NMED AIR QUALITY
INITIAL NSR APPLICATION

DELEK LOGISTICS PARTNERS, LP
OUTLAND COMPRESSOR STATION

Prepared By:

Adam Erenstein – Manager of Consulting Services

TRINITY CONSULTANTS
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(505) 266-6611

On behalf of:

Jason Boothe – Sr. Manager, Environmental

Delek Logistics Partners, LP
5850 Granite Parkway
Suite 450
Plano, TX 75024
(361) 788-3307

September 2025

Project 0253201.0050

Trinity Consultants

Trinity Consultants
9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87122 / P 505.266.6611 / **trinityconsultants.com**

September 03, 2025

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

RE: Application for Initial NSR Permit
Delek Logistics Partners, LP — Outland Compressor Station

Dear Permit Programs Manager:

On behalf of Delek Logistics Partners, LP, we are submitting this application for an initial NSR Permit for the Outland Compressor Station. This facility is located 15.7 miles southwest of Monument, New Mexico in Lea County and compresses and dehydrates natural gas for sales. Outland Compressor Station is currently authorized to operate under GCP-O&G Permit No. 7498-M3.

The format and content of this application are consistent with the Bureau's current policy regarding NSR applications; it is a complete application package using the most current application forms. Enclosed is one hard copy and one working copy of the application, including the original certification page, electronic files, and an application check. Please feel free to contact me at (505) 266-6611 or by email at aerenstein@trinityconsultants.com if you have any questions regarding this application. Alternatively, you may contact Jason Boothe with Delek Logistics Partners, LP, at (361) 788-3307 or by email at Jason.Boothe@deleklogistics.com.

Sincerely,

TRINITY CONSULTANTS

Adam Erenstein
Manager of Consulting Services

cc: Jason Boothe (Delek Logistics Partners, LP)

Trinity Project File 0253201.0050

Air Permit Application
Compliance History Disclosure Form

Pursuant to Subsection 74-2-7(S) of the New Mexico Air Quality Control Act ("AQCA"), NMSA §§ 74-2-1 to -17, the New Mexico Environment Department ("Department") may deny any permit application or revoke any permit issued pursuant to the AQCA if, within ten years immediately preceding the date of submission of the permit application, the applicant met any one of the criteria outlined below. In order for the Department to deem an air permit application administratively complete, or issue an air permit for those permits without an administrative completeness determination process, the applicant must complete this Compliance History Disclosure Form as specified in Subsection 74-2-7(P). An existing permit holder (permit issued prior to June 18, 2021) shall provide this Compliance History Disclosure Form to the Department upon request.

Permittee/Applicant Company Name		**Expected Application Submittal Date**
Delek Logistics Partners, LP		September 03, 2025
Permittee/Company Contact	**Phone**	**Email**
Jason Boothe	(361) 788-3307	Jason.Boothe@deleklogistics.com

	Within the 10 years preceding the expected date of submittal of the application, has the permittee or applicant:	
1	Knowingly misrepresented a material fact in an application for a permit?	☐ Yes ☒ No
2	Refused to disclose information required by the provisions of the New Mexico Air Quality Control Act?	☐ Yes ☒ No
3	Been convicted of a felony related to environmental crime in any court of any state or the United States?	☐ Yes ☒ No
4	Been convicted of a crime defined by state or federal statute as involving or being in restraint of trade, price fixing, bribery, or fraud in any court of any state or the United States?	☐ Yes ☒ No
5a	Constructed or operated any facility for which a permit was sought, including the current facility, without the required air quality permit(s) under 20.2.70 NMAC, 20.2.72 NMAC, 20.2.74 NMAC, 20.2.79 NMAC, or 20.2.84 NMAC?	☐ Yes ☒ No
5b	If "No" to question 5a, go to question 6. If "Yes" to question 5a, state whether each facility that was constructed or operated without the required air quality permit met at least one of the following exceptions: a. The unpermitted facility was discovered after acquisition during a timely environmental audit that was authorized by the Department; or b. The operator of the facility estimated that the facility's emissions would not require an air permit, **and** the operator applied for an air permit within 30 calendar days of discovering that an air permit was required for the facility.	☐ Yes ☐ No
6	Had any permit revoked or permanently suspended for cause under the environmental laws of any state or the United States?	☐ Yes ☒ No
7	For each "yes" answer, please provide an explanation and documentation.	

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.: 661732 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).(a) 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.): 882	Updating Permit/NOI #: 7498-M3
1	Facility Name: Outland Compressor Station	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 21113	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): Located in Township 21 South, Range 34 East, Section 15, approximately fifteen miles west-southwest of Monument, New Mexico in Lea County.		
2	Plant Operator Company Name: DKL Delaware Operating – NM LLC	Phone/Fax: (409) 553-1480 / N/A	
a	Plant Operator Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 5501695		

3	Plant Owner(s) name(s): Delek Logistics New Mexico	Phone/Fax: (409) 553-1480 / N/A
a	Plant Owner(s) Mailing Address(s): 5850 Granite Parkway, Ste. 450, Plano, TX 75024	
4	Bill To (Company): Delek Logistics New Mexico	Phone/Fax: (409) 553-1480 / N/A
a	Mailing Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024	E-mail: Jason.Boothe@deleklogistics.com
5	☐ Preparer: ☑ Consultant: Adam Erenstein	Phone/Fax: (505) 266-6611
a	Mailing Address: 9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87122	E-mail: aerenstein@trinityconsultants.com
6	Plant Operator Contact: Michael Curley	Phone/Fax: (281) 961-7957 / N/A
a	Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024	E-mail: michael.curley@deleklogistics.com
7	Air Permit Contact: Jason Boothe	Title: Environmental Manager
a	E-mail: Jason.Boothe@deleklogistics.com	Phone/Fax: (361) 788-3307
b	Mailing Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024	
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: N/A
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: 7498-M3
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: 2.08 MMscf	Daily: 50 MMscf	Annually: 18250 MMscf
b	Proposed	Hourly: 5.83 MMscf	Daily: 140 MMscf	Annually: 51100 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: 2.08 MMscf	Daily: 50 MMscf	Annually: 18250 MMscf
b	Proposed	Hourly: 5.83 MMscf	Daily: 140 MMscf	Annually: 51100 MMscf

Section 1-D: Facility Location Information

1	Section: 15	Range: 34E	Township: 21S	County: Lea	Elevation (ft): 3,746
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 644,168			UTM N (in meters, to nearest 10 meters): 3,593,799	
b	**AND** Latitude (deg., min., sec.): 32°28'19.4592" N			Longitude (deg., min., sec.): 103°27'57.0816" W	
3	Name and zip code of nearest New Mexico town: Monument, 88240				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the intersection of Monument Hwy and New Mexico Highway 8 in Monument, NM, head south on New Mexico Highway 8 S for 10.7 miles. Turn right onto New Mexico Highway 176 W and continue for 9.3 miles. Turn left onto Co Rd 30 and continue for 0.3 miles. Turn right and continue for 2.8 miles. Turn right onto Delaware Basin Rd and in 430 ft the facility will be on the left.				
5	The facility is 15.7 miles west-southwest of Monument, NM.				
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: Lea County, NM. Eunice Municipality.				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☐ Yes ☑ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers:				
9	Name nearest Class I area: Carlsbad Caverns National Park				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 90				
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: 460 meters				
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	($\frac{\text{hours}}{\text{year}}$): 8,760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: N/A	☐AM ☐PM	End: N/A	☐AM ☐PM		
3	Month and year of anticipated start of construction: N/A					
4	Month and year of anticipated construction completion: N/A					
5	Month and year of anticipated startup of new or modified facility: N/A					
6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☑ No If yes, specify: N/A

a	If yes, NOV date or description of issue: N/A		NOV Tracking No: N/A
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☑ No If Yes, provide the 1c & 1d info below:		
c	Document Title: N/A	Date: N/A	Requirement # (or page # and paragraph #): N/A
d	Provide the required text to be inserted in this permit: N/A		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☑ Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☑ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☑ Yes ☐ No		
a	If Yes, what type of source? ☑ **Major** (☑ ≥10 tpy of any single HAP **OR** ☑ ≥25 tpy of any combination of HAPS) **OR** ☐ **Minor** (☐ <10 tpy of any single HAP **AND** ☐ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☑ Yes ☐ No		
a	If yes, include the name of company providing commercial electric power to the facility: Xcel Energy 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): Michael Odigie		Phone: (972) 367-3736
a	R.O. Title: Senior Vice President, DKL	R.O. e-mail: Michael.Odigie@delekus.com	
b	R. O. Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): Michael Curley		Phone: (520) 663-4242
a	A. R.O. Title: Sr. Director of Operations	A. R.O. e-mail: Michael.Curley@deleklogistics.com	
b	A. R. O. Address: 5850 Granite Parkway, Ste. 450, Plano, TX 75024		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship): N/A		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.): Delek Logistics Partners, LP		
a	Address of Parent Company: 5850 Granite Parkway, Ste. 450, Plano, TX 75024		
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: Jason Boothe (361) 788-3307		
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: **States:** Texas (97.31 km)		

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☑ secure electronic transfer. Air Permit Contact Name Adam Erenstein, Email aerenstein@trinityconsultants.com

Phone number (505) 266-6611.

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 Onc	RICE Ignition Type (CI, SI, 4SLB, 2SLB)[4]	Replacing Unit No.
2100	Compressor Engine	Waukesha	7044GSIS4	N6E00549	1380 hp	1380 hp	1/1/2018 9/26/2018	CAT-1 2100	20200253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SRB	N/A
2200	Compressor Engine	Caterpillar	G3516	JEF02299	1380 hp	1380 hp	6/1/2013 9/13/2018	CAT-2 2200	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2300	Compressor Engine	Caterpillar	G3516	JEF01338	1380 hp	1380 hp	9/1/2011 9/13/2018	CAT-3 2300	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2400	Compressor Engine	Caterpillar	G3516	JEF02669	1380 hp	1380 hp	3/1/2014 9/13/2018	CAT-4 2400	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2500	Compressor Engine	Caterpillar	G3516	N6W01566	1380 hp	1380 hp	After 7/1/2010 TBD	CAT-5 2500	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2600	Compressor Engine	Caterpillar	G3516	JEF03256	1380 hp	1380 hp	After 7/1/2010 TBD	CAT-6 2600	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2700	Compressor Engine	Caterpillar	G3606	JFE01659	1875 hp	1875 hp	10/1/2019 TBD	CAT-7 2700	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2800	Compressor Engine	Caterpillar	G3608A4	JFE01551	2500 hp	2500 hp	8/1/2019 TBD	CAT-8 2800	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
2900	Compressor Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	TBD TBD	CAT-9 2900	20200254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	4SLB	N/A
3000	Compressor Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	1/1/2024 1/1/2024	CAT-10 3000	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3100	Compressor Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	1/1/2024 1/1/2024	CAT-11 3100	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3200	Compressor Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	1/1/2024 1/1/2024	CAT-12 3200	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3300	Compressor Engine	Caterpillar	G3606	TBD	1875 hp	1875 hp	1/1/2024 1/1/2024	CAT-13 3300	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check Onc	RICE Ignition Type (CI, SI, 4SLB, 2SLB)[4]	Replacing Unit No.
3400	Compressor Engine	Caterpillar	G3608A4	TBD	2500 hp	2500 hp	1/1/2024 1/1/2024	CAT-14 3400	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3500	Compressor Engine	Caterpillar	G3608A4	TBD	2500 hp	2500 hp	1/1/2024 1/1/2024	CAT-15 3500	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3600	Compressor Engine	Caterpillar	G3608A4	TBD	2500 hp	2500 hp	1/1/2024 1/1/2024	CAT-16 3600	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3700	Compressor Engine	Caterpillar	G3608A4	TBD	2500 hp	2500 hp	1/1/2024 1/1/2024	CAT-17 3700	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3800	Compressor Engine	Caterpillar	G3608A4	TBD	2500 hp	2500 hp	1/1/2024 1/1/2024	CAT-18 3800	20200254	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
TK-1	Gunbarrel Tank	Dragon	TBD	165353	750 bbl	750 bbl	1/1/2018 8/23/2018	FL-2 FL-2	40400312	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TK-2	Condensate Tank	Dragon	TBD	165351	500 bbl	500 bbl	1/1/2018 83/23/2018	FL-2 FL-2	31000212	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TK-3	Condensate Tank	TBD	TBD	TBD	500 bbl	500 bbl	TBD After 9/18/2015	FL-2 FL-2	31000212	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TK-4	Condensate Tank	TBD	TBD	TBD	500 bbl	500 bbl	TBD After 9/18/2015	FL-2 FL-2	31000212	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TK-5	Condensate Tank	TBD	TBD	TBD	500 bbl	500 bbl	TBD TBD	FL-2 FL-2	31000212	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-1	Produced Water Tank	Dragon	TBD	165352	500 bbl	500 bbl	2018 8/23/2018	FL-2 FL-2	31000213	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-2	Produced Water Tank	Dragon	TBD	165350	500 bbl	500 bbl	2018 8/23/2018	FL-2 FL-2	31000213	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-3	Produced Water Tank	TBD	TBD	TBD	500 bbl	500 bbl	TBD TBD	FL-2 FL-2	31000213	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-4	Produced Water Tank	TBD	TBD	TBD	500 bbl	500 bbl	TBD TBD	FL-2 FL-2	31000213	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-1	Dehy Reboiler	Flameco	TBD	SB18-12	0.5 MMBtu/hr	0.5 MMBtu/hr	TBD 1/19/2018	N/A HTR-1	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
HTR-1	Dehy Reboiler	TBD	TBD	TBD	1.5 MMBtu/hr	1.5 MMBtu/hr	TBD TBD	N/A HTR-1	31000228	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	HTR-1
HTR-2	Dehy Reboiler	TBD	TBD	TBD	1.5 MMBtu/hr	1.5 MMBtu/hr	TBD After 9/18/2015	N/A HTR-2	31000228	☑ 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 Onc	RICE Ignition Type (CI, SI, 4SLB, 2SLB)[4]	Replacing Unit No.
CONDLOAD	Condensate Loadout	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	40400250	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PW LOAD	Produced Water Loadout	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	40400250	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-1	Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	DEHY-2 FUG-1	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
DEHY-1	TEG Dehydrator	TBD	SA7859-0	TBD	25 MMSCFD	25 MMSCFD	TBD 9/13/2018	ECD-1 DEHY-1	31000304	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
DEHY-2	TEG Dehydrator	TBD	TBD	TBD	50 MMSCFD	50 MMSCFD	TBD TBD	N/A DEHY-2	31000304	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
DEHY-1	TEG Dehydrator	TBD	TBD	TBD	70 MMSCFD	70 MMSCFD	TBD TBD	ECD-1 ECD-1	31000304	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	DEHY-1
DEHY-2	TEG Dehydrator	TBD	TBD	TBD	70 MMSCFD	70 MMSCFD	TBD TBD	ECD-2 ECD-2	31000304	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	DEHY-2
ECD-1	Combustor	SpiralX	TBD	TBD	15.0 MSCFD	2.1 MSCFD	TBD 8/23/2018	N/A ECD-1	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
ECD-2	Combustor	TBD	TBD	TBD	TBD	11.5 MSCFD	TBD TBD	N/A ECD-2	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1	Process Flare	TBD	TBD	TBD	TBD	31000 MSCFD	TBD TBD	N/A N/A	31000160	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Tank Flare	Hero	TBD	VIS0004142	140 MSCFD	80.4 MSCFD	1/1/2017 8/23/2018	N/A N/A	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SSM	Maintenance Activities	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

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

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

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

Unit Number	Source Description	Manufacturer	Model No. Serial No.	Max Capacity Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
HR-1	Road Dust	N/A	N/A N/A	N/A N/A	20.2.72.202.B.5	N/A N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
GEN-1	Diesel Fired Generator	TBD	TBD TBD	TBD TBD	20.2.72.202.B.3	TBD TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ 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
CAT-1	Oxidation Catalyst/AFR	9/26/2018	NOx, CO, VOC, Formaldehyde	2100	NOx: 96.72% CO: 98.03% VOC: 91.13% HCHO: 60.00%	Manufacturer Data
CAT-2	Oxidation Catalyst/AFR	9/13/2018	NOx, CO, VOC, Formaldehyde	2200	CO: 93.00% VOC: 68.75% HCHO: 76.74%	Manufacturer Data
CAT-3	Oxidation Catalyst/AFR	9/13/2018	NOx, CO, VOC, Formaldehyde	2300		Manufacturer Data
CAT-4	Oxidation Catalyst/AFR	9/13/2018	NOx, CO, VOC, Formaldehyde	2400		Manufacturer Data
CAT-5	Oxidation Catalyst/AFR	TBD	NOx, CO, VOC, Formaldehyde	2500		Manufacturer Data
CAT-6	Oxidation Catalyst/AFR	TBD	NOx, CO, VOC, Formaldehyde	2600		Manufacturer Data
CAT-7	Oxidation Catalyst/AFR	TBD	NOx, CO, VOC, Formaldehyde	2700	CO: 79.31% VOC: 63.50% HCHO: 47.37%	Manufacturer Data
CAT-8	Oxidation Catalyst/AFR	TBD	NOx, CO, VOC, Formaldehyde	2800	CO: 81.57% VOC: 41.18% HCHO: 25.00%	Manufacturer Data
CAT-9	Oxidation Catalyst/AFR	TBD	NOx, CO, VOC, Formaldehyde	2900	CO: 79.31% VOC: 63.50% HCHO: 47.37%	Manufacturer Data
CAT-10	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3000		Manufacturer Data
CAT-11	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3100		Manufacturer Data
CAT-12	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3200		Manufacturer Data
CAT-13	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3300		Manufacturer Data
CAT-14	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3400	CO: 81.57% VOC: 41.18% HCHO: 25.00%	Manufacturer Data
CAT-15	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3500		Manufacturer Data
CAT-16	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3600		Manufacturer Data
CAT-17	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3700		Manufacturer Data
CAT-18	Oxidation Catalyst/AFR	1/1/2024	NOx, CO, VOC, Formaldehyde	3800		Manufacturer Data
Condenser	DEHY-1 Condenser	N/A	VOC/HAPs	DEHY-1	~71%	Engineering Calculation
Condenser	DEHY-2 Condenser	TBD	VOC/HAPs	DEHY-2	~71%	Engineering Calculation
ECD-1	Dehy Combustor	9/13/2018	VOC/HAPs	DEHY-1 (Regenerator)	98%	Manufacturer Data
ECD-2	Dehy Combustor	TBD	VOC/HAPs	DEHY-2 (Regenerator)	98%	Manufacturer Data
FL-1	Process Flare	TBD	VOC/HAPs	Sales Gas Downtime, Compressor Blowdowns, Plant Blowdowns	98%	Manufacturer Data
FL-2	Tank Flare	43335	VOC/HAPs	TK-1, TK-2, TK-3, TK-4, TK-5, PWTK-1, PWTK-2, PWTK-3, PWTK-4	98%	Manufacturer Data

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

[2] Glycol Dehydration Units: Indicate each stream that is being controlled and which unit is controlling each stream (condensables, non-condensables, flash tank, reboiler etc.)

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
2100	50.62	221.72	46.93	205.54	2.31	10.12	0.056	0.24	0.24	1.04	0.24	1.04	0.24	1.04	--	--	--	--
2200	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2300	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2400	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2500	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2600	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2700	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
2800	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
2900	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.11	0.62	--	--	--	--
3000	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.11	0.62	--	--	--	--
3100	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.11	0.62	--	--	--	--
3200	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.11	0.62	--	--	--	--
3300	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.14	0.62	0.11	0.62	--	--	--	--
3400	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3500	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3600	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3700	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3800	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
TK-1	--	--	--	--	31.83	139.42	--	--	--	--	--	--	--	--	9.18E-04	4.02E-03	--	--
TK-2	--	--	--	--	4.02	17.60	--	--	--	--	--	--	--	--	1.00E-04	4.39E-04	--	--
TK-3	--	--	--	--	4.02	17.60	--	--	--	--	--	--	--	--	1.00E-04	4.39E-04	--	--
TK-4	--	--	--	--	4.02	17.60	--	--	--	--	--	--	--	--	1.00E-04	4.39E-04	--	--
TK-5	-	-	-	-	4.02	17.60	-	-	-	-	-	-	-	-	1.00E-04	4.39E-04	--	--
PWTK-1	--	--	--	--	0.082	0.36	--	--	--	--	--	--	--	--	3.12E-05	1.36E-04	--	--
PWTK-2	--	--	--	--	0.082	0.36	--	--	--	--	--	--	--	--	3.12E-05	1.36E-04	--	--
PWTK-3	--	--	--	--	0.082	0.36	--	--	--	--	--	--	--	--	3.12E-05	1.36E-04	--	--
PWTK-4	--	--	--	--	0.082	0.36	--	--	--	--	--	--	--	--	3.12E-05	1.36E-04	--	--
HTR-1	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	0.011	0.049	--	--	--	--
HTR-2	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	0.011	0.049	--	--	--	--
COND LOAD	--	--	--	--	6.88	30.15	--	--	--	--	--	--	--	--	1.80E-04	7.88E-06	--	--
PW LOAD	--	--	--	--	1.92	8.39	--	--	--	--	--	--	--	--	8.08E-04	3.54E-05	--	--
DEHY-1	--	--	--	--	98.73	432.43	--	--	--	--	--	--	--	--	0.013	0.057	--	--
DEHY-2	--	--	--	--	98.73	432.43	--	--	--	--	--	--	--	--	0.013	0.057	--	--
ECD-1	0.012	0.054	0.010	0.045	0.57	2.48	5.71E-04	2.50E-03	--	--	--	--	--	--	--	--	--	--
ECD-2	0.012	0.054	0.010	0.045	0.57	2.48	5.71E-04	2.50E-03	--	--	--	--	--	--	--	--	--	--
FL-1	0.11	0.47	0.22	0.94	0.17	0.73	3.57E-03	0.016	--	--	--	--	--	--	0.0002	0.0008	--	--
FL-2	0.11	0.47	0.22	0.94	0.17	0.73	3.57E-03	0.016	--	--	--	--	--	--	0.0002	0.0008	--	--
FUG-1	--	--	--	--	3.41	14.92	--	--	--	--	--	--	--	--	5.82E-05	2.55E-04	--	--
Totals	77.11	337.76	235.45	1031.28	327.47	1434.33	1.28	5.61	2.89	12.66	2.89	12.66	2.73	12.66	0.029	0.12	--	--

[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
2100	1.66	7.28	0.92	4.05	0.30	1.32	0.056	0.24	0.24	1.04	0.24	1.04	0.24	1.04	--	--	--	--
2200	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2300	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2400	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2500	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2600	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	0.11	0.48	--	--	--	--
2700	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
2800	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
2900	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
3000	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
3100	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
3200	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
3300	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	0.14	0.62	--	--	--	--
3400	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3500	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3600	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3700	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
3800	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	0.21	0.91	--	--	--	--
TK-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	0.011	0.049	--	--	--	--
HTR-2	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	0.011	0.049	--	--	--	--
COND LOAD	--	--	--	--	6.88	30.15	--	--	--	--	--	--	--	--	1.80E-04	7.88E-06	--	--
PW LOAD	--	--	--	--	1.92	8.39	--	--	--	--	--	--	--	--	8.08E-04	3.54E-05	--	--
DEHY-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DEHY-2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ECD-1	0.10	0.44	0.084	0.37	0.57	2.48	0.016	0.070	7.57E-03	0.033	7.57E-03	0.033	7.57E-03	0.033	2.08E-04	9.11E-04	--	--
ECD-2	0.10	0.44	0.084	0.37	0.57	2.48	0.016	0.070	7.57E-03	0.033	7.57E-03	0.033	7.57E-03	0.033	2.08E-04	9.11E-04	--	--
FL-1	0.11	0.47	0.22	0.94	0.17	0.73	3.57E-03	0.016	--	--	--	--	--	--	1.87E-04	8.19E-04	--	--
FL-2	0.38	1.66	0.75	3.31	18.67	4.95	6.23E-03	0.027	--	--	--	--	--	--	2.16E-04	9.45E-04	--	--
FUG-1	--	--	--	--	3.41	14.92	--	--	--	--	--	--	--	--	5.82E-05	2.55E-04	--	--
SSM	--	--	--	--	6.83	0.12	--	--	--	--	--	--	--	--	1.14E-04	1.75E-03	--	--
Totals	28.60	125.27	34.33	150.35	67.62	189.56	1.314	5.75	2.91	12.72	2.91	12.72	2.91	12.72	1.98E-03	5.64E-03	--	--
Totals w/o Fugitives	28.60	125.27	34.33	150.35	64.21	174.64	1.31	5.75	2.91	12.72	2.91	12.72	2.91	12.72	1.92E-03	5.38E-03	--	--

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FL-1	223.69	1.16	446.57	2.32	400.43	2.08	7.14E-06	3.14E-05	-	-	-	-	-	-	3.74E-07	1.65E-06	-	-
SSM	-	-	-	-	6.83	0.12	-	-	-	-	-	-	-	-	1.14E-04	1.75E-03	-	-
Totals	223.69	1.16	446.57	2.32	407.26	2.21	7.14E-06	3.14E-05	--	--	--	--	--	--	1.14E-04	1.76E-03	--	--

[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.

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity	Inside Diameter (ft)
						(acfs)	(dscfs)		(ft/sec)	
Engine	2100	Vertical	No	24.5	1223.00	161.08	-	-	205.1	1.0
Engine	2200	Vertical	No	24.2	1015.00	135.17	-	-	101.83	1.3
Engine	2300	Vertical	No	24.2	1015.00	135.17	-	-	101.83	1.3
Engine	2400	Vertical	No	24.2	1015.00	135.17	-	-	101.83	1.3
Engine	2500	Vertical	No	24.2	1015.00	135.17	-	-	101.83	1.3
Engine	2600	Vertical	No	24.2	1015.00	135.17	-	-	101.83	1.3
Engine	2700	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	2800	Vertical	No	21.7	876.00	270.02	-	-	152.80	1.5
Engine	2900	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	3000	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	3100	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	3200	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	3300	Vertical	No	26.1	827.00	198.57	-	-	149.60	1.3
Engine	3400	Vertical	No	21.7	876.00	270.02	-	-	152.80	1.5
Engine	3500	Vertical	No	21.67	876.00	270.02	-	-	152.80	1.5
Engine	3600	Vertical	No	21.67	876.00	270.02	-	-	152.80	1.5
Engine	3700	Vertical	No	21.67	876.00	270.02	-	-	152.80	1.5
Engine	3800	Vertical	No	21.67	876.00	270.02	-	-	152.80	1.5
Heater	HTR-1	Vertical	No	21.0	500.00	9.37	-	-	5.30	1.5
Heater	HTR-2	Vertical	No	21.0	500.00	9.37	-	-	5.30	1.5
ECD	ECD-1	Vertical	No	9.0	1100.00	30.80	-	-	5.9	2.6
ECD	ECD-2	Vertical	No	9.0	1100.00	30.80	-	-	5.9	2.6
Flare	FL-1	Vertical	No	30.0	1832.0	1367.80	-	-	65.6	5.5
Flare	FL-2	Vertical	No	20.0	1832.0	1.82	-	-	65.6	5.5

Table 2-I: Emission Rates for HAPs

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		Acetaldehyde ☑ HAP		Acrolein ☑ HAP		Benzene ☑ HAP		Toluene ☑ HAP		Ethylbenzene ☑ HAP		Xylenes ☑ HAP		n-Hexane ☑ HAP	
		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
2100	2100	0.21	0.91	0.074	0.32	0.042	0.18	0.040	0.17	0.024	0.10	8.38E-03	0.037	3.73E-04	1.63E-03	2.93E-03	0.013	0.017	0.072
2200	2200	0.51	2.25	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2300	2300	0.51	2.25	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2400	2400	0.51	2.25	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2500	2500	0.51	2.25	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2600	2600	0.51	2.25	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2700	2700	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
2800	2800	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
2900	2900	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3000	3000	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3100	3100	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3200	3200	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3300	3300	0.73	3.20	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3400	3400	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3500	3500	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3600	3600	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3700	3700	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3800	3800	0.94	4.14	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
HTR-1	HTR-1	2.77E-03	0.012	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012
HTR-2	HTR-2	2.77E-03	0.012	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012
COND LOAD	COND LOAD	0.52	2.26	--	--	--	--	--	--	8.72E-03	0.038	9.94E-03	0.044	9.37E-04	4.11E-03	2.40E-03	0.011	7.11E-03	0.031
PW LOAD	PW LOAD	1.47	6.44	--	--	--	--	--	--	8.45E-03	0.037	9.21E-03	0.040	8.71E-04	3.81E-03	2.14E-03	9.37E-03	1.02E-05	4.48E-05
ECD-1	ECD-1	0.13	0.55	--	--	--	--	--	--	0.077	0.34	0.038	0.17	1.02E-03	4.45E-03	2.66E-03	0.012	6.60E-03	0.029
ECD-2	ECD-2	0.13	0.55	--	--	--	--	--	--	0.077	0.34	0.038	0.17	1.02E-03	4.45E-03	2.66E-03	0.012	6.60E-03	0.029
FL-1	FL-1	28.97	0.17	--	--	--	--	--	--	4.74	0.035	9.60	0.067	2.31	0.017	6.65	0.049	5.68	0.041
FL-2	FL-2	0.035	0.15	--	--	--	--	--	--	0.012	0.051	0.015	0.067	2.15E-03	9.40E-03	3.31E-03	0.026	8.85E-03	0.039
FUG-1	FUG-1	0.32	1.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SSM	SSM	0.40	7.16E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals:		44.79	67.69	7.35	32.19	2.74	12.02	1.700	7.45	5.60	2.758	9.85	1.167	2.33	0.10	6.72	0.391	6.089	1.822

[1] Gen-1 is exempt from permitting, but is shown here to include in facility-wide emissions.

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 (BTU/SCF)	Hourly Usage (MSCF/hr)	Annual Usage (MMSCF/yr)	% Sulfur	% Ash
2100	Field Gas	Raw/Field Natural Gas	1,251.76	9.78	85.66	2 gr S/100 scf	
2200	Field Gas	Raw/Field Natural Gas	1,251.76	8.68	76.02	2 gr S/100 scf	
2300	Field Gas	Raw/Field Natural Gas	1,251.76	8.68	76.02	2 gr S/100 scf	
2400	Field Gas	Raw/Field Natural Gas	1,251.76	8.68	76.02	2 gr S/100 scf	
2500	Field Gas	Raw/Field Natural Gas	1,251.76	8.68	76.02	2 gr S/100 scf	
2600	Field Gas	Raw/Field Natural Gas	1,251.76	8.68	76.02	2 gr S/100 scf	
2700	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
2800	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
2900	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
3000	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
3100	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
3200	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
3300	Field Gas	Raw/Field Natural Gas	1,251.76	11.24	98.49	2 gr S/100 scf	
3400	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
3500	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
3600	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
3700	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
3800	Field Gas	Raw/Field Natural Gas	1,251.76	16.58	145.28	2 gr S/100 scf	
HTR-1	Field Gas	Raw/Field Natural Gas	1,251.76	1.20	10.50	2 gr S/100 scf	
HTR-2	Field Gas	Raw/Field Natural Gas	1,251.76	1.20	10.50	2 gr S/100 scf	
ECD-1	Field Gas	Raw/Field Natural Gas	1,251.76	0.10	0.88	2 gr S/100 scf	
ECD-2	Field Gas	Raw/Field Natural Gas	1,251.76	0.10	0.88	2 gr S/100 scf	
FL-1	Field Gas	Raw/Field Natural Gas	1,251.76	0.63	5.48	2 gr S/100 scf	
FL-2	Field Gas	Raw/Field Natural Gas	1,251.76	0.63	5.48	2 gr S/100 scf	

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-1	40400311	Oil/Produced Water	Mixed Hydrocarbons	6.47	30.31	60.77	14.83	60.77	14.83
TK-2	31000212	Condensate	Mixed Hydrocarbons	6.15	38.50	70.09	11.38	82.10	12.88
TK-3	31000212	Condensate	Mixed Hydrocarbons	6.15	38.50	70.09	11.38	82.10	12.88
TK-4	31000212	Condensate	Mixed Hydrocarbons	6.15	38.50	70.09	11.38	82.10	12.88
TK-5	31000212	Condensate	Mixed Hydrocarbons	6.15	38.50	70.09	11.38	82.10	12.88
PWTK-1	31000213	Produced Water	Mixed Hydrocarbons	8.34	35.16	70.09	11.38	82.10	12.88
PWTK-2	31000213	Produced Water	Mixed Hydrocarbons	8.34	35.16	70.09	11.38	82.10	12.88
PWTK-3	31000213	Produced Water	Mixed Hydrocarbons	8.34	35.16	70.09	11.38	82.10	12.88
PWTK-4	31000213	Produced Water	Mixed Hydrocarbons	8.34	35.16	70.09	11.38	82.10	12.88

Table 2-L: Tank Data

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

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-1	8/23/2018	Condensate	N/A	Vertical - Fixed Roof (FX)	750		7.32	3.66	Green	Green	Average	9,198,000	511.0
TK-2	8/23/2018	Condensate	N/A	Vertical - Fixed Roof (FX)	500		4.08	3.05	Green	Green	0.125	2,677,500	127.5
TK-3	After 9/18/2015	Condensate	N/A	Vertical - Fixed Roof (FX)	500		4.08	3.05	Green	Green	0.125	2,677,500	127.5
TK-4	After 9/18/2015	Condensate	N/A	Vertical - Fixed Roof (FX)	500		4.08	3.05	Green	Green	0.125	2,677,500	127.5
TK-5	1/1/2024	Condensate	N/A	Vertical - Fixed Roof (FX)	500		4.08	3.05	Green	Green	0.125	2,677,500	127.5
PWTK-1	8/23/2018	Produced Water	N/A	Vertical - Fixed Roof (FX)	750		4.08	3.05	Green	Green	0.125	1,341,375	63.9
PWTK-2	8/23/2018	Produced Water	N/A	Vertical - Fixed Roof (FX)	750		4.08	3.05	Green	Green	0.125	1,341,375	63.9
PWTK-3	1/1/2024	Produced Water	N/A	Vertical - Fixed Roof (FX)	750		4.08	3.05	Green	Green	0.125	1,341,375	63.9
PWTK-4	1/1/2024	Produced Water	N/A	Vertical - Fixed Roof (FX)	750		4.08	3.05	Green	Green	0.125	1,341,375	63.9

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Natural Gas	Mixed Hydrocarbons	Gas	51100 MMscf/yr	Condensate	Mixed Hydrocarbons	Liquid	255000 bbl/yr
				Produced Water	Mixed Hydrocarbons	Liquid	127750 bbl/yr
				Natural Gas	Mixed Hydrocarbons	Gas	51100 MMscf/yr

Table 2-N: CEM Equipment

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

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
N/A - There is no CEM equipment at this facility.									

Table 2-O: Parametric Emissions Measurement Equipment

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

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A - There is no PEM equipment at this facility.								

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

		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**										
2100	**mass GHG**	6,271.21	0.012	0.13	-	-									6271.35	
	CO_2e	6,271.21	3.13	3.64	-	-										6277.98
2200	**mass GHG**	5,565.96	0.010	0.12	-	-									5566.09	
	CO_2e	5,565.96	2.78	3.23	-	-										5571.97
2300	**mass GHG**	5,565.96	0.010	0.12	-	-									5566.09	
	CO_2e	5,565.96	2.78	3.23	-	-										5571.97
2400	**mass GHG**	5,565.96	0.010	0.12	-	-									5566.09	
	CO_2e	5,565.96	2.78	3.23	-	-										5571.97
2500	**mass GHG**	5,565.96	0.010	0.12	-	-									5566.09	
	CO_2e	5,565.96	2.78	3.23	-	-										5571.97
2600	**mass GHG**	5,565.96	0.010	0.12	-	-									5566.09	
	CO_2e	5,565.96	2.78	3.23	-	-										5571.97
2700	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
2800	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO_2e	10,636.48	5.31	6.17	-	-										10647.97
2900	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
3000	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
3100	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
3200	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
3300	**mass GHG**	7,210.84	0.014	0.15	-	-									7211.00	
	CO_2e	7,210.84	3.60	4.19	-	-										7218.63
3400	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO_2e	10,636.48	5.31	6.17	-	-										10647.97
3500	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO_2e	10,636.48	5.31	6.17	-	-										10647.97
3600	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO2e	10,636.48	5.31	6.17	-	-										10647.97

3700	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO_2e	10,636.48	5.31	6.17	-	-										10647.97
3800	**mass GHG**	10,636.48	0.020	0.22	-	-									10636.72	
	CO2e	10,636.48	5.31	6.17	-	-										10647.97
HTR-1	**mass GHG**	768.54	1.45E-03	0.016											768.56	
	CO2e	768.54	0.38	0.45												769.37
HTR-2	**mass GHG**	768.54	1.45E-03	0.016	-	-									768.56	
	CO_2e	768.54	0.38	0.45	-	-										769.37
COND LOAD	**mass GHG**	0.68	-	5.65											6.32	
	CO2e	0.68	-	158.07												158.75
PW LOAD	**mass GHG**	0.0061	-	1.24											1.25	
	CO2e	0.0061	-	34.79												34.79
ECD-1	**mass GHG**	1,068.29	2.01E-03	0.022											1068.31	
	CO2e	1,068.29	0.53	0.62												1069.44
ECD-2	**mass GHG**	1,068.29	2.01E-03	0.022											1068.31	
	CO2e	1,068.29	0.53	0.62												1069.44
FL-1	**mass GHG**	1,308.85	2.31E-03	5.44											1314.29	
	CO2e	1,308.85	0.61	152.36												1461.82
FL-2	**mass GHG**	1,119.72	4.17E-03	3.40											1123.12	
	CO2e	1,119.72	1.10	95.09												1215.92
FUG-1	**mass GHG**	0.71	-	27.09											27.80	
	CO2e	0.71	-	758.50												759.22
SSM/M	**mass GHG**	5.55	-	211.00	-	-									216.55	
	CO_2e	5.55	-	5,907.98	-	-										5913.52
Total	**mass GHG**	147,294.13	0.28	256.82											147551.22	
	CO_2e	147,294.13	74.06	1,282.89												154559.06

[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.

This application is being submitted an Initial NSR Permit for the Outland Compressor Station (Outland CS) pursuant to 20.2.72.219.D.(1)(a) NMAC. Currently permitted under GCP-O&G Permit No. 7498-M3, the facility is owned and operated by Delek Logistics Partners, LP (Delek)

Outland CS receives natural gas from nearby facilities and compresses the gas for sales. The facility utilizes compressors powered by compressor engines to compress the gas for sales. With this application, Delek is proposing the replacement of two (2) existing glycol dehydrators with two (2) 70 MMSCFD units, one (1) 0.5 MMBtu/hr glycol dehydrator reboiler with one (1) 1.5 MMBtu/hr reboiler unit, and the addition of nine (9) natural gas compressor engines, one (1) condensate storage tank, two (2) produced water storage tanks, and one (1) process flare. All other units and facility operations will remain existing (unchanged).

An increase in facility throughputs of up to 140 MMSCFD of natural gas, 700 barrels per day of condensate, and 350 barrels per day of produced water is also included in this permit application.

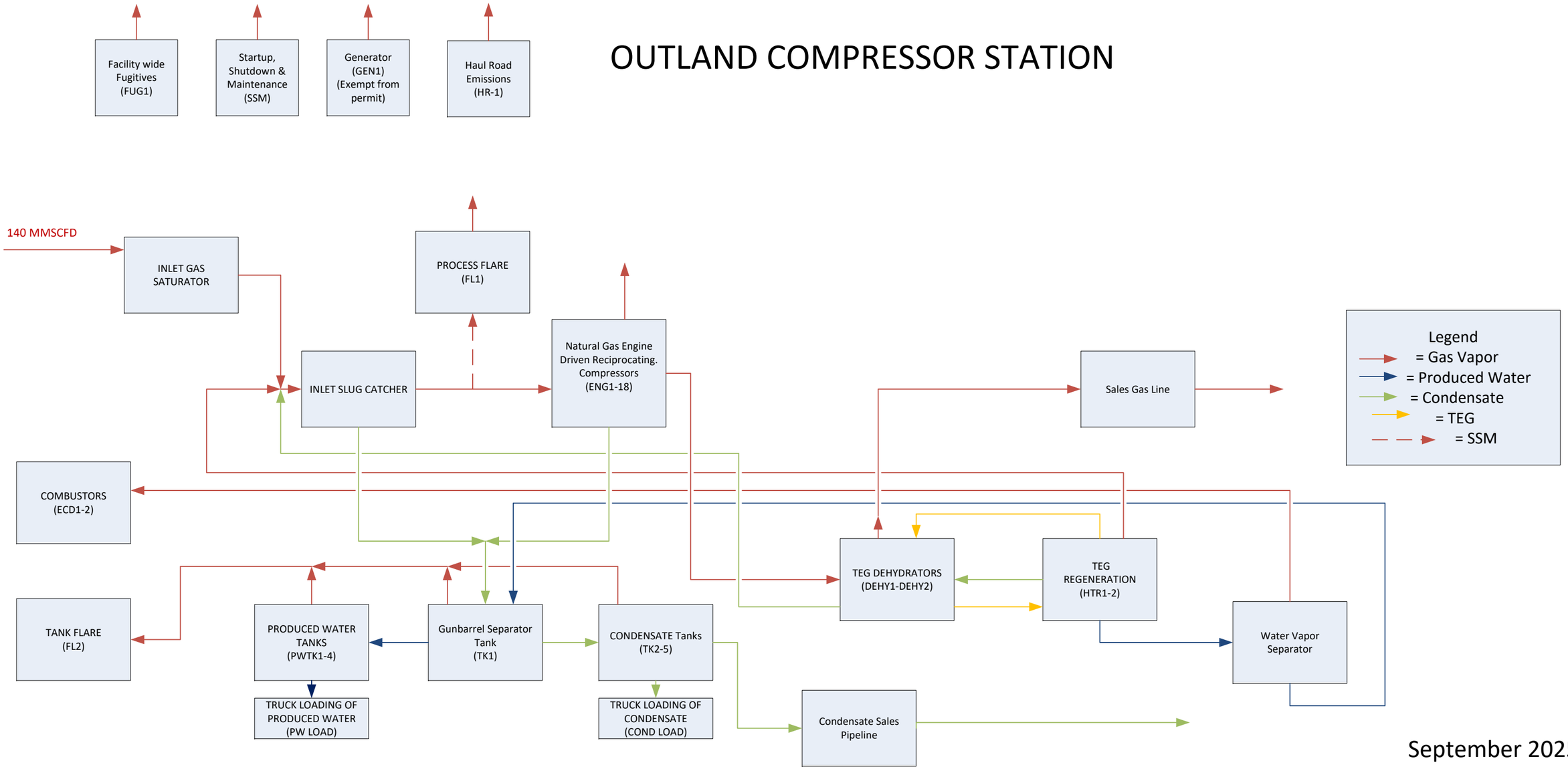
Section 4

Process Flow Sheet

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

A process flow diagram of this facility is included below.

OUTLAND COMPRESSOR STATION



September 2025 REV #0

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 of this facility has been included below.

OUTLAND CS

0°35'26"
PREVAILING WIND
TRUE NORTH
PLANT NORTH

N. 536,962.7601
E. 808,491.5585

MAN GATE

N. 536,971.4872
E. 809,294.5111

N. 536,922.7626
E. 808,492.0057

HP Flare
32°28'22.71"N
103°27'53.20"W

TRUCK GATE

N. 536,902.7638
E. 808,492.2293

Compressor #12 Compressor #14 Compressor #16 Compressor #18

PR

PR

Compressor #11 Compressor #13 Compressor #15 Compressor #17

Existing Tank
32°28'19.81"N
103°28'0.05"W

New Tanks

V-1110

PR-1 ZZZ-0520

V-3145 ZZZ-3300

T-3100 ZZZ-3110 BTEX DRUM

PR-2 ZZZ-3400

T-3200 ZZZ-3210 BTEX DRUM

FUTURE

Heater/Combuster #2

Combuster

Heater

PR-3 F-3510

PR-4 PR-2100

PR-2200 PR-2300 PR-2400 PR-2500 PR-2600 PR-2700 PR-2800

C-2100 C-2200 C-2300 C-2400 C-2500 C-2600 C-2700 C-2800

C2900 (New)
Archrock 3608

Compressor #10

PR

TK-6320
TK-6310
TK-6200
TK-6100

MAN GATE

MAN GATE

Existing Tank Flare
32°28'18.56"N
103°28'0.18"W

FL-9100

GAS GENERATOR

PDC ZZZ-0100

TRANSFORMER

C2100 (New) Archrock 7044 S4

C2200 JW 3516

C2300 JW 3516

C2400 JW 3516

C2500 DELEK 3516

C2600 Archrock 3516

C2700 JW 3606 Demo'd

C2800 Demo'd

MAN GATE

FENCE

N. 536,423.5437
E. 808,497.5871

N. 536,432.5209
E. 809,300.5369

Existing 3516 Comp
32°28'18.67"N
103°27'57.73"W

Existing 3516 Comp
32°28'18.67"N
103°27'55.62"W

Proposed equipment locations subject to change upon finalization of detailed engineering

NOTES:

1. COORDINATES BASED ON TEXAS STATE PLANE, CENTRAL ZONE, NAD27 US FOOT.

REVISIONS	NO.	DESCRIPTION	BY	CK'D	APPR.	DATE
	1	AS BUILT	DN	BR	BR	02/06/18
	0	ISSUED FOR CONSTRUCTION	DN	BR	BR	01/11/18

THIS DRAWING AND ITS CONTENTS ARE THE PROPRIETARY INFORMATION OF SNC LAVALIN AND SHALL NOT BE USED, REPRODUCED OR DISCLOSED WITHOUT THE EXPRESSED PRIOR WRITTEN PERMISSION OF SNC LAVALIN

SNC·LAVALIN
919 MILAM SUITE 1000
HOUSTON, TEXAS 77002
TEXAS REGISTERED ENGINEERING FIRM F-001178

3 BEAR OUTLAND COMPRESSOR STATION
FENCING PLAN

DRAWN	DATE	CHK'D	DATE	APPR.	DATE
D. NGUYEN	01/11/18	B. RHODES	01/11/18	B. RHODES	01/11/18

SCALE	PROJ. NO.	DWG. NO.	REV.
1/32" = 1'-0"	ISJT01		1

FILE NAME: P:\SNC\71016 3Bear Compressor Station\FCE Models and Drawings\Drawings\Civil\SJT01-1000-4102-0004.dwg PLOTTED: 2/6/18 - PLOTSTYLE: 000_TYP.ctb - PAGE SETUP: ANSI expond B (11.00 x 17.00 Inches) - USER: Duc Nguyen - LTSCALE: 0.5 - DIMSCALE: 0

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.

Authorized emissions units at the facility will be as follows:

- Eighteen (18) natural gas compressor engines (Units 2100 through 3800)
- Two (2) 70 MMSCFD Glycol Dehydrators (Units DEHY-1 & DEHY-2)
- Two (2) 1.5 MMBtu/hr glycol reboilers (Units HTR-1 & HTR-2)
- Two (2) enclosed combustion devices (Units ECD-1 & ECD-2)
- Two (2) flares, one (1) process flare (Unit FL-1) and one (1) tank flare (Unit FL-2)
- One (1) gunbarrel tank (Unit TK-1)
- Four (4) condensate storage tanks (Units TK-2, TK-3, TK-4 & TK-5)
- Four (4) produced water storga etanks (Units PWTK-1, PWTK-2, PWTK-3 & PWTK-5)
- Condensate Loading (Unit COND LOAD)
- Produced Water Loading (Unit PW LOAD)
- Haul Roads (Units HR-1) (exempt pursuant to 20.2.72.202.B. (5) NMAC)
- One emergency generator, providing standby electric power (Unit GEN-1) (exempt pursuant to 20.2.72.202.B.(3) NMAC)
- Facility-wide fugitive emissions (Unit FUG-1)
- Startup, shutdown and maintenance emissions (Unit SSM)

The basis for calculating the emissions for these units is discussed here.

Compressor Engines (Units 2100 through 3800)

NO_x, CO, VOC, and formaldehyde emissions are calculated using manufacturer specifications. SO_2 emissions are based on a conservative fuel sulfur content estimated of 2 gr S/100 scf and 100% conversion of elemental sulfur to SO_2. Particulate (PM, $PM_{2.5}$, and PM_{10}) and HAP emissions were calculated using AP-42 Table 3.2-2. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Generator Engine (Unit GEN-1)

NO_x, CO, and VOC emissions are calculated using a Certification of Conformity with the Clean Air Act dated 2021. SO_2 emissions are based on a conservative fuel sulfur content estimated of 2 gr S/100 scf and 100% conversion of elemental sulfur to SO_2. Particulate (PM, $PM_{2.5}$, and PM_{10}) and HAP emissions were calculated using AP-42 Table 3.2-2. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2. GEN-1 is exempt per 20.2.202.B.(3).

Glycol Dehydrator (Units Dehy-1 & DEHY-2)

Glycol dehydration emissions are calculated using BR&E ProMax and an extended inlet gas analysis. VOC and HAP emissions from the regenerator are controlled with a BTEX condenser. Flash tank emissions are recycled back to the inlet. The BTEX condenser overheads are routed to the reboiler for fuel, however, when the reboiler does not call for fuel, the BTEX condenser overheads are routed to the enclosed combustion device (Units ECD-1 for DEHY-1 & ECD-2 for DEHY-2).

Glycol Reboilers (Units HTR-1 & HTR-2)

NOx, CO, VOC, PM, and HAPs emissions are calculated using AP-42 Table 1.4-1 through 1.4-3 emission factors. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Atmospheric Storage Tanks (Units TK-1 through TK-5 & PWTK-1 through PWTK-4)

Uncontrolled emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the short-term worse case scenario. Annual emissions are based on the daily throughput of the facility. Flash, working, and breathing emissions are routed to the tank flare (FL-1) with a 100% capture efficiency and a 98% DRE.

Enclosed Combustion Devices (Units ECD-1 & ECD-2)

Emissions for NO_x, CO, and PM are calculated using AP-42 Tables 1.4-1 & 2 emission factors. Pilot SO_2 emissions are based on a conservative fuel sulfur content of 2 gr S/100 scf and a 100% conversion of elemental sulfur to SO_2. SO_2 emissions were calculated based on a 98% DRE, based on the manufacturer specification sheet, and conversion to SO_2. VOC, H_2S, and HAPs are calculated based on BR&E ProMax for the BTEX condenser overheads. For the H_2S, it was assumed 98% was combusted and 100% of the combusted H2S was converted to SO_2. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

Loading Emissions (Units CONDLOAD & PW LOAD)

Loading emissions are calculated using AP-42 Section 5.2 methodology. The maximum hourly throughput is based on the assumption that two trucks with a 210 bbl capacity can be loaded in an hour.

Fugitive Emissions (Unit FUG-1)

Fugitive emission calculations were completed using emission factors from Table 2-4 of EPA Protocol for Equipment Leak Emissions Estimates, 1995. Subcomponent counts for each subcomponent are based on estimated average component counts for each piece of equipment.

Haul Road Emissions (Unit HR-1)

Emissions are calculated using Equation 2 of AP-42 Section 13.2.2. Haul road emissions at this facility are exempt pursuant to 202.2.82.202.B.(5) NMAC. Emissions calculations are included in the application reference.

Startup, Shutdown, Maintenance/Malfunction (Unit SSM)

Emissions are based on various activities including, but not limited to, compressor blowdowns, dehydrator blowdowns, filter coalescer blowdowns, scrubber blowdowns, pump blowdowns, reboiler maintenance, pigging, pipeline downs, tank maintenance, surface coating, and abrasive blasting. All blowdowns are conservatively based on the inlet gas. Blowdown volumes were provided by Delek.

Flares (Units FL-1 & FL-2)

Emissions for NO_x, CO, and PM are calculated using AP-42 Tables 1.4-1 & 2 emission factors. Pilot SO_2 emissions are based on a conservative fuel sulfur content of 2 gr S/100 scf and a 100% conversion of elemental sulfur to SO_2. SO_2 emissions were calculated based on a 98% DRE and conversion to SO_2. VOC, H_2S, and HAPs are calculated based on BR&E ProMax for the inlet process gas (Unit FL-1) and tank flashing, working & breathing emissions (Unit FL-2). For the H_2S, it was assumed 98% was combusted and 100% of the combusted H_2S was converted to SO_2. Greenhouse gas emissions are estimated using emission factors from 40 CFR 98 Subpart C Tables C-1 and C-2.

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)

Greenhouse Gas calculations are included in Table 2-P of the UA2.

Delek Logistics Partners LP - Outland Compressor Station

Emission Summary

Uncontrolled Emissions																	
Unit	Description	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		H_2S		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU 2100	Waukesha 7044 GSI 1380 hp Compressor engine	50.62	221.72	46.93	205.54	2.31	10.12	0.056	0.24	0.24	1.04	0.24	1.04	--	--	0.32	1.39
EU 2200	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	--	--	1.52	6.65
EU 2300	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	--	--	1.52	6.65
EU 2400	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	--	--	1.52	6.65
EU 2500	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	--	--	1.52	6.65
EU 2600	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	7.39	32.38	2.88	12.61	0.050	0.22	0.11	0.48	0.11	0.48	--	--	1.52	6.65
EU 2700	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 2800	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
EU 2900	Caterpillar G3606 1676 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 3000	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 3100	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 3200	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 3300	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	11.99	52.51	6.59	28.88	0.064	0.28	0.14	0.62	0.11	0.62	--	--	1.10	4.83
EU 3400	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
EU 3500	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
EU 3600	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
EU 3700	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
EU 3800	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	13.16	57.62	1.97	8.63	0.095	0.42	0.21	0.91	0.21	0.91	--	--	1.13	4.94
TK-1	Gunbarrel Tank	--	--	--	--	31.83	139.42	--	--	--	--	--	--	9.18E-04	4.02E-03	2.22	9.74
TK-2	Condensate Tank	--	--	--	--	4.02	17.60	--	--	--	--	--	--	1.00E-04	4.39E-04	0.32	1.39
TK-3	Condensate Tank	--	--	--	--	4.02	17.60	--	--	--	--	--	--	1.00E-04	4.39E-04	0.32	1.39
TK-4	Condensate Tank	--	--	--	--	4.02	17.60	--	--	--	--	--	--	1.00E-04	4.39E-04	0.32	1.39
TK-5	Condensate Tank					4.02	17.60							1.00E-04	4.39E-04	0.32	1.39
PWTK-1	Produced Water Tank	--	--	--	--	0.082	0.36	--	--	--	--	--	--	3.12E-05	1.36E-04	0.057	0.25
PWTK-2	Produced Water Tank	--	--	--	--	0.082	0.36	--	--	--	--	--	--	3.12E-05	1.36E-04	0.057	0.25
PWTK-3	Produced Water Tank	--	--	--	--	0.082	0.36	--	--	--	--	--	--	3.12E-05	1.36E-04	0.057	0.25
PWTK-4	Produced Water Tank	--	--	--	--	0.082	0.36	--	--	--	--	--	--	3.12E-05	1.36E-04	0.057	0.25
HTR-1	1.5 MMBtu/Hr Dehy Reboiler	0.15	0.64	0.124	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	--	--	2.77E-03	0.01
HTR-2	1.5 MMBtu/hr Dehy Reboiler	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	--	--	2.77E-03	0.012
COND LOAD	Condensate Load	--	--	--	--	6.88	30.15	--	--	--	--	--	--	1.80E-04	7.88E-06	0.52	2.26
PW LOAD	Produced Water Load	--	--	--	--	1.92	8.39	--	--	--	--	--	--	8.08E-04	3.54E-05	1.47	6.44
DEHY-1	TEG Dehydrator	--	--	--	--	98.73	432.43	--	--	--	--	--	--	0.013	0.057	10.22	44.76
DEHY-2	TEG Dehydrator	--	--	--	--	98.73	432.43	--	--	--	--	--	--	0.013	0.057	10.22	44.76
ECD-1	Enclosed Combustion Device	0.012	0.054	0.010	0.045	0.57	2.48	5.71E-04	2.503E-03	--	--	--	--	--	--	0.13	0.55
ECD-2	Enclosed Combustion Device	0.012	0.054	0.010	0.045	0.57	2.48	5.71E-04	2.503E-03	--	--	--	--	--	--	0.13	0.55
FL-1	Process Flare	0.11	0.47	0.22	0.94	0.166	0.73	3.571E-03	0.016	--	--	--	--	1.87E-04	8.19E-04	4.63E-03	0.020
FL-2	Tank Flare	0.11	0.47	0.22	0.94	0.166	0.73	3.571E-03	0.016	--	--	--	--	1.87E-04	8.19E-04	4.63E-03	0.020
FUG-1	Fugitives	--	--	--	--	3.41	14.92	--	--	--	--	--	--	5.82E-05	2.55E-04	0.32	1.39
SSM	Startup, Shutdown, Maintenance	--	--	--	--	21824.65	104.21	--	--	--	--	--	--	0.37	1.75E-03	1578.79	7.54
	Total Emissions:	**77.11**	**337.76**	**235.45**	**1031.28**	**22152.12**	**1538.54**	**1.28**	**5.61**	**2.89**	**12.66**	**2.70**	**12.66**	**0.40**	**0.12**	**1626.79**	**217.77**

Delek Logistics Partners LP - Outland Compressor Station

Emission Summary

Controlled Emissions																	
Unit	Description	NO_x		CO		VOC		SO_2		PM_{10}		$PM_{2.5}$		H_2S		Total HAPs	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU 2100	Waukesha 7044 GSI 1380 hp Compressor engine	1.66	7.28	0.92	4.05	0.30	1.32	0.056	0.24	0.24	1.04	0.24	1.04	-	-	0.21	0.91
EU 2200	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	-	-	0.51	2.25
EU 2300	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	-	-	0.51	2.25
EU 2400	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	-	-	0.51	2.25
EU 2500	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	-	-	0.51	2.25
EU 2600	Caterpillar G3516 1380 hp Compressor Engine	1.52	6.66	0.52	2.27	0.87	3.82	0.050	0.22	0.11	0.48	0.11	0.48	-	-	0.51	2.25
EU 2700	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 2800	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
EU 2900	Caterpillar G3606 1676 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 3000	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 3100	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 3200	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 3300	Caterpillar G3606 1875 hp Compressor Engine	1.24	5.43	2.48	10.86	2.62	11.50	0.064	0.28	0.14	0.62	0.14	0.62	-	-	0.73	3.20
EU 3400	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
EU 3500	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
EU 3600	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
EU 3700	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
EU 3800	Caterpillar 3608A4 2750 hp Compressor Engine	1.82	7.97	2.43	10.62	1.36	5.98	0.095	0.42	0.21	0.91	0.21	0.91	-	-	0.94	4.14
TK-1	Gunbarrel Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	-	--	--
TK-2	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-3	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-4	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-5	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-2	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-3	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-4	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	1.5 MMBtu/Hr Dehy Reboiler	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	--	--	2.77E-03	0.012
HTR-2	1.5 MMBtu/hr Dehy Reboiler	0.15	0.64	0.12	0.54	8.09E-03	0.035	6.85E-03	0.030	0.011	0.049	0.011	0.049	--	--	2.77E-03	0.012
COND LOAD	Condensate Load	--	--	--	--	6.88	30.15	--	--	--	--	--	--	1.80E-04	7.88E-06	0.52	2.26
PW LOAD	Produced Water Load	--	--	--	--	1.92	8.39	--	--	--	--	--	--	8.08E-04	3.54E-05	1.47	6.44
DEHY-1	TEG Dehydrator	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DEHY-2	TEG Dehydrator	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ECD-1	Enclosed Combustion Device	0.10	0.44	0.084	0.37	0.57	2.48	0.016	0.070	7.57E-03	0.033	7.57E-03	0.033	2.08E-04	9.11E-04	0.13	0.55
ECD-2	Enclosed Combustion Device	0.10	0.44	0.084	0.37	0.57	2.48	0.016	0.070	7.57E-03	0.033	7.57E-03	0.033	2.08E-04	9.11E-04	0.13	0.55
FL-1	Process Flare	223.80	1.64	446.78	3.27	400.60	2.81	3.58E-03	0.016	--	--	--	--	1.87E-04	8.21E-04	28.97	0.17
FL-2	Tank Flare	0.38	1.66	0.75	3.31	18.67	4.95	6.23E-03	0.027	--	--	--	--	2.16E-04	9.45E-04	0.035	0.15
FUG-1	Fugitives	--	--	--	--	3.41	14.92	--	--	--	--	--	--	5.82E-05	2.55E-04	0.32	1.394
SSM	Startup, Shutdown, Maintenance	--	--	--	--	6.83	0.12	--	--	--	--	--	--	1.14E-04	1.754E-03	0.40	7.157E-03
	Total Emissions:	**252.29**	**126.44**	**480.89**	**152.67**	**468.05**	**191.64**	**1.31**	**5.75**	**2.91**	**12.72**	**2.91**	**12.72**	**1.98E-03**	**5.64E-03**	**44.79**	**67.69**
	Total Emissions w/o Fugitives:	**252.29**	**126.44**	**480.89**	**152.67**	**464.65**	**176.72**	**1.31**	**5.75**	**2.91**	**12.72**	**2.91**	**12.72**	**1.921E-03**	**5.39E-03**	**44.47**	**66.30**

Delek Logistics Partners LP - Outland Compressor Station

HAP Emission Summary

Uncontrolled HAP Emissions																	
Unit	Description	Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-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
2100	Waukesha 7044 GSI 1380 hp Compressor	0.074	0.32	0.042	0.18	0.040	0.17	0.024	0.10	8.38E-03	0.037	3.73E-04	1.63E-03	2.93E-03	0.013	0.017	0.072
2200	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	5.87E-03	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2300	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	5.87E-03	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2400	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	5.87E-03	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2500	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	5.87E-03	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2600	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	5.87E-03	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064
2700	Caterpillar G3606 1875 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.23	7.047E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
2800	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.123
2900	Caterpillar G3606 1676 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.233	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3000	Caterpillar G3606 1875 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3100	Caterpillar G3606 1875 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3200	Caterpillar G3606 1875 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.03	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3300	Caterpillar G3606 1875 hp Compressor Engine	0.79	3.44	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.03	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083
3400	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3500	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3600	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3700	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
3800	Caterpillar 3608A4 2750 hp Compressor Engine	0.73	3.19	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12
TK-1	Gunbarrel Tank	--	--	--	--	--	--	0.68	2.96	0.75	3.29	0.069	0.30	0.18	0.77	0.55	2.42
TK-2	Condensate Tank	--	--	--	--	--	--	0.094	0.41	0.11	0.48	0.011	0.046	0.027	0.12	0.076	0.33
TK-3	Condensate Tank	--	--	--	--	--	--	0.094	0.41	0.11	0.48	0.011	0.046	0.027	0.12	0.076	0.33
TK-4	Condensate Tank	--	--	--	--	--	--	0.094	0.41	0.11	0.48	0.011	0.046	0.027	0.12	0.076	0.33
TK-5	Condensate Tank	--	--	--	--	--	--	0.094	0.41	0.11	0.48	0.011	0.046	0.027	0.12	0.076	0.33
PWTK-1	Produced Water Tank	--	--	--	--	--	--	0.023	0.10	0.025	0.11	2.39E-03	0.010	5.87E-03	0.026	9.72E-05	4.26E-04
PWTK-2	Produced Water Tank	--	--	--	--	--	--	0.023	0.10	0.025	0.11	2.39E-03	0.010	5.87E-03	0.026	9.72E-05	4.26E-04
PWTK-3	Produced Water Tank	--	--	--	--	--	--	0.023	0.10	0.025	0.11	2.39E-03	0.010	5.87E-03	0.026	9.72E-05	4.26E-04
PWTK-4	Produced Water Tank	--	--	--	--	--	--	0.023	0.10	0.025	0.11	2.39E-03	0.010	5.87E-03	0.026	9.72E-05	4.26E-04
HTR-1	1.5 MMBtu/Hr Dehy Reboiler	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012
HTR-2	1.5 MMBtu/hr Dehy Reboiler	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012
COND LOAD	Condensate Load	--	--	--	--	--	--	8.72E-03	0.038	9.94E-03	0.044	9.37E-04	4.11E-03	2.40E-03	0.011	7.11E-03	0.031
PW LOAD	Produced Water Load	--	--	--	--	--	--	8.45E-03	0.037	9.21E-03	0.040	8.71E-04	3.81E-03	2.14E-03	9.37E-03	1.02E-05	4.48E-05
DEHY-1	TEG Dehydrator	--	--	--	--	--	--	5.33	23.34	3.10	13.56	0.11	0.49	0.27	1.19	1.41	6.18
DEHY-2	TEG Dehydrator	--	--	--	--	--	--	5.33	23.34	3.10	13.56	0.11	0.49	0.27	1.19	1.41	6.18
ECD-1	Enclosed Combustion Device	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ECD-2	Enclosed Combustion Device	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FL-1	Process Flare	--	--	--	--	--	--	2.28E-03	9.97E-03	4.61E-03	0.020	1.11E-03	4.86E-03	6.74E-04	0.014	2.73E-03	0.012
FL-2	Tank Flare	--	--	--	--	--	--	2.28E-03	9.97E-03	4.61E-03	0.020	1.11E-03	4.86E-03	6.74E-04	0.014	2.73E-03	0.012
FUG-1	Fugitives	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SSM	Startup, Shutdown, Maintenance	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total Emissions:	**10.67**	**46.75**	**2.74**	**12.02**	**1.70**	**7.45**	**12.26**	**53.71**	**7.65**	**33.50**	**0.36**	**1.59**	**0.92**	**4.04**	**4.07**	**17.83**

Delek Logistics Partners LP - Outland Compressor Station

HAP Emission Summary

Controlled HAP Emissions and GHG emissions																					
Unit	Description	Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		CO_2	CH_4	N_2O	CO_2e
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy	tpy	tpy	tpy
2100	Waukesha 7044 GSI 1380 hp Compressor	0.074	0.32	0.042	0.18	0.040	0.17	0.024	0.10	8.38E-03	0.037	3.73E-04	1.63E-03	2.93E-03	0.013	0.017	0.072	6271.209	0.13	0.012	6277.98
2200	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064	5565.961	0.12	0.010	5571.97
2300	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064	5565.961	0.12	0.010	5571.97
2400	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064	5565.961	0.12	0.010	5571.97
2500	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064	5565.961	0.12	0.010	5571.97
2600	Caterpillar G3516 1380 hp Compressor Engine	0.30	1.33	0.11	0.49	0.069	0.30	0.053	0.026	5.44E-03	0.024	5.29E-04	2.32E-03	2.45E-03	0.011	0.015	0.064	5565.961	0.12	0.010	5571.97
2700	Caterpillar G3606 1875 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.047E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
2800	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.123	10636.484	0.22	0.020	10647.97
2900	Caterpillar G3606 1676 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
3000	Caterpillar G3606 1875 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
3100	Caterpillar G3606 1875 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
3200	Caterpillar G3606 1875 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
3300	Caterpillar G3606 1875 hp Compressor Engine	0.41	1.81	0.14	0.63	0.089	0.39	0.053	0.23	7.05E-03	0.031	6.86E-04	3.00E-03	3.18E-03	0.014	0.019	0.083	7210.839	0.15	0.014	7218.63
3400	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12	10636.48	0.22	0.020	10647.97
3500	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12	10636.48	0.22	0.020	10647.97
3600	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12	10636.48	0.22	0.020	10647.97
3700	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12	10636.48	0.22	0.020	10647.97
3800	Caterpillar 3608A4 2750 hp Compressor Engine	0.55	2.39	0.21	0.93	0.13	0.57	0.011	0.049	0.010	0.046	1.01E-03	4.43E-03	4.69E-03	0.021	0.028	0.12	10636.48	0.22	0.020	10647.97
TK-1	Gunbarrel Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-2	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-3	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-4	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TK-5	Condensate Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-2	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-3	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-4	Produced Water Tank	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	1.5 MMBtu/Hr Dehy Reboiler	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012	768.54	0.016	1.45E-03	769.37
HTR-2	1.5 MMBtu/hr Dehy Reboiler	1.10E-04	4.83E-04	--	--	--	--	3.09E-06	1.35E-05	5.00E-06	2.19E-05	--	--	--	--	2.65E-03	0.012	768.54	0.016	1.45E-03	769.37
COND LOAD	Condensate Load	--	--	--	--	--	--	8.72E-03	0.038	9.94E-03	0.044	9.37E-04	4.11E-03	2.40E-03	0.011	7.11E-03	0.031	0.68	5.65	--	158.75
PW LOAD	Produced Water Load	--	--	--	--	--	--	8.45E-03	0.037	9.21E-03	0.040	8.71E-04	3.81E-03	2.14E-03	9.37E-03	1.02E-05	4.48E-05	6.15E-03	1.24	--	34.79
DEHY-1	TEG Dehydrator	--	--	--	--	--	--	-	-	-	-	-	-	-	-	--	--	--	--	--	--
DEHY-2	TEG Dehydrator	--	--	--	--	--	--	-	-	-	-	-	-	-	-	--	--	--	--	--	--
ECD-1	Enclosed Combustion Device	--	--	--	--	--	--	0.077	0.34	0.038	0.17	1.02E-03	4.45E-03	2.66E-03	0.012	6.60E-03	0.029	1068.291	0.022	2.013E-03	1069.44
ECD-2	Enclosed Combustion Device	--	--	--	--	--	--	0.077	0.34	0.038	0.17	1.02E-03	4.45E-03	2.66E-03	0.012	6.60E-03	0.029	1068.291	0.022	2.013E-03	1069.44
FL-1	Process Flare	--	--	--	--	--	--	4.74	0.035	9.60	0.067	2.31	0.017	6.65	0.05	5.68	0.04	1308.846	5.44	2.313E-03	1461.82
FL-2	Tank Flare	--	--	--	--	--	--	0.012	0.051	0.015	0.067	2.15E-03	9.40E-03	3.31E-03	0.026	8.85E-03	0.039	1119.723	3.40	4.168E-03	1215.92
FUG-1	Fugitives	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.712	27.089	--	759.216
SSM	Startup, Shutdown, Maintenance	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.548	211.00	--	5913.52
	Total Emissions:	**7.35**	**32.19**	**2.74**	**12.02**	**1.70**	**7.45**	**5.60**	**2.76**	**9.85**	**1.17**	**2.33**	**0.10**	**6.72**	**0.39**	**6.09**	**1.82**	**147294.13**	**256.82**	**0.28**	**154559.06**

Delek Logistics Partners LP - Outland Compressor Station

Inputs

Site-Wide		
Description	**Value**	**Unit**
Gas Throughput	140	MMscf/day
Annual Operating Hours	8,760	hr
Daily Operating Hours	24	hr
Site Elevation	3,036	ft MSL

Fuel Gas			
	Value	**Unit**	**Notes**
Fuel Heat Value	1,251.76	Btu/scf	Extended Gas Analysis
Fuel Sulfur Content	2.0	gr S / 100 scf	Engineering Estimate

Engine Input Information			
	Value	**Unit**	**Notes**
Units:	ENG-2100		
Description:	Waukesha 7044 GSI 1380 hp Compressor engine		
Rating:	1676	hp	Facility Permit
Fuel Usage:	7303	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating
Units:	ENG-2200 through ENG-2600		
Description:	Caterpillar G3516 1380 hp Compressor Engine		
Rating:	1380	hp	Facility Permit
Fuel Usage:	8083	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating
Units:	ENG-2700, ENG-2900-3300		
Description:	Caterpillar G3606 1875 hp Compressor Engine		
Rating:	1875	hp	Facility Permit
Fuel Usage:	7506	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating
Units:	ENG-2800, ENG 3400-3800		
Description:	Caterpillar G3608A4 2107 hp Compressor Engine		
Rating:	2750	hp	Facility Permit
Fuel Usage:	7549	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating

Gunbarrel Tanks			
	Value	**Unit**	**Notes**
Unit:	TK-1		
Description:	750 bbl Gunbarrel Tank		
Number of Tanks	1		
Volume	750	bbl	
Height (Shell)	24	ft	
Diameter	15.5	ft	
Hourly Throughput	43.75	bbl/hr	
Annual Throughput	383250.00	bbl/yr	

Condensate Tanks			
	Value	**Unit**	**Notes**
Unit:	TK-2-TK-5		
Description:	500 bbl Condensate Tanks		
Number of Tanks	4		
Volume	500	bbl	
Height (Shell)	20	ft	
Diameter	13.40	ft	
Hourly Throughput	29.11	bbl/hr	
Annual Throughput	255000	bbl/yr	

Produced Water Tanks			
	Value	**Unit**	**Notes**
Unit:	PWTK-1-PWTK-4		
Description:	500 bbl Produced Water Tanks		
Number of Tanks	4		
Volume	500	bbl	
Height (shell)	20	ft	
Diameter	13.40	ft	
Hourly Throughput	14.58	bbl/hr	
Annual Throughput	127750	bbl/yr	

Delek Logistics Partners LP - Outland Compressor Station

Waukesha 7044GSIS4 Engine Calculations

Emission Unit:	ENG-2100
Source Description:	Compressor Engine
Manufacturer:	Waukesha
Model:	7044GSIS4
Type:	4SRB

Fuel Consumption

Site horsepower	1676	hp	Manufacturer Rating
Fuel heat value	1251.76	Btu/scf	Fuel Gas Analysis
Heat input	12.2	MMBtu/hr	Fuel consumption * HP
Fuel consumption	9.8	Mscf/hr	Heat input / fuel heat value
Hours of Operation	8760.0	hrs/yr	
Annual fuel usage	85.7	MMscf/yr	8760 hrs/yr operation
Fuel Consumption	7303	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating

Emission Calculations

Uncontrolled	NO_x	CO	VOC	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
Emission Factors	13.70	12.70	0.56		0.05				g/hp-hr	Catalyst Specification Sheet
						1.94E-02	1.94E-02		lb/MMBtu	AP-42 Table 3.2-3
				0.020					gr S/scf	Engineering Estimate
Emissions	**50.62**	**46.93**	**2.31**	**0.056**	**0.18**	**0.24**	**0.24**	**0.32**	lb/hr	
	221.72	**205.54**	**10.12**	**0.24**	**0.81**	**1.04**	**1.04**	**1.39**	tpy	

Controlled	NO_x	CO	VOC[1]	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
Emission Factors	0.45	0.25	0.05		0.020				g/hp-hr	Catalyst Specification Sheet
	96.72%	98%	91%		60.00%					% Reduction
						1.94E-02	1.94E-02		lb/MMBtu	AP-42 Table 3.2-3
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.66**	**0.92**	**0.30**	**0.056**	**0.07**	**0.24**	**0.24**	**0.21**	lb/hr	
	7.28	**4.046**	**1.32**	**0.24**	**0.32**	**1.04**	**1.04**	**0.91**	tpy	

Acetaldehyde[5]	Acrolein[5]	Benzene[5]	E-Benzene[5]	n-Hexane[5]	Toluene[5]	Xylene[5]	Units	Notes
2.79E-03	2.63E-03	1.58E-03	2.48E-05	1.10E-03	5.58E-04	1.95E-04	lb/MMBtu	AP-42 Table 3.2-3
3.42E-03	3.23E-03	1.94E-03	3.04E-05	1.35E-03	6.85E-04	2.39E-04	lb/MMBtu	AP-42 Table 3.2-3 (adjusted)
0.042	**0.040**	**0.024**	**3.73E-04**	**0.017**	**8.382E-03**	**2.93E-03**	lb/hr	
0.18	**0.17**	**0.104**	**1.63E-03**	**0.072**	**0.037**	**0.013**	tpy	

NOTES

[1] VOC emission factor is calculated by adding aldehyde emissions.

