



October 2024

Submitted via STEERS

To: Texas Commission on Environmental Quality (TCEQ)
Air Permits Initial Review Team (APIRT)
Mail Code 161
P.O. Box 13087
Austin, Texas 78711-3087

Air Quality Standard Permit for Oil and Gas Handling and Production Facilities Initial Application
Apache Corporation (CN600126361)
Regulated Entity: ASAU CTB and Satellite (RN102213592)
Permit No. 175442

Dear Sir or Madam,

Apache Corporation (Apache) respectfully submits the referenced application for ASAU CTB and Satellite in Gaines County, Texas. This application is being submitted via the STEERS e-Permits Program.

If you need further information or have questions, please contact me at (432) 818-1053.

Sincerely,

Amanda Ellis

Amanda Ellis
EH&S Specialist II
EH&S Department

AIR QUALITY STANDARD PERMIT FOR OIL AND GAS HANDLING AND PRODUCTION FACILITIES INITIAL APPLICATION

**APACHE CORPORATION
ASAU CTB AND SATELLITE**

OCTOBER 2024

**SUBMITTED TO:
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
OFFICE OF AIR**

PREPARED BY:



Project Information

Apache Corporation (Apache) operates the ASAU CTB and Satellite (site) in Gaines County, TX pursuant to the terms and conditions of the Air Quality Standard Permit for Oil and Gas Handling and Production Facilities. This site was previously authorized under permit 26926, upon issuance of this permit, Apache will void permit 26926. Apache requests authorization for modifications at the site with this Air Quality Standard Permit for Oil and Gas Handling and Production Facilities initial application. Changes at the site consist of the following:

- Removing one (1) 3,000-bbl crude oil tank
- Adding one (1) 1,000-bbl crude oil tank
- Adding three (3) 1,500-bbl produced water tanks
- Adding one (1) produced water gunbarrel separator
- Adding one (1) 500-bbl skim oil tank
- Adding truck loading operations
- Adding emissions from free water knock out drum(s)(FWKO)
- Updating emissions for existing equipment

Emissions sources at the site will now consist of the following:

- One (1) 0.750-mmBtu/hr heater treater (HT-1)
- Two (2) 1,500-bbl crude oil tanks (OTK-1 – OTK-2)
- One (1) 1,000-bbl crude oil tank (OTK-4)
- One (1) 500-bbl skim oil tank (SLOPTK-1)
- Three (3) 1,500-bbl produced water tanks (PWTk-1 – PWTk-3)
- One (1) produced water gunbarrel separator (GBT-1)
- Vapor Recovery Units (VRUs)(VRU-1 – VRU-2, VRU-3 – VRU-4)
- Free water knock out drum(s)(FWKO)
- Miscellaneous tanks (TK-MISC)
- Truck loading operations (SLOAD)
- Fugitive emissions (FUG)
- Planned maintenance, startup, and shutdown (MSS) activities (MSS, MSS-PB, MSS-TK1, MSS-TK2, and MSS-BD)

Apache Corporation (CN600126361)
ASAU CTB and Satellite (RN102213592)
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This submittal includes the following sections:

- Section 1 – TCEQ Forms
- Section 2 – Process and Equipment Descriptions
- Section 3 – Process Flow Diagram
- Section 4 – Area Map
- Section 5 – Emissions Calculations
- Section 6 – State Regulatory Applicability
- Section 7 – Federal Regulatory Applicability
- Section 8 – Impacts Evaluation

Apache Corporation (CN600126361)
ASAU CTB and Satellite (RN102213592)
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Section 1 – TCEQ Forms

Form PI-1S
Registrations for Air Standard Permit
(Page 1)
Texas Commission on Environmental Quality

I. Registrant Information
A. Company or Other Legal Customer Name: Apache Corporation
B. Company Official Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:) _____
Name: Danny Galvan Jr
Title: Prod Ops Sr Manager
Mailing Address: 303 Veterans Airpark Lane
City: Midland
State: TX
ZIP Code: 79705
Telephone No.: 432-818-1084
Fax No.:
Email Address: danny.galvan@apachecorp.com
<i>All permit correspondence will be sent via email.</i>
C. Technical Contact Information (☐ Mr. ☒ Mrs. ☐ Ms. ☐ Other:) _____
Name: Amanda Ellis
Title: EH&S Specialist II
Company Name: Apache Corporation
Mailing Address: 303 Veterans Airpark Lane
City: Midland
State: TX
ZIP Code: 79705
Telephone No.: 432-818-1053
Fax No.:
Email Address: amanda.ellis@apachecorp.com
II. Facility and Site Information
A. Name and Type of Facility
Facility Name: ASAU CTB and Satellite
Type of Facility: Natural Gas & Oil Production ☒ Permanent ☐ Temporary

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II. Facility and Site Information (continued)
For portable units, please provide the serial number of the equipment being authorized below.
Serial No(s):
B. Facility Location Information
Street Address:
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).
FROM WELCH TX HEAD WEST ON TX83W FOR 8.9MI TURN R ONTO CR143 FM403 GO 3.0MI ARRIVE AT SITE ENTRANCE ON L
City: Welch
County: Gaines
ZIP Code: 79342
C. Core Data Form (required for Standard Permits 6006, 6007, and 6013).
Is the Core Data Form (TCEQ Form 10400) attached? ☐ Yes ☒ No
Customer Reference Number (CN): CN600126361
Regulated Entity Number (RN): RN102213592
D. TCEQ Account Identification Number (if known): GA0234D
E. Type of Action
☒ Initial Application ☐ Change to Registration ☐ Renewal ☐ Renewal Certification
For Change to Registration, Renewal, or Renewal Certification actions provide the following:
Registration Number: 175442
Expiration Date:
F. Standard Permit Claimed: 6002 – Oil and Gas Facility
G. Previous Standard Exemption or PBR Registration Number:
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR? ☒ Yes ☐ No
If "Yes," enter previous standard exemption number(s) and PBR registration number(s) and associated effective date in the spaces provided below.
26926; upon issuance of this permit, Apache requests that 26926 be voided.

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II. Facility and Site Information (<i>continued</i>)
H. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit? ☐ Yes ☒ No
If "Yes," enter standard exemption number(s), PBR registration number(s), and Standard Permit registration number(s), and associated effective date in the spaces provided below.
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s) and Effective Date(s)
I. Other Air Preconstruction Permits
Are there any other air preconstruction permits at this site? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
J. Affected Air Preconstruction Permits
Does the standard permit directly affect any permitted facility? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
K. Federal Operating Permit (FOP) Requirements
Is this facility located at a site that is required to obtain a FOP pursuant to 30 TAC Chapter 122? ☐ Yes ☒ No ☐ To Be Determined
Check the requirements of 30 TAC Chapter 122 that will be triggered if this standard permit is approved (<i>check all that apply</i>).
☐ Initial Application for a FOP ☐ Significant Revision for a SOP ☐ Minor Revision for a SOP
☐ Operational Flexibility/Off Permit Notification for a SOP ☐ Revision for a GOP
☐ To be Determined ☒ None
Identify the type(s) of FOP issued and/or FOP application(s) submitted/pending for the site. (<i>check all that apply</i>)
☐ SOP ☐ GOP ☐ GOP application/revision (submitted or under APD review) ☒ N/A
☐ SOP application/revision (submitted or under APD review)

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III. Fee Information (go to www.tceq.texas.gov/epay to pay online)
A. Fee Amount: \$850.00
B. Voucher number from ePay:
IV. Public Notice (if applicable)
A. Responsible Person (☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other:) _____
Name:
Title:
Company:
Mailing Address:
City:
State:
ZIP Code:
Telephone No.:
Fax No.:
Email Address:
B. Technical Contact (☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other:) _____
Name:
Title:
Company:
Mailing Address:
City:
State:
ZIP Code:
Telephone No.:
Fax No.:
Email Address:
C. Bilingual Notice
Is a bilingual program required by the Texas Education Code in the School District? ☐ Yes ☐ No
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district? ☐ Yes ☐ No

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IV. Public Notice (<i>continued</i>) (if applicable) (continued)
If "Yes," list which language(s) are required by the bilingual program below?
D. Small Business Classification and Alternate Public Notice
Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than \$6 million in annual gross receipts? ☐ Yes ☐ No
Is the site a major source under 30 TAC Chapter 122, Federal Operating Permit Program? ☐ Yes ☐ No
Are the site emissions of any individual regulated air contaminant equal to or greater than 50 tpy? ☐ Yes ☐ No
Are the site emissions of all regulated air contaminant combined equal to or greater than 75 tpy? ☐ Yes ☐ No
V. Renewal Certification Option
A. Does the permitted facility emit an air contaminant on the Air Pollutant Watch List, and is the permitted facility located in an area on the watch list? ☐ Yes ☐ No
B. For facilities participating in the Houston/Galveston/Brazoria area (HGB) cap and trade program for highly reactive VOCs (HRVOCs), do the HRVOCs need to be speciated on the maximum allowable emission rates table (MAERT)? ☐ Yes ☐ No
C. Does the company and/or site have an unsatisfactory compliance history? ☐ Yes ☐ No
D. Are there any applications currently under review for this standard permit registration? ☐ Yes ☐ No
E. Are scheduled maintenance, startup, or shutdown emissions required to be included in the standard permit registration at this time? ☐ Yes ☐ No
F. Are any of the following actions being requested at the time of renewal: ☐ Yes ☐ No
1. Are there any facilities that have been permanently shutdown that are proposed to be removed from the standard permit registration? ☐ Yes ☐ No
2. Do changes need to be made to the standard permit registration in order to remain in compliance? ☐ Yes ☐ No
3. Are sources or facilities that have always been present and represented, but never identified in the standard permit registration, proposed to be included with this renewal? ☐ Yes ☐ No
4. Are there any changes to the current emission rates table being proposed? ☐ Yes ☐ No
<i>Note: If answers to all of the questions in Section V. Renewal Certification Option are "No," use the certification option and skip to Section VII. of this form. If the answers to any of the questions in Section V. Renewal Certification Option are "Yes," the certification option cannot be used.</i>
*If notice is applicable and comments are received in response to the public notice, the application does not qualify for the renewal certification option.

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VI. Technical Information Including State and Federal Regulatory Requirements

Place a check next to the appropriate box to indicate what you have included in your submittal.

Note: Any technical or essential information needed to confirm that facilities are meeting the requirements of the standard permit must be provided. Not providing key information could result in an automatic deficiency and voiding of the project.

A. Standard Permit requirements
(Checklists are optional; however, your review will go faster if you provide applicable checklists.)

Did you demonstrate that the general requirements in 30 TAC Sections 116.610 and 116.615 are met? ☒ Yes ☐ No

Did you demonstrate that the individual requirements of the specific standard permit are met? ☒ Yes ☐ No

B. Confidential Information (All pages properly marked "CONFIDENTIAL"). ☐ Yes ☒ No

C. Process Flow Diagram. ☒ Yes ☐ No

D. Process Description. ☒ Yes ☐ No

E. Maximum Emissions Data and Calculations. ☒ Yes ☐ No

F. Plot Plan. ☐ Yes ☒ No

G. Projected Start Of Construction Date, Start Of Operation Date, and Length of Time at Site: ☐ Yes ☒ No

Projected Start of Construction (provide date):

Projected Start of Operation (provide date):

Length of Time at the Site:

VII. Delinquent Fees and Penalties

This form **will not be processed** until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ website at: www.tceq.texas.gov/agency/financial/fees/delin/index.html.

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VIII. Signature Requirements

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382, the Texas Clean Air Act (TCAA) the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name (printed): Signed via e-Permitting on STEERS

Signature (original signature required): Signed via e-Permitting on STEERS

IX. Copies of the Registration

The PI-1S application must be submitted through ePermits. No additional copies need to be sent to the Regional Office or local Air Pollution Control Program(s). The link to ePermits can be found here:

www3.tceq.texas.gov/steers/.

Section 2 – Process and Equipment Descriptions

Process Description

Fluids from the wellhead(s) enter the site through the inlet separator(s). Gas from the inlet separators exits the site. Liquids from the inlet separator(s) are routed to the free water knock out drum(s) (FWKO) for additional separation.

Crude oil from the FWKO is routed to one (1) 0.750-mmBtu/hr heater treater (HT-1) for additional separation prior to being routed to and stored in two (2) 1,500-bbl crude oil tanks (OTK-1 – OTK-2). Crude oil can occasionally be stored in one (1) 1,000-bbl crude oil storage tank (OTK-4) as needed and piped back to the FWKO. Crude oil exits the site via pipeline.

Produced water from the FWKO and HT-1 is routed to one (1) produced water gunbarrel separator (GBT-1) for additional separation. Produced water from GBT-1 is routed to and stored in three (3) 1,500-bbl produced water tanks (PWTk-1 – PWTk-3) prior to exiting the site via pipeline. Skim oil from GBT-1 is routed to and stored in one (1) 500-bbl skim oil storage tank (SLOPTK-1). Skim oil from SLOPTK-1 is routed through a hot oiler truck (SLOAD) as needed prior to being routed to the site inlet.

Vapors from OTK-1 – OTK-2, OTK-4, FWKO, heater treater vapors (HT), and tank forced ventilation 1 emissions are captured by vapor recovery units (VRUs)(VRU-1 – VRU-2).

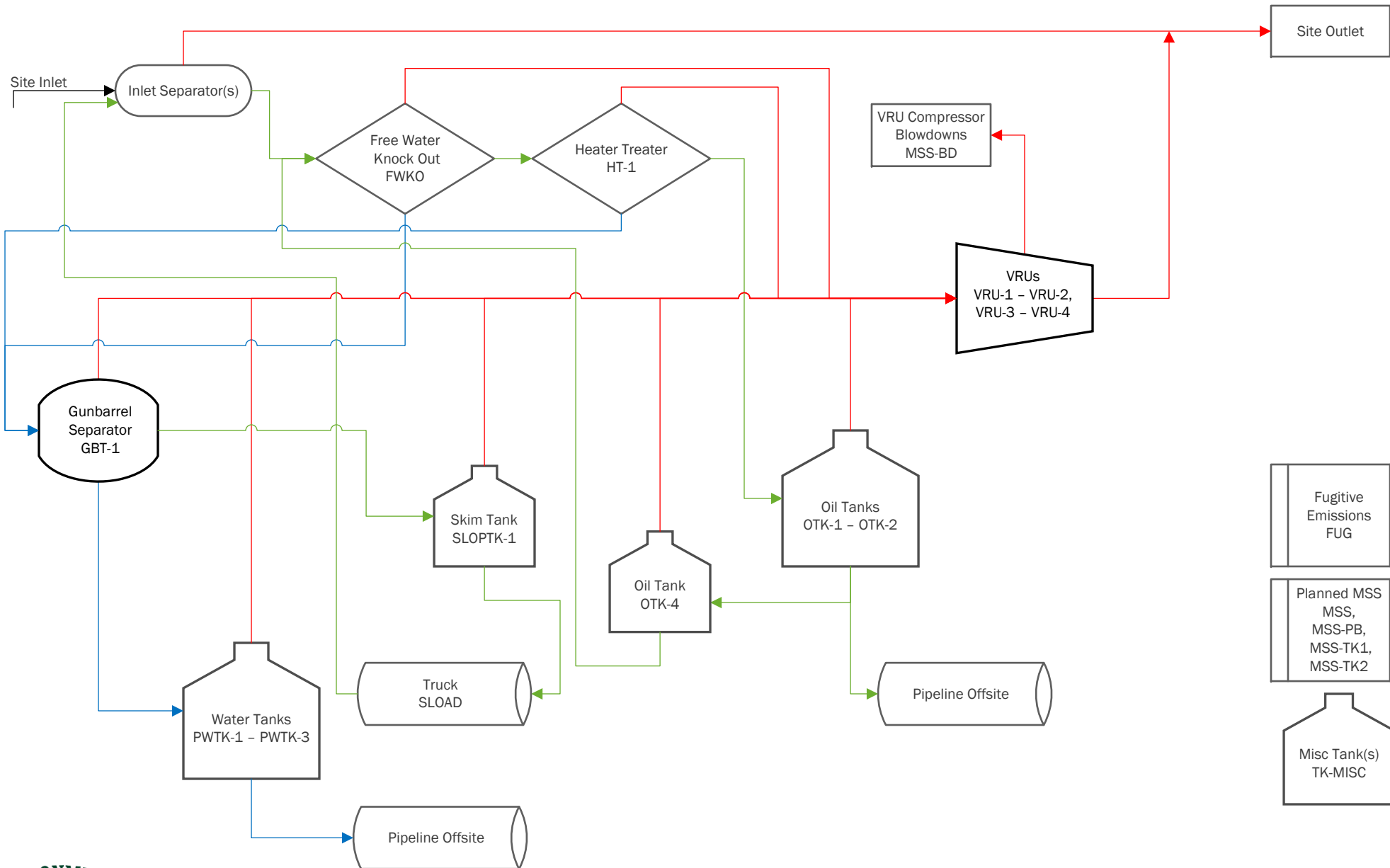
Vapors from SLOPTK-1, PWTk-1 – PWTk-3, GBT-1, and tank forced ventilation 2 emissions are captured by VRU-3 – VRU-4.

