	7622.34	0
Methane	0	1315.86	1315.86	333683	0
Ethane	0	466.003	466.003	95432.5	0
Propane	0	220.713	220.713	65626.4	0
i-Butane	0	26.9473	26.9473	11833.5	0
n-Butane	0	80.5582	80.5582	25942.3	0
i-Pentane	0	9.30087	9.30087	6814.67	0
n-Pentane	0	12.6312	12.6312	7271.54	0
n-Hexane	0	8.16328	8.16328	5958.01	0
n-Heptane	0	0.829974	0.829974	1963.13	0
n-Octane	0	0.252438	0.252438	382.425	0
n-Nonane	0	0.0172355	0.0172355	113.659	0
n-Decane	0	0	0	0	0
Water	250586	79.5534	79.5534	753.62	0
MDEA	210754	0.0658801	0.0658801	0.0368627	0
Piperazine	40143.7	0.0223412	0.0223412	1.60116	0
TEG	5.48801	1.10879E-07	1.10879E-07	0	0
UCARSOL™ AP-814	0	0	0	0	0
Benzene	0	7.70015	7.70015	444.891	0
Toluene	0	3.88425	3.88425	277.156	0
Ethylbenzene	0	1.4834	1.4834	133.34	0
m-Xylene	0	0.965896	0.965896	89.4322	0
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0

Stream Properties

Property	Units	250-36	250-41	250-42	250-70	250-83
Temperature	°F	122.237	147.506	145.854	109.58	
Pressure	psig	1028.5 *	65	40 *	972	978.5
Mole Fraction Vapor	%	0	100	100	100	
Molecular Weight	lb/lbmol	31.0684	21.079	21.079	21.1167	
Mass Density	lb/ft^3	64.0749	0.256074	0.173951	4.17001	
Molar Flow	lbmol/h	16151.3	112.629	112.629	26725	0
Mass Flow	lb/h	501796	2374.1	2374.1	564344	0
Std Vapor Volumetric Flow	MMSCFD	147.1	1.02578	1.02578	243.401	0
Std Liquid Volumetric Flow	sgpm	1017	13.2577	13.2577	3241.91	0
Specific Gravity		1.02736	0.727804	0.727804	0.729106	
API Gravity		3.93724				
Gross Ideal Gas Heating Value	Btu/ft^3	570.103	1167.78	1167.78	1264.02	
Gross Liquid Heating Value	Btu/lb	6270.54	20928.9	20928.9	22652.6	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Connections

	250-85	250-86			
From Block	V-2400	LCV-2400			
To Block	LCV-2400	M3			

Stream Composition

Mole Fraction	250-85 %	250-86 %			
H2S	0.000130283	0.000130283			
CO2	0.014541	0.014541			
N2	0.000657332	0.000657332			
Methane	0.0895176	0.0895176			
Ethane	0.0111439	0.0111439			
Propane	0.00305996	0.00305996			
i-Butane	0.000202893	0.000202893			
n-Butane	0.000642667	0.000642667			
i-Pentane	5.23715E-05	5.23715E-05			
n-Pentane	6.96865E-05	6.96865E-05			
n-Hexane	2.22358E-05	2.22358E-05			
n-Heptane	2.47493E-06	2.47493E-06			
n-Octane	3.07419E-07	3.07419E-07			
n-Nonane	2.26617E-08	2.26617E-08			
n-Decane	0	0			
Water	98.954	98.954			
MDEA	0.215845	0.215845			
Piperazine	0.709234	0.709234			
TEG	3.21661E-07	3.21661E-07			
UCARSOL™ AP-814	0	0			
Benzene	0.000598752	0.000598752			
Toluene	0.000188079	0.000188079			
Ethylbenzene	4.88857E-05	4.88857E-05			
m-Xylene	4.62516E-05	4.62516E-05			
Cyclohexane	0	0			
Cyclopentane	0	0			

Mass Fraction	250-85 %	250-86 %			
H2S	0.000237162	0.000237162			
CO2	0.0341812	0.0341812			
N2	0.000983555	0.000983555			
Methane	0.0767057	0.0767057			
Ethane	0.017898	0.017898			
Propane	0.00720708	0.00720708			
i-Butane	0.00062988	0.00062988			
n-Butane	0.00199515	0.00199515			
i-Pentane	0.000201824	0.000201824			
n-Pentane	0.00026855	0.00026855			
n-Hexane	0.000102349	0.000102349			
n-Heptane	1.32461E-05	1.32461E-05			
n-Octane	1.87566E-06	1.87566E-06			
n-Nonane	1.55244E-07	1.55244E-07			
n-Decane	0	0			
Water	95.2188	95.2188			
MDEA	1.37382	1.37382			
Piperazine	3.26302	3.26302			
TEG	2.58011E-06	2.58011E-06			
UCARSOL™ AP-814	0	0			
Benzene	0.00249811	0.00249811			
Toluene	0.000925612	0.000925612			
Ethylbenzene	0.000277211	0.000277211			
m-Xylene	0.000262275	0.000262275			
Cyclohexane	0	0			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Amine	

Mass Fraction	250-85 %	250-86 %
Cyclopentane	0	0

Mass Flow	250-85 lb/h	250-86 lb/h
H2S	0.000527315	0.000527315
CO2	0.0759997	0.0759997
N2	0.00218687	0.00218687
Methane	0.17055	0.17055
Ethane	0.0397951	0.0397951
Propane	0.0160245	0.0160245
i-Butane	0.0014005	0.0014005
n-Butane	0.00443609	0.00443609
i-Pentane	0.000448742	0.000448742
n-Pentane	0.000597104	0.000597104
n-Hexane	0.000227567	0.000227567
n-Heptane	2.94518E-05	2.94518E-05
n-Octane	4.1704E-06	4.1704E-06
n-Nonane	3.45175E-07	3.45175E-07
n-Decane	0	0
Water	211.713	211.713
MDEA	3.0546	3.0546
Piperazine	7.25512	7.25512
TEG	5.73671E-06	5.73671E-06
UCARSOL™ AP-814	0	0
Benzene	0.00555439	0.00555439
Toluene	0.00205804	0.00205804
Ethylbenzene	0.000616361	0.000616361
m-Xylene	0.000583151	0.000583151
Cyclohexane	0	0
Cyclopentane	0	0

Stream Properties

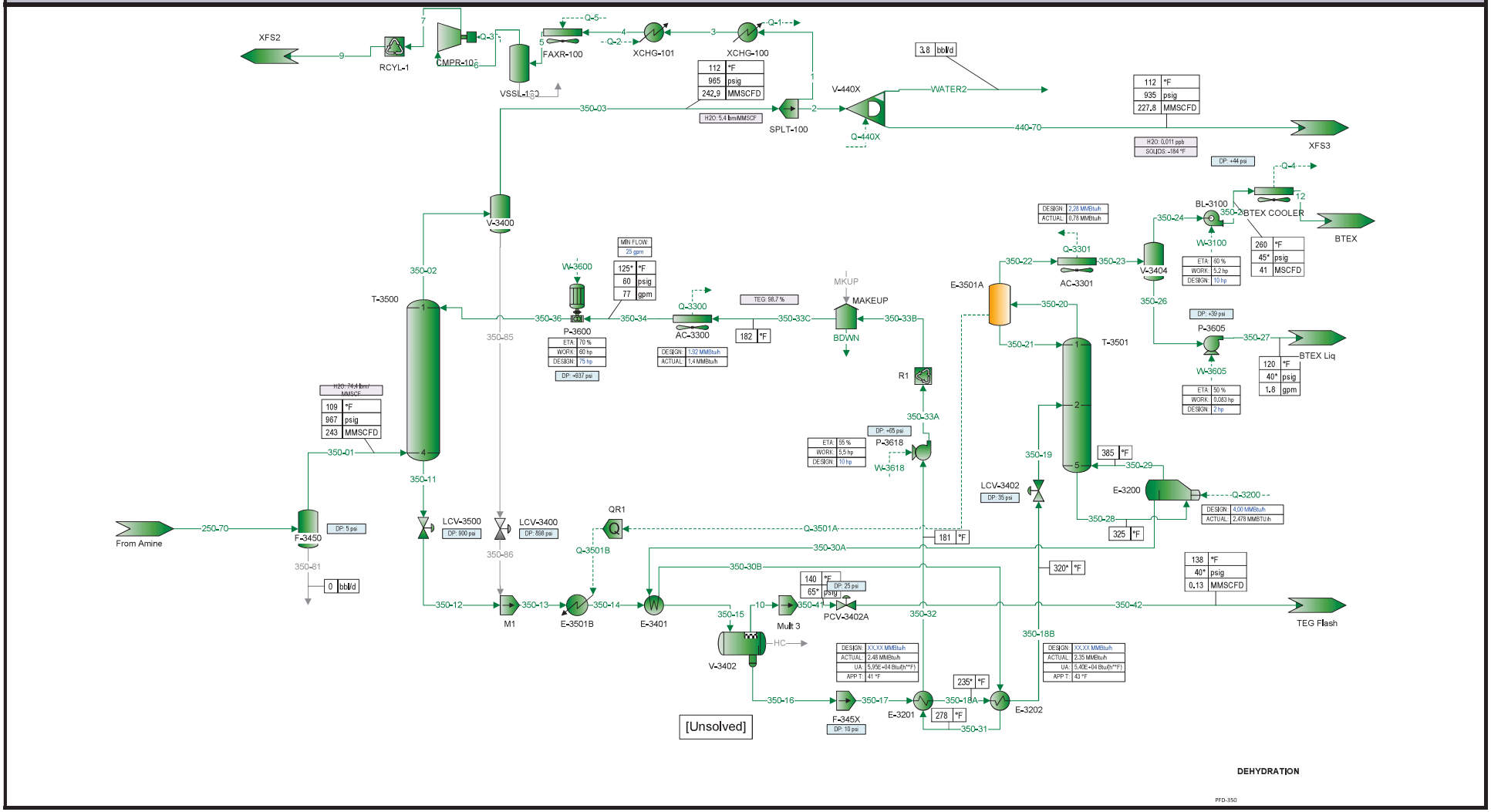
Property	Units	250-85	250-86
Temperature	°F	109.58	111.746
Pressure	psig	972	65 *
Mole Fraction Vapor	%	0	0.096535
Molecular Weight	lb/lbmol	18.722	18.722
Mass Density	lb/ft^3	62.024	49.7415
Molar Flow	lbmol/h	11.8761	11.8761
Mass Flow	lb/h	222.343	222.343
Std Vapor Volumetric Flow	MMSCFD	0.108163	0.108163
Std Liquid Volumetric Flow	sgpm	0.450872	0.450872
Specific Gravity		0.994473	
API Gravity		9.50914	
Gross Ideal Gas Heating Value	Btu/ft^3	83.8109	83.8109
Gross Liquid Heating Value	Btu/lb	676.772	676.772

Remarks

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Dehydration
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	BDWN	HC	MKUP	WATER2	1
From Block	MAKEUP	V-3402	--	V-440X	SPLT-100
To Block	--	--	MAKEUP	--	XCHG-100

Stream Composition

Mole Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	2.97874E-11		0 *	0	2.2817E-07
CO2	2.42904E-12		0 *	0	2.67499E-06
N2	1.41751E-11		0 *	0	1.02027
Methane	8.12964E-08		0 *	0	77.9702
Ethane	6.7561E-07		0 *	0	11.8884
Propane	2.58163E-06		0 *	0	5.57117
i-Butane	9.74055E-07		0 *	0	0.761964
n-Butane	6.19491E-06		0 *	0	1.66888
i-Pentane	5.55052E-06		0 *	0	0.352925
n-Pentane	9.70095E-06		0 *	0	0.376257
n-Hexane	8.48177E-05		0 *	0	0.257499
n-Heptane	4.41155E-05		0 *	0	0.0726863
n-Octane	2.3928E-05		0 *	0	0.0123693
n-Nonane	2.24289E-05		0 *	0	0.00325326
n-Decane	0		0 *	0	0
Water	9.60873		0.827516 *	99.2756	0.0114653
TEG	90.3481		99.1725 *	0.724403	8.36613E-05
Benzene	0.00476642		0 *	0	0.0180907
Toluene	0.0115425		0 *	0	0.00876208
Ethylbenzene	0.0160734		0 *	0	0.00339129
m-Xylene	0.0105889		0 *	0	0.00231939
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

Mass Fraction	BDWN %	HC %	MKUP %	WATER2 %	1 %
H2S	7.38569E-12		0 *	0	3.68403E-07
CO2	7.7773E-13		0 *	0	5.57727E-06
N2	2.88895E-12		0 *	0	1.35404
Methane	9.48834E-09		0 *	0	59.2588
Ethane	1.47796E-07		0 *	0	16.9355
Propane	8.28204E-07		0 *	0	11.6385
i-Butane	4.11882E-07		0 *	0	2.09812
n-Butane	2.61954E-06		0 *	0	4.59536
i-Pentane	2.91347E-06		0 *	0	1.20633
n-Pentane	5.09203E-06		0 *	0	1.28608
n-Hexane	5.31763E-05		0 *	0	1.05126
n-Heptane	3.21599E-05		0 *	0	0.34505
n-Octane	1.98851E-05		0 *	0	0.066938
n-Nonane	2.09281E-05		0 *	0	0.0197673
n-Decane	0		0 *	0	0
Water	1.25937		0.1 *	94.2662	0.00978546
TEG	98.7094		99.9 *	5.73383	0.00059521
Benzene	0.00270867		0 *	0	0.0669463
Toluene	0.00773729		0 *	0	0.0382473
Ethylbenzene	0.0124147		0 *	0	0.0170569
m-Xylene	0.00817865		0 *	0	0.0116656
Cyclohexane	0		0 *	0	0
Cyclopentane	0		0 *	0	0
SO2	0		0 *	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	BDWN lb/h	HC lb/h	MKUP lb/h	WATER2 lb/h	1 lb/h
H2S	1.41657E-13	0	0	0	0.000128073
CO2	1.49168E-14	0	0	0	0.0019389
N2	5.54097E-14	0	0	0	470.723
Methane	1.81986E-10	0	0	0	20600.9
Ethane	2.83472E-09	0	0	0	5887.5
Propane	1.58849E-08	0	0	0	4046.02
i-Butane	7.89987E-09	0	0	0	729.396
n-Butane	5.02425E-08	0	0	0	1597.54
i-Pentane	5.58801E-08	0	0	0	419.37
n-Pentane	9.76647E-08	0	0	0	447.095
n-Hexane	1.01992E-06	0	0	0	365.464
n-Heptane	6.16825E-07	0	0	0	119.954
n-Octane	3.81395E-07	0	0	0	23.2705
n-Nonane	4.01399E-07	0	0	0	6.87194
n-Decane	0	0	0	0	0
Water	0.0241547	0	0	51.6774	3.40184
TEG	1.89324	0	0	3.14333	0.20692
Benzene	5.19521E-05	0	0	0	23.2734
Toluene	0.000148401	0	0	0	13.2964
Ethylbenzene	0.000238114	0	0	0	5.92969
m-Xylene	0.000156866	0	0	0	4.05547
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	BDWN	HC	MKUP	WATER2	1
Temperature	°F	182.248	140	80 *	120 *	112.354
Pressure	psig	64.5957	65	70 *	965	965
Mole Fraction Vapor	%	0		0	0	100
Molecular Weight	lb/lbmol	137.452		149.079	18.9726	21.108
Mass Density	lb/ft^3	66.359		70.2029	62.258	4.09435
Molar Flow	lbmol/h	0.0139539	0	0	2.88947	1646.97
Mass Flow	lb/h	1.91799	0	0	54.8208	34764.3
Std Vapor Volumetric Flow	MMSCFD	0.000127086	0	0	0.0263161	15 *
Std Liquid Volumetric Flow	sgpm	0.00340017	0	0	0.10887	199.949
Specific Gravity		1.06398			0.998224	0.728804
API Gravity		-6.58308			8.61802	
Gross Ideal Gas Heating Value	Btu/ft^3	3737.24		4095.08	79.8549	1265.11
Gross Liquid Heating Value	Btu/lb	10048.2		10163.6	583.349	22683

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	2	3	4	5	6
From Block	SPLT-100	XCHG-100	XCHG-101	FAXR-100	VSSL-100
To Block	V-440X	XCHG-101	FAXR-100	VSSL-100	CMPR-100

Stream Composition

Mole Fraction	2 %	3 %	4 %	5 %	6 %
H2S	2.2817E-07	2.2817E-07	2.2817E-07	2.2817E-07	2.2817E-07
CO2	2.67499E-06	2.67499E-06	2.67499E-06	2.67499E-06	2.67499E-06
N2	1.02027	1.02027	1.02027	1.02027	1.02027
Methane	77.9702	77.9702	77.9702	77.9702	77.9702
Ethane	11.8884	11.8884	11.8884	11.8884	11.8884
Propane	5.57117	5.57117	5.57117	5.57117	5.57117
i-Butane	0.761964	0.761964	0.761964	0.761964	0.761964
n-Butane	1.66888	1.66888	1.66888	1.66888	1.66888
i-Pentane	0.352925	0.352925	0.352925	0.352925	0.352925
n-Pentane	0.376257	0.376257	0.376257	0.376257	0.376257
n-Hexane	0.257499	0.257499	0.257499	0.257499	0.257499
n-Heptane	0.0726863	0.0726863	0.0726863	0.0726863	0.0726863
n-Octane	0.0123693	0.0123693	0.0123693	0.0123693	0.0123693
n-Nonane	0.00325326	0.00325326	0.00325326	0.00325326	0.00325326
n-Decane	0	0	0	0	0
Water	0.0114653	0.0114653	0.0114653	0.0114653	0.0114653
TEG	8.36613E-05	8.36613E-05	8.36613E-05	8.36613E-05	8.36613E-05
Benzene	0.0180907	0.0180907	0.0180907	0.0180907	0.0180907
Toluene	0.00876208	0.00876208	0.00876208	0.00876208	0.00876208
Ethylbenzene	0.00339129	0.00339129	0.00339129	0.00339129	0.00339129
m-Xylene	0.00231939	0.00231939	0.00231939	0.00231939	0.00231939
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	2 %	3 %	4 %	5 %	6 %
H2S	3.68403E-07	3.68403E-07	3.68403E-07	3.68403E-07	3.68403E-07
CO2	5.57727E-06	5.57727E-06	5.57727E-06	5.57727E-06	5.57727E-06
N2	1.35404	1.35404	1.35404	1.35404	1.35404
Methane	59.2588	59.2588	59.2588	59.2588	59.2588
Ethane	16.9355	16.9355	16.9355	16.9355	16.9355
Propane	11.6385	11.6385	11.6385	11.6385	11.6385
i-Butane	2.09812	2.09812	2.09812	2.09812	2.09812
n-Butane	4.59536	4.59536	4.59536	4.59536	4.59536
i-Pentane	1.20633	1.20633	1.20633	1.20633	1.20633
n-Pentane	1.28608	1.28608	1.28608	1.28608	1.28608
n-Hexane	1.05126	1.05126	1.05126	1.05126	1.05126
n-Heptane	0.34505	0.34505	0.34505	0.34505	0.34505
n-Octane	0.066938	0.066938	0.066938	0.066938	0.066938
n-Nonane	0.0197673	0.0197673	0.0197673	0.0197673	0.0197673
n-Decane	0	0	0	0	0
Water	0.00978546	0.00978546	0.00978546	0.00978546	0.00978546
TEG	0.00059521	0.00059521	0.00059521	0.00059521	0.00059521
Benzene	0.0669463	0.0669463	0.0669463	0.0669463	0.0669463
Toluene	0.0382473	0.0382473	0.0382473	0.0382473	0.0382473
Ethylbenzene	0.0170569	0.0170569	0.0170569	0.0170569	0.0170569
m-Xylene	0.0116656	0.0116656	0.0116656	0.0116656	0.0116656
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	2 lb/h	3 lb/h	4 lb/h	5 lb/h	6 lb/h
H2S	0.00194555	0.000128073	0.000128073	0.000128073	0.000128073
CO2	0.0294538	0.0019389	0.0019389	0.0019389	0.0019389
N2	7150.76	470.723	470.723	470.723	470.723
Methane	312948	20600.9	20600.9	20600.9	20600.9
Ethane	89437	5887.5	5887.5	5887.5	5887.5
Propane	61463.2	4046.02	4046.02	4046.02	4046.02
i-Butane	11080.3	729.396	729.396	729.396	729.396
n-Butane	24268.3	1597.54	1597.54	1597.54	1597.54
i-Pentane	6370.66	419.37	419.37	419.37	419.37
n-Pentane	6791.82	447.095	447.095	447.095	447.095
n-Hexane	5551.77	365.464	365.464	365.464	365.464
n-Heptane	1822.22	119.954	119.954	119.954	119.954
n-Octane	353.502	23.2705	23.2705	23.2705	23.2705
n-Nonane	104.392	6.87194	6.87194	6.87194	6.87194
n-Decane	0	0	0	0	0
Water	51.6774	3.40184	3.40184	3.40184	3.40184
TEG	3.14333	0.20692	0.20692	0.20692	0.20692
Benzene	353.546	23.2734	23.2734	23.2734	23.2734
Toluene	201.986	13.2964	13.2964	13.2964	13.2964
Ethylbenzene	90.078	5.92969	5.92969	5.92969	5.92969
m-Xylene	61.6066	4.05547	4.05547	4.05547	4.05547
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	2	3	4	5	6
Temperature	°F	112.354	100 *	575 *	120 *	120
Pressure	psig	965	965	945	940	940
Mole Fraction Vapor	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.108	21.108	21.108	21.108	21.108
Mass Density	lb/ft^3	4.09435	4.26988	1.81542	3.87658	3.87658
Molar Flow	lbmol/h	25019.2	1646.97	1646.97	1646.97	1646.97
Mass Flow	lb/h	528104	34764.3	34764.3	34764.3	34764.3
Std Vapor Volumetric Flow	MMSCFD	227.865	15	15	15	15
Std Liquid Volumetric Flow	sgpm	3037.43	199.949	199.949	199.949	199.949
Specific Gravity		0.728804	0.728804	0.728804	0.728804	0.728804
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.11	1265.11	1265.11	1265.11	1265.11
Gross Liquid Heating Value	Btu/lb	22683	22683	22683	22683	22683

Warnings

ProMax:ProMax!Project!Flowsheets!Dehydration!PStreams!3

Warning: Initial guess algorithms predicted multiple phases.

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	7	8	9	10	12
From Block	CMPR-100	VSSL-100	RCYL-1	V-3402	BTEX COOLER
To Block	RCYL-1	--	XFS2	Mult 3	BTEX

Stream Composition

Mole Fraction	7 %	8 %	9 %	10 %	12 %
H2S	2.2817E-07		2.28262E-07	1.85323E-06	1.65536E-05
CO2	2.67499E-06		2.67658E-06	1.22109E-05	2.32793E-05
N2	1.02027		1.02022	0.213594	0.0112966
Methane	77.9702		77.9697	55.5497	11.4335
Ethane	11.8884		11.8887	20.6418	14.8154
Propane	5.57117		5.57124	12.9954	17.7526
i-Butane	0.761964		0.761965	1.80015	3.27457
n-Butane	1.66888		1.66892	4.88994	12.8623
i-Pentane	0.352925		0.352928	0.993627	3.8036
n-Pentane	0.376257		0.376268	1.17723	5.2087
n-Hexane	0.257499		0.25751	0.751288	4.93795
n-Heptane	0.0726863		0.0726922	0.210378	1.41654
n-Octane	0.0123693		0.0123705	0.0311086	0.164705
n-Nonane	0.00325326		0.00325347	0.0068769	0.0320839
n-Decane	0		0	0	0
Water	0.0114653		0.0114659	0.532268	11.5402
TEG	8.36613E-05		8.36665E-05	0.000359682	4.9514E-08
Benzene	0.0180907		0.0181795	0.123514	8.27383
Toluene	0.00876208		0.00881086	0.0534255	3.34358
Ethylbenzene	0.00339129		0.00340896	0.018069	0.683463
m-Xylene	0.00231939		0.00233157	0.011236	0.445627
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

Mass Fraction	7 %	8 %	9 %	10 %	12 %
H2S	3.68403E-07		3.68547E-07	2.29346E-06	1.1578E-05
CO2	5.57727E-06		5.58054E-06	1.95138E-05	2.10255E-05
N2	1.35404		1.35396	0.217273	0.00649448
Methane	59.2588		59.2578	32.3596	3.76427
Ethane	16.9355		16.9357	22.5381	9.14248
Propane	11.6385		11.6385	20.8083	16.0653
i-Butane	2.09812		2.0981	3.79928	3.90595
n-Butane	4.59536		4.59544	10.3204	15.3423
i-Pentane	1.20633		1.20633	2.60317	5.63189
n-Pentane	1.28608		1.2861	3.08418	7.71238
n-Hexane	1.05126		1.0513	2.35093	8.73293
n-Heptane	0.34505		0.345075	0.765467	2.91297
n-Octane	0.066938		0.066944	0.129034	0.38611
n-Nonane	0.0197673		0.0197684	0.0320271	0.0844486
n-Decane	0		0	0	0
Water	0.00978546		0.00978583	0.348195	4.26664
TEG	0.00059521		0.00059524	0.00196137	1.52598E-07
Benzene	0.0669463		0.0672742	0.350335	13.2634
Toluene	0.0382473		0.0384599	0.178747	6.32241
Ethylbenzene	0.0170569		0.0171456	0.0696571	1.48911
m-Xylene	0.0116656		0.0117268	0.0433156	0.97092
Cyclohexane	0		0	0	0
Cyclopentane	0		0	0	0
SO2	0		0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	7 lb/h	8 lb/h	9 lb/h	10 lb/h	12 lb/h
H2S	0.000128073	0	0.000128124	8.91561E-06	2.56521E-05
CO2	0.0019389	0	0.00194005	7.58584E-05	4.65837E-05
N2	470.723	0	470.7	0.84463	0.014389
Methane	20600.9	0	20600.7	125.795	8.34003
Ethane	5887.5	0	5887.63	87.615	20.2559
Propane	4046.02	0	4046.07	80.8904	35.5938
i-Butane	729.396	0	729.396	14.7694	8.65394
n-Butane	1597.54	0	1597.59	40.1196	33.9922
i-Pentane	419.37	0	419.374	10.1196	12.4779
n-Pentane	447.095	0	447.108	11.9895	17.0874
n-Hexane	365.464	0	365.481	9.13904	19.3485
n-Heptane	119.954	0	119.964	2.97569	6.45392
n-Octane	23.2705	0	23.2728	0.50161	0.855457
n-Nonane	6.87194	0	6.87239	0.124503	0.187103
n-Decane	0	0	0	0	0
Water	3.40184	0	3.402	1.35358	9.45307
TEG	0.20692	0	0.206933	0.00762467	3.38094E-07
Benzene	23.2734	0	23.3876	1.3619	29.386
Toluene	13.2964	0	13.3704	0.694865	14.0078
Ethylbenzene	5.92969	0	5.9606	0.270786	3.29924
m-Xylene	4.05547	0	4.07678	0.168386	2.15115
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	7	8	9	10	12
Temperature	°F	129.834	120	129.834	140	120 *
Pressure	psig	1000 *	940	1000	65	45
Mole Fraction Vapor	%	100		100	100	66.4457
Molecular Weight	lb/lbmol	21.108		21.1082	27.5391	48.727
Mass Density	lb/ft^3	4.03641		4.03647	0.342844	0.71685
Molar Flow	lbmol/h	1646.97	0	1646.97	14.116	4.54693
Mass Flow	lb/h	34764.3	0	34764.6	388.741	221.558
Std Vapor Volumetric Flow	MMSCFD	15	0	15	0.128563	0.0414117
Std Liquid Volumetric Flow	sgpm	199.949	0	199.95	1.95758	0.76058
Specific Gravity		0.728804		0.728811	0.950853	
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.11		1265.12	1616.89	2560.42
Gross Liquid Heating Value	Btu/lb	22683		22682.9	22171.4	19743.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	250-70	350-01	350-02	350-03	350-11
From Block	From Amine	F-3450	T-3500	V-3400	T-3500
To Block	F-3450	T-3500	V-3400	SPLT-100	LCV-3500

Stream Composition

Mole Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	2.31528E-07	2.31528E-07	2.2817E-07	2.2817E-07	2.81338E-07
CO2	2.67954E-06	2.67954E-06	2.67499E-06	2.67499E-06	7.60969E-07
N2	1.01814	1.01814	1.02027	1.02027	0.0083652
Methane	77.83	77.83	77.9702	77.9702	2.28112
Ethane	11.8757	11.8757	11.8884	11.8884	0.980012
Propane	5.56886	5.56886	5.57117	5.57117	0.725281
i-Butane	0.761823	0.761823	0.761964	0.761964	0.111861
n-Butane	1.67013	1.67013	1.66888	1.66888	0.359022
i-Pentane	0.353427	0.353427	0.352925	0.352925	0.0931746
n-Pentane	0.377121	0.377121	0.376257	0.376257	0.123371
n-Hexane	0.258703	0.258703	0.257499	0.257499	0.129159
n-Heptane	0.073309	0.073309	0.0726863	0.0726863	0.057087
n-Octane	0.0125272	0.0125272	0.0123693	0.0123693	0.013518
n-Nonane	0.00331598	0.00331598	0.00325326	0.00325326	0.00511354
n-Decane	0	0	0	0	0
Water	0.156529	0.156529	0.0114653	0.0114653	18.6454
TEG	0	0	8.36613E-05	8.36613E-05	75.8535
Benzene	0.0213118	0.0213118	0.0180907	0.0180907	0.241731
Toluene	0.0112556	0.0112556	0.00876208	0.00876208	0.192882
Ethylbenzene	0.0046996	0.0046996	0.00339129	0.00339129	0.109422
m-Xylene	0.00315207	0.00315207	0.00231939	0.00231939	0.069969
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	250-70 %	350-01 %	350-02 %	350-03 %	350-11 %
H2S	3.73669E-07	3.73669E-07	3.68403E-07	3.68403E-07	8.02831E-08
CO2	5.58446E-06	5.58446E-06	5.57727E-06	5.57727E-06	2.80413E-07
N2	1.35066	1.35066	1.35404	1.35404	0.00196212
Methane	59.1278	59.1278	59.2588	59.2588	0.30641
Ethane	16.9104	16.9104	16.9355	16.9355	0.246737
Propane	11.6288	11.6288	11.6385	11.6385	0.267785
i-Butane	2.09686	2.09686	2.09812	2.09812	0.0544381
n-Butane	4.59691	4.59691	4.59536	4.59536	0.174722
i-Pentane	1.20754	1.20754	1.20633	1.20633	0.0562874
n-Pentane	1.2885	1.2885	1.28608	1.28608	0.0745294
n-Hexane	1.05574	1.05574	1.05126	1.05126	0.0931947
n-Heptane	0.347862	0.347862	0.34505	0.34505	0.0478958
n-Octane	0.0677647	0.0677647	0.066938	0.066938	0.0129292
n-Nonane	0.0201401	0.0201401	0.0197673	0.0197673	0.00549137
n-Decane	0	0	0	0	0
Water	0.13354	0.13354	0.00978546	0.00978546	2.81254
TEG	0	0	0.00059521	0.00059521	95.3787
Benzene	0.0788335	0.0788335	0.0669463	0.0669463	0.158101
Toluene	0.0491114	0.0491114	0.0382473	0.0382473	0.148805
Ethylbenzene	0.0236274	0.0236274	0.0170569	0.0170569	0.0972677
m-Xylene	0.0158471	0.0158471	0.0116656	0.0116656	0.0621973
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	250-70 lb/h	350-01 lb/h	350-02 lb/h	350-03 lb/h	350-11 lb/h
H2S	0.00210877	0.00210877	0.00207363	0.00207363	3.51482E-05
CO2	0.0315155	0.0315155	0.0313927	0.0313927	0.000122766
N2	7622.34	7622.34	7621.48	7621.48	0.859025
Methane	333683	333683	333549	333549	134.148
Ethane	95432.5	95432.5	95324.5	95324.5	108.023
Propane	65626.4	65626.4	65509.2	65509.2	117.237
i-Butane	11833.5	11833.5	11809.7	11809.7	23.8332
n-Butane	25942.3	25942.3	25865.8	25865.8	76.4939
i-Pentane	6814.67	6814.67	6790.03	6790.03	24.6428
n-Pentane	7271.54	7271.54	7238.91	7238.91	32.6292
n-Hexane	5958.01	5958.01	5917.23	5917.23	40.801
n-Heptane	1963.13	1963.13	1942.18	1942.18	20.969
n-Octane	382.425	382.425	376.773	376.773	5.66043
n-Nonane	113.659	113.659	111.264	111.264	2.40414
n-Decane	0	0	0	0	0
Water	753.62	753.62	55.0793	55.0793	1231.34
TEG	0	0	3.35025	3.35025	41757.1
Benzene	444.891	444.891	376.82	376.82	69.2171
Toluene	277.156	277.156	215.282	215.282	65.1473
Ethylbenzene	133.34	133.34	96.0077	96.0077	42.5841
m-Xylene	89.4322	89.4322	65.6621	65.6621	27.2302
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	250-70	350-01	350-02	350-03	350-11
Temperature	°F	109.588	109.276	112.384	112.354	111.231
Pressure	psig	972	967	965.5	965	967
Mole Fraction Vapor	%	100	100	100	100	0
Molecular Weight	lb/lbmol	21.1167	21.1167	21.108	21.108	119.431
Mass Density	lb/ft^3	4.16989	4.14921	4.09639	4.09435	67.2474
Molar Flow	lbmol/h	26724.9	26724.9	26666.2	26666.2	366.576
Mass Flow	lb/h	564342	564342	562868	562868	43780.4
Std Vapor Volumetric Flow	MMSCFD	243.401	243.401	242.865	242.865	3.33863
Std Liquid Volumetric Flow	sgpm	3241.91	3241.91	3237.38	3237.38	79.526
Specific Gravity		0.729105	0.729105	0.728804	0.728804	1.07822
API Gravity						-3.39788
Gross Ideal Gas Heating Value	Btu/ft^3	1264.02	1264.02	1265.11	1265.11	3261.38
Gross Liquid Heating Value	Btu/lb	22652.7	22652.7	22683	22683	10082.9

Remarks

350-02:

The "A" on the Process Stream name, indicates that an Analysis Block is present for this stream. To get to the analysis information, simply select the Analyses Tab on this screen.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-12	350-13	350-14	350-15	350-16
From Block	LCV-3500	M1	E-3501B	E-3401	V-3402
To Block	M1	E-3501B	E-3401	V-3402	F-345X

Stream Composition

Mole Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	2.81338E-07	2.81338E-07	2.81338E-07	2.81338E-07	2.18384E-07
CO2	7.60969E-07	7.60969E-07	7.60969E-07	7.60969E-07	3.02402E-07
N2	0.0083652	0.0083652	0.0083652	0.0083652	0.000145795
Methane	2.28112	2.28112	2.28112	2.28112	0.147716
Ethane	0.980012	0.980012	0.980012	0.980012	0.192558
Propane	0.725281	0.725281	0.725281	0.725281	0.233863
i-Butane	0.111861	0.111861	0.111861	0.111861	0.0442446
n-Butane	0.359022	0.359022	0.359022	0.359022	0.177559
i-Pentane	0.0931746	0.0931746	0.0931746	0.0931746	0.0571116
n-Pentane	0.123371	0.123371	0.123371	0.123371	0.0811644
n-Hexane	0.129159	0.129159	0.129159	0.129159	0.104243
n-Heptane	0.057087	0.057087	0.057087	0.057087	0.0509477
n-Octane	0.013518	0.013518	0.013518	0.013518	0.0128135
n-Nonane	0.00511354	0.00511354	0.00511354	0.00511354	0.00504292
n-Decane	0	0	0	0	0
Water	18.6454	18.6454	18.6454	18.6454	19.3709
TEG	75.8535	75.8535	75.8535	75.8535	78.8914
Benzene	0.241731	0.241731	0.241731	0.241731	0.246466
Toluene	0.192882	0.192882	0.192882	0.192882	0.198467
Ethylbenzene	0.109422	0.109422	0.109422	0.109422	0.11308
m-Xylene	0.069969	0.069969	0.069969	0.069969	0.0723213
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-12 %	350-13 %	350-14 %	350-15 %	350-16 %
H2S	8.02831E-08	8.02831E-08	8.02831E-08	8.02831E-08	6.04555E-08
CO2	2.80413E-07	2.80413E-07	2.80413E-07	2.80413E-07	1.08102E-07
N2	0.00196212	0.00196212	0.00196212	0.00196212	3.31751E-05
Methane	0.30641	0.30641	0.30641	0.30641	0.0192488
Ethane	0.246737	0.246737	0.246737	0.246737	0.047031
Propane	0.267785	0.267785	0.267785	0.267785	0.0837646
i-Butane	0.0544381	0.0544381	0.0544381	0.0544381	0.0208884
n-Butane	0.174722	0.174722	0.174722	0.174722	0.0838278
i-Pentane	0.0562874	0.0562874	0.0562874	0.0562874	0.0334701
n-Pentane	0.0745294	0.0745294	0.0745294	0.0745294	0.0475662
n-Hexane	0.0931947	0.0931947	0.0931947	0.0931947	0.0729678
n-Heptane	0.0478958	0.0478958	0.0478958	0.0478958	0.0414672
n-Octane	0.0129292	0.0129292	0.0129292	0.0129292	0.011889
n-Nonane	0.00549137	0.00549137	0.00549137	0.00549137	0.00525364
n-Decane	0	0	0	0	0
Water	2.81254	2.81254	2.81254	2.81254	2.83461
TEG	95.3787	95.3787	95.3787	95.3787	96.2332
Benzene	0.158101	0.158101	0.158101	0.158101	0.156379
Toluene	0.148805	0.148805	0.148805	0.148805	0.148537
Ethylbenzene	0.0972677	0.0972677	0.0972677	0.0972677	0.0975151
m-Xylene	0.0621973	0.0621973	0.0621973	0.0621973	0.0623664
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-12 lb/h	350-13 lb/h	350-14 lb/h	350-15 lb/h	350-16 lb/h
H2S	3.51482E-05	3.51482E-05	3.51482E-05	3.51482E-05	2.62326E-05
CO2	0.000122766	0.000122766	0.000122766	0.000122766	4.69073E-05
N2	0.859025	0.859025	0.859025	0.859025	0.0143952
Methane	134.148	134.148	134.148	134.148	8.35234
Ethane	108.023	108.023	108.023	108.023	20.4075
Propane	117.237	117.237	117.237	117.237	36.3468
i-Butane	23.8332	23.8332	23.8332	23.8332	9.06383
n-Butane	76.4939	76.4939	76.4939	76.4939	36.3742
i-Pentane	24.6428	24.6428	24.6428	24.6428	14.5232
n-Pentane	32.6292	32.6292	32.6292	32.6292	20.6397
n-Hexane	40.801	40.801	40.801	40.801	31.6619
n-Heptane	20.969	20.969	20.969	20.969	17.9933
n-Octane	5.66043	5.66043	5.66043	5.66043	5.15882
n-Nonane	2.40414	2.40414	2.40414	2.40414	2.27964
n-Decane	0	0	0	0	0
Water	1231.34	1231.34	1231.34	1231.34	1229.98
TEG	41757.1	41757.1	41757.1	41757.1	41757.1
Benzene	69.2171	69.2171	69.2171	69.2171	67.8552
Toluene	65.1473	65.1473	65.1473	65.1473	64.4525
Ethylbenzene	42.5841	42.5841	42.5841	42.5841	42.3134
m-Xylene	27.2302	27.2302	27.2302	27.2302	27.0618
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-12	350-13	350-14	350-15	350-16
Temperature	°F	114.831	114.831	117.858	140 *	140
Pressure	psig	67 *	67	65	65	65
Mole Fraction Vapor	%	3.72867	3.72867	3.76103	3.85077	0
Molecular Weight	lb/lbmol	119.431	119.431	119.431	119.431	123.111
Mass Density	lb/ft^3	26.3816	26.3816	25.7226	24.6217	67.3522
Molar Flow	lbmol/h	366.576	366.576	366.576	366.576	352.46
Mass Flow	lb/h	43780.4	43780.4	43780.4	43780.4	43391.6
Std Vapor Volumetric Flow	MMSCFD	3.33863	3.33863	3.33863	3.33863	3.21007
Std Liquid Volumetric Flow	sgpm	79.526	79.526	79.526	79.526	77.5685
Specific Gravity						1.0799
API Gravity						-5.32722
Gross Ideal Gas Heating Value	Btu/ft^3	3261.38	3261.38	3261.38	3261.38	3327.24
Gross Liquid Heating Value	Btu/lb	10082.9	10082.9	10082.9	10082.9	9974.61

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-17	350-18A	350-18B	350-19	350-20
From Block	F-345X	E-3201	E-3202	LCV-3402	T-3501
To Block	E-3201	E-3202	LCV-3402	T-3501	E-3501A

Stream Composition

Mole Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	2.18384E-07	2.18384E-07	2.18384E-07	2.18384E-07	1.65596E-06
CO2	3.02402E-07	3.02402E-07	3.02402E-07	3.02402E-07	2.29296E-06
N2	0.000145795	0.000145795	0.000145795	0.000145795	0.00110544
Methane	0.147716	0.147716	0.147716	0.147716	1.12002
Ethane	0.192558	0.192558	0.192558	0.192558	1.46002
Propane	0.233863	0.233863	0.233863	0.233863	1.77321
i-Butane	0.0442446	0.0442446	0.0442446	0.0442446	0.335471
n-Butane	0.177559	0.177559	0.177559	0.177559	1.34629
i-Pentane	0.0571116	0.0571116	0.0571116	0.0571116	0.43301
n-Pentane	0.0811644	0.0811644	0.0811644	0.0811644	0.615366
n-Hexane	0.104243	0.104243	0.104243	0.104243	0.789876
n-Heptane	0.0509477	0.0509477	0.0509477	0.0509477	0.386032
n-Octane	0.0128135	0.0128135	0.0128135	0.0128135	0.097005
n-Nonane	0.00504292	0.00504292	0.00504292	0.00504292	0.0380913
n-Decane	0	0	0	0	0
Water	19.3709	19.3709	19.3709	19.3709	86.4205
TEG	78.8914	78.8914	78.8914	78.8914	0.68223
Benzene	0.246466	0.246466	0.246466	0.246466	1.83925
Toluene	0.198467	0.198467	0.198467	0.198467	1.43086
Ethylbenzene	0.11308	0.11308	0.11308	0.11308	0.75243
m-Xylene	0.0723213	0.0723213	0.0723213	0.0723213	0.479226
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-17 %	350-18A %	350-18B %	350-19 %	350-20 %
H2S	6.04555E-08	6.04555E-08	6.04555E-08	6.04555E-08	2.25584E-06
CO2	1.08102E-07	1.08102E-07	1.08102E-07	1.08102E-07	4.03359E-06
N2	3.31751E-05	3.31751E-05	3.31751E-05	3.31751E-05	0.0012378
Methane	0.0192488	0.0192488	0.0192488	0.0192488	0.718196
Ethane	0.047031	0.047031	0.047031	0.047031	1.7548
Propane	0.0837646	0.0837646	0.0837646	0.0837646	3.12538
i-Butane	0.0208884	0.0208884	0.0208884	0.0208884	0.779372
n-Butane	0.0838278	0.0838278	0.0838278	0.0838278	3.12772
i-Pentane	0.0334701	0.0334701	0.0334701	0.0334701	1.24875
n-Pentane	0.0475662	0.0475662	0.0475662	0.0475662	1.77464
n-Hexane	0.0729678	0.0729678	0.0729678	0.0729678	2.72076
n-Heptane	0.0414672	0.0414672	0.0414672	0.0414672	1.54613
n-Octane	0.011889	0.011889	0.011889	0.011889	0.442911
n-Nonane	0.00525364	0.00525364	0.00525364	0.00525364	0.195276
n-Decane	0	0	0	0	0
Water	2.83461	2.83461	2.83461	2.83461	62.2308
TEG	96.2332	96.2332	96.2332	96.2332	4.09516
Benzene	0.156379	0.156379	0.156379	0.156379	5.74255
Toluene	0.148537	0.148537	0.148537	0.148537	5.26971
Ethylbenzene	0.0975151	0.0975151	0.0975151	0.0975151	3.19297
m-Xylene	0.0623664	0.0623664	0.0623664	0.0623664	2.03362
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-17 lb/h	350-18A lb/h	350-18B lb/h	350-19 lb/h	350-20 lb/h
H2S	2.62326E-05	2.62326E-05	2.62326E-05	2.62326E-05	2.62347E-05
CO2	4.69073E-05	4.69073E-05	4.69073E-05	4.69073E-05	4.69094E-05
N2	0.0143952	0.0143952	0.0143952	0.0143952	0.0143952
Methane	8.35234	8.35234	8.35234	8.35234	8.3524
Ethane	20.4075	20.4075	20.4075	20.4075	20.4078
Propane	36.3468	36.3468	36.3468	36.3468	36.3472
i-Butane	9.06383	9.06383	9.06383	9.06383	9.06386
n-Butane	36.3742	36.3742	36.3742	36.3742	36.3744
i-Pentane	14.5232	14.5232	14.5232	14.5232	14.5226
n-Pentane	20.6397	20.6397	20.6397	20.6397	20.6385
n-Hexane	31.6619	31.6619	31.6619	31.6619	31.6416
n-Heptane	17.9933	17.9933	17.9933	17.9933	17.9811
n-Octane	5.15882	5.15882	5.15882	5.15882	5.15092
n-Nonane	2.27964	2.27964	2.27964	2.27964	2.271
n-Decane	0	0	0	0	0
Water	1229.98	1229.98	1229.98	1229.98	723.726
TEG	41757.1	41757.1	41757.1	41757.1	47.6255
Benzene	67.8552	67.8552	67.8552	67.8552	66.7841
Toluene	64.4525	64.4525	64.4525	64.4525	61.2852
Ethylbenzene	42.3134	42.3134	42.3134	42.3134	37.1333
m-Xylene	27.0618	27.0618	27.0618	27.0618	23.6503
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-17	350-18A	350-18B	350-19	350-20
Temperature	°F	140.035	235 *	320 *	316.941	290.223
Pressure	psig	55	50	45	10 *	3
Mole Fraction Vapor	%	0.0543578	0.219728	0.626009	2.56217	100
Molecular Weight	lb/lbmol	123.111	123.111	123.111	123.111	25.018
Mass Density	lb/ft^3	65.5758	56.6339	42.4369	11.0491	0.0505958
Molar Flow	lbmol/h	352.46	352.46	352.46	352.46	46.4854
Mass Flow	lb/h	43391.6	43391.6	43391.6	43391.6	1162.97
Std Vapor Volumetric Flow	MMSCFD	3.21007	3.21007	3.21007	3.21007	0.423371
Std Liquid Volumetric Flow	sgpm	77.5685	77.5685	77.5685	77.5685	2.71246
Specific Gravity						0.863806
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	3327.24	3327.24	3327.24	3327.24	514.621
Gross Liquid Heating Value	Btu/lb	9974.61	9974.61	9974.61	9974.61	7079.87

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-21	350-22	350-23	350-24	350-25
From Block	E-3501A	E-3501A	AC-3301	V-3404	BL-3100
To Block	T-3501	AC-3301	V-3404	BL-3100	BTEX COOLER

Stream Composition

Mole Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	8.5893E-09	1.72185E-06	1.72185E-06	1.65536E-05	1.65536E-05
CO2	3.10993E-09	2.38456E-06	2.38456E-06	2.32793E-05	2.32793E-05
N2	7.95446E-08	0.00114966	0.00114966	0.0112966	0.0112966
Methane	0.000209032	1.16481	1.16481	11.4335	11.4335
Ethane	0.000579758	1.5184	1.5184	14.8154	14.8154
Propane	0.001025	1.8441	1.8441	17.7526	17.7526
i-Butane	0.000195794	0.348882	0.348882	3.27457	3.27457
n-Butane	0.00128236	1.40009	1.40009	12.8623	12.8623
i-Pentane	0.000472723	0.450312	0.450312	3.8036	3.8036
n-Pentane	0.000742457	0.639951	0.639951	5.2087	5.2087
n-Hexane	0.00146975	0.821412	0.821412	4.93795	4.93795
n-Heptane	0.000802017	0.401441	0.401441	1.41654	1.41654
n-Octane	0.000269996	0.100874	0.100874	0.164705	0.164705
n-Nonane	0.000108731	0.0396106	0.0396106	0.0320839	0.0320839
n-Decane	0	0	0	0	0
Water	82.2301	86.5881	86.5881	11.5402	11.5402
TEG	17.5748	0.00652597	0.00652597	4.9514E-08	4.9514E-08
Benzene	0.0530247	1.91069	1.91069	8.27383	8.27383
Toluene	0.0627734	1.48559	1.48559	3.34358	3.34358
Ethylbenzene	0.0434397	0.78079	0.78079	0.683463	0.683463
m-Xylene	0.0286436	0.497249	0.497249	0.445627	0.445627
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-21 %	350-22 %	350-23 %	350-24 %	350-25 %
H2S	7.07296E-09	2.40864E-06	2.40864E-06	1.1578E-05	1.1578E-05
CO2	3.30696E-09	4.30745E-06	4.30745E-06	2.10255E-05	2.10255E-05
N2	5.38405E-08	0.00132191	0.00132191	0.00649448	0.00649448
Methane	8.10244E-05	0.766992	0.766992	3.76427	3.76427
Ethane	0.00042121	1.87401	1.87401	9.14248	9.14248
Propane	0.00109208	3.33768	3.33768	16.0653	16.0653
i-Butane	0.000274963	0.832312	0.832312	3.90595	3.90595
n-Butane	0.00180088	3.34013	3.34013	15.3423	15.3423
i-Pentane	0.000824078	1.33355	1.33355	5.63189	5.63189
n-Pentane	0.00129429	1.89514	1.89514	7.71238	7.71238
n-Hexane	0.00306027	2.90543	2.90543	8.73293	8.73293
n-Heptane	0.00194174	1.65106	1.65106	2.91297	2.91297
n-Octane	0.000745184	0.472956	0.472956	0.38611	0.38611
n-Nonane	0.000336947	0.208522	0.208522	0.0844486	0.0844486
n-Decane	0	0	0	0	0
Water	35.7935	64.0273	64.0273	4.26664	4.26664
TEG	63.7699	0.0402256	0.0402256	1.52598E-07	1.52598E-07
Benzene	0.100075	6.12595	6.12595	13.2634	13.2634
Toluene	0.139749	5.61829	5.61829	6.32241	6.32241
Ethylbenzene	0.11143	3.40237	3.40237	1.48911	1.48911
m-Xylene	0.0734752	2.16681	2.16681	0.97092	0.97092
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-21 lb/h	350-22 lb/h	350-23 lb/h	350-24 lb/h	350-25 lb/h
H2S	5.23373E-09	2.62295E-05	2.62295E-05	2.56521E-05	2.56521E-05
CO2	2.44703E-09	4.6907E-05	4.6907E-05	4.65837E-05	4.65837E-05
N2	3.984E-08	0.0143952	0.0143952	0.014389	0.014389
Methane	5.99551E-05	8.35234	8.35234	8.34003	8.34003
Ethane	0.00031168	20.4074	20.4074	20.2559	20.2559
Propane	0.000808097	36.3464	36.3464	35.5938	35.5938
i-Butane	0.000203463	9.06366	9.06366	8.65394	8.65394
n-Butane	0.00133259	36.3731	36.3731	33.9922	33.9922
i-Pentane	0.000609788	14.522	14.522	12.4779	12.4779
n-Pentane	0.00095773	20.6376	20.6376	17.0874	17.0874
n-Hexane	0.00226449	31.6393	31.6393	19.3485	19.3485
n-Heptane	0.00143682	17.9796	17.9796	6.45392	6.45392
n-Octane	0.000551409	5.15037	5.15037	0.855457	0.855457
n-Nonane	0.000249329	2.27075	2.27075	0.187103	0.187103
n-Decane	0	0	0	0	0
Water	26.4859	697.24	697.24	9.45307	9.45307
TEG	47.1874	0.438046	0.438046	3.38094E-07	3.38094E-07
Benzene	0.0740522	66.71	66.71	29.386	29.386
Toluene	0.103409	61.1817	61.1817	14.0078	14.0078
Ethylbenzene	0.0824539	37.0509	37.0509	3.29924	3.29924
m-Xylene	0.054369	23.596	23.596	2.15115	2.15115
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-21	350-22	350-23	350-24	350-25
Temperature	°F	216.757	216.757	120 *	120	259.509
Pressure	psig	3	3	1.5	1.5	45 *
Mole Fraction Vapor	%	0	100	10.1727	100	100
Molecular Weight	lb/lbmol	41.3873	24.3632	24.3632	48.727	48.727
Mass Density	lb/ft^3	64.4388	0.0547271	0.569	0.116668	0.380061
Molar Flow	lbmol/h	1.7879	44.6975	44.6975	4.54693	4.54693
Mass Flow	lb/h	73.9964	1088.97	1088.97	221.558	221.558
Std Vapor Volumetric Flow	MMSCFD	0.0162835	0.407087	0.407087	0.0414117	0.0414117
Std Liquid Volumetric Flow	sgpm	0.137204	2.57525	2.57525	0.76058	0.76058
Specific Gravity		1.03319	0.841198		1.68242	1.68242
API Gravity		-2.52604				
Gross Ideal Gas Heating Value	Btu/ft^3	775.817	504.173	504.173	2560.42	2560.42
Gross Liquid Heating Value	Btu/lb	6567.85	7114.66	7114.66	19743.4	19743.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-26	350-27	350-28	350-29	350-30A
From Block	V-3404	P-3605	T-3501	E-3200	E-3200
To Block	P-3605	BTEX Liq	E-3200	T-3501	E-3401