[2] SO_2 emissions are based on fuel consumption and fuel sulfur content of 2 grains of sulfur per 100 scf

2 gr S/100 scf * fuel scf/hr * 1 lb/7000 gr * 64 lb-mol SO_2/ 32 lb-mol S = lb/hr SO_2

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 (except formaldehyde: provided in mfg spec sheet).

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

[5] AP-42 Table 3.2-3 & adjusted for 0.00 0.00

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	6271.21	**0.13**	**0.01**	**-**	**tpy**	
	6271.21	**3.64**	**3.13**	**6277.98**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)

CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

G3516 Engine Calculations

Emission Unit:	ENG-2200 through ENG-2600
Source Description:	Compressor Engine
Manufacturer:	Caterpillar
Model:	G3516B
Type:	4SLB

Fuel Consumption

Site horsepower	1380	hp	Manufacturer Rating
Fuel heat value	1251.76	Btu/scf	Fuel Gas Analysis
Heat input	10.9	MMBtu/hr	Fuel consumption * HP
Fuel consumption	8.7	Mscf/hr	Heat input / fuel heat value
Hours of Operation	8760.0	hrs/yr	
Annual fuel usage	76.0	MMscf/yr	8760 hrs/yr operation
Fuel Consumption	7872	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating

Emission Calculations

Uncontrolled	NO_x	CO	VOC	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
	0.50	2.43	0.48		0.43				g/hp-hr	Catalyst Specification Sheet
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.52**	**7.39**	**2.88**	**0.050**	**1.31**	**0.11**	**0.11**	**1.52**	lb/hr	
	6.66	**32.38**	**12.61**	**0.22**	**5.73**	**0.48**	**0.48**	**6.65**	tpy	

Controlled	NO_x	CO	VOC[1]	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
	0.50	0.17	0.15		0.10				g/hp-hr	Catalyst Specification Sheet
	0.00%	93%	69%		76.74%					% Reduction
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.52**	**0.52**	**0.87**	**0.050**	**0.30**	**0.11**	**0.11**	**0.51**	lb/hr	
	6.66	**2.27**	**3.82**	**0.22**	**1.33**	**0.48**	**0.48**	**2.25**	tpy	

	Acetaldehyde[5]	Acrolein[5]	Benzene[5]	E-Benzene[5]	n-Hexane[5]	Toluene[5]	Xylene[5]	Units	Notes
	8.36E-03	5.14E-03	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	AP-42 Table 3.2-2
	1.03E-02	6.31E-03	5.40E-04	4.87E-05	1.35E-03	5.01E-04	2.26E-04	lb/MMBtu	AP-42 Table 3.2-2 (adjusted)
	0.11	**0.069**	**5.87E-03**	**5.29E-04**	**0.015**	**5.44E-03**	**2.45E-03**	lb/hr	
	0.49	**0.30**	**0.026**	**2.32E-03**	**0.064**	**0.024**	**0.011**	tpy	

NOTES

[1] VOC emission factor is calculated by adding aldehyde emissions.

[2] SO_2 emissions are based on fuel consumption and fuel sulfur content of 2 grains of sulfur per 100 scf

2 gr S/100 scf * fuel scf/hr * 1 lb/7000 gr * 64 lb-mol SO_2/ 32 lb-mol S = lb/hr SO_2

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 (except formaldehyde: provided in mfg spec sheet).

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

[5] AP-42 Table 3.2-2 & adjusted for 1251.76 Btu/scf

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	5565.96	**0.12**	**0.01**		**tpy**	
	5565.96	**3.23E+00**	**2.78E+00**	**5571.97**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)

CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

G3606A4 Engine Calculations

Emission Unit:	ENG-2700, ENG-2900-3300
Source Description:	Compressor Engine
Manufacturer:	Caterpillar
Model:	G3606A4
Type:	4SLB

Fuel Consumption

Site horsepower	1875	hp	Manufacturer Rating
Fuel heat value	1251.76	Btu/scf	Fuel Gas Analysis
Heat input	14.1	MMBtu/hr	Fuel consumption * HP
Fuel consumption	11.2	Mscf/hr	Heat input / fuel heat value
Hours of Operation	8760.0	hrs/yr	
Annual fuel usage	98.5	MMscf/yr	8760 hrs/yr operation
Fuel Consumption	7506	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating

Emission Calculations

Uncontrolled	NO_x	CO	VOC	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
Emission Factors	0.30	2.90	1.37		0.19				g/hp-hr	Catalyst Specification Sheet
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.24**	**11.99**	**6.59**	**0.064**	**0.79**	**0.14**	**0.14**	**1.10**	lb/hr	
	5.43	**52.51**	**28.88**	**0.28**	**3.44**	**0.62**	**0.62**	**4.83**	tpy	

Controlled	NO_x	CO	VOC[1]	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
Emission Factors	0.30	0.60	0.50		0.10				g/hp-hr	Catalyst Specification Sheet
	0.00%	79%	63.50%		47.37%					% Reduction
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.24**	**2.48**	**2.62**	**0.064**	**0.41**	**0.14**	**0.14**	**0.73**	lb/hr	
	5.43	**10.86**	**11.50**	**0.28**	**1.81**	**0.62**	**0.62**	**3.20**	tpy	

Acetaldehyde[5]	Acrolein[5]	Benzene[5]	E-Benzene[5]	n-Hexane[5]	Toluene[5]	Xylene[5]	Units	Notes
8.36E-03	5.14E-03	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	AP-42 Table 3.2-2
1.03E-02	6.31E-03	3.78E-03	4.87E-05	1.35E-03	5.01E-04	2.26E-04	lb/MMBtu	AP-42 Table 3.2-2 (adjusted)
0.14	**0.089**	**0.05**	**6.86E-04**	**0.019**	**7.05E-03**	**3.18E-03**	lb/hr	
0.63	**0.39**	**0.233**	**3.00E-03**	**0.083**	**0.031**	**0.014**	tpy	

NOTES

[1] VOC emission factor is calculated by adding aldehyde emissions.

[2] SO_2 emissions are based on fuel consumption and fuel sulfur content of 2 grains of sulfur per 100 scf

2 gr S/100 scf * fuel scf/hr * 1 lb/7000 gr * 64 lb-mol SO_2/ 32 lb-mol S = lb/hr SO_2

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 (except formaldehyde: provided in mfg spec sheet).

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

[5] AP-42 Table 3.2-2 & adjusted for 1251.76 Btu/scf

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	7210.84	**0.15**	**0.01**		**tpy**	
	7210.84	**4.19E+00**	**3.60E+00**	**7218.63**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)

CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

G3608A4 Engine Calculations

Emission Unit:	ENG-2800, ENG 3400-3800
Source Description:	Compressor Engine
Manufacturer:	Caterpillar
Model:	G3608A4
Type:	4SLB

Fuel Consumption

Site horsepower	2750	hp	Manufacturer Rating
Fuel heat value	1251.76	Btu/scf	Fuel Gas Analysis
Heat input	20.8	MMBtu/hr	Fuel consumption * HP
Fuel consumption	16.6	Mscf/hr	Heat input / fuel heat value
Hours of Operation	8760.0	hrs/yr	
Annual fuel usage	145.3	MMscf/yr	8760 hrs/yr operation
Fuel Consumption	7549	Btu/hp-hr	Manufacturer Spec Sheet @ Max Rating

Emission Calculations

Uncontrolled	NO_x	CO	VOC	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
	0.30	2.17	0.17		0.12				g/hr-hr	Catalyst Specification Sheet
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.82**	**13.16**	**1.97**	**0.095**	**0.73**	**0.21**	**0.21**	**1.13**	lb/hr	
	7.97	**57.62**	**8.63**	**0.42**	**3.19**	**0.91**	**0.91**	**4.94**	tpy	

Controlled	NO_x	CO	VOC[1]	SO_2[2]	HCHO	PM_{10}[4]	$PM_{2.5}$[4]	Total HAPs[3]	Units	Notes
	0.30	0.40	0.10		0.09				g/hp-hr	Catalyst Specification Sheet
	0.00%	81.57%	41.18%		25.00%					% Reduction
						9.99E-03	9.99E-03		lb/MMBtu	AP-42 Table 3.2-2
				0.020					gr S/scf	Engineering Estimate
Emissions	**1.82**	**2.43**	**1.36**	**0.095**	**0.55**	**0.21**	**0.21**	**0.94**	lb/hr	
	7.97	**10.62**	**5.98**	**0.42**	**2.39**	**0.91**	**0.91**	**4.14**	tpy	

Acetaldehyde[5]	Acrolein[5]	Benzene[5]	E-Benzene[5]	n-Hexane[5]	Toluene[5]	Xylene[5]	Units	Notes
8.36E-03	5.14E-03	4.40E-04	3.97E-05	1.10E-03	4.08E-04	1.84E-04	lb/MMBtu	AP-42 Table 3.2-2
1.03E-02	6.31E-03	5.40E-04	4.87E-05	1.35E-03	5.01E-04	2.26E-04	lb/MMBtu	AP-42 Table 3.2-2 (adjusted)
0.21	**0.13**	**0.01**	**1.01E-03**	**0.028**	**0.01**	**4.69E-03**	lb/hr	
0.93	**0.57**	**0.049**	**4.43E-03**	**0.123**	**0.046**	**0.021**	tpy	

NOTES

[1] VOC emission factor is calculated by adding aldehyde emissions.

[2] SO_2 emissions are based on fuel consumption and fuel sulfur content of 2 grains of sulfur per 100 scf

2 gr S/100 scf * fuel scf/hr * 1 lb/7000 gr * 64 lb-mol SO_2/ 32 lb-mol S = lb/hr SO_2

[3] HAPs emissions factors are referenced from AP-42 Table 3.2-2 (except formaldehyde: provided in mfg spec sheet).

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

[5] AP-42 Table 3.2-2 & adjusted for 1251.76 Btu/scf

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	10636.48	**0.22**	**0.02**		**tpy**	
	10636.48	**6.17E+00**	**5.31E+00**	**10647.97**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)

CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

Gunbarrel Tank

Emission unit number(s): TK-1
Source description: 750 bbl Gunbarrel Tank

Annual Operating Hours:	8,760	
Number of Tanks:	1	
Capacity of Tanks:	750	bbl
Max Hourly Cond Throughput:	43.75	bbl/hr
Daily Throughput:	1050.00	bbl/d
Annual Throughput:	383250.00	bbl/yr

Gunbarrel Tank Emissions[1]

Component	Uncontrolled Emissions			
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Methane	11.35	2.39	13.73	60.15
Ethane	8.12	3.16	11.28	49.41
Propane	7.77	3.58	11.34	49.68
i-Butane	1.62	0.82	2.45	10.72
n-Butane	5.24	2.75	7.99	35.01
i-Pentane	1.08	0.53	1.61	7.06
n-Pentane	2.03	1.08	3.11	13.63
Cyclohexane	0.45	0.25	0.70	3.06
n-Hexane	0.36	0.19	0.55	2.42
n-Heptane	1.28	0.71	1.98	8.69
C8	0.19	0.11	0.30	1.30
Water	0.44	0.26	0.70	3.07
N2	0.15	7.47E-03	0.161	0.71
CO2	0.70	0.24	0.94	4.11
H2S	6.48E-04	2.70E-04	9.18E-04	4.02E-03
Triethylene Glycol	6.68E-12	5.37E-12	1.21E-11	5.28E-11
EG	-	-	-	-
MeOH	-	-	-	-
MDEA	-	-	-	-
2,2,4-Trimethylpentane	-	-	-	-
Benzene	0.44	0.24	0.68	2.96
Toluene	0.48	0.27	0.75	3.29
Ethylbenzene	0.04	0.02	0.069	0.30
m-Xylene	0.09	0.05	0.136	0.60
o-Xylene	0.03	0.01	0.040	0.174
Nonane	0.06	0.04	0.102	0.45
Decane	0.01	8.54E-03	0.023	0.101
Undecane	-	-	-	-
Dodecane	-	-	-	-
VOC	**21.17**	**10.66**	**31.83**	**139.42**
Total HAPS	**1.43**	**0.79**	**2.22**	**9.74**
Total H_2S	**6.48E-04**	**2.70E-04**	**9.18E-04**	**4.02E-03**

[1] Uncontrolled emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the short-term worse case scenario. Annual emissions are based on the daily throughput of the facility.

Delek Logistics Partners LP - Outland Compressor Station

Condensate Tanks

Emission unit number(s):	TK-2-TK-5	
Source description:	500 bbl Condensate Tanks	
Annual Operating Hours:	8,760	
Number of Tanks:	4	
Capacity of Tanks:	500	bbl
Hourly Throughout:	29.11	bbl/hr
Daily Throughput:	698.63	bbl/d
Annual Throughput:	255000	bbl/yr

Condensate Tank Emissions[1]

Component	Uncontrolled Emissions			
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Methane	1.57	1.49	0.76	3.35
Ethane	2.22	2.45	1.17	5.11
Propane	2.55	2.70	1.31	5.75
i-Butane	0.60	0.61	0.30	1.33
n-Butane	2.09	2.03	1.03	4.51
i-Pentane	0.39	0.40	0.20	0.86
n-Pentane	0.83	0.80	0.41	1.78
Cyclohexane	0.20	0.18	0.10	0.42
n-Hexane	0.16	0.15	0.076	0.33
n-Heptane	0.62	0.54	0.29	1.27
C8	0.10	0.08	0.045	0.20
Water	0.12	0.13	0.061	0.27
N2	7.82E-03	1.93E-03	2.44E-03	0.011
CO2	0.16	0.18	0.08	0.37
H2S	1.92E-04	2.08E-04	1.00E-04	4.39E-04
Triethylene Glycol	4.53E-12	3.30E-12	1.96E-12	8.57E-12
EG	-	-	-	-
MeOH	-	-	-	-
MDEA	-	-	-	-
2,2,4-Trimethylpentane	-	-	-	-
Benzene	0.20	0.18	0.094	0.41
Toluene	0.23	0.20	0.11	0.48
Ethylbenzene	0.02	0.019	0.011	0.046
m-Xylene	0.05	0.038	0.021	0.09
o-Xylene	0.01	0.011	6.13E-03	0.027
Nonane	0.04	0.029	0.016	0.072
Decane	8.83E-03	6.805E-03	3.91E-03	0.017
Undecane	-	-	-	-
Dodecane	-	-	-	-
VOC	**8.09**	**7.98**	**4.02**	**17.60**
Total HAPS	**0.67**	**0.60**	**0.32**	**1.39**
Total H_2S	**1.92E-04**	**2.08E-04**	**1.00E-04**	**4.39E-04**

[1] Uncontrolled emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the short-term worse case scenario. Annual emissions are based on the daily throughput of the facility.

Delek Logistics Partners LP - Outland Compressor Station

Produced Water Tanks

Emission unit number(s):	PWTK-1-PWTK-4	
Source description:	500 bbl Produced Water Tanks	
Annual Operating Hours:	8,760	
Number of Tanks:	4	
Capacity of Tanks:	500	bbl
Hourly Throughout:	14.58	bbl/hr
Daily Throughput:	350.00	bbl/d
Annual Throughput:	127750.00	bbl/yr

Produced Water Tank Emissions[1]

Component	Uncontrolled Emissions			
	Flash (lb/hr)	Working and Breathing (lb/hr)	Total per Tank (lb/hr)	Total Emissions Per Tank (tpy)
Methane	0.02	0.043	0.02	0.069
Ethane	0.02	0.055	0.02	0.079
Propane	0.02	0.03	0.01	0.054
i-Butane	3.11E-03	6.31E-03	2.35E-03	0.01
n-Butane	9.63E-03	0.01	5.77E-03	0.025
i-Pentane	2.12E-03	3.14E-03	1.32E-03	5.77E-03
n-Pentane	1.95E-03	1.15E-03	7.77E-04	3.40E-03
Cyclohexane	1.31E-03	9.50E-03	2.70E-03	0.01
n-Hexane	2.78E-04	1.10E-04	9.72E-05	4.26E-04
n-Heptane	8.48E-04	2.42E-04	2.73E-04	1.19E-03
C8	5.74E-05	7.13E-06	1.61E-05	7.07E-05
Water	2.04E-03	0.105	0.027	0.12
N2	2.01E-04	2.13E-04	1.04E-04	4.54E-04
CO2	1.94E-03	0.082	0.021	0.092
H2S	1.84E-06	1.23E-04	3.12E-05	1.36E-04
Triethylene Glycol	1.12E-13	2.83E-12	7.36E-13	3.22E-12
EG	-	-	-	-
MeOH	-	-	-	-
MDEA	-	-	-	-
2,2,4-Trimethylpentane	-	-	-	-
Benzene	1.54E-03	0.091	0.023	0.102
Toluene	1.67E-03	0.099	0.025	0.11
Ethylbenzene	1.65E-04	9.39E-03	2.39E-03	0.010
m-Xylene	2.95E-04	0.02	4.50E-03	0.020
o-Xylene	9.39E-05	5.38E-03	1.37E-03	6.00E-03
Nonane	2.51E-05	2.92E-06	7.01E-06	3.07E-05
Decane	1.69E-06	5.89E-08	4.37E-07	1.92E-06
Undecane	-	-	-	-
Dodecane	-	-	-	-
VOC	**0.04**	**0.29**	**0.082**	**0.36**
Total HAPS	**4.04E-03**	**0.22**	**0.057**	**0.25**
Total H_2S	**1.84E-06**	**1.23E-04**	**3.12E-05**	**1.36E-04**

[1] Uncontrolled emissions are calculated using BR&E ProMax. Hourly loading emissions are based on the short-term worse case scenario. Annual emissions are based on the daily throughput of the facility.

Delek Logistics Partners LP - Outland Compressor Station

1.5 MMBtu/Hr Dehy Reboiler

Unit: HTR-1
Heat Input: 1.5 MMBTU/hr
Fuel Heat Value: 1251.76 BTU/scf
Fuel Sulfur Content: 2 gr/100 scf
Operating Hours: 8,760 hours/yr
Fuel Usage: 1198.31 scf/hr

Criteria Pollutant Emission Rates per Unit							
	NO_x	**CO**	**VOC**	**SO_2[1]**	**PM^2**	**Units**	**Notes**
Emission Factors	100	84	5.5	-	7.6	lb/MMscf	AP-42 Table 1.4-1 & 2
	122.72	103.09	6.75	-	9.33	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
				2.00		gr S/100 scf	
Emissions	**0.15**	**0.12**	**8.09E-03**	**6.85E-03**	**0.011**	lb/hr[3]	
	0.64	**0.54**	**0.035**	**0.030**	**0.049**	tons/year[4]	

HAP Emission Rates per Unit							
	n-Hexane	**Benzene**	**Toluene**	**HCHO**	**Total HAPs[5]**	**Units**	**Notes**
Emission Factors	1.80E+00	2.1E-03	3.4E-03	7.5E-02	-	lb/MMscf	AP-42 Table 1.4-3
	2.21E+00	2.58E-03	4.17E-03	9.20E-02	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	**2.65E-03**	**3.09E-06**	**5.00E-06**	**1.10E-04**	**2.77E-03**	lb/hr[3]	
	1.16E-02	**1.35E-05**	**2.19E-05**	**4.83E-04**	**1.21E-02**	tons/year[4]	

Notes:
[1] SO_2 emissions based on fuel sulfur (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)
[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.

Green House Gas Emissions	**CO_2[6]**	**CH_4[6]**	**N_2O[6]**	**CO_2e[6]**	**Units**	**Notes**
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	768.541	**0.016**	**0.001**		**tpy**	
	768.541	**4.46E-01**	**3.84E-01**	**769.37**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)
CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

1.5 MMBtu/hr Dehy Reboiler

Unit:	HTR-2	
Heat Input:	1.5	MMBTU/hr
Fuel Heat Value:	1251.76	BTU/scf
Fuel Sulfur Content:	2	gr/100 scf
Operating Hours:	8,760	hours/yr
Fuel Usage:	1198.31	scf/hr

Criteria Pollutant Emission Rates per Unit							
	NO_x	**CO**	**VOC**	**SO_2[1]**	**PM[2]**	**Units**	**Notes**
Emission Factors	100	84	5.5		7.6	lb/MMscf	AP-42 Table 1.4-1 & 2
	122.72	103.09	6.75	-	9.33	lb/MMscf	Adjusted EF, per footnote a in Tables 1.4-1 and 1.4-2
	-	-	-	2	-	gr S/100 scf	
Emissions	**0.15**	**0.12**	**8.09E-03**	**6.85E-03**	**0.011**	lb/hr[3]	
	0.64	**0.54**	**0.035**	**0.030**	**0.049**	tons/year[4]	

HAP Emission Rates per Unit							
	n-Hexane	**Benzene**	**Toluene**	**HCHO**	**Total HAPs[5]**	**Units**	**Notes**
Emission Factors	1.80E+00	2.1E-03	3.4E-03	7.5E-02	-	lb/MMscf	AP-42 Table 1.4-3
	2.21E+00	2.58E-03	4.17E-03	9.20E-02	-	lb/MMscf	Adjusted EF, per footnote a in Table 1.4-3
Emissions	**2.65E-03**	**3.09E-06**	**5.00E-06**	**1.10E-04**	**2.77E-03**	lb/hr[3]	
	1.16E-02	**1.35E-05**	**2.19E-05**	**4.83E-04**	**1.21E-02**	tons/year[4]	

Notes:

[1] SO_2 emissions based on fuel sulfur (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)

[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.

Green House Gas Emissions	**CO_2[6]**	**CH_4[6]**	**N_2O[6]**	**CO_2e[6]**	**Units**	**Notes**
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	768.54	**0.02**	**0.00**		**tpy**	
	768.54	**4.46E-01**	**3.84E-01**	**769.37**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)
CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

Condensate 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])

															CONDLOAD		
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{max}[6] (psia)**	**M[6] (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 %[3]**	**VOC Vapor Loading Losses (lb/hr)**	**HAP Vapor Loading Losses (lb/hr)**	**H_2S Vapor Loading Losses (lb/hr)**	**Uncontrolled Hourly VOC Emissions (lb/hr)**	**Uncontrolled Hourly HAP Emissions (lb/hr)**	**Uncontrolled Hourly H_2S Emissions[3] (lb/hr)**
CONDLOAD	Condensate	Submerged	0.6	12.88	48.58	542.03	8.63	1,223	0%	65.22%	4.89%	0.00%	6.88	0.52	1.80E-04	**6.88**	**0.52**	**1.80E-04**

															CONDLOAD		
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{avg}[7] (psia)**	**M[7] (lb/lbmol)**	**T_{avg}[4] (°R)**	**L_L (lbs/1000 gal)**	**Annual Throughput[7] (gal/yr)**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt %[3]**	**VOC Vapor Loading Losses (tpy)**	**HAP Vapor Loading Losses (tpy)**	**H_2S Vapor Loading Losses (tpy)**	**Uncontrolled Annual VOC Emissions (tpy)**	**Uncontrolled Annual HAP Emissions (tpy)**	**Uncontrolled Annual H_2S Emissions[3] (tpy)**
CONDLOAD	Condensate	Submerged	0.6	11.43	48.58	542.03	8.63	10,709,999	0%	65.22%	4.89%	0.00%	30.15	2.26	7.88E-04	**30.15**	**2.26**	**7.88E-06**

[1] Loading loss equation and variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] Material loaded is a mixture of condensate and produced water.
[3] H_2S content is conservatively assumed.
[4] Worst case scenario temperature is approximately 82° F and the average temperature is approximately 82° F.
[5] The maximum hourly throughput is based on the assumption that one truck with a 180 bbl capacity can be loaded in an hour.
[6] TVP and MW pulled from Max Hourly ProMax
7 TVP, MW, and annual throughput pulled from Annual Average promax

Green House Gas Emissions	**CO_2[6]**	**CH_4[6]**	**N_2O[6]**	**CO_2e[6]**	**Units**	**Notes**
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	0.677051	**5.64532**	**-**	**-**	**tpy**	
	0.677051	**158.069**	**-**	**158.746**	**tpy CO_2e**	

[6] CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

Produced Water 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])

															PW LOAD		
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{max} [6] (psia)**	**M [6] (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 % [3]**	**VOC Vapor Loading Losses (lb/hr)**	**HAP Vapor Loading Losses (lb/hr)**	**H_2S Vapor Loading Losses (lb/hr)**	**Uncontrolled Hourly VOC Emissions (lb/hr)**	**Uncontrolled Hourly HAP Emissions (lb/hr)**	**Uncontrolled Hourly H_2S Emissions [3] (lb/hr)**
PW LOAD	Produced Water	Submerged	0.6	12.88	34.87	542.03	6.20	612.50	0%	50.48%	38.71%	0.021%	1.92	1.47	8.08E-04	**1.92**	**1.47**	**8.083E-04**

															PW LOAD		
Unit	**Material Loaded [2]**	**Loading Method**	**S**	**P_{avg} [7] (psia)**	**M [7] (lb/lbmol)**	**T_{avg} [4] (°R)**	**L_L (lbs/1000 gal)**	**Annual Throughput [7] (gal/yr)**	**Capture Efficiency (%)**	**VOC Wt %**	**HAP Wt %**	**H_2S Wt % [3]**	**VOC Vapor Loading Losses (tpy)**	**HAP Vapor Loading Losses (tpy)**	**H_2S Vapor Loading Losses (tpy)**	**Uncontrolled Annual VOC Emissions (tpy)**	**Uncontrolled Annual HAP Emissions (tpy)**	**Uncontrolled Annual H_2S Emissions [3] (tpy)**
PW LOAD	Produced Water	Submerged	0.6	12.88	34.87	542.03	6.20	5,365,500	0%	50.48%	38.71%	0.02%	8.39	6.44	3.54E-03	**8.39**	**6.44**	**3.54E-05**

[1] Loading loss equation and variables are from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids.
[2] Material loaded is a mixture of condensate and produced water.
[3] H_2S content is conservatively assumed.
[4] Worst case scenario temperature is approximately 82° F and the average temperature is approximately 82° F.
[5] The maximum hourly throughput is based on the assumption that one truck with a 180 bbl capacity can be loaded in an hour.
[6] TVP and MW pulled from Max Hourly ProMax
7 TVP, MW, and annual throughput pulled from Annual Average promax

Green House Gas Emissions	**CO_2 [6]**	**CH_4 [6]**	**N_2O [6]**	**CO_2e [6]**	**Units**	**Notes**
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	0.006	**1.242**	**-**	**-**	**tpy**	
	0.006	**34.79**	**-**	**34.792**	**tpy CO_2e**	

[6] CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

TEG Dehydrator 1

Emission Unit:	DEHY-1
Source Description:	TEG Dehydrator 1 w/ Condenser
Operating Hours:	8760 hrs/yr
Throughput:	70.00 MMSCFD
ECD DRE:	98%

Uncontrolled [1]	VOC		H_2S		Total HAP		Hexane		Benzene		Toluene		Ethylbenzene		2,2,4 Trimethyl pentane		Xylene	
	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 Overheads	70.43	308.49	4.56E-03	0.02	3.96	17.34	1.08	4.74	1.49	6.53	1.19	5.21	0.061	0.27	-	-	0.137	0.60
Uncontrolled Condenser Overheads	28.30	123.94	8.40E-03	0.037	6.26	27.42	0.330	1.45	3.84	16.81	1.91	8.35	0.051	0.223	-	-	0.133	0.58
Uncontrolled Emissions Per Unit	**98.73**	**432.43**	**0.01**	**0.057**	**10.22**	**44.76**	**1.41**	**6.18**	**5.33**	**23.34**	**3.10**	**13.56**	**0.112**	**0.49**	**-**	**-**	**0.27**	**1.19**

Controlled [2,3]	VOC		H_2S		Total HAP		Hexane		Benzene		Toluene		Ethylbenzene		2,2,4 Trimethyl pentane		Xylene	
	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
Controlled Flash Tank Overheads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Controlled Condenser Overheads	**Emissions are represented at ECD-1**																	
Controlled Emissions Per Unit	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

[1] Emissions estimated using BR&E ProMax.

[2] 100% of emissions from condenser overheads are captured and routed to a combuster (ECD-1).

[3] Flash tank overheads are routed back to the inlet mixer where it is routed to the slug catcher.

Delek Logistics Partners LP - Outland Compressor Station

TEG Dehydrator 2

Emission Unit:	DEHY-2
Source Description:	TEG Dehydrator 2 w/ Condenser
Operating Hours:	8760 hrs/yr
Throughput:	70.00 MMSCFD
ECD DRE:	98%

Uncontrolled [1]	VOC		H_2S		Total HAP		Hexane		Benzene		Toluene		Ethylbenzene		2,2,4 Trimethyl pentane		Xylene	
	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 Overheads	70.43	308.49	4.56E-03	0.02	3.96	17.34	1.08	4.74	1.49	6.53	1.19	5.21	0.061	0.27	-	-	0.137	0.60
Uncontrolled Condenser Overheads	28.30	123.94	8.40E-03	0.037	6.26	27.42	0.330	1.45	3.84	16.81	1.91	8.35	0.051	0.223	-	-	0.133	0.58
Uncontrolled Emissions Per Unit	**98.73**	**432.43**	**0.01**	**0.057**	**10.22**	**44.76**	**1.41**	**6.18**	**5.33**	**23.34**	**3.10**	**13.56**	**0.112**	**0.49**	**-**	**-**	**0.27**	**1.19**

Controlled [2,3]	VOC		H_2S		Total HAP		Hexane		Benzene		Toluene		Ethylbenzene		2,2,4 Trimethyl pentane		Xylene	
	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
Controlled Flash Tank Overheads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Controlled Condenser Overheads	**Emissions are represented at ECD-2**																	
Controlled Emissions Per Unit	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

[1] Emissions estimated using BR&E ProMax.

[2] 100% of emissions from condenser overheads are captured and routed to a combuster (ECD-2).

[3] Flash tank overheads are routed back to the inlet mixer where it is routed to the slug catcher.

Delek Logistics Partners LP - Outland Compressor Station

Enclosed Combustion Device

Emission Unit: ECD-1
Source Description: TEG Dehydrator (DEHY-1)
Control Efficiency: 98% DRE
Capture Efficiency: 100%

VOC Heat Input and Flow Rate Calculation Per Unit

Process Parameters	Value	Unit	Notes
VOC Emissions	123.94	tpy	TEG BTEX Vapors
HAP Emissions	27.42	tpy	TEG BTEX Vapors
H2S Emissions	0.037	tpy	TEG BTEX Vapors
Total Flared Gas Heating Value	2337.54	Btu/scf	Heating Value
Total Flared Gas Flow	304.88	scf/hr	Stream to flare
Total Flared Gas Heating Rate	0.71	MMBtu/hr	Calculated based on heating value and steady-state flow
Combusted Gas Flow Rate with Safety Factor	25%	%	Safety factor
	381.10	scf/hr	Flow with safety factor
	3.34	MMscf/yr	
Short-Term Safety Factor	10%	-	Applied to emissions to account for variations in heat content
Heating Rate	0.98	MMBtu/hr	
Pilot Parameters	**Value**	**Unit**	**Notes**
Flare pilot hourly	100	scf/hr	Engineering estimation (assumed)
	0%		Safety factor
	100	scf/hr	Pilot flow with safety factor
	1.00E-04	MMscf/hr	
	0.88	MMscf/yr	Engineering estimation (assumed)
Flare pilot annual	0%		Safety factor
	0.88	MMscf/yr	Pilot flow with safety factor
	0.01	lb/lbmol	Molecular weight
Hours of Operation	8760	hrs	
Pipeline Gas HHV	1251.76	Btu/scf	Facility specification
Flare Heat Input	0.13	MMBtu/hr	
	0.88	MMscf/yr	
Total Flare Flow Rate	11546.50	scf/d	
Heating Rate + Pilot	1.11	MMBtu/hr	

Emission Rates Per Unit										
	NO_X	CO	VOC[1]	SO_2[2]	H_2S[3]	PM_{10}	$PM_{2.5}$	HAPs[1]	Units	Notes
Emission Factors	100.00	84.00	5.50			7.60	7.60		lb/MMscf	NO_x, CO, and VOC: AP-42 Chapter 1.4 Table 1.4-1 and 1.4-2
	122.72	103.09	6.75			9.33	9.33		lb/MMscf	Adjusted for Pilot
	229.17	192.50				17.42	17.42		lb/MMscf	Adjusted for Max Hourly Stream
					0.0004				lb S/Mscf or lb H2S/Mscf	NMED
				2.00	-				gr S / 100 scf	NMED
									lb/hr	
			123.94		0.037			27.42	tpy	
Pilot Emissions	0.012	0.010	6.75E-04	5.71E-04	4.00E-05	9.33E-04	9.33E-04	-	lb/hr	
	0.05	0.05	2.956E-03	2.503E-03	1.75E-04	4.085E-03	4.085E-03	-	tpy	
Process Emissions	0.087	0.073	0.57	0.02	1.68E-04	6.64E-03	6.64E-03	0.125	lb/hr	
	0.383	0.321	2.48	0.068	7.36E-04	0.03	0.03	0.55	tpy	
Total Emissions	**0.10**	**0.084**	**0.57**	**0.016**	**2.08E-04**	**7.57E-03**	**7.57E-03**	**0.125**	**lb/hr**	
	0.44	**0.37**	**2.48**	**0.070**	**9.11E-04**	**0.033**	**0.033**	**0.55**	**tpy**	

1 TEG BTEX vapors are controlled by ECD-1: 98% DRE

[2] Fuel sulfur content is assumed to be 2 gr/100 scf

[3] H2S 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.

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	1068.291	**0.022**	**0.002**		**tpy**	
	1068.291	**6.20E-01**	**5.34E-01**	**1069.444**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)
CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor
- Indicates emissions of this pollutant are not expected.

Delek Logistics Partners LP - Outland Compressor Station

Enclosed Combustion Device

Emission Unit: ECD-2
Source Description: TEG Dehydrator (DEHY-2)
Control Efficiency: 98% DRE
Capture Efficiency: 100%

VOC Heat Input and Flow Rate Calculation Per Unit

Process Parameters	Value	Unit	Notes
VOC Emissions	123.94	tpy	TEG BTEX Vapors
HAP Emissions	27.42	tpy	TEG BTEX Vapors
H2S Emissions	0.037	tpy	TEG BTEX Vapors
Total Flared Gas Heating Value	2337.54	Btu/scf	Heating Value
Total Flared Gas Flow	304.88	scf/hr	Stream to Flare
Total Flared Gas Heating Rate	0.71	MMBtu/hr	Calculated based on heating value and steady-state flow
Combusted Gas Flow Rate with Safety Factor	25.00%	%	Safety factor
	381.10	scf/hr	Flow with safety factor
	2.67	MMscf/yr	
Short-Term Safety Factor	10%	-	Applied to emissions to account for variations in heat content
Max hourly Heating Rate	0.98	MMBtu/hr	
Pilot Parameters	**Value**	**Unit**	**Notes**
Flare pilot	100	scf/hr	Engineering estimation (assumed)
	0%		Safety factor
	100	scf/hr	Pilot flow with safety factor
	1.00E-04	MMscf/hr	
Flare pilot annual	0.88	MMscf/yr	Engineering estimation (assumed)
	0%		Safety factor
	0.88	MMscf/yr	Pilot flow with safety factor
	0.01	lb/lbmol	Molecular weight
Hours of Operation	8760	hrs	
Pipeline Gas HHV	1251.76	Btu/scf	Facility specification
Flare Heat Input	0.13	MMBtu/hr	
	0.88	MMscf/yr	
Total Flare Flow Rate	11546.50	scf/d	
Heating Rate + Pilot	1.11	MMBtu/hr	

Emission Rates Per Unit

	NO_X	CO	VOC[1]	SO_2[2]	H_2S[3]	PM_{10}	$PM_{2.5}$	HAPs[1]	Units	Notes
Emission Factors	100.00	84.00	5.50			7.60	7.60		lb/MMscf	NO_x, CO, and VOC: AP-42 Chapter 1.4 Table 1.4-1 and 1.4-2
	122.72	103.09	6.75			9.33	9.33		lb/MMscf	Adjusted for Pilot
	229.17	192.50				17.42	17.42		lb/MMscf	Adjusted for Max Hourly Stream
					0.0004				lb S/Mscf or lb H2S/Mscf	NMED
				2.00	-				gr S / 100 scf	NMED
									lb/hr	
			123.94		0.037			27.42	tpy	
Pilot Emissions	0.012	0.010	6.75E-04	5.71E-04	4.00E-05	9.33E-04	9.33E-04	-	lb/hr	
	0.05	0.05	2.956E-03	2.503E-03	1.75E-04	4.085E-03	4.085E-03	-	tpy	
Process Emissions	0.09	0.07	0.57	0.02	1.68E-04	6.638E-03	6.638E-03	0.125	lb/hr	
	0.38	0.32	2.48	0.068	7.36E-04	0.029	0.029	0.548	tpy	
Total Emissions	**0.10**	**0.084**	**0.57**	**0.016**	**2.08E-04**	**7.570E-03**	**7.570E-03**	**0.125**	**lb/hr**	
	0.44	**0.37**	**2.48**	**0.070**	**9.11E-04**	**0.033**	**0.033**	**0.55**	**tpy**	

1 TEG BTEX vapors are controlled by ECD-2: 98% DRE

[2] Fuel sulfur content is assumed to be 2 gr/100 scf

[3] H2S 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

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
Emission Factors	53.06	1.10E-03	1.00E-04	-	kg/MMBtu	40 CFR 98 Subpart C Tables C-1 & C-2
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	1068.291	**0.022**	**0.002**		**tpy**	
	1068.291	**6.20E-01**	**5.34E-01**	**1069.444**	**tpy CO_2e**	

[6] N_2O, CH_4, and CO_2 tpy Emission Rate= EF (kg/MMBtu) * Fuel Usage (MMBtu/hr) * (2.20462 lb/kg) / (2000 lb/ton)
CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor
- Indicates emissions of this pollutant are not expected.

Delek Logistics Partners LP - Outland Compressor Station

Process Flare

Emission Unit: FL-1
Source Description: Controls blowdowns and SSM emissions from the process.
Control Efficiency: 98% DRE
Ideal gas 379.40 scf/lbmol

Pilot Parameters	Value	Unit	Notes
Flare pilot hourly	500.00	scf/hr	Engineering Estimate
	25%		Safety factor
	625.00	scf/hr	Pilot flow with safety factor
	6.25E-04	MMscf/hr	
Flare pilot annual	4.38	MMscf/yr	Annual pilot gas
	25%		Safety factor
	5.48	MMscf/yr	Annual pilot gas with safety factor
Pilot Composition	21.53	lb/lbmol	ProMax Report
	0.65	HAP wt%	ProMax Report
	23.35	VOC wt%	ProMax Report
Hours of Operation	8760	hrs	
Fuel Gas HHV	1251.76	Btu/scf	ProMax Report
	0.78	MMBtu/hr	
Flare Heat Input	5.48	MMscf/yr	
Compressor Blowdowns	**Value**	**Unit**	**Notes**
Blowdown event information	5.00	Mscf/event	
	1080.00	events/yr	
Hourly	5000.00	scf/hr	Engineering Estimate
	25%		Safety factor
	6250.00	scf/hr	Flow with safety factor
	6.25E-03	MMscf/hr	
Annual	5.40	MMscf/yr	Annual Flow
	25%		Safety factor
	6.75	MMscf/yr	Annual Flow with safety factor
Composition	22.40	lb/lbmol	Gas Analysis
	1.96	HAP wt%	Gas Analysis
	27.13	VOC wt%	Gas Analysis
Pipeline Gas HHV	1296.74	Btu/scf	Gas Analysis
	8.10	MMBtu/hr	Max hourly heat rating
	6.75	MMscf/yr	
Plant Blowdowns	**Value**	**Unit**	**Notes**
Blowdown event information	1000.00	Mscf/event	
	5.00	events/yr	
Hourly	1000000.00	scf/hr	Engineering Estimate
	25%		Safety factor
	1250000.00	scf/hr	Flow with safety factor
	1.25	MMscf/hr	
Annual	5.00	MMscf/yr	Annual Flow
	25%		Safety factor
	6.25	MMscf/yr	Annual Flow with safety factor
Composition	22.40	lb/lbmol	Gas Analysis
	1.96	HAP wt%	Gas Analysis
	27.13	VOC wt%	Gas Analysis
Pipeline Gas HHV	1296.74	Btu/scf	Gas Analysis
	1620.93	MMBtu/hr	Max hourly heat rating
	6.25	MMscf/yr	

Emission Rates Per Unit								
	NO_x	CO	VOC	SO_2[1]	H_2S[2]	HAPs	Units	Notes
Emission Factors	0.14	0.28		2.00	2.99E-04		lb/MMBtu lb H2S/Mscf gr S/100 scf	TNRCC RG-109 (high Btu; other) Engineering assumption
Pilot Emissions	0.11	0.22	0.17	3.57E-03	1.87E-04	4.63E-03	lb/hr	
	0.47	0.94	0.73	0.016	8.19E-04	0.020	tpy	
Compressor blowdowns	1.12	2.23	2.00	3.57E-08	1.87E-09	0.14	lb/hr	
	0.60	1.21	1.08	1.56E-07	8.19E-09	0.078	tpy	
Plant blowdowns	223.69	446.57	400.43	7.14E-06	3.74E-07	28.97	lb/hr	
	0.56	1.12	1.00	3.13E-05	1.64E-06	0.072	tpy	
Total Emissions	**223.80**	**446.78**	**400.60**	**3.58E-03**	**1.87E-04**	**28.97**	**lb/hr**	
	1.64	**3.27**	**2.81**	**0.016**	**8.21E-04**	**0.17**	**tpy**	

[1] Fuel sulfur content is assumed to be
[2] H2S 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

[3] "-" Indicates emissions of this pollutant are not expected.

Emission rates per unit						
	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	
Pilot Emissions	2.28E-03	4.61E-03	1.11E-03	6.74E-04	2.73E-03	lb/hr
	9.97E-03	0.020	4.86E-03	0.014	0.012	tpy
Compressor Blowdowns	0.024	0.048	0.012	0.033	0.028	lb/hr
	0.013	0.026	6.23E-03	0.018	0.015	tpy
Plant Blowdowns	4.74	9.60	2.31	6.65	5.68	lb/hr
	0.012	0.024	5.77E-03	0.017	0.014	tpy
Total Emissions	4.74	9.60	2.31	6.65	5.68	lb/hr
	0.035	0.070	0.017	0.049	0.041	tpy

Factors	*Source*	*Value*
Volume of Gas in scf/yr	Total Gas to Flare	18,475,000.00
DRE %	Manufactuer Spec.	98%
Mole Fraction of CO_2	Inlet Gas	7.35E-03
Mole Fraction of CH_4	Inlet Gas	0.77
Methane	Inlet Gas	0.77
Ethane	Inlet Gas	0.10
Propane	Inlet Gas	0.052
Butane	Inlet Gas	0.012
Pentanes Plus	Inlet Gas	0.038
Density of CO_2	40 CFR 98	0.053
Density of CH_4	40 CFR 98	0.019
HHV of Fuel (MMBtu/scf)	Inlet Gas	1.25E-03
Volume of Fuel Combusted	Total Gas to Flare	18475000.00
Emission Factor for N_2O	40 CFR 98	1.00E-04

R_j = Number of carbon atcin each Molecule

Constituent j, Methane =	1.00
Constituent j, Ethane =	2.00
Constituent j, Propane =	3.00
Constituent j, Butane =	4.00
Constitutent j, Pentanes Plus=	5.00

Green House Gas Emissions	CO_2[5]	CH_4[5]	N_2O[5]	CO_2e[5]	Units
Emissions (scf)	**24883012.09**	**283406.55**	**-**		
Mass Emissions	**1308.85**	**5.44**	**2.31E-03**		**metric ton**
Emission Factors	**1.00**	**28.00**	**265.00**		**Emission Factor**
Mass Emissions equv	**1308.85**	**152.36**	**0.61**	**1461.82**	**tpy CO_2e**

[4] Equations W-36, W-19 & W-20 used.
[5] Equation W-40 used.

$E_{s,CH4} = V_s * X_{CH4} * [(1 - \eta) * Z_L + Z_U]$ (Equation W-19)
$E_{s,CO2} = V_s * X_{CO2} * \Sigma (\eta * V_s * Y_j * R_j * Z_L)$ (Equation W-20)

$Mass_s = E_{s,i} * \rho_i * 10^{-3}$ (Equation W-36)
$Mass_{N2O} = (1* 10^{-3}) * Fuel * HHV * EF$ *(Equation W-40)*

Delek Logistics Partners LP - Outland Compressor Station

Tank Flare

Emission Unit: FL-2
Source Description: TK-1, TK-2 through TK-5, PWTK-1 through PWTK-4
Control Efficiency: 98% DRE

VOC Heat Input and Flow Rate Calculation Per Unit

Parameters	Value	Unit	Notes
VOC Emissions	211.27	tpy	TK-1, TK-2 through TK-5, PWTK-1 through PWTK-4
HAP Emissions	16.29	tpy	TK-1, TK-2 through TK-5, PWTK-1 through PWTK-4
H2S Emissions	0.0063	tpy	TK-1, TK-2 through TK-5, PWTK-1 through PWTK-4
Total Flared Gas Heating Value	1884.40	Btu/scf	Weighted average heating value from all streams
Total Flared Gas Flow	943.95	scf/hr	Total flow from all streams to flare
Total Flared Gas Heating Rate	1.78	MMBtu/hr	Calculated based on heating value and steady-state flow
Flared Gas Flow Rate with Safety Factor	10% 1038.35 9.10	% scf/hr MMscf/yr	Safety factor Flow with safety factor
Short-Term Safety Factor	10%	-	Applied to emissions to account for variations in heat content.
Heating Rate	1.96	MMBtu/hr	
Pilot Parameters	**Value**	**Unit**	**Notes**
Flare pilot	500 25% 625 6.25E-04	scf/hr scf/hr MMscf/hr	Engineering Estimate Safety factor Pilot flow with safety factor
Flare pilot annual	4.38 25% 5.475	MMscf/yr MMscf/yr	Annual pilot gas Safety factor Annual pilot gas with safety factor
Pilot Composition	21.53108861 0.65 23.35	lb/lbmol HAP wt% VOC wt%	Gas Analysis Gas Analysis
Hours of Operation	8760	hrs	
Pipeline Gas HHV	1252	Btu/scf	Facility specification
Flare Heat Input	0.78 5.48	MMBtu/hr MMscf/yr	
Total Flare Flow Rate	39920.30	SCF/D	
Heating Rate + Pilot	2.74	MMBtu/hr	

Emission Rates Per Unit

	NO_x	CO	VOC	SO_2[1]	H_2S[2]	HAPs	Units	Notes
Emission Factors	0.14	0.28					lb/MMBtu	TNRCC RG-109 (high Btu; other)
					2.99E-04		lb H2S/Mscf	
			211.2668		0.0063	16.29	tpy	Promax
				2.00			gr S/100 scf	Engineering assumption
Pilot Emissions	0.11	0.22	0.17	3.57E-03	1.87E-04	4.626E-03	lb/hr	
	0.47	0.94	0.73	0.016	8.19E-04	0.020	tpy	
Process Emissions	0.27	0.54	18.51	2.66E-03	2.89E-05	0.030	lb/hr	
	1.18	2.36	4.23	0.01	1.26E-04	0.13	tpy	
Total Emissions	**0.38**	**0.75**	**18.67**	**6.234E-03**	**2.16E-04**	**0.035**	**lb/hr**	
	1.66	**3.31**	**4.95**	**0.027**	**9.45E-04**	**0.15**	**tpy**	

[1] Fuel sulfur content is assumed to be 2 gr/100 scf

[2] H2S 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

[3] "-" Indicates emissions of this pollutant are not expected.

Emission rates per unit

	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	
	2.28E-03	4.61E-03	1.11E-03	6.74E-04	2.73E-03	lb/hr
Pilot Emissions	0.010	0.020	4.86E-03	0.014	0.012	tpy
	9.34E-03	1.08E-02	1.04E-03	2.64E-03	0.012	lb/hr
Process Emissions	0.041	0.047	0.005	0.012	0.030	tpy
	0.012	1.54E-02	0.002	0.003	0.014	lb/hr
Total Emissions	0.051	0.067	9.40E-03	0.026	0.042	tpy

Mole fraction CH4	**Pilot Gas**	**Process gas**
	0.76678	0.422362841
Mole fraction CO2	**Pilot Gas**	**Process gas**
	0.00735	0.01243925

Hydrocarbon Constituents		
Constituents	**Pilot Gas**	**process gas**
Constituent j, Methane =	0.76678	0.422362841
Constituent j, Ethane =	0.10404	0.214175298
Constituent j, Propane =	0.05181	0.151777399
Constituent j, Butane =	0.02499	0.041977907
Constituent j, Pentanes Plus =	0.0235	0.131332435

R_j = Number of carbon atoms in the hydrocarbon constituent j in the feed gas to the flare

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

Density of CO2	40 CFR 98	0.0526
Density of CH4	40 CFR 98	0.0192
Emission Factor for N_2O	40 CFR 98	0.0001

Gas Sent to Flare	Gas Sent to Flare (scf/yr)	Annual CO_2 Emissions (scf)	Annual CH_4 Emissions (scf)	Combusted CO_2 Mass Emissions (mtpy)	Uncombusted CH_4 Mass Emissions (mtpy)	N_2O Mass Emissions (mtpy)	Combusted CO_2 Mass Emissions (tpy)	Uncombusted CH_4 Mass Emissions (tpy)	N_2O Mass Emissions (tpy)	CO_2e Mass Emissions (tpy)
Pilot Gas	5,475,000.00	7,271,593.88	83,962.41	382.49	1.61	2.28E-03	420.73	1.77	2.50E-03	471.05
process tank emissions	9,095,909.47	12,080,686.69	76,835.48	635.44	1.48	1.51E-03	698.99	1.62	1.66E-03	744.87
							Total	**3.40**	**4.17E-03**	**1215.92**

[4] Equations W-36, W-19 & W-20 used.

[5] Equation W-40 used.

$E_{s,CH4} = V_s * X_{CH4} * [(1 - \eta) * Z_c + Z_{cj}]$ (Equation W-19)

$E_{s,CO2} = V_s * X_{CO2} * \Sigma (\eta * V_s * Y_j * R_j * Z_c)$ (Equation W-20)

$Mass_i = E_{s,i} * \rho_i * 10^{-3}$ (Equation W-36)

$Mass_{N2O} = (1 * 10^{-3}) * Fuel * HHV * EF$ *(Equation W-40)*

Delek Logistics Partners LP - Outland Compressor Station

Fugitives

Emission unit number(s): FUG-1
Source description: Facility-wide Fugitive Emissions
Total Operating Hours 8,760

Component		Emission factor[1] (lb/hr/source)	VOC Content[2] (wt%)	HAP Content[2] (wt%)	H_2S Content[2] (wt%)	CO2 Content (wt%)	CH4 Content (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	CO_2 emissions lb/hr	CO_2 emissions tpy	CH_4 emissions lb/hr	CH_4 emissions tpy	H_2S Emissions[4,5] lb/hr	H_2S Emissions[4,5] tpy
Valves	Inlet Gas	9.92E-03	27.13%	1.96%	0.00046%	1.44468%	54.93879%	889	2.39	10.48	0.17	0.76	0.13	0.56	4.85	21.22	4.03E-05	1.76E-04
	Light Liquid	5.51E-03	98.99%	27.30%	0.001904%	0.008109%	0.040800%	33	0.18	0.79	0.050	0.22	1.475E-05	6.46E-05	7.421E-05	3.25E-04	3.46E-06	1.52E-05
Connectors	Inlet Gas	4.41E-04	27.13%	1.96%	0.00046%	1.44468%	54.93879%	2495	0.30	1.31	0.022	0.095	0.016	0.070	0.604	2.647	5.02E-06	2.20E-05
	Light Liquid	4.63E-04	98.99%	27.30%	0.001904%	0.008109%	0.040800%	56	0.026	0.11	7.08E-03	0.031	2.10E-06	9.209E-06	1.06E-05	4.633E-05	4.94E-07	2.16E-06
Flanges	Inlet Gas	8.60E-04	27.13%	1.96%	0.00046%	1.44468%	54.93879%	0	-	-	-	-	-	-	-	-	-	-
	Light Liquid	2.43E-04	98.99%	27.30%	0.001904%	0.008109%	0.040800%	66	0.016	0.069	4.37E-03	0.019	1.30E-06	5.685E-06	6.53E-06	2.860E-05	3.05E-07	1.33E-06
Open-ended Lines	Inlet Gas	4.41E-03	27.13%	1.96%	0.00046%	1.44468%	54.93879%	57	0.068	0.30	4.93E-03	0.022	3.63E-03	0.016	0.14	0.605	1.15E-06	5.03E-06
	Light Liquid	3.09E-03	98.99%	27.30%	0.001904%	0.008109%	0.040800%	0	-	-	-	-	-	-	-	-	-	-
Other	Inlet Gas	1.94E-02	27.13%	1.96%	0.00046%	1.44468%	54.93879%	56	0.29	1.29	0.021	0.093	0.016	0.069	0.597	2.614	4.96E-06	2.17E-05
	Light Liquid	1.65E-02	98.99%	27.30%	0.001904%	0.008109%	0.040800%	8	0.13	0.57	0.036	0.16	1.073E-05	4.70E-05	5.397E-05	2.36E-04	2.52E-06	1.10E-05
								Total:	**3.41**	**14.92**	**0.32**	**1.39**	**0.16**	**0.71**	**6.18**	**27.09**	**5.82E-05**	**2.55E-04**

[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].

Green House Gas Emissions	CO_2[6]	CH_4[6]	N_2O[6]	CO_2e[6]	Units	Notes
	1	28	265	-	GWP	40 CFR 98 Subpart A Table A-1
	0.71	**27.09**	**-**	**-**	**tpy**	
	0.71	**758.50**	**-**	**759.22**	**tpy CO_2e**	

[6] CO_2e tpy Emission Rate = CO_2 Emission Rate + N_2O Emission Rate*GWP Factor + CH_4 Emission Rate*GWP Factor

Delek Logistics Partners LP - Outland Compressor Station

Emission Calculation Inputs

Compressor Blowdowns		
Blowdown event information	5.00	Mscf/event
	1080.00	events/yr
Hourly	5000.00	scf/hr
	25%	
	6250.00	scf/hr
	6.25E-03	MMscf/hr
Annual	5.40	MMscf/yr
	25%	
	6.75	MMscf/yr
Composition	22.40	lb/lbmol
	0.48%	HAP mol%
	10.15%	VOC mol%
Pipeline Gas HHV	1296.74	Btu/scf
	8.10	MMBtu/hr
	6.75	MMscf/yr
Plant Blowdowns		
Blowdown event information	1000.00	Mscf/event
	5.00	events/yr
Hourly	1000000.00	scf/hr
	25%	
	1250000.00	scf/hr
	1.25	MMscf/hr
Annual	5.00	MMscf/yr
	25%	
	6.25	MMscf/yr
Composition	22.40	lb/lbmol
	0.48%	HAP mol%
	10.15%	VOC mol%
Pipeline Gas HHV	1296.74	Btu/scf
	1620.93	MMBtu/hr
	6.25	MMscf/yr
Pigging		
Volume Vented	426.48	scf/event
Maximum hourly number of pigging events	1	events/hr
Annual Number of Events	36	events/yr
Actual Pressure	1200	psig
Maximum Temperatue	100	°F
Annual Temperature	80	°F
Annual Temperature	80.00	°F

Delek Logistics Partners LP,-Outland Compressor station

SSM Summary

Uncontrolled Emissions

Description	NO_x		CO		VOC		PM		PM_{10}		$PM_{2.5}$		SO_2		H_2S		Total HAPs		CO_2	CH_4	N_2O	CO_2e
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Compressor Blowdowns[1]	-	-	-	-	1801.47	54.04	-	-	-	-	-	-	-	-	0.03	9.10E-04	130.33	3.91	2.88	109.43	-	3066.86
Plant Blowdowns[1]	-	-	-	-	20016.35	50.04	-	-	-	-	-	-	-	-	0.34	8.42E-04	1448.07	3.62	2.66	101.32	-	2839.69
Pigging	-	-	-	-	6.83	0.12	-	-	-	-	-	-	-	-	1.14E-04	2.04E-06	0.40	0.007	0.007	0.25	-	6.98
Total	**-**	**-**	**-**	**-**	**21824.65**	**104.21**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.37**	**0.002**	**1578.79**	**7.54**	**5.55**	**211.00**	**-**	**5913.52**

[1]Compressor Blowdowns and Plant Blowdowns are controlled by the process flare (Unit FL-1) with 100% capture efficiency and a 98% DRE. However, these are considered SSM activities and are represented here as well.

Controlled Emissions

Description	NO_x		CO		VOC		PM		PM_{10}		$PM_{2.5}$		SO_2		H_2S		Total HAPs		CO_2	CH_4	N_2O	CO_2e
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Compressor Blowdowns[1]	-	-	-	-	0.00E+00	0.00E+00	-	-	-	-	-	-	-	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Plant Blowdowns[1]	-	-	-	-	0.00E+00	0.00E+00	-	-	-	-	-	-	-	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-	0.00E+00
Pigging	-	-	-	-	6.83	0.12	-	-	-	-	-	-	-	-	1.14E-04	2.04E-06	0.40	0.007	0.007	0.25	-	6.98
Total	**-**	**-**	**-**	**-**	**6.83**	**0.12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.14E-04**	**2.04E-06**	**0.40**	**0.007**	**0.007**	**0.25**	**-**	**6.98**

[1]Compressor Blowdowns and Plant Blowdowns are controlled by the process flare (Unit FL-1) with 100% capture efficiency and a 98% DRE. However, these are considered SSM activities and are represented here as well.

Delek Logistics Partners LP - Outland Compressor Station

Compressor Blowdowns

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

Maximum Uncontrolled Hourly Emissions (lb/hr) = [Volume of blowdown (scf/event/unit)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] x [# compressors blowndown simultaneously (units)] / [event duration (hr/event)] / [379.5 (scf/lb-mol)]

Maximum Uncontrolled Annual Emissions (tpy) = [Volume of blowdown (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] x [# compressors blowndown at site (units)] x [frequency of events (events/yr/unit)] / [379.5 (scf/lb-mol)] / [2,000 (lb/ton)]

Estimated Hourly Blowdown Volume [1] =	6,250	scf/event
Number of Units =	18	units
Compressors Blowndown Simultaneously =	1	units
Assumed Blowdown Duration =	1	hr/event
Blowdowns Per Year =	60	event/yr/unit
Molecular Weight of Stream =	22.40	lb/lb-mol

Compound	Composition (wt %)	Maximum Uncontrolled Hourly Emissions (lb/hr)	Maximum Uncontrolled Annual Emissions (tpy)	Control Efficiency (%)	Maximum Controlled Hourly Emissions (lb/hr)	Maximum Controlled Annual Emissions (tpy)
Methane	54.94	202.64	109.43	100.00%	0.00	0.00
Ethane	13.97	927.65	27.83	100.00%	0.00	0.00
Propane	10.20	677.45	20.32	100.00%	0.00	0.00
n-Butane	1.86	123.75	3.71	100.00%	0.00	0.00
i-Pentane	5.74	381.03	11.43	100.00%	0.00	0.00
i-Butane	1.29	85.66	2.57	100.00%	0.00	0.00
n-Pentane	2.18	144.62	4.34	100.00%	0.00	0.00
Cyclohexane	0.47	30.94	0.93	100.00%	0.00	0.00
n-Hexane	0.38	25.55	0.77	100.00%	0.00	0.00
n-Heptane	1.80	119.74	3.59	100.00%	0.00	0.00
C8	0.60	39.63	1.19	100.00%	0.00	0.00
Water	0.00	0.00	0.00	100.00%	0.00	0.00
N2	2.51	166.72	5.00	100.00%	0.00	0.00
CO2	1.44	95.92	2.88	100.00%	0.00	0.00
H2S	0.00	0.03	0.00	100.00%	0.00	0.00
Triethylene Glycol	0.00	0.00	0.00	100.00%	0.00	0.00
EG	0.00	0.00	0.00	100.00%	0.00	0.00
MeOH	0.00	0.00	0.00	100.00%	0.00	0.00
MDEA	0.00	0.00	0.00	100.00%	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	100.00%	0.00	0.00
Benzene	0.32	21.31	0.64	100.00%	0.00	0.00
Toluene	0.65	43.17	1.30	100.00%	0.00	0.00
Ethylbenzene	0.16	10.39	0.31	100.00%	0.00	0.00
m-Xylene	0.34	22.67	0.68	100.00%	0.00	0.00
o-Xylene	0.11	7.24	0.22	100.00%	0.00	0.00
Nonane	0.58	38.79	1.16	100.00%	0.00	0.00
Decane	0.44	29.53	0.89	100.00%	0.00	0.00
Undecane	0.00	0.00	0.00	100.00%	0.00	0.00
Dodecane	0.00	0.00	0.00	100.00%	0.00	0.00
Total VOC	**27.13**	**1801.47**	**54.04**	**-**	**0.00**	**0.00**
H_2S	**0.00**	**0.03**	**0.00**	**-**	**0.00**	**0.00**
Total HAP	**1.96**	**130.33**	**3.91**	**-**	**0.00**	**0.00**
Total CO_2	**1.44**	**95.92**	**2.88**	**-**	**0.00**	**0.00**
Total CH_4	**54.94**	**202.64**	**109.43**	**-**	**0.00**	**0.00**

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

Delek Logistics Partners LP - Outland Compressor Station

Plant Blowdowns

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

Maximum Uncontrolled Hourly Emissions (lb/hr) = [Estimated blowdown volume (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] / [hour/event] / [379.5 (scf/lb-mol)]

Maximum Uncontrolled Annual Emissions (tpy) = [Estimated blowdown volume (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] * [event/yr] / [379.5 (scf/lb-mol)] / [2,000 (lb/ton)]

The hourly volume is calculated from the sum of the blowdown volumes from each component of the dehydrator (i.e. the contactor, scrubber, flash tank, and filters).

Plant Blowdown Emissions

Estimated Hourly Blowdown Volume [1] =	1,250,000	scf/event
Number of Units =	1	units
Assumed Blowdown Duration =	1	hr/event
Blowdowns Per Year =	5	event/yr
Molecular Weight of Stream =	22.40	lb/lb-mol

Compound	Composition (wt %)	Maximum Uncontrolled Hourly Emissions (lb/hr)	Maximum Uncontrolled Annual Emissions (tpy)	Control Efficiency (%)	Maximum Controlled Hourly Emissions (lb/hr)	Maximum Controlled Annual Emissions (tpy)
Methane	54.94	40528.88	101.32	100%	0.00	0.00
Ethane	13.97	10307.25	25.77	100%	0.00	0.00
Propane	10.20	7527.17	18.82	100%	0.00	0.00
n-Butane	1.86	1374.96	3.44	100%	0.00	0.00
i-Pentane	5.74	4233.66	10.58	100%	0.00	0.00
i-Butane	1.29	951.75	2.38	100%	0.00	0.00
n-Pentane	2.18	1606.94	4.02	100%	0.00	0.00
Cyclohexane	0.47	343.83	0.86	100%	0.00	0.00
n-Hexane	0.38	283.93	0.71	100%	0.00	0.00
n-Heptane	1.80	1330.47	3.33	100%	0.00	0.00
C8	0.60	440.34	1.10	100%	0.00	0.00
Water	0.00	0.00	0.00	100%	0.00	0.00
N2	2.51	1852.41	4.63	100%	0.00	0.00
CO2	1.44	1065.75	2.66	100%	0.00	0.00
H2S	0.00	0.34	0.00	100%	0.00	0.00
Triethylene Glycol	0.00	0.00	0.00	100%	0.00	0.00
EG	0.00	0.00	0.00	100%	0.00	0.00
MeOH	0.00	0.00	0.00	100%	0.00	0.00
MDEA	0.00	0.00	0.00	100%	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	100%	0.00	0.00
Benzene	0.32	236.77	0.59	100%	0.00	0.00
Toluene	0.65	479.65	1.20	100%	0.00	0.00
Ethylbenzene	0.16	115.43	0.29	100%	0.00	0.00
m-Xylene	0.34	251.85	0.63	100%	0.00	0.00
o-Xylene	0.11	80.45	0.20	100%	0.00	0.00
Nonane	0.58	431.02	1.08	100%	0.00	0.00
Decane	0.44	328.15	0.82	100%	0.00	0.00
Undecane	0.00	0.00	0.00	100%	0.00	0.00
Dodecane	0.00	0.00	0.00	100%	0.00	0.00
Total VOC	**27.13**	**20016.35**	**50.04**	**-**	**0.00**	**0.00**
H_2S	**0.00**	**0.34**	**8.42E-04**	**-**	**0.00**	**0.00**
Total HAP	**1.96**	**1448.07**	**3.62**	**-**	**0.00**	**0.00**
Total CO_2	**1.44**	**1065.75**	**2.66**	**-**	**0.00**	**0.00**
Total CH_4	**54.94**	**40528.88**	**101.32**	**-**	**0.00**	**0.00**

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

Delek Logistics Partners LP - Outland Compressor Station

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 the hourly calculations.