In addition, there are emissions from small miscellaneous tanks (TK-MISC), fugitive emissions (FUG), and planned MSS activities including default MSS (MSS), painting and sandblasting (MSS-PB), tank cleaning and degassing (MSS-TK1, MSS-TK2), and vessel and VRU blowdowns (MSS-BD).

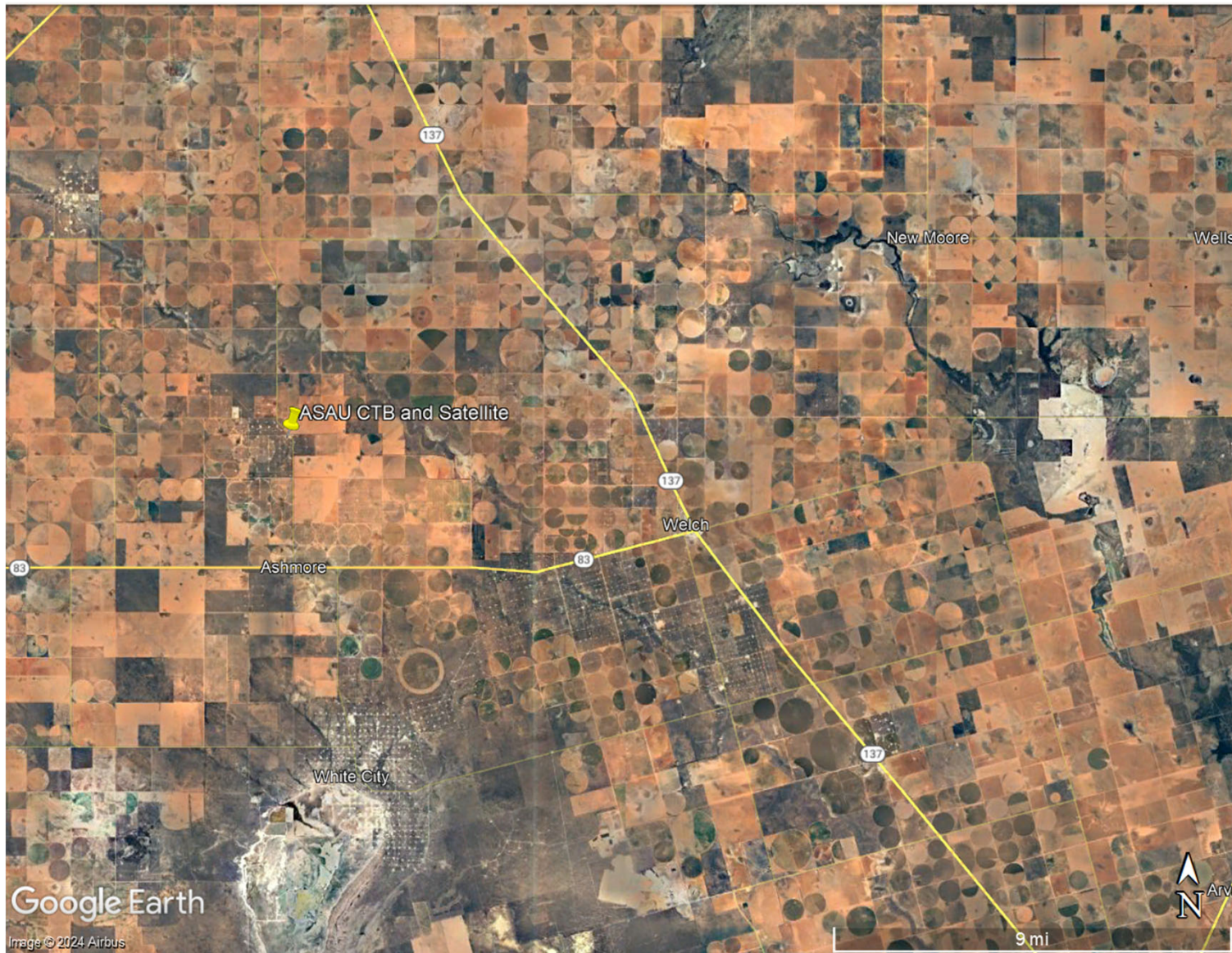
Apache Corporation (CN600126361)
 ASAU CTB and Satellite (RN102213592)
 October 2024
 Equipment Descriptions

Equipment Category	Description / Parameters	Emissions Methodology	Controls	Status
Heater Treater (HT-1)	0.750-mmBtu/hr	HT-1 emissions are calculated using AP-42 emission factors.	HT-1 off gas is routed to vapor recovery units (VRU-1 - VRU-2).	Updated
Crude Oil Tanks (OTK-1 - OTK-2, OTK-4, OTK-3)	OTK-1 - OTK-2: 1,500-bbl (each) OTK-4: 1,000-bbl OTK-3: 3,000-bbl	Emissions calculated using TCEQ guidance (APDG 6250v3,02/2020), AP-42 Chapter 7.1 (06/2020), and ProMax simulation program.	Captured OTK-1 - OTK-2 and OTK-4 emissions are controlled by VRU-1 - VRU-2.	OTK-1 - OTK-2: Updated OTK-4: New OTK-3: Removed
Produced Water Tanks (PWTK-1 - PWTK-3)	Three (3) 1,500-bbl (each)	Emissions calculated using TCEQ guidance (APDG 6250v3,02/2020), AP-42 Chapter 7.1 (06/2020), and ProMax simulation program.	Captured PWTK-1 - PWTK-3 and SLOPTK-1 emissions are controlled by VRU-3 - VRU-4.	New
Skim Oil Tank (SLOPTK-1)	One (1) 500-bbl			New
Miscellaneous tanks (TK-MISC)	500 gal/hr, 6,000 gal/yr	Emissions are calculated using ProMax simulation program.	TK-MISC emissions are uncontrolled.	Updated
Truck Loading (SLOAD)	SLOAD: 65 bbl/hr ; 730 bbl/yr	Emissions are calculated as per AP-42 Section 5.2 (06/2008).	SLOAD emissions occur during loading to hot oiler truck and are vented to the atmosphere.	New
Produced Water Gunbarrel Separator (GBT-1)	--	Emissions are calculated using ProMax simulation program.	Captured GBT-1 emissions are controlled by VRU-3 - VRU-4.	New
Free Water Knock Out (FWKO)	--	FWKO emissions are based on 2mcf/100bbl oil rate and process simulation.	FWKO emissions are captured by VRU-1 - VRU-2.	New
Vapor Recovery Unit(s) (VRU-1 - VRU-2, VRU-3 - VRU-4)	VRU-1 - VRU-2: 99% Capture; 8,760 hrs/yr uptime VRU-3 - VRU-4: 99% Capture; 8,760 hrs/yr uptime	VRUs are each driven by an electric motor, with no emissions.	Redundant VRUs are installed to ensure zero downtime. VRUs meets additional design and monitoring/recordkeeping requirements to claim greater than 95% capture efficiency.	Updated
Fugitive Emissions (FUG)	Fugitive emissions consist of equipment leaks from various component categories.	FUG-1 emissions are calculated using 40 CFR, Part 98, Subpart W, Table W-1B and W-1C methods and EPA emission factors, effective date 10/22/2015.	FUG emission are reduced utilizing a leak detection and repair (LDAR) program.	Updated
Planned MSS (MSS, MSS-TK1, MSS-TK2, MSS-PB)	<u>Controlled MSS - VRU-1 - VRU-2</u> Tank Forced Ventilation 1 - 8,713 scf/hr 2,091 mscf/yr <u>Controlled MSS - VRU-3 - VRU-4</u> Tank Forced Ventilation 2- 8,713 scf/hr 2,091 mscf/yr <u>Uncontrolled MSS</u> MSS-TK1 - Non-Forced Ventilation - 8,713 scf/hr 1,743 mscf/yr MSS-TK2 - Non-Forced Ventilation - 8,713 scf/hr 1,743 mscf/yr 25 gal/yr - Manual Application of Paints, Primer Touch up paint 100 gal/yr - Painting Tanks and Other Immovable Fixed Structures Spray Painting 100 - 16 oz Aerosol Cans/yr - Painting 2,000 lbs/hr - Sandblasting 400,000 lbs/yr - Sandblasting	MSS emissions are estimated using ideal gas law.	Tank forced ventilation emissions are captured by VRU-1 - VRU-2 and VRU-3 - VRU-4. Uncaptured MSS, MSS-TK1, MSS-TK2 and MSS-PB emissions are vented to the atmosphere.	Updated
Vessel and VRU Blowdown(s) (MSS-BD)	MSS-BD: 383 scf/hr, 91,923 scf/yr	MSS-BD emissions are estimated using ideal gas law.	MSS-BD emissions are uncontrolled.	Updated

Section 3 – Process Flow Diagram



Section 4 – Area Map



ASAU CTB and Satellite

Prepared for: Apache Corporation

October 2024

Gaines County, Texas



Section 5 – Emissions Calculations

Proposed Maximum Air Pollutant Emission Rates																								
Emission Source	FIN	EPN	VOC		NO _x		CO		PM _{2.5}		PM ₁₀		PM		SO ₂		H ₂ S		Benzene		Formaldehyde		HAP	
			lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Fugitives	FUG	FUG	0.62	2.71	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.05	0.01	0.06	--	--	0.05	0.22
0.750-mmBtu/hr Heater Treater	HT-1	HT-1	4.04E-03	0.02	0.07	0.32	0.06	0.27	0.01	0.02	0.01	0.02	0.01	0.02	4.41E-04	1.93E-03	5.28E-06	2.31E-05	1.54E-06	6.76E-06	5.51E-05	2.42E-04	1.39E-03	0.01
Two 1,500-bbl Crude Oil Tanks Controlled by VRUs	OTK-1 - OTK-2	OTK-1 - OTK-2 / VRU-1, VRU-2	1.53	3.01	--	--	--	--	--	--	--	--	--	--	--	--	0.07	0.16	0.11	0.20	--	--	0.31	0.57
One 1,000-bbl Crude Oil Tank Controlled by VRUs		OTK-4 / VRU-1, VRU-2	0.79	0.04	--	--	--	--	--	--	--	--	--	--	--	--	0.03	5.78E-04	0.06	2.80E-03	--	--	0.16	0.01
Tank Forced Ventilation 1 Controlled by VRUs	OTK-1 - OTK-2, OTK-4	OTK-1 - OTK-2, OTK-4 / VRU-1, VRU-2	2.16	0.22	--	--	--	--	--	--	--	--	--	--	--	--	0.12	0.01	0.11	0.01	--	--	0.37	0.04
Heater Treater Off Gas Controlled by VRUs	HT	HT / VRU-1, VRU-2	1.12	2.41	--	--	--	--	--	--	--	--	--	--	--	--	0.06	0.15	0.06	0.12	--	--	0.19	0.39
FWKO Off Gas Controlled by VRUs	FWKO	FWKO / VRU-1, VRU-2	1.12	2.41	--	--	--	--	--	--	--	--	--	--	--	--	0.06	0.15	0.06	0.12	--	--	0.19	0.39
One 500-bbl Skim Oil Tank Controlled by VRUs	SLOPTK-1	OTK-1 - OTK-2 / VRU-3, VRU-4	2.86E-03	3.07E-03	--	--	--	--	--	--	--	--	--	--	--	--	1.26E-04	1.39E-04	2.01E-04	1.95E-04	--	--	5.44E-04	5.07E-04
Three 1,500-bbl Produced Water Tanks Controlled by VRUs	PWTK-1 - PWTK-3	PWTK-1 - PWTK-3 / VRU-3, VRU-4	0.13	0.29	--	--	--	--	--	--	--	--	--	--	--	--	0.30	0.89	0.09	0.20	--	--	0.13	0.29
One Gunbarrel Separator Controlled by VRUs	GBT-1	GBT-1 / VRU-3, VRU-4	0.12	0.48	--	--	--	--	--	--	--	--	--	--	--	--	0.27	1.04	0.05	0.21	--	--	0.08	0.32
Tank Forced Ventilation 2 Controlled by VRUs	SLOPTK-1, PWTK-1 - PWTK-3	OTK-1 - OTK-2, OTK-4 / VRU-3, VRU-4	0.14	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.35	0.03	0.10	0.01	--	--	0.14	0.01
Miscellaneous Tanks	TK-MISC	TK-MISC	1.65	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.65	0.01
Skim Oil Truck Loading	SLOAD	SLOAD	5.11	0.02	--	--	--	--	--	--	--	--	--	--	--	--	0.18	--	0.36	1.23E-03	--	--	0.97	3.20E-03
Miscellaneous MSS Activities	MSS	MSS	0.03	0.13	--	--	--	--	--	--	--	--	--	--	--	--	8.07E-04	3.53E-03	6.30E-04	2.76E-03	--	--	2.12E-03	0.01
Painting and Blasting	MSS-PB	MSS-PB	0.11	0.48	--	--	--	--	0.10	0.01	0.68	0.08	5.73	0.60	--	--	--	--	--	--	--	--	--	--
Vessel and VRU Compressor Blowdowns	MSS-BD	MSS-BD	4.14	0.50	--	--	--	--	--	--	--	--	--	--	--	--	0.78	0.09	0.10	0.01	--	--	0.33	0.04
Tank Non-Forced Ventilation 1	MSS-TK1	MSS-TK1	1.57	0.46	--	--	--	--	--	--	--	--	--	--	--	--	0.10	0.03	0.07	0.02	--	--	0.07	0.02
Tank Non-Forced Ventilation 2	MSS-TK2	MSS-TK2	0.07	0.02	--	--	--	--	--	--	--	--	--	--	--	--	0.21	0.06	0.05	0.01	--	--	0.05	0.01
TOTAL EMISSIONS:			20.42	13.22	0.07	0.32	0.06	0.27	0.11	0.04	0.69	0.10	5.73	0.62	4.41E-04	1.93E-03	2.54	2.66	1.23	0.98	5.51E-05	2.42E-04	4.70	2.33

*Tank MSS (Tank Forced Ventilation 1, Tank Forced Ventilation 2, MSS, MSS-TK1, and MSS-TK2) and Skim Oil Truck Loading (SLOAD) cannot be performed simultaneously.

