NMED AIR QUALITY BUREAU
NSR SIGNIFICANT REVISION APPLICATION

XTO Energy Inc.
Cowboy Central Delivery Point (CDP)

Prepared By:

James Barron – Environmental & Regulatory Advisor

XTO ENERGY INC.
22777 Springwoods Village Pkwy
Spring, TX 77389
(346) 566-9345

Adam Erenstein – Manager of Consulting Services

TRINITY CONSULTANTS
9400 Holly Ave NE
Building 3, Suite B
Albuquerque, NM 87122
(505) 266-6611

December 2024

Project 243201.0116

Trinity Consultants Celebrating 50 Years 1974 2024
9400 Holly Ave NE, Bldg 3, Ste B, Albuquerque, NM 87122 / P 505.266.6611 / trinityconsultants.com

December 23, 2024

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

RE: NSR Significant Revision Application to Permit No. 7877-M2
XTO Energy Inc. – Cowboy Central Delivery Point (CDP)

Permit Programs Manager:

XTO Energy Inc. is submitting an NSR Significant Revision application for the Cowboy Central Delivery Point (CDP). The facility is located 13.8 miles east-southeast of Malaga, New Mexico in Eddy County. Currently, this facility is permitted under NSR Permit No. 7877-M2.

The proposed permit revision includes updated emissions associated with flares, oil storage tanks, heaters, produced water tanks, slop oil tank, and combustor. The permit revision will also include the addition of emergency fire pump engines and a portable backup combustor to be used when the primary combustor is out of service. Other permitted sources will be removed from the permit as they are no longer included in the facility plan, or they are not regulated emission sources.

The format and content of this application are consistent with the Bureau's current policy regarding NSR Significant Revision applications; it is a complete application package using the most current application form. Enclosed is a hard copy of the application, including the original certification. 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 James Barron, Environmental & Regulatory Advisor for XTO Energy, Inc., at (346) 566-9345 or by email at James.Barron@exxonmobil.com.

Sincerely,

Adam Erenstein
Manager of Consulting Services

Trinity Project File 243201.0116

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER. HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED.

660381

TRINITY CONSULTANTS, INC.
12700 PARK CENTRAL DRIVE STE. 600
DALLAS, TX 75251-1546
(972) 661-8100

Fraud Protected by Positive Pay

JPMORGAN CHASE BANK, N.A.
DALLAS, TX

32-61/1110

December 13, 2024
CHECK DATE

Security features. Details on back.

Five Hundred and 00/100 Dollars

AMOUNT
$ 500.00

Pay To The Order Of
New Mexico Environmental Department
525 Camino de los Marquez Suite 1
Air Quality Bureau
Santa Fe, NM 87505-1816

NOT VALID AFTER 90 DAYS

AUTHORIZED SIGNATURE

⑈660381⑈ ⑆111000614⑆ 931995472⑈

TRINITY CONSULTANTS, INC. Check Date: 12/13/2024 660381

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
12242432010116NRSAF	12/10/2024	0177114	500.00			500.00
New Mexico Environmental Department		TOTAL	500.00			500.00
CHASE BANK-	30	000006134				

TRINITY CONSULTANTS, INC. 660381

74266W

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**
XTO Energy Inc.		December 20, 2024
Permittee/Company Contact	**Phone**	**Email**
James Barron	(346) 566-9345	James.Barron@exxonmobil.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: ☐ 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.: 660381 in the amount of **$500**

☒ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known: 38481	Updating Permit/NOI #: 7877-M2
1	Facility Name: Cowboy Central Delivery Point (CDP)	Plant primary SIC Code (4 digits): 1311	
		Plant NAIC code (6 digits): 211120	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): 14 mi SE of Malaga, NM.		
2	Plant Operator Company Name: XTO Energy Inc.	Phone/Fax: (346) 566-9345 / N/A	
a	Plant Operator Address: 22777 Springwoods Village Pkwy, Spring, TX 77389		

b	Plant Operator's New Mexico Corporate ID or Tax ID: 1522747	
3	Plant Owner(s) name(s): XTO Energy Inc.	Phone/Fax: (346) 566-9345 / N/A
a	Plant Owner(s) Mailing Address(s): 22777 Springwoods Village Pkwy, Spring, TX 77389	
4	Bill To (Company): XTO Energy Inc.	Phone/Fax: (346) 566-9345 / N/A
a	Mailing Address: 22777 Springwoods Village Pkwy, Spring, TX 77389	E-mail: James.Barron@exxonmobil.com
5	☒ Preparer: Adam Erenstein ☒ Consultant: Trinity Consultant Inc.	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: James Barron	Phone/Fax: (346) 566-9345 / N/A
a	Address: 22777 Springwoods Village Pkwy, Spring, TX 77389	E-mail: James.Barron@exxonmobil.com
7	Air Permit Contact: James Barron	Title: Environmental & Regulatory Advisor
a	E-mail: James.Barron@exxonmobil.com	Phone/Fax: (346) 566-9345 / N/A
b	Mailing Address: 22777 Springwoods Village Pkwy, Spring, TX 77389	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☒ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☒ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☒ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☒ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☒ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☒ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☐ Yes ☒ No	If yes, the permit No. is: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: 7877-M2
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: 41.67 MMSCF Natural Gas 25,000 bbl Oil 7,916.67 bbl Natural Gas Liquid	Daily: 1 BSCF Natural Gas 600,000 bbl Oil 190,000 bbl Natural Gas Liquid	Annually: 365 BSCF Natural Gas 219 MMbbl Oil 69.35 MMbbl Natural Gas Liquid
b	Proposed	Hourly: 66.67 MMSCF Natural Gas 25,000 bbl Oil 7,916.67 bbl Natural Gas Liquid	Daily: 1.6 BSCF Natural Gas 600,000 bbl Oil 190,000 bbl Natural Gas Liquid	Annually: 584 BSCF Natural Gas 219 MMbbl Oil 69.35 MMbbl Natural Gas Liquid
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: 41.67 MMSCF Natural Gas 25,000 bbl Oil	Daily: 1 BSCF Natural Gas 600,000 bbl Oil	Annually: 365 BSCF Natural Gas 219 MMbbl Oil

		7,916.67 bbl Natural Gas Liquid	190,000 bbl Natural Gas Liquid	69.35 MMbbl Natural Gas Liquid
b	Proposed	Hourly: 41.67 MMSCF Natural Gas 25,000 bbl Oil 7,916.67 bbl Natural Gas Liquid	Daily: 1 BSCF Natural Gas 600,000 bbl Oil 190,000 bbl Natural Gas Liquid	Annually: 365 BSCF Natural Gas 219 MMbbl Oil 69.35 MMbbl Natural Gas Liquid

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.160000	Longitude (decimal degrees): -103.841667	County: Eddy	Elevation (ft): 3397
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☐ NAD 83 ☒ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 609,224 m	UTM N (in meters, to nearest 10 meters): 3,558,758 m		
3	Name and zip code of nearest New Mexico town: Malaga, NM 88263			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): Head W on Duarte Rd. for 1.3 mi. to R on McDonald Rd. Drive 11.2 mi. to R on Twin Wells Rd. In 0.6 mi. take slight left to stay on Twin Wells Rd. Drive 1.4 mi. to R on Buck Jackson Rd. Site will be of L in 0.6 mi.			
5	The facility is 14 miles southeast of Malaga, NM 88263			
6	Land Status of facility (check one): ☐ Private ☐ Indian/Pueblo ☐ Government ☒ BLM ☐ Forest Service ☐ Military			
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Eddy and Lea			
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: Carlsbad Caverns National Park – 49.9 km. Texas ~17.7 km.			
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): 49.9 km			
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 19,730 m			
12	Method(s) used to delineate the Restricted Area: Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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

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

Section 1-F: Other Facility Information

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

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): N/A		Phone: N/A
a	R.O. Title: N/A	R.O. e-mail: N/A	
b	R. O. Address: N/A		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): N/A		Phone: N/A
a	A. R.O. Title: N/A	A. R.O. e-mail: N/A	
b	A. R. O. Address: N/A		
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.): N/A		
a	Address of Parent Company: N/A		
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:		
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: N/A		

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.

Table of Contents

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
SHTR1	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	PK-6010 H-6012	58.93 MMBtu/hr	58.93 MMBtu/hr	2018 2020	N/A SHTR1	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR2	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	PK-6020 H-6022	58.93 MMBtu/hr	58.93 MMBtu/hr	2018 2020	N/A SHTR2	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR3	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	PK-6030 H-6032	58.93 MMBtu/hr	58.93 MMBtu/hr	2018 2020	N/A SHTR3	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR4	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	PK-6040 H-6042	58.93 MMBtu/hr	58.93 MMBtu/hr	2019 2022	N/A SHTR4	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR5	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	PK-6060 H-6062	58.93 MMBtu/hr	58.93 MMBtu/hr	2019 2023	N/A SHTR5	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR6	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	THM	SHO5000	TBD	58.93 MMBtu/hr	58.93 MMBtu/hr	TBD TBD	N/A SHTR6	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR7	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	THM	SHO5000	TBD	58.93 MMBtu/hr	58.93 MMBtu/hr	TBD TBD	SHTR7-CAT SHTR7	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SHTR8	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	THM	SHO5000	TBD	58.93 MMBtu/hr	58.93 MMBtu/hr	TBD TBD	SHTR8-CAT SHTR8	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
CHTR1	Cryo Hot Oil Heater (94.54 MMBtu/hr)	THM	SHO5000	PK-6110 H-6112	94.54 MMBtu/hr	94.54 MMBtu/hr	2019 2021	N/A CHTR1	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
CHTR2	Cryo Hot Oil Heater (94.54 MMBtu/hr)	THM	SHO5000	PK-6120 H-6122	94.54 MMBtu/hr	94.54 MMBtu/hr	2019 2023	NA CHTR2	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
CHTR3	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	THM	SHO5000	TBD	94.54 MMBtu/hr	94.54 MMBtu/hr	TBD TBD	CHTR3-CAT CHTR3	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
CHTR4	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	THM	SHO5000	TBD	94.54 MMBtu/hr	94.54 MMBtu/hr	TBD TBD	CHTR4-CAT CHTR4	31000403	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RHTR1	Regen Heater (35.25 MMBtu/hr)	THM	SHO2500	H-3132	35.25 MMBtu/hr	35.25 MMBtu/hr	2018 2021	N/A RHTR1	31000405	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
RHTR2	Regen Heater (35.25 MMBtu/hr)	THM	SHO2500	H-3232	35.25 MMBtu/hr	35.25 MMBtu/hr	2019 2023	N/A RHTR2	31000405	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RHTR3	Regen Heater (35.25 MMBtu/hr)	THM	SHO2500	H-3332	35.25 MMBtu/hr	35.25 MMBtu/hr	2019 TBD	N/A RHTR3	31000405	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
RHTR4	Regen Heater (35.25 MMBtu/hr)	THM	SHO2500	TBD	35.25 MMBtu/hr	35.25 MMBtu/hr	TBD TBD	N/A RHTR4	31000405	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL1	CDP Flare 1 (Dual Tip Flare)	Zeeco, Inc.	N/A	FS 9020 S.O # 35284	20 MMscfd	20 MMscfd	2019 2020	N/A FL1	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL2	Cryo Flare 2 (Dual Tip Flare)	Zeeco, Inc.	N/A	FS 6960 S.O # 38126	20 MMscfd	20 MMscfd	2019 2020	N/A FL2	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL3	Cryo Flare 3 (Dual Tip Flare)	Zeeco, Inc.	N/A	FS-6962	20 MMscfd	20 MMscfd	TBD 2024	N/A FL3	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL1-FL3OVHD-SSM	FL1-FL3 Stabilizer Overhead SSM Gas	Zeeco, Inc.	N/A	N/A	250 MMscfd	250 MMscfd	N/A N/A	FL1-FL3 FL1-FL3OVHD-	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
FL1-FL3CRYO-SSM	FL1-FL3 Cryo Blowdown SSM Gas	Zeeco, Inc.	N/A	N/A	250 MMscfd	250 MMscfd	N/A N/A	FL1-FL3 FL1-FL3CRYO-	31000160	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR1	Oil Storage Tank 1 (50,000 bbl)	Advance Tank	N/A	TK-4201	50,000 bbl	50,000 bbl	2019 2020	N/A IFR1	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR2	Oil Storage Tank 2 (50,000 bbl)	Advance Tank	N/A	TK-4202	50,000 bbl	50,000 bbl	2019 2020	N/A IFR2	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR3	Oil Storage Tank 3 (50,000 bbl)	Advance Tank	N/A	TK-4203	50,000 bbl	50,000 bbl	2019 2020	N/A IFR3	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR4	Oil Storage Tank 4 (50,000 bbl)	Advance Tank	N/A	TK-4204	50,000 bbl	50,000 bbl	2019 2020	N/A IFR4	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR5	Oil Storage Tank 5 (100,000 bbl)	TBD	N/A	TK-4211	100,000 bbl	100,000 bbl	3/31/2023 12/10/2023	N/A IFR5	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR6	Oil Storage Tank 6 (100,000 bbl)	TBD	N/A	TK-4212	100,000 bbl	100,000 bbl	3/31/2023 10/27/2023	N/A IFR6	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
IFR7	Oil Storage Tank 7 (100,000 bbl)	TBD	N/A	TK-4213	100,000 bbl	100,000 bbl	3/31/2023 1/21/2024	N/A IFR7	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR8	Oil Storage Tank 8 (100,000 bbl)	TBD	N/A	TK-4214	100,000 bbl	100,000 bbl	3/31/2023 11/8/2023	N/A IFR8	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR9	Oil Storage Tank 9 (100,000 bbl)	TBD	N/A	TK-4215	100,000 bbl	100,000 bbl	TBD TBD	N/A IFR9	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR10	Oil Storage Tank 10 (100,000 bbl)	TBD	N/A	TK-4216	100,000 bbl	100,000 bbl	3/12/2024 6/24/2024	N/A IFR10	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR11	Oil Storage Tank 11 (100,000 bbl)	TBD	N/A	TK-4217	100,000 bbl	100,000 bbl	3/12/2024 5/30/2024	N/A IFR11	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR12	Oil Storage Tank 12 (100,000 bbl)	TBD	N/A	TK-4218	100,000 bbl	100,000 bbl	TBD TBD	N/A IFR12	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR13	Oil Storage Tank 13 (100,000 bbl)	TBD	N/A	TK-4219	100,000 bbl	100,000 bbl	3/12/2024 7/22/2024	N/A IFR13	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
IFR14	Oil Storage Tank 14 (100,000 bbl)	TBD	N/A	TK-4220	100,000 bbl	100,000 bbl	3/12/2024 6/7/2024	N/A IFR14	40400331	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
ECD1	Combustor 1	Zeeco, Inc.	N/A	FS-6820 SO # 35567	N/A	N/A	2019 2020	N/A ECD1	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
ECD2a / ECD2b	Combustor 2	Zeeco, Inc.	Zephyr-9-48 Zephyr-7.5-40	TBD	N/A	N/A	TBD TBD	N/A ECD2a / ECD2b	31000209	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO1	Thermal Oxidizer	Zeeco, Inc.	N/A	TO-6980 SO # 35595	25 MMbtu/hr	25 MMbtu/hr	2018 2019	N/A TO1	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TO2	Thermal Oxidizer	Zeeco, Inc.	N/A	TBD	25 MMbtu/hr	25 MMbtu/hr	TBD TBD	N/A TO2	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TO3	Thermal Oxidizer	Zeeco, Inc.	N/A	TBD	25 MMbtu/hr	25 MMbtu/hr	TBD TBD	N/A TO3	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
TO4	Thermal Oxidizer	Zeeco, Inc.	N/A	TBD	25 MMbtu/hr	25 MMbtu/hr	TBD TBD	N/A TO4	31000209	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
FUG	Fugitives	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A FUG	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SSM/M	SSM Emissions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A SSM/M	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AU1	Amine Sweetener 1	Sexton Industrial	N/A	V-6978 V-6979	250 MMSCFD	250 MMSCFD	2019 TBD	TO1 TO1	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AU2	Amine Sweetener 2	TBD	N/A	TBD	250 MMSCFD	250 MMSCFD	TBD TBD	TO2 TO2	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AU3	Amine Sweetener 3	TBD	N/A	TBD	250 MMSCFD	250 MMSCFD	TBD TBD	TO3 TO3	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AU4	Amine Sweetener 4	TBD	N/A	TBD	250 MMSCFD	250 MMSCFD	TBD TBD	TO4 TO4	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
GBS1	Gunbarrel Tank	Angelina Tank	N/A	TK-7001	1,000 bbl	1,000 bbl	2019 2020	ECD1 / ECD2a/2b ECD1 / ECD2a/2b	31000506	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK1	Produced Water Tank 1	HMI	N/A	TK-7005	750 bbl	750 bbl	2019 2020	ECD1 / ECD2a/2b ECD1 / ECD2a/2b	40400315	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK2	Produced Water Tank 2	HMI	N/A	TK-7006	750 bbl	750 bbl	2019 2020	ECD1 / ECD2a/2b ECD1 / ECD2a/2b	40400315	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SOTK1	Slop Oil Tank	HMI11	N/A	TK-6895	500 bbl	500 bbl	2019 2020	ECD1 / ECD2a/2b ECD1 / ECD2a/2b	40400311	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
SOTL	Slop Oil Truck Loading	TBD	N/A	N/A	210 bbl/day	210 bbl/day	N/A N/A	ECD1 / ECD2a/2b SOTL	40400250	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ To Be Modified ☐ To be Replaced	N/A	N/A
GEN1	Emergency Generator	Caterpillar	G3520H	G-7400 GFR01251	3448 HP	3448 HP	12/1/2019 2020	N/A GEN1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
GEN2	Emergency Generator	Caterpillar	G3520H	G-7410 GFR01272	3448 HP	3448 HP	9/1/2020 2023	N/A GEN2	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A

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GEN3	Emergency Generator	Caterpillar	G3520H	TBD	3448 HP	3448 HP	TBD TBD	N/A GEN3	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
GEN4	Emergency Generator	Caterpillar	G3520H	TBD	3448 HP	3448 HP	TBD TBD	N/A GEN4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
EOOSCOMP1	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	K-1600 F-59023	450 HP	450 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP2	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	K-1610 F-59144	450 HP	450 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP3	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	K-1620 F-59213	450 HP	450 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP4	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	TBD	450 HP	450 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP5	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	TBD	450 HP	450 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP6	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	TBD	450 HP	450 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
EOOSCOMP7	Electric Oil Overhead Stabilizer Compressors	Ariel	JGT-2	TBD	450 HP	450 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP1	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	K-2600 F-59006	750 HP	750 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP2	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	K-2610 F-59007	750 HP	750 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP3	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	K-2620 F-59142	750 HP	750 HP	2/1/2019 6/1/2020	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP4	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	K-2700 F-61085	750 HP	750 HP	8/1/2019 9/1/2021	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP5	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	TBD	750 HP	750 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP6	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	TBD	750 HP	750 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ECOSCOMP7	Electric Condenstate Overhead Stabilizer Compressors	Ariel	JGH-2	TBD	750 HP	750 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ERESCOMP1	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3600 F-60185	6500 HP	6500 HP	5/1/2019 1/1/2021	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP2	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3610 F-60281	6500 HP	6500 HP	5/1/2019 1/1/2021	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP3	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3620 F-60484	6500 HP	6500 HP	6/1/2019 1/1/2021	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP4	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3630 F-60505	6500 HP	6500 HP	6/1/2019 1/1/2021	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP5	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3640 F-62887	6500 HP	6500 HP	6/1/2020 5/1/2022	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP6	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3650 F-62902	6500 HP	6500 HP	6/1/2020 5/1/2022	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP7	Electric Residue Gas Compressor	Ariel	KBZ/6	K-3660 F-62931	6500 HP	6500 HP	7/1/2020 5/1/2022	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP8	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP9	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP10	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP11	Electric Residue Gas Compressor	Dresser Rand	D8R8B	K-3700 SN169376-A1	15865 HP	15865 HP	TBD 1/1/2023	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP12	Electric Residue Gas Compressor	Dresser Rand	D8R8B	K-3710 SN169376-B1	15865 HP	15865 HP	TBD 1/1/2023	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP13	Electric Residue Gas Compressor	Dresser Rand	D8R8B	K-3720 SN169376-C1	15865 HP	15865 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP14	Electric Residue Gas Compressor	Dresser Rand	D8R8B	TBD	15865 HP	15865 HP	TBD TBD	N/A N/A	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ERESCOMP15	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	N/A N/A	N/A N/A	N/A	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP16	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	N/A N/A	N/A N/A	N/A	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP17	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	N/A N/A	N/A N/A	N/A	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
ERESCOMP18	Electric Residue Gas Compressor	Ariel	KBZ/6	TBD	6500 HP	6500 HP	N/A N/A	N/A N/A	N/A	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CRYO1-4	4 Cryogenic Trains	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	N/A	☐ Existing (unchanged) ☑ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MOL1-4	4 Molecular Sieve Dehydrators	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	N/A	☐ 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 NOI unless a complete cross reference table of all units in both NOIs is provided.

[2] Specify dates required to determine regulatory applicability.

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

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

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

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

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
FFT	1000 bbl Firefighting Foam Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
48A	1000 bbl Raw Water Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
48B	1000 bbl Raw Water Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
49	1000 bbl Demineralized Water Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
50	Amine Makeup Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
51A	100 bbl Lube Oil Make-Up Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
51B	100 bbl Lube Oil Make-Up Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
55	Utility Water Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
ROAD	Haul Road Fugitives	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	
VTank01	Varsol Tank	TBD	N/A	N/A	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	TBD	
FWPE1	Emergency Fire-Pump Engine	TBD	TBD	TBD	20.2.72.202.B.3	TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
FWPE2	Emergency Fire-Pump Engine	TBD	TBD	TBD	20.2.72.202.B.3	TBD	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
SSMEBD1	Condensate Stabilization - Reflux Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	
SSMEBD2	Condensate Stabilization - Surge and Flash Drum Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
SSMEBD3	Condensate Stabilization - Overhead Compressor Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD4	Gas Processing - Surge Drum Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD5	Gas Processing - Separator Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD6	Gas Processing - Expander/Compressor Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD7	Gas Processing - Dehydrator Regeneration Gas Compressor Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD8	Gas Processing - Subcooler Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD9	Gas Processing - Chiller/Exchanger Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD10	Gas Processing - Dehydrator Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD11	Gas Processing - Mercury Guard Bed	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD12	Gas Processing - Tower Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD13	Gas Processing - Condenser Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD14	Gas Processing - Economizer Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD15	Utilities & Common Equipment - Closed Drain Drum Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
SSMEBD16	Utilities & Common Equipment - Combustor KO Drum Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD17	Utilities & Common Equipment - Cryo LP/HP Flare KO Drum Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD18	Utilities & Common Equipment - Combustor Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD19	Sitewide - Reboiler Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD20	Sitewide - Gas Filter Coalescer Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
SSMEBD21	Sitewide - Pig Launching and Receiving Blowdowns	N/A	N/A	N/A	20.2.72.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	N/A	Units with PTE < 0.5 tpy	N/A	☐ 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
FL1	Flare 1	2020	VOC, HAP	Plant Inlet & SSM Activities	98%	Mnf. Guarantee
FL2	Flare 2	2020	VOC, HAP	Plant Inlet & SSM Activities	98%	Mnf. Guarantee
FL3	Flare 3	2024	VOC, HAP	Plant Inlet & SSM Activities	98%	Mnf. Guarantee
ECD1	Combustor 1	2020	VOC, HAP	GBS1, PWTK1-PWTK2, SOTK1,SOTL	99%	Mnf. Guarantee
ECD2a / ECD2b	Combustor 2	TBD	VOC, HAP	GBS1, PWTK1-PWTK2, SOTK1,SOTL	99%	Mnf. Guarantee
TO1	Thermal Oxidizer	2019	VOC, HAP	AU1	99%	Mnf. Guarantee
TO2	Thermal Oxidizer	TBD	VOC, HAP	AU2	99%	Mnf. Guarantee
TO3	Thermal Oxidizer	TBD	VOC, HAP	AU3	99%	Mnf. Guarantee
TO4	Thermal Oxidizer	TBD	VOC, HAP	AU4	99%	Mnf. Guarantee
SHTR7-CAT	SCR Catalytic Reduction	TBD	NOx	SHTR7-CAT	NO_x - 75%	Mnf. Guarantee
SHTR8-CAT	SCR Catalytic Reduction	TBD	NOx	SHTR8-CAT	NO_x - 75%	Mnf. Guarantee
CHTR3-CAT	SCR Catalytic Reduction	TBD	NOx	CHTR3-CAT	NO_x - 80%	Mnf. Guarantee
CHTR4-CAT	SCR Catalytic Reduction	TBD	NOx	CHTR4-CAT	NO_x - 80%	Mnf. Guarantee

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

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

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[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
SHTR1	1.97	41.35	1.20	25.24	0.47	9.91	0.16	3.42	0.55	11.54	0.55	11.54	0.55	11.54	-	-	-	-
SHTR2	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR3	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR4	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR5	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR6	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR7	1.97	13.78	1.20	3.30	0.47	3.30	0.16	1.14	0.55	3.85	0.55	3.85	0.55	3.85	-	-	-	-
SHTR8	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
CHTR1	3.95	27.66	1.93	8.41	0.76	3.30	0.26	1.14	0.88	3.85	0.88	3.85	0.88	3.85	-	-	-	-
CHTR2	3.95		1.93		0.76		0.26		0.88		0.88		0.88		-		-	
CHTR3	3.95	27.66	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.88	6.17	-	-	-	-
CHTR4	3.95		1.93		0.76		0.26		0.88		0.88		0.88		-		-	
RHTR1	1.18	16.49	0.72	10.07	0.28	3.95	0.097	1.36	0.33	4.60	0.33	4.60	0.33	4.60	-	-	-	-
RHTR2	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
RHTR3	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
RHTR4	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
FL1-FL3[2]	2.95	12.90	5.88	25.75	2.30	10.06	0.050	0.22	0.16	0.70	0.16	0.70	0.16	0.72	-	-	-	-
FL1-FL3OVHD-SSM	Not operating during normal operating conditions																	
FL1-FL3CRYO-SSM	Not operating during normal operating conditions																	
Oil Storage Tanks 1-4 (Hourly VOC emissions)	-	-	-	-	5.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil Storage Tanks 5-14 (Hourly VOC emissions)	-	-	-	-	12.93	-	-	-	-	-	-	-	-	-	-	-	-	-
IFR1-14 Annual VOC[3]	-	-	-	-	-	70.48	-	-	-	-	-	-	-	-	-	-	-	-
ECD1[2] ECD2a / ECD2b[2]	1.77	7.69	3.04	13.24	4.65	20.23	-	-	0.073	0.12	0.073	0.12	0.15	0.67	-	-	-	-
TO1[2]	0.28	1.22	0.17	0.74	0.30	1.31	-	-	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
TO2[2]	0.28	1.22	0.17	0.74	0.30	1.31	-	-	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
TO3[2]	0.28	1.22	0.17	0.74	0.30	1.31	-	-	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-

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

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[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
TO4²	0.28	1.22	0.17	0.74	0.30	1.31	-	-	0.15	0.65	0.15	0.65	0.15	0.65	-	-	-	-
FUG	-	-	-	-	7.98	34.93	-	-	-	-	-	-	-	-	-	-	-	-
AU1	-	-	-	-	73.92	323.77	-	-	-	-	-	-	-	-	-	-	-	-
AU2	-	-	-	-	73.92	323.77	-	-	-	-	-	-	-	-	-	-	-	-
AU3	-	-	-	-	73.92	323.77	-	-	-	-	-	-	-	-	-	-	-	-
AU4	-	-	-	-	73.92	323.77	-	-	-	-	-	-	-	-	-	-	-	-
GBS1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PWTK1	-	-	-	-	1.34	5.86	-	-	-	-	-	-	-	-	-	-	-	-
PWTK2	-	-	-	-	1.34	5.86	-	-	-	-	-	-	-	-	-	-	-	-
SOTK1	-	-	-	-	459.04	2,010.59	-	-	-	-	-	-	-	-	-	-	-	-
SOTL	-	-	-	-	53.02	0.57	-	-	-	-	-	-	-	-	-	-	-	-
GEN1	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN2	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN3	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN4	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
SSM/M	-	-	-	-	-	51.33	-	-	-	-	-	-	-	-	-	-	-	-
Totals	**57.26**	**153.18**	**86.95**	**105.36**	**872.87**	**3,536.99**	**2.96**	**9.11**	**10.87**	**33.48**	**10.87**	**33.48**	**10.95**	**34.05**	**-**	**-**	**-**	**-**

[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).

²Only includes pilot/purge gas/assist gas emissions, other emissions not considered normal operating conditions.

[3]Annual VOC emissions are grouped together for IFR1 - IFR14. Worst-case annual withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks and selecting the higher value to include in the total annual VOC emissions.

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
SHTR1	1.97	41.35	1.20	25.24	0.47	9.91	0.16	3.42	0.55	11.54	0.55	11.54	0.55	11.54	-	-	-	-
SHTR2	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR3	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR4	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR5	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR6	1.97		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
SHTR7	0.49	3.46	1.20	8.41	0.47	3.30	0.16	1.14	0.55	1.10	0.55	1.10	0.55	1.10	-	-	-	-
SHTR8	0.49		1.20		0.47		0.16		0.55		0.55		0.55		-		-	
CHTR1	3.95	27.66	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.88	6.17	-	-	-	-
CHTR2	3.95		1.93		0.76		0.26		0.88		0.88		0.88		-		-	
CHTR3	0.79	5.55	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.88	6.17	-	-	-	-
CHTR4	0.79		1.93		0.76		0.26		0.88		0.88		0.88		-		-	
RHTR1	1.18	16.49	0.72	10.07	0.28	3.95	0.097	1.36	0.33	4.60	0.33	4.60	0.33	4.60	-	-	-	-
RHTR2	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
RHTR3	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
RHTR4	1.18		0.72		0.28		0.097		0.33		0.33		0.33		-		-	
FL1-FL3	2.95	10.75	5.88	21.46	2.30	8.38	0.050	0.18	0.16	0.58	0.16	0.58	0.16	0.58				
Oil Storage Tanks 1-4 (Hourly VOC emissions)	-	-	-	-	5.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil Storage Tanks 5-14 (Hourly VOC emissions)	-	-	-	-	12.93	-	-	-	-	-	-	-	-	-	-	-	-	-
IFR1-14 Annual VOC[3]	-	-	-	-	-	70.48	-	-	-	-	-	-	-	-	-	-	-	-
ECD1	1.77	7.69	3.04	13.24	4.65	20.23	-	-	0.073	0.12	0.073	0.12	0.073	0.12	-	-	-	-
ECD2a-ECD2b																		
TO1	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.19	0.82	-	-	-	-
TO2	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.19	0.82	-	-	-	-
TO3	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.19	0.82	-	-	-	-
TO4	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.19	0.82	-	-	-	-
FUG	-	-	-	-	7.98	34.93	-	-	-	-	-	-	-	-	-	-	-	-
AU1	Emissions are represented at TO1																	
AU2	Emissions are represented at TO2																	
AU3	Emissions are represented at TO3																	

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
AU4	Emissions are represented at TO4																	
GBS1	Emissions are represented at ECD1																	
PWTK1	Emissions are represented at ECD1																	
PWTK2	Emissions are represented at ECD1																	
SOTK1	Emissions are represented at ECD1																	
SOTL	-	-	-	-	0.69	7.43E-03	-	-	-	-	-	-	-	-	-	-	-	-
GEN1	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN2	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN3	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
GEN4	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	0.20	0.010	-	-	-	-
Totals	**61.13**	**176.07**	**94.94**	**146.24**	**64.86**	**175.78**	**6.49**	**25.22**	**11.02**	**33.59**	**11.02**	**33.59**	**11.02**	**33.59**	**-**	**-**	**-**	**-**

[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).

[2] For all pollutants except VOC/HAP, the hourly emission rate excludes the generators and overhead SSM stream as they cannot occur at the same time and the cryo SSM stream has a higher emission rate. For VOC, the overhead SSM stream is included with the highest hourly rate. For HAP, the generators have the highest hourly rate.

[3] Annual VOC emissions are grouped together for IFR1 - IFR14. Worst-case annual withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks and selecting the higher value to include in the total annual VOC emissions.

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
SSM/M	-	-	-	-	-	51.33	-	-	-	-	-	-	-	-	-	-	-	-
FL1-FL3OVHD-SSM	222.82	8.54	444.83	17.06	1,419.77	45.00	4.04	0.15	12.03	0.21	12.03	0.21	12.03	0.21	--	--	--	--
FL1-FL3CRYO-SSM	405.77	11.43	810.06	22.82	822.57	10.60	6.99	0.19	21.91	0.58	21.91	0.58	21.91	0.58	--	--	--	--
Totals	**628.59**	**19.97**	**1,254.89**	**39.88**	**2,242.34**	**106.93**	**11.03**	**0.35**	**33.94**	**0.79**	**33.94**	**0.79**	**33.94**	**0.79**	**-**	**-**	**-**	**-**

[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
N/A - This facility does not have Special Stacks																	
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 (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
SHTR1	SHTR1	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR2	SHTR2	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR3	SHTR3	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR4	SHTR4	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR5	SHTR5	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR6	SHTR6	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR7	SHTR7	V	No	33.0	488	447	NA	0	35.6	4.0
SHTR8	SHTR8	V	No	33.0	488	447	NA	0	35.6	4.0
CHTR1	CHTR1	V	No	76.9	599	832	NA	0	66.2	4.0
CHTR2	CHTR2	V	No	76.9	599	832	NA	0	66.2	4.0
CHTR3	CHTR3	V	No	76.9	599	832	NA	0	66.2	4.0
CHTR4	CHTR4	V	No	76.9	599	832	NA	0	66.2	4.0
RHTR1	RHTR1	V	No	28.7	470	296	NA	0	53.0	2.7
RHTR2	RHTR2	V	No	28.7	470	296	NA	0	53.0	2.7
RHTR3	RHTR3	V	No	28.7	470	296	NA	0	53.0	2.7
RHTR4	RHTR4	V	No	28.7	470	296	NA	0	53.0	2.7
FL1	FL1	V	No	130.0	1832	139	NA	0	65.6	0.4
FL2	FL2	V	No	170.0	1832	139	NA	0	65.6	0.7
FL3	FL3	V	No	170.0	1832	139	NA	0	65.6	0.7
ECD1	ECD1	V	No	40.0	1450	529	NA	0	39.5	8.4
ECD2a / ECD2b	ECD2a / ECD2b	V / V	No / No	47.5 / 43	1600 / 1600	2512.9 / 1745.1	NA / NA	0 / 0	39.5 / 39.5	9 / 7.5
TO1	TO1	V	No	58.0	1700	782.5	NA	0	58.6	4.1
TO2	TO2	V	No	58.0	1700	782.5	NA	0	58.6	4.1
TO3	TO3	V	No	58.0	1700	782.5	NA	0	58.6	4.1
TO4	TO4	V	No	58.0	1700	782.5	NA	0	58.6	4.1
GEN1	GEN1	V	No	14.0	736	260.3	NA	0	331.4	1.0

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 (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
GEN2	GEN2	V	No	14.0	736	260.3	NA	0	331.4	1.0
GEN3	GEN3	V	No	14.0	736	260.3	NA	0	331.4	1.0
GEN4	GEN4	V	No	14.0	736	260.3	NA	0	331.4	1.0

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

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

Stack No.	Unit No.(s)	Total HAPs		n-Hexane ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
SHTR1	SHTR1	0.14	0.81	0.13	0.69	1.52E-04	3.19E-03	2.46E-04	5.16E-03	-	-	-	-	5.42E-03	0.11				
SHTR2	SHTR2	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
SHTR3	SHTR3	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
SHTR4	SHTR4	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
SHTR5	SHTR5	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
SHTR6	SHTR6	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
SHTR7	SHTR7	0.14	0.27	0.13	0.23	1.52E-04	1.06E-03	2.46E-04	1.72E-03	-	-	-	-	5.42E-03	0.038				
SHTR8	SHTR8	0.14		0.13		1.52E-04		2.46E-04		-		-		5.42E-03					
CHTR1	CHTR1	0.22	0.44	0.21	0.37	2.43E-04	1.71E-03	3.94E-04	2.76E-03	-	-	-	-	8.69E-03	0.061				
CHTR2	CHTR2	0.22		0.21		2.43E-04		3.94E-04		-		-		8.69E-03					
CHTR3	CHTR3	0.22	0.44	0.21	0.37	2.43E-04	1.71E-03	3.94E-04	2.76E-03	-	-	-	-	8.69E-03	0.061				
CHTR4	CHTR4	0.22		0.21		2.43E-04		3.94E-04		-		-		8.69E-03					
RHTR1	RHTR1	0.081	0.32	0.078	0.27	9.07E-05	1.27E-03	1.47E-04	2.06E-03	-	-	-	-	3.24E-03	0.045				
RHTR2	RHTR2	0.081		0.078		9.07E-05		1.47E-04		-		-		3.24E-03					
RHTR3	RHTR3	0.081		0.078		9.07E-05		1.47E-04		-		-		3.24E-03					
RHTR4	RHTR4	0.081		0.078		9.07E-05		1.47E-04		-		-		3.24E-03					
FL1-FL3[1]	FL1-FL3[1]	0.16	0.60	0.072	0.31	0.013	0.058	0.029	0.13	1.35E-03	5.93E-03	0.012	0.052	-	-				
FL1-FL3[1]	FL1-FL3OVHD-SSM	61.34	1.79	39.74	1.30	6.79	0.18	8.01	0.18	1.35E-03	5.93E-03	4.48	0.091	-	-				
FL1-FL3[1]	FL1-FL3CRYO-SSM	10.88	0.17	9.08	0.14	0.82	0.013	0.97	0.015	-	-	-	-	-	-				
Oil Storage Tanks 1-4	IFR 1-4	0.060	0.26	0.037	0.16	2.34E-03	0.010	6.37E-03	0.028	1.70E-03	7.43E-03	8.95E-03	0.039	-	-				
Oil Storage Tanks 5-14	IFR 5-14	0.059	0.26	0.044	0.19	2.47E-03	0.011	4.41E-03	0.019	8.12E-04	3.56E-03	4.13E-03	0.018	-	-				
ECD1	ECD1	0.15	0.67	0.13	0.56	0.010	0.044	7.24E-03	0.032	3.35E-04	1.46E-03	1.96E-03	8.55E-03	-	-				
ECD2a / ECD2b	ECD2a / ECD2b																		
TO1	TO1	0.018	0.079	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	-	-				
TO2	TO2	0.018	0.079	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	-	-				

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

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

Stack No.	Unit No.(s)	Total HAPs		n-Hexane ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TO3	TO3	0.018	0.079	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	-	-				
TO4	TO4	0.018	0.079	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	3.59E-03	0.016	-	-				
FUG	FUG	1.39	6.10	0.25	1.09	0.053	0.23	0.14	0.61	0.035	0.15	0.18	0.80	-	-				
TO1	AU1	Emissions are represented at TO1.																	
TO2	AU2	Emissions are represented at TO2.																	
TO3	AU3	Emissions are represented at TO3.																	
TO4	AU4	Emissions are represented at TO4.																	
ECD1	GBS1	Emissions are represented at ECD1.																	
ECD1	PWTK1	Emissions are represented at ECD1.																	
ECD1	PWTK2	Emissions are represented at ECD1.																	
ECD1	SOTK1	Emissions are represented at ECD1.																	
ECD1	SOTL	0.021	2.23E-04	0.014	1.46E-04	-	-	-	-	-	-	-	-	-	-				
GEN1	GEN1	2.17	0.11	0.022	1.12E-03	-	-	-	-	-	-	-	-	1.98	0.099				
GEN2	GEN2	2.17	0.11	0.022	1.12E-03	-	-	-	-	-	-	-	-	1.98	0.099				
GEN3	GEN3	2.17	0.11	0.022	1.12E-03	-	-	-	-	-	-	-	-	1.98	0.099				
GEN4	GEN4	2.17	0.11	0.022	1.12E-03	-	-	-	-	-	-	-	-	1.98	0.099				
Totals:		**85.10**	**12.89**	**51.65**	**5.74**	**7.71**	**0.62**	**9.19**	**1.09**	**0.055**	**0.24**	**4.70**	**1.07**	**8.00**	**0.71**				

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 (scf)	Annual Usage (mmscf)	% Sulfur (by weight)	% Ash
SHTR1	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR2	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR3	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR4	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR5	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR6	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR7	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
SHTR8	Natural Gas	Residue Gas	913.7	60194.1	527.3	< 0.0025	N/A
CHTR1	Natural Gas	Residue Gas	913.7	96567.9	845.9	< 0.0025	N/A
CHTR2	Natural Gas	Residue Gas	913.7	96567.9	845.9	< 0.0025	N/A
CHTR3	Natural Gas	Residue Gas	913.7	96567.9	845.9	< 0.0025	N/A
CHTR4	Natural Gas	Residue Gas	913.7	96567.9	845.9	< 0.0025	N/A
RHTR1	Natural Gas	Residue Gas	913.7	36006.1	315.4	< 0.0025	N/A
RHTR2	Natural Gas	Residue Gas	913.7	36006.1	315.4	< 0.0025	N/A
RHTR3	Natural Gas	Residue Gas	913.7	36006.1	315.4	< 0.0025	N/A
RHTR4	Natural Gas	Residue Gas	913.7	36006.1	315.4	< 0.0025	N/A
FL1	Natural Gas	Residue Gas	913.7	1600.0	14.0	< 0.0025	N/A
FL2	Natural Gas	Residue Gas	913.7	1600.0	14.0	< 0.0025	N/A
FL3	Natural Gas	Residue Gas	913.7	1600.0	14.0	< 0.0025	N/A
GEN1	Natural Gas	Residue Gas	913.7	24586.3	215.4	< 0.0025	N/A
GEN2	Natural Gas	Residue Gas	913.7	24586.3	215.4	< 0.0025	N/A
GEN3	Natural Gas	Residue Gas	913.7	24586.3	215.4	< 0.0025	N/A
GEN4	Natural Gas	Residue Gas	913.7	24586.3	215.4	< 0.0025	N/A
ECD1	Natural Gas	Residue Gas	913.7	180.0	1.58	< 0.0025	N/A
ECD2a / ECD2b	Natural Gas	Residue Gas	913.7	270.0	2.37	< 0.0025	N/A
TO1	Natural Gas	Residue Gas	1030.8	19430.0	170.2	< 0.0025	N/A
TO2	Natural Gas	Residue Gas	1030.8	19430.0	170.2	< 0.0025	N/A
TO3	Natural Gas	Residue Gas	1030.8	19430.0	170.2	< 0.0025	N/A
TO4	Natural Gas	Residue Gas	1030.8	19430.0	170.2	< 0.0025	N/A

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
IFR1	40400331	Oil/Condensate	Oil/Condensate	6.54	53.15	100.00	11.35	100.00	11.35
IFR2	40400331	Oil/Condensate	Oil/Condensate	6.54	53.15	100.00	11.35	100.00	11.35
IFR3	40400331	Oil/Condensate	Oil/Condensate	6.54	53.15	100.00	11.35	100.00	11.35
IFR4	40400331	Oil/Condensate	Oil/Condensate	6.54	53.15	100.00	11.35	100.00	11.35
IFR5	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR6	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR7	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR8	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR9	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR10	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR11	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR12	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR13	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
IFR14	40400331	Oil/Condensate	Oil/Condensate	6.54	53.13	100.00	11.35	100.00	11.35
GBS1	31000506	Produced Water	Produced Water w/ Trace Oils	8.26	42.92	90.00	14.95	90.00	14.95
PWTK1	40400315	Produced Water	Produced Water w/ Trace Oils	8.30	42.92	75.80	12.03	75.80	12.03
PWTK2	40400315	Produced Water	Produced Water w/ Trace Oils	8.30	42.92	75.80	12.03	75.80	12.03
SOTK1	40400311	Oil/Condensate	Oil/Condensate	5.89	54.21	75.80	11.33	75.80	11.33

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			
IFR1	TBD	Oil/Condensate	C	IF	50,000	7,949	30.5	13.4	Tan	Tan	Good	2,299,500,000	1095
IFR2	TBD	Oil/Condensate	C	IF	50,000	7,949	30.5	13.4	Tan	Tan	Good	2,299,500,000	1095
IFR3	TBD	Oil/Condensate	C	IF	50,000	7,949	30.5	13.4	Tan	Tan	Good	2,299,500,000	1095
IFR4	TBD	Oil/Condensate	C	IF	50,000	7,949	30.5	13.4	Tan	Tan	Good	2,299,500,000	1095
IFR5	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR6	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR7	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR8	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR9	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR10	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR11	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR12	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR13	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
IFR14	TBD	Oil/Condensate	C	IF	100,000	15,899	39.8	15.2	Tan	Tan	Good	919,800,000	219
GBS1	TBD	Produced Water	NA	FX	1,000	159	4.7	7.3	Tan	Tan	Good	93,513,000	2227
PWTK1	TBD	Produced Water	NA	FX	750	119	4.7	7.3	Tan	Tan	Good	46,756,500	1114
PWTK2	TBD	Produced Water	NA	FX	750	119	4.7	7.3	Tan	Tan	Good	46,756,500	1114
SOTK1	TBD	Slop - Oil/Condensate	NA	FX	500	79	3.7	7.6	Tan	Tan	Good	4,599,000	219

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)**
Mixed Hydrocarbons	Oil/Condensate	Liquid	600,000 (BOPD)	Mixed Hydrocarbons	Oil/Condensate	Liquid	600,000 (BOPD)
	Produced Water	Liquid	6,100 (BWPD)		Produced Water	Liquid	6,100 (BWPD)
	Natural Gas	Gas	1,600 (MMSCFD)		Natural Gas	Gas	1,000 (MMSCFD)
	Natural Gas Liquids	Liquid	190,000 (BOPD)		Natural Gas Liquids	Liquid	190,000 (BOPD)

Table 2-N: CEM Equipment

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

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

Table 2-O: Parametric Emissions Measurement Equipment

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

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

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]								Total GHG Mass ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	GWPs [1]	1	298	25	22,800	footnote 3									
SHTR1-6	mass GHG	181,191.43	0.34	3.41										181,195.18	
	CO_2e	181,191.43	101.76	85.37											181,378.56
SHTR7-8	mass GHG	60,397.14	0.11	1.14										60,398.39	
	CO_2e	60,397.14	33.92	28.46											60,459.52
CHTR1-2	mass GHG	96,893.70	0.18	1.83										96,895.71	
	CO_2e	96,893.70	54.42	45.65											96,993.77
CHTR3-4	mass GHG	96,893.70	0.18	1.83										96,895.71	
	CO_2e	96,893.70	54.42	45.65											96,993.77
RHTR1-4	mass GHG	72,255.19	0.14	1.36										72,256.69	
	CO_2e	72,255.19	40.58	34.04											72,329.82
FL1-FL3	mass GHG	9,774.50	-	39.84										9,814.34	
	CO_2e	9,774.50	-	996.03											10,770.53
FL1-FL3OVHD-SSM	mass GHG	9,396.56	-	0.96										9,397.52	
	CO_2e	9,396.56	-	24.00											9,420.57
FL1-FL3CRYO-SSM	mass GHG	12,156.88	-	39.02										12,195.90	
	CO_2e	12,156.88	-	975.60											13,132.48
IFR1-IFR14	mass GHG	-	-	0.44										0.44	
	CO_2e	-	-	11.01											11.01
ECD1 ECD2a / ECD2b	mass GHG	6,347.11	-	0.54										6,347.65	
	CO_2e	6,347.11	-	13.49											6,360.60
TO1	mass GHG	106,227.53	-	34.76										106,262.29	
	CO_2e	106,227.53	-	868.93											107,096.46
TO2	mass GHG	106,227.53	-	34.76										106,262.29	
	CO_2e	106,227.53	-	868.93											107,096.46
TO3	mass GHG	106,227.53	-	34.76										106,262.29	
	CO_2e	106,227.53	-	868.93											107,096.46
TO4	mass GHG	106,227.53	-	34.76										106,262.29	
	CO_2e	106,227.53	-	868.93											107,096.46
FUG	mass GHG	0.76	-	119.59										120.35	
	CO_2e	0.76	-	2,989.73											2,990.49
SOTL	mass GHG	2.25E-06	-	3.69E-06										5.94E-06	
	CO_2e	2.25E-06	-	9.23E-05											9.45E-05
GEN1-GEN4	mass GHG	627.89	8.91E-04	8.91E-03										627.90	
	CO_2e	627.89	0.27	0.22											628.38
Total	mass GHG	970,844.98	0.96	349.00										971,194.94	
	CO_2e	970,844.98	285.37	8,724.96											979,855.31

[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.

XTO Energy Inc. is requesting a Significant Revision of Cowboy Central Delivery Point (Cowboy CDP) NSR Permit #7877M2 in accordance with 20.2.72.219.D(1) NMAC. The facility is located approximately 14 miles southeast of Malaga in Eddy County, New Mexico.

Cowboy CDP consists of gas processing facilities and oil/natural gas liquids (NGLs) processing facilities. The gas processing facilities utilize amine sweetening units to remove hydrogen sulfide (H_2S) and carbon dioxide (CO_2) from raw natural gas as needed to meet product specification. The sweetened gas is then routed to dehydration facilities to eliminate moisture. The sweetened and dried gas then enters cryogenic units, where it is cooled to condense and separate valuable NGLs out of the raw gas stream. Utility hot oil systems with gas-fired auxiliary heaters are used to provide the required heat to the distillation processes in the cryogenic units. The remaining residue gas is sold via pipelines. The incoming oil and NGLs both undergo stabilization via heating and distillation processes by means of two utility hot oil systems with separate gas-fired auxiliary heaters, thereby eliminating volatile components from the oil and NGLs for safe transportation via pipeline. The facility can receive up to 600,000 barrels of oil per day from surrounding field production tank batteries. The facility also has storage tanks for storing the processed oil and a portion of the NGLs before export. The oil and NGLs are transferred offsite via pipelines, while produced water and slop oil can be shipped via pipeline or transported offsite by truck.

With this application, XTO is requesting to revise potential flaring emissions (FL1-FL3) based upon updated annual flare volume estimates at full plant built out and capacity. Flare stream compositions, MW, and heating values are also updated based on recent flare stream sample analysis.

Also, XTO is requesting to revise potential enclosed combustor (ECD1) emissions based upon updated produced water and slop oil storage throughput estimates at full plant built out and capacity. Produced water and slop oil emissions are also updated based upon recent sample analysis of slop oil streams. XTO would like to add a portable backup combustor that would only be used if the existing combustor is out of service. Two different portable ECD models (ECD2a/ECD2b) are considered for this permit as represented in Table 2A and 2H. Annual emissions conservatively assume that the backup combustor could operate up to 8,760 hrs per year. The combustors will not operate at the same time; therefore, total combustor emissions are based on worst-case emissions from ECD1 or ECD2a/ECD2b.

Heater potential emissions are updated based upon recent fuel gas sample analysis. XTO is also requesting to group like heaters (SHTR1-SHTR8, CHTR1-4, RHTR1-4) and combine annual emission limits for each heater grouping.

Oil storage tank emissions (IFR1-IFR14) are updated to reflect an average bulk storage temperature of 100 F and recent oil sample analysis.

XTO is requesting to revise and clarify the process gas limit of 1 BSCF/day or 365 BSCF/year. At full build out, up to 1.6 BSCF/day field gas can be routed to the Cowboy facility with up to 1 BSCF/day being processed in the Cowboy gas plant facilities and the remaining rich gas being routed to offsite 3rd party gas processors. This clarification of the process gas limits does not change the permit emissions but is intended to clarify the process gas permit throughput limit. Other revisions include an updated process flow diagram and process description provided in Sections 4 and 10, respectively. Planned fire pump engines are represented as exempt sources as emergency fire protection equipment.

Finally, XTO also requests the removal of four (4) Arial KBZ/6 6500 hp electric residue gas compressors (ERESCOMP15-18), as well as the permitted molecular sieve dehydrators (MOL1-4) and cryogenic trains (CRYO1-4) from the permit, as these units are not sources of emissions and are not subject to any local or federal standards, although they remain part of the Cowboy facility.

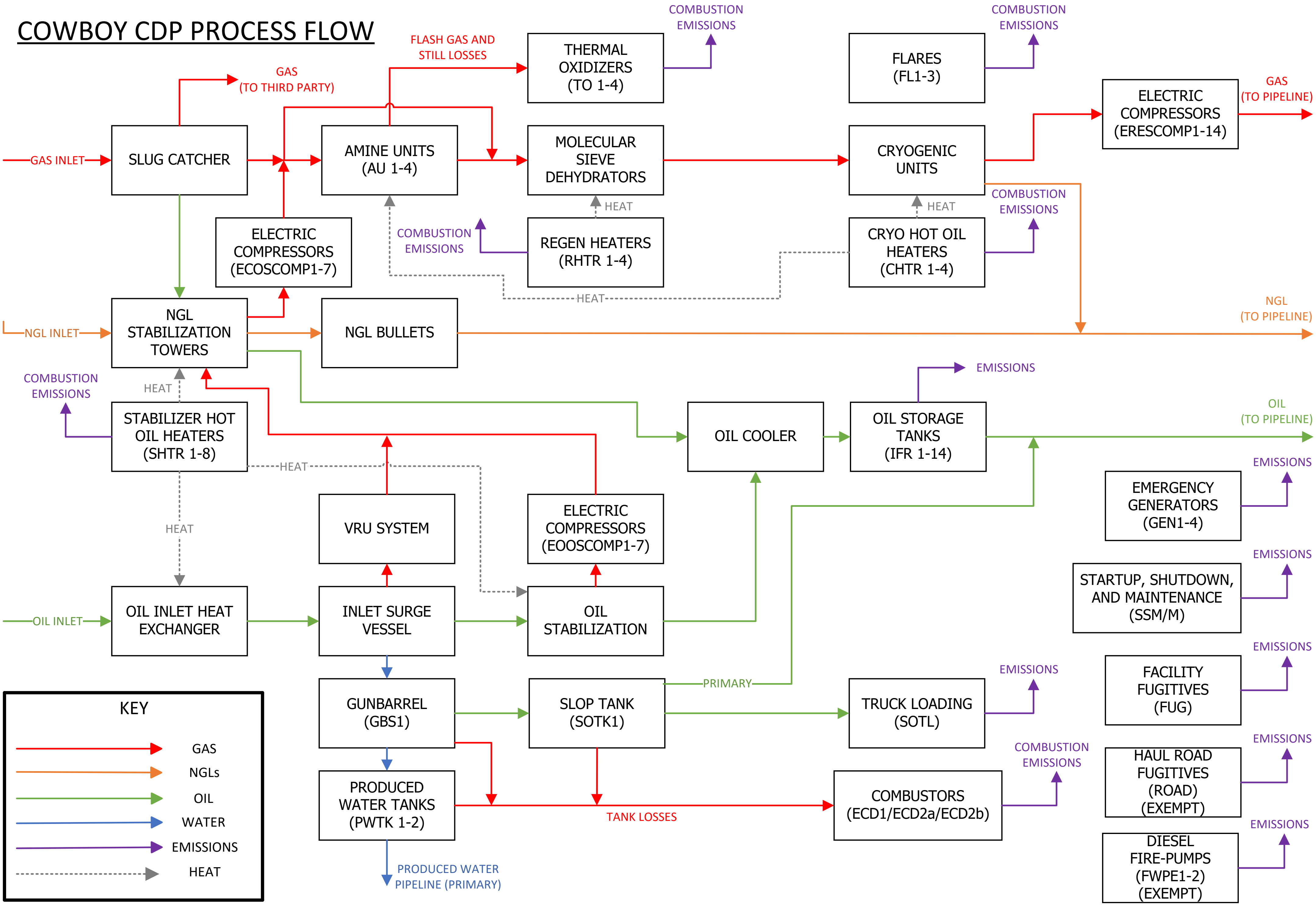
Section 4

Process Flow Sheet

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

A Process Flow Diagram is attached to this application.

COWBOY CDP PROCESS FLOW

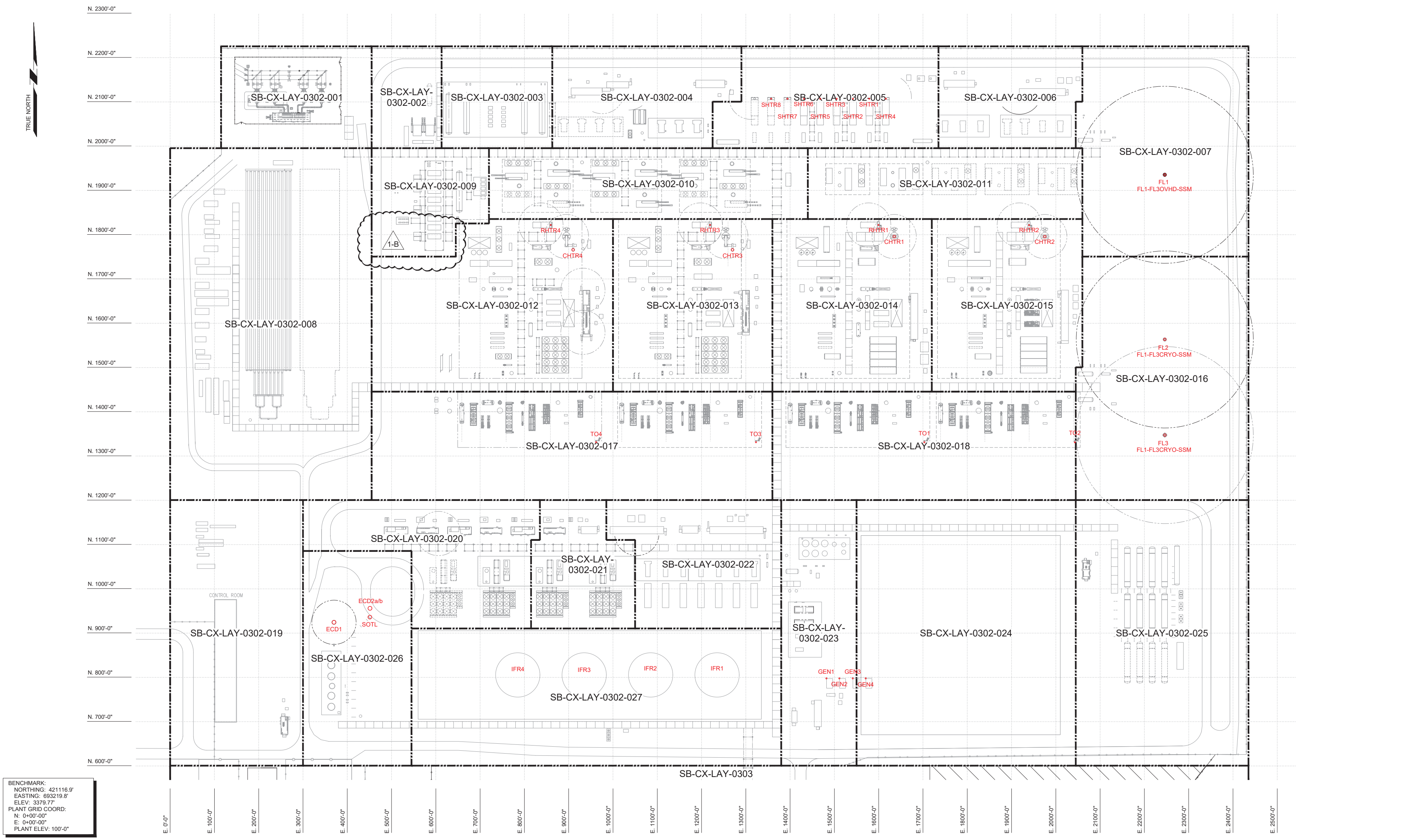


Section 5

Plot Plan Drawn to Scale

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

A plot plan is attached to this application.



BENCHMARK:
NORTHING: 421116.9'
EASTING: 693219.8'
ELEV: 3379.77'
PLANT GRID COORD:
N: 0+00'-00"
E: 0+00'-00"
PLANT ELEV: 100'-0"

NOTES

1. THE MAXIMUM HEAT FLUX AT GRADE IS LESS THAN 1,500 BTU/HR-FT2 THEREFORE NO STERILE RADIUS IS REQUIRED AROUND THE FLARE STACKS.

REFERENCE DRAWINGS

DWG. NO.	DESCRIPTION

REVISIONS

REV.	DESCRIPTION	DRWN	CHKD	APPRV	DATE
1-A	ISSUED FOR APPORVAL, SAULSBURY JOB #11160	JDW	SSR	DV	04/30/24
1	ISSUED FOR CONSTRUCTION, SAULSBURY JOB #11079	JDW	SSR	DV	02/23/24
0-D	ISSUED FOR DESIGN, SAULSBURY JOB #11079	JDW	SSR	DV	08/25/23
0-C	ISSUED FOR APPROVAL, SAULSBURY JOB #11079	JDW	SSR	DV	08/03/23
0-B	ISSUED FOR DESIGN, SAULSBURY JOB #11078	JDW	SSR	DV	05/18/23
0-A	ISSUED FOR APPROVAL, SAULSBURY JOB #11078	JDW	SSR	DV	05/11/23
1-B	ISSUED FOR DESIGN, SAULSBURY JOB #11160	JDW	MTWC	DV	05/28/24

PROJECT INFO.

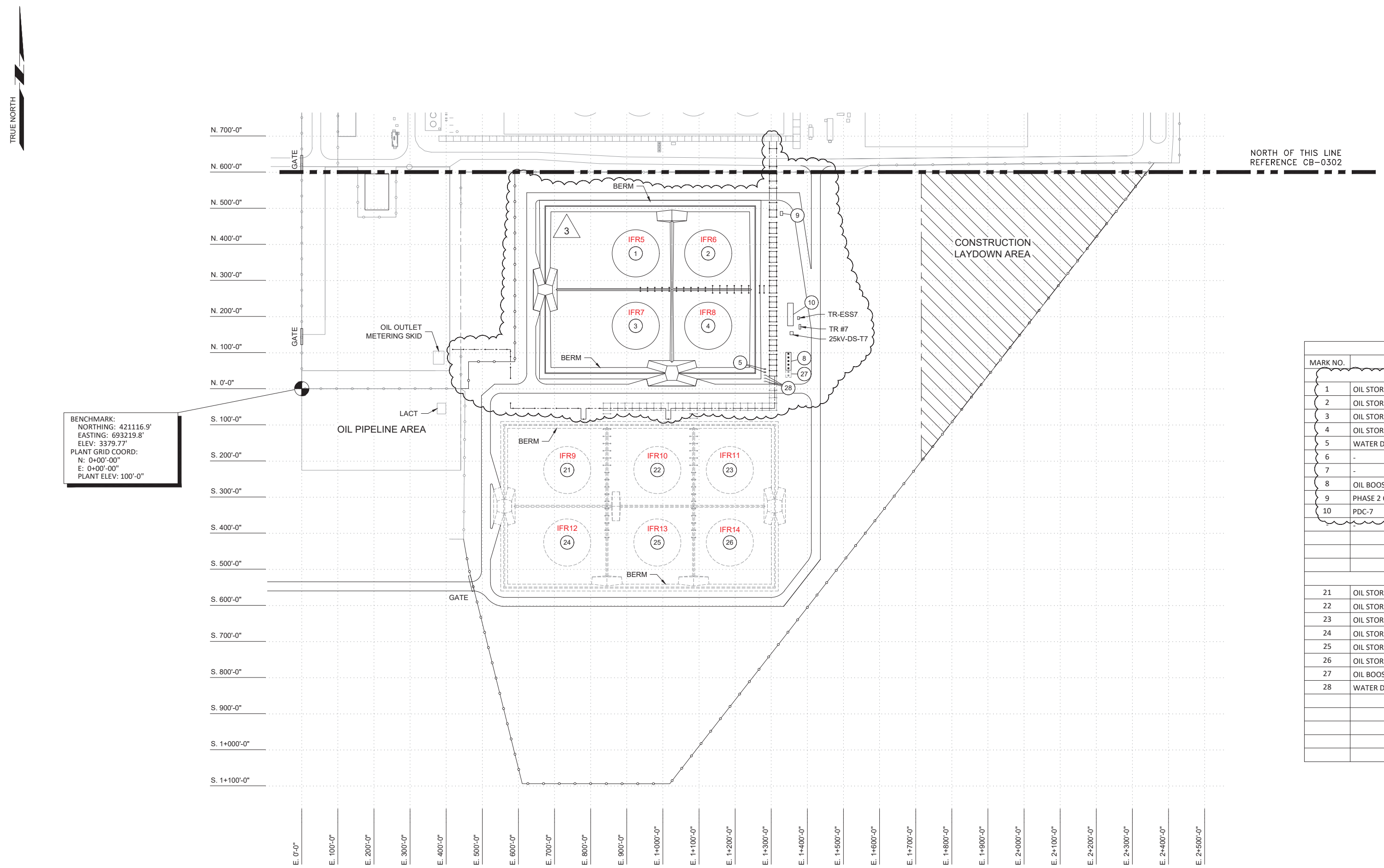
DRAWN BY: CA
DATE: 07/24/19
AEC JOB NO.: 019985-001
AFE/P.O. NO.:
CLIENT FILE NO.:
SCALE: 1"=150'

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

XTO ENERGY

PLOT PLAN
DRAWING INDEX
COWBOY NATURAL GAS & OIL CDP
EDDY COUNTY NEW MEXICO

DWG. NO. CB-0302
REV. 1-B



EQUIPMENT INDEX

MARK NO.	DESCRIPTION	TAG NO.
	TANK FARM AREA - PHASE 2	
1	OIL STORAGE TANK	TK-4211
2	OIL STORAGE TANK	TK-4212
3	OIL STORAGE TANK	TK-4213
4	OIL STORAGE TANK	TK-4214
5	WATER DRAW-OFF PUMPS	P-4221A/B
6	-	-
7	-	-
8	OIL BOOSTER PUMPS	P-4411 / 4412 / 4413 / 4414 / 4415
9	PHASE 2 OIL TANK AFFF SYSTEM	PK-6448
10	PDC-7	
-	-	
	TANK FARM AREA - PHASE 3	
21	OIL STORAGE TANK	TK-4215
22	OIL STORAGE TANK	TK-4216
23	OIL STORAGE TANK	TK-4217
24	OIL STORAGE TANK	TK-4218
25	OIL STORAGE TANK	TK-4219
26	OIL STORAGE TANK	TK-4220
27	OIL BOOSTER PUMPS	
28	WATER DRAW-OFF PUMPS	

NOTES

-

REFERENCE DRAWINGS

DWG. NO.	DESCRIPTION
CB-0302	PLOT PLAN

REVISIONS

REV.	DESCRIPTION	DRWN	CHKD	APPRV	DATE
3	REVISED ISSUED FOR CONSTRUCTION – SAULSBURY JOB #11078	JDW	SSR	DV	05/07/24
2-A	ISSUED FOR APPROVAL – SAULSBURY JOB #11159	JDW	SSR	DV	04/26/24
2	REVISED ISSUED FOR CONSTRUCTION – SAULSBURY JOB #11078	JDW	SSR	DV	08/02/23
1	REVISED ISSUED FOR CONSTRUCTION – SAULSBURY JOB #11078	JDW	SSR	DV	06/26/23
0	ISSUED FOR CONSTRUCTION – SAULSBURY JOB #11078	JDW	SSR	DV	05/11/23

PROJECT INFO.

DRAWN BY	JDW
DATE	03/17/23
SAULSBURY JOB NO.	11078
AFE/P.O. NO.	
CLIENT FILE NO.	DN-PLCOW-CD-SB-CX-LAY-0303
SCALE	1"=150'

DAVID M. VALDEZ
NEW MEXICO
25938
PROFESSIONAL ENGINEER

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TEXAS REGISTERED ENGINEERING FIRM F-518

XTO ENERGY

PLOT PLAN
TANK FARM AREA
COWBOY NATURAL GAS & OIL CDP
EDDY COUNTY NEW MEXICO

DWG. NO. DN-PLCOW-CD-SB-CX-LAY-0303
REV. 3

Drawing name: J:\XTO Energy\11078 XTO TF2O4\03 ENGINEERING, DESIGN\3.4 Piping\3.4.3 Drawings - Plot Plans\DN-PLCOW-CD-SB-CX-LAY-0303.dwg Plotted on: May 06, 2024 - 4:57pm

Section 6

All Calculations

<u>Show all calculations</u> 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.

Hot Oil Heaters (SHTR1 – SHTR8, CHTR1 – CHTR4, RHTR1 – RHTR4)
The facility is equipped with eight (8) 58.93 Million British Thermal units per hour (MMbtu/hr) burners used for heating units in oil & NGL stabilization, four (4) 94.54 MMbtu/hr burners used for natural gas cryogenic heaters, and four (4) 35.25 MMbtu/hr burners used for mole sieve regeneration. SHTR7, SHTR8, CHTR3, and CHTR4 are to be equipped with SCR catalysts to control NO_X emissions. The heaters generate emissions of nitrogen oxides (NO_X), carbon dioxide (CO), volatile organic compounds (VOC), sulfur dioxide (SO_2), and Particulate Matter (PM). NO_X, CO, and VOC emissions were calculated using manufacturer's guaranteed exhaust concentrations. PM, hazardous air pollutants (HAPs), and SO_2 emissions were calculated using emission factors from AP-42 Section 1.4 for natural gas combustion. AP-42 emission factors were adjusted for the heat content of the fuel gas. Supporting manufacturer documentation is provided in Section 7. A 25% safety factor was applied to the lb/hr emission rates. The high heating value (Btu/scf) of the fuel gas is based on Bryan Research and Engineering's (BR&E) ProMax software simulation using a recent fuel sample analysis (see simulation report in Section 7).

Thermal Oxidizers (TO1 – TO4)
Thermal oxidizers (TO) are used to control vapors from the amine flash vessels and acid gas from the amine still reflux accumulators. Speciated VOC, SO_2 and HAP emissions associated with the flash vessels and still vents were calculated using Promax simulation (see simulation report in Section 7). The ProMax simulation for each amine flash vessel and still vent was designed to simulate emissions at the maximum design gas throughput of 250 Million standard cubic feet per day (MMscfd) per cryo train and maximum design amine recirculation pump rates of 500 standard gallons per minute (sgpm). To be conservative, total HAP emissions were calculated assuming that the total molar concentration of hydrocarbon components that are hexanes or heavier (C6+) is equal to the molar concentration of each individual HAP component. A manufacturer guaranteed destruction efficiency of 99% was used for the TO. Emissions of NO_X and CO from the TOs were calculated using manufacturer's guaranteed exhaust concentrations. PM emissions from TO combustion were calculated using AP-42 Section 1.4. Supporting manufacturer documentation is provided in Section 7.

Flares (FL1 – FL3)
The facility is be equipped with three dual-tip flares used to control routine flare streams and startup, shutdown, maintenance (SSM) flare streams. Routine emissions from the flares include pilot, purge, assist gas, and process gas. Process gas includes sweep gas and miscellaneous process vents such as analyzer vents, compressor seals, and pump seals. Flare stream flowrates were based on process knowledge and engineering estimates. Flare stream composition and heat content were based on recent flare stream sample analysis and ProMax simulation (see simulation report in Section 7). NO_X and CO emissions were calculated using emission factors from the Texas Commission on Environmental Quality (TCEQ) publication RG-360A/09. VOC and H2S emissions were calculated using estimated flaring volumes, stream composition from recent flare gas sample analysis, and the manufacturer's guaranteed destruction efficiency of 98%. Manufacturer documentation provided in Section 7 of the application. SO2 emissions are based on flare stream total sulfur content of 25 ppmw and assumes 100% of the sulfur is converted to SO2. PM10 and PM2.5 emissions were calculated using emission factors from AP-42 Section 1.4 for natural gas combustion. Emission factors were adjusted for the heat content of the flare streams. A 20% safety factor was added to the lb/hr emission rates from the flares.

SSM streams routed to the flares could include process vessel purging and blowdowns associated with startup, shutdown, and maintenance activities and events. Separate SSM flaring limits have been established for process equipment associated with the oil and NGL stabilization and the natural gas processing cryo trains. A maximum hourly SSM gas rate to any of the dual-tip flares of 500,000 scfh was included in the calculations for the oil and NGL stabilization equipment. A separate maximum hourly SSM gas rate to the any of the dual-tip flares of 2,000,000 scfh was included for cryo train equipment. For permitting purposes, the total SSM rate established for each process area is intended to represent one total limit for all three flares. Flare SSM stream composition and heat content were based on recent flare stream sample analysis and ProMax simulation (see simulation report in Section 7). NO_X and CO emissions were calculated using emission factors from the Texas Commission on Environmental Quality (TCEQ) publication RG-360A/09. VOC and H2S emissions were calculated using estimated flaring volumes, stream composition from recent flare gas sample analysis, and the manufacturer's guaranteed destruction efficiency of 98%. Manufacturer documentation provided in Section 7 of the application. SO2 emissions are based on flare stream total sulfur content of 25 ppmw and assumes 100% of the sulfur is converted to SO2. PM10 and PM2.5 emissions were calculated using emission factors from AP-42 Section 1.4 for natural gas combustion. Emission factors were adjusted for the heat content of the flare streams. A 20% safety factor was added to the lb/hr emission rates from the flares.

Combustors (ECD1 and ECD2a/ECD2b)
Enclosed combustors will control flashing, working, and breathing losses from the gunbarrel separator and fixed roof tanks, as well as the displaced vapors from truck loading operations from the slop oil tank. ECD1 will be the primary control for these units, and the portable ECD2a/ECD2b will provide backup control during ECD1 downtimes. The portable unit can range in size in terms of capacity and stack parameters which are provided under Unit IDs ECD2a and ECD2b in the UA2 tables. Emissions of NO_X and CO from the combustors were calculated using manufacturer's guaranteed exhaust concentrations. VOC emissions were calculated using speciated streams determined from recent sample analysis, BR&E ProMax software simulation, and the manufacturer's guaranteed destruction efficiency of 99%. Annual emissions conservatively assume that ECD2a/ECD2b could operate up to 8760 hr/yr. Total emissions represent worst-case emission from ECD1, ECD2a, or ECD2b. The combustors will not operate at the same time. A constant pilot gas fuel rate of 180 scfh is included in the emission calculations for the ECD1, and 270 scf/hr is included for ECD2a/ECD2b. Supporting manufacturer documentation is provided in Section 7.

Storage Tanks (IFR5 – IFR8, GBS1, SOTK1, PWTK1 – PWTK2)
Standing and withdrawal emissions from the fourteen (14) internal floating roof (IFR) crude oil tanks, as well as flash, working, and breathing emissions from the one gunbarrel separator, one (1) fixed roof slop oil tank, and two (2) fixed roof produced water storage tanks were calculated using speciated streams determined from recent sample analysis, estimated liquid throughput, and BR&E ProMax simulation software. The BR&E ProMax software utilizes current AP-42, Chapter 7, Liquid Storage Tank emission calculation methodology. Emissions from the fixed roof tanks will be controlled by ECD1 or ECD2a/ECD2b. The simulation reports' details and summaries are included in Section 7.

Truck Loading (SOTL)
Controlled emissions from slop oil loading of trucks were calculated using Equation 1 of AP-42 Section 5.2. Maximum slop oil loading rates are calculated using 210 BOPD. Relevant portions of AP-42 Section 5.2 are included in Section 7. Slop oil truck loading will be controlled by the combustor (ECD1 or ECD2a/ECD2b).

Startup, Shutdown, and Maintenance (SSM/M)
Startup, shutdown, maintenance (SSM) and malfunction (M) emissions not routed to the flare system were quantified at the facility. The SSM/M emissions include blowdowns and degassing from various equipment as identified in the emission calculations. Like-kind SSM/M activities were grouped together. The estimated frequency, volume, MW, and VOC wt% of the vented stream for each SSM/M grouping were used to calculate VOC emissions. Vented volume per event was based on the capacity of equipment, piping, and piping components. Emissions for some like-kind SSM activities were less than 0.5 tpy and are identified as permit exempt sources in the emission calculations and in UA2 Table 2-B.

Haul Road Fugitive Emissions (Exempt pursuant 20.2.72.202.B.(5) NMAC)
Fugitive haul road emissions were calculated using Equations 1a and 2 of AP-42 Section 13.2.2. Relevant portions of AP-42 Section 13.2.2 are included in Section 7.

Emergency Generators (GEN1-GEN4)
Emission factors for NO_X, CO, formaldehyde, and VOC are based on manufacturer's data. Emission rates PM, PM_{10}, and $PM_{2.5}$ were calculated using AP-42 Table 3.2-3 emission factors. PM_{10} and $PM_{2.5}$ emissions are set equal to PM emissions as a conservative measure. SO_2 emissions were calculated based on the units' fuel consumption and a maximum sulfur content of 0.75 grains per 100 standard cubic feet (0.75 gr/100 scf). Hazardous Air Pollutants (HAPs) except for formaldehyde were calculated using AP-42 factors. Annual operation was assumed to be 100 hours per generator.

Piping Component Fugitive Emissions (FUG)
Facility fugitive emissions were calculated using emission factors from the "Protocol for Equipment Leak Emission Estimates" document, conservatively assumed component counts from P&I diagrams of the facility, and representative stream compositions.

XTO Energy, Inc.

Cowboy CDP

CONTROLLED FACILITY EMISSIONS SUMMARY

EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		PM		PM_{10}/ $PM_{2.5}$		HAPs		CO2e
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR1	SHTR1	1.97	41.35	1.20	25.24	0.47	9.91	0.16	3.42	0.55	11.54	0.55	11.54	0.14	0.81	181,378.56
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR2	SHTR2	1.97		1.20		0.47		0.16		0.55		0.55		0.14		
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR3	SHTR3	1.97		1.20		0.47		0.16		0.55		0.55		0.14		
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR4	SHTR4	1.97		1.20		0.47		0.16		0.55		0.55		0.14		
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR5	SHTR5	1.97		1.20		0.47		0.16		0.55		0.55		0.14		
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR6	SHTR6	1.97		1.20		0.47		0.16		0.55		0.55		0.14		
Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	SHTR7	SHTR7	0.49	3.46	1.20	8.41	0.47	3.30	0.16	1.14	0.55	1.10	0.55	1.10	0.14	0.27	60,459.52
Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	SHTR8	SHTR8	0.49		1.20		0.47		0.16		0.55		0.55		0.14		
Cryo Hot Oil Heater (94.54 MMBtu/hr)	CHTR1	CHTR1	3.95	27.66	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.22	0.44	96,993.77
Cryo Hot Oil Heater (94.54 MMBtu/hr)	CHTR2	CHTR2	3.95		1.93		0.76		0.26		0.88		0.88		0.22		
Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	CHTR3	CHTR3	0.79	5.55	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.22	0.44	96,993.77
Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	CHTR4	CHTR4	0.79		1.93		0.76		0.26		0.88		0.88		0.22		
Regen Heater (35.25 MMBtu/hr)	RHTR1	RHTR1	1.18	16.49	0.72	10.07	0.28	3.95	0.097	1.36	0.33	4.60	0.33	4.60	0.081	0.32	72,329.82
Regen Heater (35.25 MMBtu/hr)	RHTR2	RHTR2	1.18		0.72		0.28		0.097		0.33		0.33		0.081		
Regen Heater (35.25 MMBtu/hr)	RHTR3	RHTR3	1.18		0.72		0.28		0.097		0.33		0.33		0.081		
Regen Heater (35.25 MMBtu/hr)	RHTR4	RHTR4	1.18		0.72		0.28		0.097		0.33		0.33		0.081		
CDP Flare 1 (Dual Tip Flare) Cryo Flare 2 (Dual Tip Flare) Cryo Flare 3 (Dual Tip Flare)	FL1-FL3[1]	FL1-FL3[1]	2.95	10.75	5.88	21.46	2.30	8.38	0.050	0.18	0.16	0.58	0.16	0.58	0.16	0.60	10,770.53

XTO Energy, Inc.

Cowboy CDP

CONTROLLED FACILITY EMISSIONS SUMMARY

EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		PM		PM_{10}/ $PM_{2.5}$		HAPs		CO2e
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY
FL1-FL3 Stabilizer Overhead SSM Gas	FL1-FL3OVHD-SSM	FL1-FL3[1]	222.82	8.54	444.83	17.06	1,419.77	45.00	4.04	0.15	12.03	0.21	12.03	0.21	73.61	1.79	9,420.57
FL1-FL3 Cryo Blowdown SSM Gas	FL1-FL3CRYO-SSM	FL1-FL3[1]	405.77	11.43	810.06	22.82	822.57	10.60	6.99	0.19	21.91	0.58	21.91	0.58	13.05	0.17	13,132.48
Oil Storage Tanks 1-4 (Hourly VOC emissions)	IFR1-4	IFR1-4	--	--	--	--	5.05	--	--	--	--	--	--	--	0.24	--	--
Oil Storage Tanks 5-14 (Hourly VOC emissions)	IFR5-14	IFR5-14	--	--	--	--	12.93	--	--	--	--	--	--	--	0.59	--	--
Oil Storage Tanks 1-14[3] (Annual VOC emissions)	IFR1-14	IFR1-14	--	--	--	--	--	70.48	--	--	--	--	--	--	--	3.66	11.01
Combustor 1	ECD1	ECD1	1.77	7.69	3.04	13.24	4.65	20.23	--	--	0.073	0.12	0.073	0.12	0.15	0.67	6,360.60
Combustor 2a/2b (Backup Unit)	ECD2a-ECD2b	ECD2a-ECD2b															
Thermal Oxidizer	TO1	TO1	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.018	0.079	107,096.46
Thermal Oxidizer	TO2	TO2	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.018	0.079	107,096.46
Thermal Oxidizer	TO3	TO3	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.018	0.079	107,096.46
Thermal Oxidizer	TO4	TO4	3.56	15.59	2.17	9.49	0.72	3.24	0.88	3.87	0.19	0.82	0.19	0.82	0.018	0.079	107,096.46
Fugitives	FUG	FUG	--	--	--	--	7.98	34.93	--	--	--	--	--	--	1.39	6.10	2,990.49
Amine Sweetener 1	AU1	TO1	Emissions represented at TO1.														
Amine Sweetener 2	AU2	TO2	Emissions represented at TO2.														
Amine Sweetener 3	AU3	TO3	Emissions represented at TO3.														
Amine Sweetener 4	AU4	TO4	Emissions represented at TO4.														
Gunbarrel Tank	GBS1	ECD1	Emissions represented at ECD1														
Produced Water Tank 1	PWTK1	ECD1	Emissions represented at ECD1														
Produced Water Tank 2	PWTK2	ECD1	Emissions represented at ECD1														
Slop Oil Tank	SOTK1	ECD1	Emissions represented at ECD1														
Slop Oil Truck Loading	SOTL	ECD1	--	--	--	--	0.69	7.43E-03	--	--	--	--	--	--	0.021	2.23E-04	9.45E-05
Emergency Generator	GEN1	GEN1	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11	157.09

XTO Energy, Inc.

Cowboy CDP

CONTROLLED FACILITY EMISSIONS SUMMARY

EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		PM		PM_{10}/ $PM_{2.5}$		HAPs		CO2e
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY
Emergency Generator	GEN2	GEN2	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11	157.09
Emergency Generator	GEN3	GEN3	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11	157.09
Emergency Generator	GEN4	GEN4	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11	157.09
SSM/M IFR Tank and Misc Equipment	SSM/M	SSM/M	--	--	--	--	--	51.33	--	--	--	--	--	--	--	--	--

TOTAL FACILITY EMISSIONS	NOx		CO		VOC (INCLUDES HAPs)		SO_2		PM		PM_{10}/ PM_{25}		HAPs		CO2e
	lb/hr[2]	TPY	lb/hr[2]	TPY	lb/hr[2]	TPY	lb/hr[2]	TPY	lb/hr[2]	TPY	lb/hr[2]	TPY	lb/hr[2]	TPY	TPY
	689.71	**196.04**	**1,349.83**	**207.15**	**2,307.20**	**282.71**	**17.52**	**28.42**	**44.96**	**43.99**	**44.96**	**43.99**	**100.26**	**16.70**	**979,855.31**

[1] Since FL3 serves as a backup flare, the pilot/purge gas emissions for the flares includes only two flares. The NGL/condensate overheads and cryo SSM stream can be routed to any of the flare; therefore, emissions were combined between the three flares. Since the two SSM events cannot occur simulataneously, the highest of the two stream hourly rates was used in the Total Facility Emissions.