Stream Composition

Mole Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	4.21965E-08	4.21965E-08	5.26541E-10	3.92522E-09	2.99004E-11
CO2	1.8296E-08	1.8296E-08	1.27283E-10	9.81644E-10	2.43695E-12
N2	5.47139E-07	5.47139E-07	5.10525E-09	3.99448E-08	1.42284E-11
Methane	0.00191062	0.00191062	1.35471E-05	0.000105696	8.16076E-08
Ethane	0.0125531	0.0125531	5.56728E-05	0.000432019	6.78263E-07
Propane	0.0425084	0.0425084	0.000141514	0.0010922	2.59204E-06
i-Butane	0.0175572	0.0175572	4.23277E-05	0.000325296	9.78067E-07
n-Butane	0.102027	0.102027	0.000223415	0.00170975	6.22013E-06
i-Pentane	0.0705623	0.0705623	0.000146846	0.00111362	5.57295E-06
n-Pentane	0.122555	0.122555	0.000235522	0.00178062	9.74053E-06
n-Hexane	0.355227	0.355227	0.000987499	0.00716237	8.51782E-05
n-Heptane	0.286484	0.286484	0.000553262	0.00403627	4.42972E-05
n-Octane	0.0936458	0.0936458	0.000238252	0.00170427	2.40266E-05
n-Nonane	0.040463	0.040463	0.00017	0.00117923	2.25236E-05
n-Decane	0	0	0	0	0
Water	95.0871	95.0871	20.3848	94.1292	9.60866
TEG	0.00726501	0.00726501	79.4718	5.04133	90.3481
Benzene	1.19009	1.19009	0.0223946	0.143048	0.00476376
Toluene	1.27518	1.27518	0.0416716	0.247912	0.0115341
Ethylbenzene	0.791812	0.791812	0.0461982	0.252127	0.0161062
m-Xylene	0.503095	0.503095	0.0303838	0.16572	0.0106074
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-26 %	350-27 %	350-28 %	350-29 %	350-30A %
H2S	6.65658E-08	6.65658E-08	1.45708E-10	5.28134E-09	7.41371E-12
CO2	3.72705E-08	3.72705E-08	4.54838E-11	1.70557E-09	7.80261E-13
N2	7.0946E-07	7.0946E-07	1.16124E-09	4.41769E-08	2.89982E-12
Methane	0.00141876	0.00141876	1.76465E-06	6.69422E-05	9.52465E-09
Ethane	0.0174717	0.0174717	1.35926E-05	0.000512852	1.48377E-07
Propane	0.0867629	0.0867629	5.06683E-05	0.00190138	8.31543E-07
i-Butane	0.0472347	0.0472347	1.99759E-05	0.000746434	4.13579E-07
n-Butane	0.274487	0.274487	0.000105437	0.00392323	2.6302E-06
i-Pentane	0.235649	0.235649	8.60264E-05	0.00317203	2.92525E-06
n-Pentane	0.409282	0.409282	0.000137975	0.00507189	5.11281E-06
n-Hexane	1.41695	1.41695	0.000690972	0.0243674	5.34022E-05
n-Heptane	1.32874	1.32874	0.00045014	0.0159671	3.22924E-05
n-Octane	0.495139	0.495139	0.000220979	0.00768567	1.99671E-05
n-Nonane	0.240213	0.240213	0.000177037	0.00597092	2.10165E-05
n-Decane	0	0	0	0	0
Water	79.2915	79.2915	2.98186	66.9477	1.25937
TEG	0.0505001	0.0505001	96.9048	29.8887	98.7094
Benzene	4.30289	4.30289	0.0142037	0.441132	0.00270716
Toluene	5.43845	5.43845	0.0311761	0.901796	0.00773167
Ethylbenzene	3.89106	3.89106	0.0398242	1.05675	0.0124401
m-Xylene	2.47227	2.47227	0.0261917	0.694586	0.00819293
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-26 lb/h	350-27 lb/h	350-28 lb/h	350-29 lb/h	350-30A lb/h
H2S	5.77402E-07	5.77402E-07	6.32982E-08	6.0162E-08	3.1362E-09
CO2	3.2329E-07	3.2329E-07	1.9759E-08	1.94289E-08	3.30071E-10
N2	6.15397E-06	6.15397E-06	5.04465E-07	5.03238E-07	1.2267E-09
Methane	0.0123066	0.0123066	0.000766596	0.000762567	4.02918E-06
Ethane	0.151552	0.151552	0.00590488	0.00584212	6.27672E-05
Propane	0.752595	0.752595	0.0220112	0.0216594	0.000351765
i-Butane	0.409721	0.409721	0.0086779	0.00850294	0.000174955
n-Butane	2.38095	2.38095	0.0458038	0.0446912	0.00111265
i-Pentane	2.04406	2.04406	0.0373714	0.036134	0.00123746
n-Pentane	3.55018	3.55018	0.0599389	0.057776	0.00216285
n-Hexane	12.2908	12.2908	0.30017	0.27758	0.0225905
n-Heptane	11.5257	11.5257	0.195549	0.181888	0.0136605
n-Octane	4.29491	4.29491	0.0959973	0.0875507	0.0084466
n-Nonane	2.08364	2.08364	0.0769078	0.0680173	0.00889053
n-Decane	0	0	0	0	0
Water	687.787	687.787	1295.37	762.629	532.745
TEG	0.438046	0.438046	42097.2	340.475	41756.7
Benzene	37.324	37.324	6.17033	5.02512	1.1452
Toluene	47.1739	47.1739	13.5434	10.2727	3.2707
Ethylbenzene	33.7516	33.7516	17.3003	12.0379	5.26247
m-Xylene	21.4448	21.4448	11.3781	7.91232	3.46582
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-26	350-27	350-28	350-29	350-30A
Temperature	°F	120	120.161	324.651	385	385
Pressure	psig	1.5	40 *	4	4	4
Mole Fraction Vapor	%	0	0	0	100	0
Molecular Weight	lb/lbmol	21.6041	21.6041	123.157	25.3297	137.452
Mass Density	lb/ft^3	58.6502	58.6546	61.1226	0.0482994	58.6787
Molar Flow	lbmol/h	40.1505	40.1505	352.735	44.9726	307.762
Mass Flow	lb/h	867.416	867.416	43441.8	1139.14	42302.6
Std Vapor Volumetric Flow	MMSCFD	0.365676	0.365676	3.21257	0.409593	2.80298
Std Liquid Volumetric Flow	sgpm	1.81467	1.81467	77.2034	2.21023	74.9932
Specific Gravity		0.940379	0.940449	0.98002	0.874569	0.940836
API Gravity		16.3039	16.2881	-6.09172		-6.57425
Gross Ideal Gas Heating Value	Btu/ft^3	271.31	271.31	3298.32	294.632	3737.24
Gross Liquid Heating Value	Btu/lb	3888.98	3888.98	9879.71	3621.42	10048.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-30B	350-31	350-32	350-33A	350-33B
From Block	E-3401	E-3202	E-3201	P-3618	R1
To Block	E-3202	E-3201	P-3618	R1	MAKEUP

Stream Composition

Mole Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	2.99004E-11	2.99004E-11	2.99004E-11	2.99004E-11	2.97874E-11
CO2	2.43695E-12	2.43695E-12	2.43695E-12	2.43695E-12	2.42904E-12
N2	1.42284E-11	1.42284E-11	1.42284E-11	1.42284E-11	1.41751E-11
Methane	8.16076E-08	8.16076E-08	8.16076E-08	8.16076E-08	8.12964E-08
Ethane	6.78263E-07	6.78263E-07	6.78263E-07	6.78263E-07	6.7561E-07
Propane	2.59204E-06	2.59204E-06	2.59204E-06	2.59204E-06	2.58163E-06
i-Butane	9.78067E-07	9.78067E-07	9.78067E-07	9.78067E-07	9.74055E-07
n-Butane	6.22013E-06	6.22013E-06	6.22013E-06	6.22013E-06	6.19491E-06
i-Pentane	5.57295E-06	5.57295E-06	5.57295E-06	5.57295E-06	5.55052E-06
n-Pentane	9.74053E-06	9.74053E-06	9.74053E-06	9.74053E-06	9.70095E-06
n-Hexane	8.51782E-05	8.51782E-05	8.51782E-05	8.51782E-05	8.48177E-05
n-Heptane	4.42972E-05	4.42972E-05	4.42972E-05	4.42972E-05	4.41155E-05
n-Octane	2.40266E-05	2.40266E-05	2.40266E-05	2.40266E-05	2.3928E-05
n-Nonane	2.25236E-05	2.25236E-05	2.25236E-05	2.25236E-05	2.24289E-05
n-Decane	0	0	0	0	0
Water	9.60866	9.60866	9.60866	9.60866	9.60873
TEG	90.3481	90.3481	90.3481	90.3481	90.3481
Benzene	0.00476376	0.00476376	0.00476376	0.00476376	0.00476642
Toluene	0.0115341	0.0115341	0.0115341	0.0115341	0.0115425
Ethylbenzene	0.0161062	0.0161062	0.0161062	0.0161062	0.0160734
m-Xylene	0.0106074	0.0106074	0.0106074	0.0106074	0.0105889
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-30B %	350-31 %	350-32 %	350-33A %	350-33B %
H2S	7.41371E-12	7.41371E-12	7.41371E-12	7.41371E-12	7.38569E-12
CO2	7.80261E-13	7.80261E-13	7.80261E-13	7.80261E-13	7.7773E-13
N2	2.89982E-12	2.89982E-12	2.89982E-12	2.89982E-12	2.88895E-12
Methane	9.52465E-09	9.52465E-09	9.52465E-09	9.52465E-09	9.48834E-09
Ethane	1.48377E-07	1.48377E-07	1.48377E-07	1.48377E-07	1.47796E-07
Propane	8.31543E-07	8.31543E-07	8.31543E-07	8.31543E-07	8.28204E-07
i-Butane	4.13579E-07	4.13579E-07	4.13579E-07	4.13579E-07	4.11882E-07
n-Butane	2.6302E-06	2.6302E-06	2.6302E-06	2.6302E-06	2.61954E-06
i-Pentane	2.92525E-06	2.92525E-06	2.92525E-06	2.92525E-06	2.91347E-06
n-Pentane	5.11281E-06	5.11281E-06	5.11281E-06	5.11281E-06	5.09203E-06
n-Hexane	5.34022E-05	5.34022E-05	5.34022E-05	5.34022E-05	5.31763E-05
n-Heptane	3.22924E-05	3.22924E-05	3.22924E-05	3.22924E-05	3.21599E-05
n-Octane	1.99671E-05	1.99671E-05	1.99671E-05	1.99671E-05	1.98851E-05
n-Nonane	2.10165E-05	2.10165E-05	2.10165E-05	2.10165E-05	2.09281E-05
n-Decane	0	0	0	0	0
Water	1.25937	1.25937	1.25937	1.25937	1.25937
TEG	98.7094	98.7094	98.7094	98.7094	98.7094
Benzene	0.00270716	0.00270716	0.00270716	0.00270716	0.00270867
Toluene	0.00773167	0.00773167	0.00773167	0.00773167	0.00773729
Ethylbenzene	0.0124401	0.0124401	0.0124401	0.0124401	0.0124147
m-Xylene	0.00819293	0.00819293	0.00819293	0.00819293	0.00817865
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-30B lb/h	350-31 lb/h	350-32 lb/h	350-33A lb/h	350-33B lb/h
H2S	3.1362E-09	3.1362E-09	3.1362E-09	3.1362E-09	3.12477E-09
CO2	3.30071E-10	3.30071E-10	3.30071E-10	3.30071E-10	3.29045E-10
N2	1.2267E-09	1.2267E-09	1.2267E-09	1.2267E-09	1.22227E-09
Methane	4.02918E-06	4.02918E-06	4.02918E-06	4.02918E-06	4.01437E-06
Ethane	6.27672E-05	6.27672E-05	6.27672E-05	6.27672E-05	6.25302E-05
Propane	0.000351765	0.000351765	0.000351765	0.000351765	0.0003504
i-Butane	0.000174955	0.000174955	0.000174955	0.000174955	0.000174261
n-Butane	0.00111265	0.00111265	0.00111265	0.00111265	0.00110828
i-Pentane	0.00123746	0.00123746	0.00123746	0.00123746	0.00123264
n-Pentane	0.00216285	0.00216285	0.00216285	0.00216285	0.00215436
n-Hexane	0.0225905	0.0225905	0.0225905	0.0225905	0.022498
n-Heptane	0.0136605	0.0136605	0.0136605	0.0136605	0.0136063
n-Octane	0.0084466	0.0084466	0.0084466	0.0084466	0.00841308
n-Nonane	0.00889053	0.00889053	0.00889053	0.00889053	0.00885434
n-Decane	0	0	0	0	0
Water	532.745	532.745	532.745	532.745	532.821
TEG	41756.7	41756.7	41756.7	41756.7	41762.4
Benzene	1.1452	1.1452	1.1452	1.1452	1.146
Toluene	3.2707	3.2707	3.2707	3.2707	3.27352
Ethylbenzene	5.26247	5.26247	5.26247	5.26247	5.25248
m-Xylene	3.46582	3.46582	3.46582	3.46582	3.46026
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-30B	350-31	350-32	350-33A	350-33B
Temperature	°F	364.797	277.616	180.928	181.191	182.248
Pressure	psig	2	1	-2.11058E-15	64.6414	64.5957
Mole Fraction Vapor	%	0	0	0	0	0
Molecular Weight	lb/lbmol	137.452	137.452	137.452	137.452	137.452
Mass Density	lb/ft^3	59.4762	62.8311	66.4005	66.3971	66.359
Molar Flow	lbmol/h	307.762	307.762	307.762	307.762	307.804
Mass Flow	lb/h	42302.6	42302.6	42302.6	42302.6	42308.4
Std Vapor Volumetric Flow	MMSCFD	2.80298	2.80298	2.80298	2.80298	2.80336
Std Liquid Volumetric Flow	sgpm	74.9932	74.9932	74.9932	74.9932	75.0034
Specific Gravity		0.953622	1.00741	1.06464	1.06459	1.06398
API Gravity		-6.57396	-6.57381	-6.57366	-6.58308	-6.58308
Gross Ideal Gas Heating Value	Btu/ft^3	3737.24	3737.24	3737.24	3737.24	3737.24
Gross Liquid Heating Value	Btu/lb	10048.2	10048.2	10048.2	10048.2	10048.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-33C	350-34	350-36	350-41	350-42
From Block	MAKEUP	AC-3300	P-3600	Mult 3	PCV-3402A
To Block	AC-3300	P-3600	T-3500	PCV-3402A	TEG Flash

Stream Composition

Mole Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	1.85323E-06	1.85323E-06
CO2	0	0	0	1.22109E-05	1.22109E-05
N2	0	0	0	0.213594	0.213594
Methane	8.12964E-08	8.12964E-08	8.12964E-08	55.5497	55.5497
Ethane	6.7561E-07	6.7561E-07	6.7561E-07	20.6418	20.6418
Propane	2.58163E-06	2.58163E-06	2.58163E-06	12.9954	12.9954
i-Butane	9.74055E-07	9.74055E-07	9.74055E-07	1.80015	1.80015
n-Butane	6.19491E-06	6.19491E-06	6.19491E-06	4.88994	4.88994
i-Pentane	5.55052E-06	5.55052E-06	5.55052E-06	0.993627	0.993627
n-Pentane	9.70095E-06	9.70095E-06	9.70095E-06	1.17723	1.17723
n-Hexane	8.48177E-05	8.48177E-05	8.48177E-05	0.751288	0.751288
n-Heptane	4.41155E-05	4.41155E-05	4.41155E-05	0.210378	0.210378
n-Octane	2.3928E-05	2.3928E-05	2.3928E-05	0.0311086	0.0311086
n-Nonane	2.24289E-05	2.24289E-05	2.24289E-05	0.0068769	0.0068769
n-Decane	0	0	0	0	0
Water	9.60873	9.60873	9.60873	0.532268	0.532268
TEG	90.3481	90.3481	90.3481	0.000359682	0.000359682
Benzene	0.00476642	0.00476642	0.00476642	0.123514	0.123514
Toluene	0.0115425	0.0115425	0.0115425	0.0534255	0.0534255
Ethylbenzene	0.0160734	0.0160734	0.0160734	0.018069	0.018069
m-Xylene	0.0105889	0.0105889	0.0105889	0.011236	0.011236
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Mass Fraction	350-33C %	350-34 %	350-36 %	350-41 %	350-42 %
H2S	0	0	0	2.29346E-06	2.29346E-06
CO2	0	0	0	1.95138E-05	1.95138E-05
N2	0	0	0	0.217273	0.217273
Methane	9.48834E-09	9.48834E-09	9.48834E-09	32.3596	32.3596
Ethane	1.47796E-07	1.47796E-07	1.47796E-07	22.5381	22.5381
Propane	8.28204E-07	8.28204E-07	8.28204E-07	20.8083	20.8083
i-Butane	4.11882E-07	4.11882E-07	4.11882E-07	3.79928	3.79928
n-Butane	2.61954E-06	2.61954E-06	2.61954E-06	10.3204	10.3204
i-Pentane	2.91347E-06	2.91347E-06	2.91347E-06	2.60317	2.60317
n-Pentane	5.09203E-06	5.09203E-06	5.09203E-06	3.08418	3.08418
n-Hexane	5.31763E-05	5.31763E-05	5.31763E-05	2.35093	2.35093
n-Heptane	3.21599E-05	3.21599E-05	3.21599E-05	0.765467	0.765467
n-Octane	1.98851E-05	1.98851E-05	1.98851E-05	0.129034	0.129034
n-Nonane	2.09281E-05	2.09281E-05	2.09281E-05	0.0320271	0.0320271
n-Decane	0	0	0	0	0
Water	1.25937	1.25937	1.25937	0.348195	0.348195
TEG	98.7094	98.7094	98.7094	0.00196137	0.00196137
Benzene	0.00270867	0.00270867	0.00270867	0.350335	0.350335
Toluene	0.00773729	0.00773729	0.00773729	0.178747	0.178747
Ethylbenzene	0.0124147	0.0124147	0.0124147	0.0696571	0.0696571
m-Xylene	0.00817865	0.00817865	0.00817865	0.0433156	0.0433156
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-33C lb/h	350-34 lb/h	350-36 lb/h	350-41 lb/h	350-42 lb/h
H2S	0	0	0	8.91561E-06	8.91561E-06
CO2	0	0	0	7.58584E-05	7.58584E-05
N2	0	0	0	0.84463	0.84463
Methane	4.01418E-06	4.01418E-06	4.01418E-06	125.795	125.795
Ethane	6.25274E-05	6.25274E-05	6.25274E-05	87.615	87.615
Propane	0.000350384	0.000350384	0.000350384	80.8904	80.8904
i-Butane	0.000174253	0.000174253	0.000174253	14.7694	14.7694
n-Butane	0.00110823	0.00110823	0.00110823	40.1196	40.1196
i-Pentane	0.00123259	0.00123259	0.00123259	10.1196	10.1196
n-Pentane	0.00215426	0.00215426	0.00215426	11.9895	11.9895
n-Hexane	0.022497	0.022497	0.022497	9.13904	9.13904
n-Heptane	0.0136057	0.0136057	0.0136057	2.97569	2.97569
n-Octane	0.0084127	0.0084127	0.0084127	0.50161	0.50161
n-Nonane	0.00885394	0.00885394	0.00885394	0.124503	0.124503
n-Decane	0	0	0	0	0
Water	532.797	532.797	532.797	1.35358	1.35358
TEG	41760.5	41760.5	41760.5	0.00762467	0.00762467
Benzene	1.14594	1.14594	1.14594	1.3619	1.3619
Toluene	3.27338	3.27338	3.27338	0.694865	0.694865
Ethylbenzene	5.25224	5.25224	5.25224	0.270786	0.270786
m-Xylene	3.4601	3.4601	3.4601	0.168386	0.168386
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	350-33C	350-34	350-36	350-41	350-42
Temperature	°F	182.248	125 *	126.832	140	137.743
Pressure	psig	64.5957	59.5957	997 *	65 *	40 *
Mole Fraction Vapor	%	0	0	0	100	100
Molecular Weight	lb/lbmol	137.452	137.452	137.452	27.5391	27.5391
Mass Density	lb/ft^3	66.359	68.3994	68.4182	0.342844	0.23225
Molar Flow	lbmol/h	307.79	307.79	307.79	14.116	14.116
Mass Flow	lb/h	42306.5	42306.5	42306.5	388.741	388.741
Std Vapor Volumetric Flow	MMSCFD	2.80324	2.80324	2.80324	0.128563	0.128563
Std Liquid Volumetric Flow	sgpm	75 *	75	75	1.95758	1.95758
Specific Gravity		1.06398	1.09669	1.097	0.950853	0.950853
API Gravity		-6.58308	-6.58235	-6.71823		
Gross Ideal Gas Heating Value	Btu/ft^3	3737.24	3737.24	3737.24	1616.89	1616.89
Gross Liquid Heating Value	Btu/lb	10048.2	10048.2	10048.2	22171.4	22171.4

Remarks

350-33C:

The flow rate of this stream is set by a calculator which depends on the amount of water being fed into the absorber in the Wet Gas stream. The Glycol Flow Control calculator sets the flow rate of this stream to be 3 gallons of glycol solution per lb of water fed to the Contactor. Since the water amount does not change based on anything in the unit, this can be a SPECIFIER rather than a SOLVER.

350-36:

The stream coming out of the recycle block needs to have initial guesses for the temperature, pressure, flowrate, and composition in order to have a starting point to begin the calculations. While these will initially appear similar to specifications (white with blue numbers), these are guesses. Once the flowsheet is executed, the data blocks on the Properties and Composition tabs will become light grey with black numbers and not white with blue numbers, indicating which values are passed/iterated through the recycle block.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Connections

	350-81	350-85	350-86	440-70
From Block	F-3450	V-3400	LCV-3400	V-440X
To Block	--	LCV-3400	M1	XFS3

Stream Composition

Mole Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				2.28197E-07
CO2				2.6753E-06
N2				1.02038
Methane				77.9792
Ethane				11.8898
Propane				5.57181
i-Butane				0.762052
n-Butane				1.66907
i-Pentane				0.352966
n-Pentane				0.3763
n-Hexane				0.257528
n-Heptane				0.0726947
n-Octane				0.0123707
n-Nonane				0.00325363
n-Decane				0
Water				1.14667E-09
TEG				0
Benzene				0.0180928
Toluene				0.00876309
Ethylbenzene				0.00339168
m-Xylene				0.00231965
Cyclohexane				0
Cyclopentane				0
SO2				0

Mass Fraction	350-81 %	350-85 %	350-86 %	440-70 %
H2S				3.68442E-07
CO2				5.57785E-06
N2				1.35418
Methane				59.265
Ethane				16.9372
Propane				11.6397
i-Butane				2.09834
n-Butane				4.59583
i-Pentane				1.20645
n-Pentane				1.28621
n-Hexane				1.05137
n-Heptane				0.345086
n-Octane				0.066945
n-Nonane				0.0197693
n-Decane				0
Water				9.78648E-10
TEG				0
Benzene				0.0669533
Toluene				0.0382513
Ethylbenzene				0.0170586
m-Xylene				0.0116668
Cyclohexane				0
Cyclopentane				0
SO2				0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	Dehydration	

Mass Flow	350-81 lb/h	350-85 lb/h	350-86 lb/h	440-70 lb/h
H2S	0	0	0	0.00194555
CO2	0	0	0	0.0294538
N2	0	0	0	7150.76
Methane	0	0	0	312948
Ethane	0	0	0	89437
Propane	0	0	0	61463.2
i-Butane	0	0	0	11080.3
n-Butane	0	0	0	24268.3
i-Pentane	0	0	0	6370.66
n-Pentane	0	0	0	6791.82
n-Hexane	0	0	0	5551.77
n-Heptane	0	0	0	1822.22
n-Octane	0	0	0	353.502
n-Nonane	0	0	0	104.392
n-Decane	0	0	0	0
Water	0	0	0	5.16774E-06
TEG	0	0	0	0
Benzene	0	0	0	353.546
Toluene	0	0	0	201.986
Ethylbenzene	0	0	0	90.078
m-Xylene	0	0	0	61.6066
Cyclohexane	0	0	0	0
Cyclopentane	0	0	0	0
SO2	0	0	0	0

Stream Properties

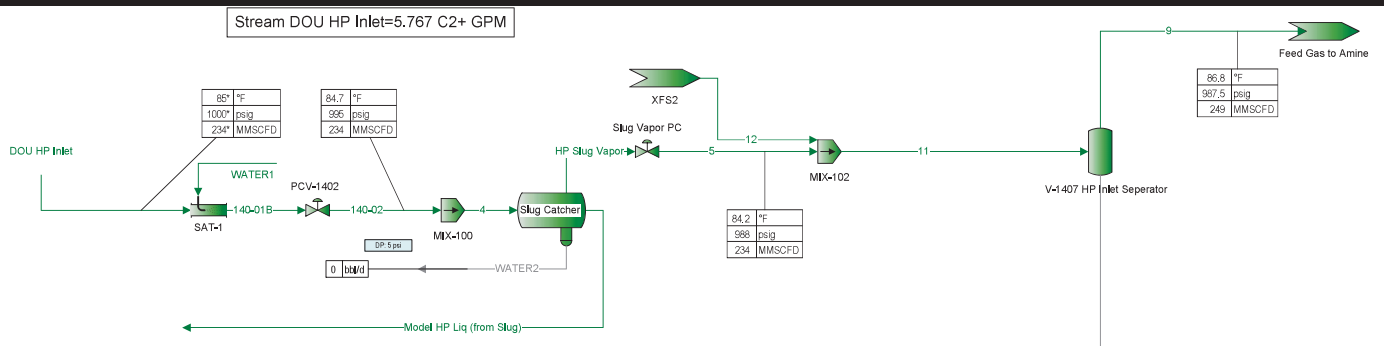
Property	Units	350-81	350-85	350-86	440-70
Temperature	°F				112.354
Pressure	psig	967	965	67	935
Mole Fraction Vapor	%				100
Molecular Weight	lb/lbmol				21.1082
Mass Density	lb/ft^3				3.94729
Molar Flow	lbmol/h	0	0	0	25016.3
Mass Flow	lb/h	0	0	0	528049
Std Vapor Volumetric Flow	MMSCFD	0	0	0	227.839
Std Liquid Volumetric Flow	sgpm	0	0	0	3037.32
Specific Gravity					0.728812
API Gravity					
Gross Ideal Gas Heating Value	Btu/ft^3				1265.25
Gross Liquid Heating Value	Btu/lb				22685.3

Remarks

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HP Inlet
Plant Schematic

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	



HEATER SUMMARY		
MAIN HEATER	32.2 MMBtu/h	66.1 MMBtu/h
TEG HEATER	9.07 MMBtu/h	4.40 MMBtu/h
REGEN HEATER	8.50 MMBtu/h	9.76 MMBtu/h

PERFORMANCE SUMMARY	
C2 RECOVERY	[Variable Not Set]
C3 RECOVERY	[Variable Not Set]
FG SHRINK	[Data Not Readu]
H2O BALANCE	+3.76 bbl/d

PRODUCTS SUMMARY	
RESIDUE	[Variable Not Set]
NGL	[Variable Not Set]
RVP	[Variable Not Set]

COMPRESSION SUMMARY		
RESIDUE	[Data Not Readu]	20,000 hp
REFRIGERATION	5,680 hp	9,000 hp

INTERMEDIATE PRESSURE INLET

PFD-140

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
From Block	--	V-1407 HP Inlet Seperator	Slug Catcher	Slug Catcher	--
To Block	SAT-1	--	Slug Vapor PC	--	SAT-1

Stream Composition

Mole Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.0005 *		0.000499622	2.72054E-05	0 *
CO2	2.4 *		2.39819	0.0506964	0 *
N2	0.994006 *		0.993254	0.00080624	0 *
Methane	76.0753 *		76.0178	0.0997489	0 *
Ethane	11.6142 *		11.6055	0.0141982	0 *
Propane	5.44288 *		5.43877	0.00329503	0 *
i-Butane	0.744255 *		0.743693	0.000220629	0 *
n-Butane	1.63234 *		1.63111	0.000640861	0 *
i-Pentane	0.345183 *		0.344922	6.26431E-05	0 *
n-Pentane	0.368404 *		0.368126	2.93423E-05	0 *
n-Hexane	0.252725 *		0.252534	9.47235E-06	0 *
n-Heptane	0.0716055 *		0.0715513	1.35741E-06	0 *
n-Octane	0.0122406 *		0.0122314	7.09578E-08	0 *
n-Nonane	0.00324082 *		0.00323837	1.16021E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0755856	99.8292	100 *
TEG	0 *		0	0	0 *
Benzene	0.0228358 *		0.0228186	0.000762765	0 *
Toluene	0.011963 *		0.0119539	0.000215837	0 *
Ethylbenzene	0.00490283 *		0.00489912	5.53645E-05	0 *
m-Xylene	0.00333393 *		0.00333141	2.27053E-05	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *
SO2	0 *		0	0	0 *

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
H2S	0.000786251 *		0.000785757	5.14238E-05	0 *
CO2	4.87347 *		4.8704	0.123743	0 *
N2	1.2848 *		1.28399	0.00125265	0 *
Methane	56.3113 *		56.2759	0.0887519	0 *
Ethane	16.1135 *		16.1034	0.0236784	0 *
Propane	11.074 *		11.067	0.00805849	0 *
i-Butane	1.99593 *		1.99467	0.00071122	0 *
n-Butane	4.37758 *		4.37483	0.00206588	0 *
i-Pentane	1.1491 *		1.14838	0.000250669	0 *
n-Pentane	1.22641 *		1.22563	0.000117414	0 *
n-Hexane	1.00488 *		1.00424	4.5273E-05	0 *
n-Heptane	0.331057 *		0.330849	7.54373E-06	0 *
n-Octane	0.0645146 *		0.064474	4.49545E-07	0 *
n-Nonane	0.0191783 *		0.0191662	8.25297E-08	0 *
n-Decane	0 *		0	0	0 *
Water	0 *		0.0628371	99.7464	100 *
TEG	0 *		0	0	0 *
Benzene	0.0823027 *		0.0822509	0.0033045	0 *
Toluene	0.0508581 *		0.0508261	0.00110297	0 *
Ethylbenzene	0.0240164 *		0.0240013	0.000325995	0 *
m-Xylene	0.0163312 *		0.0163209	0.000133693	0 *
Cyclohexane	0 *		0	0	0 *
Cyclopentane	0 *		0	0	0 *

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Fraction	DOU HP Inlet %	HP IS Liq %	HP Slug Vapor %	Model HP Liq (from Slug) %	WATER1 %
SO2	0 *		0	0	0 *

Mass Flow	DOU HP Inlet lb/h	HP IS Liq lb/h	HP Slug Vapor lb/h	Model HP Liq (from Slug) lb/h	WATER1 lb/h
H2S	4.37816 *	0	4.37816	2.45675E-06	0 *
CO2	27137.4 *	0	27137.4	0.00591179	0 *
N2	7154.28 *	0	7154.28	5.98447E-05	0 *
Methane	313564 *	0	313564	0.00424008	0 *
Ethane	89726.6 *	0	89726.6	0.00113122	0 *
Propane	61664.5 *	0	61664.5	0.000384991	0 *
i-Butane	11114.1 *	0	11114.1	3.39782E-05	0 *
n-Butane	24376.1 *	0	24376.1	9.86964E-05	0 *
i-Pentane	6398.67 *	0	6398.67	1.19756E-05	0 *
n-Pentane	6829.12 *	0	6829.12	5.60942E-06	0 *
n-Hexane	5595.55 *	0	5595.55	2.1629E-06	0 *
n-Heptane	1843.46 *	0	1843.46	3.60398E-07	0 *
n-Octane	359.243 *	0	359.243	2.14768E-08	0 *
n-Nonane	106.792 *	0	106.792	3.94282E-09	0 *
n-Decane	0 *	0	0	0	0 *
Water	0 *	0	350.122	4.76534	354.888 *
TEG	0 *	0	0	0	0 *
Benzene	458.295 *	0	458.294	0.000157871	0 *
Toluene	283.198 *	0	283.198	5.26941E-05	0 *
Ethylbenzene	133.733 *	0	133.733	1.55743E-05	0 *
m-Xylene	90.9387 *	0	90.9387	6.38711E-06	0 *
Cyclohexane	0 *	0	0	0	0 *
Cyclopentane	0 *	0	0	0	0 *
SO2	0 *	0	0	0	0 *

Stream Properties

Property	Units	DOU HP Inlet	HP IS Liq	HP Slug Vapor	Model HP Liq (from Slug)	WATER1
Temperature	°F	85 *		84.3292	84.3292	545.867
Pressure	psig	1000 *	987.5	990	990	1000
Mole Fraction Vapor	%	100		100	0	74.7393
Molecular Weight	lb/lbmol	21.673		21.6703	18.0302	18.0153
Mass Density	lb/ft^3	4.85327		4.80612	62.115	2.87975
Molar Flow	lbmol/h	25692.8	0	25712.2	0.264969	19.6993
Mass Flow	lb/h	556840	0	557190	4.77746	354.888
Std Vapor Volumetric Flow	MMSCFD	234 *	0	234.177	0.00241324	0.179413
Std Liquid Volumetric Flow	sgpm	3111.75	0	3112.45	0.00957806	0.709446
Specific Gravity		0.748313		0.748218	0.995931	
API Gravity					10.0465	
Gross Ideal Gas Heating Value	Btu/ft^3	1235.65		1234.76	51.6404	50.31
Gross Liquid Heating Value	Btu/lb	21573.5		21559.9	29.655	0

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	WATER2	4	5	9	11
From Block	Slug Catcher	MIX-100	Slug Vapor PC	V-1407 HP Inlet Seperator	MIX-102
To Block	--	Slug Catcher	MIX-102	Feed Gas to Amine	V-1407 HP Inlet Seperator

Stream Composition

Mole Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.000499617	0.000499622	0.000469559	0.000469559
CO2		2.39816	2.39819	2.25382	2.25382
N2		0.993244	0.993254	0.994877	0.994877
Methane		76.0171	76.0178	76.1353	76.1353
Ethane		11.6053	11.6055	11.6225	11.6225
Propane		5.43871	5.43877	5.44674	5.44674
i-Butane		0.743685	0.743693	0.744793	0.744793
n-Butane		1.63109	1.63111	1.63339	1.63339
i-Pentane		0.344919	0.344922	0.345404	0.345404
n-Pentane		0.368122	0.368126	0.368616	0.368616
n-Hexane		0.252532	0.252534	0.252834	0.252834
n-Heptane		0.0715506	0.0715513	0.07162	0.07162
n-Octane		0.0122312	0.0122314	0.0122397	0.0122397
n-Nonane		0.00323834	0.00323837	0.00323928	0.00323928
n-Decane		0	0	0	0
Water		0.0766136	0.0755856	0.0717257	0.0717257
TEG		0	0	5.03657E-06	5.03657E-06
Benzene		0.0228183	0.0228186	0.0225393	0.0225393
Toluene		0.0119538	0.0119539	0.0117647	0.0117647
Ethylbenzene		0.00489907	0.00489912	0.00480942	0.00480942
m-Xylene		0.00333137	0.00333141	0.00327122	0.00327122
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

Mass Fraction	WATER2 %	4 %	5 %	9 %	11 %
H2S		0.00078575	0.000785757	0.000739632	0.000739632
CO2		4.87036	4.8704	4.58437	4.58437
N2		1.28398	1.28399	1.2881	1.2881
Methane		56.2754	56.2759	56.451	56.451
Ethane		16.1033	16.1034	16.1523	16.1523
Propane		11.0669	11.067	11.1006	11.1006
i-Butane		1.99465	1.99467	2.00075	2.00075
n-Butane		4.37479	4.37483	4.38779	4.38779
i-Pentane		1.14837	1.14838	1.15178	1.15178
n-Pentane		1.22562	1.22563	1.22919	1.22919
n-Hexane		1.00424	1.00424	1.00701	1.00701
n-Heptane		0.330846	0.330849	0.331684	0.331684
n-Octane		0.0644735	0.064474	0.0646191	0.0646191
n-Nonane		0.0191661	0.0191662	0.0192016	0.0192016
n-Decane		0	0	0	0
Water		0.0636918	0.0628371	0.0597215	0.0597215
TEG		0	0	3.49575E-05	3.49575E-05
Benzene		0.0822503	0.0822509	0.0813714	0.0813714
Toluene		0.0508257	0.0508261	0.0500998	0.0500998
Ethylbenzene		0.0240011	0.0240013	0.0235987	0.0235987
m-Xylene		0.0163208	0.0163209	0.0160511	0.0160511
Cyclohexane		0	0	0	0
Cyclopentane		0	0	0	0
SO2		0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	WATER2 lb/h	4 lb/h	5 lb/h	9 lb/h	11 lb/h
H2S	0	4.37816	4.37816	4.37829	4.37829
CO2	0	27137.4	27137.4	27137.4	27137.4
N2	0	7154.28	7154.28	7624.98	7624.98
Methane	0	313564	313564	334165	334165
Ethane	0	89726.6	89726.6	95614.3	95614.3
Propane	0	61664.5	61664.5	65710.6	65710.6
i-Butane	0	11114.1	11114.1	11843.5	11843.5
n-Butane	0	24376.1	24376.1	25973.7	25973.7
i-Pentane	0	6398.67	6398.67	6818.04	6818.04
n-Pentane	0	6829.12	6829.12	7276.23	7276.23
n-Hexane	0	5595.55	5595.55	5961.03	5961.03
n-Heptane	0	1843.46	1843.46	1963.42	1963.42
n-Octane	0	359.243	359.243	382.516	382.516
n-Nonane	0	106.792	106.792	113.665	113.665
n-Decane	0	0	0	0	0
Water	0	354.888	350.122	353.524	353.524
TEG	0	0	0	0.206933	0.206933
Benzene	0	458.295	458.294	481.682	481.682
Toluene	0	283.198	283.198	296.569	296.569
Ethylbenzene	0	133.733	133.733	139.694	139.694
m-Xylene	0	90.9387	90.9387	95.0155	95.0155
Cyclohexane	0	0	0	0	0
Cyclopentane	0	0	0	0	0
SO2	0	0	0	0	0

Stream Properties

Property	Units	WATER2	4	5	9	11
Temperature	°F		84.6652	84.1918	86.77	86.804
Pressure	psig	990	995	988	987.5	988
Mole Fraction Vapor	%		99.9995	100	100	100
Molecular Weight	lb/lbmol		21.6702	21.6703	21.6364	21.6364
Mass Density	lb/ft^3		4.82939	4.79686	4.73699	4.73928
Molar Flow	lbmol/h	0	25712.5	25712.2	27359.2	27359.2
Mass Flow	lb/h	0	557195	557190	591955	591955
Std Vapor Volumetric Flow	MMSCFD	0	234.179	234.177	249.177	249.177
Std Liquid Volumetric Flow	sgpm	0	3112.46	3112.45	3312.4	3312.4
Specific Gravity				0.748218	0.74705	0.74705
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3		1234.74	1234.76	1236.58	1236.58
Gross Liquid Heating Value	Btu/lb		21559.7	21559.9	21625.9	21625.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Connections

	12	140-01B	140-02		
From Block	XFS2	SAT-1	PCV-1402		
To Block	MIX-102	PCV-1402	MIX-100		

Stream Composition

Mole Fraction	12 %	140-01B %	140-02 %		
H2S	2.28262E-07	0.000499617	0.000499617		
CO2	2.67658E-06	2.39816	2.39816		
N2	1.02022	0.993244	0.993244		
Methane	77.9697	76.0171	76.0171		
Ethane	11.8887	11.6053	11.6053		
Propane	5.57124	5.43871	5.43871		
i-Butane	0.761965	0.743685	0.743685		
n-Butane	1.66892	1.63109	1.63109		
i-Pentane	0.352928	0.344919	0.344919		
n-Pentane	0.376268	0.368122	0.368122		
n-Hexane	0.25751	0.252532	0.252532		
n-Heptane	0.0726922	0.0715506	0.0715506		
n-Octane	0.0123705	0.0122312	0.0122312		
n-Nonane	0.00325347	0.00323834	0.00323834		
n-Decane	0	0	0		
Water	0.0114659	0.0766136	0.0766136		
TEG	8.36665E-05	0	0		
Benzene	0.0181795	0.0228183	0.0228183		
Toluene	0.00881086	0.0119538	0.0119538		
Ethylbenzene	0.00340896	0.00489907	0.00489907		
m-Xylene	0.00233157	0.00333137	0.00333137		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Mass Fraction	12 %	140-01B %	140-02 %		
H2S	3.68547E-07	0.00078575	0.00078575		
CO2	5.58054E-06	4.87036	4.87036		
N2	1.35396	1.28398	1.28398		
Methane	59.2578	56.2754	56.2754		
Ethane	16.9357	16.1033	16.1033		
Propane	11.6385	11.0669	11.0669		
i-Butane	2.0981	1.99465	1.99465		
n-Butane	4.59544	4.37479	4.37479		
i-Pentane	1.20633	1.14837	1.14837		
n-Pentane	1.2861	1.22562	1.22562		
n-Hexane	1.0513	1.00424	1.00424		
n-Heptane	0.345075	0.330846	0.330846		
n-Octane	0.066944	0.0644735	0.0644735		
n-Nonane	0.0197684	0.0191661	0.0191661		
n-Decane	0	0	0		
Water	0.00978583	0.0636918	0.0636918		
TEG	0.00059524	0	0		
Benzene	0.0672742	0.0822503	0.0822503		
Toluene	0.0384599	0.0508257	0.0508257		
Ethylbenzene	0.0171456	0.0240011	0.0240011		
m-Xylene	0.0117268	0.0163208	0.0163208		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Resources	Job: 21127
Location:	Midland, TX	
Flowsheet:	HP Inlet	

Mass Flow	12 lb/h	140-01B lb/h	140-02 lb/h		
H2S	0.000128124	4.37816	4.37816		
CO2	0.00194005	27137.4	27137.4		
N2	470.7	7154.28	7154.28		
Methane	20600.7	313564	313564		
Ethane	5887.63	89726.6	89726.6		
Propane	4046.07	61664.5	61664.5		
i-Butane	729.396	11114.1	11114.1		
n-Butane	1597.59	24376.1	24376.1		
i-Pentane	419.374	6398.67	6398.67		
n-Pentane	447.108	6829.12	6829.12		
n-Hexane	365.481	5595.55	5595.55		
n-Heptane	119.964	1843.46	1843.46		
n-Octane	23.2728	359.243	359.243		
n-Nonane	6.87239	106.792	106.792		
n-Decane	0	0	0		
Water	3.402	354.888	354.888		
TEG	0.206933	0	0		
Benzene	23.3876	458.295	458.295		
Toluene	13.3704	283.198	283.198		
Ethylbenzene	5.9606	133.733	133.733		
m-Xylene	4.07678	90.9387	90.9387		
Cyclohexane	0	0	0		
Cyclopentane	0	0	0		
SO2	0	0	0		

Stream Properties

Property	Units	12	140-01B	140-02		
Temperature	°F	129.834	85	84.6652		
Pressure	psig	1000	1000	995		
Mole Fraction Vapor	%	100	100	99.9995		
Molecular Weight	lb/lbmol	21.1082	21.6702	21.6702		
Mass Density	lb/ft^3	4.03647	4.8526	4.82939		
Molar Flow	lbmol/h	1646.97	25712.5	25712.5		
Mass Flow	lb/h	34764.6	557195	557195		
Std Vapor Volumetric Flow	MMSCFD	15	234.179	234.179		
Std Liquid Volumetric Flow	sgpm	199.95	3112.46	3112.46		
Specific Gravity		0.728811	0.748217			
API Gravity						
Gross Ideal Gas Heating Value	Btu/ft^3	1265.12	1234.74	1234.74		
Gross Liquid Heating Value	Btu/lb	22682.9	21559.7	21559.7		

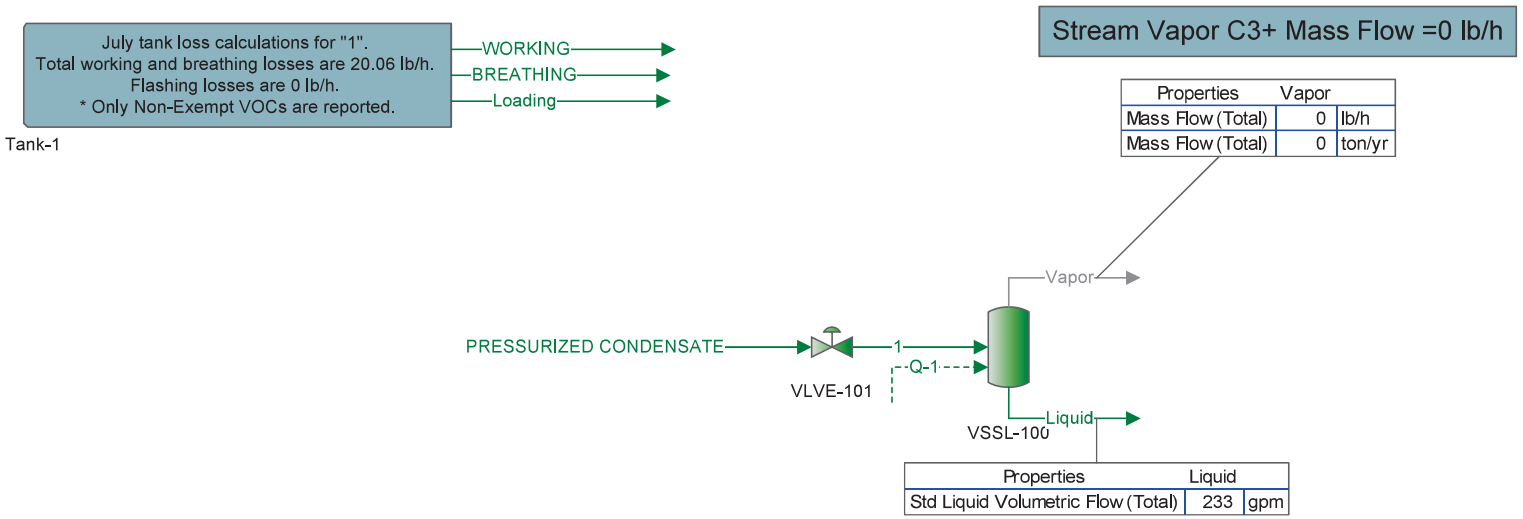
Remarks

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Flowsheet1
Plant Schematic

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Targa Midstream Services LLC
Road Runner Gas Plant
Hourly Crude Working/Breathing/Flash



Names	Units	PRESSURIZED CONDENSATE	Liquid	Vapor
Temperature	°F	120*	95	95*
Pressure	psia	14.7*	14.7	14.7
Mass Fraction Vapor	%	0	0	
Molecular Weight	lb/lbmol	92.116	92.116	
Vapor Volumetric Flow	ft^3/h	1945	1908.8	0
Liquid Volumetric Flow	gpm	242.49	237.99	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	BREATHING	Liquid	Loading	PRESSURIZED CONDENSATE	Vapor
From Block	--	VSSL-100	--	--	VSSL-100
To Block	--	--	--	VLVE-101	--

Stream Composition

Mole Fraction	BREATHING %	Liquid %	Loading %	PRESSURIZED CONDENSATE %	Vapor %
Hydrogen Sulfide	0 *	0	0 *	0 *	
Nitrogen	0 *	0	0 *	0 *	
Methane	0 *	0	0 *	0 *	
Carbon Dioxide	0 *	0	0 *	0 *	
Ethane	0 *	0	0 *	0 *	
Propane	0 *	0	0 *	0 *	
i-Butane	0 *	0	0 *	0 *	
n-Butane	3.62768 *	0.3701	3.62768 *	0.3701 *	
i-Pentane	17.2466 *	4.4366	17.2466 *	4.4366 *	
n-Pentane	31.4743 *	10.7549	31.4743 *	10.7549 *	
Neohexane	0.623166 *	0.3375	0.623166 *	0.3375 *	
Cyclopentane	3.57444 *	1.9427	3.57444 *	1.9427 *	
2-Methylpentane	8.95953 *	7.2138	8.95953 *	7.2138 *	
3-Methylpentane	4.70447 *	4.2187	4.70447 *	4.2187 *	
Hexane	10.4234 *	11.581	10.4234 *	11.581 *	
Methylcyclopentane	4.23581 *	5.1841	4.23581 *	5.1841 *	
Benzene	0.900284 *	1.5616	0.900284 *	1.5616 *	
Cyclohexane	4.04196 *	6.8907	4.04196 *	6.8907 *	
2-Methylhexane	1.19444 *	2.967	1.19444 *	2.967 *	
3-Methylhexane	1.37393 *	3.6466	1.37393 *	3.6466 *	
Cyclopentane, 1,2-Dimethyl-, cis-	1.41852 *	4.8872	1.41852 *	4.8872 *	
n-Heptane	1.75604 *	6.2036	1.75604 *	6.2036 *	
Methylcyclohexane	2.52717 *	8.8971	2.52717 *	8.8971 *	
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.262877 *	1.2957	0.262877 *	1.2957 *	
Toluene	0.416628 *	2.3355	0.416628 *	2.3355 *	
2-Methylheptane	0.369529 *	2.8207	0.369529 *	2.8207 *	
3-Methylheptane	0.133272 *	1.0694	0.133272 *	1.0694 *	
Cyclohexane, 1,3-Dimethyl-, trans-	0.245631 *	2.2016	0.245631 *	2.2016 *	
n-Octane	0.203154 *	2.412	0.203154 *	2.412 *	
Ethylbenzene	0.0111056 *	0.1797	0.0111056 *	0.1797 *	
m-Xylene	0.0715597 *	1.3185	0.0715597 *	1.3185 *	
o-Xylene	0.00903854 *	0.2072	0.00903854 *	0.2072 *	
Ethylcyclohexane	0.0816305 *	0.9947	0.0816305 *	0.9947 *	
Isononane	0.0967035 *	2.4257	0.0967035 *	2.4257 *	
n-Nonane	0.0135288 *	0.599	0.0135288 *	0.599 *	
n-Decane	0.000886971 *	0.1549	0.000886971 *	0.1549 *	
Undecane	0.00262967 *	0.8922	0.00262967 *	0.8922 *	

Mass Fraction	BREATHING %	Liquid %	Loading %	PRESSURIZED CONDENSATE %	Vapor %
Hydrogen Sulfide	0	0	0	0 *	
Nitrogen	0	0	0	0 *	
Methane	0	0	0	0 *	
Carbon Dioxide	0	0	0	0 *	
Ethane	0	0	0	0 *	

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	BREATHING %	Liquid %	Loading %	PRESSURIZED CONDENSATE %	Vapor %
Propane	0	0	0	0 *	
i-Butane	0	0	0	0 *	
n-Butane	2.66779	0.23352	2.66779	0.23352 *	
i-Pentane	15.7439	3.47491	15.7439	3.47491 *	
n-Pentane	28.732	8.42363	28.732	8.42363 *	
Neohexane	0.679465	0.315734	0.679465	0.315734 *	
Cyclopentane	3.17183	1.47908	3.17183	1.47908 *	
2-Methylpentane	9.76898	6.74856	9.76898	6.74856 *	
3-Methylpentane	5.1295	3.94662	5.1295	3.94662 *	
Hexane	11.3651	10.8341	11.3651	10.8341 *	
Methylcyclopentane	4.51045	4.73631	4.51045	4.73631 *	
Benzene	0.889769	1.32419	0.889769	1.32419 *	
Cyclohexane	4.30404	6.2955	4.30404	6.2955 *	
2-Methylhexane	1.51433	3.22744	1.51433	3.22744 *	
3-Methylhexane	1.7419	3.96669	1.7419	3.96669 *	
Cyclopentane, 1,2-Dimethyl-, cis-	1.76225	5.20923	1.76225	5.20923 *	
n-Heptane	2.22634	6.74814	2.22634	6.74814 *	
Methylcyclohexane	3.13954	9.48336	3.13954	9.48336 *	
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.373228	1.57837	0.373228	1.57837 *	
Toluene	0.485702	2.33606	0.485702	2.33606 *	
2-Methylheptane	0.534077	3.4978	0.534077	3.4978 *	
3-Methylheptane	0.192617	1.32611	0.192617	1.32611 *	
Cyclohexane, 1,3-Dimethyl-, trans-	0.348744	2.68191	0.348744	2.68191 *	
n-Octane	0.293617	2.991	0.293617	2.991 *	
Ethylbenzene	0.0149178	0.207106	0.0149178	0.207106 *	
m-Xylene	0.0961237	1.51959	0.0961237	1.51959 *	
o-Xylene	0.0121412	0.2388	0.0121412	0.2388 *	
Ethylcyclohexane	0.115898	1.21171	0.115898	1.21171 *	
Isononane	0.156927	3.37735	0.156927	3.37735 *	
n-Nonane	0.021954	0.833999	0.021954	0.833999 *	
n-Decane	0.00159676	0.239257	0.00159676	0.239257 *	
Undecane	0.00520073	1.51394	0.00520073	1.51394 *	

Mass Flow	BREATHING lb/h	Liquid lb/h	Loading lb/h	PRESSURIZED CONDENSATE lb/h	Vapor lb/h
Hydrogen Sulfide	0 *	0	0 *	0 *	0
Nitrogen	0 *	0	0 *	0 *	0
Methane	0 *	0	0 *	0 *	0
Carbon Dioxide	0 *	0	0 *	0 *	0
Ethane	0 *	0	0 *	0 *	0
Propane	0 *	0	0 *	0 *	0
i-Butane	0 *	0	0 *	0 *	0
n-Butane	0.0217619 *	193.932	1.46189 *	193.932 *	0
i-Pentane	0.128428 *	2885.81	8.6273 *	2885.81 *	0
n-Pentane	0.234374 *	6995.59	15.7444 *	6995.59 *	0
Neohexane	0.00554258 *	262.208	0.37233 *	262.208 *	0
Cyclopentane	0.0258735 *	1228.33	1.73809 *	1228.33 *	0
2-Methylpentane	0.0796882 *	5604.49	5.35316 *	5604.49 *	0
3-Methylpentane	0.0418427 *	3277.56	2.81084 *	3277.56 *	0
Hexane	0.0927085 *	8997.42	6.22783 *	8997.42 *	0
Methylcyclopentane	0.036793 *	3933.37	2.47162 *	3933.37 *	0
Benzene	0.00725808 *	1099.7	0.487572 *	1099.7 *	0
Cyclohexane	0.0351092 *	5228.23	2.35851 *	5228.23 *	0
2-Methylhexane	0.0123528 *	2680.29	0.829818 *	2680.29 *	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Flow	BREATHING lb/h	Liquid lb/h	Loading lb/h	PRESSURIZED CONDENSATE lb/h	Vapor lb/h
3-Methylhexane	0.0142091 *	3294.22	0.954516 *	3294.22 *	0
Cyclopentane, 1,2-Dimethyl-, cis-	0.0143751 *	4326.12	0.96567 *	4326.12 *	0
n-Heptane	0.0181609 *	5604.14	1.21998 *	5604.14 *	0
Methylcyclohexane	0.02561 *	7875.66	1.72039 *	7875.66 *	0
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.00304452 *	1310.8	0.20452 *	1310.8 *	0
Toluene	0.003962 *	1940.03	0.266153 *	1940.03 *	0
2-Methylheptane	0.00435661 *	2904.83	0.292661 *	2904.83 *	0
3-Methylheptane	0.00157122 *	1101.29	0.105549 *	1101.29 *	0
Cyclohexane, 1,3-Dimethyl-, trans-	0.00284479 *	2227.25	0.191103 *	2227.25 *	0
n-Octane	0.00239511 *	2483.94	0.160895 *	2483.94 *	0
Ethylbenzene	0.000121689 *	171.996	0.00817461 *	171.996 *	0
m-Xylene	0.000784106 *	1261.97	0.0526734 *	1261.97 *	0
o-Xylene	9.90386E-05 *	198.317	0.00665306 *	198.317 *	0
Ethylcyclohexane	0.000945408 *	1006.29	0.0635091 *	1006.29 *	0
Isononane	0.00128009 *	2804.79	0.0859922 *	2804.79 *	0
n-Nonane	0.000179085 *	692.612	0.0120303 *	692.612 *	0
n-Decane	1.30252E-05 *	198.696	0.000874985 *	198.696 *	0
Undecane	4.24237E-05 *	1257.28	0.00284987 *	1257.28 *	0

Stream Properties

Property	Units	BREATHING	Liquid	Loading	PRESSURIZED CONDENSATE	Vapor
Temperature	°F	98.7718	95	98.7718	120 *	95 *
Pressure	psia	5.75472	14.7	5.75472	14.7 *	14.7
Mole Fraction Vapor	%	100	0	100	0	
Molecular Weight	lb/lbmol	79.035	92.1162	79.035	92.1162	
Mass Density	lb/ft^3	0.0771988	43.5066	0.0771988	42.698	
Molar Flow	lbmol/h	0.0103211	901.548	0.693333	901.548	0
Mass Flow	lb/h	0.815727	83047.2	54.7976	83047.2	0
Std Vapor Volumetric Flow	MMSCFD	9.40005E-05	8.21095	0.00631461	8.21095	0
Std Liquid Volumetric Flow	sgpm	0.00245367	233.333	0.164829	233.333 *	0
Specific Gravity		2.72887	0.69757	2.72887	0.684606	
API Gravity			66.3383		66.3383	
Gross Ideal Gas Heating Value	Btu/ft^3	4336.69	4974.46	4336.69	4974.46	
Gross Liquid Heating Value	Btu/lb	20691.7	20395.7	20691.7	20395.7	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	WORKING	1			
From Block	--	VLVE-101			
To Block	--	VSSL-100			