Apache Corporation
ASAU CTB and Satellite
Site Information

Oil and Gas Site General Information

Administrative Information

Company Name	Apache Corporation
Site Name	ASAU CTB and Satellite
RN Number	RN102213592
Nearest City/Town	Welch, TX
Latitude/Longitude	32.957591, -102.280976
County	Gaines

Technical Information

Natural Gas Site Throughput (MSCF/day):	7,000
Natural Gas Site Throughput (MSCF/year):	1,825,000
Oil Site Throughput (bbl/day):	2,000
Oil Site Throughput (bbl/year):	419,750
Water Site Throughput (bbl/day):	22,500
Water Site Throughput (bbl/year):	7,300,000
Are there any sour gas streams at this site?	Yes
Gas H ₂ S Concentration (ppmv)	22,619

Equipment/Process Types

How many for this project?

Fugitives	Yes
IC Engines	0
Turbines	0
Compressors	4
Diesel Engines	0
Heaters-Boilers	1
Separators	11
Oil / Condensate Tanks	4
Produced Water Tanks	3
Miscellaneous Tanks	1
Loading Jobs	1
Glycol Units	0
Amine Units	0
Vapor Recovery Units	4
Flares-Vapor Combustors	0
Thermal Oxidizers	0
Other	0

**APACHE CORPORATION
ASAU CTB AND SATELLITE
OPERATIONS SUMMARY**

Proposed facility Throughputs:	7,000	MSCFD (Gas Rate - Maximum)
	5,000	MSCFD (Gas Rate - Average)
	2,000	BOPD (Live Oil - Maximum)
	1,150	BOPD (Live Oil - Average)
	730	BSPY Truck Loaded
	22,500	BWPD (Water Rate - Maximum)
	20,000	BWPD (Water Rate - Average)

Federal Regulations	Applicability	
NSPS 0000	N/A	Does not apply.
NSPS 0000a	Yes	Reference regulations summary.
NSPS 0000b	N/A	Does not apply.
NSPS JJJJ	N/A	Does not apply.
NESHAP ZZZZ	N/A	Does not apply.
MACT HH	N/A	Does not apply.

Apache Corporation
ASAU CTB and Satellite
Gas Analysis

					VOC Fugitive Calculations	
Component	Mol-Wt (lb/lb-mol)	Mole %	MW*mol%	Weight %	MW*mol%	Speciated Weight %
H2S	34.08	2.2619	0.771	1.7454%		
Nitrogen	28.01	0.0836	0.023	0.05%		
Methane	16.04	1.5282	0.245	0.56%	0.245	5.02%
CO2	44.01	87.4556	38.489	87.15%		
Ethane	30.07	1.7642	0.530	1.20%	0.530	10.87%
Propane	44.1	2.7977	1.234	2.79%	1.234	25.28%
i-Butane	58.12	0.5938	0.345	0.78%	0.345	7.07%
n-Butane	58.12	1.4469	0.841	1.90%	0.841	17.23%
i-Pentane	72.15	0.5303	0.383	0.87%	0.383	7.84%
n-Pentane	72.15	0.5188	0.374	0.85%	0.374	7.67%
iC6	86.18	0.4161	0.359	0.81%	0.359	7.35%
n-Hexane	86.18	0.1564	0.135	0.31%	0.135	2.76%
iC7	100.2	0.1450	0.145	0.33%	0.145	2.98%
n-Heptane	100.2		0.000	0.00%	0.000	0.00%
Benzene	78.11	0.1265	0.099	0.22%	0.099	2.02%
Toluene	92.14	0.0405	0.037	0.08%	0.037	0.76%
2,2,4-Trimethylpentane	114.23	0.0383	0.044	0.10%	0.044	0.90%
nC8	114.23	0.0607	0.069	0.16%	0.069	1.42%
Ethylbenzene	106.17	0.0089	0.009	0.02%	0.009	0.19%
m-Xylene	106.17	0.0035	0.004	0.01%	0.004	0.08%
o-Xylene	106.17	0.0013	0.001	0.00%	0.001	0.03%
p-Xylene	106.17		0.000	0.00%	0.000	0.00%
Nonane	128.26	0.0168	0.022	0.05%	0.022	0.44%
C10	142.29	0.0030	0.004	0.01%	0.004	0.09%
TOTAL	44.16	99.998	44.164	100.00%	4.881	84.11%

Wt% VOC	9.29%
Wt% HAP	0.75%
Sample Date	5/16/2023
Sample Location	ASAU Central Tank Battery
Sample Pressure (psig)	30.7
Sample Temperature(°F)	65
High Heating Value (Btu/scf):	290
Low Heating Value (Btu/scf):	267

SAMPLE ID		COLLECTION DATA	
Operator	Apache Corporation	Pressure	30.7 psig
Location	Adair San Andres Unit	Sample Temp	65 F
Site	Central Tank Battery	Atm Temp	75 F
Sample Point	Gas Leg of South Separator	Collection Date/Time	05/16/2023 2:01 PM
Spot/Comp	Spot	Collection By	Cody Carson
Meter ID		Base Pressure/Temp	14.650psi/60F
Fluid	Gas	Container(s)	PLS017
Sample Start		Sample Finish	

Onsite Testing by Stain Tube

METHOD	TYPE	MEAS VALUE	MOL%	GRAINS/100	PPMV
GPA2377	H2S	2.00 VOL%	2.2619	1,436.31	22,837.3

Mol%, Grains/100, PPMV are pressure and temperature corrected to base conditions.

GPA 2286 Gas Extended Fractional Analysis

COMPOUND	FORMULA	MOL%	WT%	GPM
NITROGEN	N2	0.0836	0.0530	0.0091
CARBON DIOXIDE	CO2	87.4556	87.1696	14.7394
OXYGEN	O2	0.0020	0.0014	0.0002
HYDROGEN SULFIDE	H2S	2.2619	1.7459	0.3020
METHANE	C1	1.5282	0.5552	0.2558
ETHANE	C2	1.7642	1.2014	0.4659
PROPANE	C3	2.7977	2.7940	0.7612
I-BUTANE	iC4	0.5938	0.7816	0.1919
N-BUTANE	nC4	1.4469	1.9046	0.4505
I-PENTANE	iC5	0.5303	0.8665	0.1915
N-PENTANE	nC5	0.5188	0.8477	0.1857
NEO-PENTANE	neC5	0.0000	0.0000	0.0000
BENZENE	C6H6	0.1265	0.2238	
N-HEXANE	C6H14	0.1564	0.3052	
OTHER HEXANES	C6Hx	0.4161	0.8058	0.3977
2,2,4-TRIMETHYLPENTANE	C7H14	0.0383	0.0852	
TOLUENE	C7H8	0.0405	0.0846	
OTHER HEPTANES	C7Hx	0.1450	0.3274	
ETHYLBENZENE	C8H10	0.0089	0.0213	
M+P XYLENE	C8H10	0.0035	0.0084	
O-XYLENE	C8H10	0.0013	0.0030	
OTHER OCTANES	C8Hx	0.0607	0.1565	
NONANES	C9Hx	0.0168	0.0481	

DECANES PLUS	C10+	0.0030	0.0098	
TOTALS:		100.0000	100.0000	17.9509

Value of "0.0000" interpreted as below detectable limit. Oxygen includes argon if present.

Hydrocarbon Fractional Calculated Properties

H2O CONTENT	BTU/CF	SPECIFIC GR.	Z FACTOR	MOL WT	LB/SCF	WOBBE IDX
DRY	290.1	1.5344	0.9932	44.14	0.1167	234.2
SATURATED	286.0	1.5192	0.9927	43.37	0.1147	

Apache Corporation
ASAU CTB and Satellite
Liquid Analysis

					VOC Fugitive Calculations	
Component	Mol-Wt (lb/lb-mol)	Mole %	MW*mol%	Weight %	MW*mol%	Speciated Weight %
H2S	34.08	0.2191	0.075	0.04%		
Nitrogen	28.01	0.0290	0.008	0.00%		
Methane	16.04	0.0084	0.001	0.00%	0.001	0.00%
CO2	44.01	3.4882	1.535	0.78%		
Ethane	30.07	0.1139	0.034	0.02%	0.034	0.02%
Propane	44.1	0.6902	0.304	0.16%	0.304	0.16%
i-Butane	58.12	0.3492	0.203	0.10%	0.203	0.10%
n-Butane	58.12	1.0410	0.605	0.31%	0.605	0.31%
i-Pentane	72.15	1.5289	1.103	0.56%	1.103	0.57%
n-Pentane	72.15	1.9411	1.401	0.72%	1.401	0.72%
iC6	86.18	6.8737	5.924	3.03%	5.924	3.05%
n-Hexane	86.18	2.9642	2.555	1.31%	2.555	1.32%
iC7	100.2	6.8009	6.815	3.48%	6.815	3.51%
n-Heptane	100.2		0.000	0.00%	0.000	0.00%
Benzene	78.11	4.0045	3.128	1.60%	3.128	1.61%
Toluene	92.14	4.6453	4.280	2.19%	4.280	2.21%
2,2,4-Trimethylpentane	114.23	2.6828	3.065	1.57%	3.065	1.58%
nC8	114.23	6.2782	7.172	3.66%	7.172	3.69%
Ethylbenzene	106.17	2.3388	2.483	1.27%	2.483	1.28%
m-Xylene	106.17	1.2789	1.358	0.69%	1.358	0.70%
o-Xylene	106.17	0.4792	0.509	0.26%	0.509	0.26%
p-Xylene	106.17		0.000	0.00%	0.000	0.00%
Nonane	128.26	6.8550	8.792	4.49%	8.792	4.53%
C10	142.29		0.000	0.00%	0.000	0.00%
C10+ Oil	318.0911	45.3895	144.380	73.77%	144.380	74.38%
TOTAL	195.73	100.000	195.728	100.00%	194.110	99.98%

Wt% VOC	99.16%
Wt% HAP	8.88%
Sample Date	5/16/2023
Sample Location	ASAU Central Tank Battery
Sample Pressure (psig)	30.7
Sample Temperature(°F)	65
Decanes Plus Molecular Weight (lb/lbmol)	318.0911
Decanes Plus Specific Gravity	0.8788

SAMPLE ID		COLLECTION DATA	
Operator	Apache Corporation	Pressure	30.7 psig
Location	Adair San Andres Unit	Sample Temp	65 F
Site	Central Tank Battery	Atm Temp	75 F
Sample Point	Oil Leg of Heater Treater Before Dump Valve	Collection Date/Time	05/16/2023 2:14 PM
Spot/Comp	Spot	Collection By	Cody Carson
Meter ID		Base Pressure/Temp	14.650psi/60F
Fluid	Crude Oil	Container(s)	PLBTL250-007 , PLP17781
Sample Start	5/16/2023 2:08:00 PM	Sample Finish	5/16/2023 2:15:00 PM

GPA 2186 Crude Oil Fractional Analysis

COMPOUND	FORMULA	MOL%	VOL%	WT%
NITROGEN	N2	0.0290	0.0041	0.0042
CARBON DIOXIDE	CO2	3.4882	0.7672	0.7934
HYDROGEN SULFIDE	H2S	0.2191	0.0382	0.0386
METHANE	C1	0.0084	0.0018	0.0007
ETHANE	C2	0.1139	0.0393	0.0177
PROPANE	C3	0.6902	0.2450	0.1573
I-BUTANE	iC4	0.3492	0.1473	0.1049
N-BUTANE	nC4	1.0410	0.4229	0.3127
I-PENTANE	iC5	1.5289	0.7206	0.5701
N-PENTANE	nC5	1.9411	0.9068	0.7238
NEO-PENTANE	neC5	0.0000	0.0000	0.0000
BENZENE	C6H6	4.0045	1.4442	1.6166
N-HEXANE	C6H14	2.9642	1.5708	1.3202
OTHER HEXANES	C6Hx	6.8737	3.3417	3.0226
2,2,4-TRIMETHYLPENTANE	C7H14	2.6828	1.3897	1.3614
TOLUENE	C7H8	4.6453	2.0048	2.2121
OTHER HEPTANES	C7Hx	6.8009	3.8688	3.4941
ETHYLBENZENE	C8H10	2.3388	1.1633	1.2833
M+P XYLENE	C8H10	1.2789	0.6381	0.7017
O-XYLENE	C8H10	0.4792	0.2348	0.2630
OTHER OCTANES	C8Hx	6.2782	3.9692	3.6830
NONANES	C9Hx	6.8550	4.5512	4.4460
DECANES PLUS	C10+	45.3895	72.5302	73.8726
TOTALS:		100.0000	100.0000	100.0000

Value of "0.0000" interpreted as below detectable limit. UOP163 H2S value is used in fractional when applicable.

Hydrocarbon Fractional Calculated Properties

SAMPLE FRACTION	MOLECULAR WT	VP 100F, PSI	REL DEN (60/60)	API GRAVITY, 60F
TOTAL SAMPLE	193.5269	17.9721	0.8431	36.3
C6+ ONLY	207.8103	1.0268	0.8494	35.10
C10+ ONLY	318.0911	0.0084	0.8788	29.51

Gravity/Density

METHOD	FLUID	REL DEN (60/60)	DEG API (60F)	CONTAINER	TEST DATE
ASTM D287	Crude Oil	0.8583	33.4	PLP17781	5/18/2023

Vapor Pressure - ASTM D6377

VPCR ₄ (100F)	RVPE	UNITS	CONTAINER	TEST DATE
17.02	15.57	psi	PLP17781	5/17/2023

RVPE - "Reid Vapor Pressure Equivalent" Calculation from Method, factor 0.915

H2S and Mercaptan in Crude Oil - UOP 163

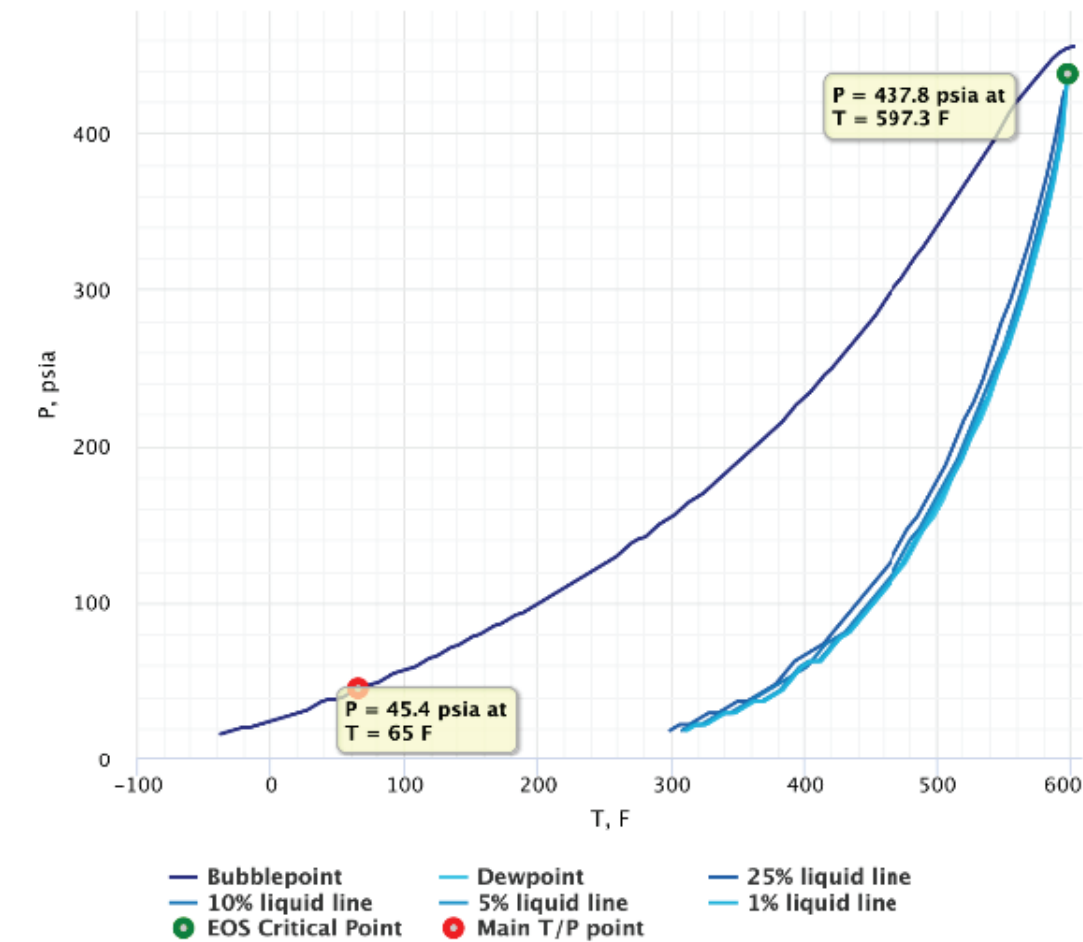
ITEM	VALUE	UNITS
Hydrogen Sulfide	385.9	PPMW
Mercaptan Sulfur	1689.4	PPMW

Test Date - 5/17/2023, Lead Acetate Paper Test - Positive

Equation of State Analysis and Phase Envelope

EOS MODEL	SAMPLE CONDITIONS	BUBBLE POINT PRESSURE	PRESSURE VARIANCE
Peng-Robinson	30.70 psig AT 65.00 F	30.40 PSIG At 65.00 F	0.9800%

Phase diagram – Apache Adair San Andres Crude Oil 2023-05-16



Apache Corporation
ASAU CTB and Satellite
Fugitive Emissions

EPN: FUG
FIN: FUG

Background Information

Total fugitive component counts are based on equipment counts at the facility and default average component counts for major crude oil production equipment (40 CFR Part 98, Subpart W, Table W-1C) and major onshore natural gas production equipment (40 CFR Part 98, Subpart W, Table W-1B), effective 10/22/2015.