Pigging and Purging Emissions

Volume Vented =	426.48	scf/event
=	1	events/hr
Annual Number of Events =	36	events/yr
Pipelines Purged Simultaneously =	1	lines
Molecular Weight of Stream =	22.40	lb/lb-mol
Control Type =	None	

Compound	Composition (wt %)	Maximum Uncontrolled Hourly Emissions (lb/hr)	Maximum Uncontrolled Annual Emissions (tpy)	Control Efficiency (%)	Maximum Controlled Hourly Emissions (lb/hr)	Maximum Controlled Annual Emissions (tpy)
Methane	54.94	13.83	0.25	--	--	--
Ethane	13.97	3.52	0.06	--	--	--
Propane	10.20	2.57	0.05	--	--	--
n-Butane	1.86	0.47	0.01	--	--	--
i-Pentane	5.73	1.44	0.03	--	--	--
i-Butane	1.29	0.32	0.01	--	--	--
n-Pentane	2.18	0.55	0.01	--	--	--
Cyclohexane	0.47	0.12	0.00	--	--	--
n-Hexane	0.39	0.10	0.00	--	--	--
n-Heptane	1.81	0.46	0.01	--	--	--
C8	0.60	0.15	0.00	--	--	--
Water	0.00	0.00	0.00	--	--	--
N2	2.51	0.63	0.01	--	--	--
CO2	1.44	0.36	0.01	--	--	--
H2S	0.00	0.00	0.00	--	--	--
Triethylene Glycol	0.00	0.00	0.00	--	--	--
EG	0.00	0.00	0.00	--	--	--
MeOH	0.00	0.00	0.00	--	--	--
MDEA	0.00	0.00	0.00	--	--	--
2,2,4-Trimethylpentane	0.00	0.00	0.00	--	--	--
Benzene	0.32	0.08	0.00	--	--	--
Toluene	0.65	0.16	0.00	--	--	--
Ethylbenzene	0.16	0.04	0.00	--	--	--
m-Xylene	0.34	0.09	0.00	--	--	--
o-Xylene	0.11	0.03	0.00	--	--	--
Nonane	0.59	0.15	0.00	--	--	--
Decane	0.45	0.11	0.00	--	--	--
Undecane	0.00	0.00	0.00	--	--	--
Dodecane	0.00	0.00	0.00	--	--	--
Total VOC	**27.13**	**6.83**	**0.12**	**--**	**--**	**--**
H_2S	**0.00**	**0.00**	**0.00**	**--**	**--**	**--**
Total HAP	**1.58**	**0.40**	**0.01**	**--**	**--**	**--**
Total CO_2	**1.44**	**0.36**	**0.01**	**--**	**--**	**--**
Total CH_4	**54.94**	**13.83**	**0.25**	**--**	**--**	**--**

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

Delek Logistics Partners LP - Outland Compressor Station

Inlet Gas Analysis

Sample Name	OCS-Inlet	
Sample Date	9/19/2024	
Temperature	85	F
Pressure	32	psig

Component	Mol %
H2S	0.0003
Nitrogen	2.007
Methane	76.678
CO2	0.735
Ethane	10.404
Propane	5.181
Isobutane	0.718
N-Butane	1.781
Isopentane	0.497
N-Pentane	0.537
2,2 Dimethylbutane	0.002
Cyclopentane	0.027
2-Methylpentane	0.068
3-Methylpentane	0.042
Hexane (C6)	0.100
Dimethylpentanes	0.001
Methylcyclopentane	0.068
2,2,3-Trimethylbutane	0.000
Benzene	0.092
Cyclohexane	0.124
2-Methylhexane	0.022
3-Methylhexane	0.036
Dimethylcyclopentanes	0.000
Heptane (C7)	0.063
Methylcyclohexane	0.149
2,5-Dimethylhexane	0.003
Toluene	0.158
2-Methylheptane	0.032
Other Octanes	0.071
Octane (C8)	0.046
Ethylcyclohexane	0.029
Ethylbenzene	0.033
m-p-xylene	0.072
o-xylene	0.023
Other Nonanes	0.033
Nonane (C-9)	0.040
IC3 Benzene	0.000
Cyclooctane	0.011
NC3 Benzene	0.004
TM Benzene(s)	0.002
IC4 Benzene	0.010
NC4 Benzene	0.002
Decanes + (C10+)	0.070
Total	99.971
Total VOC	10.147
Total HAP	0.478
Total H_2S	0.0003
Total H_2S (ppm)	3

1.433

Promax Entry

Component	Mol %
Methane	76.678
Ethane	10.404
Propane	5.181
i-Butane	0.718
n-Butane	1.781
i-Pentane	0.497
n-Pentane	0.676
Cyclohexane	0.124
n-Hexane	0.100
n-Heptane	0.403
C8	0.117
Water	0
N2	2.007
CO2	0.735
H2S	0.0003
Triethylene Glycol	0
EG	0
MeOH	0
MDEA	0
2,2,4-Trimethylpentane	0
Benzene	0.092
Toluene	0.158
Ethylbenzene	0.033
m-Xylene	0.072
o-Xylene	0.023
Nonane	0.102
Decane	0.070
Undecane	0
Dodecane	0
Total	99.971
Total VOC	10.147
Total HAP	0.478
Total H_2S	0.0003

Delek Logistics Partners LP - Outland Compressor Station

Diesel Engine Emissions (Exempt per 20.2.72.202.B.3 NMAC)

Emission Unit:	GEN-1
Source Description:	Diesel Fired Generator
Manufacturer:	TBD
Model:	TBD
Type:	Compression Ignited

Fuel Consumption

Site horsepower	644	hp	Maximum horsepower of generator engine
Site power (kW)	480	kW	Maximum kW of generator engine
Fuel heat value	137000	Btu/gal	Fuel heat value of typical diesel
Heat input	6.44	MMBtu/hr	Fuel consumption * Fuel heat value
Hours of Operation	499	hrs/yr	Assume ~3 weeks/yr of runtime
Fuel Consumption	10000	Btu/hp-hr	Engineering Estimate

Emission Calculations

Uncontrolled	NO_x[1]	CO[1]	VOC[1,2]	SO_2[3]	HCHO[4]	PM_{10}[1,5]	$PM_{2.5}$[1,5]	Total HAPs[4]	Units	Notes
Emission Factors	4.77	2.61	0.75			0.403	0.403		g/hp-hr	Tier 4 Emissions Standards for Non-Road Engines
				0.403	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
Emissions	**6.77**	**3.71**	**1.08**	**2.60**	**7.60E-03**	**0.57**	**0.57**	**0.024**	lb/hr	
	1.69	**0.92**	**0.27**	**0.65**	**1.90E-03**	**0.14**	**0.14**	**5.95E-03**	tpy	

Controlled	NO_x[1]	CO[1]	VOC[1,2]	SO_2[3]	HCHO[4]	PM_{10}[1,5]	$PM_{2.5}$[1,5]	Total HAPs[4]	Units	Notes
Emission Factors	4.77	2.61	0.75			0.403	0.403		g/hp-hr	Tier 4 Emissions Standards for Non-Road Engines
	0%	0%	0%			0%	0%			% Reduction
				0.403	1.18E-03				lb/MMBtu	AP-42 Table 3.3-1,2
Emissions	**6.77**	**3.71**	**1.08**	**2.60**	**7.60E-03**	**0.57**	**0.57**	**0.024**	lb/hr	
	1.69	**0.92**	**0.27**	**0.65**	**1.90E-03**	**0.14**	**0.14**	**5.95E-03**	tpy	

Acetaldehyde[4]	Acrolein[4]	Benzene[4]	1-3 Butadiene[4]	Toluene[4]	Xylene[4]	Units	Notes
7.67E-04	9.25E-05	9.33E-04	3.91E-05	4.09E-04	2.85E-04	lb/MMBtu	AP-42 Table 3.2-2
4.94E-03	**5.96E-04**	**6.01E-03**	**2.52E-04**	**2.63E-03**	**1.84E-03**	lb/hr	
1.23E-03	**1.49E-04**	**1.50E-03**	**6.28E-05**	**6.57E-04**	**4.58E-04**	tpy	

NOTES

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

[2] Formaldehyde and acetaldehyde emissions conservatively included in VOC total.

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

[4] HAPs emissions factors are referenced from AP-42 Table 3.3-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines.

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

Delek Logistics Partners LP - Outland Compressor Station

Haul Road (Exempt per 20.2.72.202.B.5 NMAC)

Unit: HR-1
Description: Haul Road (exempt under 20.2.72.202.B.(5) NMAC)
Control Equipmen N/A

Input Data

Empty vehicle weight[1]	32	tons
Load weight[2]	7.5	tons
Loaded vehicle[3]	39.5	tons
Mean vehicle weight[4]	35.7	tons
Vehicle frequency	2.0	trips/hour
Round-trip distance	0.25	mile/trip
Vehicle miles traveled[5]	353.70	miles/yr
Operating hours	8760	hours/yr
Surface silt content[6]	4.8	%
Annual wet days[7]	70	days/yr
Vehicle miles traveled[8]	0.50	mile/hr
Control percentage	0.0%	nominal, base course chemical treatment

Emission Factors and Constants

Parameter	PM_{10}	$PM_{2.5}$
k, lb/VMT[9]	1.5	0.15
a, lb/VMT[9]	0.90	0.90
b, lb/VMT[9]	0.45	0.45
Hourly EF, lb/VMT[10]	2.01	0.20
Annual EF, lb/VMT[11]	1.62	0.16

Uncontrolled Emissions

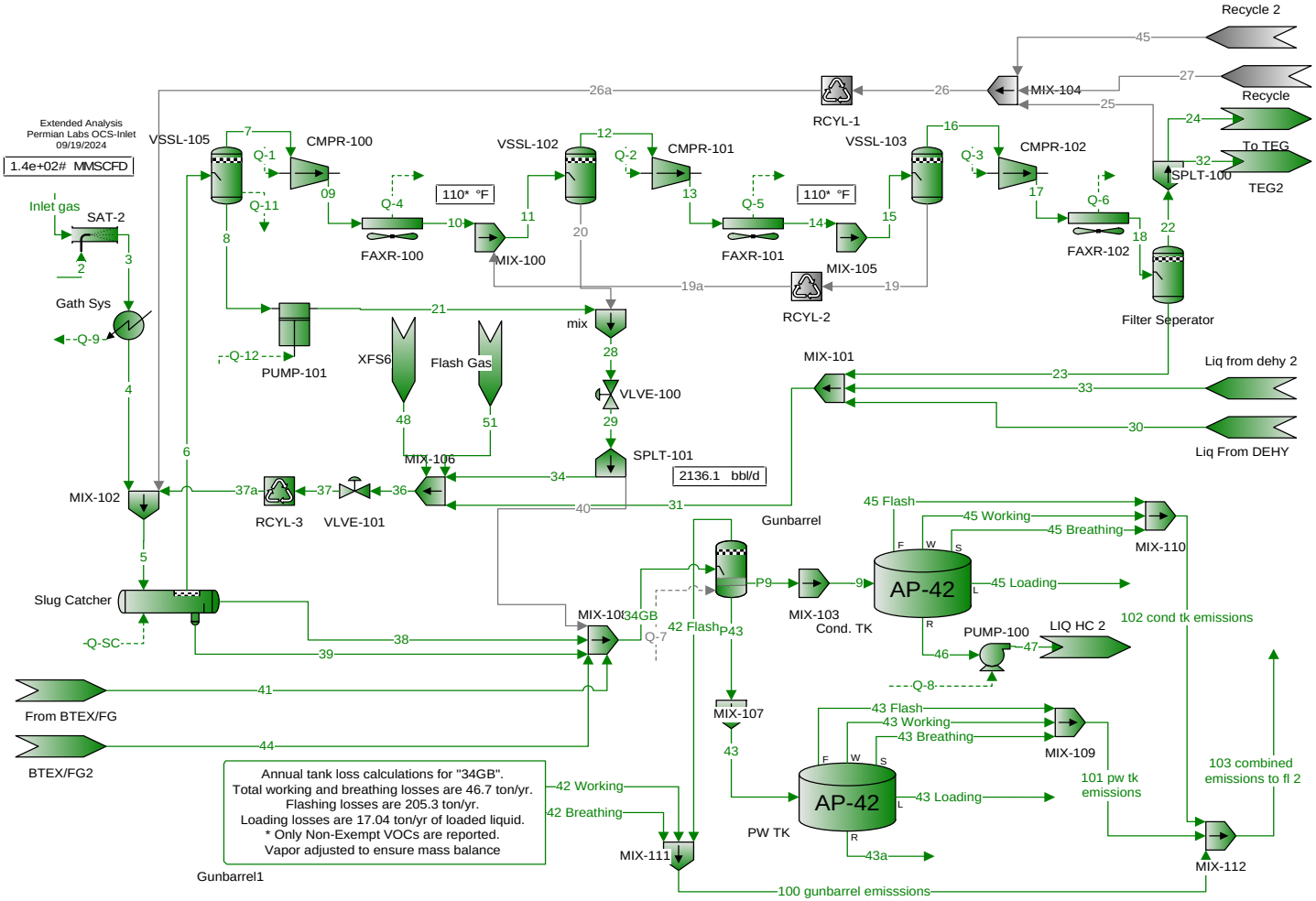
PM_{10}	$PM_{2.5}$	
1.00	0.10	lb/hr[12]
0.14	0.01	ton/yr[13]

Notes

[1] Empty vehicle weight includes driver and occupants and full fuel load; this is assumed for both produced water and condensate loadin
[2] Cargo, transported materials, etc. (Liquid Density [lb/ft^3] * 0.13 [ft^3/gal] * 7560 [gal/truck] / 2000 [lb/ton])
[3] Loaded vehicle weight = Empty + Load Size
[4] Mean Vehicle weight = (Loaded Weight + Empty Weight) / 2
[5] VMT/yr = Daily Throughput [bbl/d]*42 [gal/bbl] *(1/7560) [truck/ gal]*[VMT/trip]*1 [trip/day]* 365 [days/year]
[6] AP-42 Table 13.2.2-1, Sand and gravel processing
[7] AP-42 Figure 13.2.2-1
[8] VMT/hr = Vehicle Miles Traveled per hour = Trips per hour * Segment Length
[9] Table 13.2.2-2, Industrial Roads
[10] AP-42 13.2.2, Equation 1a
[11] AP-42 13.2.2, Equation 2
[12] lb/hr = Hourly EF (lb/VMT) * VMT (mile/hr)
[13] ton/yr = Annual EF (lb/VMT) * Truck/day * Mile/truck * 365day/yr * 1ton/2000lb

Outland CS
Plant Schematic

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	Inlet gas	P9	P43	2	3
From Block	--	Gunbarrel	Gunbarrel	--	SAT-2
To Block	SAT-2	MIX-103	MIX-107	SAT-2	Gath Sys

Stream Composition

Mole Fraction	Inlet gas %	P9 %	P43 %	2 %	3 %
Methane	76.7 *	0.254731	0.001383	0 *	75.7111
Ethane	10.407 *	0.689949	0.000848176	0 *	10.2728
Propane	5.18249 *	1.65535	0.000395264	0 *	5.11567
n-Butane	0.718206 *	1.06445	5.71564E-05	0 *	0.708946
i-Pentane	1.78151 *	7.62104	0.000112799	0 *	1.75854
i-Butane	0.497143 *	0.467967	3.19687E-05	0 *	0.490733
n-Pentane	0.676194 *	4.00784	1.51919E-05	0 *	0.667476
Cyclohexane	0.124036 *	3.66664	4.53043E-05	0 *	0.122436
n-Hexane	0.100029 *	2.18397	1.59104E-06	0 *	0.098739
n-Heptane	0.403116 *	23.0722	3.83852E-06	0 *	0.397918
C8	0.117034 *	10.5067	1.9938E-07	0 *	0.115525
Water	0 *	0.0487872	99.9929	100 *	1.28931
N2	2.00758 *	0.000465111	5.21871E-06	0 *	1.98169
CO2	0.735211 *	0.018456	0.000674636	0 *	0.725732
H2S	0.000300086 *	7.46087E-05	2.49043E-06	0 *	0.000296217
Triethylene Glycol	0 *	1.3107E-08	8.21404E-05	0 *	0
EG	0 *	0	0	0 *	0
MeOH	0 *	0	0	0 *	0
MDEA	0 *	0	0	0 *	0
2,2,4-Trimethylpentane	0 *	0	0	0 *	0
Benzene	0.0920264 *	3.34563	0.00187071	0 *	0.0908399
Toluene	0.158045 *	11.5836	0.00129972	0 *	0.156008
Ethylbenzene	0.0330095 *	3.16393	9.75885E-05	0 *	0.0325839
m-Xylene	0.0720207 *	6.95304	0.000116016	0 *	0.0710921
o-Xylene	0.0230066 *	2.25787	8.25984E-05	0 *	0.02271
Nonane	0.102029 *	10.2514	7.71877E-08	0 *	0.100714
Decane	0.0700201 *	7.18591	4.33759E-09	0 *	0.0691173
Undecane	0 *	0	0	0 *	0
Dodecane	0 *	0	0	0 *	0

Mass Fraction	Inlet gas %	P9 %	P43 %	2 %	3 %
Methane	54.9388 *	0.0407995	0.00123135	0 *	54.3676
Ethane	13.972 *	0.207128	0.00141545	0 *	13.8267
Propane	10.2034 *	0.728768	0.000967321	0 *	10.0974
n-Butane	1.86382 *	0.617689	0.000184372	0 *	1.84444
i-Pentane	5.73892 *	5.48967	0.000451672	0 *	5.67925
i-Butane	1.29014 *	0.271557	0.000103123	0 *	1.27672
n-Pentane	2.17828 *	2.88697	6.08314E-05	0 *	2.15563
Cyclohexane	0.466082 *	3.08088	0.000211607	0 *	0.461236
n-Hexane	0.384876 *	1.87902	7.60942E-06	0 *	0.380874
n-Heptane	1.80351 *	23.0817	2.13466E-05	0 *	1.78476
C8	0.596895 *	11.9824	1.26399E-06	0 *	0.590689
Water	0 *	0.00877506	99.9765	100 *	1.0397
N2	2.51102 *	0.000130085	8.11366E-06	0 *	2.48492
CO2	1.44468 *	0.00810936	0.0016478	0 *	1.42966
H2S	0.000456635 *	2.53865E-05	4.71056E-06	0 *	0.000451888
Triethylene Glycol	0 *	1.96516E-08	0.000684599	0 *	0
EG	0 *	0	0	0 *	0
MeOH	0 *	0	0	0 *	0
MDEA	0 *	0	0	0 *	0
2,2,4-Trimethylpentane	0 *	0	0	0 *	0
Benzene	0.320953 *	2.60915	0.00810981	0 *	0.317617
Toluene	0.650182 *	10.6558	0.00664628	0 *	0.643422

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	Inlet gas %	P9 %	P43 %	2 %	3 %
Ethylbenzene	0.156471 *	3.3536	0.000575	0 *	0.154844
m-Xylene	0.34139 *	7.36986	0.000683575	0 *	0.337841
o-Xylene	0.109055 *	2.39323	0.000486677	0 *	0.107921
Nonane	0.584268 *	13.1269	5.49428E-07	0 *	0.578193
Decane	0.44482 *	10.2078	3.4252E-08	0 *	0.440195
Undecane	0 *	0	0	0 *	0
Dodecane	0 *	0	0	0 *	0

Mass Flow	Inlet gas lb/h	P9 lb/h	P43 lb/h	2 lb/h	3 lb/h
Methane	190505 *	3.86429	0.0281055	0 *	190505
Ethane	48448.9 *	19.618	0.0323075	0 *	48448.9
Propane	35381.2 *	69.0245	0.022079	0 *	35381.2
n-Butane	6462.95 *	58.5038	0.00420828	0 *	6462.95
i-Pentane	19900.2 *	519.949	0.0103094	0 *	19900.2
i-Butane	4473.65 *	25.7202	0.00235377	0 *	4473.65
n-Pentane	7553.35 *	273.437	0.00138847	0 *	7553.35
Cyclohexane	1616.18 *	291.802	0.00482992	0 *	1616.18
n-Hexane	1334.59 *	177.97	0.000173685	0 *	1334.59
n-Heptane	6253.82 *	2186.16	0.000487234	0 *	6253.82
C8	2069.78 *	1134.9	2.88505E-05	0 *	2069.78
Water	0 *	0.831121	2281.96	3643.13 *	3643.13
N2	8707.17 *	0.0123208	0.000185194	0 *	8707.17
CO2	5009.54 *	0.768069	0.0376108	0 *	5009.54
H2S	1.58342 *	0.00240446	0.000107518	0 *	1.58342
Triethylene Glycol	0 *	1.86128E-06	0.0156259	0 *	0
EG	0 *	0	0	0 *	0
MeOH	0 *	0	0	0 *	0
MDEA	0 *	0	0	0 *	0
2,2,4-Trimethylpentane	0 *	0	0	0 *	0
Benzene	1112.93 *	247.123	0.185106	0 *	1112.93
Toluene	2254.56 *	1009.26	0.151701	0 *	2254.56
Ethylbenzene	542.574 *	317.633	0.0131243	0 *	542.574
m-Xylene	1183.8 *	698.028	0.0156026	0 *	1183.8
o-Xylene	378.158 *	226.672	0.0111084	0 *	378.158
Nonane	2026 *	1243.3	1.25407E-05	0 *	2026
Decane	1542.45 *	966.825	7.81799E-07	0 *	1542.45
Undecane	0 *	0	0	0 *	0
Dodecane	0 *	0	0	0 *	0

Stream Properties

Property	Units	Inlet gas	P9	P43	2	3
Temperature	°F	85 *	60.7728	60.7728	276.792	85
Pressure	psig	32 *	0.125	0.125	32	32
Mole Fraction Vapor	%	99.7368	0	0	91.6043	99.7464
Mole Fraction Light Liquid	%	0.26324	100	100	8.39566	0.253591
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	22.3969	100.161	18.0182	18.0153	22.3404
Mass Density	lb/ft^3	0.181552	46.0207	62.3622	0.118754	0.181072
Molar Flow	lbmol/h	15482.4	94.5621	126.677	202.224	15684.7
Mass Flow	lb/h	346758	9471.4	2282.49	3643.13	350401
Vapor Volumetric Flow	ft^3/h	1.90996E+06	205.808	36.6006	30677.8	1.93515E+06
Liquid Volumetric Flow	gpm	238125	25.6591	4.56319	3824.77	241265
Std Vapor Volumetric Flow	MMSCFD	141.008 *	0.861235	1.15372	1.84178	142.85
Std Liquid Volumetric Flow	sgpm	1895.22	25.8652	4.5633	7.28287	1902.5
Compressibility		0.985525	0.00577542	0.000766709	0.896307	0.985646
Specific Gravity			0.73788	0.999895		
API Gravity			60.1683	10.0004		
Enthalpy	Btu/h	-5.40087E+08	-6.71082E+06	-1.56023E+07	-2.10012E+07	-5.61089E+08

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	Inlet gas	P9	P43	2	3
Mass Enthalpy	Btu/lb	-1557.53	-708.536	-6835.64	-5764.6	-1601.27
Mass Cp	Btu/(lb*°F)	0.474706	0.474329	0.979638	0.511564	0.474406
Ideal Gas CpCv Ratio		1.2339	1.05998	1.3295	1.31939	1.23477
Dynamic Viscosity	cP		0.516601	1.12259		
Kinematic Viscosity	cSt		0.700779	1.12378		
Thermal Conductivity	Btu/(h*ft*°F)		0.0742191	0.342546		
Surface Tension	lbf/ft		0.00154733 ?	0.00510121 ?		
Net Ideal Gas Heating Value	Btu/ft^3	1178.44	4971.14	0.18552	0	1163.25
Net Liquid Heating Value	Btu/lb	19901.3	18670.3	-1055.64	-1059.76	19683.3
Gross Ideal Gas Heating Value	Btu/ft^3	1296.74	5324.84	50.5026	50.31	1280.67
Gross Liquid Heating Value	Btu/lb	21906	20010.5	4.09413	0	21678.3

Remarks

Inlet gas:

Data taken from OCS inlet 09/19/2024. The sample temperature is 85F and the sample pressure is 32 psig.

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	4	5	6	7	8
From Block	Gath Sys	MIX-102	Slug Catcher	VSSL-105	VSSL-105
To Block	MIX-102	Slug Catcher	VSSL-105	CMPR-100	PUMP-101

Stream Composition

Mole Fraction	4 %	5 %	6 %	7 %	8 %
Methane	75.7111	74.3364	75.854	75.8568	0.256908
Ethane	10.2728	10.2349	10.436	10.4364	0.245969
Propane	5.11567	5.21929	5.30946	5.30964	0.457558
n-Butane	0.708946	0.765643	0.771404	0.771423	0.267862
i-Pentane	1.75854	2.0298	2.00087	2.00087	1.89947
i-Butane	0.490733	0.518954	0.525105	0.52512	0.121155
n-Pentane	0.667476	0.793269	0.772572	0.772564	0.995187
Cyclohexane	0.122436	0.174214	0.144813	0.144785	0.888424
n-Hexane	0.098739	0.133117	0.115449	0.115433	0.549369
n-Heptane	0.397918	0.567916	0.361652	0.361446	5.87228
C8	0.115525	0.144361	0.0474469	0.0473483	2.68965
Water	1.28931	1.74556	0.653356	0.650577	75.1009
N2	1.98169	1.93791	1.97766	1.97773	0.00161754
CO2	0.725732	0.718377	0.73283	0.732857	0.0086793
H2S	0.000296217	0.000297877	0.000303576	0.000303587	1.19217E-05
Triethylene Glycol	0	1.07046E-07	1.41112E-13	7.17369E-17	3.7787E-09
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0908399	0.125554	0.107029	0.107012	0.569392
Toluene	0.156008	0.222426	0.131376	0.131285	2.57785
Ethylbenzene	0.0325839	0.0398051	0.0116123	0.0115836	0.78106
m-Xylene	0.0710921	0.085515	0.0230932	0.0230296	1.7274
o-Xylene	0.02271	0.0269118	0.00666884	0.0066482	0.559563
Nonane	0.100714	0.109783	0.0143855	0.0142883	2.62006
Decane	0.0691173	0.0699925	0.00294053	0.00287309	1.80967
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	4 %	5 %	6 %	7 %	8 %
Methane	54.3676	51.9359	54.5538	54.5573	0.107454
Ethane	13.8267	13.4029	14.0679	14.0688	0.19283
Propane	10.0974	10.0231	10.4959	10.4966	0.526037
n-Butane	1.84444	1.93804	2.01002	2.01012	0.405907
i-Pentane	5.67925	6.37788	6.47177	6.47196	3.57302
i-Butane	1.27672	1.31361	1.36824	1.36832	0.183593
n-Pentane	2.15563	2.49255	2.49887	2.49891	1.87201
Cyclohexane	0.461236	0.63853	0.54637	0.54628	1.94939
n-Hexane	0.380874	0.499588	0.446015	0.445965	1.2343
n-Heptane	1.78476	2.47831	1.62459	1.62371	15.3411
C8	0.590689	0.718155	0.242973	0.242475	8.01023
Water	1.0397	1.36952	0.527675	0.525445	35.2745
N2	2.48492	2.36425	2.48366	2.48382	0.00118139
CO2	1.42966	1.37687	1.44586	1.44595	0.00995876
H2S	0.000451888	0.000442122	0.000463825	0.000463854	1.05931E-05
Triethylene Glycol	0	7.00098E-07	9.50018E-13	4.82972E-16	1.47948E-08
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.317617	0.427112	0.374797	0.374746	1.15959
Toluene	0.643422	0.892528	0.542665	0.542303	6.1926

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	4 %	5 %	6 %	7 %	8 %
Ethylbenzene	0.154844	0.184041	0.0552684	0.0551332	2.16192
m-Xylene	0.337841	0.395384	0.109911	0.109611	4.78134
o-Xylene	0.107921	0.124428	0.03174	0.0316426	1.54883
Nonane	0.578193	0.613205	0.0827136	0.0821565	8.76113
Decane	0.440195	0.433706	0.0187564	0.0183268	6.7131
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	4 lb/h	5 lb/h	6 lb/h	7 lb/h	8 lb/h
Methane	190505	191816	191792	191792	0.0242455
Ethane	48448.9	49501.2	49457.9	49457.8	0.0435093
Propane	35381.2	37018.5	36900	36899.9	0.118693
n-Butane	6462.95	7157.82	7066.51	7066.42	0.0915872
i-Pentane	19900.2	23555.6	22752.5	22751.7	0.806202
i-Butane	4473.65	4851.58	4810.26	4810.22	0.0414252
n-Pentane	7553.35	9205.8	8785.15	8784.72	0.422392
Cyclohexane	1616.18	2358.3	1920.84	1920.4	0.439851
n-Hexane	1334.59	1845.14	1568.03	1567.75	0.278503
n-Heptane	6253.82	9153.2	5711.48	5708.01	3.4615
C8	2069.78	2652.38	854.208	852.401	1.80739
Water	3643.13	5058.09	1855.12	1847.16	7.95918
N2	8707.17	8731.95	8731.68	8731.68	0.000266565
CO2	5009.54	5085.24	5083.12	5083.12	0.00224705
H2S	1.58342	1.6329	1.63064	1.63064	2.39018E-06
Triethylene Glycol	0	0.00258569	3.33993E-09	1.69785E-12	3.33823E-09
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1112.93	1577.46	1317.65	1317.39	0.261644
Toluene	2254.56	3296.39	1907.82	1906.42	1.39727
Ethylbenzene	542.574	679.723	194.304	193.816	0.487807
m-Xylene	1183.8	1460.28	386.408	385.329	1.07884
o-Xylene	378.158	459.554	111.587	111.237	0.349472
Nonane	2026	2264.76	290.792	288.815	1.97682
Decane	1542.45	1601.82	65.941	64.4263	1.51472
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	4	5	6	7	8
Temperature	°F	60 *	55.8439	60 *	59.7397	59.7397
Pressure	psig	25 *	25	25	24.8	24.8
Mole Fraction Vapor	%	98.7849	97.7846	100	100	0
Mole Fraction Light Liquid	%	0.571475	1.02046	0	0	24.902
Mole Fraction Heavy Liquid	%	0.643663	1.1949	0	0	75.098
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	22.3404	22.9618	22.3061	22.3055	38.3553
Mass Density	lb/ft^3	0.162834	0.170538	0.160696	0.159956	50.5252
Molar Flow	lbmol/h	15684.7	16084.7	15760.9	15760.3	0.588278
Mass Flow	lb/h	350401	369332	351565	351542	22.5636
Vapor Volumetric Flow	ft^3/h	2.1519E+06	2.16568E+06	2.18776E+06	2.19775E+06	0.446581
Liquid Volumetric Flow	gpm	268289	270007	272759	274005	0.0556776
Std Vapor Volumetric Flow	MMSCFD	142.85	146.493	143.544	143.539	0.00535781
Std Liquid Volumetric Flow	sgpm	1902.5	1966.22	1919.76	1919.7	0.056076
Compressibility		0.976566	0.966107	0.988037	0.988079	0.00537894
Specific Gravity				0.770173	0.770152	0.810104
API Gravity						43.1921
Enthalpy	Btu/h	-5.67802E+08	-5.94777E+08	-5.6096E+08	-5.60944E+08	-65113.6

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	4	5	6	7	8
Mass Enthalpy	Btu/lb	-1620.43	-1610.41	-1595.61	-1595.67	-2885.78
Mass Cp	Btu/(lb*°F)	0.468302	0.467319	0.462943	0.462823	0.654277
Ideal Gas CpCv Ratio		1.24124	1.23668	1.24141	1.24148	1.15536
Dynamic Viscosity	cP			0.0103591	0.0103543	0.68785
Kinematic Viscosity	cSt			4.02434	4.04109	0.849895
Thermal Conductivity	Btu/(h*ft*°F)			0.0164362	0.0164255	0.15066
Surface Tension	lbf/ft					0.00254741 ?
Net Ideal Gas Heating Value	Btu/ft^3	1163.25	1189.81	1168.3	1168.29	1234.61
Net Liquid Heating Value	Btu/lb	19683.3	19580.4	19804.5	19805.1	11735.5
Gross Ideal Gas Heating Value	Btu/ft^3	1280.67	1309.04	1286.11	1286.1	1361.06
Gross Liquid Heating Value	Btu/lb	21678.3	21551.2	21809.1	21809.7	12986.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	09	9	10	11	12
From Block	CMPR-100	MIX-103	FAXR-100	MIX-100	VSSL-102
To Block	FAXR-100	Cond. TK	MIX-100	VSSL-102	CMPR-101

Stream Composition

Mole Fraction	09 %	9 %	10 %	11 %	12 %
Methane	75.8568	0.254731	75.8568	75.8568	75.8568
Ethane	10.4364	0.689949	10.4364	10.4364	10.4364
Propane	5.30964	1.65535	5.30964	5.30964	5.30964
n-Butane	0.771423	1.06445	0.771423	0.771423	0.771423
i-Pentane	2.00087	7.62104	2.00087	2.00087	2.00087
i-Butane	0.52512	0.467967	0.52512	0.52512	0.52512
n-Pentane	0.772564	4.00784	0.772564	0.772564	0.772564
Cyclohexane	0.144785	3.66664	0.144785	0.144785	0.144785
n-Hexane	0.115433	2.18397	0.115433	0.115433	0.115433
n-Heptane	0.361446	23.0722	0.361446	0.361446	0.361446
C8	0.0473483	10.5067	0.0473483	0.0473483	0.0473483
Water	0.650577	0.0487872	0.650577	0.650577	0.650577
N2	1.97773	0.000465111	1.97773	1.97773	1.97773
CO2	0.732857	0.018456	0.732857	0.732857	0.732857
H2S	0.000303587	7.46087E-05	0.000303587	0.000303587	0.000303587
Triethylene Glycol	7.17369E-17	1.3107E-08	7.17369E-17	7.17369E-17	7.17369E-17
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.107012	3.34563	0.107012	0.107012	0.107012
Toluene	0.131285	11.5836	0.131285	0.131285	0.131285
Ethylbenzene	0.0115836	3.16393	0.0115836	0.0115836	0.0115836
m-Xylene	0.0230296	6.95304	0.0230296	0.0230296	0.0230296
o-Xylene	0.0066482	2.25787	0.0066482	0.0066482	0.0066482
Nonane	0.0142883	10.2514	0.0142883	0.0142883	0.0142883
Decane	0.00287309	7.18591	0.00287309	0.00287309	0.00287309
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	09 %	9 %	10 %	11 %	12 %
Methane	54.5573	0.0407995	54.5573	54.5573	54.5573
Ethane	14.0688	0.207128	14.0688	14.0688	14.0688
Propane	10.4966	0.728768	10.4966	10.4966	10.4966
n-Butane	2.01012	0.617689	2.01012	2.01012	2.01012
i-Pentane	6.47196	5.48967	6.47196	6.47196	6.47196
i-Butane	1.36832	0.271557	1.36832	1.36832	1.36832
n-Pentane	2.49891	2.88697	2.49891	2.49891	2.49891
Cyclohexane	0.54628	3.08088	0.54628	0.54628	0.54628
n-Hexane	0.445965	1.87902	0.445965	0.445965	0.445965
n-Heptane	1.62371	23.0817	1.62371	1.62371	1.62371
C8	0.242475	11.9824	0.242475	0.242475	0.242475
Water	0.525445	0.00877506	0.525445	0.525445	0.525445
N2	2.48382	0.000130085	2.48382	2.48382	2.48382
CO2	1.44595	0.00810936	1.44595	1.44595	1.44595
H2S	0.000463854	2.53865E-05	0.000463854	0.000463854	0.000463854
Triethylene Glycol	4.82972E-16	1.96516E-08	4.82972E-16	4.82972E-16	4.82972E-16
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.374746	2.60915	0.374746	0.374746	0.374746
Toluene	0.542303	10.6558	0.542303	0.542303	0.542303

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	09 %	9 %	10 %	11 %	12 %
Ethylbenzene	0.0551332	3.3536	0.0551332	0.0551332	0.0551332
m-Xylene	0.109611	7.36986	0.109611	0.109611	0.109611
o-Xylene	0.0316426	2.39323	0.0316426	0.0316426	0.0316426
Nonane	0.0821565	13.1269	0.0821565	0.0821565	0.0821565
Decane	0.0183268	10.2078	0.0183268	0.0183268	0.0183268
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	09 lb/h	9 lb/h	10 lb/h	11 lb/h	12 lb/h
Methane	191792	3.05956	191792	191792	191792
Ethane	49457.8	15.5326	49457.8	49457.8	49457.8
Propane	36899.9	54.6504	36899.9	36899.9	36899.9
n-Butane	7066.42	46.3205	7066.42	7066.42	7066.42
i-Pentane	22751.7	411.671	22751.7	22751.7	22751.7
i-Butane	4810.22	20.3641	4810.22	4810.22	4810.22
n-Pentane	8784.72	216.494	8784.72	8784.72	8784.72
Cyclohexane	1920.4	231.035	1920.4	1920.4	1920.4
n-Hexane	1567.75	140.908	1567.75	1567.75	1567.75
n-Heptane	5708.01	1730.9	5708.01	5708.01	5708.01
C8	852.401	898.558	852.401	852.401	852.401
Water	1847.16	0.658042	1847.16	1847.16	1847.16
N2	8731.68	0.00975505	8731.68	8731.68	8731.68
CO2	5083.12	0.608121	5083.12	5083.12	5083.12
H2S	1.63064	0.00190374	1.63064	1.63064	1.63064
Triethylene Glycol	1.69785E-12	1.47367E-06	1.69785E-12	1.69785E-12	1.69785E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1317.39	195.66	1317.39	1317.39	1317.39
Toluene	1906.42	799.081	1906.42	1906.42	1906.42
Ethylbenzene	193.816	251.487	193.816	193.816	193.816
m-Xylene	385.329	552.666	385.329	385.329	385.329
o-Xylene	111.237	179.468	111.237	111.237	111.237
Nonane	288.815	984.387	288.815	288.815	288.815
Decane	64.4263	765.487	64.4263	64.4263	64.4263
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	09	9	10	11	12
Temperature	°F	135.674	60.7728	110 *	110	110
Pressure	psig	58 *	0.125	53	53	53
Mole Fraction Vapor	%	100	0	100	100	100
Mole Fraction Light Liquid	%	0	100	0	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	22.3055	100.161	22.3055	22.3055	22.3055
Mass Density	lb/ft^3	0.257387	46.0207	0.250784	0.250784	0.250784
Molar Flow	lbmol/h	15760.3	74.8698	15760.3	15760.3	15760.3
Mass Flow	lb/h	351542	7499.01	351542	351542	351542
Vapor Volumetric Flow	ft^3/h	1.36581E+06	162.949	1.40177E+06	1.40177E+06	1.40177E+06
Liquid Volumetric Flow	gpm	170283	20.3157	174767	174767	174767
Std Vapor Volumetric Flow	MMSCFD	143.539	0.681886	143.539	143.539	143.539
Std Liquid Volumetric Flow	sgpm	1919.7	20.4788	1919.7	1919.7	1919.7
Compressibility		0.986063	0.00577542	0.984892	0.984892	0.984892
Specific Gravity		0.770152	0.73788	0.770152	0.770152	0.770152
API Gravity			60.1683			
Enthalpy	Btu/h	-5.48598E+08	-5.31331E+06	-5.52971E+08	-5.52971E+08	-5.52971E+08

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	09	9	10	11	12
Mass Enthalpy	Btu/lb	-1560.55	-708.536	-1572.98	-1572.98	-1572.98
Mass Cp	Btu/(lb*°F)	0.49739	0.474329	0.486028	0.486028	0.486028
Ideal Gas CpCv Ratio		1.22186	1.05998	1.22842	1.22842	1.22842
Dynamic Viscosity	cP	0.0116893	0.516601	0.0112545	0.0112545	0.0112545
Kinematic Viscosity	cSt	2.83518	0.700779	2.8016	2.8016	2.8016
Thermal Conductivity	Btu/(h*ft*°F)	0.0196464	0.0742191	0.0185454	0.0185454	0.0185454
Surface Tension	lbf/ft		0.00154733 ?			
Net Ideal Gas Heating Value	Btu/ft^3	1168.29	4971.14	1168.29	1168.29	1168.29
Net Liquid Heating Value	Btu/lb	19805.1	18670.3	19805.1	19805.1	19805.1
Gross Ideal Gas Heating Value	Btu/ft^3	1286.1	5324.84	1286.1	1286.1	1286.1
Gross Liquid Heating Value	Btu/lb	21809.7	20010.5	21809.7	21809.7	21809.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	13	14	15	16	17
From Block	CMPR-101	FAXR-101	MIX-105	VSSL-103	CMPR-102
To Block	FAXR-101	MIX-105	VSSL-103	CMPR-102	FAXR-102

Stream Composition

Mole Fraction	13 %	14 %	15 %	16 %	17 %
Methane	75.8568	75.8568	75.8568	75.8568	75.8568
Ethane	10.4364	10.4364	10.4364	10.4364	10.4364
Propane	5.30964	5.30964	5.30964	5.30964	5.30964
n-Butane	0.771423	0.771423	0.771423	0.771423	0.771423
i-Pentane	2.00087	2.00087	2.00087	2.00087	2.00087
i-Butane	0.52512	0.52512	0.52512	0.52512	0.52512
n-Pentane	0.772564	0.772564	0.772564	0.772564	0.772564
Cyclohexane	0.144785	0.144785	0.144785	0.144785	0.144785
n-Hexane	0.115433	0.115433	0.115433	0.115433	0.115433
n-Heptane	0.361446	0.361446	0.361446	0.361446	0.361446
C8	0.0473483	0.0473483	0.0473483	0.0473483	0.0473483
Water	0.650577	0.650577	0.650577	0.650577	0.650577
N2	1.97773	1.97773	1.97773	1.97773	1.97773
CO2	0.732857	0.732857	0.732857	0.732857	0.732857
H2S	0.000303587	0.000303587	0.000303587	0.000303587	0.000303587
Triethylene Glycol	7.17369E-17	7.17369E-17	7.17369E-17	7.17369E-17	7.17369E-17
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.107012	0.107012	0.107012	0.107012	0.107012
Toluene	0.131285	0.131285	0.131285	0.131285	0.131285
Ethylbenzene	0.0115836	0.0115836	0.0115836	0.0115836	0.0115836
m-Xylene	0.0230296	0.0230296	0.0230296	0.0230296	0.0230296
o-Xylene	0.0066482	0.0066482	0.0066482	0.0066482	0.0066482
Nonane	0.0142883	0.0142883	0.0142883	0.0142883	0.0142883
Decane	0.00287309	0.00287309	0.00287309	0.00287309	0.00287309
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	13 %	14 %	15 %	16 %	17 %
Methane	54.5573	54.5573	54.5573	54.5573	54.5573
Ethane	14.0688	14.0688	14.0688	14.0688	14.0688
Propane	10.4966	10.4966	10.4966	10.4966	10.4966
n-Butane	2.01012	2.01012	2.01012	2.01012	2.01012
i-Pentane	6.47196	6.47196	6.47196	6.47196	6.47196
i-Butane	1.36832	1.36832	1.36832	1.36832	1.36832
n-Pentane	2.49891	2.49891	2.49891	2.49891	2.49891
Cyclohexane	0.54628	0.54628	0.54628	0.54628	0.54628
n-Hexane	0.445965	0.445965	0.445965	0.445965	0.445965
n-Heptane	1.62371	1.62371	1.62371	1.62371	1.62371
C8	0.242475	0.242475	0.242475	0.242475	0.242475
Water	0.525445	0.525445	0.525445	0.525445	0.525445
N2	2.48382	2.48382	2.48382	2.48382	2.48382
CO2	1.44595	1.44595	1.44595	1.44595	1.44595
H2S	0.000463854	0.000463854	0.000463854	0.000463854	0.000463854
Triethylene Glycol	4.82972E-16	4.82972E-16	4.82972E-16	4.82972E-16	4.82972E-16
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.374746	0.374746	0.374746	0.374746	0.374746
Toluene	0.542303	0.542303	0.542303	0.542303	0.542303

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	13 %	14 %	15 %	16 %	17 %
Ethylbenzene	0.0551332	0.0551332	0.0551332	0.0551332	0.0551332
m-Xylene	0.109611	0.109611	0.109611	0.109611	0.109611
o-Xylene	0.0316426	0.0316426	0.0316426	0.0316426	0.0316426
Nonane	0.0821565	0.0821565	0.0821565	0.0821565	0.0821565
Decane	0.0183268	0.0183268	0.0183268	0.0183268	0.0183268
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	13 lb/h	14 lb/h	15 lb/h	16 lb/h	17 lb/h
Methane	191792	191792	191792	191792	191792
Ethane	49457.8	49457.8	49457.8	49457.8	49457.8
Propane	36899.9	36899.9	36899.9	36899.9	36899.9
n-Butane	7066.42	7066.42	7066.42	7066.42	7066.42
i-Pentane	22751.7	22751.7	22751.7	22751.7	22751.7
i-Butane	4810.22	4810.22	4810.22	4810.22	4810.22
n-Pentane	8784.72	8784.72	8784.72	8784.72	8784.72
Cyclohexane	1920.4	1920.4	1920.4	1920.4	1920.4
n-Hexane	1567.75	1567.75	1567.75	1567.75	1567.75
n-Heptane	5708.01	5708.01	5708.01	5708.01	5708.01
C8	852.401	852.401	852.401	852.401	852.401
Water	1847.16	1847.16	1847.16	1847.16	1847.16
N2	8731.68	8731.68	8731.68	8731.68	8731.68
CO2	5083.12	5083.12	5083.12	5083.12	5083.12
H2S	1.63064	1.63064	1.63064	1.63064	1.63064
Triethylene Glycol	1.69785E-12	1.69785E-12	1.69785E-12	1.69785E-12	1.69785E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1317.39	1317.39	1317.39	1317.39	1317.39
Toluene	1906.42	1906.42	1906.42	1906.42	1906.42
Ethylbenzene	193.816	193.816	193.816	193.816	193.816
m-Xylene	385.329	385.329	385.329	385.329	385.329
o-Xylene	111.237	111.237	111.237	111.237	111.237
Nonane	288.815	288.815	288.815	288.815	288.815
Decane	64.4263	64.4263	64.4263	64.4263	64.4263
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	13	14	15	16	17
Temperature	°F	241.793	110 *	110	110	356.577
Pressure	psig	168 *	163	163	163	1000 *
Mole Fraction Vapor	%	100	100	100	100	100
Mole Fraction Light Liquid	%	0	0	0	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	22.3055	22.3055	22.3055	22.3055	22.3055
Mass Density	lb/ft^3	0.551499	0.674941	0.674941	0.674941	2.68312
Molar Flow	lbmol/h	15760.3	15760.3	15760.3	15760.3	15760.3
Mass Flow	lb/h	351542	351542	351542	351542	351542
Vapor Volumetric Flow	ft^3/h	637430	520849	520849	520849	131020
Liquid Volumetric Flow	gpm	79471.8	64937	64937	64937	16335
Std Vapor Volumetric Flow	MMSCFD	143.539	143.539	143.539	143.539	143.539
Std Liquid Volumetric Flow	sgpm	1919.7	1919.7	1919.7	1919.7	1919.7
Compressibility		0.981585	0.960588	0.960588	0.960588	0.962994
Specific Gravity		0.770152	0.770152	0.770152	0.770152	0.770152
API Gravity						
Enthalpy	Btu/h	-5.30179E+08	-5.54463E+08	-5.54463E+08	-5.54463E+08	-5.12178E+08

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	13	14	15	16	17
Mass Enthalpy	Btu/lb	-1508.15	-1577.23	-1577.23	-1577.23	-1456.94
Mass Cp	Btu/(lb*°F)	0.553925	0.498828	0.498828	0.498828	0.648364
Ideal Gas CpCv Ratio		1.19687	1.22842	1.22842	1.22842	1.17497
Dynamic Viscosity	cP	0.0135084	0.0114101	0.0114101	0.0114101	0.0162464
Kinematic Viscosity	cSt	1.5291	1.05536	1.05536	1.05536	0.378004
Thermal Conductivity	Btu/(h*ft*°F)	0.0247842	0.0189189	0.0189189	0.0189189	0.0325261
Surface Tension	lbf/ft					
Net Ideal Gas Heating Value	Btu/ft^3	1168.29	1168.29	1168.29	1168.29	1168.29
Net Liquid Heating Value	Btu/lb	19805.1	19805.1	19805.1	19805.1	19805.1
Gross Ideal Gas Heating Value	Btu/ft^3	1286.1	1286.1	1286.1	1286.1	1286.1
Gross Liquid Heating Value	Btu/lb	21809.7	21809.7	21809.7	21809.7	21809.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	18	19	19a	20	21
From Block	FAXR-102	VSSL-103	RCYL-2	VSSL-102	PUMP-101
To Block	Filter Seperator	RCYL-2	MIX-100	mix	mix

Stream Composition

Mole Fraction	18 %	19 %	19a %	20 %	21 %
Methane	75.8568		14.1412		0.256908
Ethane	10.4364		9.89241		0.245969
Propane	5.30964		15.5606		0.457558
n-Butane	0.771423		18.4945		0.267862
i-Pentane	2.00087		14.705		1.89947
i-Butane	0.52512		5.18366		0.121155
n-Pentane	0.772564		21.0257		0.995187
Cyclohexane	0.144785		0		0.888424
n-Hexane	0.115433		0		0.549369
n-Heptane	0.361446		0		5.87228
C8	0.0473483		2.26901E-08		2.68965
Water	0.650577		0.564593		75.1009
N2	1.97773		0.107931		0.00161754
CO2	0.732857		0.324371		0.0086793
H2S	0.000303587		0		1.19217E-05
Triethylene Glycol	7.17369E-17		7.60804E-13		3.7787E-09
EG	0		0		0
MeOH	0		0		0
MDEA	0		0		0
2,2,4-Trimethylpentane	0		0		0
Benzene	0.107012		0		0.569392
Toluene	0.131285		1.24114E-10		2.57785
Ethylbenzene	0.0115836		1.6625E-10		0.78106
m-Xylene	0.0230296		1.02454E-07		1.7274
o-Xylene	0.0066482		1.61398E-07		0.559563
Nonane	0.0142883		2.73519E-06		2.62006
Decane	0.00287309		2.4312E-08		1.80967
Undecane	0		0		0
Dodecane	0		0		0

Mass Fraction	18 %	19 %	19a %	20 %	21 %
Methane	54.5573		4.36934		0.107454
Ethane	14.0688		5.72901		0.19283
Propane	10.4966		13.2154		0.526037
n-Butane	2.01012		20.7034		0.405907
i-Pentane	6.47196		20.4339		3.57302
i-Butane	1.36832		5.80278		0.183593
n-Pentane	2.49891		29.2171		1.87201
Cyclohexane	0.54628		0		1.94939
n-Hexane	0.445965		0		1.2343
n-Heptane	1.62371		0		15.3411
C8	0.242475		4.99193E-08		8.01023
Water	0.525445		0.1959		35.2745
N2	2.48382		0.0582333		0.00118139
CO2	1.44595		0.274945		0.00995876
H2S	0.000463854		0		1.05931E-05
Triethylene Glycol	4.82972E-16		2.2005E-12		1.47948E-08
EG	0		0		0
MeOH	0		0		0
MDEA	0		0		0
2,2,4-Trimethylpentane	0		0		0
Benzene	0.374746		0		1.15959

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Process Streams Report
All Streams
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Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	18 %	19 %	19a %	20 %	21 %
Toluene	0.542303		2.20251E-10		6.1926
Ethylbenzene	0.0551332		3.39938E-10		2.16192
m-Xylene	0.109611		2.09492E-07		4.78134
o-Xylene	0.0316426		3.30018E-07		1.54883
Nonane	0.0821565		6.75646E-06		8.76113
Decane	0.0183268		6.66234E-08		6.7131
Undecane	0		0		0
Dodecane	0		0		0

Mass Flow	18 lb/h	19 lb/h	19a lb/h	20 lb/h	21 lb/h
Methane	191792	0	0	0	0.0242455
Ethane	49457.8	0	0	0	0.0435093
Propane	36899.9	0	0	0	0.118693
n-Butane	7066.42	0	0	0	0.0915872
i-Pentane	22751.7	0	0	0	0.806202
i-Butane	4810.22	0	0	0	0.0414252
n-Pentane	8784.72	0	0	0	0.422392
Cyclohexane	1920.4	0	0	0	0.439851
n-Hexane	1567.75	0	0	0	0.278503
n-Heptane	5708.01	0	0	0	3.4615
C8	852.401	0	0	0	1.80739
Water	1847.16	0	0	0	7.95918
N2	8731.68	0	0	0	0.000266565
CO2	5083.12	0	0	0	0.00224705
H2S	1.63064	0	0	0	2.39018E-06
Triethylene Glycol	1.69785E-12	0	0	0	3.33823E-09
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1317.39	0	0	0	0.261644
Toluene	1906.42	0	0	0	1.39727
Ethylbenzene	193.816	0	0	0	0.487807
m-Xylene	385.329	0	0	0	1.07884
o-Xylene	111.237	0	0	0	0.349472
Nonane	288.815	0	0	0	1.97682
Decane	64.4263	0	0	0	1.51472
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	18	19	19a	20	21
Temperature	°F	110 *	110			59.8133
Pressure	psig	995	163	163	53	50 *
Mole Fraction Vapor	%	97.5339				0
Mole Fraction Light Liquid	%	1.97233				24.902
Mole Fraction Heavy Liquid	%	0.493792				75.098
Phase Mole Fraction	%	100		100		100
Molecular Weight	lb/lbmol	22.3055		51.9209		38.3553
Mass Density	lb/ft^3	4.62746				50.5332
Molar Flow	lbmol/h	15760.3	0	0	0	0.588278
Mass Flow	lb/h	351542	0	0	0	22.5636
Vapor Volumetric Flow	ft^3/h	75968.8	0	0	0	0.44651
Liquid Volumetric Flow	gpm	9471.43	0	0	0	0.0556688
Std Vapor Volumetric Flow	MMSCFD	143.539	0	0	0	0.00535781
Std Liquid Volumetric Flow	sgpm	1919.7	0	0	0	0.056076
Compressibility		0.796111				0.00880828
Specific Gravity						0.810233
API Gravity						43.1578

* User Specified Values
? Extrapolated or Approximate Values

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All Streams
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Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	18	19	19a	20	21
Enthalpy	Btu/h	-5.69156E+08		0		-65110.8
Mass Enthalpy	Btu/lb	-1619.03		-811.075		-2885.66
Mass Cp	Btu/(lb*°F)	0.638774				0.654223
Ideal Gas CpCv Ratio		1.22842				1.15535
Dynamic Viscosity	cP					0.688472
Kinematic Viscosity	cSt					0.850528
Thermal Conductivity	Btu/(h*ft*°F)					0.150678
Surface Tension	lbf/ft					0.00253517 ?
Net Ideal Gas Heating Value	Btu/ft^3	1168.29		2684.73		1234.61
Net Liquid Heating Value	Btu/lb	19805.1		19468.6		11735.5
Gross Ideal Gas Heating Value	Btu/ft^3	1286.1		2912.8		1361.06
Gross Liquid Heating Value	Btu/lb	21809.7		21136.1		12986.7

Remarks

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All Streams
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Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	22	23	24	25	26
From Block	Filter Seperator	Filter Seperator	SPLT-100	SPLT-100	MIX-104
To Block	SPLT-100	MIX-101	To TEG	MIX-104	RCYL-1

Stream Composition

Mole Fraction	22 %	23 %	24 %	25 %	26 %
Methane	77.2779	19.6544	77.2779	77.2779	
Ethane	10.4847	8.52447	10.4847	10.4847	
Propane	5.21102	9.20985	5.21102	5.21102	
n-Butane	0.714823	3.00995	0.714823	0.714823	
i-Pentane	1.72635	12.8583	1.72635	1.72635	
i-Butane	0.497017	1.63655	0.497017	0.497017	
n-Pentane	0.645012	5.81715	0.645012	0.645012	
Cyclohexane	0.0915576	2.24992	0.0915576	0.0915576	
n-Hexane	0.0801275	1.51175	0.0801275	0.0801275	
n-Heptane	0.183564	7.39662	0.183564	0.183564	
C8	0.0156075	1.30268	0.0156075	0.0156075	
Water	0.159162	20.0858	0.159162	0.159162	
N2	2.02226	0.216829	2.02226	2.02226	
CO2	0.742402	0.355367	0.742402	0.742402	
H2S	0.000303585	0.000303652	0.000303585	0.000303585	
Triethylene Glycol	1.0399E-20	2.90849E-15	1.0399E-20	1.0399E-20	
EG	0	0	0	0	
MeOH	0	0	0	0	
MDEA	0	0	0	0	
2,2,4-Trimethylpentane	0	0	0	0	
Benzene	0.0714338	1.51412	0.0714338	0.0714338	
Toluene	0.0615646	2.88868	0.0615646	0.0615646	
Ethylbenzene	0.00353907	0.329742	0.00353907	0.00353907	
m-Xylene	0.0068085	0.664565	0.0068085	0.0068085	
o-Xylene	0.00187096	0.195586	0.00187096	0.00187096	
Nonane	0.00268542	0.473176	0.00268542	0.00268542	
Decane	0.000310709	0.104214	0.000310709	0.000310709	
Undecane	0	0	0	0	
Dodecane	0	0	0	0	

Mass Fraction	22 %	23 %	24 %	25 %	26 %
Methane	57.2298	6.60372	57.2298	57.2298	
Ethane	14.5537	5.36841	14.5537	14.5537	
Propane	10.6075	8.50563	10.6075	10.6075	
n-Butane	1.91795	3.66404	1.91795	1.91795	
i-Pentane	5.7498	19.4299	5.7498	5.7498	
i-Butane	1.33355	1.99219	1.33355	1.33355	
n-Pentane	2.14829	8.79018	2.14829	2.14829	
Cyclohexane	0.355708	3.96578	0.355708	0.355708	
n-Hexane	0.318758	2.72849	0.318758	0.318758	
n-Heptane	0.849101	15.5227	0.849101	0.849101	
C8	0.0823007	3.11653	0.0823007	0.0823007	
Water	0.132366	7.5786	0.132366	0.132366	
N2	2.61516	0.127216	2.61516	2.61516	
CO2	1.50828	0.327554	1.50828	1.50828	
H2S	0.000477625	0.000216744	0.000477625	0.000477625	
Triethylene Glycol	7.20908E-20	9.14782E-15	7.20908E-20	7.20908E-20	
EG	0	0	0	0	
MeOH	0	0	0	0	
MDEA	0	0	0	0	
2,2,4-Trimethylpentane	0	0	0	0	
Benzene	0.257583	2.47706	0.257583	0.257583	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	22 %	23 %	24 %	25 %	26 %
Toluene	0.261859	5.5744	0.261859	0.261859	
Ethylbenzene	0.0173447	0.733186	0.0173447	0.0173447	
m-Xylene	0.0333679	1.47767	0.0333679	0.0333679	
o-Xylene	0.00916941	0.434888	0.00916941	0.00916941	
Nonane	0.0158995	1.27103	0.0158995	0.0158995	
Decane	0.00204079	0.310552	0.00204079	0.00204079	
Undecane	0	0	0	0	
Dodecane	0	0	0	0	

Mass Flow	22 lb/h	23 lb/h	24 lb/h	25 lb/h	26 lb/h
Methane	190566	1225.49	95283.8	0	0
Ethane	48461.6	996.244	24230.9	0	0
Propane	35321.5	1578.44	17660.8	0	0
n-Butane	6386.47	679.955	3193.25	0	0
i-Pentane	19146	3605.71	9573.04	0	0
i-Butane	4440.52	369.701	2220.28	0	0
n-Pentane	7153.48	1631.24	3576.76	0	0
Cyclohexane	1184.45	735.951	592.231	0	0
n-Hexane	1061.41	506.34	530.711	0	0
n-Heptane	2827.38	2880.64	1413.7	0	0
C8	274.049	578.352	137.025	0	0
Water	440.757	1406.4	220.38	0	0
N2	8708.07	23.6082	4354.07	0	0
CO2	5022.34	60.7859	2511.18	0	0
H2S	1.59042	0.0402223	0.795215	0	0
Triethylene Glycol	2.40051E-16	1.69761E-12	1.20026E-16	0	0
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	857.711	459.681	428.858	0	0
Toluene	871.951	1034.47	435.978	0	0
Ethylbenzene	57.7552	136.061	28.8778	0	0
m-Xylene	111.11	274.219	55.5553	0	0
o-Xylene	30.5328	80.7045	15.2665	0	0
Nonane	52.9428	235.872	26.4716	0	0
Decane	6.79553	57.6308	3.39779	0	0
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	22	23	24	25	26
Temperature	°F	110	110	110	110	
Pressure	psig	995	995	995	995	
Mole Fraction Vapor	%	100	0	100		
Mole Fraction Light Liquid	%	0	79.977	0		
Mole Fraction Heavy Liquid	%	0	20.023	0		
Phase Mole Fraction	%	100	100	100	100	
Molecular Weight	lb/lbmol	21.6623	47.7465	21.6623	21.6623	
Mass Density	lb/ft^3	4.41278	36.4186	4.41278		
Molar Flow	lbmol/h	15371.6	388.668	7685.87	0	0
Mass Flow	lb/h	332985	18557.5	166493	0	0
Vapor Volumetric Flow	ft^3/h	75459.2	509.562	37729.8	0	0
Liquid Volumetric Flow	gpm	9407.9	63.5298	4703.98	0	0
Std Vapor Volumetric Flow	MMSCFD	139.999	3.53984	70 *	0 *	0
Std Liquid Volumetric Flow	sgpm	1857.61	62.0915	928.811	0	0
Compressibility		0.810766	0.216532	0.810766		
Specific Gravity		0.747942	0.583924	0.747942		
API Gravity			97.0933			

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	22	23	24	25	26
Enthalpy	Btu/h	-5.42713E+08	-2.64437E+07	-2.71358E+08	0	
Mass Enthalpy	Btu/lb	-1629.84	-1424.96	-1629.84		
Mass Cp	Btu/(lb*°F)	0.639499	0.625774	0.639499		
Ideal Gas CpCv Ratio		1.23445	1.11324	1.23445	1.23445	
Dynamic Viscosity	cP	0.0135371	0.161387	0.0135371		
Kinematic Viscosity	cSt	0.19151	0.276646	0.19151		
Thermal Conductivity	Btu/(h*ft*°F)	0.0228259	0.0743193	0.0228259		
Surface Tension	lbf/ft		0.000580323 ?			
Net Ideal Gas Heating Value	Btu/ft^3	1140.97	2249.02	1140.97	1140.97	
Net Liquid Heating Value	Btu/lb	19924.8	17656.8	19924.8	19924.8	
Gross Ideal Gas Heating Value	Btu/ft^3	1256.92	2440.17	1256.92	1256.92	
Gross Liquid Heating Value	Btu/lb	21956.4	19176.2	21956.4	21956.4	

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	26a	27	28	29	30
From Block	RCYL-1	Recycle	mix	VLVE-100	Liq From DEHY
To Block	MIX-102	MIX-104	VLVE-100	SPLT-101	MIX-101

Stream Composition

Mole Fraction	26a %	27 %	28 %	29 %	30 %
Methane		77.4538	0.256908	0.256908	24.5182
Ethane		10.4995	0.245969	0.245969	10.6524
Propane		5.21404	0.457558	0.457558	11.5197
n-Butane		0.714131	0.267862	0.267862	3.76787
i-Pentane		1.72282	1.89947	1.89947	16.1029
i-Butane		0.4971	0.121155	0.121155	2.04837
n-Pentane		0.642955	0.995187	0.995187	7.2851
Cyclohexane		0.0892081	0.888424	0.888424	2.81627
n-Hexane		0.0795781	0.549369	0.549369	1.89298
n-Heptane		0.181134	5.87228	5.87228	9.25229
C8		0.0152645	2.68965	2.68965	1.62447
Water		0.00502933	75.1009	75.1009	0.108966
N2		2.02754	0.00161754	0.00161754	0.270162
CO2		0.741279	0.0086793	0.0086793	0.440721
H2S		0.000298903	1.19217E-05	1.19217E-05	0.000376045
Triethylene Glycol		9.75663E-05	3.7787E-09	3.7787E-09	9.85192E-18
EG		0	0	0	0
MeOH		0	0	0	0
MDEA		0	0	0	0
2,2,4-Trimethylpentane		0	0	0	0
Benzene		0.0594698	0.569392	0.569392	1.89465
Toluene		0.0458325	2.57785	2.57785	3.61011
Ethylbenzene		0.00232471	0.78106	0.78106	0.410672
m-Xylene		0.00458636	1.7274	1.7274	0.827435
o-Xylene		0.00110162	0.559563	0.559563	0.243381
Nonane		0.00258487	2.62006	2.62006	0.58569
Decane		0.000291733	1.80967	1.80967	0.127263
Undecane		0	0	0	0
Dodecane		0	0	0	0

Mass Fraction	26a %	27 %	28 %	29 %	30 %
Methane		57.4416	0.107454	0.107454	7.12565
Ethane		14.5949	0.19283	0.19283	5.80271
Propane		10.6288	0.526037	0.526037	9.20241
n-Butane		1.91882	0.405907	0.405907	3.96736
i-Pentane		5.74622	3.57302	3.57302	21.0474
i-Butane		1.33567	0.183593	0.183593	2.15683
n-Pentane		2.14448	1.87201	1.87201	9.52202
Cyclohexane		0.347073	1.94939	1.94939	4.2938
n-Hexane		0.317022	1.2343	1.2343	2.95526
n-Heptane		0.83905	15.3411	15.3411	16.7954
C8		0.0806065	8.01023	8.01023	3.36164
Water		0.00418855	35.2745	35.2745	0.0355628
N2		2.62571	0.00118139	0.00118139	0.137105
CO2		1.50814	0.00995876	0.00995876	0.351378
H2S		0.000470928	1.05931E-05	1.05931E-05	0.000232175
Triethylene Glycol		0.000677337	1.47948E-08	1.47948E-08	2.68026E-17
EG		0	0	0	0
MeOH		0	0	0	0
MDEA		0	0	0	0
2,2,4-Trimethylpentane		0	0	0	0
Benzene		0.214747	1.15959	1.15959	2.68109

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	26a %	27 %	28 %	29 %	30 %
Toluene		0.195221	6.1926	6.1926	6.02596
Ethylbenzene		0.0114094	2.16192	2.16192	0.789844
m-Xylene		0.0225093	4.78134	4.78134	1.5914
o-Xylene		0.00540664	1.54883	1.54883	0.468093
Nonane		0.0153259	8.76113	8.76113	1.36084
Decane		0.00191888	6.7131	6.7131	0.328033
Undecane		0	0	0	0
Dodecane		0	0	0	0

Mass Flow	26a lb/h	27 lb/h	28 lb/h	29 lb/h	30 lb/h
Methane	0	0	0.0242455	0.0242455	2.18877
Ethane	0	0	0.0435093	0.0435093	1.7824
Propane	0	0	0.118693	0.118693	2.82668
n-Butane	0	0	0.0915872	0.0915872	1.21865
i-Pentane	0	0	0.806202	0.806202	6.46507
i-Butane	0	0	0.0414252	0.0414252	0.662508
n-Pentane	0	0	0.422392	0.422392	2.92486
Cyclohexane	0	0	0.439851	0.439851	1.31892
n-Hexane	0	0	0.278503	0.278503	0.907759
n-Heptane	0	0	3.4615	3.4615	5.159
C8	0	0	1.80739	1.80739	1.03259
Water	0	0	7.95918	7.95918	0.0109238
N2	0	0	0.000266565	0.000266565	0.0421143
CO2	0	0	0.00224705	0.00224705	0.107932
H2S	0	0	2.39018E-06	2.39018E-06	7.13166E-05
Triethylene Glycol	0	0	3.33823E-09	3.33823E-09	8.2329E-18
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0	0	0.261644	0.261644	0.823544
Toluene	0	0	1.39727	1.39727	1.85098
Ethylbenzene	0	0	0.487807	0.487807	0.242614
m-Xylene	0	0	1.07884	1.07884	0.488827
o-Xylene	0	0	0.349472	0.349472	0.143783
Nonane	0	0	1.97682	1.97682	0.418006
Decane	0	0	1.51472	1.51472	0.100761
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	26a	27	28	29	30
Temperature	°F			59.8133	59.8133	109.89
Pressure	psig		983	50	50	993
Mole Fraction Vapor	%			0	0	0
Mole Fraction Light Liquid	%			24.902	24.902	100
Mole Fraction Heavy Liquid	%			75.098	75.098	0
Phase Mole Fraction	%		100	100	100	100
Molecular Weight	lb/lbmol		21.6315	38.3553	38.3553	55.1995
Mass Density	lb/ft^3			50.5332	50.5332	35.2421
Molar Flow	lbmol/h	0	0	0.588278	0.588278	0.556468
Mass Flow	lb/h	0	0	22.5636	22.5636	30.7168
Vapor Volumetric Flow	ft^3/h	0	0	0.44651	0.44651	0.871592
Liquid Volumetric Flow	gpm	0	0	0.0556688	0.0556688	0.108666
Std Vapor Volumetric Flow	MMSCFD	0	0	0.00535781	0.00535781	0.0050681
Std Liquid Volumetric Flow	sgpm	0	0	0.056076	0.056076	0.106138
Compressibility				0.00880828	0.00880828	0.258226
Specific Gravity				0.810233	0.810233	0.565061
API Gravity				43.1578	43.1578	104.201