[2] For all pollutants except VOC/HAP, the hourly emission rate excludes overhead SSM stream as they cannot occur at the same time and the cryo SSM stream has a higher emission rate. For VOC, the overhead SSM stream is included with the highest hourly rate. For HAP, the generators have the highest hourly rate.

[3] Annual VOC emissions are grouped together for IFR1 - IFR14. Worst-case annual withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks and selecting the higher value to include in the total annual VOC emissions.

XTO Energy, Inc.

Cowboy CDP

UNCONTROLLED FACILITY EMISSIONS SUMMARY

UNCONTROLLED EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY IDENTIFICATION NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		TSP		PM_{10}		HAPs	
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR1	SHTR1	1.97	41.35	1.20	25.24	0.47	9.91	0.16	3.42	0.55	11.54	0.55	11.54	0.14	0.81
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR2	SHTR2	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR3	SHTR3	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR4	SHTR4	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR5	SHTR5	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Stabilization Hot Oil Heater (58.93 MMBtu/hr)	SHTR6	SHTR6	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	SHTR7	SHTR7	1.97	13.78	1.20	3.30	0.47	3.30	0.16	1.14	0.55	3.85	0.55	3.85	0.14	0.27
Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	SHTR8	SHTR8	1.97		1.20		0.47		0.16		0.55		0.55		0.14	
Cryo Hot Oil Heater (94.54 MMBtu/hr)	CHTR1	CHTR1	3.95	27.66	1.93	8.41	0.76	3.30	0.26	1.14	0.88	3.85	0.88	3.85	0.22	0.44
Cryo Hot Oil Heater (94.54 MMBtu/hr)	CHTR2	CHTR2	3.95		1.93		0.76		0.26		0.88		0.88		0.22	
Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	CHTR3	CHTR3	3.95	27.66	1.93	13.50	0.76	5.30	0.26	1.83	0.88	6.17	0.88	6.17	0.22	0.44
Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	CHTR4	CHTR4	3.95		1.93		0.76		0.26		0.88		0.88		0.22	
Regen Heater (35.25 MMBtu/hr)	RHTR1	RHTR1	1.18	16.49	0.72	10.07	0.28	3.95	0.097	1.36	0.33	4.60	0.33	4.60	0.081	0.32
Regen Heater (35.25 MMBtu/hr)	RHTR2	RHTR2	1.18		0.72		0.28		0.097		0.33		0.33		0.081	
Regen Heater (35.25 MMBtu/hr)	RHTR3	RHTR3	1.18		0.72		0.28		0.097		0.33		0.33		0.081	
Regen Heater (35.25 MMBtu/hr)	RHTR4	RHTR4	1.18		0.72		0.28		0.097		0.33		0.33		0.081	
CDP Flare 1 (Dual Tip Flare) Cryo Flare 2 (Dual Tip Flare) Cryo Flare 3 (Dual Tip Flare)	FL1-FL3[1]	FL1-FL3[1]	2.95	12.90	5.88	25.75	2.30	10.06	0.050	0.22	0.16	0.70	0.16	0.70	0.16	0.72
FL1-FL3 Stabilizer Overhead SSM Gas	FL1-FL3OVHD-SSM	FL1-FL3[1]	Not operating in uncontrolled emissions scenario.													
FL1-FL3 Cryo Blowdown SSM Gas	FL1-FL3OVHD-SSM	FL1-FL3[1]	Not operating in uncontrolled emissions scenario.													
Oil Storage Tanks 1-4 (Hourly VOC emissions)	IFR1-4	IFR1-4	--	--	--	--	5.05	--	--	--	--	--	--	--	0.24	--

XTO Energy, Inc.

Cowboy CDP

UNCONTROLLED FACILITY EMISSIONS SUMMARY

UNCONTROLLED EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY IDENTIFICATION NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		TSP		PM_{10}		HAPs	
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Oil Storage Tanks 5-14 (Hourly VOC emissions)	IFR5-14	IFR5-14	--	--	--	--	12.93	--	--	--	--	--	--	--	0.59	--
Oil Storage Tanks 1-14[3] (Annual VOC emissions)	IFR1-14	IFR1-14	--	--	--	--	--	70.48	--	--	--	--	--	--	--	3.66
Combustor 1	ECD1[1]	ECD1[1]	1.77	7.69	3.04	13.24	4.65	20.23	--	--	0.073	0.12	0.073	0.12	0.15	0.67
Combustor 2a/2b (Backup Unit)	ECD2a / ECD2b	ECD2a / ECD2b														
Thermal Oxidizer	TO1	TO1	0.28	1.22	0.17	0.74	0.30	1.31	--	--	0.15	0.65	0.15	0.65	--	--
Thermal Oxidizer	TO2	TO2	0.28	1.22	0.17	0.74	0.30	1.31	--	--	0.15	0.65	0.15	0.65	--	--
Thermal Oxidizer	TO3	TO3	0.28	1.22	0.17	0.74	0.30	1.31	--	--	0.15	0.65	0.15	0.65	--	--
Thermal Oxidizer	TO4	TO4	0.28	1.22	0.17	0.74	0.30	1.31	--	--	0.15	0.65	0.15	0.65	--	--
Fugitives	FUG	FUG	--	--	--	--	7.98	34.93	--	--	--	--	--	--	--	--
Amine Sweetener 1	AU1	TO1	--	--	--	--	73.92	323.77	--	--	--	--	--	--	1.80	7.87
Amine Sweetener 2	AU2	TO2	--	--	--	--	73.92	323.77	--	--	--	--	--	--	1.80	7.87
Amine Sweetener 3	AU3	TO3	--	--	--	--	73.92	323.77	--	--	--	--	--	--	1.80	7.87
Amine Sweetener 4	AU4	TO4	--	--	--	--	73.92	323.77	--	--	--	--	--	--	1.80	7.87
Gunbarrel Tank	GBS1	ECD1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Produced Water Tank 1	PWTK1	ECD1	--	--	--	--	1.34	5.86	--	--	--	--	--	--	0.061	0.27
Produced Water Tank 2	PWTK2	ECD1	--	--	--	--	1.34	5.86	--	--	--	--	--	--	0.061	0.27
Slop Oil Tank	SOTK1	ECD1	--	--	--	--	459.04	2,010.59	--	--	--	--	--	--	15.16	66.41
Slop Oil Truck Loading	SOTL	ECD1	--	--	--	--	53.02	0.57	--	--	--	--	--	--	1.59	0.017
Emergency Generator	GEN1	GEN1	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11
Emergency Generator	GEN2	GEN2	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11

XTO Energy, Inc.

Cowboy CDP

UNCONTROLLED FACILITY EMISSIONS SUMMARY

UNCONTROLLED EMISSIONS SUMMARY TABLE

EMISSION SOURCE DESCRIPTION	FACILITY IDENTIFICATION NUMBER	STACK NUMBER	NOx		CO		VOC (INCLUDES HAPs)		SO_2		TSP		PM_{10}		HAPs	
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Emergency Generator	GEN3	GEN3	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11
Emergency Generator	GEN4	GEN4	3.80	0.19	14.29	0.71	5.11	0.26	0.044	2.21E-03	0.20	0.010	0.20	0.010	2.17	0.11
SSM/M IFR Tank and Misc Equipment	SSM/M	SSM/M	--	--	--	--	--	51.33	--	--	--	--	--	--	--	--

TOTAL FACILITY EMISSIONS	NOx		CO		VOC (INCLUDES HAPs)		SO_2		TSP		PM10		HAPs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
	57.26	**153.18**	**86.95**	**105.36**	**872.87**	**3,536.99**	**2.96**	**9.11**	**10.87**	**33.48**	**10.87**	**33.48**	**36.17**	**106.19**

[1] **Only includes pilot/purge gas emissions in uncontrolled scenario**

[2] **Annual VOC emissions are grouped together for IFR1 - IFR14. Worst-case annual withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks and selecting the higher value to include in the total annual VOC emissions.**

XTO Energy, Inc.

Cowboy CDP

PSD MAJOR SOURCE THRESHOLD COMPARISON

PSD NESTED SOURCE CATEGORY Table 1 (20.2.74.501 NMAC)	NOx	CO	VOC	SO_2	PM	$PM_{10\ \&\ 2.5}$	H2SO4
	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Fossil fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input	**78.02**	81.69	34.46	11.06	34.59	34.59	-
Petroleum storage transfer units, total storage capacity over 300,000 barrels	7.69	13.24	**91.83**	0.00	0.121	0.121	-
PSD Categorical Thresholds (tpy)*	100	100	100	100	100	100	100
Is Project above Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

* The PSD major source threshold for the listed source categories is a potential to emit equal to or greater than 100 TPY.

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - Nested PSD Sources

Fossil fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total VOC Weight %[1]	VOC Emissions		
							lb/hour	lb/year	tons/year
Valves	Gas/Vapor		680	8760	0.009920	25.72%	1.74	15201.02	7.60
	Light Oil		0	8760	0.005500	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.000019	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.000216	99.97%	0.00	0.00	0.00
Pump Seals	Gas/Vapor		0	8760	0.005290	25.72%	0.00	0.00	0.00
	Light Oil		0	8760	0.028660	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.001130	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.000053	99.97%	0.00	0.00	0.00
Connectors	Gas/Vapor		2040	8760	0.000440	25.72%	0.23	2022.72	1.01
	Light Oil		0	8760	0.000463	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.000017	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.000243	99.97%	0.00	0.00	0.00
Flanges	Gas/Vapor		1200	8760	0.000860	25.72%	0.27	2325.58	1.16
	Light Oil		0	8760	0.000243	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.000001	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.000006	99.97%	0.00	0.00	0.00
Open-ended Lines	Gas/Vapor		0	8760	0.004410	25.72%	0.00	0.00	0.00
	Light Oil		0	8760	0.003090	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.000309	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.000550	99.97%	0.00	0.00	0.00
Other:	Gas/Vapor		40	8760	0.019400	25.72%	0.20	1748.69	0.87
	Light Oil		0	8760	0.016500	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760	0.000068	99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760	0.030900	99.97%	0.00	0.00	0.00

Emission Component	lb/hr	lb/year	TPY
Uncontrolled VOC Emissions	2.43	21298.02	10.65

Notes:

[1] Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - Nested PSD Sources

Petroleum storage transfer units over 300,000 bbls fugitive emissions

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total VOC Weight %[1]	VOC Emissions lb/hour	VOC Emissions lb/year	VOC Emissions tons/year
Valves	Gas/Vapor		159	8760	2.87E-05	25.72%	0.00	10	0.01
	Light Oil		1389	8760	9.48E-05	99.97%	0.13	1,153	0.58
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00
Pump Seals	Gas/Vapor		0	8760	1.43E-04	25.72%	0.00	0	0.00
	Light Oil		35	8760	1.19E-03	99.97%	0.04	367	0.18
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00
Connectors	Gas/Vapor		308	8760	9.26E-05	25.72%	0.01	64	0.03
	Light Oil		3623	8760	1.76E-05	99.97%	0.06	560	0.28
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00
Flanges	Gas/Vapor		169	8760	9.26E-05	25.72%	0.00	35	0.02
	Light Oil		239	8760	1.76E-05	99.97%	0.00	37	0.02
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00
Open-ended Lines	Gas/Vapor		0	8760		25.72%	0.00	0	0.00
	Light Oil		0	8760		99.97%	0.00	0	0.00
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00
Other:	Gas/Vapor		0	8760	2.65E-04	25.72%	0.00	0	0.00
	Light Oil		0	8760	2.87E-04	99.97%	0.00	0	0.00
	Heavy Oil		0	8760		99.97%	0.00	0	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0	0.00

Emission Component	lb/hr	lb/year	TPY
Controlled VOC Emissions	0.25	2,227	1.11

Notes:

[1] **Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.**

XTO Energy, Inc.

Cowboy CDP

BURNER CALCULATIONS

CRITERIA & REGULATED POLLUTANTS

Source ID	Source Description	Fuel Gas HHV Design Case (BTU/SCF)	Operating Hours	Burner Design Case (MMBTU/Hr)	Manufacturer's Data (NOx, CO, VOC) and AP-42 Factors (SO2, PM)[1,2]					lb/hr[1]					tpy[2]				
					NOx (lb/MMBtu)	CO (lb/MMBtu)	VOC (lb/MMBtu)	SO_2 (lb/MMscf)	$PM_{10 \& 2.5}$ (lb/MMscf)	NOx	CO	VOC	SO_2	$PM_{10 \& 2.5}$	NOx	CO	VOC	SO_2	$PM_{10 \& 2.5}$
SHTR1	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR2	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR3	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR4	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR5	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR6	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0267	0.0163	0.0064	2.25	7.6	1.97	1.20	0.47	0.16	0.55	6.89	4.21	1.65	0.57	1.92
SHTR7	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	979	8760	58.93	0.0067	0.0163	0.0064	2.25	7.6	0.49	1.20	0.47	0.16	0.55	1.73	4.21	1.65	0.57	1.92
SHTR8	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	979	8760	58.93	0.0067	0.0163	0.0064	2.25	7.6	0.49	1.20	0.47	0.16	0.55	1.73	4.21	1.65	0.57	1.92
CHTR1	Cryo Hot Oil Heater (94.54 MMBtu/hr)	979	8760	94.54	0.0334	0.0163	0.0064	2.25	7.6	3.95	1.93	0.76	0.26	0.88	13.83	6.75	2.65	0.91	3.09
CHTR2	Cryo Hot Oil Heater (94.54 MMBtu/hr)	979	8760	94.54	0.0334	0.0163	0.0064	2.25	7.6	3.95	1.93	0.76	0.26	0.88	13.83	6.75	2.65	0.91	3.09
CHTR3	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	979	8760	94.54	0.0067	0.0163	0.0064	2.25	7.6	0.79	1.93	0.76	0.26	0.88	2.77	6.75	2.65	0.91	3.09
CHTR4	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	979	8760	94.54	0.0067	0.0163	0.0064	2.25	7.6	0.79	1.93	0.76	0.26	0.88	2.77	6.75	2.65	0.91	3.09
RHTR1	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0267	0.0163	0.0064	2.25	7.6	1.18	0.72	0.28	0.10	0.33	4.12	2.52	0.99	0.34	1.15
RHTR2	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0267	0.0163	0.0064	2.25	7.6	1.18	0.72	0.28	0.10	0.33	4.12	2.52	0.99	0.34	1.15
RHTR3	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0267	0.0163	0.0064	2.25	7.6	1.18	0.72	0.28	0.10	0.33	4.12	2.52	0.99	0.34	1.15
RHTR4	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0267	0.0163	0.0064	2.25	7.6	1.18	0.72	0.28	0.10	0.33	4.12	2.52	0.99	0.34	1.15

[1] NOx, CO, and VOC factors were provided by the equipment manufacturers. A 25% safety factor is added to NOx, CO, VOC, SO2 and PM10 & 2.5 lb/hr emissions. The heaters may run on rich gas temporarily while a Cryo is down.

[2] SO2 and PM emission factors were adjusted based on site heat content versus the AP-42 value of 1,020 Btu/scf. SO2 factor was adjusted to 7500 gr S/MMscf (0.75 gr S/100 scf or ~25 ppmw S).

Total (tpy)	NOx	CO	VOC	SO_2	$PM_{10 \& 2.5}$
SHTR1-8	44.81	33.66	13.22	4.55	15.39
CHTR1-4	33.21	27.00	10.60	3.65	12.34
RHTR1-4	16.49	10.07	3.95	1.36	4.60
All Heaters	94.51	70.72	27.77	9.57	32.33

XTO Energy, Inc.

Cowboy CDP

BURNER CALCULATIONS

HAZARDOUS AIR POLLUTANTS (HAPs)

					AP-42 Factors[1] lb/MMSCF				AP-42[1] & Eng Calc[3] lb/MMSCF		lb/hr²					tpy²				
Source ID	Source Description	Fuel Gas HHV Design Case (BTU/SCF)	Operating Hours	Burner Design Case (MMBTU/Hr)	Benzene	Toluene	Dichloro benzene	HCHO	N-Hexane (Hourly)	N-Hexane (Annual)	Benzene	Toluene	Dichloro benzene	HCHO	N-Hexane	Benzene	Toluene	Dichloro benzene	HCHO	N-Hexane
SHTR1	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR2	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR3	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR4	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR5	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR6	Stabilization Hot Oil Heater (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR7	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
SHTR8	Stabilization Hot Oil Heater w/ SCR catalyst (58.93 MMBtu/hr)	979	8760	58.93	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.11
CHTR1	Cryo Hot Oil Heater (94.54 MMBtu/hr)	979	8760	94.54	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.03	0.18
CHTR2	Cryo Hot Oil Heater (94.54 MMBtu/hr)	979	8760	94.54	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.03	0.18
CHTR3	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	979	8760	94.54	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.03	0.18
CHTR4	Cryo Hot Oil Heater w/ SCR Catalyst (94.54 MMBtu/hr)	979	8760	94.54	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.03	0.18
RHTR1	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.07
RHTR2	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.07
RHTR3	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.07
RHTR4	Regen Heater (35.25 MMBtu/hr)	979	8760	35.25	0.0021	0.0034	0.0021	0.0750	1.8	0.45	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.07

[1] HAP emission factors are from AP-42 Table 1.4-3.

[2] A 25% safety factor added to lb/hr HAP emissions. The heaters may run on rich gas temporarily while a Cryo is down.

[3] The heaters burn residue gas with minimal to no Hexane; therefore, the Hexane lb/MMscf annual emission factor was calculated from a conservative fuel gas 0.01 mol percent Hexane (derived emission factor provided below). The heaters may burn rich gas temporarily while a Cryo is down so the lb/hr emissions are on the AP-42 factor for Hexane.

C6 EF Calc

$$\frac{0.01 \text{ lbmol C6H14}}{100 \text{ lbmol fuel gas}} \times \frac{86.178 \text{ lbs C6H14}}{1 \text{ lbmol C6}} \times \frac{1 \text{ lbmol fuel gas}}{379.5 \text{ scf fuel gas}} \times \frac{10^6 \text{ scf fuel gas}}{1 \text{ MMscf fuel gas}} \times 0.02 \text{ (1- 98\%DRE)} = \frac{0.45 \text{ lbs C6H14}}{\textbf{MMSCF}}$$

Total (tpy)	Benzene	Toluene	Dichloro benzene	HCHO	N-Hexane
SHTR1-8	0.004	0.007	0.004	0.152	0.919
CHTR1-4	0.003	0.006	0.003	0.122	0.738
RHTR1-4	0.001	0.002	0.001	0.045	0.275
All Heaters	0.009	0.014	0.009	0.319	1.932

XTO Energy, Inc.
Cowboy CDP
Greenhouse Gas Emissions - Stabilizer Heaters

Emission unit number(s): SHTR1, SHTR2, SHTR3, SHTR4, SHTR5, SHTR6, SHTR7, SHTR8
Source description: Stabilization Hot Oil Heater (58.93 MMBtu/hr)

Fuel Consumption

Input heat rate:	58.93	MMBtu/hr	Capacity
Fuel heat value:	979	Btu/scf	Field Gas
Fuel rate:	60,194	scf/hr	Input heat rate / fuel heat value
Annual fuel usage:	527.3	MMscf/yr	8760 hrs/yr operation
Hours per year:	8760	hrs/yr	

Exhaust Parameters

Heat Rate:	58,930	MBtu/hr	
Exhaust temp (Tstk):	488	°F	Manufacturer
Stack diameter:	4.00	ft	Manufacturer
Stack height:	33	ft	Manufacturer
Exhaust velocity:	35.6	ft/sec	Manufacturer

Emission Rates
Uncontrolled Heater Emissions

GHG Emissions Per Heater	CO_2	CH4	CH_4 as CO_2e	N_2O	N_2O as CO_2e	Total CO_2e	
	117.00	0.002	0.055	0.0002	0.066		lb/MMbtu
	6,895	0.130	3.25	0.013	3.87	6,902	lb/hr
	30,199	0.57	14.23	0.06	16.96	30,230	tpy (8760 hrs)

1 40 CFR 98 Emission Factors. Global warming potential of 25 for CH4 and 298 for N20.

XTO Energy, Inc.
Cowboy CDP
Greenhouse Gas Emissions - Cryo Heaters

Emission unit number(s):	CHTR1, CHTR2, CHTR3, CHTR4
Source description:	Cryo Hot Oil Heater (94.54 MMBtu/hr)

Fuel Consumption

Input heat rate:	94.54	MMBtu/hr	Capacity
Fuel heat value:	979	Btu/scf	Field Gas
Fuel rate:	96,568	scf/hr	Input heat rate / fuel heat value
Annual fuel usage:	845.9	MMscf/yr	8760 hrs/yr operation
Hours per year:	8760	hrs/yr	

Exhaust Parameters

Heat Rate:	94,540	MBtu/hr	
Exhaust temp (Tstk):	599	°F	Manufacturer
Stack diameter:	4.0	ft	Manufacturer
Stack height:	76.875	ft	Manufacturer
Exhaust velocity:	66.2	ft/sec	Manufacturer

Emission Rates

Uncontrolled Heater Emissions

GHG Emissions Per Heater	CO_2	CH4	CH_4 as CO_2e	N_2O	N_2O as CO_2e	Total CO_2e	
	117.00	0.002	0.055	0.0002	0.066		lb/MMbtu
	11,061	0.208	5.21	0.021	6.21	11,072	lb/hr
	48,447	0.91	22.83	0.09	27.21	48,497	tpy (8760 hrs)

1 40 CFR 98 Emission Factors. Global warming potential of 25 for CH4 and 298 for N20.

XTO Energy, Inc.
Cowboy CDP
Greenhouse Gas Emissions - Regen Heaters

Emission unit number(s): RHTR1, RHTR2, RHTR3, RHTR4
Source description: Regen Heater (35.25 MMBtu/hr)

Fuel Consumption

Input heat rate:	35.25	MMBtu/hr	Capacity
Fuel heat value:	979	Btu/scf	Field Gas
Fuel rate:	36,006	scf/hr	Input heat rate / fuel heat value
Annual fuel usage:	315.4	MMscf/yr	8760 hrs/yr operation
Hours per year:	8760	hrs/yr	

Exhaust Parameters

Heat Rate:	35,250	MBtu/hr	
Exhaust temp (Tstk):	470	°F	Manufacturer
Stack diameter:	2.67	ft	Manufacturer
Stack height:	28.7	ft	Manufacturer
Exhaust velocity:	53.0	ft/sec	Manufacturer

Emission Rates
Uncontrolled Heater Emissions

GHG Emissions Per Heater	CO_2	CH4	CH_4 as CO_2e	N_2O	N_2O as CO_2e	Total CO_2e	
	117.00	0.002	0.055	0.0002	0.066		lb/MMbtu
	4,124	0.078	1.94	0.008	2.32	4,128	lb/hr
	18,064	0.34	8.51	0.03	10.15	18,082	tpy (8760 hrs)

1 40 CFR 98 Emission Factors. Global warming potential of 25 for CH4 and 298 for N20.

XTO Energy, Inc.

Cowboy CDP

STORAGE TANK EMISSIONS SUMMARY

TOTAL EMISSIONS SUMMARY

FIN	Unit Description	Tank Controlled (Yes/No)	Control Type	Material Throughput (bbls/day)[1]	Material Type	VOC Standing Losses[3] lb/hr	VOC Standing Losses[3] TPY	VOC Withdrawl Losses[3] lb/hr	VOC Withdrawl Losses[3] TPY	VOC Flash Losses lb/hr	VOC Flash Losses TPY	VOC Total Emissions lb/hr	VOC Total Emissions TPY
IFR1 - IFR4	**Hourly Emissions[2] 50K BBL IFR Oil/Condensate Storage Tanks**	Yes	Internal Floating Roof	600,000	Oil/Condensate	2.68	--	2.36	--	--	--	5.05	--
IFR5 - IFR14	**Hourly Emissions[2] 100K BBL IFR Oil/Condensate Storage Tanks**	Yes	Internal Floating Roof	600,000	Oil/Condensate	11.05	--	1.89	--	--	--	12.93	--
IFR1 - IFR14	**Annual Emissions[3] 50K & 100K BBL IFR Oil/Condensate Storage Tanks**	Yes	Internal Floating Roof	600,000	Oil/Condensate	--	60.13	--	10.35	--	--	--	70.48

FIN	Unit Description	Tank Controlled (Yes/No)	Control Type	Material Throughput (bbls/day)[1]	Material Type	VOC Working & Breathing Losses lb/hr	VOC Working & Breathing Losses TPY	VOC Flash Losses lb/hr	VOC Flash Losses TPY	VOC Total Emissions lb/hr	VOC Total Emissions TPY
GBS1	**Gun Barrel Separator[4]**	Yes	Combustor	4,195	Produced Water	0.00	0.00	0.00	0.00	0.00	0.00
PWTK1	**Produced Water Tank[4]**	Yes	Combustor	2,098	Produced Water	1.34	5.86	0.00	0.00	1.34	5.86
PWTK2	**Produced Water Tank[4]**	Yes	Combustor	2,098	Produced Water	1.34	5.86	0.00	0.00	1.34	5.86
SOTK1	**Slop Tank[4]**	Yes	Combustor	16	Oil/Condensate	7.04	30.82	452.00	1979.77	459.04	2010.59

Footnotes:

(1) Total site oil/condensate throughput is 600,000 BBL/Day.

(2) Worst-case hourly withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks.

(3) Annual VOC emissions are grouped together for IFR1 - IFR14. Worst-case annual withdrawl lossess were calculated by assuming total site throughput for each size group of IFR storage tanks and selecting the higher value to include in the total annual VOC emissions. The annual total standing losses include both 50K and 100K tanks standing emissions.

(4) Uncontrolled VOC emissions are included in this table. Controlled emission rates are shown on the Combustor emissions tables.

XTO ENERGY INC.
Cowboy CDP
IFR 1-4 TANKS EMISSIONS SUMMARY

IFR 1-4 TANK EMISSIONS

50,000 BBL Internal Floating Roof Storage Tank Emissions [1]						
Component	Standing Losses (IFR 1-4 tanks)		Withdrawl Losses (IFR 1-4 tanks)		Total S&W Losses (per tank)	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Water	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hydrogen Sulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	1.97E-02	8.63E-02	8.35E-05	3.66E-04	4.95E-03	2.17E-02
Carbon Dioxide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methane	1.96E-02	8.58E-02	6.13E-05	2.68E-04	4.91E-03	2.15E-02
Ethane	1.93E-01	8.45E-01	5.70E-04	2.50E-03	4.84E-02	2.12E-01
Propane	7.54E-01	3.30E+00	9.16E-03	4.01E-02	1.91E-01	8.36E-01
Iso-butane	2.64E-01	1.16E+00	8.68E-03	3.80E-02	6.82E-02	2.99E-01
N-butane	7.06E-01	3.09E+00	3.37E-02	1.48E-01	1.85E-01	8.10E-01
Iso-pentane	2.54E-01	1.11E+00	3.03E-02	1.33E-01	7.10E-02	3.11E-01
N-pentane	2.89E-01	1.26E+00	4.58E-02	2.00E-01	8.36E-02	3.66E-01
Cyclopentanes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Other Hexanes	1.45E-01	6.35E-01	5.39E-02	2.36E-01	4.97E-02	2.18E-01
n-Hexane	9.70E-02	4.25E-01	4.96E-02	2.17E-01	3.66E-02	1.60E-01
Methylcyclopentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	5.20E-03	2.28E-02	4.14E-03	1.81E-02	2.34E-03	1.02E-02
Cyclohexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,2,4 Trimethylpentane	6.91E-03	3.03E-02	1.05E-02	4.59E-02	4.35E-03	1.90E-02
Other Heptanes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylcyclohexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
n-Heptane	9.73E-02	4.26E-01	1.57E-01	6.87E-01	6.36E-02	2.78E-01
Toluene	7.16E-03	3.14E-02	1.83E-02	8.02E-02	6.37E-03	2.79E-02
Octanes	4.53E-02	1.98E-01	2.43E-01	1.06E+00	7.21E-02	3.16E-01
Ethylbenzene	8.15E-04	3.57E-03	5.97E-03	2.61E-02	1.70E-03	7.43E-03
M&P-Xylene	3.84E-03	1.68E-02	3.20E-02	1.40E-01	8.95E-03	3.92E-02
Nonanes	6.93E-03	3.03E-02	1.39E-01	6.07E-01	3.64E-02	1.59E-01
Decanes Plus	3.10E-05	1.36E-04	1.52E+00	6.67E+00	3.81E-01	1.67E+00
Undecanes Plus	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	2.91	12.77	2.36	10.35	**1.32**	**5.78**
Total VOC	2.68	11.75	2.36	10.35	**1.26**	**5.53**
Total HAP	0.121	0.53	0.12	0.53	**0.060**	**0.26**

IFR 1-4 Tank Information		
Number of Tanks	**4**	**--**
Tank Size	**50,000**	**BBL**
Control Device	**IFR**	**--**
Total Oil/Condensate Throughput IFR1-4 [2]	**600,000**	**BBL/Day**

Footnotes:

(1) Uncontrolled stream properties determined via ProMax.

(2) Total site oil/condensate throughput is 600,000 BBL/Day. Worst-case withdrawl losses for all IFR tanks at the site was calculated by conservatively assuming 1) total site throughput through the four (4) 50,000 BBL IFRs, 2) total site throughput through the ten (10) 100,000 BBL IFRs, and 3) selecting the higher value to represent worst-case withdrawl losses.

XTO ENERGY INC.
Cowboy CDP
IFR 5-14 TANKS EMISSION SUMMARY

IFR 5-14 TANK EMISSIONS

100,000 BBL Internal Floating Roof Storage Tank Emissions (1)						
Component	Standing Losses (IFR 5-14 tanks)		Withdrawl Losses (IFR 5-14 tanks)		Total S&W Losses (per tank)	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Water	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hydrogen Sulfide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	8.13E-02	3.56E-01	6.67E-05	2.92E-04	8.14E-03	3.57E-02
Carbon Dioxide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methane	8.08E-02	3.54E-01	4.89E-05	2.14E-04	8.09E-03	3.54E-02
Ethane	7.96E-01	3.49E+00	4.55E-04	1.99E-03	7.96E-02	3.49E-01
Propane	3.11E+00	1.36E+01	7.32E-03	3.21E-02	3.12E-01	1.36E+00
Iso-butane	1.09E+00	4.77E+00	6.93E-03	3.03E-02	1.10E-01	4.80E-01
N-butane	2.91E+00	1.27E+01	2.69E-02	1.18E-01	2.94E-01	1.29E+00
Iso-pentane	1.04E+00	4.57E+00	2.42E-02	1.06E-01	1.07E-01	4.68E-01
N-pentane	1.19E+00	5.20E+00	3.65E-02	1.60E-01	1.22E-01	5.36E-01
Cyclopentanes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Other Hexanes	5.97E-01	2.61E+00	4.31E-02	1.89E-01	6.40E-02	2.80E-01
n-Hexane	3.99E-01	1.75E+00	3.96E-02	1.74E-01	4.39E-02	1.92E-01
Methylcyclopentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	2.14E-02	9.37E-02	3.31E-03	1.45E-02	2.47E-03	1.08E-02
Cyclohexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,2,4 Trimethylpentane	2.84E-02	1.25E-01	8.36E-03	3.66E-02	3.68E-03	1.61E-02
Other Heptanes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylcyclohexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
n-Heptane	4.00E-01	1.75E+00	1.25E-01	5.49E-01	5.25E-02	2.30E-01
Toluene	2.95E-02	1.29E-01	1.46E-02	6.40E-02	4.41E-03	1.93E-02
Octanes	1.86E-01	8.15E-01	1.94E-01	8.50E-01	3.80E-02	1.67E-01
Ethylbenzene	3.35E-03	1.47E-02	4.77E-03	2.09E-02	8.12E-04	3.56E-03
M&P-Xylene	1.58E-02	6.91E-02	2.55E-02	1.12E-01	4.13E-03	1.81E-02
Nonanes	2.85E-02	1.25E-01	1.11E-01	4.85E-01	1.39E-02	6.10E-02
Decanes Plus	1.27E-04	5.57E-04	1.22E+00	5.33E+00	1.22E-01	5.33E-01
Undecanes Plus	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	12.00	52.58	1.89	8.27	**1.39**	**6.08**
Total VOC	11.05	48.38	1.89	8.27	**1.29**	**5.67**
Total HAP	0.50	2.18	0.10	0.42	**0.059**	**0.26**

IFR 5-14 Tank Information		
Number of Tanks	10	--
Tank Size	100,000	BBL
Control Device	IFR	--
Total Oil/Condensate Throughput IFR5-14(2)	600,000	BBL/Day

Footnotes:

(1) Uncontrolled stream properties determined via ProMax.

(2) Total site oil/condensate throughput is 600,000 BBL/Day. Worst-case withdrawl losses for all IFR tanks at the site was calculated by conservatively assuming 1) total site throughput through the four (4) 50,000 BBL IFRs, 2) total site throughput through the ten (10) 100,000 BBL IFRs, and 3) selecting the higher value to represent worst-case withdrawl losses.

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - VOCs

Facility Fugitive Component Information

Component Type	Service	Estimated Components Total Count[1]	Hours
Valves	Gas/Vapor	5658	8760
	Light Oil	3431	8760
	Heavy Oil	200	8760
	Water/Light Oil	0	8760
Pump Seals	Gas/Vapor	0	8760
	Light Oil	35	8760
	Heavy Oil	0	8760
	Water/Light Oil	0	8760
Connectors	Gas/Vapor	16805	8760
	Light Oil	9749	8760
	Heavy Oil	0	8760
	Water/Light Oil	1400	8760
Flanges	Gas/Vapor	1569	8760
	Light Oil	1339	8760
	Heavy Oil	0	8760
	Water/Light Oil	0	8760
Open-ended Lines	Gas/Vapor	0	8760
	Light Oil	0	8760
	Heavy Oil	0	8760
	Water/Light Oil	0	8760
Other:	Gas/Vapor	0	8760
	Light Oil	0	8760
	Heavy Oil	0	8760
	Water/Light Oil	0	8760

Notes:

1 **Estimated components include both Natural Gas Processing Facility and Petroleum Storage Transfer Units.**

Uncontrolled VOC Emissions Total

Emission Component (Natural Gas Processing Facility & Petroleum Storage Transfer Units)	lb/hr	lb/year	TPY
Uncontrolled VOC Emissions	7.98	69,862.64	34.93

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - VOCs

Natural Gas Processing Facility Uncontrolled VOC Emissions[2]

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total VOC Weight %[1]	VOC Emissions		
							lb/hour	lb/year	tons/year
Valves	Gas/Vapor	75%	5499	8760	0.009920	25.72%	3.51	30,731.77	15.37
	Light Oil	75%	2042	8760	0.005500	99.97%	2.81	24,588.46	12.29
	Heavy Oil	75%	200	8760	0.000019	99.97%	0.00	8.32	0.00
	Water/Light Oil	75%	0	8760	0.000216	99.97%	0.00	0	0.00
Pump Seals	Gas/Vapor	75%	0	8760	0.005290	25.72%	0.00	0	0.00
	Light Oil	75%	0	8760	0.028660	99.97%	0.00	0	0.00
	Heavy Oil	75%	0	8760	0.001130	99.97%	0.00	0	0.00
	Water/Light Oil	75%	0	8760	0.000053	99.97%	0.00	0	0.00
Connectors	Gas/Vapor	75%	16497	8760	0.000440	25.72%	0.47	4,089.31	2.04
	Light Oil	75%	6126	8760	0.000463	99.97%	0.71	6,209.70	3.10
	Heavy Oil	75%	0	8760	0.000017	99.97%	0.00	0	0.00
	Water/Light Oil	75%	1400	8760	0.000243	99.97%	0.09	744.81	0.37
Flanges	Gas/Vapor	75%	1400	8760	0.000860	25.72%	0.08	678.30	0.34
	Light Oil	75%	1100	8760	0.000243	99.97%	0.07	585.21	0.29
	Heavy Oil	75%	0	8760	0.000001	99.97%	0.00	0	0.00
	Water/Light Oil	75%	0	8760	0.000006	99.97%	0.00	0	0.00
Open-ended Lines	Gas/Vapor	75%	0	8760	0.004410	25.72%	0.00	0	0.00
	Light Oil	75%	0	8760	0.003090	99.97%	0.00	0	0.00
	Heavy Oil	75%	0	8760	0.000309	99.97%	0.00	0	0.00
	Water/Light Oil	75%	0	8760	0.000550	99.97%	0.00	0	0.00
Other:	Gas/Vapor	75%	0	8760	0.019400	25.72%	0.00	0	0.00
	Light Oil	75%	0	8760	0.016500	99.97%	0.00	0	0.00
	Heavy Oil	75%	0	8760	0.000068	99.97%	0.00	0	0.00
	Water/Light Oil	75%	0	8760	0.030900	99.97%	0.00	0	0.00

Emission Component	lb/hr	lb/year	TPY
Controlled VOC Emissions	7.72	67635.88	33.82

Notes:

[1] **Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.**

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - VOCs

Petroleum Storage Transfer Unit Uncontrolled VOC emissions

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total VOC Weight %[1]	VOC Emissions		
							lb/hour	lb/year	tons/year
Valves	Gas/Vapor		159	8760	2.87E-05	25.72%	0.00	10.28	0.01
	Light Oil		1389	8760	9.48E-05	99.97%	0.13	1153.38	0.58
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00
Pump Seals	Gas/Vapor		0	8760	1.43E-04	25.72%	0.00	0.00	0.00
	Light Oil		35	8760	1.19E-03	99.97%	0.042	366.98	0.18
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00
Connectors	Gas/Vapor		308	8760	9.26E-05	25.72%	0.0073	64.27	0.032
	Light Oil		3623	8760	1.76E-05	99.97%	0.064	559.65	0.28
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00
Flanges	Gas/Vapor		169	8760	9.26E-05	25.72%	0.0040	35.35	0.018
	Light Oil		239	8760	1.76E-05	99.97%	0.00	36.87	0.018
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00
Open-ended Lines	Gas/Vapor		0	8760		25.72%	0.00	0.00	0.00
	Light Oil		0	8760		99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00
Other:	Gas/Vapor		0	8760	2.65E-04	25.72%	0.00	0.00	0.00
	Light Oil		0	8760	2.87E-04	99.97%	0.00	0.00	0.00
	Heavy Oil		0	8760		99.97%	0.00	0.00	0.00
	Water/Light Oil		0	8760		99.97%	0.00	0.00	0.00

Emission Component	lb/hr	lb/year	TPY
Uncontrolled VOC Emissions	0.25	2226.76	1.11

Notes:

[1] **Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.**

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - HAPs

Uncontrolled HAP Emissions Total

Component Type	Service	Control (%)	Estimated Components Total Count	Hours	Factors (Natural Gas Processing Facility)	Factors (Petroleum Storage Transfer Units)	Emissions (Natural Gas Processing Facility & Petroleum Storage Transfer Units) lb/hour	lb/year	tons/year
Valves	Gas/Vapor		5658	8760	0.00992000	0.00002866	0.547	4795.05	2.398
	Light Oil		3431	8760	0.00550000	0.00009480	0.579	5071.92	2.536
	Heavy Oil		200	8760	0.00001900	-	0.000	1.70	0.001
	Water/Light Oil		0	8760	0.00021600	-	0.000	0.00	0.000
Pump Seals	Gas/Vapor		0	8760	0.00529000	0.00014330	0.000	0.00	0.000
	Light Oil		35.2	8760	0.02866000	0.00119049	0.002	18.71	0.009
	Heavy Oil		0	8760	0.00113000	-	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00005300	-	0.000	0.00	0.000
Connectors	Gas/Vapor		16805	8760	0.00044000	0.00009259	0.073	640.50	0.320
	Light Oil		9749	8760	0.00046300	0.00001764	0.148	1294.57	0.647
	Heavy Oil		0	8760	0.00001700	-	0.000	0.00	0.000
	Water/Light Oil		1400	8760	0.00024300	-	0.017	151.85	0.076
Flanges	Gas/Vapor		1569	8760	0.00086000	0.00009259	0.012	107.20	0.054
	Light Oil		1339	8760	0.00024300	0.00001764	0.014	121.19	0.061
	Heavy Oil		0	8760	0.00000086	-	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00000620	-	0.000	0.00	0.000
Open-ended Lines	Gas/Vapor		0	8760	0.00441000	-	0.000	0.00	0.000
	Light Oil		0	8760	0.00309000	-	0.000	0.00	0.000
	Heavy Oil		0	8760	0.00030900	-	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00055000	-	0.000	0.00	0.000
Other:	Gas/Vapor		0	8760	0.01940000	0.00026455	0.000	0.00	0.000
	Light Oil		0	8760	0.01650000	0.00028660	0.000	0.00	0.000
	Heavy Oil		0	8760	0.00006800	-	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.03090000	-	0.000	0.00	0.000

Emission Component	lb/hr	lb/year	TPY
Total HAPs	1.39	12202.70	6.10

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - HAPs

Natural Gas Processing Facility Uncontrolled VOC Emissions

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total HAPs Weight %[1]	Emissions lb/hour	Emissions lb/year	Emissions tons/year
Valves	Gas/Vapor		5499	8760	0.00992000	1.00%	0.547	4794.65	2.397
	Light Oil		2042	8760	0.00550000	5.10%	0.572	5013.14	2.507
	Heavy Oil		200	8760	0.00001900	5.10%	0.000	1.70	0.001
	Water/Light Oil		0	8760	0.00021600	5.10%	0.000	0.00	0.000
Pump Seals	Gas/Vapor		0	8760	0.00529000	1.00%	0.000	0.00	0.000
	Light Oil		0	8760	0.02866000	5.10%	0.000	0.00	0.000
	Heavy Oil		0	8760	0.00113000	5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00005300	5.10%	0.000	0.00	0.000
Connectors	Gas/Vapor		16497	8760	0.00044000	1.00%	0.073	638.00	0.319
	Light Oil		6126	8760	0.00046300	5.10%	0.145	1266.04	0.633
	Heavy Oil		0	8760	0.00001700	5.10%	0.000	0.00	0.000
	Water/Light Oil		1400	8760	0.00024300	5.10%	0.017	151.85	0.076
Flanges	Gas/Vapor		1400	8760	0.00086000	1.00%	0.012	105.82	0.053
	Light Oil		1100	8760	0.00024300	5.10%	0.014	119.31	0.060
	Heavy Oil		0	8760	0.00000086	5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00000620	5.10%	0.000	0.00	0.000
Open-ended Lines	Gas/Vapor		0	8760	0.00441000	1.00%	0.000	0.00	0.000
	Light Oil		0	8760	0.00309000	5.10%	0.000	0.00	0.000
	Heavy Oil		0	8760	0.00030900	5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.00055000	5.10%	0.000	0.00	0.000
Other:	Gas/Vapor		0	8760	0.01940000	1.00%	0.000	0.00	0.000
	Light Oil		0	8760	0.01650000	5.10%	0.000	0.00	0.000
	Heavy Oil		0	8760	0.00006800	5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760	0.03090000	5.10%	0.000	0.00	0.000

Emission Component	lb/hr	lb/year	TPY
Total HAPs	1.38	12090.52	6.05

Notes:
[1] **Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.**

XTO Energy, Inc.
Cowboy CDP
FUGITIVE EMISSIONS - HAPs

Petroleum Storage Transfer Unit Uncontrolled VOC emissions

Component Type	Service	Control (%)	Estimated Components Count	Hours	Factors	Total HAPs Weight %[1]	Emissions		
							lb/hour	lb/year	tons/year
Valves	Gas/Vapor		159	8760	0.00002866	1.00%	0.000	0.40	0.000
	Light Oil		1389	8760	0.00009480	5.10%	0.007	58.79	0.029
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000
Pump Seals	Gas/Vapor		0	8760	0.00014330	1.00%	0.000	0.00	0.000
	Light Oil		35	8760	0.00119049	5.10%	0.002	18.71	0.009
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000
Connectors	Gas/Vapor		308	8760	0.00009259	1.00%	0.000	2.51	0.001
	Light Oil		3623	8760	0.00001764	5.10%	0.003	28.53	0.014
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000
Flanges	Gas/Vapor		169	8760	0.00009259	1.00%	0.000	1.38	0.001
	Light Oil		239	8760	0.00001764	5.10%	0.000	1.88	0.001
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000
Open-ended Lines	Gas/Vapor		0	8760		1.00%	0.000	0.00	0.000
	Light Oil		0	8760		5.10%	0.000	0.00	0.000
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000
Other:	Gas/Vapor		0	8760	0.00026455	1.00%	0.000	0.00	0.000
	Light Oil		0	8760	0.00028660	5.10%	0.000	0.00	0.000
	Heavy Oil		0	8760		5.10%	0.000	0.00	0.000
	Water/Light Oil		0	8760		5.10%	0.000	0.00	0.000

Emission Component	lb/hr	lb/year	TPY
Total HAPs	0.013	112.18	0.056

Notes:
[1] **Gas/Vapor analysis based on inlet gas. Liquid analysis based on stabilized crude oil.**

XTO Energy, Inc.
Cowboy CDP
FUGITIVE GREENHOUSE GAS EMISSIONS

Uncontrolled Emissions

Component Type	Service	Estimated Components Count	Hours	Factors	Total CH4 Weight %	Total CO2 Weight %	CH4 Emissions[1]	CO2 Emissions[2]
							tons/year	tons/year
Valves	Gas/Vapor	5658	8760	0.00992070	57.92%	0.37%	103.47	0.66
	Light Oil	3431	8760	0.00550000	0.00%	0.00%	0.00	0.00
	Heavy Oil	200	8760	0.00001900	0.00%	0.00%	0.00	0.00
	Water/Light Oil	0	8760	0.00021600	0.00%	0.00%	0.00	0.00
Pump Seals	Gas/Vapor	0	8760	0.00529000	57.92%	0.37%	0.00	0.00
	Light Oil	35	8760	0.02866000	0.00%	0.00%	0.00	0.00
	Heavy Oil	0	8760	0.00113000	0.00%	0.00%	0.00	0.00
	Water/Light Oil	0	8760	0.00005300	0.00%	0.00%	0.00	0.00
Connectors	Gas/Vapor	16805	8760	0.00044000	57.92%	0.37%	13.63	0.09
	Light Oil	9749	8760	0.00046300	0.00%	0.00%	0.00	0.00
	Heavy Oil	0	8760	0.00001700	0.00%	0.00%	0.00	0.00
	Water/Light Oil	1400	8760	0.00024300	0.00%	0.00%	0.00	0.00
Flanges	Gas/Vapor	1569	8760	0.00086000	57.92%	0.37%	2.49	0.02
	Light Oil	1339	8760	0.00024300	0.00%	0.00%	0.00	0.00
	Heavy Oil	0	8760	0.00000086	0.00%	0.00%	0.00	0.00
	Water/Light Oil	0	8760	0.00000620	0.00%	0.00%	0.00	0.00
Open-ended Lines	Gas/Vapor	0	8760	0.00441000	57.92%	0.37%	0.00	0.00
	Light Oil	0	8760	0.00309000	0.00%	0.00%	0.00	0.00
	Heavy Oil	0	8760	0.00030900	0.00%	0.00%	0.00	0.00
	Water/Light Oil	0	8760	0.00055000	0.00%	0.00%	0.00	0.00
Other:	Gas/Vapor	0	8760	0.01940000	57.92%	0.37%	0.00	0.00
	Light Oil	0	8760	0.01650000	0.00%	0.00%	0.00	0.00
	Heavy Oil	0	8760	0.00006800	0.00%	0.00%	0.00	0.00
	Water/Light Oil	0	8760	0.03090000	0.00%	0.00%	0.00	0.00

Emission Component	CH_4 TPY	CO_2 TPY
Uncontrolled Emissions	119.59	0.76

Notes:

[1] **CH4 emissions were calculated as follow: TOC lb/hr * CH4 weight % = CH4 lb/hr.**

[2] **CO2 emissions were calculated as follow: TOC lb/hr * CO2 weight % = CO2 lb/hr.**

XTO Energy, Inc.
Cowboy CDP
Generators (GEN1 - GEN4)

Uncontrolled Emissions Calculations

					Manufacturer's Data g/hp-hr				AP-42 Factors lb/MMBtu				lb/hr									tpy								
Source ID	Unit Description	Yearly Operating Hours	Rated HP	MMbtu/hp-hr[1]	NOx	CO	VOC[2]	HCHO	SO_2[3]	$PM_{10 \& 2.5}$[4]	Hexane	Aceta-ldehyde	NOx	CO	VOC	HCHO	SO_2	$PM_{10 \& 2.5}$	Hexane	Aceta-ldehyde	HAPs	NOx	CO	VOC	HCHO	SO_2	$PM_{10 \& 2.5}$	Hexane	Aceta-ldehyde	HAPs
GEN1	Caterpillar G3520H Emergency Generator	100	3448	0.00586	0.50	1.88	0.65	0.26	0.00219	0.01006	0.00111	0.00836	3.80	14.29	5.11	1.98	0.04	0.20	0.02	0.17	2.17	0.19	0.71	0.26	0.10	0.00	0.01	0.00	0.01	0.11
GEN2	Caterpillar G3520H Emergency Generator	100	3448	0.00586	0.50	1.88	0.65	0.26	0.00219	0.01006	0.00111	0.00836	3.80	14.29	5.11	1.98	0.04	0.20	0.02	0.17	2.17	0.19	0.71	0.26	0.10	0.00	0.01	0.00	0.01	0.11
GEN3	Caterpillar G3520H Emergency Generator	100	3448	0.00586	0.50	1.88	0.65	0.26	0.00219	0.01006	0.00111	0.00836	3.80	14.29	5.11	1.98	0.04	0.20	0.02	0.17	2.17	0.19	0.71	0.26	0.10	0.00	0.01	0.00	0.01	0.11
GEN4	Caterpillar G3520H Emergency Generator	100	3448	0.00586	0.50	1.88	0.65	0.26	0.00219	0.01006	0.00111	0.00836	3.80	14.29	5.11	1.98	0.04	0.20	0.02	0.17	2.17	0.19	0.71	0.26	0.10	0.00	0.01	0.00	0.01	0.11

[1]Fuel Consumption Rate @ 100% Load from the Gas Engine Rating Pro Report

[2]Emission Factor Includes HCHO

[3]SO_2 Emissions were calculated based on 0.75 gr S/100 scf

[4]PM Emission Factor = Sum of all PM factors in AP-42.

Total Emissions Per Pollutant (TPY)	NOx	CO	VOC	HCHO	SO_2	$PM_{10 \& 2.5}$	Hexane	Aceta-ldehyde	HAPs
	0.76	2.86	1.02	0.40	0.0088	0.041	0.0045	0.034	0.43

XTO Energy, Inc.
Cowboy CDP
Greenhouse Gas Emissions - Generators (GEN1 - GEN4)

Emission unit number(s): GEN1-GEN4
Source description: Emergency Generators

Fuel Consumption

Input heat rate:	20.21	MMBtu/hr	Fired Capacity
Fuel heat value (LHV):	914	Btu/scf	Field Gas
Fuel rate:	22117	scf/hr	Input heat rate / fuel heat value
Annual fuel usage:	193.7	MMscf/yr	8760 hrs/yr operation
Hours per year:	100	hrs/yr each	

Exhaust Parameters

Heat Rate:	20209	MBtu/hr	
Exhaust temp (Tstk):	736	°F	Manufacturer
Stack diameter:	1.0	ft	Manufacturer
Stack height:	14	ft	Manufacturer
Exhaust velocity:	331	ft/sec	Manufacturer

Emission Rates

Engine Output: 3448 horsepower

GHG Emissions Per Engine	CO_2	CH4	CH_4 as CO_2e	N_2O	N_2O as CO_2e	Total CO_2e	
	413	0.002	0.055	0.0002	0.066		lb/MMbtu
	3139.45	0.045	1.11	0.004	1.33	3141.89	lb/hr
	156.97	0.00	0.06	0.00	0.07	157.09	tpy (8760 hrs)

1 *CO2 factor provided by engine manufacturer*
2 *40 CFR 98 Emission Factors. Global warming potential of 25 for CH4 and 298 for N20.*

XTO Energy, Inc.
Cowboy CDP
HEATERS - EXHAUST STACK FLOW & FUEL CONSUMPTION RATES

Exhaust Stack and Fuel Consumption Data

Source	Stabilization Heaters (Design Case)
Burner Rating (btu/hr)	58,930,000
Heating Value (btu/scf)	979.0
Stack Temperature (°F)	488
Stack Diameter (ft)	4.0
Stack Height (ft)	33.0
Fuel Consumption (scf/hr)	60194
Fuel Consumption (scf/day)	1444658
Fuel Consumption (mmscf/year)	527.3
Air Injection Rate (scf/hr)	823455.0
Total exhaust flow rate @ STP (scf/hr)	883649.03
Total exhaust flow rate @ STP (scf/sec)	245.5
Total exhaust flow rate @ 488 °F (acf/hr)	1610960.2
Total exhaust flow rate @ 488 °F (acf/sec)	447.5
Exhaust Stack Exit Velocity @ STP (ft/sec)	19.5
Exhaust Stack Exit Velocity @ 488 °F (ft/sec)	35.6
Source	Cryogenic Heaters (Design Case)
Burner Rating (btu/hr)	94,540,000
Heating Value (btu/scf)	979.0
Stack Temperature (°F)	599
Stack Diameter (ft)	4.0
Stack Height (ft)	76.9
Fuel Consumption (scf/hr)	96568
Fuel Consumption (scf/day)	2317630
Fuel Consumption (mmscf/year)	845.9
Air Injection Rate (scf/hr)	1374161.6
Total exhaust flow rate @ STP (scf/hr)	1470729.52
Total exhaust flow rate @ STP (scf/sec)	408.5
Total exhaust flow rate @ 599 °F (acf/hr)	2995197.2
Total exhaust flow rate @ 599 °F (acf/sec)	832.0
Exhaust Stack Exit Velocity @ STP (ft/sec)	32.5
Exhaust Stack Exit Velocity @ 599 °F (ft/sec)	66.2
Source	Regeneration Heaters (Design Case)
Burner Rating (btu/hr)	35,250,000
Heating Value (btu/scf)	979.0
Stack Temperature (°F)	470
Stack Diameter (ft)	2.7
Stack Height (ft)	28.7
Fuel Consumption (scf/hr)	36006
Fuel Consumption (scf/day)	864147
Fuel Consumption (mmscf/year)	315.4
Air Injection Rate (scf/hr)	559895.3
Total exhaust flow rate @ STP (scf/hr)	595901.43
Total exhaust flow rate @ STP (scf/sec)	165.5
Total exhaust flow rate @ 470 °F (acf/hr)	1065746.8
Total exhaust flow rate @ 470 °F (acf/sec)	296.0
Exhaust Stack Exit Velocity @ STP (ft/sec)	29.6
Exhaust Stack Exit Velocity @ 470 °F (ft/sec)	53.0

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES SUMMARY - FL1/FL2/FL3

Flare Emissions Summary Table

Stream Source[a]	NOx		CO		Total VOC		SO_2		$PM_{10\ \&\ 2.5}$		Total HAPs	
	lb/hr[b]	TPY	lb/hr[b]	TPY	lb/hr[b]	TPY	lb/hr[b]	TPY	lb/hr[b]	TPY	lb/hr[b]	TPY
CDP SSM Gas (FL1-FL3OVHD-SSM)	222.82	8.54	444.83	17.06	1,419.77	45.00	4.04	0.15	12.03	0.21	73.61	1.79
Cryo SSM Gas (FL1-FL3CRYO-SSM)	405.77	11.43	810.06	22.82	822.57	10.60	6.99	0.19	21.91	0.58	13.05	0.17
CDP Flare 1 (FL1)	0.71	2.59	1.42	5.17	1.80	6.56	0.01	0.04	0.04	0.14	0.10	0.36
Cryo Flare 2 (FL2)	1.38	5.03	2.75	10.05	0.46	1.69	0.023	0.09	0.07	0.27	0.06	0.22
Cryo Flare 3 (FL3)	0.86	3.13	1.71	6.24	0.03	0.12	0.014	0.05	0.05	0.17	0.01	0.02
Total Emissions	**631.53**	**30.72**	**1,260.77**	**61.34**	**2,244.64**	**63.99**	**11.08**	**0.53**	**34.10**	**1.37**	**86.83**	**2.56**

Footnotes:
[a] SSM gas can be routed to one or any combination of the three flares. For emissions tracking purposes in accordance with the permit, XTO Energy is requesting a combined emisison limit for flaring.
[b] Pound per hour emissions include a 20% safety factor.

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - HOURLY EMISSIONS (FL1 - FL3)

Maximum Hourly Emission Rates and Composition to Flare[a,b]

Component	CDP Flare 1 (FL1)			Cryo Flare 2 (FL2)			Cryo Flare 3 (FL3)		Total	Destruction Efficiency	Exhaust Stream (controlled)
	Pilot, Purge, Assist Gas	LP Flare Header	HP Flare Header	Pilot, Purge, Assist Gas	LP Flare Header	HP Flare Header	Pilot, Purge, Assist Gas	HP Flare Header			
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Nitrogen	0.57	0.33	0.72	0.57	9.96	2.64	0.57	0.83	16.19	0%	**16.19**
Carbon Dioxide	0.42	0.16	0.16	0.42	0.90	0.77	0.42	0.24	3.49	0%	**3.49**
Methane	65.94	15.53	27.89	65.94	154.86	129.37	65.94	40.43	565.87	98%	**11.32**
Ethane	1.60	15.39	4.61	1.60	6.14	3.42	1.60	1.07	35.43	98%	**0.71**
Propane	0.05	22.81	4.71	0.05	2.42	0.34	0.05	0.11	30.53	98%	**0.61**
Iso-butane	0.04	5.26	0.61	0.04	0.81	0.09	0.04	0.03	6.93	98%	**0.14**
N-butane	0.04	13.00	1.04	0.04	2.13	0.18	0.04	0.06	16.53	98%	**0.33**
Iso-pentane	0.00	4.64	0.12	0.00	1.07	0.14	0.00	0.05	6.02	98%	**0.12**
N-pentane	0.00	5.58	0.14	0.00	1.38	0.15	0.00	0.05	7.30	98%	**0.15**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Other Hexanes	0.00	2.85	0.16	0.00	1.18	0.14	0.00	0.04	4.38	98%	**0.09**
n-Hexane	0.00	2.18	0.17	0.00	1.01	0.17	0.00	0.05	3.58	98%	**0.07**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Benzene	0.00	0.26	0.18	0.00	0.09	0.10	0.00	0.03	0.66	98%	**0.01**
Cyclohexane	0.00	1.19	0.23	0.00	0.54	0.20	0.00	0.06	2.21	98%	**0.04**
2,2,4 Trimethylpentane	0.00	0.26	0.05	0.00	0.13	0.06	0.00	0.02	0.52	98%	**0.01**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methylcyclohexane	0.00	1.39	0.28	0.00	0.76	0.38	0.00	0.12	2.94	98%	**0.06**
n-Heptane	0.00	3.39	0.47	0.00	1.80	0.61	0.00	0.19	6.46	98%	**0.13**
Toluene	0.00	0.42	0.29	0.00	0.24	0.37	0.00	0.12	1.44	98%	**0.03**
Octanes	0.00	2.54	0.30	0.00	1.38	1.01	0.00	0.31	5.54	98%	**0.11**
Ethylbenzene	0.00	0.03	0.00	0.00	0.01	0.02	0.00	0.01	0.07	98%	**0.00**
M&P-Xylene	0.00	0.20	0.04	0.00	0.13	0.17	0.00	0.05	0.59	98%	**0.01**
Nonanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Decanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**68.66**	**97.41**	**42.15**	**68.66**	**186.94**	**140.33**	**68.66**	**43.85**	**716.67**	--	**33.63**
Total VOC	**0.13**	**66.00**	**8.78**	**0.13**	**15.09**	**4.13**	**0.13**	**1.29**	**95.68**	--	**1.91**
Total HAP	**0.000**	**3.354**	**0.721**	**0.000**	**1.615**	**0.883**	**0.000**	**0.276**	**6.85**	--	**0.1370**
Net Heating Value (Btu/scf)	914	1947	1095	914	950	928	914	928	**994**		
Molecular Weight	16.29	36.97	19.99	16.29	17.30	16.64	16.29	16.64	**17.98**		
SO2 Emissions (lb/hr)	0.003	0.005	0.002	0.003	0.009	0.007	0.003	0.009	**0.04**		
Volumetric Flow (scf/hr)[c]	1,600	1,000	800	1,600	4,100	3,200	1,600	4,000	**17,900**		
Heat Release (MMBtu/hr)	1.46	1.95	0.88	1.46	3.89	2.97	1.46	3.71	**17.78**		

Criteria Pollutant Emissions Oil CDP Flare (FL1) [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	0.59	0.138	lb/MMBtu
CO	1.18	0.2755	lb/MMBtu
SO_2	0.010	25	PPMW Total S
PM_{10}	0.032	7.60	lb/MMscf
$PM_{2.5}$	0.032	7.60	lb/MMscf
H_2S	6.06E-06	98%	DRE

Flare VOC DRE	98	%

Criteria Pollutant Emissions Cryo Flare (FL2) [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	1.15	0.138	lb/MMBtu
CO	2.29	0.2755	lb/MMBtu
SO_2	0.019	25	PPMW Total S
PM_{10}	0.062	7.60	lb/MMscf
$PM_{2.5}$	0.062	7.60	lb/MMscf
H_2S	3.40E-06	98%	DRE

Criteria Pollutant Emissions Cryo Flare (FL3) [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	0.71	0.138	lb/MMBtu
CO	1.43	0.2755	lb/MMBtu
SO_2	0.012	25	PPMW Total S
PM_{10}	0.039	7.60	lb/MMscf
$PM_{2.5}$	0.039	7.60	lb/MMscf
H_2S	2.83E-06	98%	DRE

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

[c] Flare pilot, purge, assist gas, and process gas flowrates were based on engineering estimates. Process gas includes sweep gas and miscellaneous process vents such as analyzer vents, compressor seals, and pump seals.

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - ANNUAL EMISSIONS (FL1 - FL3)

Annual Emission Rates and Composition to Flare[a,b]

Component	CDP Flare 1 (FL1)			Cryo Flare 2 (FL2)			Cryo Flare 3 (FL3)		Total	Destruction Efficiency	Exhaust Stream (controlled)
	Pilot, Purge, Assist Gas	LP Flare Header	HP Flare Header	Pilot, Purge, Assist Gas	LP Flare Header	HP Flare Header	Pilot, Purge, Assist Gas	HP Flare Header			
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Nitrogen	2.50	1.46	3.14	2.50	43.63	11.56	2.50	3.61	70.93	0%	**70.93**
Carbon Dioxide	1.85	0.70	0.68	1.85	3.93	3.38	1.85	1.05	15.30	0%	**15.30**
Methane	288.80	68.00	122.16	288.80	678.28	566.62	288.80	177.07	2478.52	98%	**49.57**
Ethane	7.01	67.41	20.17	7.01	26.89	14.99	7.01	4.69	155.17	98%	**3.10**
Propane	0.21	99.89	20.63	0.21	10.60	1.48	0.21	0.46	133.70	98%	**2.67**
Iso-butane	0.19	23.04	2.68	0.19	3.54	0.41	0.19	0.13	30.37	98%	**0.61**
N-butane	0.17	56.96	4.55	0.17	9.35	0.78	0.17	0.24	72.39	98%	**1.45**
Iso-pentane	0.00	20.32	0.54	0.00	4.69	0.63	0.00	0.20	26.38	98%	**0.53**
N-pentane	0.00	24.44	0.61	0.00	6.05	0.66	0.00	0.21	31.96	98%	**0.64**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Other Hexanes	0.00	12.49	0.70	0.00	5.17	0.63	0.00	0.20	19.18	98%	**0.38**
n-Hexane	0.00	9.57	0.72	0.00	4.42	0.73	0.00	0.23	15.66	98%	**0.31**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Benzene	0.00	1.12	0.78	0.00	0.39	0.45	0.00	0.14	2.89	98%	**0.06**
Cyclohexane	0.00	5.21	0.99	0.00	2.35	0.86	0.00	0.27	9.68	98%	**0.19**
2,2,4 Trimethylpentane	0.00	1.16	0.21	0.00	0.57	0.25	0.00	0.08	2.27	98%	**0.05**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Methylcyclohexane	0.00	6.11	1.22	0.00	3.33	1.68	0.00	0.53	12.86	98%	**0.26**
n-Heptane	0.00	14.83	2.07	0.00	7.89	2.67	0.00	0.83	28.30	98%	**0.57**
Toluene	0.00	1.85	1.26	0.00	1.06	1.62	0.00	0.51	6.29	98%	**0.13**
Octanes	0.00	11.12	1.32	0.00	6.05	4.41	0.00	1.38	24.27	98%	**0.49**
Ethylbenzene	0.00	0.12	0.02	0.00	0.05	0.08	0.00	0.02	0.30	98%	**0.01**
M&P-Xylene	0.00	0.87	0.16	0.00	0.58	0.74	0.00	0.23	2.58	98%	**0.05**
Nonanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Decanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98%	**0.00**
Total	**300.74**	**426.66**	**184.62**	**300.74**	**818.82**	**614.63**	**300.74**	**192.07**	**3139.01**	--	**147.29**
Total VOC	**0.58**	**289.09**	**38.46**	**0.58**	**66.09**	**18.07**	**0.58**	**5.65**	**419.09**	--	**8.38**
Total HAP	**0.000**	**14.69**	**3.16**	**0.00**	**7.07**	**3.87**	**0.00**	**1.21**	**29.99**	--	**0.60**
Net Heating Value (Btu/scf)	914	1,947	1,095	914	950	928	914	928	**994**		
Molecular Weight	16.29	36.97	19.99	16.29	17.30	16.64	16.29	16.64	**17.98**		
SO2 Emissions (ton/yr)	0.015	0.021	0.01	0.015	0.04	0.030	0.015	0.038	**0.18**		
Volumetric Flow (scf/year)	14,016,000	8,760,000	7,008,000	14,016,000	35,916,000	28,032,000	14,016,000	35,040,000	**156,804,000**		
Heat Release (MMBtu/yr)	12,807	17,053	7,677	12,807	34,111	26,014	12,807	32,518	**155,794**		

Criteria Pollutant Emissions Oil CDP Flare (FL1) [b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	ton/yr		
NO_X	2.59	0.138	lb/MMBtu
CO	5.17	0.2755	lb/MMBtu
SO_2	0.04	25	PPMW Total S
PM_{10}	0.14	7.60	lb/MMscf
$PM_{2.5}$	0.14	7.60	lb/MMscf
H_2S	2.66E-05	98%	DRE

Flare DRE	98.00	%

Criteria Pollutant Emissions Cryo Flare (FL2) [b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	ton/yr		
NO_X	5.03	0.138	lb/MMBtu
CO	10.05	0.2755	lb/MMBtu
SO_2	0.09	25	PPMW Total S
PM_{10}	0.27	7.60	lb/MMscf
$PM_{2.5}$	0.27	7.60	lb/MMscf
H_2S	1.49E-05	98%	DRE

Criteria Pollutant Emissions Cryo Flare (FL3) [b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	ton/yr		
NO_X	3.13	0.138	lb/MMBtu
CO	6.24	0.2755	lb/MMBtu
SO_2	0.05	25	PPMW Total S
PM_{10}	0.17	7.60	lb/MMscf
$PM_{2.5}$	0.17	7.60	lb/MMscf
H_2S	1.24E-05	98%	DRE

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.

Cowboy CDP

DUAL TIP FLARES GHG EMISSIONS SUMMARY (FL1 - FL3)

Flare Emissions Summary Table - Normal Operations

Source	Annual Volume
FL1-FL3[1]	156,804,000
	156,804,000

1) $E_{a,CH4} = V_a * X_{CH4} * [(1-\eta)* Z_L + Z_U$ = **2,091,145.13** **SCF/Yr**

Va =	**156,804,000.00**			
X_{CH4} =	**0.6668**			
N =	**0.98**			
Z_L =	**1.00**			
Z_U =	**0.00**			

2) $E_{a,CO2}$ (uncombusted) = $V_a * X_{CO2}$ = **645,602.98** **SCF/Yr**

Va =	**156,804,000.00**
X_{CO2} =	**0.004117**

3) $E_{a,CO2}$ (combusted) = Σ (η * Va * Yj * Rj * Z_L)

N =	**0.98**				
V_a =	**156,804,000.00**		**Rj =**	**$E_{a,\ CO2}$ =**	
Y_J=	**Methane**	0.6668	1	102,466,111.20	
	Ethane	0.0417	2	12,829,640.43	
	Propane	0.0360	3	16,582,471.49	
	Butane	0.0276	4	16,994,212.17	
	Pentane +	0.0491	5	37,749,416.44	
Z_L =	**1.00**			**186,621,851.73**	**SCF/Yr**

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

$E_{a,n}$(CH4) =	2,091,145.13		=	**1,882,463.39**	**SCF/Yr**
$E_{a,n}$(CO2) =	187,267,454.70		=	**168,579,465.14**	**SCF/Yr**
Ts =	60º F				
Ta =	93.7º F	Roswell, AP-42			
Ps =	13.28				
Pa =	12.73	Roswell, AP-42			

4) $Mass_{s,i} = E_{s,i} * \rho_i * 10^3$

$E_{s,i}$ (CH4) =	1,882,463.39				
$E_{s,i}$ (CO2) =	168,579,465.14				
p_i (CH4) =	0.0192	kg/ft3	=	36.14	metric tons
p_i (CO2) =	0.0526	kg/ft3	=	8867.28	metric tons

5) $CO_2e = CO_2 + (CH_4 \text{ X GWP})$

			short tons	CO_2e
CO2 =	8867.28	=	9774.50	9774.50
CH4 =	36.14	=	39.84	996.03
CH4 GWP =	25			**10770.53**

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - CRYO SSM HOURLY EMISSIONS (FL1 - FL3)

Maximum Hourly CRYO-SSM Emission Rates and Composition to Flare[a,b]					
Component	CRYO Blowdown SSM Gas	CRYO SSM Gas	Max Case[c]	Destruction Efficiency	Exhaust Stream (controlled)
	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Water	0	0	0	0%	**0.00**
Hydrogen Sulfide	0	2	0	98%	**0.00**
Nitrogen	627	601	627	0%	**627.47**
Carbon Dioxide	278	429	278	0%	**278.33**
Methane	62524	73809	62524	98%	**1250.48**
Ethane	20617	18424	20617	98%	**412.35**
Propane	15571	174	15571	98%	**311.41**
Iso-butane	3124	6	3124	98%	**62.49**
N-butane	7137	0	7137	98%	**142.75**
Iso-pentane	2205	0	2205	98%	**44.11**
N-pentane	2548	0	2548	98%	**50.95**
Cyclopentanes	0	0	0	98%	**0.00**
Other Hexanes	1226	0	1226	98%	**24.53**
n-Hexane	454	0	454	98%	**9.08**
Methylcyclopentane	310	0	310	98%	**6.21**
Benzene	41	0	41	98%	**0.82**
Cyclohexane	355	0	355	98%	**7.10**
2,2,4 Trimethylpentane	0	0	0	98%	**0.00**
Other Heptanes	475	0	475	98%	**9.51**
Methylcyclohexane	310	0	310	98%	**6.21**
n-Heptane	158	0	158	98%	**3.17**
Toluene	49	0	49	98%	**0.97**
Octanes	241	0	241	98%	**4.82**
Ethylbenzene	0	0	0	98%	**0.00**
M&P-Xylene	0	0	0	98%	**0.00**
Nonanes	68	0	68	98%	**1.35**
Decanes	0	0	0	98%	**0.00**
Undecanes Plus	0	0	0	98%	**0.00**
Total	**118321**	**93445**	**118321**	**--**	**3254.10**
Total VOC	**34274**	**180**	**34274**	**--**	**685.47**
Total HAP	**544**	**0**	**544**	**--**	**10.88**
Net Heating Value (Btu/scf)	1,225	988	**1,225**		
Molecular Weight	22.45	17.73	**22.45**		
SO2 Emissions (lb/hr)	5.82	4.60	**5.82**		
Volumetric Flow (scf/hr)	2,000,000	2,000,000	**2,000,000**		
Heat Release (MMBtu/hr)	2,450	1,977	**2,450**		

Criteria Pollutant Emissions from Flare[b]			
Component	Emission Rate	Emission Factor	Emission Factor Units
	(lb/hr)		
NO_X	338.14	0.138	lb/MMBtu
CO	675.05	0.2755	lb/MMBtu
SO_2	5.82	25	PPMW Total S
PM_{10}	18.26	7.60	lb/MMscf
$PM_{2.5}$	18.26	7.60	lb/MMscf
H_2S	0.00	--	--

Flare DRE	98.00	%

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assumes 100% of total sulfur in the gas stream is converted to SO2.

[c] Max hourly emissions is based upon the worst-case emissions vent stream at max flaring rate.

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - CRYO SSM ANNUAL EMISSIONS (FL1 - FL3)

Annual Emission CRYO-SSM Rates and Composition to Flare[a,b]					
Component	CRYO Blowdown SSM Gas	CRYO SSM Gas	Total	Destruction Efficiency	Exhaust Stream (controlled)
	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Water	0.00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	0.00	0.04	0.04	98%	**0.00**
Nitrogen	9.63	13.75	23.38	0%	**23.38**
Carbon Dioxide	4.27	9.82	14.09	0%	**14.09**
Methane	959.55	1688.65	2648.20	98%	**52.96**
Ethane	316.41	421.52	737.93	98%	**14.76**
Propane	238.96	3.99	242.95	98%	**4.86**
Iso-butane	47.95	0.14	48.09	98%	**0.96**
N-butane	109.54	0.00	109.54	98%	**2.19**
Iso-pentane	33.85	0.00	33.85	98%	**0.68**
N-pentane	39.10	0.00	39.10	98%	**0.78**
Cyclopentanes	0.00	0.00	0.00	98%	**0.00**
Other Hexanes	18.82	0.00	18.82	98%	**0.38**
n-Hexane	6.97	0.00	6.97	98%	**0.14**
Methylcyclopentane	4.76	0.00	4.76	98%	**0.10**
Benzene	0.63	0.00	0.63	98%	**0.01**
Cyclohexane	5.45	0.00	5.45	98%	**0.11**
2,2,4 Trimethylpentane	0.00	0.00	0.00	98%	**0.00**
Other Heptanes	7.29	0.00	7.29	98%	**0.15**
Methylcyclohexane	4.76	0.00	4.76	98%	**0.10**
n-Heptane	2.43	0.00	2.43	98%	**0.05**
Toluene	0.75	0.00	0.75	98%	**0.01**
Octanes	3.70	0.00	3.70	98%	**0.07**
Ethylbenzene	0.00	0.00	0.00	98%	**0.00**
M&P-Xylene	0.00	0.00	0.00	98%	**0.00**
Nonanes	1.04	0.00	1.04	98%	**0.02**
Decanes	0.00	0.00	0.00	98%	**0.00**
Undecanes Plus	0.00	0.00	0.00	98%	**0.00**
Total	**1815.86**	**2137.90**	**3953.76**	--	**115.79**
Total VOC	**525.99**	**4.13**	**530.12**	--	**10.60**
Total HAP	**8.35**	**0.00**	**8.35**	--	**0.17**
Net Heating Value (Btu/scf)	1,225.14	988.26	**733.27**		
Molecular Weight	22.45	17.73	**19.62**		
SO2 Emissions (ton/yr)	0.09	0.11	**0.19**		
Volumetric Flow (scf/yr)	61,387,646	91,515,000	**152,902,646**		
Heat Release (MMBtu/yr)	75,208.22	90,440.99	**165,649.22**		

Criteria Pollutant Emissions from Flare[b]			
Component	Emission Rate	Emission Factor	Emission Factor Units
	ton/yr		
NO_X	11.43	0.138	lb/MMBtu
CO	22.82	0.2755	lb/MMBtu
SO_2	0.19	25	PPMW Total S
PM_{10}	0.58	7.60	lb/MMscf
$PM_{2.5}$	0.58	7.60	lb/MMscf
H_2S	0.0008	--	--

Flare DRE	98.00	%

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assumes 100% of total sulfur in the gas stream is converted to SO2.

XTO Energy, Inc.

Cowboy CDP

DUAL TIP FLARES CRYO SSM GHG EMISSIONS SUMMARY (FL1-FL3CRYO-SSM)

Flare Emissions Summary Table - Normal Operations

Source	Annual Volume
FL1-FL3CRYO-SSM	152,902,646
	152,902,646

1) $E_{a,CH4} = V_a * X_{CH4} * [(1-\eta) * Z_L + Z_U$ = **2,048,259.36** **SCF/Yr**

Va = **152,902,646.49**
X_{CH4} = **0.6698**
N = **0.98**
Z_L = **1.00**
Z_U = **0.00**

2) $E_{a,CO2}$ (uncombusted) = $V_a * X_{CO2}$ = **544,849.77** **SCF/Yr**

Va = **152,902,646.49**
X_{CO2} = **0.003563**

3) $E_{a,CO2}$ (combusted) = $\Sigma (\eta * Va * Yj * Rj * Z_L)$

N = **0.98**
V_a = **152,902,646.49**

			Rj =	$E_{a, CO2}$ =	
Y_J=	**Methane**	0.6698	1	100,364,708.61	
	Ethane	0.1866	2	55,934,296.82	
	Propane	0.0614	3	27,622,790.83	
	Butane	0.0399	4	23,895,804.28	
	Pentane +	0.0328	5	24,548,466.66	
Z_L =	**1.00**			**232,366,067.21**	**SCF/Yr**

3) $E_{s,n} = \dfrac{E_{a,n} * (459.67 + T_s) * P_a}{(459.67 + T_a) * P_s}$

$E_{a,n}$(CH4) =	2,048,259.36		=	**1,843,857.32**	**SCF/Yr**
$E_{a,n}$(CO2) =	232,910,916.98		=	**209,668,027.32**	**SCF/Yr**
Ts =	60° F				
Ta =	93.7° F	Roswell, AP-42			
Ps =	13.28				
Pa =	12.73	Roswell, AP-42			

4) $Mass_{s,i} = E_{s,i} * \rho_i * 10^3$

$E_{s,i}$ (CH4) =	1,843,857.32				
$E_{s,i}$ (CO2) =	209,668,027.32				
p_i (CH4) =	0.0192	kg/ft3	=	35.40	metric tons
p_i (CO2) =	0.0526	kg/ft3	=	11028.54	metric tons

5) $CO_2e = CO_2 + (CH_4 \text{ X } GWP)$

			short tons	CO_2e
CO2 =	11028.54	=	12156.88	12156.88
CH4 =	35.40	=	39.02	975.60
CH4 GWP =	25			**13132.48**

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - STABILIZER OVERHEAD SSM HOURLY EMISSIONS (FL1-FL3OVHD-SSM)

Maximum Hourly OVHD-SSM Emission Rates and Composition to Flare[a,b]

Component	Condensate SSM Gas	Oil SSM Gas	Surge Vessel SSM Gas	Max Case[c]	Destruction Efficiency	Exhaust Stream (controlled)
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Water	0.00	0.00	0.00	0.00	0%	0.00
Hydrogen Sulfide	0.45	0.45	0.00	0.45	98%	0.01
Nitrogen	133.06	20.67	0.00	0.00	0%	0.00
Carbon Dioxide	98.58	93.36	69.58	69.58	0%	69.58
Methane	15037.00	2903.83	1274.57	1274.57	98%	25.49
Ethane	6549.30	15731.24	7939.51	7939.51	98%	158.79
Propane	3911.25	19901.38	16372.42	16372.42	98%	327.45
Iso-butane	630.26	1548.46	5222.79	5222.79	98%	104.46
N-butane	1307.23	3349.63	12092.07	12092.07	98%	241.84
Iso-pentane	367.89	1128.38	4924.19	4924.19	98%	98.48
N-pentane	426.83	1563.76	5504.07	5504.07	98%	110.08
Cyclopentanes	0.00	0.00	9.24	9.24	98%	0.18
Other Hexanes	302.02	1108.18	3133.78	3133.78	98%	62.68
n-Hexane	257.74	731.22	1987.00	1987.00	98%	39.74
Methylcyclopentane	0.00	0.00	864.92	864.92	98%	17.30
Benzene	17.50	67.93	339.63	339.63	98%	6.79
Cyclohexane	135.28	288.31	1175.40	1175.40	98%	23.51
2,2,4 Trimethylpentane	0.00	0.00	60.20	60.20	98%	1.20
Other Heptanes	0.00	0.00	1584.29	1584.29	98%	31.69
Methylcyclohexane	187.58	159.12	1720.59	1720.59	98%	34.41
n-Heptane	512.25	724.81	871.36	871.36	98%	17.43
Toluene	40.06	33.99	400.62	400.62	98%	8.01
Octanes	203.18	224.25	1655.56	1655.56	98%	33.11
Ethylbenzene	0.00	0.00	55.95	55.95	98%	1.12
M&P-Xylene	8.39	5.60	223.81	223.81	98%	4.48
Nonanes	0.00	0.00	540.76	540.76	98%	10.82
Decanes	0.00	0.00	243.71	243.71	98%	4.87
Undecanes Plus	0.00	0.00	174.84	174.84	98%	3.50
Total	30125.86	49584.56	68440.86	68441.31	--	1437.02
Total VOC	8307.47	30835.02	59157.19	59157.19	--	1183.14
Total HAP	323.69	838.73	3067.21	3067.21	--	61.34
Heating Value (Btu/scf)	1,245	1,987	2,691	2,691		
Molecular Weight	22.86	37.63	51.94	51.94		
SO2 Emissions (lb/hr)	1.48	2.44	3.37	3.37		
Volumetric Flow (scf/hr)	500,000	500,000	500,000	500,000		
Heat Release (MMBtu/hr)	623	994	1,346	1,346		

Criteria Pollutant Emissions from Flare[b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	(lb/hr)		
NO_X	185.68	0.138	lb/MMBtu
CO	370.70	0.2755	lb/MMBtu
SO_2	3.37	25	PPMW Total S
PM_{10}	10.03	7.60	lb/MMscf
$PM_{2.5}$	10.03	7.60	lb/MMscf
H_2S	0.01	--	--

Flare DRE	98.00	%

Footnotes:
[a] Uncontrolled stream properties determined via ProMax.
[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998.
SO2 emissions assumes 100% of total sulfur in the gas stream is converted to SO2.
[c] Max hourly emissions is based upon the worst-case emissions vent stream at max flaring rate.

XTO Energy, Inc.
Cowboy CDP
DUAL TIP FLARES - STABILIZER OVERHEAD SSM ANNUAL EMISSIONS (FL1-FL3OVHD-SSM)

Annual Emission OVHD-SSM Rates and Composition to Flare[a,b]

Component	Condensate SSM Gas	Oil SSM Gas	Surge Vessel SSM Gas	Total	Destruction Efficiency	Exhaust Stream (controlled)
	(ton/yr)	(ton/yr)	(ton/yr)	ton/yr	(%)	(ton/yr)
Water	0.00	0.00	0.00	0.00	0%	**0.00**
Hydrogen Sulfide	0.00	0.02	0.00	0.02	98%	**0.0003**
Nitrogen	0.12	0.73	0.00	0.85	0%	**0.85**
Carbon Dioxide	0.09	3.31	1.35	4.75	0%	**4.75**
Methane	13.12	102.92	24.78	140.81	98%	**2.82**
Ethane	5.71	557.55	154.34	717.61	98%	**14.35**
Propane	3.41	705.35	318.28	1027.04	98%	**20.54**
Iso-butane	0.55	54.88	101.53	156.96	98%	**3.14**
N-butane	1.14	118.72	235.07	354.93	98%	**7.10**
Iso-pentane	0.32	39.99	95.73	136.04	98%	**2.72**
N-pentane	0.37	55.42	107.00	162.79	98%	**3.26**
Cyclopentanes	0.00	0.00	0.18	0.18	98%	**0.00**
Other Hexanes	0.26	39.28	60.92	100.46	98%	**2.01**
n-Hexane	0.22	25.92	38.63	64.77	98%	**1.30**
Methylcyclopentane	0.00	0.00	16.81	16.81	98%	**0.34**
Benzene	0.02	2.41	6.60	9.03	98%	**0.18**
Cyclohexane	0.12	10.22	22.85	33.19	98%	**0.66**
2,2,4 Trimethylpentane	0.00	0.00	1.17	1.17	98%	**0.02**
Other Heptanes	0.00	0.00	30.80	30.80	98%	**0.62**
Methylcyclohexane	0.16	5.64	33.45	39.25	98%	**0.79**
n-Heptane	0.45	25.69	16.94	43.08	98%	**0.86**
Toluene	0.03	1.20	7.79	9.03	98%	**0.18**
Octanes	0.18	7.95	32.18	40.31	98%	**0.81**
Ethylbenzene	0.00	0.00	1.09	1.09	98%	**0.02**
M&P-Xylene	0.01	0.20	4.35	4.56	98%	**0.09**
Nonanes	0.00	0.00	10.51	10.51	98%	**0.21**
Decanes	0.00	0.00	4.74	4.74	98%	**0.09**
Undecanes Plus	0.00	0.00	3.40	3.40	98%	**0.07**
Total	**26.28**	**1757.39**	**1330.49**	**3114.16**	**--**	**67.77**
Total VOC	**7.25**	**1092.86**	**1150.02**	**2250.13**	**--**	**45.00**
Total HAP	**0.28**	**29.73**	**59.63**	**89.64**	**--**	**1.79**
Heating Value (Btu/scf)	1,245	1,987	2,691	**2,221**		
Molecular Weight	22.86	37.63	51.94	**42.39**		
SO2 Emissions (ton/yr)	0.00	0.09	0.07	**0.15**		
Volumetric Flow (scf/year)	872,291	35,442,334	19,440,000	**55,754,625**		
Heat Release (MMBtu/yr)	1,086	70,428	52,314	**123,829**		

Criteria Pollutant Emissions from Flare[b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	ton/yr		
NO_X	8.54	0.138	lb/MMBtu
CO	17.06	0.2755	lb/MMBtu
SO_2	0.15	25	PPMW Total S
PM_{10}	0.21	7.60	lb/MMscf
$PM_{2.5}$	0.21	7.60	lb/MMscf
H_2S	0.0003	--	--

Flare DRE	98.00	%

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assumes 100% of total sulfur in the gas stream is converted to SO2.