Component Count for Oil Production (Western US)

Major equipment	Valves	Flanges	Connectors	Open-ended lines	Other components
Wellhead	5	10	4	--	1
Separator	6	12	10	--	--
Meters/piping	--	--	--	--	--
Heater-treater	8	12	20	--	--
Header	5	10	4	--	--
In-line heaters	--	--	--	--	--
Dehydrators	--	--	--	--	--
Compressors	--	--	--	--	--

Component Count for Gas Production (Western US)

Major equipment	Valves	Flanges	Connectors	Open-ended lines	Other components
Wellhead	11	--	36	1	--
Separators	34	--	106	6	2
Meters/piping	14	--	51	1	1
Heater-treater	--	--	--	--	--
Header	--	--	--	--	--
In-line heaters	14	--	65	2	1
Dehydrators	24	--	90	2	2
Compressors	73	--	179	3	4

Facility Equipment Counts

Major equipment	Gas Production	Oil Production
Wellhead	10	10
Separator	11	11
Meters/piping	1	N/A
Heater-treater	N/A	1
Header	N/A	2
In-line heaters	--	N/A
Dehydrators	--	N/A
Compressors	4	N/A

Component Service	Component Counts - MRR Approach				
	Valve	Flanges	Connectors	Open-Ended Line	Other Components
Gas Service	790	--	2,293	89	39
Light Oil Service	134	264	178	--	10

Emissions Estimate

Liquid Equipment/Service	Oil and Gas Production Operations Average Emissions (Light Oil) ¹ (kg/hr/component)	Oil and Gas Production Operations Average Emissions (Gas) ¹ (kg/hr/component)	# Light Oil Components	# Gas Components	Reduction Factor ²	Light Oil Service Hourly Emissions ³ (lb/hr)	Gas Service Hourly Emissions ⁴ (lb/hr)
Valves	2.50E-03	4.50E-03	134	790	97.00%	0.02	0.24
Pump Seals	0.01	2.40E-03	--	--	0.00%	--	--
Flanges	1.10E-04	3.90E-04	264	--	97.00%	1.92E-03	--
Open-Ended Lines	1.40E-03	2.00E-03	--	89	0.00%	--	0.39
Connectors	2.10E-04	2.00E-04	178	2,293	97.00%	2.47E-03	0.03
Other	0.01	0.01	10	39	95.00%	0.01	0.04
Totals TOC						0.03	0.70

¹ Emission factors have been obtained from EPA document EPA-453/R-95-017; November, 1995, Table 2-4.

² Reduction factor based on NRSP Table 9.

³ Controlled Short-Term ER (lb/hr) = (100% - Reduction Factor) * Σ(Number of Components * Emissions Factor [kg/hr/component] * 2.20462 lb/kg).

⁴ Controlled Annual ER (tpy) = Controlled Short-Term ER (lb/hr) * 8,760 (hr/yr) / 2,000 (lb/ton).

Apache Corporation
ASAU CTB and Satellite
Fugitive Emissions

EPN: FUG

FIN: FUG

Background Information

Total fugitive component counts are based on equipment counts at the facility and default average component counts for major crude oil production equipment (40 CFR Part 98, Subpart W, Table W-1C) and major onshore natural gas production equipment (40 CFR Part 98, Subpart W, Table W-1B), effective 10/22/2015.

Speciated Fugitive Emissions

Component	Light Oil ¹ (lb/hr)	Light Oil ¹ (ton/year)	Gas ^{2,3} (lb/hr)	Gas ^{2,3} (ton/year)	Total (lb/hr)	Total (ton/year)
H2S	1.33E-05	5.82E-05	0.01	0.05	0.01	0.05
Nitrogen	1.44E-06	6.33E-06	3.69E-04	1.62E-03	3.70E-04	1.62E-03
Methane	2.40E-07	1.05E-06	0.03	0.15	0.03	0.15
CO2	2.73E-04	1.20E-03	0.61	2.66	0.61	2.66
Ethane	6.09E-06	2.67E-05	0.08	0.33	0.076	0.33
Propane	5.41E-05	2.37E-04	0.18	0.77	0.176	0.77
i-Butane	3.61E-05	1.58E-04	0.05	0.22	4.92E-02	0.22
n-Butane	1.08E-04	4.71E-04	0.12	0.53	0.12	0.53
i-Pentane	1.96E-04	8.59E-04	0.05	0.24	5.47E-02	0.24
n-Pentane	2.49E-04	1.09E-03	0.05	0.23	5.36E-02	0.23
iC6	1.05E-03	4.62E-03	0.05	0.22	0.05	0.23
n-Hexane	4.54E-04	1.99E-03	0.02	0.08	0.02	0.09
iC7	1.21E-03	0.01	0.02	0.09	0.02	0.10
n-Heptane	--	--	--	--	--	--
Benzene	5.56E-04	2.44E-03	0.01	0.06	0.01	0.06
Toluene	7.61E-04	3.33E-03	0.01	0.02	0.01	0.03
2,2,4-Trimethylpentane	5.45E-04	2.39E-03	0.01	0.03	0.01	0.03
nC8	1.28E-03	0.01	0.01	0.04	0.01	0.05
Ethylbenzene	4.42E-04	1.93E-03	1.35E-03	0.01	1.79E-03	0.01
m-Xylene	2.42E-04	1.06E-03	5.30E-04	2.32E-03	7.71E-04	3.38E-03
o-Xylene	9.05E-05	3.96E-04	1.97E-04	8.62E-04	2.87E-04	1.26E-03
p-Xylene	--	--	--	--	--	--
Nonane	1.56E-03	0.01	3.07E-03	0.01	4.64E-03	0.02
C10	--	--	6.08E-04	2.67E-03	6.08E-04	2.67E-03
C10+ Oil	0.03	0.11	--	--	0.03	0.11
Total	0.03	0.15	1.31	5.76	1.35	5.91
Total CO₂	2.73E-04	1.20E-03	0.61	2.66	0.61	2.66
Total Methane	2.40E-07	1.05E-06	0.03	0.15	0.03	0.15
Total CO₂e	2.79E-04	1.22E-03	1.48	6.48	1.48	6.48
Total TOC	0.03	0.15	0.70	3.05	0.73	3.20
Percent VOC in TOC	99.16%	99.16%	84.11%	84.11%	84.83%	84.83%
VOC	0.035	0.15	0.59	2.56	0.62	2.71
Total HAP	3.091E-03	0.014	0.047	0.21	0.050	0.22

¹ Light Oil Speciated Fugitive Emissions Composition obtained from liquid analysis.

² Gas Speciated Fugitive Emissions Composition obtained from gas analysis.

³ Benzene and VOC emissions calculated in accordance with TCEQ as follows:

Benzene emissions (lb/hr) = Gas Service Hourly Emissions (lb/hr) x Benzene wt% in total sample / TOC wt% in total sample

VOC emissions (lb/hr) = Gas Service Hourly Emissions (lb/hr) x VOC wt% in total sample / TOC wt% in total sample

Apache Corporation
ASAU CTB and Satellite
Heater Treater

EPN: HT-1
FIN: HT-1

Background Information	
Name	Heater Treater
Heater/Boiler rating (MMBtu/hr):	0.75
Operating hours/year:	8,760
Natural Gas Heat Value (Btu/scf) ¹ :	1,020.0
Fuel Heat Value (Btu/scf) ² :	1,020.0
Fuel Rate (scf/hr):	735.29
Fuel Rate (scf/yr):	6,441,176.47

¹ Heating value for natural gas taken from Section 1.4 of AP-42 (dated 7/98).

² Fuel heat value assumes AP-42 Value.

Pollutant	AP-42 Emission Factor (lb/MMscf) ¹	Emission Factor (lb/MMBtu)	lb/hr	tpy
VOC	5.5	0.0054	4.04E-03	1.77E-02
NOx	100	0.10	0.074	0.32
CO	84	0.082	0.062	0.27
PM	7.6	0.0075	0.01	2.45E-02
PM ₁₀	7.6	0.0075	0.01	2.45E-02
PM _{2.5}	7.6	0.0075	0.01	2.45E-02
SO ₂	0.6		4.41E-04	1.93E-03
HAPS				
Arsenic	2.00E-04	1.96E-07	1.47E-07	6.44E-07
Benzene	2.10E-03	2.06E-06	1.54E-06	6.76E-06
Beryllium	1.20E-05	1.18E-08	8.82E-09	3.86E-08
Cadmium	1.10E-03	1.08E-06	8.09E-07	3.54E-06
Chromium	1.40E-03	1.37E-06	1.03E-06	4.51E-06
Cobalt	8.40E-05	8.24E-08	6.18E-08	2.71E-07
Dichlorobenzene	1.20E-03	1.18E-06	8.82E-07	3.86E-06
Formaldehyde	0.08	7.35E-05	5.51E-05	2.42E-04
n-Hexane	1.80	1.76E-03	1.32E-03	0.01
Lead	5.00E-04	4.90E-07	3.68E-07	1.61E-06
Manganese	3.80E-04	3.73E-07	2.79E-07	1.22E-06
Mercury	2.60E-04	2.55E-07	1.91E-07	8.37E-07
Naphthalene	6.10E-04	5.98E-07	4.49E-07	1.96E-06
Nickel	2.10E-03	2.06E-06	1.54E-06	6.76E-06
POM	8.80E-05	8.63E-08	6.47E-08	2.83E-07
Toluene	3.40E-03	3.33E-06	2.50E-06	1.10E-05
Selenium	2.40E-05	2.35E-08	1.76E-08	7.73E-08
Total HAPs			1.39E-03	0.01
Other Pollutants				
H ₂ S	N/A ²		5.28E-06	2.31E-05

Parameter	Value
scf/lbmole	379.6
lb/ton	2,000
H ₂ S MW	34.08
SO ₂ MW	64.06

GHG Pollutant Emissions ^{1,4}	
GHG CO ₂ Factor:	120,000 lb/MMscf
GHG CH ₄ Factor:	2.30 lb/MMscf
GHG N ₂ O Factor:	2.20 lb/MMscf
GWP CO ₂ Equivalent:	1
GWP CH ₄ Equivalent:	25
GWP N ₂ O Equivalent:	298
CO ₂ emissions:	386.47 tpy
CH ₄ emissions:	0.01 tpy
N ₂ O emissions:	0.01 tpy
CO ₂ e emissions:	388.77 tpy

¹ Emission factors are taken from AP-42, Chapter 1, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, dated July 1998.

² H₂S emissions are conservatively based on 98% conversion of H₂S to SO₂.

³ No Alternate Emissions Factors Utilized.

⁴ Global Warming Potentials from Table A-1 of Subpart A of Part 98 for Mandatory Greenhouse Gas Reporting.

H ₂ S Max Concentration (ppmv)	H ₂ S Mass to Heater ¹ (lb/hr)	H ₂ S Mass to Heater (tpy)
4.00	2.64E-04	1.16E-03

¹ H₂S Mass to Heater (lb/hr) = H₂S Max Concentration (ppmv) / 10⁶ * Fuel Rate (scf/hr) / Standard Molar Volume (scf/lbmol) * H₂S MW (lb/lbmol)

Example Calculation (VOC):

$$\begin{aligned}
 & \frac{5.5 \text{ lb VOC}}{\text{MMscf}} \times \frac{0.75 \text{ MMBtu/hr}}{1020 \text{ Btu/scf}} = \frac{0.0040 \text{ lb VOC}}{\text{hr}} \\
 & \frac{0.0040 \text{ lb VOC}}{\text{hr}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} = \frac{0.018 \text{ tons VOC}}{\text{year}}
 \end{aligned}$$

Apache Corporation
ASAU CTB and Satellite
Crude Oil Tanks

EPN: VRU-1, VRU-2
FINs: OTK-1 - OTK-2

Identification - Vertical Fixed Roof Tank		
	Tank ID	OTK-1 - OTK-2
	Maximum Daily Throughput (bbl/day) ⁴	1,000.00
	Annual Throughput (bbl/yr)	209,875.00
Tank Dimensions		
	Shell Height (ft)	24.0
	Diameter (ft)	21.5
	Volume (gal)	63,000
	Turnovers ¹	150.25
	Net Throughput (gal/yr)	8,814,750
Other Inputs		
	Shell/Roof Color/Shade ²	Beige/Cream/ Beige/Cream
	Shell/Roof Paint Condition	Average/Average
	Meteorological Data	Midland, TX
Tank Contents		
	Stabilized Oil RVP ³	3.45
	Tank Controlled?	Yes
	Control Strategy	VRU Only
	Control Device EPN	VRU-1, VRU-2
	VRU Capture Efficiency %	99%
	VRU Annual Downtime %	0%
	VRU Annual Operating hours	8,760

¹ Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

² Paint color from ProMax options used to simulate paint color observed in the field.

³ Reid Vapor Pressure from ProMax.