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	26a	27	28	29	30
Enthalpy	Btu/h		0	-65110.8	-65110.8	-30328.2
Mass Enthalpy	Btu/lb			-2885.66	-2885.66	-987.351
Mass Cp	Btu/(lb*°F)			0.654223	0.654223	0.597054
Ideal Gas CpCv Ratio				1.15535	1.15535	1.09729
Dynamic Viscosity	cP			0.688472	0.688472	0.139448
Kinematic Viscosity	cSt			0.850528	0.850528	0.247018
Thermal Conductivity	Btu/(h*ft*°F)			0.150678	0.150678	0.0609124
Surface Tension	lbf/ft			0.00253517 ?	0.00253517 ?	0.000387806 ?
Net Ideal Gas Heating Value	Btu/ft^3		1141.07	1234.61	1234.61	2812.37
Net Liquid Heating Value	Btu/lb		19956.6	11735.5	11735.5	19184.9
Gross Ideal Gas Heating Value	Btu/ft^3		1257.06	1361.06	1361.06	3038.82
Gross Liquid Heating Value	Btu/lb		21991.6	12986.7	12986.7	20741.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	31	32	33	34	34GB
From Block	MIX-101	SPLT-100	Liq from dehy 2	SPLT-101	MIX-108
To Block	MIX-106	TEG2	MIX-101	MIX-106	Gunbarrel

Stream Composition

Mole Fraction	31 %	32 %	33 %	34 %	34GB %
Methane	19.6683	77.2779	24.5182	0.256908	0.426673
Ethane	8.53055	10.4847	10.6524	0.245969	0.414922
Propane	9.21644	5.21102	11.5197	0.457558	0.782473
n-Butane	3.01211	0.714823	3.76787	0.267862	0.464719
i-Pentane	12.8676	1.72635	16.1029	1.89947	3.26984
i-Butane	1.63773	0.497017	2.04837	0.121155	0.207116
n-Pentane	5.82134	0.645012	7.2851	0.995187	1.71505
Cyclohexane	2.25154	0.0915576	2.81627	0.888424	1.55989
n-Hexane	1.51284	0.0801275	1.89298	0.549369	0.929533
n-Heptane	7.40192	0.183564	9.25229	5.87228	9.80595
C8	1.3036	0.0156075	1.62447	2.68965	4.4636
Water	20.0288	0.159162	0.108966	75.1009	56.9298
N2	0.216982	2.02226	0.270162	0.00161754	0.00266219
CO2	0.355611	0.742402	0.440721	0.0086793	0.015354
H2S	0.000303859	0.000303585	0.000376045	1.19217E-05	4.16526E-05
Triethylene Glycol	2.90021E-15	1.0399E-20	9.85192E-18	3.7787E-09	4.67451E-05
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.51521	0.0714338	1.89465	0.569392	1.42469
Toluene	2.89074	0.0615646	3.61011	2.57785	4.92338
Ethylbenzene	0.329973	0.00353907	0.410672	0.78106	1.34417
m-Xylene	0.66503	0.0068085	0.827435	1.7274	2.95383
o-Xylene	0.195722	0.00187096	0.243381	0.559563	0.959217
Nonane	0.473498	0.00268542	0.58569	2.62006	4.35466
Decane	0.10428	0.000310709	0.127263	1.80967	3.05236
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	31 %	32 %	33 %	34 %	34GB %
Methane	6.60544	57.2298	7.12565	0.107454	0.129184
Ethane	5.36984	14.5537	5.80271	0.19283	0.235465
Propane	8.50793	10.6075	9.20241	0.526037	0.651187
n-Butane	3.66504	1.91795	3.96736	0.405907	0.509769
i-Pentane	19.4353	5.7498	21.0474	3.57302	4.45242
i-Butane	1.99273	1.33355	2.15683	0.183593	0.227194
n-Pentane	8.7926	2.14829	9.52202	1.87201	2.33533
Cyclohexane	3.96686	0.355708	4.2938	1.94939	2.47765
n-Hexane	2.72924	0.318758	2.95526	1.2343	1.51178
n-Heptane	15.5269	0.849101	16.7954	15.3411	18.5441
C8	3.11734	0.0823007	3.36164	8.01023	9.62278
Water	7.55372	0.132366	0.0355628	35.2745	19.3563
N2	0.127249	2.61516	0.137105	0.00118139	0.00140749
CO2	0.327632	1.50828	0.351378	0.00995876	0.0127529
H2S	0.000216794	0.000477625	0.000232175	1.05931E-05	2.67913E-05
Triethylene Glycol	9.11772E-15	7.20908E-20	2.68026E-17	1.47948E-08	0.000132486
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	2.47773	0.257583	2.68109	1.15959	2.10028

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	31 %	32 %	33 %	34 %	34GB %
Toluene	5.57589	0.261859	6.02596	6.1926	8.56141
Ethylbenzene	0.733372	0.0173447	0.789844	2.16192	2.69324
m-Xylene	1.47804	0.0333679	1.5914	4.78134	5.91846
o-Xylene	0.434998	0.00916941	0.468093	1.54883	1.92194
Nonane	1.27133	0.0158995	1.36084	8.76113	10.5407
Decane	0.31061	0.00204079	0.328033	6.7131	8.19646
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	31 lb/h	32 lb/h	33 lb/h	34 lb/h	34GB lb/h
Methane	1229.87	95283.8	2.18877	0.0242455	15.2383
Ethane	999.809	24230.9	1.7824	0.0435093	27.7751
Propane	1584.09	17660.8	2.82668	0.118693	76.8129
n-Butane	682.393	3193.25	1.21865	0.0915872	60.1315
i-Pentane	3618.64	9573.04	6.46507	0.806202	525.2
i-Butane	371.026	2220.28	0.662508	0.0414252	26.7994
n-Pentane	1637.09	3576.76	2.92486	0.422392	275.471
Cyclohexane	738.589	592.231	1.31892	0.439851	292.259
n-Hexane	508.155	530.711	0.907759	0.278503	178.327
n-Heptane	2890.95	1413.7	5.159	3.4615	2187.44
C8	580.417	137.025	1.03259	1.80739	1135.09
Water	1406.42	220.38	0.0109238	7.95918	2283.23
N2	23.6924	4354.07	0.0421143	0.000266565	0.166025
CO2	61.0018	2511.18	0.107932	0.00224705	1.50431
H2S	0.0403649	0.795215	7.13166E-05	2.39018E-06	0.00316025
Triethylene Glycol	1.69763E-12	1.20026E-16	8.2329E-18	3.33823E-09	0.0156278
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	461.328	428.858	0.823544	0.261644	247.746
Toluene	1038.17	435.978	1.85098	1.39727	1009.89
Ethylbenzene	136.546	28.8778	0.242614	0.487807	317.69
m-Xylene	275.197	55.5553	0.488827	1.07884	698.131
o-Xylene	80.9921	15.2665	0.143783	0.349472	226.709
Nonane	236.708	26.4716	0.418006	1.97682	1243.37
Decane	57.8323	3.39779	0.100761	1.51472	966.84
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	31	32	33	34	34GB
Temperature	°F	109.972	110	109.89	59.8133	61.6339
Pressure	psig	993	995	993	50	25
Mole Fraction Vapor	%	0.0682812	100	0	0	0
Mole Fraction Light Liquid	%	79.9659	0	100	24.902	43.0847
Mole Fraction Heavy Liquid	%	19.9658	0	0	75.098	56.9153
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	47.7678	21.6623	55.1995	38.3553	52.9857
Mass Density	lb/ft^3	36.3431	4.41278	35.2421	50.5332	48.3794
Molar Flow	lbmol/h	389.781	7685.87	0.556468	0.588278	222.623
Mass Flow	lb/h	18619	166493	30.7168	22.5636	11795.8
Vapor Volumetric Flow	ft^3/h	512.31	37729.8	0.871592	0.44651	243.819
Liquid Volumetric Flow	gpm	63.8725	4703.98	0.108666	0.0556688	30.3982
Std Vapor Volumetric Flow	MMSCFD	3.54998	70	0.0050681	0.00535781	2.02756
Std Liquid Volumetric Flow	sgpm	62.3038	928.811	0.106138	0.056076	30.625
Compressibility		0.216659	0.810766	0.258226	0.00880828	0.00777124
Specific Gravity			0.747942	0.565061	0.810233	0.775699
API Gravity				104.201	43.1578	50.7427

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	31	32	33	34	34GB
Enthalpy	Btu/h	-2.65044E+07	-2.71358E+08	-30328.2	-65110.8	-2.23697E+07
Mass Enthalpy	Btu/lb	-1423.52	-1629.84	-987.351	-2885.66	-1896.41
Mass Cp	Btu/(lb*°F)	0.625573	0.639499	0.597054	0.654223	0.57308
Ideal Gas CpCv Ratio		1.11319	1.23445	1.09729	1.15535	1.11296
Dynamic Viscosity	cP		0.0135371	0.139448	0.688472	0.594298
Kinematic Viscosity	cSt		0.19151	0.247018	0.850528	0.766872
Thermal Conductivity	Btu/(h*ft*°F)		0.0228259	0.0609124	0.150678	0.114387
Surface Tension	lbf/ft			0.000387806 ?	0.00253517 ?	0.00205949 ?
Net Ideal Gas Heating Value	Btu/ft^3	2250.62	1140.97	2812.37	1234.61	2121.41
Net Liquid Heating Value	Btu/lb	17661.8	19924.8	19184.9	11735.5	14856.3
Gross Ideal Gas Heating Value	Btu/ft^3	2441.87	1256.92	3038.82	1361.06	2301.19
Gross Liquid Heating Value	Btu/lb	19181.4	21956.4	20741.9	12986.7	16144

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	36	37	37a	38	39
From Block	MIX-106	VLVE-101	RCYL-3	Slug Catcher	Slug Catcher
To Block	VLVE-101	RCYL-3	MIX-102	MIX-108	MIX-108

Stream Composition

Mole Fraction	36 %	37 %	37a %	38 %	39 %
Methane	20.4341	20.4341	20.4338	1.01951	0.00549152
Ethane	8.7493	8.7493	8.74914	0.986773	0.00120636
Propane	9.28234	9.28234	9.28211	1.83951	0.000435749
n-Butane	2.98885	2.98885	2.98876	1.07573	5.72611E-05
i-Pentane	12.6661	12.6661	12.6658	7.6226	0.000112088
i-Butane	1.62555	1.62555	1.6255	0.486733	3.30853E-05
n-Pentane	5.72579	5.72579	5.72564	3.99267	1.49261E-05
Cyclohexane	2.20442	2.20442	2.20444	3.55951	4.39597E-05
n-Hexane	1.4811	1.4811	1.4811	2.20208	1.58004E-06
n-Heptane	7.2337	7.2337	7.23358	23.5215	3.87229E-06
C8	1.27502	1.27502	1.27503	10.7801	2.00952E-07
Water	19.6335	19.6335	19.635	0.0462282	99.9886
N2	0.221074	0.221074	0.22107	0.00632425	7.00806E-05
CO2	0.429993	0.429993	0.429991	0.0314716	0.00115329
H2S	0.000362955	0.000362955	0.00036295	4.35369E-05	1.4682E-06
Triethylene Glycol	4.30407E-06	4.30407E-06	4.30436E-06	1.34803E-09	9.68583E-06
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.4867	1.4867	1.48669	2.27615	0.00129394
Toluene	2.8268	2.8268	2.82672	10.3189	0.00117394
Ethylbenzene	0.322944	0.322944	0.32295	3.13101	9.83455E-05
m-Xylene	0.651019	0.651019	0.651042	6.92673	0.000116521
o-Xylene	0.191657	0.191657	0.191667	2.24442	8.25238E-05
Nonane	0.465324	0.465324	0.465399	10.5398	7.79502E-08
Decane	0.104276	0.104276	0.104308	7.39218	4.36893E-09
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	36 %	37 %	37a %	38 %	39 %
Methane	6.92659	6.92659	6.92654	0.163977	0.00488947
Ethane	5.55886	5.55886	5.55881	0.297481	0.00201324
Propane	8.6486	8.6486	8.64847	0.813243	0.00106642
n-Butane	3.67062	3.67062	3.67053	0.626859	0.000184714
i-Pentane	19.3093	19.3093	19.3089	5.51385	0.000448835
i-Butane	1.99635	1.99635	1.99631	0.283632	0.000106727
n-Pentane	8.72886	8.72886	8.72871	2.88812	5.97686E-05
Cyclohexane	3.92005	3.92005	3.9201	3.00342	0.000205332
n-Hexane	2.69687	2.69687	2.69689	1.90256	7.557E-06
n-Heptane	15.3155	15.3155	15.3153	23.63	2.15349E-05
C8	3.07742	3.07742	3.07745	12.3458	1.27398E-06
Water	7.47364	7.47364	7.47426	0.00834969	99.9746
N2	0.130857	0.130857	0.130856	0.00177622	0.000108959
CO2	0.399853	0.399853	0.399855	0.0138863	0.00281698
H2S	0.00026137	0.00026137	0.000261369	1.48762E-05	2.77713E-06
Triethylene Glycol	1.36573E-05	1.36573E-05	1.36583E-05	2.02962E-09	8.07285E-05
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	2.45377	2.45377	2.45377	1.78255	0.00560957
Toluene	5.50337	5.50337	5.50326	9.53229	0.00600321

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	36 %	37 %	37a %	38 %	39 %
Ethylbenzene	0.724438	0.724438	0.724459	3.33264	0.000579474
m-Xylene	1.46039	1.46039	1.46045	7.37279	0.000686571
o-Xylene	0.429932	0.429932	0.429958	2.38895	0.000486249
Nonane	1.26102	1.26102	1.26124	13.5528	5.54868E-07
Decane	0.313493	0.313493	0.313591	10.5449	3.45003E-08
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	36 lb/h	37 lb/h	37a lb/h	38 lb/h	39 lb/h
Methane	1311.4	1311.4	1311.28	23.8833	0.156589
Ethane	1052.45	1052.45	1052.35	43.3282	0.0644755
Propane	1637.43	1637.43	1637.26	118.449	0.034153
n-Butane	694.955	694.955	694.877	91.3022	0.0059156
i-Pentane	3655.81	3655.81	3655.41	803.094	0.0143743
i-Butane	377.967	377.967	377.925	41.3111	0.00341802
n-Pentane	1652.63	1652.63	1652.45	420.655	0.00191413
Cyclohexane	742.179	742.179	742.123	437.449	0.0065759
n-Hexane	510.596	510.596	510.555	277.109	0.000242018
n-Heptane	2899.66	2899.66	2899.38	3441.72	0.000689669
C8	582.644	582.644	582.599	1798.17	4.08003E-05
Water	1414.98	1414.98	1414.97	1.21614	3201.76
N2	24.775	24.775	24.7726	0.258707	0.00348948
CO2	75.7038	75.7038	75.6975	2.02255	0.0902159
H2S	0.049485	0.049485	0.0494804	0.00216672	8.89395E-05
Triethylene Glycol	0.00258572	0.00258572	0.00258569	2.95615E-07	0.00258539
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	464.571	464.571	464.53	259.628	0.179651
Toluene	1041.95	1041.95	1041.83	1388.38	0.192257
Ethylbenzene	137.157	137.157	137.149	485.401	0.0185581
m-Xylene	276.494	276.494	276.481	1073.85	0.0219879
o-Xylene	81.3986	81.3986	81.3963	347.952	0.0155725
Nonane	238.748	238.748	238.768	1973.97	1.77701E-05
Decane	59.3533	59.3533	59.3666	1535.88	1.1049E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	36	37	37a	38	39
Temperature	°F	58.2629	58.2629	58.2638	60	60
Pressure	psig	40	40	40	25	25
Mole Fraction Vapor	%	38.932	38.932	38.9314	0	0
Mole Fraction Light Liquid	%	41.6182	41.6182	41.6174	100	100
Mole Fraction Heavy Liquid	%	19.4498	19.4498	19.4512	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	47.3268	47.3268	47.3264	99.7418	18.0178
Mass Density	lb/ft^3	1.20737	1.20737	1.20738	45.7768	62.3663
Molar Flow	lbmol/h	400.046	400.046	400.014	146.027	177.745
Mass Flow	lb/h	18932.9	18932.9	18931.2	14565	3202.57
Vapor Volumetric Flow	ft^3/h	15681.1	15681.1	15679.6	318.175	51.351
Liquid Volumetric Flow	gpm	1955.05	1955.05	1954.86	39.6686	6.40221
Std Vapor Volumetric Flow	MMSCFD	3.64347	3.64347	3.64318	1.32996	1.61883
Std Liquid Volumetric Flow	sgpm	63.7236	63.7236	63.7177	40.0561	6.4034
Compressibility		0.385731	0.385731	0.385725	0.0155091	0.0020564
Specific Gravity					0.73397	0.999961
API Gravity					61.2871	10.0056
Enthalpy	Btu/h	-2.69767E+07	-2.69767E+07	-2.69749E+07	-1.06725E+07	-2.18939E+07

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	36	37	37a	38	39
Mass Enthalpy	Btu/lb	-1424.86	-1424.86	-1424.89	-732.746	-6836.33
Mass Cp	Btu/(lb*°F)	0.52136	0.52136	0.521363	0.477078	0.979733
Ideal Gas CpCv Ratio		1.12336	1.12336	1.12336	1.05982	1.32953
Dynamic Viscosity	cP				0.507205	1.13414
Kinematic Viscosity	cSt				0.6917	1.13526
Thermal Conductivity	Btu/(h*ft*°F)				0.074084	0.342108
Surface Tension	lbf/ft				0.00152138 ?	0.00510674 ?
Net Ideal Gas Heating Value	Btu/ft^3	2231.47	2231.47	2231.44	4960.16	0.200794
Net Liquid Heating Value	Btu/lb	17676.2	17676.2	17676	18708.3	-1055.29
Gross Ideal Gas Heating Value	Btu/ft^3	2421.43	2421.43	2421.4	5316.52	50.5191
Gross Liquid Heating Value	Btu/lb	19199.6	19199.6	19199.5	20064.3	4.49254

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	40	41	42 Breathing	42 Flash	42 Working
From Block	SPLT-101	From BTEX/FG	--	Gunbarrel	--
To Block	MIX-108	MIX-108	MIX-111	MIX-111	MIX-111

Stream Composition

Mole Fraction	40 %	41 %	42 Breathing %	42 Flash %	42 Working %
Methane	0.256908	0.0356323	32.942 *	51.1115	32.942 *
Ethane	0.245969	0.0818943	23.2394 *	19.5274	23.2394 *
Propane	0.457558	0.269631	17.9662 *	12.7283	17.9662 *
n-Butane	0.267862	0.24314	3.13649 *	2.0187	3.13649 *
i-Pentane	1.89947	1.45122	8.44615 *	5.2497	8.44615 *
i-Butane	0.121155	0.0727139	2.03847 *	1.33896	2.03847 *
n-Pentane	0.995187	0.787984	3.30741 *	2.03679	3.30741 *
Cyclohexane	0.888424	1.06744	0.64853 *	0.387942	0.64853 *
n-Hexane	0.549369	0.241198	0.500442 *	0.299509	0.500442 *
n-Heptane	5.87228	1.12488	1.56894 *	0.919653	1.56894 *
C8	2.68965	0.154674	0.207835 *	0.119398	0.207835 *
Water	75.1009	78.7443	3.14268 *	1.78424	3.14268 *
N2	0.00161754	0.000189521	0.0590319 *	0.396049	0.0590319 *
CO2	0.0086793	0.0210491	1.21048 *	1.14724	1.21048 *
H2S	1.19217E-05	0.000271043	0.00175523 *	0.00137468	0.00175523 *
Triethylene Glycol	3.7787E-09	0.000494775	7.92173E-12 *	3.21477E-12	7.92173E-12 *
EG	0	0	0 *	0	0 *
MeOH	0	0	0 *	0	0 *
MDEA	0	0	0 *	0	0 *
2,2,4-Trimethylpentane	0	0	0 *	0	0 *
Benzene	0.569392	5.72243	0.676643 *	0.405387	0.676643 *
Toluene	2.57785	7.82952	0.644854 *	0.378053	0.644854 *
Ethylbenzene	0.78106	0.608399	0.0519252 *	0.0298326	0.0519252 *
m-Xylene	1.7274	1.11192	0.10299 *	0.0591428	0.10299 *
o-Xylene	0.559563	0.384926	0.0300131 *	0.0172072	0.0300131 *
Nonane	2.62006	0.0397064	0.0644184 *	0.0362614	0.0644184 *
Decane	1.80967	0.00634404	0.0132909 *	0.00734627	0.0132909 *
Undecane	0	0	0 *	0	0 *
Dodecane	0	0	0 *	0	0 *

Mass Fraction	40 %	41 %	42 Breathing %	42 Flash %	42 Working %
Methane	0.107454	0.0175705	14.2807 *	27.0545	14.2807
Ethane	0.19283	0.0756908	18.8831 *	19.3738	18.8831
Propane	0.526037	0.365456	21.4083 *	18.5189	21.4083
n-Butane	0.405907	0.434378	4.92623 *	3.87136	4.92623
i-Pentane	3.57302	3.21835	16.4671 *	12.4973	16.4671
i-Butane	0.183593	0.129906	3.20166 *	2.5678	3.20166
n-Pentane	1.87201	1.7475	6.44831 *	4.8487	6.44831
Cyclohexane	1.94939	2.76132	1.4749 *	1.07726	1.4749
n-Hexane	1.2343	0.638892	1.16538 *	0.851615	1.16538
n-Heptane	15.3411	3.4646	4.24826 *	3.04054	4.24826
C8	8.01023	0.543076	0.641538 *	0.450009	0.641538
Water	35.2745	43.6044	1.52992 *	1.06058	1.52992
N2	0.00118139	0.00016319	0.0446871 *	0.366071	0.0446871
CO2	0.00995876	0.028474	1.43957 *	1.6659	1.43957
H2S	1.05931E-05	0.000283934	0.00161649 *	0.00154583	0.00161649
Triethylene Glycol	1.47948E-08	0.00228386	3.2147E-11 *	1.59291E-11	3.2147E-11
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	1.15959	13.7394	1.42825 *	1.04481	1.42825

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	40 %	41 %	42 Breathing %	42 Flash %	42 Working %
Toluene	6.1926	22.1741	1.60558 *	1.14933	1.60558
Ethylbenzene	2.16192	1.98536	0.148966 *	0.104502	0.148966
m-Xylene	4.78134	3.62847	0.295465 *	0.207173	0.295465
o-Xylene	1.54883	1.25611	0.0861035 *	0.0602758	0.0861035
Nonane	8.76113	0.156533	0.223261 *	0.153451	0.223261
Decane	6.7131	0.027745	0.0511013 *	0.0344879	0.0511013
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Mass Flow	40 lb/h	41 lb/h	42 Breathing lb/h	42 Flash lb/h	42 Working lb/h
Methane	0	0.0855662	0.0932825 *	11.3459	2.29276 *
Ethane	0	0.368605	0.123346 *	8.12482	3.03168 *
Propane	0	1.77973	0.13984 *	7.76629	3.43709 *
n-Butane	0	2.11537	0.0321785 *	1.62353	0.790904 *
i-Pentane	0	15.673	0.107564 *	5.24098	2.64378 *
i-Butane	0	0.632626	0.0209134 *	1.07686	0.514025 *
n-Pentane	0	8.51009	0.0421208 *	2.0334	1.03527 *
Cyclohexane	0	13.4473	0.00963413 *	0.451771	0.236794 *
n-Hexane	0	3.11132	0.00761231 *	0.357142	0.1871 *
n-Heptane	0	16.8722	0.0277499 *	1.27511	0.682056 *
C8	0	2.64471	0.00419057 *	0.18872	0.102999 *
Water	0	212.348	0.00999356 *	0.444777	0.245628 *
N2	0	0.000794714	0.000291899 *	0.153519	0.00717448 *
CO2	0	0.138665	0.00940338 *	0.698631	0.231122 *
H2S	0	0.00138273	1.0559E-05 *	0.000648276	0.000259527 *
Triethylene Glycol	0	0.0111221	2.09987E-13 *	6.6802E-12	5.16119E-12 *
EG	0	0	0 *	0	0 *
MeOH	0	0	0 *	0	0 *
MDEA	0	0	0 *	0	0 *
2,2,4-Trimethylpentane	0	0	0 *	0	0 *
Benzene	0	66.9091	0.00932945 *	0.438163	0.229305 *
Toluene	0	107.985	0.0104877 *	0.481994	0.257774 *
Ethylbenzene	0	9.66848	0.000973059 *	0.0438249	0.0239165 *
m-Xylene	0	17.6702	0.00193 *	0.0868824	0.0474368 *
o-Xylene	0	6.11712	0.000562434 *	0.0252779	0.0138239 *
Nonane	0	0.762295	0.00145836 *	0.0643529	0.0358445 *
Decane	0	0.135115	0.000333797 *	0.0144632	0.00820429 *
Undecane	0	0	0 *	0	0 *
Dodecane	0	0	0 *	0	0 *

Stream Properties

Property	Units	40	41	42 Breathing	42 Flash	42 Working
Temperature	°F		89.5181	76.016	60.7728	76.016
Pressure	psig	50	75	-1.11289	0.125 *	-1.11289
Mole Fraction Vapor	%		0	100	100	100
Mole Fraction Light Liquid	%		21.2826	0	0	0
Mole Fraction Heavy Liquid	%		78.7174	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	38.3553	32.5335	37.0059	30.3074	37.0059
Mass Density	lb/ft^3		54.7715	0.0883608	0.0811021	0.0883608
Molar Flow	lbmol/h	0	14.9688	0.0176514	1.38372	0.433848
Mass Flow	lb/h	0	486.988	0.653207	41.937	16.0549
Vapor Volumetric Flow	ft^3/h	0	8.89127	7.3925	517.089	181.698
Liquid Volumetric Flow	gpm	0	1.10852	0.921662	64.4683	22.6532
Std Vapor Volumetric Flow	MMSCFD	0	0.13633	0.000160762	0.0126024	0.00395132
Std Liquid Volumetric Flow	sgpm	0	1.09921	0.00276871	0.196538	0.0680512
Compressibility			0.00903991	0.989544	0.991646	0.989544
Specific Gravity			0.878188	1.27772	1.04644	1.27772
API Gravity			27.4679			

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	40	41	42 Breathing	42 Flash	42 Working
Enthalpy	Btu/h	0	-1.4877E+06	-790.586	-56599.8	-19431.6
Mass Enthalpy	Btu/lb	-2885.66	-3054.91	-1210.32	-1349.64	-1210.32
Mass Cp	Btu/(lb*°F)		0.665877	0.413571	0.42391	0.413571
Ideal Gas CpCv Ratio			1.20184	1.1501	1.18405	1.1501
Dynamic Viscosity	cP		0.584626	0.00912311	0.00945792	0.00912311
Kinematic Viscosity	cSt		0.666351	6.44559	7.28019	6.44559
Thermal Conductivity	Btu/(h*ft*°F)		0.182079	0.0126393	0.0138546	0.0126393
Surface Tension	lbf/ft		0.00284756 ?			
Net Ideal Gas Heating Value	Btu/ft^3	1234.61	868.831	1889.69	1568.33	1889.69
Net Liquid Heating Value	Btu/lb	11735.5	9572.87	19229.9	19514.4	19229.9
Gross Ideal Gas Heating Value	Btu/ft^3	1361.06	955.954	2058.22	1714.44	2058.22
Gross Liquid Heating Value	Btu/lb	12986.7	10588.9	20958.6	21344.4	20958.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	43	43 Breathing	43 Flash	43 Loading	43 Working
From Block	MIX-107	PW TK	PW TK	PW TK	PW TK
To Block	PW TK	MIX-109	MIX-109	--	MIX-109

Stream Composition

Mole Fraction	43 %	43 Breathing %	43 Flash %	43 Loading %	43 Working %
Methane	0.001383	16.763	46.6057	0	16.763
Ethane	0.000848176	11.3889	21.8765	0	11.3889
Propane	0.000395264	4.81533	13.1722	0	4.81533
n-Butane	5.71564E-05	0.677597	2.01797	0	0.677597
i-Pentane	0.000112799	1.1628	5.03801	0	1.1628
i-Butane	3.19687E-05	0.337644	1.37886	0	0.337644
n-Pentane	1.51919E-05	0.0998238	1.02207	4.88233E-15	0.0998238
Cyclohexane	4.53043E-05	0.704486	0.586712	0	0.704486
n-Hexane	1.59104E-06	0.00799444	0.121926	0	0.00799444
n-Heptane	3.83852E-06	0.0150662	0.319696	0	0.0150662
C8	1.9938E-07	0.000389776	0.0189821	0	0.000389776
Water	99.9929	36.3676	4.2743	75.4067	36.3676
N2	5.21871E-06	0.0474885	0.271256	0	0.0474885
CO2	0.000674636	11.6602	1.66045	0	11.6602
H2S	2.49043E-06	0.0224851	0.00204201	0.0246575	0.0224851
Triethylene Glycol	8.21404E-05	1.17705E-10	2.81645E-11	1.8174E-10	1.17705E-10
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.00187071	7.28405	0.744436	12.0954	7.28405
Toluene	0.00129972	6.73498	0.683888	10.1008	6.73498
Ethylbenzene	9.75885E-05	0.552276	0.058801	0.779014	0.552276
m-Xylene	0.000116016	1.04124	0.104953	1.07725	1.04124
o-Xylene	8.25984E-05	0.316437	0.0334002	0.516122	0.316437
Nonane	7.71877E-08	0.000142064	0.00740215	0	0.000142064
Decane	4.33759E-09	2.58424E-06	0.000448633	0	2.58424E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	43 %	43 Breathing %	43 Flash %	43 Loading %	43 Working %
Methane	0.00123135	7.47399	24.7908	0	7.47399
Ethane	0.00141545	9.51768	21.8112	0	9.51768
Propane	0.000967321	5.90133	19.2591	0	5.90133
n-Butane	0.000184372	1.09457	3.889	0	1.09457
i-Pentane	0.000451672	2.33164	12.0523	0	2.33164
i-Butane	0.000103123	0.545419	2.65733	0	0.545419
n-Pentane	6.08314E-05	0.200167	2.44508	1.0103E-14	0.200167
Cyclohexane	0.000211607	1.6478	1.63723	0	1.6478
n-Hexane	7.60942E-06	0.019147	0.348385	0	0.019147
n-Heptane	2.13466E-05	0.0419573	1.06217	0	0.0419573
C8	1.26399E-06	0.00123742	0.0718952	0	0.00123742
Water	99.9765	18.2089	2.55322	38.9622	18.2089
N2	8.11366E-06	0.0369728	0.251957	0	0.0369728
CO2	0.0016478	14.262	2.423	0	14.262
H2S	4.71056E-06	0.0212978	0.00230754	0.0241019	0.0212978
Triethylene Glycol	0.000684599	4.91262E-10	1.40241E-10	7.82769E-10	4.91262E-10
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.00810981	15.8132	1.92808	27.0974	15.8132
Toluene	0.00664628	17.2467	2.08933	26.6926	17.2467

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	43 %	43 Breathing %	43 Flash %	43 Loading %	43 Working %
Ethylbenzene	0.000575	1.62954	0.206989	2.37202	1.62954
m-Xylene	0.000683575	3.07227	0.369451	3.28011	3.07227
o-Xylene	0.000486677	0.933678	0.117574	1.57154	0.933678
Nonane	5.49428E-07	0.000506391	0.0314785	0	0.000506391
Decane	3.4252E-08	1.0219E-05	0.00211652	0	1.0219E-05
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	43 lb/h	43 Breathing lb/h	43 Flash lb/h	43 Loading lb/h	43 Working lb/h
Methane	0.0628864	0.00399317	0.0197994	0	0.0390938
Ethane	0.0722884	0.00508507	0.0174197	0	0.0497837
Propane	0.0494022	0.00315294	0.0153814	0	0.0308678
n-Butane	0.00941608	0.0005848	0.00310598	0	0.00572529
i-Pentane	0.0230674	0.00124574	0.00962566	0	0.012196
i-Butane	0.00526659	0.000291404	0.00212229	0	0.0028529
n-Pentane	0.00310673	0.000106944	0.00195278	1.08821E-17	0.001047
Cyclohexane	0.010807	0.000880378	0.00130759	0	0.00861906
n-Hexane	0.000388622	1.02298E-05	0.000278241	0	0.000100151
n-Heptane	0.00109019	2.24168E-05	0.000848313	0	0.000219464
C8	6.45533E-05	6.61125E-07	5.74197E-05	0	6.47252E-06
Water	5105.91	0.00972858	0.00203915	0.0419669	0.0952444
N2	0.000414374	1.97537E-05	0.000201228	0	0.000193392
CO2	0.0841548	0.00761986	0.00193515	0	0.0745998
H2S	0.000240573	1.13789E-05	1.84294E-06	2.59606E-05	0.000111401
Triethylene Glycol	0.0349632	2.62469E-13	1.12005E-13	8.43135E-13	2.56962E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.414177	0.00844859	0.00153988	0.0291871	0.0827131
Toluene	0.339433	0.00921448	0.00166866	0.0287511	0.0902113
Ethylbenzene	0.0293659	0.000870625	0.000165314	0.00255495	0.00852357
m-Xylene	0.0349109	0.00164144	0.000295065	0.00353307	0.01607
o-Xylene	0.0248551	0.000498841	9.39015E-05	0.00169274	0.00488374
Nonane	2.80599E-05	2.70553E-07	2.51406E-05	0	2.64876E-06
Decane	1.74929E-06	5.45979E-09	1.69037E-06	0	5.34522E-08
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	43	43 Breathing	43 Flash	43 Loading	43 Working
Temperature	°F	60.7728	82.4252	82.4252	82.4252	82.4252
Pressure	psig	0.125	-1.81595	-1.81595	-1.81595	-1.81595
Mole Fraction Vapor	%	0	53.8666	100	0	53.8666
Mole Fraction Light Liquid	%	100	12.095	0	24.6481	12.095
Mole Fraction Heavy Liquid	%	0	34.0384	0	75.3519	34.0384
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	18.0182	35.9809	30.1591	34.8665	35.9809
Mass Density	lb/ft^3	62.3622	0.148732	0.0672005	56.9312	0.148732
Molar Flow	lbmol/h	283.441	0.00148489	0.00264815	0.00308927	0.0145373
Mass Flow	lb/h	5107.11	0.0534276	0.0798658	0.107712	0.523065
Vapor Volumetric Flow	ft^3/h	81.8944	0.359222	1.18847	0.00189196	3.51684
Liquid Volumetric Flow	gpm	10.2102	0.0447861	0.148173	0.000235881	0.438463
Std Vapor Volumetric Flow	MMSCFD	2.58147	1.35238E-05	2.41183E-05	2.81359E-05	0.0001324
Std Liquid Volumetric Flow	sgpm	10.2105	0.000162573	0.000370263	0.000233665	0.00159162
Compressibility		0.000766709	0.535606	0.993625	0.00135592	0.535606
Specific Gravity		0.999895		1.04132	0.912816	
API Gravity		10.0004			21.9865	
Enthalpy	Btu/h	-3.49104E+07	-111.387	-111.477	-276.995	-1090.5

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	43	43 Breathing	43 Flash	43 Loading	43 Working
Mass Enthalpy	Btu/lb	-6835.64	-2084.82	-1395.81	-2571.63	-2084.82
Mass Cp	Btu/(lb*°F)	0.979638	0.466725	0.427646	0.618648	0.466725
Ideal Gas CpCv Ratio		1.3295	1.19434	1.18293	1.20384	1.19434
Dynamic Viscosity	cP	1.12259		0.00990218	0.670996	
Kinematic Viscosity	cSt	1.12378		9.19893	0.735781	
Thermal Conductivity	Btu/(h*ft*°F)	0.342546		0.0144221	0.176233	
Surface Tension	lbf/ft	0.00510121 ?			0.00299371	
Net Ideal Gas Heating Value	Btu/ft^3	0.18552	1199.85	1522.83	983.252	1199.85
Net Liquid Heating Value	Btu/lb	-1055.64	12346.9	19021.5	10177.1	12346.9
Gross Ideal Gas Heating Value	Btu/ft^3	50.5026	1299.83	1664.77	1065.78	1299.83
Gross Liquid Heating Value	Btu/lb	4.09413	13401.3	20808.1	11075	13401.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	43a	44	45	45 Breathing	45 Flash
From Block	PW TK	BTEX/FG2	Recycle 2	Cond. TK	Cond. TK
To Block	--	MIX-108	MIX-104	MIX-110	MIX-110

Stream Composition

Mole Fraction	43a %	44 %	45 %	45 Breathing %	45 Flash %
Methane	0	0.0356323	77.4538	29.1779	31.0399
Ethane	0	0.0818943	10.4995	25.5446	23.4374
Propane	0	0.269631	5.21404	19.1954	18.4202
n-Butane	0	0.24314	0.714131	3.2775	3.30173
i-Pentane	0	1.45122	1.72282	8.82826	9.20246
i-Butane	0	0.0727139	0.4971	2.13733	2.12377
n-Pentane	1.02736E-21	0.787984	0.642955	3.46705	3.66169
Cyclohexane	0	1.06744	0.0892081	0.688234	0.762376
n-Hexane	0	0.241198	0.0795781	0.531423	0.588852
n-Heptane	0	1.12488	0.181134	1.68939	1.95301
C8	0	0.154674	0.0152645	0.227254	0.274524
Water	99.9974	78.7443	0.00502933	2.23424	2.03905
N2	0	0.000189521	2.02754	0.0216295	0.0887958
CO2	0	0.0210491	0.741279	1.27559	1.15102
H2S	1.2004E-06	0.000271043	0.000298903	0.00191621	0.0017923
Triethylene Glycol	8.21458E-05	0.000494775	9.75663E-05	6.88126E-12	9.59918E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0014521	5.72243	0.0594698	0.718355	0.794481
Toluene	0.00091268	7.82952	0.0458325	0.694858	0.803602
Ethylbenzene	6.58248E-05	0.608399	0.00232471	0.0568473	0.0687393
m-Xylene	5.61805E-05	1.11192	0.00458636	0.112804	0.136616
o-Xylene	6.44032E-05	0.384926	0.00110162	0.0329151	0.0400062
Nonane	0	0.0397064	0.00258487	0.0715051	0.0901983
Decane	0	0.00634404	0.000291733	0.0149861	0.01973
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	43a %	44 %	45 %	45 Breathing %	45 Flash %
Methane	0	0.0175705	57.4416	12.2107	12.8776
Ethane	0	0.0756908	14.5949	20.0371	18.2252
Propane	0	0.365456	10.6288	22.0805	21.0055
n-Butane	0	0.434378	1.91882	4.96938	4.96279
i-Pentane	0	3.21835	5.74622	16.6158	17.1702
i-Butane	0	0.129906	1.33567	3.24064	3.19222
n-Pentane	4.11403E-21	1.7475	2.14448	6.52537	6.8321
Cyclohexane	0	2.76132	0.347073	1.51097	1.65926
n-Hexane	0	0.638892	0.317022	1.19465	1.3123
n-Heptane	0	3.4646	0.83905	4.41595	5.06084
C8	0	0.543076	0.0806065	0.677177	0.810958
Water	99.9873	43.6044	0.00418855	1.04999	0.949974
N2	0	0.00016319	2.62571	0.0158062	0.0643282
CO2	0	0.028474	1.50814	1.46445	1.31001
H2S	2.27066E-06	0.000283934	0.000470928	0.00170361	0.00157966
Triethylene Glycol	0.000684687	0.00228386	0.000677337	2.69573E-11	3.72794E-11
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.00629547	13.7394	0.214747	1.46377	1.60488
Toluene	0.00466739	22.1741	0.195221	1.67014	1.91481

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	43a %	44 %	45 %	45 Breathing %	45 Flash %
Ethylbenzene	0.00038787	1.98536	0.0114094	0.157437	0.188725
m-Xylene	0.000331041	3.62847	0.0225093	0.312409	0.375081
o-Xylene	0.000379493	1.25611	0.00540664	0.0911578	0.109838
Nonane	0	0.156533	0.0153259	0.239237	0.299169
Decane	0	0.027745	0.00191888	0.055623	0.0725969
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	43a lb/h	44 lb/h	45 lb/h	45 Breathing lb/h	45 Flash lb/h
Methane	0	0.0855662	0	0.0727045	1.56572
Ethane	0	0.368605	0	0.119304	2.21591
Propane	0	1.77973	0	0.13147	2.55396
n-Butane	0	2.11537	0	0.0295884	0.603402
i-Pentane	0	15.673	0	0.0989328	2.08764
i-Butane	0	0.632626	0	0.0192952	0.388126
n-Pentane	2.10081E-19	8.51009	0	0.038853	0.830682
Cyclohexane	0	13.4473	0	0.00899654	0.201742
n-Hexane	0	3.11132	0	0.00711311	0.159556
n-Heptane	0	16.8722	0	0.0262932	0.615323
C8	0	2.64471	0	0.00403201	0.0986004
Water	5105.8	212.348	0	0.00625182	0.115503
N2	0	0.000794714	0	9.41127E-05	0.00782135
CO2	0	0.138665	0	0.00871955	0.159277
H2S	0.00011595	0.00138273	0	1.01436E-05	0.000192064
Triethylene Glycol	0.0349632	0.0111221	0	1.60508E-13	4.53262E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.321475	66.9091	0	0.0087155	0.19513
Toluene	0.238338	107.985	0	0.00994427	0.232812
Ethylbenzene	0.0198064	9.66848	0	0.000937406	0.0229462
m-Xylene	0.0169045	17.6702	0	0.00186013	0.0456043
o-Xylene	0.0193786	6.11712	0	0.000542767	0.0133546
Nonane	0	0.762295	0	0.00142445	0.0363745
Decane	0	0.135115	0	0.000331188	0.00882671
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	43a	44	45	45 Breathing	45 Flash
Temperature	°F	82.4252	89.5181		82.4252	82.4252
Pressure	psig	-1.81595	75	983	-1.81595	-1.81595
Mole Fraction Vapor	%	0	0		100	100
Mole Fraction Light Liquid	%	100	21.2826		0	0
Mole Fraction Heavy Liquid	%	0	78.7174		0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	18.0171	32.5335	21.6315	38.3339	38.6685
Mass Density	lb/ft^3	62.1573	54.7715		0.0857527	0.0865138
Molar Flow	lbmol/h	283.423	14.9688	0	0.0155323	0.31443
Mass Flow	lb/h	5106.45	486.988	0	0.595415	12.1585
Vapor Volumetric Flow	ft^3/h	82.1537	8.89127	0	6.94339	140.538
Liquid Volumetric Flow	gpm	10.2425	1.10852	0	0.86567	17.5217
Std Vapor Volumetric Flow	MMSCFD	2.5813	0.13633	0	0.000141462	0.00286371
Std Liquid Volumetric Flow	sgpm	10.2083	1.09921	0	0.00250281	0.0506788
Compressibility		0.000641755	0.00903991		0.98972	0.989573
Specific Gravity		0.99661	0.878188		1.32357	1.33512
API Gravity		9.99703	27.4679			
Enthalpy	Btu/h	-3.48008E+07	-1.4877E+06	0	-693.654	-13964.5

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	43a	44	45	45 Breathing	45 Flash
Mass Enthalpy	Btu/lb	-6815.07	-3054.91		-1164.99	-1148.54
Mass Cp	Btu/(lb*°F)	0.977688	0.665877		0.413935	0.413806
Ideal Gas CpCv Ratio		1.32879	1.20184		1.14395	1.14259
Dynamic Viscosity	cP	0.854936	0.584626		0.00910196	0.00908251
Kinematic Viscosity	cSt	0.858659	0.666351		6.62623	6.55389
Thermal Conductivity	Btu/(h*ft*°F)	0.352662	0.182079		0.0125488	0.0126045
Surface Tension	lbf/ft	0.00493951	0.00284756 ?			
Net Ideal Gas Heating Value	Btu/ft^3	0.103474	868.831	1141.07	1963.88	1982.99
Net Liquid Heating Value	Btu/lb	-1057.47	9572.87	19956.6	19294	19315.1
Gross Ideal Gas Heating Value	Btu/ft^3	50.4169	955.954	1257.06	2137.41	2157.56
Gross Liquid Heating Value	Btu/lb	2.25627	10588.9	21991.6	21012.3	21028.8

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	45 Loading	45 Working	46	47	48
From Block	Cond. TK	Cond. TK	Cond. TK	PUMP-100	XFS6
To Block	--	MIX-110	PUMP-100	LIQ HC 2	MIX-106

Stream Composition

Mole Fraction	45 Loading %	45 Working %	46 %	47 %	48 %
Methane	0	29.1779	0	0	52.5089
Ethane	33.3785	25.5446	0.486753	0.486753	18.0777
Propane	28.6484	19.1954	1.50894	1.50894	12.4731
n-Butane	4.99637	3.2775	1.04546	1.04546	2.21717
i-Pentane	13.39	8.82826	7.60916	7.60916	5.20729
i-Butane	3.25341	2.13733	0.453778	0.453778	1.22663
n-Pentane	5.24008	3.46705	4.01163	4.01163	2.16466
Cyclohexane	1.02461	0.688234	3.69175	3.69175	0.386784
n-Hexane	0.790607	0.531423	2.19783	2.19783	0.259294
n-Heptane	2.47432	1.68939	23.2536	23.2536	0.540918
C8	0.327282	0.227254	10.5942	10.5942	0.0379525
Water	2.73589	2.23424	0.0309623	0.0309623	0.340467
N2	0	0.0216295	0	0	0.399254
CO2	1.23566	1.27559	0.0082546	0.0082546	3.45168
H2S	0.0026762	0.00191621	5.94164E-05	5.94164E-05	0.00276464
Triethylene Glycol	9.39123E-12	6.88126E-12	1.32188E-08	1.32188E-08	0.000177932
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.0702	0.718355	3.36773	3.36773	0.394401
Toluene	1.01819	0.694858	11.6761	11.6761	0.266608
Ethylbenzene	0.0818953	0.0568473	3.1904	3.1904	0.0119716
m-Xylene	0.162381	0.112804	7.01132	7.01132	0.0212121
o-Xylene	0.0473172	0.0329151	2.27683	2.27683	0.0055545
Nonane	0.101325	0.0715051	10.3382	10.3382	0.00510743
Decane	0.0208796	0.0149861	7.24709	7.24709	0.000453738
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	45 Loading %	45 Working %	46 %	47 %	48 %
Methane	0	12.2107	0	0	27.9767
Ethane	20.6585	20.0371	0.145363	0.145363	18.0532
Propane	26.0021	22.0805	0.660838	0.660838	18.2667
n-Butane	5.97736	4.96938	0.603499	0.603499	4.2799
i-Pentane	19.8848	16.6158	5.45246	5.45246	12.4777
i-Butane	3.89219	3.24064	0.261946	0.261946	2.36782
n-Pentane	7.7818	6.52537	2.8746	2.8746	5.18693
Cyclohexane	1.77491	1.51097	3.08576	3.08576	1.0811
n-Hexane	1.40235	1.19465	1.88106	1.88106	0.74211
n-Heptane	5.10322	4.41595	23.1416	23.1416	1.80011
C8	0.769502	0.677177	12.019	12.019	0.143982
Water	1.0145	1.04999	0.00553989	0.00553989	0.203708
N2	0	0.0158062	0	0	0.371456
CO2	1.11933	1.46445	0.00360803	0.00360803	5.04509
H2S	0.00187734	0.00170361	2.01115E-05	2.01115E-05	0.00312926
Triethylene Glycol	2.90287E-11	2.69573E-11	1.97156E-08	1.97156E-08	0.000887438
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.72066	1.46377	2.61265	2.61265	1.02317
Toluene	1.931	1.67014	10.6848	10.6848	0.815843

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	45 Loading %	45 Working %	46 %	47 %	48 %
Ethylbenzene	0.178959	0.157437	3.36398	3.36398	0.0422109
m-Xylene	0.354837	0.312409	7.39279	7.39279	0.0747924
o-Xylene	0.103398	0.0911578	2.40071	2.40071	0.0195848
Nonane	0.267488	0.239237	13.1689	13.1689	0.0217555
Decane	0.0611482	0.055623	10.2409	10.2409	0.00214411
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	45 Loading lb/h	45 Working lb/h	46 lb/h	47 lb/h	48 lb/h
Methane	0	1.42113	0	0	40.7576
Ethane	0.931494	2.33199	10.8654	10.8654	26.3007
Propane	1.17244	2.56981	49.3951	49.3951	26.6118
n-Butane	0.26952	0.578354	45.1092	45.1092	6.23514
i-Pentane	0.896607	1.9338	407.551	407.551	18.178
i-Butane	0.175499	0.377158	19.5795	19.5795	3.44954
n-Pentane	0.350882	0.759447	214.865	214.865	7.55653
Cyclohexane	0.0800308	0.175852	230.649	230.649	1.57499
n-Hexane	0.0632321	0.139037	140.602	140.602	1.08114
n-Heptane	0.230104	0.513944	1729.74	1729.74	2.62248
C8	0.0346969	0.0788124	898.377	898.377	0.209759
Water	0.045744	0.122202	0.414086	0.414086	0.296771
N2	0	0.00183959	0	0	0.541152
CO2	0.0504707	0.170438	0.269686	0.269686	7.3499
H2S	8.46494E-05	0.000198273	0.00150326	0.00150326	0.00455884
Triethylene Glycol	1.3089E-12	3.13739E-12	1.47366E-06	1.47366E-06	0.00129286
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0775848	0.170359	195.286	195.286	1.49059
Toluene	0.087069	0.194377	798.644	798.644	1.18855
Ethylbenzene	0.00806927	0.0183231	251.445	251.445	0.0614946
m-Xylene	0.0159996	0.0363592	552.582	552.582	0.108961
o-Xylene	0.00466224	0.0106093	179.444	179.444	0.0285319
Nonane	0.0120611	0.0278433	984.321	984.321	0.0316943
Decane	0.00275718	0.00647361	765.471	765.471	0.00312362
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	45 Loading	45 Working	46	47	48
Temperature	°F	82.4252	82.4252	82.4252	88.3897	119.954
Pressure	psig	-1.81595	-1.81595	-1.81595	1200 *	40
Mole Fraction Vapor	%	99.0068	100	0	0	100
Mole Fraction Light Liquid	%	0.99316	0	100	100	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	48.5833	38.3339	100.687	100.687	30.1098
Mass Density	lb/ft^3	0.110424	0.0857527	45.4121	45.8164	0.270546
Molar Flow	lbmol/h	0.0928098	0.303605	74.2363	74.2363	4.83843
Mass Flow	lb/h	4.50901	11.6384	7474.61	7474.61	145.684
Vapor Volumetric Flow	ft^3/h	40.8335	135.72	164.595	163.143	538.483
Liquid Volumetric Flow	gpm	5.09094	16.921	20.521	20.3399	67.1355
Std Vapor Volumetric Flow	MMSCFD	0.000845276	0.00276512	0.676115	0.676115	0.0440666
Std Liquid Volumetric Flow	sgpm	0.0172305	0.0489216	20.3767	20.3767	0.681904
Compressibility		0.974092	0.98972	0.00490883	0.453866	0.978616
Specific Gravity			1.32357	0.728122	0.734605	1.03961
API Gravity				59.967	57.7204	
Enthalpy	Btu/h	-4604.71	-13558.6	-5.20335E+06	-5.15475E+06	-203571

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

Property	Units	45 Loading	45 Working	46	47	48
Mass Enthalpy	Btu/lb	-1021.22	-1164.99	-696.136	-689.635	-1397.35
Mass Cp	Btu/(lb*°F)	0.400442	0.413935	0.486861	0.485777	0.452381
Ideal Gas CpCv Ratio		1.11533	1.14395	1.05753	1.05697	1.17377
Dynamic Viscosity	cP		0.00910196	0.45332	0.488696	0.0106593
Kinematic Viscosity	cSt		6.62623	0.623179	0.665882	2.45963
Thermal Conductivity	Btu/(h*ft*°F)		0.0125488	0.0722831	0.0717566	0.0163677
Surface Tension	lbf/ft			0.00149109 ?	0.00103275 ?	
Net Ideal Gas Heating Value	Btu/ft^3	2468.42	1963.88	4996.72	4996.72	1520.59
Net Liquid Heating Value	Btu/lb	19114	19294	18668.2	18668.2	19053.7
Gross Ideal Gas Heating Value	Btu/ft^3	2677.04	2137.41	5351.96	5351.96	1662.52
Gross Liquid Heating Value	Btu/lb	20744.1	21012.3	20007.2	20007.2	20842.9

Remarks

45 Loading:

the loadout in gph should be multiplied by 10,0000 ie. 87400 check ryans onenote for more information

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Connections

	51	100 gunbarrel emisssions	101 pw tk emissions	102 cond tk emissions	103 combined emissions to fl 2
From Block	Flash Gas	MIX-111	MIX-109	MIX-110	MIX-112
To Block	MIX-106	MIX-112	MIX-112	MIX-112	--

Stream Composition

Mole Fraction	51 %	100 gunbarrel emisssions %	101 pw tk emissions %	102 cond tk emissions %	103 combined emissions to fl 2 %
Methane	52.5089	46.6414	20.9958	30.102	42.2363
Ethane	18.0777	20.4407	12.8765	24.4988	21.4175
Propane	12.4731	14.0169	6.00065	18.8107	15.1777
n-Butane	2.21717	2.29369	0.867711	3.28952	2.53663
i-Pentane	5.20729	6.03609	1.71245	9.01397	6.76212
i-Butane	1.22663	1.51105	0.485328	2.1306	1.66116
n-Pentane	2.16466	2.34938	0.230633	3.56365	2.64276
Cyclohexane	0.386784	0.452052	0.687781	0.72503	0.52335
n-Hexane	0.259294	0.348942	0.0241541	0.559924	0.400243
n-Heptane	0.540918	1.07939	0.058274	1.82022	1.26042
C8	0.0379525	0.141155	0.00302685	0.250713	0.168023
Water	0.340467	2.11844	31.8156	2.13737	2.34616
N2	0.399254	0.313136	0.0792271	0.0549631	0.245623
CO2	3.45168	1.1628	10.2419	1.21377	1.24392
H2S	0.00276464	0.0014683	0.0195855	0.00185472	0.00170271
Triethylene Glycol	0.000177932	4.37277E-12	1.05004E-10	8.23012E-12	6.11058E-12
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.394401	0.472121	6.35649	0.756135	0.588628
Toluene	0.266608	0.443691	5.87671	0.748826	0.562189
Ethylbenzene	0.0119716	0.0352678	0.482283	0.0627491	0.0456226
m-Xylene	0.0212121	0.0699301	0.908436	0.124621	0.0901539
o-Xylene	0.0055545	0.0203577	0.276292	0.0364343	0.0263735
Nonane	0.00510743	0.0431886	0.00117181	0.0807823	0.0524485
Decane	0.000453738	0.00880876	6.58506E-05	0.0173404	0.0109162
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	51 %	100 gunbarrel emisssions %	101 pw tk emissions %	102 cond tk emissions %	103 combined emissions to fl 2 %
Methane	27.9767	23.4153	9.58111	12.5431	20.1381
Ethane	18.0532	19.234	11.0136	19.134	19.1404
Propane	18.2667	19.3421	7.52671	21.5446	19.8914
n-Butane	4.2799	4.1719	1.43459	4.9661	4.3819
i-Pentane	12.4777	13.6283	3.51445	16.8921	14.5002
i-Butane	2.36782	2.74839	0.802396	3.2165	2.86956
n-Pentane	5.18693	5.30443	0.473328	6.67826	5.66694
Cyclohexane	1.0811	1.19055	1.64651	1.58489	1.30905
n-Hexane	0.74211	0.941007	0.0592087	1.25329	1.02511
n-Heptane	1.80011	3.38462	0.166097	4.7374	3.75364
C8	0.143982	0.504576	0.00983507	0.743861	0.570435
Water	0.203708	1.1943	16.3039	1.00014	1.25621
N2	0.371456	0.274508	0.0631322	0.0399924	0.204501
CO2	5.04509	1.60142	12.8215	1.38747	1.62706
H2S	0.00312926	0.00156596	0.0189871	0.00164183	0.0017247
Triethylene Glycol	0.000887438	2.05496E-11	4.4855E-10	3.21024E-11	2.72732E-11

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Mass Fraction	51 %	100 gunbarrel emisssions %	101 pw tk emissions %	102 cond tk emissions %	103 combined emissions to fl 2 %
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.02317	1.15405	14.1236	1.53411	1.36653
Toluene	0.815843	1.27931	15.4023	1.7921	1.53952
Ethylbenzene	0.0422109	0.11717	1.45645	0.173033	0.143954
m-Xylene	0.0747924	0.232328	2.74339	0.343648	0.284465
o-Xylene	0.0195848	0.0676342	0.834374	0.100469	0.0832168
Nonane	0.0217555	0.17334	0.00427509	0.26911	0.199926
Decane	0.00214411	0.0392211	0.000266514	0.0640838	0.0461617
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	51 lb/h	100 gunbarrel emisssions lb/h	101 pw tk emissions lb/h	102 cond tk emissions lb/h	103 combined emissions to fl 2 lb/h
Methane	40.7576	13.7319	0.0628864	3.05956	16.8544
Ethane	26.3007	11.2798	0.0722884	4.66721	16.0193
Propane	26.6118	11.3432	0.0494022	5.25523	16.6479
n-Butane	6.23514	2.44662	0.00941608	1.21134	3.66738
i-Pentane	18.178	7.99232	0.0230674	4.12038	12.1358
i-Butane	3.44954	1.6118	0.00526659	0.784579	2.40164
n-Pentane	7.55653	3.1108	0.00310673	1.62898	4.74288
Cyclohexane	1.57499	0.6982	0.010807	0.386591	1.0956
n-Hexane	1.08114	0.551855	0.000388622	0.305706	0.85795
n-Heptane	2.62248	1.98492	0.00109019	1.15556	3.14157
C8	0.209759	0.29591	6.45533E-05	0.181445	0.477419
Water	0.296771	0.700399	0.107012	0.243957	1.05137
N2	0.541152	0.160986	0.000414374	0.00975505	0.171155
CO2	7.3499	0.939157	0.0841548	0.338435	1.36175
H2S	0.00455884	0.000918362	0.000124623	0.00040048	0.00144347
Triethylene Glycol	0.00129286	1.20514E-11	2.9441E-12	7.83052E-12	2.2826E-11
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.49059	0.676797	0.0927016	0.374204	1.1437
Toluene	1.18855	0.750257	0.101094	0.437133	1.28848
Ethylbenzene	0.0614946	0.0687144	0.00955951	0.0422067	0.120481
m-Xylene	0.108961	0.136249	0.0180065	0.0838237	0.238079
o-Xylene	0.0285319	0.0396642	0.00547648	0.0245067	0.0696474
Nonane	0.0316943	0.101656	2.80599E-05	0.0656422	0.167326
Decane	0.00312362	0.0230013	1.74929E-06	0.0156315	0.0386345
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	51	100 gunbarrel emisssions	101 pw tk emissions	102 cond tk emissions	103 combined emissions to fl 2
Temperature	°F	119.954	64.8821	80.2092	82.4252	66.578
Pressure	psig	40	-1.11289	-1.81595	-1.81595	-1.81595
Mole Fraction Vapor	%	100	100	60.6803	100	99.961
Mole Fraction Light Liquid	%	0	0	9.93816	0	0.0389681
Mole Fraction Heavy Liquid	%	0	0	29.3815	0	0
Phase Mole Fraction	%	100	100	100	100	100

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland CS	

Stream Properties

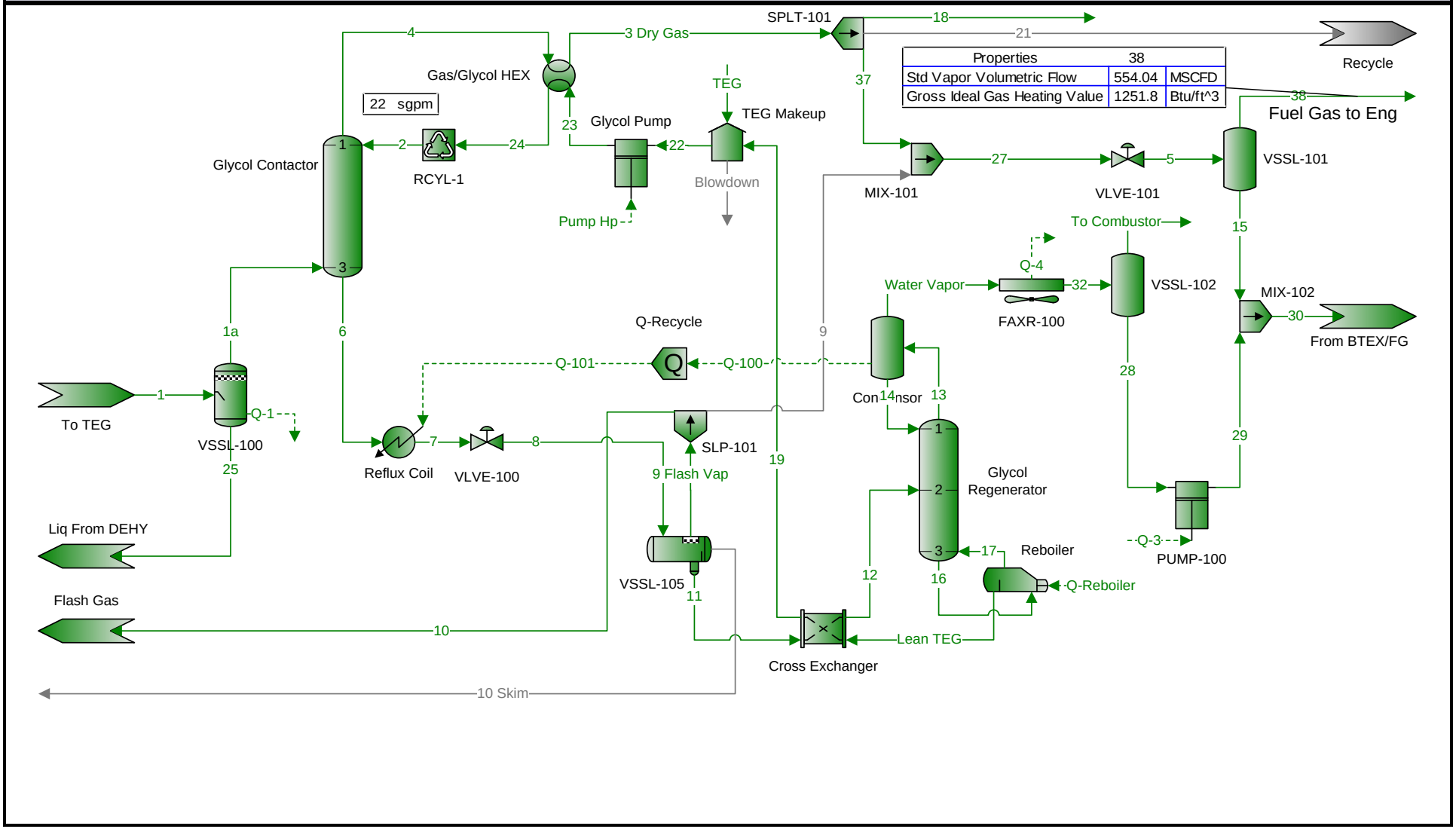
Property	Units	51	100 gunbarrel emisssions	101 pw tk emissions	102 cond tk emissions	103 combined emissions to fl 2
Molecular Weight	lb/lbmol	30.1098	31.9554	35.1551	38.5	33.6463
Mass Density	lb/ft^3	0.270546	0.0777519	0.129584	0.0861304	0.0774327
Molar Flow	lbmol/h	4.83843	1.83522	0.0186704	0.633567	2.48746
Mass Flow	lb/h	145.684	58.6452	0.656358	24.3923	83.6939
Vapor Volumetric Flow	ft^3/h	538.483	754.26	5.06514	283.202	1080.86
Liquid Volumetric Flow	gpm	67.1355	94.0376	0.631498	35.3083	134.756
Std Vapor Volumetric Flow	MMSCFD	0.0440666	0.0167145	0.000170042	0.00577028	0.0226548
Std Liquid Volumetric Flow	sgpm	0.681904	0.267358	0.00212446	0.102103	0.371586
Compressibility		0.978616	0.991695	0.603107	0.989648	0.991003
Specific Gravity		1.03961	1.10334		1.3293	
API Gravity						
Enthalpy	Btu/h	-203571	-76821.9	-1313.36	-28216.8	-106352
Mass Enthalpy	Btu/lb	-1397.35	-1309.94	-2000.98	-1156.79	-1270.73
Mass Cp	Btu/(lb*°F)	0.452381	0.420564	0.460324	0.413871	0.416207
Ideal Gas CpCv Ratio		1.17377	1.17447	1.19321	1.14327	1.16632
Dynamic Viscosity	cP	0.0106593	0.00937481		0.00909231	
Kinematic Viscosity	cSt	2.45963	7.52715		6.59018	
Thermal Conductivity	Btu/(h*ft*°F)	0.0163677	0.0135538		0.0125765	
Surface Tension	lbf/ft					
Net Ideal Gas Heating Value	Btu/ft^3	1520.59	1647.39	1245.66	1973.37	1727.4
Net Liquid Heating Value	Btu/lb	19053.7	19433.3	13159.1	19304.5	19346.6
Gross Ideal Gas Heating Value	Btu/ft^3	1662.52	1799.02	1351.59	2147.41	1884.4
Gross Liquid Heating Value	Btu/lb	20842.9	21234.5	14302.6	21020.5	21117.8

Remarks

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Outland Dehy
Plant Schematic

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	Blowdown	Lean TEG	TEG	To Combustor	Water Vapor
From Block	TEG Makeup	Reboiler	--	VSSL-102	Condensor
To Block	--	Cross Exchanger	TEG Makeup	--	FAXR-100

Stream Composition

Mole Fraction	Blowdown %	Lean TEG %	TEG %	To Combustor %	Water Vapor %
Methane	7.65443E-09	7.65443E-09	0 *	12.993	0.67352
Ethane	9.78132E-08	9.78132E-08	0 *	16.3697	0.894952
Propane	5.08177E-07	5.08177E-07	0 *	20.3418	1.26224
n-Butane	7.47707E-07	7.47707E-07	0 *	5.24952	0.480134
i-Pentane	7.74302E-06	7.74302E-06	0 *	11.9055	1.86422
i-Butane	1.44987E-07	1.44987E-07	0 *	2.27738	0.176133
n-Pentane	5.28213E-06	5.28213E-06	0 *	5.05915	0.946122
Cyclohexane	0.000216438	0.000216438	0 *	1.39022	1.05303
n-Hexane	1.25534E-05	1.25534E-05	0 *	0.476999	0.229156
n-Heptane	4.79803E-05	4.79803E-05	0 *	0.636529	0.940055
C8	1.393E-05	1.393E-05	0 *	0.0281466	0.119354
Water	4.52839	4.52839	0.827516 *	5.60938	75.525
N2	1.16481E-12	1.16481E-12	0 *	0.0235843	0.00121249
CO2	2.31139E-07	2.31139E-07	0 *	8.69698	0.465381
H2S	3.01869E-08	3.01869E-08	0 *	0.030675	0.00183116
Triethylene Glycol	95.3965	95.3965	99.1725 *	9.48924E-11	0.000104229
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0.00991897	0.00991897	0 *	6.11609	5.76018
Toluene	0.036784	0.036784	0 *	2.5762	7.56616
Ethylbenzene	0.00713049	0.00713049	0 *	0.0596033	0.579669
m-Xylene	0.01333	0.01333	0 *	0.114236	1.0586
o-Xylene	0.00765601	0.00765601	0 *	0.0418278	0.367496
Nonane	9.06325E-06	9.06325E-06	0 *	0.00322675	0.030418
Decane	4.2145E-06	4.2145E-06	0 *	0.000168406	0.00504008
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Mass Fraction	Blowdown %	Lean TEG %	TEG %	To Combustor %	Water Vapor %
Methane	8.51877E-10	8.51877E-10	0 *	4.42719	0.327788
Ethane	2.04038E-08	2.04038E-08	0 *	10.4547	0.816378
Propane	1.55455E-07	1.55455E-07	0 *	19.0517	1.68853
n-Butane	3.01486E-07	3.01486E-07	0 *	6.48053	0.846597
i-Pentane	3.87555E-06	3.87555E-06	0 *	18.2443	4.08037
i-Butane	5.84608E-08	5.84608E-08	0 *	2.81143	0.310567
n-Pentane	2.64382E-06	2.64382E-06	0 *	7.75274	2.07085
Cyclohexane	0.000126366	0.000126366	0 *	2.48504	2.68854
n-Hexane	7.50476E-06	7.50476E-06	0 *	0.87307	0.599083
n-Heptane	3.33528E-05	3.33528E-05	0 *	1.3547	2.8576
C8	1.10387E-05	1.10387E-05	0 *	0.0682887	0.413605
Water	0.565951	0.565951	0.1 *	2.14637	41.2766
N2	2.26369E-13	2.26369E-13	0 *	0.0140326	0.00103043
CO2	7.05689E-08	7.05689E-08	0 *	8.12949	0.621337
H2S	7.13713E-09	7.13713E-09	0 *	0.0222047	0.00189326
Triethylene Glycol	99.3843	99.3843	99.9 *	3.02672E-10	0.000474846
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0.00537498	0.00537498	0 *	10.147	13.6498