XTO Energy, Inc.

Cowboy CDP

DUAL TIP FLARES OVERHEAD SSM GHG EMISSIONS SUMMARY (FL1-FL3OVHD-SSM)

Flare Emissions Summary Table - Normal Operations

Source	Annual Volume
FL1-FL3OVHD-SSM	55,754,625
	55,754,625

1) $E_{a,CH4} = V_a * X_{CH4} * [(1- \eta)* Z_L + Z_U$ = **50,396.59** **SCF/Yr**

Va = **55,754,624.93**
X_{CH4} = **0.0452**
N = **0.98**
Z_L = **1.00**
Z_U = **0.00**

2) $E_{a,CO2}$ (uncombusted) = $V_a * X_{CO2}$ = **84,955.77** **SCF/Yr**

Va = **55,754,624.93**
X_{CO2} = **0.001524**

3) $E_{a,CO2}$ (combusted) = $\Sigma (\eta * Va * Yj * Rj * Z_L)$

N = **0.98**
V_a = **55,754,624.93**

			Rj =	$E_{a, CO2}$ =
Y_J=	**Methane**	0.0452	1	2,469,432.84
	Ethane	0.2303	2	25,169,406.98
	Propane	0.3296	3	54,033,732.82
	Butane	0.1643	4	35,908,099.68
	Pentane +	0.2283	5	62,360,982.38
Z_L =	**1.00**			**179,941,654.69** SCF/Yr

3) $E_{s,n} = \dfrac{E_{a,n} * (459.67 + T_s) * P_a}{(459.67 + T_a) * P_s}$

$E_{a,n}$(CH4) =	50,396.59		=	**45,367.36**	**SCF/Yr**
$E_{a,n}$(CO2) =	180,026,610.47		=	**162,061,206.80**	**SCF/Yr**
Ts =	60° F				
Ta =	93.7° F	Roswell, AP-42			
Ps =	13.28				
Pa =	12.73	Roswell, AP-42			

4) $Mass_{s,i} = E_{s,i} * \rho_i * 10^3$

$E_{s,i}$ (CH4) =	45,367.36				
$E_{s,i}$ (CO2) =	162,061,206.80				
p_i (CH4) =	0.0192	kg/ft3	=	0.87	metric tons
p_i (CO2) =	0.0526	kg/ft3	=	8524.42	metric tons

5) $CO_2e = CO_2 + (CH_4 \text{ X GWP})$

			short tons	CO_2e
CO2 =	8524.42	=	9396.56	9396.56
CH4 =	0.87	=	0.96	24.00
CH4 GWP =	25			**9420.57**

XTO Energy, Inc.
Cowboy CDP
COMBUSTOR EMISSIONS SUMMARY - ECD1/ECD2a/ECD2b

Combustor Emissions Summary Table

Stream Source	NOx		CO		Total VOC		SO_2		$PM_{10 \& 2.5}$		Total HAPs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
ECD1	1.34	5.85	2.68	11.67	4.65	20.23	0.00	0.00	0.07	0.12	0.15	0.67
ECD2a/ECD2b (Portable Backup)[a]	1.77	7.69	3.04	13.24	4.65	20.23	0.00	0.00	0.07	0.12	0.15	0.67
Total Emissions[b]	**1.77**	**7.69**	**3.04**	**13.24**	**4.65**	**20.23**	**0.00**	**0.00**	**0.07**	**0.12**	**0.15**	**0.67**

Footnotes:

[a]ECD2a/ECD2b represents a portable backup combustor that would only be used if ECD1 was out of service. Annual emissions conservatively assume that the backup combustor could operate up to 8,760 hrs per year. Two separate portable ECD models are considered for this permit as represented in Table 2A and 2H.

[b]Total emissions represent worst-case emissions from ECD1 or ECD2a/ECD2b. The combustors will not operate at the same time.

XTO ENERGY INC.
Cowboy CDP
COMBUSTOR HOURLY EMISSIONS

COMBUSTOR - HOURLY (EPN: ECD1)

Maximum Hourly Emission Rates and Composition to Combustor [a,b]

Component	Pilot Fuel	Slop Oil Tank (SOTK1)		Gunbarrel (GBS1)	PW Tanks (53-54)		Slop Oil Truck Loading (SOTL)	Total	Destruction Efficiency	Flare Exhaust (controlled)
		W&B Losses	Flashing Losses	Flashing Losses	W&B Losses	Flashing Losses				
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Water	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.29	0%	**0.29**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Nitrogen	0.36	0.00	0.04	0.00	0.00	0.00	0.00	0.40	0%	**0.40**
Carbon Dioxide	0.26	0.00	0.04	0.00	0.00	0.00	0.00	0.31	0%	**0.31**
Methane	41.21	0.02	3.57	0.00	0.10	0.00	0.01	44.90	99%	**0.45**
Ethane	1.00	0.33	16.37	0.00	0.53	0.00	0.17	18.40	99%	**0.18**
Propane	0.03	2.14	124.64	0.00	1.33	0.00	1.07	129.20	99%	**1.29**
Iso-butane	0.03	0.80	51.59	0.00	0.21	0.00	0.40	53.03	99%	**0.53**
N-butane	0.02	2.05	132.07	0.00	0.75	0.00	1.03	135.93	99%	**1.36**
Iso-pentane	0.00	0.67	45.83	0.00	0.15	0.00	0.34	46.98	99%	**0.47**
N-pentane	0.00	0.72	49.91	0.00	0.07	0.00	0.36	51.07	99%	**0.51**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Other Hexanes	0.00	0.28	19.76	0.00	0.04	0.00	0.14	20.21	99%	**0.20**
n-Hexane	0.00	0.18	12.50	0.00	0.01	0.00	0.09	12.78	99%	**0.13**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Benzene	0.00	0.01	0.95	0.00	0.05	0.00	0.00	1.01	99%	**0.01**
Cyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
2,2,4 Trimethylpentane	0.00	0.01	0.63	0.00	0.00	0.00	0.00	0.65	99%	**0.01**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Methylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
n-Heptane	0.00	0.13	10.10	0.00	0.01	0.00	0.07	10.30	99%	**0.10**
Toluene	0.00	0.01	0.67	0.00	0.04	0.00	0.00	0.72	99%	**0.01**
Octanes	0.00	0.03	2.85	0.00	0.00	0.00	0.02	2.90	99%	**0.03**
Ethylbenzene	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	99%	**0.00**
M&P-Xylene	0.00	0.00	0.18	0.00	0.02	0.00	0.00	0.20	99%	**0.00**
Nonanes	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.27	99%	**0.00**
Decanes	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	99%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**42.91**	**7.39**	**472.03**	**0.00**	**3.59**	**0.00**	**3.70**	**529.62**	**--**	**6.28**
Total VOC	**0.08**	**7.04**	**452.00**	**0.00**	**2.68**	**0.00**	**3.52**	**465.32**	**--**	**4.65**
Total HAP	**0.00**	**0.20**	**14.96**	**0.00**	**0.12**	**0.00**	**0.10**	**15.38**	**--**	**0.15**
Heating Value (Btu/scf)	913.74	2,814.24	2,842.38	0.00	1,893.47	0.00	2,814.24	**2,735.04**		
Molecular Weight	16.29	54.21	54.80	0.00	39.33	0.00	54.21	**52.69**		
SO2 Emissions (lb/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**		
Volumetric Flow (scf/hr)	180.00	51.71	3,268.81	0.00	34.68	0.00	25.87	**3,561.07**		
Heat Release (MMBtu/hr)	0.16	0.15	9.29	0.00	0.07	0.00	0.07	**9.74**		

Criteria Pollutant Emissions from ECD [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	1.34	0.138	lb/MMBtu
CO	2.68	0.2755	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.07	7.60	lb/MMscf
$PM_{2.5}$	0.07	7.60	lb/MMscf
H_2S	8.58E-05	--	--

Combustor DRE	99.00	%

Criteria Pollutant Emissions from Pilot Fuel

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	0.02	0.138	lb/MMBtu
CO	0.05	0.2755	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.001	7.60	lb/MMscf
$PM_{2.5}$	0.001	7.60	lb/MMscf
H_2S	8.58E-05	--	--

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.
Cowboy CDP
COMBUSTOR ANNUAL EMISSIONS

COMBUSTOR - ANNUAL (EPN: ECD1)

Annual Emission Rates and Composition to Combustor[a,b]

Component	Pilot Fuel[c]	Slop Oil Tank (SOTK1)		Gunbarrel (GBS1)	PW Tanks (53-54)		Slop Oil Truck Loading (SOTL)	Total	Destruction Efficiency	Exhaust Stream (controlled)
		W&B Losses	Flashing Losses	Flashing Losses	W&B Losses	Flashing Losses				
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Water	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.25	0%	**1.25**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Nitrogen	1.56	0.00	0.20	0.00	0.01	0.00	0.00	1.77	99%	**0.02**
Carbon Dioxide	1.16	0.00	0.18	0.00	0.00	0.00	0.00	1.35	0%	**1.35**
Methane	180.50	0.07	15.65	0.00	0.43	0.00	0.00	196.65	99%	**1.97**
Ethane	4.38	1.46	71.68	0.00	2.33	0.00	0.02	79.88	99%	**0.80**
Propane	0.13	9.37	545.90	0.00	5.81	0.00	0.19	561.41	99%	**5.61**
Iso-butane	0.12	3.51	225.98	0.00	0.90	0.00	0.06	230.57	99%	**2.31**
N-butane	0.11	9.00	578.49	0.00	3.27	0.00	0.15	591.02	99%	**5.91**
Iso-pentane	0.00	2.94	200.72	0.00	0.64	0.00	0.04	204.35	99%	**2.04**
N-pentane	0.00	3.17	218.61	0.00	0.32	0.00	0.05	222.16	99%	**2.22**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Other Hexanes	0.00	1.22	86.54	0.00	0.16	0.00	0.02	87.94	99%	**0.88**
n-Hexane	0.00	0.78	54.74	0.00	0.06	0.00	0.01	55.58	99%	**0.56**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
Benzene	0.00	0.04	4.17	0.00	0.20	0.00	0.00	4.41	99%	**0.04**
Cyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
2,2,4 Trimethylpentane	0.00	0.04	2.77	0.00	0.01	0.00	0.00	2.81	99%	**0.03**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Methylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
n-Heptane	0.00	0.57	44.22	0.00	0.06	0.00	0.00	44.85	99%	**0.45**
Toluene	0.00	0.03	2.94	0.00	0.19	0.00	0.00	3.16	99%	**0.03**
Octanes	0.00	0.14	12.49	0.00	0.01	0.00	0.00	12.64	99%	**0.13**
Ethylbenzene	0.00	0.00	0.13	0.00	0.01	0.00	0.00	0.15	99%	**0.00**
M&P-Xylene	0.00	0.01	0.78	0.00	0.07	0.00	0.00	0.85	99%	**0.01**
Nonanes	0.00	0.01	1.17	0.00	0.00	0.00	0.00	1.18	99%	**0.01**
Decanes	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12	99%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**187.96**	**32.36**	**2067.48**	**0.00**	**15.74**	**0.00**	**0.59**	**2304.13**	**--**	**25.61**
Total VOC	**0.36**	**30.82**	**1979.77**	**0.00**	**11.72**	**0.00**	**0.56**	**2023.24**	**--**	**20.23**
Total HAP	**0.00**	**0.88**	**65.53**	**0.00**	**0.53**	**0.00**	**0.02**	**66.96**	**--**	**0.67**
Net Heating Value (Btu/scf)	913.74	2,814.24	2,842.38	0.00	1,893.47	0.00	2,814.24	**2734.49**		
Molecular Weight	16.29	54.21	54.80	0.00	39.33	0.00	54.21	**52.68**		
SO2 Emissions (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**		
Volumetric Flow (scf/yr)	1,576,800.00	452,971.48	28,634,815.83	0.00	303,816.42	0.00	11,175.11	**30,979,578.83**		
Heat Release (MMBtu/yr)	1,440.78	1,274.77	81,391.06	0.00	575.27	0.00	31.45	**84,713.33**		

Criteria Pollutant Emissions from ECD[b]

Component	Emission Rate	Emission Factor	Emission Factor Units
	(ton/yr)		
NO_X	5.85	0.14	lb/MMBtu
CO	11.67	0.28	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.12	7.60	lb/MMscf
$PM_{2.5}$	0.12	7.60	lb/MMscf
H_2S	0.00	--	--

Combustor DRE	99.00	%

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO ENERGY INC.
Cowboy CDP
COMBUSTOR HOURLY EMISSIONS

COMBUSTOR - HOURLY (EPN: ECD2a/ECD2b)

Maximum Hourly Emission Rates and Composition to Combustor [a,b]

Component	Pilot Fuel	Slop Oil Tank (SOTK1)		Gunbarrel (GBS1)	PW Tanks (53-54)		Slop Oil Truck Loading (SOTL)	Total	Destruction Efficiency	Flare Exhaust (controlled)
		W&B Losses	Flashing Losses	Flashing Losses	W&B Losses	Flashing Losses				
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(%)	(lb/hr)
Water	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.29	0%	**0.29**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Nitrogen	0.36	0.00	0.04	0.00	0.00	0.00	0.00	0.40	0%	**0.40**
Carbon Dioxide	0.26	0.00	0.04	0.00	0.00	0.00	0.00	0.31	0%	**0.31**
Methane	41.21	0.02	3.57	0.00	0.10	0.00	0.01	44.90	99%	**0.45**
Ethane	1.00	0.33	16.37	0.00	0.53	0.00	0.17	18.40	99%	**0.18**
Propane	0.03	2.14	124.64	0.00	1.33	0.00	1.07	129.20	99%	**1.29**
Iso-butane	0.03	0.80	51.59	0.00	0.21	0.00	0.40	53.03	99%	**0.53**
N-butane	0.02	2.05	132.07	0.00	0.75	0.00	1.03	135.93	99%	**1.36**
Iso-pentane	0.00	0.67	45.83	0.00	0.15	0.00	0.34	46.98	99%	**0.47**
N-pentane	0.00	0.72	49.91	0.00	0.07	0.00	0.36	51.07	99%	**0.51**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Other Hexanes	0.00	0.28	19.76	0.00	0.04	0.00	0.14	20.21	99%	**0.20**
n-Hexane	0.00	0.18	12.50	0.00	0.01	0.00	0.09	12.78	99%	**0.13**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Benzene	0.00	0.01	0.95	0.00	0.05	0.00	0.00	1.01	99%	**0.01**
Cyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
2,2,4 Trimethylpentane	0.00	0.01	0.63	0.00	0.00	0.00	0.00	0.65	99%	**0.01**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Methylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
n-Heptane	0.00	0.13	10.10	0.00	0.01	0.00	0.07	10.30	99%	**0.10**
Toluene	0.00	0.01	0.67	0.00	0.04	0.00	0.00	0.72	99%	**0.01**
Octanes	0.00	0.03	2.85	0.00	0.00	0.00	0.02	2.90	99%	**0.03**
Ethylbenzene	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	99%	**0.00**
M&P-Xylene	0.00	0.00	0.18	0.00	0.02	0.00	0.00	0.20	99%	**0.00**
Nonanes	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.27	99%	**0.00**
Decanes	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	99%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**42.91**	**7.39**	**472.03**	**0.00**	**3.59**	**0.00**	**3.70**	**529.62**	**--**	**6.28**
Total VOC	**0.08**	**7.04**	**452.00**	**0.00**	**2.68**	**0.00**	**3.52**	**465.32**	**--**	**4.65**
Total HAP	**0.00**	**0.20**	**14.96**	**0.00**	**0.12**	**0.00**	**0.10**	**15.38**	**--**	**0.15**
Heating Value (Btu/scf)	914	2,814	2,842	0.00	1,893	0.00	2,814	**2,690**		
Molecular Weight	16.29	54.21	54.80	0.00	39.33	0.00	54.21	**51.79**		
SO2 Emissions (lb/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**		
Volumetric Flow (scf/hr)	270	52	3,269	0.00	35	0.00	26	**3,651**		
Heat Release (MMBtu/hr)	0.25	0.15	9.29	0.00	0.07	0.00	0.07	**9.82**		

Criteria Pollutant Emissions from ECD [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	1.77	0.18	lb/MMBtu
CO	3.04	0.31	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.07	7.60	lb/MMscf
$PM_{2.5}$	0.07	7.60	lb/MMscf
H_2S	0.00	--	--

Combustor DRE	99.00	%

Criteria Pollutant Emissions from Pilot Fuel

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	0.04	0.18	lb/MMBtu
CO	0.07	0.2755	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.002	7.60	lb/MMscf
$PM_{2.5}$	0.002	7.60	lb/MMscf
H_2S	0.00	--	--

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.
Cowboy CDP
COMBUSTOR ANNUAL EMISSIONS

COMBUSTOR - ANNUAL (EPN: ECD2a/ECD2b)

Annual Emission Rates and Composition to Combustor[a,b]

Component	Pilot Fuel[c]	Slop Oil Tank (SOTK1)		Gunbarrel (GBS1)	PW Tanks (53-54)		Slop Oil Truck Loading (SOTL)	Total	Destruction Efficiency	Exhaust Stream (controlled)
		W&B Losses	Flashing Losses	Flashing Losses	W&B Losses	Flashing Losses				
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(%)	(ton/yr)
Water	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.25	0%	**1.25**
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Nitrogen	1.56	0.00	0.20	0.00	0.01	0.00	0.00	1.77	99%	**0.02**
Carbon Dioxide	1.16	0.00	0.18	0.00	0.00	0.00	0.00	1.35	0%	**1.35**
Methane	180.50	0.07	15.65	0.00	0.43	0.00	0.00	196.65	99%	**1.97**
Ethane	4.38	1.46	71.68	0.00	2.33	0.00	0.02	79.88	99%	**0.80**
Propane	0.13	9.37	545.90	0.00	5.81	0.00	0.19	561.41	99%	**5.61**
Iso-butane	0.12	3.51	225.98	0.00	0.90	0.00	0.06	230.57	99%	**2.31**
N-butane	0.11	9.00	578.49	0.00	3.27	0.00	0.15	591.02	99%	**5.91**
Iso-pentane	0.00	2.94	200.72	0.00	0.64	0.00	0.04	204.35	99%	**2.04**
N-pentane	0.00	3.17	218.61	0.00	0.32	0.00	0.05	222.16	99%	**2.22**
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Other Hexanes	0.00	1.22	86.54	0.00	0.16	0.00	0.02	87.94	99%	**0.88**
n-Hexane	0.00	0.78	54.74	0.00	0.06	0.00	0.01	55.58	99%	**0.56**
Methylcyclopentane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
Benzene	0.00	0.04	4.17	0.00	0.20	0.00	0.00	4.41	99%	**0.04**
Cyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
2,2,4 Trimethylpentane	0.00	0.04	2.77	0.00	0.01	0.00	0.00	2.81	99%	**0.03**
Other Heptanes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Methylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	99%	**0.00**
n-Heptane	0.00	0.57	44.22	0.00	0.06	0.00	0.00	44.85	99%	**0.45**
Toluene	0.00	0.03	2.94	0.00	0.19	0.00	0.00	3.16	99%	**0.03**
Octanes	0.00	0.14	12.49	0.00	0.01	0.00	0.00	12.64	99%	**0.13**
Ethylbenzene	0.00	0.00	0.13	0.00	0.01	0.00	0.00	0.15	99%	**0.00**
M&P-Xylene	0.00	0.01	0.78	0.00	0.07	0.00	0.00	0.85	99%	**0.01**
Nonanes	0.00	0.01	1.17	0.00	0.00	0.00	0.00	1.18	99%	**0.01**
Decanes	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12	99%	**0.00**
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**187.96**	**32.36**	**2067.48**	**0.00**	**15.74**	**0.00**	**0.59**	**2304.13**	**--**	**25.61**
Total VOC	**0.36**	**30.82**	**1979.77**	**0.00**	**11.72**	**0.00**	**0.56**	**2023.24**	**--**	**20.23**
Total HAP	**0.00**	**0.88**	**65.53**	**0.00**	**0.53**	**0.00**	**0.02**	**66.96**	**--**	**0.67**
Net Heating Value (Btu/scf)	914	2,814	2,842	0.00	1,893	0.00	2,814	**2,689**		
Molecular Weight	16.29	54.21	54.80	0.00	39.33	0.00	54.21	**51.77**		
SO2 Emissions (tpy)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**		
Volumetric Flow (scf/yr)	2,365,200	452,971	28,634,816	0.00	303,816	0.00	11,175	**31,767,979**		
Heat Release (MMBtu/yr)	2,161	1,275	81,391	0.00	575	0.00	31	**85,434**		

Criteria Pollutant Emissions from ECD[b]

Component	Emission Rate (ton/yr)	Emission Factor	Emission Factor Units
NO_X	7.69	0.18	lb/MMBtu
CO	13.24	0.31	lb/MMBtu
SO_2	0.00	--	--
PM_{10}	0.12	7.60	lb/MMscf
$PM_{2.5}$	0.12	7.60	lb/MMscf
H_2S	0.00	--	--

Combustor DRE	99.00	%

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] Flare CO and NOx emission factors from TCEQ Air Permit Techincal Guidance for Chemical Sources. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.

Cowboy CDP

COMBUSTOR (ECD1/ECD2a/ECD2b) GHG EMISSIONS SUMMARY

Flare Emissions Summary Table - Normal Operations

Source	Annual Volume
ECD1/ECD2a/ECD2b	30,979,579
	30,979,579

1) $E_{a,CH4} = V_a * X_{CH4} * [(1-\eta) * Z_L + Z_U$ = **28,318.69** **SCF/Yr**

Va = **30,979,578.83**
X_{CH4} = **0.0914**
N = **0.99**
Z_L = **1.00**
Z_U = **0.00**

2) $E_{a,CO2}$ (uncombusted) = $V_a * X_{CO2}$ = **19,381.19** **SCF/Yr**

Va = **30,979,578.83**
X_{CO2} = **0.0006**

3) $E_{a,CO2}$ (combusted) = $\Sigma (\eta * Va * Yj * Rj * Z_L)$

N = **0.99**

			Rj =	$E_{a,CO2}$ =	
V_a =	**30,979,578.83**				
Y_J=	**Methane**	0.0914	1	2,803,550.73	
	Ethane	0.0371	2	2,277,694.29	
	Propane	0.2610	3	24,011,738.77	
	Butane	0.3819	4	46,852,532.98	
	Pentane +	0.2976	5	45,637,917.95	
Z_L =	**1.00**			**121,583,434.73**	**SCF/Yr**

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

$E_{a,n}$(CH4) =	28,318.69		=	**25,492.69**	**SCF/Yr**
$E_{a,n}$(CO2) =	121,602,815.92		=	**109,467,700.62**	**SCF/Yr**
Ts =	60° F				
Ta =	93.7° F	Roswell, AP-42			
Ps =	13.28				
Pa =	12.73	Roswell, AP-42			

4) $Mass_{s,i} = E_{s,i} * \rho_i * 10^3$

$E_{s,i}$ (CH4) =	25,492.69				
$E_{s,i}$ (CO2) =	109,467,700.62				
p_i (CH4) =	0.0192	kg/ft3	=	0.49	metric tons
p_i (CO2) =	0.0526	kg/ft3	=	5758.00	metric tons

5) $CO_2e = CO_2 + (CH_4 \text{ X GWP})$

			short tons	CO_2e
CO2 =	5758.00	=	6347.11	6347.11
CH4 =	0.49	=	0.54	13.49
CH4 GWP =	25			**6360.60**

XTO Energy, Inc.

Cowboy CDP

Truck Loading Losses - Slop Oil

Truck Loading Losses Calculations

Average BOPD	**210**
Average BOPY	**5704**

LL= 12.46 * SPM/T * (1-EFF/100)

Saturation Factor (S) =	0.6
Average True Vapor Pressure of liquid loaded (P)[a] =	6.55
Maximum True Vapor Pressure of liquid loaded (P)[a] =	7.72
Average Temperature of liquid loaded in Rankin (T) =	535.8
Maximum Temperature of liquid loaded in Rankin (T) =	501.3
Molecular Weight (M)[a] =	54.21
Uncontrolled LL-Average (lb Total HC / bbl Throughput) =	0.2081
Uncontrolled LL-Maximum (lb Total HC / bbl Throughput) =	0.2622
Uncontrolled LL-Average (lb VOC / bbl Throughput) =	**0.2004**
Uncontrolled LL-Maximum (lb VOC / bbl Throughput) =	**0.2525**
Estimated Throughput (bbls/Year) =	5704
Truck Loading Rate (bbls/hour) =	210
Estimated # of Loads (Approximately 1 hr/Load) =	27

Total Uncontrolled Loading Emissions[b]

	lb/hr	TPY
Total Hydrocarbon Emissions	55.07	0.59
Total VOC Emissions	53.02	0.57
Total HAP Emissions	1.59	0.02

Uncollected Emissions Released at Rack[c]

	lb/hr	TPY
Total VOC Emissions	0.69	0.01
Total HAP Emissions	0.02	0.00

XTO Energy, Inc.

Cowboy CDP

Truck Loading Losses - Slop Oil

Truck Loading Losses Calculations

Component	Total Uncontrolled Speciated Vapors		Uncollected Emissions Released at Rack[c]		Uncontrolled Speciated Vapors Collected to Combustor[d]	
	lb / hr	ton / year	lb / hr	ton / year	lb / hr	ton / year
Water	0.00	0.00	0.00	0.00	0.00	0.00
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00
Nitrogen	0.00	0.00	0.00	0.00	0.00	0.00
Carbon Dioxide	0.02	0.00	0.00	0.00	0.02	0.00
Methane	0.03	0.00	0.00	0.00	0.03	0.00
Ethane	2.01	0.02	0.03	0.00	1.98	0.02
Propane	18.00	0.19	0.23	0.00	17.77	0.19
Iso-butane	5.36	0.06	0.07	0.00	5.29	0.06
N-butane	14.04	0.15	0.18	0.00	13.86	0.15
Iso-pentane	4.22	0.05	0.05	0.00	4.17	0.04
N-pentane	4.55	0.05	0.06	0.00	4.49	0.05
Cyclopentanes	0.00	0.00	0.00	0.00	0.00	0.00
Other Hexanes	1.80	0.02	0.02	0.00	1.77	0.02
n-Hexane	1.04	0.01	0.01	0.00	1.03	0.01
Methylcyclopentane	0.72	0.01	0.01	0.00	0.71	0.01
Benzene	0.33	0.00	0.00	0.00	0.32	0.00
Cyclohexane	1.06	0.01	0.01	0.00	1.04	0.01
2,2,4 Trimethylpentane	0.00	0.00	0.00	0.00	0.00	0.00
Other Heptanes	0.36	0.00	0.00	0.00	0.36	0.00
Methylcyclohexane	0.67	0.01	0.01	0.00	0.66	0.01
n-Heptane	0.40	0.00	0.01	0.00	0.40	0.00
Toluene	0.18	0.00	0.00	0.00	0.18	0.00
Octanes	0.19	0.00	0.00	0.00	0.19	0.00
Ethylbenzene	0.00	0.00	0.00	0.00	0.00	0.00
M&P-Xylene	0.03	0.00	0.00	0.00	0.03	0.00
Nonanes	0.04	0.00	0.00	0.00	0.04	0.00
Decanes	0.01	0.00	0.00	0.00	0.01	0.00
Undecanes Plus	0.00	0.00	0.00	0.00	0.00	0.00
Total	55.07	0.59	0.72	0.008	54.35	0.59
Total VOC	53.02	0.57	0.69	0.007	52.33	0.56
Total HAP	1.59	0.02	0.02	0.00	1.57	0.02

a Molecular Weight and VOC/HAP weight percent were obtained from Promax

b Loading emissions include total hydrocarbons as calculated using AP-42, Section 5.2.

c 98.7% of the vapors are collected and routed to the combustor. The remaining 1.3% is illustrated as truck loading emissions.

d The component speciation was obtained from Promax (Slop Tank W&B) and multiplied by the total hydrocarbon emissions. (VOC = 55.07 lb/hr * 98. 7% = 54.35 lb/hr)

XTO ENERGY INC.
Cowboy CDP
THERMAL OXIDIZER HOURLY EMISSIONS (PER UNIT)

THERMAL OXIDIZERS - HOURLY (EPNS: TO1-TO4)

Maximum Hourly Emission Rates and Composition to Thermal Oxidizer[a,b]

Component	TO Assist Fuel (lb/hr)	Amine Flash Gas (lb/hr)	Amine Reboiler Still Vent (lb/hr)	Total (lb/hr)	Destruction Efficiency (%)	Exhaust Stream (controlled) (lb/hr)
Hydrogen Sulfide	0.00	0.00	0.47	0.47	99%	**0.00**
N2	25.10	2.12	0.03	27.25	0%	**27.25**
Carbon Dioxide	0.00	72.79	24180.07	24252.86	0%	**24252.86**
Methane	658.66	129.51	5.37	793.54	99%	**7.94**
Ethane	257.75	56.10	3.72	317.57	99%	**3.18**
Propane	29.81	27.90	1.52	59.23	99%	**0.59**
i-Butane	0.00	2.41	0.10	2.51	99%	**0.03**
n-Butane	0.00	8.18	0.49	8.67	99%	**0.09**
i-Pentane	0.00	0.75	0.03	0.78	99%	**0.01**
n-Pentane	0.00	0.90	0.04	0.94	99%	**0.01**
n-Hexane	0.00	0.35	0.01	0.36	99%	**0.00**
Benzene	0.00	0.35	0.01	0.36	99%	**0.00**
Toluene	0.00	0.35	0.01	0.36	99%	**0.00**
Ethylbenzene	0.00	0.35	0.01	0.36	99%	**0.00**
Xylene	0.00	0.35	0.01	0.36	99%	**0.00**
Water	0.00	8.21	700.92	709.13	99%	**7.09**
MDEA	0.00	0.00	0.00	0.00	99%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	99%	**0.00**
O2	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**971.32**	**310.62**	**24892.81**	**26174.75**	**--**	**24299.06**
Total VOC	**29.81**	**41.88**	**2.24**	**73.92**	**--**	**0.72**
Total HAP	**0.00**	**1.74**	**0.06**	**1.80**	**--**	**0.02**
Heating Value (Btu/scf)	1,030.84	962.33	1.07	**100.89**		
Molecular Weight	18.97	23.85	26.00	**--**		
SO2 Emissions (lb/hr)	0.00	0.00	0.88	**0.88**		
Volumetric Flow (scf/hr)	19,430.00	4,920.46	223,460.74	**247,811.20**		
Heat Release (MMBtu/hr)	20.03	4.74	0.24	**25.00**		

Criteria Pollutant Emissions from TO [b]

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	3.56	--	--
CO	2.17	--	--
SO_2	0.88	--	--
PM_{10}	0.19	7.60	lb/MMscf
$PM_{2.5}$	0.19	7.60	lb/MMscf
H_2S	0.00	--	--
CO2e	24451.25	--	--
Thermal Oxidizer DRE		99.00	%

Criteria Pollutant Emissions from Assist Gas

Component	Emission Rate (lb/hr)	Emission Factor	Emission Factor Units
NO_X	0.28	0.068	lb/MMBtu
CO	0.17	--	--
SO_2	0.00	--	--
PM_{10}	0.15	7.60	lb/MMscf
$PM_{2.5}$	0.15	7.60	lb/MMscf
H_2S	0.00	--	--

Calculation Factors:

NO2 MW	46.0100	lb/lb-mole
CO MW	28.0000	lb/lb-mole
CO2 MW	44.0100	lb/lb-mole
H2O MW	18.0150	lb/lb-mole
N2 MW	28.0134	lb/lb-mole
SO2 MW	64.0660	lb/lb-mole
O2 MW	31.9980	lb/lb-mole

Manufacturer's Guaranteed Outlet Concentration

Pollutant	(ppmv)
NOx	50
CO	50

Total lb-Mol/hr 1547.26 Zeeco Specifications

PV=nRT

T =	1700	F	Normal Operating Temp
	50,226	lb/hr	Max Design Flowrate
n =	1,547	lbmol/hr	Max Design Flowrate
P =	12.73	psia	Roswell Atmospheric Pressure
R =	10.73	psi·ft3·lbmol/°R	Gas Constant
V =	2,817,002	ft3/hr	
	782.5	ft3/sec	

Velocity = Flow Rate/Area

Flow rate =	783	ft3/sec
Inside Diameter =	4.1	feet
Area =	13.4	ft2
Velocity =	58.6	ft/sec

Notes:

[a] Uncontrolled stream properties determined via ProMax.

[b] TO and NOx CO exhuast emissions gaurantee provided by ZEECO. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.
Cowboy CDP
THERMAL OXIDIZER ANNUAL EMISSIONS (PER UNIT)

THERMAL OXIDIZER - ANNUAL (EPNS: TO1-TO4)

Annual Emission Rates and Composition to Thermal Oxidizer[a,b]

Component	TO Assist Fuel (ton/yr)	Amine Flash Gas (ton/yr)	Amine Reboiler Still Vent (ton/yr)	Total (ton/yr)	Destruction Efficiency (%)	Exhaust Stream (controlled) (ton/yr)
Hydrogen Sulfide	0.00	0.012	2.04	2.06	99%	**0.02**
N2	109.95	9.28	0.13	119.37	0%	**119.37**
Carbon Dioxide	0.00	318.82	105908.71	106227.53	0%	**106227.53**
Methane	2884.92	567.26	23.52	3475.70	99%	**34.76**
Ethane	1128.94	245.73	16.29	1390.97	99%	**13.91**
Propane	130.55	122.22	6.66	259.43	99%	**2.59**
i-Butane	0.00	10.56	0.42	10.98	99%	**0.11**
n-Butane	0.00	35.82	2.16	37.98	99%	**0.38**
i-Pentane	0.00	3.28	0.12	3.40	99%	**0.03**
n-Pentane	0.00	3.93	0.18	4.10	99%	**0.04**
n-Hexane	0.00	1.52	0.052	1.57	99%	**0.02**
Benzene	0.00	1.52	0.052	1.57	99%	**0.02**
Toluene	0.00	1.52	0.052	1.57	99%	**0.02**
Ethylbenzene	0.00	1.52	0.052	1.57	99%	**0.02**
Xylene	0.00	1.52	0.052	1.57	99%	**0.02**
Water	0.00	35.96	3070.02	3105.98	99%	**31.06**
MDEA	0.00	0.01	0.00	0.01	99%	**0.00**
Piperazine	0.00	0.00	0.00	0.00	99%	**0.00**
O2	0.00	0.00	0.00	0.00	99%	**0.00**
Total	**4254.36**	**1360.50**	**109030.53**	**114645.38**	**--**	**106429.88**
Total VOC	**130.55**	**183.42**	**9.80**	**323.77**	**--**	**3.24**
Total HAP	**0.00**	**7.61**	**0.26**	**7.87**	**--**	**0.079**
Heating Value (Btu/scf)	1,030.84	962.33	1.07	**100.89**		
Molecular Weight	16.81	23.85	26.00	**--**		
SO2 Emissions (tpy)	0.00	0.022	3.84	**3.87**		
Volumetric Flow (scf/yr)	170,206,800.0	43,103,237.4	1,957,516,073.9	**2,170,826,111.31**		
Heat Release (MMBtu/yr)	175,455.74	41,479.64	2,084.99	**219,020.38**		

Criteria Pollutant Emissions from TO [b]

Component	Emission Rate (ton/yr)	Emission Factor	Emission Factor Units
NO_X	15.59	--	lb/MMBtu
CO	9.49	--	--
SO_2	3.87	--	--
PM_{10}	0.82	7.60	lb/MMscf
$PM_{2.5}$	0.82	7.60	lb/MMscf
H_2S	0.021	--	--
CO2e	107096.46	--	--

Thermal Oxidizer DRE	99.00	%

Calculation Factors:

NO2 MW	46.0100	lb/lb-mole
CO MW	28.0000	lb/lb-mole

Manufacturers Guaranteed Outlet Concentration

Pollutant	(ppmv)
NOx	50
CO	50

Footnotes:

[a] Uncontrolled stream properties determined via ProMax.

[b] TO CO and NOx exhuast emissions gaurantee provided by ZEECO. PM and PM2.5 emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO2 emissions assume 100% conversion of H2S to SO2.

XTO Energy, Inc.
Cowboy CDP
ROAD EMISSIONS

PM_{30} (Total) Emissions $E = k(s/12)^a(W/3)^b$	
a	0.7
b	0.45
k	4.9
Silt Loading	4.8
Vehicle Weight (tons)	28
E-Hourly (lbs/VMT)	7.05
Rain Days	70
E-Annual (lbs/VMT)	5.70
Truckloads per year	27
Driving Distance Per Load (ft)	3000
Annual Distance (miles)	15
Control Efficiency - 15 MPH Limit	0.57
Control Efficiency - Base Course	0.60
Emissions (lbs/hr)	2.76
Emissions (tpy)	0.0076

PM_{10} Emissions $E = k(s/12)^a(W/3)^b$	
a	0.9
b	0.45
k	1.5
Silt Loading	4.8
Vehicle Weight (tons)	28
E-Hourly (lbs/VMT)	1.80
Rain Days	70
E-Annual (lbs/VMT)	1.45
Truckloads per year	27
Driving Distance Per Load (ft)	3000
Annual Distance (miles)	15
Control Efficiency - 15 MPH Limit	0.57
Control Efficiency - Base Course	0.60
Emissions (lbs/hr)	0.70
Emissions (tpy)	0.0019

$PM_{2.5}$ Emissions $E = k(s/12)^a(W/3)^b$	
a	0.9
b	0.45
k	0.15
Silt Loading	4.8
Vehicle Weight (tons)	28
E-Hourly (lbs/VMT)	0.18
Rain Days	70
E-Annual (lbs/VMT)	0.15
Truckloads per year	27
Driving Distance Per Load (ft)	3000
Annual Distance (miles)	15
Control Efficiency - 15 MPH Limit	0.57
Control Efficiency - Base Course	0.60
Emissions (lbs/hr)	0.070
Emissions (tpy)	0.00019

Notes:
Emissions (lbs/hr) = Driving Distance (ft)/ 5280 * E (lbs/VMT) * 4 * (1-control efficiency).
Emissions (tpy) = Annual Distance * E / 2000

References:
EPA. "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources," AP-42, Section 13.2.1
WRAP Fugitive Dust Handbook; September 7, 2006

XTO Energy, Inc.

Cowboy CDP

SSM/M Blowdown - VOC Calculations

Calculation Methodology

VOC Calculations

Maximum Annual Emissions (lb/hr) = Volume of Gas Vented (scf/event/unit) * MW of Gas Vented (lb/lbmol) * wt.% VOC * Number of Units Worked on Site (units) /Frequency of Events (hr/yr/unit) / 379.5 (scf/lbmol) / 2000 (lb/ton)

* Like-kind SSM activites were joined together into a singular group for a worst case emission scenario. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites per year. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

XTO Energy, Inc.

Cowboy CDP

STARTUP, SHUTDOWN, MAINTENANCE (SSM) VENTING EMISSIONS

Equipment Blowdowns & Purging - Emission Calculations [1]

Vessel/ Equipment	Estimated Events per Year	Vented Volume (scf/event) [2]	Total Vented Volume (scf/yr)	MW (lb/lbmol)	VOC (wt%)	Total Vented Mass (TPY)	VOC Emissions (TPY)
Oil Stabilization - Inlet Surge Vessel Blowdowns	3	12,345	37,034	40	65%	1.92	1.25
Oil Stabilization - VRU Blowdowns	97	120	11,640	50	85%	0.76	0.64
Oil Stabilization - Overhead Compressor Blowdowns	73	279	20,350	55	95%	1.45	1.38
Gas Processing - Slug Catcher Blowdown	1	78,678	78,678	25	30%	2.55	0.77
Gas Processing - Scrubber Blowdowns	5	2,243	11,215	45	100%	0.66	0.66
Gas Processing - Propane Refrigerant Compressors	72	120	8,640	45	100%	0.50	0.50
Utilities & Common Equipment - Stabilization LP/HP Flare KO Drum Blowdowns	2	6,716	13,432	55	95%	0.96	0.91
Oil and Condensate Stabilization - Tower Blowdowns	6	2,740	16,440	55	95%	1.17	1.12
Condensate Stabilization - NGL Storage Vessels Degassing	2	12,100	24,200	55	95%	1.73	1.64
Utilities & Common Equipment - Propane Vessel Degassing	2	8,365	16,729	45	100%	0.98	0.98
Totals	**263**	**123,705**	**238,358**			**12.68**	**9.84**

Standard Pressure	14.7
Standard Temperature (°R)	527.7
Molar Volume at Standard Conditions (scf/lbmol)	385.2

Calculation Methodology
Total Vented Mass = Total Vented Volume * MW / Molar Volume
VOC Emissions = Total Vented Mass * VOC Component Weight%

Notes:

(1) Like-kind SSM activies were grouped together. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

(2) Vented volume per event represents an estimated volume per like-kind activites based on the equipment capacity, piping, and piping components.

XTO Energy, Inc.

Cowboy CDP

MALFUNCTION (M) VENTING EMISSIONS

Equipment Blowdowns & Purging - Emission Calculations [1]

Vessel/ Equipment	Estimated Events per Year	Vented Volume (scf/event) [2]	Total Vented Volume (scf/yr)	MW (lb/lbmol)	VOC (wt%)	Total Vented Mass (TPY)	VOC Emissions (TPY)
Oil Stabilization - Inlet Surge Vessel Blowdowns	3	12,345	37,034	40	65%	1.92	1.25
Oil Stabilization - VRU Blowdowns	97	120	11,640	50	85%	0.76	0.64
Oil Stabilization - Overhead Compressor Blowdowns	73	279	20,350	55	95%	1.45	1.38
Gas Processing - Slug Catcher Blowdown	1	78,678	78,678	25	30%	2.55	0.77
Gas Processing - Scrubber Blowdowns	5	2,243	11,215	45	100%	0.66	0.66
Gas Processing - Propane Refrigerant Compressors	72	120	8,640	45	100%	0.50	0.50
Utilities & Common Equipment - Stabilization LP/HP Flare KO Drum Blowdowns	2	6,716	13,432	55	95%	0.96	0.91
Oil and Condensate Stabilization - Tower Blowdowns	6	2,740	16,440	55	95%	1.17	1.12
Condensate Stabilization - NGL Storage Vessels Degassing	2	12,100	24,200	55	95%	1.73	1.64
Utilities & Common Equipment - Propane Vessel Degassing	2	8,365	16,729	45	100%	0.98	0.98
Totals	**263**	**123,705**	**238,358**			**12.68**	**9.84**

Standard Pressure	14.7
Standard Temperature (°R)	527.7
Molar Volume at Standard Conditions (scf/lbmol)	385.2

Calculation Methodology
Total Vented Mass = Total Vented Volume * MW / Molar Volume
VOC Emissions = Total Vented Mass * VOC Component Weight%

Notes:

(1) Like-kind SSM activies were grouped together. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

(2) Vented volume per event represents an estimated volume per like-kind activites based on the equipment capacity, piping, and piping components.

XTO Energy, Inc.

Cowboy CDP

SSM Tank Degassing - VOC Calculations

Calcualtion Methodology

VOC Tank Degassing Calculations

Maximum Annual Emissions (tpy) = Volume of Vapor Space (scf/event) * Gas MW (lb/lbmol) * wt % VOC * Frequency of Events (events/yr) / 379.5 (scf/lbmol) / 2,000 (lb/ton) + Clingage Volume (scf/event) * Liquid Density (lb/scf) / Frequency of Event (events/yr) / 2,000 (lb/ton)

* Like-kind SSM activites were joined together into a singular group for a worst case emission scenario. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites per year. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

XTO Energy, Inc.

Cowboy CDP

STARTUP, SHUTDOWN, MAINTENANCE (SSM) VENTING EMISSIONS

Tank Degassing and Cleaning - Emission Calculations (1)

Vessel/ Equipment	Estimated Events per Year	Vented Volume (scf/event) (2)	Clingage Volume (scf/event)	MW (lb/lbmol)	Density (lb/ft^3)	VOC (wt%)	Total Vented Mass (TPY)	VOC Emissions (TPY)
Utilities & Common Equipment - Gunbarrel Tank Blowdowns	2	5,848	1.71	60	71	100%	1.03	1.03
Oil Stabilization - IFR Oil Storage Tanks (50k bbl)	2	58,906	3.62	55	65	95%	8.65	8.21
Oil Stabilization - IFR Oil Storage Tanks (100k bbl)	3	99,549	5.92	56	66	95%	22.30	21.18
Utilities & Common Equipment - Slop Oil Tank Degassing	2	2,885	0.28	60	71	100%	0.47	0.47
Utilities & Common Equipment - Produced Water Tank Degassing	2	4,624	0.34	60	71	100%	0.74	0.74
Totals	**11**	**171813**	**12**				**33.19**	**31.64**

Standard Pressure	14.7
Standard Temperature (°R)	527.7
Molar Volume at Standard Conditions (scf/lbmol)	385.2

Calculation Methodology
Total Vented Mass = Vented Volume * MW * Frequency / Molar Volume + Clingage Volume * Density * Frequency
VOC Emissions = Total Vented Mass * VOC Component Weight%

Notes:
(1) Like-kind SSM activies were grouped together. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

(2) Vented volume per event represents an estimated volume per like-kind activites based on the equipment capacity, piping, and piping components.

XTO Energy, Inc.

Cowboy CDP

STARTUP, SHUTDOWN, MAINTENANCE (SSM) VENTING EMISSIONS - EXEMPT SOURCES & ACTIVITIES (1)

Equipment Blowdowns & Purging - Emission Calculations (2)

Vessel/ Equipment	Estimated Events per Year	Vented Volume (scf/event) (3)	MW (lb/lbmol)	VOC (wt%)	Total Vented Mass (TPY)	VOC Emissions (TPY)
Condensate Stabilization - Reflux Blowdowns	2	700	55	95%	0.10	0.09
Condensate Stabilization - Surge and Flash Drum Blowdowns	2	3826	50	85%	0.50	0.42
Condensate Stabilization - Overhead Compressor Blowdowns	96	153	30	45%	0.57	0.26
Gas Processing - Surge Drum Blowdowns	2	4228	45	100%	0.49	0.49
Gas Processing - Separator Blowdowns	1	1677	25	30%	0.05	0.02
Gas Processing - Expander/Compressor Blowdowns	16	673	25	30%	0.35	0.10
Gas Processing - Dehydrator Regeneration Gas Compressor Blowdowns	16	9	25	30%	4.75E-03	1.43E-03
Gas Processing - Subcooler Blowdowns	51	256	25	30%	0.42	0.13
Gas Processing - Chiller/Exchanger Blowdowns	4	1632	45	100%	0.38	0.38
Gas Processing - Dehydrator Blowdowns	4	7906	25	30%	1.03	0.31
Gas Processing - Mercury Guard Bed	1	678	25	30%	0.02	0.01
Gas Processing - Tower Blowdowns	1	9013	25	30%	0.29	0.09
Gas Processing - Condenser Blowdowns	1	739	45	100%	0.04	0.04
Gas Processing - Economizer Blowdowns	1	922	45	100%	0.05	0.05
Utilities & Common Equipment - Closed Drain Drum Blowdowns	2	2215	50	90%	0.29	0.26
Utilities & Common Equipment - Combustor KO Drum Blowdowns	1	76	60	100%	0.01	0.01
Utilities & Common Equipment - Cryo LP/HP Flare KO Drum Blowdowns	3	8611	25	30%	0.84	0.25
Utilities & Common Equipment - Combustor Blowdowns	4	132	60	100%	0.04	0.04
Sitewide - Reboiler Blowdowns	7	504	55	95%	0.25	0.24
Sitewide - Gas Filter Coalescer Blowdowns	56	299	25	30%	0.54	0.16
Sitewide - Pig Launching and Receiving Blowdowns	168	55	45	80%	0.54	0.43
Totals	**439**	**44,305**			**6.82**	**3.79**

Standard Pressure	14.7
Standard Temperature (°R)	527.7
Molar Volume at Standard Conditions (scf/lbmol)	385.2

Calculation Methodology
Total Vented Mass = Total Vented Volume * MW / Molar Volume
VOC Emissions = Total Vented Mass * VOC Component Weight%

Notes:

(1) Activities are exempt from permitting per 20.2.72.202.B.(5) NMAC.

(2) Like-kind SSM activies were grouped together. Volume , MW, and VOC wt% were taken as the max of all the like-kind activies. Event frequency was taken as the total frequency of all the like-kind activites. Event frequency, volume, MW, and VOC wt% are not intended to represent permit limits.

(3) Vented volume per event represents an estimated volume per piece of small equipment, piping, or piping component.

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)

Section 7

Information Used to Determine Emissions

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

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

Output from the following ProMax simulations were used to estimate emissions from sources as described below. Simulations were created based on current process knowledge and recent process fluid sample analysis. Relevant simulation output files and sample analysis reports are included in this section.

- IFR Oil Storage ProMax Simulation
  - Used to estimate emissions from internal floating roof tanks (IFR1-14) in accordance with AP-42 Chapter 7 methodology
  - 2024 North Header Hydrocarbon Liquid Sample - Used as representative oil stored in the IFR tanks.

- Gas Streams ProMax Simulation
  - Recent gas samples were input into ProMax and used to estimate emissions from several gas streams that are combusted at the Cowboy facility as outlined below.
  - 2024 Fuel Gas Skid Sample - Used as representative of flare pilot, purge, assist gas for all flares.
  - 2024_FL1 CDP LPF (V-6808) – Used as representative of CDP Flare 1 LP Flaring
  - 2024_FL1 CDP HPF (V-6809) - Used as representative of CDP Flare 1 HP Flaring
  - 2024_FL2 Cryo LPF (V-6858) – Used as representative of Cryo Flares 2 & 3 LP Flaring
  - 2024_FL2 Cryo HPF (V-6859) – Used as representative of Cryo Flares 2 & 3 HP Flaring
  - 2022_Cryo Residue Gas – Used as representative of Cryo SSM Gas Flaring
  - 2024_FL2 Cryo HPF (V-6859) Hysys Comp – Simulated composition from the Cowboy Plant Hysys model used as representative of Cryo Blowdown SSM Flaring
  - 2022_Condensate OVH Compressor – Used as representative of Condensate SSM Gas Flaring
  - 2022_Oil OVH Compressor – Used as representative of Oil SSM Gas Flaring
  - 2024_FL1 CDP LPF (V-6808) Hysys Comp - Simulated composition from the Cowboy Plant Hysys model used as representative of Surge Vessel SSM Gas Flaring
- Slop Oil and Produced Water Handling ProMax Simulation

    - 2024 Closed Drain Hydrocarbon Liquid Sample and 2024 Gunbarrel Hydrocarbon Liquid Sample were used as representative of the streams handled by the gunbarrel (GB1), slop oil tank (SOTK1), produced water tanks (PWTK1-2), and slop oil loading (SOTK1)

- Amine Unit ProMax Simulation
    - 2020 Amine Inlet Gas Hysys Comp - Simulated composition from the Cowboy Plant Hysys model used as representative of gas inlet to the Amine Units

The following additional supplemental documents are provided in support of the calculations submitted with this application:

- Heater Manufacturer Data
- Thermal Oxidizer Manufacturer Data
- Flare Manufacturer Data
- Enclosed Combustor Manufacturer Data
- Generator Manufacturer Data

AP-42 and Other Emissions Guidance as Noted

September 19, 2024

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Closed Drain System Hydrocarbon Liquid
Sampled @ 60 psig & 82 °F

Date Sampled: 09/13/2024

Job Number: 243077.042

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.013	0.004	0.005
Carbon Dioxide	0.004	0.002	0.003
Methane	0.916	0.428	0.200
Ethane	2.361	1.742	0.967
Propane	14.233	10.819	8.545
Isobutane	5.762	5.202	4.559
n-Butane	16.989	14.777	13.443
2,2 Dimethylpropane	0.216	0.229	0.212
Isopentane	7.969	8.041	7.828
n-Pentane	10.674	10.675	10.485
2,2 Dimethylbutane	0.173	0.200	0.203
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.612	0.692	0.718
2 Methylpentane	4.203	4.814	4.932
3 Methylpentane	2.114	2.380	2.480
n-Hexane	6.206	7.042	7.282
Heptanes Plus	27.556	32.954	38.140
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity ---------------------------------	0.7432	(Water=1)
°API Gravity --------------------------------------	58.88	@ 60°F
Molecular Weight ------------------------------	101.7	
Vapor Volume ----------------------------------	22.62	CF/Gal
Weight --	6.19	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity ---------------------------------	0.6422	(Water=1)
°API Gravity --------------------------------------	88.85	@ 60°F
Molecular Weight-------------------------------	73.5	
Vapor Volume ----------------------------------	27.06	CF/Gal
Weight --	5.35	Lbs/Gal

Base Conditions: 15.025 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) R. Elizondo
Analyst: JL
Processor: ANB
Cylinder ID: W-2443

Conan Pierce 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.004	0.002	0.003
Nitrogen	0.013	0.004	0.005
Methane	0.916	0.428	0.200
Ethane	2.361	1.742	0.967
Propane	14.233	10.819	8.545
Isobutane	5.762	5.202	4.559
n-Butane	17.204	15.006	13.655
Isopentane	7.969	8.041	7.828
n-Pentane	10.674	10.675	10.485
Other C-6's	7.102	8.086	8.333
Heptanes	12.868	14.527	16.320
Octanes	9.175	11.336	13.185
Nonanes	1.803	2.664	3.108
Decanes Plus	0.907	1.486	1.783
Benzene	0.499	0.385	0.530
Toluene	0.974	0.899	1.221
E-Benzene	0.083	0.088	0.120
Xylenes	0.600	0.640	0.867
n-Hexane	6.206	7.042	7.282
2,2,4 Trimethylpentane	0.647	0.928	1.006
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity --	0.6422	(Water=1)
°API Gravity ---	88.85	@ 60°F
Molecular Weight--------------------------------------	73.5	
Vapor Volume ---	27.06	CF/Gal
Weight ---	5.35	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity --	0.7708	(Water=1)
Molecular Weight--------------------------------------	144.4	

Characteristics of Atmospheric Sample:

°API Gravity ---	77.69	@ 60°F
Reid Vapor Pressure Equivalent (D-6377)-----------	17.98	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	------	------
Pressure, PSIG	------	------	------
Skin Temperature, °F	------	------	------

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.013	0.004	0.005
Carbon Dioxide	0.004	0.002	0.003
Methane	0.916	0.428	0.200
Ethane	2.361	1.742	0.967
Propane	14.233	10.819	8.545
Isobutane	5.762	5.202	4.559
n-Butane	16.989	14.777	13.443
2,2 Dimethylpropane	0.216	0.229	0.212
Isopentane	7.969	8.041	7.828
n-Pentane	10.674	10.675	10.485
2,2 Dimethylbutane	0.173	0.200	0.203
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.612	0.692	0.718
2 Methylpentane	4.203	4.814	4.932
3 Methylpentane	2.114	2.380	2.480
n-Hexane	6.206	7.042	7.282
Methylcyclopentane	2.380	2.323	2.727
Benzene	0.499	0.385	0.530
Cyclohexane	3.173	2.980	3.636
2-Methylhexane	1.477	1.894	2.015
3-Methylhexane	1.276	1.617	1.741
2,2,4 Trimethylpentane	0.647	0.928	1.006
Other C-7's	1.608	1.954	2.172
n-Heptane	2.953	3.759	4.029
Methylcyclohexane	3.932	4.360	5.256
Toluene	0.974	0.899	1.221
Other C-8's	4.138	5.413	6.210
n-Octane	1.105	1.563	1.719
E-Benzene	0.083	0.088	0.120
M & P Xylenes	0.501	0.536	0.723
O-Xylene	0.100	0.104	0.144
Other C-9's	1.482	2.165	2.547
n-Nonane	0.321	0.498	0.561
Other C-10's	0.590	0.948	1.136
n-decane	0.073	0.123	0.141
Undecanes(11)	0.190	0.313	0.381
Dodecanes(12)	0.037	0.066	0.081
Tridecanes(13)	0.012	0.023	0.028
Tetradecanes(14)	0.001	0.002	0.003
Pentadecanes(15)	0.001	0.002	0.002
Hexadecanes(16)	0.000	0.001	0.001
Heptadecanes(17)	0.000	0.001	0.001
Octadecanes(18)	0.001	0.001	0.002
Nonadecanes(19)	0.000	0.001	0.001
Eicosanes(20)	0.001	0.002	0.003
Heneicosanes(21)	0.000	0.001	0.001
Docosanes(22)	0.000	0.001	0.001
Tricosanes(23)	0.000	0.001	0.001
Tetracosanes(24)	0.000	0.001	0.001
Pentacosanes(25)	0.000	0.000	0.001
Hexacosanes(26)	0.000	0.000	0.000
Heptacosanes(27)	0.000	0.000	0.000
Octacosanes(28)	0.000	0.000	0.000
Nonacosanes(29)	0.000	0.000	0.000
Triacontanes(30)	0.000	0.000	0.000
Hentriacontanes Plus(31+)	0.000	0.000	0.000
Total	100.000	100.000	100.000

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy Inc.
6401 N. Holiday Hill Road
Midland, Texas 79707

Sample: Cowboy CDP
Condensate Overhead Compressor K2609, 2610, 2620
Spot Gas Sampled @ 240 psig & 64 °F

Date Sampled: 02/04/2022

Job Number: 221249.021

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.721	
Carbon Dioxide	0.170	
Methane	71.141	
Ethane	16.531	4.529
Propane	6.732	1.900
Isobutane	0.823	0.276
n-Butane	1.699	0.549
2-2 Dimethylpropane	0.008	0.003
Isopentane	0.387	0.145
n-Pentane	0.449	0.167
Hexanes	0.493	0.208
Heptanes Plus	0.846	0.361
Totals	100.000	8.137

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ------------------------------	3.390	(Air=1)
Molecular Weight ---------------------------	97.74	
Gross Heating Value ----------------------	5309	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ------------------------------	0.7962	(Air=1)
Compressibility (Z) -------------------------	0.9955	
Molecular Weight ---------------------------	22.96	
Gross Heating Value		
Dry Basis -----------------------------------	1400.69	BTU/CF
Saturated Basis --------------------------	1377.06	BTU/CF

*Hydrogen Sulfide tested on location by: Stain Tube Method (GPA 2377)
Results: 0.031 Gr/100 CF, 0.5 PPMV or <0.0001 Mol%

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (24) D. Morales
Analyst: RG
Processor: AS
Cylinder ID: T-2534

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.721		0.880
Carbon Dioxide	0.170		0.326
Methane	71.141		49.719
Ethane	16.531	4.529	21.654
Propane	6.732	1.900	12.932
Isobutane	0.823	0.276	2.084
n-Butane	1.699	0.549	4.302
2,2 Dimethylpropane	0.008	0.003	0.025
Isopentane	0.387	0.145	1.216
n-Pentane	0.449	0.167	1.411
2,2 Dimethylbutane	0.008	0.003	0.030
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.035	0.015	0.131
2 Methylpentane	0.144	0.061	0.541
3 Methylpentane	0.079	0.033	0.297
n-Hexane	0.227	0.096	0.852
Methylcyclopentane	0.077	0.028	0.282
Benzene	0.017	0.005	0.058
Cyclohexane	0.122	0.043	0.447
2-Methylhexane	0.048	0.023	0.210
3-Methylhexane	0.050	0.024	0.218
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.101	0.045	0.436
n-Heptane	0.112	0.053	0.489
Methylcyclohexane	0.145	0.060	0.620
Toluene	0.033	0.011	0.132
Other C8's	0.095	0.045	0.456
n-Octane	0.017	0.009	0.085
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.005	0.002	0.023
O-Xylene	0.001	0.000	0.005
Other C9's	0.011	0.006	0.060
n-Nonane	0.001	0.001	0.006
Other C10's	0.001	0.001	0.006
n-Decane	0.001	0.001	0.006
Undecanes (11)	0.009	0.006	0.061
Totals	100.000	8.137	100.000

Computed Real Characteristics of Total Sample

Specific Gravity --	0.7962	(Air=1)
Compressibility (Z) -----------------------------------	0.9955	
Molecular Weight -------------------------------------	22.96	

Gross Heating Value

Dry Basis ---	1400.69	BTU/CF
Saturated Basis ----------------------------------	1377.06	BTU/CF

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Cowboy CDP
Condensate Overhead Compressor K2609, 2610, 2620
Spot Gas Sampled @ 240 psig & 64 °F

Date Sampled: 02/04/2022 Job Number: 221249.021

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.170		0.326
Hydrogen Sulfide	< 0.001		< 0.001
Nitrogen	0.721		0.880
Methane	71.141		49.719
Ethane	16.531	4.529	21.654
Propane	6.732	1.900	12.932
Isobutane	0.823	0.276	2.084
n-Butane	1.707	0.552	4.327
Isopentane	0.387	0.145	1.216
n-Pentane	0.449	0.167	1.411
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.227	0.096	0.852
Cyclohexane	0.122	0.043	0.447
Other C6's	0.266	0.112	0.999
Heptanes	0.388	0.172	1.635
Methylcyclohexane	0.145	0.060	0.620
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.017	0.005	0.058
Toluene	0.033	0.011	0.132
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.006	0.002	0.028
Octanes Plus	0.135	0.068	0.680
Totals	100.000	8.137	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity -----------------------	4.017	(Air=1)
Molecular Weight -----------------------	115.81	
Gross Heating Value -----------------	6031	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity ----------------------------	0.7962	(Air=1)
Compressibility (Z) ------------------------	0.9955	
Molecular Weight --------------------------	22.96	
Gross Heating Value		
Dry Basis ----------------------------------	1400.69	BTU/CF
Saturated Basis -------------------------	1377.06	BTU/CF

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy Inc.
6401 N. Holiday Hill Road
Midland, Texas 79707

Sample: Cowboy CDP
Cryo Residue
Spot Gas Sampled @ 1060 psig & 72 °F

Date Sampled: 02/04/2022 Job Number: 221249.011

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	**MOL%**	**GPM**
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.814	
Carbon Dioxide	0.185	
Methane	87.298	
Ethane	11.626	3.179
Propane	0.075	0.021
Isobutane	0.002	0.001
n-Butane	0.000	0.000
2-2 Dimethylpropane	0.000	0.000
Isopentane	0.000	0.000
n-Pentane	0.000	0.000
Hexanes	0.000	0.000
Heptanes Plus	0.000	0.000
Totals	100.000	3.201

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ------------------------------	------	(Air=1)
Molecular Weight ---------------------------	------	
Gross Heating Value ----------------------	------	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ------------------------------	0.6177	(Air=1)
Compressibility (Z) -------------------------	0.9975	
Molecular Weight ---------------------------	17.84	
Gross Heating Value		
Dry Basis ----------------------------------	1116.63	BTU/CF
Saturated Basis --------------------------	1097.97	BTU/CF

*Hydrogen Sulfide tested on location by: Stain Tube Method (GPA 2377)
Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (24) D. Morales
Analyst: RG
Processor: AS
Cylinder ID: T-3904

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.814		1.278
Carbon Dioxide	0.185		0.456
Methane	87.298		78.483
Ethane	11.626	3.179	19.591
Propane	0.075	0.021	0.185
Isobutane	0.002	0.001	0.007
n-Butane	0.000	0.000	0.000
2,2 Dimethylpropane	0.000	0.000	0.000
Isopentane	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000
2,2 Dimethylbutane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.000	0.000	0.000
2 Methylpentane	0.000	0.000	0.000
3 Methylpentane	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000
Methylcyclopentane	0.000	0.000	0.000
Benzene	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000
2-Methylhexane	0.000	0.000	0.000
3-Methylhexane	0.000	0.000	0.000
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.000	0.000	0.000
n-Heptane	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000
Toluene	0.000	0.000	0.000
Other C8's	0.000	0.000	0.000
n-Octane	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.000	0.000	0.000
O-Xylene	0.000	0.000	0.000
Other C9's	0.000	0.000	0.000
n-Nonane	0.000	0.000	0.000
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	3.201	100.000

Computed Real Characteristics of Total Sample

Specific Gravity --	0.6177	(Air=1)
Compressibility (Z) ----------------------------------	0.9975	
Molecular Weight ------------------------------------	17.84	

Gross Heating Value

Dry Basis --	1116.63	BTU/CF
Saturated Basis ----------------------------------	1097.97	BTU/CF

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Cowboy CDP
Cryo Residue
Spot Gas Sampled @ 1060 psig & 72 °F

Date Sampled: 02/04/2022 Job Number: 221249.011

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.185		0.456
Hydrogen Sulfide	< 0.001		< 0.001
Nitrogen	0.814		1.278
Methane	87.298		78.483
Ethane	11.626	3.179	19.591
Propane	0.075	0.021	0.185
Isobutane	0.002	0.001	0.007
n-Butane	0.000	0.000	0.000
Isopentane	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000
Other C6's	0.000	0.000	0.000
Heptanes	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.000	0.000	0.000
Toluene	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.000	0.000	0.000
Octanes Plus	0.000	0.000	0.000
Totals	100.000	3.201	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity -----------------------	------	(Air=1)
Molecular Weight -----------------------	------	
Gross Heating Value -----------------	------	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity -----------------------------	0.6177	(Air=1)
Compressibility (Z) -------------------------	0.9975	
Molecular Weight --------------------------	17.84	
Gross Heating Value		
Dry Basis ----------------------------------	1116.63	BTU/CF
Saturated Basis --------------------------	1097.97	BTU/CF

August 29, 2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Fuel Skid
Spot Gas Sample @ 124 psig & 81°F

Date Sampled: 08/21/2024 Job Number: 243077.061

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Oxygen	< 0.001	
Nitrogen	0.968	
Carbon Dioxide	0.228	
Methane	97.482	
Ethane	1.262	0.345
Propane	0.026	0.007
Isobutane	0.018	0.006
n-Butane	0.016	0.005
2-2 Dimethylpropane	0.000	0.000
Isopentane	0.000	0.000
n-Pentane	0.000	0.000
Hexanes	0.000	0.000
Heptanes Plus	0.000	0.000
Totals	100.000	0.363

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ---------------------------	------	(Air=1)
Molecular Weight ------------------------	------	
Gross Heating Value --------------------	------	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ---------------------------	0.568	(Air=1)
Compressibility (Z) -----------------------	0.9979	
Molecular Weight ------------------------	16.42	
Gross Heating Value		
Dry Basis --------------------------------	1033	BTU/CF
Saturated Basis -----------------------	1016	BTU/CF

Remark: Hydrogen Sulfide analysis (ASTM D-5504) yielded 2.2 ppm wt.
Remark: Total Sulfur analysis (ASTM D-6667) yielded 14.1 ppm wt.

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) R.Elizondo
Analyst: RG
Processor: RG
Cylinder ID: T-6009

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

FESCO, Ltd. Job Number: 243077.061

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Oxygen	< 0.001		< 0.001
Nitrogen	0.968		1.651
Carbon Dioxide	0.228		0.611
Methane	97.482		95.236
Ethane	1.262	0.345	2.311
Propane	0.026	0.007	0.070
Isobutane	0.018	0.006	0.064
n-Butane	0.016	0.005	0.057
2,2 Dimethylpropane	0.000	0.000	0.000
Isopentane	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000
2,2 Dimethylbutane	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.000	0.000	0.000
2 Methylpentane	0.000	0.000	0.000
3 Methylpentane	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000
Methylcyclopentane	0.000	0.000	0.000
Benzene	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000
2-Methylhexane	0.000	0.000	0.000
3-Methylhexane	0.000	0.000	0.000
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.000	0.000	0.000
n-Heptane	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000
Toluene	0.000	0.000	0.000
Other C8's	0.000	0.000	0.000
n-Octane	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.000	0.000	0.000
O-Xylene	0.000	0.000	0.000
Other C9's	0.000	0.000	0.000
n-Nonane	0.000	0.000	0.000
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	0.363	100.000

Computed Real Characteristics of Total Sample

Specific Gravity ---------------------------------------	0.568	(Air=1)
Compressibility (Z) -----------------------------------	0.9979	
Molecular Weight -------------------------------------	16.42	

Gross Heating Value

Dry Basis ---	1033	BTU/CF
Saturated Basis ----------------------------------	1016	BTU/CF

08/28/2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Fuel Gas Skid
Spot Gas Sample @ 124 psig & 8 °F

Date Sampled: 08/21/2024 | Job Number: 243077

SULFUR SPECIATION ANALYSIS - ASTM D5504

Compound	**PPMW of Compounds**
Hydrogen Sulfide	2.2
COS	3.0
Methyl Mercaptan	6.6
Ethyl Mercaptan	2.9
Dimethyl Sulfide	<0.1
Carbon Disulfide	<0.1
Isopropyl Mercaptan	<0.1
tert-Butyl Mercaptan	<0.1
n-Propyl Mercaptan	<0.1
Methylethyl Sulfide	<0.1
Thiophene	<0.1
sec-Butyl Mercaptan	<0.1
Isobutyl Mercaptan	<0.1
Diethyl Sulfide	<0.1
n-Butyl Mercaptan	<0.1
Dimethyl Disulfide	<0.1
Diethyl Disulfide	<0.1

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) RE
Analyst: JG
Processor: JG
Cylinder ID: ST-6009

Conan Pierce 361-661-7015

August 29, 2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Separator V-6808
Spot Gas Sample @ <1 psig & 137°F

Date Sampled: 08/21/2024

Job Number: 243077.031

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Oxygen	< 0.001	
Nitrogen	0.453	
Carbon Dioxide	0.138	
Methane	36.874	
Ethane	19.504	5.393
Propane	19.708	5.614
Isobutane	3.449	1.167
n-Butane	8.459	2.757
2-2 Dimethylpropane	0.054	0.021
Isopentane	2.450	0.926
n-Pentane	2.947	1.104
Hexanes	2.227	0.948
Heptanes Plus	3.737	1.601
Totals	100.000	19.533

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ---------------------------	3.455	(Air=1)
Molecular Weight -------------------------	98.69	
Gross Heating Value --------------------	5199	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ---------------------------	1.299	(Air=1)
Compressibility (Z) -----------------------	0.9863	
Molecular Weight -------------------------	37.12	
Gross Heating Value		
Dry Basis ---------------------------------	2193	BTU/CF
Saturated Basis ------------------------	2156	BTU/CF

Remark: Hydrogen Sulfide analysis (ASTM D-5504) yielded 0.8 ppm wt.
Remark: Total Sulfur analysis (ASTM D-6667) yielded 3.8 ppm wt.

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) R.Elizondo
Analyst: RG
Processor: RG
Cylinder ID: T-6226

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Oxygen	< 0.001		< 0.001
Nitrogen	0.453		0.342
Carbon Dioxide	0.138		0.164
Methane	36.874		15.938
Ethane	19.504	5.393	15.799
Propane	19.708	5.614	23.412
Isobutane	3.449	1.167	5.400
n-Butane	8.459	2.757	13.245
2,2 Dimethylpropane	0.054	0.021	0.105
Isopentane	2.450	0.926	4.762
n-Pentane	2.947	1.104	5.728
2,2 Dimethylbutane	0.037	0.016	0.086
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.186	0.079	0.432
2 Methylpentane	0.676	0.290	1.569
3 Methylpentane	0.362	0.153	0.840
n-Hexane	0.966	0.411	2.243
Methylcyclopentane	0.381	0.136	0.864
Benzene	0.125	0.036	0.263
Cyclohexane	0.539	0.190	1.221
2-Methylhexane	0.153	0.074	0.413
3-Methylhexane	0.163	0.077	0.440
2,2,4 Trimethylpentane	0.088	0.046	0.271
Other C7's	0.290	0.130	0.775
n-Heptane	0.365	0.174	0.985
Methylcyclohexane	0.541	0.225	1.431
Toluene	0.175	0.061	0.434
Other C8's	0.498	0.239	1.479
n-Octane	0.109	0.058	0.335
Ethylbenzene	0.010	0.004	0.029
M & P Xylenes	0.060	0.024	0.172
O-Xylene	0.011	0.004	0.031
Other C9's	0.177	0.093	0.602
n-Nonane	0.023	0.013	0.079
Other C10's	0.026	0.016	0.099
n-Decane	0.002	0.001	0.008
Undecanes (11)	0.001	0.001	0.004
Totals	100.000	19.533	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	1.299	(Air=1)
Compressibility (Z)	0.9863	
Molecular Weight	37.12	

Gross Heating Value

Dry Basis	2193	BTU/CF
Saturated Basis	2156	BTU/CF

08/28/2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Separator V-6808
Spot Gas Sample @ <1 psig & 137 °F

Date Sampled: 08/21/2024

Job Number: 243077

SULFUR SPECIATION ANALYSIS - ASTM D5504

Compound	**PPMW of Compounds**
Hydrogen Sulfide	0.8
COS	0.9
Methyl Mercaptan	<0.1
Ethyl Mercaptan	<0.1
Dimethyl Sulfide	1.0
Carbon Disulfide	0.7
Isopropyl Mercaptan	<0.1
tert-Butyl Mercaptan	<0.1
n-Propyl Mercaptan	<0.1
Methylethyl Sulfide	<0.1
Thiophene	<0.1
sec-Butyl Mercaptan	<0.1
Isobutyl Mercaptan	<0.1
Diethyl Sulfide	<0.1
n-Butyl Mercaptan	<0.1
Dimethyl Disulfide	<0.1
Diethyl Disulfide	<0.1

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) RE
Analyst: JG
Processor: JG
Cylinder ID: ST-5814

Conan Pierce 361-661-7015

August 29, 2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Separator V-6809
Spot Gas Sample @ <1 psig & 132°F

Date Sampled: 08/21/2024

Job Number: 243077.051

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Oxygen	0.090	
Nitrogen	1.229	
Carbon Dioxide	0.170	
Methane	83.399	
Ethane	7.347	2.011
Propane	5.124	1.445
Isobutane	0.505	0.169
n-Butane	0.848	0.274
2-2 Dimethylpropane	0.007	0.003
Isopentane	0.082	0.031
n-Pentane	0.092	0.034
Hexanes	0.181	0.076
Heptanes Plus	0.926	0.367
Totals	100.000	4.408

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ---------------------------	3.290	(Air=1)
Molecular Weight -------------------------	94.97	
Gross Heating Value --------------------	4923	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ---------------------------	0.701	(Air=1)
Compressibility (Z) ----------------------	0.9966	
Molecular Weight -------------------------	20.25	
Gross Heating Value		
Dry Basis ---------------------------------	1237	BTU/CF
Saturated Basis ------------------------	1216	BTU/CF

Remark: Hydrogen Sulfide analysis (ASTM D-5504) yielded 2.2 ppm wt.
Remark: Total Sulfur analysis (ASTM D-6667) yielded 13.0 ppm wt.

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) R.Elizondo
Analyst: RG
Processor: RG
Cylinder ID: T-6241

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Oxygen	0.090		0.142
Nitrogen	1.229		1.700
Carbon Dioxide	0.170		0.369
Methane	83.399		66.075
Ethane	7.347	2.011	10.910
Propane	5.124	1.445	11.159
Isobutane	0.505	0.169	1.450
n-Butane	0.848	0.274	2.434
2,2 Dimethylpropane	0.007	0.003	0.025
Isopentane	0.082	0.031	0.292
n-Pentane	0.092	0.034	0.328
2,2 Dimethylbutane	0.002	0.001	0.009
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.013	0.005	0.055
2 Methylpentane	0.045	0.019	0.192
3 Methylpentane	0.029	0.012	0.123
n-Hexane	0.092	0.039	0.392
Methylcyclopentane	0.063	0.022	0.262
Benzene	0.109	0.031	0.421
Cyclohexane	0.129	0.045	0.536
2-Methylhexane	0.025	0.012	0.124
3-Methylhexane	0.028	0.013	0.139
2,2,4 Trimethylpentane	0.020	0.010	0.113
Other C7's	0.057	0.025	0.279
n-Heptane	0.064	0.030	0.317
Methylcyclohexane	0.136	0.056	0.660
Toluene	0.150	0.051	0.683
Other C8's	0.080	0.038	0.435
n-Octane	0.020	0.010	0.113
Ethylbenzene	0.002	0.001	0.010
M & P Xylenes	0.015	0.006	0.079
O-Xylene	0.002	0.001	0.010
Other C9's	0.021	0.011	0.131
n-Nonane	0.003	0.002	0.019
Other C10's	0.002	0.001	0.014
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	4.408	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	0.701	(Air=1)
Compressibility (Z)	0.9966	
Molecular Weight	20.25	

Gross Heating Value

Dry Basis	1237	BTU/CF
Saturated Basis	1216	BTU/CF

08/28/2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
V-6809
Spot Gas Sample @ <1 psig & 132 °F

Date Sampled: 08/21/2024

Job Number: 243077

SULFUR SPECIATION ANALYSIS - ASTM D5504

Compound	PPMW of Compounds
Hydrogen Sulfide	2.2
COS	2.0
Methyl Mercaptan	<0.1
Ethyl Mercaptan	3.4
Dimethyl Sulfide	2.0
Carbon Disulfide	<0.1
Isopropyl Mercaptan	1.6
tert-Butyl Mercaptan	<0.1
n-Propyl Mercaptan	<0.1
Methylethyl Sulfide	<0.1
Thiophene	<0.1
sec-Butyl Mercaptan	<0.1
Isobutyl Mercaptan	<0.1
Diethyl Sulfide	<0.1
n-Butyl Mercaptan	<0.1
Dimethyl Disulfide	<0.1
Diethyl Disulfide	<0.1

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) RE
Analyst: JG
Processor: JG
Cylinder ID: ST-5802

Conan Pierce 361-661-7015

August 29, 2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Separator V-6858
Spot Gas Sample @ <1 psig & 145°F

Date Sampled: 08/21/2024 Job Number: 243077.071

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Oxygen	0.042	
Nitrogen	3.402	
Carbon Dioxide	0.195	
Methane	92.346	
Ethane	1.953	0.534
Propane	0.525	0.148
Isobutane	0.133	0.044
n-Butane	0.330	0.106
2-2 Dimethylpropane	0.017	0.007
Isopentane	0.142	0.053
n-Pentane	0.183	0.068
Hexanes	0.243	0.102
Heptanes Plus	0.489	0.210
Totals	100.000	1.272

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ---------------------------	3.442	(Air=1)
Molecular Weight ------------------------	99.46	
Gross Heating Value --------------------	5256	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ---------------------------	0.619	(Air=1)
Compressibility (Z) -----------------------	0.9976	
Molecular Weight ------------------------	17.90	
Gross Heating Value		
Dry Basis --------------------------------	1072	BTU/CF
Saturated Basis ------------------------	1054	BTU/CF

Remark: Hydrogen Sulfide analysis (ASTM D-5504) yielded <0.1 ppm wt.
Remark: Total Sulfur analysis (ASTM D-6667) yielded 14.7 ppm wt.

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) R.Elizondo
Analyst: RG
Processor: RG
Cylinder ID: T-6130

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Oxygen	0.042		0.075
Nitrogen	3.402		5.325
Carbon Dioxide	0.195		0.480
Methane	92.346		82.774
Ethane	1.953	0.534	3.281
Propane	0.525	0.148	1.294
Isobutane	0.133	0.044	0.432
n-Butane	0.330	0.106	1.072
2,2 Dimethylpropane	0.017	0.007	0.069
Isopentane	0.142	0.053	0.572
n-Pentane	0.183	0.068	0.738
2,2 Dimethylbutane	0.004	0.002	0.019
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.017	0.007	0.082
2 Methylpentane	0.071	0.030	0.342
3 Methylpentane	0.039	0.016	0.188
n-Hexane	0.112	0.047	0.539
Methylcyclopentane	0.041	0.014	0.193
Benzene	0.011	0.003	0.048
Cyclohexane	0.061	0.021	0.287
2-Methylhexane	0.022	0.010	0.123
3-Methylhexane	0.023	0.011	0.129
2,2,4 Trimethylpentane	0.011	0.006	0.070
Other C7's	0.039	0.017	0.216
n-Heptane	0.054	0.025	0.302
Methylcyclohexane	0.074	0.030	0.406
Toluene	0.025	0.009	0.129
Other C8's	0.072	0.034	0.443
n-Octane	0.017	0.009	0.109
Ethylbenzene	0.001	0.000	0.006
M & P Xylenes	0.010	0.004	0.059
O-Xylene	0.002	0.001	0.012
Other C9's	0.020	0.010	0.141
n-Nonane	0.004	0.002	0.029
Other C10's	0.001	0.001	0.008
n-Decane	0.001	0.001	0.008
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	1.272	100.000

Computed Real Characteristics of Total Sample
- Specific Gravity -- 0.619 (Air=1)
- Compressibility (Z) ----------------------------------- 0.9976
- Molecular Weight ------------------------------------- 17.90

Gross Heating Value
- Dry Basis --- 1072 BTU/CF
- Saturated Basis ---------------------------------- 1054 BTU/CF

08/28/2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
V-6858
Spot Gas Sample @ Ounces psig & 145 °F

Date Sampled: 08/21/2024

Job Number: 243077

SULFUR SPECIATION ANALYSIS - ASTM D5504

Compound	PPMW of Compounds
Hydrogen Sulfide	<0.1
COS	<0.1
Methyl Mercaptan	<0.1
Ethyl Mercaptan	2.5
Dimethyl Sulfide	2.0
Carbon Disulfide	<0.1
Isopropyl Mercaptan	<0.1
tert-Butyl Mercaptan	3.0
n-Propyl Mercaptan	<0.1
Methylethyl Sulfide	3.4
Thiophene	1.5
sec-Butyl Mercaptan	2.1
Isobutyl Mercaptan	<0.1
Diethyl Sulfide	<0.1
n-Butyl Mercaptan	<0.1
Dimethyl Disulfide	<0.1
Diethyl Disulfide	<0.1

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) RE
Analyst: JG
Processor: JG
Cylinder ID: ST-5954

Conan Pierce 361-661-7015

August 29, 2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Separator V-6859
Spot Gas Sample @ <1 psig & 110°F

Date Sampled: 08/21/2024 Job Number: 243077.081

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Oxygen	0.011	
Nitrogen	1.130	
Carbon Dioxide	0.210	
Methane	96.702	
Ethane	1.365	0.373
Propane	0.092	0.026
Isobutane	0.019	0.006
n-Butane	0.027	0.009
2-2 Dimethylpropane	0.008	0.003
Isopentane	0.024	0.009
n-Pentane	0.025	0.009
Hexanes	0.043	0.018
Heptanes Plus	0.344	0.147
Totals	100.000	0.600

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ---------------------------	3.511	(Air=1)
Molecular Weight -------------------------	101.46	
Gross Heating Value --------------------	5310	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ---------------------------	0.582	(Air=1)
Compressibility (Z) -----------------------	0.9978	
Molecular Weight -------------------------	16.83	
Gross Heating Value		
Dry Basis ---------------------------------	1052	BTU/CF
Saturated Basis ------------------------	1035	BTU/CF

Remark: Hydrogen Sulfide analysis (ASTM D-5504) yielded <0.1 ppm wt.
Remark: Total Sulfur analysis (ASTM D-6667) yielded 2.4 ppm wt.