⁴ Throughput represented on a per tank basis

Uncontrolled Speciated Crude Oil Tanks Emissions (EPN: VRU-1, VRU-2)

Component	Hourly Emissions, lb/hr				Annual Emissions, TPY			
	Working	Breathing	Flash	Total	Working	Breathing	Flash	Total
H2S	1.14	0.04	5.70	6.88	2.07	0.17	13.47	15.71
Nitrogen	0.01	3.46E-04	1.00	1.01	0.02	1.52E-03	2.50	2.52
Methane	4.75E-03	1.96E-04	0.16	0.16	0.01	8.68E-04	0.40	0.41
CO2	18.27	0.75	166.30	185.33	41.76	3.39	410.66	455.81
Ethane	0.56	0.02	3.06	3.64	1.27	0.10	7.37	8.74
Propane	3.26	0.12	16.58	19.96	5.83	0.47	37.74	44.04
i-Butane	1.13	0.04	6.26	7.43	1.90	0.15	13.57	15.63
n-Butane	2.52	0.09	14.31	16.93	4.17	0.34	30.50	35.01
i-Pentane	2.19	0.08	12.44	14.70	3.42	0.28	25.51	29.20
n-Pentane	2.19	0.08	12.52	14.79	3.36	0.27	25.39	29.02
iC6	4.33	0.15	25.10	29.58	6.37	0.52	49.61	56.50
n-Hexane	1.40	0.05	7.98	9.43	2.03	0.16	15.56	17.76
iC7	1.80	0.06	11.69	13.55	2.50	0.20	22.44	25.15
n-Heptane	--	--	--	--	--	--	--	--
Benzene	1.14	0.04	9.49	10.67	1.62	0.13	18.60	20.35
Toluene	0.53	0.02	3.88	4.44	0.72	0.06	7.36	8.13
2,2,4-Trimethylpentane	0.61	0.02	3.93	4.56	0.85	0.07	7.50	8.42
nC8	0.47	0.02	3.14	3.62	0.59	0.05	5.78	6.42
Ethylbenzene	0.12	3.82E-03	0.78	0.90	0.15	0.01	1.43	1.59
m-Xylene	0.06	1.85E-03	0.39	0.44	0.07	0.01	0.71	0.79
o-Xylene	0.02	5.63E-04	0.13	0.15	0.02	1.78E-03	0.24	0.26
p-Xylene	--	--	--	--	--	--	--	--
Nonane	0.15	4.99E-03	1.38	1.54	0.19	0.02	2.47	2.68
C10	--	--	--	--	--	--	--	--
Water	--	--	--	--	--	--	--	--
C10+ Oil	6.83E-06	1.57E-07	4.74E-05	5.43E-05	4.31E-06	3.50E-07	6.00E-05	6.47E-05
Total	41.89	1.59	306.22	349.70	78.93	6.41	698.79	784.13
Total CO₂	18.27	0.75	166.30	185.33	41.76	3.39	410.66	455.81
Total Methane	4.75E-03	1.96E-04	0.16	0.16	0.01	8.68E-04	0.40	0.41
Total CO₂e	18.39	0.76	170.26	189.41	42.03	3.41	420.56	466.00
VOC	21.91	0.77	130.00	152.69	33.80	2.74	264.39	300.94
Total HAP	3.89	0.13	26.58	30.60	5.46	0.44	51.40	57.30

Apache Corporation
ASAU CTB and Satellite
Crude Oil Tanks

EPN: VRU-1, VRU-2
FIN: OTK-4

Identification - Vertical Fixed Roof Tank		
	Tank ID	OTK-4
	Maximum Daily Throughput (bbl/day) ⁴	1,000.00
	Annual Throughput (bbl/yr)	1,000.00
Tank Dimensions		
	Shell Height (ft)	16.0
	Diameter (ft)	21.5
	Volume (gal)	42,000
	Turnovers ¹	1.07
	Net Throughput (gal/yr)	42,000
Other Inputs		
	Shell/Roof Color/Shade ²	Tan/Tan
	Shell/Roof Paint Condition	New/New
	Meteorological Data	Midland, TX
Tank Contents		
	Stabilized Oil RVP ³	3.45
	Tank Controlled?	Yes
	Control Strategy	VRU Only
	Control Device EPN	VRU-1, VRU-2
	VRU Capture Efficiency %	99%
	VRU Annual Downtime %	0%
	VRU Annual Operating hours	8,760

¹ Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

² Paint color from ProMax options used to simulate paint color observed in the field.

³ Reid Vapor Pressure from ProMax.

⁴ Throughput represented on a per tank basis

Uncontrolled Speciated Crude Oil Tanks Emissions (EPN: VRU-1, VRU-2)

Component	Hourly Emissions, lb/hr				Annual Emissions, TPY			
	Working	Breathing	Flash	Total	Working	Breathing	Flash	Total
H2S	0.48	0.04	2.88	3.39	6.20E-04	0.02	0.03	0.06
Nitrogen	0.01	1.31E-03	0.50	0.51	4.49E-06	1.73E-04	0.01	0.01
Methane	0.01	5.47E-04	0.08	0.09	1.89E-06	7.31E-05	9.69E-04	1.04E-03
CO2	13.15	1.15	83.40	97.70	4.60E-03	0.18	1.01	1.19
Ethane	0.26	0.02	1.54	1.82	2.12E-04	0.01	0.02	0.03
Propane	1.41	0.11	8.41	9.93	3.58E-03	0.14	0.09	0.24
i-Butane	0.53	0.04	3.20	3.77	3.11E-03	0.12	0.03	0.16
n-Butane	1.22	0.09	7.33	8.65	0.01	0.38	0.08	0.47
i-Pentane	1.07	0.08	6.40	7.55	0.01	0.32	0.06	0.39
n-Pentane	1.08	0.08	6.45	7.61	0.01	0.32	0.06	0.39
iC6	2.17	0.16	12.99	15.31	0.02	0.61	0.13	0.75
n-Hexane	0.69	0.05	4.14	4.88	4.89E-03	0.19	0.04	0.23
iC7	1.02	0.07	6.07	7.16	0.01	0.27	0.06	0.33
n-Heptane	--	--	--	--	--	--	--	--
Benzene	0.82	0.06	4.91	5.79	0.01	0.23	0.05	0.28
Toluene	0.34	0.02	2.02	2.38	2.27E-03	0.09	0.02	0.11
2,2,4-Trimethylpentane	0.34	0.02	2.04	2.41	2.33E-03	0.09	0.02	0.11
nC8	0.27	0.02	1.64	1.93	1.75E-03	0.07	0.01	0.08
Ethylbenzene	0.07	4.66E-03	0.41	0.48	4.32E-04	0.02	3.68E-03	0.02
m-Xylene	0.03	2.31E-03	0.20	0.24	2.14E-04	0.01	1.82E-03	0.01
o-Xylene	0.01	7.81E-04	0.07	0.08	7.20E-05	2.78E-03	6.15E-04	3.47E-03
p-Xylene	--	--	--	--	--	--	--	--
Nonane	0.12	0.01	0.72	0.85	7.30E-04	0.03	0.01	0.04
C10	--	--	--	--	--	--	--	--
Water	--	--	--	--	--	--	--	--
C10+ Oil	4.35E-06	2.08E-07	2.60E-05	3.06E-05	1.36E-08	5.25E-07	1.64E-07	7.03E-07
Total	25.10	2.04	155.40	182.54	0.08	3.08	1.73	4.89
Total CO₂	13.15	1.15	83.40	97.70	4.60E-03	0.18	1.01	1.19
Total Methane	0.01	5.47E-04	0.08	0.09	1.89E-06	7.31E-05	9.69E-04	1.04E-03
Total CO₂e	13.29	1.17	85.39	99.84	4.64E-03	0.18	1.03	1.22
VOC	11.20	0.83	67.00	79.03	0.07	2.87	0.67	3.61
Total HAP	2.31	0.17	13.79	16.26	0.02	0.62	0.13	0.77

Apache Corporation
ASAU CTB and Satellite
Skim Oil Tank

EPN: VRU-3, VRU-4
FIN: SLOPTK-1

Identification - Vertical Fixed Roof Tank		
	Tank ID	SLOPTK-1
	Maximum Daily Throughput (bbl/day) ⁴	25.00
	Annual Throughput (bbl/yr)	730.00
Tank Dimensions		
	Shell Height (ft)	16.0
	Diameter (ft)	15.5
	Volume (gal)	21,000.00
	Turnovers ¹	1.51
	Net Throughput (gal/yr)	30,660.00
Other Inputs		
	Shell/Roof Color/Shade ²	Rust/Rust
	Shell/Roof Paint Condition	New/New
	Meteorological Data	Midland, TX
Tank Contents		
	Stabilized Oil RVP ³	3.45
	Tank Controlled?	Yes
	Control Strategy	VRU Only
	Control Device EPN	VRU-3, VRU-4
	VRU Capture Efficiency %	99%
	VRU Annual Downtime %	0%
	VRU Annual Operating hours	8,760

¹ Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

² Paint color from ProMax options used to simulate paint color observed in the field.

³ Reid Vapor Pressure from ProMax.

⁴ Throughput represented on a per tank basis

Uncontrolled Speciated Skim Oil Tank Emissions (EPN: VRU-3, VRU-4)

Component	Hourly Emissions, lb/hr				Annual Emissions, TPY			
	Working	Breathing	Flash	Total	Working	Breathing	Flash	Total
H2S	0.01	4.58E-03	--	0.01	1.38E-03	0.01	--	0.01
Nitrogen	2.50E-04	1.11E-04	--	3.61E-04	9.31E-06	8.41E-05	--	9.34E-05
Methane	9.15E-05	4.08E-05	--	1.32E-04	3.41E-06	3.08E-05	--	3.42E-05
CO2	0.14	0.07	--	0.21	0.01	0.05	--	0.05
Ethane	3.58E-03	2.07E-03	--	0.01	3.68E-04	3.33E-03	--	3.69E-03
Propane	0.03	0.01	--	0.04	0.01	0.05	--	0.05
i-Butane	0.01	0.01	--	0.02	1.86E-03	0.02	--	0.02
n-Butane	0.02	0.01	--	0.03	4.07E-03	0.04	--	0.04
i-Pentane	0.02	0.01	--	0.03	3.11E-03	0.03	--	0.03
n-Pentane	0.02	0.01	--	0.03	2.97E-03	0.03	--	0.03
iC6	0.04	0.02	--	0.05	0.01	0.05	--	0.05
n-Hexane	0.01	0.01	--	0.02	1.57E-03	0.01	--	0.02
iC7	0.02	0.01	--	0.02	2.13E-03	0.02	--	0.02
n-Heptane	--	--	--	--	--	--	--	--
Benzene	0.01	0.01	--	0.02	1.95E-03	0.02	--	0.02
Toluene	0.01	2.52E-03	--	0.01	6.58E-04	0.01	--	0.01
2,2,4-Trimethylpentane	0.01	2.61E-03	--	0.01	6.94E-04	0.01	--	0.01
nC8	3.79E-03	1.85E-03	--	0.01	4.50E-04	4.06E-03	--	4.51E-03
Ethylbenzene	9.37E-04	4.56E-04	--	1.39E-03	1.11E-04	9.99E-04	--	1.11E-03
m-Xylene	4.64E-04	2.25E-04	--	6.89E-04	5.45E-05	4.92E-04	--	5.47E-04
o-Xylene	1.56E-04	7.56E-05	--	2.32E-04	1.82E-05	1.64E-04	--	1.83E-04
p-Xylene	--	--	--	--	--	--	--	--
Nonane	1.55E-03	7.35E-04	--	2.29E-03	1.66E-04	1.50E-03	--	1.67E-03
C10	--	--	--	--	--	--	--	--
Water	--	--	--	--	--	--	--	--
C10+ Oil	2.22E-08	7.44E-09	--	2.96E-08	7.00E-10	6.32E-09	--	7.02E-09
Total	0.34	0.17	--	0.51	0.04	0.34	--	0.38
Total CO₂	0.14	0.07	--	0.21	0.01	0.05	--	0.05
Total Methane	9.15E-05	4.08E-05	--	1.32E-04	3.41E-06	3.08E-05	--	3.42E-05
Total CO₂e	0.14	0.07	--	0.21	0.01	0.05	--	0.05
VOC	0.19	0.10	--	0.29	0.03	0.28	--	0.31
Total HAP	0.04	0.02	--	0.05	0.01	0.05	--	0.05

Apache Corporation
ASAU CTB and Satellite
Produced Water Tanks

EPN: VRU-3, VRU-4
FINs: PWTk-1 - PWTk-3

Identification - Vertical Fixed Roof Tank		
	Tank ID	PWTk-1 - PWTk-3
	Maximum Daily Throughput (bbl/day) ³	7,500.00
	Annual Throughput (bbl/yr)	2,433,333.33
Tank Dimensions		
	Shell Height (ft)	24.0
	Diameter (ft)	21.5
	Volume (gal)	63,000
	Turnovers ¹	1,742.02
	Net Throughput (gal/yr)	102,200,000
Other Inputs		
	Shell/Roof Color/Shade ²	White/White
	Shell/Roof Paint Condition	Aged/Aged
	Meteorological Data	Midland, TX
Tank Contents		
	Water Weight %	1.60
	Tank Controlled?	Yes
	Control Strategy	VRU Only
	Control Device EPN	VRU-3, VRU-4
	VRU Capture Efficiency %	99%
	VRU Annual Downtime %	0%
	VRU Annual Operating hours	8,760

¹ Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

² Paint color from ProMax options used to simulate paint color observed in the field.

³ Throughput represented on a per tank basis

Uncontrolled Speciated Produced Water Tanks Emissions (EPN: VRU-3, VRU-4)

Component	Hourly Emissions, lb/hr				Annual Emissions, TPY			
	Working	Breathing	Flash	Total	Working	Breathing	Flash	Total
H2S	21.95	0.24	7.80	29.99	73.27	0.98	14.35	88.61
Nitrogen	8.88E-06	1.05E-07	2.15E-04	2.24E-04	6.99E-05	9.39E-07	8.00E-04	8.71E-04
Methane	7.29E-04	8.61E-06	0.01	0.01	0.01	7.43E-05	0.03	0.04
CO2	251.26	2.96	160.22	414.43	1,247.34	16.74	342.91	1,607.00
Ethane	0.01	6.02E-05	0.04	0.05	0.04	5.41E-04	0.15	0.19
Propane	4.32E-03	5.11E-05	0.05	0.06	0.04	4.81E-04	0.19	0.22
i-Butane	4.21E-04	4.99E-06	0.01	0.01	4.00E-03	5.37E-05	0.03	0.03
n-Butane	2.11E-03	2.50E-05	0.03	0.03	0.02	2.36E-04	0.10	0.12
i-Pentane	3.50E-04	4.15E-06	0.01	0.01	3.23E-03	4.33E-05	0.03	0.03
n-Pentane	2.11E-05	2.49E-07	9.07E-04	9.28E-04	1.71E-04	2.30E-06	3.44E-03	3.61E-03
iC6	6.87E-05	8.12E-07	2.34E-03	2.41E-03	6.04E-04	8.11E-06	0.01	0.01
n-Hexane	2.71E-06	3.20E-08	1.78E-04	1.81E-04	2.33E-05	3.12E-07	6.81E-04	7.05E-04
iC7	9.53E-06	1.13E-07	5.66E-04	5.75E-04	1.02E-04	1.37E-06	2.14E-03	2.24E-03
n-Heptane	--	--	--	--	--	--	--	--
Benzene	6.53	0.07	2.31	8.91	16.13	0.22	3.41	19.76
Toluene	2.26	0.02	0.80	3.08	5.78	0.08	1.22	7.07
2,2,4-Trimethylpentane	2.34E-06	2.78E-08	1.87E-04	1.90E-04	2.99E-05	4.01E-07	7.08E-04	7.39E-04
nC8	2.45E-08	2.90E-10	5.13E-06	5.15E-06	2.14E-07	2.87E-09	1.98E-05	2.01E-05
Ethylbenzene	0.42	4.26E-03	0.15	0.58	1.00	0.01	0.22	1.23
m-Xylene	0.15	1.54E-03	0.05	0.20	0.40	0.01	0.08	0.49
o-Xylene	0.08	7.84E-04	0.03	0.11	0.18	2.41E-03	0.04	0.22
p-Xylene	--	--	--	--	--	--	--	--
Nonane	1.00E-08	1.19E-10	2.63E-06	2.64E-06	1.14E-07	1.53E-09	1.02E-05	1.03E-05
C10	3.04E-13	3.60E-15	2.53E-10	2.53E-10	3.23E-12	4.33E-14	9.82E-10	9.85E-10
Water	13.11	0.12	4.62	17.85	21.87	0.29	5.04	27.21
C10+ Oil	1.93E-08	2.30E-10	9.91E-08	1.19E-07	2.27E-07	3.04E-09	2.33E-07	4.62E-07
Total	295.76	3.42	176.14	475.32	1,366.08	18.34	367.81	1,752.23
Total CO2	251.26	2.96	160.22	414.43	1,247.34	16.74	342.91	1,607.00
Total Methane	7.29E-04	8.61E-06	0.01	0.01	0.01	7.43E-05	0.03	0.04
Total CO2e	251.27	2.96	160.44	414.67	1,247.48	16.75	343.68	1,607.91
VOC	9.45	0.10	3.44	12.99	23.55	0.32	5.32	29.19
Total HAP	9.44	0.10	3.34	12.88	23.49	0.32	4.96	28.77

Apache Corporation
 ASAU CTB and Satellite
 Miscellaneous Tanks

EPN: TK-MISC
 FIN: TK-MISC

Identification - Horizontal Cylinder		
	Tank ID	TK-MISC
	Throughput (gal/hr)	500
	Throughput (gal/yr)	6,000
	Number of Tanks	1
Tank Dimensions		
	Shell Height (ft)	5.50
	Diameter (ft)	4.00
	Volume (gal)	500.00
	Turnovers ¹	12.89
	Net Throughput (gal/yr)	6,000
Other Inputs		
	Shell Color/Shade ²	Light Grey
	Shell Paint Condition	Average
	Meteorological Data	Midland, TX

1 Turnovers calculated using equation 1-30 of AP-42, Chapter 7, assuming a maximum fill height of 90% of the tank shell height.