Stream Composition

Mole Fraction	WORKING %		1 %			
Hydrogen Sulfide	0	*	0			
Nitrogen	0	*	0			
Methane	0	*	0			
Carbon Dioxide	0	*	0			
Ethane	0	*	0			
Propane	0	*	0			
i-Butane	0	*	0			
n-Butane	3.62768	*	0.3701			
i-Pentane	17.2466	*	4.4366			
n-Pentane	31.4743	*	10.7549			
Neohexane	0.623166	*	0.3375			
Cyclopentane	3.57444	*	1.9427			
2-Methylpentane	8.95953	*	7.2138			
3-Methylpentane	4.70447	*	4.2187			
Hexane	10.4234	*	11.581			
Methylcyclopentane	4.23581	*	5.1841			
Benzene	0.900284	*	1.5616			
Cyclohexane	4.04196	*	6.8907			
2-Methylhexane	1.19444	*	2.967			
3-Methylhexane	1.37393	*	3.6466			
Cyclopentane, 1,2-Dimethyl-, cis-	1.41852	*	4.8872			
n-Heptane	1.75604	*	6.2036			
Methylcyclohexane	2.52717	*	8.8971			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.262877	*	1.2957			
Toluene	0.416628	*	2.3355			
2-Methylheptane	0.369529	*	2.8207			
3-Methylheptane	0.133272	*	1.0694			
Cyclohexane, 1,3-Dimethyl-, trans-	0.245631	*	2.2016			
n-Octane	0.203154	*	2.412			
Ethylbenzene	0.0111056	*	0.1797			
m-Xylene	0.0715597	*	1.3185			
o-Xylene	0.00903854	*	0.2072			
Ethylcyclohexane	0.0816305	*	0.9947			
Isononane	0.0967035	*	2.4257			
n-Nonane	0.0135288	*	0.599			
n-Decane	0.000886971	*	0.1549			
Undecane	0.00262967	*	0.8922			

Mass Fraction	WORKING %	1 %			
Hydrogen Sulfide	0	0			
Nitrogen	0	0			
Methane	0	0			
Carbon Dioxide	0	0			
Ethane	0	0			
Propane	0	0			
i-Butane	0	0			
n-Butane	2.66779	0.23352			
i-Pentane	15.7439	3.47491			
n-Pentane	28.732	8.42363			
Neohexane	0.679465	0.315734			
Cyclopentane	3.17183	1.47908			
2-Methylpentane	9.76898	6.74856			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	WORKING %	1 %			
3-Methylpentane	5.1295	3.94662			
Hexane	11.3651	10.8341			
Methylcyclopentane	4.51045	4.73631			
Benzene	0.889769	1.32419			
Cyclohexane	4.30404	6.2955			
2-Methylhexane	1.51433	3.22744			
3-Methylhexane	1.7419	3.96669			
Cyclopentane, 1,2-Dimethyl-, cis-	1.76225	5.20923			
n-Heptane	2.22634	6.74814			
Methylcyclohexane	3.13954	9.48336			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.373228	1.57837			
Toluene	0.485702	2.33606			
2-Methylheptane	0.534077	3.4978			
3-Methylheptane	0.192617	1.32611			
Cyclohexane, 1,3-Dimethyl-, trans-	0.348744	2.68191			
n-Octane	0.293617	2.991			
Ethylbenzene	0.0149178	0.207106			
m-Xylene	0.0961237	1.51959			
o-Xylene	0.0121412	0.2388			
Ethylcyclohexane	0.115898	1.21171			
Isononane	0.156927	3.37735			
n-Nonane	0.021954	0.833999			
n-Decane	0.00159676	0.239257			
Undecane	0.00520073	1.51394			

Mass Flow	WORKING lb/h		1 lb/h			
Hydrogen Sulfide	0	*	0			
Nitrogen	0	*	0			
Methane	0	*	0			
Carbon Dioxide	0	*	0			
Ethane	0	*	0			
Propane	0	*	0			
i-Butane	0	*	0			
n-Butane	0.513303	*	193.932			
i-Pentane	3.02925	*	2885.81			
n-Pentane	5.52825	*	6995.59			
Neohexane	0.130734	*	262.208			
Cyclopentane	0.610285	*	1228.33			
2-Methylpentane	1.87962	*	5604.49			
3-Methylpentane	0.986954	*	3277.56			
Hexane	2.18674	*	8997.42			
Methylcyclopentane	0.867845	*	3933.37			
Benzene	0.171198	*	1099.7			
Cyclohexane	0.828129	*	5228.23			
2-Methylhexane	0.291369	*	2680.29			
3-Methylhexane	0.335154	*	3294.22			
Cyclopentane, 1,2-Dimethyl-, cis-	0.33907	*	4326.12			
n-Heptane	0.428365	*	5604.14			
Methylcyclohexane	0.604071	*	7875.66			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.0718119	*	1310.8			
Toluene	0.0934527	*	1940.03			
2-Methylheptane	0.10276	*	2904.83			
3-Methylheptane	0.0370609	*	1101.29			
Cyclohexane, 1,3-Dimethyl-, trans-	0.0671009	*	2227.25			
n-Octane	0.0564941	*	2483.94			
Ethylbenzene	0.0028703	*	171.996			
m-Xylene	0.0184949	*	1261.97			
o-Xylene	0.00233605	*	198.317			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Hourly Condensate
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Flow	WORKING lb/h	1 lb/h
Ethylcyclohexane	0.0222996 *	1006.29
Isononane	0.0301939 *	2804.79
n-Nonane	0.00422412 *	692.612
n-Decane	0.000307228 *	198.696
Undecane	0.00100066 *	1257.28

Stream Properties

Property	Units	WORKING	1
Temperature	°F	98.7718	120
Pressure	psia	5.75472	14.7 *
Mole Fraction Vapor	%	100	0
Molecular Weight	lb/lbmol	79.035	92.1162
Mass Density	lb/ft^3	0.0771988	42.698
Molar Flow	lbmol/h	0.243446	901.548
Mass Flow	lb/h	19.2407	83047.2
Std Vapor Volumetric Flow	MMSCFD	0.00221721	8.21095
Std Liquid Volumetric Flow	sgpm	0.0578753	233.333
Specific Gravity		2.72887	0.684606
API Gravity			66.3383
Gross Ideal Gas Heating Value	Btu/ft^3	4336.69	4974.46
Gross Liquid Heating Value	Btu/lb	20691.7	20395.7

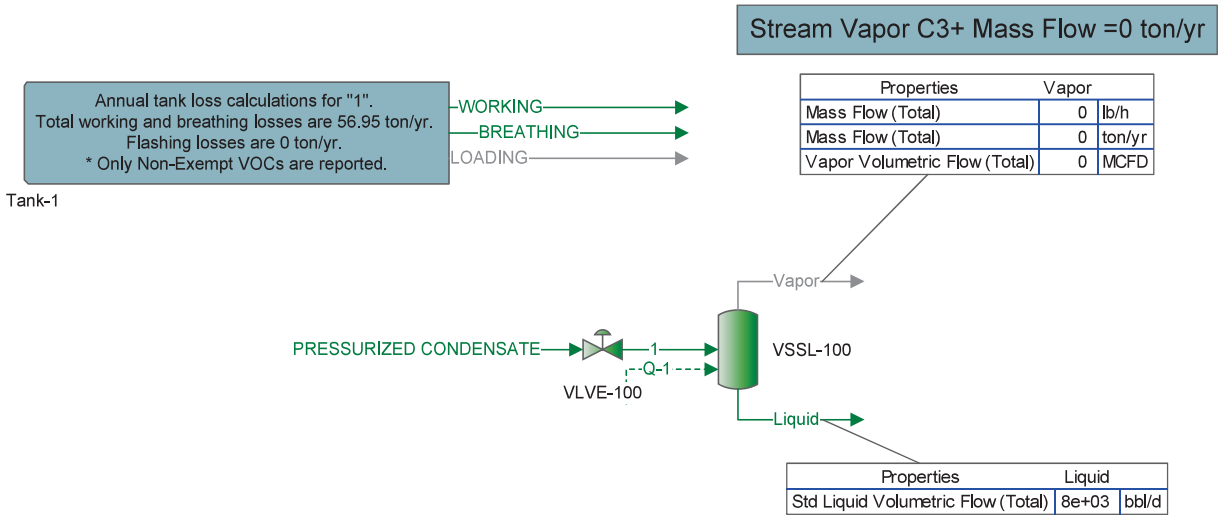
Remarks

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Flowsheet1
Plant Schematic

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Road Runner
Annual Crude Working/Breathing/Flash



Names	Units	Liquid	Vapor
Temperature	°F	63.2	63.2*
Pressure	psig	0.0040512	0.0040512
Mass Fraction Vapor	%	0	
Molecular Weight	lb/lbmol	92.116	
Vapor Volumetric Flow	ft^3/h	1865.9	0
Liquid Volumetric Flow	gpm	232.63	0

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	BREATHING	Liquid	LOADING	PRESSURIZED CONDENSATE	Vapor
From Block	--	VSSL-100	--	--	VSSL-100
To Block	--	--	--	VLVE-100	--

Stream Composition

Mole Fraction	BREATHING %	Liquid %	LOADING %	PRESSURIZED CONDENSATE %	Vapor %
Hydrogen Sulfide	0 *	0	0 *	0 *	
Nitrogen	0 *	0	0 *	0 *	
Methane	0 *	0	0 *	0 *	
Carbon Dioxide	0 *	0	0 *	0 *	
Ethane	0 *	0	0 *	0 *	
Propane	0 *	0	0 *	0 *	
i-Butane	0 *	0	0 *	0 *	
n-Butane	4.02173 *	0.3701	4.02173 *	0.3701 *	
i-Pentane	18.1292 *	4.4366	18.1292 *	4.4366 *	
n-Pentane	32.3998 *	10.7549	32.3998 *	10.7549 *	
Neohexane	0.631979 *	0.3375	0.631979 *	0.3375 *	
Cyclopentane	3.58652 *	1.9427	3.58652 *	1.9427 *	
2-Methylpentane	8.79984 *	7.2138	8.79984 *	7.2138 *	
3-Methylpentane	4.58772 *	4.2187	4.58772 *	4.2187 *	
Hexane	10.0029 *	11.581	10.0029 *	11.581 *	
Methylcyclopentane	4.06673 *	5.1841	4.06673 *	5.1841 *	
Benzene	0.837468 *	1.5616	0.837468 *	1.5616 *	
Cyclohexane	3.80437 *	6.8907	3.80437 *	6.8907 *	
2-Methylhexane	1.09371 *	2.967	1.09371 *	2.967 *	
3-Methylhexane	1.25392 *	3.6466	1.25392 *	3.6466 *	
Cyclopentane, 1,2-Dimethyl-, cis-	1.28342 *	4.8872	1.28342 *	4.8872 *	
n-Heptane	1.5664 *	6.2036	1.5664 *	6.2036 *	
Methylcyclohexane	2.29781 *	8.8971	2.29781 *	8.8971 *	
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.233731 *	1.2957	0.233731 *	1.2957 *	
Toluene	0.364065 *	2.3355	0.364065 *	2.3355 *	
2-Methylheptane	0.315483 *	2.8207	0.315483 *	2.8207 *	
3-Methylheptane	0.113408 *	1.0694	0.113408 *	1.0694 *	
Cyclohexane, 1,3-Dimethyl-, trans-	0.210976 *	2.2016	0.210976 *	2.2016 *	
n-Octane	0.165958 *	2.412	0.165958 *	2.412 *	
Ethylbenzene	0.00905773 *	0.1797	0.00905773 *	0.1797 *	
m-Xylene	0.0580227 *	1.3185	0.0580227 *	1.3185 *	
o-Xylene	0.00723101 *	0.2072	0.00723101 *	0.2072 *	
Ethylcyclohexane	0.0688191 *	0.9947	0.0688191 *	0.9947 *	
Isononane	0.0763836 *	2.4257	0.0763836 *	2.4257 *	
n-Nonane	0.0109484 *	0.599	0.0109484 *	0.599 *	
n-Decane	0.00078473 *	0.1549	0.00078473 *	0.1549 *	
Undecane	0.00167836 *	0.8922	0.00167836 *	0.8922 *	

Mass Fraction	BREATHING %	Liquid %	LOADING %	PRESSURIZED CONDENSATE %	Vapor %
Hydrogen Sulfide	0	0	0	0 *	
Nitrogen	0	0	0	0 *	
Methane	0	0	0	0 *	
Carbon Dioxide	0	0	0	0 *	
Ethane	0	0	0	0 *	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	BREATHING %	Liquid %	LOADING %	PRESSURIZED CONDENSATE %	Vapor %
Propane	0	0	0	0 *	
i-Butane	0	0	0	0 *	
n-Butane	2.97725	0.23352	2.97725	0.23352 *	
i-Pentane	16.6597	3.47491	16.6597	3.47491 *	
n-Pentane	29.7736	8.42363	29.7736	8.42363 *	
Neohexane	0.693659	0.315734	0.693659	0.315734 *	
Cyclopentane	3.20373	1.47908	3.20373	1.47908 *	
2-Methylpentane	9.65868	6.74856	9.65868	6.74856 *	
3-Methylpentane	5.03547	3.94662	5.03547	3.94662 *	
Hexane	10.9791	10.8341	10.9791	10.8341 *	
Methylcyclopentane	4.35922	4.73631	4.35922	4.73631 *	
Benzene	0.833192	1.32419	0.833192	1.32419 *	
Cyclohexane	4.07798	6.2955	4.07798	6.2955 *	
2-Methylhexane	1.39585	3.22744	1.39585	3.22744 *	
3-Methylhexane	1.60031	3.96669	1.60031	3.96669 *	
Cyclopentane, 1,2-Dimethyl-, cis-	1.60501	5.20923	1.60501	5.20923 *	
n-Heptane	1.99912	6.74814	1.99912	6.74814 *	
Methylcyclohexane	2.87359	9.48336	2.87359	9.48336 *	
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.334055	1.57837	0.334055	1.57837 *	
Toluene	0.427248	2.33606	0.427248	2.33606 *	
2-Methylheptane	0.458998	3.4978	0.458998	3.4978 *	
3-Methylheptane	0.164998	1.32611	0.164998	1.32611 *	
Cyclohexane, 1,3-Dimethyl-, trans-	0.301533	2.68191	0.301533	2.68191 *	
n-Octane	0.241453	2.991	0.241453	2.991 *	
Ethylbenzene	0.0122479	0.207106	0.0122479	0.207106 *	
m-Xylene	0.0784584	1.51959	0.0784584	1.51959 *	
o-Xylene	0.00977778	0.2388	0.00977778	0.2388 *	
Ethylcyclohexane	0.0983582	1.21171	0.0983582	1.21171 *	
Isononane	0.124777	3.37735	0.124777	3.37735 *	
n-Nonane	0.0178849	0.833999	0.0178849	0.833999 *	
n-Decane	0.0014221	0.239257	0.0014221	0.239257 *	
Undecane	0.00334138	1.51394	0.00334138	1.51394 *	

Mass Flow	BREATHING lb/h	Liquid lb/h	LOADING lb/h	PRESSURIZED CONDENSATE lb/h	Vapor lb/h
Hydrogen Sulfide	0 *	0	0	0 *	0
Nitrogen	0 *	0	0	0 *	0
Methane	0 *	0	0	0 *	0
Carbon Dioxide	0 *	0	0	0 *	0
Ethane	0 *	0	0	0 *	0
Propane	0 *	0	0	0 *	0
i-Butane	0 *	0	0	0 *	0
n-Butane	0.0133006 *	193.932	0	193.932 *	0
i-Pentane	0.0744254 *	2885.81	0	2885.81 *	0
n-Pentane	0.13301 *	6995.59	0	6995.59 *	0
Neohexane	0.00309885 *	262.208	0	262.208 *	0
Cyclopentane	0.0143123 *	1228.33	0	1228.33 *	0
2-Methylpentane	0.0431492 *	5604.49	0	5604.49 *	0
3-Methylpentane	0.0224954 *	3277.56	0	3277.56 *	0
Hexane	0.0490482 *	8997.42	0	8997.42 *	0
Methylcyclopentane	0.0194743 *	3933.37	0	3933.37 *	0
Benzene	0.0037222 *	1099.7	0	1099.7 *	0
Cyclohexane	0.018218 *	5228.23	0	5228.23 *	0
2-Methylhexane	0.0062358 *	2680.29	0	2680.29 *	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Flow	BREATHING lb/h	Liquid lb/h	LOADING lb/h	PRESSURIZED CONDENSATE lb/h	Vapor lb/h
3-Methylhexane	0.00714924 *	3294.22	0	3294.22 *	0
Cyclopentane, 1,2-Dimethyl-, cis-	0.00717024 *	4326.12	0	4326.12 *	0
n-Heptane	0.00893088 *	5604.14	0	5604.14 *	0
Methylcyclohexane	0.0128375 *	7875.66	0	7875.66 *	0
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.00149236 *	1310.8	0	1310.8 *	0
Toluene	0.00190869 *	1940.03	0	1940.03 *	0
2-Methylheptane	0.00205053 *	2904.83	0	2904.83 *	0
3-Methylheptane	0.000737112 *	1101.29	0	1101.29 *	0
Cyclohexane, 1,3-Dimethyl-, trans-	0.00134707 *	2227.25	0	2227.25 *	0
n-Octane	0.00107866 *	2483.94	0	2483.94 *	0
Ethylbenzene	5.47161E-05 *	171.996	0	171.996 *	0
m-Xylene	0.000350505 *	1261.97	0	1261.97 *	0
o-Xylene	4.36813E-05 *	198.317	0	198.317 *	0
Ethylcyclohexane	0.000439405 *	1006.29	0	1006.29 *	0
Isononane	0.000557429 *	2804.79	0	2804.79 *	0
n-Nonane	7.98988E-05 *	692.612	0	692.612 *	0
n-Decane	6.35307E-06 *	198.696	0	198.696 *	0
Undecane	1.49273E-05 *	1257.28	0	1257.28 *	0

Stream Properties

Property	Units	BREATHING	Liquid	LOADING	PRESSURIZED CONDENSATE	Vapor
Temperature	°F	77.4387	63.2	77.4387	278.8 *	63.2 *
Pressure	psia	3.67317	14.7		215 *	14.7
Mole Fraction Vapor	%	100	0	100	0	
Molecular Weight	lb/lbmol	78.5127	92.1162	78.5127	92.1162	
Mass Density	lb/ft^3	0.0506295	44.5087		37.1343	
Molar Flow	lbmol/h	0.00569003	901.548	0	901.548	0
Mass Flow	lb/h	0.44674	83047.2	0	83047.2	0
Std Vapor Volumetric Flow	MMSCFD	5.18226E-05	8.21095	0	8.21095	0
Std Liquid Volumetric Flow	sgpm	0.00134836	233.333	0	233.333 *	0
Specific Gravity		2.71084	0.713637		0.595399	
API Gravity			66.3383		65.8752	
Gross Ideal Gas Heating Value	Btu/ft^3	4311.24	4974.46	4311.24	4974.46	
Gross Liquid Heating Value	Btu/lb	20705.6	20395.7	20705.6	20395.7	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	WORKING	1			
From Block	--	VLVE-100			
To Block	--	VSSL-100			

Stream Composition

Mole Fraction	WORKING %		1 %			
Hydrogen Sulfide	0	*	0			
Nitrogen	0	*	0			
Methane	0	*	0			
Carbon Dioxide	0	*	0			
Ethane	0	*	0			
Propane	0	*	0			
i-Butane	0	*	0			
n-Butane	4.02173	*	0.3701			
i-Pentane	18.1292	*	4.4366			
n-Pentane	32.3998	*	10.7549			
Neohexane	0.631979	*	0.3375			
Cyclopentane	3.58652	*	1.9427			
2-Methylpentane	8.79984	*	7.2138			
3-Methylpentane	4.58772	*	4.2187			
Hexane	10.0029	*	11.581			
Methylcyclopentane	4.06673	*	5.1841			
Benzene	0.837468	*	1.5616			
Cyclohexane	3.80437	*	6.8907			
2-Methylhexane	1.09371	*	2.967			
3-Methylhexane	1.25392	*	3.6466			
Cyclopentane, 1,2-Dimethyl-, cis-	1.28342	*	4.8872			
n-Heptane	1.5664	*	6.2036			
Methylcyclohexane	2.29781	*	8.8971			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.233731	*	1.2957			
Toluene	0.364065	*	2.3355			
2-Methylheptane	0.315483	*	2.8207			
3-Methylheptane	0.113408	*	1.0694			
Cyclohexane, 1,3-Dimethyl-, trans-	0.210976	*	2.2016			
n-Octane	0.165958	*	2.412			
Ethylbenzene	0.00905773	*	0.1797			
m-Xylene	0.0580227	*	1.3185			
o-Xylene	0.00723101	*	0.2072			
Ethylcyclohexane	0.0688191	*	0.9947			
Isononane	0.0763836	*	2.4257			
n-Nonane	0.0109484	*	0.599			
n-Decane	0.00078473	*	0.1549			
Undecane	0.00167836	*	0.8922			

Mass Fraction	WORKING %	1 %			
Hydrogen Sulfide	0	0			
Nitrogen	0	0			
Methane	0	0			
Carbon Dioxide	0	0			
Ethane	0	0			
Propane	0	0			
i-Butane	0	0			
n-Butane	2.97725	0.23352			
i-Pentane	16.6597	3.47491			
n-Pentane	29.7736	8.42363			
Neohexane	0.693659	0.315734			
Cyclopentane	3.20373	1.47908			
2-Methylpentane	9.65868	6.74856			

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	WORKING %	1 %			
3-Methylpentane	5.03547	3.94662			
Hexane	10.9791	10.8341			
Methylcyclopentane	4.35922	4.73631			
Benzene	0.833192	1.32419			
Cyclohexane	4.07798	6.2955			
2-Methylhexane	1.39585	3.22744			
3-Methylhexane	1.60031	3.96669			
Cyclopentane, 1,2-Dimethyl-, cis-	1.60501	5.20923			
n-Heptane	1.99912	6.74814			
Methylcyclohexane	2.87359	9.48336			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.334055	1.57837			
Toluene	0.427248	2.33606			
2-Methylheptane	0.458998	3.4978			
3-Methylheptane	0.164998	1.32611			
Cyclohexane, 1,3-Dimethyl-, trans-	0.301533	2.68191			
n-Octane	0.241453	2.991			
Ethylbenzene	0.0122479	0.207106			
m-Xylene	0.0784584	1.51959			
o-Xylene	0.00977778	0.2388			
Ethylcyclohexane	0.0983582	1.21171			
Isononane	0.124777	3.37735			
n-Nonane	0.0178849	0.833999			
n-Decane	0.0014221	0.239257			
Undecane	0.00334138	1.51394			

Mass Flow	WORKING lb/h		1 lb/h			
Hydrogen Sulfide	0	*	0			
Nitrogen	0	*	0			
Methane	0	*	0			
Carbon Dioxide	0	*	0			
Ethane	0	*	0			
Propane	0	*	0			
i-Butane	0	*	0			
n-Butane	0.373778	*	193.932			
i-Pentane	2.09154	*	2885.81			
n-Pentane	3.73792	*	6995.59			
Neohexane	0.0870852	*	262.208			
Cyclopentane	0.402211	*	1228.33			
2-Methylpentane	1.2126	*	5604.49			
3-Methylpentane	0.632177	*	3277.56			
Hexane	1.37837	*	8997.42			
Methylcyclopentane	0.547277	*	3933.37			
Benzene	0.104603	*	1099.7			
Cyclohexane	0.511969	*	5228.23			
2-Methylhexane	0.175241	*	2680.29			
3-Methylhexane	0.200911	*	3294.22			
Cyclopentane, 1,2-Dimethyl-, cis-	0.201501	*	4326.12			
n-Heptane	0.25098	*	5604.14			
Methylcyclohexane	0.360764	*	7875.66			
Cyclopentane, 1,2,4-Trimethyl-, (1.alpha.,2.beta.,4.alpha.)-	0.0419388	*	1310.8			
Toluene	0.0536388	*	1940.03			
2-Methylheptane	0.0576248	*	2904.83			
3-Methylheptane	0.0207147	*	1101.29			
Cyclohexane, 1,3-Dimethyl-, trans-	0.037856	*	2227.25			
n-Octane	0.0303131	*	2483.94			
Ethylbenzene	0.00153766	*	171.996			
m-Xylene	0.00985004	*	1261.97			
o-Xylene	0.00122755	*	198.317			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Flow	WORKING lb/h	1 lb/h
Ethylcyclohexane	0.0123484 *	1006.29
Isononane	0.0156651 *	2804.79
n-Nonane	0.00224535 *	692.612
n-Decane	0.000178537 *	198.696
Undecane	0.000419493 *	1257.28

Stream Properties

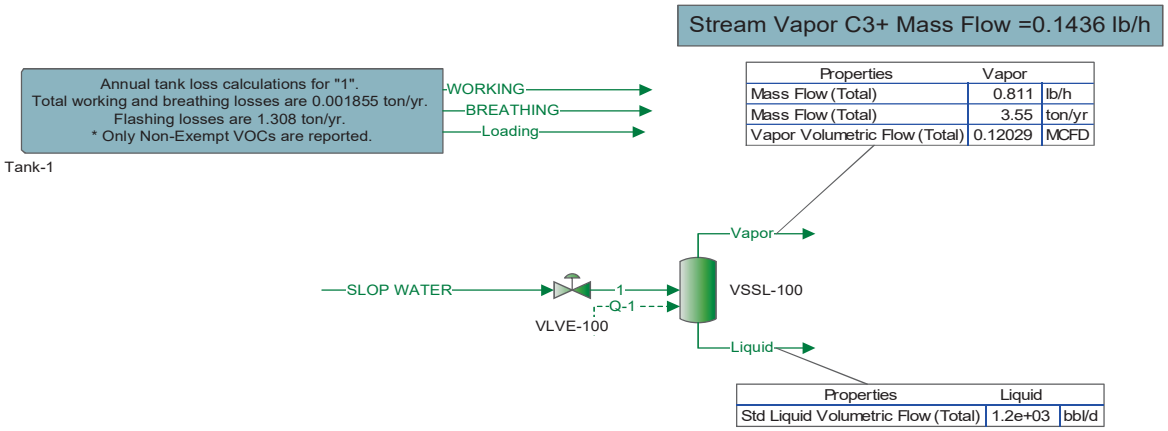
Property	Units	WORKING	1
Temperature	°F	77.4387	176.426
Pressure	psia	3.67317	14.7 *
Mole Fraction Vapor	%	100	46.7227
Molecular Weight	lb/lbmol	78.5127	92.1162
Mass Density	lb/ft^3	0.0506295	0.437802
Molar Flow	lbmol/h	0.159904	901.548
Mass Flow	lb/h	12.5545	83047.2
Std Vapor Volumetric Flow	MMSCFD	0.00145634	8.21095
Std Liquid Volumetric Flow	sgpm	0.0378921	233.333
Specific Gravity		2.71084	
API Gravity			
Gross Ideal Gas Heating Value	Btu/ft^3	4311.24	4974.46
Gross Liquid Heating Value	Btu/lb	20705.6	20395.7

Remarks

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Tank ProMax Reports

Road Runner
Hourly PW Working/Breathing/Flash



Names	Units	Liquid	Vapor
Temperature	°F	95	95*
Pressure	psig	20.223	20.223
Mass Fraction Vapor	%	0	100
Molecular Weight	lb/lbmol	18.02	27.302
Vapor Volumetric Flow	ft^3/h	282.26	5.0121
Liquid Volumetric Flow	gpm	35.191	0.62488

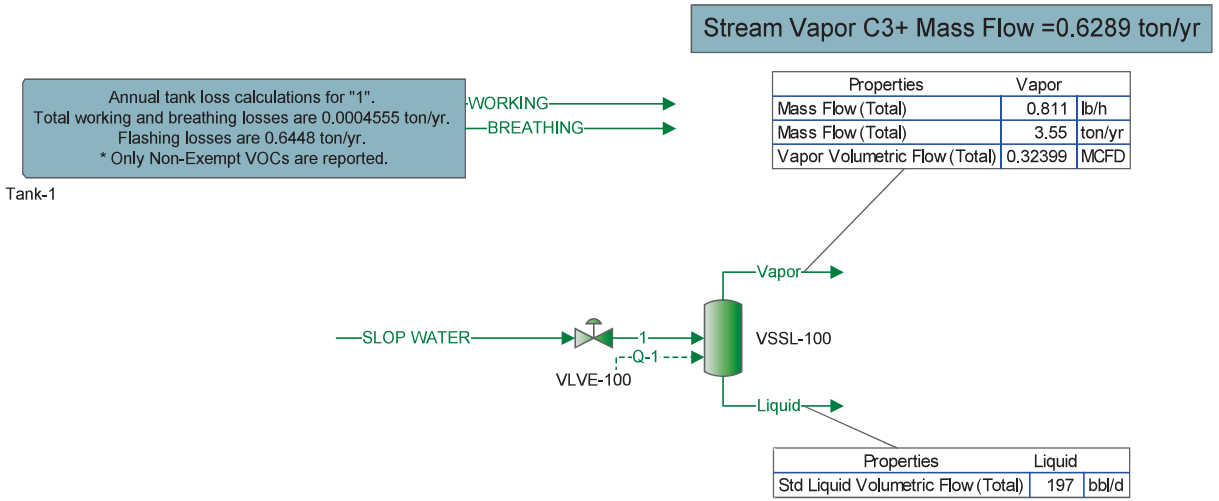
Process Streams		BREATHING	Liquid	SLOP WATER	Vapor	WORKING	1	Loading
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	VSSL-100	--	VSSL-100	--	VLVE-100	--
	To Block:	--	--	VLVE-100	--	--	VSSL-100	--
Mole Fraction		%	%	%	%	%	%	%
Carbon Dioxide		16.9481*	0.0164262	0.0169610	17.5025*	16.9481*	0.0169610	16.9481*
Hydrogen Sulfide		0.224160*	0.000585231	0.000591492	0.205294*	0.224160*	0.000591492	0.224160*
Nitrogen		0.000452584*	4.15701E-06	9.22904E-06	0.165838*	0.000452584*	9.22904E-06	0.000452584*
Methane		0.494009*	0.00247048	0.00394764	48.2995*	0.494009*	0.00394764	0.494009*
Ethane		0.334888*	0.00150053	0.00215921	21.5375*	0.334888*	0.00215921	0.334888*
Propane		0.0173357*	0.000357054	0.000583454	7.40269*	0.0173357*	0.000583454	0.0173357*
i-Butane		0.000257848*	1.79381E-05	3.62470E-05	0.598642*	0.000257848*	3.62470E-05	0.000257848*
n-Butane		0.000730820*	6.15128E-05	0.000104070	1.39151*	0.000730820*	0.000104070	0.000730820*
i-Pentane		1.94359E-05*	4.98303E-06	1.02936E-05	0.173639*	1.94359E-05*	1.02936E-05	1.94359E-05*
n-Pentane		1.83332E-06*	7.75698E-07	2.53456E-06	0.0575080*	1.83332E-06*	2.53456E-06	1.83332E-06*
Hexane		6.88565E-08*	1.04402E-07	4.70046E-07	0.0119551*	6.88565E-08*	4.70046E-07	6.88565E-08*
Heptane		2.57948E-09*	1.33207E-08	8.16906E-08	0.00223542*	2.57948E-09*	8.16906E-08	2.57948E-09*
Cyclopentane		3.23141E-05*	7.94451E-06	9.51511E-06	0.0513601*	3.23141E-05*	9.51511E-06	3.23141E-05*
Benzene		0.00224847*	0.000783228	0.000787866	0.152424*	0.00224847*	0.000787866	0.00224847*
Cyclohexane		7.23220E-06*	5.72635E-06	6.93618E-06	0.0395621*	7.23220E-06*	6.93618E-06	7.23220E-06*
Methylcyclohexane		1.86913E-07*	4.64865E-07	6.95848E-07	0.00755266*	1.86913E-07*	6.95848E-07	1.86913E-07*
2,2,4-Trimethylpentane		4.95900E-10*	2.44454E-09	1.29581E-08	0.000343750*	4.95900E-10*	1.29581E-08	4.95900E-10*
Toluene		0.000105053*	0.000119954	0.000120893	0.0308484*	0.000105053*	0.000120893	0.000105053*
Ethylbenzene		4.39018E-06*	1.46538E-05	1.47925E-05	0.00455175*	4.39018E-06*	1.47925E-05	4.39018E-06*
o-Xylene		2.77854E-06*	1.28211E-05	1.29016E-05	0.00264670*	2.77854E-06*	1.29016E-05	2.77854E-06*
Octane		6.93117E-12*	1.27795E-10	1.57395E-09	4.72833E-05*	6.93117E-12*	1.57395E-09	6.93117E-12*
Water		81.9776*	99.9776	99.9746	2.36177*	81.9776*	99.9746	81.9776*
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Carbon Dioxide		0.000271439*	0.159559	0.164759	0.00520003*	0.00662661*	0.164759	0.00333624*
Hydrogen Sulfide		3.59011E-06*	0.00568475	0.00574574	6.09933E-05*	8.76450E-05*	0.00574574	4.41259E-05*
Nitrogen		7.24852E-09*	4.03799E-05	8.96507E-05	4.92708E-05*	1.76958E-07*	8.96507E-05	8.90912E-08*
Methane		7.91196E-06*	0.0239974	0.0383473	0.0143499*	0.000193154*	0.0383473	9.72456E-05*
Ethane		5.36351E-06*	0.0145756	0.0209745	0.00639884*	0.000130939*	0.0209745	6.59227E-05*
Propane		2.77645E-07*	0.00346831	0.00566766	0.00219935*	6.77813E-06*	0.00566766	3.41253E-06*
i-Butane		4.12966E-09*	0.000174245	0.000352102	0.000177858*	1.00817E-07*	0.000352102	5.07574E-08*
n-Butane		1.17047E-08*	0.000597515	0.00101094	0.000413421*	2.85746E-07*	0.00101094	1.43862E-07*
i-Pentane		3.11283E-10*	4.84035E-05	9.99920E-05	5.15885E-05*	7.59932E-09*	9.99920E-05	3.82596E-09*
n-Pentane		2.93622E-11*	7.53488E-06	2.46206E-05	1.70857E-05*	7.16817E-10*	2.46206E-05	3.60889E-10*
Hexane		1.10279E-12*	1.01413E-06	4.56601E-06	3.55189E-06*	2.69225E-11*	4.56601E-06	1.35544E-11*
Heptane		4.13125E-14*	1.29393E-07	7.93541E-07	6.64148E-07*	1.00856E-12*	7.93541E-07	5.07771E-13*
Cyclopentane		5.17537E-10*	7.71704E-05	9.24296E-05	1.52592E-05*	1.26346E-08*	9.24296E-05	6.36103E-09*
Benzene		3.60112E-08*	0.00760802	0.00765331	4.52855E-05*	8.79138E-07*	0.00765331	4.42612E-07*
Cyclohexane		1.15830E-10*	5.56239E-05	6.73779E-05	1.17540E-05*	2.82774E-09*	6.73779E-05	1.42366E-09*
Methylcyclohexane		2.99357E-12*	4.51554E-06	6.75945E-06	2.24391E-06*	7.30818E-11*	6.75945E-06	3.67939E-11*
2,2,4-Trimethylpentane		7.94225E-15*	2.37455E-08	1.25874E-07	1.02129E-07*	1.93894E-13*	1.25874E-07	9.76179E-14*
Toluene		1.68252E-09*	0.00116519	0.00117436	9.16512E-06*	4.10752E-08*	0.00117436	2.06797E-08*
Ethylbenzene		7.03124E-11*	0.000142342	0.000143694	1.35233E-06*	1.71653E-09*	0.000143694	8.64207E-10*
o-Xylene		4.45007E-11*	0.000124540	0.000125326	7.86340E-07*	1.08639E-09*	0.000125326	5.46957E-10*
Octane		1.11008E-16*	1.24136E-09	1.52893E-08	1.40480E-08*	2.71004E-15*	1.52893E-08	1.36440E-15*
Water		0.00131294*	971.150	971.151	0.000701687*	0.0320527*	971.151	0.0161373*
Mass Fraction		%	%	%	%	%	%	%
Carbon Dioxide		33.1592	0.0401159	0.0414214	28.2134*	33.1592	0.0414214	33.1592
Hydrogen Sulfide		0.339629	0.00110681	0.00111863	0.256269*	0.339629	0.00111863	0.339629
Nitrogen		0.000563639	6.46220E-06	1.43466E-05	0.170160*	0.000563639	1.43466E-05	0.000563639
Methane		0.352323	0.00219930	0.00351427	28.3806*	0.352323	0.00351427	0.352323
Ethane		0.447666	0.00250378	0.00360280	23.7205*	0.447666	0.00360280	0.447666
Propane		0.0339838	0.000873700	0.00142767	11.9562*	0.0339838	0.00142767	0.0339838
i-Butane		0.000666257	5.78564E-05	0.000116907	1.27443*	0.000666257	0.000116907	0.000666257
n-Butane		0.00188837	0.000198399	0.000335656	2.96235*	0.00188837	0.000335656	0.00188837
i-Pentane		6.23404E-05	1.99506E-05	4.12120E-05	0.458865*	6.23404E-05	4.12120E-05	6.23404E-05
n-Pentane		5.88035E-06	3.10567E-06	1.01475E-05	0.151973*	5.88035E-06	1.01475E-05	5.88035E-06
Hexane		2.63793E-07	4.99259E-07	2.24776E-06	0.0377351*	2.63793E-07	2.24776E-06	2.63793E-07
Heptane		1.14906E-08	7.40688E-08	4.54229E-07	0.00820434*	1.14906E-08	4.54229E-07	1.14906E-08
Cyclopentane		0.000100751	3.09188E-05	3.70307E-05	0.131934*	0.000100751	3.70307E-05	0.000100751
Benzene		0.00780800	0.00339499	0.00341504	0.436093*	0.00780800	0.00341504	0.00780800
Cyclohexane		2.70588E-05	2.67433E-05	3.23929E-05	0.121953*	2.70588E-05	3.23929E-05	2.70588E-05
Methylcyclohexane		8.15878E-07	2.53285E-06	3.79132E-06	0.0271618*	8.15878E-07	3.79132E-06	8.15878E-07
2,2,4-Trimethylpentane		2.51828E-09	1.54955E-08	8.21375E-08	0.00143822*	2.51828E-09	8.21375E-08	2.51828E-09
Toluene		0.000430314	0.000613320	0.000618116	0.104108*	0.000430314	0.000618116	0.000430314
Ethylbenzene		2.07205E-05	8.63304E-05	8.71465E-05	0.0176998*	2.07205E-05	8.71465E-05	2.07205E-05
o-Xylene		1.31140E-05	7.55333E-05	7.60067E-05	0.0102919*	1.31140E-05	7.60067E-05	1.31140E-05
Octane		3.51979E-11	8.10068E-10	9.97683E-09	0.000197829*	3.51979E-11	9.97683E-09	3.51979E-11
Water		65.6556	99.9487	99.9441	1.55843*	65.6556	99.9441	65.6556
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Carbon Dioxide		0.0119459*	7.02210	7.25095	0.228851*	0.291634*	7.25095	0.146826*
Hydrogen Sulfide		0.000122354*	0.193741	0.195820	0.00207870*	0.00298702*	0.195820	0.00150385*
Nitrogen		2.03056E-07*	0.00113118	0.00251142	0.00138024*	4.95718E-06*	0.00251142	2.49575E-06*
Methane		0.000126927*	0.384978	0.615185	0.230207*	0.00309867*	0.615185	0.00156006*
Ethane		0.000161276*	0.438276	0.630682	0.192407*	0.00393721*	0.630682	0.00198223*
Propane		1.22429E-05*	0.152937	0.249919	0.0969818*	0.000298886*	0.249919	0.000150477*
i-Butane		2.40025E-07*	0.0101275	0.0204650	0.0103375*	5.85971E-06*	0.0204650	2.95013E-06*
n-Butane		6.80303E-07*	0.0347289	0.0587578	0.0240289*	1.66082E-05*	0.0587578	8.36157E-06*
i-Pentane		2.24587E-08*	0.00349225	0.00721430	0.00372205*	5.48282E-07*	0.00721430	2.76039E-07*
n-Pentane		2.11845E-09*	0.000543632	0.00177635	0.00123271*	5.17175E-08*	0.00177635	2.60377E-08*
Hexane		9.50337E-11*	8.73928E-05	0.000393478	0.000306085*	2.32005E-09*	0.000393478	1.16806E-09*
Heptane		4.13960E-12*	1.29654E-05	7.95143E-05	6.65489E-05*	1.01060E-10*	7.95143E-05	5.08796E-11*
Cyclopentane		3.62964E-08*	0.00541218	0.00648235	0.00107017*	8.86101E-07*	0.00648235	4.46117E-07*
Benzene		2.81290E-06*	0.594277	0.597814	0.00353733*	6.86711E-05*	0.597814	3.45732E-05*
Cyclohexane		9.74817E-09*	0.00468128	0.00567049	0.000989209*	2.37981E-07*	0.00567049	1.19814E-07*
Methylcyclohexane		2.93927E-10*	0.000443363	0.000663684	0.000220321*	7.17562E-09*	0.000663684	3.61264E-09*
2,2,4-Trimethylpentane		9.07231E-13*	2.71241E-06	1.43784E-05	1.16660E-05*	2.21482E-11*	1.43784E-05	1.11507E-11*
Toluene		1.55024E-07*	0.107359	0.108203	0.000844460*	3.78460E-06*	0.108203	1.90540E-06*
Ethylbenzene		7.46472E-09*	0.0151117	0.0152553	0.000143571*	1.82236E-07*	0.0152553	9.17485E-08*
o-Xylene		4.72442E-09*	0.0132217	0.0133052	8.34818E-05*	1.15337E-07*	0.0133052	5.80676E-08*
Octane		1.26803E-14*	1.41799E-07	1.74648E-06	1.60468E-06*	3.09564E-13*	1.74648E-06	1.55853E-13*
Water		0.0236530*	17495.5	17495.6	0.0126411*	0.577439*	17495.6	0.290718*

Process Streams		BREATHING	Liquid	SLOP WATER	Vapor	WORKING	1	Loading
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	VSSL-100	--	VSSL-100	--	VLVE-100	--
	To Block:	--	--	VLVE-100	--	--	VSSL-100	--
Property	Units							
Temperature	°F	98.7718	95	95*	95*	98.7718	95.7831	98.7718
Pressure	psia	1.11714	34.9189	300*	34.9189	1.11714	14.7*	1.11714
Mole Fraction Vapor	%	100	0	0	100	100	0.00934089	100
Mole Fraction Light Liquid	%	0	100	100	0	0	99.9907	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	22.4939	18.0205	18.0208	27.3018	22.4939	18.0208	22.4939
Mass Density	lb/ft^3	0.00419668	62.0158	62.0295	0.161838	0.00419668	54.8932	0.00419668
Molar Flow	lbmol/h	0.00160158	971.367	971.397	0.0297102	0.0390994	971.397	0.0196850
Mass Flow	lb/h	0.0360258	17504.5	17505.3	0.811142	0.879496	17505.3	0.442792
Vapor Volumetric Flow	ft^3/h	8.58437	282.259	282.210	5.01207	209.570	318.898	105.510
Liquid Volumetric Flow	gpm	1.07026	35.1907	35.1846	0.624882	26.1282	39.7587	13.1545
Std Vapor Volumetric Flow	MMSCFD	1.45866E-05	8.84684	8.84711	0.000270589*	0.000356102	8.84711	0.000179284
Std Liquid Volumetric Flow	sgpm	7.86239E-05	35.0000	35.0037*	0.00374258	0.00191944	35.0037	0.000966363
Compressibility		0.999140	0.00170462	0.0146419	0.989633	0.999140	0.000809583	0.999140
Specific Gravity		0.776655	0.994341	0.994560	0.942661	0.776655		0.776655
API Gravity			9.99022	9.96175				
Enthalpy	Btu/h	-182.633	-1.19062E+08	-1.19051E+08	-1775.86	-4458.60	-1.19051E+08	-2244.73
Mass Enthalpy	Btu/lb	-5069.49	-6801.78	-6800.84	-2189.33	-5069.49	-6800.84	-5069.49
Mass Cp	Btu/(lb*°F)	0.365770	0.977060	0.976550	0.394363	0.365770	0.976970	0.365770
Ideal Gas CpCv Ratio		1.31847	1.32833	1.32833	1.22876	1.31847	1.32830	1.31847
Dynamic Viscosity	cP	0.0120507	0.739434	0.741971	0.0115817	0.0120507		0.0120507
Kinematic Viscosity	cSt	179.262	0.744348	0.746737	4.46758	179.262		179.262
Thermal Conductivity	Btu/(h*ft*°F	0.0118031	0.357721	0.357677	0.0155115	0.0118031		0.0118031
Surface Tension	lbf/ft		0.00484531	0.00484513				
Net Ideal Gas Heating Value	Btu/ft^3	11.7486	0.0962251	0.128048	1040.55	11.7486	0.128048	11.7486
Net Liquid Heating Value	Btu/lb	-523.845	-1057.23	-1056.52	14360.5	-523.845	-1056.52	-523.845
Gross Ideal Gas Heating Valu	Btu/ft^3	54.1471	50.4025	50.4359	1144.12	54.1471	50.4359	54.1471
Gross Liquid Heating Value	Btu/lb	191.450	2.13867	2.87072	15800.5	191.450	2.87072	191.450

Flowsheet1
Plant Schematic

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Road Runner
Annual Crude Working/Breathing/Flash



Names	Units	Liquid	Vapor
Temperature	°F	63.4	63.4*
Pressure	psig	-2.3959	-2.3959
Mass Fraction Vapor	%	0	100
Molecular Weight	lb/lbmol	18.018	27.302
Vapor Volumetric Flow	ft^3/h	46.161	13.5
Liquid Volumetric Flow	gpm	5.7551	1.6831

ProMax 6.0.24302.0
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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	BREATHING	Liquid	SLOP WATER	Vapor	WORKING
From Block	--	VSSL-100	--	VSSL-100	--
To Block	--	--	VLVE-100	--	--

Stream Composition

Mole Fraction	BREATHING %	Liquid %	SLOP WATER %	Vapor %	WORKING %
Carbon Dioxide	15.7454 *	0.00826449	0.0115182	17.5025 *	15.7454 *
Hydrogen Sulfide	0.180607 *	0.000298396	0.000336522	0.205294 *	0.180607 *
Nitrogen	0.00196159 *	1.77397E-06	3.2617E-05	0.165838 *	0.00196159 *
Methane	1.59416 *	0.00106298	0.0100458	48.2995 *	1.59416 *
Ethane	0.830439 *	0.000752627	0.00475814	21.5375 *	0.830439 *
Propane	0.048519 *	0.000184882	0.00156164	7.40269 *	0.048519 *
i-Butane	0.000957615 *	1.13113E-05	0.000122648	0.598642 *	0.000957615 *
n-Butane	0.00199022 *	3.17866E-05	0.000290581	1.39151 *	0.00199022 *
i-Pentane	6.57343E-05 *	2.97734E-06	3.52711E-05	0.173639 *	6.57343E-05 *
n-Pentane	6.41709E-06 *	3.51129E-07	1.10467E-05	0.057508 *	6.41709E-06 *
Hexane	2.60308E-07 *	5.16926E-08	2.27515E-06	0.0119551 *	2.60308E-07 *
Heptane	1.04409E-08 *	7.52384E-09	4.23277E-07	0.00223542 *	1.04409E-08 *
Cyclopentane	5.20883E-05 *	5.07234E-06	1.46236E-05	0.0513601 *	5.20883E-05 *
Benzene	0.00190335 *	0.00055398	0.000582226	0.152424 *	0.00190335 *
Cyclohexane	1.12515E-05 *	3.67391E-06	1.10312E-05	0.0395621 *	1.12515E-05 *
Methylcyclohexane	4.13983E-07 *	2.99241E-07	1.70387E-06	0.00755266 *	4.13983E-07 *
2,2,4-Trimethylpentane	2.80508E-09 *	2.4771E-09	6.6409E-08	0.00034375 *	2.80508E-09 *
Toluene	8.3403E-05 *	8.38585E-05	8.95802E-05	0.0308484 *	8.3403E-05 *
Ethylbenzene	3.72799E-06 *	1.16645E-05	1.25089E-05	0.00455175 *	3.72799E-06 *
o-Xylene	2.22717E-06 *	9.98023E-06	1.04706E-05	0.0026467 *	2.22717E-06 *
Octane	2.57054E-11 *	6.45125E-11	8.85849E-09	4.72833E-05 *	2.57054E-11 *
Water	81.5939 *	99.9887	99.9706	2.36177 *	81.5939 *

Molar Flow	BREATHING lbmol/h	Liquid lbmol/h	SLOP WATER lbmol/h	Vapor lbmol/h	WORKING lbmol/h
Carbon Dioxide	0.000121232 *	0.0131997	0.0183997	0.00520003 *	0.000539592 *
Hydrogen Sulfide	1.39059E-06 *	0.000476584	0.000537577	6.09933E-05 *	6.18938E-06 *
Nitrogen	1.51033E-08 *	2.8333E-06	5.21041E-05	4.92708E-05 *	6.72234E-08 *
Methane	1.22743E-05 *	0.00169774	0.0160476	0.0143499 *	5.46318E-05 *
Ethane	6.394E-06 *	0.00120206	0.0076009	0.00639884 *	2.84591E-05 *
Propane	3.73575E-07 *	0.000295285	0.00249464	0.00219935 *	1.66274E-06 *
i-Butane	7.3732E-09 *	1.80659E-05	0.000195923	0.000177858 *	3.28174E-08 *
n-Butane	1.53238E-08 *	5.0768E-05	0.000464189	0.000413421 *	6.82045E-08 *
i-Pentane	5.06124E-10 *	4.75527E-06	5.63438E-05	5.15885E-05 *	2.25271E-09 *
n-Pentane	4.94087E-11 *	5.60808E-07	1.76465E-05	1.70857E-05 *	2.19913E-10 *
Hexane	2.00426E-12 *	8.2561E-08	3.63445E-06	3.55189E-06 *	8.92074E-12 *
Heptane	8.03903E-14 *	1.20167E-08	6.76165E-07	6.64148E-07 *	3.57809E-13 *
Cyclopentane	4.01056E-10 *	8.10131E-06	2.33605E-05	1.52592E-05 *	1.78506E-09 *
Benzene	1.46549E-08 *	0.000884792	0.000930077	4.52855E-05 *	6.52276E-08 *
Cyclohexane	8.66315E-11 *	5.8678E-06	1.76218E-05	1.1754E-05 *	3.85588E-10 *
Methylcyclohexane	3.18748E-12 *	4.77934E-07	2.72184E-06	2.24391E-06 *	1.41871E-11 *
2,2,4-Trimethylpentane	2.15979E-14 *	3.95631E-09	1.06085E-07	1.02129E-07 *	9.613E-14 *
Toluene	6.42166E-10 *	0.000133935	0.0001431	9.16512E-06 *	2.85821E-09 *
Ethylbenzene	2.87039E-11 *	1.863E-05	1.99823E-05	1.35233E-06 *	1.27758E-10 *
o-Xylene	1.71482E-11 *	1.594E-05	1.67263E-05	7.8634E-07 *	7.63248E-11 *
Octane	1.9792E-16 *	1.03036E-10	1.4151E-08	1.4048E-08 *	8.80921E-16 *
Water	0.000628236 *	159.697	159.698	0.000701687 *	0.00279622 *

Mass Fraction	BREATHING %	Liquid %	SLOP WATER %	Vapor %	WORKING %
Carbon Dioxide	31.184	0.0201862	0.0281307	28.2134 *	31.184
Hydrogen Sulfide	0.276999	0.000564412	0.000636466	0.256269 *	0.276999
Nitrogen	0.0024729	2.75806E-06	5.07062E-05	0.17016 *	0.0024729
Methane	1.1509	0.000946427	0.00894345	28.3806 *	1.1509

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	BREATHING %	Liquid %	SLOP WATER %	Vapor %	WORKING %
Ethane	1.12373	0.00125601	0.00793977	23.7205 *	1.12373
Propane	0.0962811	0.000452462	0.00382143	11.9562 *	0.0962811
i-Butane	0.00250476	3.64879E-05	0.000395596	1.27443 *	0.00250476
n-Butane	0.00520566	0.000102536	0.00093726	2.96235 *	0.00520566
i-Pentane	0.000213429	1.1922E-05	0.000141221	0.458865 *	0.000213429
n-Pentane	2.08354E-05	1.40601E-06	4.42295E-05	0.151973 *	2.08354E-05
Hexane	1.0095E-06	2.47232E-07	1.08804E-05	0.0377351 *	1.0095E-06
Heptane	4.70812E-08	4.18416E-08	2.35371E-06	0.00820434 *	4.70812E-08
Cyclopentane	0.000164398	1.97434E-05	5.69151E-05	0.131934 *	0.000164398
Benzene	0.00669066	0.00240162	0.00252383	0.436093 *	0.00669066
Cyclohexane	4.26135E-05	1.71603E-05	5.15201E-05	0.121953 *	4.26135E-05
Methylcyclohexane	1.82922E-06	1.63066E-06	9.28403E-06	0.0271618 *	1.82922E-06
2,2,4-Trimethylpentane	1.44196E-08	1.5704E-08	4.20972E-07	0.00143822 *	1.44196E-08
Toluene	0.000345825	0.000428825	0.000458041	0.104108 *	0.000345825
Ethylbenzene	1.78111E-05	6.87291E-05	7.36973E-05	0.0176998 *	1.78111E-05
o-Xylene	1.06406E-05	5.8805E-05	6.16886E-05	0.0102919 *	1.06406E-05
Octane	1.32139E-10	4.08989E-10	5.61546E-08	0.000197829 *	1.32139E-10
Water	66.1504	99.9734	99.9457	1.55843 *	66.1504