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	Blowdown %	Lean TEG %	TEG %	To Combustor %	Water Vapor %
Toluene	0.0235122	0.0235122	0 *	5.04161	21.1489
Ethylbenzene	0.00525163	0.00525163	0 *	0.1344	1.86695
m-Xylene	0.0098176	0.0098176	0 *	0.257593	3.40945
o-Xylene	0.00563868	0.00563868	0 *	0.094318	1.1836
Nonane	8.06403E-06	8.06403E-06	0 *	0.00878998	0.118352
Decane	4.15995E-06	4.15995E-06	0 *	0.000508925	0.021755
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Mass Flow	Blowdown lb/h	Lean TEG lb/h	TEG lb/h	To Combustor lb/h	Water Vapor lb/h
Methane	0	1.05798E-07	0 *	1.67463	1.69276
Ethane	0	2.53402E-06	0 *	3.95459	4.21593
Propane	0	1.93065E-05	0 *	7.20652	8.71989
n-Butane	0	3.74426E-05	0 *	2.45133	4.37198
i-Pentane	0	0.000481318	0 *	6.90111	21.0718
i-Butane	0	7.26046E-06	0 *	1.06345	1.60383
n-Pentane	0	0.000328345	0 *	2.93256	10.6942
Cyclohexane	0	0.0156938	0 *	0.939995	13.8841
n-Hexane	0	0.000932042	0 *	0.330249	3.09377
n-Heptane	0	0.0041422	0 *	0.51243	14.7572
C8	0	0.00137094	0 *	0.025831	2.13593
Water	0	70.2874	0.00102722 *	0.811888	213.16
N2	0	2.81135E-11	0 *	0.00530798	0.00532132
CO2	0	8.76419E-06	0 *	3.07507	3.2087
H2S	0	8.86385E-07	0 *	0.00839916	0.00977715
Triethylene Glycol	0	12342.9	1.0262 *	1.14489E-10	0.0024522
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0	0.667538	0 *	3.83823	70.4899
Toluene	0	2.92006	0 *	1.90704	109.217
Ethylbenzene	0	0.652219	0 *	0.0508384	9.6413
m-Xylene	0	1.21928	0 *	0.0974374	17.607
o-Xylene	0	0.700287	0 *	0.0356769	6.11235
Nonane	0	0.0010015	0 *	0.00332491	0.611194
Decane	0	0.000516639	0 *	0.000192507	0.112347
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Stream Properties

Property	Units	Blowdown	Lean TEG	TEG	To Combustor	Water Vapor
Temperature	°F		445	100 *	89.7891	194.412
Pressure	psig	1.88	2.38	12.18 *	-2.32	-1.12
Mole Fraction Vapor	%		0	0	100	100
Mole Fraction Light Liquid	%		100	100	0	0
Mole Fraction Heavy Liquid	%		0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	144.147	144.147	149.079	47.0816	32.9631
Mass Density	lb/ft^3		56.2335	69.4615	0.100128	0.0643721
Molar Flow	lbmol/h	0	86.1574	0.00689046	0.803416	15.6666
Mass Flow	lb/h	0	12419.4	1.02722	37.8261	516.419
Vapor Volumetric Flow	ft^3/h	0	220.853	0.0147884	377.778	8022.39
Liquid Volumetric Flow	gpm	0	27.535	0.00184375	47.0996	1000.19
Std Vapor Volumetric Flow	MMSCFD	0	0.784689	6.27556E-05	0.0073172	0.142685
Std Liquid Volumetric Flow	sgpm	0	21.9982	0.00181814	0.132898	1.20707
Compressibility			0.00450861	0.00960377	0.986906	0.990385
Specific Gravity			0.901629	1.11372	1.62561	1.13813
API Gravity			-6.83331	-7.0854		

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	Blowdown	Lean TEG	TEG	To Combustor	Water Vapor
Enthalpy	Btu/h	0	-2.61871E+07	-2362.7	-43132	-1.23663E+06
Mass Enthalpy	Btu/lb	-2222.04	-2108.57	-2300.09	-1140.27	-2394.63
Mass Cp	Btu/(lb*°F)		0.670459	0.542648	0.375331	0.401364
Ideal Gas CpCv Ratio			1.02746	1.03561	1.12748	1.1778
Dynamic Viscosity	cP		0.567347	21.1048	0.009104	0.0117727
Kinematic Viscosity	cSt		0.629844	18.9677	5.67618	11.4171
Thermal Conductivity	Btu/(h*ft*°F)		0.102946 ?	0.112147	0.0108437	0.012401
Surface Tension	lbf/ft		0.00184098 ?	0.00300898		
Net Ideal Gas Heating Value	Btu/ft^3	3606.46	3606.46	3745.75	2162.37	914.038
Net Liquid Heating Value	Btu/lb	9230.28	9230.28	9274.43	17261	9983.53
Gross Ideal Gas Heating Value	Btu/ft^3	3944.52	3944.52	4095.08	2337.54	1004.22
Gross Liquid Heating Value	Btu/lb	10120.3	10120.3	10163.6	18673.2	11021.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	1	1a	2	3 Dry Gas	4
From Block	To TEG	VSSL-100	RCYL-1	Gas/Glycol HEX	Glycol Contactor
To Block	VSSL-100	Glycol Contactor	Glycol Contactor	SPLT-101	Gas/Glycol HEX

Stream Composition

Mole Fraction	1 %	1a %	2 %	3 Dry Gas %	4 %
Methane	77.2779	77.2817	0	77.4538	77.4538
Ethane	10.4847	10.4847	9.79242E-08	10.4995	10.4995
Propane	5.21102	5.21056	5.09298E-07	5.21404	5.21404
n-Butane	0.714823	0.714601	7.51968E-07	0.714131	0.714131
i-Pentane	1.72635	1.7253	7.80056E-06	1.72282	1.72282
i-Butane	0.497017	0.496905	1.45522E-07	0.4971	0.4971
n-Pentane	0.645012	0.644532	5.35915E-06	0.642955	0.642955
Cyclohexane	0.0915576	0.0913603	0.000216021	0.0892081	0.0892081
n-Hexane	0.0801275	0.0799962	1.25839E-05	0.0795781	0.0795781
n-Heptane	0.183564	0.182907	4.7443E-05	0.181134	0.181134
C8	0.0156075	0.015491	1.35969E-05	0.0152645	0.0152645
Water	0.159162	0.159165	4.53003	0.00502933	0.00502933
N2	2.02226	2.02238	0	2.02754	2.02754
CO2	0.742402	0.742423	2.31785E-07	0.741279	0.741279
H2S	0.000303585	0.00030358	0	0.000298903	0.000298903
Triethylene Glycol	1.0399E-20	9.68642E-21	95.3961	9.75663E-05	9.75663E-05
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0714338	0.0713018	0.00990922	0.0594698	0.0594698
Toluene	0.0615646	0.0613076	0.0362556	0.0458325	0.0458325
Ethylbenzene	0.00353907	0.00350959	0.0069619	0.00232471	0.00232471
m-Xylene	0.0068085	0.00674908	0.0130047	0.00458636	0.00458636
o-Xylene	0.00187096	0.00185347	0.00746382	0.00110162	0.00110162
Nonane	0.00268542	0.00264321	8.75819E-06	0.00258487	0.00258487
Decane	0.000310709	0.000301517	4.06361E-06	0.000291733	0.000291733
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	1 %	1a %	2 %	3 Dry Gas %	4 %
Methane	57.2298	57.239	0	57.4416	57.4416
Ethane	14.5537	14.5553	2.04271E-08	14.5949	14.5949
Propane	10.6075	10.6078	1.55799E-07	10.6288	10.6288
n-Butane	1.91795	1.91757	3.03207E-07	1.91882	1.91882
i-Pentane	5.7498	5.74698	3.90439E-06	5.74622	5.74622
i-Butane	1.33355	1.3334	5.86773E-08	1.33567	1.33567
n-Pentane	2.14829	2.14693	2.6824E-06	2.14448	2.14448
Cyclohexane	0.355708	0.354981	0.000126124	0.347073	0.347073
n-Hexane	0.318758	0.318271	7.52312E-06	0.317022	0.317022
n-Heptane	0.849101	0.846159	3.29797E-05	0.83905	0.83905
C8	0.0823007	0.0816956	1.07749E-05	0.0806065	0.0806065
Water	0.132366	0.132384	0.566162	0.00418855	0.00418855
N2	2.61516	2.61561	0	2.62571	2.62571
CO2	1.50828	1.50849	7.07669E-08	1.50814	1.50814
H2S	0.000477625	0.000477671	0	0.000470928	0.000470928
Triethylene Glycol	7.20908E-20	6.71583E-20	99.3849	0.000677337	0.000677337
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	1 %	1a %	2 %	3 Dry Gas %	4 %
Benzene	0.257583	0.257136	0.00536976	0.214747	0.214747
Toluene	0.261859	0.260796	0.0231747	0.195221	0.195221
Ethylbenzene	0.0173447	0.0172021	0.00512752	0.0114094	0.0114094
m-Xylene	0.0333679	0.0330804	0.00957809	0.0225093	0.0225093
o-Xylene	0.00916941	0.00908473	0.00549719	0.00540664	0.00540664
Nonane	0.0158995	0.0156513	7.79269E-06	0.0153259	0.0153259
Decane	0.00204079	0.00198064	4.01106E-06	0.00191888	0.00191888
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	1 lb/h	1a lb/h	2 lb/h	3 Dry Gas lb/h	4 lb/h
Methane	95283.8	95281.7	0	95239.2	95239.2
Ethane	24230.9	24229.2	2.53713E-06	24198.6	24198.6
Propane	17660.8	17658	1.93509E-05	17622.7	17622.7
n-Butane	3193.25	3192.04	3.76596E-05	3181.43	3181.43
i-Pentane	9573.04	9566.57	0.000484941	9527.32	9527.32
i-Butane	2220.28	2219.61	7.28796E-06	2214.56	2214.56
n-Pentane	3576.76	3573.84	0.000333165	3555.59	3555.59
Cyclohexane	592.231	590.912	0.0156651	575.452	575.452
n-Hexane	530.711	529.803	0.000934402	525.628	525.628
n-Heptane	1413.7	1408.54	0.00409621	1391.16	1391.16
C8	137.025	135.993	0.00133829	133.647	133.647
Water	220.38	220.369	70.3196	6.94469	6.94469
N2	4354.07	4354.02	0	4353.48	4353.48
CO2	2511.18	2511.08	8.78953E-06	2500.52	2500.52
H2S	0.795215	0.795144	0	0.780807	0.780807
Triethylene Glycol	1.20026E-16	1.11794E-16	12344	1.12304	1.12304
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	428.858	428.035	0.666946	356.054	356.054
Toluene	435.978	434.127	2.8784	323.68	323.68
Ethylbenzene	28.8778	28.6352	0.636859	18.917	18.917
m-Xylene	55.5553	55.0665	1.18964	37.3209	37.3209
o-Xylene	15.2665	15.1227	0.682773	8.9643	8.9643
Nonane	26.4716	26.0536	0.000967884	25.4107	25.4107
Decane	3.39779	3.29703	0.000498189	3.18154	3.18154
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	1	1a	2	3 Dry Gas	4
Temperature	°F	110	109.89	122.829	122.959	112.838
Pressure	psig	995	993	1402.18	983	988
Mole Fraction Vapor	%	100	100	0	100	100
Mole Fraction Light Liquid	%	0	0	100	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6623	21.6598	144.146	21.6315	21.6315
Mass Density	lb/ft^3	4.41278	4.40329	68.653	4.16079	4.32486
Molar Flow	lbmol/h	7685.87	7685.32	86.1656	7664.82	7664.82
Mass Flow	lb/h	166493	166463	12420.4	165802	165802
Vapor Volumetric Flow	ft^3/h	37729.8	37804.1	180.916	39848.7	38336.9
Liquid Volumetric Flow	gpm	4703.98	4713.24	22.5557	4968.14	4779.67
Std Vapor Volumetric Flow	MMSCFD	70	69.9949	0.784764	69.8083	69.8083
Std Liquid Volumetric Flow	sgpm	928.811	928.705	22	926.818	926.818
Compressibility		0.810766	0.810969	0.475899	0.829572	0.81628
Specific Gravity		0.747942	0.747858	1.10076	0.74688	0.74688

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	1	1a	2	3 Dry Gas	4
API Gravity				-7.02489		
Enthalpy	Btu/h	-2.71358E+08	-2.71329E+08	-2.86162E+07	-2.68403E+08	-2.69496E+08
Mass Enthalpy	Btu/lb	-1629.84	-1629.97	-2303.97	-1618.82	-1625.41
Mass Cp	Btu/(lb*°F)	0.639499	0.63916	0.555755	0.628607	0.63594
Ideal Gas CpCv Ratio		1.23445	1.2345	1.03567	1.23125	1.23388
Dynamic Viscosity	cP	0.0135371	0.0135287	13.5897	0.013576	0.0135201
Kinematic Viscosity	cSt	0.19151	0.191804	12.3574	0.203692	0.195158
Thermal Conductivity	Btu/(h*ft*°F)	0.0228259	0.0228121	0.113054	0.023124	0.022867
Surface Tension	lbf/ft			0.00293744		
Net Ideal Gas Heating Value	Btu/ft^3	1140.97	1140.85	3606.39	1141.07	1141.07
Net Liquid Heating Value	Btu/lb	19924.8	19924.9	9230.19	19956.6	19956.6
Gross Ideal Gas Heating Value	Btu/ft^3	1256.92	1256.79	3944.45	1257.06	1257.06
Gross Liquid Heating Value	Btu/lb	21956.4	21956.7	10120.2	21991.6	21991.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	5	6	7	8	9
From Block	VLVE-101	Glycol Contactor	Reflux Coil	VLVE-100	SLP-101
To Block	VSSL-101	Reflux Coil	VLVE-100	VSSL-105	MIX-101

Stream Composition

Mole Fraction	5 %	6 %	7 %	8 %	9 %
Methane	77.4538	2.48084	2.48084	2.48084	52.5089
Ethane	10.4995	0.951493	0.951493	0.951493	18.0777
Propane	5.21404	0.751203	0.751203	0.751203	12.4731
n-Butane	0.714131	0.171098	0.171098	0.171098	2.21717
i-Pentane	1.72282	0.510037	0.510037	0.510037	5.20729
i-Butane	0.4971	0.0815132	0.0815132	0.0815132	1.22663
n-Pentane	0.642955	0.237164	0.237164	0.237164	2.16466
Cyclohexane	0.0892081	0.172389	0.172389	0.172389	0.386784
n-Hexane	0.0795781	0.0454307	0.0454307	0.0454307	0.259294
n-Heptane	0.181134	0.162651	0.162651	0.162651	0.540918
C8	0.0152645	0.0192636	0.0192636	0.0192636	0.0379525
Water	0.00502933	14.7664	14.7664	14.7664	0.340467
N2	2.02754	0.0182891	0.0182891	0.0182891	0.399254
CO2	0.741279	0.224931	0.224931	0.224931	3.45168
H2S	0.000298903	0.000394396	0.000394396	0.000394396	0.00276464
Triethylene Glycol	9.75663E-05	77.0573	77.0573	77.0573	0.000177932
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0594698	0.871959	0.871959	0.871959	0.394401
Toluene	0.0458325	1.15312	1.15312	1.15312	0.266608
Ethylbenzene	0.00232471	0.0914446	0.0914446	0.0914446	0.0119716
m-Xylene	0.00458636	0.167217	0.167217	0.167217	0.0212121
o-Xylene	0.00110162	0.060414	0.060414	0.060414	0.0055545
Nonane	0.00258487	0.0047068	0.0047068	0.0047068	0.00510743
Decane	0.000291733	0.000764274	0.000764274	0.000764274	0.000453738
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Methane	57.4416	0.324508	0.324508	0.324508	27.9767
Ethane	14.5949	0.233282	0.233282	0.233282	18.0532
Propane	10.6288	0.27009	0.27009	0.27009	18.2667
n-Butane	1.91882	0.0810855	0.0810855	0.0810855	4.2799
i-Pentane	5.74622	0.300045	0.300045	0.300045	12.4777
i-Butane	1.33567	0.03863	0.03863	0.03863	2.36782
n-Pentane	2.14448	0.139519	0.139519	0.139519	5.18693
Cyclohexane	0.347073	0.118296	0.118296	0.118296	1.0811
n-Hexane	0.317022	0.0319219	0.0319219	0.0319219	0.74211
n-Heptane	0.83905	0.132889	0.132889	0.132889	1.80011
C8	0.0806065	0.0179419	0.0179419	0.0179419	0.143982
Water	0.00418855	2.16906	2.16906	2.16906	0.203708
N2	2.62571	0.00417747	0.00417747	0.00417747	0.371456
CO2	1.50814	0.0807144	0.0807144	0.0807144	5.04509
H2S	0.000470928	0.000109597	0.000109597	0.000109597	0.00312926
Triethylene Glycol	0.000677337	94.3541	94.3541	94.3541	0.000887438
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.214747	0.555352	0.555352	0.555352	1.02317

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Toluene	0.195221	0.866307	0.866307	0.866307	0.815843
Ethylbenzene	0.0114094	0.0791579	0.0791579	0.0791579	0.0422109
m-Xylene	0.0225093	0.144749	0.144749	0.144749	0.0747924
o-Xylene	0.00540664	0.0522967	0.0522967	0.0522967	0.0195848
Nonane	0.0153259	0.00492216	0.00492216	0.00492216	0.0217555
Decane	0.00191888	0.000886652	0.000886652	0.000886652	0.00214411
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	5 lb/h	6 lb/h	7 lb/h	8 lb/h	9 lb/h
Methane	757.185	42.4503	42.4503	42.4503	0
Ethane	192.388	30.5166	30.5166	30.5166	0
Propane	140.107	35.3317	35.3317	35.3317	0
n-Butane	25.2935	10.6072	10.6072	10.6072	0
i-Pentane	75.7456	39.2502	39.2502	39.2502	0
i-Butane	17.6065	5.05337	5.05337	5.05337	0
n-Pentane	28.2682	18.2511	18.2511	18.2511	0
Cyclohexane	4.57505	15.4748	15.4748	15.4748	0
n-Hexane	4.17893	4.17584	4.17584	4.17584	0
n-Heptane	11.0602	17.3838	17.3838	17.3838	0
C8	1.06254	2.34706	2.34706	2.34706	0
Water	0.0552127	283.744	283.744	283.744	0
N2	34.6117	0.546474	0.546474	0.546474	0
CO2	19.88	10.5586	10.5586	10.5586	0
H2S	0.00620769	0.0143369	0.0143369	0.0143369	0
Triethylene Glycol	0.00892852	12342.9	12342.9	12342.9	0
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	2.83075	72.6481	72.6481	72.6481	0
Toluene	2.57337	113.326	113.326	113.326	0
Ethylbenzene	0.150397	10.355	10.355	10.355	0
m-Xylene	0.296714	18.9353	18.9353	18.9353	0
o-Xylene	0.0712693	6.84117	6.84117	6.84117	0
Nonane	0.202024	0.64389	0.64389	0.64389	0
Decane	0.0252943	0.115987	0.115987	0.115987	0
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	5	6	7	8	9
Temperature	°F	59.9213	111.914	116.558	120.101	
Pressure	psig	125 *	993	988	125 *	40
Mole Fraction Vapor	%	99.8266	0	0.00879034	3.59031	
Mole Fraction Light Liquid	%	0.173421	100	99.9912	96.4097	
Mole Fraction Heavy Liquid	%	0	0	0	0	
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6315	122.644	122.644	122.644	30.1098
Mass Density	lb/ft^3	0.565019	66.7297	66.5607	36.7478	
Molar Flow	lbmol/h	60.938	106.662	106.662	106.662	0
Mass Flow	lb/h	1318.18	13081.5	13081.5	13081.5	0
Vapor Volumetric Flow	ft^3/h	2332.99	196.036	196.534	355.979	0
Liquid Volumetric Flow	gpm	290.866	24.4409	24.503	44.3818	0
Std Vapor Volumetric Flow	MMSCFD	0.555	0.97144	0.97144	0.97144	0
Std Liquid Volumetric Flow	sgpm	7.36853	23.8872	23.8872	23.8872	0
Compressibility		0.959141	0.301934	0.298771	0.0749337	
Specific Gravity			1.06992			
API Gravity			-2.54193			

* User Specified Values
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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	5	6	7	8	9
Enthalpy	Btu/h	-2.1339E+06	-3.04493E+07	-3.04153E+07	-3.04153E+07	0
Mass Enthalpy	Btu/lb	-1618.82	-2327.67	-2325.07	-2325.07	-1397.35
Mass Cp	Btu/(lb*°F)	0.482021	0.562372	0.564565	0.565618	
Ideal Gas CpCv Ratio		1.24774	1.04288	1.0426	1.04239	
Dynamic Viscosity	cP		9.53978			
Kinematic Viscosity	cSt		8.92479			
Thermal Conductivity	Btu/(h*ft*°F)		0.111291			
Surface Tension	lbf/ft		0.00276042			
Net Ideal Gas Heating Value	Btu/ft^3	1141.07	3116.38	3116.38	3116.38	1520.59
Net Liquid Heating Value	Btu/lb	19956.6	9369.42	9369.42	9369.42	19053.7
Gross Ideal Gas Heating Value	Btu/ft^3	1257.06	3409.13	3409.13	3409.13	1662.52
Gross Liquid Heating Value	Btu/lb	21991.6	10275.3	10275.3	10275.3	20842.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	9 Flash Vap	10	10 Skim	11	12
From Block	VSSL-105	SLP-101	VSSL-105	VSSL-105	Cross Exchanger
To Block	SLP-101	Flash Gas	--	Cross Exchanger	Glycol Regenerator

Stream Composition

Mole Fraction	9 Flash Vap %	10 %	10 Skim %	11 %	12 %
Methane	52.5089	52.5089		0.103627	0.103627
Ethane	18.0777	18.0777		0.137697	0.137697
Propane	12.4731	12.4731		0.194208	0.194208
n-Butane	2.21717	2.21717		0.0738738	0.0738738
i-Pentane	5.20729	5.20729		0.286835	0.286835
i-Butane	1.22663	1.22663		0.0270999	0.0270999
n-Pentane	2.16466	2.16466		0.145574	0.145574
Cyclohexane	0.386784	0.386784		0.162202	0.162202
n-Hexane	0.259294	0.259294		0.0352684	0.0352684
n-Heptane	0.540918	0.540918		0.144677	0.144677
C8	0.0379525	0.0379525		0.0183756	0.0183756
Water	0.340467	0.340467		15.4519	15.4519
N2	0.399254	0.399254		0.000186554	0.000186554
CO2	3.45168	3.45168		0.0716035	0.0716035
H2S	0.00276464	0.00276464		0.000281767	0.000281767
Triethylene Glycol	0.000177932	0.000177932		80.7188	80.7188
EG	0	0		0	0
MeOH	0	0		0	0
MDEA	0	0		0	0
2,2,4-Trimethylpentane	0	0		0	0
Benzene	0.394401	0.394401		0.894651	0.894651
Toluene	0.266608	0.266608		1.19525	1.19525
Ethylbenzene	0.0119716	0.0119716		0.0952209	0.0952209
m-Xylene	0.0212121	0.0212121		0.174154	0.174154
o-Xylene	0.0055545	0.0055545		0.0630208	0.0630208
Nonane	0.00510743	0.00510743		0.00468776	0.00468776
Decane	0.000453738	0.000453738		0.00077903	0.00077903
Undecane	0	0		0	0
Dodecane	0	0		0	0

Mass Fraction	9 Flash Vap %	10 %	10 Skim %	11 %	12 %
Methane	27.9767	27.9767		0.0130859	0.0130859
Ethane	18.0532	18.0532		0.0325912	0.0325912
Propane	18.2667	18.2667		0.0674093	0.0674093
n-Butane	4.2799	4.2799		0.0337979	0.0337979
i-Pentane	12.4777	12.4777		0.162899	0.162899
i-Butane	2.36782	2.36782		0.0123984	0.0123984
n-Pentane	5.18693	5.18693		0.0826744	0.0826744
Cyclohexane	1.0811	1.0811		0.107452	0.107452
n-Hexane	0.74211	0.74211		0.0239236	0.0239236
n-Heptane	1.80011	1.80011		0.114112	0.114112
C8	0.143982	0.143982		0.0165224	0.0165224
Water	0.203708	0.203708		2.19119	2.19119
N2	0.371456	0.371456		4.11365E-05	4.11365E-05
CO2	5.04509	5.04509		0.0248049	0.0248049
H2S	0.00312926	0.00312926		7.55891E-05	7.55891E-05
Triethylene Glycol	0.000887438	0.000887438		95.4167	95.4167
EG	0	0		0	0
MeOH	0	0		0	0
MDEA	0	0		0	0
2,2,4-Trimethylpentane	0	0		0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	9 Flash Vap %	10 %	10 Skim %	11 %	12 %
Benzene	1.02317	1.02317		0.550083	0.550083
Toluene	0.815843	0.815843		0.866875	0.866875
Ethylbenzene	0.0422109	0.0422109		0.079574	0.079574
m-Xylene	0.0747924	0.0747924		0.145537	0.145537
o-Xylene	0.0195848	0.0195848		0.0526651	0.0526651
Nonane	0.0217555	0.0217555		0.00473258	0.00473258
Decane	0.00214411	0.00214411		0.00087249	0.00087249
Undecane	0	0		0	0
Dodecane	0	0		0	0

Mass Flow	9 Flash Vap lb/h	10 lb/h	10 Skim lb/h	11 lb/h	12 lb/h
Methane	40.7576	40.7576	0	1.69276	1.69276
Ethane	26.3007	26.3007	0	4.21593	4.21593
Propane	26.6118	26.6118	0	8.71991	8.71991
n-Butane	6.23514	6.23514	0	4.37202	4.37202
i-Pentane	18.178	18.178	0	21.0723	21.0723
i-Butane	3.44954	3.44954	0	1.60383	1.60383
n-Pentane	7.55653	7.55653	0	10.6946	10.6946
Cyclohexane	1.57499	1.57499	0	13.8998	13.8998
n-Hexane	1.08114	1.08114	0	3.09471	3.09471
n-Heptane	2.62248	2.62248	0	14.7613	14.7613
C8	0.209759	0.209759	0	2.1373	2.1373
Water	0.296771	0.296771	0	283.447	283.447
N2	0.541152	0.541152	0	0.00532132	0.00532132
CO2	7.3499	7.3499	0	3.20871	3.20871
H2S	0.00455884	0.00455884	0	0.00977803	0.00977803
Triethylene Glycol	0.00129286	0.00129286	0	12342.9	12342.9
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.49059	1.49059	0	71.1575	71.1575
Toluene	1.18855	1.18855	0	112.137	112.137
Ethylbenzene	0.0614946	0.0614946	0	10.2935	10.2935
m-Xylene	0.108961	0.108961	0	18.8263	18.8263
o-Xylene	0.0285319	0.0285319	0	6.81264	6.81264
Nonane	0.0316943	0.0316943	0	0.612195	0.612195
Decane	0.00312362	0.00312362	0	0.112863	0.112863
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	9 Flash Vap	10	10 Skim	11	12
Temperature	°F	119.954	119.954		119.954	300 *
Pressure	psig	40 *	40	40	40	39.5
Mole Fraction Vapor	%	100	100		0	0.524023
Mole Fraction Light Liquid	%	0	0		100	99.476
Mole Fraction Heavy Liquid	%	0	0		0	0
Phase Mole Fraction	%	100	100		100	100
Molecular Weight	lb/lbmol	30.1098	30.1098		127.041	127.041
Mass Density	lb/ft^3	0.270546	0.270546		67.6421	44.7652
Molar Flow	lbmol/h	4.83843	4.83843	0	101.824	101.824
Mass Flow	lb/h	145.684	145.684	0	12935.8	12935.8
Vapor Volumetric Flow	ft^3/h	538.483	538.483	0	191.239	288.97
Liquid Volumetric Flow	gpm	67.1355	67.1355	0	23.8427	36.0274
Std Vapor Volumetric Flow	MMSCFD	0.0440666	0.0440666	0	0.927374	0.927374
Std Liquid Volumetric Flow	sgpm	0.681904	0.681904	0	23.2053	23.2053
Compressibility		0.978616	0.978616		0.0165147	0.018866
Specific Gravity		1.03961	1.03961		1.08455	

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	9 Flash Vap	10	10 Skim	11	12
API Gravity					-4.72221	
Enthalpy	Btu/h	-203571	-203571		-3.02117E+07	-2.88025E+07
Mass Enthalpy	Btu/lb	-1397.35	-1397.35		-2335.51	-2226.58
Mass Cp	Btu/(lb*°F)	0.452381	0.452381		0.566233	0.637238
Ideal Gas CpCv Ratio		1.17377	1.17377		1.04093	1.03416
Dynamic Viscosity	cP	0.0106593	0.0106593		11.0987	
Kinematic Viscosity	cSt	2.45963	2.45963		10.2431	
Thermal Conductivity	Btu/(h*ft*°F)	0.0163677	0.0163677		0.113332	
Surface Tension	lbf/ft				0.00287617	
Net Ideal Gas Heating Value	Btu/ft^3	1520.59	1520.59		3192.21	3192.21
Net Liquid Heating Value	Btu/lb	19053.7	19053.7		9260.35	9260.35
Gross Ideal Gas Heating Value	Btu/ft^3	1662.52	1662.52		3492.13	3492.13
Gross Liquid Heating Value	Btu/lb	20842.9	20842.9		10156.2	10156.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	13	14	15	16	17
From Block	Glycol Regenerator	Condensor	VSSL-101	Glycol Regenerator	Reboiler
To Block	Condensor	Glycol Regenerator	MIX-102	Reboiler	Glycol Regenerator

Stream Composition

Mole Fraction	13 %	14 %	15 %	16 %	17 %
Methane	0.612292	1.07076E-05	3.97786	1.69799E-06	8.85255E-06
Ethane	0.813594	1.47216E-05	3.37573	1.16406E-05	6.04971E-05
Propane	1.14749	1.51535E-05	5.71596	4.18528E-05	0.000216849
n-Butane	0.436486	5.64657E-06	3.17009	4.22138E-05	0.000217724
i-Pentane	1.69475	1.14016E-05	19.7031	0.00032436	0.00166448
i-Butane	0.160121	9.63829E-07	1.50192	9.58647E-06	4.95487E-05
n-Pentane	0.860112	5.12461E-06	9.81566	0.000206457	0.00105795
Cyclohexane	0.957303	2.6454E-05	5.65789	0.00302696	0.0149228
n-Hexane	0.208324	7.39613E-07	3.81905	0.00023299	0.00116601
n-Heptane	0.854596	1.68627E-06	24.812	0.00103021	0.00518764
C8	0.108504	1.36836E-07	4.4287	0.000245537	0.00122584
Water	77.7346	99.8312	0.000948472	19.0729	80.6343
N2	0.00110227	1.00277E-08	0.0263938	5.06363E-10	2.64467E-09
CO2	0.423082	9.0266E-05	0.108276	1.88876E-05	9.78532E-05
H2S	0.0016648	1.1669E-06	0.000131764	9.51509E-07	4.85111E-06
Triethylene Glycol	0.014688	0.160526	0.0546303	80.4378	17.1235
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	5.23685	0.0034754	3.11853	0.0875762	0.41627
Toluene	6.87867	0.00383651	6.93379	0.251007	1.15773
Ethylbenzene	0.52699	0.000201612	0.695381	0.0379391	0.16834
m-Xylene	0.962394	0.000352221	1.43142	0.0714438	0.317417
o-Xylene	0.334105	0.000196236	0.3605	0.03595	0.155708
Nonane	0.0276527	1.19835E-08	1.13935	0.000123121	0.000605881
Decane	0.00458189	8.7099E-10	0.152701	4.37025E-05	0.00021084
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	13 %	14 %	15 %	16 %	17 %
Methane	0.310608	9.42112E-06	0.803292	2.18461E-07	3.35437E-06
Ethane	0.773589	2.42781E-05	1.27773	2.80713E-06	4.2966E-05
Propane	1.60003	3.66478E-05	3.17277	1.48008E-05	0.000225852
n-Butane	0.802224	1.79997E-05	2.31935	1.96772E-05	0.000298896
i-Pentane	3.8665	4.51165E-05	17.8944	0.000187682	0.00283647
i-Butane	0.294289	3.07243E-06	1.09886	4.46856E-06	6.80214E-05
n-Pentane	1.96231	2.02782E-05	8.9146	0.000119461	0.00180288
Cyclohexane	2.54762	0.000122105	5.99392	0.00204304	0.0296638
n-Hexane	0.567682	3.49565E-06	4.14278	0.000161022	0.00237333
n-Heptane	2.70782	9.26708E-06	31.2961	0.000827885	0.0122777
C8	0.391926	8.57265E-07	6.36802	0.000224935	0.00330735
Water	44.2832	98.6387	0.000215089	2.75565	34.3109
N2	0.000976419	1.54066E-08	0.00930725	1.13761E-10	1.74988E-09
CO2	0.588782	0.000217877	0.0599835	6.66637E-06	0.000101717
H2S	0.00179414	2.18115E-06	5.65277E-05	2.6007E-07	3.90502E-06
Triethylene Glycol	0.0697491	1.32214	0.103271	96.8765	60.7375
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	13 %	14 %	15 %	16 %	17 %
Benzene	12.9351	0.0148889	3.06634	0.0548617	0.768003
Toluene	20.0414	0.0193873	8.04202	0.185479	2.51954
Ethylbenzene	1.76916	0.00117392	0.929304	0.0323024	0.422125
m-Xylene	3.23085	0.00205086	1.91294	0.0608292	0.795946
o-Xylene	1.12163	0.00114261	0.48177	0.0306088	0.390447
Nonane	0.112149	8.42943E-08	1.83943	0.00012664	0.00183541
Decane	0.0206147	6.79676E-09	0.273492	4.9868E-05	0.000708556
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	13 lb/h	14 lb/h	15 lb/h	16 lb/h	17 lb/h
Methane	1.69276	2.69114E-06	0.0674388	2.90141E-05	2.89083E-05
Ethane	4.21593	6.93503E-06	0.10727	0.00037282	0.000370286
Propane	8.7199	1.04684E-05	0.266364	0.00196572	0.00194642
n-Butane	4.37199	5.14162E-06	0.194717	0.00261336	0.00257592
i-Pentane	21.0718	1.28875E-05	1.50229	0.0249263	0.024445
i-Butane	1.60383	8.77639E-07	0.0922526	0.000593476	0.000586216
n-Pentane	10.6943	5.79247E-06	0.748408	0.0158658	0.0155374
Cyclohexane	13.8841	3.48793E-05	0.503208	0.271339	0.255645
n-Hexane	3.09377	9.98531E-07	0.347799	0.0213856	0.0204536
n-Heptane	14.7572	2.64714E-06	2.62741	0.109953	0.105811
C8	2.13593	2.44878E-07	0.534615	0.029874	0.0285031
Water	241.336	28.1761	1.80574E-05	365.983	295.695
N2	0.00532132	4.4009E-09	0.000781372	1.51088E-08	1.50807E-08
CO2	3.20876	6.22364E-05	0.0050358	0.000885371	0.000876607
H2S	0.00977777	6.23046E-07	4.74567E-06	3.45403E-05	3.36539E-05
Triethylene Glycol	0.380121	0.377669	0.00866993	12866.3	523.442
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	70.4942	0.004253	0.257429	7.28627	6.61873
Toluene	109.222	0.00553798	0.675152	24.6337	21.7137
Ethylbenzene	9.64163	0.000335329	0.0780179	4.29014	3.63792
m-Xylene	17.6076	0.000585828	0.160597	8.07883	6.85955
o-Xylene	6.11268	0.000326387	0.0404461	4.0652	3.36492
Nonane	0.611194	2.40786E-08	0.154426	0.0168193	0.0158178
Decane	0.112347	1.94149E-09	0.0229605	0.00662305	0.00610641
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	13	14	15	16	17
Temperature	°F	222.578	194.412	59.9213	325.105	445 *
Pressure	psig	1.88	-1.12	125	2.38	2.38
Mole Fraction Vapor	%	100	0	0	0	100
Mole Fraction Light Liquid	%	0	100	100	100	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	31.624	18.2331	79.4414	124.691	42.3378
Mass Density	lb/ft^3	0.0723403	60.3778	42.5494	61.0301	0.0752093
Molar Flow	lbmol/h	17.2332	1.56666	0.105679	106.513	20.3556
Mass Flow	lb/h	544.984	28.565	8.39531	13281.2	861.811
Vapor Volumetric Flow	ft^3/h	7533.61	0.473104	0.197307	217.617	11458.8
Liquid Volumetric Flow	gpm	939.255	0.0589844	0.0245994	27.1314	1428.63
Std Vapor Volumetric Flow	MMSCFD	0.156954	0.0142685	0.000962487	0.970079	0.185391
Std Liquid Volumetric Flow	sgpm	1.26409	0.0570201	0.0250357	23.6134	1.61525
Compressibility		0.989712	0.000584059	0.0467748	0.00414253	0.99012
Specific Gravity		1.09189	0.968078	0.682223	0.978537	1.46182

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	13	14	15	16	17
API Gravity			9.70229	75.9231	-6.01741	
Enthalpy	Btu/h	-1.3924E+06	-189821	-7260.5	-3.02346E+07	-2.63461E+06
Mass Enthalpy	Btu/lb	-2554.95	-6645.24	-864.828	-2276.5	-3057.06
Mass Cp	Btu/(lb*°F)	0.413277	0.988034	0.502515	0.651095	0.498155
Ideal Gas CpCv Ratio		1.1805	1.31905	1.0741	1.03416	1.10452
Dynamic Viscosity	cP	0.012373	0.320124	0.323148	1.20048	0.0156525
Kinematic Viscosity	cSt	10.6776	0.330994	0.474118	1.22797	12.9925
Thermal Conductivity	Btu/(h*ft*°F)	0.0133589	0.382397	0.0700805	0.11263 ?	0.0169937
Surface Tension	lbf/ft		0.00411089 ?	0.00123452 ?	0.00231171 ?	
Net Ideal Gas Heating Value	Btu/ft^3	831.524	6.39159	4001.07	3059.42	744.013
Net Liquid Heating Value	Btu/lb	9412.25	-915.808	18951.7	9029.66	6138.6
Gross Ideal Gas Heating Value	Btu/ft^3	918.123	57.1965	4304.69	3353.04	849.49
Gross Liquid Heating Value	Btu/lb	10451.2	141.592	20402.2	9923.24	7083.97

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	18	19	21	22	23
From Block	SPLT-101	Cross Exchanger	SPLT-101	TEG Makeup	Glycol Pump
To Block	--	TEG Makeup	Recycle	Glycol Pump	Gas/Glycol HEX

Stream Composition

Mole Fraction	18 %	19 %	21 %	22 %	23 %
Methane	77.4538	7.65443E-09	77.4538	0	0
Ethane	10.4995	9.78132E-08	10.4995	9.78053E-08	9.78053E-08
Propane	5.21404	5.08177E-07	5.21404	5.08136E-07	5.08136E-07
n-Butane	0.714131	7.47707E-07	0.714131	7.47647E-07	7.47647E-07
i-Pentane	1.72282	7.74302E-06	1.72282	7.7424E-06	7.7424E-06
i-Butane	0.4971	1.44987E-07	0.4971	1.44976E-07	1.44976E-07
n-Pentane	0.642955	5.28213E-06	0.642955	5.2817E-06	5.2817E-06
Cyclohexane	0.0892081	0.000216438	0.0892081	0.00021642	0.00021642
n-Hexane	0.0795781	1.25534E-05	0.0795781	1.25524E-05	1.25524E-05
n-Heptane	0.181134	4.79803E-05	0.181134	4.79764E-05	4.79764E-05
C8	0.0152645	1.393E-05	0.0152645	1.39288E-05	1.39288E-05
Water	0.00502933	4.52839	0.00502933	4.5281	4.5281
N2	2.02754	1.16481E-12	2.02754	0	0
CO2	0.741279	2.31139E-07	0.741279	2.3112E-07	2.3112E-07
H2S	0.000298903	3.01869E-08	0.000298903	0	0
Triethylene Glycol	9.75663E-05	95.3965	9.75663E-05	95.3968	95.3968
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0594698	0.00991897	0.0594698	0.00991818	0.00991818
Toluene	0.0458325	0.036784	0.0458325	0.036781	0.036781
Ethylbenzene	0.00232471	0.00713049	0.00232471	0.00712992	0.00712992
m-Xylene	0.00458636	0.01333	0.00458636	0.0133289	0.0133289
o-Xylene	0.00110162	0.00765601	0.00110162	0.0076554	0.0076554
Nonane	0.00258487	9.06325E-06	0.00258487	9.06253E-06	9.06253E-06
Decane	0.000291733	4.2145E-06	0.000291733	4.21416E-06	4.21416E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	18 %	19 %	21 %	22 %	23 %
Methane	57.4416	8.51877E-10	57.4416	0	0
Ethane	14.5949	2.04038E-08	14.5949	2.04021E-08	2.04021E-08
Propane	10.6288	1.55455E-07	10.6288	1.55442E-07	1.55442E-07
n-Butane	1.91882	3.01486E-07	1.91882	3.01461E-07	3.01461E-07
i-Pentane	5.74622	3.87555E-06	5.74622	3.87522E-06	3.87522E-06
i-Butane	1.33567	5.84608E-08	1.33567	5.8456E-08	5.8456E-08
n-Pentane	2.14448	2.64382E-06	2.14448	2.6436E-06	2.6436E-06
Cyclohexane	0.347073	0.000126366	0.347073	0.000126355	0.000126355
n-Hexane	0.317022	7.50476E-06	0.317022	7.50414E-06	7.50414E-06
n-Heptane	0.83905	3.33528E-05	0.83905	3.335E-05	3.335E-05
C8	0.0806065	1.10387E-05	0.0806065	1.10378E-05	1.10378E-05
Water	0.00418855	0.565951	0.00418855	0.565912	0.565912
N2	2.62571	2.26369E-13	2.62571	0	0
CO2	1.50814	7.05689E-08	1.50814	7.0563E-08	7.0563E-08
H2S	0.000470928	7.13713E-09	0.000470928	0	0
Triethylene Glycol	0.000677337	99.3843	0.000677337	99.3843	99.3843
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	18 %	19 %	21 %	22 %	23 %
Benzene	0.214747	0.00537498	0.214747	0.00537454	0.00537454
Toluene	0.195221	0.0235122	0.195221	0.0235102	0.0235102
Ethylbenzene	0.0114094	0.00525163	0.0114094	0.0052512	0.0052512
m-Xylene	0.0225093	0.0098176	0.0225093	0.00981679	0.00981679
o-Xylene	0.00540664	0.00563868	0.00540664	0.00563821	0.00563821
Nonane	0.0153259	8.06403E-06	0.0153259	8.06336E-06	8.06336E-06
Decane	0.00191888	4.15995E-06	0.00191888	4.15961E-06	4.15961E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	18 lb/h	19 lb/h	21 lb/h	22 lb/h	23 lb/h
Methane	94482	1.05798E-07	0	0	0
Ethane	24006.3	2.53402E-06	0	2.53402E-06	2.53402E-06
Propane	17482.6	1.93065E-05	0	1.93065E-05	1.93065E-05
n-Butane	3156.14	3.74426E-05	0	3.74426E-05	3.74426E-05
i-Pentane	9451.58	0.000481318	0	0.000481318	0.000481318
i-Butane	2196.95	7.26046E-06	0	7.26046E-06	7.26046E-06
n-Pentane	3527.32	0.000328345	0	0.000328345	0.000328345
Cyclohexane	570.877	0.0156938	0	0.0156938	0.0156938
n-Hexane	521.449	0.000932042	0	0.000932042	0.000932042
n-Heptane	1380.1	0.0041422	0	0.0041422	0.0041422
C8	132.584	0.00137094	0	0.00137094	0.00137094
Water	6.88948	70.2874	0	70.2884	70.2884
N2	4318.87	2.81135E-11	0	0	0
CO2	2480.64	8.76419E-06	0	8.76419E-06	8.76419E-06
H2S	0.774599	8.86385E-07	0	0	0
Triethylene Glycol	1.11411	12342.9	0	12343.9	12343.9
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	353.223	0.667538	0	0.667538	0.667538
Toluene	321.107	2.92006	0	2.92006	2.92006
Ethylbenzene	18.7666	0.652219	0	0.652219	0.652219
m-Xylene	37.0241	1.21928	0	1.21928	1.21928
o-Xylene	8.89303	0.700287	0	0.700287	0.700287
Nonane	25.2086	0.0010015	0	0.0010015	0.0010015
Decane	3.15624	0.000516639	0	0.000516639	0.000516639
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	18	19	21	22	23
Temperature	°F	122.959	268.779		268.766	272.745
Pressure	psig	983	1.88	983	1.88	1407.18 *
Mole Fraction Vapor	%	100	0		0	0
Mole Fraction Light Liquid	%	0	100		100	100
Mole Fraction Heavy Liquid	%	0	0		0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6315	144.147	21.6315	144.148	144.148
Mass Density	lb/ft^3	4.16079	63.1325		63.133	63.1252
Molar Flow	lbmol/h	7603.88	86.1574	0	86.1643	86.1643
Mass Flow	lb/h	164484	12419.4	0	12420.4	12420.4
Vapor Volumetric Flow	ft^3/h	39531.8	196.719	0	196.733	196.758
Liquid Volumetric Flow	gpm	4928.65	24.526	0	24.5278	24.5308
Std Vapor Volumetric Flow	MMSCFD	69.2533	0.784689	0 *	0.784751	0.784751
Std Liquid Volumetric Flow	sgpm	919.449	21.9982	0	22 *	22
Compressibility		0.829572	0.00484138		0.00484144	0.413091
Specific Gravity		0.74688	1.01225		1.01225	1.01213

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	18	19	21	22	23
API Gravity			-6.83324		-6.83326	-7.02524
Enthalpy	Btu/h	-2.66269E+08	-2.75963E+07	0	-2.75986E+07	-2.75234E+07
Mass Enthalpy	Btu/lb	-1618.82	-2222.04	-1618.82	-2222.04	-2215.99
Mass Cp	Btu/(lb*°F)	0.628607	0.615628		0.615623	0.614257
Ideal Gas CpCv Ratio		1.23125	1.0306		1.0306	1.0305
Dynamic Viscosity	cP	0.013576	1.99637		1.99661	2.02602
Kinematic Viscosity	cSt	0.203692	1.97409		1.97431	2.00364
Thermal Conductivity	Btu/(h*ft*°F)	0.023124	0.111834 ?		0.111834 ?	0.111723 ?
Surface Tension	lbf/ft		0.00246099 ?		0.00246103 ?	0.00244878 ?
Net Ideal Gas Heating Value	Btu/ft^3	1141.07	3606.46	1141.07	3606.47	3606.47
Net Liquid Heating Value	Btu/lb	19956.6	9230.28	19956.6	9230.29	9230.29
Gross Ideal Gas Heating Value	Btu/ft^3	1257.06	3944.52	1257.06	3944.54	3944.54
Gross Liquid Heating Value	Btu/lb	21991.6	10120.3	21991.6	10120.3	10120.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	24	25	27	28	29
From Block	Gas/Glycol HEX	VSSL-100	MIX-101	VSSL-102	PUMP-100
To Block	RCYL-1	Liq From DEHY	VLVE-101	PUMP-100	MIX-102

Stream Composition

Mole Fraction	24 %	25 %	27 %	28 %	29 %
Methane	0	24.5182	77.4538	0.00760242	0.00760242
Ethane	9.78053E-08	10.6524	10.4995	0.0584746	0.0584746
Propane	5.08136E-07	11.5197	5.21404	0.230907	0.230907
n-Butane	7.47647E-07	3.76787	0.714131	0.222329	0.222329
i-Pentane	7.7424E-06	16.1029	1.72282	1.32145	1.32145
i-Butane	1.44976E-07	2.04837	0.4971	0.062552	0.062552
n-Pentane	5.2817E-06	7.2851	0.642955	0.723796	0.723796
Cyclohexane	0.00021642	2.81627	0.0892081	1.0348	1.0348
n-Hexane	1.25524E-05	1.89298	0.0795781	0.215759	0.215759
n-Heptane	4.79764E-05	9.25229	0.181134	0.956462	0.956462
C8	1.39288E-05	1.62447	0.0152645	0.124285	0.124285
Water	4.5281	0.108966	0.00502933	79.3042	79.3042
N2	0	0.270162	2.02754	3.20422E-06	3.20422E-06
CO2	2.3112E-07	0.440721	0.741279	0.0204289	0.0204289
H2S	0	0.000376045	0.000298903	0.000272033	0.000272033
Triethylene Glycol	95.3968	9.85192E-18	9.75663E-05	0.000109863	0.000109863
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.00991818	1.89465	0.0594698	5.74095	5.74095
Toluene	0.036781	3.61011	0.0458325	7.83589	7.83589
Ethylbenzene	0.00712992	0.410672	0.00232471	0.607781	0.607781
m-Xylene	0.0133289	0.827435	0.00458636	1.10965	1.10965
o-Xylene	0.0076554	0.243381	0.00110162	0.3851	0.3851
Nonane	9.06253E-06	0.58569	0.00258487	0.0318878	0.0318878
Decane	4.21416E-06	0.127263	0.000291733	0.00530342	0.00530342
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	24 %	25 %	27 %	28 %	29 %
Methane	0	7.12565	57.4416	0.00378763	0.00378763
Ethane	2.04021E-08	5.80271	14.5949	0.0546049	0.0546049
Propane	1.55442E-07	9.20241	10.6288	0.316211	0.316211
n-Butane	3.01461E-07	3.96736	1.91882	0.401313	0.401313
i-Pentane	3.87522E-06	21.0474	5.74622	2.9609	2.9609
i-Butane	5.8456E-08	2.15683	1.33567	0.112909	0.112909
n-Pentane	2.6436E-06	9.52202	2.14448	1.62177	1.62177
Cyclohexane	0.000126355	4.2938	0.347073	2.70462	2.70462
n-Hexane	7.50414E-06	2.95526	0.317022	0.577428	0.577428
n-Heptane	3.335E-05	16.7954	0.83905	2.97638	2.97638
C8	1.10378E-05	3.36164	0.0806065	0.440897	0.440897
Water	0.565912	0.0355628	0.00418855	44.3693	44.3693
N2	0	0.137105	2.62571	2.78761E-06	2.78761E-06
CO2	7.0563E-08	0.351378	1.50814	0.0279213	0.0279213
H2S	0	0.000232175	0.000470928	0.000287924	0.000287924
Triethylene Glycol	99.3843	2.68026E-17	0.000677337	0.000512376	0.000512376
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	24 %	25 %	27 %	28 %	29 %
Benzene	0.00537454	2.68109	0.214747	13.9266	13.9266
Toluene	0.0235102	6.02596	0.195221	22.422	22.422
Ethylbenzene	0.0052512	0.789844	0.0114094	2.00389	2.00389
m-Xylene	0.00981679	1.5914	0.0225093	3.65856	3.65856
o-Xylene	0.00563821	0.468093	0.00540664	1.2697	1.2697
Nonane	8.06336E-06	1.36084	0.0153259	0.127012	0.127012
Decane	4.15961E-06	0.328033	0.00191888	0.0234342	0.0234342
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	24 lb/h	25 lb/h	27 lb/h	28 lb/h	29 lb/h
Methane	0	2.18877	757.185	0.0181273	0.0181273
Ethane	2.53402E-06	1.7824	192.388	0.261335	0.261335
Propane	1.93065E-05	2.82668	140.107	1.51336	1.51336
n-Butane	3.74426E-05	1.21865	25.2935	1.92065	1.92065
i-Pentane	0.000481318	6.46507	75.7456	14.1707	14.1707
i-Butane	7.26046E-06	0.662508	17.6065	0.540374	0.540374
n-Pentane	0.000328345	2.92486	28.2682	7.76169	7.76169
Cyclohexane	0.0156938	1.31892	4.57505	12.9441	12.9441
n-Hexane	0.000932042	0.907759	4.17893	2.76353	2.76353
n-Heptane	0.0041422	5.159	11.0602	14.2448	14.2448
C8	0.00137094	1.03259	1.06254	2.1101	2.1101
Water	70.2884	0.0109238	0.0552127	212.348	212.348
N2	0	0.0421143	34.6117	1.33413E-05	1.33413E-05
CO2	8.76419E-06	0.107932	19.88	0.133629	0.133629
H2S	0	7.13166E-05	0.00620769	0.00137798	0.00137798
Triethylene Glycol	12343.9	8.2329E-18	0.00892852	0.00245219	0.00245219
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.667538	0.823544	2.83075	66.6517	66.6517
Toluene	2.92006	1.85098	2.57337	107.31	107.31
Ethylbenzene	0.652219	0.242614	0.150397	9.59046	9.59046
m-Xylene	1.21928	0.488827	0.296714	17.5096	17.5096
o-Xylene	0.700287	0.143783	0.0712693	6.07667	6.07667
Nonane	0.0010015	0.418006	0.202024	0.607869	0.607869
Decane	0.000516639	0.100761	0.0252943	0.112154	0.112154
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	24	25	27	28	29
Temperature	°F	122.838	109.89	122.959	89.7891	90.0021
Pressure	psig	1402.18	993	983	-2.32	75 *
Mole Fraction Vapor	%	0	0	100	0	0
Mole Fraction Light Liquid	%	100	100	0	20.7244	20.7245
Mole Fraction Heavy Liquid	%	0	0	0	79.2756	79.2755
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	144.148	55.1995	21.6315	32.1999	32.1999
Mass Density	lb/ft^3	68.6525	35.2421	4.16079	55.0339	55.0552
Molar Flow	lbmol/h	86.1643	0.556468	60.938	14.8632	14.8632
Mass Flow	lb/h	12420.4	30.7168	1318.18	478.593	478.593
Vapor Volumetric Flow	ft^3/h	180.917	0.871592	316.811	8.69632	8.69296
Liquid Volumetric Flow	gpm	22.5558	0.108666	39.4985	1.08422	1.0838
Std Vapor Volumetric Flow	MMSCFD	0.784751	0.0050681	0.555	0.135368	0.135368
Std Liquid Volumetric Flow	sgpm	22	0.106138	7.36853	1.07417	1.07417
Compressibility		0.475902	0.258226	0.829572	0.00122802	0.00889329
Specific Gravity		1.10075	0.565061	0.74688	0.882396	0.882737

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

Property	Units	24	25	27	28	29
API Gravity		-7.02456	104.201		26.7161	26.6467
Enthalpy	Btu/h	-2.86157E+07	-30328.2	-2.1339E+06	-1.48061E+06	-1.48044E+06
Mass Enthalpy	Btu/lb	-2303.93	-987.351	-1618.82	-3093.67	-3093.33
Mass Cp	Btu/(lb*°F)	0.555756	0.597054	0.628607	0.668741	0.66857
Ideal Gas CpCv Ratio		1.03567	1.09729	1.23125	1.20449	1.20445
Dynamic Viscosity	cP	13.5867	0.139448	0.013576	0.589126	0.590344
Kinematic Viscosity	cSt	12.3548	0.247018	0.203692	0.668278	0.669401
Thermal Conductivity	Btu/(h*ft*°F)	0.113053	0.0609124	0.023124	0.184716	0.184781
Surface Tension	lbf/ft	0.00293739	0.000387806 ?		0.00293767 ?	0.00287129 ?
Net Ideal Gas Heating Value	Btu/ft^3	3606.47	2812.37	1141.07	846.56	846.56
Net Liquid Heating Value	Btu/lb	9230.29	19184.9	19956.6	9408.35	9408.35
Gross Ideal Gas Heating Value	Btu/ft^3	3944.54	3038.82	1257.06	932.144	932.144
Gross Liquid Heating Value	Btu/lb	10120.3	20741.9	21991.6	10416.7	10416.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Connections

	30	32	37	38	
From Block	MIX-102	FAXR-100	SPLT-101	VSSL-101	
To Block	From BTEX/FG	VSSL-102	MIX-101	--	

Stream Composition

Mole Fraction	30 %	32 %	37 %	38 %	
Methane	0.0356323	0.67352	77.4538	77.5815	
Ethane	0.0818943	0.894952	10.4995	10.5119	
Propane	0.269631	1.26224	5.21404	5.21317	
n-Butane	0.24314	0.480134	0.714131	0.709865	
i-Pentane	1.45122	1.86422	1.72282	1.69158	
i-Butane	0.0727139	0.176133	0.4971	0.495354	
n-Pentane	0.787984	0.946122	0.642955	0.62702	
Cyclohexane	1.06744	1.05303	0.0892081	0.0795341	
n-Hexane	0.241198	0.229156	0.0795781	0.0730818	
n-Heptane	1.12488	0.940055	0.181134	0.138344	
C8	0.154674	0.119354	0.0152645	0.00759738	
Water	78.7443	75.525	0.00502933	0.00503642	
N2	0.000189521	0.00121249	2.02754	2.03101	
CO2	0.0210491	0.465381	0.741279	0.742378	
H2S	0.000271043	0.00183116	0.000298903	0.000299194	
Triethylene Glycol	0.000494775	0.000104229	9.75663E-05	2.8307E-06	
EG	0	0	0	0	
MeOH	0	0	0	0	
MDEA	0	0	0	0	
2,2,4-Trimethylpentane	0	0	0	0	
Benzene	5.72243	5.76018	0.0594698	0.0541556	
Toluene	7.82952	7.56616	0.0458325	0.0338666	
Ethylbenzene	0.608399	0.579669	0.00232471	0.00112072	
m-Xylene	1.11192	1.0586	0.00458636	0.00210764	
o-Xylene	0.384926	0.367496	0.00110162	0.000477268	
Nonane	0.0397064	0.030418	0.00258487	0.000610066	
Decane	0.00634404	0.00504008	0.000291733	2.69641E-05	
Undecane	0	0	0	0	
Dodecane	0	0	0	0	

Mass Fraction	30 %	32 %	37 %	38 %	
Methane	0.0175705	0.327788	57.4416	57.8047	
Ethane	0.0756908	0.816378	14.5949	14.6803	
Propane	0.365456	1.68853	10.6288	10.6766	
n-Butane	0.434378	0.846597	1.91882	1.91625	
i-Pentane	3.21835	4.08037	5.74622	5.66835	
i-Butane	0.129906	0.310567	1.33567	1.33719	
n-Pentane	1.7475	2.07085	2.14448	2.10109	
Cyclohexane	2.76132	2.68854	0.347073	0.310878	
n-Hexane	0.638892	0.599083	0.317022	0.2925	
n-Heptane	3.4646	2.8576	0.83905	0.64383	
C8	0.543076	0.413605	0.0806065	0.0403062	
Water	43.6044	41.2766	0.00418855	0.00421402	
N2	0.00016319	0.00103043	2.62571	2.64248	
CO2	0.028474	0.621337	1.50814	1.51742	
H2S	0.000283934	0.00189326	0.000470928	0.000473584	
Triethylene Glycol	0.00228386	0.000474846	0.000677337	1.97433E-05	
EG	0	0	0	0	
MeOH	0	0	0	0	
MDEA	0	0	0	0	
2,2,4-Trimethylpentane	0	0	0	0	
Benzene	13.7394	13.6498	0.214747	0.196469	

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Mass Fraction	30 %	32 %	37 %	38 %
Toluene	22.1741	21.1489	0.195221	0.144926
Ethylbenzene	1.98536	1.86695	0.0114094	0.00552601
m-Xylene	3.62847	3.40945	0.0225093	0.0103923
o-Xylene	1.25611	1.1836	0.00540664	0.0023533
Nonane	0.156533	0.118352	0.0153259	0.003634
Decane	0.027745	0.021755	0.00191888	0.000178184
Undecane	0	0	0	0
Dodecane	0	0	0	0

Mass Flow	30 lb/h	32 lb/h	37 lb/h	38 lb/h
Methane	0.0855662	1.69276	757.185	757.117
Ethane	0.368605	4.21593	192.388	192.28
Propane	1.77973	8.71989	140.107	139.84
n-Butane	2.11537	4.37198	25.2935	25.0988
i-Pentane	15.673	21.0718	75.7456	74.2433
i-Butane	0.632626	1.60383	17.6065	17.5143
n-Pentane	8.51009	10.6942	28.2682	27.5198
Cyclohexane	13.4473	13.8841	4.57505	4.07184
n-Hexane	3.11132	3.09377	4.17893	3.83113
n-Heptane	16.8722	14.7572	11.0602	8.4328
C8	2.64471	2.13593	1.06254	0.527925
Water	212.348	213.16	0.0552127	0.0551947
N2	0.000794714	0.00532132	34.6117	34.6109
CO2	0.138665	3.2087	19.88	19.875
H2S	0.00138273	0.00977715	0.00620769	0.00620294
Triethylene Glycol	0.0111221	0.0024522	0.00892852	0.000258595
EG	0	0	0	0
MeOH	0	0	0	0
MDEA	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0
Benzene	66.9091	70.4899	2.83075	2.57332
Toluene	107.985	109.217	2.57337	1.89822
Ethylbenzene	9.66848	9.6413	0.150397	0.0723789
m-Xylene	17.6702	17.607	0.296714	0.136117
o-Xylene	6.11712	6.11235	0.0712693	0.0308232
Nonane	0.762295	0.611194	0.202024	0.0475977
Decane	0.135115	0.112347	0.0252943	0.00233383
Undecane	0	0	0	0
Dodecane	0	0	0	0

Stream Properties

Property	Units	30	32	37	38
Temperature	°F	89.5181	90 *	122.959	59.9213
Pressure	psig	75	-2.12	983	125
Mole Fraction Vapor	%	0	5.08992	100	100
Mole Fraction Light Liquid	%	21.2826	19.6952	0	0
Mole Fraction Heavy Liquid	%	78.7174	75.2149	0	0
Phase Mole Fraction	%	100	100	100	100
Molecular Weight	lb/lbmol	32.5335	32.9631	21.6315	21.5311
Mass Density	lb/ft^3	54.7715	1.36693	4.16079	0.561468
Molar Flow	lbmol/h	14.9688	15.6666	60.938	60.8323
Mass Flow	lb/h	486.988	516.419	1318.18	1309.79
Vapor Volumetric Flow	ft^3/h	8.89127	377.793	316.811	2332.79
Liquid Volumetric Flow	gpm	1.10852	47.1015	39.4985	290.841
Std Vapor Volumetric Flow	MMSCFD	0.13633	0.142685	0.555 *	0.554038
Std Liquid Volumetric Flow	sgpm	1.09921	1.20707	7.36853	7.34349
Compressibility		0.00903991	0.0514109	0.829572	0.960726
Specific Gravity		0.878188		0.74688	0.743413
API Gravity		27.4679			

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland Dehy	

Stream Properties

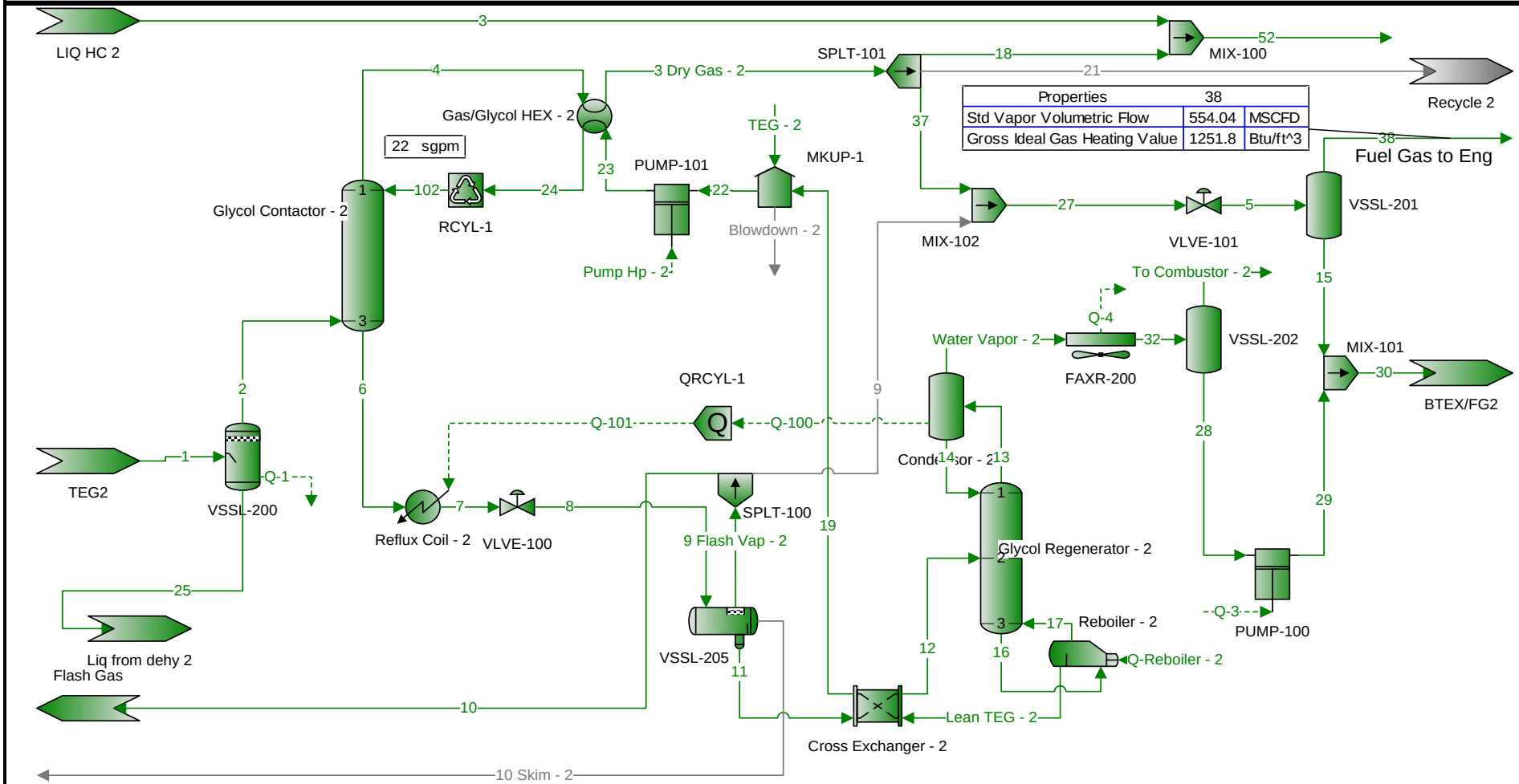
Property	Units	30	32	37	38	
Enthalpy	Btu/h	-1.4877E+06	-1.52374E+06	-2.1339E+06	-2.12664E+06	
Mass Enthalpy	Btu/lb	-3054.91	-2950.59	-1618.82	-1623.65	
Mass Cp	Btu/(lb*°F)	0.665877	0.647438	0.628607	0.48189	
Ideal Gas CpCv Ratio		1.20184	1.1983	1.23125	1.24875	
Dynamic Viscosity	cP	0.584626		0.013576	0.0105677	
Kinematic Viscosity	cSt	0.666351		0.203692	1.17499	
Thermal Conductivity	Btu/(h*ft*°F)	0.182079		0.023124	0.0170074	
Surface Tension	lbf/ft	0.00284756 ?				
Net Ideal Gas Heating Value	Btu/ft^3	868.831	914.038	1141.07	1136.1	
Net Liquid Heating Value	Btu/lb	9572.87	9983.53	19956.6	19963	
Gross Ideal Gas Heating Value	Btu/ft^3	955.954	1004.22	1257.06	1251.76	
Gross Liquid Heating Value	Btu/lb	10588.9	11021.5	21991.6	22001.8	

Remarks

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Outland dehy 2
Plant Schematic

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	



* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	Blowdown - 2	Lean TEG - 2	TEG - 2	To Combustor - 2	Water Vapor - 2
From Block	MKUP-1	Reboiler - 2	--	VSSL-202	Condensor - 2
To Block	--	Cross Exchanger - 2	MKUP-1	--	FAXR-200