2 Paint color from ProMax options used to simulate paint color observed in the field.

Component	Hourly Emissions, lb/hr			Annual Emissions, TPY		
	Working	Breathing	Total	Working	Breathing	Total
Methanol	1.65	0.01	1.65	4.38E-03	0.01	0.01
VOC	1.65	0.01	1.65	4.38E-03	0.01	0.01
Total HAP	1.65	0.01	1.65	4.38E-03	0.01	0.01

Apache Corporation
ASAU CTB and Satellite
Skim Oil Truck Loading

EPN: SLOAD
FIN: SLOAD

Stabilized Oil RVP ^a	2.82	psia
Oil Antoine Const. A	11.82	dimensionless
Oil Antoine Const. B	6002	°R

Hourly	
Saturation Factor, S ^b	0.6
Number of Loading Arms	1
Percent Reduction (%)	0.00%
Max True Vapor Pressure, P ^c (psia)	2.730
Molecular Weight of Vapors, M ^a (lb/lb-mol)	53.3
Temp of Loaded Liquid, T (°F)	95.0
Emission Factor ^b (lb/10 ³ gal)	1.96
Estimated Hourly Throughput ^d (gal/hr)	2,730
Total Uncontrolled Hourly Total Gas Emissions ^e (lb/hr)	5.35
Capture Efficiency (%)	0.0%
Loading Fugitive Hourly Total Gas Emissions ^f (lb/hr)	5.35
Maximum Annual Total Gas to Control Device ^g (lb/hr)	--

Annual	
Saturation Factor, S ^b	0.6
Number of Loading Arms	1
Percent Reduction (%)	0.00%
Average Max True Vapor Pressure, P ^c (psia)	1.503
Molecular Weight of Vapors, M ^a (lb/lb-mol)	51.0
Average Max Temp of Loaded Liquid, T (°F)	66.0
Emission Factor ^b (lb/10 ³ gal)	1.09
Estimated Annual Throughput ^d (gal/yr)	30,660
Total Uncontrolled Annual Total Gas Emissions ^e (tpy)	0.02
Capture Efficiency (%)	0.0%
Loading Fugitive Annual Total Gas Emissions ^f (tpy)	0.02
Maximum Annual Total Gas to Control Device ^g (tpy)	--

^a Estimated by ProMax.

^b Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1

$$\text{Emission Factor (lb/10}^3\text{gal)} = \frac{S \times P \times M \times 12.46}{T + 460}$$

Saturation Factor = 0.6 for submerged loading, dedicated normal service

^c True vapor pressure is based on RVP and Antoine coefficients.

^d Oil can be loaded at a maximum of 2,730 gal/hour and 730 bbls/year.

^e Hourly Emissions (lb/hr) = Hourly Throughput (gal/hr) / 1000 x Emission Factor (lb/10³ gal) * (100% - Percent Reduction (%)).

Annual Emissions (tpy) = Annual Throughput (gal/yr) / 1000 x Emission Factor (lb/10³ gal) * (100% - Percent Reduction (%)).

^f Maximum Hourly Emissions (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x (100% - 0% capture efficiency)

Annual Emissions (lb/hr) = Uncontrolled Annual Emissions (tpy) x (100% - 0% capture efficiency)

^g Maximum Hourly Total Gas to Control (lb/hr) = Uncontrolled Hourly Emissions (lb/hr) x 0% capture efficiency.

Annual Total Gas to Control (tpy) = Uncontrolled Annual Emissions (tpy) x 0% capture efficiency.

Speciated Emissions to Control Device¹

Component	lb/hr	ton/year
H2S	--	--
Nitrogen	--	--
Methane	--	--
CO2	--	--
Ethane	--	--
Propane	--	--
i-Butane	--	--
n-Butane	--	--
i-Pentane	--	--
n-Pentane	--	--
iC6	--	--
n-Hexane	--	--
iC7	--	--
n-Heptane	--	--
Benzene	--	--
Toluene	--	--
2,2,4-Trimethylpentane	--	--
nC8	--	--
Ethylbenzene	--	--
m-Xylene	--	--
p-Xylene	--	--
Nonane	--	--
C10	--	--
Water	--	--
C10+ Oil	--	--
Total	--	--
Total CO ₂	--	--
Total Methane	--	--
Total CO ₂ e	--	--
VOC	--	--
Total HAP	--	--

Speciated Loading Fugitive Emissions (EPN SLOAD)¹

Component	lb/hr	ton/year
H2S	0.18	--
Nitrogen	--	--
Methane	--	--
CO2	--	--
Ethane	0.06	--
Propane	0.68	1.45E-03
i-Butane	0.28	9.50E-04
n-Butane	0.63	2.26E-03
i-Pentane	0.52	1.90E-03
n-Pentane	0.52	1.84E-03
iC6	0.97	3.36E-03
n-Hexane	0.30	9.94E-04
iC7	0.41	1.35E-03
n-Heptane	--	--
Benzene	0.36	1.23E-03
Toluene	0.13	4.17E-04
2,2,4-Trimethylpentane	0.14	4.39E-04
nC8	0.10	2.83E-04
Ethylbenzene	0.02	6.96E-05
m-Xylene	0.01	3.43E-05
p-Xylene	3.91E-03	1.14E-05
Nonane	--	--
C10	0.04	1.04E-04
C10	--	--
Water	--	--
C10+ Oil	3.37E-07	3.92E-10
Total	5.35	0.02
Total CO ₂	--	--
Total Methane	--	--
Total CO ₂ e	--	--
VOC	5.11	0.02
Total HAP	0.97	3.20E-03

¹ Vented to Atmosphere

Apache Corporation
ASAU CTB and Satellite
Vapor Recovery Units - Hourly

EPN: VRU-1, VRU-2

FIN(s): OTK-1 - OTK-2, OTK-4, FWKO, HT

Capture Efficiency	99%
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Controlled Emissions ^{1,2}					
Component	OTK-1 - OTK-2	OTK-4	Tank Forced Ventilation 1	HT	FWKO
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
H2S	0.07	0.03	0.12	6.11E-02	6.11E-02
Nitrogen	0.01	0.01	9.65E-04	5.00E-04	5.00E-04
Methane	1.63E-03	8.54E-04	5.46E-04	2.83E-04	2.83E-04
CO2	1.85	0.98	2.10	1.09E+00	1.09E+00
Ethane	0.04	0.02	0.06	3.33E-02	3.33E-02
Propane	0.20	0.10	0.34	1.75E-01	1.75E-01
i-Butane	0.07	0.04	0.11	5.95E-02	5.95E-02
n-Butane	0.17	0.09	0.26	1.33E-01	1.33E-01
i-Pentane	0.15	0.08	0.22	1.13E-01	1.13E-01
n-Pentane	0.15	0.08	0.22	1.12E-01	1.12E-01
iC6	0.30	0.15	0.42	2.18E-01	2.18E-01
n-Hexane	0.09	0.05	0.14	7.02E-02	7.02E-02
iC7	0.14	0.07	0.17	8.82E-02	8.82E-02
n-Heptane	--	--	--	--	--
Benzene	0.11	0.06	1.09E-01	5.66E-02	5.66E-02
Toluene	0.04	0.02	0.05	2.58E-02	2.58E-02
2,2,4-Trimethylpentane	0.05	0.02	0.06	3.00E-02	3.00E-02
nC8	0.04	0.02	0.04	2.18E-02	2.18E-02
Ethylbenzene	0.01	4.79E-03	0.01	5.52E-03	5.52E-03
m-Xylene	4.45E-03	2.38E-03	0.01	2.67E-03	2.67E-03
o-Xylene	1.49E-03	8.05E-04	1.57E-03	8.13E-04	8.13E-04
p-Xylene	--	--	--	--	--
Nonane	0.02	0.01	0.01	7.21E-03	7.21E-03
C10	--	--	--	--	--
C10+ Oil	5.43E-07	3.06E-07	4.38E-07	2.27E-07	2.27E-07
Total	3.50	1.83	4.45	2.30	2.30
Total VOC	1.53	0.79	2.16	1.12	1.12
Total HAP	0.31	0.16	0.37	0.19	0.19

¹ Feed stream properties determined via ProMax process simulator.

² Emissions are based on process simulation. Heater/treater and FWKO are based on 2 mcf/100 bbl oil rate.

Apache Corporation
ASAU CTB and Satellite
Vapor Recovery Units - Annual

Capture Efficiency	99%
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EPN: VRU-1, VRU-2

FIN(s): OTK-1 - OTK-2, OTK-4, FWKO, HT

Controlled Emissions ^{1,2}					
Component	OTK-1 - OTK-2	OTK-4	Tank Forced Ventilation 1	HT	FWKO
	TPY	TPY	TPY	TPY	TPY
H2S	0.16	5.78E-04	0.01	0.15	0.15
Nitrogen	0.03	6.29E-05	1.21E-04	1.33E-03	1.33E-03
Methane	4.07E-03	1.04E-05	6.91E-05	7.62E-04	7.62E-04
CO2	4.56	0.01	0.27	2.98	2.98
Ethane	0.09	2.65E-04	0.01	0.09	0.09
Propane	0.44	2.36E-03	0.04	0.42	0.42
i-Butane	0.16	1.57E-03	0.01	0.14	0.14
n-Butane	0.35	4.69E-03	0.03	0.30	0.30
i-Pentane	0.29	3.91E-03	0.02	0.24	0.24
n-Pentane	0.29	3.87E-03	0.02	0.24	0.24
iC6	0.57	0.01	4.12E-02	0.45	0.45
n-Hexane	0.18	2.33E-03	1.31E-02	0.14	0.14
iC7	0.25	3.34E-03	0.02	0.18	0.18
n-Heptane	--	--	--	--	--
Benzene	0.20	2.80E-03	0.01	0.12	0.12
Toluene	0.08	1.09E-03	4.63E-03	0.05	0.05
2,2,4-Trimethylpentane	0.08	1.11E-03	0.01	0.06	0.06
nC8	0.06	8.40E-04	3.82E-03	0.04	0.04
Ethylbenzene	0.02	2.08E-04	9.68E-04	0.01	0.01
m-Xylene	0.01	1.03E-04	4.66E-04	0.01	0.01
o-Xylene	2.63E-03	3.47E-05	1.41E-04	1.56E-03	1.56E-03
p-Xylene	--	--	--	--	--
Nonane	0.03	3.53E-04	1.26E-03	0.01	0.01
C10	--	--	--	--	--
C10+ Oil	6.47E-07	7.03E-09	2.78E-08	3.07E-07	3.07E-07
Total	7.84	0.05	0.51	5.63	5.63
Total VOC	3.01	0.04	0.22	2.41	2.41
Total HAP	0.57	0.01	0.04	0.39	0.39

¹ Feed stream properties and emissions are based on process simulation. Heater/treater and FWKO are based on 2 mcf/100 bbl oil rate.

² Emissions based on uptime of 8760 hrs/year.

Apache Corporation
ASAU CTB and Satellite
Vapor Recovery Units - Hourly

EPN: VRU-3, VRU-4

FIN(s): SLOPTK-1, PWTK-1 - PWTK-3, GBT-1

Capture Efficiency	99%
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Controlled Emissions ^{1,2}				
Component	SLOPTK-1	PWTK-1 - PWTK-3	GBT-1	Tank Forced Ventilation 2
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
H2S	1.26E-04	0.30	0.27	0.35
Nitrogen	3.61E-06	2.24E-06	1.78E-04	1.52E-07
Methane	1.32E-06	9.33E-05	3.61E-03	1.25E-05
CO2	2.07E-03	4.14	7.51	4.30
Ethane	5.66E-05	4.87E-04	0.01	8.75E-05
Propane	3.98E-04	5.73E-04	0.02	7.43E-05
i-Butane	1.52E-04	8.67E-05	3.95E-03	7.25E-06
n-Butane	3.44E-04	3.02E-04	0.01	3.64E-05
i-Pentane	2.86E-04	7.44E-05	3.72E-03	6.03E-06
n-Pentane	2.82E-04	9.28E-06	1.29E-03	3.62E-07
iC6	5.40E-04	2.41E-05	2.29E-03	1.18E-06
n-Hexane	1.66E-04	1.81E-06	3.55E-04	4.65E-08
iC7	2.35E-04	5.75E-06	7.10E-04	1.64E-07
n-Heptane	--	--	--	--
Benzene	2.01E-04	0.09	0.05	9.77E-02
Toluene	7.55E-05	0.03	0.02	0.03
2,2,4-Trimethylpentane	7.78E-05	1.90E-06	2.31E-04	4.04E-08
nC8	5.64E-05	5.15E-08	3.19E-05	4.22E-10
Ethylbenzene	1.39E-05	0.01	3.42E-03	0.01
m-Xylene	6.89E-06	2.01E-03	1.45E-03	2.23E-03
o-Xylene	2.32E-06	1.06E-03	6.08E-04	1.14E-03
p-Xylene	--	--	--	--
Nonane	2.29E-05	2.64E-08	1.35E-05	1.73E-10
C10	--	2.53E-12	4.59E-09	5.23E-15
C10+ Oil	2.96E-10	1.19E-09	5.18E-09	3.35E-10
Total	0.01	4.57	7.92	4.79
Total VOC	2.86E-03	0.13	0.12	0.14
Total HAP	5.44E-04	0.13	0.08	0.14

¹ Feed stream properties determined via ProMax process simulator.

² Emissions are based on process simulation.

Apache Corporation
ASAU CTB and Satellite
Vapor Recovery Units - Annual

Capture Efficiency	99%
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EPN: VRU-3, VRU-4
FIN(s): SLOPTK-1, PWTK-1 - PWTK-3, GBT-1

Controlled Emissions ^{1,2}				
Component	SLOPTK-1	PWTK-1 - PWTK-3	GBT-1	Tank Forced Ventilation 2
	TPY	TPY	TPY	TPY
H2S	1.39E-04	0.89	1.04	0.03
Nitrogen	9.34E-07	8.71E-06	6.94E-04	2.83E-08
Methane	3.42E-07	3.63E-04	0.01	2.24E-06
CO2	5.36E-04	16.07	29.25	0.51
Ethane	3.69E-05	1.90E-03	0.05	1.63E-05
Propane	5.43E-04	2.23E-03	0.08	1.45E-05
i-Butane	1.87E-04	3.38E-04	0.02	1.62E-06
n-Butane	4.09E-04	1.17E-03	0.04	7.11E-06
i-Pentane	3.12E-04	2.90E-04	0.01	1.31E-06
n-Pentane	2.98E-04	3.61E-05	0.01	6.93E-08
iC6	5.35E-04	9.38E-05	0.01	2.45E-07
n-Hexane	1.58E-04	7.05E-06	1.38E-03	9.43E-09
iC7	2.13E-04	2.24E-05	2.76E-03	4.13E-08
n-Heptane	--	--	--	--
Benzene	1.95E-04	1.98E-01	0.21	0.01
Toluene	6.60E-05	7.07E-02	0.08	2.34E-03
2,2,4-Trimethylpentane	6.96E-05	7.39E-06	8.99E-04	1.21E-08
nC8	4.51E-05	2.01E-07	1.24E-04	8.67E-11
Ethylbenzene	1.11E-05	0.01	0.01	4.04E-04
m-Xylene	5.47E-06	4.95E-03	0.01	1.64E-04
o-Xylene	1.83E-06	2.21E-03	2.37E-03	7.29E-05
p-Xylene	--	--	--	--
Nonane	1.67E-05	1.03E-07	5.27E-05	4.61E-11
C10	--	9.85E-12	1.79E-08	1.31E-15
C10+ Oil	7.02E-11	4.62E-09	2.02E-08	9.18E-11
Total	3.78E-03	17.25	30.84	0.54
Total VOC	3.07E-03	0.29	0.48	0.01
Total HAP	5.07E-04	0.29	0.32	0.01

¹ Feed stream properties determined via ProMax process simulator.