Mass Flow	BREATHING lb/h	Liquid lb/h	SLOP WATER lb/h	Vapor lb/h	WORKING lb/h
Carbon Dioxide	0.00533536 *	0.58091	0.809761	0.228851 *	0.0237472 *
Hydrogen Sulfide	4.73926E-05 *	0.0162424	0.0183211	0.0020787 *	0.000210939 *
Nitrogen	4.23096E-07 *	7.93703E-05	0.00145961	0.00138024 *	1.88316E-06 *
Methane	0.00019691 *	0.0272359	0.257443	0.230207 *	0.000876428 *
Ethane	0.000192262 *	0.0361448	0.228552	0.192407 *	0.000855736 *
Propane	1.6473E-05 *	0.0130208	0.110003	0.0969818 *	7.33197E-05 *
i-Butane	4.28547E-07 *	0.00105003	0.0113875	0.0103375 *	1.90742E-06 *
n-Butane	8.90651E-07 *	0.00295075	0.0269797	0.0240289 *	3.9642E-06 *
i-Pentane	3.65162E-08 *	0.000343087	0.00406514	0.00372205 *	1.6253E-07 *
n-Pentane	3.56478E-09 *	4.04616E-05	0.00127318	0.00123271 *	1.58665E-08 *
Hexane	1.72718E-10 *	7.11472E-06	0.0003132	0.000306085 *	7.68748E-10 *
Heptane	8.05526E-12 *	1.2041E-06	6.7753E-05	6.65489E-05 *	3.58531E-11 *
Cyclopentane	2.81272E-08 *	0.000568168	0.00163834	0.00107017 *	1.25191E-07 *
Benzene	1.14472E-06 *	0.0691127	0.07265	0.00353733 *	5.09505E-06 *
Cyclohexane	7.29086E-09 *	0.000493831	0.00148304	0.000989209 *	3.24509E-08 *
Methylcyclohexane	3.12966E-10 *	4.69265E-05	0.000267247	0.000220321 *	1.39298E-09 *
2,2,4-Trimethylpentane	2.46709E-12 *	4.51923E-07	1.2118E-05	1.1666E-05 *	1.09808E-11 *
Toluene	5.91682E-08 *	0.0123405	0.013185	0.00084446 *	2.63351E-07 *
Ethylbenzene	3.04735E-09 *	0.00197785	0.00212143	0.000143571 *	1.35634E-08 *
o-Xylene	1.82054E-09 *	0.00169227	0.00177575	8.34818E-05 *	8.10303E-09 *
Octane	2.26081E-14 *	1.17697E-08	1.61645E-06	1.60468E-06 *	1.00626E-13 *
Water	0.0113179 *	2876.99	2877.01	0.0126411 *	0.0503746 *

Stream Properties

Property	Units	BREATHING	Liquid	SLOP WATER	Vapor	WORKING
Temperature	°F	77.4387	63.4	90 *	63.4 *	77.4387
Pressure	psia	0.571841	12.3	300 *	12.3	0.571841
Mole Fraction Vapor	%	100	0	0	100	100
Mole Fraction Light Liquid	%	0	100	100	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	22.2211	18.018	18.0198	27.3018	22.2211
Mass Density	lb/ft^3	0.00220559	62.3422	62.0794	0.0600863	0.00220559
Molar Flow	lbmol/h	0.000769955	159.715	159.745	0.0297102	0.00342699
Mass Flow	lb/h	0.0171093	2877.76	2878.57	0.811142	0.0761517
Vapor Volumetric Flow	ft^3/h	7.75724	46.1607	46.3691	13.4996	34.5267
Liquid Volumetric Flow	gpm	0.967136	5.75509	5.78109	1.68307	4.30462
Std Vapor Volumetric Flow	MMSCFD	7.01246E-06	1.45463	1.4549	0.000270589 *	3.12117E-05
Std Liquid Volumetric Flow	sgpm	3.82609E-05	5.75342	5.75717 *	0.00374258	0.000170295

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Stream Properties

Property	Units	BREATHING	Liquid	SLOP WATER	Vapor	WORKING
Compressibility		0.99952	0.000633297	0.0147624	0.995631	0.99952
Specific Gravity		0.767238	0.999574	0.995361	0.942661	0.767238
API Gravity			9.99534	9.98288		
Enthalpy	Btu/h	-86.4781	-1.96654E+07	-1.95902E+07	-1785.07	-384.905
Mass Enthalpy	Btu/lb	-5054.46	-6833.59	-6805.52	-2200.69	-5054.46
Mass Cp	Btu/(lb*°F)	0.369473	0.979328	0.976864	0.380618	0.369473
Ideal Gas CpCv Ratio		1.31923	1.32944	1.3285	1.23738	1.31923
Dynamic Viscosity	cP	0.0115299	1.0838	0.784466	0.0109529	0.0115299
Kinematic Viscosity	cSt	326.348	1.08529	0.788871	11.3798	326.348
Thermal Conductivity	Btu/(h*ft*°F)	0.0114273	0.343805	0.355498	0.0142511	0.0114273
Surface Tension	lbf/ft		0.00508086 ?	0.00488176		
Net Ideal Gas Heating Value	Btu/ft^3	30.291	0.0542027	0.24772	1040.55	30.291
Net Liquid Heating Value	Btu/lb	-209.523	-1058.36	-1054.01	14360.5	-209.523
Gross Ideal Gas Heating Value	Btu/ft^3	74.3953	50.3624	50.5659	1144.12	74.3953
Gross Liquid Heating Value	Btu/lb	543.699	1.1996	5.65164	15800.5	543.699

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Connections

	1				
From Block	VLVE-100				
To Block	VSSL-100				

Stream Composition

Mole Fraction	1 %				
Carbon Dioxide	0.0115182				
Hydrogen Sulfide	0.000336522				
Nitrogen	3.2617E-05				
Methane	0.0100458				
Ethane	0.00475814				
Propane	0.00156164				
i-Butane	0.000122648				
n-Butane	0.000290581				
i-Pentane	3.52711E-05				
n-Pentane	1.10467E-05				
Hexane	2.27515E-06				
Heptane	4.23277E-07				
Cyclopentane	1.46236E-05				
Benzene	0.000582226				
Cyclohexane	1.10312E-05				
Methylcyclohexane	1.70387E-06				
2,2,4-Trimethylpentane	6.6409E-08				
Toluene	8.95802E-05				
Ethylbenzene	1.25089E-05				
o-Xylene	1.04706E-05				
Octane	8.85849E-09				
Water	99.9706				

Molar Flow	1 lbmol/h				
Carbon Dioxide	0.0183997				
Hydrogen Sulfide	0.000537577				
Nitrogen	5.21041E-05				
Methane	0.0160476				
Ethane	0.0076009				
Propane	0.00249464				
i-Butane	0.000195923				
n-Butane	0.000464189				
i-Pentane	5.63438E-05				
n-Pentane	1.76465E-05				
Hexane	3.63445E-06				
Heptane	6.76165E-07				
Cyclopentane	2.33605E-05				
Benzene	0.000930077				
Cyclohexane	1.76218E-05				
Methylcyclohexane	2.72184E-06				
2,2,4-Trimethylpentane	1.06085E-07				
Toluene	0.0001431				
Ethylbenzene	1.99823E-05				
o-Xylene	1.67263E-05				
Octane	1.4151E-08				
Water	159.698				

Mass Fraction	1 %				
Carbon Dioxide	0.0281307				
Hydrogen Sulfide	0.000636466				
Nitrogen	5.07062E-05				

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Mass Fraction	1 %				
Methane	0.00894345				
Ethane	0.00793977				
Propane	0.00382143				
i-Butane	0.000395596				
n-Butane	0.00093726				
i-Pentane	0.000141221				
n-Pentane	4.42295E-05				
Hexane	1.08804E-05				
Heptane	2.35371E-06				
Cyclopentane	5.69151E-05				
Benzene	0.00252383				
Cyclohexane	5.15201E-05				
Methylcyclohexane	9.28403E-06				
2,2,4-Trimethylpentane	4.20972E-07				
Toluene	0.000458041				
Ethylbenzene	7.36973E-05				
o-Xylene	6.16886E-05				
Octane	5.61546E-08				
Water	99.9457				

Mass Flow	1 lb/h				
Carbon Dioxide	0.809761				
Hydrogen Sulfide	0.0183211				
Nitrogen	0.00145961				
Methane	0.257443				
Ethane	0.228552				
Propane	0.110003				
i-Butane	0.0113875				
n-Butane	0.0269797				
i-Pentane	0.00406514				
n-Pentane	0.00127318				
Hexane	0.0003132				
Heptane	6.7753E-05				
Cyclopentane	0.00163834				
Benzene	0.07265				
Cyclohexane	0.00148304				
Methylcyclohexane	0.000267247				
2,2,4-Trimethylpentane	1.2118E-05				
Toluene	0.013185				
Ethylbenzene	0.00212143				
o-Xylene	0.00177575				
Octane	1.61645E-06				
Water	2877.01				

Stream Properties

Property	Units	1				
Temperature	°F	90.755				
Pressure	psia	14.7 *				
Mole Fraction Vapor	%	0.0198429				
Mole Fraction Light Liquid	%	99.9802				
Mole Fraction Heavy Liquid	%	0				
Phase Mole Fraction	%	100				
Molecular Weight	lb/lbmol	18.0198				
Mass Density	lb/ft^3	48.7513				
Molar Flow	lbmol/h	159.745				
Mass Flow	lb/h	2878.57				
Vapor Volumetric Flow	ft^3/h	59.046				
Liquid Volumetric Flow	gpm	7.36158				
Std Vapor Volumetric Flow	MMSCFD	1.4549				

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Targa Midstream LLC	Job: Annual Tank Emissions
Location:	Road Runner Gas Plant	
Flowsheet:	Flowsheet1	

Stream Properties

Property	Units	1				
Std Liquid Volumetric Flow	sgpm	5.75717				
Compressibility		0.000919854				
Specific Gravity						
API Gravity						
Enthalpy	Btu/h	-1.95902E+07				
Mass Enthalpy	Btu/lb	-6805.52				
Mass Cp	Btu/(lb*°F)	0.977095				
Ideal Gas CpCv Ratio		1.32847				
Dynamic Viscosity	cP					
Kinematic Viscosity	cSt					
Thermal Conductivity	Btu/(h*ft*°F)					
Surface Tension	lbf/ft					
Net Ideal Gas Heating Value	Btu/ft^3	0.24772				
Net Liquid Heating Value	Btu/lb	-1054.01				
Gross Ideal Gas Heating Value	Btu/ft^3	50.5659				
Gross Liquid Heating Value	Btu/lb	5.65164				

Remarks

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Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

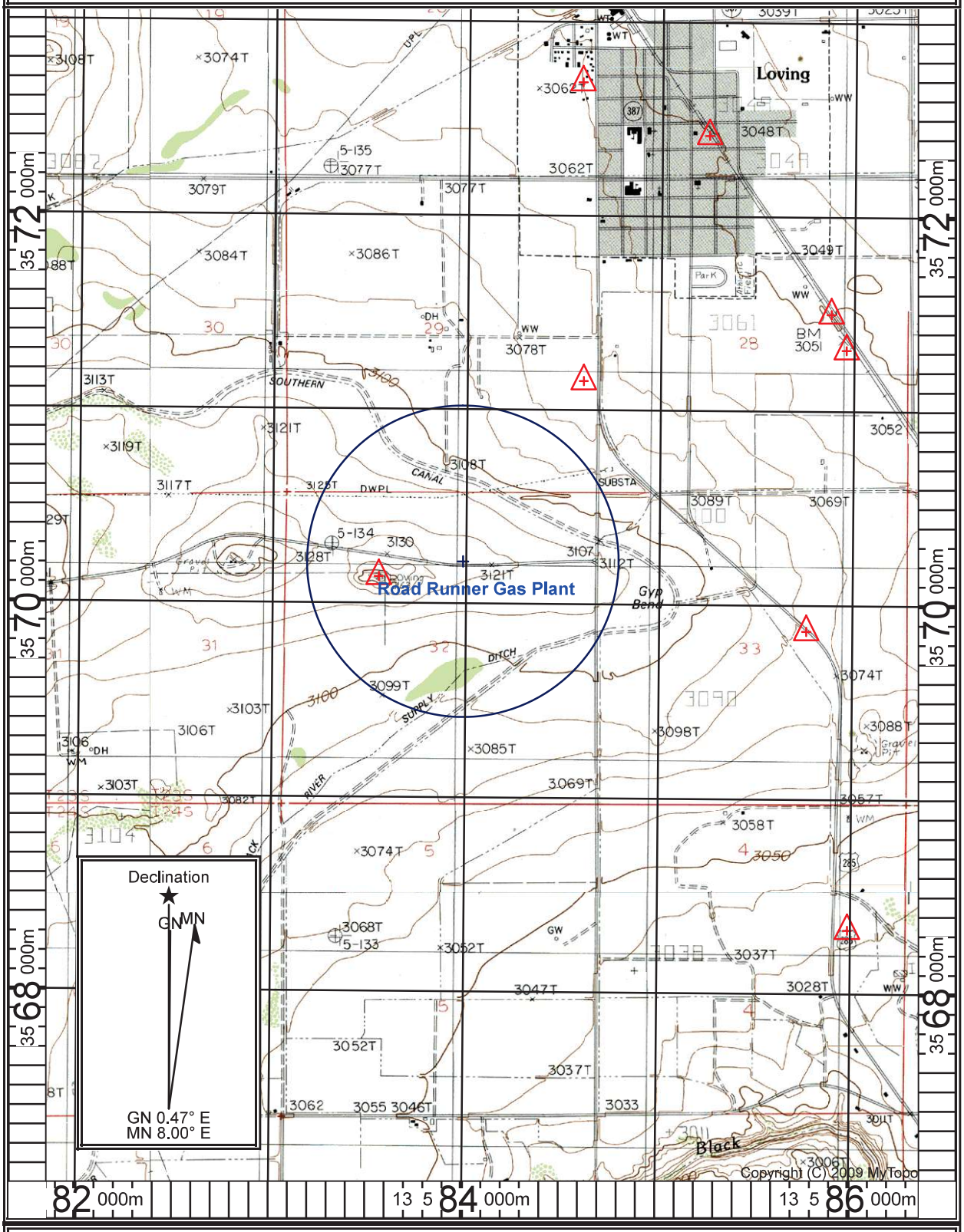
The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A topographical map is attached.

Map Name: LOVING (NM)
Print Date: 07/14/26

Scale: 1 inch = 2,500 ft.
Map Center: 13 0584081 E 35701

Horizontal Datum: WGS84



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.

Section 9.1 - Certified Letter Receipts

9589 0710 5270 3302 0592 85

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Postage
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Total Postage and Fees
$

US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037919

Sent To: County of Eddy
Street and Apt. No., or PO Box No.: 101 W Greene St
City, State, ZIP+4®: Carlsbad, NM 88220

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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Total Postage and Fees
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US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037916

Sent To: Ryan M Zuniga
Street and Apt. No., or PO Box No.: 24 Mesquite Lane
City, State, ZIP+4®: Artesia, NM 88210

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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Total Postage and Fees
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US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037906

Sent To: Joel S (JT) Onsurez
Street and Apt. No., or PO Box No.: PO Box 1058
City, State, ZIP+4®: Loving, NM 88256-1058

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- ☐ Adult Signature Restricted Delivery $

Postage
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Total Postage and Fees
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US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037907

Sent To: Susan D Blackmon & John E Blackmon
Street and Apt. No., or PO Box No.: 3501 Bonniebrook Dr
City, State, ZIP+4®: Plano, TX 75075

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- ☐ Adult Signature Restricted Delivery $

Postage
$

Total Postage and Fees
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US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037917

Sent To: Mrs. F Sooby
Street and Apt. No., or PO Box No.: 921 Montcrest Dr
City, State, ZIP+4®: Redding, CA 96003

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- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$

Total Postage and Fees
$

US POSTAGE $0.00
7/22/2026 IMI
063S12395454
87113
000037905

Sent To: Damian S & Cynthia Kay (JT) Onsurez
Street and Apt. No., or PO Box No.: PO Box 1058
City, State, ZIP+4®: Loving, NM 88221-1088

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$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037912

Sent To Southwestern Public Service CO
Street and Apt. No., or PO Box No. PO Box 1979
City, State, ZIP+4® Denver, CO 80201

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- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
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Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037910

Sent To Village of Loving
Street and Apt. No., or PO Box No. PO Box 56
City, State, ZIP+4® Loving, NM 88256

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- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037908

Sent To Gloria Onsurez
Street and Apt. No., or PO Box No. PO Box 598
City, State, ZIP+4® Loving, NM 88256-0568

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- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037913

Sent To George A Huffer
Street and Apt. No., or PO Box No. 4713 Craig Ave
City, State, ZIP+4® Metairie, LA 70003

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- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037911

Sent To State of New Mexico
Street and Apt. No., or PO Box No. 310 Old Santa Fe Trail
City, State, ZIP+4® Santa Fe, NM 87504

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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037909

Sent To Pablo P & Maria Trustees
Street and Apt. No., or PO Box No. 1991 Pecos HWY
City, State, ZIP+4® Loving, NM 88256

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037899

Sent To Henry McDonald
Street and Apt. No., or PO Box No.
PO Box 597
City, State, ZIP+4® Loving, NM 88256-0597

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3302 0592 54

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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037902

Sent To Vickie Connally
Street and Apt. No., or PO Box No.
125 Brinkley Ln
City, State, ZIP+4® Elgin, TX 78621-5046

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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037914

Sent To Nelda Wyrick Etal (JT) COX
Street and Apt. No., or PO Box No.
3101 Sexton Dr
City, State, ZIP+4® Norman, OK 7573026

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3302 0591 86

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL

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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037898

Sent To Felix & Debra (JT) Calderon
Street and Apt. No., or PO Box No.
PO Box 64
City, State, ZIP+4® Loving, NM 88256-0064

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3302 0592 30

U.S. Postal Service™
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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037900

Sent To Lucid Energy Delaware, LLC
Street and Apt. No., or PO Box No.
3100 Mckinnon St Ste 800
City, State, ZIP+4® Dallas, TX 75201-7014

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3302 0592 61

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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OFFICIAL

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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037901

Sent To Ogden Estate Heirs
Street and Apt. No., or PO Box No.
2302 Forehand RD
City, State, ZIP+4® CARLSBAD, NM 88220

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

9589 0710 5270 3302 0591 93

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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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037897

Sent To Jose D & Elisa (N-JT) Zuniga
Street and Apt. No., or PO Box No. 211 W Fiesta Dr
City, State, ZIP+4® Carlsbad, NM 88220

PS Form 3800, January 2023 PSN 7530-02-000-9047 **See Reverse for Instructions**

9589 0710 5270 3302 0589 29

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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OFFICIAL

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
$

Total Postage and Fees
$

$0.00
US POSTAGE
7/22/2026 IMI
063S12395454
87113
000037915

Sent To Reymundo & Victoria (JT)
Street and Apt. No., or PO Box No. PO Box 356
City, State, ZIP+4® Lovina, NM 88256-0356

PS Form 3800, January 2023 PSN 7530-02-000-9047 **See Reverse for Instructions**

Section 9.2 - List of Places for Posting

9.2 Locations of Posted Notice				
Location	**Address**	**City**	**State**	**Zip Code**
Facility Entrance				
Village of Loving City Hall	415 W Cedar St.	Loving	NM	88256
Loving Allsup's Convenience Store	105 N 8th St.	Loving	NM	88256
Loving USPS	402 W Beech St.	Loving	NM	88256

Section 9.3 - Property Tax Records

Property Record Card

Eddy Assessor

BLACKMON, SUSAN D &
BLACKMON, JOHN E

3501 BONNIEBROOK DR
PLANO, TX 75075

Account: R037966

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 10.000

Parcel: 4-165-138-066-066

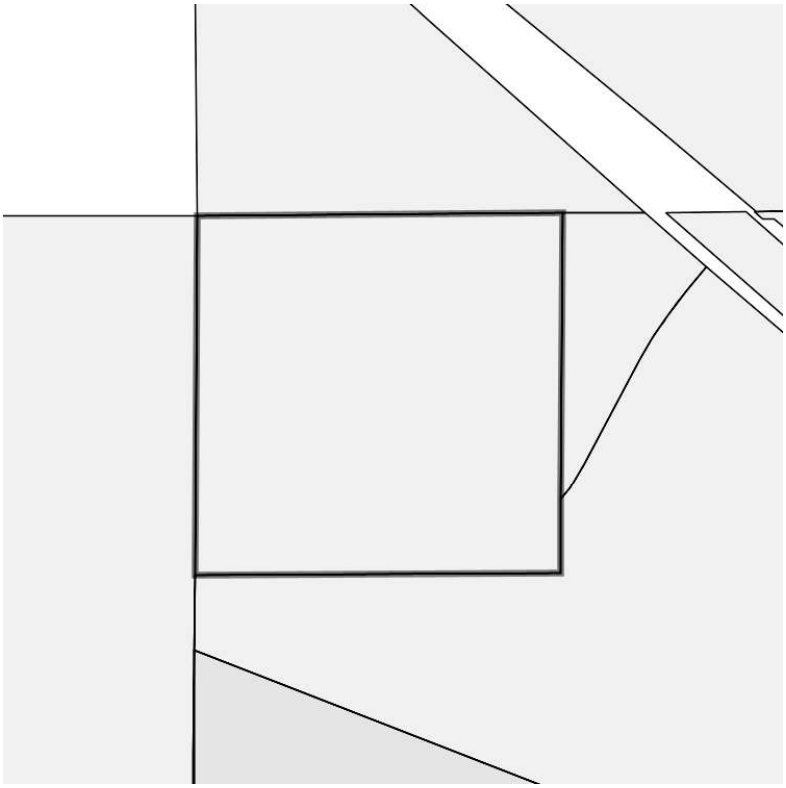
Situs Address:
E OF 25 HIGBY HOLE ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$4,500	N/A
Total	**$4,500**	**$4,500**

Legal Description

Quarter: NW S: 33 T: 23S R: 28E NWNWNW



Public Remarks

Entry Date	Model	Remark
01/14/2000		BOOK 371 PG 843

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_450 - Misc Land Vacant C - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$4,500	$1,500	NA	NA
Total		**$4,500**	**$1,500**	**NA**	**NA**

Property Record Card

Eddy Assessor

CALDERON, FELIX & DEBRA (JT)

PO BOX 64
LOVING, NM 88256-0064

Account: R040029

Tax Area: 10O_R - LOVING-OUT (Residential)

Acres: 46.600

Parcel: 4-164-137-201-324

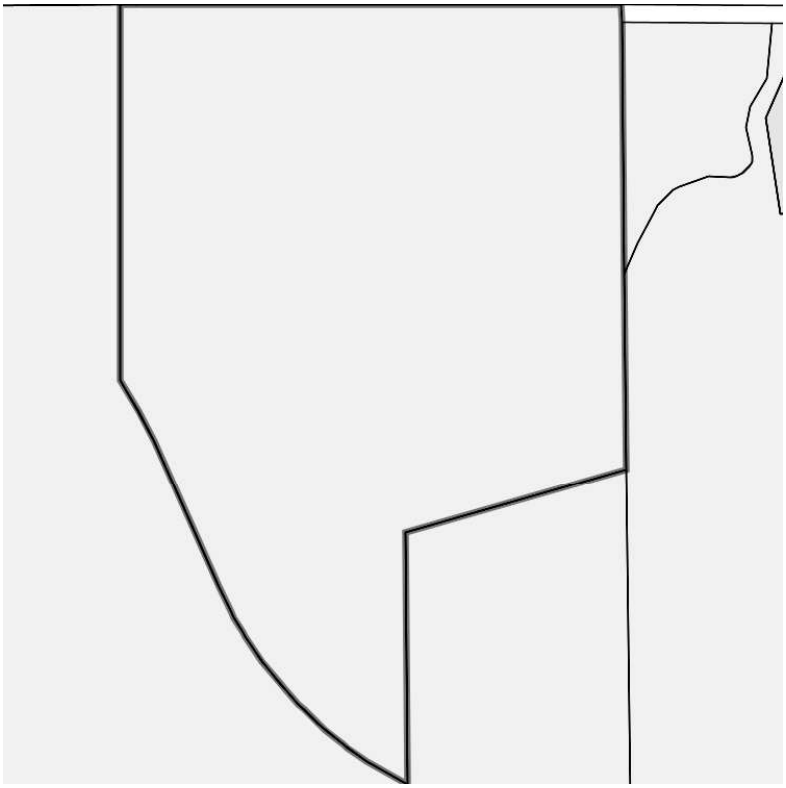
Situs Address:
53 EL LOBO ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$15,000	N/A
Land (2)	$10,000	N/A
Land (3)	$20,070	N/A
Residential (1)	$91,748	N/A
Residential (2)	$86,894	N/A
Commercial (1)	$89,648	N/A
Total	**$313,360**	**$313,360**

Legal Description

Quarter: SW S: 29 T: 23S R: 28E THAT PT E2SW LYING N & E OF CANAL (LESS BEG SE COR SW, N 399.97' TO POB, N72°21'51"W 619.63, N 666.12', N74°06'13"E 610.05', S 1020.95' TO POB)



Public Remarks

Entry Date	Model	Remark
12/21/2015		BK 1051 PG 131
09/11/2017		BK 1098 PG 800 DEATH DEED
08/23/2023		AG APPLICATION ON FILE

Land Occurrence 1

Property Code	0100 - RESIDENTIAL LAND	Land Code	101_15000 - Residential Land - 15000
Description	RESIDENTIAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Land Occurrence 2

Property Code	0100 - RESIDENTIAL LAND	Land Code	101_9999_99 - Residential Land - 9999.99
Description	RESIDENTIAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Land Occurrence 3

Property Code	0400 - AGRICULTURAL LAND	Land Code	131_450 - Crop / Farm Land - 450
Description	AGRICULTURAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Residential Occurrence 1

Property Code	0120 - RESIDENTIAL IMPROVEMENT	Architectural Style	1 - 1
Building Type	201 - Structure Res	Condition	3 - 3
Construction Quality	2.0 - 2.0	Frame	4 - 4
Roof Cover	3 - Metal	Roof Structure	2 - Gable
Stories	1.0 - 1.0	Exterior Wall	4_2 - Frame Stucco
Floor	2 - Hardwood	Interior Wall	3 - Sheet Rock

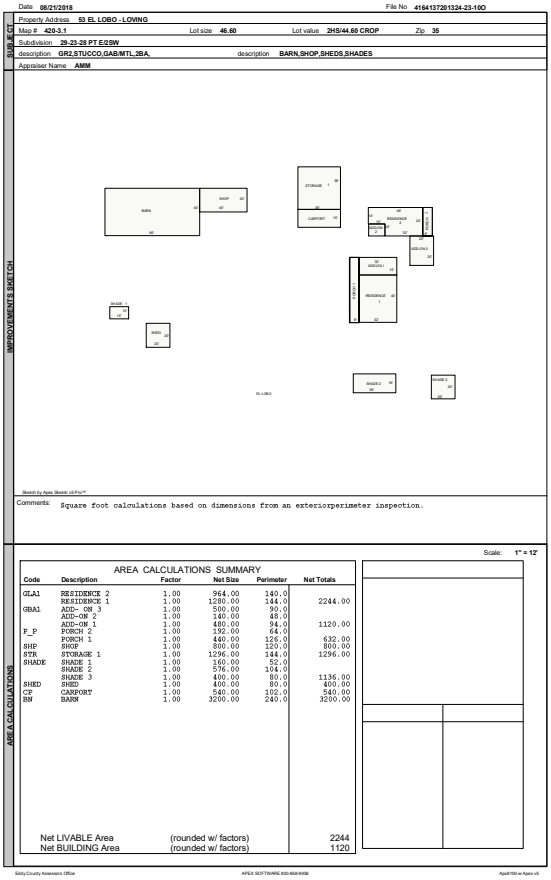
SubArea	ACTUAL	EFFECTIVE	HEATED	FOOTPRINT
GLA1 - First Floor	2244.0	2244.0	2244.0	2244.0
GBA1 - First Floor	1120.0	1120.0	1120.0	1120.0
P_P - PORCH	632.0	632.0	632.0	632.0
CP - CARPORT	540.0	540.0	540.0	540.0
SHP - SHOP	800.0	800.0	800.0	800.0
STR - STORAGE	1296.0	1296.0	1296.0	1296.0
SHADE - SHADE	1136.0	1136.0	1136.0	1136.0
SHED - SHED	400.0	400.0	400.0	400.0
BN - BARN	3200.0	3200.0	3200.0	3200.0
Total	11,368.00	11,368.00	11,368.00	11,368.00

Property Record Card

Eddy Assessor

Residential Occurrence 1

SKETCH/AREA TABLE ADDENDUM



Residential Occurrence 2

Property Code	0120 - RESIDENTIAL IMPROVEMENT

Commercial Occurrence 1

Property Code	0120 - RESIDENTIAL IMPROVEMENT

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0100	RESIDENTIAL LAND	$25,000	$8,333	$17,229	$5,743
0120	RESIDENTIAL IMPROVEMENT	$268,290	$89,430	$149,911	$49,970
0400	AGRICULTURAL LAND	$20,070	$6,690	NA	NA
Total		**$313,360**	**$104,453**	**$187,210**	**$62,403**

Property Record Card

Eddy Assessor

CONNALLY, EMILY
125 BRINKLEY LN
ELGIN , TX 78621

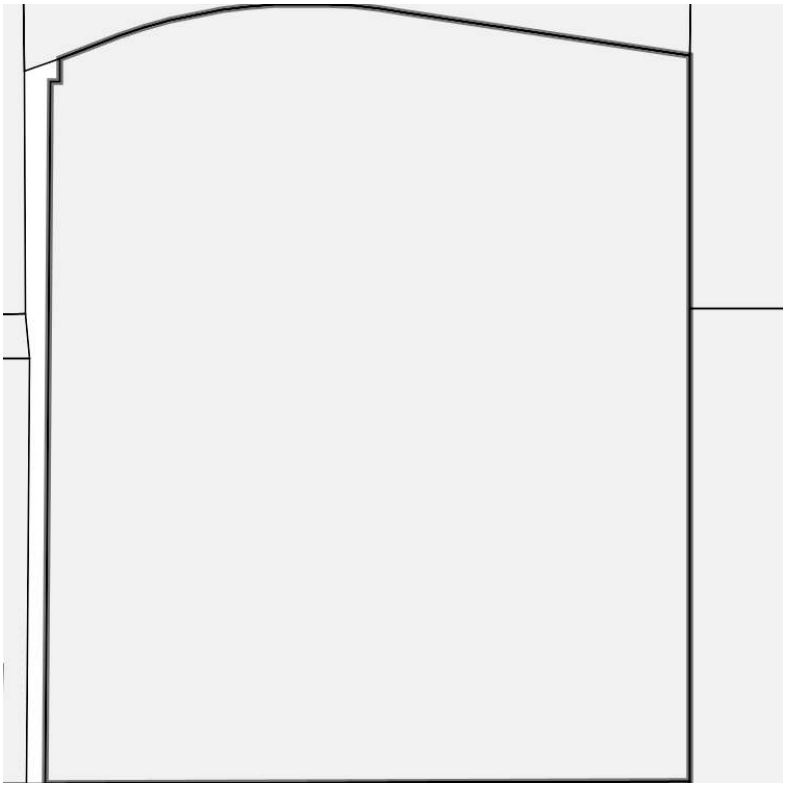
Account: R201027
Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)
Acres: 43.930

Parcel: 4-163-138-473-152
Situs Address:
1025 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$79	N/A
Total	**$79**	**$79**

Legal Description
Subd: SENDERO/CONNALLY BOUNDARY LINE ADJ Tract: D
Quarter: NE S: 31 T: 23S R: 28E



Public Remarks

Entry Date	Model	Remark
02/03/2021		LIVESTOCK ACCT - P102486
10/20/2025		BK 1201 PG 860

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$79	$26	NA	NA
Total		**$79**	**$26**	**NA**	**NA**

Property Record Card

Eddy Assessor

TARGA NORTHERN DELAWARE LLC

3100 MCKINNON ST STE 800
DALLAS, TX 75201

Account: R200263

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 22.810

Parcel: 4-163-138-471-039

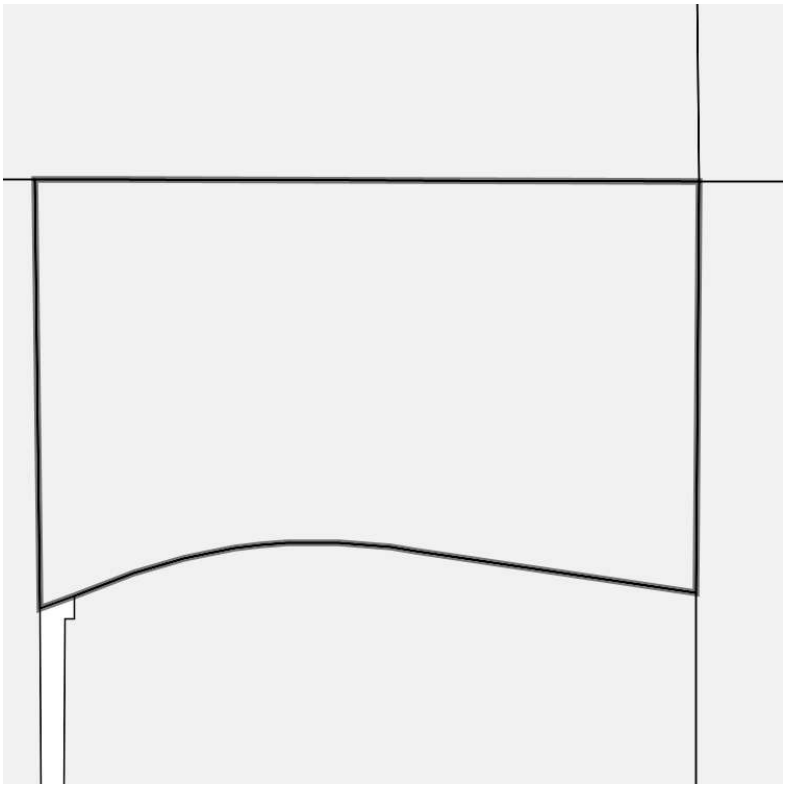
Situs Address:
NE OF 1011 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$2,281	N/A
Total	**$2,281**	**$2,281**

Legal Description

Subd: CONNALLY LINE ADJUSTMENT Tract: A THIS TRACT IS IN TWO DIFFERENT SEC'S AND HAS TO BE SOLD TOGETHER SEE 4-164-138-202-066 Quarter: NE S: 32 T: 23S R: 28E Quarter: NW S: 32 T: 23S R: 28E



Public Remarks

Entry Date	Model	Remark
06/17/2014		BK 982 PG 415
02/15/2017		BK 1091 PG 666
08/08/2022		BK 1162 PG 795 - MERGER

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_99_99 - Misc Land Vacant C - 99.99
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$2,281	$760	NA	NA
Total		**$2,281**	**$760**	**NA**	**NA**

Property Record Card

Eddy Assessor

COUNTY OF EDDY
101 W GREENE ST
CARLSBAD, NM 88220

Account: R037608
Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)
Acres: 44.100

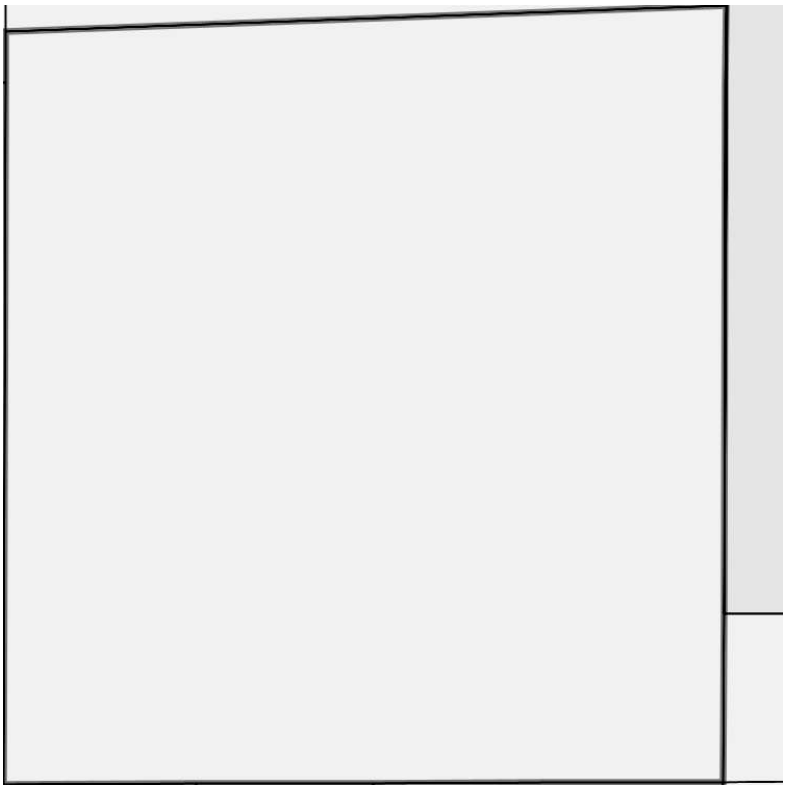
Parcel: 4-164-138-467-180
Situs Address:
45 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Commercial (1)	$46,118	N/A
Land (1)	$60,984	N/A
Land (2)	$4,210	N/A
Total	**$111,312**	**$111,312**

Legal Description

Quarter: NE S: 32 T: 23S R: 28E SENE & BEG SE COR NENE, N 89 DEG 37' W 1316.04' TO SW COR OF NENE, N 0 DEG 32' E 111' TO CENTERLINE BOUNDS RD N 88 DEG 12'E 1316.42' TO CENTER OF HIGBY HOLE RD ON E LINE NENE, S 0 DEG 17'W 161' TO POB EXEMPT



Public Remarks

Entry Date	Model	Remark
		BOOK 8 PG 330

Commercial Occurrence 1

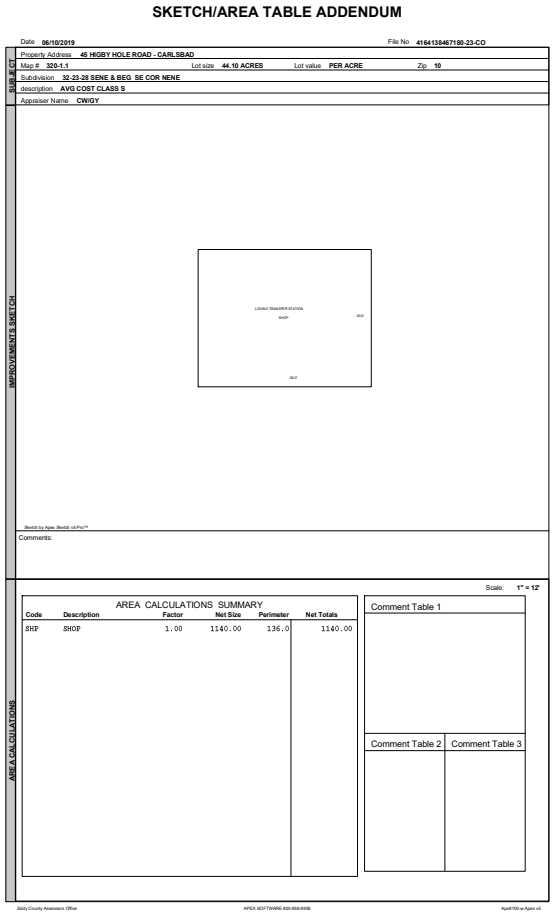
Property Code	9220 - EXEMPT NON-RESIDENTIAL IMPROVEMENT	Building Type	250 - Comm Structures

SubArea	ACTUAL	EFFECTIVE	HEATED	FOOTPRINT
SHP - SHOP	1140.0	1140.0	1140.0	1140.0
Total	1,140.00	1,140.00	1,140.00	1,140.00

Property Record Card

Eddy Assessor

Commercial Occurrence 1



Land Occurrence 1

Property Code	9200 - EXEMPT NON-RESIDENTIAL LAND	Land Code	111_30492 - Commercial Land N/R - 30492
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Land Occurrence 2

Property Code	9200 - EXEMPT NON-RESIDENTIAL LAND	Land Code	113_99_99 - Misc Land Vacant C - 99.99
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
9200	EXEMPT NON-RESIDENTIAL LAND	$65,194	$21,731	NA	NA
9220	EXEMPT NON-RESIDENTIAL IMPROVEMENT	$46,118	$15,373	NA	NA
Total		**$111,312**	**$37,104**	**NA**	**NA**

Property Record Card

Eddy Assessor

TARGA NORTHERN DELAWARE LLC

3100 MCKINNON ST STE 800
DALLAS, TX 75201

Account: R200263

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 22.810

Parcel: 4-163-138-471-039

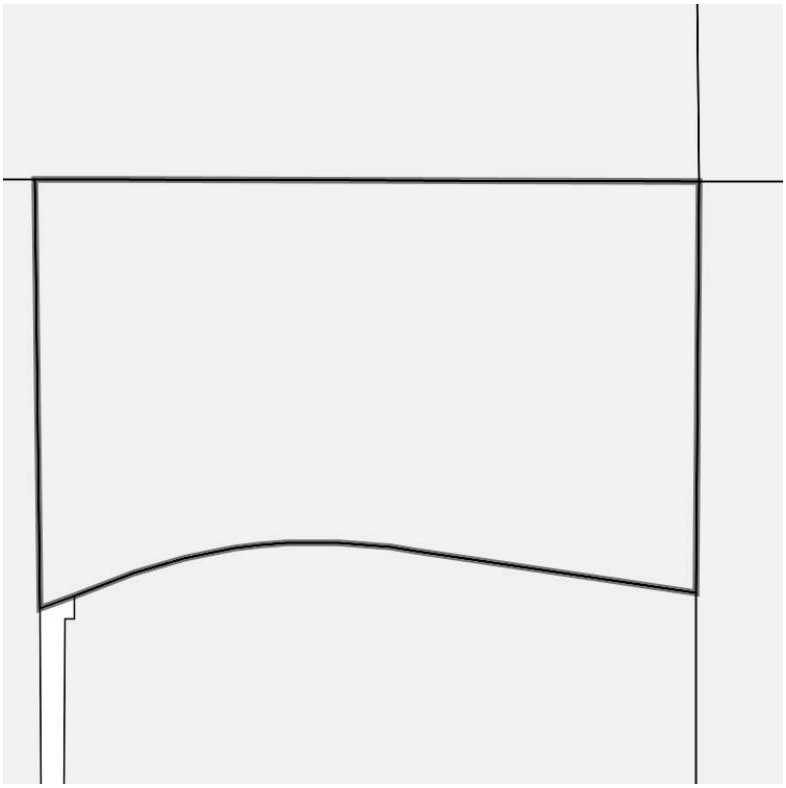
Situs Address:
NE OF 1011 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$2,281	N/A
Total	**$2,281**	**$2,281**

Legal Description

Subd: CONNALLY LINE ADJUSTMENT Tract: A THIS TRACT IS IN TWO DIFFERENT SEC'S AND HAS TO BE SOLD TOGETHER SEE 4-164-138-202-066 Quarter: NE S: 32 T: 23S R: 28E Quarter: NW S: 32 T: 23S R: 28E



Public Remarks

Entry Date	Model	Remark
06/17/2014		BK 982 PG 415
02/15/2017		BK 1091 PG 666
08/08/2022		BK 1162 PG 795 - MERGER

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_99_99 - Misc Land Vacant C - 99.99
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$2,281	$760	NA	NA
Total		**$2,281**	**$760**	**NA**	**NA**

Property Record Card

Eddy Assessor

MCDONALD, HENRY ESTATE

PO BOX 597
LOVING, NM 88256-0597

Account: R097084

Tax Area: 10O_R - LOVING-OUT (Residential)

Acres: 523.700

Parcel: 4-163-137-290-261

Situs Address:
48 PARDUE ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$15,000	N/A
Land (2)	$6,206	N/A
Land (3)	$19,215	N/A
Land (4)	$78,750	N/A
Land (5)	$540	N/A
Residential (1)	$102,427	N/A
Commercial (1)	$49,831	N/A
Total	**$271,969**	**$271,969**

Legal Description

Quarter: NE S: 30 T: 23S R: 28E ALL (LESS E 10 AC IN NE4) Quarter: NW S: 30 T: 23S R: 28E ALL (LESS MCDONALD LAND DIV NO 13-CAB 5-492) Quarter: SW S: 30 T: 23S R: 28E ALL (LESS MCDONALD LAND DIV NO 13) Quarter: SE S: 30 T: 23S R: 28E ALL (LESS MCDONALD LAND DIV NO 13)

Public Remarks

Entry Date	Model	Remark
12/12/2011		BK 876 PG 446
05/31/2019		LIVESTOCK ACCT - P101439, P65890
11/04/2025		AG LAND APPLICATION ON FILE

Land Occurrence 1

Property Code	0100 - RESIDENTIAL LAND	Land Code	102_15000 - Homesite C/10 - 15000
Description	RESIDENTIAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Property Record Card

Eddy Assessor

Land Occurrence 2

Property Code	0100 - RESIDENTIAL LAND	Land Code	103_1241_25 - Excess Res Land - 1241.25
Description	RESIDENTIAL LAND	Measure	A - Acres

Land Occurrence 3

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	114_450 - Misc Land Vacant 10 - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Land Occurrence 4

Property Code	0400 - AGRICULTURAL LAND	Land Code	131_450 - Crop / Farm Land - 450
Description	AGRICULTURAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Land Occurrence 5

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres
Sewer Type	1 - Septic		

Residential Occurrence 1

Property Code	0120 - RESIDENTIAL IMPROVEMENT	Effective Year Built	1981
Air Conditioning	1 - 1	Architectural Style	1 - 1
Building Type	201 - Structure Res	Condition	3 - 3
Construction Quality	2.0 - 2.0	Frame	4 - 4
Heating Type	4 - Forced	Roof Cover	1 - Shingle
Roof Structure	2 - Gable	Stories	1.0 - 1.0
Exterior Wall	4_2 - Frame Stucco	Floor	1 - Softwood
Interior Wall	3 - Sheet Rock 6 - Other		

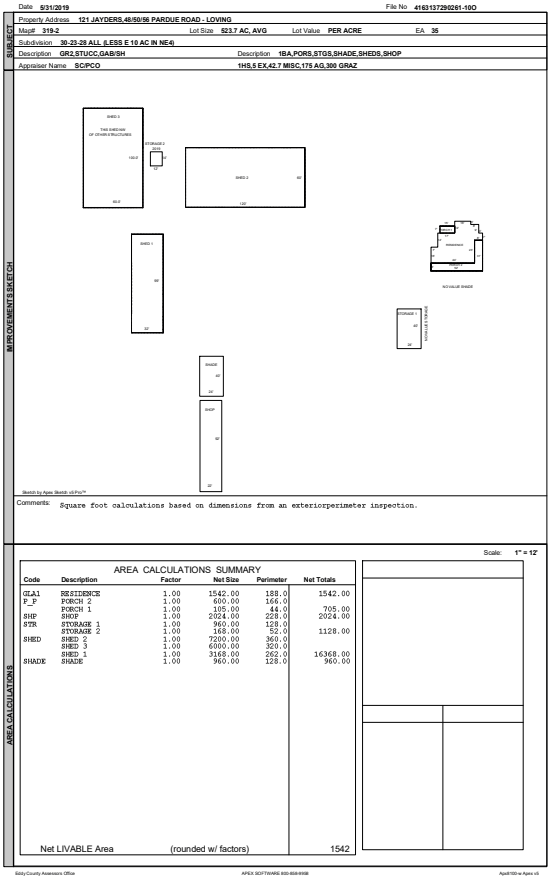
SubArea	ACTUAL	EFFECTIVE	HEATED	FOOTPRINT
GLA1 - First Floor	1542.0	1542.0	1542.0	1542.0
P_P - PORCH	705.0	705.0	705.0	705.0
SHP - SHOP	2024.0	2024.0	2024.0	2024.0
STR - STORAGE	1128.0	1128.0	1128.0	1128.0
SHADE - SHADE	960.0	960.0	960.0	960.0
SHED - SHED	16368.0	16368.0	16368.0	16368.0
Total	22,727.00	22,727.00	22,727.00	22,727.00

Property Record Card

Eddy Assessor

Residential Occurrence 1

SKETCH/AREA TABLE ADDENDUM



Commercial Occurrence 1

Property Code	0220 - NON-RESIDENTIAL IMPROVEMENT	Building Type	207 - Structures / AGR

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0100	RESIDENTIAL LAND	$21,206	$7,069	$13,142	$4,381
0120	RESIDENTIAL IMPROVEMENT	$102,427	$34,142	$74,070	$24,690
0200	NON-RESIDENTIAL LAND	$19,215	$6,405	NA	NA
0220	NON-RESIDENTIAL IMPROVEMENT	$49,831	$16,610	NA	NA
0400	AGRICULTURAL LAND	$79,290	$26,430	NA	NA
Total		**$271,969**	**$90,656**	**$235,548**	**$78,516**

Property Record Card

Eddy Assessor

MCDONALD, HENRY ESTATE

PO BOX 597
LOVING, NM 88256-0597

Account: R067535

Tax Area: 10O_NR - LOVING-OUT (Nonresidential)

Acres: 103.100

Parcel: 4-164-137-097-396

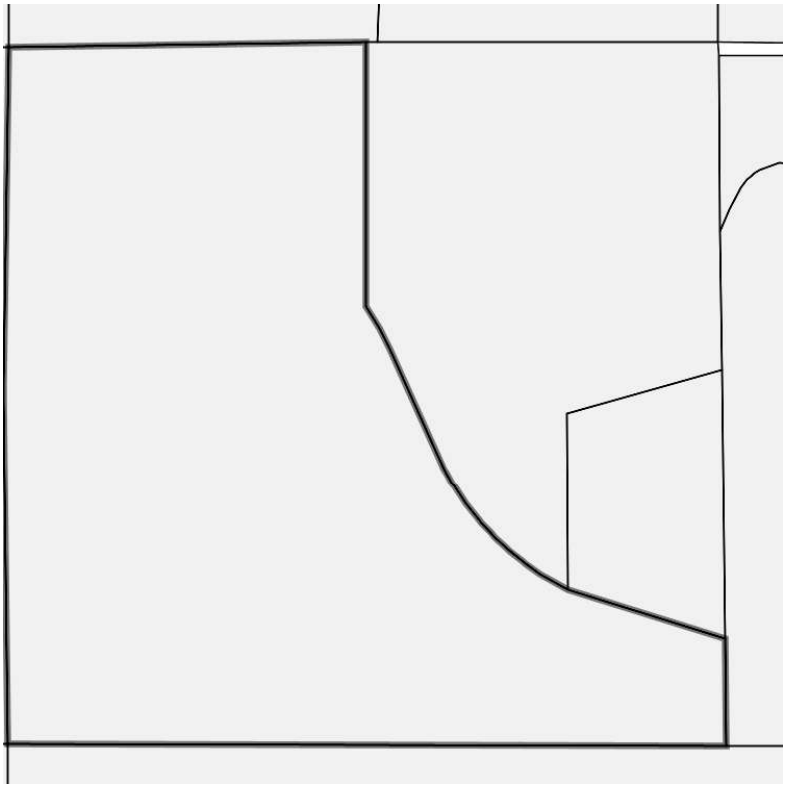
Situs Address:
E OF 48 PARDUE ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$6,570	N/A
Land (2)	$239	N/A
Total	**$6,809**	**$6,809**

Legal Description

Quarter: SW S: 29 T: 23S R: 28E W2SW, PART OF E2SW S OF CID CANAL



Public Remarks

Entry Date	Model	Remark
12/12/2011		BK 876 PG 446
11/05/2025		AG LAND APPLICATION ON FILE
	Land Occurrence 1	

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	131_450 - Crop / Farm Land - 450
Description	AGRICULTURAL LAND	Measure	A - Acres

Land Occurrence 2

Property Code	0400 - AGRICULTURAL LAND	Land Code	123_2_7 - Grazing Land D - 2.7
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value	Value	Taxable	Actual Value	Taxable

Property Record Card

Eddy Assessor

Abstract Summary

			Value	Override	Override
0400	AGRICULTURAL LAND	$6,809	$2,270	NA	NA
Total		**$6,809**	**$2,270**	**NA**	**NA**

Property Record Card

Eddy Assessor

HERNANDEZ, PABLO & MARIA REV TRUST
HERNANDEZ, PABLO P & MARIA Q TRUSTEES

1971 PECOS HWY
LOVING, NM 88256

Account: R200621

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 20.930

Parcel: 4-165-138-099-081

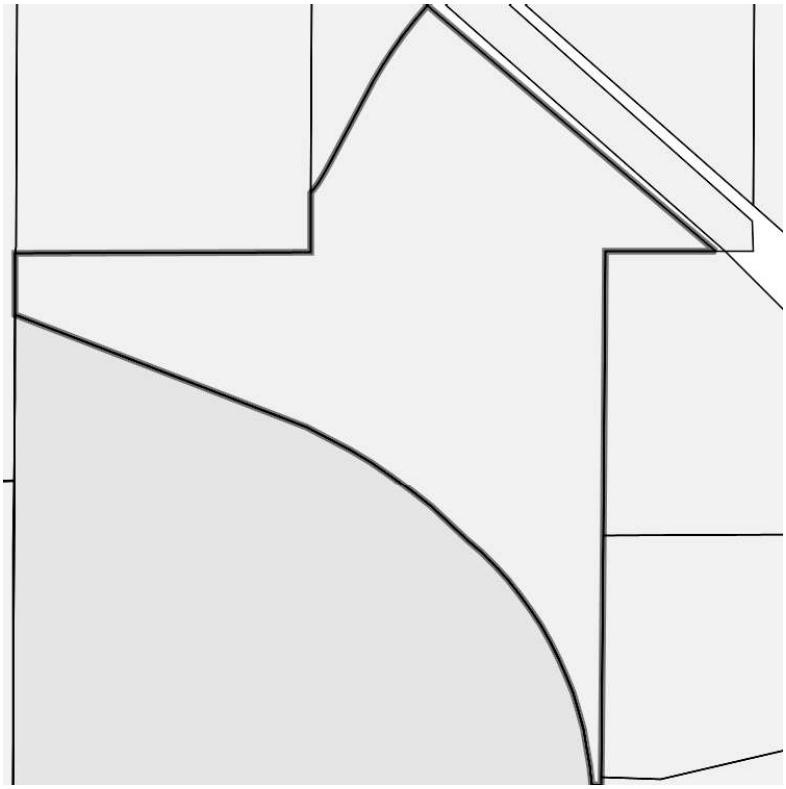
Situs Address:
1971 PECOS HIGHWAY
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$9,419	N/A
Total	**$9,419**	**$9,419**

Legal Description

Subd: HERNANDEZ LAND DIVISION # 5 Tract: A2 (LESS HERNANDEZ SUMMARY REVIEW SUB) (LESS .5054 AC DEED BK 1158 PG 347 NM DEPT OF TRANSPORTATION)



Public Remarks

Entry Date	Model	Remark

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	106_450 - Land Subdivided N/R - 450
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$9,419	$3,140	NA	NA
Total		**$9,419**	**$3,140**	**NA**	**NA**

Property Record Card

Eddy Assessor

HUFFER, GEORGE A
C/O: COBURN, MARLENE

4713 CRAIG AVE
METAIRIE, LA 70003

Account: R038155

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-418-355

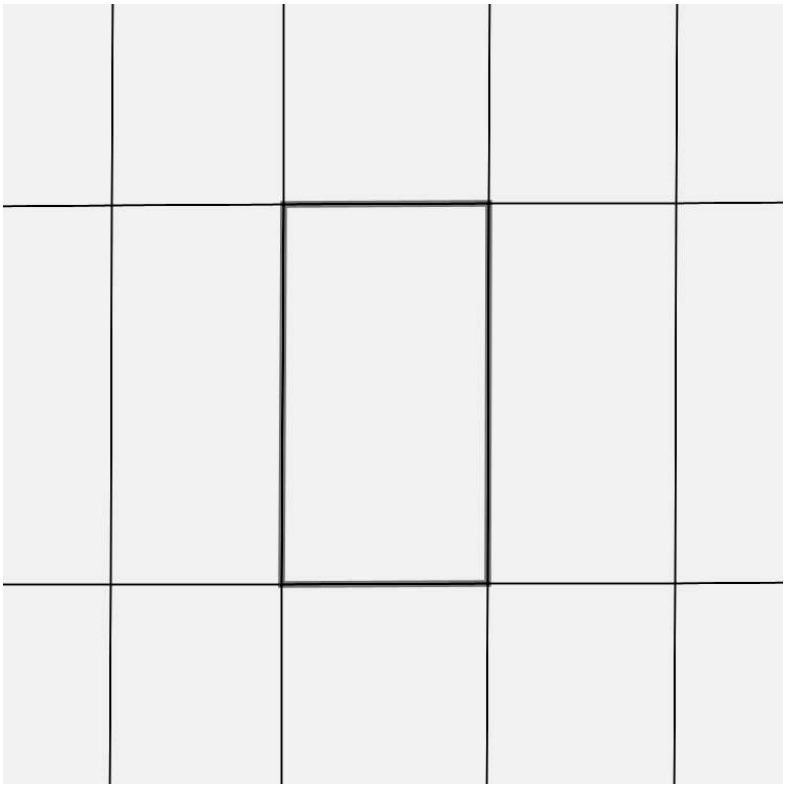
Situs Address:
W OF 76 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$2,250	N/A
Total	**$2,250**	**$2,250**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E W/2SWNESE (527)



Public Remarks

Entry Date	Model	Remark
		BOOK 48 PG 223

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_450 - Misc Land Vacant C - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$2,250	$750	NA	NA
Total		**$2,250**	**$750**	**NA**	**NA**

Property Record Card

Eddy Assessor

VILLAGE OF LOVING
PO BOX 56
LOVING, NM 88256-0056

Account: R200007
Tax Area: 10I_NR - LOVING-IN (Nonresidential)
Acres: 35.900

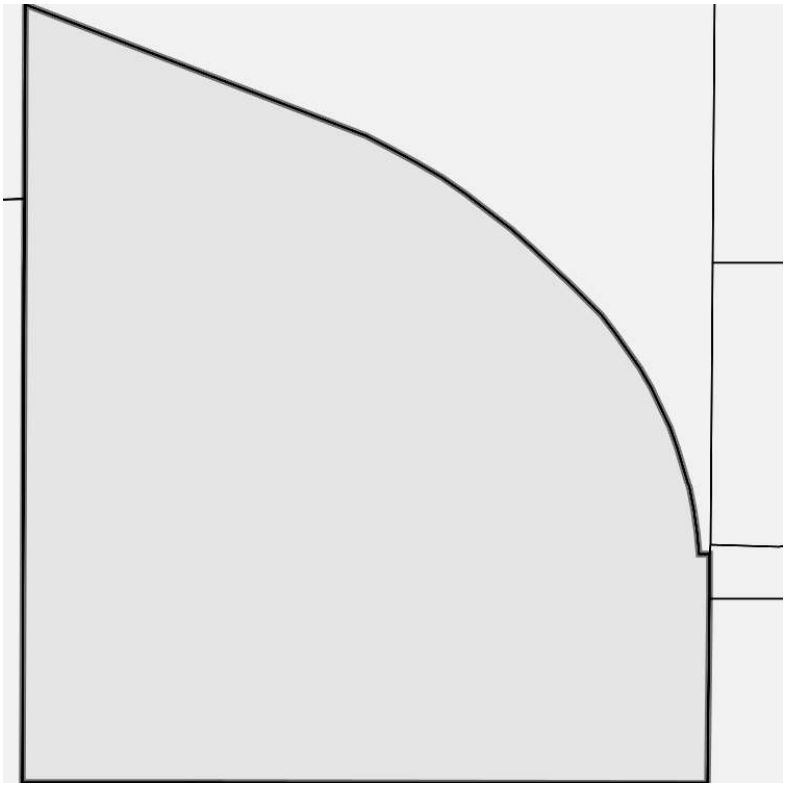
Parcel: 4-165-138-061-175
Situs Address:
E OF 45 HIGBY HOLE RD

Value Summary

Value By:	Market	Override
Land (1)	$3,590	N/A
Total	**$3,590**	**$3,590**

Legal Description

Subd: HERNANDEZ LAND DIVISION # 4 Tract: B MAP#321-HLD4-BCAB#6-542-1 LOC E OF 45 HIGBY HOLE RD-CARLSBAD



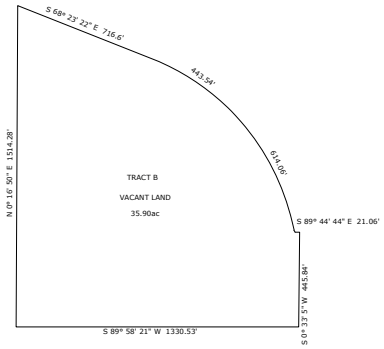
Land Occurrence 1

Property Code	9200 - EXEMPT NON-RESIDENTIAL LAND	Land Code	196_99_99 - Excess Misc Muni Land - 99.99
Measure	A - Acres		

Property Record Card

Eddy Assessor

Land Occurrence 1



Sketch by Apex Sketch v5 Pro™

Comments:

VACANT LAND
Beginning at a point of the Tract described by Metes and Bounds as follows:
THENCE South 89° 44' 44" East, a distance of 21.06 Feet;
THENCE South 0° 33' 5" West, a distance of 445.84 Feet;
THENCE South 89° 58' 21" West, a distance of 1330.53 Feet;
THENCE North 0° 16' 50" East, a distance of 1514.28 Feet;
THENCE South 68° 23' 22" East, a distance of 716.60 Feet;
THENCE along a curve to the Right, said curve having a radius of 1100.52 Feet, a central angle of 23° 5' 30", a chord which bears South 54° 41' 29" East, a distance of 443.54 Feet;
THENCE along a curve to the Right, said curve having a radius of 1109.44 Feet, a central angle of 31° 42' 45", a chord which bears South 26° 56' 0" East, a distance of 614.06 Feet;
THENCE South 34° 42' 52" East, a distance of 10.55 Feet to point of beginning;
Said tract containing 35.90 acres (1563904.31 sf) of land, more or less.
Perimeter = 5096.46 Feet
No significant error of closure.