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (16) R.Elizondo
Analyst: RG
Processor: RG
Cylinder ID: T-6155

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Oxygen	0.011		0.021
Nitrogen	1.130		1.881
Carbon Dioxide	0.210		0.549
Methane	96.702		92.170
Ethane	1.365	0.373	2.439
Propane	0.092	0.026	0.241
Isobutane	0.019	0.006	0.066
n-Butane	0.027	0.009	0.093
2,2 Dimethylpropane	0.008	0.003	0.034
Isopentane	0.024	0.009	0.103
n-Pentane	0.025	0.009	0.107
2,2 Dimethylbutane	0.001	0.000	0.005
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.002	0.001	0.010
2 Methylpentane	0.010	0.004	0.051
3 Methylpentane	0.007	0.003	0.036
n-Hexane	0.023	0.010	0.118
Methylcyclopentane	0.013	0.005	0.065
Benzene	0.016	0.005	0.074
Cyclohexane	0.028	0.010	0.140
2-Methylhexane	0.008	0.004	0.048
3-Methylhexane	0.010	0.005	0.060
2,2,4 Trimethylpentane	0.006	0.003	0.041
Other C7's	0.019	0.008	0.112
n-Heptane	0.025	0.012	0.149
Methylcyclohexane	0.047	0.019	0.274
Toluene	0.048	0.016	0.263
Other C8's	0.055	0.026	0.360
n-Octane	0.014	0.007	0.095
Ethylbenzene	0.002	0.001	0.013
M & P Xylenes	0.016	0.006	0.101
O-Xylene	0.003	0.001	0.019
Other C9's	0.023	0.012	0.173
n-Nonane	0.005	0.003	0.038
Other C10's	0.004	0.002	0.034
n-Decane	0.002	0.001	0.017
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	0.600	100.000

Computed Real Characteristics of Total Sample

Specific Gravity --	0.582	(Air=1)
Compressibility (Z) -----------------------------------	0.9978	
Molecular Weight -------------------------------------	16.83	

Gross Heating Value

Dry Basis ---	1052	BTU/CF
Saturated Basis ----------------------------------	1035	BTU/CF

08/28/2024

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
V-6859
Spot Gas Sample @ Ounces psig & 110 °F

Date Sampled: 08/21/2024 Job Number: 243077

SULFUR SPECIATION ANALYSIS - ASTM D5504

Compound	PPMW of Compounds
Hydrogen Sulfide	<0.1
COS	<0.1
Methyl Mercaptan	<0.1
Ethyl Mercaptan	2.3
Dimethyl Sulfide	<0.1
Carbon Disulfide	<0.1
Isopropyl Mercaptan	<0.1
tert-Butyl Mercaptan	<0.1
n-Propyl Mercaptan	<0.1
Methylethyl Sulfide	<0.1
Thiophene	<0.1
sec-Butyl Mercaptan	<0.1
Isobutyl Mercaptan	<0.1
Diethyl Sulfide	<0.1
n-Butyl Mercaptan	<0.1
Dimethyl Disulfide	<0.1
Diethyl Disulfide	<0.1

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) RE
Analyst: JG
Processor: JG
Cylinder ID: ST-5806

Conan Pierce 361-661-7015

September 3, 2024

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
Atmospheric Hydrocarbon Liquid
Sampled from Slop Tank Stream from GB

Date Sampled: 08/21/2024 — Job Number: 243077.022

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.000	0.000	0.000
Carbon Dioxide	0.000	0.000	0.000
Methane	0.000	0.000	0.000
Ethane	0.080	0.036	0.017
Propane	1.390	0.643	0.421
Isobutane	1.370	0.753	0.547
n-Butane	5.823	3.083	2.326
2,2 Dimethylpropane	0.093	0.060	0.046
Isopentane	4.900	3.010	2.430
n-Pentane	7.335	4.466	3.637
2,2 Dimethylbutane	0.150	0.105	0.089
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.641	0.441	0.380
2 Methylpentane	3.526	2.458	2.088
3 Methylpentane	1.861	1.276	1.102
n-Hexane	5.398	3.728	3.197
Heptanes Plus	67.433	79.941	83.720
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity ---------------------------------	0.8110	(Water=1)
°API Gravity --------------------------------------	42.98	@ 60°F
Molecular Weight ------------------------------	180.6	
Vapor Volume ----------------------------------	13.89	CF/Gal
Weight --	6.76	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity ---------------------------------	0.7744	(Water=1)
°API Gravity --------------------------------------	51.22	@ 60°F
Molecular Weight-------------------------------	145.5	
Vapor Volume ----------------------------------	16.47	CF/Gal
Weight --	6.45	Lbs/Gal

Base Conditions: 15.025 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

Sampled By: (16) R. Elizondo
Analyst: JG
Processor: ANBdjv
Cylinder ID: Can

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.000	0.000	0.000
Nitrogen	0.000	0.000	0.000
Methane	0.000	0.000	0.000
Ethane	0.080	0.036	0.017
Propane	1.390	0.643	0.421
Isobutane	1.370	0.753	0.547
n-Butane	5.916	3.143	2.372
Isopentane	4.900	3.010	2.430
n-Pentane	7.335	4.466	3.637
Other C-6's	6.178	4.280	3.659
Heptanes	11.280	7.774	7.232
Octanes	11.826	9.081	8.666
Nonanes	5.367	4.889	4.676
Decanes Plus	34.961	55.645	60.392
Benzene	0.446	0.210	0.239
Toluene	1.158	0.651	0.733
E-Benzene	0.259	0.168	0.189
Xylenes	1.527	0.991	1.114
n-Hexane	5.398	3.728	3.197
2,2,4 Trimethylpentane	0.610	0.533	0.479
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity --	0.7744	(Water=1)
°API Gravity ---	51.22	@ 60°F
Molecular Weight--------------------------------------	145.5	
Vapor Volume ---	16.47	CF/Gal
Weight ---	6.45	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity --	0.8405	(Water=1)
Molecular Weight--------------------------------------	251.3	

Characteristics of Atmospheric Sample:

°API Gravity ---	51.22	@ 60°F
Reid Vapor Pressure Equivalent (D-6377)-----------	8.70	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	------	------
Pressure, PSIG	------	------	------
Skin Temperature, °F	------	------	------

* Sample used for analysis

FESCO, Ltd. Job Number: 243077.022

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.000	0.000	0.000
Carbon Dioxide	0.000	0.000	0.000
Methane	0.000	0.000	0.000
Ethane	0.080	0.036	0.017
Propane	1.390	0.643	0.421
Isobutane	1.370	0.753	0.547
n-Butane	5.823	3.083	2.326
2,2 Dimethylpropane	0.093	0.060	0.046
Isopentane	4.900	3.010	2.430
n-Pentane	7.335	4.466	3.637
2,2 Dimethylbutane	0.150	0.105	0.089
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.641	0.441	0.380
2 Methylpentane	3.526	2.458	2.088
3 Methylpentane	1.861	1.276	1.102
n-Hexane	5.398	3.728	3.197
Methylcyclopentane	1.930	1.147	1.116
Benzene	0.446	0.210	0.239
Cyclohexane	2.835	1.620	1.640
2-Methylhexane	1.074	0.838	0.740
3-Methylhexane	1.091	0.842	0.751
2,2,4 Trimethylpentane	0.610	0.533	0.479
Other C-7's	1.575	1.177	1.074
n-Heptane	2.774	2.150	1.910
Methylcyclohexane	4.191	2.830	2.828
Toluene	1.158	0.651	0.733
Other C-8's	5.658	4.551	4.286
n-Octane	1.976	1.700	1.551
E-Benzene	0.259	0.168	0.189
M & P Xylenes	1.231	0.802	0.898
O-Xylene	0.296	0.189	0.216
Other C-9's	3.926	3.527	3.406
n-Nonane	1.441	1.361	1.270
Other C-10's	4.046	3.995	3.928
n-decane	0.966	0.996	0.945
Undecanes(11)	3.985	4.036	4.026
Dodecanes(12)	2.955	3.234	3.270
Tridecanes(13)	2.901	3.403	3.489
Tetradecanes(14)	2.384	2.996	3.113
Pentadecanes(15)	2.083	2.804	2.949
Hexadecanes(16)	1.621	2.332	2.474
Heptadecanes(17)	1.439	2.190	2.345
Octadecanes(18)	1.352	2.165	2.332
Nonadecanes(19)	1.232	2.056	2.228
Eicosanes(20)	0.984	1.707	1.860
Heneicosanes(21)	0.839	1.530	1.677
Docosanes(22)	0.744	1.416	1.560
Tricosanes(23)	0.662	1.306	1.448
Tetracosanes(24)	0.584	1.193	1.328
Pentacosanes(25)	0.536	1.137	1.271
Hexacosanes(26)	0.488	1.072	1.204
Heptacosanes(27)	0.463	1.055	1.191
Octacosanes(28)	0.419	0.987	1.118
Nonacosanes(29)	0.354	0.860	0.978
Triacontanes(30)	0.328	0.822	0.937
Hentriacontanes Plus(31+)	3.594	12.353	14.722
Total	100.000	100.000	100.000

September 19, 2024

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: XTO Energy, Inc.
22777 Springswoods Village Pkwy., W4.6B.345
Spring, Texas 77389

Sample: Cowboy CDP
North Header Hydrocarbon Liquid
Sampled @ 10 psig & 74 °F

Date Sampled: 09/13/2024 Job Number: 243077.062

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.039	0.007	0.007
Carbon Dioxide	0.000	0.000	0.000
Methane	0.025	0.007	0.003
Ethane	0.124	0.054	0.024
Propane	1.360	0.610	0.392
Isobutane	0.977	0.521	0.371
n-Butane	3.760	1.930	1.428
2,2 Dimethylpropane	0.037	0.023	0.017
Isopentane	2.753	1.639	1.298
n-Pentane	4.151	2.449	1.957
2,2 Dimethylbutane	0.109	0.074	0.061
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.317	0.211	0.178
2 Methylpentane	2.412	1.630	1.359
3 Methylpentane	1.257	0.835	0.708
n-Hexane	3.768	2.522	2.122
Heptanes Plus	78.910	87.487	90.072
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity ---------------------------------	0.8126	(Water=1)
°API Gravity --------------------------------------	42.64	@ 60°F
Molecular Weight ------------------------------	174.6	
Vapor Volume ----------------------------------	14.40	CF/Gal
Weight --	6.77	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity ---------------------------------	0.7893	(Water=1)
°API Gravity --------------------------------------	47.78	@ 60°F
Molecular Weight-------------------------------	153.0	
Vapor Volume ----------------------------------	15.96	CF/Gal
Weight --	6.58	Lbs/Gal

Base Conditions: 15.025 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (16) R. Elizondo
Analyst: JG
Processor: ANB
Cylinder ID: PL-35022

Conan Pierce 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.000	0.000	0.000
Nitrogen	0.039	0.007	0.007
Methane	0.025	0.007	0.003
Ethane	0.124	0.054	0.024
Propane	1.360	0.610	0.392
Isobutane	0.977	0.521	0.371
n-Butane	3.797	1.953	1.446
Isopentane	2.753	1.639	1.298
n-Pentane	4.151	2.449	1.957
Other C-6's	4.095	2.751	2.307
Heptanes	10.253	6.938	6.309
Octanes	13.930	10.358	9.745
Nonanes	7.073	6.185	5.861
Decanes Plus	43.066	61.159	65.125
Benzene	0.347	0.158	0.177
Toluene	1.300	0.709	0.783
E-Benzene	0.368	0.231	0.255
Xylenes	1.971	1.240	1.368
n-Hexane	3.768	2.522	2.122
2,2,4 Trimethylpentane	0.600	0.508	0.448
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity --	0.7893	(Water=1)
°API Gravity ---	47.78	@ 60°F
Molecular Weight--------------------------------------	153.0	
Vapor Volume ---	15.96	CF/Gal
Weight ---	6.58	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity --	0.8404	(Water=1)
Molecular Weight--------------------------------------	231.4	

Characteristics of Atmospheric Sample:

°API Gravity ---	48.31	@ 60°F
Reid Vapor Pressure Equivalent (D-6377)-----------	6.71	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	------	------
Pressure, PSIG	------	------	------
Skin Temperature, °F	------	------	------

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.039	0.007	0.007
Carbon Dioxide	0.000	0.000	0.000
Methane	0.025	0.007	0.003
Ethane	0.124	0.054	0.024
Propane	1.360	0.610	0.392
Isobutane	0.977	0.521	0.371
n-Butane	3.760	1.930	1.428
2,2 Dimethylpropane	0.037	0.023	0.017
Isopentane	2.753	1.639	1.298
n-Pentane	4.151	2.449	1.957
2,2 Dimethylbutane	0.109	0.074	0.061
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.317	0.211	0.178
2 Methylpentane	2.412	1.630	1.359
3 Methylpentane	1.257	0.835	0.708
n-Hexane	3.768	2.522	2.122
Methylcyclopentane	1.431	0.824	0.787
Benzene	0.347	0.158	0.177
Cyclohexane	2.359	1.307	1.298
2-Methylhexane	1.147	0.868	0.751
3-Methylhexane	1.051	0.785	0.688
2,2,4 Trimethylpentane	0.600	0.508	0.448
Other C-7's	1.344	0.960	0.871
n-Heptane	2.922	2.194	1.913
Methylcyclohexane	4.520	2.958	2.901
Toluene	1.300	0.709	0.783
Other C-8's	6.902	5.308	4.972
n-Octane	2.509	2.092	1.873
E-Benzene	0.368	0.231	0.255
M & P Xylenes	1.585	1.001	1.100
O-Xylene	0.386	0.239	0.268
Other C-9's	5.159	4.431	4.256
n-Nonane	1.915	1.754	1.605
Other C-10's	5.387	5.085	4.974
n-decane	1.271	1.270	1.182
Undecanes(11)	5.270	5.104	5.063
Dodecanes(12)	3.833	4.010	4.033
Tridecanes(13)	3.760	4.218	4.301
Tetradecanes(14)	3.042	3.656	3.778
Pentadecanes(15)	2.619	3.371	3.526
Hexadecanes(16)	2.018	2.775	2.928
Heptadecanes(17)	1.776	2.583	2.751
Octadecanes(18)	1.648	2.525	2.704
Nonadecanes(19)	1.448	2.311	2.490
Eicosanes(20)	1.148	1.904	2.064
Heneicosanes(21)	1.001	1.746	1.903
Docosanes(22)	0.887	1.612	1.768
Tricosanes(23)	0.781	1.472	1.623
Tetracosanes(24)	0.681	1.329	1.473
Pentacosanes(25)	0.613	1.243	1.383
Hexacosanes(26)	0.557	1.169	1.307
Heptacosanes(27)	0.504	1.097	1.232
Octacosanes(28)	0.437	0.984	1.109
Nonacosanes(29)	0.390	0.906	1.024
Triacontanes(30)	0.340	0.815	0.924
Hentriacontanes Plus(31+)	3.656	9.974	11.589
Total	100.000	100.000	100.000

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: XTO Energy Inc.
6401 N. Holiday Hill Road
Midland, Texas 79707

Sample: Cowboy CDP
Oil Overhead Compressor
Spot Gas Sampled @ 300 psig & 100 °F

Date Sampled: 02/04/2022 Job Number: 221249.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.112	
Carbon Dioxide	0.161	
Methane	13.738	
Ethane	39.708	10.976
Propane	34.254	9.754
Isobutane	2.022	0.684
n-Butane	4.359	1.420
2-2 Dimethylpropane	0.015	0.006
Isopentane	1.187	0.449
n-Pentane	1.645	0.616
Hexanes	1.620	0.690
Heptanes Plus	1.179	0.488
Totals	100.000	25.083

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ------------------------------	3.335	(Air=1)
Molecular Weight ---------------------------	95.29	
Gross Heating Value ----------------------	5182	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ------------------------------	1.3169	(Air=1)
Compressibility (Z) -------------------------	0.9866	
Molecular Weight ---------------------------	37.63	
Gross Heating Value		
Dry Basis -----------------------------------	2240.36	BTU/CF
Saturated Basis --------------------------	2202.03	BTU/CF

*Hydrogen Sulfide tested on location by: Stain Tube Method (GPA 2377)
Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 15.025 PSI & 60 Deg F

Sampled By: (24) D. Morales
Analyst: RG
Processor: AS
Cylinder ID: T-5778

Certified: FESCO, Ltd. - Alice, Texas

Conan Pierce 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.112		0.083
Carbon Dioxide	0.161		0.188
Methane	13.738		5.855
Ethane	39.708	10.976	31.727
Propane	34.254	9.754	40.137
Isobutane	2.022	0.684	3.123
n-Butane	4.359	1.420	6.732
2,2 Dimethylpropane	0.015	0.006	0.029
Isopentane	1.187	0.449	2.276
n-Pentane	1.645	0.616	3.154
2,2 Dimethylbutane	0.026	0.011	0.060
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.148	0.063	0.339
2 Methylpentane	0.531	0.228	1.216
3 Methylpentane	0.271	0.114	0.621
n-Hexane	0.644	0.274	1.475
Methylcyclopentane	0.236	0.086	0.528
Benzene	0.066	0.019	0.137
Cyclohexane	0.260	0.091	0.581
2-Methylhexane	0.048	0.023	0.128
3-Methylhexane	0.049	0.023	0.130
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.130	0.058	0.343
n-Heptane	0.086	0.041	0.229
Methylcyclohexane	0.123	0.051	0.321
Toluene	0.028	0.010	0.069
Other C8's	0.058	0.028	0.170
n-Octane	0.010	0.005	0.030
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.003	0.001	0.008
O-Xylene	0.001	0.000	0.003
Other C9's	0.008	0.004	0.027
n-Nonane	0.001	0.001	0.003
Other C10's	0.045	0.027	0.169
n-Decane	0.008	0.005	0.030
Undecanes (11)	0.019	0.013	0.079
Totals	100.000	25.083	100.000

Computed Real Characteristics of Total Sample

Specific Gravity --	1.3169	(Air=1)
Compressibility (Z) -----------------------------------	0.9866	
Molecular Weight -------------------------------------	37.63	
Gross Heating Value		
Dry Basis --	2240.36	BTU/CF
Saturated Basis -----------------------------------	2202.03	BTU/CF

February 15, 2022

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Cowboy CDP
Oil Overhead Compressor
Spot Gas Sampled @ 300 psig & 100 °F

Date Sampled: 02/04/2022

Job Number: 221249.001

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.161		0.188
Hydrogen Sulfide	< 0.001		< 0.001
Nitrogen	0.112		0.083
Methane	13.738		5.855
Ethane	39.708	10.976	31.727
Propane	34.254	9.754	40.137
Isobutane	2.022	0.684	3.123
n-Butane	4.374	1.426	6.761
Isopentane	1.187	0.449	2.276
n-Pentane	1.645	0.616	3.154
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.644	0.274	1.475
Cyclohexane	0.260	0.091	0.581
Other C6's	0.976	0.416	2.236
Heptanes	0.549	0.232	1.358
Methylcyclohexane	0.123	0.051	0.321
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.066	0.019	0.137
Toluene	0.028	0.010	0.069
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.004	0.002	0.011
Octanes Plus	0.149	0.083	0.508
Totals	100.000	25.083	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity -----------------------	4.495	(Air=1)
Molecular Weight -----------------------	128.45	
Gross Heating Value -----------------	6850	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity ----------------------------	1.3169	(Air=1)
Compressibility (Z) ------------------------	0.9866	
Molecular Weight --------------------------	37.63	
Gross Heating Value		
Dry Basis ----------------------------------	2240.36	BTU/CF
Saturated Basis -------------------------	2202.03	BTU/CF

XTO ENERGY INC.
Cowboy CDP
PROCESS SIMULATION COMPONENTS

PROCESS SIMULATION COMPONENTS - CDP Flare 1, LPF V-6808

	HYSYS PROCESS STREAM NAME:	V-6808
	HYSYS COMPONENTS	
	Component	**Mole Frac**
	Oxygen	0.0000
	H2S	0.0000
Nitrogen	Nitrogen	0.0000
CO2	CO2	0.0012
Methane	Methane	0.0603
Ethane	Ethane	0.2024
Propane	Propane	0.2818
i-Butane	i-Butane	0.0682
n-Butane	n-Butane	0.1579
22-Mpropane	22-Mpropane	0.0015
i-Pentane	i-Pentane	0.0518
n-Pentane	n-Pentane	0.0579
22-Mbutane	22-Mbutane	0.0009
Cyclopentane	Cyclopentane	0.0001
23-Mbutane	23-Mbutane	0.0024
2-Mpentane	2-Mpentane	0.0131
3-Mpentane	3-Mpentane	0.0069
n-Hexane	n-Hexane	0.0175
Hexanes*	Hexanes*	0.0028
Mcyclopentan	Mcyclopentan	0.0078
Benzene	Benzene	0.0033
Cyclohexane	Cyclohexane	0.0106
2-Mhexane	2-Mhexane	0.0036
3-Mhexane	3-Mhexane	0.0032
224-Mpentane	224-Mpentane	0.0004
n-Heptane	n-Heptane	0.0066
Heptanes*	Heptanes*	0.0052
Mcyclohexane	Mcyclohexane	0.0113
Toluene	Toluene	0.0033
n-Octane	n-Octane	0.0021
Octanes*	Octanes*	0.0089
E-Benzene	E-Benzene	0.0004
m-Xylene	m-Xylene	0.0005
o-Xylene	o-Xylene	0.0005
p-Xylene	p-Xylene	0.0006
Nonanes*	Nonanes*	0.0030
n-Nonane	Decanes*	0.0012
Decanes*	Undecanes_3*	0.0004
n-Decane	Dodecanes_3*	0.0001
Undecanes*	Triadecanes_3*	0.0000
Dodecanes*	Tetradecanes_3*	0.0000
Triadecanes*	Pentadecanes_3*	0.0000
Tetradecanes*	Hexadecanes_3*	0.0000
Pentadecanes*	Heptadecanes_3*	0.0000
Hexadecanes*	Octadecanes_3*	0.0000
Heptadecanes*	Nonadecanes_3*	0.0000
Octadecanes*	eicosanes_3*	0.0000
Nonadecanes*	Heneicosanes_3*	0.0000
eicosanes*	Dodocosanes_3*	0.0000
Heneicosanes*	Triacosanes_3*	0.0000
Dodocosanes*	Tetracosanes_3*	0.0000
Triacosanes*	Pentacosanes_3*	0.0000
Tetracosanes*	Hexacosanes_3*	0.0000
Pentacosanes*	Heptacosanes_3*	0.0000
Hexacosanes*	Octacosanes_3*	0.0000
Heptacosanes*	Nonacosanes_3*	0.0000
Octacosanes*	Triacontanes*	0.0000
Nonacosanes*	C31+_2*	0.0000
Triacontanes*	H2O	0.0000
C31+*	NC30*	0.0000
	n-Nonane	0.0002
	n-Decane	0.0001
	NC31-35*	0.0000
	TexaTherm	0.0000
	NC31-35_1*	0.0000
	CO	0.0000
	TOTALS	1.000

PROMAX PROCESS STREAM NAME:	CDP Flare 1 LPF V-6808
PROMAX COMPONENTS	
Component	**Mole Frac**
Water	0.0000
Hydrogen Sulfide	0.0000
Nitrogen	0.0000
Carbon Dioxide	0.0012
Methane	0.0603
Ethane	0.2024
Propane	0.2818
Iso-butane	0.0682
N-butane	0.1579
Iso-pentane	0.0518
N-pentane	0.0579
Cyclopentanes	0.0001
Other Hexanes	0.0276
n-Hexane	0.0175
Methylcyclopentane	0.0078
Benzene	0.0033
Cyclohexane	0.0106
2,2,4 Trimethylpentane	0.0004
Other Heptanes	0.0120
Methylcyclohexane	0.0113
n-Heptane	0.0066
Toluene	0.0033
Octanes	0.0110
Ethylbenzene	0.0004
M&P-Xylene	0.0016
Nonanes	0.0032
Decanes	0.0013
Undecanes	0.0005
Total	1.0000

Characteristics of Undecanes Plus	
Specific Gravity	0.8533
Molecular Weight (lb/lbmol)	265.400

XTO ENERGY INC.
Cowboy CDP
PROCESS SIMULATION COMPONENTS

PROCESS SIMULATION COMPONENTS - Cryo Flare 2, LPF V-6858

H

	HYSYS PROCESS STREAM NAME:	V-6859
	HYSYS COMPONENTS	
	Component	**Mole Frac**
	Oxygen	0.0000
	H2S	0.0000
Nitrogen	Nitrogen	0.0085
CO2	CO2	0.0012
Methane	Methane	0.7395
Ethane	Ethane	0.1301
Propane	Propane	0.0670
i-Butane	i-Butane	0.0102
n-Butane	n-Butane	0.0233
22-Mpropane	22-Mpropane	0.0002
i-Pentane	i-Pentane	0.0058
n-Pentane	n-Pentane	0.0067
22-Mbutane	22-Mbutane	0.0001
Cyclopentane	Cyclopentane	0.0000
23-Mbutane	23-Mbutane	0.0001
2-Mpentane	2-Mpentane	0.0009
3-Mpentane	3-Mpentane	0.0004
n-Hexane	n-Hexane	0.0010
Hexanes*	Hexanes*	0.0010
Mcyclopentan	Mcyclopentan	0.0007
Benzene	Benzene	0.0001
Cyclohexane	Cyclohexane	0.0008
2-Mhexane	2-Mhexane	0.0002
3-Mhexane	3-Mhexane	0.0001
224-Mpentane	224-Mpentane	0.0000
n-Heptane	n-Heptane	0.0003
Heptanes*	Heptanes*	0.0006
Mcyclohexane	Mcyclohexane	0.0006
Toluene	Toluene	0.0001
n-Octane	n-Octane	0.0000
Octanes*	Octanes*	0.0004
E-Benzene	E-Benzene	0.0000
m-Xylene	m-Xylene	0.0000
o-Xylene	o-Xylene	0.0000
p-Xylene	p-Xylene	0.0000
Nonanes*	Nonanes*	0.0001
n-Nonane	Decanes*	0.0000
Decanes*	Undecanes_3*	0.0000
n-Decane	Dodecanes_3*	0.0000
Undecanes*	Triadecanes_3*	0.0000
Dodecanes*	Tetradecanes_3*	0.0000
Triadecanes*	Pentadecanes_3*	0.0000
Tetradecanes*	Hexadecanes_3*	0.0000
Pentadecanes*	Heptadecanes_3*	0.0000
Hexadecanes*	Octadecanes_3*	0.0000
Heptadecanes*	Nonadecanes_3*	0.0000
Octadecanes*	eicosanes_3*	0.0000
Nonadecanes*	Heneicosanes_3*	0.0000
eicosanes*	Dodocosanes_3*	0.0000
Heneicosanes*	Triacosanes_3*	0.0000
Dodocosanes*	Tetracosanes_3*	0.0000
Triacosanes*	Pentacosanes_3*	0.0000
Tetracosanes*	Hexacosanes_3*	0.0000
Pentacosanes*	Heptacosanes_3*	0.0000
Hexacosanes*	Octacosanes_3*	0.0000
Heptacosanes*	Nonacosanes_3*	0.0000
Octacosanes*	Triacontanes*	0.0000
Nonacosanes*	C31+_2*	0.0000
Triacontanes*	H2O	0.0000
C31+*	NC30*	0.0000
	n-Nonane	0.0000
	n-Decane	0.0000
	NC31-35*	0.0000
	TexaTherm	0.0000
	NC31-35_1*	0.0000
	CO	0.0000
	TOTALS	1.000

PROMAX PROCESS STREAM NAME:	Cryo Flare 2 HPF V-6859
PROMAX COMPONENTS	
Component	**Mole Frac**
Water	0.0000
Hydrogen Sulfide	0.0000
Nitrogen	0.0085
Carbon Dioxide	0.0012
Methane	0.7395
Ethane	0.1301
Propane	0.0670
Iso-butane	0.0102
N-butane	0.0233
Iso-pentane	0.0058
N-pentane	0.0067
Cyclopentanes	0.0000
Other Hexanes	0.0027
n-Hexane	0.0010
Methylcyclopentane	0.0007
Benzene	0.0001
Cyclohexane	0.0008
2,2,4 Trimethylpentane	0.0000
Other Heptanes	0.0009
Methylcyclohexane	0.0006
n-Heptane	0.0003
Toluene	0.0001
Octanes	0.0004
Ethylbenzene	0.0000
M&P-Xylene	0.0000
Nonanes	0.0001
Decanes	0.0000
Undecanes	0.0000
Total	1.000

Characteristics of Undecanes Plus	
Specific Gravity	0.8533
Molecular Weight (lb/lbmol)	265.400

XTO ENERGY INC.
Cowboy CDP
PROCESS SIMULATION COMPONENTS

PROCESS SIMULATION COMPONENTS - INLET GAS

HYSYS PROCESS STREAM NAME:	Gas Int
HYSYS COMPONENTS	
Component	**Mole Frac**
Oxygen	0.00000
H2S	0.00000
Nitrogen	0.01480
CO2	0.00112
Methane	0.70205
Ethane	0.15319
Propane	0.08529
i-Butane	0.00984
n-Butane	0.02370
22-Mpropane	0.00011
i-Pentane	0.00377
n-Pentane	0.00378
22-Mbutane	0.00002
Cyclopentane	0.00000
23-Mbutane	0.00012
2-Mpentane	0.00042
3-Mpentane	0.00021
n-Hexane	0.00046
Hexanes*	0.00000
Mcyclopentan	0.00027
Benzene	0.00006
Cyclohexane	0.00028
2-Mhexane	0.00004
3-Mhexane	0.00003
224-Mpentane	0.00000
n-Heptane	0.00006
Heptanes*	0.00007
Mcyclohexane	0.00012
Toluene	0.00002
n-Octane	0.00000
Octanes*	0.00003
E-Benzene	0.00000
m-Xylene	0.00000
o-Xylene	0.00000
p-Xylene	0.00000
Nonanes*	0.00000
Decanes*	0.00000
Undecanes_3*	0.00000
Dodecanes_3*	0.00000
Triadecanes_3*	0.00000
Tetradecanes_3*	0.00000
Pentadecanes_3*	0.00000
Hexadecanes_3*	0.00000
Heptadecanes_3*	0.00000
Octadecanes_3*	0.00000
Nonadecanes_3*	0.00000
eicosanes_3*	0.00000
Heneicosanes_3*	0.00000
Dodocosanes_3*	0.00000
Triacosanes_3*	0.00000
Tetracosanes_3*	0.00000
Pentacosanes_3*	0.00000
Hexacosanes_3*	0.00000
Heptacosanes_3*	0.00000
Octacosanes_3*	0.00000
Nonacosanes_3*	0.00000
Triacontanes*	0.00000
C31+_2*	0.00000
H2O	0.00015
NC30*	0.00000
n-Nonane	0.00000
n-Decane	0.00000
NC31-35*	0.00000
TexaTherm	0.00000
NC31-35_1*	0.00000
CO	0.00000
TOTALS	1.000

PROMAX PROCESS STREAM NAME:	Inlet Gas AMINE	
PROMAX COMPONENTS		
Component	**Mole Frac**	**WT%**
Hydrogen Sulfide	0.000	0.00
N2	0.015	1.82
Carbon Dioxide	0.001	0.22
Methane	0.702	49.42
Ethane	0.153	20.21
Propane	0.085	16.50
i-Butane	0.010	2.51
n-Butane	0.024	6.04
i-Pentane	0.004	1.23
n-Pentane	0.004	1.20
n-Hexane	0.002	0.83
Water	0.000	0.01
MDEA	0.000	0.00
Piperazine	0.000	0.00
O2	0.000	0.00
Total	1.00000	

Specific Gravity	
Molecular Weight (lb/lbmol)	
VOC WT%	11.82
HAP WT%	0.826

XTO ENERGY INC.
Cowboy CDP
PROCESS SIMULATION COMPONENTS

PROCESS SIMULATION COMPONENTS - INLET GAS

HYSYS PROCESS STREAM NAME:	Gas Inlet
HYSYS COMPONENTS	
Component	**Mole Frac**
Oxygen	0.000
H2S	0.000
Nitrogen	0.016
CO2	0.001
Methane	0.735
Ethane	0.147
Propane	0.072
i-Butane	0.007
n-Butane	0.016
22-Mpropane	0.000
i-Pentane	0.002
n-Pentane	0.002
22-Mbutane	0.000
Cyclopentane	0.000
23-Mbutane	0.000
2-Mpentane	0.000
3-Mpentane	0.000
n-Hexane	0.000
Hexanes*	0.000
Mcyclopentan	0.000
Benzene	0.000
Cyclohexane	0.000
2-Mhexane	0.000
3-Mhexane	0.000
224-Mpentane	0.000
n-Heptane	0.000
Heptanes*	0.000
Mcyclohexane	0.000
Toluene	0.000
n-Octane	0.000
Octanes*	0.000
E-Benzene	0.000
m-Xylene	0.000
o-Xylene	0.000
p-Xylene	0.000
Nonanes*	0.000
Decanes*	0.000
Undecanes_3*	0.000
Dodecanes_3*	0.000
Triadecanes_3*	0.000
Tetradecanes_3*	0.000
Pentadecanes_3*	0.000
Hexadecanes_3*	0.000
Heptadecanes_3*	0.000
Octadecanes_3*	0.000
Nonadecanes_3*	0.000
eicosanes_3*	0.000
Heneicosanes_3*	0.000
Dodocosanes_3*	0.000
Triacosanes_3*	0.000
Tetracosanes_3*	0.000
Pentacosanes_3*	0.000
Hexacosanes_3*	0.000
Heptacosanes_3*	0.000
Octacosanes_3*	0.000
Nonacosanes_3*	0.000
Triacontanes*	0.000
C31+_2*	0.000
H2O	0.000
NC30*	0.000
n-Nonane	0.000
n-Decane	0.000
NC31-35*	0.000
TexaTherm	0.000
NC31-35_1*	0.000
CO	0.000
TOTALS	1.000

PROMAX PROCESS STREAM NAME:	Inlet Gas	
PROMAX COMPONENTS		
Component	**Mole Frac**	**WT%**
Water	0.00015	0.01
Hydrogen Sulfide	0.00000	0.00
Nitrogen	0.01592	1.04
Carbon Dioxide	0.00113	0.23
Methane	0.73517	55.11
Ethane	0.14720	20.68
Propane	0.07216	14.87
Iso-butane	0.00724	1.97
N-butane	0.01623	4.41
Iso-pentane	0.00208	0.70
N-pentane	0.00192	0.65
Cyclopentanes	0.00000	0.00
Other Hexanes	0.00037	0.15
n-Hexane	0.00016	0.06
Methylcyclopentane	0.00009	0.04
Benzene	0.00002	0.01
Cyclohexane	0.00009	0.04
2,2,4 Trimethylpentane	0.00000	0.00
Other Heptanes	0.00003	0.01
Methylcyclohexane	0.00003	0.01
n-Heptane	0.00001	0.00
Toluene	0.00000	0.00
Octanes	0.00001	0.01
Ethylbenzene	0.00000	0.00
M&P-Xylene	0.00000	0.00
Nonanes	0.00000	0.00
Decanes	0.00000	0.00
Undecanes	0.00000	0.00
Total	1.000	100.000

Characteristics of Undecanes Plus	
Specific Gravity	0.8661
Molecular Weight (lb/lbmol)	262.912
VOC WT%	22.92
HAP WT%	0.072

Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

Project: Cowboy CDP_2024.10.pmx

Licensed to Esso Exploration, Inc.

Client Name: XTO ENERGY INC
Location: Cowboy CDP
Job: IFR Tanks

ProMax Filename: \\FTWNAS01a\projnt15\EHS\Environmental\Air\Areas of Operation\New Mexico\Delaware Division\0_Midstream\Cowboy CDP\1. Permits\2024-07_Update\ProMax\New\Cowboy CDP_2024.10.pmx
ProMax Version: 6.0.22251.0
Simulation Initiated: 10/14/2024 3:40:31 PM

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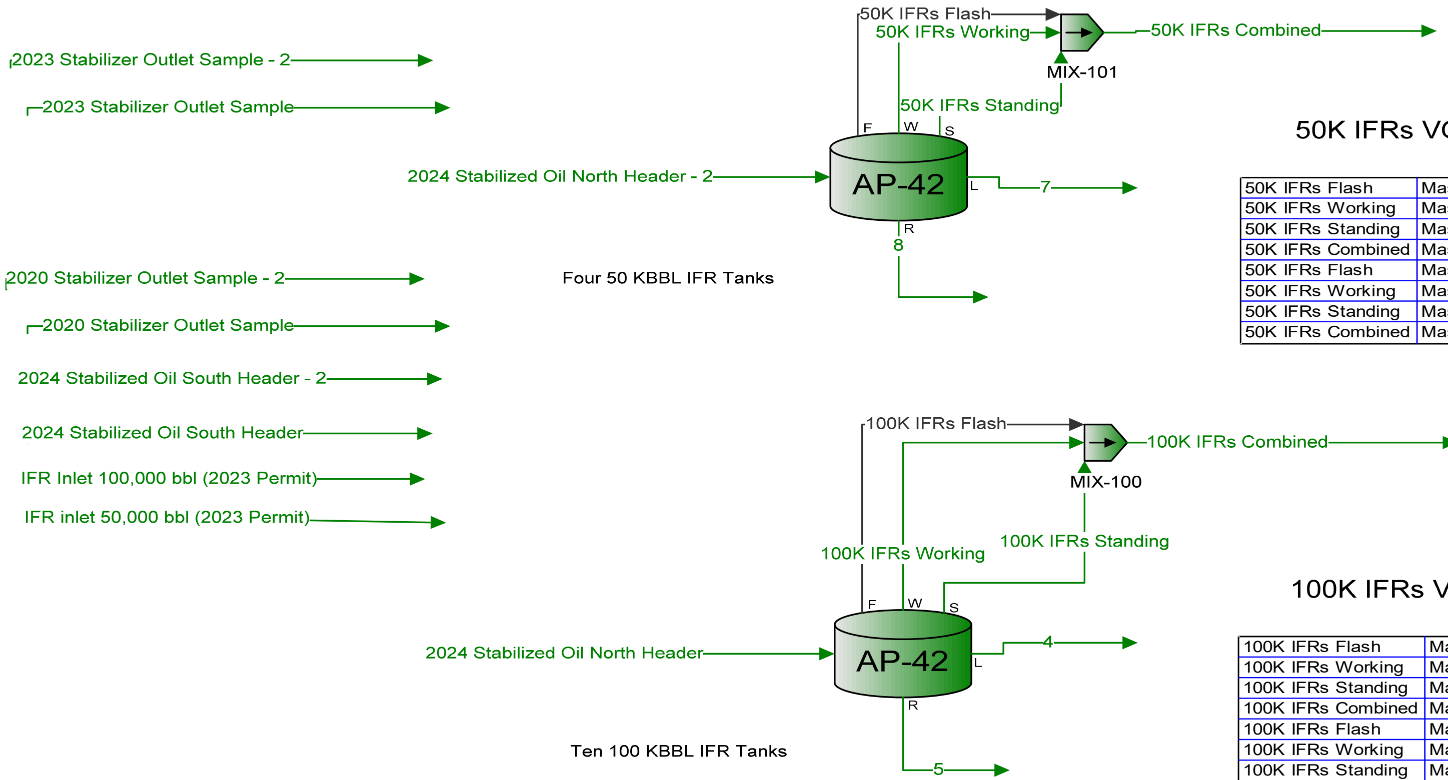
Office: (979) 776-5220
FAX: (979) 776-4818
mailto:sales@bre.com
http://www.bre.com/

Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

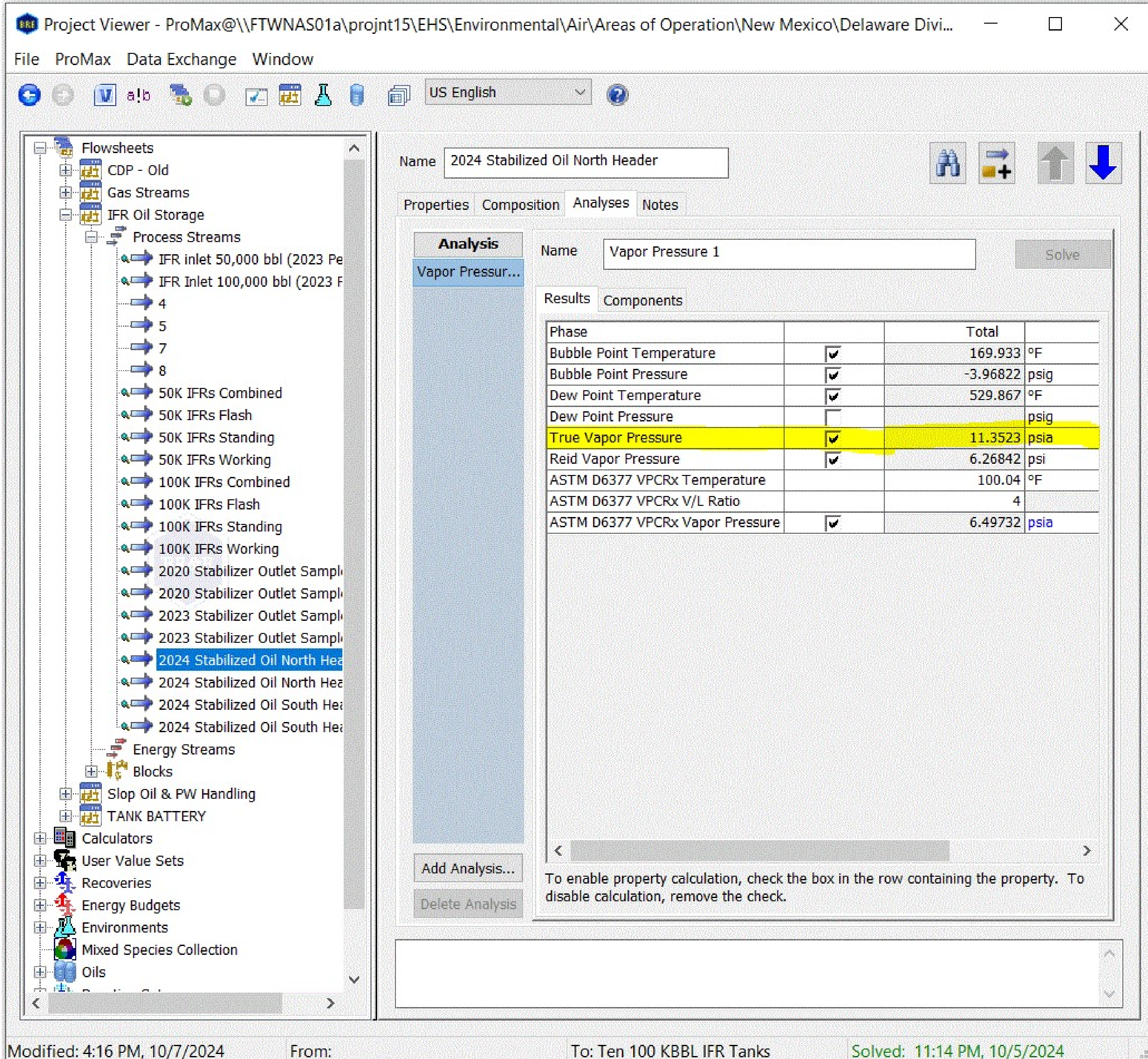


50K IFRs VOC Emissions

50K IFRs Flash	Mass Flow Sum		lb/h
50K IFRs Working	Mass Flow Sum	2.3633	lb/h
50K IFRs Standing	Mass Flow Sum	2.6825	lb/h
50K IFRs Combined	Mass Flow Sum	5.0458	lb/h
50K IFRs Flash	Mass Flow Sum		ton/yr
50K IFRs Working	Mass Flow Sum	10.351	ton/yr
50K IFRs Standing	Mass Flow Sum	11.749	ton/yr
50K IFRs Combined	Mass Flow Sum	22.101	ton/yr

100K IFRs VOC Emissions

100K IFRs Flash	Mass Flow Sum		lb/h
100K IFRs Working	Mass Flow Sum	1.8875	lb/h
100K IFRs Standing	Mass Flow Sum	11.046	lb/h
100K IFRs Combined	Mass Flow Sum	12.934	lb/h
100K IFRs Flash	Mass Flow Sum		ton/yr
100K IFRs Working	Mass Flow Sum	8.2673	ton/yr
100K IFRs Standing	Mass Flow Sum	48.384	ton/yr
100K IFRs Combined	Mass Flow Sum	56.651	ton/yr


Project Viewer - ProMax@\\FTWNAS01a\projnt15\EHS\Environmental\Air\Areas of Operation\New Mexico\Delaware Divi...
File ProMax Data Exchange Window
US English
Flowsheets
CDP - Old
Gas Streams
IFR Oil Storage
Process Streams
IFR inlet 50,000 bbl (2023 Pe
IFR Inlet 100,000 bbl (2023 F
4
5
7
8
50K IFRs Combined
50K IFRs Flash
50K IFRs Standing
50K IFRs Working
100K IFRs Combined
100K IFRs Flash
100K IFRs Standing
100K IFRs Working
2020 Stabilizer Outlet Sampl
2020 Stabilizer Outlet Sampl
2023 Stabilizer Outlet Sampl
2023 Stabilizer Outlet Sampl
2024 Stabilized Oil North Hea
2024 Stabilized Oil North Hea
2024 Stabilized Oil South Hea
2024 Stabilized Oil South Hea
Energy Streams
Blocks
Slop Oil & PW Handling
TANK BATTERY
Calculators
User Value Sets
Recoveries
Energy Budgets
Environments
Mixed Species Collection
Oils
Name 2024 Stabilized Oil North Header
Properties Composition Analyses Notes
Analysis
Vapor Pressur...
Name Vapor Pressure 1
Solve
Results Components
Phase Total
Bubble Point Temperature 169.933 °F
Bubble Point Pressure -3.96822 psig
Dew Point Temperature 529.867 °F
Dew Point Pressure psig
True Vapor Pressure 11.3523 psia
Reid Vapor Pressure 6.26842 psi
ASTM D6377 VPCRx Temperature 100.04 °F
ASTM D6377 VPCRx V/L Ratio 4
ASTM D6377 VPCRx Vapor Pressure 6.49732 psia
Add Analysis...
Delete Analysis
To enable property calculation, check the box in the row containing the property. To disable calculation, remove the check.
Modified: 4:16 PM, 10/7/2024
From:
To: Ten 100 KBBL IFR Tanks
Solved: 11:14 PM, 10/5/2024

Process Streams	50K IFRs Combined	50K IFRs Flash	50K IFRs Standing	50K IFRs Working	100K IFRs Combined	100K IFRs Flash	100K IFRs Standing	100K IFRs Working
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	MIX-101	Four 50 KBBL IFR Tanks	Four 50 KBBL IFR Tanks	Four 50 KBBL IFR Tanks	MIX-100	Ten 100 KBBL IFR Tanks	Ten 100 KBBL IFR Tanks	Ten 100 KBBL IFR Tanks
To Block:	--	MIX-101	MIX-101	MIX-101	--	MIX-100	MIX-100	MIX-100
Mole Fraction	%		%	%	%		%	%
Water	0		0	0	0		0	0
Hydrogen Sulfide	0		0	0	0		0	0
Nitrogen, Atomic	2.01497		2.56546	0.039	2.44026		2.56995	0.039
Carbon Dioxide	0		0	0	0		0	0
Methane	1.74625		2.22577	0.025	2.11669		2.22966	0.025
Ethane	9.17394		11.6951	0.124	11.1216		11.7156	0.124
Propane	24.6931		31.1933	1.36	29.6657		31.1944	1.36
Isobutane	6.69870		8.29270	0.977	7.91599		8.29075	0.977
Butane	18.1588		22.1599	3.797	21.2121		22.1527	3.797
Isopentane	5.61288		6.40961	2.753	6.21833		6.40548	2.753
Pentane	6.60808		7.29259	4.151	7.12629		7.28698	4.151
Cyclopentane	0		0	0	0		0	0
i-C6	3.29253		3.06898	4.095	3.11850		3.06576	4.095
n-Hexane	2.42562		2.05165	3.768	2.13728		2.04921	3.768
Methylcyclopentane	0		0	0	0		0	0
Benzene	0.170583		0.121436	0.347	0.132836		0.121269	0.347
Cyclohexane	0		0	0	0		0	0
2,2,4-Trimethylpentane	0.217025		0.110333	0.6	0.135268		0.110168	0.6
i-C7	0		0	0	0		0	0
Methylcyclohexane	0		0	0	0		0	0
n-Heptane	3.61825		1.76989	10.253	2.20185		1.76702	10.253
Toluene	0.394122		0.141756	1.3	0.200870		0.141507	1.3
Octane	3.60051		0.722843	13.93	1.39809		0.721267	13.93
Ethylbenzene	0.0911369		0.0140064	0.368	0.0321166		0.0139762	0.368
m-Xylene	0.481016		0.0659259	1.971	0.163406		0.0657812	1.971
Nonane	1.61813		0.0984747	7.073	0.455649		0.0982573	7.073
Decane	0		0	0	0		0	0
Decanes Plus - Closed Drain Oil	0		0	0	0		0	0
Decanes Plus - GBS1 Oil	0		0	0	0		0	0
Decanes Plus - Inlet Oil	0		0	0	0		0	0
Decanes Plus - North Header Oil	9.38436		0.000244594	43.069	2.20712		0.000243228	43.069
Decanes Plus - South Header Oil	0		0	0	0		0	0
Decanes Plus - Stabilizer Outlet Oil	0		0	0	0		0	0
Undecanes Plus	0		0	0	0		0	0
Mass Fraction	%		%	%	%		%	%
Water	0		0	0	0		0	0
Hydrogen Sulfide	0		0	0	0		0	0
Nitrogen, Atomic	0.374894		0.676095	0.00353031	0.585877		0.677470	0.00353031
Carbon Dioxide	0		0	0	0		0	0
Methane	0.372118		0.671828	0.00259193	0.582055		0.673194	0.00259193
Ethane	3.66420		6.61656	0.0240965	5.73223		6.63002	0.0240965
Propane	14.4635		25.8800	0.387567	22.4225		25.8882	0.387567
Isobutane	5.17174		9.06871	0.366986	7.88646		9.06914	0.366986
Butane	14.0195		24.2335	1.42625	21.1330		24.2325	1.42625
Isopentane	5.37921		8.70097	1.28365	7.69020		8.69783	1.28365
Pentane	6.33298		9.89962	1.93550	8.81308		9.89479	1.93550
Cyclopentane	0		0	0	0		0	0
i-C6	3.76892		4.97605	2.28060	4.60642		4.97223	2.28060
n-Hexane	2.77657		3.32654	2.09849	3.15704		3.32353	2.09849
Methylcyclopentane	0		0	0	0		0	0
Benzene	0.176993		0.178473	0.175170	0.177855		0.178278	0.175170
Cyclohexane	0		0	0	0		0	0
2,2,4-Trimethylpentane	0.329297		0.237131	0.442933	0.264852		0.236843	0.442933
i-C7	0		0	0	0		0	0
Methylcyclohexane	0		0	0	0		0	0
n-Heptane	4.81591		3.33680	6.63956	3.78181		3.33233	6.63956
Toluene	0.482364		0.245747	0.774099	0.317241		0.245386	0.774099
Octane	5.46313		1.55355	10.2834	2.73745		1.55060	10.2834
Ethylbenzene	0.128522		0.0279779	0.252489	0.0584449		0.0279254	0.252489
m-Xylene	0.678336		0.131688	1.35232	0.297362		0.131436	1.35232
Nonane	2.75672		0.237633	5.86261	1.00171		0.237175	5.86261
Decane	0		0	0	0		0	0
Decanes Plus - Closed Drain Oil	0		0	0	0		0	0
Decanes Plus - GBS1 Oil	0		0	0	0		0	0
Decanes Plus - Inlet Oil	0		0	0	0		0	0
Decanes Plus - North Header Oil	28.8451		0.00106492	64.4081	8.75437		0.00105927	64.4081
Decanes Plus - South Header Oil	0		0	0	0		0	0
Decanes Plus - Stabilizer Outlet Oil	0		0	0	0		0	0
Undecanes Plus	0		0	0	0		0	0

Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0	0	0	0	0	0	0	0
Hydrogen Sulfide	0	0	0	0	0	0	0	0
Nitrogen, Atomic	0.0197894	0	0.0197059	8.34560E-05	0.0813937	0	0.0813270	6.66555E-05
Carbon Dioxide	0	0	0	0	0	0	0	0
Methane	0.0196428	0	0.0195815	6.12728E-05	0.0808627	0	0.0808138	4.89380E-05
Ethane	0.193420	0	0.192851	0.000569637	0.796357	0	0.795902	0.000454963
Propane	0.763478	0	0.754316	0.00916202	3.11508	0	3.10776	0.00731762
Isobutane	0.272998	0	0.264322	0.00867548	1.09564	0	1.08871	0.00692902
Butane	0.740042	0	0.706325	0.0337163	2.93593	0	2.90900	0.0269289
Isopentane	0.283949	0	0.253604	0.0303454	1.06837	0	1.04413	0.0242365
Pentane	0.334295	0	0.288540	0.0457550	1.22437	0	1.18782	0.0365441
Cyclopentane	0	0	0	0	0	0	0	0
i-C6	0.198948	0	0.145035	0.0539131	0.639952	0	0.596893	0.0430598
n-Hexane	0.146565	0	0.0969575	0.0496079	0.438595	0	0.398974	0.0396213
Methylcyclopentane	0	0	0	0	0	0	0	0
Benzene	0.00934286	0	0.00520188	0.00414098	0.0247088	0	0.0214014	0.00330736
Cyclohexane	0	0	0	0	0	0	0	0
2,2,4-Trimethylpentane	0.0173824	0	0.00691156	0.0104709	0.0367949	0	0.0284319	0.00836298
i-C7	0	0	0	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0	0	0	0
n-Heptane	0.254215	0	0.0972566	0.156958	0.525392	0	0.400031	0.125361
Toluene	0.0254623	0	0.00716270	0.0182996	0.0440731	0	0.0294575	0.0146157
Octane	0.288380	0	0.0452808	0.243099	0.380303	0	0.186143	0.194161
Ethylbenzene	0.00678425	0	0.000815460	0.00596879	0.00811953	0	0.00335231	0.00476721
m-Xylene	0.0358069	0	0.00383825	0.0319687	0.0413113	0	0.0157782	0.0255331
Nonane	0.145517	0	0.00692620	0.138591	0.139163	0	0.0284718	0.110691
Decane	0	0	0	0	0	0	0	0
Decanes Plus - Closed Drain Oil	0	0	0	0	0	0	0	0
Decanes Plus - GBS1 Oil	0	0	0	0	0	0	0	0
Decanes Plus - Inlet Oil	0	0	0	0	0	0	0	0
Decanes Plus - North Header Oil	1.52263	0	3.10388E-05	1.52260	1.21621	0	0.000127160	1.21608
Decanes Plus - South Header Oil	0	0	0	0	0	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0	0	0	0	0	0
Undecanes Plus	0	0	0	0	0	0	0	0

Process Streams		50K IFRs Combined	50K IFRs Flash	50K IFRs Standing	50K IFRs Working	100K IFRs Combined	100K IFRs Flash	100K IFRs Standing	100K IFRs Working
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	MIX-101	Four 50 KBBL IFR Tanks	Four 50 KBBL IFR Tanks	Four 50 KBBL IFR Tanks	MIX-100	Ten 100 KBBL IFR Tanks	Ten 100 KBBL IFR Tanks	Ten 100 KBBL IFR Tanks
	To Block:	--	MIX-101	MIX-101	MIX-101	--	MIX-100	MIX-100	MIX-100
Property	Units								
Temperature	°F	106.437	100.177	100.177	100.177	99.9214	93.58	93.58	93.58
Pressure	psig	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Mole Fraction Vapor	%	76.2203		100	0	93.6050		99.9991	0
Mole Fraction Light Liquid	%	23.7797		0	100	6.39500		0.000940981	100
Mole Fraction Heavy Liquid	%	0		0	0	0		0	0
Phase Mole Fraction	%	100		100	100	100		100	100
Molecular Weight	lb/lbmol	75.2829		53.1487	154.735	58.3398		53.1337	154.735
Mass Density	lb/ft^3	0.212610		0.116026	47.8227	0.136030		0.117449	48.0058
Molar Flow	lbmol/h	0.0701175	0	0.0548398	0.0152777	0.238133	0	0.225931	0.0122021
Mass Flow	lb/h	5.27865	0	2.91466	2.36398	13.8926	0	12.0045	1.88809
Vapor Volumetric Flow	ft^3/h	24.8278	0	25.1207	0.0494323	102.129	0	102.211	0.0393304
Liquid Volumetric Flow	gpm	3.09541	0	3.13193	0.00616299	12.7330	0	12.7431	0.00490353
Std Vapor Volumetric Flow	MMSCFD	0.000638603	0	0.000499460	0.000139143	0.00216882	0	0.00205769	0.000111132
Std Liquid Volumetric Flow	sgpm	0.0165960	0	0.0105370	0.00605897	0.0482435	0	0.0434042	0.00483924
Compressibility		0.750698		0.982015	0.00693644	0.919841		0.981413	0.00699237
Specific Gravity				1.83509	0.766773				0.769710
API Gravity					48.8656				48.8656
Enthalpy	Btu/h	-4415.29		-2463.67	-1951.62	-11743.2		-10178.4	-1564.80
Mass Enthalpy	Btu/lb	-836.444		-845.269	-825.562	-845.285		-847.882	-828.774
Mass Cp	Btu/(lb*°F)	0.455212		0.416416	0.488789	0.428494		0.412619	0.484868
Ideal Gas CpCv Ratio		1.06975		1.09931	1.03448	1.09064		1.10038	1.03485
Dynamic Viscosity	cP			0.00824897	0.924514				0.975577
Kinematic Viscosity	cSt			4.43835	1.20687				1.26866
Thermal Conductivity	Btu/(h*ft*°F)			0.0106369	0.0695091				0.0699380
Surface Tension	lbf/ft				0.00167133				0.00169516
Net Ideal Gas Heating Value	Btu/ft^3	3823.11		2753.38	7662.96	3004.24		2752.63	7662.96
Net Liquid Heating Value	Btu/lb	19114.7		19502.2	18637.0	19384.7		19502.3	18637.0
Gross Ideal Gas Heating Value	Btu/ft^3	4119.77		2984.01	8196.63	3250.34		2983.20	8196.63
Gross Liquid Heating Value	Btu/lb	20610.3		21149.1	19945.8	20985.8		21149.4	19945.8

2024 Stabilized Oil North Header	2024 Stabilized Oil North Header - 2
Solved	Solved
--	--
Ten 100 KBBL IFR Tanks	Four 50 KBBL IFR Tanks
%	%
0*	0*
0*	0*
0.039*	0.039*
0*	0*
0.025*	0.025*
0.124*	0.124*
1.36*	1.36*
0.977*	0.977*
3.797*	3.797*
2.753*	2.753*
4.151*	4.151*
0*	0*
4.095*	4.095*
3.768*	3.768*
0*	0*
0.347*	0.347*
0*	0*
0.6*	0.6*
0*	0*
0*	0*
10.253*	10.253*
1.3*	1.3*
13.93*	13.93*
0.368*	0.368*
1.971*	1.971*
7.073*	7.073*
0*	0*
0*	0*
0*	0*
0*	0*
43.069*	43.069*
0*	0*
0*	0*
0*	0*
%	%
0*	0*
0*	0*
0.00353031*	0.00353031*
0*	0*
0.00259193*	0.00259193*
0.0240965*	0.0240965*
0.387567*	0.387567*
0.366986*	0.366986*
1.42625*	1.42625*
1.28365*	1.28365*
1.93550*	1.93550*
0*	0*
2.28060*	2.28060*
2.09849*	2.09849*
0*	0*
0.175170*	0.175170*
0*	0*
0.442933*	0.442933*
0*	0*
0*	0*
6.63956*	6.63956*
0.774099*	0.774099*
10.2834*	10.2834*
0.252489*	0.252489*
1.35232*	1.35232*
5.86261*	5.86261*
0*	0*
0*	0*
0*	0*
0*	0*
64.4081*	64.4081*
0*	0*
0*	0*
0*	0*

lb/h	lb/h
0*	0*
0*	0*
241.044*	241.044*
0*	0*
176.973*	176.973*
1645.27*	1645.27*
26462.5*	26462.5*
25057.2*	25057.2*
97382.0*	97382.0*
87645.8*	87645.8*
132153*	132153*
0*	0*
155716*	155716*
143281*	143281*
0*	0*
11960.3*	11960.3*
0*	0*
30242.8*	30242.8*
0*	0*
0*	0*
453339*	453339*
52854.3*	52854.3*
702137*	702137*
17239.5*	17239.5*
92334.5*	92334.5*
400290*	400290*
0*	0*
0*	0*
0*	0*
0*	0*
4.39769E+06*	4.39769E+06*
0*	0*
0*	0*
0*	0*

2024 Stabilized Oil North Header	2024 Stabilized Oil North Header - 2
Solved	Solved
--	--
Ten 100 KBBL IFR Tanks	Four 50 KBBL IFR Tanks
74*	74*
10*	10*
0	0
100	100
0	0
100	100
154.735	154.735
48.5503	48.5503
44126.1	44126.1
6.82784E+06	6.82784E+06
140635	140635
17533.7	17533.7
401.884	401.884
17500*	17500*
0.0126491	0.0126491
0.778439	0.778439
48.8505	48.8505
-5.72256E+09	-5.72256E+09
-838.121	-838.121
0.473250	0.473250
1.03603	1.03603
1.15830	1.15830
1.48939	1.48939
0.0712049	0.0712049
0.00183033	0.00183033
7662.96	7662.96
18637.0	18637.0
8196.63	8196.63
19945.8	19945.8

Tank Losses Report
Four 50 KBBL IFR Tanks

Client Name:	XTO ENERGY INC	**Job:**	IFR Tanks
Location:	Cowboy CDP	**Modified:**	10/14/2024 15:36
Flowsheet:	IFR Oil Storage	**Status:**	Solved 3:36 PM, 10/14/2024

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
2024 Stabilized Oil North Header - 2	Inlet		50K IFRs Flash	Flashing Losses Stream	MIX-101
50K IFRs Working	Working Losses Stream	MIX-101	50K IFRs Standing	Standing Losses Stream	MIX-101
7	Loading Losses Stream		8	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Internal Floating Roof Tank*	Location	Roswell, NM*
Shell Length	35.74* ft	Time Frame	Year
Shell Diameter	100* ft	Known Liquid Bulk Temperature?	TRUE
Number of Storage Tanks	4*	Liquid Bulk Temperature	100* °F
Material Category	Light Organics*	Use AP 42 Raoult's Vapor Pressure?	TRUE
Insulation	Uninsulated	Flashing Temperature	100.177 °F
Vapor Balanced Tank?	FALSE	Average Daily Maximum Ambient Temperature	75.8 °F
Known Sum of Increases in Liquid Level?	FALSE	Average Daily Minimum Ambient Temperature	47.6 °F
Sum of Increases in Liquid Level	39600.6 ft/yr	Atmospheric Pressure at Tank Location	12.88 psia
Shell Color	Tan*	Daily Solar Insolation	1722 Btu/(day*ft^2)
Shell Paint Condition	Average	Average Wind Speed	8.7 mph
Roof Color	Tan*	Include Short Term Emissions	FALSE
Roof Paint Condition	Average		

Composition Subset Properties : Scalar Data

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Water	FALSE
Hydrogen Sulfide	FALSE
Nitrogen, Atomic	FALSE
Carbon Dioxide	FALSE
Methane	FALSE
Ethane	FALSE
Propane	TRUE
Isobutane	TRUE
Butane	TRUE
Isopentane	TRUE
Pentane	TRUE
Cyclopentane	TRUE
i-C6	TRUE
n-Hexane	TRUE
Methylcyclopentane	TRUE
Benzene	TRUE
Cyclohexane	TRUE
2,2,4-Trimethylpentane	TRUE
i-C7	TRUE
Methylcyclohexane	TRUE
n-Heptane	TRUE
Toluene	TRUE
Octane	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
Nonane	TRUE
Decane	TRUE
Decanes Plus - Closed Drain Oil	TRUE
Decanes Plus - GBS1 Oil	TRUE
Decanes Plus - Inlet Oil	TRUE
Decanes Plus - North Header Oil	TRUE
Decanes Plus - South Header Oil	TRUE
Decanes Plus - Stabilizer Outlet Oil	TRUE
Undecanes Plus	TRUE

Floating Roof Properties : Scalar Data

Shell Internal Condition	Light Rust*	Slotted Guidepole/Sample Well Quantity	1*
Self Supported Roof?	FALSE	Gauge-Float Well Type	Unbolted Cover, Ungasketed
Number of Roof Support Columns	1*	Gauge-Float Well Quantity	1

Support Column Diameter Type	Unknown	Gauge-Hatch/Sample Port Type	N/A*
Effective Support Column Diameter	1 ft	Vacuum Breaker Type	Weighted Mechanical Actuation, Gasketed
Tank Construction	Welded	Vacuum Breaker Quantity	2*
Primary Seal	Mechanical Shoe	Deck Drain Type	N/A*
Secondary Seal Type #1	Rim Mounted*	Center Deck Leg Type	Adjustable, Internal Floating Roof
Seal Fitting Tightness	Average	Center Deck Leg Quantity	44*
Access Hatch Type	Bolted Cover, Gasketed*	Rim Vent Type	Weighted Mechanical Actuation, Gasketed
Access Hatch Quantity	2*	Rim Vent Quantity	1*
Fixed Roof Support Column Well Type	Built-up Column, Ungasketed Sliding Cover	Ladder Well Type	N/A*
Fixed Roof Support Column Well Quantity	1*	Ladder-Slotted Guidepole Combination Well Type	Ladder Sleeve, Gasketed Sliding Cover*
Unslotted Guidepole and Well Type	N/A*	Ladder-Slotted Guidepole Combination Well Quantity	1*
Slotted Guidepole/Sample Well Type	Gasketed Sliding Cover, With Float, Pole Sleeve, and Pole Wiper*	Construction Type of Internal Floating Roof Tank	Welded

Details Properties : Scalar Data

Vapor Pressure at Average Daily Liquid Surface Temperature	7.49212 psia	Vapor Pressure Function	0.214497
Average Daily Liquid Surface Temperature	550.869 °R	Product Factor	1
Tank Roof Surface Solar Absorptance	0.49	Total Deck Fitting Loss Factor	499.91 lbmol/yr
Tank Shell Surface Solar Absorptance	0.49	Deck Seam Loss per Unit Seam Length Factor	0 lbmol/(ft*yr)
Maximum Liquid Surface Temperature	559.847 °R	Deck Seam Length Factor	0 ft/ft^2
Minimum Liquid Surface Temperature	541.891 °R	Area of Deck	7853.98 ft^2
Vapor Molecular Weight	53.1487 lb/lbmol	Effective Annual Throughput	5.54013E+07 bbl/yr
Average Daily Ambient Temperature	521.37 °R	Shell Clingage Factor	0.0015 bbl/(1000*ft^2)
Annual Net Throughput	2.21605E+08 bbl/yr	Average Organic Liquid Density	6.54101 lb/gal
Zero Wind Speed Rim Seal Loss Factor	0.6 lbmol/(ft*yr)	Saturation Factor	0.5
Wind Speed Dependent Rim Seal Loss Factor	0.4 lbmol/(mph^n*ft*yr)	Vapor Pressure of Liquid Loaded	7.49212 psia
Average Effective Wind Speed	0 mph	Collection Efficiency	70 %
Seal-Related Wind Speed Exponent	1	Annual Net Throughput Per Tank	5.54013E+07 bbl/yr

Details Properties : Tabulated Data

Index	Kfa lbmol/yr	Kfb lbmol/(mph^m*yr)	m	Kfi lbmol/yr
Access Hatch Type	1.6	0	0	1.6
Fixed Roof Support Column Well Type	51	0	0	51
Slotted Guidepole/Sample Well Type	11	9.9	0.89	11
Gauge-Float Well Type	14	5.4	1.1	14
Vacuum Breaker Type	6.2	1.2	0.94	6.2
Center Deck Leg Type	7.9	0	0	7.9
Rim Vent Type	0.71	0.1	1	0.71
Ladder-Slotted Guidepole Combination Well Type	60	0	0	60

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	None
Land Based Mode of Operation	Submerged Loading of a Clean Cargo Tank	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	0 ton/yr	Standing Losses per Tank	2.93736 ton/yr
Working Losses	10.3511 ton/yr	Rim Seal Losses per Tank	0.314768 ton/yr
Standing Losses	11.7495 ton/yr	Deck Fitting Losses per Tank	2.62260 ton/yr
Loading Losses	18984.9 ton/yr	Deck Seam Losses per Tank	0 ton/yr
Rim Seal Losses	1.25907 ton/yr	Flashing Losses per Tank	0 ton/yr
Deck Fitting Losses	10.4904 ton/yr	Working and Standing Losses	22.1006 ton/yr
Deck Seam Losses	0 ton/yr	Working and Standing Losses per Tank	5.52515 ton/yr
Working Losses per Tank	2.58778 ton/yr	Loading Losses per Tank	4746.22 ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Rim Seal Losses Mass Flows ton/yr	Deck Fitting Losses Mass Flows ton/yr
Propane	0	0.0401297	3.30390	0.354047	2.94986
Isobutane	0	0.0379986	1.15773	0.124063	1.03367
Butane	0	0.147677	3.09371	0.331522	2.76218
Isopentane	0	0.132913	1.11079	0.119032	0.991754
Pentane	0	0.200407	1.26381	0.135430	1.12838
Cyclopentane	0	0	0	0	0
i-C6	0	0.236139	0.635253	0.0680738	0.567179
n-Hexane	0	0.217283	0.424674	0.0455081	0.379166
Methylcyclopentane	0	0	0	0	0
Benzene	0	0.0181375	0.0227842	0.00244156	0.0203427
Cyclohexane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0.0458624	0.0302726	0.00324402	0.0270286
i-C7	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0
n-Heptane	0	0.687477	0.425984	0.0456485	0.380336
Toluene	0	0.0801522	0.0313726	0.00336189	0.0280107
Octane	0	1.06477	0.198330	0.0212530	0.177077
Ethylbenzene	0	0.0261433	0.00357172	0.000382745	0.00318897
m-Xylene	0	0.140023	0.0168115	0.00180152	0.0150100

Nonane	0	0.607029	0.0303368	0.00325089	0.0270859
Decane	0	0	0	0	0
Decanes Plus - Closed Drain Oil	0	0	0	0	0
Decanes Plus - GBS1 Oil	0	0	0	0	0
Decanes Plus - Inlet Oil	0	0	0	0	0
Decanes Plus - North Header Oil	0	6.66898	0.000135950	1.45684E-05	0.000121382
Decanes Plus - South Header Oil	0	0	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0	0	0
Undecanes Plus	0	0	0	0	0

Index	Deck Seam Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
Propane	0	5338.47	3.34403
Isobutane	0	1870.67	1.19573
Butane	0	4998.83	3.24138
Isopentane	0	1794.82	1.24370
Pentane	0	2042.07	1.46421
Cyclopentane	0	0	0
i-C6	0	1026.45	0.871392
n-Hexane	0	686.191	0.641956
Methylcyclopentane	0	0	0
Benzene	0	36.8149	0.0409217
Cyclohexane	0	0	0
2,2,4-Trimethylpentane	0	48.9148	0.0761351
i-C7	0	0	0
Methylcyclohexane	0	0	0
n-Heptane	0	688.308	1.11346
Toluene	0	50.6921	0.111525
Octane	0	320.463	1.26310
Ethylbenzene	0	5.77121	0.0297150
m-Xylene	0	27.1642	0.156834
Nonane	0	49.0184	0.637366
Decane	0	0	0
Decanes Plus - Closed Drain Oil	0	0	0
Decanes Plus - GBS1 Oil	0	0	0
Decanes Plus - Inlet Oil	0	0	0
Decanes Plus - North Header Oil	0	0.219669	6.66911
Decanes Plus - South Header Oil	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0
Undecanes Plus	0	0	0

Notes:

Tank Losses Report
Ten 100 KBBL IFR Tanks

Client Name:	XTO ENERGY INC	**Job:**	IFR Tanks
Location:	Cowboy CDP	**Modified:**	10/14/2024 15:36
Flowsheet:	IFR Oil Storage	**Status:**	Solved 3:36 PM, 10/14/2024

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
2024 Stabilized Oil North Header	Inlet		100K IFRs Flash	Flashing Losses Stream	MIX-100
100K IFRs Working	Working Losses Stream	MIX-100	100K IFRs Standing	Standing Losses Stream	MIX-100
4	Loading Losses Stream		5	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Internal Floating Roof Tank*	Location	Roswell, NM*
Shell Length	50* ft	Time Frame	Year*
Shell Diameter	130.6* ft	Known Liquid Bulk Temperature?	TRUE
Number of Storage Tanks	10*	Liquid Bulk Temperature	100* °F
Material Category	Light Organics*	Use AP 42 Raoult's Vapor Pressure?	TRUE
Insulation	Uninsulated	Flashing Temperature	93.58* °F
Vapor Balanced Tank?	FALSE	Average Daily Maximum Ambient Temperature	75.8 °F
Known Sum of Increases in Liquid Level?	FALSE	Average Daily Minimum Ambient Temperature	47.6 °F
Sum of Increases in Liquid Level	9286.32 ft/yr	Atmospheric Pressure at Tank Location	12.88 psia
Shell Color	Tan*	Daily Solar Insolation	1722 Btu/(day*ft^2)
Shell Paint Condition	Average	Average Wind Speed	8.7 mph
Roof Color	Tan*	Include Short Term Emissions	FALSE
Roof Paint Condition	Average		

Composition Subset Properties : Scalar Data

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Water	FALSE
Hydrogen Sulfide	FALSE
Nitrogen, Atomic	FALSE
Carbon Dioxide	FALSE
Methane	FALSE
Ethane	FALSE
Propane	TRUE
Isobutane	TRUE
Butane	TRUE
Isopentane	TRUE
Pentane	TRUE
Cyclopentane	TRUE
i-C6	TRUE
n-Hexane	TRUE
Methylcyclopentane	TRUE
Benzene	TRUE
Cyclohexane	TRUE
2,2,4-Trimethylpentane	TRUE
i-C7	TRUE
Methylcyclohexane	TRUE
n-Heptane	TRUE
Toluene	TRUE
Octane	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
Nonane	TRUE
Decane	TRUE
Decanes Plus - Closed Drain Oil	TRUE
Decanes Plus - GBS1 Oil	TRUE
Decanes Plus - Inlet Oil	TRUE
Decanes Plus - North Header Oil	TRUE
Decanes Plus - South Header Oil	TRUE
Decanes Plus - Stabilizer Outlet Oil	TRUE
Undecanes Plus	TRUE

Floating Roof Properties : Scalar Data

Shell Internal Condition	Light Rust*	Slotted Guidepole/Sample Well Quantity	1*
Self Supported Roof?	FALSE	Gauge-Float Well Type	Unbolted Cover, Ungasketed
Number of Roof Support Columns	7*	Gauge-Float Well Quantity	1

Support Column Diameter Type	Unknown*	Gauge-Hatch/Sample Port Type	N/A*
Effective Support Column Diameter	1 ft	Vacuum Breaker Type	Weighted Mechanical Actuation, Gasketed*
Tank Construction	Welded	Vacuum Breaker Quantity	2*
Primary Seal	Mechanical Shoe	Deck Drain Type	N/A*
Secondary Seal Type #1	Rim Mounted*	Center Deck Leg Type	Adjustable, Internal Floating Roof
Seal Fitting Tightness	Average	Center Deck Leg Quantity	49*
Access Hatch Type	Bolted Cover, Gasketed*	Rim Vent Type	Weighted Mechanical Actuation, Gasketed
Access Hatch Quantity	2*	Rim Vent Quantity	3*
Fixed Roof Support Column Well Type	Built-up Column, Ungasketed Sliding Cover	Ladder Well Type	N/A*
Fixed Roof Support Column Well Quantity	7*	Ladder-Slotted Guidepole Combination Well Type	Ladder Sleeve, Gasketed Sliding Cover*
Unslotted Guidepole and Well Type	N/A*	Ladder-Slotted Guidepole Combination Well Quantity	1*
Slotted Guidepole/Sample Well Type	Gasketed Sliding Cover, With Float, Pole Sleeve, and Pole Wiper*	Construction Type of Internal Floating Roof Tank	Welded

Details Properties : Scalar Data

Vapor Pressure at Average Daily Liquid Surface Temperature	7.47903 psia	Vapor Pressure Function	0.213918
Average Daily Liquid Surface Temperature	550.739 °R	Product Factor	1
Tank Roof Surface Solar Absorptance	0.49	Total Deck Fitting Loss Factor	846.83 lbmol/yr
Tank Shell Surface Solar Absorptance	0.49	Deck Seam Loss per Unit Seam Length Factor	0 lbmol/(ft*yr)
Maximum Liquid Surface Temperature	559.729 °R	Deck Seam Length Factor	0 ft/ft^2
Minimum Liquid Surface Temperature	541.750 °R	Area of Deck	13396.0 ft^2
Vapor Molecular Weight	53.1337 lb/lbmol	Effective Annual Throughput	2.21589E+07 bbl/yr
Average Daily Ambient Temperature	521.37 °R	Shell Clingage Factor	0.0015 bbl/(1000*ft^2)
Annual Net Throughput	2.21589E+08 bbl/yr	Average Organic Liquid Density	6.54101 lb/gal
Zero Wind Speed Rim Seal Loss Factor	0.6 lbmol/(ft*yr)	Saturation Factor	0.5
Wind Speed Dependent Rim Seal Loss Factor	0.4 lbmol/(mph^n*ft*yr)	Vapor Pressure of Liquid Loaded	7.47903 psia
Average Effective Wind Speed	0 mph	Collection Efficiency	70 %
Seal-Related Wind Speed Exponent	1	Annual Net Throughput Per Tank	2.21589E+07 bbl/yr

Details Properties : Tabulated Data

Index	Kfa lbmol/yr	Kfb lbmol/(mph^m*yr)	m	Kfi lbmol/yr
Access Hatch Type	1.6	0	0	1.6
Fixed Roof Support Column Well Type	51	0	0	51
Slotted Guidepole/Sample Well Type	11	9.9	0.89	11
Gauge-Float Well Type	14	5.4	1.1	14
Vacuum Breaker Type	6.2	1.2	0.94	6.2
Center Deck Leg Type	7.9	0	0	7.9
Rim Vent Type	0.71	0.1	1	0.71
Ladder-Slotted Guidepole Combination Well Type	60	0	0	60

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	None
Land Based Mode of Operation	Submerged Loading of a Clean Cargo Tank	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	0 ton/yr	Standing Losses per Tank	4.83836 ton/yr
Working Losses	8.26734 ton/yr	Rim Seal Losses per Tank	0.409790 ton/yr
Standing Losses	48.3836 ton/yr	Deck Fitting Losses per Tank	4.42857 ton/yr
Loading Losses	18941.6 ton/yr	Deck Seam Losses per Tank	0 ton/yr
Rim Seal Losses	4.09790 ton/yr	Flashing Losses per Tank	0 ton/yr
Deck Fitting Losses	44.2857 ton/yr	Working and Standing Losses	56.6509 ton/yr
Deck Seam Losses	0 ton/yr	Working and Standing Losses per Tank	5.66509 ton/yr
Working Losses per Tank	0.826734 ton/yr	Loading Losses per Tank	1894.16 ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Rim Seal Losses Mass Flows ton/yr	Deck Fitting Losses Mass Flows ton/yr
Propane	0	0.0320512	13.6120	1.15288	12.4591
Isobutane	0	0.0303491	4.76854	0.403877	4.36466
Butane	0	0.117948	12.7414	1.07915	11.6623
Isopentane	0	0.106156	4.57330	0.387341	4.18596
Pentane	0	0.160063	5.20267	0.440646	4.76202
Cyclopentane	0	0	0	0	0
i-C6	0	0.188602	2.61439	0.221429	2.39296
n-Hexane	0	0.173542	1.74751	0.148007	1.59950
Methylcyclopentane	0	0	0	0	0
Benzene	0	0.0144862	0.0937382	0.00793926	0.0857990
Cyclohexane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0.0366299	0.124532	0.0105474	0.113984
i-C7	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0
n-Heptane	0	0.549081	1.75213	0.148399	1.60374
Toluene	0	0.0640167	0.129024	0.0109278	0.118096
Octane	0	0.850423	0.815305	0.0690531	0.746252
Ethylbenzene	0	0.0208804	0.0146831	0.00124360	0.0134395
m-Xylene	0	0.111835	0.0691087	0.00585324	0.0632554

Nonane	0	0.484828	0.124706	0.0105621	0.114144
Decane	0	0	0	0	0
Decanes Plus - Closed Drain Oil	0	0	0	0	0
Decanes Plus - GBS1 Oil	0	0	0	0	0
Decanes Plus - Inlet Oil	0	0	0	0	0
Decanes Plus - North Header Oil	0	5.32645	0.000556963	4.71726E-05	0.000509790
Decanes Plus - South Header Oil	0	0	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0	0	0
Undecanes Plus	0	0	0	0	0

Index	Deck Seam Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
Propane	0	5328.93	13.6440
Isobutane	0	1866.83	4.79889
Butane	0	4988.11	12.8594
Isopentane	0	1790.39	4.67946
Pentane	0	2036.78	5.36273
Cyclopentane	0	0	0
i-C6	0	1023.50	2.80299
n-Hexane	0	684.127	1.92105
Methylcyclopentane	0	0	0
Benzene	0	36.6974	0.108224
Cyclohexane	0	0	0
2,2,4-Trimethylpentane	0	48.7527	0.161162
i-C7	0	0	0
Methylcyclohexane	0	0	0
n-Heptane	0	685.940	2.30122
Toluene	0	50.5112	0.193040
Octane	0	319.182	1.66573
Ethylbenzene	0	5.74827	0.0355635
m-Xylene	0	27.0552	0.180944
Nonane	0	48.8211	0.609534
Decane	0	0	0
Decanes Plus - Closed Drain Oil	0	0	0
Decanes Plus - GBS1 Oil	0	0	0
Decanes Plus - Inlet Oil	0	0	0
Decanes Plus - North Header Oil	0	0.218044	5.32700
Decanes Plus - South Header Oil	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0
Undecanes Plus	0	0	0

Notes:

User Specification Summary
For Reported Objects

Client Name:	XTO ENERGY INC	**Job:**	IFR Tanks
Location:	Cowboy CDP		
Flowsheet:			

Flowsheet : IFR Oil Storage

PStream : 2024 Stabilized Oil North Header

Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header!Phases!Total!Properties!Temperature		74	°F
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header!Phases!Total!Properties!Pressure		10	psig
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header!Phases!Total!Properties!Std Liquid Volumetric Flow		17500	sgpm
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header!Phases!Total!Composition!Mole Fraction	Nitrogen, Atomic	3.90E-02	%
	Methane	2.50E-02	%
	Ethane	0.124	%
	Propane	1.36	%
	Isobutane	0.977	%
	Butane	3.797	%
	Isopentane	2.753	%
	Pentane	4.151	%
	i-C6	4.095	%
	n-Hexane	3.768	%
	Benzene	0.347	%
	2,2,4-Trimethylpentane	0.6	%
	n-Heptane	10.253	%
	Toluene	1.3	%
	Octane	13.93	%
	Ethylbenzene	0.368	%
	m-Xylene	1.971	%
	Nonane	7.073	%
	Decanes Plus - North Header Oil	43.069	%

PStream : 2024 Stabilized Oil North Header - 2

Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header - 2!Phases!Total!Properties!Temperature		74	°F
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header - 2!Phases!Total!Properties!Pressure		10	psig
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header - 2!Phases!Total!Properties!Std Liquid Volumetric Flow		17500	sgpm
Project!Flowsheets!IFR Oil Storage!PStreams!2024 Stabilized Oil North Header - 2!Phases!Total!Composition!Mole Fraction	Nitrogen, Atomic	3.90E-02	%
	Methane	2.50E-02	%
	Ethane	0.124	%
	Propane	1.36	%
	Isobutane	0.977	%
	Butane	3.797	%
	Isopentane	2.753	%
	Pentane	4.151	%
	i-C6	4.095	%
	n-Hexane	3.768	%
	Benzene	0.347	%
	2,2,4-Trimethylpentane	0.6	%
	n-Heptane	10.253	%
	Toluene	1.3	%
	Octane	13.93	%
	Ethylbenzene	0.368	%
	m-Xylene	1.971	%
	Nonane	7.073	%
	Decanes Plus - North Header Oil	43.069	%

Block : Four 50 KBBL IFR Tanks

Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Tank Geometry	Internal Floating Roof Tank	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Shell Length	35.74	ft
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Shell Diameter	100	ft
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Number of Storage Tanks	4	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Material Category	Light Organics	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Shell Color	Tan	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Roof Color	Tan	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Location	Roswell, NM	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Known Liquid Bulk Temperature?	TRUE	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Liquid Bulk Temperature	100	°F

Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Working and Standing Properties!Use AP 42 Raoult's Vapor Pressure?	TRUE	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Shell Internal Condition	Light Rust	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Number of Roof Support Columns	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Secondary Seal Type #1	Rim Mounted	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Access Hatch Type	Bolted Cover, Gasketed	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Access Hatch Quantity	2	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Fixed Roof Support Column Well Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Unslotted Guidepole and Well Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Slotted Guidepole/Sample Well Type	Gasketed Sliding Cover, With Float, Pole Sleeve, and Pole Wiper	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Slotted Guidepole/Sample Well Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Gauge-Hatch/Sample Port Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Vacuum Breaker Quantity	2	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Deck Drain Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Center Deck Leg Quantity	44	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Rim Vent Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Ladder Well Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Ladder-Slotted Guidepole Combination Well Type	Ladder Sleeve, Gasketed Sliding Cover	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Floating Roof Properties!Ladder-Slotted Guidepole Combination Well Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Four 50 KBBL IFR Tanks!Loading Properties!Control Efficiency	0	%
Block : Ten 100 KBBL IFR Tanks		
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Tank Geometry	Internal Floating Roof Tank	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Shell Length	50	ft
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Shell Diameter	130.6	ft
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Number of Storage Tanks	10	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Material Category	Light Organics	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Vapor Balanced Tank?	FALSE	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Shell Color	Tan	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Roof Color	Tan	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Location	Roswell, NM	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Time Frame	Year	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Known Liquid Bulk Temperature?	TRUE	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Liquid Bulk Temperature	100	°F
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Use AP 42 Raoult's Vapor Pressure?	TRUE	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Flashing Temperature	93.58	°F
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Working and Standing Properties!Include Short Term Emissions	FALSE	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Shell Internal Condition	Light Rust	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Number of Roof Support Columns	7	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Support Column Diameter Type	Unknown	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Secondary Seal Type #1	Rim Mounted	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Access Hatch Type	Bolted Cover, Gasketed	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Access Hatch Quantity	2	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Fixed Roof Support Column Well Quantity	7	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Unslotted Guidepole and Well Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Slotted Guidepole/Sample Well Type	Gasketed Sliding Cover, With Float, Pole Sleeve, and Pole Wiper	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Slotted Guidepole/Sample Well Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Gauge-Hatch/Sample Port Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Vacuum Breaker Type	Weighted Mechanical Actuation, Gasketed	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Vacuum Breaker Quantity	2	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Deck Drain Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Center Deck Leg Quantity	49	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Rim Vent Quantity	3	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Ladder Well Type	N/A	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Ladder-Slotted Guidepole Combination Well Type	Ladder Sleeve, Gasketed Sliding Cover	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Floating Roof Properties!Ladder-Slotted Guidepole Combination Well Quantity	1	
Project!Flowsheets!IFR Oil Storage!Blocks!Ten 100 KBBL IFR Tanks!Loading Properties!Control Efficiency	0	%

Environments

CDP - STAB Sample	
Project!Environments!CDP - STAB Sample!Flash Properties!Only Isothermal Property Flash	FALSE
Project!Environments!CDP - STAB Sample!Flash Properties!Flash Polish Step	TRUE
Project!Environments!CDP - STAB Sample!Flash Properties!Rachford-Rice Style Algorithm	TRUE
Project!Environments!CDP - STAB Sample!Flash Properties!Boston-Britt Style Algorithm	TRUE

Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

Project: Cowboy CDP_2024.10.pmx

Licensed to Esso Exploration, Inc.