² Emissions based on uptime of 8760 hrs/year.

Apache Corporation
 ASAU CTB and Satellite
 MSS Emissions

Planned MSS - Other Emissions	
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Company Name	Apache Corporation
EPN No:	MSS
Site name:	ASAU CTB and Satellite
Type of MSS activity	Miscellaneous MSS Activities

VOC Wt%	42.82
H ₂ S Wt%	2.62747
Benzene Wt%	2.05101
Total HAP Wt %	6.91838
Methane Wt %	0.0135
Type of Control Device	None

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

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

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
TCEQ Default MSS	0.03	0.13

Planned MSS Emissions		
Air contaminant	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Total VOC	0.01	0.06
Total H ₂ S	8.07E-04	3.53E-03
Total Benzene	6.30E-04	2.76E-03
Total HAP	2.12E-03	0.01
Total Methane	4.16E-06	1.82E-05

Notes:
 Detailed emission calculations for default VOC emissions from miscellaneous MSS activities are provided in the next table. Emissions have been conservatively speciated based on the inlet gas composition and 100% VOC.

Default VOC Emissions for Miscellaneous MSS Activities

Company Name	Apache Corporation
Site Name	ASAU CTB and Satellite
Source Name	Miscellaneous MSS Activities
EPN	MSS
Default VOC emissions (tpy) associated with miscellaneous MSS activities	0.25
Add default VOC emissions from miscellaneous MSS activities to the emissions summary	No

#	Activity	Description / comments	Default parameters	Equation used	Input parameters	Annual emissions (tpy)
1	(b)(1) Engine Oil changes / Filter changes The emissions associated with an engine oil/filter change occur during the draining of the used engine oil into oil pan or container.	-Engine has been isolated and blow down occurs prior to oil change. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Oil is drained into a 4 ft x 4 ft open pan and transferred to a closed container per Best Management Practice (BMP). -Input parameters based on manufacturer specifications of engine oil SAE 10W (a). -Used a 1380 hp Caterpillar G3516B LE engine (b) as basis for calculation. In order to account for emissions from larger horse power engines, the emissions are doubled. An average engine uses 112 gallons of motor oil and manufacturer recommends changing oil every 1000 hrs. We used 10 changes of oil per year as a conservative estimate. -Emission estimates for 1380 hp engine are being doubled to be conservative and to accommodate engines with higher hp.	Temperature (°F) 212 Vapor pressure (psia) 0.001 Saturation factor 1 Molecular weight (lb/lbmol) 500 Motor oil (gal/activity) 112 U wind speed (m/s) 3.52 Vapor pressure P _v (Pa) 10 Molecular weight (lb/lbmol) 500 Surface Area A _s (m ²) (4ft * 4ft) 1.48 Evaporation time t (hrs) 10 Number of activities per year (Number of oil changes per engine per year) 6 Factor used to account for larger horsepower engines 2	Loading loss L ₁ (lb/1000 gal) 0.009 Loading loss per activity (lb/activity) 0.001 Evaporation Loss (lb/activity) 1.027 Total (lbs/yr/engine) 12.339	Number of engines 0	0.000
2	(b)(1) & (b)(4) Changing Engine Rod Packings Emissions from changing of the rod would be from clingage of lubricant in the casing.	-Engine has been isolated and blow down occurs prior to changing rod packing. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Emissions from clingage are the evaporation of the lubricant adhered to the rod packing casing. -Casing volume for calculations is based on field observation of casing for a 1380hp G3516B LE engine(b). -Input parameters based on material specifications for AP 101(c) grease.	Temperature (°F) 104 Vapor pressure (psia) 0.001 Molecular weight (lb/lb-mole) 500 V _v Casing volume (ft ³) (1ft * 3ft) 2.355 Ideal gas constant (psia-ft ³ /lb-mol-°R) 10.73 Number of activities per year (Number of rod packing changes per year per engine) 6	Clingage loss (lb/activity) 0.0001 Total (lbs/yr/engine) 0.0007	Number of engines 0	0
3	(b)(3) Changing wet and dry seals Emissions from changing seals would be from clingage of lubricant in the casing.	-Engine has been isolated and blow down occurs prior to changing seals. The emissions associated with the blow down [106.359 (b) (8)] need to be accounted for in the oil and gas emission calculation spreadsheet. -Emissions from clingage are the evaporation of the lubricant adhered to the rod packing casing. -Casing volume for calculations is based on field observation of casing for a 1380 hp Caterpillar G3516B LE engine (b). -Input parameters based on material specifications for AP 101(c) grease.	Temperature (°F) 104 Vapor pressure of material stored (psia) 0.001 Molecular weight (lb/lb-mole) 500 V _v Casing volume (ft ³) (1ft * 3ft) 2.355 Ideal gas constant (psia-ft ³ /lb-mol-°R) 10.73 Number of activities per year (Number of seal changes per year) 4	Clingage loss (lb/activity) 0.0001 Total (lbs/yr/engine) 0.0005	Number of engines 0	0.000000
4	(b)(2) Glycol dehydration unit Emissions associated with replacement of glycol solution used in dehydration unit. There are two vessels in a dehydration unit: contactor and regenerator.	-Calculations based on physical properties of mono ethylene glycol (MEG)(d) because of its low molecular weight and high vapor pressure which gives the most conservative emissions estimate. -Typically the glycol solution used in dehydration unit is not entirely replaced but it is conservatively assumed that the glycol solution is drained once per year for vessel maintenance. -Per field experience, 4000 gal of glycol solution is used in a large dehydration unit.	Temperature (°F) 68 Vapor pressure (psia) 0.001 Saturation factor 1 Molecular weight (lb/lbmol) 62.07 Glycol solution (gal/activity) 4000 Temperature (°F) 68 Vapor pressure (psia) 0.001 Molecular weight (lb/lb-mole) 62.07 V _v Vessel volume (ft ³) (5 ft radii * 30 ft height) 2355 Ideal gas constant (psia-ft ³ /lb-mol-°R) 10.73 Number of activities per year 1	Loading loss L ₁ (lb/1000 gal) 0.0015 Loading loss per activity (lb/activity) 0.0059 Clingage loss (lb/activity) 0.0155 Total (lbs/yr/unit) 0.0213	Number of Dehy units 0	0.000000
5	(b)(2) Amine unit Emissions associated with replacement of solution used in the amine unit. There are two vessels in an amine unit: Contactor and regenerator.	-Calculations based on physical properties of mono ethanol amine (MEA)(c) because of its low molecular weight and high vapor pressure which gives the most conservative emissions estimate. -Typically the solution used in amine unit is not entirely replaced but it is conservatively assumed that the amine solution is drained once per year for vessel maintenance. -Per field experience, 4000 gal of solution is used in a large amine unit.	Temperature (°F) 68 Vapor pressure (psia) 0.004 Saturation factor 1 Molecular weight (lb/lbmol) 61.08 Amine solution (gal/activity) 4000 Temperature (°F) 68 Vapor pressure (psia) 0.004 Molecular weight (lb/lb-mole) 61.08 V _v Vessel volume (ft ³) (5 ft radii * 30 ft height) 2355 Ideal gas constant (psia-ft ³ /lb-mol-°R) 10.73 Number of activities per year 0	Loading loss L ₁ (lb/1000 gal) 0.0058 Loading loss per activity (lb/activity) 0.0231 Clingage loss (lb/activity) 0.0609 Total (lbs/yr/unit) 0.0000	Number of Amine units 0	0.000000
6	(b)(2) Heater Treater -Calculations based on condensate (RVP 10) because it has higher vapor pressure than crude oil (RVP 5) and results in a more conservative emission estimate. -Emission estimates are based on a large site that typically has 4 heater treaters.		Temperature (°F) 100 Vapor pressure (psia) 10.5 Molecular weight (lb/lb-mole) 66 V _v Vessel volume (ft ³) (2ft radii * 10 ft height) 125.6 Ideal gas constant (psia-ft ³ /lb-mol-°R) 10.73 Number of activities per year 1	Clingage loss (lb/activity) 8.6913 Total (lbs/yr/unit) 8.6913	Number of Heater Treaters 1	0.004
7	(b)(2) Aerosol Lubricants	-45-50% VOC by weight volatilizes. -Material specification per Lubricant MSDS (f). -VOC evaporation is based off standard engineering judgment consistent with product specification. - Standard Industrial Size Cans (oz.) 16		Pounds of emissions per can (lb/can) 0.5 Total (lbs/yr/unit) 8.6913	Number of 16 oz cans used 100	0.025

Default VOC Emissions for Miscellaneous MSS Activities

	(b)(3) Piping Components	-Calculations based on condensate (RVP 10) because it has higher vapor pressure than crude oil (RVP 5) and results in a more conservative emission estimate. -100 foot long pipe sections conservatively assumed for emission calculations.	Temperature (°F)	100	Clingage loss (lb/activity)	5.4321	Number of 100 ft in length of pipes	10	0.027
			Vapor pressure (psia)	10.5					
			Molecular weight (lb/lb-mole)	66					
			V _v , Vessel volume (ft ³) (0.5 ft radii * 100 ft height)	78.50					
			Ideal gas constant (psia-ft ³ /lb-mol-°R)	10.73					
			Number of activities per year	1					
Total (lbs/yr)				5.4321					
9	(b)(3) Pneumatic controllers	Based on field experience, changing pneumatic controllers of equipment under pressure requires isolation of pipe section or process equipment and a blow down. There are no emissions associated with changing the controller.							
10	(b)(2) Calibration	-Per Monitoring Division's Laboratory and Quality Assurance Section - One cylinder of pentane or other calibration gas used per year and a typical cylinder contains 100 lbs.	Pounds of pentane in one cylinder (lb)	100	Pounds of pentane in one cylinder (lb/cylinder)	100	Number of cylinders	1	0.050
11	(b)(6) Safety factor to account for MSS activities with the same character and quantity of emissions as those listed in paragraphs (b) (1) - (5) of §106.359.							1	0.028

		TPV	lbs/hr
	Total VOC emissions	0.13	0.03

Equations used:

1. Loading loss equation: Reference AP-42 Loading equation:
$$L_L = 12.46 \frac{SPM}{T}$$

 L_L = Loading loss (lb/1000 gal of liquid loaded)
 S = Saturation factor from AP-42, Table 5.2-1
 P = True vapor pressure of liquid loaded (psia)
 M = Molecular weight of vapors (lb/lb-mol)
 T = Temperature of bulk liquid loaded (deg R)
2. Ideal Gas Law: $n = PV/RT$
Total Emissions = $(PV/RT) * M_w * \text{Concentration}$
 P = vapor pressure of material stored pressure (psia) at t
 V = vessel volume (ft³)
 MW = molecular weight (lb/lb-mole)
 R = (10.73 psia-ft³/lb-mol-R)
 T = 460 + t (deg R)
 t = 95° F or actual, whichever is higher
3. Evaporative loss equation: Reference: Ajay Kumar, N.S. Vatcha, and John Schmelzle, "Estimate Emissions from Atmospheric Releases of Hazardous Substances," Environmental Engineering World, November-December 1996.
$$L_E^L = 4.14 * 10^{-5} U_z^{0.78} P_v M_w^{0.87} A_o^{0.94} t$$

 L_E^L = Evaporation loss (lb/activity)
 U is wind speed in m/s
 P_v = VOC vapor pressure, Pa
 M_w = VOC vapor molecular weight
 A_o = liquid surface area, m²
 t = time, hrs
4. Clingage loss equation: AP-42 (2-23) constrained by an upper limit equal to filling loss for IFR with liquid heel.
$$L_{CL, max} = 0.60 (P_v / RT) M_w$$

 P = vapor pressure of material stored pressure (psia) at t
 V_v = vessel volume (ft³)
 M_w = molecular weight (lb/lb-mole)
 R = (10.73 psia-ft³/lb-mol-R)
 T = 460 + t (deg R)
 t = Temperature (R)

References

- (a) [Engine Oil SAE 10 W: MSDS](#)
(b) [Caterpillar G3516B 1E engine specifications sheet](#)
(c) [AP101 Apeizon grease MSDS](#)
(d) [Mono ethylene glycol \(MEG\) MSDS](#)
(e) [Mono ethanol amine \(MEA\)](#)
(f) [WD-40 Aerosol lubricant MSDS](#)

MSS emissions associated with painting and blasting operations

Source Name	Painting and Blasting MSS Activities
EPN	MSS-PB

1. Input variables such as amount of paint used (gallons) or number of hours blasting operation occurs in the yellow box.
2. Default numbers are included for your convenience but may be edited

#	Activity	Description / comments	Default parameters		Input parameters		Annual emissions (tpy)
1	(b)(2) Aerosol Cans Includes spray paints and primers, degreasers, cleaners and other solvents, rust inhibitors	- 90% VOC content is an average obtained from a survey of MSDS sheets (c)(d)(e) for spray paints and primers, degreasers, cleaners and other solvents, rust inhibitors. This does not include lubricants. - VOC is propellant. 100% VOC evaporates.	Standard Industrial Size Cans (oz.)	16	Number of 16 oz cans used	100	0.045
			VOC emissions (lb/can)	0.9			VOC (tpy)
2	(b)(2) Manual application of paints, primer Touch up paint	- 100% VOC evaporates - Survey of MSDS sheets (a) (b) indicates VOC content varies from 2 lb/gallon to 7 lb/gallon. As Chapter 115 limits VOC content to 3.5 lb/gal in nonattainment areas this was used as a conservative amount - Usage of paint based on technical expertise and NSR permit section reviews.	VOC content (lb/gal)	7	Paint used (gallons)	25	0.088 VOC (tpy)
3	(b)(2) Painting Tanks and Other Immovable Fixed Structures Spray Painting	- 100% VOC evaporates - Painting used on 1 tank or 1 vessel per year - Survey of MSDS sheets (a)(b) indicates VOC content varies from 2 lb/gallon to 7 lb/gallon. As Chapter 115 limits VOC content to 3.5 lb/gal in nonattainment areas this was used as a conservative amount. - Input parameters based on TCEQ Surface Coating Guidance Document for Air Quality Permit Applications. - Per field research in 2012, company indicated that a large site uses around 100 gallons to paint pipes and tanks in 6 month period. - Total PM Emissions for Painting assumed to be PM30	VOC content (lb/gal)	7	Paint used (gallons)	100	0.350 VOC (tpy)
			PM _{10 & 2.5} content (lb/gal)	8			0.008
			Transfer Efficiency PM _{10 & 2.5} (%)	65			PM ₁₀ (tpy)
			Droplet factor for PM _{2.5} overspray (%)	99			0.001
			Droplet factor for PM ₁₀ overspray (%)	94			PM _{2.5} (tpy)
			Droplet factor for PM ₅₀ overspray (%)	81			0.027 PM ₃₀ (tpy)
4	(b)(2) Sandblasting	- An application rate of 2,000 lb/hr. - Per industry expertise and BMP, blasting occurs for 5 days per year and 8 hrs per day - Emission factors for PM ₁₀ based on TCEQ Abrasive Blast Cleaning technical guidance document. Emission factor for PM _{2.5} is based on 15% of PM ₁₀ emission factor. - Emission factor for PM based on low dusting abrasive media and was obtained from Mr. Tony Spinelli of the TCEQ via email on 12/14/2020.	Emission factor for PM ₁₀ (lb/lb of usage)	0.00034	Number of hours blasting operation occurs	200	0.068 PM ₁₀ (tpy)
			Application rate (lb/hr)	2000			0.01
			PM ₁₀ Emissions (lb/hr)	0.68			PM _{2.5} (tpy)
			Emission factor for PM _{2.5} (lb/lb of usage)	0.00005			0.572
			Application rate (lb/hr)	2000			PM (tpy)
			PM _{2.5} Emissions (lb/hr)	0.1			
			Emission factor for PM (lb/lb of usage)	0.00286			
			Application rate (lb/hr)	2000			
			PM Emissions (lb/hr)	5.72			

	TPY	lbs/hr
VOC	0.483	0.110
PM _{2.5}	0.011	0.100
PM ₁₀	0.076	0.682
PM	0.599	5.726

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

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

References
(a) Industrial Urethane Alkyd Enamel MSDS
(b) Rust Preventive Enamel MSDS
(c) Rust Oleum - Rust Inhibitor MSDS
(d) Rust Oleum - High Performance Industrial Enamel Aerosol MSDS
(e) Hi-Bild Waterbased Catalyzed Epoxy MSDS

Apache Corporation
ASAU CTB and Satellite
Planned MSS Emissions - Vessel Blowdowns

A) Enter information into the yellow boxes.