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
9200	EXEMPT NON-RESIDENTIAL LAND	$3,590	$1,197	NA	NA
Total		**$3,590**	**$1,197**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096645

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-386-290

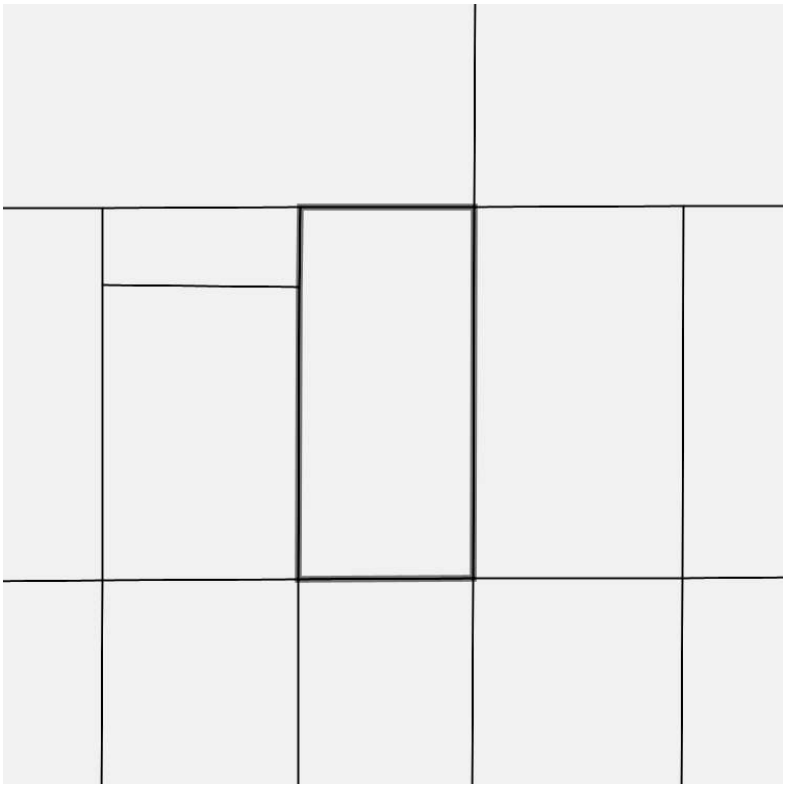
Situs Address:
SE OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E E2NENWSE (520)



Public Remarks

Entry Date	Model	Remark
		BOOK 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096644

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-320-290

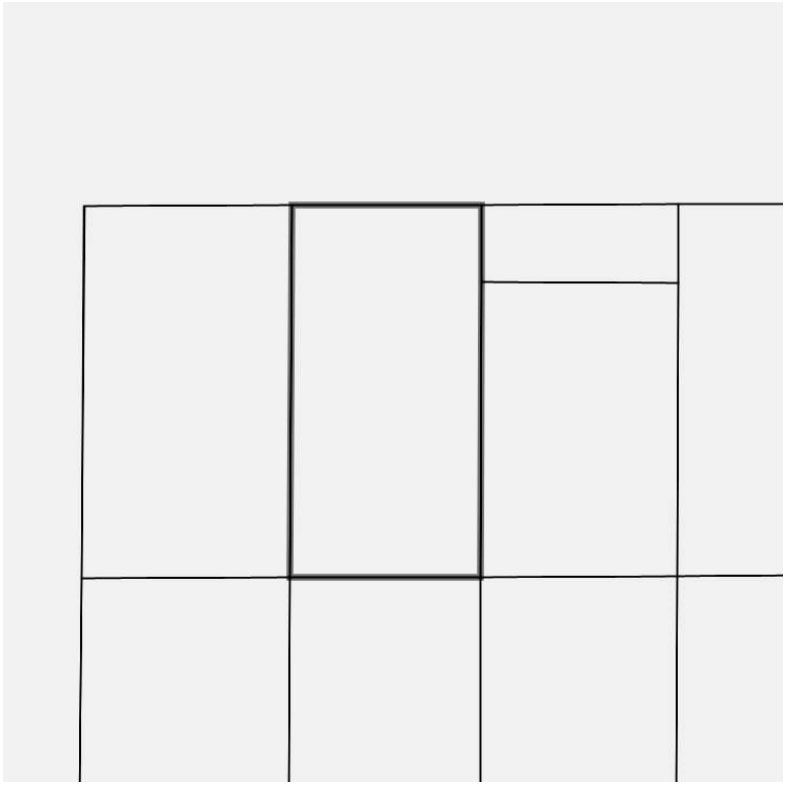
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E E2NWNWSE (518)



Public Remarks

Entry Date	Model	Remark
		BOOK 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096643

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-286-290

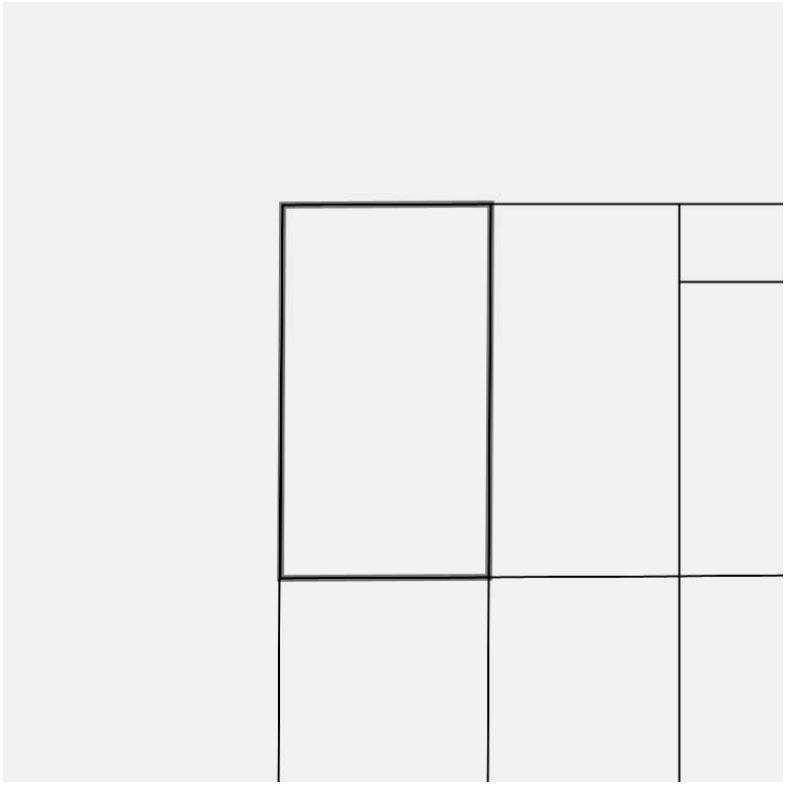
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E W2NWNWSE (517)



Public Remarks

Entry Date	Model	Remark
		BOOK 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096650

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-385-355

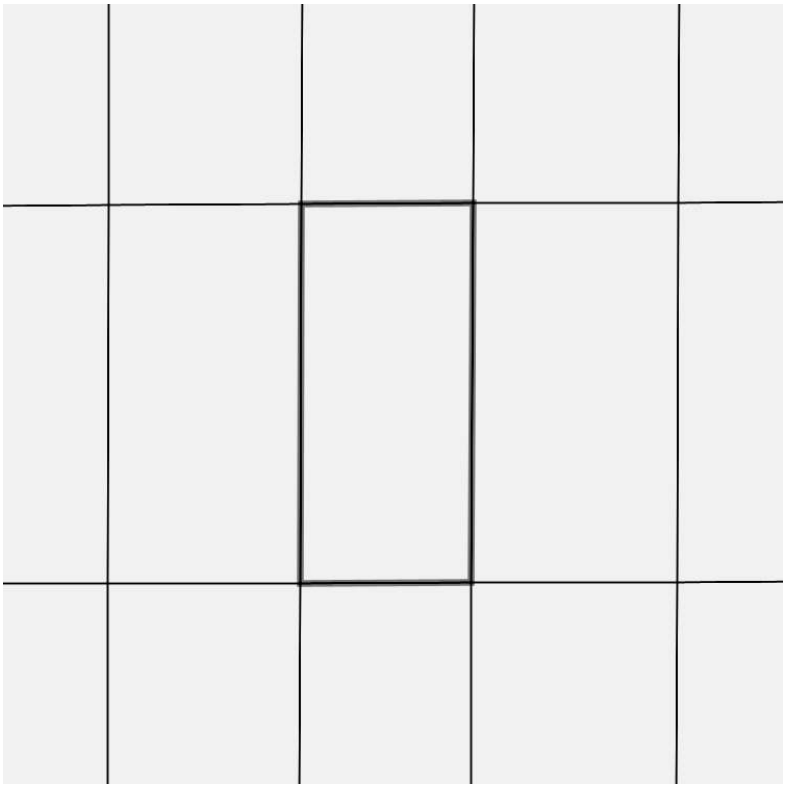
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E E2SENWSE (526)



Public Remarks

Entry Date	Model	Remark
		BOOK D 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096649

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-354-355

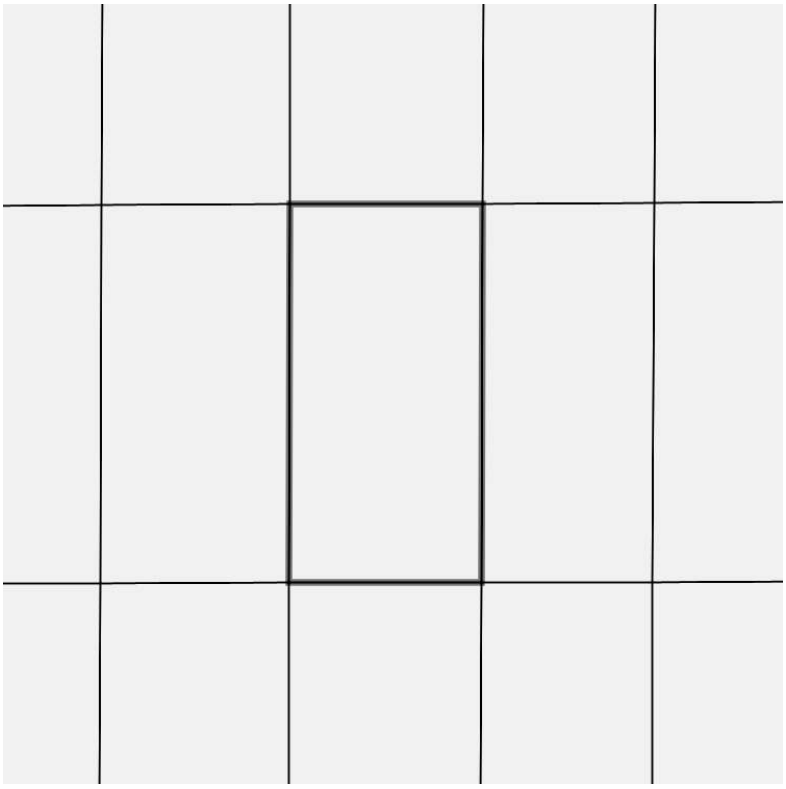
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E W2SENWSE (525)



Public Remarks

Entry Date	Model	Remark
		BOOK D 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096648

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-320-355

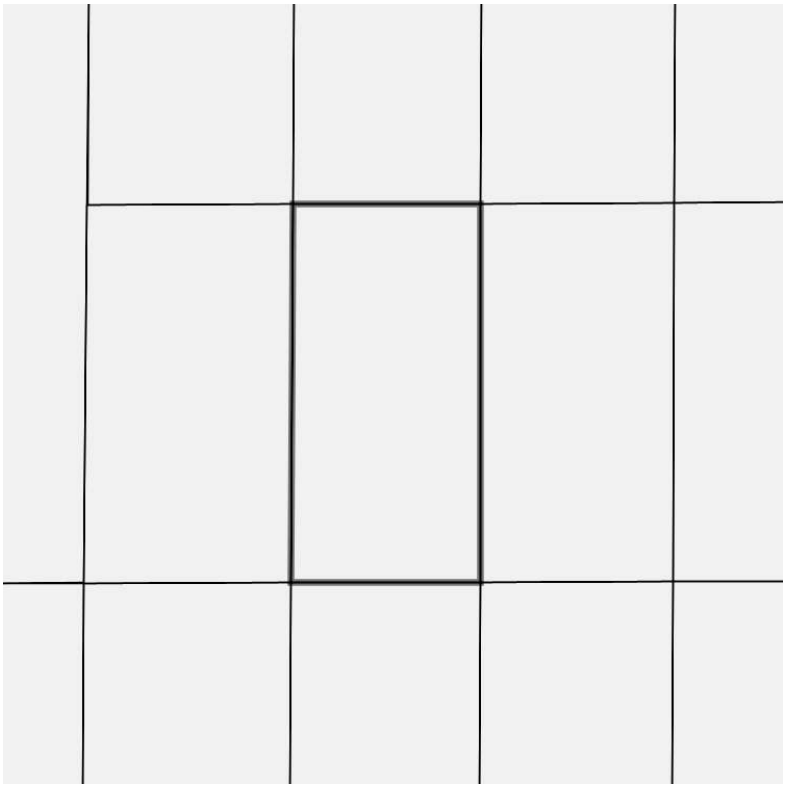
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E E2SWNWSE (524)



Public Remarks

Entry Date	Model	Remark
		BOOK D 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096647

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-286-356

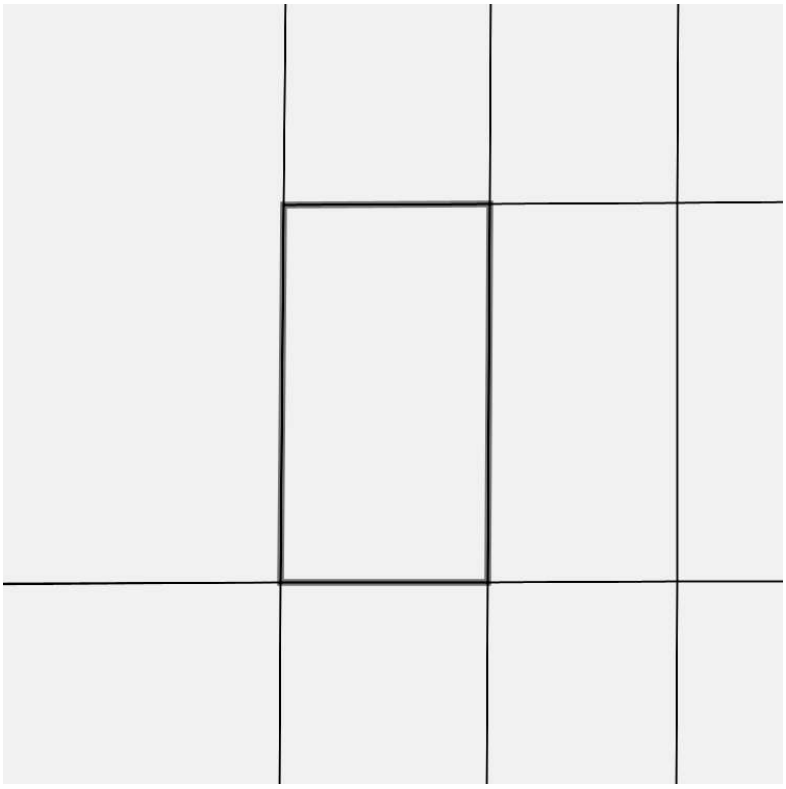
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E W2SWNWSE (523)



Public Remarks

Entry Date	Model	Remark
		BOOK 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096665

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 10.000

Parcel: 4-164-138-501-290

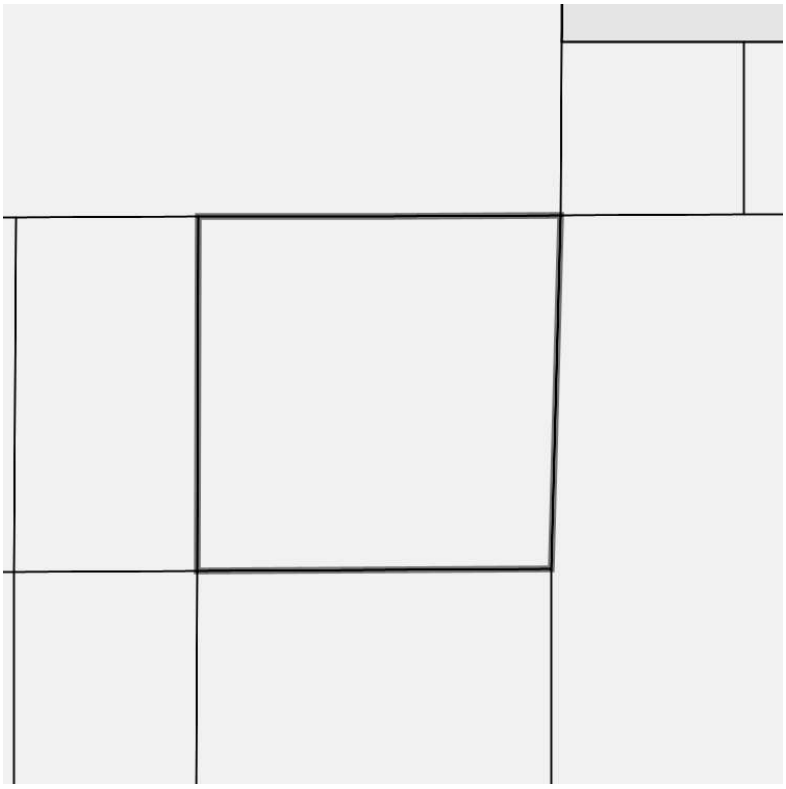
Situs Address:
W OF 76 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$18	N/A
Total	**$18**	**$18**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E NENESE (206)



Public Remarks

Entry Date	Model	Remark
		BOOK D 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$18	$6	NA	NA
Total		**$18**	**$6**	**NA**	**NA**

Property Record Card

Eddy Assessor

OGDEN ESTATE HEIRS
C/O: OGDEN, ALISA C/O

2302 FOREHAND RD
CARLSBAD, NM 88220

Account: R096646

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-453-290

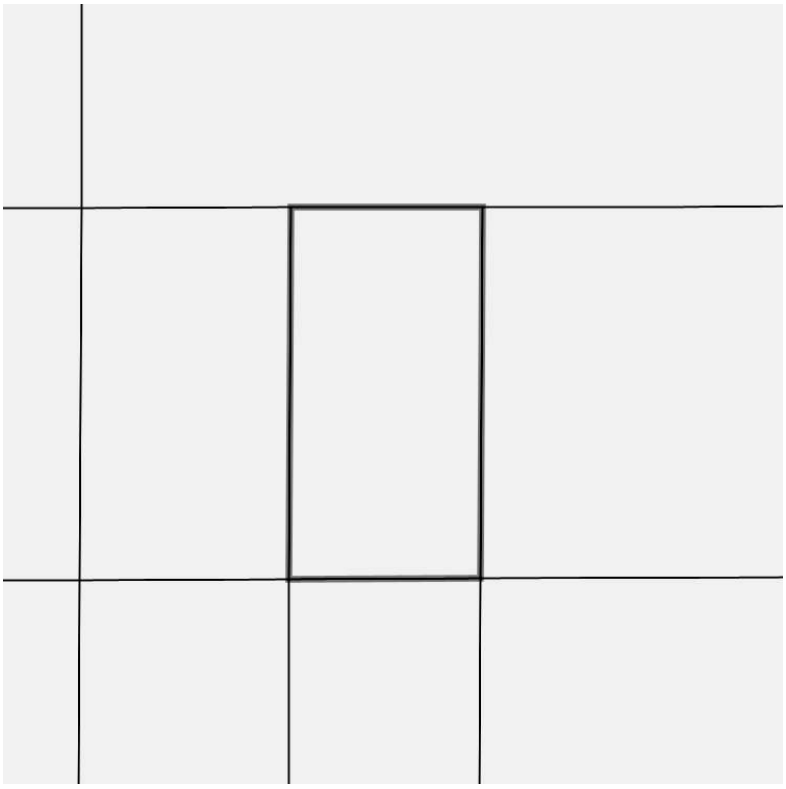
Situs Address:
W OF 76 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$10	N/A
Total	**$10**	**$10**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E E2NWNESE (522)



Public Remarks

Entry Date	Model	Remark
		BOOK 229 PG 838

Land Occurrence 1

Property Code	0400 - AGRICULTURAL LAND	Land Code	122_1_8 - Grazing Land C - 1.8
Description	AGRICULTURAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0400	AGRICULTURAL LAND	$10	$3	NA	NA
Total		**$10**	**$3**	**NA**	**NA**

Property Record Card

Eddy Assessor

ONSUREZ, JOEL & GRACE GARCIA (JT)

PO BOX 1058
LOVING, NM 88256-1058

Account: R204660

Tax Area: 10O_NR - LOVING-OUT (Nonresidential)

Acres: 123.150

Parcel: 4-164-137-396-387

Situs Address:
9 EL LOBO ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$91,476	N/A
Land (2)	$54,068	N/A
Commercial (1)	$202,706	N/A
Total	**$348,250**	**$348,250**

Legal Description

Subd: ONSUREZ LAND DIVISION 2025 Tract: 7 Quarter: SE S: 29 T: 23S R: 28E

Public Remarks

Entry Date	Model	Remark
04/27/2026		BK 1208 PG 807

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	111_30492 - Commercial Land N/R - 30492
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Land Occurrence 2

Property Code	0400 - AGRICULTURAL LAND	Land Code	131_450 - Crop / Farm Land - 450
Description	AGRICULTURAL LAND	Measure	A - Acres

Commercial Occurrence 1

Property Code	0220 - NON-RESIDENTIAL IMPROVEMENT	Actual Year Built	2016

Property Record Card

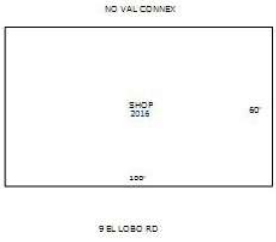
Eddy Assessor

Commercial Occurrence 1

	IMPROVEMENT
Building Type	250 - Comm Structures

SubArea	ACTUAL	EFFECTIVE	HEATED	FOOTPRINT
SHP - SHOP	6000.0	6000.0	6000.0	6000.0
HAY - HAY SHED	5400.0	5400.0	5400.0	5400.0
Total	11,400.00	11,400.00	11,400.00	11,400.00





S HIGBY HOLE RD

S EL LOBO RD

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$91,476	$30,492	NA	NA
0220	NON-RESIDENTIAL IMPROVEMENT	$202,706	$67,569	NA	NA
0400	AGRICULTURAL LAND	$54,068	$18,023	NA	NA
Total		**$348,250**	**$116,084**	**NA**	**NA**

Property Record Card

Eddy Assessor

ONSUREZ, DAMIAN S & CYNTHIA KAY (JT)

PO BOX 1088
CARLSBAD, NM 88221-1088

Account: R074312

Tax Area: 10O_R - LOVING-OUT (Residential)

Acres: 0.000

Parcel: 4-164-137-522-472

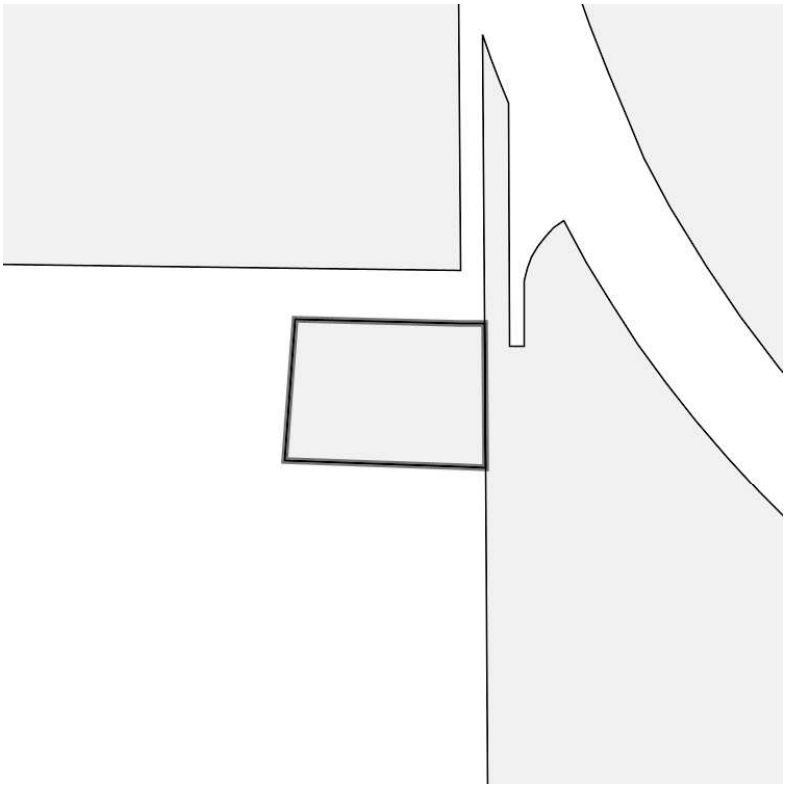
Situs Address:
7 HIGBY HOLE ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$6,366	N/A
Residential (1)	$159,040	N/A
Extra Feature (1)	$11,750	$0
Extra Feature (2)	$6,000	$0
Extra Feature (3)	$3,360	$0
Extra Feature (4)	$2,335	$0
Extra Feature (5)	$1,411	$0
Extra Feature (6)	$1,210	$0
Total	**$191,472**	**$165,406**

Legal Description

Subd: SE OF 29-23-28 TRACTS Tract: 2



Public Remarks

Entry Date	Model	Remark
04/01/2003		BOOK 498 PG 774

Land Occurrence 1

Property Code	0100 - RESIDENTIAL LAND	Land Code	102_6365_4 - Homesite C/10 - 6365.4
Description	RESIDENTIAL LAND	Sewer Type	1 - Septic

Residential Occurrence 1

Property Code	0120 - RESIDENTIAL IMPROVEMENT	Actual Year Built	2003
Effective Year Built	2003	Air Conditioning	1 - 1

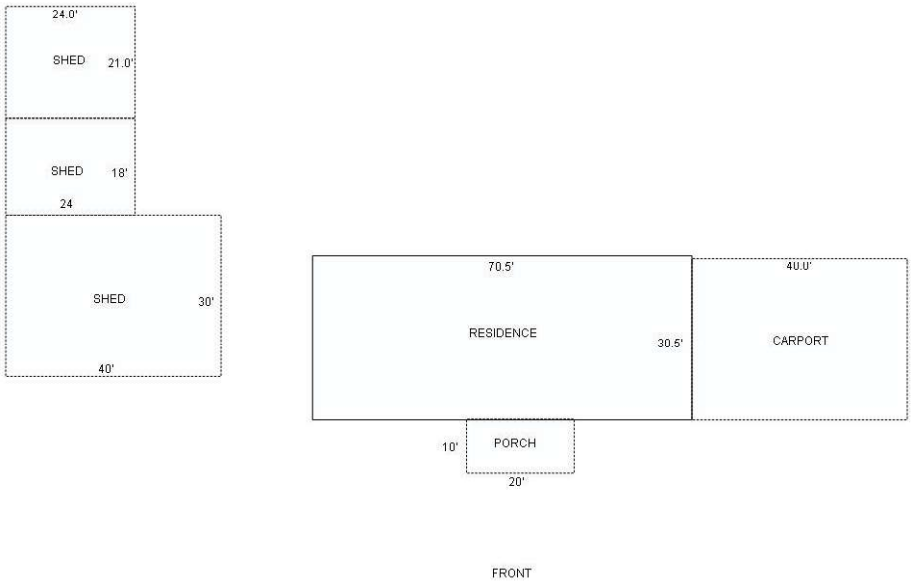
Property Record Card

Eddy Assessor

Residential Occurrence 1

Effective Year Built	2003	Air Conditioning	1 - 1
Architectural Style	2 - 2	Building Type	201 - Structure Res
Condition	3 - 3	Construction Quality	3.0 - 3.0
Frame	4 - 4	Heating Type	4 - Forced
Roof Cover	1 - Shingle	Roof Structure	2 - Gable
Stories	1.0 - 1.0	Exterior Wall	4_2 - Frame Stucco
Floor	3 - Concrete 5 - Vinyl	Interior Wall	3 - Sheet Rock

SubArea	ACTUAL	EFFECTIVE	HEATED	FOOTPRINT
GLA1 - First Floor	2150	2150	2150	2150
Total	2,150.00	2,150.00	2,150.00	2,150.00



Extra Feature Occurrence 1

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	PRCH_OPEN - Porch - Open
Effective Year Built	2016	Building Number	1
Description	PORCH / CARPORT	Quality	3 - Good

Extra Feature Occurrence 2

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	A/D - Additions / Deletions
Effective Year Built	2016	Building Number	1
Description	CARPORT		

Extra Feature Occurrence 3

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	A/D - Additions / Deletions
Effective Year Built	2016	Building Number	1
Description	HORSE SHED		

Extra Feature Occurrence 4

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	PRCH_OPEN - Porch - Open
Effective Year Built	2016	Building Number	1
Description	PORCH / CARPORT	Quality	3 - Good

Extra Feature Occurrence 5

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	A/D - Additions / Deletions
Effective Year Built	2016	Building Number	1
Description	HORSE SH		

Extra Feature Occurrence 6

Property Code	0120 - RESIDENTIAL IMPROVEMENT	XFOB Code	A/D - Additions / Deletions
Effective Year Built	2016	Building Number	1
Description	HORSE SHED		

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0100	RESIDENTIAL LAND	$6,366	$2,122	NA	NA
0120	RESIDENTIAL IMPROVEMENT	$185,106	$61,702	$159,040	$53,013
Total		**$191,472**	**$63,824**	**$165,406**	**$55,135**

Property Record Card

Eddy Assessor

SOOBY, F W MRS
C/O: POTEET, DEANNA
C/O

921 MONTCREST DR
REDDING, CA 96003

Account: R038438

Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)

Acres: 5.000

Parcel: 4-164-138-419-290

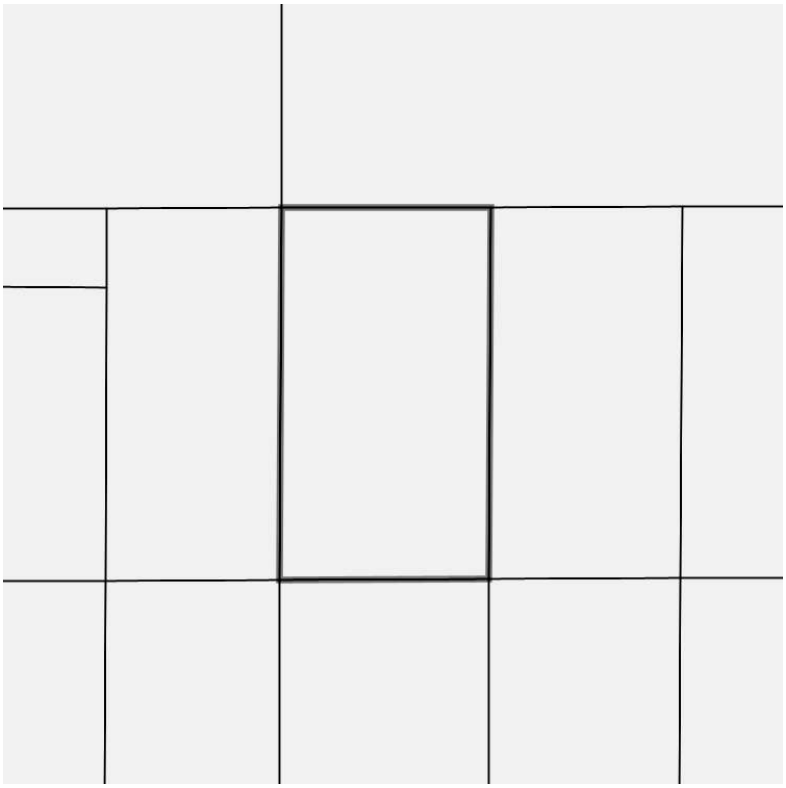
Situs Address:
W OF 76 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$2,250	N/A
Total	**$2,250**	**$2,250**

Legal Description

Quarter: SE S: 32 T: 23S R: 28E W/2NWNESE (521)



Public Remarks

Entry Date	Model	Remark
09/27/2019		SEE FILE ***
		BOOK 34 PG 35

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_450 - Misc Land Vacant C - 450
Description	NON RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$2,250	$750	NA	NA
Total		**$2,250**	**$750**	**NA**	**NA**

Property Record Card

Eddy Assessor

SOUTHWESTERN PUBLIC SERVICE CO

ATTN: PROPERTY TAX DEPT
PO BOX 1979
DENVER, CO 80201-0840

Account: C200174

Tax Area: 10O_NR - LOVING-OUT (Nonresidential)

Acres: 0.000

Parcel: 4-165-137-030-504

Situs Address:
10 HIGBY HOLE ROAD
LOVING, 88256

Legal Description

Subd: SOUTH LOVING SUBSTATION (LESS DEED BK 1168 PG 558) S: 28 T: 23S R: 28E

Public Remarks

Entry Date	Model	Remark
08/29/2016		STATE ASSESSED - FOR INFORMATION PURPOSES ONLY
02/24/2023		BK 1168 PG 558

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
Total		**$0**	**$0**	**NA**	**NA**

Property Record Card

Eddy Assessor

STATE OF NEW MEXICO
310 OLD SANTA FE TRAIL
SANTA FE, NM 87504

Account: R096667
Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)
Acres: 242.600

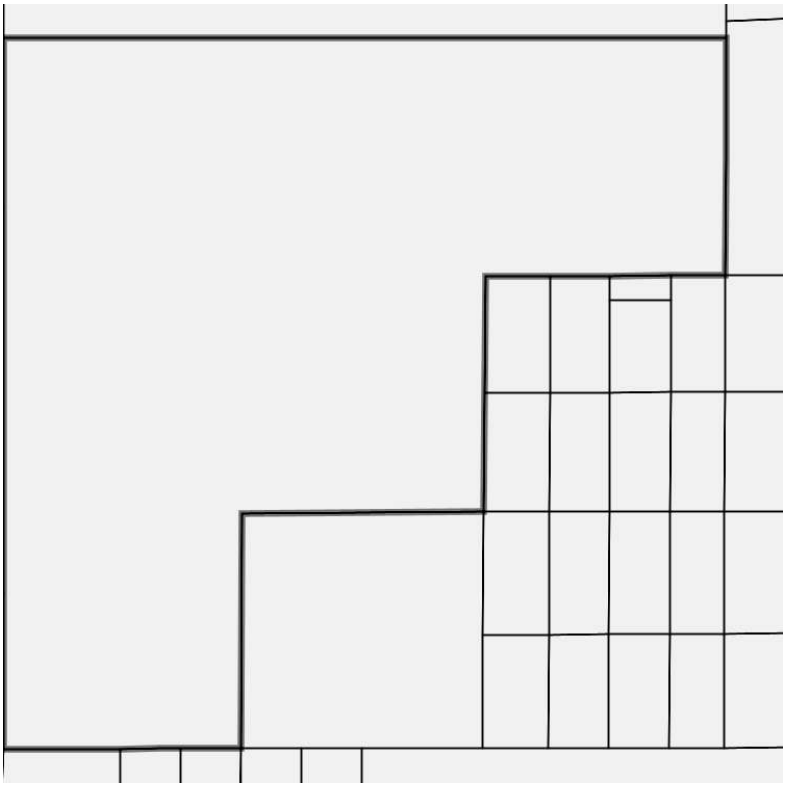
Parcel: 4-164-138-203-323
Situs Address:
S OF 1098 BOUNDS ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$437	N/A
Total	**$437**	**$437**

Legal Description

Quarter: NE S: 32 T: 23S R: 28E SWNE Quarter: NW S: 32 T: 23S R: 28E S2NW Quarter: SW S: 32 T: 23S R: 28E SWSW, N2SW



Public Remarks

Entry Date	Model	Remark

Land Occurrence 1

Property Code	9400 - EXEMPT AGRICULTURAL LAND	Land Code	151_1_8 - Grazing C NM - 1.8
Description	EXEMPT AG LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
9400	EXEMPT AGRICULTURAL LAND	$437	$146	NA	NA
Total		**$437**	**$146**	**NA**	**NA**

Property Record Card

Eddy Assessor

ZUNIGA, JOSE D & ELISA (N-JT)
C/O: MORENO, ISMAEL K/S

511 W CHURCH ST
CARLSBAD, NM 88220

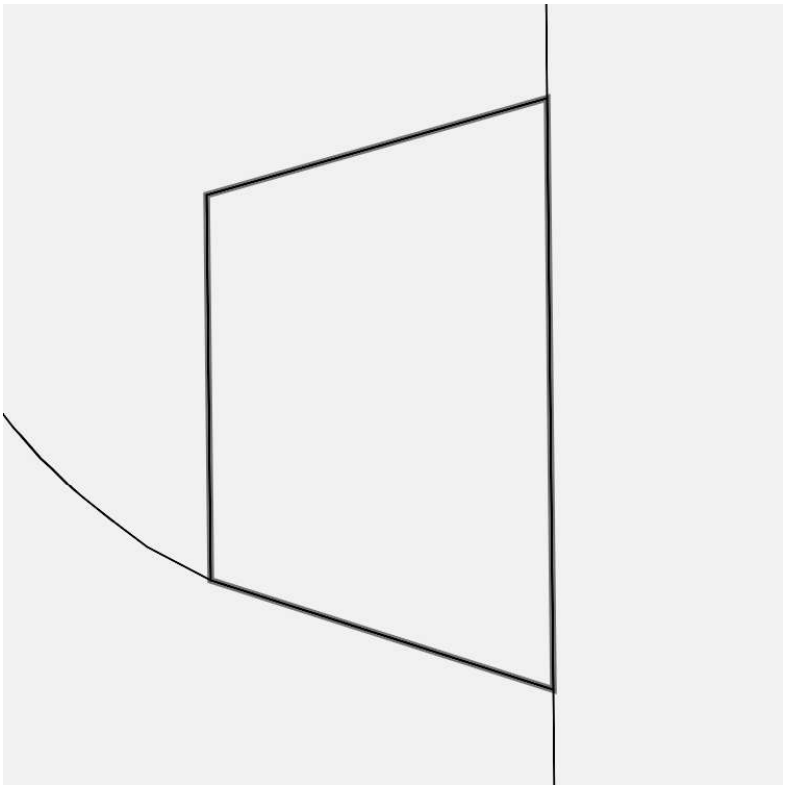
Account: R071648
Tax Area: 10O_NR - LOVING-OUT (Nonresidential)
Acres: 11.400

Parcel: 4-164-137-233-442
Situs Address:
53 EL LOBO ROAD
LOVING, 88256

Value Summary

Value By:	Market	Override
Land (1)	$3,780	N/A
Land (2)	$1,350	N/A
Total	**$5,130**	**$5,130**

Legal Description
Subd: SUMMARY REPL PT E2SW 29-23-28



Public Remarks

Entry Date	Model	Remark
08/01/2019		BK 1126 PG 219 - K/S
09/11/2025		AG LAND APPLICATION ON FILE

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	114_450 - Misc Land Vacant 10 - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Land Occurrence 2

Property Code	0400 - AGRICULTURAL LAND	Land Code	131_450 - Crop / Farm Land - 450
Description	AGRICULTURAL LAND	Measure	A - Acres

Property Record Card

Eddy Assessor

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$3,780	$1,260	NA	NA
0400	AGRICULTURAL LAND	$1,350	$450	NA	NA
Total		**$5,130**	**$1,710**	**NA**	**NA**

Property Record Card

Eddy Assessor

ZUNIGA, RYAN M
7104 OLD CAVERN HWY
CARLSBAD , NM 88220

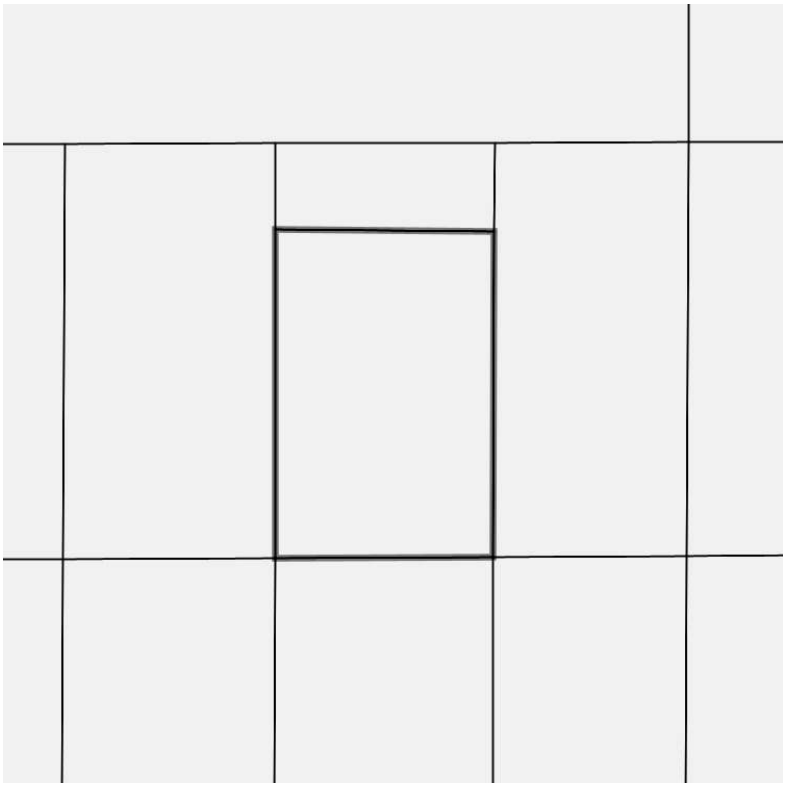
Account: R053760
Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)
Acres: 4.000

Parcel: 4-164-138-354-298
Situs Address:
W OF 68 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$1,800	N/A
Total	**$1,800**	**$1,800**

Legal Description
Quarter: SE S: 32 T: 23S R: 28E W/2NENWSE (519) LESS N 132'(1 ACRE)



Public Remarks

Entry Date	Model	Remark
07/26/2012		BOOK 899 PG 395

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_450 - Misc Land Vacant C - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$1,800	$600	NA	NA
Total		**$1,800**	**$600**	**NA**	**NA**

Property Record Card

Eddy Assessor

ZUNIGA, RYAN M
7104 OLD CAVERN HWY
CARLSBAD, NM 88220

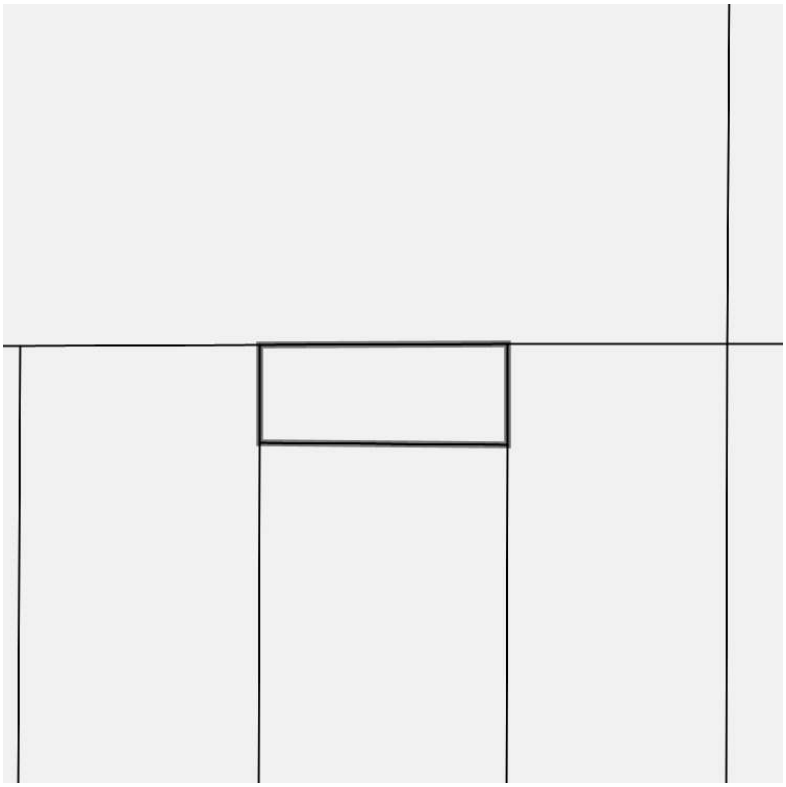
Account: R056705
Tax Area: CO_NR - CARLSBAD-OUT (Nonresidential)
Acres: 1.000

Parcel: 4-164-138-354-268
Situs Address:
W OF 68 HIGBY HOLE ROAD
CARLSBAD, 88220

Value Summary

Value By:	Market	Override
Land (1)	$450	N/A
Total	**$450**	**$450**

Legal Description
Quarter: SE S: 32 T: 23S R: 28E N 132' OF W/2NENWSE (519)



Public Remarks

Entry Date	Model	Remark
07/26/2012		BOOK 899 PG 395

Land Occurrence 1

Property Code	0200 - NON-RESIDENTIAL LAND	Land Code	113_450 - Misc Land Vacant C - 450
Description	NON-RESIDENTIAL LAND	Measure	A - Acres

Abstract Summary

Code	Classification	Actual Value Value	Taxable Value	Actual Value Override	Taxable Override
0200	NON-RESIDENTIAL LAND	$450	$150	NA	NA
Total		**$450**	**$150**	**NA**	**NA**

Section 9.4 - Letters to Owners

07/22/2026

CERTIFIED MAIL 9589 0710 5270 3302 0591 79
RETURN RECEIPT REQUESTED

Dear **Henry McDonald,**

Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its **Road Runner Gas Processing Plant** facility. The expected date of application submittal to the Air Quality Bureau is **July 24, 2026.**
The exact location for the proposed facility known as, **Road Runner Gas Processing Plant**, is latitude **32.265519** dec deg North and longitude **-104.108318** dec deg West. The approximate location of this facility is **1.6** miles south-southwest of Loving in Eddy county, NM.

The proposed **modification** consists of updating NSR permit #7002M6 to authorize an increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire facility.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	31	21
PM_{10}	9	21
$PM_{2.5}$	6	21
Sulfur Dioxide (SO_2)	321	162
Nitrogen Oxides (NO_x)	5,150	137
Carbon Monoxide (CO)	10,283	229
Volatile Organic Compounds (VOC) with Fugitives	8,933	277
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
Toxic Air Pollutant (TAP)	N/A	N/A
Hydrogen Sulfide (H_2S)	21	12
Green House Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: **Targa Northern Delaware, LLC, 201 S 4th Street, Artesia, NM, 88210.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and facility name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Sincerely,
Targa Northern Delaware, LLC
201 S 4th Street, Artesia, NM, 88210

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.