Stream Composition

Mole Fraction	Blowdown - 2 %	Lean TEG - 2 %	TEG - 2 %	To Combustor - 2 %	Water Vapor - 2 %
Methane	7.65443E-09	7.65443E-09	0 *	12.993	0.67352
Ethane	9.78132E-08	9.78132E-08	0 *	16.3697	0.894952
Propane	5.08177E-07	5.08177E-07	0 *	20.3418	1.26224
n-Butane	7.47707E-07	7.47707E-07	0 *	5.24952	0.480134
i-Pentane	7.74302E-06	7.74302E-06	0 *	11.9055	1.86422
i-Butane	1.44987E-07	1.44987E-07	0 *	2.27738	0.176133
n-Pentane	5.28213E-06	5.28213E-06	0 *	5.05915	0.946122
Cyclohexane	0.000216438	0.000216438	0 *	1.39022	1.05303
n-Hexane	1.25534E-05	1.25534E-05	0 *	0.476999	0.229156
n-Heptane	4.79803E-05	4.79803E-05	0 *	0.636529	0.940055
C8	1.393E-05	1.393E-05	0 *	0.0281466	0.119354
Water	4.52839	4.52839	0.827516 *	5.60938	75.525
N2	1.16481E-12	1.16481E-12	0 *	0.0235843	0.00121249
CO2	2.31139E-07	2.31139E-07	0 *	8.69698	0.465381
H2S	3.01869E-08	3.01869E-08	0 *	0.030675	0.00183116
Triethylene Glycol	95.3965	95.3965	99.1725 *	9.48924E-11	0.000104229
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0.00991897	0.00991897	0 *	6.11609	5.76018
Toluene	0.036784	0.036784	0 *	2.5762	7.56616
Ethylbenzene	0.00713049	0.00713049	0 *	0.0596033	0.579669
m-Xylene	0.01333	0.01333	0 *	0.114236	1.0586
o-Xylene	0.00765601	0.00765601	0 *	0.0418278	0.367496
Nonane	9.06325E-06	9.06325E-06	0 *	0.00322675	0.030418
Decane	4.2145E-06	4.2145E-06	0 *	0.000168406	0.00504008
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Mass Fraction	Blowdown - 2 %	Lean TEG - 2 %	TEG - 2 %	To Combustor - 2 %	Water Vapor - 2 %
Methane	8.51877E-10	8.51877E-10	0 *	4.42719	0.327788
Ethane	2.04038E-08	2.04038E-08	0 *	10.4547	0.816378
Propane	1.55455E-07	1.55455E-07	0 *	19.0517	1.68853
n-Butane	3.01486E-07	3.01486E-07	0 *	6.48053	0.846597
i-Pentane	3.87555E-06	3.87555E-06	0 *	18.2443	4.08037
i-Butane	5.84608E-08	5.84608E-08	0 *	2.81143	0.310567
n-Pentane	2.64382E-06	2.64382E-06	0 *	7.75274	2.07085
Cyclohexane	0.000126366	0.000126366	0 *	2.48504	2.68854
n-Hexane	7.50476E-06	7.50476E-06	0 *	0.87307	0.599083
n-Heptane	3.33528E-05	3.33528E-05	0 *	1.3547	2.8576
C8	1.10387E-05	1.10387E-05	0 *	0.0682887	0.413605
Water	0.565951	0.565951	0.1 *	2.14637	41.2766
N2	2.26369E-13	2.26369E-13	0 *	0.0140326	0.00103043
CO2	7.05689E-08	7.05689E-08	0 *	8.12949	0.621337
H2S	7.13713E-09	7.13713E-09	0 *	0.0222047	0.00189326
Triethylene Glycol	99.3843	99.3843	99.9 *	3.02672E-10	0.000474846
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	Blowdown - 2 %	Lean TEG - 2 %	TEG - 2 %	To Combustor - 2 %	Water Vapor - 2 %
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0.00537498	0.00537498	0 *	10.147	13.6498
Toluene	0.0235122	0.0235122	0 *	5.04161	21.1489
Ethylbenzene	0.00525163	0.00525163	0 *	0.1344	1.86695
m-Xylene	0.0098176	0.0098176	0 *	0.257593	3.40945
o-Xylene	0.00563868	0.00563868	0 *	0.094318	1.1836
Nonane	8.06403E-06	8.06403E-06	0 *	0.00878998	0.118352
Decane	4.15995E-06	4.15995E-06	0 *	0.000508925	0.021755
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Mass Flow	Blowdown - 2 lb/h	Lean TEG - 2 lb/h	TEG - 2 lb/h	To Combustor - 2 lb/h	Water Vapor - 2 lb/h
Methane	0	1.05798E-07	0 *	1.67463	1.69276
Ethane	0	2.53402E-06	0 *	3.95459	4.21593
Propane	0	1.93065E-05	0 *	7.20652	8.71989
n-Butane	0	3.74426E-05	0 *	2.45133	4.37198
i-Pentane	0	0.000481318	0 *	6.90111	21.0718
i-Butane	0	7.26046E-06	0 *	1.06345	1.60383
n-Pentane	0	0.000328345	0 *	2.93256	10.6942
Cyclohexane	0	0.0156938	0 *	0.939995	13.8841
n-Hexane	0	0.000932042	0 *	0.330249	3.09377
n-Heptane	0	0.0041422	0 *	0.51243	14.7572
C8	0	0.00137094	0 *	0.025831	2.13593
Water	0	70.2874	0.00102722 *	0.811888	213.16
N2	0	2.81135E-11	0 *	0.00530798	0.00532132
CO2	0	8.76419E-06	0 *	3.07507	3.2087
H2S	0	8.86385E-07	0 *	0.00839916	0.00977715
Triethylene Glycol	0	12342.9	1.0262 *	1.14489E-10	0.0024522
EG	0	0	0 *	0	0
MeOH	0	0	0 *	0	0
MDEA	0	0	0 *	0	0
2,2,4-Trimethylpentane	0	0	0 *	0	0
Benzene	0	0.667538	0 *	3.83823	70.4899
Toluene	0	2.92006	0 *	1.90704	109.217
Ethylbenzene	0	0.652219	0 *	0.0508384	9.6413
m-Xylene	0	1.21928	0 *	0.0974374	17.607
o-Xylene	0	0.700287	0 *	0.0356769	6.11235
Nonane	0	0.0010015	0 *	0.00332491	0.611194
Decane	0	0.000516639	0 *	0.000192507	0.112347
Undecane	0	0	0 *	0	0
Dodecane	0	0	0 *	0	0

Stream Properties

Property	Units	Blowdown - 2	Lean TEG - 2	TEG - 2	To Combustor - 2	Water Vapor - 2
Temperature	°F		445	100 *	89.7891	194.412
Pressure	psig	1.88	2.38	12.18 *	-2.32	-1.12
Mole Fraction Vapor	%		0	0	100	100
Mole Fraction Light Liquid	%		100	100	0	0
Mole Fraction Heavy Liquid	%		0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	144.147	144.147	149.079	47.0816	32.9631
Mass Density	lb/ft^3		56.2335	69.4615	0.100128	0.0643721
Molar Flow	lbmol/h	0	86.1574	0.00689046	0.803416	15.6666
Mass Flow	lb/h	0	12419.4	1.02722	37.8261	516.419
Vapor Volumetric Flow	ft^3/h	0	220.853	0.0147884	377.778	8022.39

* User Specified Values
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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	Blowdown - 2	Lean TEG - 2	TEG - 2	To Combustor - 2	Water Vapor - 2
Liquid Volumetric Flow	gpm	0	27.535	0.00184375	47.0996	1000.19
Std Vapor Volumetric Flow	MMSCFD	0	0.784689	6.27556E-05	0.0073172	0.142685
Std Liquid Volumetric Flow	sgpm	0	21.9982	0.00181814	0.132898	1.20707
Compressibility			0.00450861	0.00960377	0.986906	0.990385
Specific Gravity			0.901629	1.11372	1.62561	1.13813
API Gravity			-6.83331	-7.0854		
Enthalpy	Btu/h	0	-2.61871E+07	-2362.71	-43132	-1.23663E+06
Mass Enthalpy	Btu/lb	-2222.04	-2108.57	-2300.09	-1140.27	-2394.63
Mass Cp	Btu/(lb*°F)		0.670459	0.542648	0.375331	0.401364
Ideal Gas CpCv Ratio			1.02746	1.03561	1.12748	1.1778
Dynamic Viscosity	cP		0.567347	21.1048	0.009104	0.0117727
Kinematic Viscosity	cSt		0.629844	18.9677	5.67618	11.4171
Thermal Conductivity	Btu/(h*ft*°F)		0.102946 ?	0.112147	0.0108437	0.012401
Surface Tension	lbf/ft		0.00184098 ?	0.00300898		
Net Ideal Gas Heating Value	Btu/ft^3	3606.46	3606.46	3745.75	2162.37	914.038
Net Liquid Heating Value	Btu/lb	9230.28	9230.28	9274.43	17261	9983.53
Gross Ideal Gas Heating Value	Btu/ft^3	3944.52	3944.52	4095.08	2337.54	1004.22
Gross Liquid Heating Value	Btu/lb	10120.3	10120.3	10163.6	18673.2	11021.5

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	1	2	3	3 Dry Gas - 2	4
From Block	TEG2	VSSL-200	LIQ HC 2	Gas/Glycol HEX - 2	Glycol Contactor - 2
To Block	VSSL-200	Glycol Contactor - 2	MIX-100	SPLT-101	Gas/Glycol HEX - 2

Stream Composition

Mole Fraction	1 %	2 %	3 %	3 Dry Gas - 2 %	4 %
Methane	77.2779	77.2817	0	77.4538	77.4538
Ethane	10.4847	10.4847	0.486753	10.4995	10.4995
Propane	5.21102	5.21056	1.50894	5.21404	5.21404
n-Butane	0.714823	0.714601	1.04546	0.714131	0.714131
i-Pentane	1.72635	1.7253	7.60916	1.72282	1.72282
i-Butane	0.497017	0.496905	0.453778	0.4971	0.4971
n-Pentane	0.645012	0.644532	4.01163	0.642955	0.642955
Cyclohexane	0.0915576	0.0913603	3.69175	0.0892081	0.0892081
n-Hexane	0.0801275	0.0799962	2.19783	0.0795781	0.0795781
n-Heptane	0.183564	0.182907	23.2536	0.181134	0.181134
C8	0.0156075	0.015491	10.5942	0.0152645	0.0152645
Water	0.159162	0.159165	0.0309623	0.00502933	0.00502933
N2	2.02226	2.02238	0	2.02754	2.02754
CO2	0.742402	0.742423	0.0082546	0.741279	0.741279
H2S	0.000303585	0.00030358	5.94164E-05	0.000298903	0.000298903
Triethylene Glycol	1.0399E-20	9.68642E-21	1.32188E-08	9.75663E-05	9.75663E-05
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0714338	0.0713018	3.36773	0.0594698	0.0594698
Toluene	0.0615646	0.0613076	11.6761	0.0458325	0.0458325
Ethylbenzene	0.00353907	0.00350959	3.1904	0.00232471	0.00232471
m-Xylene	0.0068085	0.00674908	7.01132	0.00458636	0.00458636
o-Xylene	0.00187096	0.00185347	2.27683	0.00110162	0.00110162
Nonane	0.00268542	0.00264321	10.3382	0.00258487	0.00258487
Decane	0.000310709	0.000301517	7.24709	0.000291733	0.000291733
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	1 %	2 %	3 %	3 Dry Gas - 2 %	4 %
Methane	57.2298	57.239	0	57.4416	57.4416
Ethane	14.5537	14.5553	0.145363	14.5949	14.5949
Propane	10.6075	10.6078	0.660838	10.6288	10.6288
n-Butane	1.91795	1.91757	0.603499	1.91882	1.91882
i-Pentane	5.7498	5.74698	5.45246	5.74622	5.74622
i-Butane	1.33355	1.3334	0.261946	1.33567	1.33567
n-Pentane	2.14829	2.14693	2.8746	2.14448	2.14448
Cyclohexane	0.355708	0.354981	3.08576	0.347073	0.347073
n-Hexane	0.318758	0.318271	1.88106	0.317022	0.317022
n-Heptane	0.849101	0.846159	23.1416	0.83905	0.83905
C8	0.0823007	0.0816956	12.019	0.0806065	0.0806065
Water	0.132366	0.132384	0.00553989	0.00418855	0.00418855
N2	2.61516	2.61561	0	2.62571	2.62571
CO2	1.50828	1.50849	0.00360803	1.50814	1.50814
H2S	0.000477625	0.000477671	2.01115E-05	0.000470928	0.000470928
Triethylene Glycol	7.20908E-20	6.71583E-20	1.97156E-08	0.000677337	0.000677337
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	1 %	2 %	3 %	3 Dry Gas - 2 %	4 %
Benzene	0.257583	0.257136	2.61265	0.214747	0.214747
Toluene	0.261859	0.260796	10.6848	0.195221	0.195221
Ethylbenzene	0.0173447	0.0172021	3.36398	0.0114094	0.0114094
m-Xylene	0.0333679	0.0330804	7.39279	0.0225093	0.0225093
o-Xylene	0.00916941	0.00908473	2.40071	0.00540664	0.00540664
Nonane	0.0158995	0.0156513	13.1689	0.0153259	0.0153259
Decane	0.00204079	0.00198064	10.2409	0.00191888	0.00191888
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	1 lb/h	2 lb/h	3 lb/h	3 Dry Gas - 2 lb/h	4 lb/h
Methane	95283.8	95281.7	0	95239.2	95239.2
Ethane	24230.9	24229.2	10.8654	24198.6	24198.6
Propane	17660.8	17658	49.3951	17622.7	17622.7
n-Butane	3193.25	3192.04	45.1092	3181.43	3181.43
i-Pentane	9573.04	9566.57	407.551	9527.32	9527.32
i-Butane	2220.28	2219.61	19.5795	2214.56	2214.56
n-Pentane	3576.76	3573.84	214.865	3555.59	3555.59
Cyclohexane	592.231	590.912	230.649	575.452	575.452
n-Hexane	530.711	529.803	140.602	525.628	525.628
n-Heptane	1413.7	1408.54	1729.74	1391.16	1391.16
C8	137.025	135.993	898.377	133.647	133.647
Water	220.38	220.369	0.414086	6.94469	6.94469
N2	4354.07	4354.02	0	4353.48	4353.48
CO2	2511.18	2511.08	0.269686	2500.52	2500.52
H2S	0.795215	0.795144	0.00150326	0.780807	0.780807
Triethylene Glycol	1.20026E-16	1.11794E-16	1.47366E-06	1.12304	1.12304
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	428.858	428.035	195.286	356.054	356.054
Toluene	435.978	434.127	798.644	323.68	323.68
Ethylbenzene	28.8778	28.6352	251.445	18.917	18.917
m-Xylene	55.5553	55.0665	552.582	37.3209	37.3209
o-Xylene	15.2665	15.1227	179.444	8.9643	8.9643
Nonane	26.4716	26.0536	984.321	25.4107	25.4107
Decane	3.39779	3.29703	765.471	3.18154	3.18154
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	1	2	3	3 Dry Gas - 2	4
Temperature	°F	110	109.89	88.3897	122.959	112.838
Pressure	psig	995	993	1200	983	988
Mole Fraction Vapor	%	100	100	0	100	100
Mole Fraction Light Liquid	%	0	0	100	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6623	21.6598	100.687	21.6315	21.6315
Mass Density	lb/ft^3	4.41278	4.40329	45.8164	4.16079	4.32486
Molar Flow	lbmol/h	7685.87	7685.32	74.2363	7664.82	7664.82
Mass Flow	lb/h	166493	166463	7474.61	165802	165802
Vapor Volumetric Flow	ft^3/h	37729.8	37804.1	163.143	39848.7	38336.9
Liquid Volumetric Flow	gpm	4703.98	4713.24	20.3399	4968.14	4779.67
Std Vapor Volumetric Flow	MMSCFD	70	69.9949	0.676115	69.8083	69.8083
Std Liquid Volumetric Flow	sgpm	928.811	928.705	20.3767	926.818	926.818
Compressibility		0.810766	0.810969	0.453866	0.829572	0.81628
Specific Gravity		0.747942	0.747858	0.734605	0.74688	0.74688

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	1	2	3	3 Dry Gas - 2	4
API Gravity				57.7204		
Enthalpy	Btu/h	-2.71358E+08	-2.71329E+08	-5.15475E+06	-2.68403E+08	-2.69496E+08
Mass Enthalpy	Btu/lb	-1629.84	-1629.97	-689.635	-1618.82	-1625.41
Mass Cp	Btu/(lb*°F)	0.639499	0.63916	0.485777	0.628607	0.63594
Ideal Gas CpCv Ratio		1.23445	1.2345	1.05697	1.23125	1.23388
Dynamic Viscosity	cP	0.0135371	0.0135287	0.488696	0.013576	0.0135201
Kinematic Viscosity	cSt	0.19151	0.191804	0.665882	0.203692	0.195158
Thermal Conductivity	Btu/(h*ft*°F)	0.0228259	0.0228121	0.0717566	0.023124	0.022867
Surface Tension	lbf/ft			0.00103275 ?		
Net Ideal Gas Heating Value	Btu/ft^3	1140.97	1140.85	4996.72	1141.07	1141.07
Net Liquid Heating Value	Btu/lb	19924.8	19924.9	18668.2	19956.6	19956.6
Gross Ideal Gas Heating Value	Btu/ft^3	1256.92	1256.79	5351.96	1257.06	1257.06
Gross Liquid Heating Value	Btu/lb	21956.4	21956.7	20007.2	21991.6	21991.6

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	5	6	7	8	9
From Block	VLVE-101	Glycol Contactor - 2	Reflux Coil - 2	VLVE-100	SPLT-100
To Block	VSSL-201	Reflux Coil - 2	VLVE-100	VSSL-205	MIX-102

Stream Composition

Mole Fraction	5 %	6 %	7 %	8 %	9 %
Methane	77.4538	2.48084	2.48084	2.48084	52.5089
Ethane	10.4995	0.951493	0.951493	0.951493	18.0777
Propane	5.21404	0.751203	0.751203	0.751203	12.4731
n-Butane	0.714131	0.171098	0.171098	0.171098	2.21717
i-Pentane	1.72282	0.510037	0.510037	0.510037	5.20729
i-Butane	0.4971	0.0815132	0.0815132	0.0815132	1.22663
n-Pentane	0.642955	0.237164	0.237164	0.237164	2.16466
Cyclohexane	0.0892081	0.172389	0.172389	0.172389	0.386784
n-Hexane	0.0795781	0.0454307	0.0454307	0.0454307	0.259294
n-Heptane	0.181134	0.162651	0.162651	0.162651	0.540918
C8	0.0152645	0.0192636	0.0192636	0.0192636	0.0379525
Water	0.00502933	14.7664	14.7664	14.7664	0.340467
N2	2.02754	0.0182891	0.0182891	0.0182891	0.399254
CO2	0.741279	0.224931	0.224931	0.224931	3.45168
H2S	0.000298903	0.000394396	0.000394396	0.000394396	0.00276464
Triethylene Glycol	9.75663E-05	77.0573	77.0573	77.0573	0.000177932
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0594698	0.871959	0.871959	0.871959	0.394401
Toluene	0.0458325	1.15312	1.15312	1.15312	0.266608
Ethylbenzene	0.00232471	0.0914446	0.0914446	0.0914446	0.0119716
m-Xylene	0.00458636	0.167217	0.167217	0.167217	0.0212121
o-Xylene	0.00110162	0.060414	0.060414	0.060414	0.0055545
Nonane	0.00258487	0.0047068	0.0047068	0.0047068	0.00510743
Decane	0.000291733	0.000764274	0.000764274	0.000764274	0.000453738
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Methane	57.4416	0.324508	0.324508	0.324508	27.9767
Ethane	14.5949	0.233282	0.233282	0.233282	18.0532
Propane	10.6288	0.27009	0.27009	0.27009	18.2667
n-Butane	1.91882	0.0810855	0.0810855	0.0810855	4.2799
i-Pentane	5.74622	0.300045	0.300045	0.300045	12.4777
i-Butane	1.33567	0.03863	0.03863	0.03863	2.36782
n-Pentane	2.14448	0.139519	0.139519	0.139519	5.18693
Cyclohexane	0.347073	0.118296	0.118296	0.118296	1.0811
n-Hexane	0.317022	0.0319219	0.0319219	0.0319219	0.74211
n-Heptane	0.83905	0.132889	0.132889	0.132889	1.80011
C8	0.0806065	0.0179419	0.0179419	0.0179419	0.143982
Water	0.00418855	2.16906	2.16906	2.16906	0.203708
N2	2.62571	0.00417747	0.00417747	0.00417747	0.371456
CO2	1.50814	0.0807144	0.0807144	0.0807144	5.04509
H2S	0.000470928	0.000109597	0.000109597	0.000109597	0.00312926
Triethylene Glycol	0.000677337	94.3541	94.3541	94.3541	0.000887438
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.214747	0.555352	0.555352	0.555352	1.02317

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	5 %	6 %	7 %	8 %	9 %
Toluene	0.195221	0.866307	0.866307	0.866307	0.815843
Ethylbenzene	0.0114094	0.0791579	0.0791579	0.0791579	0.0422109
m-Xylene	0.0225093	0.144749	0.144749	0.144749	0.0747924
o-Xylene	0.00540664	0.0522967	0.0522967	0.0522967	0.0195848
Nonane	0.0153259	0.00492216	0.00492216	0.00492216	0.0217555
Decane	0.00191888	0.000886652	0.000886652	0.000886652	0.00214411
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	5 lb/h	6 lb/h	7 lb/h	8 lb/h	9 lb/h
Methane	757.185	42.4503	42.4503	42.4503	0
Ethane	192.388	30.5166	30.5166	30.5166	0
Propane	140.107	35.3317	35.3317	35.3317	0
n-Butane	25.2935	10.6072	10.6072	10.6072	0
i-Pentane	75.7456	39.2502	39.2502	39.2502	0
i-Butane	17.6065	5.05337	5.05337	5.05337	0
n-Pentane	28.2682	18.2511	18.2511	18.2511	0
Cyclohexane	4.57505	15.4748	15.4748	15.4748	0
n-Hexane	4.17893	4.17584	4.17584	4.17584	0
n-Heptane	11.0602	17.3838	17.3838	17.3838	0
C8	1.06254	2.34706	2.34706	2.34706	0
Water	0.0552127	283.744	283.744	283.744	0
N2	34.6117	0.546474	0.546474	0.546474	0
CO2	19.88	10.5586	10.5586	10.5586	0
H2S	0.00620769	0.0143369	0.0143369	0.0143369	0
Triethylene Glycol	0.00892852	12342.9	12342.9	12342.9	0
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	2.83075	72.6481	72.6481	72.6481	0
Toluene	2.57337	113.326	113.326	113.326	0
Ethylbenzene	0.150397	10.355	10.355	10.355	0
m-Xylene	0.296714	18.9353	18.9353	18.9353	0
o-Xylene	0.0712693	6.84117	6.84117	6.84117	0
Nonane	0.202024	0.64389	0.64389	0.64389	0
Decane	0.0252943	0.115987	0.115987	0.115987	0
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	5	6	7	8	9
Temperature	°F	59.9213	111.914	116.558	120.101	
Pressure	psig	125 *	993	988	125 *	40
Mole Fraction Vapor	%	99.8266	0	0.00879034	3.59031	
Mole Fraction Light Liquid	%	0.173421	100	99.9912	96.4097	
Mole Fraction Heavy Liquid	%	0	0	0	0	
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6315	122.644	122.644	122.644	30.1098
Mass Density	lb/ft^3	0.565019	66.7297	66.5607	36.7478	
Molar Flow	lbmol/h	60.938	106.662	106.662	106.662	0
Mass Flow	lb/h	1318.18	13081.5	13081.5	13081.5	0
Vapor Volumetric Flow	ft^3/h	2332.99	196.036	196.534	355.979	0
Liquid Volumetric Flow	gpm	290.866	24.4409	24.503	44.3818	0
Std Vapor Volumetric Flow	MMSCFD	0.555	0.97144	0.97144	0.97144	0
Std Liquid Volumetric Flow	sgpm	7.36853	23.8872	23.8872	23.8872	0
Compressibility		0.959141	0.301934	0.298771	0.0749337	
Specific Gravity			1.06992			
API Gravity			-2.54193			

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	5	6	7	8	9
Enthalpy	Btu/h	-2.1339E+06	-3.04493E+07	-3.04153E+07	-3.04153E+07	0
Mass Enthalpy	Btu/lb	-1618.82	-2327.67	-2325.07	-2325.07	-1397.35
Mass Cp	Btu/(lb*°F)	0.482021	0.562372	0.564565	0.565618	
Ideal Gas CpCv Ratio		1.24774	1.04288	1.0426	1.04239	
Dynamic Viscosity	cP		9.53978			
Kinematic Viscosity	cSt		8.92479			
Thermal Conductivity	Btu/(h*ft*°F)		0.111291			
Surface Tension	lbf/ft		0.00276042			
Net Ideal Gas Heating Value	Btu/ft^3	1141.07	3116.38	3116.38	3116.38	1520.59
Net Liquid Heating Value	Btu/lb	19956.6	9369.42	9369.42	9369.42	19053.7
Gross Ideal Gas Heating Value	Btu/ft^3	1257.06	3409.13	3409.13	3409.13	1662.52
Gross Liquid Heating Value	Btu/lb	21991.6	10275.3	10275.3	10275.3	20842.9

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	9 Flash Vap - 2	10	10 Skim - 2	11	12
From Block	VSSL-205	SPLT-100	VSSL-205	VSSL-205	Cross Exchanger - 2
To Block	SPLT-100	Flash Gas	--	Cross Exchanger - 2	Glycol Regenerator - 2

Stream Composition

Mole Fraction	9 Flash Vap - 2 %	10 %	10 Skim - 2 %	11 %	12 %
Methane	52.5089	52.5089		0.103627	0.103627
Ethane	18.0777	18.0777		0.137697	0.137697
Propane	12.4731	12.4731		0.194208	0.194208
n-Butane	2.21717	2.21717		0.0738738	0.0738738
i-Pentane	5.20729	5.20729		0.286835	0.286835
i-Butane	1.22663	1.22663		0.0270999	0.0270999
n-Pentane	2.16466	2.16466		0.145574	0.145574
Cyclohexane	0.386784	0.386784		0.162202	0.162202
n-Hexane	0.259294	0.259294		0.0352684	0.0352684
n-Heptane	0.540918	0.540918		0.144677	0.144677
C8	0.0379525	0.0379525		0.0183756	0.0183756
Water	0.340467	0.340467		15.4519	15.4519
N2	0.399254	0.399254		0.000186554	0.000186554
CO2	3.45168	3.45168		0.0716035	0.0716035
H2S	0.00276464	0.00276464		0.000281767	0.000281767
Triethylene Glycol	0.000177932	0.000177932		80.7188	80.7188
EG	0	0		0	0
MeOH	0	0		0	0
MDEA	0	0		0	0
2,2,4-Trimethylpentane	0	0		0	0
Benzene	0.394401	0.394401		0.894651	0.894651
Toluene	0.266608	0.266608		1.19525	1.19525
Ethylbenzene	0.0119716	0.0119716		0.0952209	0.0952209
m-Xylene	0.0212121	0.0212121		0.174154	0.174154
o-Xylene	0.0055545	0.0055545		0.0630208	0.0630208
Nonane	0.00510743	0.00510743		0.00468776	0.00468776
Decane	0.000453738	0.000453738		0.00077903	0.00077903
Undecane	0	0		0	0
Dodecane	0	0		0	0

Mass Fraction	9 Flash Vap - 2 %	10 %	10 Skim - 2 %	11 %	12 %
Methane	27.9767	27.9767		0.0130859	0.0130859
Ethane	18.0532	18.0532		0.0325912	0.0325912
Propane	18.2667	18.2667		0.0674093	0.0674093
n-Butane	4.2799	4.2799		0.0337979	0.0337979
i-Pentane	12.4777	12.4777		0.162899	0.162899
i-Butane	2.36782	2.36782		0.0123984	0.0123984
n-Pentane	5.18693	5.18693		0.0826744	0.0826744
Cyclohexane	1.0811	1.0811		0.107452	0.107452
n-Hexane	0.74211	0.74211		0.0239236	0.0239236
n-Heptane	1.80011	1.80011		0.114112	0.114112
C8	0.143982	0.143982		0.0165224	0.0165224
Water	0.203708	0.203708		2.19119	2.19119
N2	0.371456	0.371456		4.11365E-05	4.11365E-05
CO2	5.04509	5.04509		0.0248049	0.0248049
H2S	0.00312926	0.00312926		7.55891E-05	7.55891E-05
Triethylene Glycol	0.000887438	0.000887438		95.4167	95.4167

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	9 Flash Vap - 2 %	10 %	10 Skim - 2 %	11 %	12 %
EG	0	0		0	0
MeOH	0	0		0	0
MDEA	0	0		0	0
2,2,4-Trimethylpentane	0	0		0	0
Benzene	1.02317	1.02317		0.550083	0.550083
Toluene	0.815843	0.815843		0.866875	0.866875
Ethylbenzene	0.0422109	0.0422109		0.079574	0.079574
m-Xylene	0.0747924	0.0747924		0.145537	0.145537
o-Xylene	0.0195848	0.0195848		0.0526651	0.0526651
Nonane	0.0217555	0.0217555		0.00473258	0.00473258
Decane	0.00214411	0.00214411		0.00087249	0.00087249
Undecane	0	0		0	0
Dodecane	0	0		0	0

Mass Flow	9 Flash Vap - 2 lb/h	10 lb/h	10 Skim - 2 lb/h	11 lb/h	12 lb/h
Methane	40.7576	40.7576	0	1.69276	1.69276
Ethane	26.3007	26.3007	0	4.21593	4.21593
Propane	26.6118	26.6118	0	8.71991	8.71991
n-Butane	6.23514	6.23514	0	4.37202	4.37202
i-Pentane	18.178	18.178	0	21.0723	21.0723
i-Butane	3.44954	3.44954	0	1.60383	1.60383
n-Pentane	7.55653	7.55653	0	10.6946	10.6946
Cyclohexane	1.57499	1.57499	0	13.8998	13.8998
n-Hexane	1.08114	1.08114	0	3.09471	3.09471
n-Heptane	2.62248	2.62248	0	14.7613	14.7613
C8	0.209759	0.209759	0	2.1373	2.1373
Water	0.296771	0.296771	0	283.447	283.447
N2	0.541152	0.541152	0	0.00532132	0.00532132
CO2	7.3499	7.3499	0	3.20871	3.20871
H2S	0.00455884	0.00455884	0	0.00977803	0.00977803
Triethylene Glycol	0.00129286	0.00129286	0	12342.9	12342.9
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	1.49059	1.49059	0	71.1575	71.1575
Toluene	1.18855	1.18855	0	112.137	112.137
Ethylbenzene	0.0614946	0.0614946	0	10.2935	10.2935
m-Xylene	0.108961	0.108961	0	18.8263	18.8263
o-Xylene	0.0285319	0.0285319	0	6.81264	6.81264
Nonane	0.0316943	0.0316943	0	0.612195	0.612195
Decane	0.00312362	0.00312362	0	0.112863	0.112863
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	9 Flash Vap - 2	10	10 Skim - 2	11	12
Temperature	°F	119.954	119.954		119.954	300 *
Pressure	psig	40 *	40	40	40	39.5
Mole Fraction Vapor	%	100	100		0	0.524023
Mole Fraction Light Liquid	%	0	0		100	99.476
Mole Fraction Heavy Liquid	%	0	0		0	0
Phase Mole Fraction	%	100	100		100	100
Molecular Weight	lb/lbmol	30.1098	30.1098		127.041	127.041
Mass Density	lb/ft^3	0.270546	0.270546		67.6421	44.7652
Molar Flow	lbmol/h	4.83843	4.83843	0	101.824	101.824

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	9 Flash Vap - 2	10	10 Skim - 2	11	12
Mass Flow	lb/h	145.684	145.684	0	12935.8	12935.8
Vapor Volumetric Flow	ft^3/h	538.483	538.483	0	191.239	288.97
Liquid Volumetric Flow	gpm	67.1355	67.1355	0	23.8427	36.0274
Std Vapor Volumetric Flow	MMSCFD	0.0440666	0.0440666	0	0.927374	0.927374
Std Liquid Volumetric Flow	sgpm	0.681904	0.681904	0	23.2053	23.2053
Compressibility		0.978616	0.978616		0.0165147	0.018866
Specific Gravity		1.03961	1.03961		1.08455	
API Gravity					-4.72221	
Enthalpy	Btu/h	-203571	-203571		-3.02117E+07	-2.88025E+07
Mass Enthalpy	Btu/lb	-1397.35	-1397.35		-2335.51	-2226.58
Mass Cp	Btu/(lb*°F)	0.452381	0.452381		0.566233	0.637238
Ideal Gas CpCv Ratio		1.17377	1.17377		1.04093	1.03416
Dynamic Viscosity	cP	0.0106593	0.0106593		11.0987	
Kinematic Viscosity	cSt	2.45963	2.45963		10.2431	
Thermal Conductivity	Btu/(h*ft*°F)	0.0163677	0.0163677		0.113332	
Surface Tension	lbf/ft				0.00287617	
Net Ideal Gas Heating Value	Btu/ft^3	1520.59	1520.59		3192.21	3192.21
Net Liquid Heating Value	Btu/lb	19053.7	19053.7		9260.35	9260.35
Gross Ideal Gas Heating Value	Btu/ft^3	1662.52	1662.52		3492.13	3492.13
Gross Liquid Heating Value	Btu/lb	20842.9	20842.9		10156.2	10156.2

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	13	14	15	16	17
From Block	Glycol Regenerator - 2	Condensor - 2	VSSL-201	Glycol Regenerator - 2	Reboiler - 2
To Block	Condensor - 2	Glycol Regenerator - 2	MIX-101	Reboiler - 2	Glycol Regenerator - 2

Stream Composition

Mole Fraction	13 %	14 %	15 %	16 %	17 %
Methane	0.612292	1.07076E-05	3.97786	1.69799E-06	8.85255E-06
Ethane	0.813594	1.47216E-05	3.37573	1.16406E-05	6.04971E-05
Propane	1.14749	1.51535E-05	5.71596	4.18528E-05	0.000216849
n-Butane	0.436486	5.64657E-06	3.17009	4.22138E-05	0.000217724
i-Pentane	1.69475	1.14016E-05	19.7031	0.00032436	0.00166448
i-Butane	0.160121	9.63829E-07	1.50192	9.58647E-06	4.95487E-05
n-Pentane	0.860112	5.12461E-06	9.81566	0.000206457	0.00105795
Cyclohexane	0.957303	2.6454E-05	5.65789	0.00302696	0.0149228
n-Hexane	0.208324	7.39613E-07	3.81905	0.00023299	0.00116601
n-Heptane	0.854596	1.68627E-06	24.812	0.00103021	0.00518764
C8	0.108504	1.36836E-07	4.4287	0.000245537	0.00122584
Water	77.7346	99.8312	0.000948472	19.0729	80.6343
N2	0.00110227	1.00277E-08	0.0263938	5.06363E-10	2.64467E-09
CO2	0.423082	9.0266E-05	0.108276	1.88876E-05	9.78532E-05
H2S	0.0016648	1.1669E-06	0.000131764	9.51509E-07	4.85111E-06
Triethylene Glycol	0.014688	0.160526	0.0546303	80.4378	17.1235
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	5.23685	0.0034754	3.11853	0.0875762	0.41627
Toluene	6.87867	0.00383651	6.93379	0.251007	1.15773
Ethylbenzene	0.52699	0.000201612	0.695381	0.0379391	0.16834
m-Xylene	0.962394	0.000352221	1.43142	0.0714438	0.317417
o-Xylene	0.334105	0.000196236	0.3605	0.03595	0.155708
Nonane	0.0276527	1.19835E-08	1.13935	0.000123121	0.000605881
Decane	0.00458189	8.7099E-10	0.152701	4.37025E-05	0.00021084
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	13 %	14 %	15 %	16 %	17 %
Methane	0.310608	9.42112E-06	0.803292	2.18461E-07	3.35437E-06
Ethane	0.773589	2.42781E-05	1.27773	2.80713E-06	4.2966E-05
Propane	1.60003	3.66478E-05	3.17277	1.48008E-05	0.000225852
n-Butane	0.802224	1.79997E-05	2.31935	1.96772E-05	0.000298896
i-Pentane	3.8665	4.51165E-05	17.8944	0.000187682	0.00283647
i-Butane	0.294289	3.07243E-06	1.09886	4.46856E-06	6.80214E-05
n-Pentane	1.96231	2.02782E-05	8.9146	0.000119461	0.00180288
Cyclohexane	2.54762	0.000122105	5.99392	0.00204304	0.0296638
n-Hexane	0.567682	3.49565E-06	4.14278	0.000161022	0.00237333
n-Heptane	2.70782	9.26708E-06	31.2961	0.000827885	0.0122777
C8	0.391926	8.57265E-07	6.36802	0.000224935	0.00330735
Water	44.2832	98.6387	0.000215089	2.75565	34.3109
N2	0.000976419	1.54066E-08	0.00930725	1.13761E-10	1.74988E-09
CO2	0.588782	0.000217877	0.0599835	6.66637E-06	0.000101717
H2S	0.00179414	2.18115E-06	5.65277E-05	2.6007E-07	3.90502E-06
Triethylene Glycol	0.0697491	1.32214	0.103271	96.8765	60.7375
EG	0	0	0	0	0
MeOH	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	13 %	14 %	15 %	16 %	17 %
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	12.9351	0.0148889	3.06634	0.0548617	0.768003
Toluene	20.0414	0.0193873	8.04202	0.185479	2.51954
Ethylbenzene	1.76916	0.00117392	0.929304	0.0323024	0.422125
m-Xylene	3.23085	0.00205086	1.91294	0.0608292	0.795946
o-Xylene	1.12163	0.00114261	0.48177	0.0306088	0.390447
Nonane	0.112149	8.42943E-08	1.83943	0.00012664	0.00183541
Decane	0.0206147	6.79676E-09	0.273492	4.9868E-05	0.000708556
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	13 lb/h	14 lb/h	15 lb/h	16 lb/h	17 lb/h
Methane	1.69276	2.69114E-06	0.0674388	2.90141E-05	2.89083E-05
Ethane	4.21593	6.93503E-06	0.10727	0.00037282	0.000370286
Propane	8.7199	1.04684E-05	0.266364	0.00196572	0.00194642
n-Butane	4.37199	5.14162E-06	0.194717	0.00261336	0.00257592
i-Pentane	21.0718	1.28875E-05	1.50229	0.0249263	0.024445
i-Butane	1.60383	8.77639E-07	0.0922526	0.000593476	0.000586216
n-Pentane	10.6943	5.79247E-06	0.748408	0.0158658	0.0155374
Cyclohexane	13.8841	3.48793E-05	0.503208	0.271339	0.255645
n-Hexane	3.09377	9.98531E-07	0.347799	0.0213856	0.0204536
n-Heptane	14.7572	2.64714E-06	2.62741	0.109953	0.105811
C8	2.13593	2.44878E-07	0.534615	0.029874	0.0285031
Water	241.336	28.1761	1.80574E-05	365.983	295.695
N2	0.00532132	4.4009E-09	0.000781372	1.51088E-08	1.50807E-08
CO2	3.20876	6.22364E-05	0.0050358	0.000885371	0.000876607
H2S	0.00977777	6.23046E-07	4.74567E-06	3.45403E-05	3.36539E-05
Triethylene Glycol	0.380121	0.377669	0.00866993	12866.3	523.442
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	70.4942	0.004253	0.257429	7.28627	6.61873
Toluene	109.222	0.00553798	0.675152	24.6337	21.7137
Ethylbenzene	9.64163	0.000335329	0.0780179	4.29014	3.63792
m-Xylene	17.6076	0.000585828	0.160597	8.07883	6.85955
o-Xylene	6.11268	0.000326387	0.0404461	4.0652	3.36492
Nonane	0.611194	2.40786E-08	0.154426	0.0168193	0.0158178
Decane	0.112347	1.94149E-09	0.0229605	0.00662305	0.00610641
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	13	14	15	16	17
Temperature	°F	222.578	194.412	59.9213	325.105	445 *
Pressure	psig	1.88	-1.12	125	2.38	2.38
Mole Fraction Vapor	%	100	0	0	0	100
Mole Fraction Light Liquid	%	0	100	100	100	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	31.624	18.2331	79.4414	124.691	42.3378
Mass Density	lb/ft^3	0.0723403	60.3778	42.5494	61.0301	0.0752093
Molar Flow	lbmol/h	17.2332	1.56666	0.105679	106.513	20.3556
Mass Flow	lb/h	544.984	28.565	8.39531	13281.2	861.811
Vapor Volumetric Flow	ft^3/h	7533.61	0.473104	0.197307	217.617	11458.8
Liquid Volumetric Flow	gpm	939.255	0.0589844	0.0245994	27.1314	1428.63
Std Vapor Volumetric Flow	MMSCFD	0.156954	0.0142685	0.000962487	0.970079	0.185391
Std Liquid Volumetric Flow	sgpm	1.26409	0.0570201	0.0250357	23.6134	1.61525

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	13	14	15	16	17
Compressibility		0.989712	0.000584059	0.0467748	0.00414253	0.99012
Specific Gravity		1.09189	0.968078	0.682223	0.978537	1.46182
API Gravity			9.70229	75.9231	-6.01741	
Enthalpy	Btu/h	-1.3924E+06	-189821	-7260.5	-3.02346E+07	-2.63461E+06
Mass Enthalpy	Btu/lb	-2554.95	-6645.24	-864.828	-2276.5	-3057.06
Mass Cp	Btu/(lb*°F)	0.413277	0.988034	0.502515	0.651095	0.498155
Ideal Gas CpCv Ratio		1.1805	1.31905	1.0741	1.03416	1.10452
Dynamic Viscosity	cP	0.012373	0.320124	0.323148	1.20048	0.0156525
Kinematic Viscosity	cSt	10.6776	0.330994	0.474118	1.22797	12.9925
Thermal Conductivity	Btu/(h*ft*°F)	0.0133589	0.382397	0.0700805	0.11263 ?	0.0169937
Surface Tension	lbf/ft		0.00411089 ?	0.00123452 ?	0.00231171 ?	
Net Ideal Gas Heating Value	Btu/ft^3	831.524	6.39159	4001.07	3059.42	744.013
Net Liquid Heating Value	Btu/lb	9412.25	-915.808	18951.7	9029.66	6138.6
Gross Ideal Gas Heating Value	Btu/ft^3	918.123	57.1965	4304.69	3353.04	849.49
Gross Liquid Heating Value	Btu/lb	10451.2	141.592	20402.2	9923.24	7083.97

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	18	19	21	22	23
From Block	SPLT-101	Cross Exchanger - 2	SPLT-101	MKUP-1	PUMP-101
To Block	MIX-100	MKUP-1	Recycle 2	PUMP-101	Gas/Glycol HEX - 2

Stream Composition

Mole Fraction	18 %	19 %	21 %	22 %	23 %
Methane	77.4538	7.65443E-09	77.4538	0	0
Ethane	10.4995	9.78132E-08	10.4995	9.78053E-08	9.78053E-08
Propane	5.21404	5.08177E-07	5.21404	5.08136E-07	5.08136E-07
n-Butane	0.714131	7.47707E-07	0.714131	7.47647E-07	7.47647E-07
i-Pentane	1.72282	7.74302E-06	1.72282	7.7424E-06	7.7424E-06
i-Butane	0.4971	1.44987E-07	0.4971	1.44976E-07	1.44976E-07
n-Pentane	0.642955	5.28213E-06	0.642955	5.2817E-06	5.2817E-06
Cyclohexane	0.0892081	0.000216438	0.0892081	0.00021642	0.00021642
n-Hexane	0.0795781	1.25534E-05	0.0795781	1.25524E-05	1.25524E-05
n-Heptane	0.181134	4.79803E-05	0.181134	4.79764E-05	4.79764E-05
C8	0.0152645	1.393E-05	0.0152645	1.39288E-05	1.39288E-05
Water	0.00502933	4.52839	0.00502933	4.5281	4.5281
N2	2.02754	1.16481E-12	2.02754	0	0
CO2	0.741279	2.31139E-07	0.741279	2.3112E-07	2.3112E-07
H2S	0.000298903	3.01869E-08	0.000298903	0	0
Triethylene Glycol	9.75663E-05	95.3965	9.75663E-05	95.3968	95.3968
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.0594698	0.00991897	0.0594698	0.00991818	0.00991818
Toluene	0.0458325	0.036784	0.0458325	0.036781	0.036781
Ethylbenzene	0.00232471	0.00713049	0.00232471	0.00712992	0.00712992
m-Xylene	0.00458636	0.01333	0.00458636	0.0133289	0.0133289
o-Xylene	0.00110162	0.00765601	0.00110162	0.0076554	0.0076554
Nonane	0.00258487	9.06325E-06	0.00258487	9.06253E-06	9.06253E-06
Decane	0.000291733	4.2145E-06	0.000291733	4.21416E-06	4.21416E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	18 %	19 %	21 %	22 %	23 %
Methane	57.4416	8.51877E-10	57.4416	0	0
Ethane	14.5949	2.04038E-08	14.5949	2.04021E-08	2.04021E-08
Propane	10.6288	1.55455E-07	10.6288	1.55442E-07	1.55442E-07
n-Butane	1.91882	3.01486E-07	1.91882	3.01461E-07	3.01461E-07
i-Pentane	5.74622	3.87555E-06	5.74622	3.87522E-06	3.87522E-06
i-Butane	1.33567	5.84608E-08	1.33567	5.8456E-08	5.8456E-08
n-Pentane	2.14448	2.64382E-06	2.14448	2.6436E-06	2.6436E-06
Cyclohexane	0.347073	0.000126366	0.347073	0.000126355	0.000126355
n-Hexane	0.317022	7.50476E-06	0.317022	7.50414E-06	7.50414E-06
n-Heptane	0.83905	3.33528E-05	0.83905	3.335E-05	3.335E-05
C8	0.0806065	1.10387E-05	0.0806065	1.10378E-05	1.10378E-05
Water	0.00418855	0.565951	0.00418855	0.565912	0.565912
N2	2.62571	2.26369E-13	2.62571	0	0
CO2	1.50814	7.05689E-08	1.50814	7.0563E-08	7.0563E-08
H2S	0.000470928	7.13713E-09	0.000470928	0	0
Triethylene Glycol	0.000677337	99.3843	0.000677337	99.3843	99.3843
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	18 %	19 %	21 %	22 %	23 %
Benzene	0.214747	0.00537498	0.214747	0.00537454	0.00537454
Toluene	0.195221	0.0235122	0.195221	0.0235102	0.0235102
Ethylbenzene	0.0114094	0.00525163	0.0114094	0.0052512	0.0052512
m-Xylene	0.0225093	0.0098176	0.0225093	0.00981679	0.00981679
o-Xylene	0.00540664	0.00563868	0.00540664	0.00563821	0.00563821
Nonane	0.0153259	8.06403E-06	0.0153259	8.06336E-06	8.06336E-06
Decane	0.00191888	4.15995E-06	0.00191888	4.15961E-06	4.15961E-06
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	18 lb/h	19 lb/h	21 lb/h	22 lb/h	23 lb/h
Methane	94482	1.05798E-07	0	0	0
Ethane	24006.3	2.53402E-06	0	2.53402E-06	2.53402E-06
Propane	17482.6	1.93065E-05	0	1.93065E-05	1.93065E-05
n-Butane	3156.14	3.74426E-05	0	3.74426E-05	3.74426E-05
i-Pentane	9451.58	0.000481318	0	0.000481318	0.000481318
i-Butane	2196.95	7.26046E-06	0	7.26046E-06	7.26046E-06
n-Pentane	3527.32	0.000328345	0	0.000328345	0.000328345
Cyclohexane	570.877	0.0156938	0	0.0156938	0.0156938
n-Hexane	521.449	0.000932042	0	0.000932042	0.000932042
n-Heptane	1380.1	0.0041422	0	0.0041422	0.0041422
C8	132.584	0.00137094	0	0.00137094	0.00137094
Water	6.88948	70.2874	0	70.2884	70.2884
N2	4318.87	2.81135E-11	0	0	0
CO2	2480.64	8.76419E-06	0	8.76419E-06	8.76419E-06
H2S	0.774599	8.86385E-07	0	0	0
Triethylene Glycol	1.11411	12342.9	0	12343.9	12343.9
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	353.223	0.667538	0	0.667538	0.667538
Toluene	321.107	2.92006	0	2.92006	2.92006
Ethylbenzene	18.7666	0.652219	0	0.652219	0.652219
m-Xylene	37.0241	1.21928	0	1.21928	1.21928
o-Xylene	8.89303	0.700287	0	0.700287	0.700287
Nonane	25.2086	0.0010015	0	0.0010015	0.0010015
Decane	3.15624	0.000516639	0	0.000516639	0.000516639
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	18	19	21	22	23
Temperature	°F	122.959	268.779		268.766	272.745
Pressure	psig	983	1.88	983	1.88	1407.18 *
Mole Fraction Vapor	%	100	0		0	0
Mole Fraction Light Liquid	%	0	100		100	100
Mole Fraction Heavy Liquid	%	0	0		0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	21.6315	144.147	21.6315	144.148	144.148
Mass Density	lb/ft^3	4.16079	63.1325		63.133	63.1252
Molar Flow	lbmol/h	7603.88	86.1574	0	86.1643	86.1643
Mass Flow	lb/h	164484	12419.4	0 *	12420.4	12420.4
Vapor Volumetric Flow	ft^3/h	39531.8	196.719	0	196.733	196.758
Liquid Volumetric Flow	gpm	4928.65	24.526	0	24.5278	24.5308
Std Vapor Volumetric Flow	MMSCFD	69.2533	0.784689	0	0.784751	0.784751
Std Liquid Volumetric Flow	sgpm	919.449	21.9982	0	22 *	22
Compressibility		0.829572	0.00484138		0.00484144	0.413091
Specific Gravity		0.74688	1.01225		1.01225	1.01213

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	18	19	21	22	23
API Gravity			-6.83324		-6.83326	-7.02524
Enthalpy	Btu/h	-2.66269E+08	-2.75963E+07	0	-2.75986E+07	-2.75234E+07
Mass Enthalpy	Btu/lb	-1618.82	-2222.04	-1618.82	-2222.04	-2215.99
Mass Cp	Btu/(lb*°F)	0.628607	0.615628		0.615623	0.614257
Ideal Gas CpCv Ratio		1.23125	1.0306		1.0306	1.0305
Dynamic Viscosity	cP	0.013576	1.99637		1.99661	2.02602
Kinematic Viscosity	cSt	0.203692	1.97409		1.97431	2.00364
Thermal Conductivity	Btu/(h*ft*°F)	0.023124	0.111834 ?		0.111834 ?	0.111723 ?
Surface Tension	lbf/ft		0.00246099 ?		0.00246103 ?	0.00244878 ?
Net Ideal Gas Heating Value	Btu/ft^3	1141.07	3606.46	1141.07	3606.47	3606.47
Net Liquid Heating Value	Btu/lb	19956.6	9230.28	19956.6	9230.29	9230.29
Gross Ideal Gas Heating Value	Btu/ft^3	1257.06	3944.52	1257.06	3944.54	3944.54
Gross Liquid Heating Value	Btu/lb	21991.6	10120.3	21991.6	10120.3	10120.3

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	24	25	27	28	29
From Block	Gas/Glycol HEX - 2	VSSL-200	MIX-102	VSSL-202	PUMP-100
To Block	RCYL-1	Liq from dehy 2	VLVE-101	PUMP-100	MIX-101

Stream Composition

Mole Fraction	24 %	25 %	27 %	28 %	29 %
Methane	0	24.5182	77.4538	0.00760242	0.00760242
Ethane	9.78053E-08	10.6524	10.4995	0.0584746	0.0584746
Propane	5.08136E-07	11.5197	5.21404	0.230907	0.230907
n-Butane	7.47647E-07	3.76787	0.714131	0.222329	0.222329
i-Pentane	7.7424E-06	16.1029	1.72282	1.32145	1.32145
i-Butane	1.44976E-07	2.04837	0.4971	0.062552	0.062552
n-Pentane	5.2817E-06	7.2851	0.642955	0.723796	0.723796
Cyclohexane	0.00021642	2.81627	0.0892081	1.0348	1.0348
n-Hexane	1.25524E-05	1.89298	0.0795781	0.215759	0.215759
n-Heptane	4.79764E-05	9.25229	0.181134	0.956462	0.956462
C8	1.39288E-05	1.62447	0.0152645	0.124285	0.124285
Water	4.5281	0.108966	0.00502933	79.3042	79.3042
N2	0	0.270162	2.02754	3.20422E-06	3.20422E-06
CO2	2.3112E-07	0.440721	0.741279	0.0204289	0.0204289
H2S	0	0.000376045	0.000298903	0.000272033	0.000272033
Triethylene Glycol	95.3968	9.85192E-18	9.75663E-05	0.000109863	0.000109863
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.00991818	1.89465	0.0594698	5.74095	5.74095
Toluene	0.036781	3.61011	0.0458325	7.83589	7.83589
Ethylbenzene	0.00712992	0.410672	0.00232471	0.607781	0.607781
m-Xylene	0.0133289	0.827435	0.00458636	1.10965	1.10965
o-Xylene	0.0076554	0.243381	0.00110162	0.3851	0.3851
Nonane	9.06253E-06	0.58569	0.00258487	0.0318878	0.0318878
Decane	4.21416E-06	0.127263	0.000291733	0.00530342	0.00530342
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	24 %	25 %	27 %	28 %	29 %
Methane	0	7.12565	57.4416	0.00378763	0.00378763
Ethane	2.04021E-08	5.80271	14.5949	0.0546049	0.0546049
Propane	1.55442E-07	9.20241	10.6288	0.316211	0.316211
n-Butane	3.01461E-07	3.96736	1.91882	0.401313	0.401313
i-Pentane	3.87522E-06	21.0474	5.74622	2.9609	2.9609
i-Butane	5.8456E-08	2.15683	1.33567	0.112909	0.112909
n-Pentane	2.6436E-06	9.52202	2.14448	1.62177	1.62177
Cyclohexane	0.000126355	4.2938	0.347073	2.70462	2.70462
n-Hexane	7.50414E-06	2.95526	0.317022	0.577428	0.577428
n-Heptane	3.335E-05	16.7954	0.83905	2.97638	2.97638
C8	1.10378E-05	3.36164	0.0806065	0.440897	0.440897
Water	0.565912	0.0355628	0.00418855	44.3693	44.3693
N2	0	0.137105	2.62571	2.78761E-06	2.78761E-06
CO2	7.0563E-08	0.351378	1.50814	0.0279213	0.0279213
H2S	0	0.000232175	0.000470928	0.000287924	0.000287924
Triethylene Glycol	99.3843	2.68026E-17	0.000677337	0.000512376	0.000512376
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	24 %	25 %	27 %	28 %	29 %
Benzene	0.00537454	2.68109	0.214747	13.9266	13.9266
Toluene	0.0235102	6.02596	0.195221	22.422	22.422
Ethylbenzene	0.0052512	0.789844	0.0114094	2.00389	2.00389
m-Xylene	0.00981679	1.5914	0.0225093	3.65856	3.65856
o-Xylene	0.00563821	0.468093	0.00540664	1.2697	1.2697
Nonane	8.06336E-06	1.36084	0.0153259	0.127012	0.127012
Decane	4.15961E-06	0.328033	0.00191888	0.0234342	0.0234342
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	24 lb/h	25 lb/h	27 lb/h	28 lb/h	29 lb/h
Methane	0	2.18877	757.185	0.0181273	0.0181273
Ethane	2.53402E-06	1.7824	192.388	0.261335	0.261335
Propane	1.93065E-05	2.82668	140.107	1.51336	1.51336
n-Butane	3.74426E-05	1.21865	25.2935	1.92065	1.92065
i-Pentane	0.000481318	6.46507	75.7456	14.1707	14.1707
i-Butane	7.26046E-06	0.662508	17.6065	0.540374	0.540374
n-Pentane	0.000328345	2.92486	28.2682	7.76169	7.76169
Cyclohexane	0.0156938	1.31892	4.57505	12.9441	12.9441
n-Hexane	0.000932042	0.907759	4.17893	2.76353	2.76353
n-Heptane	0.0041422	5.159	11.0602	14.2448	14.2448
C8	0.00137094	1.03259	1.06254	2.1101	2.1101
Water	70.2884	0.0109238	0.0552127	212.348	212.348
N2	0	0.0421143	34.6117	1.33413E-05	1.33413E-05
CO2	8.76419E-06	0.107932	19.88	0.133629	0.133629
H2S	0	7.13166E-05	0.00620769	0.00137798	0.00137798
Triethylene Glycol	12343.9	8.2329E-18	0.00892852	0.00245219	0.00245219
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	0.667538	0.823544	2.83075	66.6517	66.6517
Toluene	2.92006	1.85098	2.57337	107.31	107.31
Ethylbenzene	0.652219	0.242614	0.150397	9.59046	9.59046
m-Xylene	1.21928	0.488827	0.296714	17.5096	17.5096
o-Xylene	0.700287	0.143783	0.0712693	6.07667	6.07667
Nonane	0.0010015	0.418006	0.202024	0.607869	0.607869
Decane	0.000516639	0.100761	0.0252943	0.112154	0.112154
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	24	25	27	28	29
Temperature	°F	122.838	109.89	122.959	89.7891	90.0021
Pressure	psig	1402.18	993	983	-2.32	75 *
Mole Fraction Vapor	%	0	0	100	0	0
Mole Fraction Light Liquid	%	100	100	0	20.7244	20.7245
Mole Fraction Heavy Liquid	%	0	0	0	79.2756	79.2755
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	144.148	55.1995	21.6315	32.1999	32.1999
Mass Density	lb/ft^3	68.6525	35.2421	4.16079	55.0339	55.0552
Molar Flow	lbmol/h	86.1643	0.556468	60.938	14.8632	14.8632
Mass Flow	lb/h	12420.4	30.7168	1318.18	478.593	478.593
Vapor Volumetric Flow	ft^3/h	180.917	0.871592	316.811	8.69632	8.69296
Liquid Volumetric Flow	gpm	22.5558	0.108666	39.4985	1.08422	1.0838
Std Vapor Volumetric Flow	MMSCFD	0.784751	0.0050681	0.555	0.135368	0.135368
Std Liquid Volumetric Flow	sgpm	22	0.106138	7.36853	1.07417	1.07417
Compressibility		0.475902	0.258226	0.829572	0.00122802	0.00889329
Specific Gravity		1.10075	0.565061	0.74688	0.882396	0.882737

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	24	25	27	28	29
API Gravity		-7.02456	104.201		26.7161	26.6467
Enthalpy	Btu/h	-2.86157E+07	-30328.2	-2.1339E+06	-1.48061E+06	-1.48044E+06
Mass Enthalpy	Btu/lb	-2303.93	-987.351	-1618.82	-3093.67	-3093.33
Mass Cp	Btu/(lb*°F)	0.555756	0.597054	0.628607	0.668741	0.66857
Ideal Gas CpCv Ratio		1.03567	1.09729	1.23125	1.20449	1.20445
Dynamic Viscosity	cP	13.5867	0.139448	0.013576	0.589126	0.590344
Kinematic Viscosity	cSt	12.3548	0.247018	0.203692	0.668278	0.669401
Thermal Conductivity	Btu/(h*ft*°F)	0.113053	0.0609124	0.023124	0.184716	0.184781
Surface Tension	lbf/ft	0.00293739	0.000387806 ?		0.00293767 ?	0.00287129 ?
Net Ideal Gas Heating Value	Btu/ft^3	3606.47	2812.37	1141.07	846.56	846.56
Net Liquid Heating Value	Btu/lb	9230.29	19184.9	19956.6	9408.35	9408.35
Gross Ideal Gas Heating Value	Btu/ft^3	3944.54	3038.82	1257.06	932.144	932.144
Gross Liquid Heating Value	Btu/lb	10120.3	20741.9	21991.6	10416.7	10416.7

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	30	32	37	38	52
From Block	MIX-101	FAXR-200	SPLT-101	VSSL-201	MIX-100
To Block	BTEX/FG2	VSSL-202	MIX-102	--	--

Stream Composition

Mole Fraction	30 %	32 %	37 %	38 %	52 %
Methane	0.0356323	0.67352	77.4538	77.5815	76.7049
Ethane	0.0818943	0.894952	10.4995	10.5119	10.4027
Propane	0.269631	1.26224	5.21404	5.21317	5.17822
n-Butane	0.24314	0.480134	0.714131	0.709865	0.717335
i-Pentane	1.45122	1.86422	1.72282	1.69158	1.77973
i-Butane	0.0727139	0.176133	0.4971	0.495354	0.496681
n-Pentane	0.787984	0.946122	0.642955	0.62702	0.675525
Cyclohexane	1.06744	1.05303	0.0892081	0.0795341	0.124039
n-Hexane	0.241198	0.229156	0.0795781	0.0730818	0.100058
n-Heptane	1.12488	0.940055	0.181134	0.138344	0.40421
C8	0.154674	0.119354	0.0152645	0.00759738	0.117547
Water	78.7443	75.525	0.00502933	0.00503642	0.00528006
N2	0.000189521	0.00121249	2.02754	2.03101	2.00793
CO2	0.0210491	0.465381	0.741279	0.742378	0.734191
H2S	0.000271043	0.00183116	0.000298903	0.000299194	0.000296588
Triethylene Glycol	0.000494775	0.000104229	9.75663E-05	2.8307E-06	9.66231E-05
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	5.72243	5.76018	0.0594698	0.0541556	0.091456
Toluene	7.82952	7.56616	0.0458325	0.0338666	0.15828
Ethylbenzene	0.608399	0.579669	0.00232471	0.00112072	0.0331488
m-Xylene	1.11192	1.0586	0.00458636	0.00210764	0.0723313
o-Xylene	0.384926	0.367496	0.00110162	0.000477268	0.0231046
Nonane	0.0397064	0.030418	0.00258487	0.000610066	0.102516
Decane	0.00634404	0.00504008	0.000291733	2.69641E-05	0.0703578
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Fraction	30 %	32 %	37 %	38 %	52 %
Methane	0.0175705	0.327788	57.4416	57.8047	54.9448
Ethane	0.0756908	0.816378	14.5949	14.6803	13.9668
Propane	0.365456	1.68853	10.6288	10.6766	10.1955
n-Butane	0.434378	0.846597	1.91882	1.91625	1.86164
i-Pentane	3.21835	4.08037	5.74622	5.66835	5.73345
i-Butane	0.129906	0.310567	1.33567	1.33719	1.289
n-Pentane	1.7475	2.07085	2.14448	2.10109	2.17622
Cyclohexane	2.76132	2.68854	0.347073	0.310878	0.466117
n-Hexane	0.638892	0.599083	0.317022	0.2925	0.385007
n-Heptane	3.4646	2.8576	0.83905	0.64383	1.80849
C8	0.543076	0.413605	0.0806065	0.0403062	0.599542
Water	43.6044	41.2766	0.00418855	0.00421402	0.00424729
N2	0.00016319	0.00103043	2.62571	2.64248	2.51158
CO2	0.028474	0.621337	1.50814	1.51742	1.44274
H2S	0.000283934	0.00189326	0.000470928	0.000473584	0.000451332
Triethylene Glycol	0.00228386	0.000474846	0.000677337	1.97433E-05	0.000647895
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	13.7394	13.6498	0.214747	0.196469	0.318978
Toluene	22.1741	21.1489	0.195221	0.144926	0.651177

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	30 %	32 %	37 %	38 %	52 %
Ethylbenzene	1.98536	1.86695	0.0114094	0.00552601	0.157138
m-Xylene	3.62847	3.40945	0.0225093	0.0103923	0.342878
o-Xylene	1.25611	1.1836	0.00540664	0.0023533	0.109525
Nonane	0.156533	0.118352	0.0153259	0.003634	0.587079
Decane	0.027745	0.021755	0.00191888	0.000178184	0.446985
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Mass Flow	30 lb/h	32 lb/h	37 lb/h	38 lb/h	52 lb/h
Methane	0.0855662	1.69276	757.185	757.117	94482
Ethane	0.368605	4.21593	192.388	192.28	24017.1
Propane	1.77973	8.71989	140.107	139.84	17532
n-Butane	2.11537	4.37198	25.2935	25.0988	3201.24
i-Pentane	15.673	21.0718	75.7456	74.2433	9859.13
i-Butane	0.632626	1.60383	17.6065	17.5143	2216.53
n-Pentane	8.51009	10.6942	28.2682	27.5198	3742.19
Cyclohexane	13.4473	13.8841	4.57505	4.07184	801.526
n-Hexane	3.11132	3.09377	4.17893	3.83113	662.052
n-Heptane	16.8722	14.7572	11.0602	8.4328	3109.84
C8	2.64471	2.13593	1.06254	0.527925	1030.96
Water	212.348	213.16	0.0552127	0.0551947	7.30356
N2	0.000794714	0.00532132	34.6117	34.6109	4318.87
CO2	0.138665	3.2087	19.88	19.875	2480.91
H2S	0.00138273	0.00977715	0.00620769	0.00620294	0.776102
Triethylene Glycol	0.0111221	0.0024522	0.00892852	0.000258595	1.11411
EG	0	0	0	0	0
MeOH	0	0	0	0	0
MDEA	0	0	0	0	0
2,2,4-Trimethylpentane	0	0	0	0	0
Benzene	66.9091	70.4899	2.83075	2.57332	548.509
Toluene	107.985	109.217	2.57337	1.89822	1119.75
Ethylbenzene	9.66848	9.6413	0.150397	0.0723789	270.211
m-Xylene	17.6702	17.607	0.296714	0.136117	589.606
o-Xylene	6.11712	6.11235	0.0712693	0.0308232	188.337
Nonane	0.762295	0.611194	0.202024	0.0475977	1009.53
Decane	0.135115	0.112347	0.0252943	0.00233383	768.627
Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0

Stream Properties

Property	Units	30	32	37	38	52
Temperature	°F	89.5181	90 *	122.959	59.9213	123.986
Pressure	psig	75	-2.12	983	125	983
Mole Fraction Vapor	%	0	5.08992	100	100	97.8502
Mole Fraction Light Liquid	%	21.2826	19.6952	0	0	2.14977
Mole Fraction Heavy Liquid	%	78.7174	75.2149	0	0	0
Phase Mole Fraction	%	100	100	100	100	100
Molecular Weight	lb/lbmol	32.5335	32.9631	21.6315	21.5311	22.3959
Mass Density	lb/ft^3	54.7715	1.36693	4.16079	0.561468	4.34321
Molar Flow	lbmol/h	14.9688	15.6666	60.938	60.8323	7678.12
Mass Flow	lb/h	486.988	516.419	1318.18	1309.79	171958
Vapor Volumetric Flow	ft^3/h	8.89127	377.793	316.811	2332.79	39592.4
Liquid Volumetric Flow	gpm	1.10852	47.1015	39.4985	290.841	4936.19
Std Vapor Volumetric Flow	MMSCFD	0.13633	0.142685	0.555 *	0.554038	69.9294
Std Liquid Volumetric Flow	sgpm	1.09921	1.20707	7.36853	7.34349	939.826
Compressibility		0.00903991	0.0514109	0.829572	0.960726	0.821361
Specific Gravity		0.878188		0.74688	0.743413	
API Gravity		27.4679				
Enthalpy	Btu/h	-1.4877E+06	-1.52374E+06	-2.1339E+06	-2.12664E+06	-2.71424E+08

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	30	32	37	38	52
Mass Enthalpy	Btu/lb	-3054.91	-2950.59	-1618.82	-1623.65	-1578.43
Mass Cp	Btu/(lb*°F)	0.665877	0.647438	0.628607	0.48189	0.623756
Ideal Gas CpCv Ratio		1.20184	1.1983	1.23125	1.24875	1.22385
Dynamic Viscosity	cP	0.584626		0.013576	0.0105677	
Kinematic Viscosity	cSt	0.666351		0.203692	1.17499	
Thermal Conductivity	Btu/(h*ft*°F)	0.182079		0.023124	0.0170074	
Surface Tension	lbf/ft	0.00284756 ?				
Net Ideal Gas Heating Value	Btu/ft^3	868.831	914.038	1141.07	1136.1	1178.35
Net Liquid Heating Value	Btu/lb	9572.87	9983.53	19956.6	19963	19900.6
Gross Ideal Gas Heating Value	Btu/ft^3	955.954	1004.22	1257.06	1251.76	1296.65
Gross Liquid Heating Value	Btu/lb	10588.9	11021.5	21991.6	22001.8	21905.4

Remarks

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Connections

	102				
From Block	RCYL-1				
To Block	Glycol Contactor - 2				

Stream Composition

Mole Fraction	102 %				
Methane	0				
Ethane	9.79242E-08				
Propane	5.09298E-07				
n-Butane	7.51969E-07				
i-Pentane	7.80056E-06				
i-Butane	1.45522E-07				
n-Pentane	5.35915E-06				
Cyclohexane	0.000216021				
n-Hexane	1.25839E-05				
n-Heptane	4.7443E-05				
C8	1.35969E-05				
Water	4.53003				
N2	0				
CO2	2.31785E-07				
H2S	0				
Triethylene Glycol	95.3961				
EG	0				
MeOH	0				
MDEA	0				
2,2,4-Trimethylpentane	0				
Benzene	0.00990922				
Toluene	0.0362557				
Ethylbenzene	0.0069619				
m-Xylene	0.0130047				
o-Xylene	0.00746382				
Nonane	8.75819E-06				
Decane	4.06361E-06				
Undecane	0				
Dodecane	0				

Mass Fraction	102 %				
Methane	0				
Ethane	2.04272E-08				
Propane	1.55799E-07				
n-Butane	3.03208E-07				
i-Pentane	3.90439E-06				
i-Butane	5.86773E-08				
n-Pentane	2.6824E-06				
Cyclohexane	0.000126124				
n-Hexane	7.52312E-06				
n-Heptane	3.29797E-05				
C8	1.07749E-05				
Water	0.566162				
N2	0				
CO2	7.07669E-08				
H2S	0				
Triethylene Glycol	99.3849				
EG	0				
MeOH	0				
MDEA	0				
2,2,4-Trimethylpentane	0				
Benzene	0.00536976				

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Mass Fraction	102 %				
Toluene	0.0231747				
Ethylbenzene	0.00512752				
m-Xylene	0.00957809				
o-Xylene	0.00549719				
Nonane	7.79269E-06				
Decane	4.01106E-06				
Undecane	0				
Dodecane	0				

Mass Flow	102 lb/h				
Methane	0				
Ethane	2.53714E-06				
Propane	1.93509E-05				
n-Butane	3.76596E-05				
i-Pentane	0.000484941				
i-Butane	7.28796E-06				
n-Pentane	0.000333165				
Cyclohexane	0.0156651				
n-Hexane	0.000934402				
n-Heptane	0.00409621				
C8	0.00133829				
Water	70.3196				
N2	0				
CO2	8.78954E-06				
H2S	0				
Triethylene Glycol	12344				
EG	0				
MeOH	0				
MDEA	0				
2,2,4-Trimethylpentane	0				
Benzene	0.666946				
Toluene	2.8784				
Ethylbenzene	0.636859				
m-Xylene	1.18964				
o-Xylene	0.682773				
Nonane	0.000967884				
Decane	0.00049819				
Undecane	0				
Dodecane	0				

Stream Properties

Property	Units	102				
Temperature	°F	122.829				
Pressure	psig	1402.18				
Mole Fraction Vapor	%	0				
Mole Fraction Light Liquid	%	100				
Mole Fraction Heavy Liquid	%	0				
Phase Mole Fraction	%	100				
Molecular Weight	lb/lbmol	144.146				
Mass Density	lb/ft^3	68.653				
Molar Flow	lbmol/h	86.1656				
Mass Flow	lb/h	12420.4				
Vapor Volumetric Flow	ft^3/h	180.916				
Liquid Volumetric Flow	gpm	22.5557				
Std Vapor Volumetric Flow	MMSCFD	0.784764				
Std Liquid Volumetric Flow	sgpm	22				
Compressibility		0.475899				
Specific Gravity		1.10076				
API Gravity		-7.02489				

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Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	Delek	Job: 253201.0050
Location:	Outland Compressor Station	
Flowsheet:	Outland dehy 2	

Stream Properties

Property	Units	102				
Enthalpy	Btu/h	-2.86162E+07				
Mass Enthalpy	Btu/lb	-2303.97				
Mass Cp	Btu/(lb*°F)	0.555755				
Ideal Gas CpCv Ratio		1.03567				
Dynamic Viscosity	cP	13.5897				
Kinematic Viscosity	cSt	12.3574				
Thermal Conductivity	Btu/(h*ft*°F)	0.113054				
Surface Tension	lbf/ft	0.00293744				
Net Ideal Gas Heating Value	Btu/ft^3	3606.39				
Net Liquid Heating Value	Btu/lb	9230.19				
Gross Ideal Gas Heating Value	Btu/ft^3	3944.45				
Gross Liquid Heating Value	Btu/lb	10120.2				

Remarks

ProMax 6.0.24302.0
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Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☑ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☑ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☑ If an EPA document or other material is referenced, include a complete copy.
- ☑ Fuel specifications sheet.
- ☑ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

The following items were used to calculate the emissions for this application:

- Compressor manufacturer and catalyst specification sheets (for 2100 through 3800)
- Generator manufacturer specification sheets (for GEN-1)
- Vapor combustion unit manufacturer specification sheet (for ECD-1 & ECD-2)
- ProMax report
- Inlet gas analysis (September 19, 2024)
- Current version of AP-42 located online at: EPA AP-42 Compilation Air Emissions Factors
- Specific sections used in this application:
- Section 1.3 – Natural Gas external Combustion Sources-Natural Gas (Table 1.4-1 through 1.4-3)
- Section 3.2 – Natural Gas-fired Reciprocating Engines (Table 3.2-2)
- Section 3.3 – Gasoline and Diesel Industrial Engines (Tables 3.3-1 & 2)
- Section 5.2 – Transportation And Marketing Of Petroleum Liquids
- Section 13.2-2 - Unpaved Haul Roads
- EPA Protocol for Equipment Leak Emissions Estimates, 1995 Table 2-4
- 40 CFR 98 Subpart C Tables C-1 and C-2

Emission Statement

Date: 11/04/2024

Project Name	**Archrock: 806555**
Engine Model	Waukesha 7044GSIS4
Engine Mechanical Power	1676 hp
Fuel	NG High BTU per Supplied GERP
Exhaust Flowrate	11796 lb/h
Exhaust Temperature	1223 deg. F
Catalyst Housing Model	EmPact 33.50”
Catalyst Model	DC75.5
Catalyst Part Number	CB000-RH-040Y-0H63-01
Number of Elements	2
Housing Capacity	2
Catalyst Code	0Y Premium NSCR, 3-Way / 300 cpsi
Dimensions	33.50” x 3.5”

Exhaust Gas Component	**Engine Output (g/bhp-hr)**	**Converter Output (g/bhp-hr)**
NOx	13.70	0.45
CO	12.70	0.25
VOC (NMNEHC)	0.564	0.05
HCHO	0.05	0.02

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

G3516B

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
701658 - 3516B - Site Specific

CATERPILLAR®

GAS COMPRESSION APPLICATION	
ENGINE SPEED (rpm):	1400
COMPRESSION RATIO:	8
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	201
JACKET WATER OUTLET (°F):	210
ASPIRATION:	TA
COOLING SYSTEM:	JW+OC+1AC, 2AC
CONTROL SYSTEM:	ADEM3
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	28

RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	CAT WIDE RANGE WITH AIR FUEL RATIO CONTROL
SITE CONDITIONS:	
FUEL:	Gas Analysis
FUEL PRESSURE RANGE(psig): (See note 1)	7.0-40.0
FUEL METHANE NUMBER:	51.2
FUEL LHV (Btu/scf):	1109
ALTITUDE(ft):	2500
INLET AIR TEMPERATURE(°F):	100
STANDARD RATED POWER:	1380 bhp@1400rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE			°F	100	100	100	100
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	7149	7149	7480	8058
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7872	7872	8236	8873
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	3177	3177	2416	1657
AIR FLOW	(WET)	(4)(5)	lb/hr	13507	13507	10273	7047
FUEL FLOW (60°F, 14.7 psia)			scfm	148	148	116	84
INLET MANIFOLD PRESSURE		(6)	psi(abs)	42.9	42.9	34.5	24.2
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	996	996	979	988
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	8879	8879	6684	4627
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	14038	14038	10690	7347
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(9)(10)	g/bhp-hr	2.52	2.52	2.54	2.45
THC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	3.87	3.87	3.78	3.57
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	1.77	1.77	1.73	1.63
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	1.08	1.08	1.05	0.99
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.37	0.37	0.35	0.34
CO2		(9)(10)	g/bhp-hr	501	501	524	565
EXHAUST OXYGEN		(9)(12)	% DRY	9.1	9.1	8.7	8.0
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(13)	Btu/min	21213	21213	20689	19953
HEAT REJ. TO ATMOSPHERE		(13)	Btu/min	6110	6110	5092	4074
HEAT REJ. TO LUBE OIL (OC)		(13)	Btu/min	4475	4475	3978	3363
HEAT REJ. TO A/C - STAGE 1 (1AC)		(13)(14)	Btu/min	10803	10803	7513	2256
HEAT REJ. TO A/C - STAGE 2 (2AC)		(13)(14)	Btu/min	5309	5309	4304	2636
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)		(14)(15)	Btu/min	40047			
TOTAL AFTERCOOLER CIRCUIT (2AC)		(14)(15)	Btu/min	5575			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.