Client Name: XTO ENERGY INC
Location: Cowboy CDP
Job: Gas Streams

ProMax Filename: \\FTWNAS01a\projnt15\EHS\Environmental\Air\Areas of Operation\New Mexico\Delaware Division\0_Midstream\Cowboy CDP\1. Permits\2024-07_Update\ProMax\New\Cowboy CDP_2024.10.pmx
ProMax Version: 6.0.22251.0
Simulation Initiated: 10/15/2024 1:13:31 PM

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mailto:sales@bre.com
http://www.bre.com/

Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

VOC (lb/kscf)

Fuel Gas Skid @ 1000 scfh	Mass Flow Sum	0.082286	lb/h
Plant Fuel Outlet @ 1000 scfh	Mass Flow Sum	0.0731	lb/h
Plant Inlet @ 1000 scfh	Mass Flow Sum	14.636	lb/h
FL1 CDP LPF (V-6808) @ 1000 scfh	Mass Flow Sum	66.002	lb/h
FL1 CDP HPF (V-6809) @ 1000 scfh	Mass Flow Sum	10.977	lb/h
FL2 Cryo LPF (V-6858) @ 1000 scfh	Mass Flow Sum	3.6801	lb/h
FL2 Cryo HPF (V-6859) @ 1000 scfh	Mass Flow Sum	1.2895	lb/h
FL3 Cryo HPF (V-XXXX) @ 1000 scfh	Mass Flow Sum	0.54893	lb/h
Oil OVH Compressor @ 1000 scfh	Mass Flow Sum	61.67	lb/h
Condensate OVH Compressor @ 1000 scfh	Mass Flow Sum	16.615	lb/h
Cryo Residue Gas @ 1000 scfh	Mass Flow Sum	0.090212	lb/h
FL1 CDP LPF (V-6808) @ 1000 scfh - Hysys Comp	Mass Flow Sum	118.31	lb/h
FL2 Cryo HPF (V-6859) @ 1000 scfh - Hysys Comp	Mass Flow Sum	17.137	lb/h

Gas Stream Samples 8/2024

Fuel Gas Skid @ 1000 scfh

Plant Fuel Outlet @ 1000 scfh

Plant Inlet @ 1000 scfh

FL1 CDP LPF (V-6808) @ 1000 scfh

FL1 CDP HPF (V-6809) @ 1000 scfh

FL2 Cryo LPF (V-6858) @ 1000 scfh

FL2 Cryo HPF (V-6859) @ 1000 scfh

FL3 Cryo HPF (V-XXXX) @ 1000 scfh

Gas Stream Samples 2/2022

Oil OVH Compressor @ 1000 scfh

Condensate OVH Compressor @ 1000 scfh

Cryo Residue Gas @ 1000 scfh

Hysys Sim Streams – M Olson 10/2024

FL1 CDP LPF (V-6808) @ 1000 scfh - Hysys Comp

FL2 Cryo HPF (V-6859) @ 1000 scfh - Hysys Comp

Process Streams		Condensate OVH Compressor @ 1000 scfh	Cryo Residue Gas @ 1000 scfh	FL1 CDP HPF (V-6809) @ 1000 scfh	FL1 CDP LPF (V-6808) @ 1000 scfh
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	--	--	--
	To Block:	--	--	--	--
Mole Fraction		%	%	%	%
Water		0*	0*	0*	0*
Hydrogen Sulfide		0.001*	0.001*	0.000117498*	9.06764E-05*
Nitrogen, Atomic		0.721*	0.814*	2.43011*	0.902587*
Carbon Dioxide		0.17*	0.185*	0.167878*	0.137751*
Methane		71.14*	87.297*	82.4668*	36.7250*
Ethane		16.531*	11.626*	7.26471*	19.4227*
Propane		6.732*	0.075*	5.06690*	19.6265*
Isobutane		0.823*	0.002*	0.499504*	3.43440*
Butane		1.707*	0*	0.847090*	8.49059*
Isopentane		0.387*	0*	0.0810339*	2.43983*
Pentane		0.449*	0*	0.0910244*	2.93476*
Cyclopentane		0*	0*	0*	0*
i-C6		0.266*	0*	0.0880580*	1.25556*
n-Hexane		0.227*	0*	0.0910785*	0.962155*
Methylcyclopentane		0*	0*	0*	0*
Benzene		0.017*	0*	0.107914*	0.124462*
Cyclohexane		0.122*	0*	0.127519*	0.536305*
2,2,4-Trimethylpentane		0*	0*	0.0198069*	0.0876988*
i-C7		0*	0*	0*	0*
Methylcyclohexane		0.145*	0*	0.134588*	0.538752*
n-Heptane		0.388*	0*	0.223997*	1.28271*
Toluene		0.033*	0*	0.148420*	0.174120*
Octane		0.135*	0*	0.124801*	0.843332*
Ethylbenzene		0*	0*	0.00188596*	0.0100975*
m-Xylene		0.006*	0*	0.0167850*	0.0706828*
Nonane		0*	0*	0*	0*
Decane		0*	0*	0*	0*
Decanes Plus - Closed Drain Oil		0*	0*	0*	0*
Decanes Plus - GBS1 Oil		0*	0*	0*	0*
Decanes Plus - Inlet Oil		0*	0*	0*	0*
Decanes Plus - North Header Oil		0*	0*	0*	0*
Decanes Plus - South Header Oil		0*	0*	0*	0*
Decanes Plus - Stabilizer Outlet Oil		0*	0*	0*	0*
Undecanes Plus		0*	0*	0*	0*
Mass Fraction		%	%	%	%
Water		0*	0*	0*	0*
Hydrogen Sulfide		0.00149055*	0.00192217*	0.000200284*	8.35999E-05*
Nitrogen, Atomic		0.441680*	0.643045*	1.70241*	0.342000*
Carbon Dioxide		0.327214*	0.459197*	0.369524*	0.164000*
Methane		49.9139*	78.9862*	66.1688*	15.9380*
Ethane		21.7398*	19.7165*	10.9255*	15.7990*
Propane		12.9830*	0.186525*	11.1748*	23.4120*
Isobutane		2.09208*	0.00655621*	1.45206*	5.40000*
Butane		4.33923*	0*	2.46249*	13.3500*
Isopentane		1.22117*	0*	0.292415*	4.76200*
Pentane		1.41681*	0*	0.328466*	5.72800*
Cyclopentane		0*	0*	0*	0*
i-C6		1.00254*	0*	0.379538*	2.92700*
n-Hexane		0.855551*	0*	0.392557*	2.24300*
Methylcyclopentane		0*	0*	0*	0*
Benzene		0.0580768*	0*	0.421598*	0.263000*
Cyclohexane		0.449055*	0*	0.536761*	1.22100*
2,2,4-Trimethylpentane		0*	0*	0.113160*	0.271000*
i-C7		0*	0*	0*	0*
Methylcyclohexane		0.622665*	0*	0.660937*	1.43100*
n-Heptane		1.70038*	0*	1.12259*	3.47700*
Toluene		0.132982*	0*	0.683970*	0.434000*
Octane		0.674443*	0*	0.713011*	2.60600*
Ethylbenzene		0*	0*	0.0100142*	0.0290000*
m-Xylene		0.0278593*	0*	0.0891264*	0.203000*
Nonane		0*	0*	0*	0*
Decane		0*	0*	0*	0*
Decanes Plus - Closed Drain Oil		0*	0*	0*	0*
Decanes Plus - GBS1 Oil		0*	0*	0*	0*

Decanes Plus - Inlet Oil	0*	0*	0*	0*
Decanes Plus - North Header Oil	0*	0*	0*	0*
Decanes Plus - South Header Oil	0*	0*	0*	0*
Decanes Plus - Stabilizer Outlet Oil	0*	0*	0*	0*
Undecanes Plus	0*	0*	0*	0*
Mass Flow	**lb/h**	**lb/h**	**lb/h**	**lb/h**
Water	0*	0*	0*	0*
Hydrogen Sulfide	0.000898085*	0.000898085*	0.000105524*	8.14351E-05*
Nitrogen, Atomic	0.266120*	0.300446*	0.896950*	0.333144*
Carbon Dioxide	0.197152*	0.214548*	0.194691*	0.159753*
Methane	30.0740*	36.9043*	34.8623*	15.5253*
Ethane	13.0986*	9.21205*	5.75631*	15.3899*
Propane	7.82251*	0.0871491*	5.88768*	22.8057*
Isobutane	1.26052*	0.00306322*	0.765046*	5.26016*
Butane	2.61446*	0*	1.29741*	13.0043*
Isopentane	0.735777*	0*	0.154064*	4.63868*
Pentane	0.853654*	0*	0.173059*	5.57967*
Cyclopentane	0*	0*	0*	0*
i-C6	0.604048*	0*	0.199967*	2.85120*
n-Hexane	0.515484*	0*	0.206826*	2.18492*
Methylcyclopentane	0*	0*	0*	0*
Benzene	0.0349923*	0*	0.222127*	0.256189*
Cyclohexane	0.270564*	0*	0.282803*	1.18938*
2,2,4-Trimethylpentane	0*	0*	0.0596208*	0.263982*
i-C7	0*	0*	0*	0*
Methylcyclohexane	0.375167*	0*	0.348228*	1.39394*
n-Heptane	1.02451*	0*	0.591459*	3.38696*
Toluene	0.0801237*	0*	0.360363*	0.422761*
Octane	0.406364*	0*	0.375664*	2.53851*
Ethylbenzene	0*	0*	0.00527618*	0.0282490*
m-Xylene	0.0167857*	0*	0.0469580*	0.197743*
Nonane	0*	0*	0*	0*
Decane	0*	0*	0*	0*
Decanes Plus - Closed Drain Oil	0*	0*	0*	0*
Decanes Plus - GBS1 Oil	0*	0*	0*	0*
Decanes Plus - Inlet Oil	0*	0*	0*	0*
Decanes Plus - North Header Oil	0*	0*	0*	0*
Decanes Plus - South Header Oil	0*	0*	0*	0*
Decanes Plus - Stabilizer Outlet Oil	0*	0*	0*	0*
Undecanes Plus	0*	0*	0*	0*

Process Streams		**Condensate OVH Compressor @ 1000 scfh**	**Cryo Residue Gas @ 1000 scfh**	**FL1 CDP HPF (V-6809) @ 1000 scfh**	**FL1 CDP LPF (V-6808) @ 1000 scfh**
Properties	**Status:**	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	--	--	--	--
	To Block:	--	--	--	--
Property	**Units**				
Temperature	°F	64*	72*	132*	137*
Pressure	psig	240*	1060*	1*	1*
Mole Fraction Vapor	%	98.0440	100	100	100
Mole Fraction Light Liquid	%	1.95604	0	0	0
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	22.8646	17.7304	19.9939	36.9657
Mass Density	lb/ft^3	1.13346	4.03569	0.0433297	0.0798845
Molar Flow	lbmol/h	2.63516	2.63516	2.63516	2.63516
Mass Flow	lb/h	60.2517	46.7224	52.6869	97.4105
Vapor Volumetric Flow	ft^3/h	53.1574	11.5773	1215.96	1219.39
Liquid Volumetric Flow	gpm	6.62741	1.44341	151.600	152.028
Std Vapor Volumetric Flow	MMSCFD	0.024*	0.024*	0.024*	0.024*
Std Liquid Volumetric Flow	sgpm	0.333920	0.299342	0.306068	0.418381
Specific Gravity			0.612185	0.690336	1.27633
API Gravity					
Net Ideal Gas Heating Value	Btu/ft^3	1245.11	988.264	1095.43	1946.72
Net Liquid Heating Value	Btu/lb	20588.5	21121.3	20741.6	19854.0
Gross Ideal Gas Heating Value	Btu/ft^3	1368.91	1093.76	1206.99	2120.06
Gross Liquid Heating Value	Btu/lb	22643.7	23379.7	22859.2	21633.9

FL1 CDP LPF (V-6808) @ 1000 scfh - Hysys Comp	FL2 Cryo HPF (V-6859) @ 1000 scfh	FL2 Cryo HPF (V-6859) @ 1000 scfh - Hysys Comp	FL2 Cryo LPF (V-6858) @ 1000 scfh
Solved	Solved	Solved	Solved
--	--	--	--
--	--	--	--
%	%	%	%
0*	0*	0*	0*
0*	4.88383E-06*	0*	5.08087E-06*
0*	2.23524*	0.85*	6.58313*
0.12*	0.207633*	0.12*	0.188861*
6.03*	95.6290*	73.95*	89.3453*
20.04*	1.35009*	13.01*	1.88945*
28.18*	0.0909689*	6.7*	0.508145*
6.82*	0.0189005*	1.02*	0.128703*
15.79*	0.0363691*	2.33*	0.339932*
5.18*	0.0237618*	0.58*	0.137283*
5.79*	0.0246846*	0.67*	0.177123*
0.01*	0*	0*	0*
2.76*	0.0197010*	0.27*	0.126793*
1.75*	0.0227914*	0.1*	0.108306*
0.78*	0*	0.07*	0*
0.33*	0.0157683*	0.01*	0.0106408*
1.06*	0.0276883*	0.08*	0.0590510*
0.04*	0.00597421*	0*	0.0106114*
1.2*	0*	0.09*	0*
1.33*	0.0464485*	0.06*	0.0716019*
0.66*	0.0720916*	0.03*	0.166417*
0.33*	0.0475101*	0.01*	0.0242436*
1.1*	0.104476*	0.04*	0.111874*
0.04*	0.00203814*	0*	0.000978630*
0.16*	0.0188136*	0*	0.0115805*
0.32*	0*	0.01*	0*
0.13*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0.05*	0*	0*	0*
%	%	%	%
0*	0*	0*	0*
0*	1.00021E-05*	0*	1.00075E-05*
0*	1.88139*	0.530311*	5.32900*
0.101669*	0.549115*	0.235236*	0.480360*
1.86230*	92.1894*	52.8427*	82.8361*
11.6005*	2.43951*	17.4250*	3.28346*
23.9220*	0.241051*	13.1597*	1.29497*
7.63110*	0.0660139*	2.64070*	0.432324*
17.6679*	0.127027*	6.03218*	1.14186*
7.19482*	0.103022*	1.86394*	0.572429*
8.04208*	0.107022*	2.15318*	0.738554*
0.0135015*	0*	0*	0*
4.57882*	0.102021*	1.03639*	0.631474*
2.90323*	0.118025*	0.383848*	0.539404*
1.26374*	0*	0.262408*	0*
0.496240*	0.0740155*	0.0347931*	0.0480360*
1.71739*	0.140029*	0.299895*	0.287215*
0.0879621*	0.0410086*	0*	0.0700525*
2.31483*	0*	0.401693*	0*
2.51398*	0.274058*	0.262408*	0.406305*
1.27315*	0.434091*	0.133898*	0.963723*
0.585350*	0.263055*	0.0410409*	0.129097*
2.41896*	0.717151*	0.203522*	0.738554*
0.0817527*	0.0130027*	0*	0.00600450*
0.327011*	0.120025*	0*	0.0710533*
0.790106*	0*	0.0571282*	0*
0.356085*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*

0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0.255465*	0*	0*	0*
lb/h	lb/h	lb/h	lb/h
0*	0*	0*	0*
0*	4.38609E-06*	0*	4.56305E-06*
0*	0.825024*	0.313734*	2.42982*
0.139166*	0.240796*	0.139166*	0.219026*
2.54915*	40.4266*	31.2619*	37.7702*
15.8790*	1.06977*	10.3087*	1.49714*
32.7448*	0.105705*	7.78532*	0.590458*
10.4456*	0.0289482*	1.56224*	0.197124*
24.1841*	0.0557034*	3.56865*	0.520644*
9.84839*	0.0451767*	1.10272*	0.261006*
11.0081*	0.0469312*	1.27383*	0.336753*
0.0184811*	0*	0*	0*
6.26756*	0.0447381*	0.613131*	0.287928*
3.97400*	0.0517559*	0.227086*	0.245948*
1.72983*	0*	0.155241*	0*
0.679262*	0.0324571*	0.0205837*	0.0219026*
2.35080*	0.0614053*	0.177419*	0.130959*
0.120404*	0.0179830*	0*	0.0319413*
3.16857*	0*	0.237643*	0*
3.44118*	0.120179*	0.155241*	0.185260*
1.74272*	0.190356*	0.0792143*	0.439422*
0.801237*	0.115354*	0.0242799*	0.0588633*
3.31111*	0.314483*	0.120404*	0.336753*
0.111905*	0.00570192*	0*	0.00273783*
0.447618*	0.0526331*	0*	0.0323976*
1.08151*	0*	0.0337972*	0*
0.487415*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0*	0*	0*	0*
0.349685*	0*	0*	0*
FL1 CDP LPF (V-6808) @ 1000 scfh - Hysys Comp	**FL2 Cryo HPF (V-6859) @ 1000 scfh**	**FL2 Cryo HPF (V-6859) @ 1000 scfh - Hysys Comp**	**FL2 Cryo LPF (V-6858) @ 1000 scfh**
Solved	Solved	Solved	Solved
--	--	--	--
--	--	--	--
137*	110*	145*	145*
1*	1*	1*	1*
99.8828	100	100	100
0.117153	0	0	0
0	0	0	0
51.9444	16.6410	22.4504	17.3031
0.113240	0.0374368	0.0476296	0.0366629
2.63516	2.63516	2.63516	2.63516
136.882	43.8517	59.1603	45.5963
1208.78	1171.35	1242.09	1243.66
150.705	146.039	154.858	155.054
0.024*	0.024*	0.024*	0.024*
0.506109	0.281875	0.328655	0.278482
	0.574571	0.775154	0.597430
2691.07	928.020	1225.14	949.757
19512.5	21154.2	20637.0	20812.0
2917.18	1028.08	1347.52	1048.21
21164.7	23436.1	22706.2	22971.4

FL3 Cryo HPF (V-XXXX) @ 1000 scfh	Fuel Gas Skid @ 1000 scfh	Oil OVH Compressor @ 1000 scfh	Plant Fuel Outlet @ 1000 scfh	Plant Inlet @ 1000 scfh
Solved	Solved	Solved	Solved	Solved
--	--	--	--	--
--	--	--	--	--
%	%	%	%	%
0*	0*	0*	0*	0*
4.80146E-06*	9.55674E-05*	0.001*	9.55342E-05*	0.000299999*
13.4458*	0.967998*	0.112*	1.01304*	0.833997*
0.189630*	0.228000*	0.161*	0.216008*	0.179999*
84.8502*	97.4819*	13.738*	97.4468*	77.9478*
1.27236*	1.26200*	39.707*	1.27005*	11.0950*
0.0233792*	0.0260000*	34.254*	0.0260010*	5.19998*
0.0140771*	0.0180000*	2.022*	0.0100004*	0.822998*
0.0202710*	0.0160000*	4.374*	0.0180007*	1.84999*
0.00748460*	0*	1.187*	0*	0.491999*
0.00839183*	0*	1.645*	0*	0.577998*
0*	0*	0*	0*	0*
0.00854502*	0*	0.976*	0*	0.257999*
0.00835513*	0*	0.644*	0*	0.188999*
0*	0*	0*	0*	0*
0.0102651*	0*	0.066*	0*	0.0140000*
0.0132218*	0*	0.26*	0*	0.0859997*
0.00286510*	0*	0*	0*	0.0130000*
0*	0*	0*	0*	0*
0.0196660*	0*	0.123*	0*	0.0809998*
0.0310285*	0*	0.549*	0*	0.228999*
0.0234432*	0*	0.028*	0*	0.0199999*
0.0416872*	0*	0.149*	0*	0.101000*
0.000924813*	0*	0*	0*	0.000999997*
0.00847745*	0*	0.004*	0*	0.00799998*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
%	%	%	%	%
0*	0*	0*	0*	0*
1.01200E-05*	0.000200000*	0.000905609*	0.000200000*	0.000473535*
11.6471*	0.832566*	0.0416854*	0.871608*	0.541031*
0.516121*	0.616154*	0.188279*	0.583951*	0.366893*
84.1824*	96.0292*	5.85631*	96.0280*	57.9157*
2.36606*	2.33016*	31.7261*	2.34585*	15.4514*
0.0637561*	0.0704006*	40.1362*	0.0704280*	10.6199*
0.0506001*	0.0642424*	3.12286*	0.0357041*	2.21545*
0.0728642*	0.0571044*	6.75540*	0.0642674*	4.98005*
0.0333961*	0*	2.27567*	0*	1.64405*
0.0374441*	0*	3.15373*	0*	1.93142*
0*	0*	0*	0*	0*
0.0455401*	0*	2.23492*	0*	1.02973*
0.0445281*	0*	1.47468*	0*	0.754336*
0*	0*	0*	0*	0*
0.0495881*	0*	0.136991*	0*	0.0506483*
0.0688162*	0*	0.581442*	0*	0.335214*
0.0202400*	0*	0*	0*	0.0687762*
0*	0*	0*	0*	0*
0.119416*	0*	0.320911*	0*	0.368345*
0.192280*	0*	1.46177*	0*	1.06275*
0.133584*	0*	0.0685534*	0*	0.0853475*
0.294493*	0*	0.452263*	0*	0.534338*
0.00607201*	0*	0*	0*	0.00491701*
0.0556601*	0*	0.0112842*	0*	0.0393361*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*

0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
lb/h	lb/h	lb/h	lb/h	lb/h
0*	0*	0*	0*	0*
4.31211E-06*	8.58276E-05*	0.000898085*	8.57978E-05*	0.000269425*
4.96281*	0.357287*	0.0413390*	0.373911*	0.307827*
0.219918*	0.264416*	0.186715*	0.250509*	0.208749*
35.8699*	41.2099*	5.80766*	41.1950*	32.9519*
1.00817*	0.999965*	31.4625*	1.00634*	8.79128*
0.0271663*	0.0302117*	39.8028*	0.0302129*	6.04232*
0.0215606*	0.0275690*	3.09692*	0.0153167*	1.26051*
0.0310472*	0.0245057*	6.69927*	0.0275701*	2.83347*
0.0142300*	0*	2.25676*	0*	0.935404*
0.0159548*	0*	3.12753*	0*	1.09891*
0*	0*	0*	0*	0*
0.0194045*	0*	2.21636*	0*	0.585879*
0.0189733*	0*	1.46243*	0*	0.429190*
0*	0*	0*	0*	0*
0.0211294*	0*	0.135852*	0*	0.0288171*
0.0293224*	0*	0.576611*	0*	0.190725*
0.00862423*	0*	0*	0*	0.0391312*
0*	0*	0*	0*	0*
0.0508829*	0*	0.318245*	0*	0.209575*
0.0819302*	0*	1.44962*	0*	0.604668*
0.0569199*	0*	0.0679838*	0*	0.0485597*
0.125483*	0*	0.448505*	0*	0.304019*
0.00258727*	0*	0*	0*	0.00279761*
0.0237166*	0*	0.0111905*	0*	0.0223808*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*
0*	0*	0*	0*	0*

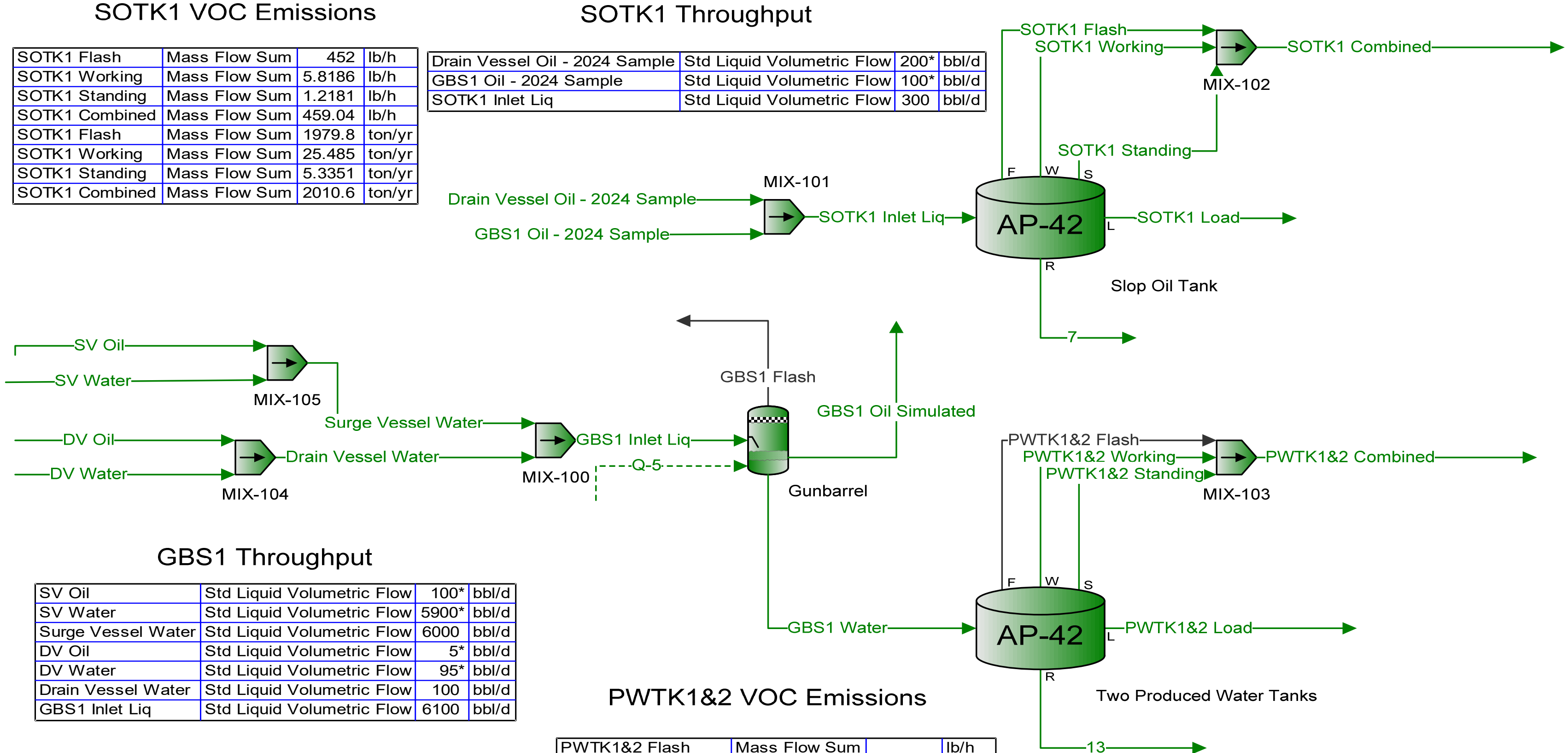
FL3 Cryo HPF (V-XXXX) @ 1000 scfh	Fuel Gas Skid @ 1000 scfh	Oil OVH Compressor @ 1000 scfh	Plant Fuel Outlet @ 1000 scfh	Plant Inlet @ 1000 scfh
Solved	Solved	Solved	Solved	Solved
--	--	--	--	--
--	--	--	--	--
110*	81*	100*	118*	111*
1*	124*	300*	1145*	1090*
100	100	72.2616	100	99.3365
0	0	27.7384	0	0.663544
0	0	0	0	0
16.1697	16.2852	37.6331	16.2795	21.5913
0.0363682	0.391359	3.29897	3.38550	4.91692
2.63516	2.63516	2.63516	2.63516	2.63516
42.6097	42.9139	99.1691	42.8990	56.8964
1171.62	109.654	30.0607	12.6714	11.5716
146.072	13.6711	3.74782	1.57981	1.44269
0.024*	0.024*	0.024*	0.024*	0.024*
0.259188	0.282176	0.443147	0.282087	0.321807
0.558298	0.562284		0.562088	
874.631	913.739	1987.13	913.612	1180.62
20520.6	21288.1	19889.7	21292.5	20686.0
962.670	1013.85	2164.28	1013.68	1299.81
22586.9	23620.9	21676.8	23625.2	22781.1

SOTK1 VOC Emissions

SOTK1 Flash	Mass Flow Sum	452	lb/h
SOTK1 Working	Mass Flow Sum	5.8186	lb/h
SOTK1 Standing	Mass Flow Sum	1.2181	lb/h
SOTK1 Combined	Mass Flow Sum	459.04	lb/h
SOTK1 Flash	Mass Flow Sum	1979.8	ton/yr
SOTK1 Working	Mass Flow Sum	25.485	ton/yr
SOTK1 Standing	Mass Flow Sum	5.3351	ton/yr
SOTK1 Combined	Mass Flow Sum	2010.6	ton/yr

SOTK1 Throughput

Drain Vessel Oil - 2024 Sample	Std Liquid Volumetric Flow	200*	bbl/d
GBS1 Oil - 2024 Sample	Std Liquid Volumetric Flow	100*	bbl/d
SOTK1 Inlet Liq	Std Liquid Volumetric Flow	300	bbl/d



GBS1 Throughput

SV Oil	Std Liquid Volumetric Flow	100*	bbl/d
SV Water	Std Liquid Volumetric Flow	5900*	bbl/d
Surge Vessel Water	Std Liquid Volumetric Flow	6000	bbl/d
DV Oil	Std Liquid Volumetric Flow	5*	bbl/d
DV Water	Std Liquid Volumetric Flow	95*	bbl/d
Drain Vessel Water	Std Liquid Volumetric Flow	100	bbl/d
GBS1 Inlet Liq	Std Liquid Volumetric Flow	6100	bbl/d

PWTK1&2 VOC Emissions

PWTK1&2 Flash	Mass Flow Sum		lb/h
PWTK1&2 Working	Mass Flow Sum	2.4806	lb/h
PWTK1&2 Standing	Mass Flow Sum	0.19449	lb/h
PWTK1&2 Combined	Mass Flow Sum	2.675	lb/h
PWTK1&2 Flash	Mass Flow Sum		ton/yr
PWTK1&2 Working	Mass Flow Sum	10.865	ton/yr
PWTK1&2 Standing	Mass Flow Sum	0.85185	ton/yr
PWTK1&2 Combined	Mass Flow Sum	11.717	ton/yr

GBS1 VOC Emissions

GBS1 Flash	Mass Flow Sum		lb/h
GBS1 Flash	Mass Flow Sum		ton/yr

PWTK1&2 Throughput

GBS1 Water	Std Liquid Volumetric Flow	5995.6	bbl/d

Process Streams		Drain Vessel Oil - 2024 Sample	Drain Vessel Water	DV Oil	DV Water	GBS1 Flash	GBS1 Inlet Liq	GBS1 Oil - 2024 Sample	GBS1 Oil Simulated	GBS1 Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	MIX-104	--	--	Gunbarrel	MIX-100	--	Gunbarrel	Gunbarrel
	To Block:	MIX-101	MIX-100	MIX-104	MIX-104	--	Gunbarrel	MIX-101	--	Two Produced Water Tanks
Mole Fraction		%	%	%	%		%	%	%	%
Water		0*	99.2064	0*	100*		99.8432	0*	0.158017	99.9979
Hydrogen Sulfide		0*	0	0*	0*		0	0*	0	0
Nitrogen, Atomic		0.013*	0.000103170	0.013*	0*		4.34610E-05	0*	0.0264390	2.48386E-06
Carbon Dioxide		0.004*	3.17447E-05	0.004*	0*		5.06273E-07	0*	1.28755E-05	4.87070E-07
Methane		0.916*	0.00726954	0.916*	0*		0.000164962	0*	0.0243189	0.000127464
Ethane		2.361*	0.0187373	2.361*	0*		0.000868385	0.08*	0.325332	0.000364679
Propane		14.233*	0.112956	14.233*	0*		0.00489869	1.39*	2.76100	0.000620044
Isobutane		5.762*	0.0457282	5.762*	0*		0.00206883	1.37*	1.28759	7.31487E-05
Butane		17.204*	0.136534	17.204*	0*		0.00753709	5.916*	4.69208	0.000264675
Isopentane		7.969*	0.0632434	7.969*	0*		0.00434666	4.9*	2.77746	4.16049E-05
Pentane		10.674*	0.0847107	10.674*	0*		0.00636887	7.335*	4.09547	2.08407E-05
Cyclopentane		0*	0	0*	0*		0	0*	0	0
i-C6		7.102*	0.0563627	7.102*	0*		0.00469113	6.178*	3.02074	8.93931E-06
n-Hexane		6.206*	0.0492519	6.206*	0*		0.00436865	5.398*	2.81650	3.01910E-06
Methylcyclopentane		0*	0	0*	0*		0	0*	0	0
Benzene		0.499*	0.00396015	0.499*	0*		0.00111576	0.446*	0.513697	0.000320013
Cyclohexane		0*	0	0*	0*		0	0*	0	0
2,2,4-Trimethylpentane		0.647*	0.00513471	0.647*	0*		0.000944157	0.61*	0.608990	2.09926E-07
i-C7		0*	0	0*	0*		0	0*	0	0
Methylcyclohexane		0*	0	0*	0*		0	0*	0	0
n-Heptane		12.868*	0.102123	12.868*	0*		0.0165078	11.28*	10.6483	2.68059E-06
Toluene		0.974*	0.00772984	0.974*	0*		0.00261059	1.158*	1.55754	0.000196672
Octane		9.175*	0.0728144	9.175*	0*		0.0198586	11.826*	12.8115	4.67218E-07
Ethylbenzene		0.083*	0.000658703	0.083*	0*		0.000483455	0.259*	0.305115	1.05370E-05
m-Xylene		0.6*	0.00476171	0.6*	0*		0.00271898	1.527*	1.73050	3.67294E-05
Nonane		1.803*	0.0143089	1.803*	0*		0.00994673	5.367*	6.41712	6.39684E-08
Decane		0*	0	0*	0*		0	0*	0	0
Decanes Plus - Closed Drain Oil		0.907*	0.00719811	0.907*	0*		0.000114797	0*	0.0740446	2.66883E-08
Decanes Plus - GBS1 Oil		0*	0	0*	0*		0	34.96*	0	0
Decanes Plus - Inlet Oil		0*	0	0*	0*		0.0671905	0*	43.3481	1.56416E-08
Decanes Plus - North Header Oil		0*	0	0*	0*		0	0*	0	0
Decanes Plus - South Header Oil		0*	0	0*	0*		0	0*	0	0
Decanes Plus - Stabilizer Outlet Oil		0*	0	0*	0*		0	0*	0	0
Undecanes Plus		0*	0	0*	0*		0	0*	0	0
Mass Fraction		%	%	%	%		%	%	%	%
Water		0*	96.7707	0*	100*		98.6449	0*	0.0179374	99.9937
Hydrogen Sulfide		0*	0	0*	0*		0	0*	0	0
Nitrogen, Atomic		0.00242292*	7.82445E-05	0.00242292*	0*		3.33850E-05	0*	0.00233343	1.93109E-06
Carbon Dioxide		0.00234243*	7.56451E-05	0.00234243*	0*		1.22193E-06	0*	3.57047E-06	1.18981E-06
Methane		0.195536*	0.00631453	0.195536*	0*		0.000145134	0*	0.00245827	0.000113501
Ethane		0.944661*	0.0305063	0.944661*	0*		0.00143201	0.0163383*	0.0616398	0.000608654
Propane		8.35127*	0.269691	8.35127*	0*		0.0118465	0.416300*	0.767142	0.00151760
Isobutane		4.45631*	0.143910	4.45631*	0*		0.00659450	0.540828*	0.471557	0.000235988
Butane		13.3055*	0.429681	13.3055*	0*		0.0240249	2.33543*	1.71839	0.000853878
Isopentane		7.65056*	0.247063	7.65056*	0*		0.0171989	2.40116*	1.26267	0.000166615
Pentane		10.2475*	0.330926	10.2475*	0*		0.0252003	3.59439*	1.86186	8.34607E-05
Cyclopentane		0*	0	0*	0*		0	0*	0	0
i-C6		8.14375*	0.262989	8.14375*	0*		0.0221705	3.61599*	1.64025	4.27590E-05
n-Hexane		7.11632*	0.229810	7.11632*	0*		0.0206465	3.15946*	1.52935	1.44411E-05
Methylcyclopentane		0*	0	0*	0*		0	0*	0	0
Benzene		0.518654*	0.0167491	0.518654*	0*		0.00477972	0.236618*	0.252836	0.00138747
Cyclohexane		0*	0	0*	0*		0	0*	0	0
2,2,4-Trimethylpentane		0.983421*	0.0317580	0.983421*	0*		0.00591472	0.473261*	0.438328	1.33101E-06
i-C7		0*	0	0*	0*		0	0*	0	0
Methylcyclohexane		0*	0	0*	0*		0	0*	0	0
n-Heptane		17.1573*	0.554066	17.1573*	0*		0.0907156	7.67683*	6.72315	1.49090E-05
Toluene		1.19415*	0.0385633	1.19415*	0*		0.0131915	0.724679*	0.904262	0.00100583
Octane		13.9457*	0.450355	13.9457*	0*		0.124405	9.17506*	9.22126	2.96234E-06
Ethylbenzene		0.117252*	0.00378646	0.117252*	0*		0.00281483	0.186757*	0.204107	6.20925E-05
m-Xylene		0.847604*	0.0273720	0.847604*	0*		0.0158308	1.10107*	1.15762	0.000216439
Nonane		3.07702*	0.0993676	3.07702*	0*		0.0699633	4.67523*	5.18596	4.55387E-07
Decane		0*	0	0*	0*		0	0*	0	0
Decanes Plus - Closed Drain Oil		1.74275*	0.0562793	1.74275*	0*		0.000909105	0*	0.0673713	2.13909E-07
Decanes Plus - GBS1 Oil		0*	0	0*	0*		0	59.6706*	0	0

	Drain Vessel Oil - 2024 Sample	Drain Vessel Water	DV Oil	DV Water	GBS1 Flash	GBS1 Inlet Liq	GBS1 Oil - 2024 Sample	GBS1 Oil Simulated	GBS1 Water
Decanes Plus - Inlet Oil	0*	0	0*	0*		0.897269	0*	66.5095	2.11408E-07
Decanes Plus - North Header Oil	0*	0	0*	0*		0	0*	0	0
Decanes Plus - South Header Oil	0*	0	0*	0*		0	0*	0	0
Decanes Plus - Stabilizer Outlet Oil	0*	0	0*	0*		0	0*	0	0
Undecanes Plus	0*	0	0*	0*		0	0*	0	0

Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0*	1386.06	0*	1386.06*	0	87467.6	0*	0.214571	87467.4
Hydrogen Sulfide	0*	0	0*	0*	0	0	0*	0	0
Nitrogen, Atomic	0.0448282*	0.00112071	0.00112071*	0*	0	0.0296022	0*	0.0279130	0.00168918
Carbon Dioxide	0.0433390*	0.00108348	0.00108348*	0*	0	0.00108348	0*	4.27107E-05	0.00104076
Methane	3.61775*	0.0904438	0.0904438*	0*	0	0.128689	0*	0.0294063	0.0992829
Ethane	17.4779*	0.436946	0.436946*	0*	0	1.26976	0.182686*	0.737348	0.532408
Propane	154.513*	3.86282	3.86282*	0*	0	10.5042	4.65486*	9.17671	1.32749
Isobutane	82.4495*	2.06124	2.06124*	0*	0	5.84729	6.04727*	5.64086	0.206425
Butane	246.175*	6.15438	6.15438*	0*	0	21.3027	26.1136*	20.5558	0.746913
Isopentane	141.549*	3.53871	3.53871*	0*	0	15.2501	26.8486*	15.1044	0.145743
Pentane	189.596*	4.73990	4.73990*	0*	0	22.3449	40.1907*	22.2719	0.0730055
Cyclopentane	0*	0	0*	0*	0	0	0*	0	0
i-C6	150.673*	3.76683	3.76683*	0*	0	19.6584	40.4322*	19.6210	0.0374026
n-Hexane	131.664*	3.29160	3.29160*	0*	0	18.3071	35.3275*	18.2944	0.0126321
Methylcyclopentane	0*	0	0*	0*	0	0	0*	0	0
Benzene	9.59599*	0.239900	0.239900*	0*	0	4.23814	2.64575*	3.02447	1.21367
Cyclohexane	0*	0	0*	0*	0	0	0*	0	0
2,2,4-Trimethylpentane	18.1950*	0.454874	0.454874*	0*	0	5.24453	5.29177*	5.24337	0.00116428
i-C7	0*	0	0*	0*	0	0	0*	0	0
Methylcyclohexane	0*	0	0*	0*	0	0	0*	0	0
n-Heptane	317.439*	7.93596	7.93596*	0*	0	80.4367	85.8384*	80.4237	0.0130413
Toluene	22.0939*	0.552347	0.552347*	0*	0	11.6968	8.10300*	10.8170	0.879828
Octane	258.020*	6.45050	6.45050*	0*	0	110.309	102.591*	110.307	0.00259125
Ethylbenzene	2.16936*	0.0542340	0.0542340*	0*	0	2.49589	2.08823*	2.44157	0.0543142
m-Xylene	15.6821*	0.392053	0.392053*	0*	0	14.0370	12.3117*	13.8477	0.189326
Nonane	56.9302*	1.42326	1.42326*	0*	0	62.0359	52.2760*	62.0355	0.000398340
Decane	0*	0	0*	0*	0	0	0*	0	0
Decanes Plus - Closed Drain Oil	32.2439*	0.806096	0.806096*	0*	0	0.806096	0*	0.805909	0.000187113
Decanes Plus - GBS1 Oil	0*	0	0*	0*	0	0	667.207*	0	0
Decanes Plus - Inlet Oil	0*	0	0*	0*	0	795.601	0*	795.601	0.000184925
Decanes Plus - North Header Oil	0*	0	0*	0*	0	0	0*	0	0
Decanes Plus - South Header Oil	0*	0	0*	0*	0	0	0*	0	0
Decanes Plus - Stabilizer Outlet Oil	0*	0	0*	0*	0	0	0*	0	0
Undecanes Plus	0*	0	0*	0*	0	0	0*	0	0

Process Streams		Drain Vessel Oil - 2024 Sample	Drain Vessel Water	DV Oil	DV Water	GBS1 Flash	GBS1 Inlet Liq	GBS1 Oil - 2024 Sample	GBS1 Oil Simulated	GBS1 Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	MIX-104	--	--	Gunbarrel	MIX-100	--	Gunbarrel	Gunbarrel
	To Block:	MIX-101	MIX-100	MIX-104	MIX-104	--	Gunbarrel	MIX-101	--	Two Produced Water Tanks
Property	Units									
Temperature	°F	82*	81.9977	82*	82*	90*	93.8066	90*	90	90
Pressure	psig	60*	60	60*	60*	0.25*	15	0.25*	0.25	0.25
Mole Fraction Vapor	%	0	0	0	0		0	0	0	0
Mole Fraction Light Liquid	%	100	0.784235	100	100		0.155003	100	100	100
Mole Fraction Heavy Liquid	%	0	99.2158	0	0		99.8450	0	0	0
Molecular Weight	lb/lbmol	75.1518	18.4687	75.1518	18.0153		18.2341	147.232	158.703	18.0160
Mass Density	lb/ft^3	39.4344	61.0354	39.4344	62.1647		61.7925	47.2354	48.5080	62.0711
Molar Flow	lbmol/h	24.6191	77.5535	0.615478	76.9380	0	4862.82	7.59445	7.53747	4855.28
Mass Flow	lb/h	1850.17	1432.31	46.2543	1386.06	0	88669.2	1118.15	1196.22	87473.0
Vapor Volumetric Flow	ft^3/h	46.9178	23.4670	1.17294	22.2966	0	1434.95	23.6719	24.6603	1409.24
Liquid Volumetric Flow	gpm	5.84949	2.92575	0.146237	2.77983	0	178.903	2.95130	3.07453	175.697
Std Vapor Volumetric Flow	MMSCFD	0.224222	0.706327	0.00560554	0.700722	0	44.2887	0.0691674	0.0686484	44.2201
Std Liquid Volumetric Flow	sgpm	5.83333*	2.91667	0.145833*	2.77083*	0	177.917	2.91667*	3.04453	174.872
Specific Gravity		0.632278	0.978621	0.632278	0.996728		0.990761	0.757356	0.777761	0.995229
API Gravity		87.9537	12.4946	87.9537	9.99121		10.5027	52.0551	47.3917	10.0004
Net Ideal Gas Heating Value	Btu/ft^3	3843.55	30.5031	3843.55	0		12.2098	7311.16	7840.56	0.0568364
Net Liquid Heating Value	Btu/lb	19249.4	-403.906	19249.4	-1059.76		-793.404	18688.6	18591.9	-1058.50
Gross Ideal Gas Heating Value	Btu/ft^3	4151.85	82.8606	4151.85	50.3100		63.2853	7827.05	8382.88	50.3698
Gross Liquid Heating Value	Btu/lb	20806.4	671.909	20806.4	0		269.569	20018.3	19888.7	1.27125

PWTK1&2 Combined	PWTK1&2 Flash	PWTK1&2 Load	PWTK1&2 Standing	PWTK1&2 Working	SOTK1 Combined	SOTK1 Flash	SOTK1 Inlet Liq	SOTK1 Load	SOTK1 Standing	SOTK1 Working
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
MIX-103	Two Produced Water Tanks	Two Produced Water Tanks	Two Produced Water Tanks	Two Produced Water Tanks	MIX-102	Slop Oil Tank	MIX-101	Slop Oil Tank	Slop Oil Tank	Slop Oil Tank
--	MIX-103	--	MIX-103	MIX-103	--	MIX-102	Slop Oil Tank	--	MIX-102	MIX-102
%		%	%	%	%	%	%	%	%	%
17.3441		17.3441	17.3441	17.3441	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0.131955		0.131955	0.131955	0.131955	0.0364374	0.0369663	0.00993521	0.00299928	0.00299928	0.00299928
0.00708318		0.00708318	0.00708318	0.00708318	0.0110449	0.0110691	0.00305699	0.00951209	0.00951209	0.00951209
6.77158		6.77158	6.77158	6.77158	2.55576	2.58495	0.700050	0.710720	0.710720	0.710720
19.3737		19.3737	19.3737	19.3737	6.34744	6.31880	1.82325	8.15780	8.15780	8.15780
32.9400		32.9400	32.9400	32.9400	32.8569	32.8133	11.2052	35.6153	35.6153	35.6153
3.88604		3.88604	3.88604	3.88604	10.3024	10.3053	4.72657	10.1159	10.1159	10.1159
14.0609		14.0609	14.0609	14.0609	26.3736	26.3804	14.5428	25.9442	25.9442	25.9442
2.21027		2.21027	2.21027	2.21027	7.36546	7.37395	7.24547	6.82902	6.82902	6.82902
1.10717		1.10717	1.10717	1.10717	8.02085	8.03113	9.88682	7.37100	7.37100	7.37100
0		0	0	0	0	0	0	0	0	0
0.474903		0.474903	0.474903	0.474903	2.65713	2.66171	6.88416	2.36770	2.36770	2.36770
0.160390		0.160390	0.160390	0.160390	1.68098	1.68372	6.01551	1.50757	1.50757	1.50757
0		0	0	0	0	0	0	0	0	0
0.630749		0.630749	0.630749	0.630749	0.140484	0.141517	0.486505	0.0751940	0.0751940	0.0751940
0		0	0	0	0	0	0	0	0	0
0.0111524		0.0111524	0.0111524	0.0111524	0.0640343	0.0642031	0.638277	0.0533590	0.0533590	0.0533590
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0.142407		0.142407	0.142407	0.142407	1.16639	1.16971	12.4936	0.956573	0.956573	0.956573
0.518961		0.518961	0.518961	0.518961	0.0839832	0.0845505	1.01738	0.0481199	0.0481199	0.0481199
0.0248211		0.0248211	0.0248211	0.0248211	0.288504	0.289807	9.79998	0.206095	0.206095	0.206095
0.0299609		0.0299609	0.0299609	0.0299609	0.00327504	0.00329650	0.124493	0.00191812	0.00191812	0.00191812
0.169274		0.169274	0.169274	0.169274	0.0192250	0.0193549	0.818543	0.0110124	0.0110124	0.0110124
0.00339834		0.00339834	0.00339834	0.00339834	0.0239494	0.0240938	2.64322	0.0148250	0.0148250	0.0148250
0		0	0	0	0	0	0	0	0	0
0.00101455		0.00101455	0.00101455	0.00101455	0.00219509	0.00220973	0.693172	0.00126945	0.00126945	0.00126945
0		0	0	0	4.24843E-06	4.28569E-06	8.24193	1.89291E-06	1.89291E-06	1.89291E-06
0.000170517		0.000170517	0.000170517	0.000170517	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
%		%	%	%	%	%	%	%	%	%
7.94504		7.94504	7.94504	7.94504	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0.0469965		0.0469965	0.0469965	0.0469965	0.00931503	0.00944868	0.00151022	0.000774915	0.000774915	0.000774915
0.00792643		0.00792643	0.00792643	0.00792643	0.00887174	0.00888973	0.00146005	0.00772189	0.00772189	0.00772189
2.76225		2.76225	2.76225	2.76225	0.748329	0.756748	0.121879	0.210315	0.210315	0.210315
14.8127		14.8127	14.8127	14.8127	3.48353	3.46723	0.594967	4.52474	4.52474	4.52474
36.9336		36.9336	36.9336	36.9336	26.4438	26.4043	5.36221	28.9689	28.9689	28.9689
5.74318		5.74318	5.74318	5.74318	10.9290	10.9303	2.98137	10.8454	10.8454	10.8454
20.7806		20.7806	20.7806	20.7806	27.9777	27.9803	9.17315	27.8152	27.8152	27.8152
4.05487		4.05487	4.05487	4.05487	9.69908	9.70863	5.67314	9.08842	9.08842	9.08842
2.03116		2.03116	2.03116	2.03116	10.5621	10.5739	7.74129	9.80972	9.80972	9.80972
0		0	0	0	0	0	0	0	0	0
1.04062		1.04062	1.04062	1.04062	4.17924	4.18574	6.43817	3.76366	3.76366	3.76366
0.351450		0.351450	0.351450	0.351450	2.64390	2.64778	5.62579	2.39642	2.39642	2.39642
0		0	0	0	0	0	0	0	0	0
1.25278		1.25278	1.25278	1.25278	0.200284	0.201722	0.412413	0.108343	0.108343	0.108343
0		0	0	0	0	0	0	0	0	0
0.0323925		0.0323925	0.0323925	0.0323925	0.133502	0.133832	0.791246	0.112430	0.112430	0.112430
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0.362836		0.362836	0.362836	0.362836	2.13315	2.13886	13.5860	1.76805	1.76805	1.76805
1.21584		1.21584	1.21584	1.21584	0.141233	0.142163	1.01731	0.0817836	0.0817836	0.0817836
0.0720937		0.0720937	0.0720937	0.0720937	0.601489	0.604106	12.1486	0.434252	0.434252	0.434252
0.0808795		0.0808795	0.0808795	0.0808795	0.00634599	0.00638651	0.143434	0.00375628	0.00375628	0.00375628
0.456956		0.456956	0.456956	0.456956	0.0372520	0.0374974	0.943085	0.0215657	0.0215657	0.0215657
0.0110826		0.0110826	0.0110826	0.0110826	0.0560624	0.0563909	3.67906	0.0350728	0.0350728	0.0350728
0		0	0	0	0	0	0	0	0	0
0.00372513		0.00372513	0.00372513	0.00372513	0.00578523	0.00582285	1.08627	0.00338131	0.00338131	0.00338131
0		0	0	0	1.94860E-05	1.96536E-05	22.4776	8.77454E-06	8.77454E-06	8.77454E-06

0.00105577		0.00105577	0.00105577	0.00105577	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
0		0	0	0	0	0	0	0	0	0
lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
0.285566	0	5.39209	0.0207617	0.264805	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0.00168918	0	0.0318953	0.000122810	0.00156637	0.0446576	0.0446004	0.0448282	2.86347E-05	9.90896E-06	4.73346E-05
0.000284897	0	0.00537946	2.07131E-05	0.000264184	0.0425324	0.0419620	0.0433390	0.000285339	9.87410E-05	0.000471680
0.0992829	0	1.87467	0.00721824	0.0920647	3.58760	3.57206	3.61775	0.00777156	0.00268933	0.0128468
0.532408	0	10.0530	0.0387080	0.493700	16.7006	16.3663	17.6605	0.167198	0.0578586	0.276387
1.32749	0	25.0658	0.0965137	1.23098	126.775	124.635	159.168	1.07046	0.370431	1.76953
0.206425	0	3.89774	0.0150079	0.191418	52.3953	51.5942	88.4967	0.400759	0.138682	0.662476
0.746913	0	14.1033	0.0543033	0.692609	134.129	132.075	272.289	1.02783	0.355678	1.69905
0.145743	0	2.75194	0.0105961	0.135147	46.4988	45.8275	168.397	0.335835	0.116215	0.555153
0.0730055	0	1.37850	0.00530777	0.0676977	50.6363	49.9117	229.787	0.362489	0.125438	0.599212
0	0	0	0	0	0	0	0	0	0	0
0.0374026	0	0.706239	0.00271931	0.0346833	20.0359	19.7579	191.106	0.139075	0.0481266	0.229898
0.0126321	0	0.238520	0.000918398	0.0117137	12.6753	12.4983	166.992	0.0885524	0.0306434	0.146382
0	0	0	0	0	0	0	0	0	0	0
0.0450284	0	0.850231	0.00327374	0.0417547	0.960190	0.952186	12.2417	0.00400349	0.00138540	0.00661798
0	0	0	0	0	0	0	0	0	0	0
0.00116428	0	0.0219840	8.46472E-05	0.00107963	0.640029	0.631724	23.4867	0.00415453	0.00143766	0.00686764
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0.0130413	0	0.246247	0.000948152	0.0120932	10.2266	10.0960	403.277	0.0653331	0.0226084	0.107999
0.0437007	0	0.825161	0.00317721	0.0405235	0.677090	0.671048	30.1969	0.00302207	0.00104578	0.00499563
0.00259125	0	0.0489281	0.000188393	0.00240285	2.88363	2.85155	360.611	0.0160465	0.00555285	0.0265257
0.00290703	0	0.0548908	0.000211352	0.00269568	0.0304236	0.0301461	4.25759	0.000138802	4.80322E-05	0.000229447
0.0164242	0	0.310124	0.00119410	0.0152301	0.178591	0.176998	27.9938	0.000796896	0.000275764	0.00131731
0.000398340	0	0.00752150	2.89608E-05	0.000369380	0.268771	0.266181	109.206	0.00129601	0.000448482	0.00214237
0	0	0	0	0	0	0	0	0	0	0
0.000133891	0	0.00252815	9.73439E-06	0.000124157	0.0277353	0.0274855	32.2439	0.000124946	4.32374E-05	0.000206542
0	0	0	0	0	9.34187E-05	9.27705E-05	667.207	3.24237E-07	1.12201E-07	5.35980E-07
3.79472E-05	0	0.000716523	2.75891E-06	3.51883E-05	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0

PWTK1&2 Combined	PWTK1&2 Flash	PWTK1&2 Load	PWTK1&2 Standing	PWTK1&2 Working	SOTK1 Combined	SOTK1 Flash	SOTK1 Inlet Liq	SOTK1 Load	SOTK1 Standing	SOTK1 Working
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
MIX-103	Two Produced Water Tanks	Two Produced Water Tanks	Two Produced Water Tanks	Two Produced Water Tanks	MIX-102	Slop Oil Tank	MIX-101	Slop Oil Tank	Slop Oil Tank	Slop Oil Tank
--	MIX-103	--	MIX-103	MIX-103	--	MIX-102	Slop Oil Tank	--	MIX-102	MIX-102
75.6836	75.6836	75.6836	75.6836	75.6836	75.5893	75.5893	55.7118	75.5893	75.5893	75.5893
0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.25	0.15	0.15	0.15
85.5746		85.5746	85.5746	85.5746	100	100	17.1877	100	100	100
0.000324457		0.000324457	0.000324457	0.000324457	0	0	82.8123	0	0	0
14.4251		14.4251	14.4251	14.4251	0	0	0	0	0	0
39.3276		39.3276	39.3276	39.3276	54.7897	54.7988	92.1451	54.2125	54.2125	54.2125
0.104449		0.104449	0.104449	0.104449	0.125576	0.125597	1.25222	0.124205	0.124205	0.124205
0.0913931	0	1.72569	0.00664462	0.0847485	8.75010	8.61384	32.2136	0.0681615	0.0235871	0.112674
3.59427	0	67.8674	0.261317	3.33296	479.415	472.028	2968.32	3.69520	1.27872	6.10835
34.4119	0	649.768	2.50187	31.9100	3817.74	3758.26	2370.44	29.7508	10.2952	49.1796
4.29032	0	81.0101	0.311922	3.97839	475.978	468.563	295.536	3.70919	1.28356	6.13148
0.000832374	0	0.0157169	6.05167E-05	0.000771857	0.0796926	0.0784516	0.293389	0.000620789	0.000214823	0.00102620
0.0138919	0	0.262309	0.00101000	0.0128819	1.71554	1.68889	8.75	0.0133316	0.00461338	0.0220379
					1.89175	1.89206		1.87182	1.87182	1.87182
1893.47		1893.47	1893.47	1893.47	2841.94	2842.38	4661.05	2814.24	2814.24	2814.24
18043.5		18043.5	18043.5	18043.5	19525.6	19525.4	19038.1	19540.4	19540.4	19540.4
2065.08		2065.08	2065.08	2065.08	3080.96	3081.43	5018.29	3051.41	3051.41	3051.41
19699.9		19699.9	19699.9	19699.9	21181.3	21181.0	20509.5	21200.8	21200.8	21200.8

Surge Vessel Water	SV Oil	SV Water	7	13
Solved	Solved	Solved	Solved	Solved
MIX-105	--	--	Slop Oil Tank	Two Produced Water Tanks
MIX-100	MIX-105	MIX-105	--	--
%	%	%	%	%
99.8535	0*	100*	0	99.9995
0	0*	0*	0	0
4.24933E-05	0.029*	0*	5.19106E-05	0
0	0*	0*	7.81090E-05	3.53747E-07
4.98198E-05	0.034*	0*	0.00801075	0
0.000578789	0.395*	0*	0.136066	0
0.00314744	2.148*	0*	3.13078	0
0.00136125	0.929*	0*	2.64722	0
0.00544647	3.717*	0*	10.1308	0
0.00339214	2.315*	0*	7.20073	0
0.00509920	3.48*	0*	10.5827	0
0	0*	0*	0	0
0.00385371	2.63*	0*	8.46053	0
0.00364124	2.485*	0*	7.63197	0
0	0*	0*	0	0
0.00106966	0.73*	0*	0.615545	0.000308146
0	0*	0*	0	0
0.000876242	0.598*	0*	0.852426	0
0	0*	0*	0	0
0	0*	0*	0	0
0.0151203	10.319*	0*	16.7178	0
0.00252762	1.725*	0*	1.36546	0.000186907
0.0190004	12.967*	0*	13.3470	0
0.000480614	0.328*	0*	0.169698	9.97323E-06
0.00268587	1.833*	0*	1.11663	3.35437E-05
0.00987604	6.74*	0*	3.62002	0
0	0*	0*	0	0
0	0*	0*	0.950854	7.59124E-09
0	0*	0*	11.3155	0
0.0682795	46.598*	0*	0	1.24322E-08
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0
%	%	%	%	%
98.6757	0*	100*	0	99.9975
0	0*	0*	0	0
3.26485E-05	0.00246531*	0*	6.85450E-06	0
0	0*	0*	3.24064E-05	8.64150E-07
4.38408E-05	0.00331045*	0*	0.00121151	0
0.000954653	0.0720866*	0*	0.0385702	0
0.00761305	0.574867*	0*	1.30146	0
0.00433997	0.327714*	0*	1.45049	0
0.0173645	1.31121*	0*	5.55100	0
0.0134248	1.01372*	0*	4.89766	0
0.0201807	1.52386*	0*	7.19795	0
0	0*	0*	0	0
0.0182166	1.37555*	0*	6.87328	0
0.0172123	1.29971*	0*	6.20016	0
0	0*	0*	0	0
0.00458320	0.346081*	0*	0.453273	0.00133605
0	0*	0*	0	0
0.00549041	0.414585*	0*	0.917942	0
0	0*	0*	0	0
0	0*	0*	0	0
0.0831080	6.27554*	0*	15.7921	0
0.0127749	0.964645*	0*	1.18606	0.000955908
0.119054	8.98984*	0*	14.3729	0
0.00279888	0.211345*	0*	0.169840	5.87716E-05
0.0156413	1.18109*	0*	1.11757	0.000197671
0.0694806	5.24653*	0*	4.37692	0
0	0*	0*	0	0
0	0*	0*	1.29439	6.08457E-08
0	0*	0*	26.8072	0

0.912000	68.8658*	0*	0	1.68033E-07
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0
lb/h	lb/h	lb/h	lb/h	lb/h
86081.6	0*	86081.6*	0	87467.1
0	0*	0*	0	0
0.0284815	0.0284815*	0*	0.000170602	0
0	0*	0*	0.000806566	0.000755867
0.0382454	0.0382454*	0*	0.0301534	0
0.832809	0.832809*	0*	0.959975	0
6.64139	6.64139*	0*	32.3922	0
3.78605	3.78605*	0*	36.1014	0
15.1483	15.1483*	0*	138.159	0
11.7114	11.7114*	0*	121.898	0
17.6050	17.6050*	0*	179.150	0
0	0*	0*	0	0
15.8916	15.8916*	0*	171.070	0
15.0155	15.0155*	0*	154.316	0
0	0*	0*	0	0
3.99824	3.99824*	0*	11.2816	1.16864
0	0*	0*	0	0
4.78966	4.78966*	0*	22.8467	0
0	0*	0*	0	0
0	0*	0*	0	0
72.5008	72.5008*	0*	393.050	0
11.1445	11.1445*	0*	29.5198	0.836127
103.859	103.859*	0*	357.727	0
2.44165	2.44165*	0*	4.22716	0.0514071
13.6450	13.6450*	0*	27.8152	0.172901
60.6127	60.6127*	0*	108.938	0
0	0*	0*	0	0
0	0*	0*	32.2161	5.32214E-05
0	0*	0*	667.207	0
795.601	795.601*	0*	0	0.000146978
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0
0	0*	0*	0	0

Surge Vessel Water	SV Oil	SV Water	7	13
Solved	Solved	Solved	Solved	Solved
MIX-105	--	--	Slop Oil Tank	Two Produced Water Tanks
MIX-100	MIX-105	MIX-105	--	--
93.9964	94*	94*	75.5893	75.6836
15	15*	15*	0.15	0.15
0	0	0	0	0
0.145165	100	100	100	100
99.8548	0	0	0	0
18.2303	164.764	18.0153	106.076	18.0156
61.8041	48.7547	62.0256	44.0195	62.2268
4785.27	7.01179	4778.25	23.4635	4855.19
87236.9	1155.29	86081.6	2488.91	87469.4
1411.51	23.6960	1387.84	56.5409	1405.66
175.980	2.95431	173.029	7.04926	175.251
43.5824	0.0638607	43.5185	0.213696	44.2192
175	2.91667*	172.083*	7.03446	174.858
0.990946	0.781717	0.994498	0.705795	0.997724
10.4728	46.1439	9.99668	66.8183	9.99821
11.9133	8130.36	0	5339.44	0.0211952
-799.799	18570.0	-1059.76	18944.3	-1059.29
62.9681	8688.97	50.3100	5740.77	50.3319
262.963	19856.6	0	20380.1	0.461800

Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

Project: Cowboy CDP_2024.10.pmx

Licensed to Esso Exploration, Inc.

Client Name: XTO ENERGY INC
Location: Cowboy CDP
Job: Slop Oil & PW Handling

ProMax Filename: \\FTWNAS01a\projnt15\EHS\Environmental\Air\Areas of Operation\New Mexico\Delaware Division\0_Midstream\Cowboy CDP\1. Permits\2024-07_Update\ProMax\New\Cowboy CDP_2024.10.pmx
ProMax Version: 6.0.22251.0
Simulation Initiated: 11/8/2024 2:26:10 PM

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FAX: (979) 776-4818
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Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Separator Report
Gunbarrel

Client Name:	XTO ENERGY INC	**Job:**	Slop Oil & PW Handling
Location:	Cowboy CDP	**Modified:**	10/9/2024 12:36
Flowsheet:	Slop Oil & PW Handling	**Status:**	Solved 2:10 PM, 11/8/2024

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
GBS1 Inlet Liq	Inlet	MIX-100	GBS1 Flash	Vapor Outlet	
GBS1 Oil Simulated	Light Liquid Outlet		GBS1 Water	Heavy Liquid Outlet	Two Produced Water Tanks
Q-5	Energy				

Block : Scalar Data

Pressure Drop	14.75	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	0	%	Heat Duty	-331278	Btu/h
Mole Fraction Light Liquid	0.155002	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	99.8450	%	Heat Release Curve Increments	10	

Entrainments

Entrainment Entrainment 1

From Phase (Numerator)	Vapor*	Numerator Value	10*	%
To Phase (Denominator)	Heavy Liquid*	Entrainment Value	10	%
Numerator Basis	Fraction From Phase*	Active	TRUE	

Notes:

Tank Losses Report

Slop Oil Tank

Client Name:	XTO ENERGY INC	**Job:**	Slop Oil & PW Handling
Location:	Cowboy CDP	**Modified:**	10/14/2024 16:42
Flowsheet:	Slop Oil & PW Handling	**Status:**	Solved 4:58 PM, 10/14/2024

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
SOTK1 Inlet Liq	Inlet	MIX-101	SOTK1 Flash	Flashing Losses Stream	MIX-102
SOTK1 Working	Working Losses Stream	MIX-102	SOTK1 Standing	Standing Losses Stream	MIX-102
SOTK1 Load	Loading Losses Stream		7	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	30*	ft	Slope of Coned Roof	0.0625	
Shell Diameter	15.5*	ft	Breather Vent Pressure	0.0300000	psig
Number of Storage Tanks	1		Breather Vacuum Pressure	-0.0300000	psig
Maximum Fraction Fill of Tank	90*	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50*	%	Time Frame	Year	
Minimum Fraction Fill of Tank	10	%	Known Liquid Bulk Temperature?	FALSE	
Material Category	Light Organics*		Liquid Bulk Temperature	64.2313	°F
Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	TRUE	
Bolted or Riveted Construction?	FALSE		Flashing Temperature	75.5893	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperature	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperature	47.6	°F
Sum of Increases in Liquid Level	2617.03	ft/yr	Atmospheric Pressure at Tank Location	12.88	psia
Shell Color	Tan*		Daily Solar Insolation	1722	Btu/(day*ft^2)
Shell Paint Condition	Average		Average Wind Speed	8.7	mph
Roof Color	Tan*		Include Short Term Emissions	FALSE	
Roof Paint Condition	Average				

Composition Subset Properties : Scalar Data

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Water	FALSE
Hydrogen Sulfide	FALSE
Nitrogen, Atomic	FALSE
Carbon Dioxide	FALSE
Methane	FALSE
Ethane	FALSE
Propane	TRUE
Isobutane	TRUE
Butane	TRUE
Isopentane	TRUE
Pentane	TRUE
Cyclopentane	TRUE
i-C6	TRUE
n-Hexane	TRUE
Methylcyclopentane	TRUE
Benzene	TRUE
Cyclohexane	TRUE
2,2,4-Trimethylpentane	TRUE
i-C7	TRUE
Methylcyclohexane	TRUE
n-Heptane	TRUE
Toluene	TRUE
Octane	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
Nonane	TRUE
Decane	TRUE
Decanes Plus - Closed Drain Oil	TRUE
Decanes Plus - GBS1 Oil	TRUE
Decanes Plus - Inlet Oil	TRUE
Decanes Plus - North Header Oil	TRUE
Decanes Plus - South Header Oil	TRUE
Decanes Plus - Stabilizer Outlet Oil	TRUE
Undecanes Plus	TRUE

Details Properties : Scalar Data

Vapor Space Volume	2860.84 ft^3	Roof Outage	0.161458 ft
Vapor Density	0.108359 lb/ft^3	Tank Roof Height	0.484375 ft
Vapor Space Expansion Factor	1 1/day	Tank Shell Radius	7.75 ft
Vented Vapor Saturation Factor	0.0989976	Vapor Molecular Weight	54.2125 lb/lbmol
Vapor Space Outage	15.1615 ft	Average Vapor Temperature	528.024 °R
Average Daily Vapor Temperature Range	37.1866 °R	Average Daily Ambient Temperature	521.37 °R
Average Daily Vapor Pressure Range	3.54131 psi	Net Working Loss Throughput	493812 ft^3/yr
Breather Vent Pressure Setting Range	0.0600000 psi	Working Loss Turnover (Saturation) Factor	1
Vapor Pressure at Average Daily Liquid Surface Temperature	11.3262 psia	Number of Turnovers per Year	109.043
Average Daily Liquid Surface Temperature	525.963 °R	Annual Net Throughput	87960.8 bbl/yr
Average Daily Ambient Temperature Range	28.2 °R	Maximum Liquid Height	27 ft
Tank Roof Surface Solar Absorptance	0.49	Minimum Liquid Height	3 ft
Tank Shell Surface Solar Absorptance	0.49	Working Loss Product Factor	1
Vapor Pressure at Maximum Liquid Surface Temperature	13.2064 psia	Vent Setting Correction Factor	1
Vapor Pressure at Minimum Liquid Surface Temperature	9.66512 psia	Saturation Factor	0.6
Maximum Liquid Surface Temperature	535.259 °R	Vapor Pressure of Liquid Loaded	11.3262 psia
Minimum Liquid Surface Temperature	516.666 °R	Collection Efficiency	98.7 %
Liquid Height	15 ft	Annual Net Throughput Per Tank	87960.8 bbl/yr

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	NSPS-Level*
Land Based Mode of Operation	Submerged Loading: Dedicated Normal Service*	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	1979.77 ton/yr	Standing Losses per Tank	5.33510 ton/yr
Working Losses	25.4855 ton/yr	Flashing Losses per Tank	1979.77 ton/yr
Standing Losses	5.33510 ton/yr	Working and Standing Losses	30.8206 ton/yr
Loading Losses	15.4172 ton/yr	Working and Standing Losses per Tank	30.8206 ton/yr
Working Losses per Tank	25.4855 ton/yr	Loading Losses per Tank	15.4172 ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
Propane	545.903	7.75052	1.62249	4.68862	9.37301
Isobutane	225.982	2.90164	0.607427	1.75533	3.50907
Butane	578.487	7.44185	1.55787	4.50189	8.99972
Isopentane	200.724	2.43157	0.509022	1.47096	2.94059
Pentane	218.613	2.62455	0.549420	1.58770	3.17397
Cyclopentane	0	0	0	0	0
i-C6	86.5394	1.00695	0.210794	0.609148	1.21775
n-Hexane	54.7423	0.641151	0.134218	0.387859	0.775369
Methylcyclopentane	0	0	0	0	0
Benzene	4.17058	0.0289867	0.00606805	0.0175353	0.0350548
Cyclohexane	0	0	0	0	0
2,2,4-Trimethylpentane	2.76695	0.0300803	0.00629697	0.0181968	0.0363772
i-C7	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0
n-Heptane	44.2205	0.473035	0.0990246	0.286159	0.572060
Toluene	2.93919	0.0218809	0.00458052	0.0132367	0.0264614
Octane	12.4898	0.116182	0.0243215	0.0702836	0.140504
Ethylbenzene	0.132040	0.00100498	0.000210381	0.000607953	0.00121536
m-Xylene	0.775253	0.00576982	0.00120785	0.00349041	0.00697767
Nonane	1.16587	0.00938359	0.00196435	0.00567653	0.0113479
Decane	0	0	0	0	0
Decanes Plus - Closed Drain Oil	0.120386	0.000904656	0.000189380	0.000547264	0.00109404
Decanes Plus - GBS1 Oil	0.000406335	2.34759E-06	4.91442E-07	1.42016E-06	2.83904E-06
Decanes Plus - Inlet Oil	0	0	0	0	0
Decanes Plus - North Header Oil	0	0	0	0	0
Decanes Plus - South Header Oil	0	0	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0	0	0
Undecanes Plus	0	0	0	0	0

Notes:

Tank Losses Report
Two Produced Water Tanks

Client Name:	XTO ENERGY INC	**Job:**	Slop Oil & PW Handling
Location:	Cowboy CDP	**Modified:**	10/15/2024 8:55
Flowsheet:	Slop Oil & PW Handling	**Status:**	Solved 2:10 PM, 11/8/2024

Stream Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
GBS1 Water	Inlet	Gunbarrel	PWTK1&2 Flash	Flashing Losses Stream	MIX-103
PWTK1&2 Working	Working Losses Stream	MIX-103	PWTK1&2 Standing	Standing Losses Stream	MIX-103
PWTK1&2 Load	Loading Losses Stream		13	Residual Liquid Stream	

Working and Standing Properties : Scalar Data

Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	24*	ft	Slope of Coned Roof	0.0625	
Shell Diameter	15.5*	ft	Breather Vent Pressure	0.0300000	psig
Number of Storage Tanks	2*		Breather Vacuum Pressure	-0.0300000	psig
Maximum Fraction Fill of Tank	90	%	Location	Roswell, NM*	
Average Fraction Fill of Tank	50	%	Time Frame	Year	
Minimum Fraction Fill of Tank	10	%	Known Liquid Bulk Temperature?	FALSE	
Material Category	Light Organics*		Liquid Bulk Temperature	64.2313	°F
Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	FALSE	
Bolted or Riveted Construction?	FALSE		Flashing Temperature	75.6836	°F
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperature	75.8	°F
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperature	47.6	°F
Sum of Increases in Liquid Level	32581.3	ft/yr	Atmospheric Pressure at Tank Location	12.88	psia
Shell Color	Tan*		Daily Solar Insolation	1722	Btu/(day*ft^2)
Shell Paint Condition	Average		Average Wind Speed	8.7	mph
Roof Color	Tan*		Include Short Term Emissions	FALSE	
Roof Paint Condition	Average				

Composition Subset Properties : Scalar Data

Component Subset	VOCs	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
Water	FALSE
Hydrogen Sulfide	FALSE
Nitrogen, Atomic	FALSE
Carbon Dioxide	FALSE
Methane	FALSE
Ethane	FALSE
Propane	TRUE
Isobutane	TRUE
Butane	TRUE
Isopentane	TRUE
Pentane	TRUE
Cyclopentane	TRUE
i-C6	TRUE
n-Hexane	TRUE
Methylcyclopentane	TRUE
Benzene	TRUE
Cyclohexane	TRUE
2,2,4-Trimethylpentane	TRUE
i-C7	TRUE
Methylcyclohexane	TRUE
n-Heptane	TRUE
Toluene	TRUE
Octane	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
Nonane	TRUE
Decane	TRUE
Decanes Plus - Closed Drain Oil	TRUE
Decanes Plus - GBS1 Oil	TRUE
Decanes Plus - Inlet Oil	TRUE
Decanes Plus - North Header Oil	TRUE
Decanes Plus - South Header Oil	TRUE
Decanes Plus - Stabilizer Outlet Oil	TRUE
Undecanes Plus	TRUE

Details Properties : Scalar Data

Vapor Space Volume	2294.77 ft^3	Roof Outage	0.161458 ft
Vapor Density	0.0798877 lb/ft^3	Tank Roof Height	0.484375 ft
Vapor Space Expansion Factor	0.928682 1/day	Tank Shell Radius	7.75 ft
Vented Vapor Saturation Factor	0.114233	Vapor Molecular Weight	37.6489 lb/lbmol
Vapor Space Outage	12.1615 ft	Average Vapor Temperature	528.292 °R
Average Daily Vapor Temperature Range	37.0284 °R	Average Daily Ambient Temperature	521.37 °R
Average Daily Vapor Pressure Range	0.789581 psi	Net Working Loss Throughput	6.14782E+06 ft^3/yr
Breather Vent Pressure Setting Range	0.0600000 psi	Working Loss Turnover (Saturation) Factor	0.184346
Vapor Pressure at Average Daily Liquid Surface Temperature	12.0300 psia	Number of Turnovers per Year	1696.94
Average Daily Liquid Surface Temperature	526.096 °R	Annual Net Throughput	2.19018E+06 bbl/yr
Average Daily Ambient Temperature Range	28.2 °R	Maximum Liquid Height	21.6 ft
Tank Roof Surface Solar Absorptance	0.49	Minimum Liquid Height	2.4 ft
Tank Shell Surface Solar Absorptance	0.49	Working Loss Product Factor	1
Vapor Pressure at Maximum Liquid Surface Temperature	12.5434 psia	Vent Setting Correction Factor	1
Vapor Pressure at Minimum Liquid Surface Temperature	11.7538 psia	Saturation Factor	0.6
Maximum Liquid Surface Temperature	535.354 °R	Vapor Pressure of Liquid Loaded	12.0300 psia
Minimum Liquid Surface Temperature	516.839 °R	Collection Efficiency	98.7 %
Liquid Height	12 ft	Annual Net Throughput Per Tank	1.09509E+06 bbl/yr

Loading Properties : Scalar Data

Cargo Carrier	Tank Truck or Rail Tank Car	Truck Annual Leak Test Passed	NSPS-Level*
Land Based Mode of Operation	Submerged Loading: Dedicated Normal Service*	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

Flashing Losses	0 ton/yr	Standing Losses per Tank	0.425923 ton/yr
Working Losses	10.8648 ton/yr	Flashing Losses per Tank	0 ton/yr
Standing Losses	0.851847 ton/yr	Working and Standing Losses	11.7167 ton/yr
Loading Losses	221.235 ton/yr	Working and Standing Losses per Tank	5.85834 ton/yr
Working Losses per Tank	5.43242 ton/yr	Loading Losses per Tank	110.618 ton/yr

Results Properties : Tabulated Data

Index	Flashing Losses Mass Flows ton/yr	Working Losses Mass Flows ton/yr	Standing Losses Mass Flows ton/yr	Loading Losses Mass Flows ton/yr	Working and Standing Losses Mass Flows ton/yr
Propane	0	5.39169	0.422730	109.788	5.81442
Isobutane	0	0.838409	0.0657346	17.0721	0.904144
Butane	0	3.03363	0.237849	61.7723	3.27148
Isopentane	0	0.591945	0.0464108	12.0535	0.638355
Pentane	0	0.296516	0.0232480	6.03781	0.319764
Cyclopentane	0	0	0	0	0
i-C6	0	0.151913	0.0119106	3.09332	0.163823
n-Hexane	0	0.0513059	0.00402258	1.04472	0.0553285
Methylcyclopentane	0	0	0	0	0
Benzene	0	0.182886	0.0143390	3.72401	0.197225
Cyclohexane	0	0	0	0	0
2,2,4-Trimethylpentane	0	0.00472877	0.000370755	0.0962897	0.00509953
i-C7	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0
n-Heptane	0	0.0529680	0.00415290	1.07856	0.0571209
Toluene	0	0.177493	0.0139162	3.61420	0.191409
Octane	0	0.0105245	0.000825162	0.214305	0.0113497
Ethylbenzene	0	0.0118071	0.000925722	0.240422	0.0127328
m-Xylene	0	0.0667080	0.00523017	1.35834	0.0719382
Nonane	0	0.00161788	0.000126848	0.0329442	0.00174473
Decane	0	0	0	0	0
Decanes Plus - Closed Drain Oil	0	0.000543807	4.26366E-05	0.0110733	0.000586444
Decanes Plus - GBS1 Oil	0	0	0	0	0
Decanes Plus - Inlet Oil	0	0.000154125	1.20840E-05	0.00313837	0.000166209
Decanes Plus - North Header Oil	0	0	0	0	0
Decanes Plus - South Header Oil	0	0	0	0	0
Decanes Plus - Stabilizer Outlet Oil	0	0	0	0	0
Undecanes Plus	0	0	0	0	0

Notes:

Bryan Research & Engineering, LLC

ProMax® 5.0

Simulation Report

Project: Gas CDP 250MMSCFD_MDEA.pmx

Licensed to Esso Exploration, Inc.