Section 9.5 - Letters to Counties, Municipalities, Indian Tribes

07/22/2026

CERTIFIED MAIL 9589 0710 5270 3302 0592 85
RETURN RECEIPT REQUESTED

Dear **County Official,**

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Nitrogen Oxides (NO_x)	5,150	137
Carbon Monoxide (CO)	10,283	229
Volatile Organic Compounds (VOC) with Fugitives	8,933	277
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
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Green House Gas Emissions as Total CO_2e	N/A	313,984

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Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

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Section 9.6 - Public Notice Posted and Verified Local Postings

General Posting of Notices – Certification

I, Tabitha Guadian, the undersigned, certify that on **{DATE}**, posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the **City of Loving** of **Eddy** County, State of New Mexico on the following dates:

1. Facility entrance {DATE} 7/23/26
2. Village of Loving City Hall, 415 W Cedar St., Loving, NM 88256 {DATE} 7/23/26
3. Loving Allsup's Convenience Store, 105 N 8th St., Loving, NM 88256 {DATE} 7/23/26
4. Loving USPS, 402 W Beech St., Loving, NM 88256 {DATE} 7/23/26

Signed this 23 day of July, 2026

Signature

7/23/26
Date

Tabitha Guadian
Printed Name

ES+H Specialist 1
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

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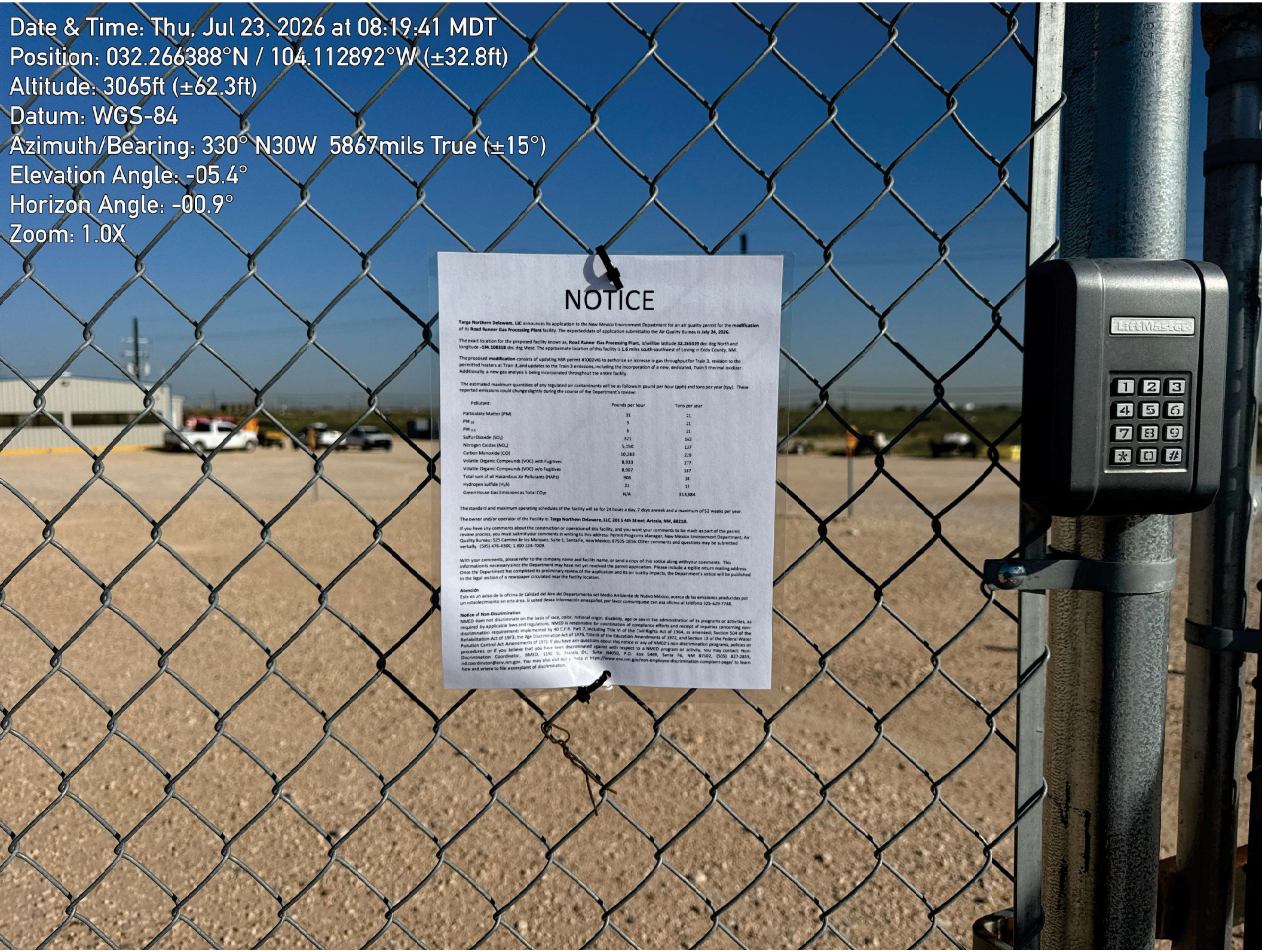
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Date & Time: Thu, Jul 23, 2026 at 08:19:41 MDT
Position: 032.266388°N / 104.112892°W (±32.8ft)
Altitude: 3065ft (±62.3ft)
Datum: WGS-84
Azimuth/Bearing: 330° N30W 5867mils True (±15°)
Elevation Angle: -05.4°
Horizon Angle: -00.9°
Zoom: 1.0X



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Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	31	21
PM_{10}	9	21
$PM_{2.5}$	6	21
Sulfur Dioxide (SO_2)	321	162
Nitrogen Oxides (NO_x)	5,150	117
Carbon Monoxide (CO)	10,283	219
Volatile Organic Compounds (VOC) with Fugitives	8,933	277
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
Hydrogen Sulfide (H_2S)	21	12
GreenHouse Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

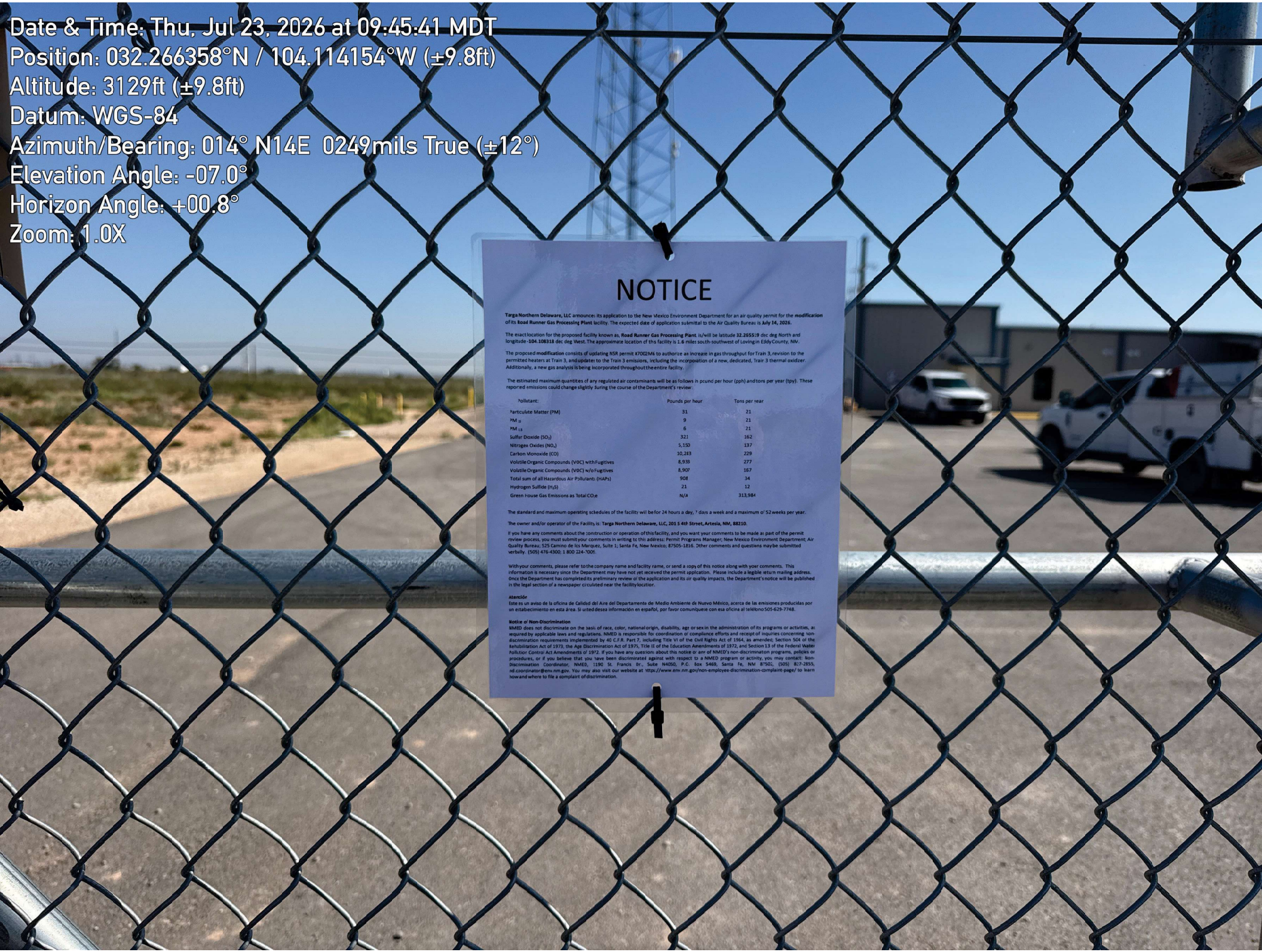
The owner and/or operator of the Facility is: **Targa Northern Delaware, LLC, 201 S 4th Street, Artesia, NM, 88210.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager, New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico, 87505-1816. Other comments and questions may be submitted verbally (505) 476-4300; 1 800 224-7009.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Atención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-7748.

Notice of Non-Discrimination
NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.


Date & Time: Thu, Jul 23, 2026 at 09:45:41 MDT
Position: 032.266358°N / 104.114154°W (±9.8ft)
Altitude: 3129ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 014° N14E 0249mils True (±12°)
Elevation Angle: -07.0°
Horizon Angle: +00.8°
Zoom: 1.0X
NOTICE
Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its Road Runner Gas Processing Plant facility. The expected date of application submittal to the Air Quality Bureau is July 14, 2026.
The exact location for the proposed facility known as, Road Runner Gas Processing Plant, is/will be latitude 32.26559 dec deg North and longitude -104.108318 dec deg West. The approximate location of this facility is 1.6 miles south-southwest of Loving in Eddy County, NM.
The proposed modification consists of updating NSR permit #7002M6 to authorize an increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire 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) | 31 | 21
PM10 | 9 | 21
PM2.5 | 6 | 21
Sulfur Dioxide (SO2) | 321 | 162
Nitrogen Oxides (NOx) | 5,150 | 137
Carbon Monoxide (CO) | 10,283 | 229
Volatile Organic Compounds (VOC) with Fugitives | 8,933 | 277
Volatile Organic Compounds (VOC) w/o Fugitives | 8,907 | 167
Total sum of all Hazardous Air Pollutants (HAPs) | 908 | 34
Hydrogen Sulfide (H2S) | 21 | 12
Green house Gas Emissions as Total CO2e | N/A | 313,984
The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.
The owner and/or operator of the Facility is: Targa Northern Delaware, LLC, 201 S 4th Street, Artesia, NM, 88210.
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; 1 800 224-7001.
With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.
Atención
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Date & Time: Thu, Jul 23, 2026 at 09:54:09 MDT
Position: 032.286284°N / 104.101058°W (±111.6ft)
Altitude: 3062ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 280° N80W 4978mils True (±13°)
Elevation Angle: -02.3°
Horizon Angle: -01.6°
Zoom: 1.0X

b. [illegible] 2026 Regular Council meeting.
c. Municipal Judge's Report for June 2026.
Business Registration Applications and Local Liquor License Renewal.

h Quarter Eddy County Fire & Rescue Update by Fire Chief Joshua Mack.

Discuss/Consider approval of request from Shawn Larson to purchase potable water for domestic use [illegible] housing from village water supply.

[illegible] approval of Special Use Permit Application to occupy an RV trailer at 413 S. Sixth Street submitted by Bertha Armendariz.

9. Discuss/Consider approval of request from Carlsbad Community Anti-Drug/Gang Coalition, Inc. for financial assistance in the amount of $71,600.00.

10. Discuss/Consider approval of the following items submitted by Village IT Services Contractor, Cary Romine:

a. IT Services Updates – Informational Item.

NOTICE

Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its **Road Runner Gas Processing Plant** facility. The expected date of applicaton submittal to the Air Quality Bureau is **July 24, 2026.**

The exact location for the proposed facility known as, **Road Runner Gas Processing Plant**, is/will be latitude **32.265519** dec deg North and longitude **-104.108318** dec deg West. The approximate location of this facility is **1.6** miles south southwest of Loving in Eddy County, NM.

The proposed modification consists of updating NSR permit #7002M6 to authorize an increase in gas throughput for Train 3, revision to the permitted hourly and annual emissions updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, [illegible] and updating incorporated throughout the entire facility.

The estimated [illegible] of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions [illegible] slightly during the course of the Departments review.

Pollutant	Pounds per hour	Tons per year
Particulate Matter (PM)	31	21
PM_{10}	9	21
$PM_{2.5}$	6	21
Sulfur Dioxide (SO_2)	321	162
Nitrogen Oxides (NO_x)	5,150	137
Carbon Monoxide (CO)	10,283	229
Voatile Organic Compounds (VOC) with Fugitives	8,933	277
Voatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
Hydrogen Sulfide (H_2S)	21	12
Green House Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: **Targa Northern Delaware, LLC, 201 S 4th Street, Artesa, NM, 88210.**

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, 1 800 224-7909.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comment. This information is necessary since the Department may have not yet receives the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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Date & Time: Thu, Jul 23, 2026 at 10:00:35 MDT
Position: 032.285028°N / 104.096041°W (±59.5ft)
Altitude: 3059ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 100° S80E 1778mils True (±1.2°)
Elevation Angle: -00.6°
Horizon Angle: +00.2°
Zoom: 0.5X

NOTICE

Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its **Road Runner Gas Processing Plant** facility. The expected date of application submittal to the Air Quality Bureau is **July 24, 2026**.

The exact location for the proposed facility known as, **Road Runner Gas Processing Plant**, is/will be latitude **32.265519** dec deg North and longitude **-104.108318** dec deg West. The approximate location of this facility is **1.6** miles south-southwest of Loving in Eddy County, NM.

The proposed **modification** consists of updating NSR permit #7002M6 to authorize an increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire 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)	31	21
PM_{10}	9	21
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Sulfur Dioxide (SO_2)	321	162
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Volatile Organic Compounds (VOC) with Fugitives	8,933	277
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
Hydrogen Sulfide (H_2S)	71	12
Green House Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: **Targa Northern Delaware, LLC, 201 S 4th Street, Artesia, NM, 88210.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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NOTICE

Enterprise Field Services, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **natural gas compressor station** facility. The expected date of application submittal to the Air Quality Bureau is **November 24, 2023.**

The exact location for the proposed facility known as, **South Carlsbad Compressor Station**, is at **32° 18' 49.7814" N, 104° 8' 13.5749" W**. The approximate location of this facility is **2.5** miles **northwest** of **Loving, NM** in **Eddy** county.

The proposed **modification** consists of the addition of four (4) Caterpillar G3612 compressor engines, one (1) Caterpillar G3608 compressor engine, and one (1) slop storage tank and one (1) Caterpillar GG3516A4 emergency generator.

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	17
PM_{10}	4	17
$PM_{2.5}$	4	17
Sulfur Dioxide (SO_2)	6	34
Nitrogen Oxides (NO_x)	172	339
Carbon Monoxide (CO)	295	297
Volatile Organic Compounds (VOC)	327	427
Total sum of all Hazardous Air Pollutants (HAPs)	6	24.9
Hydrogen Sulfide (H_2S)	2	4
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	205,322

The standard operating schedule of the facility will be 24 hours a day, 7 days a week, 52 weeks per year.

The owner and/or operator of the Facility is:
Enterprise Field Services, LLC
PO Box 4324
Houston, TX 77210-4324

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención
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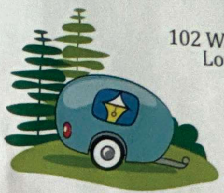
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Attention Loving Residents!

- Late Charges ($10) will be applied to your Utility Bill after the 20th day of each month (only if a balance is pending). **Ordinance No. 191: Part V – Section 1. A**
- A Termination letter will be sent out, if not paid by the due date. Balance will be noted with the delinquent notice. The outstanding balance must be paid in FULL within five (5) days of the date of the notice, or the customer will be disconnected. **Ordinance No. 191: Part V – Section 1.C**
- A reconnection charge of $25.00 will be assessed to restore water service. This must be paid at the time of tendering past due balance and prior to any reconnection. **Ordinance No. 191: Part V – Section 1. D**

NOW OPEN

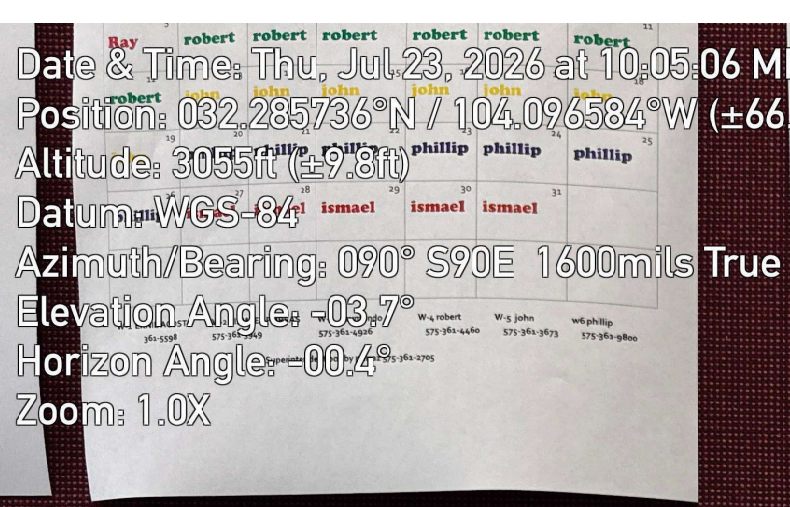
ONSUREZ RV PARK



102 W. Cottonwood Street
Loving, NM 88256

For more info call
575.302.0622
575.706.1478

Date & Time: Thu, Jul 23, 2026 at 10:05:06 MDT
Position: 032.285736°N / 104.096584°W (±66.4ft)
Altitude: 3055ft (±9.8ft)
Datum: WGS-84
Azimuth/Bearing: 090° S90E 1600mils True (±13°)
Elevation Angle: -03.7°
Horizon Angle: -00.4°
Zoom: 1.0X

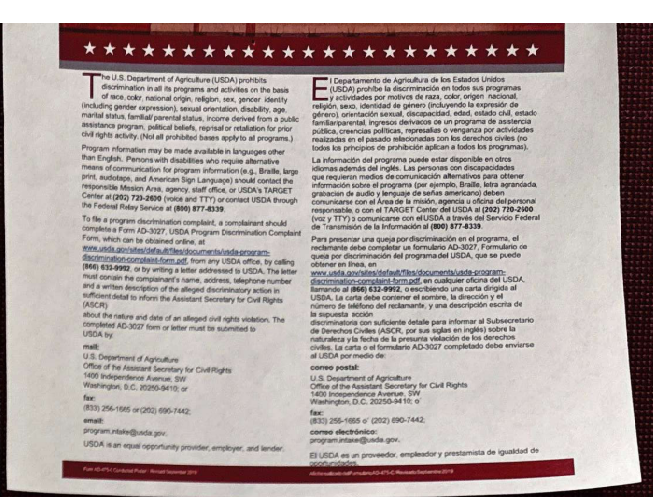


This change is necessary to ensure that village water resources and staff remain available to support essential municipal operations and to maintain reliable service for utility customers.

Contractors, businesses and individuals are encouraged to make alternative arrangements for obtaining bulk water from private suppliers or other authorized sources.

The Village of Loving appreciates the public's understanding and cooperation regarding this matter.

Issued by Order of: Loving Village Council
Date: May 18, 2026



The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activites on the basis of race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, familial/ parental status, income derived from a public assistance program, political beliefs, reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs.)

Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, and American Sign Language) should contact the responsible Mission Area, agency, staff office, or USDA's TARGET Center at **(202) 720-2600** (voice and TTY) or contact USDA through the Federal Relay Service at **(800) 877-8339**.

To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online, at www.usda.gov/sites/default/files/documents/usda-program-discrimination-complaint-form.pdf, from any USDA office, by calling **(866) 632-9992**, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

mail:
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:
(833) 256-1665 or (202) 690-7442;

email:
program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

El Departamento de Agricultura de los Estados Unidos (USDA) prohíbe la discriminación en todos sus programas y actividades por motivos de raza, color, origen nacional, religión, sexo, identidad de género (incluyendo la expresión de género), orientación sexual, discapacidad, edad, estado civil, estado familiar/parental, ingresos derivados de un programa de asistencia pública, creencias políticas, represalias o venganza por actividades realizadas en el pasado relacionadas con los derechos civiles (no todos los principios de prohibición aplican a todos los programas).

La información del programa puede estar disponible en otros idiomas además del inglés. Las personas con discapacidades que requieran medios de comunicación alternativos para obtener información sobre el programa (por ejemplo, Braille, letra agrandada, grabación de audio y lenguaje de señas americano) deben comunicarse con el Área de la misión, agencia u oficina del persona responsable, o con el TARGET Center del USDA al **(202) 720-2600** (voz y TTY) o comunicarse con el USDA a través del Servicio Federal de Transmisión de la Información al **(800) 877-8339**.

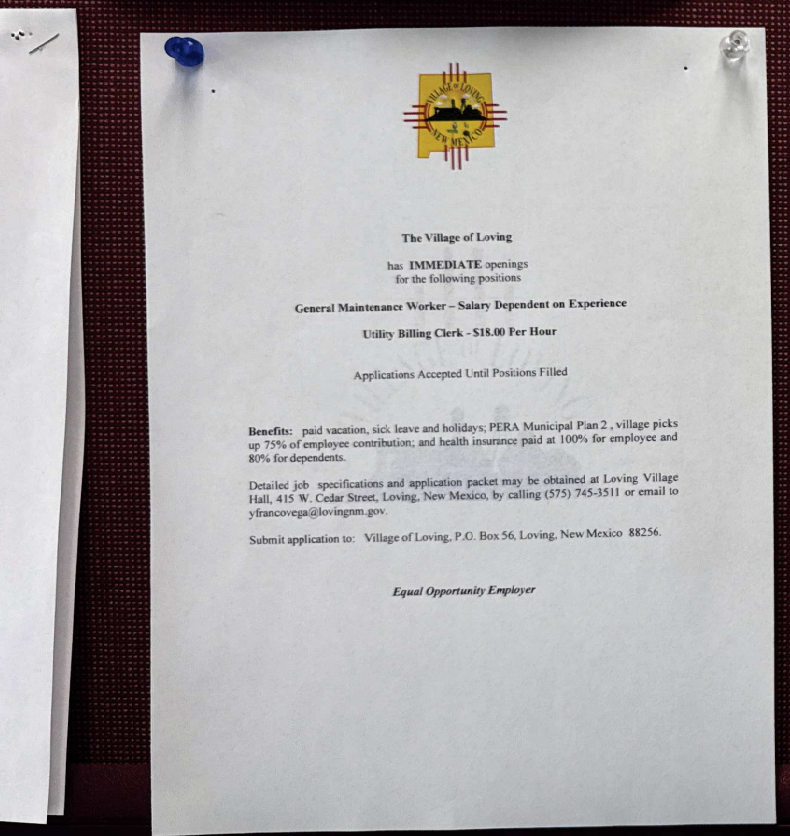
Para presentar una queja por discriminación en el programa, el reclamante debe completar un formulario AD-3027, Formulario de queja por discriminación del programa del USDA, que se puede obtener en línea, en www.usda.gov/sites/default/files/documents/usda-program-discrimination-complaint-form.pdf, en cualquier oficina del USDA, llamando al **(866) 632-9992**, o escribiendo una carta dirigida al USDA. La carta debe contener el nombre, la dirección y el número de teléfono del reclamante, y una descripción escrita de la supuesta acción discriminatoria con suficiente detalle para informar al Subsecretario de Derechos Civiles (ASCR, por sus siglas en inglés) sobre la naturaleza y la fecha de la presunta violación de los derechos civiles. La carta o el formulario AD-3027 completado debe enviarse al USDA por medio de:

correo postal:
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; o

fax:
(833) 256-1665 o (202) 690-7442;

correo electrónico:
program.intake@usda.gov.

El USDA es un proveedor, empleador y prestamista de igualdad de oportunidades.



The Village of Loving

has **IMMEDIATE** openings
for the following positions

General Maintenance Worker – Salary Dependent on Experience

Utility Billing Clerk - $18.00 Per Hour

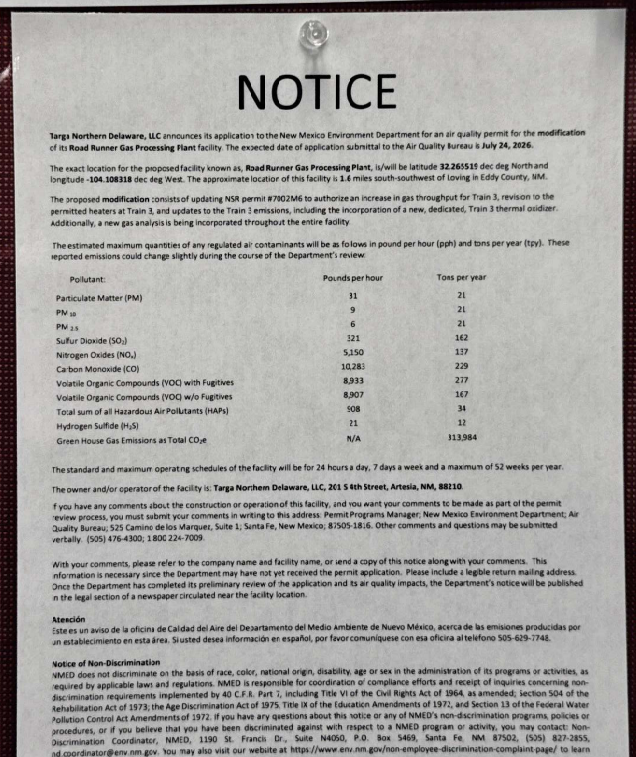
Applications Accepted Until Positions Filled

Benefits: paid vacation, sick leave and holidays; PERA Municipal Plan 2 , village picks up 75% of employee contribution; and health insurance paid at 100% for employee and 80% for dependents.

Detailed job specifications and application packet may be obtained at Loving Village Hall, 415 W. Cedar Street, Loving, New Mexico, by calling (575) 745-3511 or email to yfrancovega@lovingnm.gov.

Submit application to: Village of Loving, P.O. Box 56, Loving, New Mexico 88256.

Equal Opportunity Employer



NOTICE

Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its **Road Runner Gas Processing Plant** facility. The expected date of application submittal to the Air Quality Bureau is **July 24, 2026.**

The exact location for the proposed facility known as, **Road Runner Gas Processing Plant**, is/will be latitude **32.265515** dec deg North and longitude **-104.108318** dec deg West. The approximate location of this facility is **1.6** miles south-southwest of Loving in Eddy County, NM.

The proposed **modification** consists of updating NSR permit #7902M6 to authorize an increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire 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)	31	21
PM_{10}	9	21
$PM_{2.5}$	6	21
Sulfur Dioxide (SO_2)	121	162
Nitrogen Oxides (NO_x)	5,150	137
Carbon Monoxide (CO)	10,283	229
Volatile Organic Compounds (VOC) with Fugitives	8,933	217
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	508	34
Hydrogen Sulfide (H_2S)	21	12
Green House Gas Emissions as Total CO_2e	N/A	113,984

The standard and maximum operating schedules of the facility will be for 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

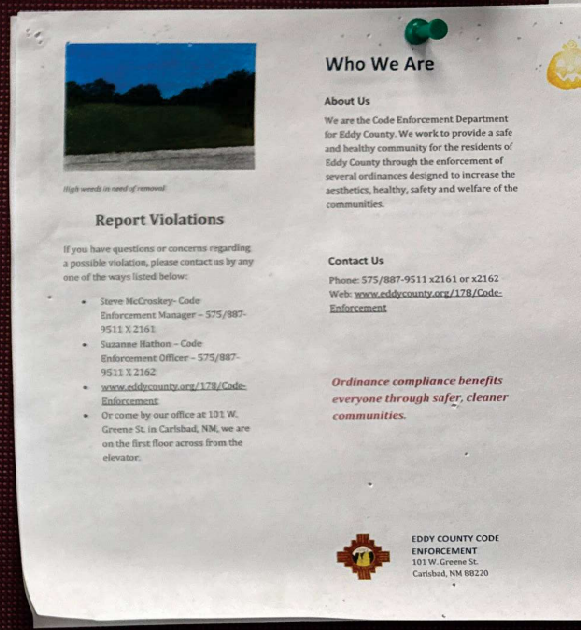
The owner and/or operator of the facility is: **Targa Northern Delaware, LLC, 261 S 4th Street, Artesia, NM, 88210.**

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager, New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally (505) 476-4300; 1 800 224-7009.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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Notice of Non-Discrimination
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High weeds in need of removal

Report Violations

If you have questions or concerns regarding a possible violation, please contact us by any one of the ways listed below:

- Steve McCroskey- Code Enforcement Manager – 575/887-9511 X 2161
- Suzanne Hathon – Code Enforcement Officer – 575/887-9511 X 2162
- www.eddycounty.org/178/Code-Enforcement
- Or come by our office at 101 W. Greene St. in Carlsbad, NM, we are on the first floor across from the elevator.

Who We Are

About Us

We are the Code Enforcement Department for Eddy County. We work to provide a safe and healthy community for the residents of Eddy County through the enforcement of several ordinances designed to increase the aesthetics, healthy, safety and welfare of the communities.

Contact Us

Phone: 575/887-9511 x2161 or x2162
Web: www.eddycounty.org/178/Code-Enforcement

Ordinance compliance benefits everyone through safer, cleaner communities.

EDDY COUNTY CODE ENFORCEMENT
101 W. Greene St.
Carlsbad, NM 88220

Section 9.7 - Table of Noticed

Table of Notified Citizens

Name	Address	City	State	Zip Code
HENRY MCDONALD	PO BOX 597	LOVING	NM	88256-0597
FELIX & DEBRA (JT) CALDERON	PO BOX 64	LOVING	NM	88256-0064
JOSE D & ELISA (N-JT) ZUNIGA	211 W FIESTA DR	CARLSBAD	NM	88220
JOEL S (JT) ONSUREZ	PO BOX 1058	LOVING	NM	88256-1058
DAMIAN S & CYNTHIA KAY (JT) ONSUREZ	PO BOX 1088	CARLSBAD	NM	88221-1088
LUCID ENERGY DELAWARE LLC	3100 MCKINNON ST STE 800	DALLAS	TX	75201-7014
VICKIE CONNALLY	125 BRINKLEY LN	ELGIN	TX	78621-5046
ODGEN ESTATE HEIRS	2302 FOREHAND RD	CARLSBAD	NM	88220
NELDA WYRICK ETAL (JT) COX	3101 SEXTON DR	NORMAN	OK	7573026
COUNTY OF EDDY	101 W GREENE ST	CARLSBAD	NM	88220
MRS F W SOOBY	921 MONTCREST DR	REDDING	CA	96003
RYAN M ZUNIGA	24 MESQUITE LANE	ARTESIA	NM	88210
STATE OF NEW MEXICO	310 OLD SANTA FE TRAIL	SANTA FE	NM	87504
REYMUNDO & VICTORIA (JT) PINA	PO BOX 356	LOVING	NM	88256-0356
GLORIA ONSUREZ	PO BOX 598	LOVING	NM	88256-0568
PABLO & MARY REV TRUST HERNANDEZ, PABLO P & MARIA TRUSTEES	1971 PECOS HWY	LOVING	NM	88256
VILLAGE OF LOVING	PO BOX 56	LOVING	NM	88256
SOUTHWESTERN PUBLIC SERVICE CO	P.O BOX 1979	DENVER	CO	80201
GEORGE A HUFFER	4713 CRAIG AVE	METAIRIE	LA	70003
SUSAN D BLACKMON & JOHN E BLACKMON	3501 BONNIEBROOK DR	PLANO	TX	75075

Table of Notified Counties

Name	Address	City	State	Zip Code
EDDY COUNTY – COUNTY MANAGER	101 W GREENE ST	CARLSBAD	NM	88220

9.7.3 Table of Notified Municipalities

Name	Address	City	State	Zip Code
LOVING – VILLAGE MANAGER	415 W CEDAR ST	LOVING	NM	88256

9.7.4 Table of Notified Tribes

Name	Address	City	State	Zip Code
N/A - There are no tribes located within 10 miles of the facility fenceline				

Section 9.8 - Public Service Announcement

Submittal of Public Service Announcement – Certification

I, Miles Kelsey, the undersigned, certify that on July 15, 2026, submitted a public service announcement to **Carlsbad Radio** that serves the City\Town\Village of **Carlsbad**, **Eddy** County, New Mexico, in which the source is or is proposed to be located and that **Carlsbad Radio DID RESPOND.**

Signed this 24 day of July , 2026 ,

Miles Kelsey
Signature

7/24/26
Date

Miles Kelsey
Printed Name

Associate Consultant
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Johnny Nguyen

From: Miles Kelsey
Sent: Wednesday, July 15, 2026 9:14 AM
To: don@carlsbadradio.com; donhughes42@gmail.com
Cc: Johnny Nguyen; Jaimy Karacaoglu
Subject: Road Runner Gas Plant - Public Service Announcement Request

Dear KATK - 92.1 FM

We are requesting that KATK 92.1 FM air the enclosed Public Service Announcement to fulfill the public notice requirements associated with a New Mexico Air Quality Permit application.

Pursuant to New Mexico Administrative Code 20.2.72.203.D NMAC and according to the Guidance for Public Notice for Air Quality Permit Applications – **(5) Notifications: Submittal of Public Service Announcement (PSA):** A public service announcement required for permits and significant permit revisions must be submitted to at least one radio or television station, which services the municipality, or county which the facility is or will be located. Accordingly, because KATK 92.1 FM serves the county in which the facility is located, we respectfully request that you air the following information as a Public Service Announcement.

The public service announcement must contain the following information about the facility (20.2.72.203.D NMAC):

- The name: **Roadrunner Gas Processing Plant**, Location: **latitude 32.265519** and **longitude -104.10831**, and Type of Business: **Gas Processing Plant.**
- Name and principal owner or operator: **Targa Northern Delaware, LLC** (Owner and Operator)
- Description of Permit Action: **NSR Revisions including authorization to increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire facility.**
- Locations where the notices have been posted in the City of Loving, of Eddy County, NM:
    - **Road Runner Gas Plant Facility Entrance**
    - **Village of Loving City Hall, (415 W Cedar St., Loving NM 8856)**
    - **Loving Allsup's Convenience Store, (105 N 8th St., Loving NM 8856)**
    - **Loving USPS, (402 W Breech St., Loving NM 8856)**

The Department's address or telephone number to which comments may be directed: **Permit Programs Manager: New Mexico Environmental Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1, Santa Fe, New Mexico; 87505-1816; (505) 476-4300; (800) 224-7009**

Best regards,

Miles Kelsey
Associate Consultant

Email: Miles.Kelsey@trinityconsultants.com
9400 Holly Ave NE, Albuquerque, New Mexico 87122

Connect with us: LinkedIn / trinityconsultants.com
View our capabilities in the Environmental Consulting, Built Environment, Life Sciences, and Water & Ecology markets.

Section 9.9 and 9.10 - Affidavits of Newspaper Notice

Affidavit of Publication

No. 118210

State of New Mexico

County of Eddy:

Adrian Hedden

being duly sworn, sayes that he is the **Publisher**

of the Artesia Daily Press, a weekly newspaper of General circulation, published in English at Artesia,

said county and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said Artesia Daily Press, a weekly newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same day as follows:

First Publication July 22, 2026

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Sixth Publication

Seventh Publication

Eighth Publication

Subscribed and sworn before me this

22nd day of July 2026

STATE OF NEW MEXICO
NOTARY PUBLIC
Latisha Romine
Commission Number 1076338
Commission Expires 5-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

NOTICE OF AIR QUALITY PERMIT APPLICATION

Targa Northern Delaware, LLC announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its **Road Runner Gas Processing Plant** facility. The expected date of application submittal to the Air Quality Bureau is **July 24, 2026.**

The exact location for the proposed facility known as, **Road Runner Gas Processing Plant,** is latitude **32.265519** dec deg North and longitude **-104.108318** dec deg West. The approximate location of this facility is 1.6 miles south-southwest of Loving in Eddy county, NM.

The proposed **modification** consists of updating NSR permit #7002M6 to authorize an increase in gas throughput for Train 3, revision to the permitted heaters at Train 3, and updates to the Train 3 emissions, including the incorporation of a new, dedicated, Train 3 thermal oxidizer. Additionally, a new gas analysis is being incorporated throughout the entire facility.

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Particulate Matter (PM)	31	21
PM_{10}	9	21
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Nitrogen Oxides (NO_x)	5,150	137
Carbon Monoxide (CO)	10,283	229
Volatile Organic Compounds (VOC) with Fugitives	8,933	277
Volatile Organic Compounds (VOC) w/o Fugitives	8,907	167
Total sum of all Hazardous Air Pollutants (HAPs)	908	34
Toxic Air Pollutant (TAP)	N/A	N/A
Hydrogen Sulfide (H_2S)	21	12
Green House Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 7 days a week and a maximum of 52 weeks per year

The owner and/or operator of the Facility is: **Targa Northern Delaware, LLC, 201 S 4th Street, Artesia, NM, 88210.**

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

Subscribed and sworn before me this

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NOTARY PUBLIC
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Commission Number 1076338
Commission Expires 5-12-2027

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General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Atención

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118210 Published in Artesia Daily Press July 22, 2026.

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No.

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Green House Gas Emissions as Total CO_2e	N/A	313,984

The standard and maximum operating schedules of the facility will be for 7 days a week and a maximum of 52 weeks per year

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Eighth Publication

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NOTARY PUBLIC
Latisha Romine
Commission Number 1076338
Commission Expires 5-12-2027

Latisha Romine

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N/A 313,984

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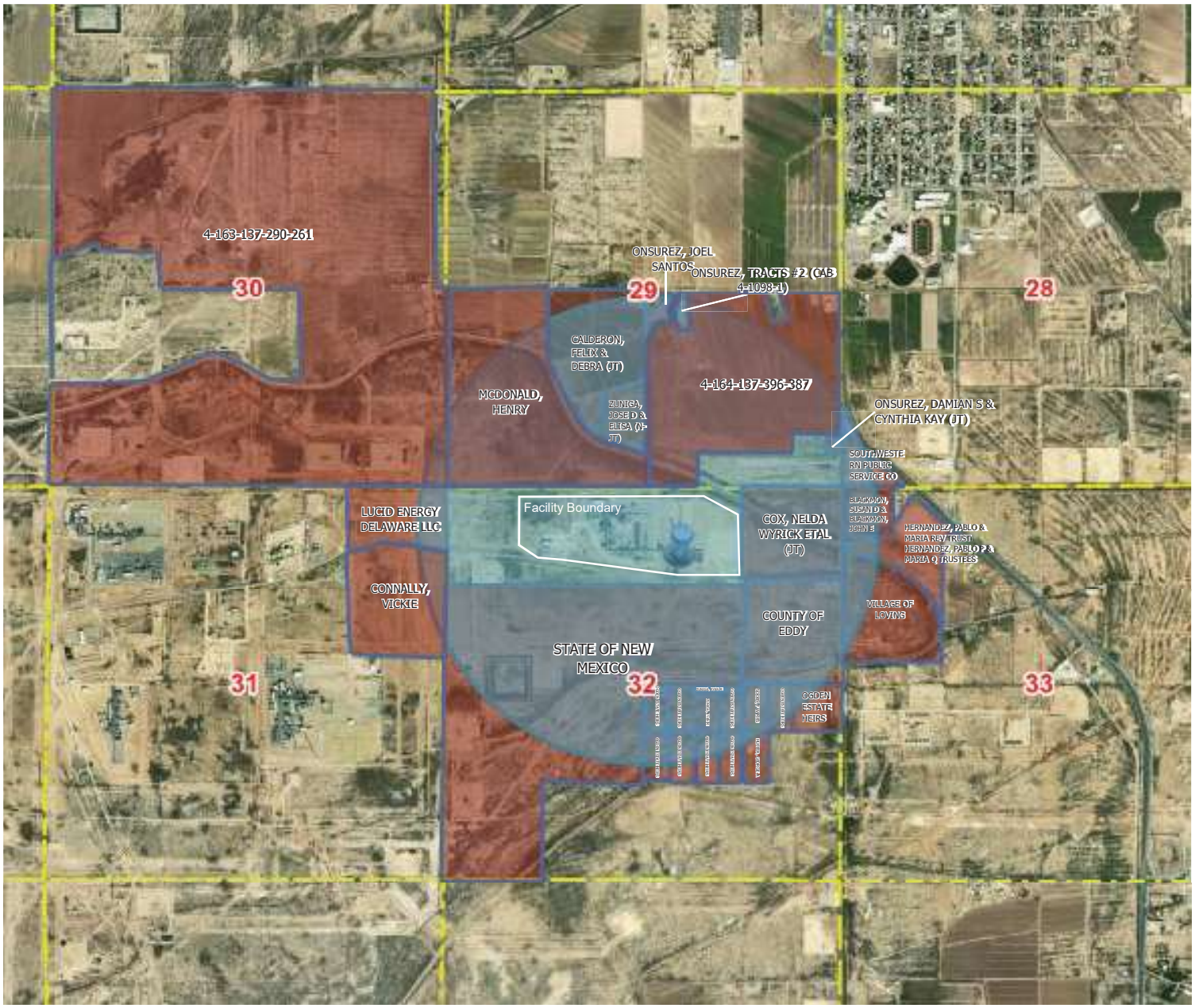
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Section 9.11 - Map for Public Notice



Road Runner Gas Plant Neighbors

Web Print: 06/30/2026

0 3,009 Feet

N W E S

This map is user generated static output from an internet mapping site and is for reference only. Data Layers that appear on this map may or may not be, current, or otherwise reliable.

Section 10

Written Description of the Routine Operations of the Facility

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

The Road Runner Gas Processing Plant is a natural gas processing plant located in Eddy County near Loving, 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 Roadrunner Gas Processing Plant is intended to process **855** MMscfd of gas. 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.

Roadrunner Gas Processing Train 1

Inlet Separation

Inlet gas flows into the gas plant through the slug catcher and inlet separator which are designed to allow for liquids to drop out of the inlet gas. Gas coming into the gas plant is already at high pressure and therefore, does not need to be compressed. Next, the gas is router to the treating system, see the "Gas Treating" section of the process description below. Liquids from the slug catcher and inlet separator are routed to the Condensate Surge Tank for processing, see the "Condensate Stabilization Process" section.

Condensate Stabilization Process

The raw condensate in the Condensate Surge Tank is routed to the Stabilizer Feed Separator and then to the deethanizer (to boil off ethane, CO_2, and H_2S from the raw condensate). Hot oil from the stabilizer HMO system (Unit ID: RDR-H-3601) is used to provide heat. The vapors from the deethanizer are combined with the flash vapors from the Condensate Surge Tank and Stabilizer Feed Separator and recompressed by the electric motor-driven Flash Compressors (RDR-C-1300 through RDR-C-1450). Water is separated in the Condensate Surge Tank and Stabilizer Feed Separator and routed to the plant Produced Water Tank (Unit ID: RDR-T-6). Partially stabilized condensate from the deethanizer flows to the Stabilizer where the condensate is heated to further boil off light hydrocarbons making a 9 RVP liquid bottoms product. Hot oil from the stabilizer HMO system (Unit ID: RDR-H-3601) is used to provide heat. The stabilized condensate liquids are stored in the Condensate Storage Tanks (Unit IDs: RDR-T-1 through RDR-T-5) and are primarily pumped to a pipeline from the facility via a Lease Automatic Custody Transfer (LACT) skid. Truck loading of the stabilized condensate liquids only occurs when the LACT skid is not functional. Vapors from the Stabilizer are condensed into the liquid phase and pumped to the natural gas liquids (NGL) pipeline leaving the plant. Vapors from the Condensate Storage Tanks, Produced Water Tank, and truck loading vapor return are routed to the vapor combustion unit (Unit ID: RDR-FL-2850) for control.

Gas Treating

After inlet separation and filtration, the inlet gas flows into the amine contactors, where the gas is contacted with an aqueous solution of amine to remove CO_2 and hydrogen sulfide (H2S). CO_2 and H_2S exit from the bottom of the contactors with the rich amine which is heated and regenerated using the closed hot oil system in the amine regenerator.
Hot oil is circulated and supplied by the hot oil system (Unit IDs: RDR-H-0901 and RDR-H-1054). Flash tank vapors are routed to the fuel gas system for use as supplemental fuel gas for the hot oil system heaters and/or to Flare (Unit ID: RDR-FL-5100). The CO_2 and H_2S rich vent gas released from the regeneration process is routed to the Thermal Oxidizer (Unit ID: RDR-TO-5500) where additional combustion will further minimize VOC and H_2S emissions.

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 5 ppm H_2S will be processed at the plant. 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 70.28 MMBtu/hr heater (RDR-H-1054 and one 75 MMBtu/hr heater (RDR-H-0901). Significant amounts of VOC and HAP can be generated in this process. The acid gas is sent to a thermal oxidizer (RDR-TO-5500), where additional combustion will further minimize VOC and H_2S emissions.

Gas Dehydration

Gas from the amine contactor then goes to the glycol contactor where water removal is accomplished by absorption with triethylene glycol (TEG). The rich TEG is then routed through a flash tank and to the TEG regenerator. The TEG is then regenerated using a direct-fire reboiler (Unit ID: RDR-H-2301). Flash vapors from the flash tank are routed to the Amine Regeneration hot oil system heaters (Unit IDs: RDR-H-0901 and RDR-H-1054) for use as supplemental fuel gas. Vapors from the TEG dehydration unit still vent (Unit ID: RDR-TEG) are routed to the Thermal Oxidizer (Unit ID: RDR-TO-5500) where additional combustion will further minimize VOC emissions.

Gas exits the glycol dehydrator and flows into the mole sieve dehydrator beds. Each dehydrator bed contains molecular sieve dehydration beads that adsorb trace amounts of water from the gas stream. Two vessels are used to dehydrate inlet gas while the third vessel is being regenerated. Dehydrated high pressure gas is used for regeneration. The regen gas flows to the regen heater (Unit ID: RDR-H-741). The hot gas flows from the heater to the dehydrator vessel in regeneration and water is removed from the molecular sieve by evaporation. The hot gas and vaporized water are cooled and the water is condensed and separated. The condensed water is routed to the plant Produced Water Tank (Unit ID: RDR-T-6). The cooled regen gas is recompressed by the regen gas compressor and recycled to the inlet of the Amine Contactors.

Cryogenic Unit

After the mole sieve dehydration system, dry inlet gas goes through the dust filters and enters the cryogenic unit. In the cryogenic unit the inlet gas is cooled by cross exchanging the inlet gas with cold residue gas, cold natural gas liquids (NGL)s, and propane refrigeration. As the inlet gas cools, NGLs are condensed. The NGLs are separated from the cold inlet gas in the cold separator. The NGLs are discharged from the separator to the demethanizer. The cold inlet gas exiting the top of the cold separator flows through the expander & reflux exchanger. The expander reduces the pressure of the inlet gas and in doing so extracts work from the gas and results in condensation of additional NGLs.

The two-phase mixture exiting the expander is fed to the upper section of the demethanizer, which strips methane from the NGLs. The NGLs exit the bottom of the demethanizer with a low residual concentration of methane. The remainder of the inlet feed gas (residue gas) exits the top of the demethanizer. The cold residue gas is cross exchanged with the inlet gas to recover the refrigeration. The warm residue gas exiting the cryogenic unit is compressed by electric motor driven compressors (RDR-C-1300 through RDR-C-1450) to pipeline pressure. Prior to discharge to the pipeline, the residue gas is filtered and metered.

The NGL product from the cryogenic unit is pumped through a sales meter and then off-site via pipeline.

Ancillary Tanks

The site will store various products used to maintain the equipment and normal operations listed in table 2-A in section 2 of this application.

Except for the Produced Water and Condensate Storage tanks (Unit IDs: RDR-T-1 through RDR-T-6), emissions from the ancillary tanks are assumed to be negligible and are exempt per 20.2.72.202.b(2) as documented on the attached NMED Table 2-B: Insignificant Activities or Exempted Equipment, included in section 2 of this application. Additional sources of emissions are fugitives from piping components from the first gas processing train (Unit ID: RDR-FUG) and SSM activities.

Flare for Startup, Shutdown, and Maintenance (SSM) and Malfunction (M) Activities

The gas plant flare (Unit ID: RDR-FL-5100) is designed for smokeless operation and located at the facility for amine gas stream control as well as routine SSM and Malfunction activities. During routine SSM activities, plant turnarounds, and Malfunction activities residue (process) gases may also be routed to the flare (Unit IDs: BD SSM and RDR-FL-5100).

Roadrunner Gas Processing Train 2

Inlet Separation

Inlet separation processes for Train 1 are applicable to Train 2 due to the equipment in both trains having similar capacities.

Condensate Stabilization Process

Stabilization processes for Train 1 are applicable to Train 2 due to the equipment in both trains having similar capacities.

Gas Treating

After inlet separation and filtration, the inlet gas flows into the amine contactors, where the gas is contacted with an aqueous solution of amine to remove CO_2 and hydrogen sulfide (H_2S). CO_2 and H_2S exit with the amine solution from the bottom of the contactors and the amine is regenerated using the regeneration equipment at processing Train 1. Treated gas (less CO_2 and H_2S) exits the amine contactor and is routed to the glycol dehydrator.

Gas Dehydration

Gas from the amine contactor then goes to the glycol contactor where water removal is accomplished by absorption with triethylene glycol (TEG). The rich TEG is then routed through a flash tank and to the TEG regenerator. The TEG is then regenerated using a direct-fire reboiler (Unit ID: RDR-H-2301). Flash vapors from the flash tank are routed to the Amine Regeneration hot oil system heaters (Unit IDs: RDR-H-0901 and RDR-H-1054) for use as supplemental fuel gas. Vapors from the TEG dehydration unit still vent (Unit ID: RDR-TEG) are routed to the Thermal Oxidizer (Unit ID: RDR-TO-5500) where additional combustion will further minimize VOC emissions.

Gas exits the glycol dehydrator and flows into the mole sieve dehydrator beds. Each dehydrator bed contains molecular sieve dehydration beads that adsorb trace amounts of water from the gas stream. Two vessels are used to dehydrate inlet gas while the third vessel is being regenerated. Dehydrated high pressure gas is used for regeneration. The regen gas flows to the regen heater (Unit ID: RDR-H-741). The hot gas flows from the heater to the dehydrator vessel in regeneration and water is removed from the molecular sieve by evaporation. The hot gas and vaporized water are cooled and the water is condensed and separated. The condensed water is routed to the plant Produced Water Tank (Unit ID: RDR-T-6). The cooled regen gas is recompressed by the regen gas compressor and recycled to the inlet of the Amine Contactors.

Cryogenic Unit

After the mole sieve dehydration system, dry inlet gas goes through the dust filters and enters the cryogenic unit. In the cryogenic unit the inlet gas is cooled by cross exchanging the inlet gas with cold residue gas, cold natural gas liquids (NGL)s, and propane refrigeration. As the inlet gas cools, NGLs are condensed. The NGLs are separated from the cold inlet gas in the cold separator. The NGLs are discharged from the separator to the demethanizer. The cold inlet gas exiting the top of the cold separator flows through the expander & reflux exchanger. The expander reduces the pressure of the inlet gas and in doing so extracts work from the gas and results in condensation of additional NGLs.

The two-phase mixture exiting the expander is fed to the upper section of the demethanizer, which strips methane from the NGLs. The NGLs exit the bottom of the demethanizer with a low residual concentration of methane. The remainder of the inlet feed gas (residue gas) exits the top of the demethanizer. The cold residue gas is cross exchanged with the inlet gas to recover the refrigeration. The warm residue gas exiting the cryogenic unit is compressed by electric motor driven compressors (RR2-C-1160 through RR2-C-502B2) to pipeline pressure. Prior to discharge to the pipeline, the residue gas is filtered and metered.

The NGL product from the cryogenic unit is pumped through a sales meter and then off-site via pipeline.

Flare for Startup, Shutdown, and Maintenance (SSM) and Malfunction (M) Activities

The gas plant flare (Unit ID: RR2-FL-991) is designed for smokeless operation and located at the facility for amine gas stream control as well as routine SSM and Malfunction activities. During routine SSM activities, plant turnarounds, and Malfunction activities residue (process) gases may also be routed to the flare (Unit IDs: BD SSM and RR2-FL-991).

Roadrunner Gas Plant Train 3

Inlet Separation

Inlet gas flows into the gas plant through the slug catcher and inlet separator which are designed to allow for liquids to drop out of the inlet gas. Gas coming into the gas plant is already at high pressure and, therefore, does not need to be compressed. Next the gas is routed to the treating system, see the "Gas Treating" section of process description below. Liquids from the slug catcher and inlet separator are routed to the Medium Pressure (MP) Flash Tank for processing, see the "Condensate Stabilization Process" section.

Gas Treating

After inlet separation and filtration, the inlet gas flows into the amine contactors, where the gas is contacted with an aqueous solution of amine to remove CO_2 and hydrogen sulfide (H_2S). CO_2 and H_2S exit from the bottom of the contactors with the rich amine which is heated and regenerated using the closed hot oil system in the amine regenerator.

Hot oil is circulated and supplied by the hot oil system (Unit IDs: RR3-H-1700, RR3-H-1701, RR3-H-1703). Flash tank vapors are routed to the fuel gas system for use as supplemental fuel gas for the hot oil system heaters and/or to Flare (Unit ID: RR3-FL-1800). The CO_2 and H_2S rich vent gas released from the regeneration process is routed to the Thermal Oxidizer (Unit ID: RR3-TO-1801) where additional combustion will further minimize VOC and H_2S emissions.

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 5 ppm H_2S will be processed at the plant. 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 the hot oil system (Unit IDs: RR3-H-1700, RR3-H-1701, and RR3-H-1703). Significant amounts of VOC and HAP can be generated in this process. The acid gas and flash tank gas is sent to a thermal oxidizer (RR3-TO-1801), where additional combustion will further minimize VOC and H_2S emissions.

Gas Dehydration

Gas from the amine contactor then goes to the glycol contactor where water removal is accomplished by absorption with triethylene glycol (TEG). The rich TEG is then routed through a flash tank and to the TEG regenerator. The TEG is then regenerated using. Flash vapors from the flash tank and vapors from the TEG dehydration unit still vent (Unit ID: RR3-TEG) are routed to the Thermal Oxidizer (Unit ID: RR3-TO-1801) where additional combustion will further minimize VOC and H_2S emissions.

Gas exits the glycol dehydrator and flows into the mole sieve dehydrator beds. Each dehydrator bed contains molecular sieve dehydration beads that adsorb trace amounts of water from the gas stream. Two vessels are used to dehydrate inlet gas while the third vessel is being regenerated. Dehydrated high pressure gas is used for regeneration. The regen gas flows to the). The hot gas flows from the heater to the dehydrator vessel in regeneration and water is removed from the molecular sieve by evaporation. The hot gas and vaporized water are cooled and the water is condensed and separated. The condensed water is routed to the plant Produced Water Tank (Unit ID: RDR-T-6). The cooled regen gas is recompressed by the regen gas compressor and recycled to the inlet of the Amine Contactors.

Cryogenic Unit

After the mole sieve dehydration system, dry inlet gas goes through the dust filters and enters the cryogenic unit. The mole sieve is regenerated using heat from the regen gas heater (RR3-H-4701) and the dry gas is then recompressed using the regen gas compressor (RR3-C-4101) to send the regen gas to the inlet of the amine system. In the cryogenic unit the inlet gas is cooled by cross exchanging the inlet gas with cold residue gas, cold natural gas liquids (NGL)s, and propane refrigeration. Propane refrigeration utilizes the refrigeration compressors (RDR-C-4111, RDR-C-4112, and RDR-C-4113) to further cool the dry inlet gas. As the inlet gas cools, NGLs are condensed. The NGLs are separated from the cold inlet gas in the cold separator. The NGLs are discharged from the separator to the demethanizer. The cold inlet gas exiting the top of the cold separator flows through the expander & reflux exchanger. The expander reduces the pressure of the inlet gas and in doing so extracts work from the gas and results in condensation of additional NGLs.

The two-phase mixture exiting the expander is fed to the upper section of the demethanizer, which strips methane from the NGLs. The NGLs exit the bottom of the demethanizer with a low residual concentration of methane. The remainder of the inlet feed gas (residue gas) exits the top of the demethanizer. The cold residue gas is cross exchanged with the inlet gas to recover the refrigeration. The warm residue gas exiting the cryogenic unit is compressed by electric motor driven compressors (RR3-C-5100 – RR3-C-5140) to pipeline pressure. Prior to discharge to the pipeline, the residue gas is filtered and metered.

The NGL product from the cryogenic unit is pumped through a sales meter and then off-site via pipeline.

Flare for Startup, Shutdown, and Maintenance (SSM) and Malfunction (M) Activities

The gas plant flare (Unit ID: RR3-FL-1800) is designed for smokeless operation and located at the facility for amine gas stream control as well as routine SSM and Malfunction activities. During routine SSM activities, plant turnarounds, and Malfunction activities residue (process) gases may also be routed to the flare (Unit IDs: BD SSM and RR3-FL-1800).

Emergency Flares

The three flares (RDR-FL-1800, RR2-FL-991, and RR3-FL-1800) header systems gather hydrocarbons from Pressure Safety Devices in the plant, and route 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 24 electric-driven compressors. Compressors RDR-C-1300 through RDR-C-164 are used in Train 1. Compressors RR2-C-1130 through RR2-C-4164 are for Train 2. Compressors RR3-C-4111 through RR3-C-5140. No internal combustion engines or turbines will be used to drive compressors.