Emission Statement

Date: 06/25/2025

Project Name	**Archrock: DKL Residue Gas**
Engine Model	CAT 3516B
Engine Mechanical Power	1380 hp
Fuel	NG per Supplied GERP
Exhaust Flowrate	14359 b/h
Exhaust Temperature	992 deg. F
Catalyst Housing Model	ELS3050
Catalyst Model	DCA3W
Catalyst Part Number	C30F1-01-040A-03W3-01
Number of Elements	2
Housing Capacity	3
Catalyst Code	0A Oxidation High VOC Reduction / 300 cpsi
Dimensions	24” x 15” x 3.5”

Exhaust Gas Component	**Engine Output (g/bhp-hr)**	**Converter Output (g/bhp-hr)**
NOx	0.50	0.50
CO	2.43	0.17
VOC (NMNEHC)	0.48	0.15
HCHO	0.43	0.10

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

Global Leader in Emission Control Solutions
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G3606
NON-CURRENT

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
DKL - 3606A4 - Site Specific

CATERPILLAR®

GAS COMPRESSION APPLICATION

ENGINE SPEED (rpm):	1000	RATING STRATEGY:	GEN 1 ENGINE - NO CCV
COMPRESSION RATIO:	7.6	RATING LEVEL:	CONTINUOUS
AFTERCOOLER TYPE:	SCAC	FUEL SYSTEM:	GAV
AFTERCOOLER - STAGE 1/STAGE 2 INLET (°F):	174 / 130		WITH AIR FUEL RATIO CONTROL
JACKET WATER OUTLET (°F):	190	**SITE CONDITIONS:**	
ASPIRATION:	TA	FUEL:	DKL - Aztec
COOLING SYSTEM:	JW+1AC, OC+2AC	FUEL PRESSURE RANGE(psig): (See note 1)	58.0-70.3
CONTROL SYSTEM:	ADEM4	FUEL METHANE NUMBER:	52.7
EXHAUST MANIFOLD:	DRY	FUEL LHV (Btu/scf):	1167
COMBUSTION:	LOW EMISSION	ALTITUDE(ft):	3500
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.3	STANDARD RATED POWER:	1875 bhp@1000rpm
SET POINT TIMING:	16		

				MAX RATING	SITE RATING AT MAX INLET AIR TEMP		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	1875	1875	1406	938
INLET AIR TEMPERATURE			°F	100	100	100	100
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(3)	Btu/bhp-hr	6943	6943	7223	7803
FUEL CONSUMPTION (HHV)		(3)	Btu/bhp-hr	7642	7642	7951	8588
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(4)(5)	ft3/min	5002	5002	3800	2609
AIR FLOW	(WET)	(4)(5)	lb/hr	21269	21269	16159	11094
FUEL FLOW (60°F, 14.7 psia)			scfm	186	186	145	105
INLET MANIFOLD PRESSURE		(6)	psi(abs)	50.7	50.7	39.1	27.8
EXHAUST TEMPERATURE - ENGINE OUTLET		(7)	°F	808	808	878	955
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(5)(8)	ft3/min	12052	12052	9672	7039
EXHAUST GAS MASS FLOW	(WET)	(5)(8)	lb/hr	21954	21954	16693	11479
EMISSIONS DATA - EXHAUST OUT							
NOx (as NO2)		(9)(10)	g/bhp-hr	0.30	0.30	0.30	0.30
CO		(9)(10)	g/bhp-hr	2.90	2.90	2.90	2.90
NMHC (mol. wt. of 15.84)		(9)(10)	g/bhp-hr	2.28	2.28	2.35	2.50
NMNEHC (VOCs) (mol. wt. of 15.84)		(9)(10)(11)	g/bhp-hr	1.37	1.37	1.42	1.51
HCHO (Formaldehyde)		(9)(10)	g/bhp-hr	0.19	0.19	0.20	0.22
CH4 (mol. wt. of 16.04)	(NOMINAL)	(9)(12)	g/bhp-hr	1.86	1.86	1.92	2.04
CO2	(NOMINAL)	(9)(12)	g/bhp-hr	430	430	445	483
EXHAUST OXYGEN	(NOMINAL)	(9)(13)	% DRY	11.3	11.3	11.2	10.7
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(14)	Btu/min	23836	23836	19107	15789
HEAT REJ. TO ATMOSPHERE		(14)	Btu/min	5804	5804	5699	5486
HEAT REJ. TO LUBE OIL (OC)		(14)	Btu/min	11717	11717	10836	9390
HEAT REJ. TO A/C - STAGE 1 (1AC)		(14)(15)	Btu/min	19028	19028	9893	3139
HEAT REJ. TO A/C - STAGE 2 (2AC)		(14)(15)	Btu/min	8212	8212	5047	2471

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+1AC)	(15)(16)	Btu/min	46200
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (OC+2AC)	(15)(16)	Btu/min	22683
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.			

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Refer to product O&M manual for details on additional lower load capability. No overload permitted at rating shown.

For notes information consult page three.

Emission Statement

Date: 06/27/2025

Project Name	**Archrock: 3606A4 Example Sheet**
Engine Model	CAT 3606A4
Engine Mechanical Power	1875 hp
Fuel	NG High BTU Per Supplied GERP
Exhaust Flowrate	22072 lb/h
Exhaust Temperature	798 deg. F
Catalyst Housing Model	ELH-5000-1820F-4CEO-362
Catalyst Model	DCA1T
Catalyst Part Number	A70TL-01-040A-01T3-02
Number of Elements	4
Housing Capacity	4
Catalyst Code	0A Oxidation High VOC Reduction / 300 cpsi
Dimensions	36” x 15” x 3.5”

Exhaust Gas Component	**Engine Output (g/bhp-hr)**	**Converter Output (g/bhp-hr)**
NOx	0.30	0.30
CO	2.90	0.60
VOC	1.37	0.50
HCHO	0.19	0.10

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	

Emission Statement

Date: 06/25/2025

Project Name	**Archrock: DKL Residue Gas**
Engine Model	CAT 3608A4-E
Engine Mechanical Power	2750 hp
Fuel	NG per Supplied GERP
Exhaust Flowrate	31983 b/h
Exhaust Temperature	787 deg. F
Catalyst Housing Model	DCL ARC1T6-20/26
Catalyst Model	DCQ1T
Catalyst Part Number	A70TL-01-0427-01T3-02
Number of Elements	2
Housing Capacity	6
Catalyst Code	27 Standard Oxidation / 300 cpsi
Dimensions	36” x 15” x 3.5”

Exhaust Gas Component	**Engine Output (g/bhp-hr)**	**Converter Output (g/bhp-hr)**
NOx	0.30	0.30
CO	2.17	0.40
VOC (NMNEHC)	0.17	0.10
HCHO	0.12	0.09

Limited Warranty	(doc. X0000-0000-K1) one year or 8000 hours of operation, whichever first
Guarantee By:	Sam Kirk

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EXTENDED GAS REPORT
SUMMARY OF CHROMATOGRAPHIC ANALYSIS

Sample Name:	OCS-Inlet	**For:**	21660G
Sample Date:	09/19/2024	**Cyl. Ident.:**	2024098057
Sampled By:	JW	**Company:**	Delek
Time Sampled:	10:00	**Analysis Date:**	09/21/2024
Sample Temp:	0.0 F	**Analysis By:**	LC
Sample Press:	32.0	**Data File:**	LS1_0854.D

H2S (PPM) = 3.0

Component	Mole%	GPM REAL	GPM IDEAL
H2S	0.000		
Nitrogen	2.007		
Methane	76.678		
CO2	0.735		
Ethane	10.404	2.782	2.775
Propane	5.181	1.427	1.424
Isobutane	0.718	0.235	0.234
N-Butane	1.781	0.561	0.560
Isopentane	0.497	0.182	0.181
N-Pentane	0.537	0.195	0.194
Hexanes+	1.462	0.614	0.610
Total	100.000	5.996	5.978

CALCULATED PARAMETERS

TOTAL ANALYSIS SUMMARY

MOLE WT:	22.250
VAPOR PRESS PSIA:	3928.6
SPECIFIC GRAVITY	
AIR = 1 (REAL):	0.7709
AIR = 1 (IDEAL):	0.7682
H2O = 1 (IDEAL):	0.365
REPORTED BASIS:	14.73
Unnormalized Total:	46.656

HEATING VALUE

BTU/CUFT (DRY)	1297.2
BTU/CUFT (WET)	1275.2

BTEX SUMMARY

WT% BENZENE	9.592
WT% TOLUENE	10.039
WT% E BENZENE	2.416
WT% XYLENES	6.955

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Sample Name: OCS-Inlet
Company: Delek

Data File: LS1_0854.D

*ANALYSIS OF HEXANES PLUS

Component	MOLE%	WT%
2,2 DIMETHYL BUTANE	0.002	0.010
CYCLOPENTANE	0.027	0.095
2-METHYLPENTANE	0.068	0.264
3-METHYLPENTANE	0.042	0.165
HEXANE (C6)	0.100	0.388
DIMETHYLPENTANES	0.001	0.006
METHYLCYCLOPENTANE	0.068	0.257
2,2,3 TRIMETHYLBUTANE	0.000	0.000
BENZENE	0.092	0.323
CYCLOHEXANE	0.124	0.471
2-METHYLHEXANE	0.022	0.100
3-METHYLHEXANE	0.036	0.160
DIMETHYCYCLOPENTANES	0.000	0.000
HEPTANE (C7)	0.063	0.286
METHYLCYCLOHEXANE	0.149	0.664
2,5 DIMETHYLHEXANE	0.003	0.014
TOLUENE	0.158	0.624
2-METHYLHEPTANE	0.032	0.165
OTHER OCTANES	0.071	0.362
OCTANE (C8)	0.046	0.235
ETHYLCYCLOHEXANE	0.029	0.148
ETHYL BENZENE	0.033	0.159
M,P-XYLENE	0.072	0.345
O-XYLENE	0.023	0.108
OTHER NONANES	0.033	0.195
NONANE (C-9)	0.040	0.232
IC3 BENZENE	0.000	0.000
CYCLOOCTANE	0.011	0.060
NC3 BENZENE	0.004	0.021
TM BENZENE(S)	0.002	0.011
IC4 BENZENE	0.010	0.059
NC4 BENZENE	0.002	0.013
DECANES + (C10+)	0.070	0.444

*HEXANES PLUS SUMMARY

AVG MOLE WT	99.320
VAPOR PRESS PSIA	9.860
API GRAVITY @ 60F	56.9
SPECIFIC GRAVITY	
AIR = 1 (IDEAL):	2.975
H2O = 1 (IDEAL):	0.751

COMPONENT RATIOS

HEXANES (C6) MOLE%	16.448
HEPTANES (C7) MOLE%	29.827
OCTANES (C8) MOLE%	30.949
NONANES (C9) MOLE%	15.869
DECANES+ (C10+) MOLE%	6.907
HEXANES (C6) WT%	14.121
HEPTANES (C7) WT%	26.739
OCTANES (C8) WT%	31.634
NONANES (C9) WT%	18.169
DECANES+ (C10+) WT%	9.337

Remarks: NR=NOT REPORTED ON FIELD TAG

* Hexane+ portion calculated by Allocation Process

Table 1.—Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year[1]	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW≤560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW>560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

[1] The model years listed indicate the model years for which the specified tier of standards take effect.

Table 2.—Upper Limit for Family Emission Limits (g/kW-hr)

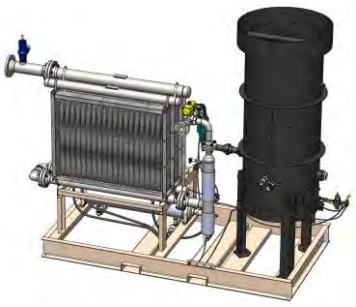
Rated Power (kW)	Tier	Model Year[1]	NOx FEL	NMHC+ NOx FEL	PM FEL
kW<8	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	10.5	1.0
8≤kW<19	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	9.5	0.80
19≤kW<37	Tier 1	1999	—	16.0	1.2
	Tier 2	2004	—	9.5	0.80
37≤kW<75	Tier 1	1998	14.6	—	—
	Tier 2	2004	—	11.5	1.2
	Tier 3	2008	—	7.5	
75≤kW<130	Tier 1	1997	14.6	—	—
	Tier 2	2003	—	11.5	1.2
	Tier 3	2007	—	6.6	
130≤kW<225	Tier 1	1996	14.6	—	—
	Tier 2	2003	—	10.5	0.54
	Tier 3	2006	—	6.6	
225≤kW<450	Tier 1	1996	14.6	—	—
	Tier 2	2001	—	10.5	0.54
	Tier 3	2006	—	6.4	
450≤kW≤560	Tier 1	1996	14.6	—	—
	Tier 2	2002	—	10.5	0.54
	Tier 3	2006	—	6.4	
kW>560	Tier 1	2000	14.6	—	—
	Tier 2	2006	—	10.5	0.54

[1] The model years listed indicate the model years for which the specified tier of limits take effect.

3532 Miller Park Dr. Garland, TX 75042

SNC-Lavalin/Valerus
ATTN: Matthew Harris
919 Milam
Houston, TX 77002

Ref: Zap Dehy 43466



Electric Standard Features

Value added only from SpiralXLLC

Removable Tube Bundles
Blowcase valve oiler for improved reliability
Kimray Level Switches
Taylor Relief Valves
Heavy Duty Base / Powder Coated
Completely Assembled and tested before shipment
ASME Code paperwork including MTR Test Reports
3D Model Available
Lifetime Versa brand 3 way valves
Low Shipping/set up costs (Location Specific)

Series III BTEX System

The SpiralX Series III System takes in the boiled off water vapors from the glycol regenerator's still column. As the water vapors travel through the tube bundles the vapors are cooled down. Cooling of the vapors causes them to separate into condensate and non-condensable gasses. The condensate is drained from the tube bundles and into the blowcase tank. The lightweight non-condensable gasses (BTEX) exit the unit where they are sent to the CFR 40 combustor or fuel ring and destroyed.

For Blowcase units:

The blowcase outlet pipe sends the condensate out of the tank and is typically routed to some means of onsite storage or disposal.

Blowcase Rating: 650 lb/hr of steam/condensate, minimum .50 specific gravity fluid
Blowcase Vent Rating: 4.5 cubic ft @ 120 psi, 3.8 cubic ft @ 100 psi, 1.54 cubic feet @40 psi
Blowcase Material: Stainless Steel

For diaphragm pump option:

Pump rating: 15 GPM at 100 psi supply pressure.
Diaphragm material: Teflon

IIIe System

SpiralX Electric Emission Systems offer customers a complete solution for capturing BTEX and VOCs from a regenerator's still column, where electricity is available. Performance of these units are independent on the natural wind blowing across the tube bundle. This unit has an electric driven forced draft fan that works year round. These units are considerably more compact than ambient units, and do a much better job of condensing BTEX vapors.

Power requirement is 4 AMPS @480 VAC

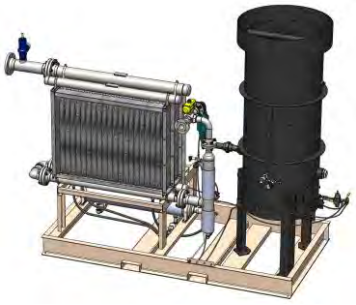
With all stainless steel construction, these systems are built to last. Most systems are an All-in-One Solution.We use only the best pneumatics which are readily available for easy, no-hassle parts replacement. Enjoy the benefits of our extensive documentation with operators manuals, drawings and diagrams. We even offer SpiralX certification exams for field technicians.

30" Combustor

Environmental Rating: CFR 40

3532 Miller Park Dr. Garland, TX 75042

SNC-Lavalin/Valerus
ATTN: Matthew Harris
919 Milam
Houston, TX 77002



Ref: Zap Dehy 43466

EPA Efficiency Rating: 99%
Combustor Rating: Maximum dry BTEX 15 MSCFD
Combustor Location: Within 10 ft. of the BTEX system
Combustor Height: 9 ft.
Pilot Gas Used: 14-17 cfh @ 5-7 psig

No cold weather protection is included

System Color

Gray (Cardinal powder coat spec# P004-GR09)

Options

Optional Heat Trace Only **Included**

ELECTRICAL CONNECTION KIT DEKORON PN 1548-40000 shipped loose to be installed by the end user.

We use 10W electrical heat trace as a part of our cold weather package. We wrap all pipes, tubes and valves which come in contact with liquids, pursant to Class 1 Group D Divison 2.

ESD Loop Pneumatic **Included**

Emergency Shut Down Loop, where the Combuster can be turned off and the system thrown into bypass if the regen goes down. Requires pneumatic line run to the combuster

Design Data Sheet

Process Design Conditions

Waste Flare Stream	Flow Rate *(MMSCFD)*	Molecular Weight	Lower Heating Value *(Btu/SCF)*	Inlet Pressure *(psig)*	Temp. *(F)*
Design Flow	0 to 0.1	18 – 35	1100 – 1800	0.25	amb

Utilities

Pilot Gas (per pilot)	78 scfh at 5 psig. Clean, dry natural gas.
Plant Air	No Plant Air Required
Electricity	None required (Solar powered (12VDC) igniton system is being offered)
Blowers	Electric: No blower required Blower Size:N/A

Mechanical

Design Wind Speed	120 mph ASCE 7-10
Site Conditions	Temp: 0 to 120ºF Elevation: 14.0 Psia
Corrosion Allowance	1/16" (standard)
Electrical Area	Non-classified area
Control Panel Type	Nema 4 (Painted Carbon Steel)
Blower Motor	No blower included with this offer

Emission & Performance Guarantees

Destruction	98% or greater hydrocarbon destruction efficiency will be achieved
Stability	Flare will be stable over the entire operating range
Smokeless Rate	May smoke, but should be less than Ringleman 1 due to small flow rate.
Max Radiation	Less than 500 Btu/hr/SF at normal & 1500 Btu/hr at max flow rates
Tip Velocity	Meets EPA regulations over full operating range

Flare Construction

Component	Dimension	Material	Conn. @ Joints	Connection Type	Connection Elevation
Flare Stack	20' H x 4" Dia.	A-36/A53B	Full Pen. Buttweld	----	----
Inlet Flange	4" dia	CS	---	150# RFSO	6'
Flare Tip Ø	4"	304SS	Full Pen.	Integral	---
Pilots	Hero HS	Stainless Steel	NPT / SW	---	flare tip
Pilot Tubing Ø	3/8"	SS tubing or SS flexhose	Swagelok	NPT at regulator	3'-10"
Pilot Conduit	---	rigid conduit or flexible SO cord	NPT	NPT	stack base

Equipment Description

Hotspot Ignition System (HS) and Control Panel

The flare gas is ignited by one or more continuously sparking pilots. This design has been used on hundreds of gas flares with good success.

- High stability pilot flame in all wind conditions.
- Stainless steel construction for long life and corrosion resistance.
- Wind bonnet on pilot tip for improved flame stability.
- Automatic spark ignition system. The control panel spark module sends a low voltage current to the exciter mounted on the pilot. A high energy spark lights the pilot flame.
- Pilot flame monitoring system. A thermocouple continuously monitors the pilot flame status. Dry contacts are included for remote indication of pilot status.
- Solar panel and battery charger. No other power is required.
- One control panel per pilot. Can be mounted on rack, Unistrut or 2" pipe.
- Pilot gas regulator with gauge set for 10 psig outlet pressure. One per pilot.

Panel to Pilot Interconnection (by client)

- One ¾" conduit between the each control panel and the associated pilot. Each pilot is operated by one control panel. Interconnecting wire is 5 wires per pilot (one pair of Type K thermocouple wires, three 14ga power wires). For simplicity sake, we recommend one conduit run per pilot.
- One 3/8"-1/2" stainless tubing for fuel gas to pilots. HERO Flare supplies the pilot gas regulator.

Equipment Description

Utility Flare Tip

The flare uses a utility flare tip that is well proven and has lasted well in previous applications. The flare gas is ignited by a continuously sparking pilot. This design has been used on hundreds of gas flares with good success. The flare tip includes:

- Stainless steel upper tip section for temperature and corrosion resistance.
- Flame stabilizers for good destruction efficiency at high Mach flow rates.
- Pilot support brackets.

Free Standing Utility Flare Stack

The flare height will minimize thermal radiation and SO2 ground level emissions. The flare stack includes:

- Free standing stack complete with base ring (CS).
- Flare stack and tip will be shipped as one piece. No field welding required.
- Tubing, wiring and conduit for pilot (ships loose for field installation).
- Sandblast, prime and finish coat.
- Flat plate diverter located just below inlet flange to drain liquid to separate knock out pot. See optional pricing to incorporate knock out pot in base of flare stack.
- Mechanical drawings and operating manual.
- Complete structural calculations for the stack, lifting trunnions and base ring. Finite element analysis of the inlet nozzle and lifting trunnions. For the record, not for approval.

Flame Arrestor

Flame arrestors are available in a wide variety of sizes and materials. For most applications, we recommend:

- Carbon steel body for strength compared to aluminum body arrestors.
- 304SS flame cell for greatly increased resistance to flashback and overtemperature.
- 150# RF flanged ends.
- 2” -6” flame arrestors are stock items.

The flame arrestor is normally mounted at the inlet to the flare stack. Deflagration and detonation arrestors are also available for special applications.

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 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	5.53 E-06	C
Acetaldehyde[k,l]	8.36 E-03	A
Acrolein[k,l]	5.14 E-03	A
Benzene[k]	4.40 E-04	A
Benzo(b)fluoranthene[k]	1.66 E-07	D
Benzo(e)pyrene[k]	4.15 E-07	D
Benzo(g,h,i)perylene[k]	4.14 E-07	D
Biphenyl[k]	2.12 E-04	D
Butane	5.41 E-04	D
Butyr/Isobutyraldehyde	1.01 E-04	C
Carbon Tetrachloride[k]	<3.67 E-05	E
Chlorobenzene[k]	<3.04 E-05	E
Chloroethane	1.87 E-06	D
Chloroform[k]	<2.85 E-05	E
Chrysene[k]	6.93 E-07	C
Cyclopentane	2.27 E-04	C
Ethane	1.05 E-01	C
Ethylbenzene[k]	3.97 E-05	B
Ethylene Dibromide[k]	<4.43 E-05	E
Fluoranthene[k]	1.11 E-06	C
Fluorene[k]	5.67 E-06	C
Formaldehyde[k,l]	5.28 E-02	A
Methanol[k]	2.50 E-03	B
Methylcyclohexane	1.23 E-03	C
Methylene Chloride[k]	2.00 E-05	C
n-Hexane[k]	1.11 E-03	C
n-Nonane	1.10 E-04	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
n-Octane	3.51 E-04	C
n-Pentane	2.60 E-03	C
Naphthalene[k]	7.44 E-05	C
PAH[k]	2.69 E-05	D
Phenanthrene[k]	1.04 E-05	D
Phenol[k]	2.40 E-05	D
Propane	4.19 E-02	C
Pyrene[k]	1.36 E-06	C
Styrene[k]	<2.36 E-05	E
Tetrachloroethane[k]	2.48 E-06	D
Toluene[k]	4.08 E-04	B
Vinyl Chloride[k]	1.49 E-05	C
Xylene[k]	1.84 E-04	B

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NOx control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM-10 = Particulate Matter ≤ 10 microns (μm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (1/\text{operating HP, } 1/\text{hp})$$

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and

h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6scf.

[f] Emission factor for TOC is based on measured emission levels from 22 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.31 lb/MMBtu vs. 1.25 lb/MMBtu, respectively.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.

[i] Considered ≤ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[j] PM Condensable = PM Condensable Inorganic + PM-Condensable Organic

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

[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

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

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

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Chlorobenzene[l]	<1.29 E-05	E
Chloroform[l]	<1.37 E-05	E
Ethane[n]	7.04 E-02	C
Ethylbenzene[l]	<2.48 E-05	E
Ethylene Dibromide[l]	<2.13 E-05	E
Formaldehyde[l,m]	2.05 E-02	A
Methanol[l]	3.06 E-03	D
Methylene Chloride[l]	4.12 E-05	C
Naphthalene[l]	<9.71 E-05	E
PAH[l]	1.41 E-04	D
Styrene[l]	<1.19 E-05	E
Toluene[l]	5.58 E-04	A
Vinyl Chloride[l]	<7.18 E-06	E
Xylene[l]	1.95 E-04	A

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM-10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NOx control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM10 = Particulate Matter ≤ 10 microns (μm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})(\text{heat input, MMBtu/hr})(\text{1/operating HP, 1/hp})$$

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2,

C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6scf.

[f] Emission factor for TOC is based on measured emission levels from 6 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds. Methane and ethane emissions were not measured for this engine category.

[i] No data were available for uncontrolled engines. PM10 emissions are for engines equipped with a PCC.

[j] Considered $\leq$ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[k] No data were available for condensable emissions. The presented emission factor reflects emissions from 4SLB engines.

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

[m] For rich-burn engines, no interference is suspected in quantifying aldehyde emissions. The presented emission factors are based on FTIR and CARB 430 emissions data measurements.

[n] Ethane emission factor is determined by subtracting the VOC emission factor from the NMHC emission factor.

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

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

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

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

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

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

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

EMISSION FACTOR RATING: E

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

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

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

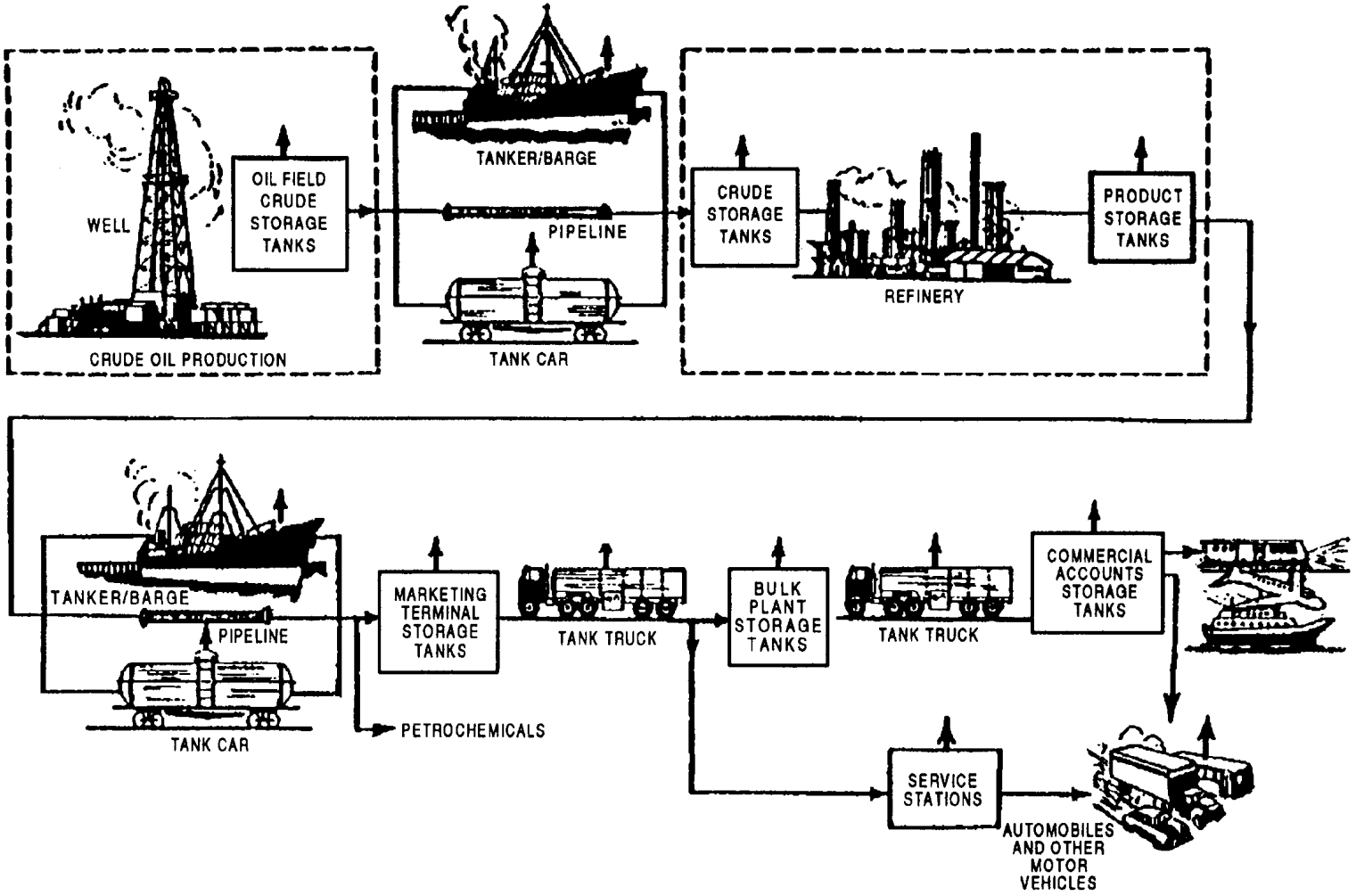


Figure 5.2-1. Flow sheet of petroleum production, refining, and distribution systems.
(Points of organic emissions are indicated by vertical arrows.)

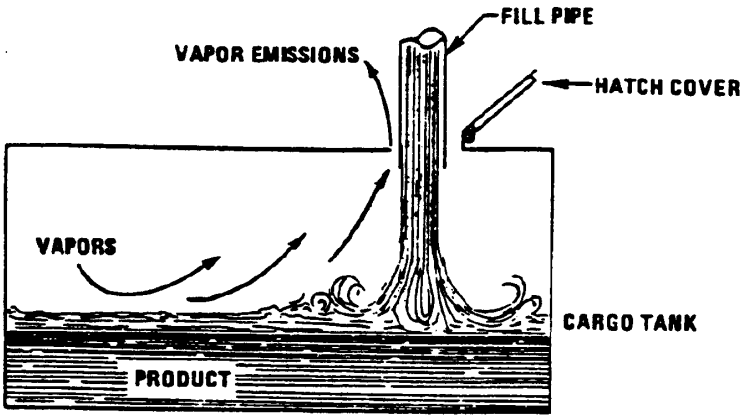


Figure 5.2-2. Splash loading method.

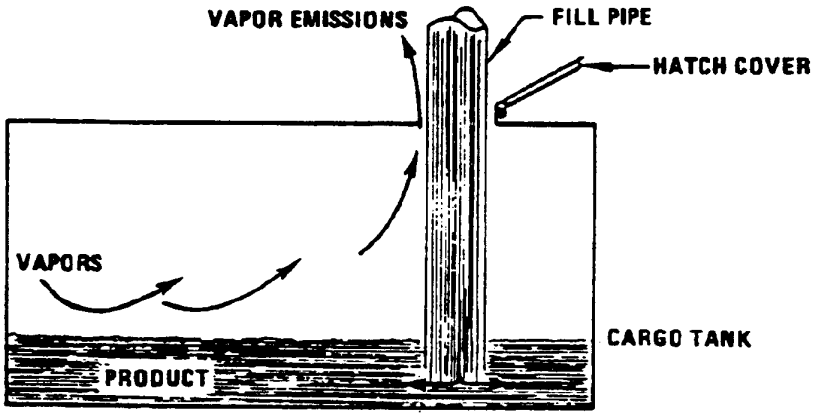


Figure 5.2-3. Submerged fill pipe.

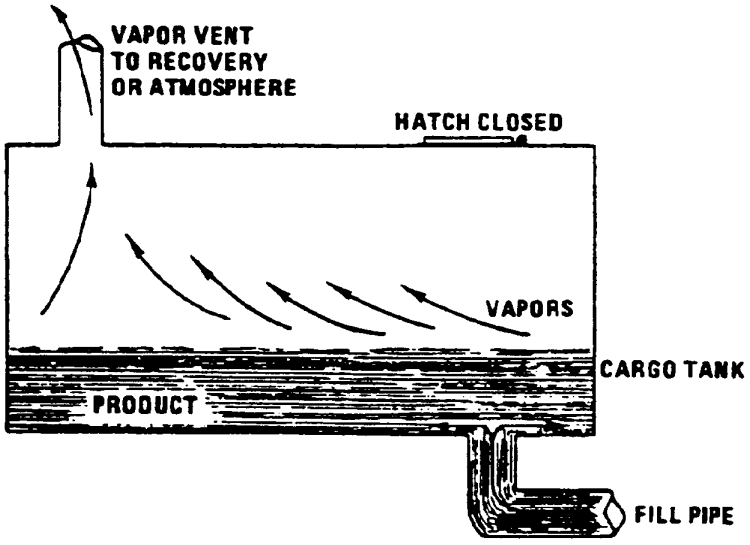


Figure 5.2-4. Bottom loading.

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)

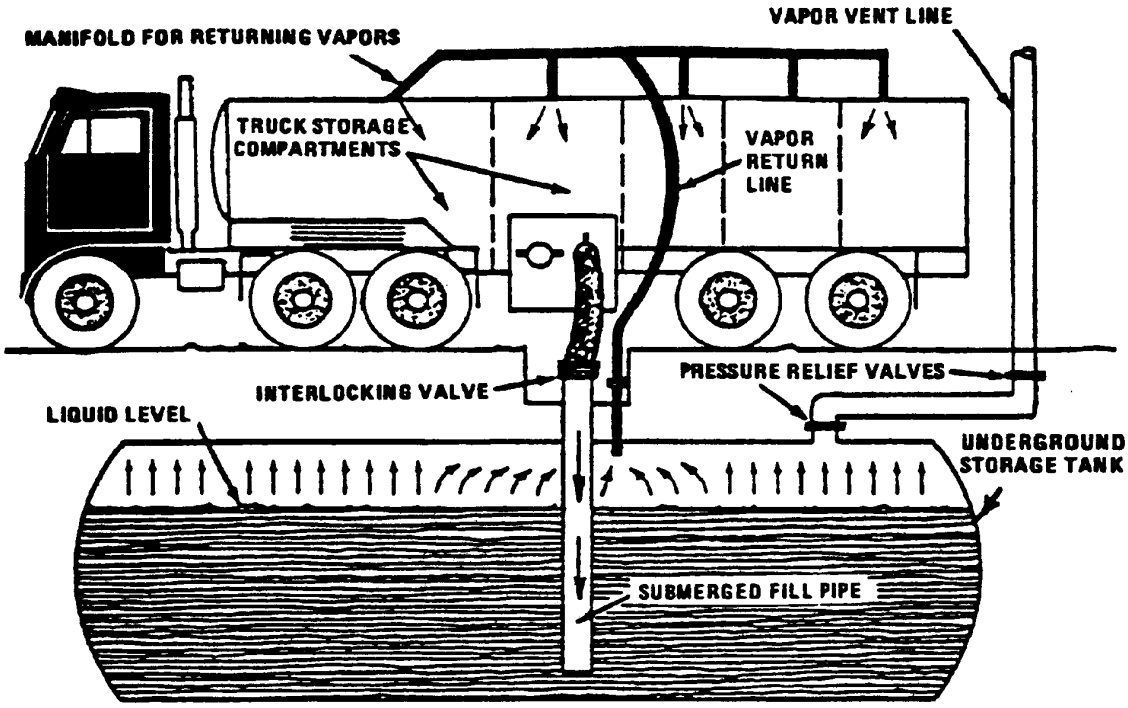


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

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].

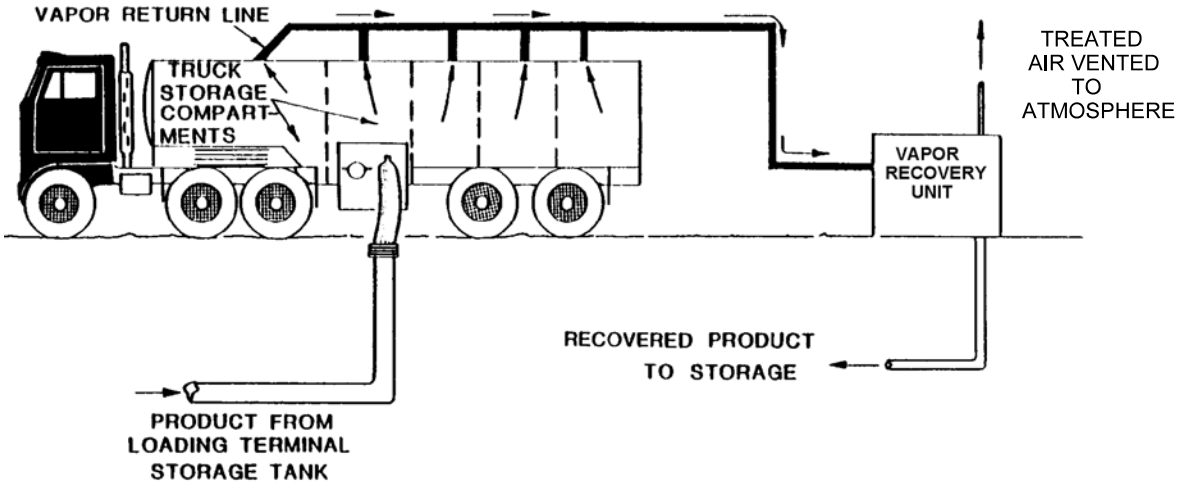


Figure 5.2-6. Tank truck loading with vapor recovery.

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.

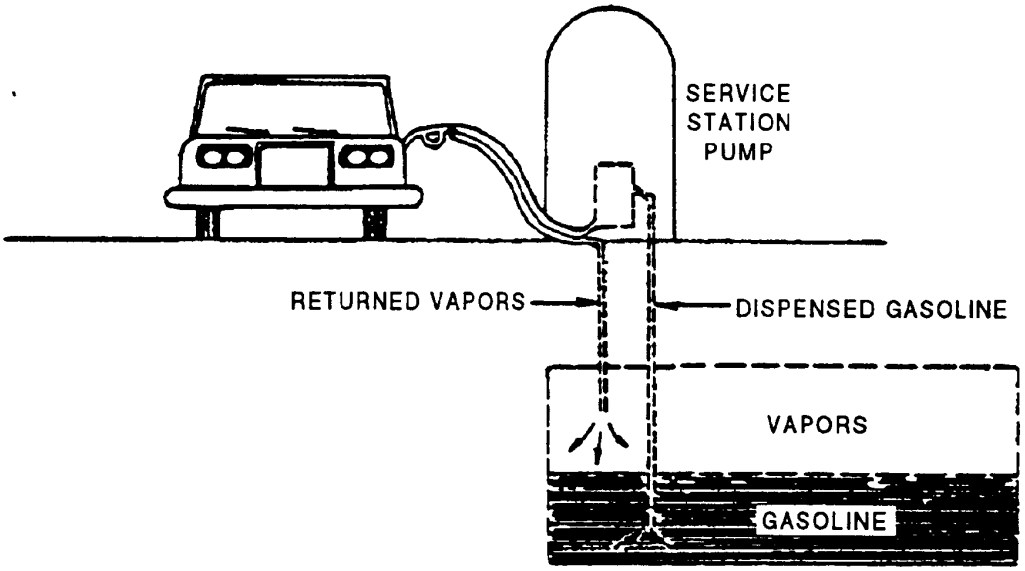


Figure 5.2-7. Automobile refueling vapor recovery system.

References For Section 5.2

1. C. E. Burklin and R. L. Honercamp, *Revision Of Evaporative Hydrocarbon Emission Factors*, EPA-450/3-76-039, U. S. Environmental Protection Agency, Research Triangle Park, NC, August 1976.

2. G. A. LaFlam, *et al*., *Revision Of Tank Truck Loading Hydrocarbon Emission Factors*, Pacific Environmental Services, Inc., Durham, NC, May 1982.

3. G. A. LaFlam, *Revision Of Marine Vessel Evaporative Emission Factors*, Pacific Environmental Services, Inc., Durham, NC, November 1984.

4. *Evaporation Loss From Tank Cars, Tank Trucks And Marine Vessels*, Bulletin No. 2514, American Petroleum Institute, Washington, DC, 1959.

5. C. E. Burklin, *et al*., *A Study Of Vapor Control Methods For Gasoline Marketing Operations*, EPA-450/3-75-046A and -046B, U. S. Environmental Protection Agency, Research Triangle Park, NC, May 1975.

6. *Bulk Gasoline Terminals - Background Information For Proposed Standards*, EPA-450/3-80-038a, U. S. Environmental Protection Agency, Research Triangle Park, NC, December 1980.

7. *Gasoline Distribution Industry (Stage I) - Background Information for Promulgated Standards*, EPA-453/R-94-002b, U.S. Environmental Protection Agency, Research Triangle Park, NC, 1995.

8. *Atmospheric Hydrocarbon Emissions From Marine Vessel Transfer Operations*, Publication 2514A, American Petroleum Institute, Washington, DC, 1981.

9. C. E. Burklin, *et al*., *Background Information On Hydrocarbon Emissions From Marine Terminal Operations*, EPA-450/3-76-038a and -038b, U. S. Environmental Protection Agency, Research Triangle Park, NC, November 1976.

10. *Rules For The Protection Of The Marine Environment Relating To Tank Vessels Carrying Oil In Bulk*, 45 FR 43705, June 30, 1980.

11. R. A. Nichols, *Analytical Calculation Of Fuel Transit Breathing Loss*, Chevron USA, Inc., San Francisco, CA, March 21, 1977.

12. R. A. Nichols, *Tank Truck Leakage Measurements*, Chevron USA, Inc., San Francisco, CA, June 7, 1977.

13. *Investigation Of Passenger Car Refueling Losses: Final Report, 2nd Year Program*, APTD-1453, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1972.

14. *Refueling Emissions From Uncontrolled Vehicles*, EPA-AA-SDSB-85-6, U. S. Environmental Protection Agency, Ann Arbor, MI, June 1985.

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.

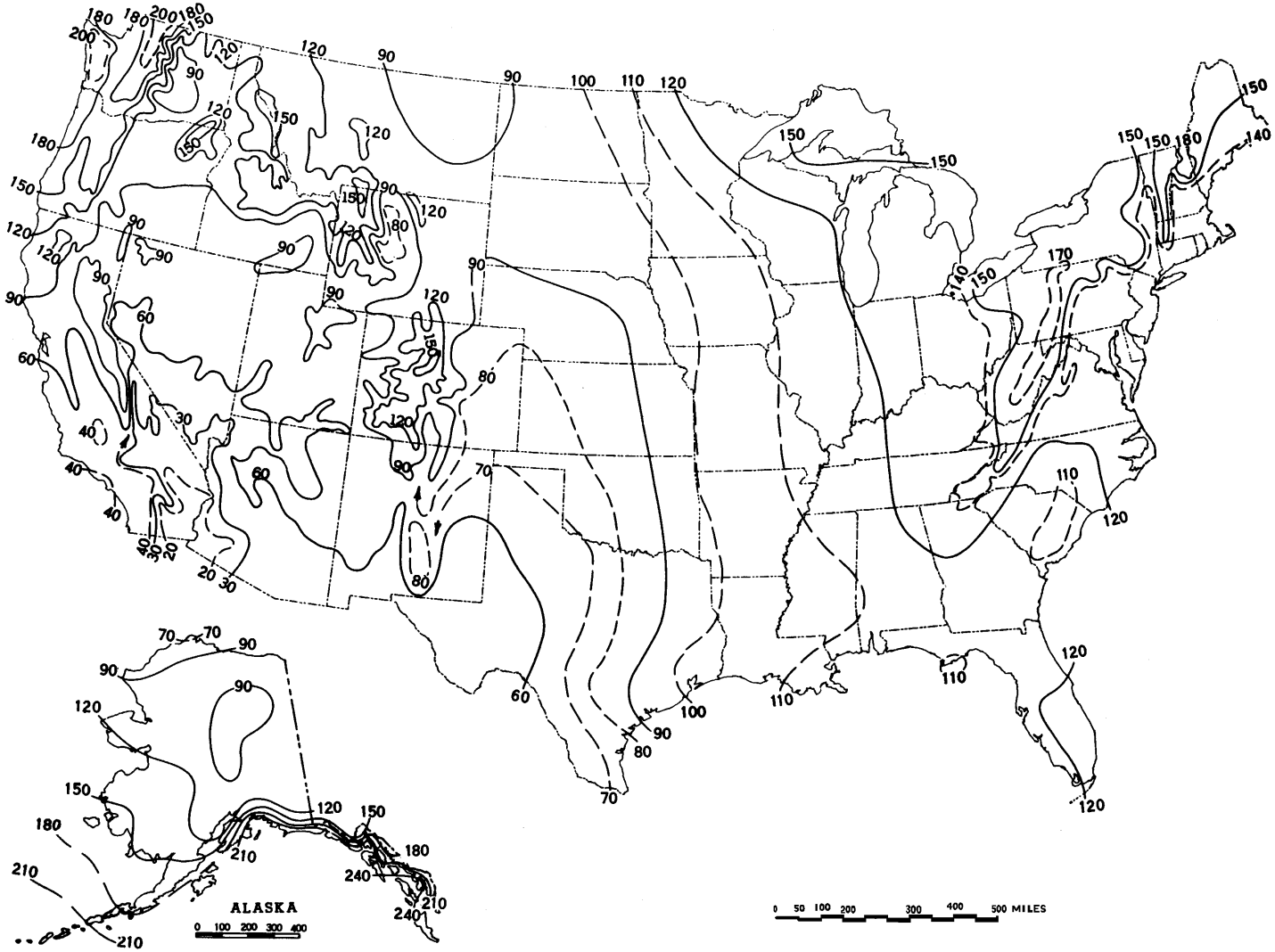


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

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.

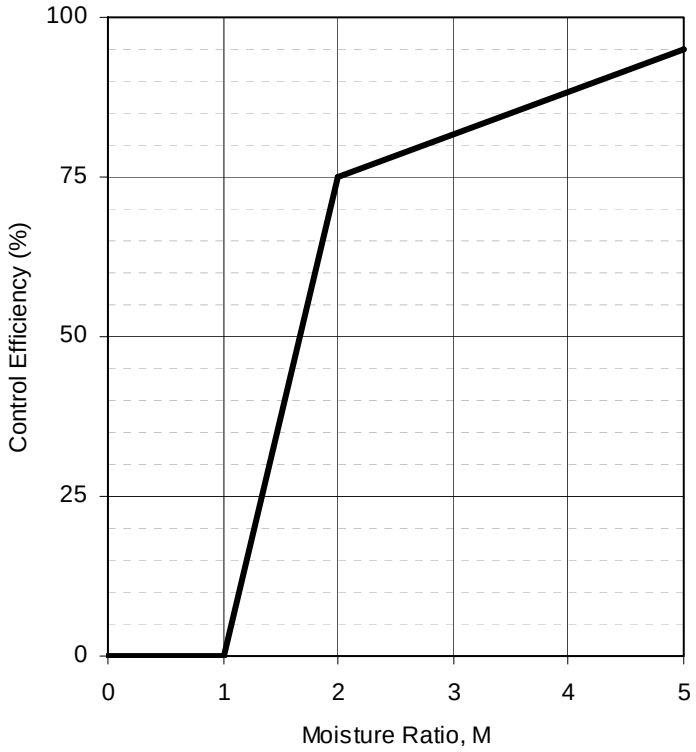


Figure 13.2.2-2. Watering control effectiveness for unpaved travel surfaces

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.

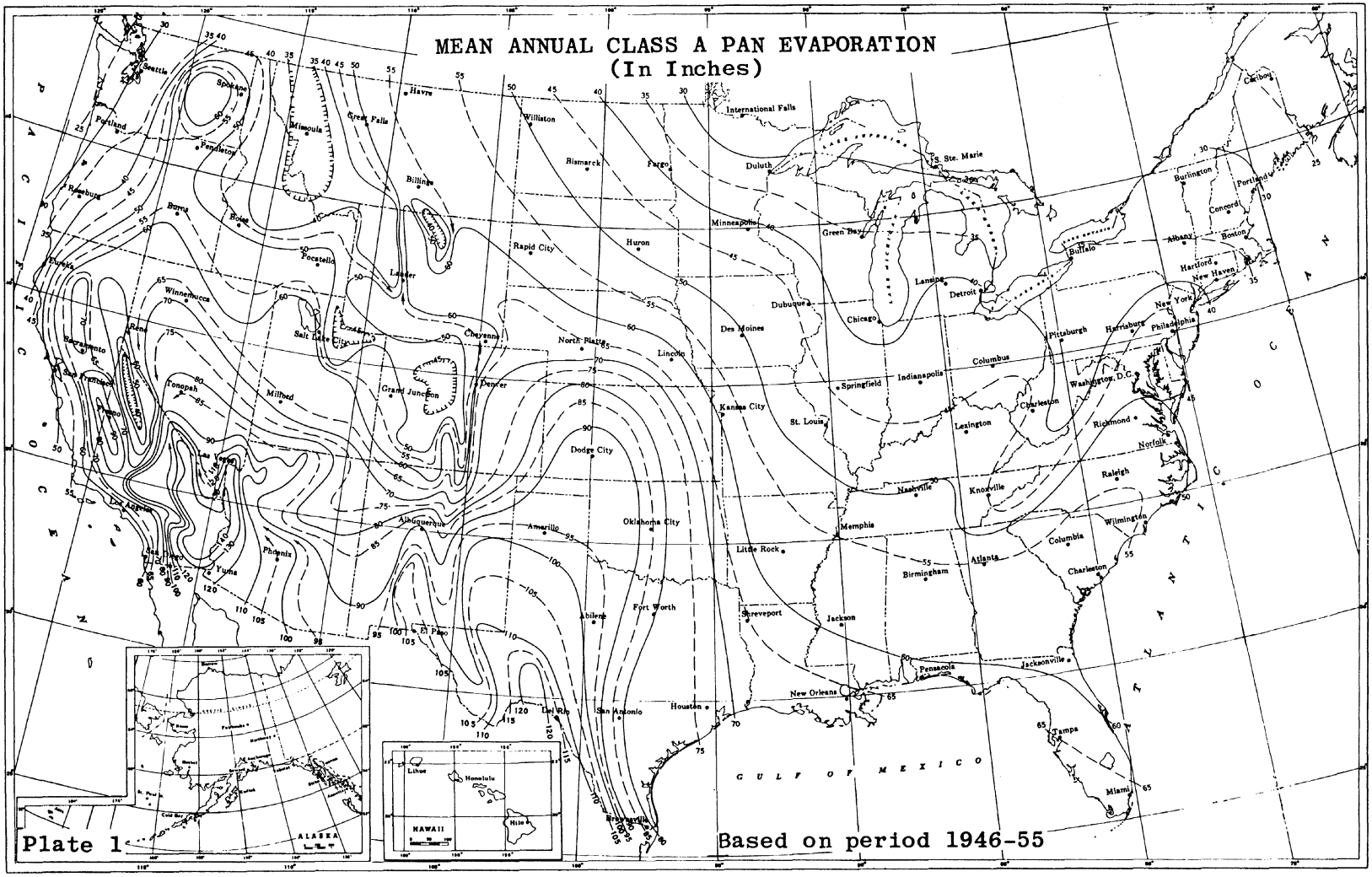


Figure 13.2.2-3. Annual evaporation data.

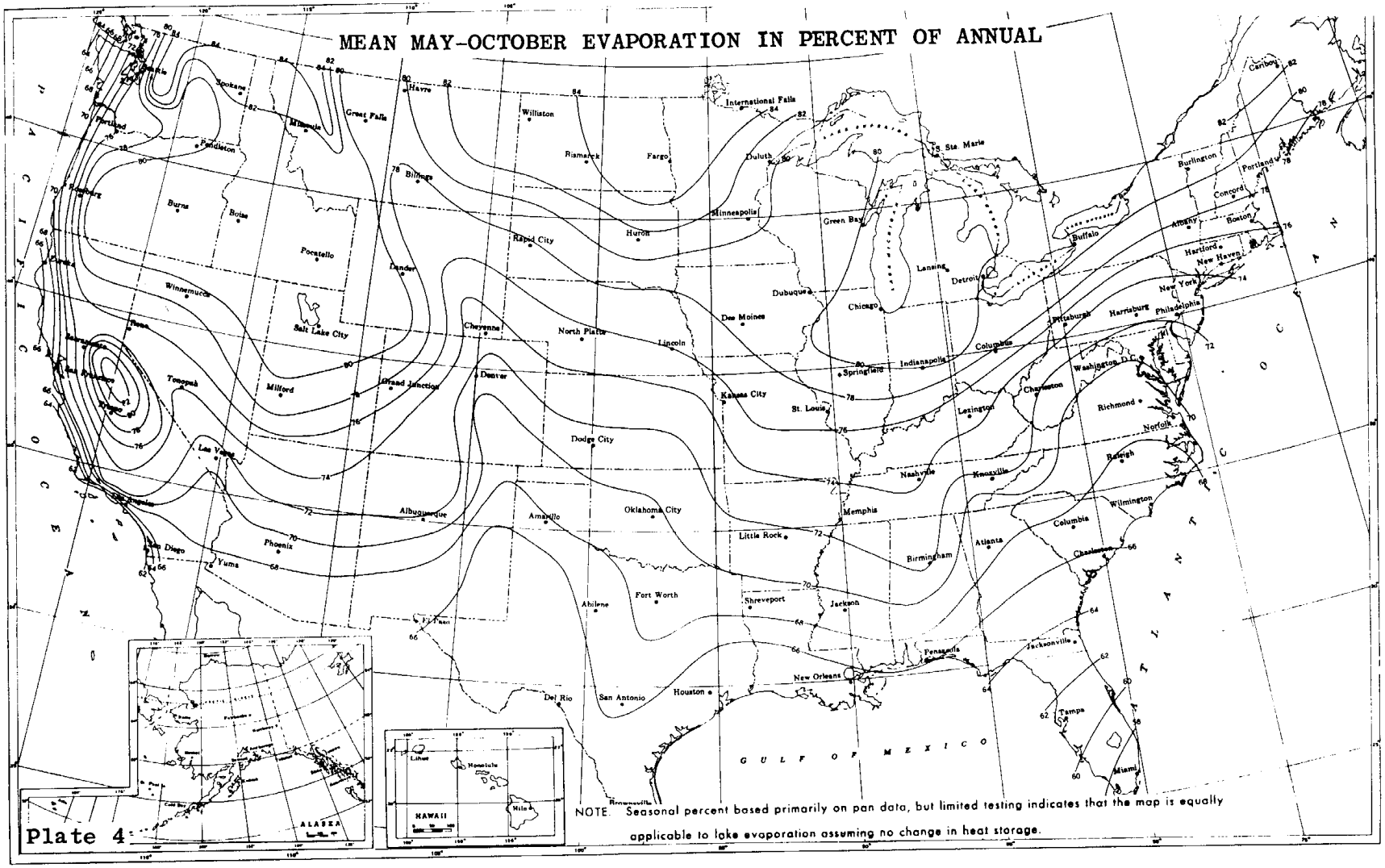


Figure 13.2.2-4. Geographical distribution of the percentage of evaporation occurring between May and October.

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, $\leq$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.

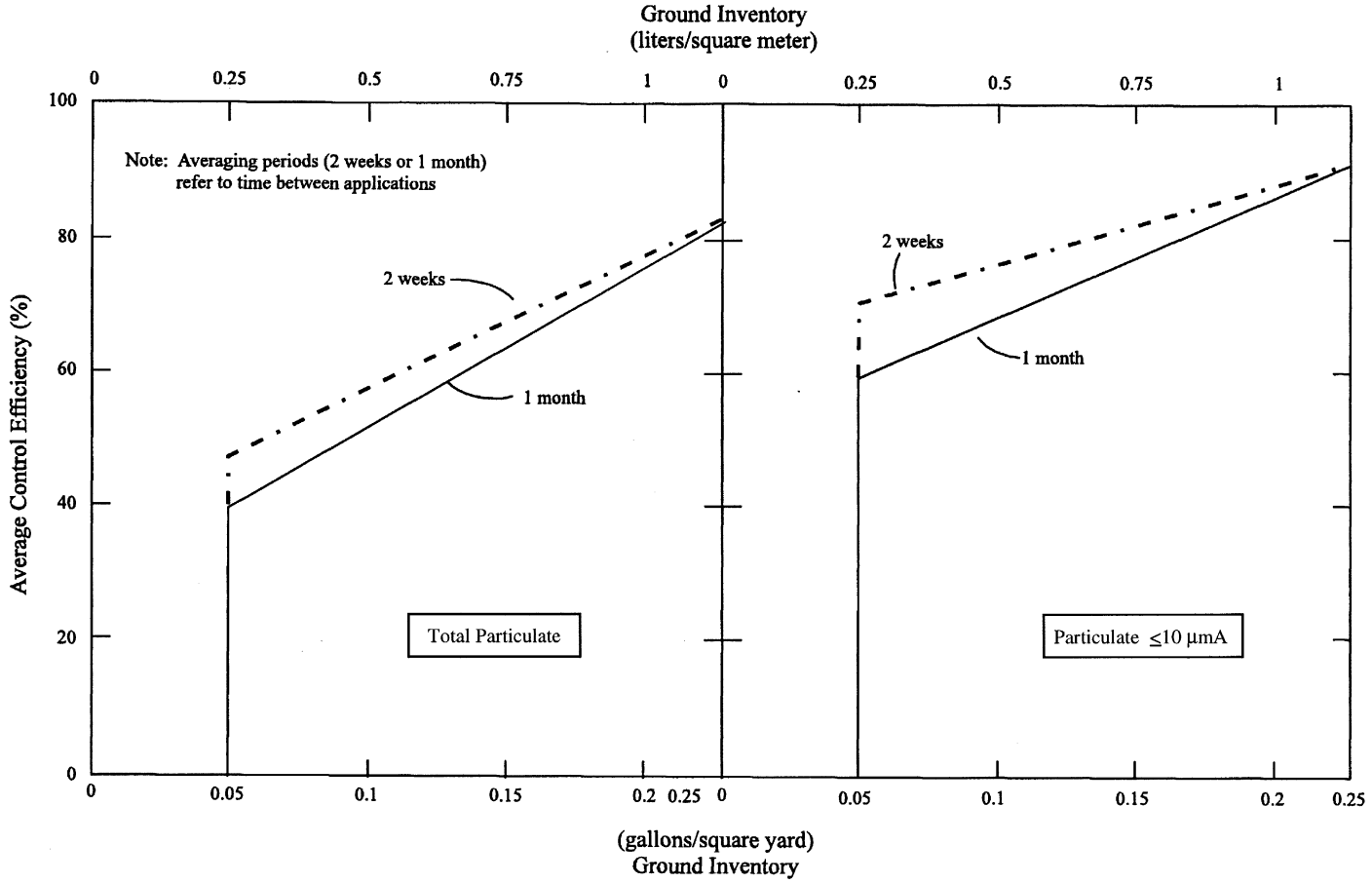


Figure 13.2.2-5. Average control efficiencies over common application intervals.

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.

References For Section 13.2.2

1. C. Cowherd, Jr., *et al., Development Of Emission Factors For Fugitive Dust Sources*, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

2. R. J. Dyck and J. J. Stukel, "Fugitive Dust Emissions From Trucks On Unpaved Roads", *Environmental Science And Technology, 10*(10):1046-1048, October 1976.

3. R. O. McCaldin and K. J. Heidel, "Particulate Emissions From Vehicle Travel Over Unpaved Roads", Presented at the 71st Annual Meeting of the Air Pollution Control Association, Houston, TX, June 1978.

4. C. Cowherd, Jr, *et al., Iron And Steel Plant Open Dust Source Fugitive Emission Evaluation*, EPA-600/2-79-013, U. S. Environmental Protection Agency, Cincinnati, OH, May 1979.

5. G. Muleski, *Unpaved Road Emission Impact*, Arizona Department of Environmental Quality, Phoenix, AZ, March 1991.

6. *Emission Factor Documentation For AP-42, Section 13.2.2, Unpaved Roads, Final Report*, Midwest Research Institute, Kansas City, MO, September 1998.

7. T. Cuscino, Jr., *et al., Taconite Mining Fugitive Emissions Study*, Minnesota Pollution Control Agency, Roseville, MN, June 1979.

8. *Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources*, 2 Volumes, EPA Contract No. 68-03-2924, Office of Air Quality Planning and Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC.

9. T. Cuscino, Jr., *et al., Iron And Steel Plant Open Source Fugitive Emission Control Evaluation*, EPA-600/2-83-110, U. S. Environmental Protection Agency, Cincinnati, OH, October 1983.

10. *Size Specific Emission Factors For Uncontrolled Industrial And Rural Roads*, EPA Contract No. 68-02-3158, Midwest Research Institute, Kansas City, MO, September 1983.

11. C. Cowherd, Jr., and P. Englehart, *Size Specific Particulate Emission Factors For Industrial And Rural Roads*, EPA-600/7-85-038, U. S. Environmental Protection Agency, Cincinnati, OH, September 1985.

12. *PM-10 Emission Inventory Of Landfills In The Lake Calumet Area*, EPA Contract 68-02-3891, Work Assignment 30, Midwest Research Institute, Kansas City, MO, September 1987.

13. *Chicago Area Particulate Matter Emission Inventory — Sampling And Analysis*, EPA Contract No. 68-02-4395, Work Assignment 1, Midwest Research Institute, Kansas City, MO, May 1988.

14. *PM-10 Emissions Inventory Data For The Maricopa And Pima Planning Areas*, EPA Contract No. 68-02-3888, Engineering-Science, Pasadena, CA, January 1987.

15. *Oregon Fugitive Dust Emission Inventory*, EPA Contract 68-D0-0123, Midwest Research Institute, Kansas City, MO, January 1992.

16. *Climatic Atlas Of The United States*, U. S. Department Of Commerce, Washington, DC, June 1968.

17. National Climatic Data Center, *Solar And Meteorological Surface Observation Network 1961-1990*; 3 Volume CD-ROM. Asheville, NC, 1993.

18. C. Cowherd, Jr. *et al., Control Of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

19. G. E. Muleski, *et al., Extended Evaluation Of Unpaved Road Dust Suppressants In The Iron And Steel Industry*, EPA-600/2-84-027, U. S. Environmental Protection Agency, Cincinnati, OH, February 1984.

20. C. Cowherd, Jr., and J. S. Kinsey, *Identification, Assessment And Control Of Fugitive Particulate Emissions*, EPA-600/8-86-023, U. S. Environmental Protection Agency, Cincinnati, OH, August 1986.

21. G. E. Muleski and C. Cowherd, Jr., *Evaluation Of The Effectiveness Of Chemical Dust Suppressants On Unpaved Roads*, EPA-600/2-87-102, U. S. Environmental Protection Agency, Cincinnati, OH, November 1986.

22. *Fugitive Dust Background Document And Technical Information Document For Best Available Control Measures*, EPA-450/2-92-004, Office Of Air Quality Planning And Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1992.

23. Written communication (Technical Memorandum) from P. Hemmer, E.H. Pechan & Associates, Inc., Durham, NC to B. Kuykendal, U. S. Environmental Protection Agency, Research Triangle Park, NC, August, 21, 2003.

24. MOBILE6 User Guide, United States Environmental Protection Agency, Office of Transportation and Air Quality. EPA420-R-02-028, October 2002.

25. Written communication (Technical Memorandum) from G. Muleski, Midwest Research Institute, Kansas City, MO, to B. Kuykendal, U. S. Environmental Protection Agency, Research Triangle Park, NC, Subject "Unpaved Roads", September 27, 2001.

26. Written communication (Technical Memorandum) from W. Kuykendal, U. S. Environmental Protection Agency, to File, Subject "Decisions on Final AP-42 Section 13.2.2 Unpaved Roads", November 24, 2003.

27. C. Cowherd, *Background Document for Revisions to Fine Fraction Ratios &sed for AP-42 Fugitive Dust Emission Factors*. Prepared by Midwest Research Institute for Western Governors Association, Western Regional Air Partnership, Denver, CO, February 1, 2006.