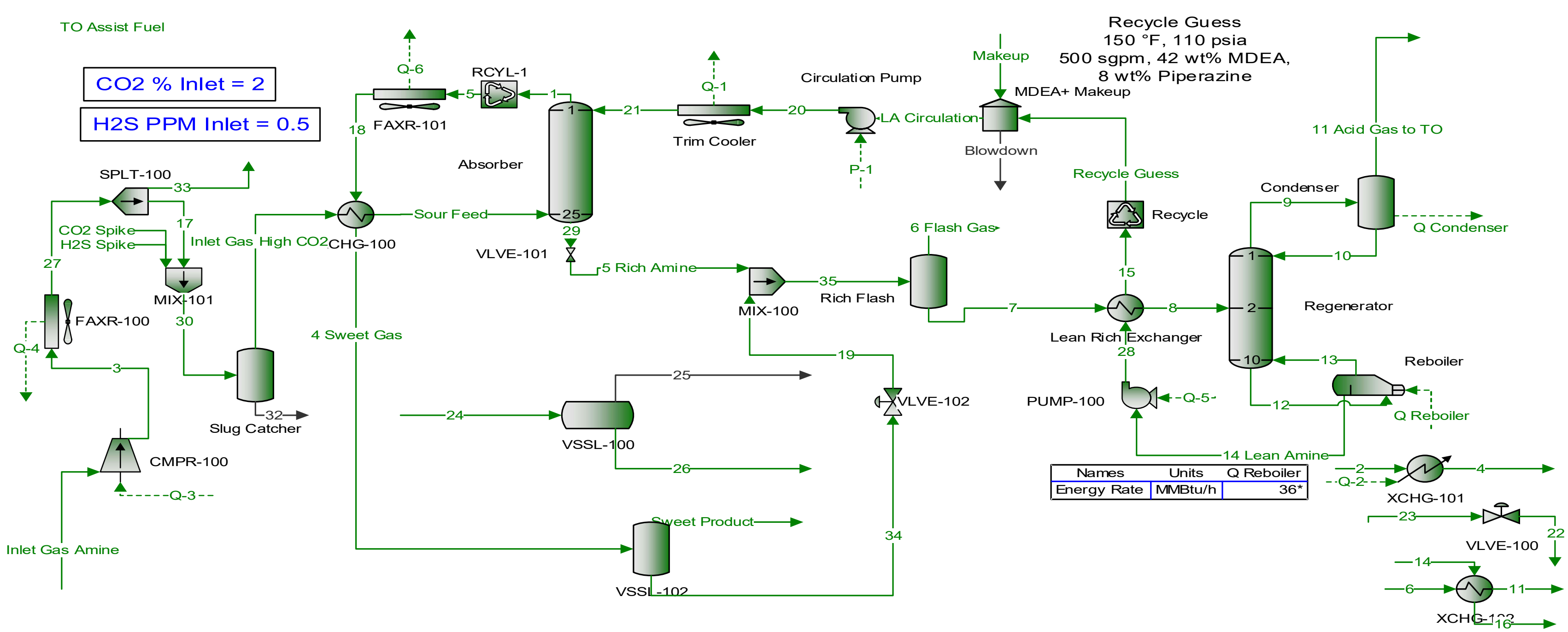
Client Name: Cowboy Amine - Max Capacity
Location:
Job:

ProMax Filename: P:\New Mexico\Delaware Division\0_Midstream\Cowboy CDP\11-1-19 Updates\Process Simulations\Gas CDP 250MMSCFD_MDEA.pmx
ProMax Version: 5.0.19050.0
Simulation Initiated: 3/31/2020 8:44:04 AM

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

Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

MDEA Sweetening with 50 wt% MDEA+Piperazine



Names	Units	Sour Feed	4 Sweet Gas	11 Acid Gas to TO	5 Rich Amine	6 Flash Gas	21	Sweet Product
Std Vapor Volumetric Flow	MMSCFD	251	246	5.36	76.8	0.118	72.3	246
Hydrogen Sulfide(Mole Fraction)	ppm	0.5	0.0001805	23.26	1.675	5.951	0.04447	0.0001659
Carbon Dioxide(Mole Fraction)	ppm	2e+04	5.4	9.33e+05	6.6e+04	1.28e+05	650	3.93
Carbon Dioxide(Mole Fraction)	%	2	0.00054048	93.305	6.5957	12.756	0.06505	0.00039322
Carbon Dioxide(Partial Molar Volumetric Fraction)	ppm	19315	3.9836	9.3345e+05	24612	1.2731e+05	-776.15	3.8287
Total Acid Gas Loading/Mole Amine					0.50586		0.0047004	

Process Streams	Blowdown	CO2 Spike	H2S Spike	Inlet Gas Amine	Inlet Gas High CO2	LA Circulation	Makeup	Recycle Guess	Sour Feed	Sweet Product	TO Assist Fuel	1	2	3
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	MDEA+ Makeup	--	--	--	Slug Catcher	MDEA+ Makeup	--	Recycle	XCHG-100	VSSL-102	--	Absorber	--	CMPR-100
To Block:	--	MIX-101	MIX-101	CMPR-100	XCHG-100	Circulation Pump	MDEA+ Makeup	MDEA+ Makeup	Absorber	--	--	RCYL-1	XCHG-101	FAXR-100
Mole Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Hydrogen Sulfide	4.48765E-06	0*	100*	0*	5.00000E-05	4.44730E-06	0	4.48765E-06	5.00000E-05	1.65904E-08	0*	1.74766E-08	0*	0
N2	0	0*	0*	1.47987*	1.45190	0	0	0	1.45190	1.48010	1.75018*	1.47818	2.28810*	1.47987
Carbon Dioxide	0.0656401	100*	0*	0.111991*	2	0.0650499	0	0.0656401	2	0.000393220	0*	0.000534743	2.09826*	0.111991
Methane	0	0*	0*	70.2052*	68.8782	0	0	0	68.8782	70.1988	80.1880*	70.1073	70.0718*	70.2052
Ethane	0	0*	0*	15.3194*	15.0298	0	0	0	15.0298	15.3174	16.7417*	15.2974	13.1491*	15.3194
Propane	0	0*	0*	8.52924*	8.36802	0	0	0	8.36802	8.52977	1.32013*	8.51866	7.70360*	8.52924
i-Butane	0	0*	0*	0.983915*	0.965317	0	0	0	0.965317	0.984101	0*	0.982819	0.859286*	0.983915
n-Butane	0	0*	0*	2.36979*	2.32500	0	0	0	2.32500	2.37007	0*	2.36698	2.24813*	2.36979
i-Pentane	0	0*	0*	0.387662*	0.380334	0	0	0	0.380334	0.387758	0*	0.387253	0.439635*	0.387662
n-Pentane	0	0*	0*	0.379782*	0.372603	0	0	0	0.372603	0.379867	0*	0.379372	0.469610*	0.379782
n-Hexane	0	0*	0*	0.218501*	0.214371	0	0	0	0.214371	0.218563	0*	0.218278	0.579518*	0.218501
Water	85.9688	0*	0*	0.0147201*	0.0144418	86.0949	99.9905	85.9688	0.0144418	0.133186	0*	0.262385	0.0930397*	0.0147201
MDEA	11.0531	0*	0*	0*	0	10.9537	0.000256913	11.0531	0	6.60675E-07	0*	0.000169799	0*	0
Piperazine	2.91250	0*	0*	0*	0	2.88640	0.00929296	2.91250	0	2.44502E-05	0*	0.000597088	0*	0
O2	0	0*	0*	0*	0	0	0	0	0	0	0*	0	0*	0
Mass Fraction	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Hydrogen Sulfide	4.90262E-06	0*	100*	0*	7.34853E-05	4.87706E-06	0	4.90262E-06	7.34853E-05	2.48434E-08	0*	2.61769E-08	0*	0
N2	0	0*	0*	1.81922*	1.75396	0	0	0	1.75396	1.82180	2.58444*	1.81988	2.77062*	1.81922
Carbon Dioxide	0.0926007	100*	0*	0.216285*	3.79574	0.0921179	0	0.0926007	3.79574	0.000760371	0*	0.00103429	3.99155*	0.216285
Methane	0	0*	0*	49.4240*	47.6510	0	0	0	47.6510	49.4816	67.8109*	49.4293	48.5904*	49.4240
Ethane	0	0*	0*	20.2143*	19.4891	0	0	0	19.4891	20.2371	26.5361*	20.2157	17.0904*	20.2143
Propane	0	0*	0*	16.5045*	15.9125	0	0	0	15.9125	16.5263	3.06854*	16.5088	14.6834*	16.5045
i-Butane	0	0*	0*	2.50956*	2.41953	0	0	0	2.41953	2.51319	0*	2.51053	2.15882*	2.50956
n-Butane	0	0*	0*	6.04436*	5.82753	0	0	0	5.82753	6.05267	0*	6.04627	5.64808*	6.04436
i-Pentane	0	0*	0*	1.22738*	1.18335	0	0	0	1.18335	1.22923	0*	1.22793	1.37106*	1.22738
n-Pentane	0	0*	0*	1.20243*	1.15930	0	0	0	1.15930	1.20422	0*	1.20294	1.46455*	1.20243
n-Hexane	0	0*	0*	0.826294*	0.796652	0	0	0	0.796652	0.827565	0*	0.826689	2.15867*	0.826294
Water	49.6456	0*	0*	0.0116372*	0.0112197	49.9079	99.9539	49.6456	0.0112197	0.105425	0*	0.207744	0.0724513*	0.0116372
MDEA	42.2201	0*	0*	0*	0	42	0.00169873	42.2201	0	3.45915E-06	0*	0.000889251	0*	0
Piperazine	8.04170	0*	0*	0*	0	8	0.0444157	8.04170	0	9.25357E-05	0*	0.00226033	0*	0
O2	0	0*	0*	0*	0	0	0	0	0	0	0*	0	0*	0
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Hydrogen Sulfide	0	0*	0.469624*	0*	0.469624	0.0120311	0	0.0120311	0.469624	0.000152825	0*	0.000161200	0*	0
N2	0	0*	0*	11379.5*	11209.1	0	0	0	11209.1	11206.9	25.1031*	11206.9	14075.6*	11379.5
Carbon Dioxide	0	22924.8*	0*	1352.89*	24257.5	227.243	0	227.243	24257.5	4.67747	0*	6.36923	20278.2*	1352.89
Methane	0	0*	0*	309154*	304524	0	0	0	304524	304389	658.658*	304390	246854*	309154
Ethane	0	0*	0*	126443*	124550	0	0	0	124550	124490	257.749*	124490	86824.0*	126443
Propane	0	0*	0*	103238*	101692	0	0	0	101692	101663	29.8052*	101663	74595.8*	103238
i-Butane	0	0*	0*	15697.7*	15462.5	0	0	0	15462.5	15460.0	0*	15460.0	10967.4*	15697.7
n-Butane	0	0*	0*	37808.3*	37242.1	0	0	0	37242.1	37233.4	0*	37233.4	28693.9*	37808.3
i-Pentane	0	0*	0*	7677.46*	7562.47	0	0	0	7562.47	7561.69	0*	7561.69	6965.40*	7677.46
n-Pentane	0	0*	0*	7521.40*	7408.75	0	0	0	7408.75	7407.81	0*	7407.81	7440.32*	7521.40
n-Hexane	0	0*	0*	5168.59*	5091.18	0	0	0	5091.18	5090.82	0*	5090.82	10966.7*	5168.59
Water	0	0*	0*	72.7924*	71.7022	123116	1285.67	121831	71.7022	648.526	0*	1279.31	368.073*	72.7924
MDEA	0	0*	0*	0*	0	103609	0.0218501	103609	0	0.0212792	0*	5.47608	0*	0
Piperazine	0	0*	0*	0*	0	19735.0	0.571302	19734.4	0	0.569239	0*	13.9193	0*	0
O2	0	0*	0*	0*	0	0	0	0	0	0	0*	0	0*	0

Process Streams		Blowdown	CO2 Spike	H2S Spike	Inlet Gas Amine	Inlet Gas High CO2	LA Circulation	Makeup	Recycle Guess	Sour Feed	Sweet Product	TO Assist Fuel	1	2	3
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	MDEA+ Makeup	--	--	--	Slug Catcher	MDEA+ Makeup	--	Recycle	XCHG-100	VSSL-102	--	Absorber	--	CMPR-100
	To Block:	--	MIX-101	MIX-101	CMPR-100	XCHG-100	Circulation Pump	MDEA+ Makeup	MDEA+ Makeup	Absorber	--	--	RCYL-1	XCHG-101	FAXR-100
Property	**Units**														
Temperature	°F		100*	100	50*	84.5174	170.237	80*	170.771	98.6691	104.178	65*	134.620	50*	43.8765
Pressure	psia	110	1014*	1014	1100*	1014	110	110*	110	1004	984	50*	999	1000*	1009*
Molecular Weight	lb/lbmol	31.1962	44.0095	34.0809	22.7878	23.1889	31.0777	18.0219	31.1962	23.1889	22.7592	18.9706	22.7536	23.1347	22.7878
Mass Flow	lb/h	0	22924.8	0.469624	625515	639071	246687	1286.26	245401	639071	615156	971.316	615808	508029	625515
Std Vapor Volumetric Flow	MMSCFD	0	4.74422*	0.000125500*	250*	251	72.2939	0.650031	71.6439	251	246.169	0.46632*	246.490	200*	250
Std Liquid Volumetric Flow	sgpm	0	56.0819	0.00117520	3458.13	3462.42	500*	2.57177	497.428	3462.42	3402.85	6.01693	3404.16	2728.10	3458.13
Mass Cp	Btu/(lb*°F)		0.614535	0.586905	0.816909	0.698540	0.862976	0.998589	0.862662	0.666302	0.665510	0.490766	0.640455	0.717859	0.776746
Net Ideal Gas Heating Value	Btu/ft^3	488.159	0	586.79	1222.83	1199.72	483.772	0.304496	488.159	1199.72	1222.78	1030.84	1221.21	1181.12	1222.83
Gross Ideal Gas Heating Value	Btu/ft^3	574.838	0	637.1	1345.22	1319.80	570.125	50.6339	574.838	1319.80	1345.22	1139.39	1343.56	1299.56	1345.22

4	4 Sweet Gas	5	5 Rich Amine	6	6 Flash Gas	7	8	9	10	11	11 Acid Gas to TO	12	13	14	14 Lean Amine	15
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
XCHG-101	XCHG-100	RCYL-1	VLVE-101	--	Rich Flash	Rich Flash	Lean Rich Exchanger	Regenerator	Condenser	XCHG-102	Condenser	Regenerator	Reboiler	--	Reboiler	Lean Rich Exchanger
--	VSSL-102	FAXR-101	MIX-100	XCHG-102	--	Lean Rich Exchanger	Regenerator	Condenser	Regenerator	--	--	Reboiler	Regenerator	XCHG-102	PUMP-100	Recycle
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
0	1.80487E-08	1.80487E-08	0.000167534	0*	0.000595084	0.000166184	0.000166184	0.00132096	4.63265E-06	0	0.00232624	5.14145E-06	7.61524E-06	0*	4.48809E-06	4.48809E-06
2.28810	1.47817	1.47817	0.000905831	2.28970*	0.583606	1.27887E-05	1.27887E-05	0.000104117	3.04006E-09	2.28970	0.000183629	0	0	2.33595*	0	0
2.09826	0.000540475	0.000540475	6.59567	2.09972*	12.7559	6.55916	6.55916	52.9283	0.0588414	2.09972	93.3047	0.106152	0.259539	0.00490265*	0.0656399	0.0656399
70.0718	70.1073	70.1073	0.0993760	70.1208*	62.2627	0.00395807	0.00395807	0.0322246	1.81698E-06	70.1208	0.0568330	0	0	71.5074*	0	0
13.1491	15.2974	15.2974	0.0235366	13.1583*	14.3897	0.00146328	0.00146328	0.0119133	7.48744E-07	13.1583	0.0210109	0	0	13.4159*	0	0
7.70360	8.51865	8.51865	0.00789564	7.70898*	4.88050	0.000408082	0.000408082	0.00332238	1.60248E-07	7.70898	0.00585956	0	0	7.86277*	0	0
0.859286	0.982818	0.982818	0.000510626	0.859887*	0.319872	1.96877E-05	1.96877E-05	0.000160285	4.87157E-09	0.859887	0.000282691	0	0	0.877226*	0	0
2.24813	2.36698	2.36698	0.00176595	2.24970*	1.08510	0.000100484	0.000100484	0.000818086	3.74622E-08	2.24970	0.00144283	0	0	2.29484*	0	0
0.439635	0.387253	0.387253	0.000127512	0.439942*	0.0801470	4.46982E-06	4.46982E-06	3.63904E-05	8.39914E-10	0.439942	6.41811E-05	0	0	0.448848*	0	0
0.469610	0.379372	0.379372	0.000153654	0.469938*	0.0958045	6.57199E-06	6.57199E-06	5.35051E-05	1.52444E-09	0.469938	9.43657E-05	0	0	0.479427*	0	0
0.579518	0.218277	0.218277	4.93621E-05	0.579924*	0.0310918	1.61391E-06	1.61391E-06	1.31394E-05	2.11654E-10	0.579924	2.31737E-05	0	0	0.591698*	0	0
0.0930397	0.262446	0.262446	80.2449	0.0231808*	3.51479	80.4418	80.4418	47.0217	99.9411	0.0231808	6.60722	88.7973	99.5064	0.180543*	85.9688	85.9688
0	0.000169857	0.000169857	10.3100	0*	0.000128191	10.2833	10.2833	8.31424E-06	1.92010E-05	0	7.92995E-14	8.75693	0.0632636	0.000146088*	11.0531	11.0531
0	0.000597097	0.000597097	2.71501	0*	1.02709E-05	2.70967	2.70967	1.01086E-05	2.33449E-05	0	3.15836E-14	2.33966	0.170741	0.000341412*	2.91250	2.91250
0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0*	0	0
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
0	2.70338E-08	2.70338E-08	0.000178364	0*	0.000850405	0.000177169	0.000177169	0.00141678	8.75649E-06	0	0.00187542	6.14955E-06	1.42109E-05	0*	4.90310E-06	4.90310E-06
2.77062	1.81988	1.81988	0.000792693	2.77213*	0.685523	1.12068E-05	1.12068E-05	9.17891E-05	4.72322E-09	2.77213	0.000121687	0	0	2.88456*	0	0
3.99155	0.00104538	0.00104538	9.06772	3.99373*	23.5394	9.02993	9.02993	73.3054	0.143621	3.99373	97.1369	0.163953	0.625426	0.00951104*	0.0926004	0.0926004
48.5904	49.4293	49.4293	0.0498018	48.6169*	41.8828	0.00198630	0.00198630	0.0162690	1.61663E-06	48.6169	0.0215678	0	0	50.5677*	0	0
17.0904	20.2157	20.2157	0.0221083	17.0997*	18.1430	0.00137637	0.00137637	0.0112734	1.24865E-06	17.0997	0.0149451	0	0	17.7823*	0	0
14.6834	16.5088	16.5088	0.0108762	14.6914*	9.02395	0.000562901	0.000562901	0.00461049	3.91903E-07	14.6914	0.00611216	0	0	15.2835*	0	0
2.15882	2.51053	2.51053	0.000927122	2.16000*	0.779571	3.57953E-05	3.57953E-05	0.000293182	1.57036E-08	2.16000	0.000388676	0	0	2.24752*	0	0
5.64808	6.04627	6.04627	0.00320636	5.65115*	2.64452	0.000182696	0.000182696	0.00149638	1.20760E-07	5.65115	0.00198377	0	0	5.87957*	0	0
1.37106	1.22793	1.22793	0.000287390	1.37181*	0.242467	1.00881E-05	1.00881E-05	8.26262E-05	3.36088E-09	1.37181	0.000109540	0	0	1.42751*	0	0
1.46455	1.20294	1.20294	0.000346311	1.46534*	0.289835	1.48325E-05	1.48325E-05	0.000121486	6.09999E-09	1.46534	0.000161056	0	0	1.52476*	0	0
2.15867	0.826689	0.826689	0.000132883	2.15985*	0.112348	4.35062E-06	4.35062E-06	3.56336E-05	1.01158E-09	2.15985	4.72404E-05	0	0	2.24768*	0	0
0.0724513	0.207793	0.207793	45.1596	0.0180484*	2.65508	45.3328	45.3328	26.6588	99.8561	0.0180484	2.81575	56.1419	98.1565	0.143374*	49.6456	49.6456
0	0.000889552	0.000889552	38.3786	0*	0.000640521	38.3319	38.3319	3.11790E-05	0.000126897	0	2.23534E-13	36.6215	0.412781	0.000767368*	42.2201	42.2201
0	0.00226036	0.00226036	7.30543	0*	3.70961E-05	7.30110	7.30110	2.74014E-05	0.000111523	0	6.43546E-14	7.07264	0.805280	0.00129632*	8.04170	8.04170
0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0*	0	0
lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
0	0.000166476	0.000166476	0.481493	0*	0.00262967	0.478877	0.478877	0.467555	0.000710019	0	0.466845	0.0174244	0.00539214	0*	0.0120323	0.0120323
14075.6	11206.9	11206.9	2.13988	14188.4*	2.11981	0.0302912	0.0302912	0.0302916	3.82982E-07	14188.4	0.0302912	0	0	14355.9*	0	0
20278.2	6.43751	6.43751	24478.3	20440.8*	72.7899	24407.3	24407.3	24191.7	11.6455	20440.8	24180.1	464.552	237.310	47.3346*	227.242	227.242
246854	304390	304390	134.440	248832*	129.512	5.36883	5.36883	5.36896	0.000131085	248832	5.36883	0	0	251666*	0	0
86824.0	124490	124490	59.6815	87519.9*	56.1028	3.72025	3.72025	3.72035	0.000101247	87519.9	3.72025	0	0	88499.3*	0	0
74595.8	101663	101663	29.3602	75193.7*	27.9044	1.52149	1.52149	1.52152	3.17774E-05	75193.7	1.52149	0	0	76062.9*	0	0
10967.4	15460.0	15460.0	2.50277	11055.3*	2.41063	0.0967523	0.0967523	0.0967536	1.27333E-06	11055.3	0.0967523	0	0	11185.5*	0	0
28693.9	37233.4	37233.4	8.65558	28923.8*	8.17755	0.493815	0.493815	0.493825	9.79185E-06	28923.8	0.493815	0	0	29261.5*	0	0
6965.40	7561.69	7561.69	0.775812	7021.23*	0.749771	0.0272674	0.0272674	0.0272677	2.72517E-07	7021.23	0.0272674	0	0	7104.44*	0	0
7440.32	7407.81	7407.81	0.934868	7499.95*	0.896246	0.0400914	0.0400914	0.0400919	4.94617E-07	7499.95	0.0400914	0	0	7588.44*	0	0
10966.7	5090.82	5090.82	0.358718	11054.6*	0.347409	0.0117594	0.0117594	0.0117595	8.20238E-08	11054.6	0.0117594	0	0	11186.3*	0	0
368.073	1279.61	1279.61	121909	92.3759*	8.21019	122532	122532	8797.74	8096.82	92.3759	700.919	159075	37244.3	713.546*	121831	121831
0	5.47793	5.47793	103603	0*	0.00198066	103609	103609	0.0102895	0.0102895	0	5.56438E-11	103765	156.625	3.81904*	103609	103609
0	13.9195	13.9195	19721.0	0*	0.000114711	19734.4	19734.4	0.00904282	0.00904282	0	1.60196E-11	20039.9	305.554	6.45153*	19734.4	19734.4
0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0*	0	0

4	4 Sweet Gas	5	5 Rich Amine	6	6 Flash Gas	7	8	9	10	11	11 Acid Gas to TO	12	13	14	14 Lean Amine	15
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
XCHG-101	XCHG-100	RCYL-1	VLVE-101	--	Rich Flash	Rich Flash	Lean Rich Exchanger	Regenerator	Condenser	XCHG-102	Condenser	Regenerator	Reboiler	--	Reboiler	Lean Rich Exchanger
--	VSSL-102	FAXR-101	MIX-100	XCHG-102	--	Lean Rich Exchanger	Regenerator	Condenser	Regenerator	--	--	Reboiler	Regenerator	XCHG-102	PUMP-100	Recycle
80*	104.517	134.630	115.988	100*	115.980	115.980	190*	202.590	120.000	120*	120.000	254.519	256.237	141*	256.237	170.771
1000	989	999	89.7*	956.73*	37.73*	37.73	27.73	26	26	952.73*	26	29	29	950.73*	29	110
23.1347	22.7536	22.7536	32.0116	23.1382	23.8486	31.9676	31.9676	31.7759	18.0306	23.1382	42.2732	28.4940	18.2630	22.6856	31.1962	31.1962
508029	615808	615808	269950	511822*	309.226	270294	270294	33001.3	8108.49	511822	24892.8	283345	37943.8	497681*	245401	245401
200	246.491	246.491	76.8035	201.462	0.118091	77.0070	77.0070	9.45881	4.09576	201.462	5.36306	90.5661	18.9222	199.805	71.6439	71.6439
2728.10	3404.16	3404.16	558.262	2749.41	1.53076	558.048	558.048	76.8347	16.2147	2749.41	60.6200	573.611	76.1824	2731.57	497.428	497.428
0.678773	0.666775	0.640448	0.667262	0.641496	0.428747	0.668315	0.747892	0.283566	0.997566	0.621407	0.216219	0.939121	0.465779	0.622691	0.930976	0.862662
1181.12	1221.21	1221.21	456.837	1181.94	962.332	454.236	454.236	0.604559	0.00148998	1181.94	1.06512	387.773	7.68997	1205.38	488.159	488.159
1299.56	1343.56	1343.56	537.870	1300.43	1062.41	535.117	535.117	24.3217	50.2820	1300.43	4.49590	466.935	58.3874	1326.30	574.838	574.838

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	32	33	34	35
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
XCHG-102	SPLT-100	FAXR-101	VLVE-102	Circulation Pump	Trim Cooler	VLVE-100	--	--	VSSL-100	VSSL-100	FAXR-100	PUMP-100	Absorber	MIX-101	Slug Catcher	SPLT-100	VSSL-102	MIX-100
--	MIX-101	XCHG-100	MIX-100	Trim Cooler	Absorber	--	VLVE-100	VSSL-100	--	--	SPLT-100	Lean Rich Exchanger	VLVE-101	Slug Catcher	--	--	VLVE-102	Rich Flash
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
0	0	1.80487E-08	1.13450E-06	4.44730E-06	4.44730E-06	0	0*	0*		0	0	4.48809E-06	0.000167534	5.00000E-05		0	1.13450E-06	0.000166840
2.33595	1.47987	1.47817	0.00103384	0	0	2.33375	2.33375*	0*		0	1.47987	0	0.000905831	1.45190		1.47987	0.00103384	0.000906365
0.00490265	0.111991	0.000540475	0.113275	0.0650499	0.0650499	0.000682900	0.000682900*	0*		0	0.111991	0.0656399	6.59567	2		0.111991	0.113275	6.56865
71.5074	70.2052	70.1073	0.0778747	0	0	71.4498	71.4498*	0*		0	70.2052	0	0.0993760	68.8782		70.2052	0.0778747	0.0992864
13.4159	15.3194	15.2974	0.0133299	0	0	13.4068	13.4068*	0*		0	15.3194	0	0.0235366	15.0298		15.3194	0.0133299	0.0234941
7.86277	8.52924	8.51865	0.00421561	0	0	7.85615	7.85615*	0*		0	8.52924	0	0.00789564	8.36802		8.52924	0.00421561	0.00788030
0.877226	0.983915	0.982818	0.000224871	0	0	0.876419	0.876419*	0*		0	0.983915	0	0.000510626	0.965317		0.983915	0.000224871	0.000509434
2.29484	2.36979	2.36698	0.000769357	0	0	2.29276	2.29276*	0*		0	2.36979	0	0.00176595	2.32500		2.36979	0.000769357	0.00176179
0.448848	0.387662	0.387253	4.81832E-05	0	0	0.448435	0.448435*	0*		0	0.387662	0	0.000127512	0.380334		0.387662	4.81832E-05	0.000127181
0.479427	0.379782	0.379372	5.76770E-05	0	0	0.478995	0.478995*	0*		0	0.379782	0	0.000153654	0.372603		0.379782	5.76770E-05	0.000153254
0.591698	0.218501	0.218277	1.48184E-05	0	0	0.591136	0.591136*	0*		0	0.218501	0	4.93621E-05	0.214371		0.218501	1.48184E-05	4.92181E-05
0.180543	0.0147201	0.262446	99.2205	86.0949	86.0949	0.263749	0.263749*	86.1729*		86.1729	0.0147201	85.9688	80.2449	0.0144418		0.0147201	99.2205	80.3240
0.000146088	0	0.000169857	0.129702	10.9537	10.9537	0.000199277	0.000199277*	10.9434*		10.9434	0	11.0531	10.3100	0		0	0.129702	10.2675
0.000341412	0	0.000597097	0.439000	2.88640	2.88640	0.00106768	0.00106768*	2.88369*		2.88369	0	2.91250	2.71501	0		0	0.439000	2.70552
0	0	0	0	0	0	0	0*	0*		0	0	0	0	0		0	0	0
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
0	0	2.70338E-08	2.09263E-06	4.87706E-06	4.87706E-06	0	0*	0*		0	0	4.90310E-06	0.000178364	7.34853E-05		0	2.09263E-06	0.000177939
2.88456	1.81922	1.81988	0.00156745	0	0	2.88241	2.88241*	0*		0	1.81922	0	0.000792693	1.75396		1.81922	0.00156745	0.000794561
0.00951104	0.216285	0.00104538	0.269809	0.0921179	0.0921179	0.00132507	0.00132507*	0*		0	0.216285	0.0926004	9.06772	3.79574		0.216285	0.269809	9.04651
50.5677	49.4240	49.4293	0.0676150	0	0	50.5368	50.5368*	0*		0	49.4240	0	0.0498018	47.6510		49.4240	0.0676150	0.0498447
17.7823	20.2143	20.2157	0.0216931	0	0	17.7738	17.7738*	0*		0	20.2143	0	0.0221083	19.4891		20.2143	0.0216931	0.0221073
15.2835	16.5045	16.5088	0.0100608	0	0	15.2736	15.2736*	0*		0	16.5045	0	0.0108762	15.9125		16.5045	0.0100608	0.0108742
2.24752	2.50956	2.51053	0.000707377	0	0	2.24590	2.24590*	0*		0	2.50956	0	0.000927122	2.41953		2.50956	0.000707377	0.000926593
5.87957	6.04436	6.04627	0.00242017	0	0	5.87540	5.87540*	0*		0	6.04436	0	0.00320636	5.82753		6.04436	0.00242017	0.00320446
1.42751	1.22738	1.22793	0.000188148	0	0	1.42647	1.42647*	0*		0	1.22738	0	0.000287390	1.18335		1.22738	0.000188148	0.000287151
1.52476	1.20243	1.20294	0.000225220	0	0	1.52369	1.52369*	0*		0	1.20243	0	0.000346311	1.15930		1.20243	0.000225220	0.000346019
2.24768	0.826294	0.826689	6.91130E-05	0	0	2.24598	2.24598*	0*		0	0.826294	0	0.000132883	0.796652		0.826294	6.91130E-05	0.000132729
0.143374	0.0116372	0.207793	96.7426	49.9079	49.9079	0.209492	0.209492*	50*		50	0.0116372	49.6456	45.1596	0.0112197		0.0116372	96.7426	45.2840
0.000767368	0	0.000889552	0.836489	42	42	0.00104696	0.00104696*	42*		42	0	42.2201	38.3786	0		0	0.836489	38.2881
0.00129632	0	0.00226036	2.04655	8	8	0.00405470	0.00405470*	8*		8	0	8.04170	7.30543	0		0	2.04655	7.29275
0	0	0	0	0	0	0	0*	0*		0	0	0	0	0		0	0	0
lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
0	0	0.000166476	1.36508E-05	0.0120311	0.0120311	0	0*	0*		0	0	0.0120323	0.481493	0.469624		0	1.36508E-05	0.481507
14355.9	11209.1	11206.9	0.0102249	0	0	14356.4	14356.4*	0*		0	11379.5	0	2.13988	11209.1		170.435	0.0102249	2.15010
47.3346	1332.63	6.43751	1.76004	227.243	227.243	6.59977	6.59977*	0*		0	1352.89	227.242	24478.3	24257.5		20.2628	1.76004	24480.1
251666	304524	304390	0.441072	0	0	251708	251708*	0*		0	309154	0	134.440	304524		4630.32	0.441072	134.881
88499.3	124550	124490	0.141510	0	0	88525.9	88525.9*	0*		0	126443	0	59.6815	124550		1893.79	0.141510	59.8230
76062.9	101692	101663	0.0656293	0	0	76073.0	76073.0*	0*		0	103238	0	29.3602	101692		1546.24	0.0656293	29.4259
11185.5	15462.5	15460.0	0.00461442	0	0	11186.1	11186.1*	0*		0	15697.7	0	2.50277	15462.5		235.110	0.00461442	2.50739
29261.5	37242.1	37233.4	0.0157874	0	0	29263.5	29263.5*	0*		0	37808.3	0	8.65558	37242.1		566.269	0.0157874	8.67137
7104.44	7562.47	7561.69	0.00122734	0	0	7104.83	7104.83*	0*		0	7677.46	0	0.775812	7562.47		114.988	0.00122734	0.777039
7588.44	7408.75	7407.81	0.00146917	0	0	7589.02	7589.02*	0*		0	7521.40	0	0.934868	7408.75		112.651	0.00146917	0.936337
11186.3	5091.18	5090.82	0.000450844	0	0	11186.5	11186.5*	0*		0	5168.59	0	0.358718	5091.18		77.4119	0.000450844	0.359169
713.546	71.7022	1279.61	631.079	123116	123116	1043.42	1043.42*	135705*		135705	72.7924	121831	121909	71.7022		1.09024	631.079	122540
3.81904	0	5.47793	5.45665	103609	103609	5.21461	5.21461*	113993*		113993	0	103609	103603	0		0	5.45665	103609
6.45153	0	13.9195	13.3502	19735.0	19735.0	20.1952	20.1952*	21712.9*		21712.9	0	19734.4	19721.0	0		0	13.3502	19734.4
0	0	0	0	0	0	0	0*	0*		0	0	0	0	0		0	0	0

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	32	33	34	35
Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
XCHG-102	SPLT-100	FAXR-101	VLVE-102	Circulation Pump	Trim Cooler	VLVE-100	--	--	VSSL-100	VSSL-100	FAXR-100	PUMP-100	Absorber	MIX-101	Slug Catcher	SPLT-100	VSSL-102	MIX-100
--	MIX-101	XCHG-100	MIX-100	Trim Cooler	Absorber	--	VLVE-100	VSSL-100	--	--	SPLT-100	Lean Rich Exchanger	VLVE-101	Slug Catcher	--	--	VLVE-102	Rich Flash
119.877	85	120*	106.328	172.737	121*	-16.5011	100*	125*	125	125	85*	256.511	112.879	84.5174		85	104.178	115.969
947.73*	1014	994	89.7*	1012.73*	1012.73	15*	1222.73*	100*	100	100	1014*	115*	1004	1014	1014	1014	984	89.7
22.6856	22.7878	22.7536	18.4767	31.0777	31.0777	22.6811	22.6811	31.0486		31.0486	22.7878	31.1962	32.0116	23.1889		22.7878	18.4767	31.9552
497681	616146	615808	652.328	246687	246687	498069	498069	271411	0	271411	625515	245401	269950	639071	0	9368.56	652.328	270603
199.805	246.256	246.491	0.321548	72.2939	72.2939	200	200*	79.6141	0	79.6141	250	71.6439	76.8035	251*	0	3.74434	0.321548	77.1250
2731.57	3406.34	3404.16	1.31747	500	500	2732.66	2732.66	550*	0	550	3458.13	497.428	558.262	3462.42	0	51.7938	1.31747	559.579
0.633719	0.710092	0.650734	0.981707	0.861367	0.823736	0.432798?	0.729490	0.831485		0.831485	0.710092	0.930740	0.665536	0.698540	0	0.710092	0.981414	0.667963
1205.38	1222.83	1221.21	19.6484	483.772	483.772	1204.44	1204.44	483.319		483.319	1222.83	488.159	456.837	1199.72		1222.83	19.6484	455.014
1326.30	1345.22	1343.56	71.2029	570.125	570.125	1325.30	1325.30	569.670		569.670	1345.22	574.838	537.870	1319.80		1345.22	71.2029	535.925

Owner:	XTO	Owner Ref.:	H-16-F700
Purchaser:	Linde Engineering N.A.	Purchaser Ref.:	2110A4YK
Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	MJ18-327
Service:	Regen Gas Heater	Project:	Cowboy Cryo Plant
Number:	1	Location:	New Mexico
SHO Duty:	27.73 MMBTU/ hr	SHO Model:	SHO2500

Guarantees:

NO_x	0.0267	Lb/MMBTU	20	ppm
SO_x	no quote	Lb/MMBTU	-	ppm
CO	0.0163	Lb/MMBTU	20	ppm
VOC	0.0064	Lb/MMBTU	5	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.0128	Lb/MMBTU	15	ppm

			Design Case				Maximum Case			
Heat Release	LHV Basis		35.25	MMBTU/hr			38.77	MMBTU/hr		
	HHV Basis		39.14	MMBTU/hr						
Products of Combus		MW								
	O_2	32.00	886	Lbm/ hr			1,083	Lbm/ hr		
	N_2 + Ar	28.15	22,517	Lbm/ hr			27,520	Lbm/ hr		
	CO_2	44.01	4,051	Lbm/ hr			4,952	Lbm/ hr		
	H_2O	18.02	3,490	Lbm/ hr			4,265	Lbm/ hr		
	NO_x	46.01	0.85	Lbm/ hr /	20	ppm	0.93	Lbm/ hr /	20	ppm
	SO_x	64.06	0.00	Lbm/ hr /	0	ppm	0.00	Lbm/ hr /	0	ppm
	CO	28.01	0.52	Lbm/ hr /	20	ppm	0.57	Lbm/ hr /	20	ppm
	VOC	44.10	0.20	Lbm/ hr /	5	ppm	0.22	Lbm/ hr /	5	ppm
	UHC	16.04	0.22	Lbm/ hr /	15	ppm	0.24	Lbm/ hr /	15	ppm
	SPM		0.40	Lbm/ hr /	15	ppm	0.44	Lbm/ hr /	15	ppm
	Total		30,946	Lbm/ hr			37,821	Lbm/ hr		
Flue Gas Exit Temp.			470	°F						
Flue Gas Exit Velocity			52.3	Ft/sec			57.5	Ft/sec		
Stack Height			27.1	ft			27.1	ft		
Stack ID			32	in			32	in		

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd

USA Applications

SHO = Superior Quality, Flexibility, Dependability & Modularity

EMISSIONS PERMIT DATA SHEET

AMERICAN ENGINEERING SYSTEM of UNITS

MJ18-327-Emissions-

COMPONENT DESCRIPTION

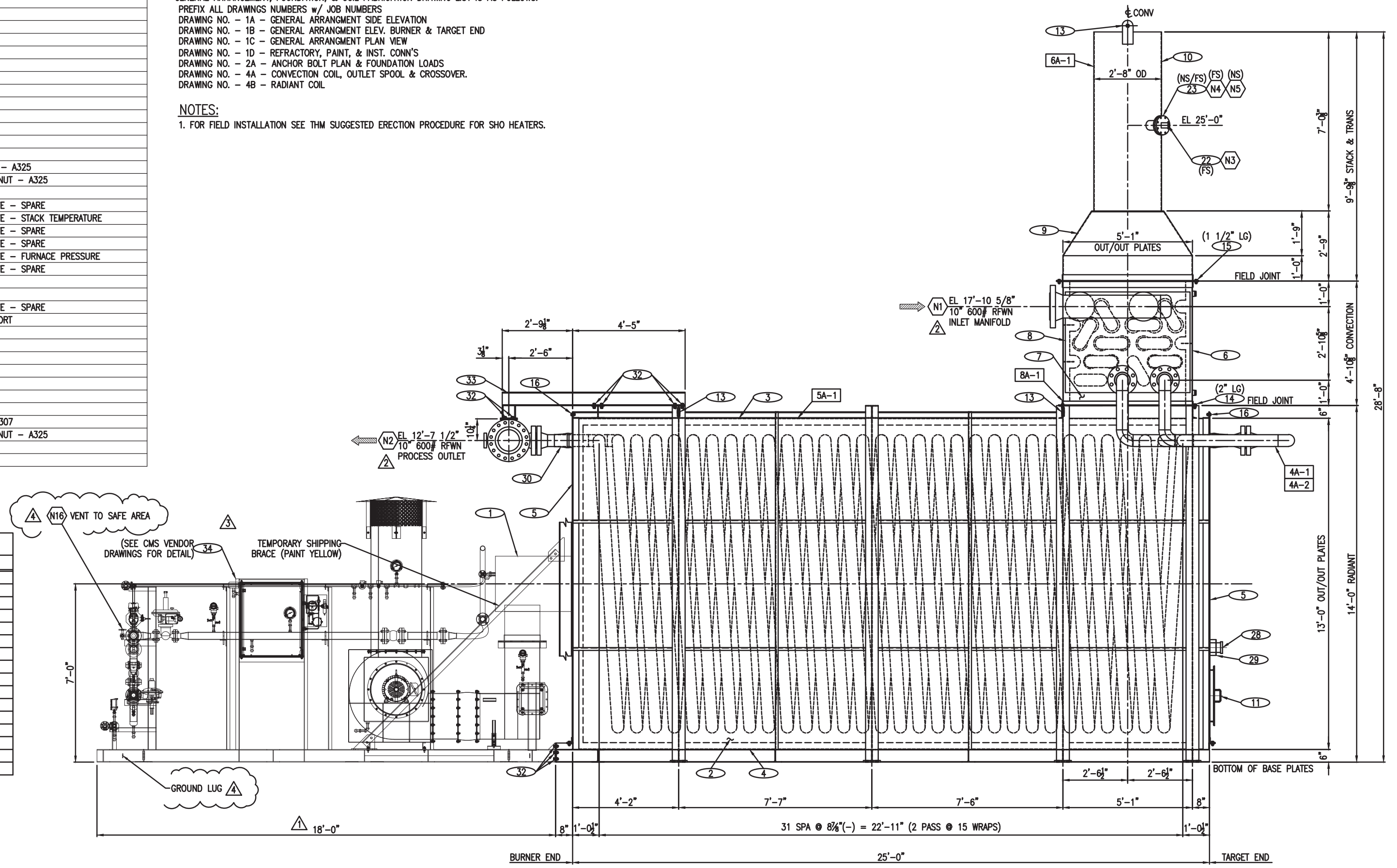
ITEM	QTY	DESCRIPTION
1	1	CALLIDUS BURNER (ENHANCED IFGR ULTRA LOW NOX CUBL-8W-HC-HZ)
2	2	3/16" PL RADIANT SIDE WALLS – A36
3	1	3/16" PL RADIANT ROOF – A36
4	1	3/16" PL RADIANT FLOOR – A36
5	2	3/16" PL RADIANT END WALL – A36
6	2	3/16" PL CONVECTION SIDE WALL – A36
7	2	3/8" PL CONVECTION TUBE SHEETS – A36
8	2	10 GA. PL RETURN COVERS – A36
9	1	3/16" PL TRANSITION – A36
10	1	32" O.D. x 3/16" PL. STACK – A36
11	1	24" x 24" ACCESS DOOR @ RADIANT END WALL
12		NOT USED
13		LIFTING LUGS (STRAIGHT UP LIFT ONLY) – A36
14		5/8" GALV. HIGH STRENGTH BOLT w/ BEVEL WASHER & HEAVY HEX NUT – A325
15		5/8" GALV. HIGH STRENGTH BOLT w/ HARDENED WASHER & HEAVY HEX NUT – A325
16		5/8" GALV. MACHINE BOLT w/ FLAT WASHER & HEX NUT – A307
17A	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – SPARE
17B	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – STACK TEMPERATURE
18A	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – SPARE
18B	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – SPARE
19A	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – FURNACE PRESSURE
19B	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – SPARE
20		NOT USED
21		NOT USED
22	1	1 1/2" – 3000# THR'D COUPLING w/ PLUG (CS) w/ 304SS PIPE SLEEVE – SPARE
23	2	4" – 150# RFWN FLG w/ BLIND (CS) w/ CS PIPE SLEEVE – SAMPLE PORT
24		NOT USED
25		14 GA. FERRULES – 304SS (@ TUBE SHEET)
26		10 GA. FERRULES – C.S. (@ RETURN COVERS)
27		10 GA. FERRULES – 304SS (@ RADIANT SHELL)
28	1	4" SITE PORT W/ 304SS PIPE SLEEVE (@ RADIANT SHELL)
29	1	THM NAME PLATE (304SS)
30	8	FLEXIBLE TUBE SEALS (SOCK & CLAMP) – SHOP INSTALLED
31		1/2" DIA. GALV MACHINE BOLT w/ FLAT WASHER & HEAVY HEX NUT – A307
32		3/4" GALV. HIGH STRENGTH BOLT w/ HARDENED WASHER & HEAVY HEX NUT – A325
33	1	OUTLET SUPPORT – A36
34	1	COMBUSTION MODULE SKID 5500 W/ CONTROL PANEL

DRAWING LIST

GENERAL ARRANGEMENT, FOUNDATION, & COIL FABRICATION DRAWING LIST IS AS FOLLOWS:
PREFIX ALL DRAWINGS NUMBERS w/ JOB NUMBERS
DRAWING NO. – 1A – GENERAL ARRANGMENT SIDE ELEVATION
DRAWING NO. – 1B – GENERAL ARRANGMENT ELEV. BURNER & TARGET END
DRAWING NO. – 1C – GENERAL ARRANGMENT PLAN VIEW
DRAWING NO. – 1D – REFRACTORY, PAINT, & INST. CONN'S
DRAWING NO. – 2A – ANCHOR BOLT PLAN & FOUNDATION LOADS
DRAWING NO. – 4A – CONVECTION COIL, OUTLET SPOOL & CROSSOVER.
DRAWING NO. – 4B – RADIANT COIL

NOTES:

1. FOR FIELD INSTALLATION SEE THM SUGGESTED ERECTION PROCEDURE FOR SHO HEATERS.



SIDE ELEVATION

Customer:
LINDE ENGINEERING NA
XTO

LOCATION : NEW MEXICO
UNIT : N/A
SERVICE : REGEN GAS HEATER
EQUIPMENT No. : H-3132
P.O. No. : 004 2DA64□0
SHO : 2500

Rev.	Date	By	Revision Description
1	5/2□	SDB	REV ADDED CMS
2	7/23	SDB	REV PER CUSTOMER COMMENTS
3	11/22	SDB	REV CMS
4	1/7/1□	RU	REV PER CUSTOMER COMMENTS

THM TULSA HEATERS MIDSTREAM

Title: GENERAL ARRANGEMENT SIDE ELEV

Drawn By: JRW	Date: 4/14/18	Job No.: MJ18-327	
Checked By: ASW	Date: 4/18/18	Drawing No.: MJ18327-1A	Rev.: 4
Approved By:	Certified By:		

CUSTOMER CONNECTIONS

MARK	SIZE	RATING	TYPE	MATERIAL	SERVICE
N1	10"	600#	RFWN	SA105	PROCESS INLET
N2	10"	600#	RFWN	SA105	PROCESS OUTLET
N3	1 1/2"	3000#	FNPT	SA105	SPARE
N4	4"	150#	RFWN	SA105	SAMPLE PORT
N5	4"	150#	RFWN	SA105	SAMPLE PORT
N6	1 1/2"	3000#	FNPT	SA105	TEMPERATURE CONNECTION
N7	1 1/2"	3000#	FNPT	SA105	SPARE
N8	1 1/2"	3000#	FNPT	SA105	SPARE
N9	1 1/2"	3000#	FNPT	SA105	SPARE
N10	1 1/2"	3000#	FNPT	SA105	SPARE
N11	1 1/2"	3000#	FNPT	SA105	FURNACE PRESSURE
N12	1 1/2"	900#	RFWN	SA105	SPARE CONNECTION
N13	1 1/2"	900#	RFWN	SA105	P.I. CONNECTION
N14	1 1/2"	900#	RFWN	SA105	SPARE CONNECTION
N15	1 1/2"	900#	RFWN	SA105	SPARE CONNECTION
N16	1/2"	150#	RF	SA105	FUEL GAS VENT

Owner:	XTO Energy	Owner Ref.:	PK-6010
Purchaser:	Audubon	Purchaser Ref.:	018193001
Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	MJ18-346
Service:	Hot Oil Heater	Project:	Cowboy CDP
Number:	1	Location:	Carlsbad, NM
SHO Duty:	50.00 MMBTU/ hr	SHO Model:	SHO5000

Guarantees:

NOx	0.0067	Lb/MMBTU	5	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0163	Lb/MMBTU	20	ppm
VOC	0.0064	Lb/MMBTU	5	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.0134	Lb/MMBTU	15	ppm

		Design Case				Maximum Case			
Heat Release	LHV Basis	58.93	MMBTU/hr			64.83	MMBTU/hr		
Products of Combustion									
	MW								
O2	32.00	1,578	Lbm/ hr			1,778	Lbm/ hr		
N2 + Ar	28.15	40,582	Lbm/ hr			45,725	Lbm/ hr		
CO2	44.01	7,847	Lbm/ hr			8,841	Lbm/ hr		
H2O	18.02	5,817	Lbm/ hr			6,554	Lbm/ hr		
NOx	46.01	0.38	Lbm/ hr /	5	ppm	0.42	Lbm/ hr /	5	ppm
SOx	64.06	0.00	Lbm/ hr /	0	ppm	0.00	Lbm/ hr /	0	ppm
CO	28.01	0.94	Lbm/ hr /	20	ppm	1.03	Lbm/ hr /	20	ppm
VOC	44.10	0.37	Lbm/ hr /	5	ppm	0.41	Lbm/ hr /	5	ppm
UHC	16.04	0.40	Lbm/ hr /	15	ppm	0.44	Lbm/ hr /	15	ppm
SPM		0.77	Lbm/ hr /	15	ppm	0.85	Lbm/ hr /	15	ppm
Total		55,827	Lbm/ hr			62,901	Lbm/ hr		
Flue Gas Exit Temp.		488	°F						
Flue Gas Exit Velocity		35.1	Ft/sec			38.6	Ft/sec		
Stack Height		32.6	ft			32.6	ft		
Stack ID		48	in			48	in		

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd

USA Applications

SHO = Superior Quality, Flexibility, Dependability & Modularity

EMISSIONS PERMIT DATA SHEET

AMERICAN ENGINEERING SYSTEM of UNITS

MJ18-346-Emissions-

Owner:	XTO Energy	Owner Ref.:	PK-6010
Purchaser:	Audubon	Purchaser Ref.:	018193001
Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	MJ18-346
Service:	Hot Oil Heater	Project:	Cowboy CDP
Number:	1	Location:	Carlsbad, NM
SHO Duty:	50.00 MMBTU/ hr	SHO Model:	SHO5000

Guarantees:

NOx	0.0267	Lb/MMBTU	20	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0163	Lb/MMBTU	20	ppm
VOC	0.0064	Lb/MMBTU	5	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.0134	Lb/MMBTU	15	ppm

			Design Case				Maximum Case			
Heat Release	LHV Basis		58.93	MMBTU/hr			64.83	MMBTU/hr		
Products of Combustion										
		MW								
	O2	32.00	1,578	Lbm/ hr			1,778	Lbm/ hr		
	N2 + Ar	28.15	40,581	Lbm/ hr			45,723	Lbm/ hr		
	CO2	44.01	7,847	Lbm/ hr			8,841	Lbm/ hr		
	H2O	18.02	5,817	Lbm/ hr			6,554	Lbm/ hr		
	NOx	46.01	1.54	Lbm/ hr /	20	ppm	1.69	Lbm/ hr /	20	ppm
	SOx	64.06	0.00	Lbm/ hr /	0	ppm	0.00	Lbm/ hr /	0	ppm
	CO	28.01	0.94	Lbm/ hr /	20	ppm	1.03	Lbm/ hr /	20	ppm
	VOC	44.10	0.37	Lbm/ hr /	5	ppm	0.41	Lbm/ hr /	5	ppm
	UHC	16.04	0.40	Lbm/ hr /	15	ppm	0.44	Lbm/ hr /	15	ppm
	SPM		0.77	Lbm/ hr /	15	ppm	0.85	Lbm/ hr /	15	ppm
	Total		55,827	Lbm/ hr			62,901	Lbm/ hr		
Flue Gas Exit Temp.			488	°F						
Flue Gas Exit Velocity			35.1	Ft/sec			38.6	Ft/sec		
Stack Height			32.6	ft			32.6	ft		
Stack ID			48	in			48	in		

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd

USA Applications

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EMISSIONS PERMIT DATA SHEET
AMERICAN ENGINEERING SYSTEM of UNITS

MJ18-346-Emissions-

						REV
1	**GAS FUEL CHARACTERISTICS**					REV
2	DESIGNATION		Lean Fuel	Lean Fuel	Rich Fuel	1
3			(C2 Rej.)	(C2 Rec.)		1
4	HEATING VALVE (LHV)	Btu/SCF	993	881	1152	1
5	HEATING VALVE (HHV)	Btu/SCF	1098	979	1268	1
6	SPECIFIC GRAVITY		0.639	0.568	0.759	1
7	MOLECULAR WEIGHT		18.51	16.44	21.97	1
8	FUEL TEMPERATURE @ BURNER	ft.	100	100	100	1
9	FUEL PRESSURE @ BURNER (Available)	°F	30	30	30	1
10	FUEL GAS COMPOSITION, mol %					
11	METHANE	CH4	82.33%	96.75%	71.46%	1
12	EHTANE	C2H6	14.67%	0.08%	14.48%	1
13	PROPANE	C3H8	0.28%		7.55%	1
14	BUTANES	C4H10			2.25%	1
15	PENTANES	C5H12			0.56%	1
16	HEXANES	C6H14			0.09%	1
17	ETHYLENE	C2H4				
18	PROPENE	C3H6				
19	BUTENE	C4H8				
20	PENTENE	C5H10				
21	BUTADIENE	C4H6				
22	ACETYLENE	C2H2				
23	ETHONAL	C2H4O				
24	HYDROGEN	H2				
25	CARBON MONOXIDE	CO				
26	HYDROGEN SULFIDE	H2S				
27	AMMONIA	NH3				
28	BENZENE	C6H6				
29	WATER (VAPOR)	H2O			0.01%	1
30	CARBON DIOXIDE	CO2	0.03%	0.01%	0.12%	1
31	OXYGEN	O2				
32	NITROGEN	N2	2.69%	3.17%	3.48%	1
33	TOTAL		**100.0%**	**100.0%**	**100.0%**	1

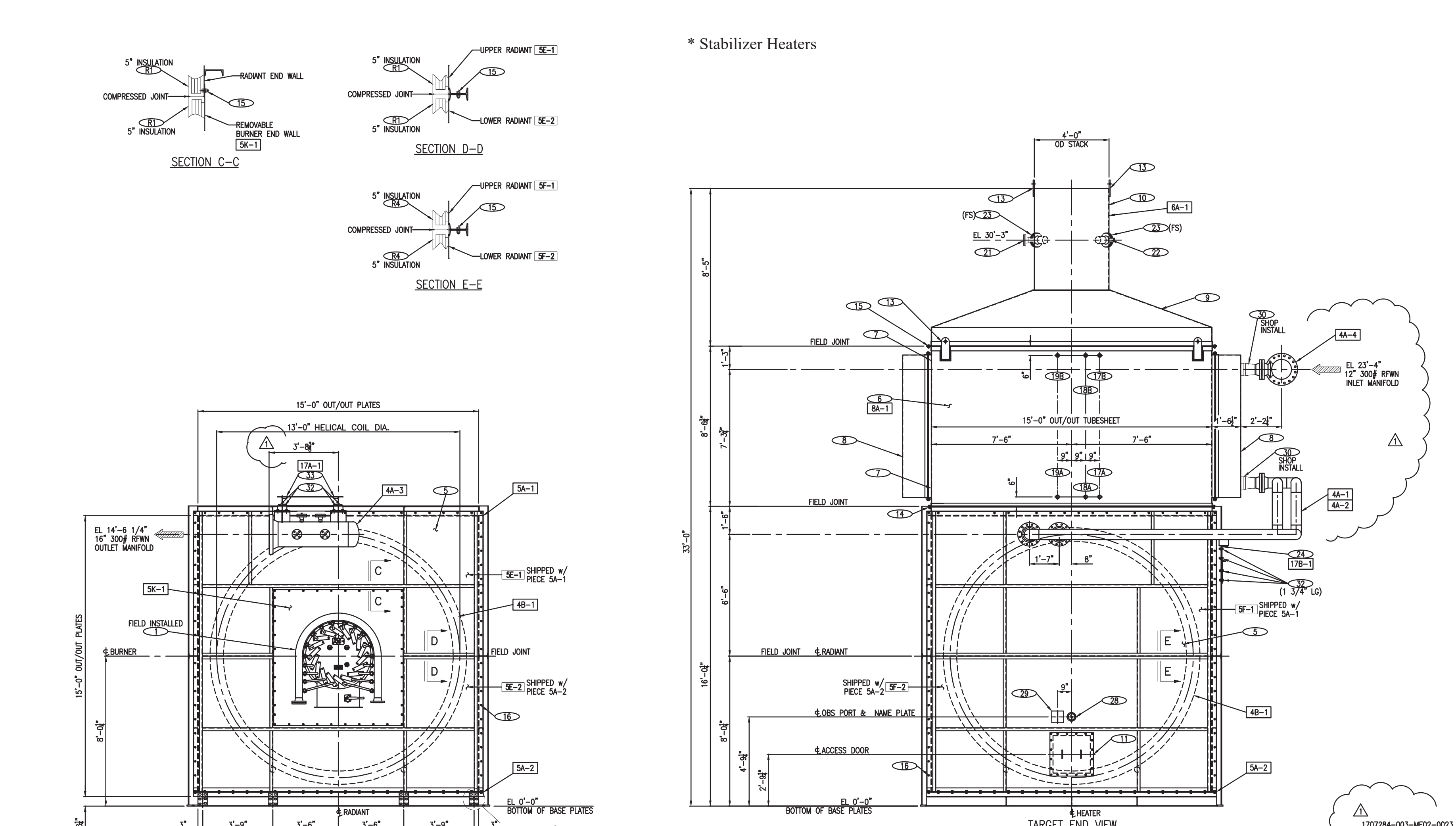
34	**LIQUID FUEL CHARACTERISTICS**			
35	DESIGNATION			
36	HEATING VALUE	(LHV)		Btu/lb
37	SPECIFIC GRAVITY			DEG. API
38	VISCOSITY	@	15 °F	cSt
39		@	100 °F	cSt
40	VANADIUM			ppm
41	SODIUM			ppm
42	POTASSIUM			ppm
43	NICKEL			ppm
44	FIXED NITROGEN			% wt
45	SULFUR			% wt
46	ASH			% wt
47	WATER			% wt
48	**DISTILLATION**			
49	INITIAL BOILING POINT			°F
50	ASTM MID-POINT			°F
51	ASTM END-POINT			°F
52	FUEL TEMPERATURE @ BURNER			°F
53	FUEL PRESSURE AVAILABLE @ BURNER			psig
54	ATOMIZING MEDIUM :	AIR / STEAM / MECHANICAL		
55	TEMPERATURE			°F
56	PRESSURE			psig

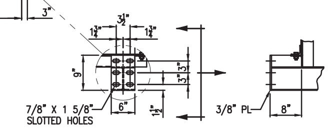
OWNER:	XTO Energy	**CALLIDUS REF:**	**BB-9027773**
OWNER REF.:	PK-6010 / 6020 / 6030	**PROJECT TITLE:**	**BB-9027773-DS**
PURCHASER:	Tulsa Heaters Midstream		
PURCHASER REF.:	MJ18-346, MJ18-347, MJ18-348		
HEATER SERVICE	Hot Oil Heater		
UNIT:			
ITEM NO.:			

uop
A Honeywell Company

BURNER DATA SHEET

* Stabilizer Heaters





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Customer:
XTO ENERGY, INC.
AUDUBON

LOCATION	:	CARLSBAD, NM
UNIT	:	COWBOY CDP
SERVICE	:	HOT OIL HEATER
EQUIPMENT No.	:	PK-6020
P.O. No.	:	1707284-003
SHO	:	5000

Rev.	Date	By	Revision Description
1	8/23	GP	ADDED CUST. DWG. NO., RELOCATED INLET/ OUTLET MANIFOLDS, REVERSE ITEM 16, 17 & 18 LOCATIONS

THM TULSA HEATERS MIDSTREAM

Title: GENERAL ARRANGEMENT ELEV. BURNER & TARGET END

Drawn By: JPW	Date: 7/14/18	Job No.: MJ18-347	
Checked By: ASW	Date: 7/15/18	Drawing No.: MJ18347-1B	Rev.: 1
Approved By	Certified By		

Owner:	XTO Energy	Owner Ref.:	PK-6310
Purchaser:	Audubon	Purchaser Ref.:	018193001
Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	MJ19-395
Service:	Hot Oil Heater	Project:	Cowboy CDP
Number:	1	Location:	Carlsbad, NM
SHO Duty:	79.30 MMBTU/ hr	SHO Model:	SHO5000

Guarantees:

NOx	0.0067	Lb/MMBTU	5	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0163	Lb/MMBTU	20	ppm
VOC	0.0064	Lb/MMBTU	5	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.013	Lb/MMBTU	15	ppm

		Design Case				Maximum Case			
Heat Release	LHV Basis	94.54	MMBTU/hr			103.99	MMBTU/hr		
Products of Combustion									
	MW								
O2	32.00	2,657	Lbm/ hr			2,923	Lbm/ hr		
N2 + Ar	28.15	66,981	Lbm/ hr			73,679	Lbm/ hr		
CO2	44.01	12,059	Lbm/ hr			13,265	Lbm/ hr		
H2O	18.02	10,400	Lbm/ hr			11,440	Lbm/ hr		
NOx	46.01	0.63	Lbm/ hr /	5	ppm	0.69	Lbm/ hr /	5	ppm
SOx	64.06	0.00	Lbm/ hr /	0	ppm	0.00	Lbm/ hr /	0	ppm
CO	28.01	1.54	Lbm/ hr /	20	ppm	1.69	Lbm/ hr /	20	ppm
VOC	44.10	0.61	Lbm/ hr /	5	ppm	0.67	Lbm/ hr /	5	ppm
UHC	16.04	0.66	Lbm/ hr /	15	ppm	0.73	Lbm/ hr /	15	ppm
SPM		1.23	Lbm/ hr /	15	ppm	1.35	Lbm/ hr /	15	ppm
Total		92,101	Lbm/ hr			101,311	Lbm/ hr		
Flue Gas Exit Temp.		599	°F						
Flue Gas Exit Velocity		65.3	Ft/sec			71.8	Ft/sec		
Stack Height		34.3	ft			34.3	ft		
Stack ID		48	in			48	in		

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd

TULSA HEATERS MIDSTREAM

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EMISSIONS PERMIT DATA SHEET
AMERICAN ENGINEERING SYSTEM of UNITS

MJ19-395-Emissions-

Owner:	XTO Energy	Owner Ref.:	PK-6110
Purchaser:	Audubon	Purchaser Ref.:	018193001
Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	MJ18-349
Service:	Hot Oil Heater	Project:	Cowboy CDP
Number:	1	Location:	Carlsbad, NM
SHO Duty:	79.30 MMBTU/ hr	SHO Model:	SHO5000

Guarantees:

NOx	0.0334	Lb/MMBTU	25	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0163	Lb/MMBTU	20	ppm
VOC	0.0064	Lb/MMBTU	5	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.013	Lb/MMBTU	15	ppm

			Design Case				Maximum Case			
Heat Release		LHV Basis	94.54	MMBTU/hr			103.99	MMBTU/hr		
Products of Combustion										
		MW								
	O2	32.00	2,657	Lbm/ hr			2,923	Lbm/ hr		
	N2 + Ar	28.15	66,978	Lbm/ hr			73,676	Lbm/ hr		
	CO2	44.01	12,059	Lbm/ hr			13,265	Lbm/ hr		
	H2O	18.02	10,400	Lbm/ hr			11,440	Lbm/ hr		
	NOx	46.01	3.16	Lbm/ hr /	25	ppm	3.47	Lbm/ hr /	25	ppm
	SOx	64.06	0.00	Lbm/ hr /	0	ppm	0.00	Lbm/ hr /	0	ppm
	CO	28.01	1.54	Lbm/ hr /	20	ppm	1.69	Lbm/ hr /	20	ppm
	VOC	44.10	0.61	Lbm/ hr /	5	ppm	0.67	Lbm/ hr /	5	ppm
	UHC	16.04	0.66	Lbm/ hr /	15	ppm	0.73	Lbm/ hr /	15	ppm
	SPM		1.23	Lbm/ hr /	15	ppm	1.35	Lbm/ hr /	15	ppm
	Total		92,101	Lbm/ hr			101,311	Lbm/ hr		
Flue Gas Exit Temp.			599	°F						
Flue Gas Exit Velocity			65.3	Ft/sec			71.8	Ft/sec		
Stack Height			34.3	ft			34.3	ft		
Stack ID			48	in			48	in		

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

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The Maximum Case is the the specified heat release for the burner purchased. Extra duty is spec'd into the burner to ensure that the burner is never the limiting factor on duty.

revision	date	description	by	chk'd	appv'd

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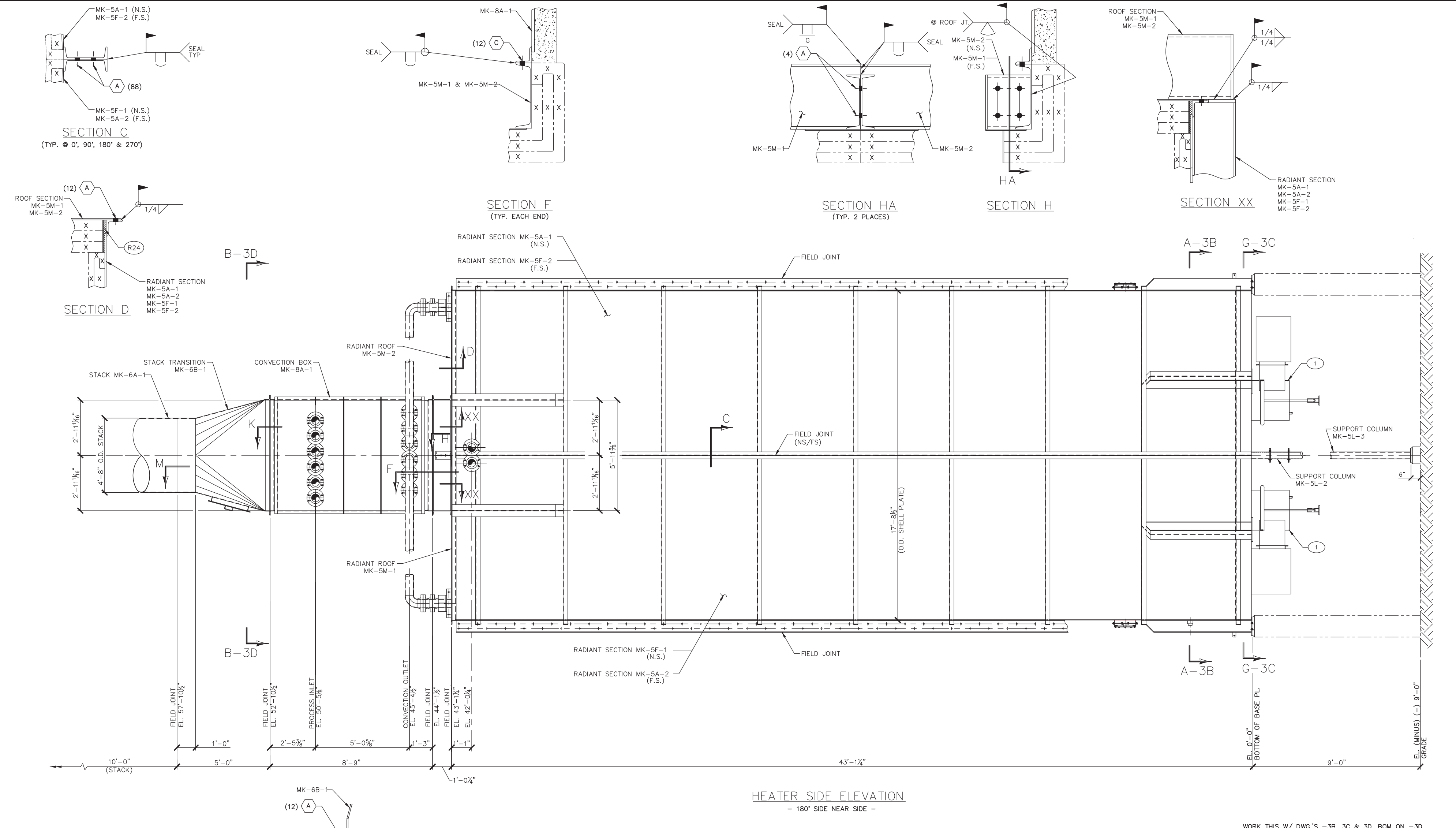
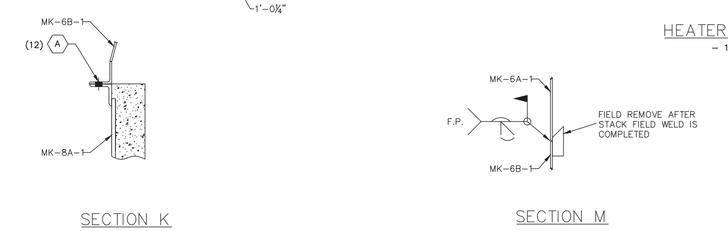
EMISSIONS PERMIT DATA SHEET

AMERICAN ENGINEERING SYSTEM of UNITS

MJ18-349-Emissions-





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Customer: AUDUBON / XTO ENERGY

LOCATION : CARLSBAD, NM.
UNIT : CRYO UNIT
SERVICE : HOT OIL HEATER
EQUIP. No. : PK-6110
P.O. No. : 1802759-002
THI JOB No.: 18925

Rev.	Date	By	Revision Description

THI TULSA HEATERS INC.

Title	FIELD ERECTION		
Drawn By: GG	Date: 7-24-18	Job No.: 18925	
Checked By: KEN	Date: 7-25-18	Drawing No.: 18925-3A	Rev.: 0

audubon

D: 713.452.3123
kejones@audubonompanies.com

10205 Westheimer Road, Suite 100
Houston, Texas 77042
audubonompanies.com | LinkedIn

From: Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>
Sent: Friday, May 4, 2018 5:30 PM
To: Kelly Jones <kejones@audubonompanies.com>; Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@audubonompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; John Ehlig <John_Ehlig@zeeco.com>; Sean O'Grady <Sean_OGrady@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP

Kelly,

Below are the guaranteed DRE's for each piece of combustion equipment in regards to the XTO Cowboy project.

There will be no cost impact added to our proposals to meet the DRE's listed below. If a higher DRE is required, we can provide equipment that meets the request.

1. CDP Flare System, 98% DRE
2. CDP Combustor, 99% DRE
3. Thermal Oxidizer, 99.99% DRE

Please let us know if you have any questions or more official documentation is needed. Thanks!

Cody Faulkenberry
Applications Engineer, Sales

Zeeco Houston | Cell: +1 713 859 6047 | Direct: +1 918 893 8816

From: Kelly Jones [mailto:kejones@audubonompanies.com]
Sent: Wednesday, May 02, 2018 7:18 AM
To: Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@audubonompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>; John Ehlig <John_Ehlig@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP
Importance: High

Kirsten,

4.4 Flue Gas at 1700°F, Normal Operation

	Normal Case
COMPONENT:	**lb/hr**
CO_2	22743.78
H_2O	3869.91
N_2	17926.10
SO_2	2.72
O_2	1376.65
TOTAL	**45919.16**

4.5 System Performance

Stack Emission	Expected Performance
Destruction Efficiency	> 99.95% of all H2S / VOC
NOx, ppm_{vd} @ 3% O2	50
CO, ppm_{vd} @ 3% O2	50

These values are understood to apply only when the system is operated in accordance with the operating conditions stipulated in the design summary and for the waste stipulated in the design basis sections of this proposal.

Thermal Oxidizer Datasheet

Tulsa, Oklahoma

Client:	XTO Energy	REV	BY	DATE	DESCRIPTION	Customer Document No.
End User:	Cowboy CDP	A	JNM	16-Jul-18	Issued for Review	Zeeco Document No. 35595-2031
Job Site:	Carlsbad, NM	B	SN	9-Aug-18	Issued for Review	Project: Cowboy - CDP
Tag Number:	TO Thermal Oxidizer / TO-6980	C	SN	31-Aug-18	Issued for Review	BY: JNM / APPR: SN / DATE: 16-Jul-18

#		
	DESIGN	
1	Service	Acid Gas Incineration
2	Waste Gas Flow (Max), lb/hr	22,541 (Acid Gas) / 547 (Flash Gas) / 588 (BTEX w/ Stripping Gas)
3	Incinerator Operating Temp, °F	1700-1800
4	Altitude ASL, ft	3400
5	Product Flow Max, lb/hr	50,226
6	Air Flow Design, lb/hr	26,973
7	Max Waste Release, mmBTU/HR	21.6
8	Max Total Heat Release, mmBTU/HR	24.1
9	Number Required	1
10	**INCINERATOR SPECIFICATIONS**	
11	Type	Vertical Thermal Oxidizer
12	Size	7' OD x 52' OAH
13		
14	Shell Material	SA-36
15-16	Refractory	Floor: 4" 3000°F Castable, backed w/ 2" Insulating Castable. Stack: 4" 2300°F Insulating Castable
17	Mechanical Design Temp (°F) / Pressure (psig)	650 / 0
18	Mastic (Y/N)	N
19	Refractory Anchors	310 SS
20	Burner Connection, in.	36"
21	Jacket	Corrugated Rainshield
23	Access Door	30" Manway with Davit
24	Lifting Lug Design	[X] YES [ ] NO Two(2) lifting trunnions 180° apart
25	Slide Plates	[ ] YES [X] NO
26	Rainshield	[X] YES [ ] NO
28	**BURNER SPECIFICATIONS**	
29	Type	Forced Draft Design
30	Pilot	Premix with High Energy Ignitor
31	Combustion Air Change in Pressure (in WC)	3
33	Fuel Gas Rel, mmBTU/HR	25
34	Waste Gas Rel, mmBTU/HR	0.8 (Acid Gas) / 10.74 (Flash Gas) / 10.01 (BTEX w/ Stripping Gas)
35		
36	**NOZZLES**	

#	Noz.	Description	Size (in)
38	N1	Burner Connection	36"
39	N2A/B	Sample Ports w/ Blind	4"
40	N3A/B	Thermocouple	1-1/2"
41	N4	Sampling Port	4"
42	N5A/B	Spare Conn.	2"
43	N6	Sight Port w/ Blast Gate	4"
44	M1	Manway w/ Davit	30"
45			

NOTES: Reference Document for Nozzles - 35595-G065A-001

ZEECO Tulsa, Oklahoma	**Burner Datasheet**				**Customer Doc No.**
	REV	**BY**	**DATE**	**DESCRIPTION**	**Zeeco Doc No.**
	A	JNM	16-Jul-18	Issued for Review	35595-2030
	B	SN	9-Aug-18	Issued for Review	**Project:**
Client: XTO Energy					Cowboy - CDP
Customer:					
Job Site: Cowboy CDP					
Tag Number: GB Burner / BR-6980					

BY	APPR	DATE
JNM	SN	16-Jul-18

#	**VESSEL DATA**	
1		
2	Firing Direction	Vertical
3	Refractory Thickness at Burner Nozzle (in.)	6"
4	Type of Draft (Natural, Forced, Induced)	Forced
5	**BURNER MECHANICAL DATA**	
6	Burner Item Number	
7	Type	GB
8	Quantity	1
9	Location	Carlsbad, NM
10	Burner Mounting	Bolted
11	Burner Design Code	None
12	Burner Case Material	Carbon Steel
13	Tile Block Material	60% Alumina
14	Scanner Type	1" Swivel Scanner
15	Scanner Quantity / Connection Quantity	2
16	Paint	Per Customer Specifications
17		
18		
19	**BURNER PROCESS DATA**	
20	Maximum Burner Combustion Air Pressure Drop, in WC	2.9
21	Design Combustion Air Temperature, °F	100
22	Design Combustion Air Flowrate, lb/hr	28,151
23	Combustion Air Turn Down lb/hr	5,630
24	Maximum Excess Air (%)	35%
25	**HEAT RELEASE (mmBTU/hr)**	

#	Case	Fuel Gas	
26	**Case**	**Fuel Gas**	
27		Heat Release	
28	Maximum (Rated)	25	
29	Minimum	2.5	
30			
31			
32	**NOZZLE SCHEDULE**		

#	ITEM	QTY	SIZE / RATING	SERVICE
33	**ITEM**	**QTY**	**SIZE / RATING**	**SERVICE**
34	B1	1	36" / FAB	Mounting Flange
35	B2	1	16" / 150#	Waste Gas Conn. /Acid gas
36	B3	1	20" / FAB	Combuston Air Conn.
37	B4	1	2" / 150#	Fuel Gas Conn.
38	B5	1	2" / 150#	Flash Gas Conn.
39	B6	1	1-1/2" / 150#	Pilot Mounting Conn.
40	B7	1	1" / 150#	Drain w/ Blind
41	B8	1	1" / 150#	Drain w/ Blind
42	B9	1	1" NPT	Pilot Sight Port Conn. w/ Purge
43	B10	1	2" NPT	Sight Port Conn. w/ Purge
44	B11	1	1" NPT	Main Flame Scanner Conn. w/ Purge
45	B12	1	3" / 150#	BTEX Stream Conn.
46				
47				
48				

PILOT DATA	
Model:	AR/GS-1
Quantity per Burner	1
Size (in.)	1 1/2"
Ignition	Electronic HEI
Operating Pressure (PSI)	10
Air / Gas Consumption (SCFH)	1609/178 (methane)

FUEL CHARACTERISTICS		
Type of Fuel	**Rich Fuel Gas**	**Lean Fuel Gas**
LHV (BTU/SCF)	1153	885
Molecular Weight	21.52	16.43
Pressure Avail. (psig)	125	125
Temperature (°F)	35-80	110
Composition - VOL %		
Nitrogen	2.1448	3.166
CO2	0.2038	0.006
Methane	74.43	96.7529
Ethane	13.73	0.075
Propane	6.4286	
i-Butane	0.628	
n-Butane	1.6049	
i-Pentane	0.2989	
n-Pentane	0.3112	
n-Hexane	0.1	
n-Heptane	0.1	
H2O	0.0192	
Total:	99.9994	99.9999

NOTES:

1. Reference Documents - P&ID for Burner 35595-04-11001-002 (Cust. No. 1802750-003-ME08-0007)
2. Reference Documents - Burner General Arrangement 35595-G006A-001 (Cust. No. 1802759-003-ME02-0040)
3. Expected NOx & CO ppmv included in proposal as indicated here:

Stack Emission	Expected Performance
Destruction Efficiency	*> 99.95% of all H2S / VOC*
NOx, ppm_{vd} @ 3% O2	50
CO, ppm_{vd} @ 3% O2	*50*

– DESIGN DATA –

DESIGN CODE:	ASME STS-1-2011
DESIGN PRESSURE INTERNAL	0 PSI @ 650°F
HYDRO TEST	NONE
MAWP	5 PSI @ 650°F
MDMT	-20°F
PWHT	NO
LETHAL SERVICE:	NO
SEISMIC CODE PER ASCE 7-10	SITE CLASS = C, IMP FACTOR = 1.25, Ss = 0.24%, S1 = 0.05%, R = 3
WIND CODE PER ASCE 7-10	WIND SPEED = 120 MPH, EXP. = C, IMP FACTOR = 1.15
RADIOGRAPH	SHELL: SPOT, SHELL CIRC.: SPOT, SHELL LONG.: SPOT
JOINT EFFICIENCY	SHELL: 0.85, SHELL CIRC.: 0.85, SHELL LONG.: 0.85
ALLOWABLE CORROSION:	1/8"
ESTIMATED STEEL FABRICATION WT.	20,375 LB.
ESTIMATED TEST WEIGHT	N/A
ESTIMATED OPERATING/EMPTY WEIGHT	59,806 LB.
ESTIMATED CAPACITY	10,411 GAL.

– NOZZLE LEGEND –

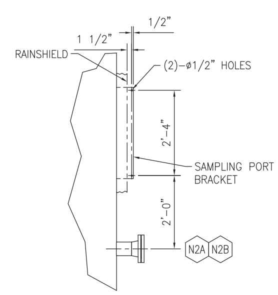
ITEM	SERVICE	SIZE	RATING	TYPE	CODE	SCH/BORE	FLG. MAT'L.	NECK MAT'L.
N1	BURNER CONNECTION	36"	FAB.	FAB.	FABRICATED	---	A-36	---
N2A/B	SAMPLE PORTS w/ BLIND	4"	150#	RFWN	ASME B16.5	STD.	A-105	A-106-B
N3A/B	THERMOCOUPLE	1 1/2"	150#	RFWN	ASME B16.5	XH	A-105	A-106-B
N4	SPARE O_2 ANALYZER CONN. w/ BLIND	4"	150#	RFWN	ASME B16.5	STD.	A-105	A-106-B
N5A/B	SPARE CONNECTION	2"	---	M.N.P.T.	------	----	----	A-106-B
N6	SIGHT PORT W/ BLAST GATE	4"	150#	RFWN	ASME B16.5	STD.	A-105	A-106-B
M1	MANWAY WITH DAVIT	30"	FAB.	FAB.	FABRICATED	.250"	A-36	A-36
C1	PURGE CONNECTION	3/4"	6000#	F.N.P.T.	------	-----	A-105	------
C2	PURGE CONNECTION	3/4"	6000#	F.N.P.T.	------	-----	A-105	------
C3	PURGE CONNECTION	3/4"	6000#	F.N.P.T.	------	-----	A-105	------

– GENERAL NOTES –

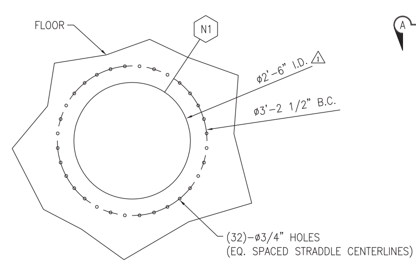
1. ONE UNIT REQUIRED. TAG NUMBER: TO-1801
2. ALL FABRICATION IN ACCORDANCE WITH ASME STS-1-2011.
3. FLANGE HOLES SHALL STRADDLE NORMAL VESSEL CENTERLINES UNLESS OTHERWISE NOTED.
4. FOR PAINT, SEE ZEECO DOCUMENT 35595-4030.
5. REFRACTORY IS TO BE FURNISHED AND SHOP INSTALLED BY ZEECO.
6. FOR REFRACTORY, REFRACTORY LEGEND AND REFRACTORY NOTES, SEE DRAWING 35595-R064A-001.
7. FOR LIFTING DIAGRAM, SEE DRAWING 35595-G064A-010.