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)**:** Refer to Table 2-A

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

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

C. Make a determination:

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

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

Section 12

Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☑ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

B. **This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this modification are **not significant. Project emission increases are less than 250 tpy for all criteria pollutants. 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: 124.49 TPY**
b. **CO: 207.57 TPY**
c. **VOC (without fugitives): 150.97 TPY**
d. **SOx: 147.10 TPY**
e. **PM: 18.39 TPY**
f. **PM10: 18.27 TPY**
g. **PM2.5: 18.25 TPY**
h. **Fluorides: N/A TPY**
i. **Lead: N/A TPY**
j. **Sulfur compounds (listed in Table 2): 10.50 TPY**
k. **GHG: 285,439.89 CO_2e TPY**

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/

Table for State Regulations:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. The facility meets maximum allowable concentrations of the TSP, SO_2, H_2S, NO_x, and CO under this regulation.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation establishes requirements for the facility if operations at the facility result in any excess emissions. The owner or operator will operate the source at the facility having an excess emission, to the extent practicable, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. The facility will also notify the NMED of any excess emission per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This application is not for a Notice of Intent (NOI) and is not located in an area subject to a mitigation plan pursuant to 40 CFR 51.930; therefore, this regulation does not apply to this facility.
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 establishes sulfur emission standards for natural gas processing plants. The proposed facility meets the definition of a new natural gas processing plant under this regulation and is subject to the requirements of this regulation [20.2.35.7 (B) NMAC]. The facility will comply with all requirements under 20.2.35 NMAC as applicable.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	**These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.**
20.2.38 NMAC	Hydrocarbon Storage Facility	Yes	Facility	This regulation is meant to minimize hydrogen sulfide emissions from hydrocarbon storage facilities. The facility has a capacity greater than 20,000 gallons with a throughput greater than 30,000 gallons per week and is therefore subject to this regulation. This facility will comply with 20.2.38.109.B NMAC and all requirements as applicable.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation could apply to sulfur recovery plants that are not part of petroleum or natural gas processing facilities. The site is a natural gas processing facility. As such, this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	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	113 – N/A—There are no natural gas fired engines > 500 hp at the site; therefore, this requirement does not apply. 114 – The reciprocating compressors associated with the electric driven engines at this facility are subject to this subpart. Targa will comply with the applicable requirements pursuant to 20.2.50.114.B and 20.2.50.114.C. The following existing reciprocating compressors are subject to this rule: **Train 1:** RDR-C-1300, RDR-C-1350, RDR-C-1400, RDR-C-1450, RDR-C-161, RDR-C-162, RDR-C-163, RDR-C-164 **Train 2:** RR2-C-1130, RR2-C-1160, RR2-C-502B1, RR2-C-502B2, RR2-C-161, RR2-C-162, RR2-C-4163, RR2-C-4164

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.)
			☐ 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	**Train 3:** RR3-C-5100, RR3-C-5110, RR3-C-5120, RR3-C-5130, RR3-C-5140, RR3-C-4111, RR3-C-4112, RR3-C-4113 115 – N/A—There are no control devices used to comply with 20.2.50 NMAC; therefore, this requirement does not apply. 116 – This facility will have equipment leaks and fugitive emissions. Thus, it will comply with this regulation pursuant to 20.2.50.116.A and 20.2.50.116.C. The following existing units are subject to this regulation: RDR-FUG. 117 – N/A—There are no natural gas well liquid unloading activities at this facility; therefore, this subpart does not apply. 118– N/A – The dehydrators at this facility will have a PTE of less than two tpy of VOC; therefore, this regulation does not apply. 119 –This facility has heater and reboiler units with a capacity greater than 20 MMBtu/hr; therefore, Targa will comply with the applicable requirements of this subpart pursuant to 20.2.50.119.B and 20.2.50.119.C. The following heaters and reboilers are subject to this rule: **Train 1:** RDR-H-781, RDR-H-0901, RDR-H-1054 **Train 2:** RR2-H-781 **Train 3:** RR3-H-1700, RR3-H-1701. 120 – N/A –This facility is connected to a pipeline for hydrocarbon liquid transfers; therefore, this regulation does not apply to this facility. 121 – Pig launching and receiving activities have the potential to emit less than 1 tpy per launcher and receiver; therefore, this regulation does not apply. 122– N/A – All pneumatic devices and pumps at this facility will utilize instrument air; therefore, this subpart does not apply. 123 – N/A – The hydrocarbon storage tanks at this facility will have a PTE of less than two tpy of VOC; therefore, this regulation does not apply. 124 – N/A – There are no well workovers at this facility; therefore, this subpart does not apply. 125 – N/A – This facility does not qualify as a small business facility; therefore, this subpart does not apply. 126 – N/A – There are no produced water management units at this facility; therefore, this subpart does not apply. 127 – N/A – This is not a wellhead site; therefore, this subpart does not apply.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	**Train 1:** RDR-FL-5100; RDR-H-781; RDR-H-0901; RDR-H-1054; RDR-H-2301; RDR-H-741; RDR-H-3601 RDR-TO-5500; RDR-FL-2850; RR2-G-2220	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, thermal oxidizers, 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).

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.)
			Train 2: RR2-FL-991; RR2-H-781; RR2-H-0801; RR2-H-741; **Train 3:** RR3-FL-1800; RR3-H-1700; RR3-H-1701; RR3-H-1703; RR3-H-4701; RR3-TO-1801 **Generators:** RDR-G-2 through RDR-G-12	
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. The facility is a Title V major source and has applied for a Title V permit.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. The facility is subject to 20.2.70 NMAC and is therefore subject to requirements of this regulation.
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. The facility is a stationary source that has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Air Quality Standard. The facility has a construction permit to meet the requirements of this regulation.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	This facility is considered a major source pursuant to 20.2.70.7.R(2) due to emitting greater than or equal to 100 tpy of a regulated air pollutant(s). Therefore, this facility is subject to emissions inventory reporting per 20.2.73.300 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	This facility does not meet the definition of major stationary source according to 20.2.74.7.AG(5). Therefore, this regulation does not apply to this facility.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation applies since this submittal is an application pursuant to 20.2.72.
20.2.77 NMAC	New Source Performance	Yes	Units subject to 40 CFR 60	The following equipment at this facility are subject to the requirements of 40 CFR Part 60: • 40 CFR 60, Subpart Dc: Heaters and Reboilers; Unit IDs: **Train 1:** RDR-H-781, RDR-H-0901, RDR-H-1054, RDR-H-741, RDR-H-3601 **Train 2:** RR2-H-781, RR2-H-741, **Train 3:** RR3-H-1700, RR3-H-1701, RR3-H-1703, RR3-H-4701 • 40 CFR 60, Subpart Kb: Tanks at this facility (Unit IDs: RDR-T-1; RDR-T-2; T RDR-T-3; RDR-T-4; RDR-T-5) • 40 CFR 60, Subpart OOOOa (Train 1): Amine sweeting, Fugitives and Compressors (RDR-AMINE, RDR-FUG (Train 1), RDR-C-1300, RDR-C-1350, RDR-C-1400, RDR-C-1450, RDR-C-161, RDR-C-162, RDR-C-163, RDR-C-164. • 40 CFR 60, Subpart OOOOa (Train 2): Amine sweeting, Fugitives and Compressors, RR2-AMINE, RDR-FUG (Train

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.)
				2, RR2-C-1130, RR2-C-1160, RR2-C-502B1, RR2-C-502B2, RR2-C-161, RR2-C-162, RR2-C-4163, RR2-C-4164) • 40 CFR 60, Subpart OOOOb: Amine sweeting, Fugitives and Compressors are potentially applicable to OOOOb (Unit IDs: (RR3-AMINE, RDR-FUG (train 3), RR3-C-5100, RR3-C-5110, RR3-C-5120, RR3-C-5130, RR3-C-5140, RR3-C-4111, RR3-C-4112, RR3-C-4113) • 40 CFR 60, Subpart IIII: Engines (Unit IDs: RR2-G-2220, RDR-G-2)
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility emits hazardous air pollutants but none of which are subject to the requirements of 40 CFR Part 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This regulation establishes requirements for obtaining permits in a county deemed to be in nonattainment. This facility is not located in a non-attainment area and therefore it is not subject to this regulation.
20.2.80 NMAC	Stack Heights	No	N/A	This regulation establishes the requirements for the evaluation of stack heights and other dispersion techniques. This regulation does not apply, as all stacks at the facility will follow good engineering practice.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	Units Subject to 40 CFR 63	The following equipment at this facility are subject to the requirements of 40 CFR Part 63: • 40 CFR 63.774, Subpart HH: Dehydrators (Unit IDs: RDR-TEG; RR2-TEG; RR3-TEG) • 40 CFR 63, Subpart ZZZZ: Engines (Unit IDs: RR2-G-2220, RDR-G-2) • 40 CFR 63, Subpart DDDDD: Heaters and Reboilers (Unit IDs: Train 1: RDR-H-781, RDR-H-0901, RDR-H-1054, RDR-H-2301, RDR-H-741, RDR-H-3601; Train 2: RR2-H-781, RR2-H-0801, RR2-H-741; Train 3: RR3-H-1700, RR3-H-1701, RR3-H-1703, RR3-H-4701

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	**Train 1:** RDR-H-781; RDR-H-0901; RDR-H-1054; RDR-C-1300, RDR-C-1350, RDR-C-1400, RDR-C-1450, RDR-C-161, RDR-C-162, RDR-C-163, RDR-C-164, RDR-H-741; RDR-H-3601; RDR-AMINE; RDR-FUG;	Heaters are subject to NSPS Dc. [40 CFR §60.48c] Compressors are subject to NSPS OOOOa (Train 1 and 2), or OOOOb (Train 3). Amine unit is subject to NSPS OOOOa (Train 1 and 2) [40 CFR §60.5385a] Facility fugitives are subject to NSPS OOOOa (Train 1 and 2). [40 CFR §60.5400a] Tanks RDR-T-1, RDR-T-2, RDR-T-3, RDR-T-4, and RDR-T-5 are subject to NSPS Kb. [40 CFR 60.110b(a)] As these tanks are subject to NSPS Kb, they are exempt from NSPS OOOOa per the exemption in §60.5395a(e).

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
			RDR-T-1; RDR-T-2; RDR-T-3; RDR-T-4; RDR-T-5; RR2-G-2220-RDR-G-2 **Train 2:** RR2-H-781; RR2-C-1130, RR2-C-1160, RR2-C-502B1, RR2-C-502B2, RR2-C-161, RR2-C-162, RR2-C-4163, RR2-C-4164, RR2-H-741; RR2-AMINE; **Train 3:** RR3-H-1700; RR3-H-1701, RR3-H-1703, RR3-H-4701; RR3-C-5100, RR3-C-5110, RR3-C-5120, RR3-C-5130, RR3-C-5140, RR3-C-4111, RR3-C-4112, RR3-C-4113; RR3-AMINE;	RR2-G-2220 and RDR-G-2 are subject to NSPS IIII.
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.
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	**Train 1:** RDR-H-781; RDR-H-3601; RDR-H-1054; **Train 2:** RR2-H-781; RDR-H-0901; **Train 3**: RR3-H-1701 RR3-H-1703; RR3-H-4701; RR3-H-1700	This facility has steam generating units for which construction, modification or reconstruction 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). Only recordkeeping and notification requirements apply as the units burn only natural gas per 60.48c(g)(3).

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
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	The hydrocarbon tanks at this facility have a storage capacity less than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction commenced after May 18, 1978, and do not meet the applicability criteria of 40 CFR 60.110a(b).
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	Yes	RDR-T-1; RDR-T-2; RDR-T-3; RDR-T-4; RDR-T-5	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. Because of this, this facility is subject NSPS 40 CFR 60, Subpart Kb under 40 CFR 60.110b(a).
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	There are no stationary gas turbines operating at this facility; therefore, this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	Affected Facility with Leaks of VOC from Onshore Gas Plants. Any affected facility under paragraph (a) of this section that commences construction, reconstruction, or modification after January 20, 1984 and on or before August 23, 2011, is subject to the requirements of this subpart. As this site was constructed after August 23, 2011, Subpart KKK is not applicable.
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	There are no units at the facility subject to NSPS 40 CFR Part 60 Subpart OOOO.
NSPS 40 CFR Part	Standards of Performance for	Yes	**Train 1:** RDR-AMINE, RDR-FUG (Train 1),	RDR-C-1300 through RDR-C-164 and RR2-C-1130 through RR2-C-4164 are electric-driven compressors associated with Train 1

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
60 Subpart OOOOa	Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced **After** September 18, 2015		RDR-C-1300, RDR-C-1350, RDR-C-1400, RDR-C-1450, RDR-C-161, RDR-C-162, RDR-C-163, RDR-C-164 **Train 2:** RR2-AMINE, RR2-C-1130, RR2-C-1160, RR2-C-502B1, RR2-C-502B2, RR2-C-161, RR2-C-162, RR2-C-4163, RR2-C-4164, RDR-FUG (Train 2)	and Train 2 respectively, and were manufactured and constructed after September 18, 2015 and are thus subject to 60.5385a, 60.5410a, 60.5415a, and 60.5420a. RDR-T-1, RDR-T-2, RDR-T-3, RDR-T-4, and RDR-T-5 are storage vessels constructed after September 18, 2015 with federally enforceable limitations that limit emissions to less than 6 tpy of VOCs. RDR-T-6 is a storage vessel that emits less than 6 tpy of VOCs. As such, RDR-T-1 to RDR-T-6 are not subject to 60.5395a, 60.5410a, 60.5417a, 60.5420a. The amine units at Train 1 and 2 (single still vents RDR-AMINE, RR2-AMINE) 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, Train 1 and 2 fugitives (RDR-FUG) are covered by 60.5400a, 60.5401a, 60.5402a, 60.5421a, and 60.5422a. Pneumatic devices and pumps will utilize instrument air.
NSPS 40 CFR Part 60 Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction Commenced After November 15, 2021	Yes	**Train 3:** RR3-AMINE, RDR-FUG (train 3), RR3-C-5100, RR3-C-5110, RR3-C-5120, RR3-C-5130, RR3-C-514-, RR3-C-4111, RR3-C-4112, and RR3-C-4113	This regulation applies to amine units, compressors, and fugitive equipment leaks which commenced construction after December 6, 2022. Leak standards will apply to new and modified units at this facility as per [40 CFR 60.5400b]. Sweetening units located at onshore natural gas processing plants are an affected unit. [40 CFR 60.5365b(g)(1)]. Train 3 reciprocating compressors at this facility are an affected unit and will comply with GHG and VOC standards as per [40 CFR60.5385b].
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	Yes	RR2-G-2220 and RDR-G-2	This regulation establishes standards of performance for stationary compression ignition internal combustion engines. This rule applies to IC engines (diesel engines) that commenced construction after July 11, 2005. Permanent diesel engines at the site are subject to emission standards under this subpart. Engines are Tier 4 diesel engines and meet standards on Table 1 of 40 CFR 89.112. Mobile non-road generators (RDR-G-3 through RDR-G-12) are not subject to this rule as they will not be located at the facility for longer than 12 months.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	This regulation establishes standards of performance for stationary compression ignition internal combustion engines. There are no stationary spark ignition internal combustion engines at the facility. This regulation does not apply.
NSPS 40 CFR 60	Standards of Performance for	No	N/A	This subpart establishes emission standards and compliance schedules for the control of greenhouse gas (GHG) emissions from

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
Subpart TTTT	Greenhouse Gas Emissions for Electric Generating Units			a steam generating unit, IGCC, or a stationary combustion turbine that commences construction after January 8, 2014 or commences modification or reconstruction after June 18, 2014. This site does not contain any stationary combustion turbines, so, this regulation does not apply.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This subpart establishes emission guidelines and approval criteria for State or multi-State plans that establish emission standards limiting greenhouse gas (GHG) emissions from an affected steam generating unit, integrated gasification combined cycle (IGCC), or stationary combustion turbine. This site does not have any stationary combustion turbines, so, this regulation does not apply.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	The facility is not a municipal solid waste landfill. This regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	No 40 CFR Part 61 sources at the site.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	This regulation establishes a national emission standard for mercury. The facility does not have stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge [40 CFR Part 61.50]. The facility is not subject to this regulation.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	This regulation establishes national emission standards for equipment leaks (fugitive emission sources). The facility does not have equipment that operates in volatile hazardous air pollutant (VHAP) service [40 CFR Part 61.240]. The regulated activities subject to this regulation do not take place at this facility. The facility is not subject to this regulation.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	RR2-G-2220 and RDR-G-2; RDR-TEG; RR2-TEG; RR3-TEG	This facility is a major source for HAPs. Major source provisions of 40 CFR Part 63 subpart HH apply to the glycol dehydrators at the site. The storage tanks have a gas-oil ratio (GOR) that is less than 0.31 m^3/liter. The tanks do not meet the definition of storage vessels with the potential for flash emissions per 40 CFR 63.761 "Storage vessel with the potential for flash emissions" and are therefore not subject to 40 CFR Part 63 subpart HH.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	RDR-TEG; RR2-TEG; RR3-TEG	This facility is a HAP Major Source and is subject to the requirements of 40 CFR 63 Subpart HH. Dehydrators RDR-TEG, RR2-TEG, and RR3-TEG 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). The storage tanks have a gas-oil ratio (GOR) that is less than 0.31 m^3/liter. The tanks do not meet the definition of storage vessels with the potential for flash emissions per 40 CFR 63.761 "Storage vessel with the potential for flash emissions" and are therefore not subject to this regulation.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	N/A	This facility is not a natural gas transmission or storage facility. Thus, this subpart does not apply.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	Yes	Train 1: RDR-H-781, RDR-H-0901, RDR-H-1054, RDR-H-2301, RDR-H-741, RDR-H-3601 Train 2: RR2-H-781, RR2-H-0801, RR2-H-741 Train 3: RR3-H-1700, RR3-H-1701, RR3-H-1703, RR3-H-4701	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 a Major source of HAPs; therefore, this regulation applies. Boilers and heaters must comply with this subpart by the timelines specified in 40 CFR 63.7495(c). Boilers and heaters must comply with the emission limitations, work practice standards, and operating limits that are provided in 40 CFR 63.7500(a) through 40 CFR 63.7500(f).
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	This subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from coal- and oil-fired electric utility steam generating units (EGUs) as defined in §63.10042 of this subpart. This facility does not contain an affected source under this regulation. This regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	No	RR2-G-2220 and RDR-G-2	This regulation defines national emissions standards for HAPs for stationary Reciprocating Internal Combustion Engines. Units RR2-G-2220 and RDR-G-2 are Tier 4 diesel engines subject to MACT ZZZZ and meet applicable requirements. Portable engines (RDR-G-3 through RDR-G-12) are not subject to this rule as they will not be located at the facility for longer than 12 months.
40 CFR 64	**Compliance Assurance Monitoring**	Yes	**Train 1:** RDR-TEG, RDR-AMINE, RDR-LOAD **Train 2:** RR2-TEG, RR2-AMINE **Train 3:** RR3-TEG, RR3-AMINE	This regulation defines compliance assurance monitoring (CAM). This regulation applies to the listed amine units, glycol dehydration units, and loading, because the units have potential pre-control device emissions that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. The owner will comply with all applicable requirements under 40 CFR Part 64
40 CFR 68	**Chemical Accident Prevention**	No	Facility	This facility is exempt from being subject to this chapter as it handles naturally occurring hydrocarbon mixtures as stated in §68.115(b)(2)(iii).
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	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.

- To the maximum extent practicable, the air pollution control equipment, process equipment, and processes will be maintained and operated in a manner consistent with good practice for minimizing emissions;
- Repairs will be made in an expeditious fashion when the operator becomes aware that applicable emission limitations are being exceeded;
- Repairs will be made in an expeditious fashion when the operator becomes aware of a malfunction that may cause emission limitations to be exceeded;
- Repairs will be made in an expeditious fashion when the operator becomes aware of a malfunction;
- Off-shift labor and overtime will be utilized, to the extent practicable, to ensure that such repairs were made as expeditiously as practicable;
- The amount and duration of the excess emissions (including any during bypass) periods will be minimized to the maximum extent practicable;
- All possible steps will be taken to minimize the impact of the excess emission on ambient air quality; and,
- The facility will monitor operations to ensure that excess emissions are not part of a recurring pattern indicative of inadequate design, operation, or maintenance.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

There will be an alternate operating scenario to route the amine flash gas stream from the commingled fuel gas header to the flare (Unit RDR-FL-5100). This alternative operating scenario will be in place to mitigate the safety and reliability concerns associated with the risk of condensed liquids in the fuel supply to the amine hot oil heaters (Units RDR-H-0901, RDR-H-1054, RR3-H-0901) during low temperature months. Calculations and emission details for this scenario are provided in Section 6.

During thermal oxidizer (RDR-TO-5500) downtime, emissions from the amine and dehydrator systems are vented through the thermal oxidizer stack without combustion. Therefore, additional VOC, HAP, and H_2S emissions will only occur during this time. This occurs for 20 hr/yr. Emissions from the thermal oxidizer downtime are represented under RDR-TO-5500-SSM in section 6.

During Train 3 thermal oxidizer (RR3-TO-1801) downtime, emissions from the amine system are vented through the thermal oxidizer stack without combustion. Therefore, additional VOC, HAP, and H_2S emissions will only occur during this time. This occurs for 20 hr/yr. Emissions from the thermal oxidizer downtime are represented under RR3-TO-1801-SSM in section 6.

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.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
RDR-FL-2850 (VCU)	State Compliance Universal Stack Test State Compliance	7/30/2024 7/17/2023 12/1/2023
RDR-TO-5500 (Thermal Oxidizer)	State Compliance State Compliance	10/02/2024 5/17/2023
RR2-H-781 (Trim Reboiler)	Boiler Combustion Test	7/23/2025
RDR-H-0901 (Amine Reboiler)	Boiler Combustion Test	7/22/2025
RDR-H-781 (Trim Reboiler)	Boiler Combustion Test	8/20/2025

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

No other relevant information is being included in the application.

Section 22: Certification

Company Name: Targa Northern Delaware, LLC

I, Andrew Perdue, 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 16 day of July, 2026, upon my oath or affirmation, before a notary of the State of Colorado.

*Signature

7/16/26
Date

Andrew Perdue
Printed Name

VP Operations
Title

Scribed and sworn before me on this 16 day of July, 2026.

My authorization as a notary of the State of Colorado expires on the

16th day of July, 2029.

Notary's Signature

7/16/2026
Date

Joshua R Hulling
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.

JOSHUA RYAN HULLING
Notary Public
State of Colorado
Notary ID: 20254027667
My Commission Expires July 21, 2029

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:	Road Runner Gas Processing Plant
2	Name of company:	Targa Northern Delaware, LLC
3	Current Permit number:	7200-M6R1
4	Name of applicant's modeler:	Jaimy Karacaoglu
5	Phone number of modeler:	410-903-0750
6	E-mail of modeler:	jaimy.karacaoglu@trinityconsultants.com

16-B: Brief

1	Was a modeling protocol submitted and approved? A protocol was submitted on July 4, 2026. No response was received from the NMED. See Protocol and submittal email attached in Appendix A.	Yes ☒	No ☐
2	Why is the modeling being done? NSR Significant Revision	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	Targa Northern Delaware, LLC (Targa) owns and operates the Road Runner Gas Processing Plant (Road Runner) located near Loving in Eddy County, NM. The facility is currently operating under New Source Review (NSR) permit No. 7200-M6. Targa is proposing a significant revision to NSR Permit No.7200-M6 to authorize the following design changes: • Increase the gas throughput of train 3 to 325 MMSCFD from 265 MMSCFD; • Increase the capacities and emission limits of train 3's amine regeneration system, TEG regeneration system, and inlet flare		

	• Update the inlet gas analysis for the facility leading to updated emission limits for units at the facility; • Existing permitted train 1 and train 2 heater emissions are being updated to represent 3% oxygen in the exhaust; • Remove permitted train 3 reboilers (RR3-H-781, RR3-H-0901, RR3-H-0801) and heaters (RR3-H-741, RR3-H-3601); • Add new train 3 hot oil heaters (RR3-H-1700, RR3-H-1701, RR3-H-1703) and regen gas heater (RR3-H-4701); • Add a new train 3 thermal oxidizer (RR3-TO-1801) to control train 3 amine venting, amine flash tank gas, dehydrator flash tank gas, and dehydrator BTEX overheads; • Add train 3 thermal oxidizer SSM (RR3-TO-1801-SSM) for train 3 amine venting during thermal oxidizer downtime; • Add RR3-TO-1801 downtime emissions routed to RR3-FL-1800 emissions; and • Update pigging activity emissions.

4	What geodetic datum was used in the modeling?	NAD83	
5	How long will the facility be at this location?	Longer than one year	
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).
	The nearest Class I area is Carlsbad Caverns National Park, 26.3 km from the facility.

10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
	This facility is located in Eddy County, New Mexico. The county is designated as an attainment area with the ambient air quality standards.		

11	Describe any special modeling requirements, such as streamline permit requirements.
	There are no special modeling requirements for this application submittal.

16-C: Modeling History of Facility

Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

1	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO	7200-M6	05/07/2026	N/A
	NO_2	7200-M6	05/07/2026	N/A
	SO_2	7200-M6	05/07/2026	N/A
	H_2S	7200-M6	05/07/2026	N/A
	PM2.5	7200-M6	05/07/2026	N/A

	PM10	7200-M6	05/07/2026	N/A
	Lead	N/A	N/A	N/A
	Ozone (PSD only)	N/A	N/A	N/A
	NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	N/A

16-D: Modeling performed for this application

For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

1	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 - There are no New Mexico TAPs that are modeled for this application.

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
N/A	N/A	N/A	N/A	N/A	N/A

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☒	No☐
	AERMOD version 24142 was used with regulatory default options.		

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	Facility Surrounding Sources: 07/06/2026

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
1119E2, 1119E3	SO_2: Removed from inventory as provided coordinates >25km from facility UTM: 379310.968, 3926388.442
1867E1	PM_{10}, $PM_{2.5}$: Removed from inventory as provided coordinates >25km from facility UTM: 544925.333, 3705807.581
1867E6	SO_2, PM_{10}, $PM_{2.5}$: Removed from inventory as provided coordinates >25km from facility UTM: 656668.989, 3643193.959
38339E17, 38339E18	PM_{10}: Removed from inventory as provided coordinates >25km from facility UTM: 568241.173, 3595198.763
3589E2, 3589E3, 3589E4, 3589E5, 3589E6, 3589E7, 3589E8, 3589E9, 3589E10	$PM_{2.5}$, PM_{10}: Removed from inventory as provided coordinates >25km from facility UTM: 598991.878, 3600197.969
1767E1	$PM_{2.5}$, PM_{10}: Removed from inventory as provided coordinates >25km from facility UTM: 460004.659, 3917189.141
37882E3	$PM_{2.5}$: Stack height and exhaust temperature were updated to reflect values presented in table 2-H of permit application 7307M5. Table 2-H has been provided in Appendix B of this modeling report. The full application, as acquired from NMED's APMAP is provided as a separate document.
37882E8	$PM_{2.5}$: Stack height and exhaust temperature were updated to reflect values presented in table 2-H of permit application 7307M5. Table 2-H has been provided in Appendix B of this modeling report. The full application, as acquired from NMED's APMAP is provided as a separate document.
37882E48	$PM_{2.5}$: Stack height, exhaust temperature, and exit velocity were updated to reflect values presented in table 2-H of permit application 7307M5. Table 2-H has been provided in Appendix B of this modeling report. The full application, as acquired from NMED's APMAP is provided as a separate document.
37882E49	$PM_{2.5}$:

		Stack height, exhaust temperature, and exit velocity were updated to reflect values presented in table 2-H of permit application 7307M5. Table 2-H has been provided in Appendix B of this modeling report. The full application, as acquired from NMED's APMAP is provided as a separate document.
	37882A1	$PM_{2.5}$: Haul road emissions are below the exemption threshold of 20.2.72.202.B(5) NMAC and would not be included in modeling as a surrounding source if it had been listed as an exempt unit on its application. Therefore, it was removed. Table 2-D and 2-E for the facility are included in Appendix D.
	38340E14	$PM_{2.5}$: This unit was listed as a volume source. The ECD has been converted to a point source using the parameters indicated in the permit application for AI#38340, Permit No. 7743M1R3. Table 2-H has been provided in Appendix E. The full application, as acquired from NMED's APMAP is provided as a separate document.
	37724R5	$PM_{2.5}$: Per permit application for permit No. 7220M4, unit 14 (or surrounding source 37724R5), represents malfunction emissions at this facility. There are no PM emissions associated with this unit, therefore it was removed from the model. Table 2-D and 2-F for this facility are included in Appendix F. The full application, as acquired from NMED's APMAP is provided as a separate document.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	Two (2) buildings		
2	How many above ground storage tanks are present at the facility?	Six (6) above ground storage tanks		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		Yes☒	No☐
	N/A – All building downwash was modeled for all buildings and tanks within the facility boundary.			
4	Building comments	N/A – No additional 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.		
	Fencing and entry gates around the facility define 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☐
	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.		

4	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
	Variable Density	Square	50 m	0 m	800 m	N/A
	Variable Density	Square	100 m	800 m	3,000 m	N/A
	Variable Density	Square	250 m	3,000 m	6,000 m	N/A
	Variable Density	Square	500 m	6,000 m	10,000 m	N/A
	Variable Density	Square	1,000 m	10,000 m	50,000 m	N/A
5	Describe receptor spacing along the fence line.					
	Fenceline receptors were placed along the facility boundary at least every 25-meters in linear fence line distance.					
6	Describe the PSD Class I area receptors.					
	1,000 m spacing for receptors. The PSD Class I area receptor grid for Carlsbad Caverns National Park was obtained through NMED MergeMaster.					

16-J: Modeling Scenarios

	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).
1	Only one modeled scenario exists: RDR-FL-5100 emissions are the total emissions routed to the flare and combusted. The alternate operating scenario is detailed in Section 15 of the UA3. RDR-TO-5500 has downtime that occurs for 20 hr/yr, where emissions are vented to atmosphere. These emissions are combined with normal operating emissions. SSMM (application ID contains the combined emissions from SSM/M). Abrasive blasting and surface coating SSM/M occurs once a year for a total of six hours. This activity produces 3.36 lb/hr PM_{10} and 0.34 lb/hr $PM_{2.5}$. According to the NMED modeling guidelines: "'…[W]hen n years are modeled, the (n+1)th highest concentration over the n-year period is the design value, since this represents an average or expected exceedance rate of one per year.' (https://www.epa.gov/sites/production/files/2020-09/documents/appw_05.pdf)" Since five meteorological years were modeled, the high sixth highest concentration was used as the design value. By definition, the high sixth high means the facility can be in exceedance of the NAAQS standard a total of six days of the year. Since abrasive blasting and surface coating only occurs during one day of the year, Targa will count that day towards one of the six days of exceedance. Thus SSMM (model ID MSSM) was removed from the NAAQS PM_{10} and $PM_{2.5}$ 24-hr models. The high fifth high concentration for the 24-hr PM_{10} and the high seventh high concentration for the $PM_{2.5}$ models was compared to the standards. SSMM is still included in the PM_{10} and $PM_{2.5}$ annual models. Targa also annualized the lb/hr abrasive blasting and surface coating emissions for the annual models. For annual PM_{10} and annual $PM_{2.5}$, the following was completed: 1. PM_{10}: Unit SSMM has a requested annual emission limit of 0.02 tpy. The following equation was used to annualize these emissions: 0.02 tpy * 2000 lb/ton / 8760 hours per year = 0.0046 lb/hr

2. PM2.5: Unit SSMM has a requested annual emission limit of 0.002 tpy. The following equation was used to annualize these emissions: 0.002 tpy * 2000 lb/ton / 8760 hours per year = 0.00046 lb/hr

Model ID SSMM includes emissions from permit application sources SSMM and RDR-FUG. No changes were made to the model IDs emissions for H_2S modeling.

Units RDR-FL-5100, RR2-FL-991, and RR3-FL-1800 utilized annualized lb/hr emission rates for the annual NO2 NAAQs, PSD Class II, and PSD Class I analyses.

The generators at the facility (units RR2-G-2220, RDR-G-2 through RDR-G-12) operate less than 500 hours per year and are therefore considered intermittent sources. The following was completed for modeling the intermittent generators:

1. The generators were modeled at their maximum short-term emission rates for the following pollutants and averaging periods – CO 1 hour and 8 hour NMAAQs and PM10 24 hour NAAQs.
2. The generators were modeled with annualized emission rates for the following pollutants and averaging periods – NO2 Annual NAAQs and PM2.5 Annual NAAQs.
3. The generators were excluded from short term probabilistic standards per EPA's *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standards,* dated March 1, 2011 and based on consultation with NMED modeling staff, including the following pollutants and averaging periods – PM2.5 24 hour NAAQs, SO2 1 hour NAAQs, NO2 1 hour NAAQs.
4. The generators were excluded from PSD increment modeling, including PSD Class I and Class II increment as the units are considered to be intermittent and short-term, and therefore do not consume increment. The pollutants and averaging periods include – 3 hour SO2, 24 hour SO2, annual SO2, Annual NO2, PM10 24 hour, PM10 annual, PM2.5 24 hour, and PM2.5 annual.
5. The generators are not sources of H2S emissions and were therefore not included in this model.

RDR2-G-2200 and RDR-G-2 through RDR-G-12 are not being modified with this application, and were therefore not part of the "project" being evaluated, per Section 2.4.3 of NMED's modeling guideline. RDR2-G-2200 and RDR-G-2 through RDR-G-12 were included in all required cumulative and culpability analyses as required for the pollutants, averaging periods, and standards identified above.

For units with alternative operating scenarios occurring at the same emission point, such as the thermal oxidizer (RDR-TO-5500) and flare (RDR-FL-5100), the sum of the emission rates are used for short-term averaging periods.

Only one modeled scenario exists: RDR-FL-5100 emissions are the total emissions routed to the flare and combusted. The alternate operating scenario is detailed in Section 15 of the UA3. RDR-TO-5500 has downtime that occurs for 20 hr/yr, where emissions are vented to atmosphere. These emissions are combined with normal operating emissions.

2	Which scenario produces the highest concentrations? Why? Only one scenario was modeled.		
	Only one scenario was modeled as described above.		
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: N/A		

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.											
	N/A – Emission factor sets were not used to limit emission rates or hours of operation.											

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☒	No☐

For short-term PM_{10} and $PM_{2.5}$ modeling (24 hour averaging period), the following was completed:

Model ID SSMM contains the combined emissions from SSM/M activities that are sources of pollutants that require modeling at the facility and fugitive emissions, unit RDR-FUG. For SSMM particulate modeling, abrasive blasting and surface coating SSM/M occurs once a year for a total of six hours. This activity produces 3.36 lb/hr PM_{10} and 0.34 lb/hr $PM_{2.5}$. According to the NMED modeling guidelines:

> "'…[W]hen n years are modeled, the (n+1)th highest concentration over the n-year period is the design value, since this represents an average or expected exceedance rate of one per year.' (https://www.epa.gov/sites/production/files/2020-09/documents/appw_05.pdf)"

Since five meteorological years were modeled, the high sixth highest concentration was used as the design value. By definition, the high sixth high means the facility can be in exceedance of the NAAQS standard a total of six days of the year. Since abrasive blasting and surface coating only occurs during one day of the year, Targa will count that day towards one of the six days of exceedance. Thus SSMM was removed from the NAAQS PM_{10} and $PM_{2.5}$ 24-hr models. The high fifth high concentration for the 24-hr PM_{10} and the high seventh high concentration for the $PM_{2.5}$ models was compared to the standards. SSMM is still included in the PM_{10} and $PM_{2.5}$ annual models. Targa also annualized the lb/hr abrasive blasting and surface coating emissions for the annual models.
Per the NMED modeling guidelines, "Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption." Therefore, MSSM was not included in PM10 or PM2.5 annual NAAQS and PSD Increment models. The generators at the facility (units RR2-G-2220, and RDR-G-2 through RDR-G-12) operate less than 500 hours per year and are therefore considered intermittent sources. The following was completed for modeling the intermittent generators:

1. The generators were modeled at their maximum short-term emission rates for the following pollutants and averaging periods –$PM_{2.5}$ 24 hour NAAQS, PM_{10} 24 hour NAAQs.
2. The generators were modeled with annualized emission rates for the following pollutants and averaging periods – NO2 Annual NAAQs PM10 Annual NAAQs, and $PM_{2.5}$ Annual NAAQs.
    a. Example calculation: RDR-G-2220 – This unit has a requested annual emission limit of 1.44 tpy. The following equation was used to annualize these emissions: 1.44 tpy * 2000 lb/ton / 8760 hours per year = 0.33 lb/hr
3. The generators were excluded from short term probabilistic standards per EPA's *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standards,* dated March 1, 2011 and based on consultation with NMED modeling staff, including the following pollutants and averaging periods –SO_2 1 hour NAAQs, NO_2 1 hour NAAQs.

	For the annual NO_2 NAAQs, PSD Class II, and PSD Class I analyses, the following was completed: 1. RDR-FL-5100 – This unit has a requested annual emission limit of 20.18 tpy (combined SSM and Routine emissions from Table 2-E and 2-F). The following equation was used to annualize these emissions: 20.18 tpy * 2000 lb/ton / 8760 hours per year = 4.61 lb/hr 2. RR2-FL-991 - This unit has a requested annual emission limit of 19.59 tpy (combined SSM and Routine emissions from Table 2-E and 2-F). The following equation was used to annualize these emissions: 19.59 tpy * 2000 lb/ton / 8760 hours per year = 4.47 lb/hr 3. RR3-FL-1800 - This unit has a requested annual emission limit of 19.17 tpy (combined SSM and Routine emissions from Table 2-E and 2-F). The following equation was used to annualize these emissions: 19.17 tpy * 2000 lb/ton / 8760 hours per year = 4.38 lb/hr For units with alternative operating scenarios occurring at the same emission point, such as the thermal oxidizer (RDR-TO-5500) and flare (RDR-FL-5100), the sum of the emission rates are used for short-term averaging periods. Only one modeled scenario exists: RDR-FL-5100 emissions are the total emissions routed to the flare and combusted. The alternate operating scenario is detailed in Section 15 of the UA3. RDR-TO-5500 has downtime that occurs for 20 hr/yr, where emissions are vented to atmosphere. These emissions are combined with normal operating 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.			
	ARM2 was used to convert from NOx to NO_2.			
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☐
	The default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) were used.			
4	Describe the design value used for each averaging period modeled.			
	1-hour: High eighth high Annual Other (Describe): Maximum of five individual years. (2017-2021)			

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows.

	The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $$[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$$ =1.546 µg/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)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$
N/A	N/A	N/A	N/A	N/A

This site is not a PSD Major Source. Therefore, no MERPS were used to account for ozone.

16-M: Particulate Matter Modeling

1 Select the pollutants for which plume depletion modeling was used.

☐	PM2.5
☐	PM10
☒	None

2 Describe the particle size distributions used. Include the source of information.

N/A – Particle size distribution was not used in this modeling analyses.

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	NOx	SO_2		$[PM2.5]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.11
$MERP_{24\text{-hour}}$	7331	1981		$[PM2.5]_{annual}$

	Emission rate (ton/yr)	124.49	147.10		0.00289
	Secondary PM was added to the modeled $PM_{2.5}$ results.				

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 – There are no portable sources or sources requesting flexibility in their site configuration.
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 – There are no portable sources or sources requesting flexibility in their site configuration.

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
RDR-H-781	RDRH781
RR2-H-781	RR2H781
RDR-H-0901	RDRH0901
RDR-H-1054	RDRH1054
RDR-H-2301	RDRH2301
RR2-H-0801	RR2H0801
RDR-H-741	RDRH741
RR2-H-741	RR2H741
RDR-H-3601	RDRH3601
RDR-TO-5500	RRTO5500
RDR-FL-5100	RRFL5100
RR2-FL-991	RR2FL991
RR3-FL-1800	R3FL1800
RDR-FL-2850	RDFL2850
RR3-H-1700	RR3H1700
RR3-H-1701	RR3H1701
RR3-H-1703	RR3H1703
RR3-H-4701	RR3H4701
RR3-TO-1801	R3TO1801
RR2-G-2220	RR2G2220
RDR-G-2	RDRG2
RDR-G-3	RDRG3
RDR-G-4	RDRG4

	RDR-G-5	RDRG5
	RDR-G-6	RDRG6
	RDR-G-7	RDRG7
	RDR-G-8	RDRG8
	RDR-G-9	RDRG9
	RDR-G-10	RDRG10
	RDR-G-11	RDRG11
	RDR-G-12	RDRG12
	RDR-FUG	MSSM (combined volume source)
	SSMM	MSSM (combined volume source)

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☒

Model ID MSSM contains the combined emissions from SSMM as well as the site-wide fugitive emissions (RDR-FUG). Abrasive blasting and surface coating SSM/M occurs once a year for a total of six hours. This activity produces 3.36 lb/hr PM_{10} and 0.34 lb/hr $PM_{2.5}$. According to the NMED modeling guidelines:

> "'…[W]hen n years are modeled, the (n+1)th highest concentration over the n-year period is the design value, since this represents an average or expected exceedance rate of one per year.' (https://www.epa.gov/sites/production/files/2020-09/documents/appw_05.pdf)"

Since five meteorological years were modeled, the high sixth highest concentration was used as the design value. By definition, the high sixth high means the facility can be in exceedance of the NAAQS standard a total of six days of the year. Since abrasive blasting and surface coating only occurs during one day of the year, Targa will count that day towards one of the six days of exceedance. Thus MSSM was removed from the NAAQS PM_{10} and $PM_{2.5}$ 24-hr models. The high fifth high concentration for the 24-hr PM_{10} and the high seventh high concentration for the $PM_{2.5}$ models was compared to the standards.

Per the NMED modeling guidelines, "Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption." Therefore, MSSM was not included in PM10 or PM2.5 annual NAAQS and PSD Increment models.

Model ID MSSM includes emissions from permit application sources SSMM and RDR-FUG. No changes were made to the model IDs emissions for H2S modeling.

For annual NO2 modeling, the following was completed:

1. RDR-FL-5100 – This unit has a requested annual emission limit of 20.18 tpy. The following equation was used to annualize these emissions: 20.18 tpy * 2000 lb/ton / 8760 hours per year = 4.61 lb/hr
2. RR2-FL-991 - This unit has a requested annual emission limit of 19.59 tpy. The following equation was used to annualize these emissions: 19.59 tpy * 2000 lb/ton / 8760 hours per year = 4.47 lb/hr
3. RR3-FL-5100 - This unit has a requested annual emission limit of 19.17 tpy. The following equation was used to annualize these emissions: 19.17 tpy * 2000 lb/ton / 8760 hours per year = 4.38 lb/hr

The generators at the facility (units RR2-G-2220, RDR-G-2 through RDR-G-12) operate less than 500 hours per year and are therefore considered intermittent sources. The following was completed for modeling the intermittent generators:

1. The generators were modeled at their maximum short-term emission rates for the following pollutants and averaging periods – PM2.5 24 hour NAAQs and PM10 24 hour NAAQs.

2. The generators were modeled with annualized emission rates for the following pollutants and averaging periods – NO2 Annual NAAQs, PM10 Annual NAAQS, and PM2.5 Annual NAAQs.
3. The generators were excluded from short term probabilistic standards per EPA's *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standards,* dated March 1, 2011 and based on consultation with NMED modeling staff, including the following pollutants and averaging periods –SO2 1 hour NAAQs, NO2 1 hour NAAQs.
4. The generators were excluded from PSD increment modeling, including PSD Class I and Class II increment as the units are considered to be intermittent and short-term, and therefore do not consume increment. The pollutants and averaging periods include – 3 hour SO2, 24 hour SO2, annual SO2, annual NO2, PM10 24 hour, PM10 annual, PM2.5 24 hour, and PM2.5 annual.
5. The generators are not sources of H2S emissions and were therefore not included in this model.

For units with alternative operating scenarios occurring at the same emission point, such as the thermal oxidizer (RDR-TO-5500) and flare (RDR-FL-5100), the sum of the emission rates are used for short-term averaging periods.

Only one modeled scenario exists: RDR-FL-5100 emissions are the total emissions routed to the flare and combusted. The alternate operating scenario is detailed in Section 15 of the UA3. RDR-TO-5500 has downtime that occurs for 20 hr/yr, where emissions are vented to atmosphere. These emissions are combined with normal operating emissions.

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?
Units at this facility consume increment for all pollutants identified below.

Unit ID	NO_2	SO_2	PM10	PM2.5
RDRH781	X	X	X	X
RR2H781	X	X	X	X
RDRH0901	X	X	X	X
RDRH1054	X	X	X	X
RDRH2301	X	X	X	X
RR2H0801	X	X	X	X
RDRH741	X	X	X	X
RR2H741	X	X	X	X
RDRH3601	X	X	X	X
RRTO5500	X	X	X	X
RRFL5100	X	X		
RR2FL991	X	X		
R3FL1800	X	X		
RDFL2850	X	X	X	X
RR3H1700	X	X	X	X
RR3H1701	X	X	X	X
RR3H1703	X	X	X	X
RR3H4701	X	X	X	X
R3TO1801	X	X	X	X
RR2G2220				
RDRG2				
RDRG3				
RDRG4				
RDRG5				
RDRG6				

	RDRG7				
	RDRG8				
	RDRG9				
	RDRG10				
	RDRG11				
	RDRG12				
	MSSM			X	X

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	All units consume increment as indicated above. The flares are smokeless and do not have PM_{10} and $PM_{2.5}$ emissions and therefore do not consume increment for those pollutants. SSMM is fugitive and therefore do not have emissions of NO_X or CO. Generators at the facility (RR2G2220, RDRG2 through RDRG12) are intermittent sources and do not consume increment.

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☐
	All units at this facility consume increment for all pollutants identified.		

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)
	RDR-FL-5100	11.22	788761109	84.41
	RR2-FL-991	20.65	787590094	81.41
	RR3-FL-1800	20.88	787533075	81.35

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
	N/A – Volume source dimensions used are the standard dimensions provided by the Air Quality Bureau Modeling Guidelines.		
	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
2	Release height (H) is the distance from the center of the volume to the surface of the ground, measured at 6.10 m. Initial lateral dimension (sYo) was determined by divinding the apparent length by 4.3 = 30.49 m / 4.3 = 7.09 m. Initial vertical dimension (sZo) was calculated dividing the vertical dimension of the source by 2.15 = 15.24 m / 2.15 = 5.67 m.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	Volume source model ID MSSM includes units RDR-FUG and SSMM as represented in the permit application.		
	Describe any open pits.		

4	N/A – There are no open pits at this facility.
5	Describe emission units included in each open pit.
	N/A – There are no open pits at this facility.

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☒	No☐
	CO: N/A		
	NO_2: Outside Carlsbad (350151005)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: N/A		
	Other: N/A		
	Comments: N/A		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒
	N/A – No refinement was made to background concentrations.		

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Carlsbad Dataset used: NWS_CARLSBAD 2020-2024	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		
	N/A – NMED meteorological data was used as provided by NMED on NMED's website. The appropriate MET data set and years were utilized in the modeling analysis.(cloud.env.nm.gov/resources/collection/411)		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
	N/A – Complex terrain was used in this air dispersion modeling analysis.		
2	What was the source of the terrain data?		
	Terrain was incorporated into the modeling analysis through the use of AERMAP with the most recent 1/3 degree NED data currently available from https://apps.nationalmap.gov/downloader/#/		

16-U: Modeling Files

1

Describe the modeling files:
File name format "RRGP_P STD AP YY C1_TYPE_YYYY MMDD.ami"

- "RRGP" = Roadrunner Gas Plant
- "P" = Pollutant (CO, NO2, H2S, PM2.5, PM10, and SO2)
- "STD" = Standard for Modeling. "S" = SIL, "N" = NAAQS, "P" = PSD Increment, "NP" = both NAAQS and PSD, "NC" = NAAQS Culpability, "PC" = PSD Culpability, "SN" = SIL with NAAQS, "SP" = SIL with PSD
- "AP" = Averaging Period. 1hr = 1 hour, 3hr = 3 hour, etc., and Ann = annual
- "YY" = Year of 5 year met dataset used. 17 = 2017, 18 = 2018, 17-21 = 2017 through 2021, etc.
- "C1" = Class I analysis (if applicable). Otherwise all models will be Class II analyses
- "TYPE"= File type. "I" = Input, "O" = Output
- "YYYY MMDD" = Date of Model

Ex. "RRGP_PM2.5 NP Ann 20-24_I_2026-0727.ami" indicates:

- Roadrunner Gas Plant
- PM2.5
- NAAQS and PSD Increment Analysis
- Annual averaging period
- Years 2020 through 2024 of the five year met data
- Class II analysis
- Input file
- Model completed July 27, 2026.

Ex. "RRGP_SO2 S 3hr24hr 20 C1_I_2026-0727.ami" indicates:

- Roadrunner Gas Plant
- SO2
- Significant Impact Level (SIL) analysis
- 3-hour and 24-hour averaging periods
- Year 2020 of the five year met data
- Class I analysis
- Input file
- Model completed July 27, 2026

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
RRGP_CO S 1hr8hr 20-24_I_2026-0727	CO	SIL
RRGP_NO2 S 1hr 20-24_I_2026-0727	NO2	SIL
RRGP_NO2 S Ann 20_I_2026-0727	NO2	SIL
RRGP_NO2 S Ann 21_I_2026-0727	NO2	SIL
RRGP_NO2 S Ann 22_I_2026-0727	NO2	SIL
RRGP_NO2 S Ann 23_I_2026-0727	NO2	SIL
RRGP_NO2 S Ann 24_I_2026-0727	NO2	SIL
RRGP_NO2 S 24hr 20-24_I_2026-0727	NO2	SIL
RRGP_H2S S 1hr 20-24_I_2026-0727	H2S	SIL
RRGP_PM2.5 S 24hr 20-24_I_2026-0727	PM2.5	SIL
RRGP_PM2.5 S Ann 20-24_I_2026-0727	PM2.5	SIL
RRGP_PM10 S 24hr 20-24_I_2026-0727	PM10	SIL
RRGP_PM10 S Ann 20_I_2026-0727	PM10	SIL
RRGP_PM10 S Ann 21_I_2026-0727	PM10	SIL
RRGP_PM10 S Ann 22_I_2026-0727	PM10	SIL

	RRGP_PM10 S Ann 23_I_2026-0727	PM10	SIL
	RRGP_PM10 S Ann 24_I_2026-0727	PM10	SIL
	RRGP_SO2 S 1hr 20-24_I_2026-0727	SO2	SIL
	RRGP_SO2 S Ann3hr24hr 20_I_2026-0727	SO2	SIL
	RRGP_SO2 S Ann3hr24hr 21_I_2026-0727	SO2	SIL
	RRGP_SO2 S Ann3hr24hr 22_I_2026-0727	SO2	SIL
	RRGP_SO2 S Ann3hr24hr 23_I_2026-0727	SO2	SIL
	RRGP_SO2 S Ann3hr24hr 24_I_2026-0727	SO2	SIL
	RRGP_NO2 C1 SIL Ann 20-24_I_2026-0727	NO2	Class I SIL
	RRGP_PM2.5 C1 SIL 24hr 20-24_I_2026-0727	PM2.5	Class I SIL
	RRGP_PM2.5 C1 SIL Ann 20-24_I_2026-0727	PM2.5	Class I SIL
	RRGP_PM10 C1 SIL 24hr 20-24_I_2026-0727	PM10	Class I SIL
	RRGP_PM10 C1 SIL Ann 20-24_I_2026-0727	PM10	Class I SIL
	RRGP_SOx C1 SIL Ann_3_24 hr 20-24_I_2026-0727	SO2	Class I SIL
	RRGP_NO2 N 1hr 20-24_I_2026-0727	NO2	Cumulative
	RRGP_NO2 P Ann 20_I_2026-0727	NO2	Cumulative
	RRGP_NO2 P Ann 21_I_2026-0727	NO2	Cumulative
	RRGP_NO2 P Ann 22_I_2026-0727	NO2	Cumulative
	RRGP_NO2 P Ann 23_I_2026-0727	NO2	Cumulative
	RRGP_NO2 P Ann 24_I_2026-0727	NO2	Cumulative
	RRGP_H2S N 1hr 20-24_I_2026-0727	H2S	Cumulative
	RRGP_PM2.5 N 24hr 20-24_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P 24hr 20_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P 24hr 21_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P 24hr 22_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P 24hr 23_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P 24hr 24_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 N Ann 20-24_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P Ann 20_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P Ann 21_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P Ann 22_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P Ann 23_I_2026-0727	PM2.5	Cumulative
	RRGP_PM2.5 P Ann 24_I_2026-0727	PM2.5	Cumulative
	RRGP_PM10 N 24hr 20_I_2026-0727	PM10	Cumulative
	RRGP_PM10 N 24hr 21_I_2026-0727	PM10	Cumulative
	RRGP_PM10 N 24hr 22_I_2026-0727	PM10	Cumulative
	RRGP_PM10 N 24hr 23_I_2026-0727	PM10	Cumulative
	RRGP_PM10 N 24hr 24_I_2026-0727	PM10	Cumulative
	RRGP_PM10 P 24hr 20_I_2026-0727	PM10	Cumulative
	RRGP_PM10 P 24hr 21_I_2026-0727	PM10	Cumulative
	RRGP_PM10 P 24hr 22_I_2026-0727	PM10	Cumulative
	RRGP_PM10 P 24hr 23_I_2026-0727	PM10	Cumulative
	RRGP_PM10 P 24hr 24_I_2026-0727	PM10	Cumulative
	RRGP_PM10 NP Ann 20_I_2026-0727	PM10	Cumulative
	RRGP_PM10 NP Ann 21_I_2026-0727	PM10	Cumulative
	RRGP_PM10 NP Ann 22_I_2026-0727	PM10	Cumulative
	RRGP_PM10 NP Ann 23_I_2026-0727	PM10	Cumulative
	RRGP_PM10 NP Ann 24_I_2026-0727	PM10	Cumulative
	RRGP_SO2 N 1hr 20-24_I_2026-0727	SO2	Cumulative

	RRGP_SO2 P 3hr 20_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 3hr 21_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 3hr 22_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 3hr 23_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 3hr 24_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 24hr 20_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 24hr 21_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 24hr 22_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 24hr 23_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P 24hr 24_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P Ann 20_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P Ann 21_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P Ann 22_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P Ann 23_I_2026-0727	SO2	Cumulative
	RRGP_SO2 P Ann 24_I_2026-0727	SO2	Cumulative

16-V: PSD New or Major Modification Applications – N/A Not a PSD Application

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)? N/A – Not a PSD major source	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.		
	N/A – This facility is not a new PSD major source or a major modification to an existing PSD major source.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
	N/A – This facility is not a new PSD major source or a major modification to an existing PSD major source.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☒
	N/A – This facility is not a new PSD major source or a major modification to an existing PSD major source.		