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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	0.0485 lb/MMBtu
		low Btu	0.068 lb/MMBtu
	other:	high Btu	0.138 lb/MMBtu
		low Btu	0.0641 lb/MMBtu
fuel NO_x	NO_x is 0.5 wt percent of inlet NH_3, other fuels case by case		
CO	steam-assist:	high Btu	0.3503 lb/MMBtu
		low Btu	0.3465 lb/MMBtu
	other:	high Btu	0.2755 lb/MMBtu
		low Btu	0.5496 lb/MMBtu
PM	none, required to be smokeless		
SO_2	100 percent S in fuel to SO_2		

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

United States
Environmental Protection
Agency

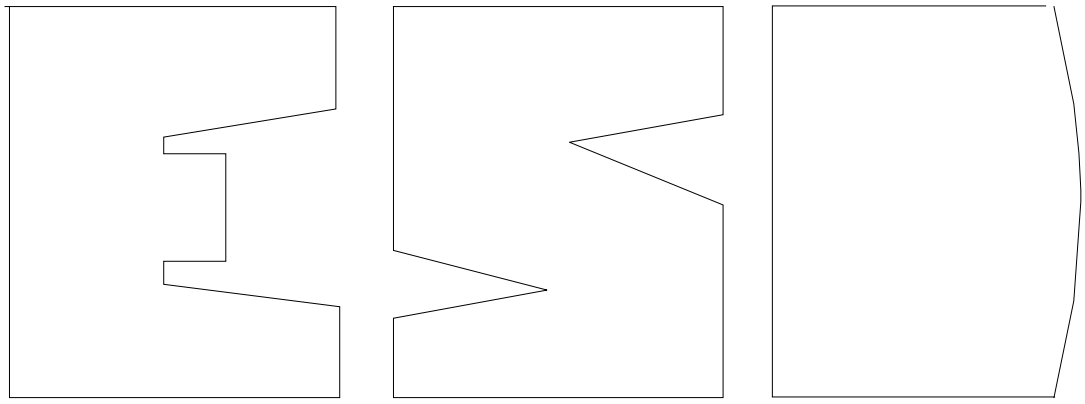
Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EPA-453/R-95-017
November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates



EPA-453/R-95-017

1995 Protocol for Equipment Leak Emission Estimates

Emission Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

November 1995

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.

Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A topographic map is included below.



OUTLAND COMPRESSOR STATION
DELEK LOGISTICS PARTNERS, LP

SECTION 15 & 16, T21S, R34E
LEA COUNTY, NEW MEXICO

- PROPOSED ACCESS ROAD
- OVERHEAD ELECTRIC
- EXISING PIPELINE
- EXISTING FENCE
- OUTLAND COMPRESSOR STATION STATE
- LAND

1,000 500 0 1,000
Feet Feet

DATE: 9/8/2017

FILE: Outland-CS-Topo

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011

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.

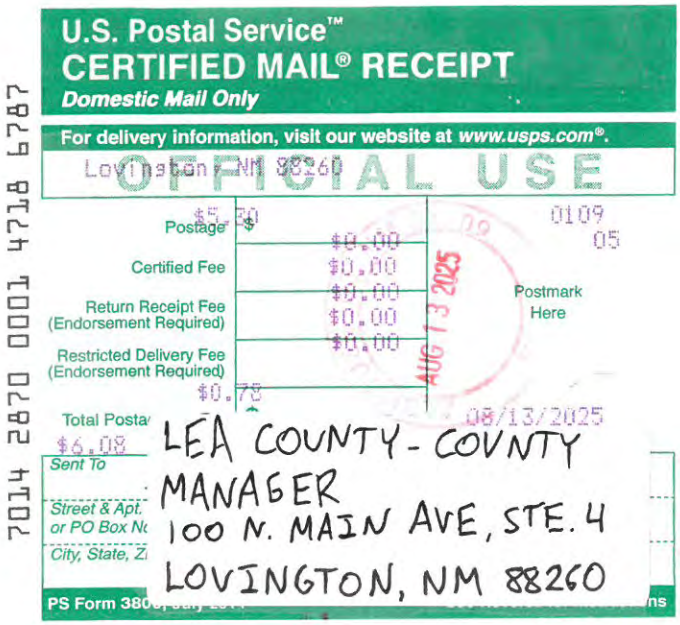
Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

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:

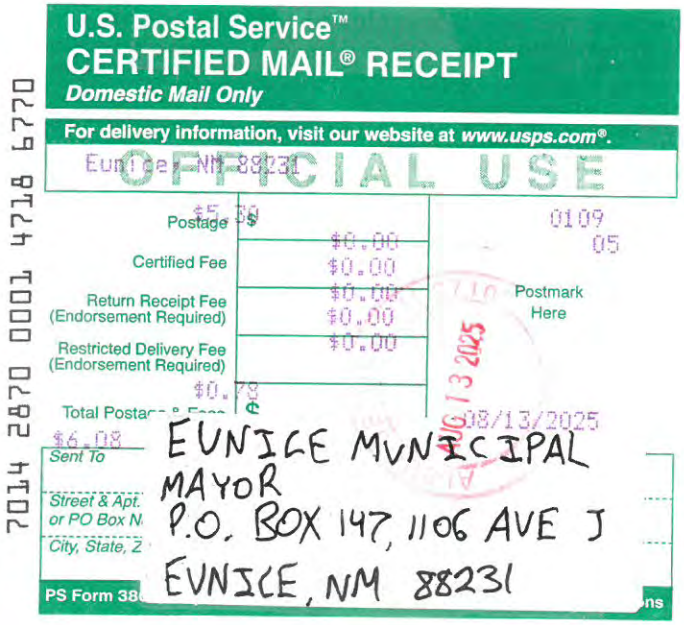
1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
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.



U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only
For delivery information, visit our website at www.usps.com®.
Lovington, NM 88260
OFFICIAL USE
Postage $5.30
Certified Fee $0.00
Return Receipt Fee (Endorsement Required) $0.00
Restricted Delivery Fee (Endorsement Required) $0.00
Total Postage & Fees $6.08
0109 05
AUG 13 2025
Postmark Here
08/13/2025
Sent To
LEA COUNTY - COUNTY MANAGER
Street & Apt. or PO Box No.
100 N. MAIN AVE, STE. 4
City, State, ZIP+4
LOVINGTON, NM 88260
PS Form 3800, July 2017
7014 2870 0001 4718 6787



U.S. Postal Service™
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For delivery information, visit our website at www.usps.com®.
Eunice, NM 88231
OFFICIAL USE
Postage $5.30
Certified Fee $0.00
Return Receipt Fee (Endorsement Required) $0.00
Restricted Delivery Fee (Endorsement Required) $0.00
Total Postage & Fees $6.08
0109 05
AUG 13 2025
Postmark Here
08/13/2025
Sent To
MERCHANT LIVESTOCK
Street & Apt. or PO Box
P.O. BOX 1105
City, State, ZIP+4
Eunice, NM 88231
PS Form 3800, July 2017
7014 2870 0001 4718 6794



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For delivery information, visit our website at www.usps.com®.
Eunice, NM 88231
OFFICIAL USE
Postage $5.30
Certified Fee $0.00
Return Receipt Fee (Endorsement Required) $0.00
Restricted Delivery Fee (Endorsement Required) $0.00
Total Postage & Fees $6.08
0109 05
AUG 13 2025
Postmark Here
08/13/2025
Sent To
EUNICE MUNICIPAL MAYOR
Street & Apt. or PO Box No.
P.O. BOX 147, 1106 AVE J
City, State, ZIP+4
EUNICE, NM 88231
PS Form 3800, July 2017
7014 2870 0001 4718 6770

August 13, 2025

CERTIFIED MAIL 7014 2870 0001 4718 6787
RETURN RECEIPT REQUESTED (certified mail is required, return receipt is optional)

Dear County Official,
Delek Logistics Partners, LP announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **compressor station** facility. The expected date of application submittal to the Air Quality Bureau is **August 15, 2025.**

The exact location for the proposed facility known as, **Outland Compressor Station**, is at latitude 32 deg**,** 28 min, 19.4592 sec and longitude -103 deg**,** 27 min, 57.0816 sec. The approximate location of this facility is **15.7** miles **west-southwest** of **Monument, NM** in **Lea County**.

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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
PM_{10}	4	14
$PM_{2.5}$	4	14
Sulfur Dioxide (SO_2)	2	7
Nitrogen Oxides (NO_x)	278	140
Carbon Monoxide (CO)	529	168
Volatile Organic Compounds (VOC)	515	211
Total sum of all Hazardous Air Pollutants (HAPs)	50	75
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	170,180

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days per week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is:
Delek Logistics Partners, LP
5850 Granite Parkway, Ste. 450
Plano, Texas, 75024

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the

application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

Attención
Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-629-3395.

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.

August 13, 2025

CERTIFIED MAIL 7014 2870 0001 4718 6794
RETURN RECEIPT REQUESTED (certified mail is required, return receipt is optional)

Dear Neighbor,
Delek Logistics Partners, LP announces its application submittal to the New Mexico Environment Department for an air quality permit for the **modification** of its **compressor station** facility. The expected date of application submittal to the Air Quality Bureau is **August 15, 2025.**

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Table of Notified Citizens

Name	Address	City	State	Zip Code
MERCHANT LIVESTOCK	PO BOX 1105 EUNICE, NM 88231	EUNICE	NM	88231

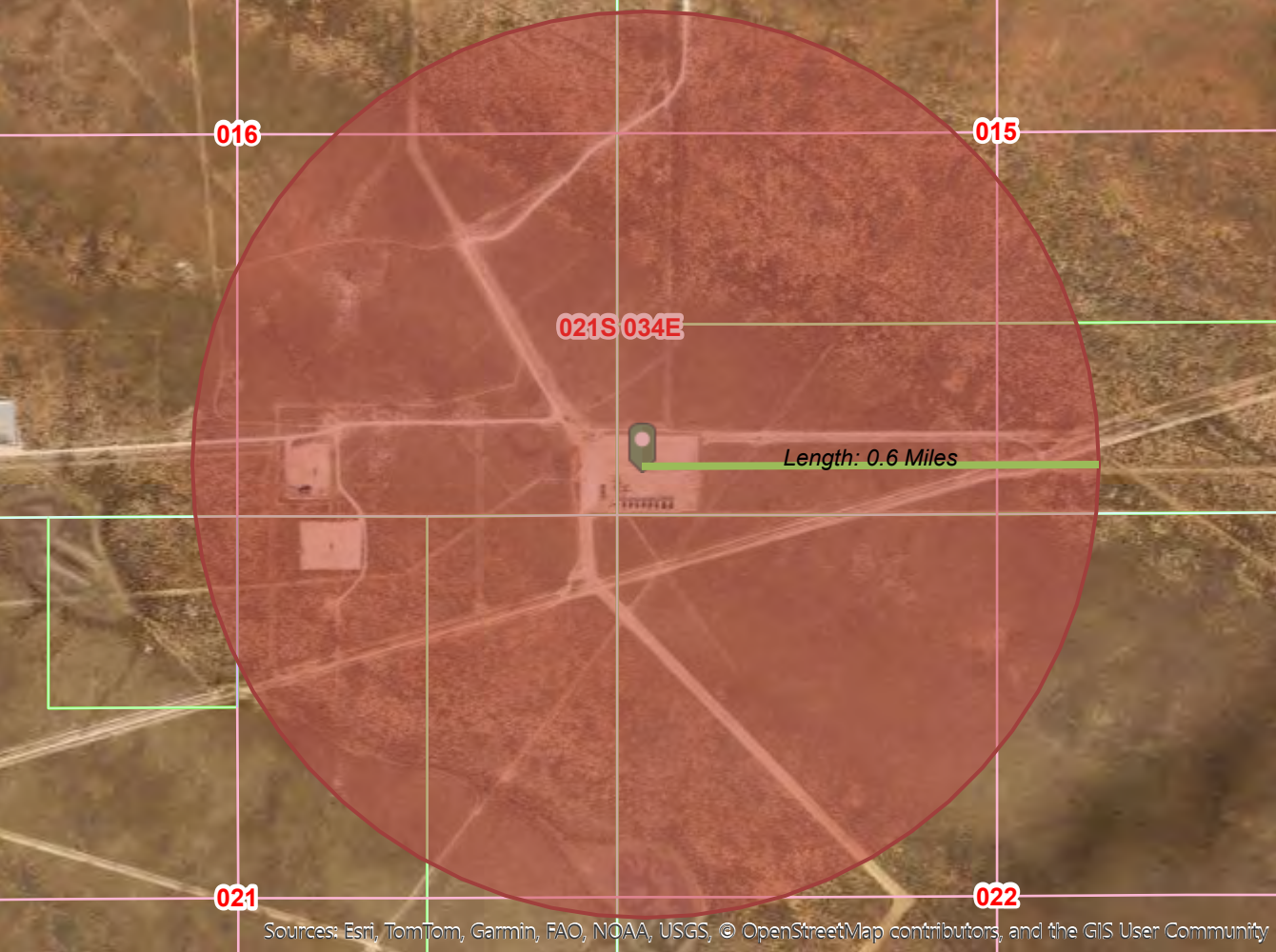
Table of Notified Counties

Name	Address	City	State	Zip Code
LEA COUNTY – COUNTY MANAGER	100 N Main Ave, Ste. 4	LOVINGTON	NM	88260

Table of Notified Municipalities

Name	Address	City	State	Zip Code
EUNICE MUNICIPAL MAYOR	PO Box 147 1106 Ave J	EUNICE	NM	88231


Length: 0.1 Miles
021S 034E
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community


016
015
021S 034E
Length: 0.6 Miles
021
022
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Click to Print

Owner Information

Owner #:50188 **District:**080

Name: MERCHANT LIVESTOCK

Co Name: COMPANY

Address1: PO BOX 1105

Address2:

City: EUNICE **State:** NM **Zip Code:** 88231

Estimated Taxes for Owner

Estimated Tax	Estimated Year used
$105.75	2024

Calculate Estimated Tax

Recap Value Information

Affidavit of Publicati

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobb
News-Sun, a newspaper published at
Hobbs, New Mexico, solemnly swear t
the clipping attached hereto was publi
in the regular and entire issue of said
newspaper, and not a supplement the
for a period of 1 issue(s).

Beginning with the issue dated
August 13, 2025
and ending with the issue date
August 13, 2025.

Publisher

Sworn and subscribed to before me th
13th day of August 2025.

Business Manager

My commission expires
January 29, 2027
(Seal)

STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/20

This newspaper is duly qualified to pub
legal notices or advertisements within t
meaning of Section 3, Chapter 167, La
1937 and payment of fees for said pub
has been made.

NOTICE OF AIR QUALITY PERMIT APPLICATION

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Fentanyl

from PAGE 1

without their support."

In November 2024, LCDTF placed a tracker on a vehicle associated with Marquez and alerted DEA agents in Albuquerque the vehicle was headed their direction, according to an affidavit by DEA Agent David Zimmerman.

The vehicle pulled into a motel parking lot in Albuquerque where agents observed Marquez and two females exit the car to check in. While there, the vehicle also went to a house associated with known drug trafficker, Bruce Sedillo, the affidavit reported.

The vehicle then headed to Tatum, where the LCDTF initiated an investigative stop that resulted in Marquez and two females being interviewed. LCDTF narcotics K9 indicated there was a possibility of drugs in the vehicle, as stated in the affidavit.

The vehicle was taken to Lea County Sheriff's Office to await a search warrant and Marquez was released pending further investigation, the affidavit stated.

When LCDTF received the search warrant for the vehicle, 11,000 fentanyl pills were found in the backseat. It is believed Marquez picked up the pills from Sedillo in Albuquerque, Zimmerman wrote in the affidavit.

In May, Marquez attempted to flee from the Hobbs Apartments as the LCDTF arrested him on several federal warrants including a U.S. Marshall warrant for the violation of supervised release and was on the run for several months, according to a report from NewsWest9.

Marquez was charged with possession with intent to distribute and distribution of 400 grams or more of fentanyl and conspiracy to commit drug trafficking, according to the criminal complaint.

The U.S. Attorney's press release stated that in July, Marquez pled guilty to conspiracy to commit a drug trafficking offense and possession with intent to distribute fentanyl. At sentencing, Marquez faces not less than 10 years to a maximum life in prison.

Sedillo pled guilty to conspiracy, distribution of fentanyl, possession with intent to distribute fentanyl, and possession a firearm in furtherance of a drug trafficking crime. At sentencing, Sedillo also faces from 15-years to life in prison, according to the press release.

Others have pled guilty to federal charges including David Anesi, Cesar Acuna Moreno, Francisco Garcia, Phillip Lovato, and Brian Sanchez. The remaining accused defendants, including Heriberto Salazar Amaya, are scheduled for trial on Oct. 21, 2025, the press release stated.

Christina Holt's *email is reporter3@hobbsnews.com.*

Eunice

from PAGE 1

Larger communities such as Hobbs began feeling the pinch first in 2023 and 2024 as oilfield companies caught on to the change and jumped on board to save money.

Smaller communities like Eunice took a little longer to get hit. But when it came, it came much harder because it took less gross receipts tax revenue losses to affect their budgets.

"In July 2024, we were at $622,000," Cummins said of the monthly GRT checks from the state, which collects all GRT revenues and redistributes them to cities and counties. "Our last three have been in the $300,000 range."

Over the course of a year, $300,000 a month in lost revenue can amount to around $3.6 million.

Cummins said the big dips in GRT revenues have only started showing up in the last four or five months, so the gap between revenue and expenses could widen even further before the year is out.

Beyond that, the city recently got hit with a sucker punch from the New Mexico Taxation and Revenue Department, which, while refiguring GRT distributions under the HB6 changes, found that Eunice had received an additional $1.2 million in GRT distributions last year that were mis-distributed under the old method.

"We suffered a claw-back," Cummins said of the state hitting the community with an upfront withholding of the entire June GRT distribution the city should have received — an amount in the tune of $368,000. "We still owe more. We still owe $857,000. Luckily, we were able to do an agreement and we will be paying out the rest, but we didn't have that option the first round."

Eunice residents will soon start feeling the pinch as the city's government scrambles to make up those losses.

At the July meeting, councilors approved not only implementing a 2017 tariff on ambulance runs that will charge patients who refuse transport as much as $500, billed to their insurance provider, but also increased the city's sanitation rate fees by 30 percent, raising the cost of a residential trash cart from $17.59 to $22.87 per month.

The community also cut next year's Fourth of July fireworks display in favor of a contracted drone show, a move that may save the community as much as $100,000 a year in specialty insurance, although the exact amount is unclear.

Cummins said she doesn't want to scare residents, but "everything is on the table" when it comes to shoring up the revenue gap.

"We are looking at every option possible. We are just making changes everywhere we can," Cummins said. "I am looking under every rug. We are cutting everything we don't use, little things. We had not made an increase to trash rates in six years, so that was one place we looked.

"We depend on our GRTs and when it is not where we need it to be, we have to start looking at other options," she added.

Levi Hill's *email is reporter1@hobbsnews.com.*

Landfill

from PAGE 1

Much like a burning underground coal seam, the fire could be spread through many layers of waste deposited at the facility, smoldering until exposed to oxygen.

"You don't know how far down it is," Velasquez said. "You have to continue to keep moving the product around. You have to keep moving it around and wet it enough to kill the heat."

Velasquez said only one of six disposal cells at the facility is on fire and there is no danger of the fire spreading to other cells or leaving the facility in a high wind event.

"It is contained," he said. "We called the state because of our permitting and we are following their guidelines. It is really just a nuisance for the public."

Nuisance indeed, as Velasquez said the county has received complaints from Urenco USA about the smell of smoke.

Jeremy Derryberry, director of communications for Urenco USA, said the smoke is not causing an issue with facility operations, but is bothering the workforce.

"We are operating normally," he said. "The inside air quality is fine but you notice it outside. It seemed better this morning. The wind is from the other direction."

He said if it becomes an issue for employees, the facility does allow some staff to work from home if necessary.

Eunice city officials and the Eunice Health Clinic did not return phone calls as of press time concerning complaints or increased health issues related to the smoke.

However, health recommendations from the national Centers for Disease Control and Preventing concerning wildfire smoke may apply in this case.

According to the CDC, tips to staying healthy include: Staying indoors, closing doors and windows and using recirculation mode on air conditioning systems and seeing a healthcare provider if symptoms such as asthma worsen.

Democrats

from PAGE 1

The Republican Party of New Mexico also released a statement condemning the crime and stating the party is "deeply troubled" by the act.

The Republican state headquarters in Albuquerque was firebombed in March with graffiti spray painted on the building appearing to equate the white supremacist hate group, the Ku Klux Klan, with U.S. Immigration and Customs Enforcement, or ICE.

"Crime continues to be at the forefront in every community around New Mexico," the RPNM release reads. "This violation compromises not just the safety and integrity of political activities but also fosters fear and uncertainty among both local party members and (the) wider community."

The Republican Party of Lea County chairwoman Carol Parish was quoted in the release saying the incident highlights the "critical need" to address crime, and address any disagreements through transparent dialogue instead of turning to illegal behavior.

"We must stress that violence must never be tolerated and that the political framework deserves respect," Parish said. "We remain committed to exposing these issues until our state and local policies take a firmer stance against crime."

New Mexico House Republican Representative, Elaine Sena-Cortez of Hobbs, was also quoted in the RPLC release, stating violence has no place in our country and no matter how strong the differences in opinion, it must be settled through dialogue and debate.

"That's what our constitutional republic demands of us all. We can disagree passionately on policy while still respecting the political process and each other's right to participate in it." Sena-Cortez said.

Public Information Officer with the HPD, Reanna Alarcon said investigations are pending until further information is gathered.

The News-Sun was unable reach Democrat Party of Lea County chairwoman Trish Ruiz for commit as of press time.

Parents pleaded with officers to act during Uvalde shooting

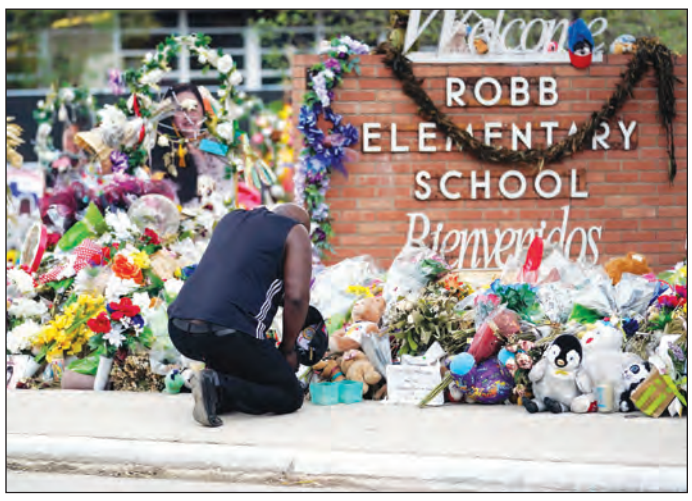
AUSTIN, Texas (AP) — Desperate parents begged law enforcement officers to storm an elementary school in Uvalde, Texas, in the frantic minutes after a gunman opened fire in one of the deadliest classroom attacks in U.S. history, police body camera video released Tuesday shows.

"Whose class is he in?" one parent can be heard asking. Another comes up and yells, "Come on man, my daughter is in there!"

The heartbreaking videos show the agonizingly slow law enforcement response along with confusion and delays. Authorities failed to confront 18-year-old gunman Salvador Ramos for more than an hour after the attack at Robb Elementary School began on May 24, 2022. Nineteen students and two teachers were killed.

The records released Tuesday are the final batch of documents that local authorities withheld during a yearslong legal battle over public access. Family members of the victims were among those pushing for the records to be released.

The documents disclosed deputies visited the gunman's home three months before the shooting after his mother said she was scared of him, while nearly six hours of bodycam videos revealed missteps and frustration throughout the attack and its aftermath.



AP PHOTO

Reggie Daniels pays his respects at a memorial at Robb Elementary School June 9, 2022, in Uvalde, Texas, created to honor the victims killed in the school shooting.

Frightened parents urge officers to act

Several videos show officers from multiple departments inside the school hallway and standing outside, some suggesting throwing gas in the window or searching for a key to the locked classroom. But it's unclear who is in charge.

Within minutes, parents making their way to a fence near the school yell at officers to do something.

One parent angrily says, "Either you go in or I'm going in bro," adding a few seconds later, "My kids are in there, bro. ... Please!"

In one video, an officer involved in the initial response can be heard saying, "We can't see him at all" before adding, "We were at the front and he started shooting."

The officer wearing the bodycam asks: "He's in a classroom right?" Another officer responds: "With kids."

"Something needs to be done ASAP," a voice can be heard saying almost an hour before anyone charged into the classroom.

Outside, a woman who says she's a relative of the gunman sobs, telling police to "take him out."

Deputies met Uvalde gunman months earlier

Documents released Monday by the school district offer the most detailed look yet at the gunman whose downward spiral began in middle school with a series of suspensions and warnings for harassment and bullying. He dropped out of school just months before the shooting.

Sheriff's deputies went to the gunman's home on two consecutive nights before the attack because he was arguing with his mother over Wi-Fi and broken video game equipment after she turned off the internet, according to county records released Tuesday.

Adriana Reyes said her son never hit her but told deputies she was scared of him and needed help, a report said. Ramos' grandmother picked him up one night, and deputies drove him there the next night.

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Total sum of all Hazardous Air Pollutants (HAPs)	50	75
Toxic Air Pollutant (TAP)	N/A	N/A
Green House Gas Emissions as Total CO_2e	N/A	170,180

The standard and maximum operating schedules of the facility will be 24 hours per day, 7 days per week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is:
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5850 Granite Parkway, Ste. 450
Plano, Texas, 75024

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Affidavit of Publicati

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobb
News-Sun, a newspaper published at
Hobbs, New Mexico, solemnly swear th
the clipping attached hereto was publis
in the regular and entire issue of said
newspaper, and not a supplement there
for a period of 1 issue(s).

Beginning with the issue dated
August 13, 2025
and ending with the issue dated
August 13, 2025.

Publisher

Sworn and subscribed to before me this
13th day of August 2025.

Business Manager

My commission expires
January 29, 2027
(Seal)

STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/2027

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

LEGAL LEGAL LEGAL LEGAL

LEGAL NOTICE
August 13, 2025

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TRACY POWELL
TRINITY CONSULTANTS, INC.
12700 PARK CENTRAL DR., STE. 600
DALLAS, TX 75251

Outlook

Request for Public Service Announcement

From Ryan Ahlberg <Ryan.Ahlberg@trinityconsultants.com>
Date Fri 8/15/2025 1:35 PM
To aaron@noalmark.com <aaron@noalmark.com>
Cc Adam Erenstein <AErenstein@trinityconsultants.com>; Jason Boothe <jason.boothe@deleklogistics.com>; Jonathon A Smith <jonathon.smith@deleklogistics.com>; Daniel Dolce <Daniel.Dolce@trinityconsultants.com>

Good Afternoon,

Per New Mexico Administrative Code 20.2.72.203.B 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. **Therefore, based on the above, we respectfully ask you to air the following script as a Public Service Announcement.**

> "This is a Public Service Announcement for a revision to the air quality permit of a compressor station facility per the requirements of New Mexico Administrative Code 20.2.72.203.D. The name of the facility is the Outland Compressor Station. The Outland Compressor Station is located at the following coordinates: 32.472072 degrees North and -103.465856 degrees West. The type of change for which the permit is sought is an Initial New Source Review in which the calculation methodology, representation, and emission limits at the facility are updated for all units.
>
> Public notice has been posted near Jal, New Mexico at the following locations:
> (1) At the facility entrance of the Outland Compressor Station,
> (2) At the Eunice Public Library located at 1003 Avenue N. in Eunice, NM Zip Code 88231
> (3) At the Eunice City Hall located at 1106 Ave J. in Eunice, NM Zip Code 88231
> (4) At the Lowe's Pay-N-Save located at 1326 Ave J. in Eunice, NM Zip Code 88231
>
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>
> Please let me know if you have any questions.
>
> Have a great day,

Ryan Ahlberg
Associate Consultant

P 505.266.6611 M 815.341.2524
Email: mailto:ryan.ahlberg@trinityconsultants.com
9400 Holly Ave NE, Bldg 3, Ste B Albuquerque, NM 87122

Trinity Consultants

Connect with us: LinkedIn / YouTube / trinityconsultants.com (UPDATED WEBSITE!)

View our capabilities in the Environmental Consulting, Built Environment, Life Sciences, and Water & Ecology markets.

General Posting of Notices – Certification

I, _____Aaron Smith _____, the undersigned, certify that on **8/13/2025,** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in **Eunice, New Mexico** of Lea County, State of New Mexico on the following dates:

1. Outland Compressor Station Facility Entrance - 8/13/2025
2. Eunice Public Library_1003 Avenue N. Eunice, NM 88231 - 8/13/2025
3. Eunice City Hall_1106 Ave J. Eunice, NM 88231 - 8/13/2025
4. Lowe's Pay-N-Save_1326 Ave J. Eunice, NM 88231-8/13/2025

Signed this 13th day of August, 2025

Signature

8/13/25
Date

Aaron Smith
Printed Name

Delek Logistics – Environmental Manager
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

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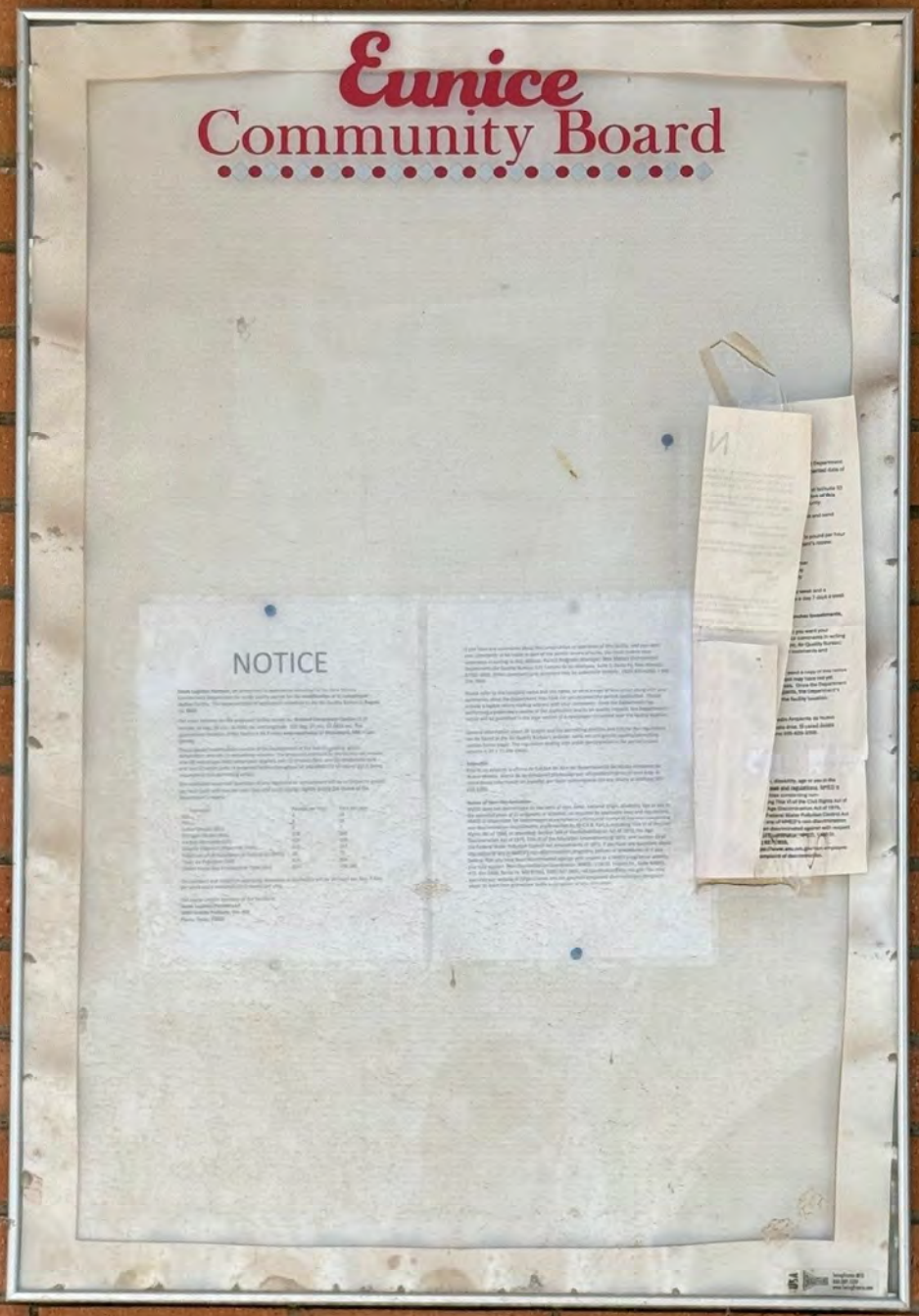
ONOUS GAS
BE PRESENT
CAUCION


NOTICE
CAU
POISONOUS GAS
MAY BE PRESENT
PRECAUCION
H_2S
GAS VENENOSO PUEDE
ESTAR PRESENTE
CAUTION
Proper PPE Required
Hard hat, Safety Glasses,
Steel Toe Boots,
Hearing Protection
Gloves, FRC
OUTLAND BOOSTER
LEA COUNTY
LAT:32.4732
LONG:-103.4672
EMERGENCY PHONE: 1- 575-552-3997
SAFETY FIRST!
DANGER
NOTICE
NO SMOKING
EXCEPT IN
DESIGNATED AREAS
AUTHORIZED
PERSONNEL
ONLY!


NOTICE
CAUTION
Proper PPE Required
Hard hat, Safety Glasses, Steel Toe Boots, Hearing Protection Gloves, FRC
OUTLAND BOOSTER
LEA COUNTY
LAT 32.4732
LONG -103.4672
EMERGENCY PHONE 1- 575-552-3997
SAFETY FIRST!
DANGER
NOTICE
NO SMOKING
EXCEPT IN DESIGNATED AREAS
AUTHORIZED PERSONNEL ONLY!
H_2S
GAS VENENOSO PUEDE ESTAR PRESENTE


If eligible, there are 17 free services for children and their families to benefit from.
These can include but are not limited to:
Speech Therapy
Occupational Therapy
Physical Therapy
Family Support Services
Developmental Instruction
Services are conducted in the home and community setting so we'll go to daycare, grandma's house or wherever is most convenient for you and your family.
mecakids.com
SMALL BUSINESS WEBINAR SERIES:
Independent Contractor or Employee?
How to Navigate Legal Classification and Contracts
Wednesday, June 4, 2025
12:1 p.m. (MT)
New Mexico State Bar Foundation
Modest Means Helpline
505-797-6013 • 888-857-9935
PMS
Presbyterian Medical Services
Home Visiting Program
WHAT IS HOME VISITING?
PMS Home Visitors are qualified parent educators certified through the nationally recognized, evidence-based Parents as Teachers model.
WHO CAN RECEIVE HOME VISITING SERVICES?
Serving Lea & Eddy Counties
Call or Text 575-430-4405 or for Spanish-speaking, 575-241-9356
Example on 12 cent
Action # 252
Amazing Spiderman
Amazing Fantasy #15
Fantastic four 1 to 48
Daredevil #1
Wolverine #1
Teenage mutant ninja turtles 1 to 3
Avengers 1 to 10
X-men 1 to 19
Justice league of America #1
Walking dead No. 1
CALL ANYTIME DAY OR NIGHT
575-399-2060
Do you need a babysitter for the Summer? I am a Grandma, and have a substitute teaching license. Call (575)408-6624, ask for Lisa.
Women, Infants and Children
What is WIC?
Who is eligible?
WIC services are free!
WIC
PUBLIC HEALTH DIVISION
WIC NUTRITION PROGRAM
WIC builds healthy futures.
Modest Means Helpline
New Mexico State Bar Foundation
Modest Means Helpline
505-797-6013 • 888-857-9935
Goodwill provide job opportunities to older
Become a Host Agency
NOTICE
FIX YOUR HAIL DAMAGE FOR FREE
$
TALK TO US
CHI St. Joseph's Children
Telehealth Home Visiting
We know your first baby is your first priority.
Interesting Work that Fits your Busy Schedule
Goodwillit.
CHI St. Joseph's Children
Telehealth-Home Visiting
Babies DO Come with Instructions!
It's okay to be nervous.
Bringing a child into the world is a major life event & today there are many unknowns. One thing is certain, we are here to support you
Telehealth-Home Visiting
Opportunity to Learn and grow
Need to Know
What you can Expect
Contact Us
Website: www.stjosephsnm.org
Phone: 505 924 8000
Facebook: @StJosephsChildren
Twitter: @StJosephChildren
PHARMACY 575
Your Health Is Our Pri
PHARMACY COMMUNITY PLANS
Blue Cross and Blue Shield of New Mexico for Turquoise Care Members
Programs and Benefits
Notice of Non-Discrimination


PUBLIC
LIBRARY
OPEN


Eunice
Community Board
NOTICE


CITY HALL
EUNICE, NEW MEXICO
1106 Ave J
HANDICAPPED
PARKING
HOURS


NOTICE
AUTOMATIC
CAUTION
DOOR


Swift
Established
1855
WARNING:
Drinking alcoholic beverages during pregnancy can cause birth defects.
New Mexico Law [Section 60-6A-30]
CUIDADO:
Tomar bebidas alcoholicas durante el embarazo puede causar defectos de nacimiento.
Your Guide to Transforming Lives
Working together to build a successful blood drive


Buy Lottery HERE
NO PROPANE CYLINDERS PERMITTED INSIDE STORE
NOTICE
CAUTION
CAUTION
Swift
Now hiring great people!


LOWES
Market
RESERVED PARKING

Section 10

Written Description of the Routine Operations of the Facility

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

Outland Compressor Station is a natural gas compressor station that compresses received natural gas and delivers compressed gas to a pipeline for mainline transportation. This facility will consist of eighteen (18) natural gas-fired compressor engines, identified as units 2100 through 3800, which provide power to the compressors. Compressed gas is then routed through two (2) glycol dehydrators, identified as units DEHY-1 & DEHY-2, after which the dehydrated gas is sent offsite via pipeline. Both DEHY's are equipped with BTEX condensers and 1.5 MMBtu/hr reboilers, identified as units HTR-1 & HTR-2. BTEX emissions are controlled by enclosed combustion units, identified as units ECD-1 & ECD-2. A gunbarrel tank, identified as unit TK-1, separates inlet liquids into condensate and produced water, with condensate routed to the condensate storage tanks, identified as units TK-2 through TK-5, and produced water to the produced water storage tanks, identified as units PWTK-1 through PWTK-4. All tanks at the facility are controlled by a tank flare, identified as FL-2. Condensate and produced water are trucked offsite, identified as CONDLOAD & PWLOAD. Haul roads, identified as HR-1, is exempt pursuant to 20.2.72.202.B (5) NMAC. A process flare, identified as FL-1, controls process gas SSM, plant blowdowns, and compressor blowdowns. An auxiliary emergency generator engine (GEN-1), is maintained at the facility to provide electric power in the event that service from the local utility is interrupted. This unit is exempt pursuant to 20.2.72.202.B.(3) NMAC).

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)**:**

See Table 2-A in Section 2 of this application.

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.**

This application is for an initial NSR permit.

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 State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide
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 emissions per 20.2.7.110 NMAC.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	This regulation does not apply because this application is not for a Notice of Intent.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	Yes	HTR-1, HTR-2	This facility has existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility does not have oil burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation establishes sulfur emission standards for natural gas processing plants. This facility is a compressor station and not a natural gas process plant. Therefore, this regulation does not apply.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	No	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	TK-2, TK-3, TK-4, TK-5	The condensate storage tanks at this facility are applicable to this regulation and will comply via control by a tank flare (Unit FL-2).
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This facility is not a sulfur recovery plant; therefore, this regulation does not apply.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	2100 through 3800, FUG, COND LOAD, PW LOAD, DEHY-1, DEHY-2, TK-1, TK-2, TK-3, TK-4, TK-5, PWTK-1, PWTK-2, PWTK-3, PWTK-4	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NO_x) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: Include the construction status of applicable units as “New”, “Existing”, “Relocation of Existing”, or “Reconstructed” as defined by this Part in your justification: Check the box for the subparts that are applicable: ☒113 – Engines and Turbines ☒114 – Compressor Seals ☒115 – Control Devices and Closed Vent Systems ☒116 – Equipment Leaks and Fugitive Emissions ☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators ☐ 119 – Heaters ☒ 120 – Hydrocarbon Liquid Transfers ☐121 – Pig Launching and Receiving ☒122 – Pneumatic Controllers and Pumps ☐ 123 – Storage Vessels ☐124 – Well Workovers ☐ 125 – Small Business Facilities ☐126 – Produced Water Management Unit

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.)
				☐127 – Flowback Vessels and Preproduction Operations
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	2100 through 3800, HTR-1, HTR-2, ECD-1, ECD-2, FL-1, FL-2	This regulation establishes controls on smoke and visible emissions from certain sources, including stationary combustion equipment such as engines, reboilers, incinerators, and flares. The compressor engines (2100 through 3800), glycol reboilers (HTR-1 & HTR-2), enclosed combustion devices (ECD-1 & ECD-2), and flares (FL-1 and FL-2) are subject to this regulation.
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. This facility is a major source with respect to Title V. The facility will comply with all operating permit conditions as applicable.
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 a schedule of operating permit emission fees. The facility is subject to 20.2.72 NMAC and is therefore subject to requirements of this regulation.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	This regulation establishes emission inventory requirements. The facility meets the applicability requirements of 20.2.73.300 NMAC. The facility will meet all applicable reporting requirements under 20.2.73.300.B.1 NMAC.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	N/A	This regulation establishes requirements for obtaining a prevention of significant deterioration permit. This facility is not a PSD major source. Therefore, this regulation does not apply.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation establishes a schedule of operating permit emission fees. This facility is subject to 20.2.72 NMAC and in turn subject to 20.2.75 NMAC. The facility is exempt from annual fees under this part (20.2.75.11.E NMAC) as it is subject to fees pursuant to 20.2.71 NMAC.
20.2.77 NMAC	New Source Performance	Yes	2100 through 3800, FUG	This is a stationary source which is subject to the requirements of 40 CFR Part 60.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility emits hazardous air pollutants which are subject to the requirements of 40 CFR Part 61. However, there are no units subject to 40 CFR Part 61; therefore, this regulation does not apply.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This regulation establishes the requirements for obtaining a nonattainment area permit. The facility is not located in a non-attainment area and therefore is not subject to this regulation.
20.2.80 NMAC	Stack Heights	No	N/A	This regulation establishes 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.

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.)
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	DEHY-1, DEHY-2, 2100 through 3800	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

Example of a Table for Applicable Federal Regulations (Note: This is not an exhaustive list):

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	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	2100 through 3800, FUG	This regulation establishes state authority to implement new source performance standards (NSPS) for stationary sources, as amended through January 15, 2017. • 2100 through 3800 are subject to 40 CFR 60, Subpart JJJJ. • 2100 through 2700 are subject to 40 CFR 60, Subpart OOOOa • 2800 through 3800, and FUG are subject to 40 CFR 60, Subpart OOOOb
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	This regulation establishes standards of performance for fossil-fuel-fired stream generators. This regulation does not apply as the facility does not have any fossil fuel-fired steam generating units with a heat input rate of 250 MMBtu/hr [60.40(a)(1)].
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	This regulation establishes standards of performance for electric utility steam generating units. This regulation does not apply because the facility does not operate any electric utility steam generating units.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	This regulation does not apply as there are no small industrial commercial instructional steam generating units at this facility.

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	This facility does not operate storage vessels constructed between May 18, 1978 and July 23, 1984. Therefore this subpart does not apply.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	No	N/A	This facility does not have storage vessels with design capacities > 75m^3.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	This Facility does not operate stationary gas turbines with a heat input equal to or greater than 10 million Btu per hour. Therefore this regulation does not apply.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	The facility was constructed after the applicability date of 40 CFR 60 Subpart KKK (August 23, 2011).
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The facility was constructed after the applicability date of 40 CFR 60 Subpart LLL (August 23, 2011).
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	No units at this facility were constructed, modified or reconstructed within the applicability dates of this regulation; therefore, this Subpart does not apply.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for	Yes	2100 through 2700	This regulation is applicable to onshore affected facilities listed in paragraphs (a) through (j) of this section constructed after September 18, 2015, and on or before December 6, 2022. The reciprocating compressors associated with units 2100 through 2700 were constructed/reconstructed between the applicability dates of

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	which Construction, Modification or Reconstruction Commenced **After** September 18, 2015			this regulation and are therefore subject to the requirements of this subpart. Storage tanks TK-1 through TK-4, PWTK-1, and PWTK-2 have a PTE of less than 6 tpy of VOC and are therefore not subject to this regulation.
NSPS 40 CFR Part 60 Subpart OOOOb	Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022	Yes	2800 through 3800, FUG	This regulation is applicable to onshore affected facilities listed in paragraphs (a) through (i) of this section constructed after December 6, 2022. The reciprocating compressors associated with units 2800 through 3800 were manufactured after the applicability date of this regulation and are therefore subject to the requirements of this subpart. The site will be subject to leak monitoring from fugitive components per §60.5365b(i). Storage tanks TK-5, PWTK-3, and PWTK-4 have a PTE of less than 6 tpy of VOC and are therefore not subject to this regulation.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	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. There are no IC engines at this facility; therefore, this regulation does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	2100 through 3800	This regulation establishes standards of performance for stationary spark ignition combustion engines. The compressor engines (Units: 2100 through 3800) will comply with the applicable requirements of this regulation.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This facility does not have any steam generating units; therefore, the facility is not subject to this regulation.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This facility does not generate electricity; therefore, 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	This facility is not a landfill; therefore, this regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	NSPS 40 CFR 61 does not apply to the facility because the facility does not emit or have the triggering substances on site and/or the facility is not involved in the triggering activity. The facility is not subject to this regulation. None of the subparts of Part 61 apply to the facility.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	The provisions of this subpart are applicable to those 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. Therefore, this subpart does not apply.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	Not applicable as the facility equipment does not operate in VHAP service. VHAP service is a piece of equipment, which contains or encounters a fluid that is at least 10% weight of VHAP. VHAP is a substance regulated under this subpart for which a standard for equipment leaks of VHAPs has been promulgated.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	DEHY-1, DEHY-2, 2100 through 3800	This regulation defines general provisions for relevant standards that have been set under this part. The facility is subject to this regulation because 40 CFR 63 Subpart HH applies to the dehydrators (Units: DEHY-1 & DEHY-2), and 40 CFR Part 63 Subpart ZZZZ applies to the compressor engines (Units: 2100 through 3800).
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY-1, DEHY-2	This regulation establishes national emission standards for hazardous air pollutants from oil and natural gas production facilities. The facility is a major source of HAPs and meets the definition of a natural gas processing plant. The dehydrators will have a natural gas flow rates equal to or greater than 85 thousand standard cubic meters per day. The dehydrators do meet the definition of a Large Glycol Dehydration Units in 40 CFR 63.761. When determining the benzene emissions with federally enforceable controls as allowed in 40 CFR 63.772(b)(2), the benzene emissions are less than 0.9 Mg/yr.
MACT 40 CFR 63 Subpart HHH		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	No	N/A	This regulation establishes the national emissions standards for hazardous air pollutants for major industrial, commercial, and institutional boilers and process heaters. This facility operates a glycol reboiler which meets the definition of a process heater as defined in § 63.7575 but it is not located at a major source of HAPs and is therefore not subject to the requirements of this regulation.
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 subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations. This facility does not contain the affected units and is therefore not subject to this regulation.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	2100 through 3800	This regulation defines national emissions standards for HAPs from stationary reciprocating Internal Combustion Engines. 2100 through 3800 are subject to MACT ZZZZ and comply by following the requirements of NSPS JJJJ.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	This regulation establishes requirements for a Compliance Assurance Monitoring (CAM) plan for pollutant-specific emissions units at a major source required for part 70 or 71 permitting. This application is being submitted under part 72 and is therefore not subject to this regulation.
40 CFR 68	**Chemical Accident Prevention**	No	N/A	This facility does not have any sources listed in this subpart. Therefore, this regulation does not apply.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	Not applicable as this facility is not an acid rain source.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	Not applicable as this facility is not an acid rain source.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	Not applicable as this facility does not generate commercial electric power or electric power for sale.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	Not applicable as this facility is not an acid rain source.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	Not applicable as the facility does not service, maintain, repair class I or class II appliances nor disposes of the appliances.

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.

Delek maintains the required planning and excess emission mitigation documents at Outland Compressor Station.

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.

The term “alternative operating scenario” is not defined by regulation. Delek understands this term to apply to a source which may routinely operate with alternative fuels or processes in such a manner as to potentially affect emissions. Based on this understanding, this facility has no alternative operating scenarios.

Units at the facility may be shut down from time to time due to factors including but not limited to market demand, maintenance, malfunctions, and emergency shutdowns. Operating in alternative modes and temporary shutdowns are not alternative operating scenarios as Delek understands the term.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	X
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☑ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☐ No modeling is required.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility:	Outland Compressor Station
2	Name of company:	Delek Logistics Partners, LP
3	Current Permit number:	GCP-O&G Permit #7498-M3
4	Name of applicant's modeler:	Adam Erenstein
5	Phone number of modeler:	(505) 266-6611
6	E-mail of modeler:	aerenstein@trinityconsultants.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done? Submission of an application for an initial NSR permit.	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	This permit application is for an initial NSR and a full facility modeling demonstration is required.		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	Longer than 1 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	March 16, 1988	
	SO2	July 28, 1978	
	PM10	February 20, 1979	
	PM2.5	November 13, 2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	N/A – No Class I areas within 50 km of the facility.		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
	N/A		
11	Describe any special modeling requirements, such as streamline permit requirements.		
	N/A		

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).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	N/A	N/A	N/A
NO_2	N/A	N/A	N/A
SO_2	N/A	N/A	N/A
H_2S	N/A	N/A	N/A
PM2.5	N/A	N/A	N/A
PM10	N/A	N/A	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.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
CO	☒	☐	☐	☐	☐

	NO_2	☒	☒	☐	☐	☐
	SO_2	☒	☐	☐	☐	☐
	H_2S	☒	☐	☐	☐	☐
	PM2.5	☒	☒	☐	☐	☐
	PM10	☒	☒	☐	☐	☐
	Lead	☐	☐	☐	☐	☒
	Ozone	☐	☐	☐	☐	☒
	State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1	List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application. N/A

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor
N/A	N/A	N/A	N/A	N/A	N/A
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☐
	N/A		

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	June 30, 2025

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
39796E1/E2/E3/ E22	Incorrect location was more than 25 km from facility boundary. The coordinates were corrected to 644645mE and 3602742mN
722E2	Incorrect location was more than 25 km from facility boundary. The coordinates were corrected to 630898mE and 3584394mN
1775@1	Incorrect location was more than 25 km from facility boundary. The coordinates were corrected to 649141mE and 3617494mN

16-H: Building and structure downwash

1	How many buildings are present at the facility?	0		
2	How many above ground storage tanks are present at the facility?	9		
3	Was building downwash modeled for all buildings and tanks? If not explain why below.		Yes☒	No☐
	N/A			
4	Building comments	N/A		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area.					
	The property is enclosed by a fence and receptors are placed starting along the fence line.					
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?				Yes☐	No☒
3	Are restricted area boundary coordinates included in the modeling files?				Yes☐	No☒
4	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.					
	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
	Cartesian	Circular	50	0	800	
	Cartesian	Circular	100	800	3000	
	Cartesian	Circular	250	3000	6000	
	Cartesian	Circular	500	6000	10000	
	Cartesian	Circular	1000	10000	50000	
5	Describe receptor spacing along the fence line.					
	A spacing of 50 meters will be used for receptors along the fence line of the property.					
6	Describe the PSD Class I area receptors.					
	N/A – No Class I area is within 50 km of the facility.					

16-J: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).		
	N/A – This facility does not have any alternate operating scenarios and operates continuously (8760 hr/yr)		
2	Which scenario produces the highest concentrations? Why?		
	N/A		
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		
6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒
	N/A		

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.	
	The ARM2 method was used for NO_2 modeling.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ No☐
	N/A	
4	Describe the design value used for each averaging period modeled. N/A	
	1-hour: High eighth high Annual Other (Describe): Highest annual average of five years.	

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/m³, which is below the significance level of 1.96 µg/m³. 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

NO_x was not affected by the scope of this project and therefore, ozone analysis is not required for this facility.

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	
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☒ / No☐
4	Was secondary PM modeled for PM2.5?	Yes☐ / No☒

5 If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.

Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		2.42E-02
$MERP_{24\text{-hour}}$	7331	1981		$[PM2.5]_{annual}$
Emission rate (ton/yr)	126.44	5.75		1.02E-03

16-N: Setback Distances

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location.
	N/A
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling.
	N/A

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐
	Unit Number in UA-2	Unit Number in Modeling Files	
	N/A	N/A	
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☐
	N/A		

3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	No☒

4	Which units consume increment for which pollutants?				
	Unit ID	NO_2	SO_2	PM10	PM2.5
	FL-2	X	X		
	2100	X	X	X	X
	2200	X	X	X	X
	2300	X	X	X	X
	2400	X	X	X	X
	2500	X	X	X	X
	2600	X	X	X	X
	2700	X	X	X	X
	2800	X	X	X	X
	2900	X	X	X	X
	3000	X	X	X	X
	3100	X	X	X	X
	3200	X	X	X	X
	3300	X	X	X	X
	3400	X	X	X	X
	3500	X	X	X	X
	3600	X	X	X	X
	3700	X	X	X	X
	3800	X	X	X	X
	HTR-2	X	X	X	X
	ECD-2	X	X	X	X
	HTR-1	X	X	X	X
	ECD-1	X	X	X	X
	FL-1	X	X		

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	The units at this facility were all constructed after the baseline dates and are therefore full increment consumers.

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☐
	N/A		

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL-1	22.40	113517905.88	30.73
	FL-2	29.42	191727.09	1.24

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 yes, please explain below.	Yes☐	No☒
	N/A		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
	Section 5.3.2 of the New Mexico Air Dispersion Guidelines were used to determine the dimensions of fugitive sources at the facility for H_2S modeling.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
	Facility-wide Fugitives (Unit FUG-1), startup, shutdown & maintenance activities (SSM), condensate loading (Unit COND LOAD), and produced water loading (Unit PW LOAD) were modeled as a single volume source.		
4	Describe any open pits.		
	N/A		
5	Describe emission units included in each open pit.		
	N/A		

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: Hobbs-Jefferson (350250008)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: N/A		
	Other:		
	Comments: N/A		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒
	N/A		

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Hobbs	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

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
	N/A		
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 DEM data currently available from https://apps.nationalmap.gov/downloader/#/		

16-U: Modeling Files

1	Describe the modeling files:		
	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
	Meteorological data inputs – obtained from NMED web site.		
	Outland CS CO SIL Model_v1.0_2025_0818	CO	SIA
	Outland CS H2S SIL Model_v1.0_2025_0818	H_2S	SIA
	Outland CS NOx SIL Model_v1.0_2025_0818	NO_x	SIA
	Outland CS PM10 SIL Model_v1.0_2025_0818	PM_{10}	SIA
	Outland CS PM2.5 SIL Model_v1.0_2025_0818	$PM_{2.5}$	SIA
	Outland CS SO2 SIL Model_v1.0_2025_0818	SO_2	SIA
	Outland CS PM10 24-hr NAAQS & PSD II Model_v1.0_2025_0818	PM_{10}	Cumulative
	Outland CS PM2.5 24-hr NAAQS & PSD II Model_v1.0_2025_0818	$PM_{2.5}$	Cumulative
	Outland CS PM2.5 Annual NAAQS & PSD II Model_v1.0_2025_0818	$PM_{2.5}$	Cumulative

16-V: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☒
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☒
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
	N/A		
	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		

4	N/A		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☒
	N/A		

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-hour) SIL	93.97	-	-	-	93.97	500	18.79%	644172	3593595	3735.07
CO (1-hour) SIL	156.85	-	-	-	156.85	2000	7.84%	644072	3593945	3744.16
NO2 (Annual) SIL	6.00	-	-	-	6.00	1.0	Significant	644172	3593945	3744.26
NO2 (24-hour) SIL	47.87	-	-	-	47.87	5.0	Significant	644122	3593595	3732.35
NO2 (1-hour) SIL	105.01	-	-	-	105.01	7.52	Significant	644072	3593745	3741.80
PM2.5 (Annual) SIL	0.59	-	-	-	0.59	0.13	Significant	644172	3593945	3744.26
PM2.5 (24-hour) SIL	3.71	-	-	-	3.71	1.2	Significant	644072	3593645	3734.19
PM10 (Annual) SIL	0.59	-	-	-	0.59	1.0	59.02%	644172	3593945	3744.26
PM10 (24-hour) SIL	5.07	-	-	-	5.07	5.0	Significant	644122	3593595	3732.35
SO2 (Annual) SIL	0.30	-	-	-	0.30	1.0	30.36%	644172	3593945	3744.26

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
SO2 (24-hour) SIL	2.73	-	-	-	2.73	5.0	54.67%	644127	3593760	3742.75
SO2 (3-hour) SIL	4.87	-	-	-	4.87	25.0	19.48%	644127	3593760	3742.75
SO2 (1-hour) SIL	5.48	-	-	-	5.48	7.8	70.29%	644072	3593945	3744.16
H2S (1/2-hour) SIL	0.46	-	-	-	0.46	5.0	9.17%	644177	3593760	3742.78
NO_2 (Annual) NMAAQS	6.00	-	-	9.3	15.30	94.02	16.27%	644172	3593945	1141
NO_2 (Annual) PSD Increment Class II	6.00	-	-	9.3	15.30	25	61.19%	644172	3593945	1141
NO_2 (1-hour) NAAQS	101.12	-	-	66	166.92	188.03	88.77%	644122	3593645	1139
$PM_{2.5}$ (Annual) NAAQS	0.59	0.65	0.0010	7.1	7.75	9.0	86.16%	644172	3593945	1141
$PM_{2.5}$ (Annual) PSD Increment Class II	0.59	0.64	0.0010	-	1.23	4	30.75%	644172	3593945	1141
$PM_{2.5}$ (24-hour) NAAQS	1.79	1.81	0.02	16.5	18.34	35	52.39%	644122	3593995	1141
$PM_{2.5}$ (24-hour) PSD Increment Class II	3.05	3.06	0.02	-	6.13	9	68.11%	644122	3593645	1139
PM_{10} (24-hour) NAAQS	3.56	3.61	-	37.3	40.91	150	27.28%	644122	3593595	1138
PM_{10} (24-hour) PSD Increment Class II	4.05	4.07	-	-	8.13	30	27.09%	644122	3593595	1138

16-X: Summary/conclusions	
1	A statement that modeling requirements have been satisfied and that the permit can be issued.
	Delek Logistics Partners, LP has demonstrated that the proposed NSR application would neither cause nor contribute to an exceedance of the standards for NO_x, CO, SO_2, PM_{10}, $PM_{2.5}$ or H_2S.

AIR DISPERSION MODELING PROTOCOL

Initial NSR Modeling Protocol

Delek Logistics Partners, LP
Outland Compressor Station

Prepared By:

Adam Erenstein – Manager of Consulting Services

TRINITY CONSULTANTS
9400 Holly Avenue NE
Building 3, Suite B
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(505) 266-6611

May 2025

Project 253201.0050

1. INTRODUCTION

1.1 Purpose of Modeling

The Outland Compressor Station (Outland) is a compressor station facility owned by and operated by Delek Logistics Partners, LP (Delek). The facility receives up to 140 MMscf/day of natural gas from nearby production facilities and compresses the gas for sales. The facility utilizes compressors powered by compressor engines to compress the gas for sales and glycol dehydrators to dehydrate the gas.

Delek is submitting an application pursuant to 20.2.72.200.A NMAC for an initial NSR Permit application. With this application, the facility will be permitted for the following units:

- Eighteen (18) natural gas driven compressor engines (Units ENG-1 through ENG-18)
- Five (5) condensate storage tanks (Units TK-1 through TK-5)
- Four (4) produced water storage tanks (Units PWTK-1 through PWTK-4)
- Two (2) glycol dehydrators (Units DEHY-1 and DEHY-2)
- Two (2) glycol dehydrator reboilers (Units HTR-1 and HTR-2)
- Two (2) enclosed combustors (Units ECD-1 and ECD-2)
- Two (2) process flares (Units FL-1 and FL-2)
- Loading of condensate (Unit CONDLOAD)
- Loading of produced water (Unit PW LOAD)
- Unpaved Haul Roads (Unit HR-1)
- Facility-wide Fugitives (Unit FUG-1) and
- Startup, Shutdown & Maintenance (Unit SSM)

Delek seeks to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), the New Mexico Ambient Air Quality Standards (NMAAQS), and PSD Increment standards, as applicable, for the following pollutants and averaging periods: NO_2 (1-hour, 24-hour, and annual), CO (1-hour and 8-hour), SO_2 (1-hour, 3-hour, 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 644,168 meters East and 3,593,799 meters North with WGS84 datum at an elevation of approximately 3,743 feet above mean sea level.

2. PROPOSED MODELING

2.1 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.

Table 1 and 2 show the emission sources and stack parameters for the facility. Please note that emissions and stack parameters may vary throughout the development of this application.

Table 1- Emission sources and stack parameters to be included in the air dispersion modeling.

Unit Number	NO_x lb/hr	CO lb/hr	SO_2 lb/hr	PM_{10} lb/hr	$PM_{2.5}$ lb/hr	H_2S lb/hr	Height ft	Temp F	Velocity ft/s	Diam. ft
2100	1.37	0.76	0.046	0.20	0.20	0.00E+00	24.50	1223	205.1	1.0
2200	1.52	1.83	0.050	0.11	0.11	0.00E+00	24.20	839	101.83	1.3
2300	1.52	1.83	0.050	0.11	0.11	0.00E+00	24.20	839	101.83	1.3
2400	1.52	1.83	0.050	0.11	0.11	0.00E+00	24.20	839	101.83	1.3
2500	1.52	1.83	0.050	0.11	0.11	0.00E+00	24.20	839	101.83	1.3
2600	1.52	1.83	0.050	0.11	0.11	0.00E+00	24.20	839	101.83	1.3
2700	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
2800	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
2900	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
3000	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
3100	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
3200	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
3300	1.24	2.48	0.064	0.14	0.14	0.00E+00	26.10	827	149.60	1.3
3400	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
3500	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
3600	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
3700	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
3800	1.39	0.93	0.073	0.16	0.16	0.00E+00	21.67	876	152.80	1.5
HTR-1	0.15	0.64	6.85E-03	0.011	0.011	0.00E+00	21.00	500	5.30	1.5
HTR-2	0.15	0.64	6.85E-03	0.011	0.011	0.00E+00	21.00	500	5.30	1.5
ECD-1	0.10	0.084	0.016	7.57E-03	07.57E-03	2.08E-04	9.00	1100	5.90	2.6
ECD-2	0.10	0.084	0.016	7.57E-03	07.57E-03	2.08E-04	9.00	1100	5.90	2.6
FL-1	0.83	1.65	3.58E-03	0.00E+00	0.00E+00	7.95E-07	30.00	1832	65.60	39.2
FL-2	0.38	0.76	5.52E-03	0.00E+00	0.00E+00	2.79E-04	20.00	1832	65.60	22.7

Table 2 – Volume Source

Volume Source	H_2S lb/hr	Release Height ft	Initial Lateral Dimension ft	Initial Vertical Dimension ft
FUG-1/COND LOAD/PW LOAD/SSM	**1.74E-03**	**3**	**93.39**	**2.79**

A downwash analysis will not be conducted within modeling as there are no building structures present at the facility.

2.2 Receptor Grid Description and Elevation Data

The center point of the facility will be designated at 644,172 meters east and 3,593,845 meters north. This center point will serve as the center point for a variable density circular receptor grid. The facility will be modeled with the following receptor grid design:

- Fenceline: 50 m grid spacing
- Very Fine Grid Resolution: 50 m grid spacing from 0 m to 800 m of center point
- Fine Grid Resolution: 100 m spacing from 800 m to 3,000 m of center point
- Medium Grid Resolution: 250 m spacing from 3,000 m to 6,000 m of center point
- Course Grid Resolution: 500 m spacing from 6,000 m to 10,000 m of center point
- Very Course Grid Resolution: 1,000 m from 10,000 m to 50,000 m of center point

It is expected that the highest impacts from the proposed source will be at or near the facility property.

The elevations of receptors and facility sources will be determined using the most recent NED data currently available (1/3 arc-second NED).

2.3 Meteorological Data

The Hobbs dataset will be used for five meteorological years (2017-2021) as available on the NMED website.

2.4 Significance Analysis (SIL) and Cumulative Impact Analysis (CIA)

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. The CIA will include impacts from the facility sources, as well as background concentrations and/or surrounding sources, as applicable.

The inclusion of background concentrations will follow the guidance shown in Table 20: "Modeling the Design Value Summary (Default Modeling)" from the Modeling Guidelines[1]. If necessary, the following monitors will be used for background concentrations:

- El Pason Chamizal (481410044) for CO;
- Amarillo (483751025) for SO_2;
- Hobbs-Jefferson Monitor (5ZS, 350250008) for NO_2;
- Hobbs-Jefferson Monitor (5ZS, 350250008) for $PM_{2.5}$; and
- Hobbs-Jefferson Monitor (5ZS, 350250008) for PM_{10};

Based on the NMED Modeling Guidelines for SO_2 modeling, if the facility is in the Pecos-Permian Basin

[1] New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines Revised December 2023

Intrastate AQCR (AQCR 155), it will be modeled with surrounding sources, as representative monitoring is not available for background data.

For $PM_{2.5}$ and PM_{10} modeling, the facility will be modeled with surrounding sources, and a background concentration and secondary formation (if applicable) will be added to the modeling results. For modeling surrounding sources, all sources within 10 km of the facility will be included in the model. An inventory of the surrounding sources will be obtained from the NMED MergeMaster. 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 if the facility emits more than 40 tpy of either NO_x or SO_2.

For H_2S modeling, the only sources at the facility that produced H_2S will be the process flare (Unit FL-1), tank flare (Unit FL-2), enclosed combustion devices (Units ECD-1 & ECD-2), facility-wide fugitives (Unit FUG-1), startup, shutdown & maintenance activities (SSM) condensate loading (Unit COND LOAD), and produced water loading (Unit PW LOAD). The flares and enclosed combustion units will be modeled as point sources. Fugitives, SSM activities and loadings will be modeled as a single volume source at the center of the facility with dimensions determined per Section 4.3.2 of NMED's 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 1/2-hour averaging period.

2.5 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 for the appropriate averaging periods. If required, the 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 Class II PSD Standard.

2.6 Class I Areas Analysis

The nearest Class I area is Carlsbad Caverns National Park at 90.9 km from the facility. A Class I area analysis will not need to be performed as the national park is not within the 50 km inclusion zone for PSD minor sources.

Outlook

RE: [EXTERNAL] RE: Modeling Protocol for Delek Logistics Partners, LP Outland Compressor Station (Initial NSR)

From Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Date Mon 8/11/2025 6:09 PM
To Ryan Ahlberg <Ryan.Ahlberg@trinityconsultants.com>

Ryan
I am sorry for a delayed response.
Your modeling protocol is acceptable.
Thank you.

Sufi A. Mustafa, Ph.D.
Manager Air Dispersion Modeling and Emission Inventory Section
New Mexico Environment Department's Air Quality Bureau
Office: (505) 629 6186
sufi.mustafa@state.nm.us
525 Camino de los Marquez
Suite 1
Santa Fe, New Mexico, 87505
https://www.env.nm.gov/air-quality/

"Innovation, Science, Collaboration, Compliance"

From: Ryan Ahlberg <Ryan.Ahlberg@trinityconsultants.com>
Sent: Friday, August 1, 2025 11:52 AM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: Adam Erenstein <AErenstein@trinityconsultants.com>; Jason Boothe <jason.boothe@deleklogistics.com>; Jonathon A Smith <Jonathon.Smith@deleklogistics.com>
Subject: [EXTERNAL] RE: Modeling Protocol for Delek Logistics Partners, LP Outland Compressor Station (Initial NSR)

You don't often get email from ryan.ahlberg@trinityconsultants.com. Learn why this is important
CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good Morning Sufi,

I wanted to reach out to you if you have had a moment to review the modeling protocol I had sent to you in the emails below. Please let me know if you have any questions and thank you for your time.

Ryan Ahlberg
Associate Consultant

P 505.266.6611 M 815.341.2524
Email: mailto:ryan.ahlberg@trinityconsultants.com
9400 Holly Ave NE, Bldg 3, Ste B Albuquerque, NM 87122

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From: Ryan Ahlberg
Sent: Tuesday, June 24, 2025 10:41 AM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: Adam Erenstein <AErenstein@trinityconsultants.com>; Nicole Penners <Nicole.Penners@trinityconsultants.com>; Jason Boothe <jason.boothe@deleklogistics.com>; Jonathon A Smith <Jonathon.Smith@deleklogistics.com>
Subject: RE: Modeling Protocol for Delek Logistics Partners, LP Outland Compressor Station (Initial NSR)

Good Morning Sufi, I wanted to reach out to you to inquire if you have had a moment to review the modeling protocol I sent to you last month in the email below. Please let me know if you have any questions and thank you for your time.

Ryan Ahlberg
Associate Consultant

P 505.266.6611 M 815.341.2524
Email: mailto:ryan.ahlberg@trinityconsultants.com
9400 Holly Ave NE, Bldg 3, Ste B Albuquerque, NM 87122

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From: Ryan Ahlberg
Sent: Friday, May 23, 2025 7:08 PM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: Adam Erenstein <AErenstein@trinityconsultants.com>; Nicole Penners <Nicole.Penners@trinityconsultants.com>; Jason Boothe <jason.boothe@deleklogistics.com>; Jonathon A Smith <Jonathon.Smith@deleklogistics.com>
Subject: Modeling Protocol for Delek Logistics Partners, LP Outland Compressor Station (Initial NSR)

Good Evening Sufi,
Please find attached the modeling protocol for Delek Logistics Partners, LP Outland Compressor Station **(GCP-O&G 7498M3)**. Modeling is being completed as a part of an initial NSR application.

Ryan Ahlberg
Associate Consultant

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Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

N/A – There is no compliance test history available at this facility.

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.

N/A – there is no other relevant information for this permit application.

Section 22: Certification

Company Name: Delek Logistics Partners, LP

I, MICHAEL ODIGIE, 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 28th day of August, 2025, upon my oath or affirmation, before a notary of the State of Texas.

*Signature

08/28/2025
Date

Michael Odigie
Printed Name

SVP, DKL
Title

Scribed and sworn before me on this 28th day of August, 2025.

My authorization as a notary of the State of Texas expires on the 4th day of June, 2027.

Notary's Signature

08/28/2025
Date

Tamara Charles
Notary's Printed Name

TAMARA CHARLES
Notary Public, State of Texas
Comm. Expires 06-04-2027
Notary ID 132037213

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.