– MATERIALS –

SHELL	A-36
NOZZLE CYLINDERS & PIPES	A-36 / A-106-B
FLANGE FORGINGS	A-105
STUD BOLTS/NUTS	A-193-B7 / A-194-2H ZINC PLATED
GASKETS	1/8" SERVICE SHEET GASKET
VESSEL SUPPORT COLUMNS	A-992
COUPLINGS	A-105
TAILING LUGS	A-36
LIFTING TRUNNIONS	A-36



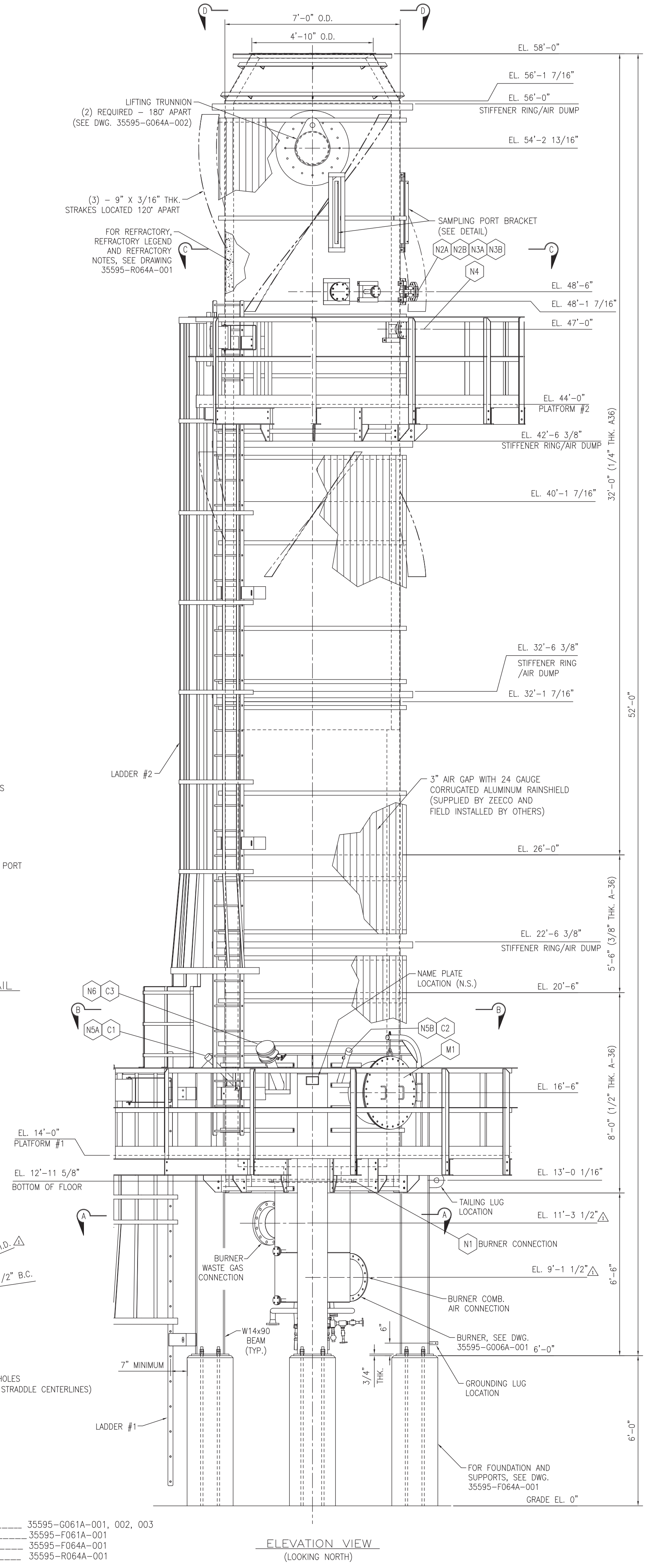
SAMPLING PORT BRACKET DETAIL



BURNER MOUNTING

REFERENCE DRAWINGS:

THERMAL OXIDIZER SYSTEM GENERAL ARRANGEMENT ____ 35595-G061A-001, 002, 003
FOUNDATION PLAN THERMAL OXIDIZER SYSTEM ________ 35595-F061A-001
THERMAL OXIDIZER FOUNDATION PLAN ____________ 35595-F064A-001
THERMAL OXIDIZER REFRACTORY DETAILS __________ 35595-R064A-001



ELEVATION VIEW
(LOOKING NORTH)

NO	DATE	REVISION DESCRIPTION	BY	CHD	APP
2	31AUG18	REVISED AS NOTED	SAN	DAK	SAN
1	16JUL18	REVISED AS NOTED	ABG	JGH	SAN
0	12JUL18	ISSUED FOR APPROVAL	ABG	JGH	SAN

CUSTOMER: XTO ENERGY, INC.
JOBSITE: COWBOY CDP, CARLSBAD, NEW MEXICO
END USER: AUDUBON COMPANIES
P.O. NO.: 1802759-003-ME02-0035

ZEECO, INC.

THERMAL OXIDIZER
GENERAL ARRANGEMENT
TO-6980
DWG. SUB. CAT. & SYSTEM NO.

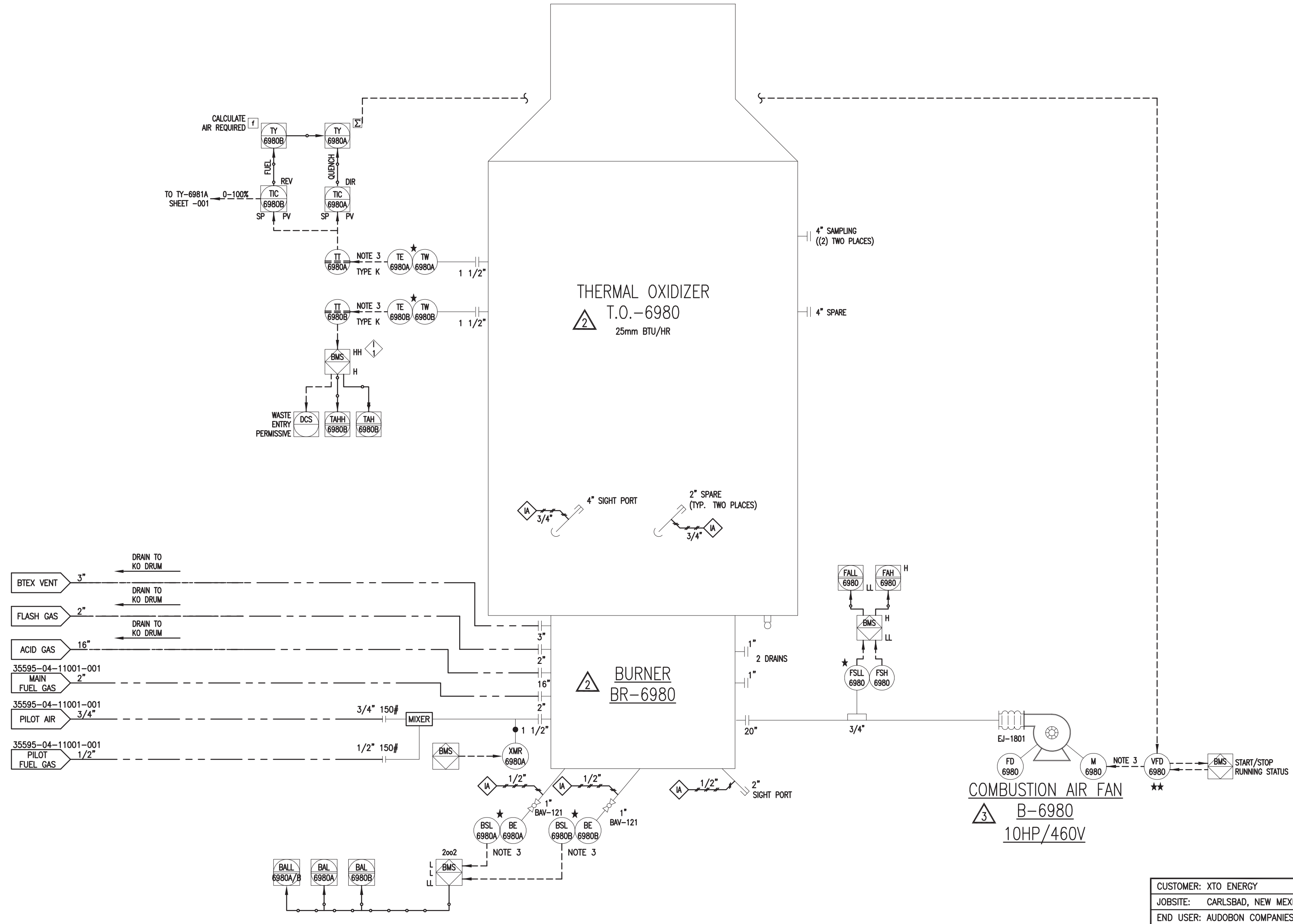
DRAWN ABG | DATE 12JUL18
CHK. JGH | APP SAN
SCALE NONE | APP JM
S.O. NO. DWG. NO. 35595 - G064A - 001 | REV. NO. 2

Shaun_Napier0/3/2018 6:44:34 AM

Q:\Job-Information\Incinerators\35000\35595 XTO Energy\Drafting\Controls\35595-04-11001-002 3.dwg

10/3/2018 6:45:59 AM

Shaun Napier



3	03OCT18	REVISED AS NOTED	SAN	EK	SAN
2	31AUG18	REVISED PER CUSTOMER COMMENTS	BLS	EK	SN
1	02AUG18	REVISED PER CUSTOMER COMMENTS	BLC	EK	SN
0	28JUN18	ISSUED FOR APPROVAL	BLC	JEA	SN
NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.

CUSTOMER: XTO ENERGY

JOBSITE: CARLSBAD, NEW MEXICO

END USER: AUDOBON COMPANIES

P.O. NO.: 1802759-003

ZEECO, INC.
22151 EAST 91st STREET
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P & I DIAGRAM
INCINERATOR PACKAGE
THERMAL OXIDIZER

DRAWN	DATE
BLC	28JUN18
CHK JEA	APP SN
SCALE N.T.S.	APP –

S.O. NO. GROUP DWG. SUB CAT. SYSTEM NO. DWG. NO. REV. NO.

35595–04–11001–002 3

SEE PID–35595–04–11001–001 FOR LEGEND AND NOTES

audubon

D: 713.452.3123
kejones@auduboncompanies.com

10205 Westheimer Road, Suite 100
Houston, Texas 77042
auduboncompanies.com | LinkedIn

From: Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>
Sent: Friday, May 4, 2018 5:30 PM
To: Kelly Jones <kejones@auduboncompanies.com>; Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@auduboncompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; John Ehlig <John_Ehlig@zeeco.com>; Sean O'Grady <Sean_OGrady@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP

Kelly,

Below are the guaranteed DRE's for each piece of combustion equipment in regards to the XTO Cowboy project.

There will be no cost impact added to our proposals to meet the DRE's listed below. If a higher DRE is required, we can provide equipment that meets the request.

1. CDP Flare System, 98% DRE
2. CDP Combustor, 99% DRE
3. Thermal Oxidizer, 99.99% DRE

Please let us know if you have any questions or more official documentation is needed. Thanks!

Cody Faulkenberry
Applications Engineer, Sales

Zeeco Houston | Cell: +1 713 859 6047 | Direct: +1 918 893 8816

From: Kelly Jones [mailto:kejones@auduboncompanies.com]
Sent: Wednesday, May 02, 2018 7:18 AM
To: Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@auduboncompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>; John Ehlig <John_Ehlig@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP
Importance: High

Kirsten,

ZEECO, INC.

CLIENT:	Audubon	DOCUMENT NO:	35284-8020
USER:	XTO Energy	PAGES:	1258 + Cover
PROJECT:	Cowboy CDP		
CLIENT P.O. #:	1707284-002 / 1707285-003	ZEECO SO:	35284

FLARE SYSTEM

FINAL DATA BOOK

REV	DATE	BY	APP	DESCRIPTION
0	01MAY19	ADM	TRD	FOR YOUR USE

Predicted Utility Requirements

Client:	Audubon	Zeeco Ref.:	35284	Date:	11-Apr-19
Location:	New Mexico - XTO Cowboy	Client Ref.:	1707284-002 / 1707285-003	Rev.	0

Equipment	Normal Operations Utility Requirements
HP / LP AFTAMJ-18/50-12	**Pilot Gas Consumption (Fuel Gas):** 65.12 SCFH @ 15 PSIG Per Pilot (Lean Fuel) 56.17 @ 15 PSIG Per Pilot (Rich Fuel) **HP Purge Gas requirement:** 480 SCFH (Fuel Gas) or 180 SCFH (N2) **LP Purge Gas Requirement:** 706 SCFH (Fuel Gas From Pilot Gas Manifold) and 50 SCFH (Fuel Gas From LP Riser) or 530 SCFH (N2 From LP Riser)
GENERAL	**Electrical Consumption per Ignition Rack (HP & Acid)** 700 W @ 120V, 60 Hz, 1 Ph During Ignition 400 W @ 110V, 60 Hz, 1 Ph After Ignition **Ignition Timing** 1 pulse per 3 seconds, Timeout after 3 minutes **Ignition Gas Consumption On Control Rack Assembly:** 109 SCFH @ 15 PSIG (Ignition Period Only) **Instrument Air Consumption On Control Rack Assembly:** 986 @ 15 PSIG (Ignition Period Only)

NOTES:
(1) Pilot fuel gas requirements are based upon a fuel gas with an LHV of 923 BTU/SCF and a specific gravity of 0.56.
(2) If ignition is made and pilot temperature returns to high temperature above setpoint before 5 minutes, then igniter will cease and timer will not timeout. System will go back to high temperature state.
(3) Electrical Consumption during ignition includes all power required for the entire panel.

Air Assisted Flare Tip Specification Sheet

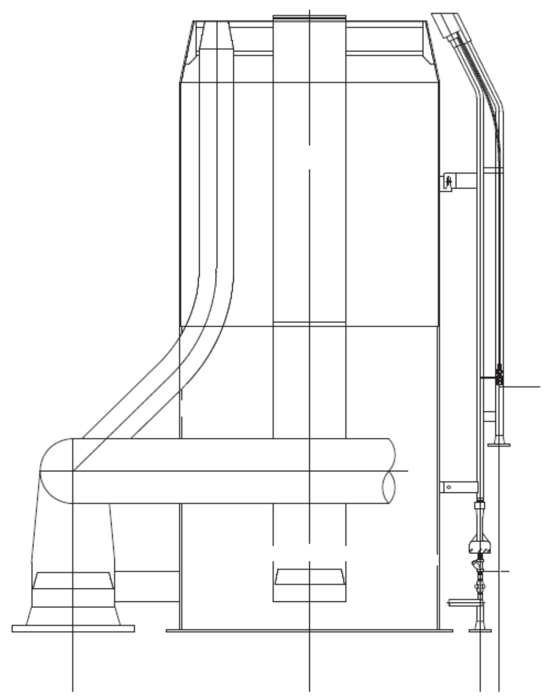
Client:	Audobon Engineering	Zeeco Ref.:	2018-01056FL-02	Date:	14-May-18
Location:	Carlsbad, NM	Client Ref.:	018193001-AE-RFQ-ME0017	Rev.	3

General Information:

Tag No.:	F-1		
Model:	AFTA-18/50-12	Type:	Air-Assisted
Length:	10'- 0 "		
Weight:	5000 lbs		
No. of Pilots:	3		

Design Case:

Governing Case:	HP Max Case	
Molecular weight:	21.3	
L. H. V. :	1,143	BTU/SCF
Temperature:	-50	Deg. F
Available Static Pressure:	50.0	psig
Design Flow Rate:	467,821	lbs/hr
Governing Smokeless Case:	Case A	
Design Smokeless Rate:	46,782	lbs/hr
Approximate Exit Velocity:	1122	ft/s
Mach No.:	1.00	
Approx. Tip Press. Drop:	41.29	psig



(Typical drawing only)

Construction:

Upper Section:	310 SS	Windshield:	NO
Lower Section:	Carbon Steel	Flame Retention Hub:	310 SS
Refractory:	None	Lifting Lugs:	NO
Refractory Thk:	N/A		

Surface Finish (Carbon Steel Surfaces):

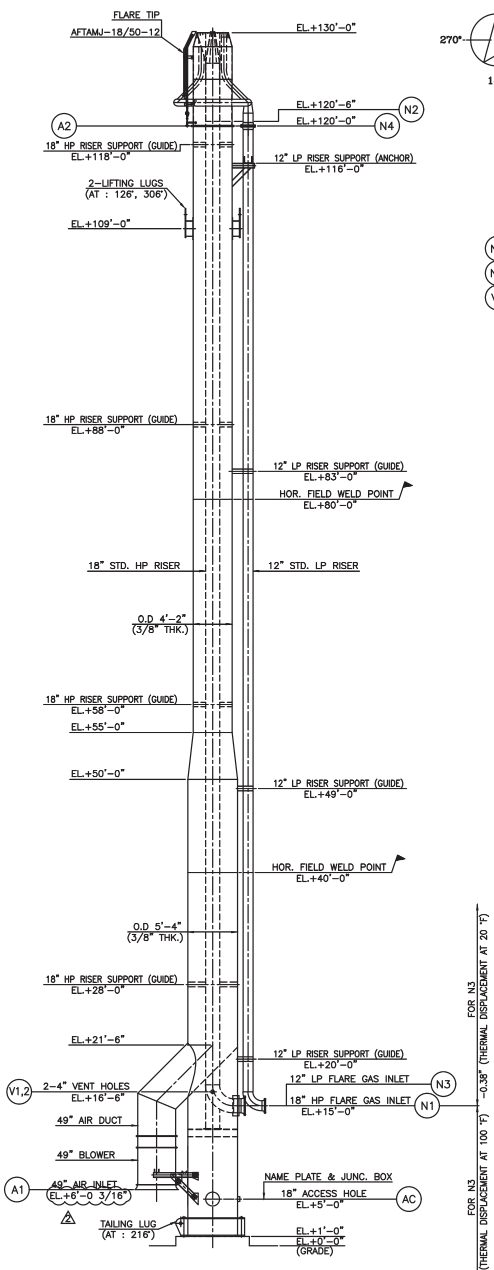
Surface Preparation:	SSPC-SP6	Primer:	Inorganic Zinc
Paint (c. s. surfaces):	High Heat Aluminum		

Connections:

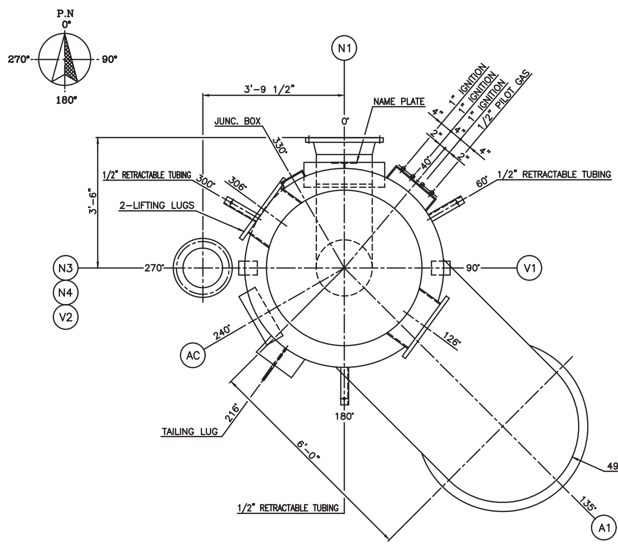
	Qty.	Size	Type	Material
N1 - HP Flare Gas Inlet:	1	18 "	Beveled ; Weld	Carbon Steel
N2 - Combustion Air Inlet:	1	50 "	Fab. Plate Flange	Carbon Steel
N3 - LP Flare Gas Inlet:	1	12 "	150# RF	Carbon Steel
N4 - Pilot Gas:	1	1 "	150# RF	Carbon Steel

Miscellaneous Notes:

1. Includes Integral Purge Reducing Velocity Seal.
2. Recommended Purge Rate for HP: 480 SCFH (Fuel Gas) or 180 (Nitrogen).
3. Recommended Purge Rate for LP Flare: 320 SCFH (Fuel Gas) or 60 SCFH (Nitrogen).
4. See Attachment C, Process Conditions, for HP / LP Process Conditions.

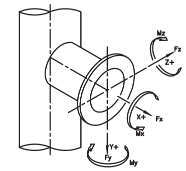


ELEVATION



PLAN LAYOUT

(SCALE : 1/20)



PIPE SIZE (IN)	Fx	Fy	Fz	Mx	My	Mz
	lb	lb	lb	lb-ft	lb-ft	lb-ft
12"	400	700	700	1000	750	750
18"	550	850	850	1210	900	900

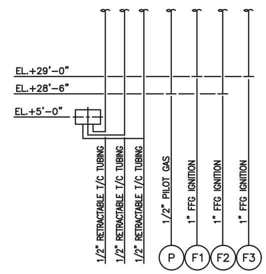
MAX. ALLOWABLE INLET NOZZLE LOADS

(PER API537)

MATERIAL SPECIFICATIONS		DESIGN DATA		
HP GAS RISER	A333-6	TYPE	SELF SUPPORT TYPE	
LP GAS RISER	A106-B	DESIGN CODE	ASME-STS-1 / AISC	
AIR RISER	A36	WIND DESIGN	ASCE-7-10/ V=120mph/ EXP.=C	
SKIRT	A36	SEISMIC DESIGN	ASCE-7-10/ SITE CLASS=D/ Ss=0.153/ S1=0.045/ LF=1.25	
FLARE TIP	SEE FLARE TIP DWG.	FLUID	FLARE GAS	
RISER FLANGE (HP/LP)	A350-LF2 CL.1 / A105	DESIGN PRESS.(HP/LP/AIR)	50 / 50 / ATM	psig
RISER FLANGE (AIR)	A36	DESIGN TEMP.(HP/LP/AIR)	-50~350 / 20~100 / AMB	°F
RISER BOLT/NUT	A193-B7/A194-2H	M.A.W.P.(NEW & COLD)	-	psig
RISER GASKET	C4401	OPERATING PRESS.(HP/LP)	-	psig
BASE PLATE	A36	OPERATING TEMP.(HP/LP/AIR)	-50 / 25 / 20~100	°F
ANCHOR BOLT	F1554 Gr. 36	HYDRO'C TEST PRESS.	-	psig
EARTH LUG	304 S.S	PNEUM'C TEST PRESS.	-	psig
NAME PLATE	304 S.S	P.W.H.T.	NO	
NAME PLATE BRACKET	A36 OR EQ.	RADIOGRAPH	AS PER ITP, SPOT	
UTILITY LINE	A106-B	JOINT EFFICIENCY	85	%
CONDUIT LINE	C.S (GALV.)	CORROSION ALLOWANCE (HP/LP)	1/16" / 1/16"	INCH
LIFTING LUG	A36	CORROSION ALLOWANCE (AIR)	0"	INCH
TALING LUG	A36	PAINTING	SEE NOTE 2	

NOZZLE AND CONNECTIONS

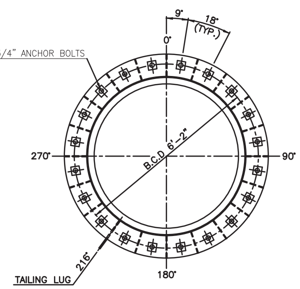
MARK	Q'TY	SIZE	SCH.	RATING	FACING	FLG. MAT'L	MATERIAL NOZZLE	SERVICE	REMARKS	℄ TO FACE
N1	1	18"	STD.	ASME #150	WN, RF	A350-LF2 CL.1	A333-6	HP FLARE GAS INLET		3'-8"
N2	1	18"	STD.	-	-	-	A333-6	HP FLARE GAS OUTLET		SEE DWG.
N3	1	12"	STD.	ASME #150	WN, RF	A105	A106-B	LP FLARE GAS INLET		SEE DWG.
N4	1	12"	STD.	ASME #150	WN, RF	A105	A106-B	LP FLARE GAS OUTLET		SEE DWG.
A1	1	49"	3/8"	3/8" PLATE FLANGE	-	A36	A36	AIR INLET		SEE DWG.
A2	1	50"	3/8"	3/4" PLATE FLANGE	-	A36	A36	AIR OUTLET		SEE DWG.
V1,2	2	4"	STD.	-	-	-	A53-B	VENT HOLE		-
AC	1	18"	3/8"	-	-	-	A36	ACCESS HOLE		-
P	1	1/2"	40	ASME #150	SW, RF	A105	A106-B	PILOT GAS		SEE DWG.
F1~3	3	1"	40	ASME #150	SW, RF	A105	A106-B	FFG IGNITION		SEE DWG.



UTILITY PIPING DETAIL

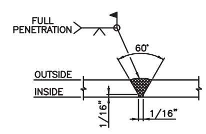
NOTE

1. FLANGE BOLTING TO STRADDLE CENTERLINES INDICATED BY CENTERLINE UNLESS NOTED OTHERWISE.
2. PAINTING
   - EXTERNAL CARBON STEEL SURFACE (AIR RISER & LP RISER)
     - PAINT SPEC. : 018193001-AE-SP-ME1007
     - CHART 4 : SSPC-SP10
     - AMERON, CARBOLINE, SHERWIN WILLIAMS
   - EXTERNAL CARBON STEEL SURFACE (HP RISER)
     - SSPC-SP10
     - PRIMER ONLY : SAME AS AIR & LP RISER
   - INTERNAL CARBON STEEL (SKIRT TO BLOWER PLATE)
     - SSPC-SP10
     - PRIMER ONLY : SAME AS AIR & LP RISER
3. ALL UTILITY PIPING LINES WILL BE SUPPLIED IN RANDOM LENGTH FOR FIELD WELDING AND INSTALLATION AT JOB SITE.
4. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS , FC' = 4000 PSI
5. LOADING DATA INCLUDES OVERAGE FACTOR OF 10% ABOVE CALCULATED LOADS.
6. FLARE STACK STRUCTURAL DESIGN ASSUMES ELASTIC FOUNDATION SUPPORT PER ASME STS-1.



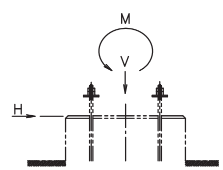
ANCHOR BOLT PLAN

(SCALE : 1/25)



FIELD WELD DETAIL

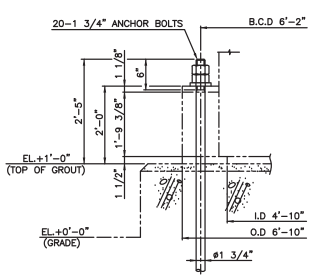
(TYP.)



LOADING DATA

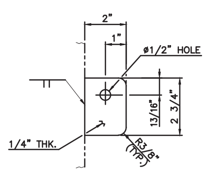
(FOR STACK RISER)

LOADING DATA	V(kip)	H(kip)	M(kip-ft)
DEAD LOAD	66.5	0.0	0.0
WIND LOAD	0.0	18.3	1377.7
SEISMIC LOAD	2.2	1.5	138
NOZZLE LOAD	1.7	2.0	31.0



ANCHOR BOLT

(FOR STACK RISER)



EARTH LUG

(AT : 90°, 270°)

(SCALE : 1/3)

REFERENCE DRAWING NO.	DESCRIPTION
SD-7438	FLARE TIP ASSEMBLY
SD-7509	CONDUIT DETAIL
SD-7508	PIPING DETAIL
SD-7507	PIPING ARRANGEMENT
SD-7506	RISER DETAIL
SD-7505	TEMPLATE DETAIL

NO	DATE	REVISION DESCRIPTION	BY	CKD	APP.
2	29NOV18	REVISED AS MARKED	MGE	CK	TRD
1	01NOV18	REVISED AS MARKED	MGE	CK	TRD

JOBSITE: Eddy County, New Mexico

END USER: XTO Energy

S.O. NO.: 35284 | P.O. NO.: 1707284-002 | APP KNB

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

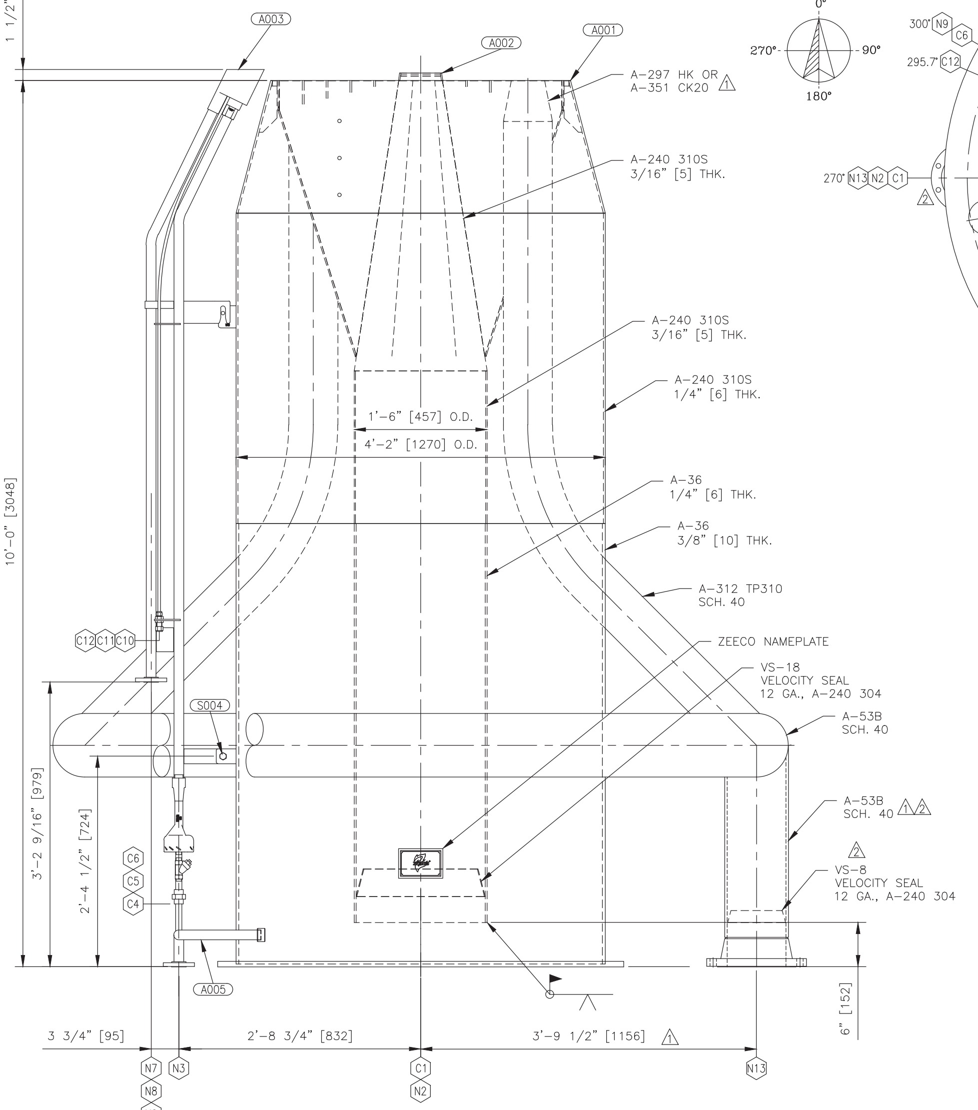
SELF SUPPORTED FLARE STACK SYSTEM
GENERAL ARRANGEMENT & LOADING DATA

FOR: AUDUBON ENGINEERING

DRAWN	DATE
MGE	27JUL18
CHK CK	APP TRD
SCALE 1/80	REV 2

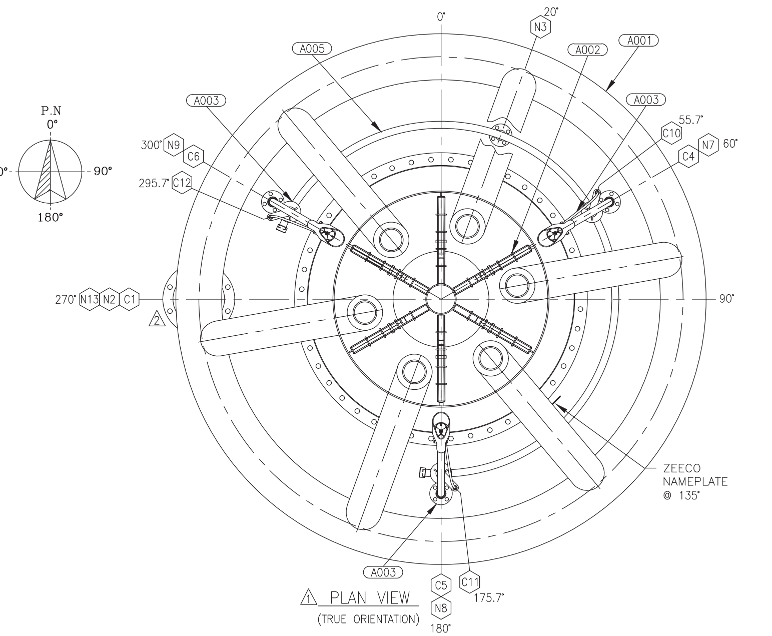
DRAWING NUMBER SD-7441

SHT. 1 OF 1



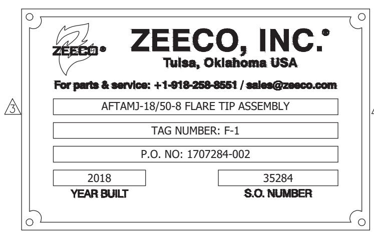
ELEVATION VIEW

(PORTIONS ROTATED FOR CLARITY)



PLAN VIEW

(TRUE ORIENTATION)



ZEECO NAMEPLATE

DRAWING	DRAWING NUMBER
P & I DIAGRAM FOR FLARE SYSTEM	YA-3129
GENERAL ARRANGEMENT	SD-7441
LMC-3-DT/S FFG IGNITION RACK ASSEMBLY	WD-0071

-NOZZLE LEGEND-

ITEM	SERVICE	SIZE	RATING	TYPE	SCH./BORE	FLG. MAT'L
C1	HP FLARE GAS INLET	18"	N/A	B.W.	SCH. 10	N/A
N2	FLARE AIR INLET	55" O.D. X 3/4" THK. X 50 1/4" I.D. W/ (44) 7/8"ø HOLES ON A 52 1/2" B.C.				A-36
N3	PILOT GAS MANIFOLD INLET	1"	150#	RFSW	SCH.40	A-105
C4-C6	PILOT GAS INLET	1/2"	3000#	SW UNION	SCH. 40	A-182 F304/L
N7-N9	IGNITION GAS INLET	1"	150#	RFSW	SCH.40	A-182 F304
C10-C12	RT/C CONNECTION	1/2"	N/A	TUBE	N/A	A-479 TP316
N13	LP FLARE GAS INLET	8"	150#	RFWN	SCH. 40	A-105

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
3	30nov18	APPROVED	MKN	MDK	TRD
2	12SEP18	REVISED PER ENGINEERING	ASW	MKN	TRD
1	28AUG18	REVISED PER ENGINEERING	MDK	MKN	TRD
0	20JUL18	ISSUED FOR APPROVAL	MKN	RLO	TRD

- SD-7438 PARTS LIST -

ITEM	QTY	Description	P/N
A001	1	AFTAMJ-18/50-8 PLENUM ASSEMBLY	KC-7653-A001
A002	1	AFTAMJ-18/50-8 CENTER ASSEMBLY	KC-7654-A002
A003	3	HSLF-Z-FFG-RDT/C PILOT ASSEMBLY	MB-4868-A003
		COMPLETE WITH:	
		HEI IGNITION PROBE	
		THERMOCOUPLE (SEE DATASHEET)	
		HSLF-Z MIXER BODY	
		HSLF-Z MIXER SPUD	
		STRAINER W/PLUG	
S004	3	HEAVY HEX BOLT: 1/2-13UNC X 1 1/2" LG. (A-193 B8M)	080001-0069
		W/ HEAVY HEX NUT: 1/2-13 UNC (A-194 GR. 8M)	081001-0135
A005	1	PILOT MANIFOLD ASSEMBLY	KC-7655-A005

-NOTES-

1. PILOT MIXER ORIFICE DRILLED: 3/64"Ø [1.19 mm]

2a. PILOT GAS CONSUMPTION LEAN FUEL: 65.12 SCFH @ 15 PSIG PER PILOT [1.74 Nm³ /HR @ 1.05 kg/cm² g]

2b. PILOT GAS CONSUMPTION RICH FUEL: 56.17 SCFH @ 15 PSIG PER PILOT [1.50 Nm³ /HR @ 1.05 kg/cm² g]

3. PILOT ORIFICE DRILLING BASED ON 923 BTU/SCF (LHV) [8683 kcal/Nm³] GAS WITH 0.563 SP. GR.

4a. THE HP FLARE TIP REQUIRES A CONTINUOUS PURGE OF 480 SCFH [12.86 Nm³ /HR] OR 180 SCFH [4.82 Nm³ /HR] (N_2) OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES. TO ENSURE AIR DOES NOT MIGRATE DOWN THE FLARE STACK. IT SHOULD BE NOTED THAT DEPENDING UPON THE TURNDOWN OPERATION OF THE FAN AND THE TYPE OF PURGE GAS USED IT MAY BE NECESSARY TO INCREASE THIS MINIMUM PURGE RATE TO ENSURE PROPER COMBUSTION OF THE PURGE GAS DURING IDLE OPERATION.

4b. THE LP FLARE TIP REQUIRES A CONTINUOUS PURGE OF 706 SCFH [18.91 Nm³ /HR] OR 530 SCFH [14.20 Nm³ /HR] (N_2) OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES. TO ENSURE AIR DOES NOT MIGRATE DOWN THE FLARE STACK. IT SHOULD BE NOTED THAT DEPENDING UPON THE TURNDOWN OPERATION OF THE FAN AND THE TYPE OF PURGE GAS USED IT MAY BE NECESSARY TO INCREASE THIS MINIMUM PURGE RATE TO ENSURE PROPER COMBUSTION OF THE PURGE GAS DURING IDLE OPERATION.

5. ALL FLANGE BOLTING TO STRADDLE NORMAL CENTERLINES, UNLESS NOTED OTHERWISE.

6. ALL TESTING PER INSPECTION TEST PLAN DOCUMENT NO. 35284-4010

7. THE PILOT THERMOCOUPLE IS FOR ON/OFF INDICATION ONLY, NOT FOR ACCURATE MEASUREMENT OF THE PILOT FLAME TEMPERATURE.

8. WHEN INSTALLING THE CENTER ASSEMBLY THE GAS EXIT ARMS MUST BE CENTERED ON THE PILOT AS PER THE PLAN VIEW.

9. APPROXIMATE WEIGHT FOR FLARE TIP ASS'Y: 4,731 LBS. [2,146 Kg]

10. APPROXIMATE WEIGHT FOR FOR EACH PILOT: 65 LBS. [29 Kg.]

11. ALL EXTERNAL CARBON STEEL SURFACES TO BE PREPARED PER SSPC-SP10. PRIME WITH ONE COAT INORGANIC ZINC (2-3 MILS DFT MIN.). PAINT ONE COAT HIGH HEAT ALUMINUM (1-2 MILS DFT MIN.). FINISH COLOR: ALUMINUM

CUSTOMER PAINT SPEC: 018193001-AE-SP-ME1007

12. LP FLARE GAS INLET (N13) WILL NEED TO BE ABLE TO CONTRACT 0.34" VERTICALLY.

JOBSITE: EDDY COUNTY, NEW MEXICO

END USER: XTO ENERGY

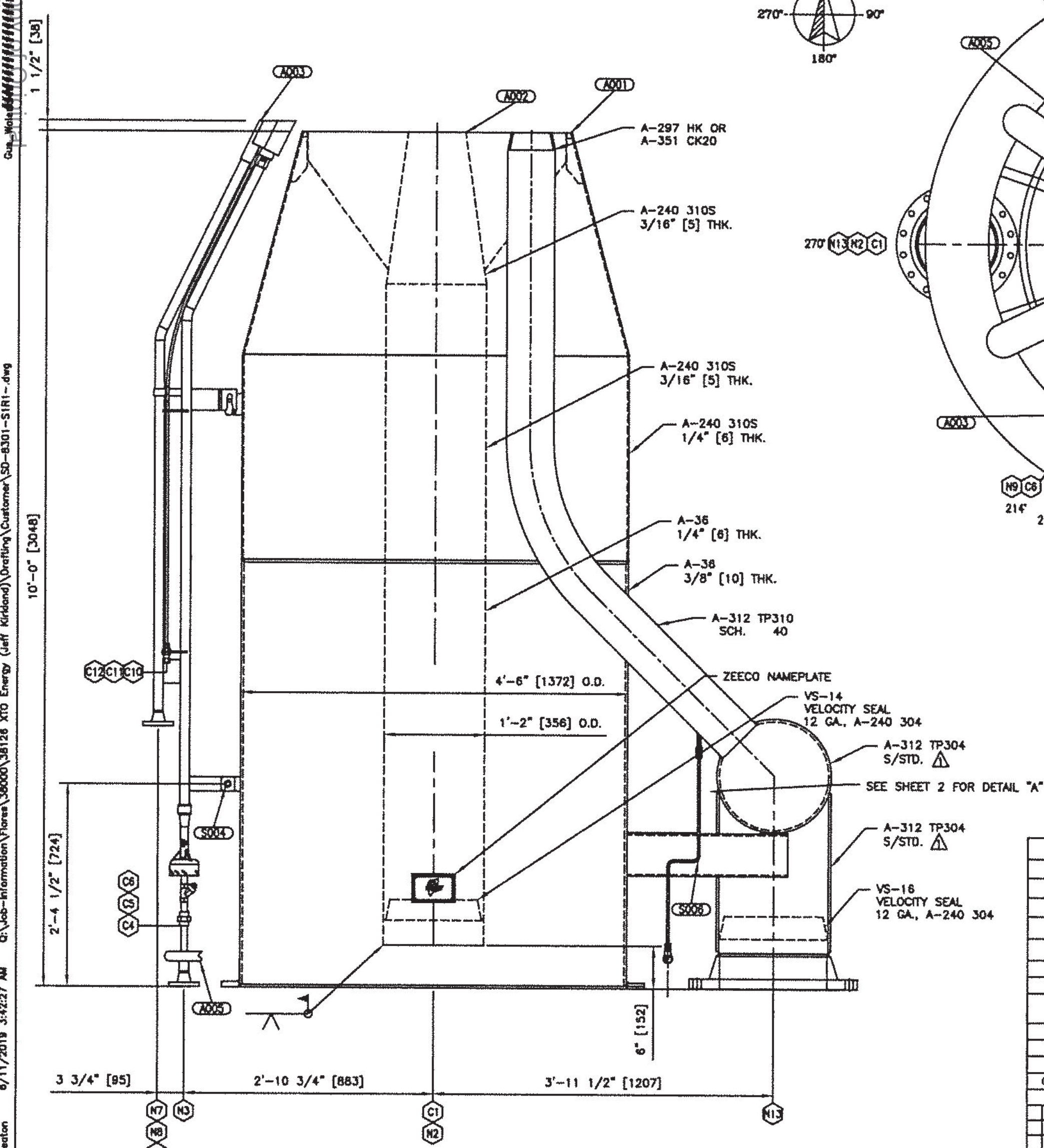
S.O. NO.: 35284 | P.O. NO.: 1707284-002 | APP KNB

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

AFTAMJ-18/50-8 FLARE TIP ASSEMBLY

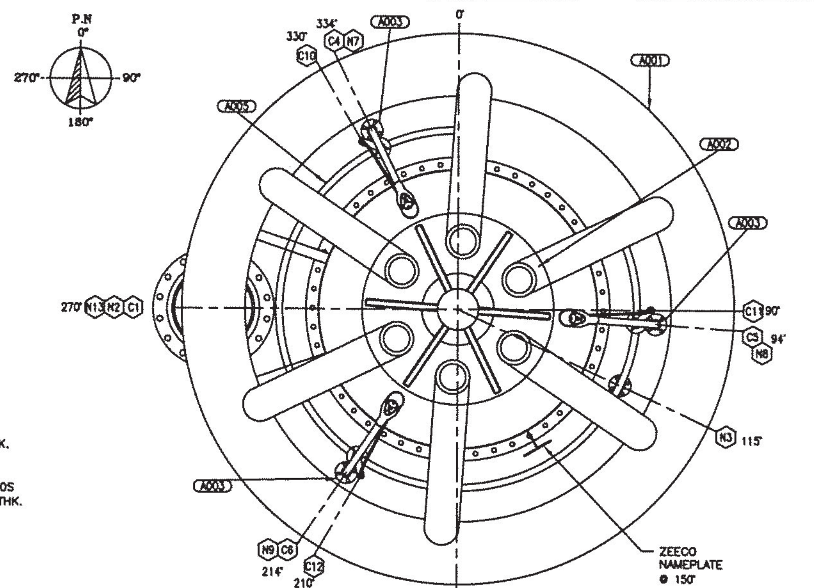
FOR: AUDUBON

DRAWN	DATE	CHK	APP	SCALE	REV	DRAWING NUMBER
MKN	20JUL18	RLO	TRD	NONE	3	SD-7438 SHT. 1 OF 1



ELEVATION VIEW

(PORTIONS ROTATED FOR CLARITY)



PLAN VIEW

(TRUE ORIENTATION)

ZEECO, INC.
Tulsa, Oklahoma USA
For parts & service: +1-918-258-8551 / sales@zeeco.com

AFTAMJ-14/54-16 FLARE TIP ASSEMBLY
TAG NUMBER: F-2 CRYO FLARE
P.O. NO: 1802759-032

2019	38126
YEAR BUILT	S.O. NUMBER

ZEECO NAMEPLATE

DRAWING	DRAWING NUMBER
P & I DIAGRAM FOR FLARE SYSTEM	YA-3310
GENERAL ARRANGEMENT	SD-8259
LMC-3-DT/S FFG IGNITION RACK ASSEMBLY	WD-0610

-NOZZLE LEGEND-

ITEM	SERVICE	SIZE	RATING	TYPE	SCH./BORE	FLG. MAT'L
C1	LP FLARE GAS INLET	14"	N/A	B.W.	SCH. 10	N/A
N2	FLARE AIR INLET	59" O.D. X 3/4" THK. X 54 1/4" I.D. W/ (48) 7/8"ø HOLES ON A 56 1/2" B.C.				A-36
N3	PILOT GAS MANIFOLD INLET	1"	150#	RFWN	SCH.40	A-105
C4-C6	PILOT GAS INLET	1/2"	3000#	SW UNION	SCH. 40	A-182 F304/L
N7-N9	IGNITION GAS INLET	1"	150#	RFSW	SCH. 40	A-182 F304/L
C10-C12	RT/C CONNECTION	1/2"	N/A	TUBE	N/A	A-479 TP316
N13	HP FLARE GAS INLET	16"	150#	RFWN	SCH. 40	A-182 F304

NO.	DATE	REVISION DESCRIPTION	BY	CKD.	APP.
1	27MAR19	REVISED PER ENGINEERING / CUSTOMER COMMENTS	MKN/ASW	RLO	JSK
0	25FEB19	ISSUED FOR APPROVAL	MKN	RLO	JSK

- SD-8301 PARTS LIST -

ITEM	QTY	Description	P/N
A001	1	AFTAMJ-14/54-16 PLENUM ASSEMBLY	KC-8197-A001
A002	1	AFTAMJ-14/54-16 CENTER ASSEMBLY	KC-8198-A002
A003	3	HSLF-Z-FFG-RDT/C PILOT ASSEMBLY	MB-5232-A003
		COMPLETE WITH:	
		THERMOCOUPLE (SEE DATASHEET)	
		HSLF-Z MIXER BODY	
		HSLF-Z MIXER SPUD	
		STRAINER W/PLUG	
S004	3	HEAVY HEX BOLT: 1/2-13UNC X 1 1/2" LG. (A-193 B8M)	080001-0069
		W/ HEAVY HEX NUT: 1/2-13 UNC (A-194 GR. 8M)	081001-0135
A005	1	PILOT MANIFOLD ASSEMBLY	KC-8199-A005
S006	6	FUEL INJECTION TUBE	033005-0001

-NOTES-

1a. PILOT MIXER ORIFICE DRILLED: 3/64"Ø [1.19 mm]
1b. MJ ARMS PURGE ORIFICE DRILLED: #50 MTD [1.78 MM]
2a. PILOT GAS CONSUMPTION LEAN FUEL: 61.36 SCFH @ 15 PSIG PER PILOT [1.64 Nm³ /HR @ 1.05 kg/cm² g]
2b. PILOT GAS CONSUMPTION RICH FUEL: 53.49 SCFH @ 15 PSIG PER PILOT [1.43 NM³ /HR @ 1.05 KG/CM² G]
3a. PILOT ORIFICE DRILLING LEAN FUEL BASED ON 879 BTU/SCF (LHV) [8269 kcal/Nm³] GAS WITH 0.57 SP. GR.
3A. PILOT ORIFICE DRILLING RICH FUEL BASED ON 1158 BTU/SCF (LHV) [10893 KCAL/NM³] GAS WITH 0.75 SP. GR.
4a. THE HP FLARE TIP REQUIRES A CONTINUOUS PURGE OF 190 SCFH [5.09 Nm³ /HR] OR 143 SCFH [3.83 Nm³ /HR] (N_2) OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES. TO ENSURE AIR DOES NOT MIGRATE DOWN THE FLARE STACK. IT SHOULD BE NOTED THAT DEPENDING UPON THE TURNDOWN OPERATION OF THE FAN AND THE TYPE OF PURGE GAS USED IT MAY BE NECESSARY TO INCREASE THIS MINIMUM PURGE RATE TO ENSURE PROPER COMBUSTION OF THE PURGE GAS DURING IDLE OPERATION.
4b. THE LP FLARE TIP REQUIRES A CONTINUOUS PURGE OF 290 SCFH [7.77 Nm³ /HR] OR 110 SCFH [2.95 Nm³ /HR] (N_2) OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES. TO ENSURE AIR DOES NOT MIGRATE DOWN THE FLARE STACK. IT SHOULD BE NOTED THAT DEPENDING UPON THE TURNDOWN OPERATION OF THE FAN AND THE TYPE OF PURGE GAS USED IT MAY BE NECESSARY TO INCREASE THIS MINIMUM PURGE RATE TO ENSURE PROPER COMBUSTION OF THE PURGE GAS DURING IDLE OPERATION.
4c. OF A GAS THAT WILL NOT GO TO DEW POINT AT OPERATING TEMPERATURES.
5. ALL FLANGE BOLTING TO STRADDLE NORMAL CENTERLINES, UNLESS NOTED OTHERWISE.
6. ALL TESTING PER INSPECTION TEST PLAN DOCUMENT NO. 38126-4010
7. THE PILOT THERMOCOUPLE IS FOR ON/OFF INDICATION ONLY, NOT FOR ACCURATE MEASUREMENT OF THE PILOT FLAME TEMPERATURE.
8. WHEN INSTALLING THE CENTER ASSEMBLY THE GAS EXIT ARMS MUST BE CENTERED ON THE PILOT AS PER THE PLAN VIEW.
9. APPROXIMATE WEIGHT FOR FLARE TIP ASS'Y: 5,755 LBS. [2610 Kg]
10. APPROXIMATE WEIGHT FOR FOR EACH PILOT: 65 LBS. [29 Kg.]
11. ALL EXTERNAL CARBON STEEL SURFACES TO BE PREPARED PER SSPC-SP10.
PRIME: 1 COAT CARBOZINC 11 (2-3 MILS DFT MIN.)
PAINT: 1 COAT THERMALINE 4900 (1-2 MILS DFT MIN.)
FINISH COLOR: CARLSBAD CANYON 9265
12. MJ ARM GAS CONSUMPTION: 137 SCFH @ 15 PSIG PER ARM [3.67 NM³ /HR @ 1.05 KG/CM² G]

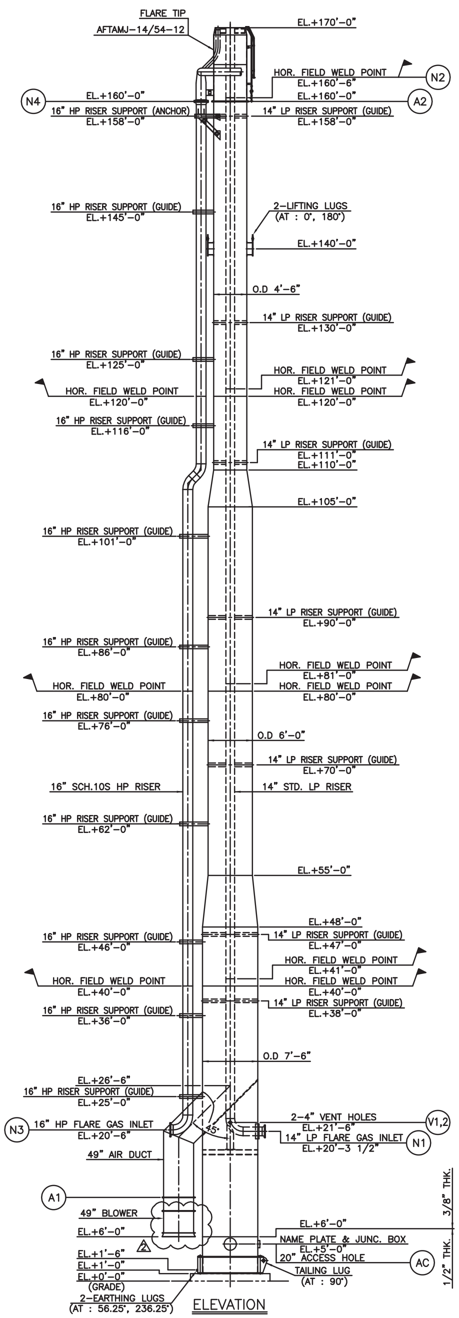
JOBSITE: COWBOY CDP-EDDY COUNTY, NEW MEXICO
END USER: XTO ENERGY
S.O. NO.: 38126 | P.O. NO.: 1802759-032 | APP KNB

AFTAMJ-14/54-16
FLARE TIP ASSEMBLY

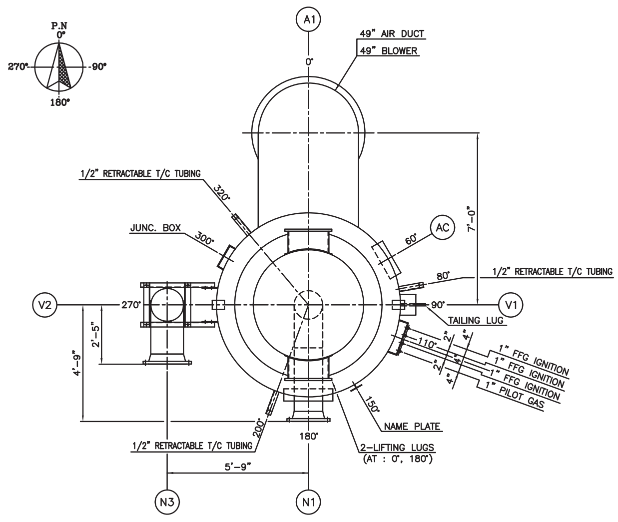
FOR: AUDOBON

DRAWN MKN | DATE 25FEB19 | CHK RLO | APP JSK | SCALE NONE | REV 1
DRAWING NUMBER SD-8301 SHT. 1 OF 2

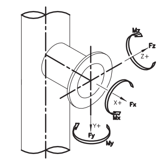
8/11/2019 3:42:27 AM Q:\Job-Information\Flares\38000\38126 XTO Energy (Jeff Kirkland)\Drafting\Customer\SD-8301-S1R1-.dwg
Meranda_deaton



ELEVATION



PLAN LAYOUT
(SCALE : 1/30)



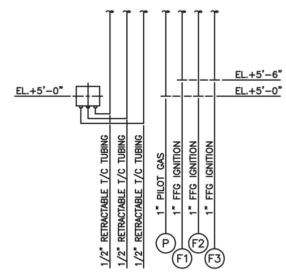
PIPE SIZE (IN)	Fx	Fy	Fz	Mx	My	Mz
	lb	lb	lb	lb-ft	lb-ft	lb-ft
14	450	750	750	1070	800	800
16	500	800	800	1140	850	850

MAX. ALLOWABLE INLET NOZZLE LOAD
(PER API 537)

MATERIAL SPECIFICATIONS		DESIGN DATA	
AIR RISER	A36 OR EQ.	TYPE	SELF SUPPORTED
LP GAS RISER	A106-B OR EQ.	STRUCTURE CODE	ASME STS-1 / AISC
HP GAS RISER	A312-TP304	WIND DESIGN	ASCE 7-10/ V=120mph/ EXP.=C
BOTTOM PLATE	A36 OR EQ.	SEISMIC DESIGN	ASCE 7-10/ Ss=0.153/ S1=0.045/ I.F=1.25/ SITE CLASS=D
SKIRT	A36 OR EQ.	FLUID	FLARE GAS
FLARE TIP	SEE FLARE TIP DWG.	DESIGN PRESS.(HP/LP/AIR)	75 / 50 / ATM psig
AIR RISER FLANGE	A36 OR EQ.	DESIGN TEMP.(HP/LP/AIR)	-65~120/-10~120/-10~120 °F
LP RISER FLANGE	A105	OPERATING PRESS.(HP/LP/AIR)	66 / 1 / ATM psig
HP RISER FLANGE	A182-F304	OPERATING TEMP.(HP/LP/AIR)	-65~115/-5~115/-5~115 °F
RISER GASKET	C4401	AMBIENT TEMP (MIN./MAX.)	-5 ~ 115 °F
BASE PLATE	A36 OR EQ.	P.W.H.T.	NO
ANCHOR BOLT	F1554 GR. 36	NDE	AS PER ITP
EARTHING LUG	304 S.S	CORROSION ALLOWANCE (HP/LP/AIR)	0.0 / 1/16" / 1/16"
NAME PLATE	304 S.S	COATING	SEE NOTE 2
NAME PLATE BRACKET	A36 OR EQ.		
UTILITY LINE	A106-B		
TUBING LINE	316 S.S		
LIFTING LUG	A53-B/A36 OR EQ.		
TAILING LUG	A36 OR EQ.		

NOZZLE AND CONNECTIONS

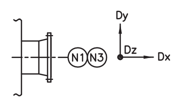
MARK	Q'TY	SIZE	SCH.	RATING	FACING	FLG. MAT'L	MATERIAL NOZZLE	SERVICE	REMARKS
N1	1	14"	STD.	ASME #150	WN, RF	A105	A106-B OR EQ.	LP GAS INLET	
N2	1	14"	STD.	-	-	-	A106-B OR EQ.	LP GAS OUTLET	
N3	1	16"	SCH.10S	ASME #150	WN, RF	A182-F304	A403-WP304	HP GAS INLET	
N4	1	16"	SCH.10S	ASME #150	WN, RF	A182-F304	A312-TP304	HP GAS OUTLET	
A1	1	49"	3/8" THK.	PLATE FLANGE	-	A36 OR EQ.	A36 OR EQ.	AIR INLET	
A2	1	54"	3/8" THK.	PLATE FLANGE	-	A36 OR EQ.	A36 OR EQ.	AIR OUTLET	
V1,2	2	4"	STD.	-	-	-	A53-B ERW	VENT HOLE	
AC	1	20"	1/2" THK.	-	-	-	A36 OR EQ.	ACCESS HOLE	
P	1	1"	STD.	ASME #150	SW, RF	A105	A106-B	PILOT GAS	
F1~3	3	1"	STD.	ASME #150	SW, RF	A105	A106-B	FFG IGNITION	



UTILITY PIPING DETAIL

NOTE

1. ALL FLANGE BOLTING TO STRADDLE CENTERLINES INDICATED BY CENTERLINE UNLESS NOTED OTHERWISE.
2. COATING SYSTEM (AS PER CHART 1, AUDUBON COATING SPEC.)
   - EXTERNAL CARBON STEEL FOR AIR RISER & UTILITY PIPING
     - SURFACE PREPARATION : SSPC-SP10
     - PRIMER : INORGANIC ZINC (DRY MILS 2~3)
     - BUILD : EPOXY (DRY MILS 4~6)
     - TOP : POLYURETHANE (DRY MILS 2~3)
     - TOP COAT COLOR : CARLSBAD CANYON 9265
3. ALL PIPING 2" & SMALLER AND ALL CONDUIT WILL BE SUPPLIED IN RANDOM LENGTH WITH LOOSE FITTING FOR FIELD ASSEMBLY.
4. LOADING DATA INCLUDES OVERAGE FACTOR OF 10% ABOVE CALCULATED LOADS.
5. FLARE STACK STRUCTURAL DESIGN ASSUMES ELASTIC FOUNDATION SUPPORT PER ASME STS-1.
6. ANCHOR BOLT ARE NOT BY ZEECO. (BY OTHERS)
7. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS , FC' = 4000 PSI.

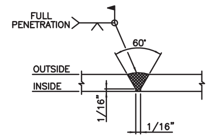


INLET DISPLACEMENT FOR "N1" LP NOZZLE

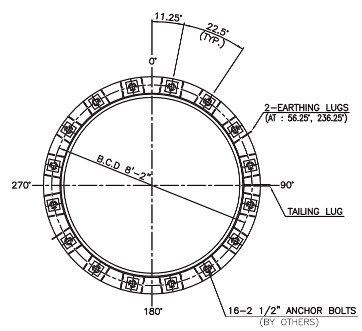
CASE	Dx (inch)	Dy (inch)	Dz (inch)
MIN. CONTRACTION	-0.03	-0.12	0.0
MAX. EXPANSION	0.02	0.08	0.0

INLET DISPLACEMENT FOR "N3" HP NOZZLE

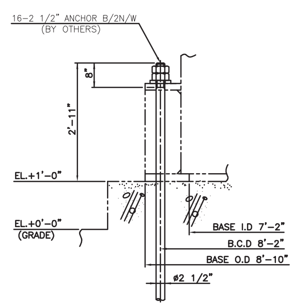
CASE	Dx (inch)	Dy (inch)	Dz (inch)
MIN. CONTRACTION	-0.02	-1.66	0.0
MAX. EXPANSION	0.01	2.44	0.0



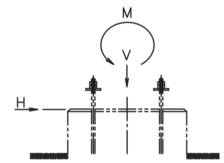
FIELD WELD DETAIL
(TYP.)
(SCALE : N/S)



ANCHOR BOLT PLAN
(SCALE : 1/30)

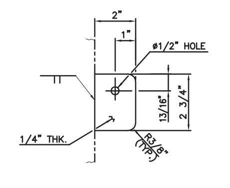


ANCHOR BOLT
(FOR STACK RISER)



LOADING DATA
(FOR STACK RISER)

LOADING DATA	V(kip)	H(kip)	M(kip-ft)
DEAD LOAD	86.0	0.0	0.0
WIND LOAD	0.0	55.8	4668.1
SEISMIC LOAD	2.8	1.9	224.7
NOZZLE LOAD	1.7	2.0	31.0



EARTHING LUG
(AT : 56.25', 236.25')
(SCALE : 1/3)

REFERENCE DRAWING NO.	DESCRIPTION
SD-8264	CONDUIT DETAIL
SD-8263	PIPING DETAIL
SD-8262	PIPING ARRANGEMENT
SD-8261	RISER DETAIL
SD-8260	TEMPLATE DETAIL

PROJECT NAME: CRYO FLARE STACK
JOBSITE: CARLSBAD, NM.
END USER: XTO ENERGY
S.O. NO.: 38126 P.O. NO.: 1802759-032 APP KB

NO	DATE	REVISION DESCRIPTION	BY	CKD	APP.
2	13JUN19	REVISED AS MARKED	MGE	KWH	JK
1	19MAR19	REVISED AS MARKED	MGE	KWH	JK

ZEECO, INC.
22151 EAST 91st STREET
BROKEN ARROW, OK 74014
PHONE: (918) 258-8551
FAX: (918) 251-5519
www.zeeco.com
sales@zeeco.com

SELF SUPPORTED
FLARE STACK SYSTEM
GENERAL ARRANGEMENT & LOADING DATA
(FS-6960)

FOR: AUDUBON ENGINEERING

DRAWN MGE | DATE 15FEB19 | CHK KWH | APP JK | SCALE 1/100 | REV 2
DRAWING NUMBER SD-8259
SHT. 1 OF 1

audubon
D: 713.452.3123
kejones@audubonccompanies.com

10205 Westheimer Road, Suite 100
Houston, Texas 77042
audubonccompanies.com | LinkedIn

From: Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>
Sent: Friday, May 4, 2018 5:30 PM
To: Kelly Jones <kejones@audubonccompanies.com>; Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@audubonccompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; John Ehlig <John_Ehlig@zeeco.com>; Sean O'Grady <Sean_OGrady@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP

Kelly,

Below are the guaranteed DRE's for each piece of combustion equipment in regards to the XTO Cowboy project.

There will be no cost impact added to our proposals to meet the DRE's listed below. If a higher DRE is required, we can provide equipment that meets the request.

1. CDP Flare System, 98% DRE
2. CDP Combustor, 99% DRE
3. Thermal Oxidizer, 99.99% DRE

Please let us know if you have any questions or more official documentation is needed. Thanks!

Cody Faulkenberry
Applications Engineer, Sales

Zeeco Houston | Cell: +1 713 859 6047 | Direct: +1 918 893 8816

From: Kelly Jones [mailto:kejones@audubonccompanies.com]
Sent: Wednesday, May 02, 2018 7:18 AM
To: Kirsten Berg <Kirsten_Berg@zeeco.com>; Gabriel Garcia <ggarcia@audubonccompanies.com>
Cc: Nikki Jenlink <Nikki_Jenlink@zeeco.com>; Scott Reed <Scott_Reed@zeeco.com>; Blake Knight <Blake_Knight@zeeco.com>; Alan Forman <integratedcontrols@prodigy.net>; Cody Faulkenberry <Cody_Faulkenberry@zeeco.com>; John Ehlig <John_Ehlig@zeeco.com>
Subject: RE: 2018-02438FL-01: RFQ 018193001-AE-RFQ-ME0018 - Combustor Package - XTO Energy Cowboy Natural Gas and Oil CDP
Importance: High

Kirsten,

ZEECO
• Burners
• Flares
• Incinerators
• Aftermarket Products and Services

22151 East 91st Street
Broken Arrow, OK 74014 USA
Ph: +1-918-258-8551
Fx: +1-918-251-5519
www.zeeco.com
sales@zeeco.com

General Process Performance Warranty for Flare System

Zeeco Inc. warrants the process performance of this unit will meet or exceed the contract requirements. Specific process performance requirements and acceptance criteria will be defined and mutually agreed to by both parties within two (2) months of receipt of the purchase order for supply of the equipment. Performance of the system is to be defined under normal ambient conditions of temperature, wind, etc. Such performance acceptance criteria in general to be as follows:

Based on provided Datasheet 019141001-AE-DS-ME0018 and Agreed Flow Rates:

1) Hydrocarbon Destruction efficiency of the unit will be 99% or higher when operated and maintained per the operating instructions and industry standards for this type of equipment.
2) The expected NOx and CO emissions will be 124 ppm and 204 ppm (corrected to 3% O2), +/- 10%, using calibrated measurement equipment under defined flow conditions at the specified gas composition in the contract and when operated and maintained per the operating instructions and industry standards for this type of equipment.. The specific operating temperature required to meet all three conditions will be determined upon field testing of the equipment.

Process performance of the system, if required, will be confirmed at a performance test to take place within 90 days after the unit is fully assembled and erected at site. The cost for Zeeco Inc. personnel to be on site for any testing is at the expense of the customer. The cost for testing equipment would also be to the account of the customer, if not readily available in the process system as installed. The specific conditions of the performance test, and the measurement and acceptance criteria for the above process performance points, including specific liability points associated with each process item, are to be mutually agreed to by both buyer and seller prior to shipment of the equipment. Successful completion of the process performance test at site will be deemed as compliance with the process performance warranty for any and all reasons. In the event the site performance test is postponed or delayed for more than 90 days after completion of erection of the unit at site, prior to the test, Zeeco Inc. will inspect the unit and any required refurbishment / repair to like new condition must be completed prior to testing, at purchaser’s sole expense. If the testing is not completed within 6 months of the startup of the unit, the unit will have been deemed to have met any and all performance requirements.

Enclosed Flare Stack Specification Sheet

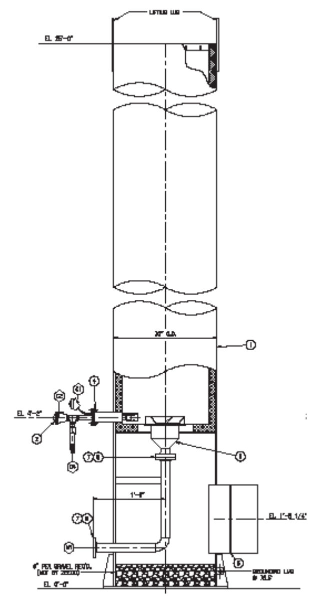
Client: Audobon Engineering	Zeeco Ref.: 2018-02438FL-01	Date: 22-May-18	
Location: Carlsbad, NM	Client Ref.: 018193001-AE-RFQ	Rev. 1	

General Information:

Tag No.:	EGF-1
Overall Height:	40 ft
Model No.	EF-9/40

Design Criteria:

Wind Design Code:	ASCE 7-10
Seismic Design Code:	ASCE 7-10
Importance Factor:	1.25
Structural Design Code:	AISC
Wind Speed (Structural):	120 mph
Seismic Zone:	0
Max. Design Temperature:	300 Deg. F
Min. Design Temperature:	20 Deg. F
Design Pressure:	Atmospheric
Stack Corrosion Allow.:	0.000 in.



(Typical drawing only)

Construction:

Stack Material:	Carbon Steel	Ladders & Step-offs:	None
Stack Height (approx.)	40 ft	Platform at tip:	None
Stack Width (approx.):	9 ft	Additional Platforms:	None
Flare Gas Inlet Diameter:	8 in		

Surface Preparation:	SSPC-SP-6	Primer:	Inorganic Zinc
		Finish Paint:	Per Specification

Utility piping:

Per Attached Utility Piping Scope of Supply

Miscellaneous Notes:

VAPOR COMBUSTOR RENTALS

Easy installation and operation on demand.

Zeeco maintains a rental fleet of skid and trailer-mounted vapor combustor units (VCU) staged around the world and available on demand. Designed with the end user in mind, our rental vapor combustors offer easy operation and installation within a matter of hours. Whether you need a simple skid-mounted design, or a fully-automated, trailer mounted ZEECO® Zephyr™, users depend on our proven, reliable smokeless solutions.

Wide range of applications.

Each Zeeco vapor combustor is engineered to operate safely through a wide range of relief conditions. From low flow and low pressure hydrocarbon gas streams to contaminated air streams, Zeeco's high capacity rental vapor combustor systems provide clean flames, consistent smokeless operation, and high destruction efficiencies.

Meet regulatory requirements.

Zeeco's vapor combustors are fully enclosed to efficiently use both combustion and quench air. The combustion enclosure maintains precise chamber temperatures and ensures optimal destruction and removal efficiencies (DRE) to meet or exceed the most stringent clean-air standards. Our vapor combustor can be fully automatic or manually operated, depending on your specific needs and regulatory requirements. Typically used in liquid loading and tank degassing operations to destroy harmful emissions that emanate from fumes, vapor combustors fill diverse roles and can be used in multiple applications while maintaining optimal efficiency.

Advanced technology.

Zeeco is a pioneer in smokeless flare and vapor combustor system design. We put our nearly 40 years of experience into our rental system designs to ensure our customers benefit from the best available technologies. ZEECO ProFlame™ flame scanners provide reliable flame detection using state-of-the-art digital signal processing for easy flame analysis, and offer an intuitive display for easy setup and installation. ZEECO Guardian™ wireless monitoring system allows operators to check on the system from anywhere via remote diagnostics and controls.

ZEECO Zephyr™ Trailer Mounted Vapor Combustor

Design Features

- Wide range of flow rates, including up to 4800 gpm for vapor loading
- Destruction efficiencies up to 99.99% with sample ports for testing
- Full turndown capability
- Smokeless performance from 0% to 100% operation
- Completely hidden flame and zero emitted radiation
- Flame arrestors on inlet for flashback prevention
- Automatic on/off operation for loading facilities based on pump operations
- Interchangeable tip designs for broad relief conditions
- Staged air assist by forced draft to facilitate better mixing and stoichiometric combustion at the burner assembly
- Natural draft dampers for chamber combustion air and temperature control of vapor combustor
- Internal ceramic fiber refractory lining
- Thermowell and thermocouple for temperature monitoring of combustion chamber
- Fully automated controls system for automatic flame ignition and monitoring with electric or solar power
- Retractable pilot can be removed and maintained without shutting down
- DOT-compliant trailer-mounted option for easy transportation
- Trailer option with hydraulic outriggers and stack lift system for simple setup without need for cranes
- Skid mounted option for longer-term usage periods
- Can be used as a thermal oxidizer, flare, or vapor combustor to meet local regulations and existing permits

Options Available

- Anti-flashback burner tips for flashback protection
- ZEECO Guardian™ for wireless monitoring and operation
- ZEECO ProFlame™ flame scanners
- Flame and detonation arrestors
- Assist gas for maintaining internal operating temperatures for high DRE
- Forced draft fan for smokeless operation
- Vapor blower for low/no pressure gas operation
- Solar-powered ignition system
- Auto or manual spark ignition
- Knock out drums and instrumentation
- Integrated dock safety system loading applications

ZEECO® Engineered Enclosed Flare System

The Zeeco Difference

By concentrating on what we do best, Zeeco has grown into a worldwide leader in combustion and environmental solutions. We are a privately held company whose ownership stays highly involved in daily operations, with upper management comprised of the world's leading combustion experts.

When you call Zeeco, we answer. When you make a request, you get a quick, efficient response. We are lean and efficient, able to make decisions quickly, without bureaucracy and red tape. Our sales, engineering, and purchasing groups work hand-in-hand to deliver highly competitive quotes and heroic turnaround times. We stand ready and willing to travel anywhere in the world to discuss upcoming projects firsthand, and to ensure that every existing project runs seamlessly.

Zeeco Headquarters
22151 East 91st Street
Broken Arrow, OK 74014

Learn more at zeeco.com

sales@zeeco.com
+1 (918) 258 8551

NSF REGISTERED ISO 9001: 2015

Certification applies to Zeeco Headquarters.

Visit zeeco.com/contact for additional Global Location contact information

GO ZEECO®

Choose to work with our dedicated, flexible, and innovative team, and you won't be disappointed. Call or email us today to request a quote or to learn more about our proprietary combustion systems.

Destruction Efficiency

Client:	XTO Energy	Zeeco Ref.:	2024-10319RE-01	Date:	14-Nov-24
Location:	Midland, TX	Client Ref.:	Flare	Rev.	0

To whom it may concern,

The hydrocarbon destruction efficiency for the combustion systems providing on Zeeco Ref: 2024-10319RE-01 will be 99% or higher as long as the flare is operated and maintained within the design operating parameters and accepted industry standard practices for this type of equipment.

NOx = 0.18 lb/MMBtu Fired
CO = 0.31 lb/MMBtu Fired

Sincerely,

Josh Kimrey
josh_kimrey@zeeco.com
Applications Engineer

G3520H

GENSET - WITHOUT RADIATOR

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
EPIC

CATERPILLAR®

ENGINE SPEED (rpm):	1500
COMPRESSION RATIO:	12.1
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	118
AFTERCOOLER - STAGE 1 INLET (°F):	192
JACKET WATER OUTLET (°F):	210
ASPIRATION:	TA
COOLING SYSTEM:	JW+OC+1AC, 2AC+GB
CONTROL SYSTEM:	ADEM4 W/ IM
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	22

RATING STRATEGY:	HIGH ALTITUDE/AMBIENT
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	CAT LOW PRESSURE WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:

FUEL:	Nat Gas
FUEL PRESSURE RANGE(psig): (See note 1)	2.0-5.0
FUEL METHANE NUMBER:	84.7
FUEL LHV (Btu/scf):	905
ALTITUDE(ft):	3400
INLET AIR TEMPERATURE(°F):	97
STANDARD RATED POWER:	3448 bhp@1500rpm
POWER FACTOR:	0.8
VOLTAGE(V):	4160-13800

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**51%**
GENSET POWER	(WITH GEARBOX, WITHOUT FAN)	(2)(3)	ekW	2414	2377	1783	1213
GENSET POWER	(WITH GEARBOX, WITHOUT FAN)	(2)(3)	kVA	3018	2971	2228	1517
ENGINE POWER	(WITHOUT GEARBOX, WITHOUT FAN)	(3)	bhp	3372	3320	2497	1714
INLET AIR TEMPERATURE			°F	77	97	97	97
GENERATOR EFFICIENCY		(2)	%	96.8	96.8	96.5	95.7
GENSET EFFICIENCY	(ISO 3046/1)	(4)(5)	%	42.5	42.4	41.4	39.4
THERMAL EFFICIENCY		(4)(6)	%	41.9	42.0	43.7	46.3
TOTAL EFFICIENCY		(4)(7)	%	84.4	84.4	85.1	85.7
ENGINE DATA							
GENSET FUEL CONSUMPTION	(ISO 3046/1)	(8)	Btu/ekW-hr	8033	8043	8236	8665
GENSET FUEL CONSUMPTION	(NOMINAL)	(8)	Btu/ekW-hr	8310	8321	8520	8964
ENGINE FUEL CONSUMPTION	(NOMINAL)	(8)	Btu/bhp-hr	5950	5957	6083	6347
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(9)	ft3/min	6523	6659	4959	3400
AIR FLOW	(WET)	(9)	lb/hr	28923	28467	21197	14532
FUEL FLOW (60ºF, 14.7 psia)			scfm	369	364	280	200
INLET MANIFOLD PRESSURE		(10)	in Hg(abs)	139.4	137.3	103.1	71.8
EXHAUST TEMPERATURE - ENGINE OUTLET		(11)	°F	736	740	800	902
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(12)	ft3/min	15617	15416	12074	8973
EXHAUST GAS MASS FLOW	(WET)	(12)	lb/hr	29935	29465	21963	15081
MAX INLET RESTRICTION		(13)	in H2O	14.08	13.81	9.78	7.25
MAX EXHAUST RESTRICTION		(13)	in H2O	19.31	18.79	10.67	5.25
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(14)(15)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(14)(15)	g/bhp-hr	1.88	1.88	1.73	1.58
THC (mol. wt. of 15.84)		(14)(15)	g/bhp-hr	3.23	3.23	3.10	2.81
NMHC (mol. wt. of 15.84)		(14)(15)	g/bhp-hr	0.48	0.48	0.47	0.42
NMNEHC (VOCs) (mol. wt. of 15.84)		(14)(15)(16)	g/bhp-hr	0.39	0.39	0.37	0.34
HCHO (Formaldehyde)		(14)(15)	g/bhp-hr	0.26	0.26	0.25	0.24
CO2		(14)(15)	g/bhp-hr	416	417	425	441
EXHAUST OXYGEN		(14)(17)	% DRY	9.9	9.9	9.6	9.1
HEAT REJECTION							
LHV INPUT		(18)	Btu/min	334354	329631	253148	181284
HEAT REJ. TO JACKET WATER (JW)		(19)	Btu/min	36555	36328	31335	25731
HEAT REJ. TO ATMOSPHERE	(INCLUDES GENERATOR)	(19)	Btu/min	9213	9115	7544	6296
HEAT REJ. TO LUBE OIL (OC)		(19)	Btu/min	10542	10480	9402	8143
HEAT REJECTION TO EXHAUST (LHV TO 248°F)		(19)	Btu/min	64185	63689	54198	43947
HEAT REJ. TO A/C - STAGE 1 (1AC)		(19)(21)	Btu/min	26561	25742	14223	5537
HEAT REJ. TO A/C - STAGE 2 (2AC)		(19)(21)	Btu/min	19716	19272	12737	7316
HEAT REJECTION FROM GEARBOX (GB)		(19)	Btu/min	1130	1112	836	574
PUMP POWER		(20)	Btu/min	859	859	859	859
COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)		(22)	Btu/min	84554	87900		
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (2AC+GB)		(22)	Btu/min	23609	25089		
HEAT REJECTION TO EXHAUST (LHV TO 248°F)		(22)	Btu/min	70603	70058		
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.							
MINIMUM HEAT RECOVERY							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)		(23)	Btu/min	66565	65534		
TOTAL STAGE 2 AFTERCOOLER CIRCUIT (2AC+GB)		(23)	Btu/min	19803	19365		
HEAT REJECTION TO EXHAUST(LHV TO 248°F)		(23)	Btu/min	54700	50042		

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. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

PREPARED BY: Darrell Paull, Hol Cat

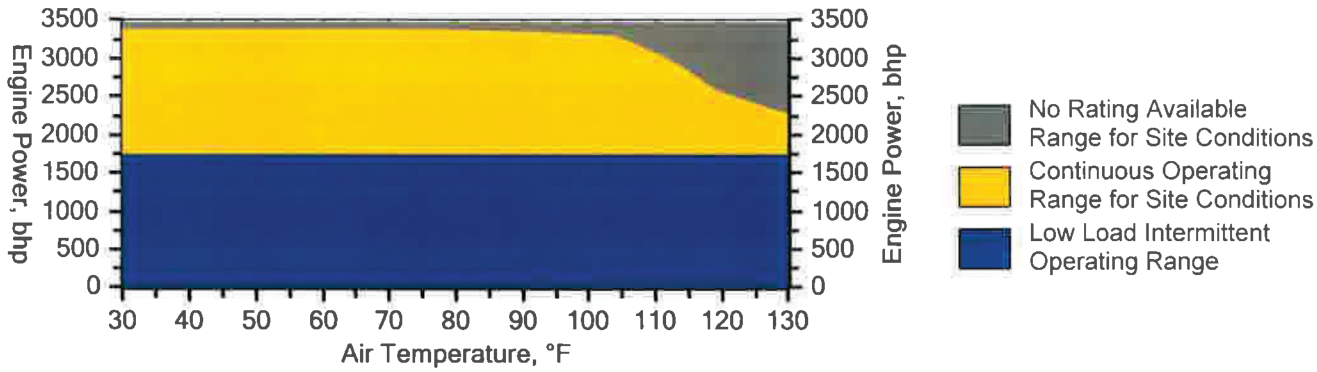
For notes information consult page three.

Data generated by Gas Engine Rating Pro Version 6.09.01

Ref. Data Set EM0923-04-001, Printed 23Jan2019

Engine Power vs. Inlet Air Temperature

Data represents temperature sweep at 3400 ft and 1500 rpm



GAS ENGINE SITE SPECIFIC TECHNICAL DATA
EPIC

NOTES

1. Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components should be considered in pressure and flow calculations

2. Generator efficiencies, power factor, and voltage are based on specified generator. [Genset Power (ekW) is calculated as: (Engine Power (bkW) - Gearbox Power (bkW)) x Generator Efficiency], [Genset Power (kVA) is calculated as: (Engine Power (bkW) - Gearbox Power (bkW)) x Generator Efficiency / Power Factor]

3. Rating is with two engine driven water pumps. Tolerance is (+)3, (-)0% of full load. All derates are applied without pumps , then pump power is subtracted to obtain final rating.

4. Efficiency represents a Closed Crankcase Ventilation (CCV) system installed on the engine

5. Genset Effieciency published in accordance with ISO 3046/1.

6. Thermal Efficiency is calculated based on energy recovery from the jacket water, lube oil, 1st stage aftercooler, and exhaust to 248ºF with engine operation at ISO 3046/1 Genset Efficiency, and assumes unburned fuel is converted in an oxidation catalyst.

7. Total efficiency is calculated as: Genset Efficiency + Thermal Efficiency. Tolerance is ±10% of full load data.

8. ISO 3046/1 Genset fuel consumption tolerance is (+)5, (-)0% at the specified power factor. Nominal genset and engine fuel consumption tolerance is ± 1.5% of full load data at the specified power factor.

9. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.

10. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.

11. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.

12. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of ± 6 %.

13. Inlet and Exhaust Restrictions are maximum allowed values at the corresponding loads. Increasing restrictions beyond what is specified will result in a significant engine derate.

14. Emissions data is at engine exhaust flange prior to any after treatment.

15. NOx tolerance's are ± 18% of specified value. All other emission values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate the maximum values expected under steady state conditions. Fuel methane number cannot vary more than ± 3. THC, NMHC, and NMNEHC do not include aldehydes

16. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ

17. Exhaust Oxygen level is the result of adjusting the engine to operate at the specified NOx level. Tolerance is ± 0.5.

18. LHV rate tolerance is ± 1.5%.

19. Heat rejection values are representative of site conditions. Tolerances, based on treated water, are ± 10% for jacket water circuit, ± 50% for atmosphere, ± 20% for lube oil circuit, ± 10% for exhaust, ± 5% for aftercooler circuit, and ± 5% for Gearbox.

20. Pump power includes engine driven jacket water and aftercooler water pumps. Engine brake power includes effects of pump power.

21. Aftercooler heat rejection is nominal for site conditions and does not include an aftercooler heat rejection factor. Aftercooler heat rejection values at part load are for reference only.

22. Cooling system sizing criteria represent the expected maximum circuit heat rejection for the ratings at site, with applied plus tolerances. Total circuit heat rejection is calculated using formulas referenced in the notes on the standard tech data sheet with the following qualifications. Aftercooler heat rejection data (1AC & 2AC) is based on the standard rating. Jacket Water (JW), Oil Cooler (OC), and Gearbox (GB) heat rejection values are based on the respective site or maximum column. Aftercooler heat rejection factors (ACHRF) are specific for the site elevation and inlet air temperature specified in the site or maximum column, referenced from the table on the standard data sheet

23. Minimum heat recovery values represent the expected minimum heat recovery for the site, with applied minus tolerances. Do not use these values for cooling system sizing.