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☒
	N/A		
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)
CO 8-hr SIL	72.94	-	-	-	72.94	500	14.59%	583889	3570528	3114.24
CO 1-hr SIL	109.35	-	-	-	109.35	2000	5.47%	583857	3570543	3113.68
NO2 Annual NMAAQS	4.31	-	-	9.30	13.61	94.02	14.47%	583914	3570527	3114.04
NO2 Annual PSD Class II Increment	2.83	-	-	9.30	12.13	25	48.51%	583914	3570527	3114.04
NO2 1-hr NAAQS	52.38	-	-	54.50	106.88	188.03	56.84%	583758	3570252	3131.79
PM2.5 Annual NAAQS	-	2.00	0.0029	6.60	8.61	9	95.62%	583914	3570527	3114.04
PM2.5 Annual PSD Class II Increment	-	2.64	0.0029	-	2.65	4	66.19%	583914	3570527	3114.04
PM2.5 24-hr NAAQS	-	6.62	0.11	16.50	17.88	35	51.09%	583889	3570528	3114.24

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)
PM2.5 24-hr PSD Class II Increment	-	8.77	0.11	-	8.88	9.0	98.68%	583889	3570528	3114.24
PM10 Annual PSD Class II Increment	-	4.82	-	-	4.82	17	28.36%	583914	3570527	3114.04
PM10 24-hr NAAQS	-	14.68	-	37.30	51.98	150	34.65%	583714	3570534	3115.32
PM10 24-hr PSD Class II Increment	-	12.71	-	-	12.71	30	42.37%	583757	3570593	3112.04
SO2 Annual PSD Class II Increment	-	3.38	-	-	3.38	20	16.91%	584128	3570570	3106.79
SO2 24-hr PSD Class II Increment	-	25.21	-	-	25.21	91	27.70%	584357	3570493	3104.27
SO2 3-hr PSD Class II Increment	-	60.93	-	-	60.93	512	11.90%	584323	3570471	3105.94
SO2 1-hr NAAQS	-	60.09	-	-	60.09	196.4	30.59%	584357	3570493	3104.27
H2S 1/2-hr NMAAQS	-	43.61	-	-	43.61	139.3	31.30%	584307	3570493	3104.95

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)
NO2 Annual Class I SIL	0.0018	-	-	-	0.0018	0.1	1.81%	558177	3559070	3604.33
PM2.5 Annual Class I SIL	0.00052	-	-	-	0.00052	0.05	1.04%	558177	3559070	3604.33
PM2.5 24-hr Class I SIL	0.011	-	-	-	0.011	0.27	3.94%	558177	3559070	3604.33
PM10 Annual Class I SIL	0.00063	-	-	-	0.00063	0.2	0.32%	558177	3559070	3604.33
PM10 24-hr Class I SIL	0.017	-	-	-	0.017	0.3	5.83%	559359	3560480	3624.77
SO2 Annual Class I SIL	0.0018	-	-	-	0.0018	0.1	1.79%	557365	3558860	3596.46
SO2 24-hr Class I SIL	0.10	-	-	-	0.10	0.2	50.88%	537974	3558800	5086.58
SO2 3-hr Class I SIL	0.66	-	-	-	0.66	1	66.00%	534666	3558751	5176.08

16-X: Summary/conclusions

1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	Targa Northern Delaware, LLC has demonstrated through this air dispersion modeling analysis that the proposed revisions to the existing facility neither cause nor contribute to an exceedance of the applicable standards.

Appendix A – Modeling Protocol and Proof of Submittal to NMED

AIR DISPERSION MODELING PROTOCOL

NSR Significant Revision Modeling Protocol

Targa Northern Delaware, LLC
Road Runner Gas Processing Plant

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June 2026

Project 253201.0253

1. INTRODUCTION

1.1 Purpose of Modeling

Road Runner Gas Processing Plant (Road Runner) is a natural gas plant owned and operated by Targa Northern Delaware, LLC (Targa). The primary function of Road Runner is to treat natural gas to remove CO_2, H_2S, water and heavier (liquid) hydrocarbons from the gas stream. Gas enters the facility through an inlet separator, then sweetened with an amine system, then dehydrated and transported offsite via pipeline. The facility collects and stores stabilized condensate generated at the inlet separator and cryo plant, which will be transported offsite via pipeline or truck as needed. Produced water is trucked out from the site. Road Runner is located approximately 1.6 miles south-southwest of Loving, NM.

Targa is submitting this application pursuant to 20.2.72.219.D(1)(a) NMAC for a significant permit revision of NSR Permit 7200-M6. The purpose of this revision is to increase the gas throughput to the site, modify the facility's heaters and install a new control device dedicated to Train 3. Additionally, a new gas analysis was incorporated for the entire facility.

This facility has twelve (12) emergency generators (Units RR2-G-2220, and RDR-G-2 through RDR-G-12), which operate for startup operations for less than 500 hours each year. In accordance with EPA guidance on the 1-hour NO2 NAAQS, as stated in the March 1, 2011 memorandum,[1] the EPA:

> "recommends that compliance demonstrations for the 1-hour NO_2 NAAQS address emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations based on existing modeling guidelines, which provide sufficient discretion for reviewing authorities to not include intermittent emissions from emergency generators or startup/shutdown operations from compliance demonstrations for the 1-hour NO_2 standard under appropriate circumstances."

Therefore, since the generators are intermittent sources of emissions, they will be excluded from the air dispersion modeling analyses for the 1-hour NO_2 and SO_2 NAAQS. Additionally, in accordance with Section 2.7.1, Table 21, Footnote 5 and Section 4.1.6 of NMED's Modeling Guidelines, the generators will not be included in PSD Increment modeling, including Class I and Class II as the units are not considered to be increment consuming sources.

Targa seeks to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), the New Mexico Ambient Air Quality Standards (NMAAQS), and the Prevention of Significant Deterioration (PSD) Increment as applicable for the following pollutants and averaging periods: NO_2 (1-hour and annual), CO (1-hour and 8-hour), SO_2 (1-hour, 3-hour and 24-hour, and annual), H_2S (1/2-hour), $PM_{2.5}$ (24-hour and annual) and PM_{10} (24-hour and annual).

1.2 Facility Description and Location

The approximate UTM coordinates of the facility are 583,982 meters east and 3,570,216 north with NAD83 datum at an elevation of approximately 3,124 feet above mean sea level.

[1] Fox, T. (2011, March 1). Memorandum to Regional Air Division Directors: Additional clarification regarding application of Appendix W modeling guidance for the 1-hour NO2 National Ambient Air Quality Standard. U.S. Environmental Protection Agency, Air Quality Modeling Group. https://www.epa.gov/sites/default/files/2020-10/documents/additional_clarifications_appendixw_hourly-no2-naaqs_final_03-01-2011.pdf.

2. MODEL INPUT OPTIONS

The latest version of the AERMOD dispersion model (version 24142) will be used for this analysis. The model will be run in regulatory mode with all default options. The ARM2 method will be used to convert NO_X to NO_2. Default minimum and maximum ambient ratios will be utilized.

2.1 Project Related Increases (SIL Only)

Table 1 shows only the units which experienced net increases with the new project, including new units, with the total emission unit per increase to be modeled in the SIL analysis. Units not listed in Table 1 either had no emission change associated with the project or had a net decrease and therefore do not need to be included in the SIL analysis. Previously modeled emission rates and calculations for determining project related increases will be included with the modeling report submitted alongside the application.

Table 1 – Project Point Source Short-Term Emission Rates Increases

Unit ID	NO_x lb/hr	CO lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	H_2S lb/hr
RR3-H-1700	0.729	0.740	0.038	0.400	0.400	-
RR3-H-1701	0.729	0.740	0.038	0.400	0.400	-
RR3-H-1703	0.291	0.295	0.014	0.149	0.149	-
RR3-H-4701	0.218	0.221	0.044	0.106	0.106	-
RR3-TO-5500	0.627	0.382	10.924	0.264	0.264	0.006
RR3-FL-5100	1.208	2.411	-	-	-	5.779*

*Steady-state and SSM emissions cannot occur at the same time. The larger of the two scenarios will be modeled.

Table 2 – Project Point Source Long-Term Emission Rates Increases

Unit ID	NO_x lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr
RR3-H-1700	0.729	0.038	0.400	0.400
RR3-H-1701	0.729	0.038	0.400	0.400
RR3-H-1703	0.291	0.014	0.149	0.149
RR3-H-4701	0.218	0.044	0.106	0.106
RR3-TO-5500	0.627	10.924	0.264	0.264
RDR-FL-5100	-	0.025	-	-
RR3-FL-5100	0.002	-	-	-

2.2 Facility Point Sources

Emissions from the heater/reboiler stack will be modeled as point sources. Table 3 displays the emission rates for each unit along with the stack parameters.

Table 4 displays the long-term emission rates along with the stack parameters of the respective units. Short-term emission rates are used for modeling the 1-hour, 3-hour, 8-hour, and 24-hour averaging periods, while long-term emission rates are applied to the annual averaging periods.

Table 3 - Project Point Source Short-Term Emission Rates

Unit ID	NO_x lb/hr	CO lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	H_2S lb/hr
RDR-H-781	0.359	2.187	0.0168	0.176	0.176	3.16E-04
RR2-H-781	0.403	0.817	0.0188	0.197	0.197	3.54E-04
RDR-H-0901	1.140	2.312	0.0533	0.559	0.559	1.18E-04
RDR-H-1054	1.068	2.881	0.0499	0.281	0.281	9.39E-04
RDR-H-2301	0.382	0.321	0.0028	0.029	0.029	3.36E-09
RR2-H-0801	0.382	0.321	0.0028	0.029	0.029	3.36E-09
RDR-H-741	0.956	0.865	0.0075	0.504	0.504	1.40E-04
RR2-H-741	0.956	0.865	0.0075	0.504	0.504	1.40E-04
RDR-H-3601	1.951	1.639	0.0141	0.148	0.148	2.66E-04
RR3-H-1700	0.729	0.740	0.0381	0.400	0.400	7.17E-04
RR3-H-1701	0.729	0.740	0.0381	0.400	0.400	7.17E-04
RR3-H-1703	0.291	0.295	0.0142	0.149	0.149	2.67E-04
RR3-H-4701	0.218	0.221	0.0101	0.106	0.106	1.89E-04
RDR-TO-5500	0.971	0.591	18.6096	0.375	0.375	9.882*
RR3-TO-5500	0.627	0.382	10.924	0.264	0.264	5.779*
RDR-FL-5100	1551.647	3097.672	26.9502	-	-	2.88E-01
RR2-FL-991	1549.339	3093.064	8.3677	-	-	9.06E-02
RR3-FL-5100	1551.842	3098.061	8.3928	-	-	9.10E-02
RR2-G-2220	5.745	0.790	0.0065	0.034	0.034	-
RDR-G-2	2.430	2.238	0.7588	0.128	0.128	-
RDR-G-3	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-4	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-5	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-6	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-7	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-8	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-9	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-10	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-11	0.330	2.860	1.1577	0.017	0.017	-
RDR-G-12	0.330	2.860	1.1577	0.017	0.017	-
RDR-FL-2850	0.040	0.034	0.0096	0.003	0.003	1.04E-04

*Steady-state and SSM emissions cannot occur at the same time. The larger of the two scenarios will be modeled.

Table 4 - Project Point Source Long-Term Emission Rates and Stack Parameters

Unit ID	NO_x lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	Height ft	Temp F	Velocity ft/s	Diam. ft
RDR-H-781	0.359	0.017	0.176	0.176	23.06	624.00	21.13	3.84
RR2-H-781	0.403	0.019	0.197	0.197	19.29	624.00	21.13	3.48
RDR-H-0901	1.140	0.053	0.559	0.559	27.59	624.00	176.12	3.51
RDR-H-1054	1.068	0.050	0.281	0.281	41.67	624.00	176.12	4.00
RDR-H-2301	0.382	0.003	0.029	0.029	26.77	624.00	77.56	2.00
RR2-H-0801	0.382	0.003	0.029	0.029	27.89	624.00	77.56	2.00
RDR-H-741	0.956	0.007	0.504	0.504	15.60	624.00	49.00	2.00
RR2-H-741	0.956	0.007	0.504	0.504	15.60	575.01	49.00	2.00
RDR-H-3601	1.951	0.014	0.148	0.148	15.78	624.00	90.91	2.33
RR3-H-1700	0.729	0.038	0.400	0.400	23.90	751.00	7.18	3.00
RR3-H-1701	0.729	0.038	0.400	0.400	23.90	751.00	7.18	3.00
RR3-H-1703	0.291	0.014	0.149	0.149	19.50	671.00	3.41	2.50
RR3-H-4701	0.218	0.010	0.106	0.106	17.60	610.00	2.42	2.50
RDR-TO-5500	0.971	18.610	0.375	0.375	75.98	1600.00	12.11	10.01
RR3-TO-5500	0.628	10.897	0.264	0.264	30.00	1457.00	26.77	5.67
RDR-FL-5100	4.608	0.761	-	-	100.56	1832.00	65.62	82.70
RR2-FL-991	4.472	0.032	-	-	124.28	1832.00	65.62	81.41
RR3-FL-5100	4.365	0.025	-	-	124.28	1832.00	65.62	81.35
RR2-G-2220	0.328	3.696E-04	0.002	1.918E-03	10.17	710.33	45.93	0.07
RDR-G-2	0.139	0.043	0.007	7.300E-03	6.56	920.00	456.67	0.25
RDR-G-3	0.019	0.066	1.918E-03	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-4	0.019	0.066	7.300E-03	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-5	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-6	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-7	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-8	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-9	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-10	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-11	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-G-12	0.019	0.066	9.419E-04	9.419E-04	6.56	440.33	16.40	0.25
RDR-FL-2850	0.040	0.004	0.003	0.003	48.00	1200.00	18.41	7.50

2.3 Volume Sources

Emissions that enter the atmosphere without a stack (i.e. fugitive sources) will be modeled as volume sources. Fugitive PM_{10} and $PM_{2.5}$ emissions are from abrasive blasting and surface coating SSM emissions. Sources of fugitive H_2S emissions include truck loading operation, fugitive emissions, RR3-FL-5100 downtime, and miscellaneous SSM blowdowns. These sources of emissions will be modeled as a combined

volume source located at the center of the facility. The volume source release height and initial lateral and vertical dimensions will follow NMED Modeling Guidelines[2] and are provided in Table 5.

Table 5 – Project Volume Sources

Volume Source	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	H_2S lb/hr	Release Height m	Initial Lateral Dimension m	Initial Vertical Dimension m
SSMFLOAD	3.4	0.341	0.084	2.44	4.25	2.27

For PM_{10} and $PM_{2.5}$, abrasive blasting and surface coating SSM occurs once a year for a total of six hours and can only occur between the hours of 7 am and 7pm. According to the NMED modeling guidelines:

> "The 24-hour NAAQS is not to be exceeded more than once per year. Use high second high and a single year of representative meteorological data. This is approximately equivalent to the high fourth high specified in the multi-year analysis. '…[W]hen n years are modeled, the (n+1)th highest concentration over the n-year period is the design value, since this represents an average or expected exceedance rate of one per year.'

Since five meteorological years are being modeled, the high sixth highest concentration would be the design value. By definition, the high sixth high means the facility can be in exceedance of the NAAQS standard a total of six days of the year. Since abrasive blasting would only occur during one day of the year, Targa proposes for that day to count towards one of the six days of exceedance and to remove SSMFLOAD from the NAAQS PM_{10} and $PM_{2.5}$ 24-hr models. The high fifth high concentration would then be the design value for the 24-hr models which would then be compared to the standard.

This concept will also apply to both the PM_{10} and $PM_{2.5}$ 24-hour PSD Class II Increment in which only one exceedance is allowed. Therefore, SSMFLOAD will be removed from these models and the high first high concentration will be used as the design value and compared to the standard.

Per the NMED modeling guidelines, "Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption." Therefore, SSMFLOAD will be removed from all annual NAAQS and PSD Increment models.

2.4 Building Downwash

A downwash analysis using the latest version of BPIP will be conducted and incorporated into the modeling analysis to account for potential effluent downwash due to structures at the facility. All building heights and dimensions will be confirmed before any modeling is done. Table 6 below lists the parameters for the building downwash structures.

Table 6- Rectangular Building Downwash Structures

Building ID	Height m	Diameter m	X Length m	Y Length m
BLD_1	6.10	-	47.00	13.00
BLD_2	6.10	-	33.50	12.55

[2] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024.

BLD_16	4.88	6.81	-	-
BLD_17	4.88	6.81	-	-
BLD_18	4.88	6.81	-	-
BLD_19	4.88	6.81	-	-
BLD_20	4.88	6.81	-	-
Tank	3.66	3.74	-	-

2.5 Receptor Grid Description and Elevation Data

The center point of the facility will be designated at 583,957 meters east and 3,570,393 meters north. This center point will serve as the center point for a variable density square receptor grid. The facility fenceline will be modeled using 25-meter grid spacing. A 50-meter grid spacing will extend out to 800 meters in each direction from the facility center point for a very fine grid resolution. A 100-meter grid spacing will extend from 800 meters to 3,000 meters in each direction for a fine grid resolution. A 250-meter grid spacing will extend from 3,000 meters to 6,000 meters in each direction for a medium grid resolution. A 500-meter grid spacing will extend from 6,000 meters to 10,000 meters in each direction for a coarse grid resolution. A 1000-meter grid spacing will extend from 10,000 meters to 50,000 meters in each direction for a very coarse grid resolution. It is expected that the highest impacts from the proposed source will be at or near the facility property.

For the Class I area analysis, a grid spacing of 1000 m is used for receptors over the Class I area. Class I receptors will be obtained through NMED MergeMaster.

The elevations of receptors and facility sources will be determined using the most recent NED data currently available (1/3 arc-second NED).

2.6 Meteorological Data

The Carlsbad NWS dataset for five meteorological years (2020-2024) will be utilized in the analysis. The meteorological files will be obtained from NMED website.

3. PROPOSED MODELING

3.1 Significance Analysis (SIL)

The modeled ground-level concentrations will be compared to the corresponding significant impact levels (SILs) to determine whether any modeled ground-level concentrations at any receptor locations are greater than the SIL (i.e., "significant" receptors). If the significance analysis reveals that modeled ground-level concentrations for a particular pollutant and averaging period are greater than the applicable SIL, a Cumulative Impact Analysis (CIA) will be performed at the significant receptors.

3.2 Cumulative Impact Analysis (CIA)

The CIA will include impacts from the facility sources and background concentrations and/or surrounding sources if applicable. An inventory of surrounding sources within 25 km of the facility will be obtained from NMED MergeMaster for each pollutant.

If necessary, the background concentration used for background concentrations:

- Outside Carlsbad Monitor (5ZR, 350151005) for NO_2;
- Del Norte High School Monitor (350010023) for CO;
- Hobbs-Jefferson Monitor (5ZS, 350250008) dataset will be used for $PM_{2.5}$; and
- Hobbs-Jefferson Monitor (5ZS, 350250008) dataset will be used for PM_{10}.

The inclusion of background concentrations will follow the guidance shown in Table 20: "Modeling the Design Value Summary (Default Modeling)" from the Modeling Guidelines[3].

Based on the NMED Modeling Guidelines for SO_2 modeling, since the facility is in the Pecos-Permian Basin Intrastate AQCR (AQCR 155), the facility and surrounding sources will be modeled, as representative monitoring is not available for background data.

For $PM_{2.5}$ and PM_{10} modeling, the modeling will include the facility and surrounding sources and will add background concentration and secondary formation (if applicable). Since both surrounding sources and background concentration will be used, only sources within 10 km of the facility will be included in the model.

Based on EPA's Guidance for $PM_{2.5}$ Permit Modeling and NMED'S Modeling Guidelines, 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. Sources with significant increases of $PM_{2.5}$ precursors must qualitatively and/or quantitatively account for the secondary formation of $PM_{2.5}$. The secondary formation of $PM_{2.5}$ will be calculated in this modeling following the NMED Modeling Guidelines.

Based on the NMED Modeling Guidelines for H_2S modeling, if the facility is in the Pecos-Permian Basin Intrastate AQCR, H_2S will be modeling using the 1-hour averaging time and compared to the ½-hour averaging period.

[3] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024

3.3 PSD Increment Analysis

If the results of the ROI analysis for NO_x, SO_2, $PM_{2.5}$, or PM_{10} indicate concentrations greater than significance levels, PSD increment analysis will be conducted including all PSD increment consuming and expanding sources within 25 km of the facility, plus sources emitting over 1000 pounds per hour within 50 km of the facility. The surrounding source information will be obtained from NMED MergeMaster. The predicted maximum concentrations will be compared to the appropriate PSD Increment Class II standard. Following NMED guidance, emergency equipment that operates less than 500 hours per year, does not need to demonstrate compliance with PSD increment.

3.4 Culpability Analysis

If any of the modeled pollutants and averaging periods exceed any applicable NAAQS, NMAAQS, or PSD Increment standards, a culpability analysis will be conducted for each receptor showing a modeled exceedance in accordance with NMED's Air Dispersion Modeling Guidelines[4]. Source contributions from the facility will be pared in time and space with contributions from surrounding area to show that the contribution from the facility is less than the significant levels for the specific pollutant and averaging period. For any culpability modeling, two (2) source groups will be created and analyzed:

- FACILITY group containing all the emission sources from the facility and
- PSD or NAAQS group, depending on the exceeded standard, containing the surrounding sources identified by NMED and the emission sources identified in the FACILITY group.

Post files will be extracted from the model(s), and the results of the above source groups will be compared against the significance level and applicable air quality standards (NAAQS and Class II Increment) for each of the above pollutants at the exceeding receptors. If the NAAQS/PSD result is greater than the air quality standard and the FACILITY result is greater than the Significance Level then the facility is culpable, otherwise the facility is not culpable. A table or a similar demonstration technique will be provided along with an explanation in the final report.

3.5 Class I Area Analysis

The nearest Class I area is Carlsbad Caverns National Park at 26.30 km from the facility. Pollutants will be modeled for significance using the Carlsbad Caverns receptor grid obtained from NMED MergeMaster. A Class I area analysis will be performed if concentrations are greater than significant levels as the national park is within the 50 km inclusion zone for PSD minor sources. A separate inventory of PSD increment consuming and expanding sources within 25 km of Carlsbad Caverns, plus sources emitting over 1000 pounds per hour within 50 km of the Carlsbad Caverns will be obtained from NMED MergeMaster.

[4] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised June 2024. Chapter 7.2.1.(V) page 79

Johnny Nguyen

From: Jaimy Karacaoglu
Sent: Friday, July 10, 2026 10:46 AM
To: Mustafa, Sufi A., ENV
Cc: Andries, Robert L.; Julia Cacciavillani; Veronica Lui
Subject: FW: Modeling Protocol for Roadrunner Gas Processing Plant
Attachments: Road Runner GP_Modeling Protocol_v1.0_2026-0704.pdf

Hi Sufi,

I hope you're doing well! I wanted to reach out regarding the Roadrunner modeling protocol. Let me know if you have any questions.

Regards,

Jaimy Karacaoglu
Senior Consultant
M 410.903.0750
1999 Broadway, Suite 820 | Denver, Colorado 80202

Book time to meet with me

From: Jaimy Karacaoglu
Sent: Saturday, July 4, 2026 7:39 PM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: Andries, Robert L. <randries@targaresources.com>; Julia Cacciavillani <Julia.Cacciavillani@trinityconsultants.com>; Veronica Lui <Veronica.Lui@trinityconsultants.com>
Subject: Modeling Protocol for Roadrunner Gas Processing Plant

Hi Sufi,

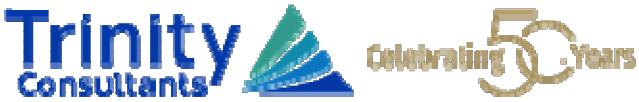
Please find attached the modeling protocol for Targa Northern Delaware's Roadrunner Gas Processing Plant. Modeling is being completed as part of an NSR permit application to modify NSR Permit 7200M6.

Please don't hesitate to reach out if you have any questions!

Regards,

Jaimy Karacaoglu
Senior Consultant

M 410.903.0750
1999 Broadway, Suite 820 | Denver, Colorado 80202
Email: jaimy.karacaoglu@trinityconsultants.com



Connect with us: LinkedIn / YouTube / trinityconsultants.com (UPDATED WEBSITE!)

View our capabilities in the Environmental Consulting, Built Environment, Life Sciences, and Water & Ecology markets.

Upcoming Events:

Jul 15-16 – NSR/PSD Compliance Workshop – Beaver Creek, CO
Jul 17 – Title V Compliance Workshop – Beaver Creek, CO
Aug 10-12 – Introduction to Environmental Regulations - 3-Day (Multimedia) – Glacier National Park, MT
Aug 12 – New Mexico UIC Permitting – Albuquerque, NM
Aug 13-14 – Introduction to Environmental Reporting and Recordkeeping Requirements – Glacier National Park, MT
Sep 15-16 – Effective Management of Stack Test Programs – Salt Lake City, UT
Sep 17 – Continuous Emission Monitoring Systems (CEMS) – Best Practices and Program Management – Salt Lake City, UT
Oct 14 – Air Quality Permitting in Utah – Salt Lake City, UT
Oct 21 – Air Quality Permitting in Colorado – Denver, CO
Oct 22 – Air Dispersion Modeling for Managers in Colorado – Denver, CO

 Book time to meet with me

Appendix B – Table 2-H of Permit Application 7307M5

Table 2-H: Stack Exit Conditions

Data may not be provided for subject items (SIs) that are not complete. Please edit the SI in Table 2-A before providing information here.

Please enter the stack information for the original source, not the control or reduction equipment.

For equipment that doesn't have an actual stack or fugitive stack please just list it as having a default fugitive stack with a height of 10 ft. This field is required by our database.

Edit	Stack Description	Unit number	Orientation (H=Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)	Complete
Edit	DEHY-1	DEHY-1	Fugitive	No	10							☑
Edit	ECD	ECD	Vertical	No	25	1400	28			2.25	4	☑
Edit	ENG-1	ENG-1	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-2	ENG-2	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-3	ENG-3	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-4	ENG-4	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-5	ENG-5	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	FUG	FUG	Fugitive	No	10							☑
Edit	HR-1	HR-1	Fugitive	No	10							☑
Edit	M	M	Fugitive	No	10							☑
Edit	LOAD-1	LOAD-1	Fugitive	No	10							☑
Edit	RBL-1	RBL-1	Vertical	No	17	600	10.35			7.41	1	☑
Edit	SSM	SSM	Fugitive	No	10							☑
Edit	TK-1	TK-1	Fugitive	No	10							☑
Edit	DEHY-2	DEHY-2	Fugitive	No	10							☑
Edit	DEHY-3	DEHY-3	Fugitive	No	10							☑
Edit	ENG 12	ENG 12	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	ENG-6	ENG-6	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-7	ENG-7	Vertical	No	26	1215	144.7			103.6	1.17	☑
Edit	ENG-8	ENG-8	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	ENG-9	ENG-9	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	ENG-10	ENG-10	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	ENG-11	ENG-11	Vertical	No	26	1100	138.6			128.4	1.17	☑
Edit	FL-5100	FL-5100	Vertical	No	60	1400	231.4			294.8	1	☑
Edit	LOAD-2	LOAD-2	Fugitive	No	10							☑
Edit	RBL-2	RBL-2	Vertical	No	17	600	10.35			7.41	1	☑
Edit	RBL-3	RBL-3	Vertical	No	17	600	10.35			7.41	1	☑
Edit	TK-2	TK-2	Fugitive	No	10							☑
Edit	TK-3	TK-3	Fugitive	No	10							☑
Edit	TK-4	TK-4	Fugitive	No	10							☑
Edit	TK-5	TK-5	Fugitive	No	10							☑
Edit	TK-6	TK-6	Fugitive	No	10							☑
Edit	TK-7	TK-7	Fugitive	No	10							☑
Edit	TK-8	TK-8	Fugitive	No	10							☑

Add Stack Conditions to Select one Add

Comments (2000 character maximum)

Appendix C – Relevant AECT Pages from Permit Application 7307M5

New Mexico Environment Department Air Quality Bureau Emissions Calculation Forms

Date: Apr 26, 2024
Company Name: Sendero Carlsbad Midstream, LLC
Facility Name: Pecos Compressor Station

Permit Number: 7307M3
AI# if Known:
Elevation (ft.): 3,051

Reboilers for Glycol Dehydration Units & Other Units (Only for units rated <100 MMBTU/Hr)

Enter appropriate information in green boxes below changing default values as appropriate and adding additional rows for each heater unit.

Enter the Sulfur Content of Gas or use default value (grains/10^6 scf). **2,000**

SO_2 emissions based on AP-42 EF and assumes 100% conversion of fuel sulfur to SO2 and assumes sulfur content in natural gas of 2,000 grains/1000000 scf. Change default value of 2000 as needed based on gas analysis submitted with application.

Enter the Low Heat Value of Gas or use default value (Btu/scf). **1,355**

Total Emissions For Reboilers For Glycol Dehydration Units & Other Units

Add/Remove Rows	Unit ID	Heat Input	NO_x		CO		VOC		SO_2		$PM/PM_{10}/PM_{2.5}$	
		MMBtu/hr	pph	tpy	pph	tpy	pph	tpy	pph	tpy	pph	tpy
+ -	RBL-1	0.75	0.098	0.429	0.082	0.359	0.005	0.022	0	0	0.007	0.031
+ -	RBL-2	0.75	0.098	0.429	0.082	0.359	0.005	0.022	0	0	0.007	0.031
+ -	RBL-3	0.75	0.098	0.429	0.082	0.359	0.005	0.022	0	0	0.007	0.031
	Totals		0.294	1.287	0.246	1.077	0.015	0.066	0	0	0.021	0.093

Appendix D – Table 2-D and 2-E of Permit Application 7307M5

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**. 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 or 1.41).

Edit	NMED SI ID	NMED SI Status	Unit No.	NOx		CO		VOC		SOx		PM10[1]		PM2.5[1]		H_2S		Lead		Complete
				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	
Edit	**EQPT-5**	**Active 09/27/2017**	DEHY-1	-	-	-	-	60.23	263.79	-	-	-	-	-	-	-	-	-	-	☑
Edit	**EQPT-16**	**Active 10/01/2021**	ECD	0.01	0.02	0.01	0.05	0.01	0.05	-	-	-	-	-	-	-	-	-	-	☑
Edit	**EQPT-1**	**Active 07/25/2018**	ENG-1	49.63	217.38	42.22	184.97	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**EQPT-2**	**Active 07/25/2018**	ENG-2	49.63	217.38	42.22	184.94	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**EQPT-3**	**Active 07/25/2018**	ENG-3	49.63	217.38	42.22	184.94	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**EQPT-7**	**Active 07/25/2018**	ENG-4	49.63	217.38	42.22	184.94	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**EQPT-8**	**Active 03/02/2018**	ENG-5	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**RPNT-1**	**Active 09/27/2017**	FUG	-	-	-	-	4.76	20.85	-	-	-	-	-	-	-	-	-	-	☑
Edit	**AREA-1**	**Active 10/01/2017**	HR-1	-	-	-	-	-	-	-	-	0.27	0.32	0.03	0.03	-	-	-	-	☑
Edit	**RPNT-2**	**Active 07/25/2018**	M	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-	-	-	☑
Edit	**EQPT-10**	**Active 09/27/2017**	LOAD-1	-	-	-	-	31.88	30.44	-	-	-	-	-	-	-	-	-	-	☑
Edit	**EQPT-6**	**Active 09/27/2017**	RBL-1	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	**RPNT-3**	**Active 05/03/2019**	SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	☑
Edit	**EQPT-9**	**Active 09/27/2017**	TK-1	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	DEHY-2	-	-	-	-	61.79	270.64	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	DEHY-3	-	-	-	-	61.79	270.64	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	ENG 12	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**new**	**New**	ENG-6	49.63	217.38	42.22	184.97	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**new**	**New**	ENG-7	49.63	217.38	42.22	184.97	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	**new**	**New**	ENG-8	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**new**	**New**	ENG-9	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**new**	**New**	ENG-10	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**new**	**New**	ENG-11	48.17	210.99	38.12	166.96	1.29	5.67	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	**new**	**New**	FL-5100	0.01	0.05	0.02	0.09	0.02	0.09	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	LOAD-2	-	-	-	-	31.88	30.44	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	RBL-2	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	**new**	**New**	RBL-3	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	**new**	**New**	TK-2	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-3	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-4	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-5	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-6	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-7	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
Edit	**new**	**New**	TK-8	-	-	-	-	18.59	81.41	-	-	-	-	-	-	-	-	-	-	☑
			Totals	587.12	2571.58	482.31	2112.71	416.41	1606.42	1.83	7.95	3.42	14.03	3.18	13.74	0.0	0.0	0.0	0.0	

[1] **Condensable Particulate Matter: Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source.**

Comments (2000 character maximum)

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 or 1.41). Facility totals are a summation of all the emissions entered for equipment in this table plus total tpy SSM emissions from Table 2F.
GCP-O&G: Combustion emissions from malfunction events are not allowed under this permit.

NOI: Malfunction emissions are not allowed under a Notice of Intent.

Edit	NMED SI ID	NMED SI Status	Unit No.	NOx		CO		VOC		SOx		PM10[1]		PM2.5[1]		H_2S		Lead		Complete
				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	
Edit	EQPT-5	Active 09/27/2017	DEHY-1	-	-	-	-	0.90	3.93	-	-	-	-	-	-	-	-	-	-	☑
Edit	EQPT-16	Active 10/01/2021	ECD	0.27	0.14	0.53	0.27	0.01	0.05	-	-	-	-	-	-	-	-	-	-	☑
Edit	EQPT-1	Active 07/25/2018	ENG-1	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	EQPT-2	Active 07/25/2018	ENG-2	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	EQPT-3	Active 07/25/2018	ENG-3	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	EQPT-7	Active 07/25/2018	ENG-4	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	EQPT-8	Active 03/02/2018	ENG-5	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	RPNT-1	Active 09/27/2017	FUG	-	-	-	-	4.76	20.85	-	-	-	-	-	-	-	-	-	-	☑
Edit	AREA-1	Active 10/01/2017	HR-1	-	-	-	-	-	-	-	-	0.27	0.32	0.03	0.03	-	-	-	-	☑
Edit	RPNT-2	Active 07/25/2018	M	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-	-	-	☑
Edit	EQPT-10	Active 09/27/2017	LOAD-1	-	-	-	-	1.04	1.00	-	-	-	-	-	-	-	-	-	-	☑
Edit	EQPT-6	Active 09/27/2017	RBL-1	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	RPNT-3	Active 05/03/2019	SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	☑
Edit	EQPT-9	Active 09/27/2017	TK-1	-	-	-	-	0.37	1.63	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	DEHY-2	-	-	-	-	0.91	3.98	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	DEHY-3	-	-	-	-	0.91	3.98	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	ENG 12	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	new	New	ENG-6	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	new	New	ENG-7	1.67	7.30	1.67	7.30	1.26	5.52	0.15	0.65	0.26	1.13	0.26	1.13	-	-	-	-	☑
Edit	new	New	ENG-8	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	new	New	ENG-9	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	new	New	ENG-10	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	new	New	ENG-11	1.68	7.34	1.76	7.71	1.25	5.48	0.15	0.66	0.26	1.14	0.26	1.14	-	-	-	-	☑
Edit	new	New	FL-5100	1.21	0.57	2.42	1.13	0.06	0.25	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	LOAD-2	-	-	-	-	0.45	0.43	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	RBL-2	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	new	New	RBL-3	0.10	0.43	0.08	0.36	0.01	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-	-	-	-	☑
Edit	new	New	TK-2	-	-	-	-	0.37	1.63	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-3	-	-	-	-	0.37	1.63	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-4	-	-	-	-	0.02	0.08	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-5	-	-	-	-	0.02	0.08	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-6	-	-	-	-	0.02	0.08	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-7	-	-	-	-	0.02	0.08	-	-	-	-	-	-	-	-	-	-	☑
Edit	new	New	TK-8	-	-	-	-	0.02	0.08	-	-	-	-	-	-	-	-	-	-	☑
			SSM Totals	155.88	0.96	311.19	1.92	191.1	8.18	0.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			Totals	177.76	90.8	334.96	94.46	216.44	115.0	1.97	7.95	3.42	14.03	3.18	13.74	0.0	0.0	0.0	0.0	

[1]Condensable Particulate Matter: Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source.

Comments (2000 character maximum)

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

☐ **This table is intentionally left blank as all SSM emissions at this facility do not require an increase in Requested Allowables greater than those listed in Table 2-E.**

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)2, 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). Provide emissions calculations for all SSM emissions reported in this table. Refer to the guidance "Startup, Shutdown, Maintenance Emissions in Permits" (www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41 or 1.41).

Edit	NMED SI ID	NMED SI Status	Unit No.	NOx		CO		VOC		SOx		PM10[1]		PM2.5[1]		H_2S		Lead		Complete
				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	

Appendix E – Table 2-H of Permit Application 7743M1R3

Table 2-H: Stack Exit Conditions

Data may not be provided for subject items (SIs) that are not complete. Please edit the SI in Table 2-A before providing information here.

Please enter the stack information for the original source, not the control or reduction equipment.

For equipment that doesn't have an actual stack or fugitive stack please just list it as having a default fugitive stack with a height of 10 ft. This field is required by our database.

Edit	Stack Description	Unit number	Orientation (H=Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)	Complete
Edit	Dehy-1	Dehy-1	Fugitive	No	10							☑
Edit	ENG-1	ENG-1	Vertical	No	14.8	782	136.4			72.2	0.7	☑
Edit	ENG-2	ENG-2	Vertical	No	14.8	782	136.4			72.2	0.7	☑
Edit	ENG-5	ENG-5	Vertical	No	14.8	782	197.4			72.2	0.7	☑
Edit	ENG-6	ENG-6	Vertical	No	14.8	782	197.4			72.2	0.7	☑
Edit	FUG	FUG	Fugitive	No	10							☑
Edit	RBL-1	RBL-1	Vertical	No	12	600	4.4			5.6	1.0	☑
Edit	RBL-2	RBL-2	Vertical	No	12	600	4.4			5.56	1	☑
Edit	SSM/M	SSM	Fugitive	No	10							☑
Edit	TK-1	TK-1	Fugitive	No	10							☑
Edit	TK-2	TK-2	Fugitive	No	10							☑
Edit	ECD-1	ECD-1	Vertical	No	10	600	130.3			165.9	1	☑
Edit	ENG-3	ENG-3	Vertical	No	14.8	782	199.7			72.2	0.7	☑
Edit	ENG-4	ENG-4	Vertical	No	14.8	782	199.7			72.2	0.7	☑
Edit	ENG-7	ENG-7	Vertical	No	14.8	782	199.7			72.2	0.7	☑
Edit	GEN-1	GEN-1	Vertical	No	14.8	782	69.6			72.2	0.7	☑
Edit	LOAD	LOAD	Fugitive	No	10							☑
Edit	Malfunction	Malfunction	Fugitive	No	10							☑
Edit	TK-3	TK-3	Fugitive	No	10							☑
Edit	Trailer-1	Trailer-1	Vertical	No	14.8	782	117.7			72.2	0.7	☑

Add Stack Conditions to [Select one] Add

Comments (2000 character maximum)

Appendix F – Table 2-E and 2-F of Permit Application 7220M4

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
12	-	-	-	-	3.37	14.75	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
1	1.23	5.38	2.52	11.05	0.17	0.72	0.02	0.08	0.23	1.00	0.23	1.00	0.17	0.75	-	-	-	-
15	2.58	11.31	2.62	11.48	0.35	1.52	0.04	0.16	0.48	2.10	0.48	2.10	0.36	1.58	-	-	-	-
16	0.79	3.46	0.80	3.51	0.11	0.47	0.01	0.05	0.15	0.64	0.15	0.64	0.11	0.48	-	-	-	-
17	0.65	2.83	0.66	2.87	0.09	0.38	0.01	0.04	0.12	0.53	0.12	0.53	0.09	0.39	-	-	-	-
20	0.02	0.10	0.03	0.13	0.02	0.07	0.65	2.85	0.12	0.55	0.12	0.55	0.09	0.41	-	-	-	-
2	53.06	5.07	106.12	10.96	56.51	1.44	0.20	0.86	2.32	0.34	2.32	0.34	1.74	0.25	-	-	-	-
2-SSM	4.45	0.03	8.89	0.06	0.09	0.001	0.02	<0.001	0.21	0.001	0.21	0.001	0.16	0.001	<0.001	<0.001	-	-
2-M	57.20	1.24	114.19	2.47	3.49	0.08	0.20	0.004	2.57	0.05	2.57	0.05	1.92	0.04	<0.001	<0.001	-	-
19	-	-	-	-	9.58	8.07	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
18	-	-	-	-	1.31	2.08	-	-	-	-	-	-	-	-	0.01	0.02	-	-
3	-	-	-	-	4.66	0.81	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
4	-	-	-	-	4.66	0.81	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
5	-	-	-	-	4.66	0.81	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
6	-	-	-	-	4.66	0.81	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
7	-	-	-	-	4.66	0.81	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
21	-	-	-	-	4.63	2.60	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
9	-	-	-	-	1.40	0.16	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
8	-	-	-	-	1.10	0.25	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
10	-	-	-	-	0.29	0.04	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
11	-	-	-	-	1.17	0.12	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
13	-	-	-	-		10	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-
14	-	-	-	-		10	-	-	-	-	-	-	-	-	<0.01	<0.01	-	-
22	-	-	-	-	-	-	-	-	0.37	1.33	0.10	0.34	0.01	0.03	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	1.89	8.30	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
26	3.31	14.48	3.64	15.93	4.38	19.19	0.02	0.10	0.37	1.62	0.37	1.62	0.37	1.62	-	-	-	-
27	3.31	14.48	3.64	15.93	4.38	19.19	0.02	0.10	0.37	1.62	0.37	1.62	0.37	1.61	-	-	-	-
28	3.31	14.48	3.64	15.93	4.38	19.19	0.02	0.10	0.37	1.62	0.37	1.62	0.37	1.62	-	-	-	-
29	3.31	14.48	3.64	15.93	4.38	19.19	0.02	0.10	0.37	1.62	0.37	1.62	0.37	1.61	-	-	-	-
30	2.40	10.51	2.83	12.39	1.20	5.25	0.01	0.06	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-

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
31	2.40	10.51	2.83	12.39	1.20	5.25	0.01	0.06	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-
32	2.40	10.51	2.83	12.39	1.20	5.25	0.01	0.06	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-
33	2.40	10.51	2.83	12.39	1.20	5.25	0.01	0.06	0.22	0.97	0.22	0.97	0.22	0.97	-	-	-	-
34	0.37	1.61	0.31	1.35	0.07	0.31	0.003	0.01	0.03	0.12	0.03	0.12	0.02	0.09	-	-	-	-
35	1.56	6.85	1.31	5.75	0.09	0.38	0.01	0.04	0.12	0.52	0.12	0.52	0.09	0.39	-	-	-	-
36	2.41	10.54	4.94	21.64	1.12	4.91	0.04	0.18	0.45	1.96	0.45	1.96	0.34	1.47	-	-	-	-
37	0.55	2.41	0.46	2.02	0.03	0.13	0.003	0.01	0.04	0.18	0.04	0.18	0.03	0.14	-	-	-	-
38	0.92	4.04	1.89	8.30	0.12	0.54	0.01	0.06	0.17	0.75	0.17	0.75	0.13	0.56	-	-	-	-
39	70.61	3.72	140.97	7.44	0.001	0.005	4.95	0.25	2.44	0.13	2.44	0.13	1.83	0.10	-	-	-	-
46	-	-	-	-	1.60	0.19	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
49	-	-	-	-	1.40	0.56	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
50	-	-	-	-	1.40	0.56	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
55	-	-	-	-	0.22	0.001	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	4.95	0.38	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
58	-	-	-	-	0.41	0.37	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
48	-	-	-	-	82.43	2.65	-	-	-	-	-	-	-	-	0.01	<0.001	-	-
40	2.96	5.61	25.17	47.33	0.22	0.42	54.63	102.43	1.74	3.26	1.74	3.26	1.30	2.45	-	-	-	-
41	0.11	0.49	0.14	0.60	0.32	1.41	54.61	239.21	1.56	6.85	1.56	6.85	1.17	5.13	<0.001	<0.001	-	-
44	-	-	-	-	1.15	3.79	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
45	-	-	-	-	0.17	0.62	-	-	-	-	-	-	-	-	0.58	1.82	-	-
47	-	-	-	-	137.67	6.88	-	-	-	-	-	-	-	-	0.05	0.003	-	-
51	-	-	-	-	2.68	0.26	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
52	-	-	-	-	2.68	0.26	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
53	-	-	-	-	2.68	0.26	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
54	-	-	-	-	2.68	0.26	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
57	-	-	-	-	1.72	1.59	-	-	-	-	-	-	-	-	<0.001	<0.001	-	-
Totals	222.04	164.22	436.46	249.50	366.58	187.84	60.93	244.43	13.93	27.76	13.65	26.77	10.77	22.46	0.65	1.85	0	0

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM^2		$PM10^2$		$PM2.5^2$		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals																		

[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.

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

[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).

Point Sources

ID	Description	Easting m	Northing m	NO_x lb/hr	NO_x tpy	CO lb/hr	SO_2 lb/hr	SO_2 tpy	H_2S lb/hr	PM_{10} lb/hr	PM_{10} tpy	$PM_{2.5}$ lb/hr	$PM_{2.5}$ tpy	Height ft	Temp F	Velocity ft/s	Diam ft
RR2-G-2220	Diesel Fired Generator	584034.3	3570260	5.745	1.436	0.79	0.0065	0.0016	0	0.0336	0.0084	0.0336	0.0084	10.171	710.33	45.932	0.066
RDR-G-2	Diesel Fired Generator	583455	3570360	2.43	0.608	2.238	0.7588	0.1897	0	0.1279	0.032	0.1279	0.032	6.562	920	456.668	0.249
RDR-G-3	Diesel Fired Generator	583803	3570424	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-4	Diesel Fired Generator	583770	3570388	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-5	Diesel Fired Generator	583929	3570353	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-6	Diesel Fired Generator	583940	3570315	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-7	Diesel Fired Generator	584068	3570401	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-8	Diesel Fired Generator	584084	3570365	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-9	Diesel Fired Generator	584129	3570327	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-10	Diesel Fired Generator	584096	3570464	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-11	Diesel Fired Generator	584183	3570371	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-G-12	Diesel Fired Generator	584025	3570283	0.33	0.083	2.86	1.1577	0.2894	0	0.0165	0.0041	0.0165	0.0041	6.562	440.33	16.404	0.249
RDR-H-781	Trim Reboiler	583824.3	3570503	0.359	1.574	2.187	0.0168	0.0736	3.16E-04	0.1762	0.7718	0.1762	0.7718	23.064	624.002	21.129	3.839
RR2-H-781	Trim Reboiler	583978.4	3570442	0.403	1.764	0.817	0.0188	0.0824	3.54E-04	0.1975	0.8648	0.1975	0.8648	19.291	624.002	21.129	3.478
RR3-H-781	Trim Reboiler	583988	3570443	0.403	1.764	0.817	0.0188	0.0824	3.54E-04	0.1975	0.8648	0.1975	0.8648	22.802	624.002	21.129	3.478
RDR-H-0901	Amine Reboiler	583733.9	3570360	1.14	4.991	2.312	0.0533	0.2333	1.00E-03	0.5588	2.4476	0.5588	2.4476	27.592	624.002	176.115	3.51
RDR-H-1054	Amine Reboiler	583736.4	3570342	1.068	4.677	2.881	0.0499	0.2186	9.39E-04	0.2811	1.2313	0.2811	1.2313	41.667	624.002	176.115	4.003
RDR-H-2301	Glycol Reboiler	583692.7	3570342	0.382	1.675	0.321	0.0028	0.0121	5.21E-05	0.0291	0.1273	0.0291	0.1273	26.772	624.002	77.559	2.001
RR2-H-0801	Glycol Reboiler	583695	3570323	0.382	1.675	0.321	0.0028	0.0121	5.21E-05	0.0291	0.1273	0.0291	0.1273	27.887	624.002	77.559	2.001
RR3-H-0801	Glycol Reboiler	583701	3570302	0.382	1.675	0.321	0.0028	0.0121	5.21E-05	0.0291	0.1273	0.0291	0.1273	31.791	624.002	77.559	2.001
RDR-H-741	Regen Gas Heaters	583823.8	3570497	0.956	4.185	0.865	0.0075	0.0327	1.40E-04	0.504	2.2075	0.504	2.2075	15.6	624.002	49	2
RR2-H-741	Regen Gas Heaters	583984.2	3570442	0.956	4.185	0.865	0.0075	0.0327	1.40E-04	0.504	2.2075	0.504	2.2075	15.6	575.006	49	2
RR3-H-741	Regen Gas Heaters	583996	3570442	0.956	4.185	0.865	0.0075	0.0327	1.40E-04	0.504	2.2075	0.504	2.2075	22.014	550.004	42.684	1.345
RDR-H-3601	Stabilizer Heater	583724.8	3570294	1.951	8.545	1.639	0.0141	0.0619	2.66E-04	0.1483	0.6494	0.1483	0.6494	15.781	624.002	90.912	2.329
RR3-H-3601	Stabilizer Heater	583717	3570295	0.356	1.557	0.361	0.0166	0.0728	3.13E-04	0.1744	0.7637	0.1744	0.7637	24.902	624.002	90.912	2.329
RDR-TO-5500	Thermal Oxidizer	583721.9	3570321	1.4	6.13	0.852	27.8835	122.1295	1.56E-02	0.375	1.6425	0.375	1.6425	75.984	1599.998	12.106	10.007
RDR-FL-5100	Flare (SSM)	583900.3	3570462	1554.234	20.404	3102.836	82.9826	3.2215	9.00E-01	0	0	0	0	100.558	1832	65.617	81.214
RR2-FL-991	Flare (SSM)	584013.2	3570499	1550.747	19.604	3095.875	82.8757	3.1987	8.98E-01	0	0	0	0	124.278	1832	65.617	81.45
RR3-FL-5100	Flare (SSM)	584141	3570539	1550.634	19.111	3095.65	82.8691	3.1697	8.98E-01	0	0	0	0	124.278	1832	65.617	81.385
RDR-FL-2850	Tank Combustor	583905.2	3570271	0.13	0.57	0.109	0.0993	0.0406	1.08E-03	0.0099	0.0433	0.0099	0.0433	48	1200.002	18.406	7.5
RR3-H-0901	Amine Reboiler	583992	3570445	1.068	4.677	2.881	0.0499	0.2186	9.39E-04	0.2811	1.2313	0.2811	1.2313	41.667	624.002	176.115	4.003
RDR-TO-5500-SSM	Thermal Oxidizer	583721.9	3570321	0	0	0	0	0	14.8	0	0	0	0	75.984	119.51	1.509	10.007

Volume Sources

ID	Description	NO_x lb/hr	CO lb/hr	SO_2 lb/hr	H_2S lb/hr	PM_{10} lb/hr	PM_{10} tpy	$PM_{2.5}$ lb/hr	$PM_{2.5}$ tpy	Release Height m	Latitude Dimensions m	Vertical Dimension m
MSSM	Surface Coating and Abrasive Blasting	-	-	-	0.08	3.43	0.02	0.341	0.002	6.1	7.09	5.67

Point Sources

		short-term	long-term			short-term	long-term								
ID	**Description**	**NO_x lb/hr**	**NO_x lb/hr**	**NO_x tpy**	**CO lb/hr**	**SO_2 lb/hr**	**SO_2 lb/hr**	**SO_2 tpy**	**H_2S lb/hr**	**PM_{10} lb/hr**	**PM_{10} tpy**	**$PM_{2.5}$ lb/hr**	**$PM_{2.5}$ tpy**	**Comment**	Determination
RDR-H-781	Trim Reboiler	0.061	0.06027397	0.264	0.367	0	0	0	0	0	0	0	0		Include in SIL
RR2-H-781	Trim Reboiler	0.067	0.0673516	0.295	0.137	0	0	0	0	0	0	0	0		Include in SIL
RDR-H-0901	Amine Reboiler	0.191	0.19109589	0.837	0.388	0	0	0	0	0	0	0	0		Include in SIL
RDR-H-1054	Amine Reboiler	0.179	0.17899543	0.784	0	0	0	0	0	0	0	0	0		Include in SIL
RDR-H-2301	Glycol Reboiler	0	0	0	0	0	0	0	0	0	0	0	0		Include in SIL
RR2-H-0801	Glycol Reboiler	0	0	0	0	0	0	0	0	0	0	0	0		Include in SIL
RDR-H-741	Regen Gas Heaters	0	0	0	0	0	0	0	0	0	0	0	0		Include in SIL
RR2-H-741	Regen Gas Heaters	0	0	0	0	0	0	0	0	0	0	0	0		Include in SIL
RDR-H-3601	Stabilizer Heater	0	0	0	0	0	0	0	0	0	0	0	0		Include in SIL
RR3-H-1700	HMO Heater	0.852	0.852	3.730	0.864	0.038	0.038	0.167	0.001	0.400	1.750	0.400	1.750	Unit added	Include in SIL
RR3-H-1701	HMO Heater	0.852	0.852	3.730	0.864	0.038	0.038	0.167	0.001	0.400	1.750	0.400	1.750	Unit added	Include in SIL
RR3-H-1703	HMO Heater	0.340	0.339	1.487	0.345	0.014	0.014	0.062	0	0.149	0.652	0.149	0.652	Unit added	Include in SIL
RR3-H-4701	Regen Gas Heater	0.255	0.255	1.116	0.258	0.010	0.010	0.044	0	0.106	0.463	0.106	0.463	Unit added	Include in SIL
RDR-TO-5500	Thermal Oxidizer	-0.429	-0.4283105	-1.876	-0.261	-9.274	-9.2739726	-40.62	-0.005	0	0	0	0		NAAQS only
RR3-TO-1801	Thermal Oxidizer	0.625	0.625	2.737	0.381	11.005	11.005	48.203	0.006	0.288	1.261	0.288	1.261	Unit added	Include in SIL
RDR-FL-5100	Flare (SSM)	-2.55	-0.0509132	-0.223	-5.091	-0.004	-0.49611872	-2.173	0	0	0	0	0		NAAQS only
RR2-FL-991	Flare (SSM)	-1.372	-0.0038813	-0.017	-2.739	0.043	-0.49429224	-2.165	0.001	0	0	0	0		Include in Short term SO2 model and H2S model
RR3-FL-5100	Flare (SSM)	6.597	0.01438356	0.063	13.17	0.185	-0.49406393	-2.164	0.002	0	0	0	0		Include in all SIL except SO2
RR2-G-2220	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-2	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-3	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-4	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-5	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-6	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-7	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-8	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-9	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-10	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-11	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-G-12	Diesel Fired Generator	0	0	0	0	0	0	0	0	0	0	0	0		NAAQS only
RDR-FL-2850	Tank Combustor	-0.09	-0.0899543	-0.394	-0.075	-0.09	-0.00502283	-0.022	-0.001	-0.007	-0.03	-0.007	-0.03		NAAQS only
RR3-H-781	Trim Reboiler	-0.403	-0.403	-1.764	-0.817	-0.019	-0.019	-0.082	0.000	-0.198	-0.865	-0.198	-0.865	Unit removed	-
RR3-H-0801	Glycol Reboiler	-0.382	-0.382	-1.675	-0.321	-0.003	-0.003	-0.012	0.000	-0.029	-0.127	-0.029	-0.127	Unit removed	-
RR3-H-741	Regen Gas Heaters	-0.956	-0.955	-4.185	-0.865	-0.008	-0.008	-0.033	0.000	-0.504	-2.208	-0.504	-2.208	Unit removed	-
RR3-H-3601	Stabilizer Heater	-0.356	-0.355	-1.557	-0.361	-0.017	-0.017	-0.073	0.000	-0.174	-0.764	-0.174	-0.764	Unit removed	-
RR3-H-0901	Amine Reboiler	-1.068	-1.068	-4.677	-2.881	-0.050	-0.050	-0.219	-0.001	-0.281	-1.231	-0.281	-1.231	Unit removed	-