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	92.2700	92.2700
Ethane	C2H6	2.5000	2.5000
Propane	C3H8	0.5000	0.5000
Isobutane	iso-C4H1O	0.0000	0.0000
Norbutane	nor-C4H1O	0.2000	0.2000
Isopentane	iso-C5H12	0.0000	0.0000
Norpentane	nor-C5H12	0.1000	0.1000
Hexane	C6H14	0.0500	0.0500
Heptane	C7H16	0.0000	0.0000
Nitrogen	N2	3.4800	3.4800
Carbon Dioxide	CO2	0.9000	0.9000
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0000	0.0000
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0000	100.0000

Fuel Makeup:	Nat Gas
Unit of Measure:	English

Calculated Fuel Properties

Caterpillar Methane Number:	84.7
Lower Heating Value (Btu/scf):	905
Higher Heating Value (Btu/scf):	1004
WOBBE Index (Btu/scf):	1168
THC: Free Inert Ratio:	21.83
Total % Inerts (% N2, CO2, He):	4.38%
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.998
Stoich A/F Ratio (Vol/Vol):	9.45
Stoich A/F Ratio (Mass/Mass):	15.75
Specific Gravity (Relative to Air):	0.600
Fuel Specific Heat Ratio (K):	1.313

CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia

FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.

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

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

NO_x and CO Emissions

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

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

Table A-6. TCEQ Air Permits Flare Emission Factors

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

[a] High Btu: > 1000 Btu/scf

[b] Low Btu: 192–1000 Btu/scf

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[$lb/10^6$ 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, $4.2x10^4$ $lb/10^6$ scf.

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

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

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

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

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

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

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

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

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

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

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

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

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

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act*.
[b] Factors are derived from units operating at high loads ($\geq$80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief".
[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60^{o}F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.
[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.
[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.
[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

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:

$$L_L = 12.46 \frac{SPM}{T} \tag{1}$$

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)

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:

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

[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

ELECTRONIC CODE OF FEDERAL REGULATIONS

e-CFR data is current as of August 23, 2017

Title 40 → Chapter I → Subchapter C → Part 98 → Subpart C → Appendix

Title 40: Protection of Environment
PART 98—MANDATORY GREENHOUSE GAS REPORTING
Subpart C—General Stationary Fuel Combustion Sources

TABLE C-1 TO SUBPART C OF PART 98—DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Link to an amendment published at 81 FR 89252, Dec. 9, 2016.

DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	61.71
Propane[1]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[1]	0.068	59.60
Ethanol	0.084	68.44
Ethylene[2]	0.058	65.96
Isobutane[1]	0.099	64.94
Isobutylene[1]	0.103	68.86
Butane[1]	0.103	64.77
Butylene[1]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02
Petrochemical Feedstocks	0.125	71.02
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.54
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.54
Other fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95[3]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00

Petroleum Coke	30.00	102.41
Other fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32
Coke Oven Gas	0.599×10^{-3}	46.85
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas[4]	1.388×10^{-3}	59.00
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals (dry basis)[5]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	10.39	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655×10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1]The HHV for components of LPG determined at 60 °F and saturation pressure with the exception of ethylene.

[2]Ethylene HHV determined at 41 °F (5 °C) and saturation pressure.

[3]Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

[4]Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO_2 emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

[5]Use the following formula to calculate a wet basis HHV for use in Equation C-1: $HHV_w = ((100 - M)/100)*HHV_d$ where HHV_w = wet basis HHV, M = moisture content (percent) and HHV_d = dry basis HHV from Table C-1.

[78 FR 71950, Nov. 29, 2013]

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ELECTRONIC CODE OF FEDERAL REGULATIONS

e-CFR data is current as of August 23, 2017

Title 40 → Chapter I → Subchapter C → Part 98 → Subpart C → Appendix

Title 40: Protection of Environment
PART 98—MANDATORY GREENHOUSE GAS REPORTING
Subpart C—General Stationary Fuel Combustion Sources

TABLE C-2 TO SUBPART C OF PART 98—DEFAULT CH_4 AND N_2O EMISSION FACTORS FOR VARIOUS TYPES OF FUEL

Link to an amendment published at 81 FR 89252, Dec. 9, 2016.

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum (All fuel types in Table C-1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Municipal Solid Waste	3.2×10^{-02}	4.2×10^{-03}
Tires	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels—Solid (All fuel types in Table C-1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-03}	3.6×10^{-03}
Biomass Fuels—Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C-1)	1.1×10^{-03}	1.1×10^{-04}

Note: Those employing this table are assumed to fall under the IPCC definitions of the “Energy Industry” or “Manufacturing Industries and Construction”. In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC “Energy Industry” category may employ a value of 1g of CH_4/mmBtu.

[78 FR 71952, Nov. 29, 2013]

Table II: Facility/Compound Specific Fugitive Emission Factors

Equipment/Service	Compound Specific See Section I for more information			Facility Specific[1]					
	Ethylene Oxide[2] w/LDAR	Phosgene[3] w/LDAR	Butadiene w/LDAR[4]	Petroleum Marketing Terminal[5, 6] w/28PET	Oil and Gas ProductionOperation[6]				Refinery[6]
					Gas	Heavy Oil < 20 API	Light Oil	Water/ Light Oil	
Valves					0.00992	0.0000185	0.0055	0.000216	
Gas/Vapor	0.000444	0.00000216	0.001105	0.0000287					0.059
Light Liquid	0.00055	0.00000199	0.00314	0.0000948					0.024
Heavy Liquid				0.0000948					0.00051
Pumps	0.042651	0.0000201	0.05634		0.00529	0.00113[7]	0.02866	0.000052	
Light Liquid				0.00119					0.251
Heavy Liquid				0.00119					0.046
Flanges/Connectors[11]	0.000555	0.00000011	0.000307		0.00086	0.00000086	0.000243	0.000006	0.00055
					0.00044	0.0000165	0.000463	0.000243	
Gas/Vapor				0.000092604					
Light Liquid				0.00001762					
Heavy Liquid				0.0000176					
Compressors	0.000767		0.000004		0.0194	0.0000683	0.0165	0.0309	1.399
Relief Valve	0.000165	0.0000162	0.02996		0.0194	0.0000683	0.0165	0.0309	0.35
Open-ended Lines[8]	0.001078	0.00000007	0.00012		0.00441	0.000309	0.00309	0.00055	0.0051
Sampling[9]	0.000088		0.00012						0.033
Other[10]					0.0194	0.0000683	0.0165	0.0309	
Gas/Vapor				0.000265					
Light/Heavy Liquid				0.000287					
Process Drains					0.0194	0.0000683	0.0165	0.0309	0.07

Endnotes Table II

1. **Factors give the total organic compound emission rate. Multiply by the weight percent of non-methane, non-ethane organics to get the VOC emission rate.**
2. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 500 ppmv. No additional control credit can be applied to these factors except 28CNTQ and 28CNTA. Emission factors are from EOIC Fugitive Emission Study, summer 1988.**
3. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 50 ppmv. No additional control credit can be applied to these factors. Emission factors are from Phosgene Panel Study, summer 1988.**
4. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 100 ppmv. No additional control credit can be applied to these factors. Emission factors are from Randall, J. L., et al., Radian Corporation. Fugitive Emissions from the 1,3-butadiene Production Industry: A Field Study. Final Report. Prepared for the 1,3-Butadiene Panel for the Chemical Manufacturers Association. April 1989.**
5. **Control credit is included in the factor; no additional control credit can be applied to these factors. Monthly 28 PET inspection is required.**
6. **Factors are taken from EPA Document EPA-453/R-95-017, November 1995, pages 2-13, 2-14, and 2-15.**
7. **Heavy liquid oil – Pump factor was not derived during the API study. The factor is the SOCMI without C_2 Heavy Liquid – Pump factor with a 93% reduction credit for the physical inspection.**

Table III: Leak Detection and Repair (LDAR) Program Instrument Monitoring Options

LDAR Program	28M	28RCT	28VHP	28MID	28LAER	28CNTQ	28CNTA
Leak Definition for Pumps and Compressors	10,000 ppmv	10,000 ppmv	2,000 ppmv	500 ppmv	500 ppmv	N/A	N/A
Leak Definition for All Other Components	10,000 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv	500 ppmv
Applicable Vapor Pressure	>0.5 psia at 100°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F	>0.044 psia at 68°F
Monitoring Frequency	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Annually
Directed/Nondirected Maintenance	Nondirected	Nondirected	Nondirected	Directed	Directed	Nondirected	Nondirected
Most Common State/Federal Programs with Similar Requirements	40 CFR Part 60 Subpart VV 40 CFR Part 61 30 TAC §115.322	30 TAC §115.352[1]	40 CFR Part 60 Subpart VVa 40 CFR Part 63 Subparts H, CC	N/A	Nonattainment NSR	N/A	40 CFR Part 60Subpart VVa, 40 CFR Part 63 Subparts H, CC

Endnotes Table III

[1] **Except in Gregg, Nueces, and Victoria Counties where 28M applies.**

Table V: Control Efficiencies for LDAR

Equipment/Service	28M	28RCT	28VHP	28MID	28LAER	28CNTQ	28CNTA	28PI	28AVO[9]
Valves[1]									97%
Gas/Vapor	75%	97%	97%	97%	97%			30%	
Light Liquid	75%	97%	97%	97%	97%			30%	
Heavy Liquid[5]	0%[6]	0%[6]	0%[6]	0%[6]	30%[6, 8]			30%[8]	
Pumps[1]									93%
Light Liquid	75%	75%	85%	93%	93%			30%	
Heavy Liquid[5]	0%	0%[7]	0%[7]	0%[8, 10]	30%[8]			30%[8]	
Flanges/Connectors[1]	30%	30%	30%	30%				30%	97%
Gas/Vapor					97%	97%	75%		
Light Liquid					97%	97%	75%		
Heavy Liquid[8]					30%	30%	30%		
Compressors[1]	75%	75%	85%	95%	95%			30%	95%
Relief Valves[1, 2] (Gas/Vapor)	75%	97%	97%	97%	97%			30%	97%
Sampling Connection[3] (pounds per hour per sample taken)	0%	0%	0%	0%	0%			0%	0%
Open Ended Lines[1, 4]									

It should be noted in the application and added to the permit conditions if any of the footnotes are applicable. For example, if components in heavy liquid service are monitored, then the application should include the monitored concentration and the concentration of saturation, in ppmv and such monitoring will be added as a separate condition.

Endnotes Table V

1 **Control efficiencies apply only to components that are actually monitored. Control efficiencies do not apply to components that are difficult or unsafe-to-monitor on the standard schedule. However, difficult-to-monitor gas or light liquid valves under the 28RCT, 28VHP, 28MID, or 28LAER programs that are monitored once per year may apply a 75% reduction credit.**

2 **100% control may be taken if a relief valve vents to an operating control device or if it is equipped with a rupture disc and a pressure-sensing device between the valve and disc to monitor for disc integrity. For new facilities, BACT guidelines generally require that all relief valves vent to a control device. When there are safety reasons that the relief valve cannot achieve 100% control, the relief valve can be monitored under the LDAR programs for the credit listed. This monitoring must be performed regardless of whether the relief valve is considered accessible, difficult-to-monitor or unsafe-to-monitor. Relief valves that do not achieve 100% control should not be built in locations that are unsafe-to-monitor.**

3 **Sampling connection control efficiencies are covered under other equipment and services. Sampling emissions are based on the number of samples taken per year as opposed to the number of connections. Fugitives for a closed loop sampling system are based on the component count.**

4 **Good design criteria for special chemicals handling and most LDAR programs require open-ended lines to be equipped with an appropriately sized cap, blind flange, plug, or a second valve. If so equipped, open-ended lines may be given a 100% control credit. Regardless of the lines given 100% credit, these lines should be mentioned in permit applications. Exceptions to the LDAR program criteria may be made for safety reasons with the approval of TCEQ management.**

TABLE 5-2. CONTROL EFFECTIVENESS FOR AN LDAR PROGRAM AT A SOCMI PROCESS UNIT

	Control effectiveness (%)		
Equipment type and service	Monthly monitoring 10,000 ppmv leak definition	Quarterly monitoring 10,000 ppmv leak definition	HON reg neg[a]
Valves - gas	87	67	92
Valves - light liquid	84	61	88
Pumps - light liquid	69	45	75
Connectors - all	b	b	93

[a] Control effectiveness attributable to the requirements of the proposed hazardous organic NESHAP equipment leak negotiated regulation are estimated based on equipment-specific leak definitions and performance levels.

[b] Data are not available to estimate control effectiveness.

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:

$$E = k\ (s/12)^a (W/3)^b \tag{1a}$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\ (s/12)^a (S/30)^d}{(M/0.5)^c} - C \tag{1b}$$

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

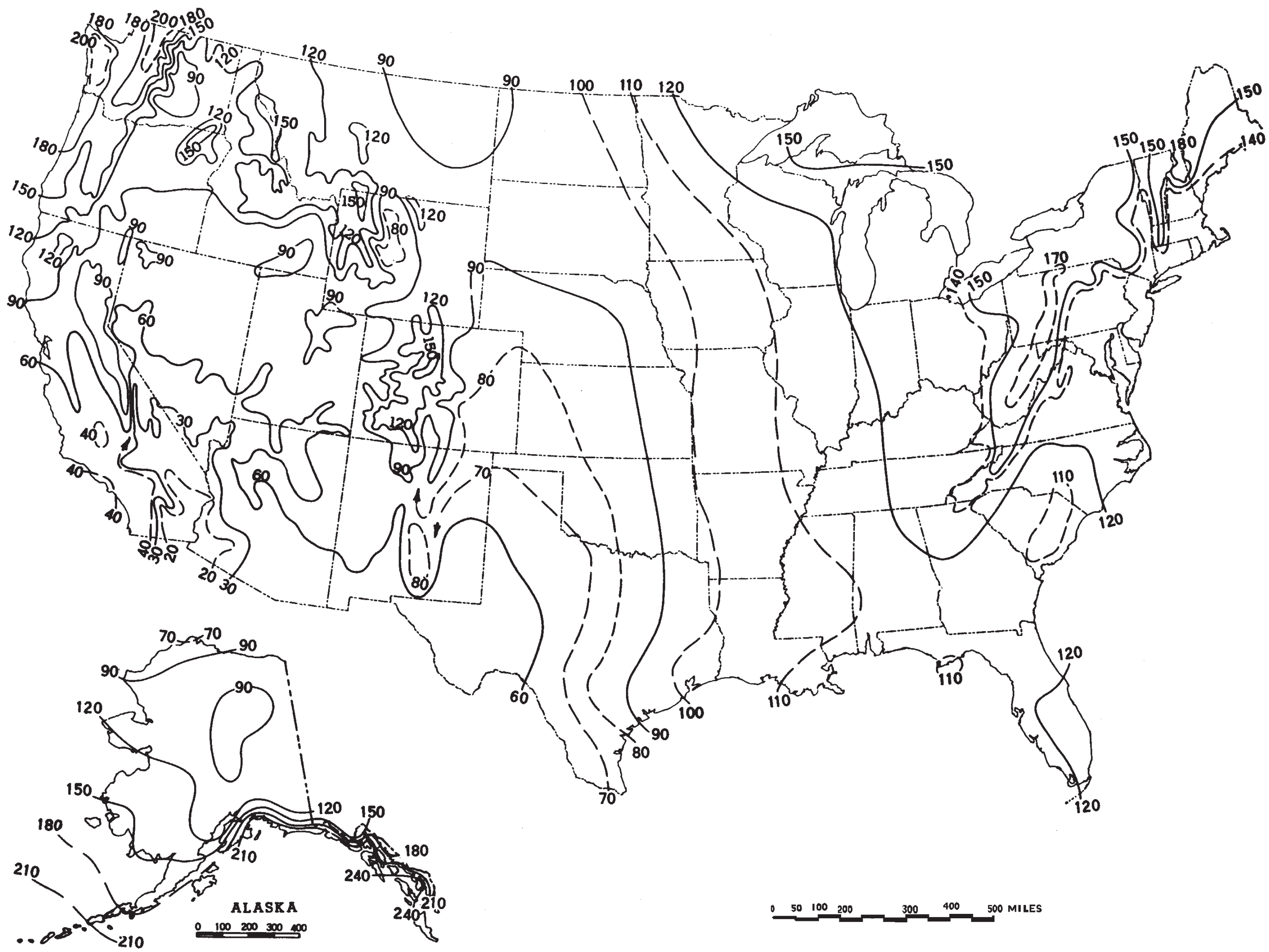


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

United States Environmental Protection Agency

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

EPA-453/R-95-017
November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates

TABLE 2-3. MARKETING TERMINAL AVERAGE EMISSION FACTORS

Equipment type	Service	Emission factor (kg/hr/source)[a]
Valves	Gas	1.3E-05
	Light Liquid	4.3E-05
Pump seals	Gas	6.5E-05
	Light Liquid	5.4E-04
Others (compressors and others)[b]	Gas	1.2E-04
	Light Liquid	1.3E-04
Fittings (connectors and flanges)[c]	Gas	4.2E-05
	Light Liquid	8.0E-06

[a]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane).

[b]The "other" equipment type should be applied for any equipment type other than fittings, pumps, or valves.

[c]"Fittings" were not identified as flanges or non-flanged connectors; therefore, the fitting emissions were estimated by averaging the estimates from the connector and the flange correlation equations.

Section 8

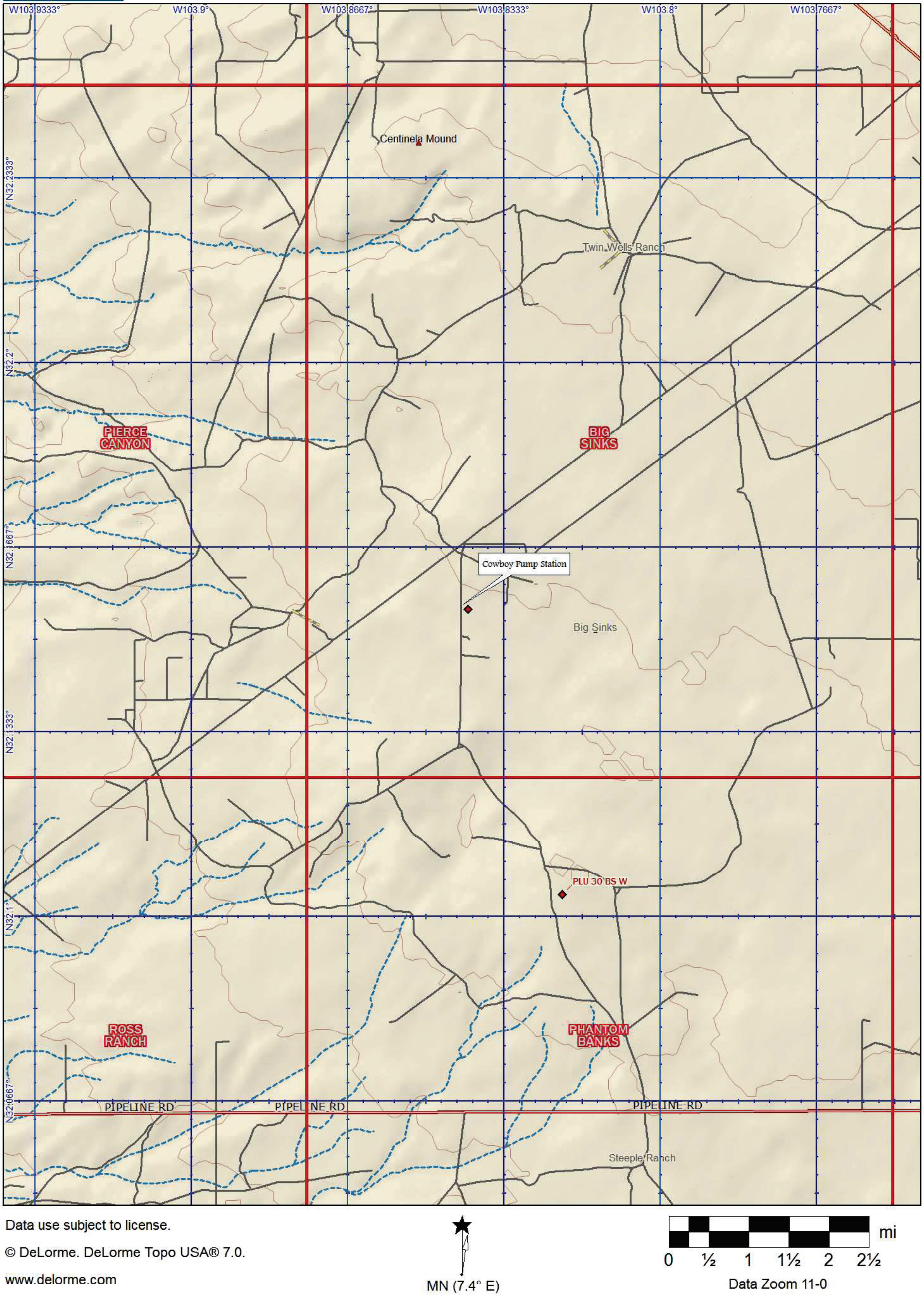
Map(s)

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

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

A map is attached to this application.

DeLorme Topo USA® 7.0



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.

All public notice requirements have been completed and are included in this section.

Table of Posted Notice Locations

Name	Address	City	State	Zip Code
Cowboy CDP Facility Entrance				
Carlsbad Main Post Office	301 N Canyon St	Carlsbad	NM	88220
Carlsbad Main Library	101 S Halagueno St	Carlsbad	NM	88220
Eddy County Clerk's Office	325 S Main St	Carlsbad	NM	88220

General Posting of Notices – Certification

I, Carolina Kysiak , the undersigned, certify that on **{12/11/2024}**, posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the City of Carlsbad of Eddy County, State of New Mexico on the following dates:

1. Cowboy CDP entrance 12/11/2024
2. Carlsbad Main Post Office 12/11/2024
3. Carlsbad Main Library 12/11/2024
4. Eddy County Clerk's Office 12/11/2024

Signed this 11th day of December, 2024,

Carolina Kysiak
Signature

12/11/2024
Date

Carolina Kysiak
Printed Name

Cowboy CDP Environmental Engineer
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

December 11, 2024 at 3:29:42 PM MST
+32.158827,-103.842508 ±22.22m
Eddy County

NOTICE

XTO Energy Inc. announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its facility. The expected date of application submittal to the Air Quality Bureau is **December 13, 2024.**

The exact location for the proposed facility known as, **Cowboy Central Delivery Point (CDP)**, is at **latitude 32.160000** and **longitude -103.841667**. The approximate location of this facility is **13.8** miles **east-southeast** of **Malaga, NM** in **Eddy** county.

The proposed **modification** consists of an update to the facility inlet gas, slop oil, and produced water throughputs, as well as an update to emissions from the heaters, flares, combustors, oil storage tanks, and other miscellaneous equipment.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	50	39
PM_{10}	48	39
$PM_{2.5}$	48	39
Sulfur Dioxide (SO_2)	18	27
Nitrogen Oxides (NO_x)	724	206
Carbon Monoxide (CO)	1,417	195
Volatile Organic Compounds (VOC)	2,422	295
Total sum of all Hazardous Air Pollutants (HAPs)	105	13
Green House Gas Emissions as Total CO_2e	N/A	1,030,245

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:
XTO Energy Inc.
22777 Springwoods Village Pkwy
Spring, TX 77389

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

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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.

December 11, 2024 at 4:33:08 PM MST
+32.422664,-104.228110 ±14.45m
Eddy County
Post Office

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December 11, 2024 at 5:43:52 PM MST
+32.419934,-104.230750 ±13.40m
Eddy County
Public Library

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December 11, 2024 at 4:40:19 PM MST
+32.417045,-104.226854 ±5.72m
Eddy County
County Clerk's Office

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Table of Noticed Neighbors

Name	Address	City	State	Zip Code
BUREAU OF LAND MANAGEMENT	620 E. GREENE ST.	CARLSBAD	NM	88220
STATE OF NEW MEXICO LAND OFFICE	310 OLD SANTA FE TRAIL	SANTA FE	NM	87504

Table of Noticed Municipalities

Name	Address	City	State	Zip Code
There are no municipalities within 10 miles of the facility.				

Table of Noticed Counties

Name	Address	City	State	Zip Code
EDDY COUNTY - COUNTY MANAGER	101 W GREENE STREET, SUITE 110	CARLSBAD	NM	88220
LEA COUNTY - COUNTY MANAGER	100 N. MAIN AVENUE, SUITE 4	LOVINGTON	NM	88260

Table of Noticed Tribes

Name	Address	City	State	Zip Code
There are no tribed within 10 miles of the facility.				

7014 2870 0001 4722 3963

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website

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$0.00
US POSTAGE
12/10/2024 IMI
063S12395454
87113
000032329

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Sent To
BUREAU OF LAND MANAGEMENT
Street & Apt. N or PO Box No.
620 E. GREENE STREET
City, State, ZIP
CARLSBAD, NM 88220

PS Form 3800

7014 2870 0001 4722 3956

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$0.00
US POSTAGE
12/10/2024 IMI
063S12395454
87113
000032328

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Sent To
STATE OF NEW MEXICO LAND OFFICE
Street & Apt. No. or PO Box No.
310 OLD SANTE FE TRAIL
City, State, ZIP+
SANTE FE, NM 87504

PS Form 3800,

7014 2870 0001 4722 3949

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$0.00
US POSTAGE
12/10/2024 IMI
063S12395454
87113
000032325

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Sent To
EDDY COUNTY – COUNTY MANAGER
Street & Apt. No. or PO Box No.
101 W GREENE STREET, SUITE 110
City, State, ZIP+
CARLSBAD, NM 88220

PS Form 3800,

7014 2870 0001 4722 3932

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OFFICIAL

$0.00
US POSTAGE
12/10/2024 IMI
063S12395454
87113
000032327

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Sent To
LEA COUNTY – COUNTY MANAGER
Street & Apt. N or PO Box No.
101 N. MAIN AVENUE, SUITE 4
City, State, ZIP
LOVINGTON, NM 88260

PS Form 3800

December 17, 2024
CERTIFIED MAIL 7014 2870 0001 4722 3963
RETURN RECEIPT REQUESTED *(certified mail is required, **return receipt is optional**)*

Dear **Bureau of Land Management**

XTO Energy Inc. announces its application to the New Mexico Environment Department for an air quality permit for the **modification** of its facility. The expected date of application submittal to the Air Quality Bureau is **September 27, 2024.**

The exact location for the proposed facility known as, **Cowboy Central Delivery Point (CDP)**, is at latitude 32.160000 and longitude -103.841667. The approximate location of this facility is **13.8** miles **east-southeast** of **Malaga, NM** in **Eddy** county.

The proposed **modification** consists of an emission true up to update emissions and process equipment; specifically, flare and combustor emissions as well as other miscellaneous updates.

The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Particulate Matter (PM)	50	39
PM_{10}	48	39
$PM_{2.5}$	48	39
Sulfur Dioxide (SO_2)	18	27
Nitrogen Oxides (NO_x)	724	206
Carbon Monoxide (CO)	1,417	195
Volatile Organic Compounds (VOC)	2,422	295
Total sum of all Hazardous Air Pollutants (HAPs)	105	13
Green House Gas Emissions as Total CO_2e	N/A	1,030,245

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.

Owners and operators of the facility include
XTO Energy Inc.
22777 Springwoods Village Pkwy
Spring, TX 77389

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

Please refer to the company name and facility name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

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

Sincerely,
XTO Energy Inc.
22777 Springwoods Village Pkwy
Spring, TX 77389

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.

Cowboy CDP Nearby Landowners

Web Print: 09/06/2024

0 1,505 Feet

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Submittal of Public Service Announcement – Certification

I, __Oliver Seekins____________________, the undersigned, certify that on **December 17th, 2024**, submitted a public service announcement to **KATK – 92.1 FM** that serves the City\Town\Village of **Carlsbad**, **Eddy** County, New Mexico, in which the source is or is proposed to be located and that KATK **DID NOT RESPOND.**

Signed this 17th day of December , 2024,

____ 12/17/2024________
Signature Date

Oliver Seekins________________________
Printed Name

Senior Consultant____________________________________
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Daniel Dolce

From: Oliver Seekins
Sent: Tuesday, December 17, 2024 3:03 PM
To: don@carlsbadradio.com
Cc: Daniel Dolce
Subject: XTO Energy - Cowboy CDP - Public Service Announcement

Dear Radio KATK – 92.1 FM,

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 information shown below as a Public Service Announcement.**

The public service announcement request must contain the following information about the facility or proposed facility (20.2.72.203.D NMAC).

a. The name: **Cowboy Central Delivery Point (CDP)** located at **latitude 32.15992** and **longitude -103.84160** and type of business: **Crude Petroleum Extraction**.
b. The name and principal owner or operator: **XTO Energy, Inc** – owner and operator.
c. The type of process or change for which the permit is sought: **NSR Significant Revision – Consisting of an update to the facility inlet gas, slop oil, and produced water throughputs, as well as an update to emissions from the heaters, flares, combustors, oil storage tanks, and other miscellaneous equipment.**
d. Locations where the notices have been posted in the City of Carlsbad, of Eddy County, NM:
   (1) Cowboy CDP Entrance
   (2) Carlsbad Main Post Office
   (3) Carlsbad Main Library
   (4) Eddy County Clerk's Office

The Department's address or telephone number to which comments may be directed**: Permits Program manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez; Suite 1, Santa Fe, New Mexico, 87505-1816; (505) 476-4300; 1(800) 224-7009.**

Best Regards,

Oliver Seekins
Senior Consultant

P: 505.266.6611 M: 918.805.5037
Email: oliver.seekins@trinityconsultants.com
9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122

Affidavit of Publication

No. 25470

te of New Mexico

unty of Eddy:

anny Scott

ng duly sworn, sayes that he is the **Publisher**

the Artesia Daily Press, a daily newspaper of General

culation, published in English at Artesia, said county

l state, and that the hereto attached

Legal Ad

s published in a regular and entire issue of the said

tesia Daily Press, a daily newspaper duly qualified

that purpose within the meaning of Chapter 167 of

e 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same

y as follows:

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hth Publication

bscribed ans sworn before me this

th day of December 2024

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:

NOTICE OF AIR QUALITY PERMIT APPLICATION

XTO Energy Inc. announces its application to the New Mexico Enviro ment Department for an air quality permit for the **modification** of facility. The expected date of application submittal to the Air Quality reau is **December 13, 2024**.

The exact location for the proposed facility known as **Cowboy Cent Delivery Point (CDP)**, is at latitude 32.160000 and longitude -103.8416 The approximate location of this facility is **13.8** miles **east-southeast o Malaga, NM in Eddy County.**

The proposed modification consists of an update to the facility inlet g slop oil, and produced water throughputs, as well as an update to em sions from the heaters, flares, combustors, oil storage tanks, and ot miscellaneous equipment.

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Pollutant:	Pounds per hour	Tons per ye
Particulate Matter (PM)	50	39
PM 10	48	39
PM 2.5	48	39
Sulfur Dioxide (SO2)	18	27
Nitrogen Oxides (NOx)	724	206
Carbon Monoxide (CO)	1,417	195
Volatile Organic Compounds (VOC) (Including Fugitives)	2,422	295
Volatile Organic Compounds (VOC) (Excluding Fugitives)	2,414	249
Total sum of all Hazardous Air Pollutants (HAPs)	105	13
Green House Gas Emissions as Total CO2e	N/A	1,030,245

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

The owner and/or operator of the Facility is:
XTO Energy Inc.
22777 Springwoods Village Pkwy
Spring, TX 77389

If you have any comments about the construction or operation of facility, and you want your comments to be made as part of the permit view process, you must submit your comments in writing to this addr Permit Programs Manager; New Mexico Environment Department; Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New M ico; 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 notice along with your comments, since the Department may have yet received the permit application. Please include a legible return m ing address with your comments. Once the Department has perform a preliminary review of the application and its air quality impacts, Department's notice will be published in the legal section of a newspa circulated near the facility location.

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

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Legal Ad

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ghth Publication	

bscribed ans sworn before me this

th day of December 2024

LATISHA ROMINE
Notary Public, State of New Mexico
Commission No. 1076338
My Commission Expires
05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

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pañol, por favor comuníquese con esa oficina al teléfono 505-629-339

Notice of Non-Discrimination

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disability, age or sex in the administration of its programs or activit
as required by applicable laws and regulations. NMED is responsible
coordination of compliance efforts and receipt of inquiries concern
non-discrimination requirements implemented by 40 C.F.R. Part 7,
cluding Title VI of the Civil Rights Act of 1964, as amended;
Section 504 of the Rehabilitation Act of 1973; the Age Discrimination
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Affidavit of Publication

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Carbon Monoxide (CO)	1,417	19
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Volatile Organic Compounds (VOC) (Excluding Fugitives)	2,414	24
Total sum of all Hazardous Air Pollutants (HAPs)	105	13
Green House Gas Emissions as Total CO2e	N/A	1,030,

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

The owner and/or operator of the Facility is:
XTO Energy Inc.
22777 Springwoods Village Pkwy
Spring, TX 77389

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

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Pollutant:	Pounds per hour	Tons p
Particulate Matter (PM)	50	3
PM 10	48	3
PM 2.5	48	3
Sulfur Dioxide (SO2)	18	2
Nitrogen Oxides (NOx)	724	2(
Carbon Monoxide (CO)	1,417	1!
Volatile Organic Compounds (VOC) (Including Fugitives)	2,422	2!
Volatile Organic Compounds (VOC) (Excluding Fugitives)	2,414	2
Total sum of all Hazardous Air Pollutants (HAPs)	105	1
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Section 10

Written Description of the Routine Operations of the Facility

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

The Cowboy Central Delivery Point (CDP) is a gas processing facility with oil and NGL stabilization. The facility produces residue sales gas, Y-Grade NGL, and spec oil products. The Cowboy CDP is being built over multiple phases to reach a full processing capacity of 1.0 BCFD of Natural Gas Treatment, 600,000 BPD of Oil Stabilization and 190,000 BPD of NGL Stabilization. The overall facility will be designed to accommodate four (4) cryogenic (cryo) trains.

Natural Gas System

The Cowboy CDP gas handling system is fed by field gathering lines, delivering up to 1.6 BCFD natural gas and condensate to the facility at high pressure. At the inlet of the facility, these pipelines are routed into the slug catcher where liquid condensate is separated and routed to the NGL stabilizers to produce Y-Grade NGL product. Up to 1.0 BCFD of gas from the slug catcher will feed the four (4) cryo trains. The remaining rich gas will be routed to offsite 3rd party gas processors. Each cryo train will have a dedicated amine unit (AU1-AU4) to remove carbon dioxide (CO_2) using MDEA with piperizine additive followed by a molecular sieve dehydration unit to remove moisture. In the amine regeneration unit for each cryo train, the flash gas from the amine flash vessel and acid gas from the amine still overheads will be routed to a thermal oxidizer (TO1-TO4) to destroy hazardous air pollutants (HAPs) and volatile organic compounds (VOCs). In the dehydration unit for each cryo train, molecular sieve beds are used to dehydrate the sweetened gas via adsorption. In this three-bed design, part of the unit operates in dehydration mode while the other part operates in regeneration mode. Switching from dehydration mode to regeneration mode and vice versa is done using automatic switching valves on a timed sequence. As one bed in the dehydration unit becomes saturated with water, it is automatically switched to regeneration mode while the bed in the regeneration unit is switched to become active in dehydration mode. When a bed requires regeneration due to being saturated with water, a fired regeneration gas heater (RHTR1-RHTR4) with a maximum heat input rate of 35.25 MMBtu/hr will be used to remove adsorbed water from the molecular sieve beds via temperature swing adsorption. Following dehydration, the dried gas is cooled and expanded in the cryo units to condense and separate NGLs out of the raw gas stream. Utility hot oil systems with gas-fired auxiliary heaters are used to provide the required heat to the distillation processes in the cryogenic units. The remaining residue gas is then boosted by electric-drive residue compressors into the sales gas pipeline.

NGL System

Natural Gas Liquids (NGLs) are condensed, gathered, and pumped at surrounding field compressor stations to be delivered via pipelines into the Cowboy CDP. The NGLs in these liquid pipelines are then combined with the condensate dropout from the slug catcher and other miscellaneous streams within the facility to make a combined feed for the condensate stabilization system. The condensate stabilization system consists of two fractionation towers per train and produces a "Y-Grade" NGL and a 9 psia RVP spec oil. From the first tower, the overhead gas is compressed using electric-drive compressors and sent into the cryo trains, whereas the liquids are sent into the second tower to produce Y-Grade NGL and stabilized oil. The Y-Grade NGL from the second tower is combined with a similar product from the parallel condensate stabilization trains. Then, it is stored temporarily in pressurized bullets before being pumped to the NGL sales pipelines. Any uncondensed gas from the second tower is recycled back to the surrounding field compressor stations. Note that the NGLs from the cryo trains are also pumped, cooled, and exported via the same pipelines. The stabilized oil from the second tower is combined with a similar product from the parallel condensate stabilization trains before being blended with on-spec oil from the oil stabilization system. This occurs upstream of the internal floating roof oil storage tanks (IFR1-IFR14), where the blended product is stored temporarily, before being pumped to the oil sales pipeline. Heat for the condensate stabilization system will be provided by a subset of up to eight (8) heaters, each with a maximum heat input rate of 58.93 MMBtu/hr (SHTR1-SHTR8).

Oil System

Oil from surrounding field tank batteries is heated up before being routed to the oil inlet surge vessels, which provide the bulk phase separation of gas, oil, and produced water. Gas flashing in the oil inlet surge vessels is gathered and compressed by electric-drive compressors, referred to as vapor recovery units (VRUs). Any gas in the final discharge stage of the VRUs is recycled back to the surrounding field compressor stations. Liquids that condense out of the flash gas as it is compressed by the VRUs are pumped and mixed into the combined feed for the condensate stabilization system. Produced water removed by the oil inlet surge vessels is routed through a 1,000 bbl gunbarrel separator (GBS1). From the GBS1, skimmed oil is routed to the 500 bbl slop oil tank (OTK7), and the heavier water phase is routed to two 750 bbl produced water tanks (PWTK1-PWTK2). All these tanks are gas blanketed. Slop oil is trucked offsite or blended with the stabilized oil product, if within spec. Produced water is pumped and transported offsite via pipeline.

Oil received at the inlet of Cowboy CDP is typically sent from the inlet surge vessel through inlet pumps and into the oil stabilization system. In the base facility design, a portion of the oil may bypass the oil stabilization system, if within spec. Within the stabilization system, heat is added to drive lighter components out of the stabilized oil via distillation. Following stabilization, the stabilized oil is blended with the bypass to create an on-spec oil product that is then sent to IFR1-IFR14 for temporary storage before transporting the oil offsite via pipeline. Flash gas from oil stabilization system is recompressed by electric-drive compressors. The majority of the flash gas condenses back into liquid and is mixed into the combined feed for the condensate stabilization system. Heat for the oil stabilization system will be provided by a subset of up to eight (8) heaters, each with a maximum heat input rate of 58.93 MMBtu/hr (SHTR1-SHTR8).

Hot Oil System

Natural gas direct-fired heaters are used to supply heat input into multiple closed-loop utility hot oil systems. These hot oil systems are used to provide the required heat to the oil and NGL stabilization packages, as well as the amine and cryo units. The systems consist of fired heaters, expansion vessels, circulation pumps, and filters. All oil stabilization packages are served by a common hot oil loop operating with a supply temperature of up to approximately 400°F. By comparison, all NGL stabilization packages are served by a common hot oil loop operating with a supply temperature of up to approximately 500°F. The heat input to each oil/NGL stabilizer hot oil loop is provided by 58.93 MMBtu/hr burner hot oil heaters (SHTR1-SHTR8), which can be set to run at either temperature. Each of the amine/cryo trains have their own dedicated hot oil loop served by a 94.54 MMBtu/hr burner hot oil heater (CHTR1-CHTR4) and pump skid with an expansion vessel.

Flare System

All automated vents and most process reliefs are routed to either the low-pressure headers or high-pressure flare headers for the site's flare system, which consists of three dual-tip flares (FL1-FL3). The flares are permitted to manage pilot, purge, sweep, process vent, and SSM gas. Any gas that would be removed from the process during an emergency event would also be routed to FL1-FL3. The flares are permitted such that gas may be routed to one or all the flares at any given time.

Combustor

An enclosed combustor (ECD1) is used to collect and dispose of vapors emitted from GBS1, SOTK1, PWTK1-PWTK2, and SOTL. A portable backup enclosed combustor may be used if the existing combustor is out of service. Two different portable ECD models (ECD2a/ECD2b) are considered for this facility. The primary and backup combustors will not operate at the same time.

Emergency Generators

The emergency generators for Cowboy CDP (GEN1-GEN4) will be used to power safety-sensitive equipment in the event of grid power outages.

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)**: Please refer to Table 2A.**

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.**

XTO Energy's Cowboy CDP is not a PSD facility however it has two (2) PSD nested sources categories. With this application the "Petroleum storage transfer units, total storage capacity over 300,000 barrels" and the "Fossil fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input" nested sources have changed. Below is the table for the two PSD nested source categories.

PSD NESTED SOURCE CATEGORY Table 1 (20.2.74.501 NMAC)	NOx	CO	VOC (INCLUDES HAPs)	SO_2	TSP	$PM_{10 \& 2.5}$	H_2SO_4
	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Fossil fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input	78.02	81.69	42.72	11.06	34.59	34.59	-
Petroleum storage transfer units, total storage capacity over 300,000 barrels	7.69	13.24	91.83	0.00	0.121	0.121	-
PSD Categorical Thresholds (tpy)	100	100	100	100	100	100	100
Is Project above SER?	No	No	No	No	No	No	No

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. This facility is an affected facility.
20.2.7 NMAC	Excess Emissions	Yes	Facility	The entire facility is subject to emissions limits both federal and state regulation. Thus, the facility is subject to this regulation.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	This regulation does not apply as the facility has no need for fugitive dust control measures. This facility does not fall under the applicability facility listed mentioned in this regulation.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	None of the equipment has a heat input greater than 1,000,000 million BTU per year per unit. Thus, the regulation is not applicable to this facility.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility does not have any equipment that burns oil as fuel. Therefore, this regulation is not applicable to this facility.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	SO_2 emission of this facility is below the applicable threshold limit established in this regulation. Thus, this regulation is not applicable to this facility.
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	IFR1-14, SOTK1, GBS1, PWTK1, PWTK2	Hydrocarbon storage capacity of this facility is greater than the threshold 65,000 gal. Therefore, this facility is subject to this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	**N/A**	This is a central distribution point (CDP) facility. The regulation is not applicable to this facility.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	GEN1-4, EOOSCOMP 1-7, ECOSCOMP 1-7, ERESCOMP 1-10, ECD1, ECD2a, ECD2b, FUG, SOTK, SHTR1-8, CHTR1-4, and RHTR1-4	This regulation establishes emission standards for volatile organic compounds (VOC) and oxides of nitrogen (NOx) for oil and gas production, processing, compression, and transmission sources. 20.2.50 NMAC subparts below: 113 – The emergency generator engines **(GEN1-4)** will comply with the emission standards of this subpart in accordance with the dates specified in 20.2.50.113.B. Alternatively, the units will meet the emission standard exemption in 20.2.50.113(B)(9) by operating the units as emergency use engines as defined in 40 CFR 60.4211, §60.4243 or §63.6675. 114 – The electric-powered reciprocating compressors (**EOOSCOMP 1-7, ECOSCOMP 1-7, and ERESCOMP 1-10)** will comply with the applicable requirements of this subpart as stated in the 20.2.50.114.B(2). The electric-powered centrifugal compressors (**ERESCOMP 11-14)** are equipped with dry seals; therefore, the requirements of this subpart do not apply. 115 – The Combustor 1 and Combustor 2 **(ECD1, ECD2a, ECD2b)** are used to comply with the emission control requirements for the slop oil tank (SOTK); therefore, they will comply with the applicable requirements of this rule. The other control devices and closed vent systems at this facility are not used to

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.)
				comply with the requirements of this rule; therefore, the facility is not subject to the requirements of this rule. 116 – The equipment fugitive emission components **(FUG)** will comply with the applicable requirements of this regulation. 117 – The facility is not a natural gas well; therefore, it is not subject to this rule. 118 – There are no glycol dehydrators at this facility. Thus, this regulation is not applicable to the facility. 119 – The heaters (**SHTR1-8, CHTR1-4, and RHTR1-4)** have maximum capacity greater than 20 MMBtu/hr and will comply with the applicable requirements of this subpart. 120 – Oil from SOTK1 is not routinely transferred via truck **(**Unit SOTL), but instead is routinely transferred to the Crude Storage and on to the oil sales pipeline. As such, SOTL is not be subject to 20.2.50.120 per 20.2.50.120.A.(1). 121 – Individual pipeline pig launcher and receiver operations within the property boundary have a PTE less than one tpy VOC. Therefore, this facility is not subject to this subpart. 122 – This facility uses compressed-gas pneumatic controllers. There is no drive gas emission at this facility. Thus, the regulation does not apply to this facility. 123 – The slop oil tank **(SOTK)** has a VOC PTE greater than 3 tpy; therefore, it will comply with the applicable requirements of this subpart. The produced water tanks **(PWTK1-2)** have a VOC PTE less than 3 tpy; therefore, they are not subject to the requirements of this subpart. The oil storage tanks **(IFR1-14)** are internal floating roof tanks that are subject to 40 CFR 60, Subpart Kb or Kc. Therefore, these tanks are not considered “storage vessels” per 20.2.50.007.S.(6) and; therefore, they are not subject to this rule. 124 – The facility is not a well workover; therefore, it is not subject to this rule. 126 – This facility does not contain a produced water management unit; therefore, it is not subject to this rule. 127 – The facility is not a flowback vessel or a preproduction operation; therefore, it is not subject to this rule.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	SHTR1-8, CHTR1-4, RHTR1-4, FL1-3, ECD1, ECD2a/ECD2b, TO1-4, GEN1-4	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless your equipment is subject to another state regulation that limits particulate matter such as 20.2.19 NMAC (see 20.2.61.109 NMAC). The facility will comply with this regulation.
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation establishes requirements for obtaining an operating permit. The facility is a major source for NOx, CO, VOC, and SO_2. The facility will have a Title V operating permit P-297 to meet the requirements of this regulation once the permit is issued.
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. The facility will meet all fee requirements under 20.2.71.110 NMAC.

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation establishes the requirements for obtaining a construction permit. The facility is a stationary source that has potential emission rates greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Air Quality Standard. The facility has a construction permit (NSR Permit) 7877M2 to meet the 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 reporting 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	The facility does not meet the threshold value for a major PSD source. Thus, the regulation does not apply to this facility.
20.2.75 NMAC	Construction Permit Fees	Construction Permit Fees	Yes	This regulation establishes a schedule of operating permit emission fees. This facility is currently permitted under NSR #7877M2. This regulation applies to this facility and the owner will comply with this regulation.
20.2.77 NMAC	New Source Performance	Yes	GEN1-4, IFR1-14, SHTR1-8, CHTR1-4, FUG, EOOSCOMP1-7, ECOSCOMP1-7, ERESCOMP1-14, AU1-4	This regulation establishes state authority to implement new source performance standards (NSPS) for stationary sources, as amended through January 15, 2017. • GEN1-4 are subject to 40 CFR 60, Subpart JJJJ. • IFR1-8 are subject to 40 CFR 60, Subpart Kb. • IFR9-14 are subject to 40 CFR 60, Subpart Kc once they are constructed at the facility. • SHTR1-8 and CHTR1-4 are subject to 40 CFR 60, Subpart Dc. • FUG, EOOSCOMP1-3, ECOSCOMP1-4, ERESCOMP1-7, and AU1 are subject to 40 CFR 60, Subpart OOOOa. ERESCOMP11-13 are dry seal centrifugal compressors; therefore, they are not subject to the rule. • EOOSCOMP4-7, ECOSCOMP5-7, ERESCOMP8-10 & 14, AU2-4 will be subject to 40 CFR 60, Subpart OOOOb once they are constructed at the facility.
20.2.78 NMAC	Emission Standards for HAPS	No	Units Subject to 40 CFR 61	This regulation establishes state authority to implement emission standards for hazardous air pollutants subject to 40 CFR Part 61. This facility does not emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61 and is therefore not subject to this regulation.
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 follow good engineering practices.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	GEN1-4	This regulation established state authority to implement MACT Standards for source categories of HAPs. The facility is a area source of HAPs and four (4) emergency generators (Units: GEN1-4) are subject to 40 CFR 63 Subpart ZZZZ. Thus, this regulation applies to this facility.

Table for Applicable Federal Regulations:

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	This regulation defines national ambient air quality standards. The facility meets all applicable national ambient air quality standards for NOx, CO, SO_2, H_2S, PM_{10}, and $PM_{2.5}$ under this regulation.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	GEN1-4, IFR1-14, SHTR1-8, CHTR1-4, FUG, EOOSCOMP1-7, ECOSCOMP1-7, ERESCOMP1-14, AU1-44	This regulation establishes state authority to implement new source performance standards (NSPS) for stationary sources, as amended through January 15, 2017. • GEN1-4 are subject to 40 CFR 60, Subpart JJJJ. • IFR1-8 are subject to 40 CFR 60, Subpart Kb. • IFR9-14 are subject to 40 CFR 60, Subpart Kc once they are constructed at the facility. • SHTR1-8 and CHTR1-4 are subject to 40 CFR 60, Subpart Dc. • FUG, EOOSCOMP1-3, ECOSCOMP1-4, ERESCOMP1-7, and AU1 are subject to 40 CFR 60, Subpart OOOOa. ERESCOMP11-13 are dry seal centrifugal compressors; therefore, they are not subject to the rule. • EOOSCOMP4-7, ECOSCOMP5-7, ERESCOMP8-10 & 14, AU2-4 will be subject to 40 CFR 60, Subpart OOOOb once they are constructed at the facility.
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 electric utility steam generating units. This regulation does not apply because the facility does not operate any electric utility steam generating units.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	This regulation establishes standards of performance for industrial-commercial-institutional steam generating units. This regulation does not apply because the facility does not operate any industrial-commercial-institutional steam generating units with a heat capacity greater than 100 MMBtu/hr.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	SHTR1-8, CHTR 1-4	The heaters have an input rating greater than 10 MMBtu/hr and are subject per §60.40c(a). Since the units burn only natural gas, there are no applicable control, monitoring, or reporting requirements. Only fuel use records are required per §60.48c(g).
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	This regulation establishes performance standards for storage vessels for petroleum liquids for which construction, reconstruction, or modification commenced after May 18, 1978, and prior to July 23, 1984. The facility was not constructed prior to July 23, 1984. Thus, this rule does not apply to this facility.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984, and On or **Before** October 4, 2023	Yes	IFR1-8	This regulation establishes performance standards for volatile organic liquid storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after July 23, 1984 and on or before October 4, 2023. The tanks were constructed within the applicable dates of this rule, store volatile organic liquids, and have a design volume greater than or equal to 75 cubic meters; therefore, these oil storage tanks (IFR1-8) are subject to the applicable requirements of this rule. The tanks use internal floating roof tanks to comply with the control requirements. The slop oil tank (SOTK) stores petroleum liquid prior to custody transfer and has a design capacity less than 10,000 BBL; therefore, this tank is exempt from this rule per §60.110b(d)(4).
NSPS 40 CFR 60, Subpart Kc	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** October 4, 2023	Yes	IFR9-14	This regulation establishes performance standards for volatile organic liquid storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after October 4, 2023. The tanks were constructed or will be constructed after the applicability date of this rule, store volatile organic liquids, and have a design volume greater than or equal to 75.7 cubic meters; therefore, these oil storage tanks (IFR1-8) are subject to the applicable requirements of this rule. The tanks use internal floating roof tanks to comply with the control requirements. The slop oil tank (SOTK) stores petroleum liquid prior to custody transfer and has a design capacity less than 10,000 BBL; therefore, this tank is exempt from this rule per §60.110c(d)(4).
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	The facility does not have any applicable units. Therefore, the facility is not subject to this regulation.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This regulation defines standards of performance for equipment leaks of VOC emissions from onshore natural gas processing plants for which construction, reconstruction, or modification commenced after January 20, 1984, and on or before August 23, 2011. The was constructed after August 23, 2011. Therefore, this regulation does not apply to this facility.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	This regulation establishes standards of performance for SO_2 emissions from onshore natural gas processing for which construction, reconstruction, or modification of the amine sweetening unit commenced after January 20, 1984, and on or before August 23, 2011. The facility is not subject to this regulation as the amine sweetening unit was constructed after 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	No	N/A	The rule applies to “affected” facilities that are constructed, modified, or reconstructed after Aug 23, 2011 (40 CFR 60.5365): gas wells, including fractured and hydraulically refractured wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, certain equipment at natural gas processing plants, sweetening units at natural gas processing plants, and storage vessels. The facility is not subject to this regulation as the facility was constructed after September 18, 2015.

[Federal Regulation](#) Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
	September 18, 2015			
NSPS 40 CFR Part 60 Subpart OOOOa	Subpart OOOOa—Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced **After** September 18, 2015 and On or **Before** December 6, 2022	Yes	FUG, EOOSCOMP1-3, ECOSCOMP1-4, ERESCOMP1-7, AU1	The rule applies to the following "affected" facilities that are constructed, modified, or reconstructed after September 18, 2011 and on or before December 6, 2022: gas wells, including fractured and hydraulically refractured wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, certain equipment at natural gas processing plants, sweetening units at natural gas processing plants, and storage vessels. The reciprocating compressors used for oil stabilization gas (EOOSCOMP1-3), condensate stabilization gas (ECOSCOMP1-4), and residue gas air (ERESCOMP1-7) are subject to rule per from §60.5365a(c). The electric driven centrifugal compressors (ERESCOMP11-14) are exempt from §60.5365a(b) since they use dry seals. The electric driven screw compressors for the refrigeration gas and instrument air are exempt from the definition of centrifugal compressor per §60.5430a. IFR1-4 were constructed within the applicability dates of the rule; however, since emissions will be limited by permit to less than 6 tpy, IFR1-IFR4 are exempt per §60.5365a(e). Also, since IFR1-4 are subject to NSPS Kb they are exempt from this subpart per §60.5395a(e). IFR5-14 have been or will be constructed after the applicability date for this rule and are therefore not subject. The site uses compressed air for pneumatic controllers. The site will be subject to leak monitoring from fugitive components per §60.5365a(f). Since the sweetening units process less than 2 lt/d of sulfur, they are exempt from §60.5365a(g).
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	EOOSCOMP4-7, ECOSCOMP5-7, ERESCOMP8-10, AU2-4	The rule applies to the following "affected" facilities that are constructed, modified, or reconstructed after December 6, 2022: gas wells, including fractured and hydraulically refractured wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, certain equipment at natural gas processing plants, sweetening units at natural gas processing plants, and storage vessels. The reciprocating compressors used for oil stabilization gas (EOOSCOMP4-7), condensate stabilization gas (ECOSCOMP5-7), and residue gas air (ERESCOMP8-10) are subject to rule per from §60.5365a(c). The electric driven centrifugal compressors (ERESCOMP11-14) are exempt from §60.5365a(b) since they use dry seals. The electric driven screw compressors for the refrigeration gas and instrument air are exempt from the definition of centrifugal compressor per §60.5430a. IFR5-14 have been or will be constructed after the applicability date of the rule; however, since IFR5-14 are subject to NSPS Kb they are exempt from this subpart per §60.5395b(e).

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
				IFR9-14 will be constructed after the applicability date of this rule; however, since emissions will be limited by permit to less than 6 tpy VOCs and less than 20 tpy methane, IFR9-IFR14 are exempt per §60.5365b(e). Since the sweetening units process less than 2 lt/d of sulfur, they are exempt from §60.5365b(g).
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 combustion engines. The engines at this facility are not compression ignition combustion engines. This regulation does not apply.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	GEN1-4	This regulation establishes standards of performance for stationary spark ignition combustion engines. The emergency generators (Units: GEN1-4) 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 regulation establishes standards of performance for greenhouse gas emissions for electric generating units. This facility does not have electric generating units. This regulation does not apply.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This regulation establishes emissions guidelines for greenhouse gas emissions and compliance times for electric generating units. This facility does not have electric generating units. 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 municipal solid waste landfill. This regulation does not apply.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	Units Subject to 40 CFR 61	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
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	This regulation establishes national emission standards for equipment leaks (fugitive emission sources). The facility does not have equipment that operates in volatile hazardous air pollutant (VHAP) service [40 CFR Part 61.240]. The regulated activities subject to this regulation do not take place at this facility. The facility is not subject to this regulation.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	GEN1-4	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 Part 63 Subpart ZZZZ applies to the emergency generators (Units: GEN1-4).

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No	N/A	This regulation establishes national emission standards for hazardous air pollutants from oil and natural gas production facilities. As an area source of HAP, sources subject to HH include triethylene glycol (TEG) dehydration units that meet certain criteria. The facility does not have a TEB dehydration unit; therefore, this regulation does not apply.
MACT 40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	N/A	This regulation establishes national emission standards for hazardous air pollutants from natural gas transmission and storage facilities. This regulation does not apply because this facility is not a natural gas transmission or storage facility as defined in this regulation [40 CFR Part 63.1270(a)].
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This regulation establishes national emission standards for a major source of HAPs for industrial, commercial, and institutional boilers and process heaters. This facility is not a major source of HAPs. Therefore, this regulation does not apply to this facility.
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 regulation establishes national emission standards for hazardous air pollutants from coal and oil-fired electric utility steam generating units. The facility does not contain the affected units. This regulation does not apply.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	GEN1-4	This regulation defines national emissions standards for HAPs from stationary reciprocating Internal Combustion Engines. The emergency generators (Units: GEN1-4) will comply with the applicable requirements of this regulation by following the requirements of NSPS JJJJ.
40 CFR 64	**Compliance Assurance Monitoring**	Yes	AU1-4	This regulation defines compliance assurance monitoring. Amine sweeteners (Units: AU1-4) are subject to CAM to demonstrate continuous compliance with the control limits. These units use a control device(s) (TO1-4) to achieve compliance with such emission limitations.
40 CFR 68	**Chemical Accident Prevention**	No	N/A	This regulation does not apply to this facility because the facility does not store more than the regulated quantity of regulated substances.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	This part establishes the acid rain program. This part does not apply because the facility is not covered by this regulation [40 CFR Part 72.6].
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	This regulation establishes sulfur dioxide allowance emissions for certain types of facilities. This part does not apply because the facility is not the type covered by this regulation [40 CFR Part 73.2].

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	The provisions of this part apply to each affected unit subject to Acid Rain emission limitations or reduction requirements for SO_2 or NO_X. The facility is not an acid rain source and is therefore not subject to this application.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	This regulation establishes an acid rain nitrogen oxide emission reduction program. This regulation applies to each coal-fired utility unit that is subject to an acid rain emissions limitation or reduction requirement for SO_2. This part does not apply because the facility does not operate any coal-fired units [40 CFR Part 76.1].
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	This regulation establishes a regulation for the protection of the stratospheric ozone. The regulation is not applicable because the facility does not “service”, “maintain” or “repair” class I or class II appliances nor “dispose” of the appliances [40 CFR Part 82.1(a)].

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☐ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **NSR** (20.2.72 NMAC), **PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Startup and shutdown procedures are either based on the manufacturer's recommendations or based on XTO Energy's experience with specific equipment. These procedures are designed to proactively address the potential for malfunction to the greatest extent possible. These procedures dictate a sequence of operations that are designed to minimize emissions from the facility during events that result in shutdown and subsequent startup.

Equipment located at this facility is equipped with various safety devices and features that aid in the prevention of excess emissions in the event of an operational emergency. If an operational emergency does occur and excess emissions occur, XTO Energy will submit the required Excess Emissions Report as per 20.2.7 NMAC. Corrective action to eliminate the excess emissions and prevent recurrence in the future will be undertaken as quickly as safety allows.

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.

XTO Energy is not proposing any alternative operating scenarios for this facility.

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:	**Cowboy CDP**
2	Name of company:	**XTO Energy, Inc.**
3	Current Permit number:	**7877**
4	Name of applicant's modeler:	**Bruce Ferguson**
5	Phone number of modeler:	**601-824-1860**
6	E-mail of modeler:	**bferguson@fce-engineering.com**

16-B: Brief			
1	Was a modeling protocol submitted and approved?	Yes☒	No☐
2	Why is the modeling being done?	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	The proposed permit revision includes updated emissions associated with flares, heaters, and combustor. The permit revision will also include the addition of a portable backup combustor to be used when the primary combustor is out of service.		
4	What geodetic datum was used in the modeling?	NAD83	
5	How long will the facility be at this location?	indefinite	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒

16-B: Brief

7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	
8	List the PSD baseline dates for this region (minor or major, as appropriate).		
	NO2	3/16/1988	
	SO2	7/28/1978	
	PM10	2/20/1979	
	PM2.5	11/13/2013	
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).		
	Carlsbad Caverns NP, 49.9 km		
10	Is the facility located in a non-attainment area? If so describe below	Yes☐	No☒
11	Describe any special modeling requirements, such as streamline permit requirements.		
	None		

16-C: Modeling History of Facility

1 Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
CO	7877-M1	2/11/2022	
NO_2	7877-M1	2/11/2022	
SO_2	7877-M1	2/11/2022	
H_2S			
PM2.5	7877-M1	2/11/2022	
PM10	7877-M1	2/11/2022	
Lead	7877-M1	2/11/2022	
Ozone (PSD only)			
NM Toxic Air Pollutants (20.2.72.402 NMAC)			

16-D: Modeling performed for this application

1 For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
CO	☒	☐	☐	☐	☐
NO_2	☒	☒	☐	☐	☐
SO_2	☒	☐	☐	☐	☐
H_2S	☐	☐	☐	☐	☒
PM2.5	☒	☒	☐	☐	☐
PM10	☒	☒	☐	☐	☐
Lead	☐	☐	☐	☐	☐
Ozone	☐	☐	☐	☐	☐
State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☐

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.
None

2 List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes☐	No☒
	The model version used was 23132. The model version was updated on November 20, 2024. The changes to the model do not affect any of the modeling options used for the analysis.		

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	10/28/2024
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
		Sources identified as SSM in the NMED surrounding source inventory were not included in the modeling per NMED Air Quality Modeling Guidelines Section 4.1.6

16-H: Building and structure downwash

1	How many buildings are present at the facility?	1	
2	How many above ground storage tanks are present at the facility?	18	
3	Was building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
4	Building comments	Significant equipment structures were also included in the downwash analysis.	

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.		
	Facility is encompassed with a cyclone fence.		
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 (meters)	Start distance (km) from restricted area or center of facility	End distance (km) from restricted area or center of facility	Comments
Cartesian	Circular	50	0	1	
Cartesian	Circular	100	1	3	
Cartesian	Circular	250	3	6	
Cartesian	Circular	500	6	10	
Cartesian	Circular	1000	10	50	

16-I: Receptors and modeled property boundary

5	Describe receptor spacing along the fence line.
	50 meters
6	Describe the PSD Class I area receptors.
	100 meters spacing along the Class 1 boundary that is within 50-km of the nearest facility emission point. Only 5 receptors were used because only a short distance of the boundary 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).		
	The source was modeled using three normal operations scenarios and three scenarios for SSM emissions. The flaring scenarios were used to cover a range of SSM possibilities producing the highest emissions and the lowest effective diameters. Three normal operation scenarios were used to account for the allowance of portable temporary combustors to be used on-site when the facility combustor is down. Two portable combustor models were evaluated.		
2	Which scenario produces the highest concentrations? Why?		
	The maximum impacts for all of the scenarios were basically the same because the facility equipment controls the maximum impacts and the SSM flaring does not impact the location of the highs at the same time.		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

If hourly, variable emission rates were used that were not described above, describe them below.

6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☐	No☒

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.	
	Facility impacts determined assuming 100% conversion of NOx to NO2. Surrounding sources were accounted for by adding in monitored background.	
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☐
	Not applicable	
4	Describe the design value used for each averaging period modeled.	
	1-hour: High first high Annual One Year Annual Average:	

16-L: Ozone Analysis

1	NMED has performed a generic analysis that demonstrates sources that are minor with respect to PSD do not cause or contribute to any violations of ozone NAAQS. The analysis follows. The basis of the ozone SIL is documented in *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*, EPA, April 17, 2018 and associated documents. NMED accepts this SIL basis and incorporates it into this permit record by reference. Complete documentation of the ozone concentration analysis using MERPS is included in the New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines.		
2	The MERP values presented in Table 10 and Table 11 of the NM AQB Modeling Guidelines that produce the highest concentrations indicate that facilities emitting no more than 250 tons/year of NO_X and no more than 250 tons/year of VOCs will cause less formation of O_3 than the O_3 significance level. $$[O_3]_{8-hour} = \left(\frac{250 \frac{ton}{yr}}{340_{MERP_{NOX}}} + \frac{250 \frac{ton}{yr}}{4679_{MERP_{VOC}}} \right) \times 1.96\ \mu g/m^3$$ =1.546 $\mu g/m^3$, which is below the significance level of 1.96 $\mu g/m^3$. Sources that produce ozone concentrations below the ozone SIL do not cause or contribute to air contaminant levels exceeding the ozone NAAQS.		
3	Does the facility emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs? Sources that emit at least 250 tons per year of NO_X or at least 250 tons per year of VOCs are covered by the analysis above and require an individual analysis.	Yes☐	No☒

5	For new PSD Major Sources or PSD major modifications, if MERPs were used to account for ozone fill out the information below. If another method was used describe below.				
	NO_X (ton/yr)	$MERP_{NOX}$	VOCs (ton/yr)	$MERP_{VOC}$	$[O_3]_{8\text{-hour}}$

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
	☐	PM2.5
	☐	PM10
	☒	None
2	Describe the particle size distributions used. Include the source of information.	

3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.	Yes☐	No☒
4	Was secondary PM modeled for PM2.5?	Yes☐	No☒

5 If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.

Pollutant	NO_X	SO_2		$[PM2.5]_{24\text{-hour}}$
$MERP_{annual}$	26780	14978		0.04757863
$MERP_{24\text{-hour}}$	7331	1981		$[PM2.5]_{annual}$
Emission rate (ton/yr)	196.04	25.57		0.001805512

16-N: Setback Distances N/A

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.
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.

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

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☒	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	No☒
4	Which units consume increment for which pollutants?		

Unit ID	NO_2	SO_2	PM10	PM2.5
All Facility Sources	x	x	x	x

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	All sources at facility constructed after baseline date.	
6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐

16-P: Flare Modeling

1 For each flare or flaring scenario, complete the following

Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
FL1 (Normal)	21.40	219,488.94	0.4132
FL2 (Normal)	21.40	345,028.41	0.5181
FL3 (Normal)	21.40	345,028.41	0.5181
FL1 (Scenario B)	51.78	94,468,503.25	7.8637
FL2 (Scenario B)	22.45	171,850,527.04	11.5225
FL3 (Scenario B)	21.40	345,028.41	0.5181
FL1 (Scenario C)	51.78	94,468,503.25	7.8637
FL2 (Scenario C)	22.45	86,035,007.99	8.1529
FL3 (Scenario C)	22.45	86,160,547.45	8.1588
FL1 (Scenario D)	22.86	43,826,817.99	5.8111
FL2 (Scenario D)	17.75	69,443,142.71	7.4432
FL3 (Scenario D)	17.75	69,568,682.18	7.4499

16-Q: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
	No volume sources were used.		
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
4	Describe any open pits.		
5	Describe emission units included in each open pit.		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☐	No☒
	CO: N/A		
	NO_2: Outside Carlsbad (350151005)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: N/A		
	Other:		
	Comments:	US EPA Air Quality Design Values for the listed monitors were approved by October 18, 2024, email from Sufi Mustafa	
2	Were background concentrations refined to monthly or hourly values? If so, describe below.	Yes☐	No☒

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Artesia	Yes☒	No☐
2	If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	Downloaded through third-party GUI, AERMOD-View		

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)
	SIA\CO.zip	CO	SIA
	SIA\NOx.zip	NOx	SIA\CIA
	SIA\PM25.zip	PM2.5, PM10	SIA
	SIA\SO2.zip	SO2	SIA
	SIA\NOx_CL1.zip	NOx	Class 1 SIA
	SIA\PM25_CL1.zip	PM2.5, PM10	Class 1 SIA
	SIA\SO2_CL1.zip	SO2	Class 1 SIA
	CIA\PM10.zip	PM10	CIA
	CIA\PM25.zip	PM2.5	CIA
	CIA\PM25_PSD24hr.zip	PM2.5	CIA
	CIA\Ambient Air Impacts outside South Eddy Cryo.xlsx	PM2.5	CIA

16-V: PSD New or Major Modification Applications (N/A)

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes☐	No☐
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes☐	No☐
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☐

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☒	No☐
	The PM2.5 analysis conservatively used the H2H over 5 years of meteorological data. The PSD annual and 24 hour impacts within the significant impact area were exceeded on the Facility ID=34514 Name=South Eddy Cryo Plant property. The plot files were used to determine the maximum impacts in the significant impact area outside of the South Eddy Cryo Plant fence line (Ambient Air Impacts outside South Eddy Cryo.xlsx) There was one receptor outside of the South Eddy Cryo Plant fence line within the significant impact area above the PSD 24 hr increment, using the H2H over 5 years. The analysis was run on the individual years for this receptor and the H2H of each year was below the PSD 24 hr increment.		
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)
NO_2 1-hr NAAQS	95.02143	N/A	N/A	38.0	133.02	188.03	70.7%	609778.11	3558478.75	1030.18
NO_2 Annual NMAAQS[1]	5.81607	N/A	N/A	6.1	11.91	94.02	19.3%	609500.00	3559200.00	1041.41
NO2 Annual Increment[1]	5.81607	N/A	N/A	6.1	11.91	25	47.7%	609500.00	3559200.00	1041.41
NO_2 Annual CL1Ann SIL[1]	0.00323	N/A	N/A	N/A	0.00323	0.1	3.2%	559318.36	3560690.07	1130.11
CO 1-hr SIL	349.68189	N/A	N/A	N/A	349.68189	2000	17.5%	609885.89	3558688.01	1036.82
CO 8-hr SIL	245.00191	N/A	N/A	N/A	245.00192	500	49.0%	609885.89	3558688.01	1036.82
SO_2 1-hr SIL	6.05144	N/A	N/A	N/A	6.05144	7.8	77.6%	609500.00	3559200.00	1041.41
SO_2 3-hr SIL	5.42058	N/A	N/A	N/A	5.42058	25	21.7%	609750.00	3559100.00	1041.56
SO_2 3-hr CL1 SIL	0.11767	N/A	N/A	N/A	0.11767	1.0	11.8%	559318.36	3560690.07	1130.11
SO_2 24-hr SIL	3.18896	N/A	N/A	N/A	3.18896	5	63.8%	609500.00	3559200.00	1041.41
SO_2 24-hr CL1 SIL	0.01713	N/A	N/A	N/A	0.01713	0.2	8.6%	559318.36	3560690.07	1130.11
SO_2 Annual SIL	0.50014	N/A	N/A	N/A	0.50014	1	50.0%	609500.00	3559200.00	1041.41
SO_2 Annual CL1 SIL[1]	0.00034	N/A	N/A	N/A	0.00034	0.1	0.3%	559318.36	3560690.07	1130.11
$PM_{2.5}$ 24-hr CL1 SIL	0.03097	N/A	0.0476	N/A	0.07857	0.27	29.1%	559318.36	3560690.07	1130.11

[1] Maximum annual impact at normal operation.

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)
$PM_{2.5}$ 24-hr NAAQS		12.16979	0.0476	20	32.21739	35	92.0%	610450.00	3558950.00	1037.35
$PM_{2.5}$ 24-hr Increment		7.34006	0.0476	N/A	7.39	9	82.1%	608850.00	3558050.00	1021.59
$PM_{2.5}$ Annual CL1 SIL[1]	0.00062	N/A	0.0018	N/A	0.00242	0.05	4.8%	559318.36	3560690.07	1130.11
$PM_{2.5}$ Annual NAAQS		1.92079	0.0018	6.6	8.52	9	94.6%	609500.00	3559250.00	1040.97
$PM_{2.5}$ Annual Increment		2.0447	0.0018	N/A	2.0465	4	51.1%	609450.00	3559250.00	1041.00
PM_{10} 24-hr Increment		7.40248	N/A	N/A	7.40248	30	24.7%	609750.00	3559100.00	1041.56
PM_{10} Annual Increment		2.20427	N/A	N/A	2.20427	17	13.0%	609500.00	3559250.00	1041.33
PM_{10} 24-hr NAAQS		7.31560	N/A	37.3	44.6	150	29.7%	609750.00	3559100.00	1041.56

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	The facility was modeled with the maximum hourly emission rates presented on UA-2 tabs 2-E and 2-F for all averaging periods using a 5-yr meteorological dataset for Carlsbad downloaded from the NMED website.. Three SSM flaring scenarios were included as well as the facility normal operation. Impacts were found to be below the Class I modeling significance levels for all pollutants and averaging periods, and no further analysis was performed for the Class I area. CO and SO_2 were found to be below the Class 2 modeling significance levels for all averaging periods and no further analysis was performed for these pollutants. Surrounding sources were accounted for by using monitored background for the NO2 analysis and no surrounding sources were explicitly modeled. Cumulative impacts of NO_2 were estimated using the significant NOx analysis and adding monitored background. The maximum modeled NOx impacts from the facility plus the monitored background are below the NO_2 standards and no further analysis was performed. Emissions of PM_{10} and $PM_{2.5}$ are equal for all the facility sources. The maximum modeled impacts in the PM_{10} /$PM_{2.5}$ significance analysis were within 100 meter spacing. The cumulative analysis was conducted with those receptors identified as above the modeling significance level in the significance analysis. The PM_{10} and $PM_{2.5}$ cumulative analysis consisted of explicitly modeling the surrounding sources downloaded from the NMED website and adding the monitored background. Additionally, for the $PM_{2.5}$ analysis the secondary formation estimated with the EPA MERPs equation was added to the $PM_{2.5}$ impacts. Surrounding source SSM emissions were removed from the surrounding inventory and surrounding sources greater than 10 km from the Cowboy CDP were removed from the NAAQS source group. The PM_{10} impacts were found to be below the ambient air quality standards and PSD increment. No further analysis was conducted for PM10. Cumulative $PM_{2.5}$ analysis indicated exceedances within the fence line of the South Eddy Cryo Plant. The exceedances are due to the South Eddy Cryo Plant sources. A source cannot cause or contribute to an exceedance within the facility's restricted boundary. The receptors within the South Eddy Cryo Planter were discounted in determining the maximum $PM_{2.5}$ impacts. The maximum impact of CO and SO_2 were found to be below the modeling significance levels. The cumulative impacts for NO_2, PM_{10} and $PM_{2.5}$ were found to be below the respective ambient air quality standards and PSD increment. The modeling requirements have been satisfied and the permit can be issued.

Daniel Dolce

From: Barron, James W <james.barron@exxonmobil.com>
Sent: Tuesday, September 24, 2024 8:22 AM
To: Adam Erenstein
Subject: FW: [EXTERNAL] Modeling Protocol - Cowboy CDP

FYI – Modeling protocol approved by NMED.

James (Jamie) Barron
Environmental & Regulatory Advisor

XTO Energy Inc. (an ExxonMobil Subsidiary)
22777 Springwoods Village Parkway
Spring, TX 77389
W4.5A.296
Office: 346-566-9345
Cell: 346-366-3240

From: Bruce Ferguson <bferguson@fce-engineering.com>
Sent: Monday, September 23, 2024 7:38 PM
To: Barron, James W <james.barron@exxonmobil.com>
Subject: Fwd: [EXTERNAL] Modeling Protocol - Cowboy CDP

Sent from my iPhone

Begin forwarded message:

> **From:** "Mustafa, Sufi A., ENV" <sufi.mustafa@env.nm.gov>
> **Date:** September 23, 2024 at 6:21:23 PM CDT
> **To:** Bruce Ferguson <bferguson@fce-engineering.com>
> **Subject: RE: [EXTERNAL] Modeling Protocol - Cowboy CDP**
>
> Bruce
> The modeling protocol you provided 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: Bruce Ferguson <bferguson@fce-engineering.com>
Sent: Thursday, September 12, 2024 7:20 AM
To: Mustafa, Sufi A., ENV <sufi.mustafa@env.nm.gov>
Cc: James Barron <james.barron@exxonmobil.com>
Subject: [EXTERNAL] Modeling Protocol - Cowboy CDP

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sufi,

Please find attached a modeling protocol for modeling to support an upcoming minor NSR modification request at Cowboy CDP. If you have any questions or comments, please let me know.

Thanks

____

Bruce Ferguson
FC&E Engineering, LLC

Office: 601-824-1860
Direct: 769-241-6069
Cell: 601-826-6376

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FC&E Engineering, LLC
Water ▪ Soils ▪ Air ▪ Compliance

September 12, 2024

Mr. Sufi Mustafa
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816
Via Email: Sufi.Mustafa@state.nm.us

Re: Air Dispersion Modeling Protocol
XTO Energy, LLC – Cowboy CDP

Dear Mr. Mustafa:

XTO Energy, LLC is preparing to submit a construction permit application to the New Mexico Air Quality Bureau (NMAQB) requesting a modification to the Cowboy CDP construction permit (7877-M2) pursuant to 20.2.72.219.D.1.a NMAC. In support of this application, air dispersion modeling will be conducted for the following pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$). This protocol outlines the proposed air dispersion modeling techniques that will be used to assess impacts surrounding the facility. The modeling analysis will follow the NMED Air Dispersion Modeling Guidelines, Revised June 2024.

Facility

The facility is located approximately 14 miles southeast of Malaga in Eddy County, New Mexico. The facility center is located at 32.160715°, -103.838447°. The facility processes natural gas using amine sweetening units as needed. Sweetened gas is dehydrated then flows to cryogenic units to remove NGLs for sale. Heat for the dehydration and cryogenic processes is supplied by gas-fired auxiliary heaters. NGLs from the inlet slug catcher and surrounding compressor stations are stabilized before being transferred offsite via pipeline. Heat for the stabilization process is supplied by gas-fired auxiliary heaters. The central delivery point portion of the facility receives up to 600,000 barrels of oil/condensate (oil) per day from surrounding field production batteries. Oil is transferred directly to storage or stabilized using auxiliary heaters. Oil is transferred offsite via pipeline. Incoming water is temporarily stored onsite prior to being transferred offsite via pipeline. Water and slop oil can be transferred offsite by truck. SSM flaring emissions are routed to either the low pressure or high-pressure flare headers (FL1/FL2/FL3). SSM/M venting emissions are vented to atmosphere.

The most recent modeling submitted for the facility was included in the February 2021 NSR Modification Permit Application. The facility is proposing the following modifications:

- Update emissions from the flares, enclosed combustor, heaters, storage tanks, emergency generators, and piping fugitives based upon current process knowledge and updated process samples.

Models

AERMOD (Version 23132), the US EPA preferred model for near field impacts will be used for the modeling analysis. The third-party graphical user interface (GUI) AERMOD – View (Version 1.20.0) will be used to aid in constructing the AERMOD input files.

Model Input Options

The model will be executed with the DFAULT model option ensuring that only regulatory options are used in the execution of the model.

The cumulative NO_2 analysis will be executed with the ARM2 model option to convert NOx to NO_2. The default NO_2/NOx ratios of 0.5 for the minimum ratio and 0.9 for the maximum ratio will be used in the analysis.

Terrain

National Elevation Dataset (NED) 1/3 arc second data will be incorporated into the model using the regulatory preprocessor AERMAP (Version 18081). The terrain data will be downloaded through the third-party GUI AERMOD-View. Receptor elevations, receptor hill heights and nearby source elevations will be assigned through AERMAP. As built elevations will be assigned to Cowboy CDP sources.

Receptor Grid

A cartesian grid will be used in the analysis. Receptors will be placed along the fence line at 50-meter spacing. Receptor spacing will be varied based on the distance from the facility center as summarized below.

Distance from facility center (km)	Spacing (m)
1	50
1 to 3	100
3 to 6	250
6 to 10	500
10 to 50	1000

Source Inventory

Facility sources will be modeled with the emissions presented in the application on UA2 tabs 2-E, 2-F. Stack parameters used will be as presented on UA2 tab 2-H, except for the flares. The flares will be modeled as point sources with the stack parameters as defined in section 5.2.3. of the NMED Air Dispersion Modeling Guideline.

Surrounding sources to include in the cumulative modeling will be downloaded from the NMED website at https://air.web.env.nm.gov/mergemaster/. Startup, shutdown and malfunction (SSM) may be removed from the surrounding source inventory for the annual analyses. Additionally, for the PM_{10} and $PM_{2.5}$ NAAQS analysis, sources greater than 10 km from Cowboy CDP will not be explicitly modeled.

Minor Source Baseline Dates

The facility is in the Pecos Permian Basin Air Quality Control Region. The minor source baseline dates are summarized in the table below. The facility sources were constructed after all the baseline dates and, therefore, consume increment for all pollutants.

Pollutant	Baseline Date
NO_2	3/16/1988
SO_2	7/28/1978
PM_{10}	2/20/1979
$PM_{2.5}$	11/13/2013

Class I Areas

The nearest Class I area, Carlsbad Caverns National Park, is located 50 km to the west of the Cowboy CDP. A Class I PSD analysis is not required. The radius of impact to the Class I significance levels will be determined using the Class II analysis runs to confirm impacts disperse to levels below the Class I significance level prior to reaching the Class I area.

Meteorological Data

AERMOD ready meteorological data for Artesia will be downloaded from the NMED website at cloud.env.nm.gov/resources/collection/411 and used in the analysis. The Artesia meteorological data has historically been used for the modeling conducted for the facility.

Background Concentrations

NMAAQS and NAAQS

Background values for CO and NO_2 will be accounted for using existing air quality monitoring data. PM_{10} and $PM_{2.5}$ background concentrations will be accounted for by explicitly modeling nearby sources within 10 km of the Cowboy CDP and adding monitored background. SO_2 background will be accounted for by explicitly modeling the nearby sources within 25 km.

Background values will be obtained from the NMED Air Dispersion Modeling Guidelines, Revised June 2024. The monitoring stations are summarized below.

CO: Del Norte High School (350010023)
NO_2: Outside Carlsbad (350151005)
PM2.5: Hobbs-Jefferson (350450019)
PM10: Hobbs-Jefferson (350250008)

PSD Increment

Background for PSD increment will be accounted for by explicitly modeling the increment affecting sources within 25 km and very large sources greater than 1000 lb/hr within 50 km of the Cowboy CDP for the respective pollutants.

Secondary Formation

The secondary formation of PM2.5 will be calculated as presented in section 2.6.6.2 of the NMED Modeling Guidelines and added to the modeled impacts and monitored background.

Methodology

A significance analysis will be performed for the Cowboy CDP emission sources using the 5-year meteorological dataset. Maximum emissions will be defined within 100-meter spacings. Receptors with impacts above the modeling significance levels defined in Table 18 of the NMED guideline will be used in the cumulative analyses.

The cumulative analyses will be conducted with the Cowboy CDP sources and the nearby surrounding sources downloaded from the NMED website at the receptor locations determined in the significance analyses. The design values will be calculated following the NMED Guideline procedures defined in section 2.6 for the respective pollutants.

Please advise if you approve of the modeling protocol methods or any changes that are required.

Sincerely,

Bruce Ferguson
FC&E Engineering, LLC

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.

No history of compliance testing.

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

No other relevant information is provided in this application.

Section 22: Certification

Company Name: XTO Energy, Inc.

I, James Barron, 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 11 day of December, 2024, upon my oath or affirmation, before a notary of the State of

Texas.

James Barron
*Signature

12/11/2024
Date

James Barron
Printed Name

E&R Advisor
Title

Scribed and sworn before me on this 11 day of December, 2024.

My authorization as a notary of the State of Texas expires on the

4 day of August, 2026.

Kry Ullur
Notary's Signature

12/11/2024
Date

Kimberly McQuillen
Notary's Printed Name

KIMBERLY MCQUILLEN
Notary Public
STATE OF TEXAS
ID# 12990808-2
My Comm. Exp. August 4, 2026

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.