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

C) The vapor VOC, benzene, and H₂S weight percents may be entered. The weight percents from the Analyses tab are displayed below.

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

E) Make sure to answer the control device question.

EPN	MSS-BD
Identifier	Vessel and VRU Compressor Blowdowns

Describe this MSS event in detail, include specifically what is being done and how it is being done.	Vessels and VRU compressors are blown down for scheduled maintenance.
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<table><tr><td>Actual Volume of the Vented Unit (acf - actual cubic feet)</td><td>50</td></tr><tr><td>Pressure of Gas Inside the Unit Before Venting (psig)</td><td>100</td></tr><tr><td>Final Pressure (psia)</td><td>14.7</td></tr><tr><td>Pressure of Gas Inside the Unit Before Venting (psia)</td><td>114.7</td></tr><tr><td>Temperature of Gas Inside the Unit Before Venting (°F)</td><td>70</td></tr><tr><td>Temperature of Gas Inside the Unit Before Venting (°R)</td><td>529.67</td></tr><tr><td>Duration of Each Event (hours/event)</td><td>1</td></tr><tr><td>Frequency of Events (events/year)</td><td>240</td></tr><tr><td>Venting Gas Molecular Weight (lb/lb-mol)</td><td>44.16</td></tr><tr><td>VOC wt %</td><td>9.29</td></tr><tr><td>benzene wt%</td><td>0.22</td></tr><tr><td>H₂S wt%</td><td>1.75</td></tr><tr><td>Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?</td><td>(A) uncontrolled</td></tr><tr><td>VOC Control Efficiency (%)</td><td></td></tr><tr><td>H₂S Control Efficiency (%)</td><td></td></tr></table>	Actual Volume of the Vented Unit (acf - actual cubic feet)	50	Pressure of Gas Inside the Unit Before Venting (psig)	100	Final Pressure (psia)	14.7	Pressure of Gas Inside the Unit Before Venting (psia)	114.7	Temperature of Gas Inside the Unit Before Venting (°F)	70	Temperature of Gas Inside the Unit Before Venting (°R)	529.67	Duration of Each Event (hours/event)	1	Frequency of Events (events/year)	240	Venting Gas Molecular Weight (lb/lb-mol)	44.16	VOC wt %	9.29	benzene wt%	0.22	H ₂ S wt%	1.75	Are planned MSS vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled	VOC Control Efficiency (%)		H ₂ S Control Efficiency (%)		Ideal Gas Constant, [(ft³*psia)/(R*lb-mol)] 10.73159 Gas Molecular Weight and Weight Percents From Analyses Tab: <table><tr><td>Molecular Weight</td><td>44.1641</td></tr><tr><td>VOC wt %</td><td>9.29</td></tr><tr><td>Benzene wt %</td><td>0.22</td></tr><tr><td>H₂S wt %</td><td>1.75</td></tr><tr><td>HAP wt %</td><td>0.75</td></tr></table> Volume released <table><tr><td>scf/hr</td><td>scf/yr</td></tr><tr><td>383</td><td>91,923</td></tr></table>	Molecular Weight	44.1641	VOC wt %	9.29	Benzene wt %	0.22	H ₂ S wt %	1.75	HAP wt %	0.75	scf/hr	scf/yr	383	91,923
Actual Volume of the Vented Unit (acf - actual cubic feet)	50																																												
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VOC Control Efficiency (%)																																													
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HAP wt %	0.75																																												
scf/hr	scf/yr																																												
383	91,923																																												

Vapors Captured by Control Device		
You need to input these values into the appropriate control device emission calculation tab.		
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC Results:	0.0000	0.0000
Benzene Results:	0.0000	0.0000
H ₂ S Results:	0.0000	0.0000

Planned MSS Emissions		
	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC Results:	4.14	0.50
Benzene Results:	0.10	0.01
H ₂ S Results:	0.78	0.09
HAP Result:	0.33	0.04

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
High Pressure Periodic

Enter any notes here:	
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Apache Corporation
ASAU CTB and Satellite
Planned MSS - Tank Non-Forced Ventilation

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

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

Note:

1. Enter information into the yellow boxes.
2. The tank calculations are applied to product stored at ambient temperature. For heated tanks or tanks storing hot product, please provide more explanation on the input parameters used such as vapor pressure of heated product, Antoine's constant etc., and how they are derived.
3. Use site specific analysis for input parameters such as weight percents, molecular weight, stock liquid density etc., of the liquid / product stored.
4. VOC and H2S control efficiencies may be entered (if applicable).
5. Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).
6. Make sure to answer the control device question.
7. Make sure to select the correct VOC Type and Emission Type from the pull down menus below.

Company Name:	Apache Corporation
Site Name.:	ASAU CTB and Satellite
EPN No:	MSS-TK1
Name	Tank Non-Forced Ventilation 1
Product stored:	Oil
Type of tank roof	Fixed Roof
Tank Capacity (bbl)	1,500
Tank Diameter (ft) (D)	21.50
Vapor Molecular Wt. (lb/lb mol) (M _v)	50.88
Number of events/yr	200
Height of the roof (ft)	24.00
Saturation factor (S)	1.0

Vapor Space Volume (ft ³) (V _v)	8,713
Height of Vapor Space under roof (ft)* (h _v)	24.00

	Max. hourly emissions lb/hr	Avg. Annual emissions tpy	
Duration of activity (hrs/event)	6	1	
True Vapor Pressure (psia) (P)	10.35	9.74	Max > Avg
Day time temperature (°F)	117.09	108.54	Max > Avg
Night time temperature (°F)	100.00	100.00	
Temperature Expansion %	2.961	1.503	
Emissions (lb/event)	740.957	708.071	
Max. Hourly Emissions (lb/hr)	3.66		
Avg. Hourly Emissions (lb/hr)		10.64	
Avg. Annual emissions (tpy)		1.06	

VOC Wt%	42.82
H ₂ S Wt%	2.6275
Benzene Wt%	2.05

Type of Control Device	
Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled
VOC Control Efficiency	
H ₂ S Control Efficiency	

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Thermal / Passive Expansion	3.66	1.06
Planned MSS Emissions		
Air Contaminant	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Total VOC	1.57	4.56E-01
Total H ₂ S	9.61E-02	2.80E-02
Total Benzene	7.50E-02	2.18E-02

Apache Corporation
ASAU CTB and Satellite
Planned MSS - Tank Non-Forced Ventilation

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

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

Note:

1. Enter information into the yellow boxes.
2. The tank calculations are applied to product stored at ambient temperature. For heated tanks or tanks storing hot product, please provide more explanation on the input parameters used such as vapor pressure of heated product, Antoine's constant etc., and how they are derived.
3. Use site specific analysis for input parameters such as weight percents, molecular weight, stock liquid density etc., of the liquid / product stored.
4. VOC and H2S control efficiencies may be entered (if applicable).
5. Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs).
6. Make sure to answer the control device question.
7. Make sure to select the correct VOC Type and Emission Type from the pull down menus below.

Company Name:	Apache Corporation
Site Name.:	ASAU CTB and Satellite
EPN No:	MSS-TK2
Name	Tank Non-Forced Ventilation 2
Product stored:	PW
Type of tank roof	Fixed Roof
Tank Capacity (bbl)	1.500
Tank Diameter (ft) (D)	21.50
Vapor Molecular Wt. (lb/lb mol) (M _v)	42.70
Number of events/yr	200
Height of the roof (ft)	24.00
Saturation factor (S)	1.0

Vapor Space Volume (ft ³) (V _v)	8,713
Height of Vapor Space under roof (ft)* (h _v)	24.00

	Max. hourly emissions lb/hr	Avg. Annual emissions tpy	
Duration of activity (hrs/event)	6	1	
True Vapor Pressure (psia) (P)	13.26	12.13	Max > Avg
Day time temperature (°F)	94.72	86.92	Max > Avg
Night time temperature (°F)	79.12	79.12	
Temperature Expansion %	2.813	1.427	
Emissions (lb/event)	828.744	768.676	
Max. Hourly Emissions (lb/hr)	3.89		
Avg. Hourly Emissions (lb/hr)		10.97	
Avg. Annual emissions (tpy)		1.10	

VOC Wt%	1.72
H ₂ S Wt%	5.3636
Benzene Wt%	1.18

Type of Control Device	
Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(A) uncontrolled
VOC Control Efficiency	
H ₂ S Control Efficiency	

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Thermal / Passive Expansion	3.89	1.10
Planned MSS Emissions		
Air Contaminant	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Total VOC	0.07	1.89E-02
Total H ₂ S	2.08E-01	5.88E-02
Total Benzene	4.59E-02	1.30E-02

Apache Corporation
ASAU CTB and Satellite
Planned MSS - Tank Forced Ventilation

Planned MSS - Forced Ventilation / Vapor space purge / Degassing for Fixed Roof and Floating Roof Tanks

This section calculates planned MSS emissions due to forced ventilation for both floating roof and fixed roof tanks.

Note:

1. Enter information into the yellow boxes.
2. The tank calculations are applied to product stored at ambient temperature. For heated tanks or tanks storing hot product, please provide more explanation on the input parameters used such as vapor pressure of heated product, Antoine's constant etc., and how they are derived.
3. VOC and H2S control efficiencies may be entered (if applicable)
4. Use site specific analysis for input parameters such as weight percents, molecular weight, stock liquid density etc., of the liquid / product stored
5. Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs)
6. Make sure to answer the control device question
7. Make sure to select the correct VOC Type and Emission Type from the pull down menus below.

Hourly emissions		Annual emissions	
Company Name:	Apache Corporation		
Site Name.:	ASAU CTB and Satellite		
EPN No:	VRU-1, VRU-2		
Name	Tank Forced Ventilation 1		
Tank No.:	OTK-1 - OTK-2, OTK-4		
Product stored:	Oil		
Type of tank roof	Fixed Roof		
Tank Capacity (bbl)	1,500		
Max. True Vapor Pressure (psia) (P)	10.35	Max > Avg	Avg. True Vapor Pressure (psia) (P) 9.74
Tank Diameter (ft) (D)	21.50		
Vapor Molecular Wt. (lb/lb mol) (M _v)	50.88		
Max. Temperature (°F) (T)	117	Max > Avg	Avg. Temperature (°F) (T) 109
Height of the tank (ft)	24		
Forced Ventilation Blower rate (ft ³ /hr)	10,000		
Saturation factor (S) Full liquid Heel	0.6		
Duration of activity / Hours of operation per year	240		

scf/hr	scf/yr
8,713	2,091,170

Vapor Space Volume (ft ³) (V _v)	8,713
Height of Vapor Space under roof (ft) (h _v)	24.00
Max. Emissions (lb/event)	444.57
Max. Hourly Emissions (lb/hr)	444.57
Avg. Emissions (lb/event)	424.84
Avg. Hourly Emissions (lb/hr)	424.84
Avg. Annual emissions (tpy)	50.98

VOC Wt%	42.82
H ₂ S Wt%	2.6275
Benzene Wt%	2.05

Type of Control Device	
Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(B) cont. by flare/ VC/TO/VRU
VOC Control Efficiency	
H ₂ S Control Efficiency	

VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Vapor Space Purge / Degassing	444.57	50.98
Planned MSS Emissions		
Air Contaminant	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Total VOC	190.37	2.18E+01
Total H ₂ S	1.17E+01	1.34E+00
Total Benzene	9.12E+00	1.05E+00

Apache Corporation
ASAU CTB and Satellite
Planned MSS - Tank Forced Ventilation

Planned MSS - Forced Ventilation / Vapor space purge / Degassing for Fixed Roof and Floating Roof Tanks

This section calculates planned MSS emissions due to forced ventilation for both floating roof and fixed roof tanks.

Note:

1. Enter information into the yellow boxes.
2. The tank calculations are applied to product stored at ambient temperature. For heated tanks or tanks storing hot product, please provide more explanation on the input parameters used such as vapor pressure of heated product, Antoine's constant etc., and how they are derived.
3. VOC and H2S control efficiencies may be entered (if applicable)
4. Use site specific analysis for input parameters such as weight percents, molecular weight, stock liquid density etc., of the liquid / product stored
5. Use the box provided below for entering any notes necessary (such as the source/justification for any calculation inputs)
6. Make sure to answer the control device question
7. Make sure to select the correct VOC Type and Emission Type from the pull down menus below.

Hourly emissions		Annual emissions	
Company Name:	Apache Corporation		
Site Name.:	ASAU CTB and Satellite		
EPN No:	VRU-3, VRU-4		
Name	Tank Forced Ventilation 2		
Tank No.:	SLOPTK-1, PWTK-1 - PWTK-3		
Product stored:	PW		
Type of tank roof	Fixed Roof		
Tank Capacity (bbl)	1,500		
Max. True Vapor Pressure (psia) (P)	13.26	Max > Avg	Avg. True Vapor Pressure (psia) (P) 12.13
Tank Diameter (ft) (D)	21.50		
Vapor Molecular Wt. (lb/lb mol) (M _v)	42.70		
Max. Temperature (°F) (T)	95	Max > Avg	Avg. Temperature (°F) (T) 87
Height of the tank (ft)	24		
Forced Ventilation Blower rate (ft ³ /hr)	10,000		
Saturation factor (S) Full liquid Heel	0.6		
Duration of activity / Hours of operation per year	240		

scf/hr	scf/yr
8,713	2,091,170

Vapor Space Volume (ft ³) (V _v)	8,713
Height of Vapor Space under roof (ft) (h _v)	24.00
Max. Emissions (lb/event)	497.25
Max. Hourly Emissions (lb/hr)	497.25
Avg. Emissions (lb/event)	461.21
Avg. Hourly Emissions (lb/hr)	461.21
Avg. Annual emissions (tpy)	55.34

VOC Wt%	1.72
H ₂ S Wt%	5.3636
Benzene Wt%	1.18

Type of Control Device	
Are tank vapors (A) uncontrolled; (B) controlled by a flare, vapor combustor, thermal oxidizer, or vapor recovery unit (VRU); or (C) controlled by another type of control device?	(B) cont. by flare/ VC/TO/VRU
VOC Control Efficiency	
H ₂ S Control Efficiency	

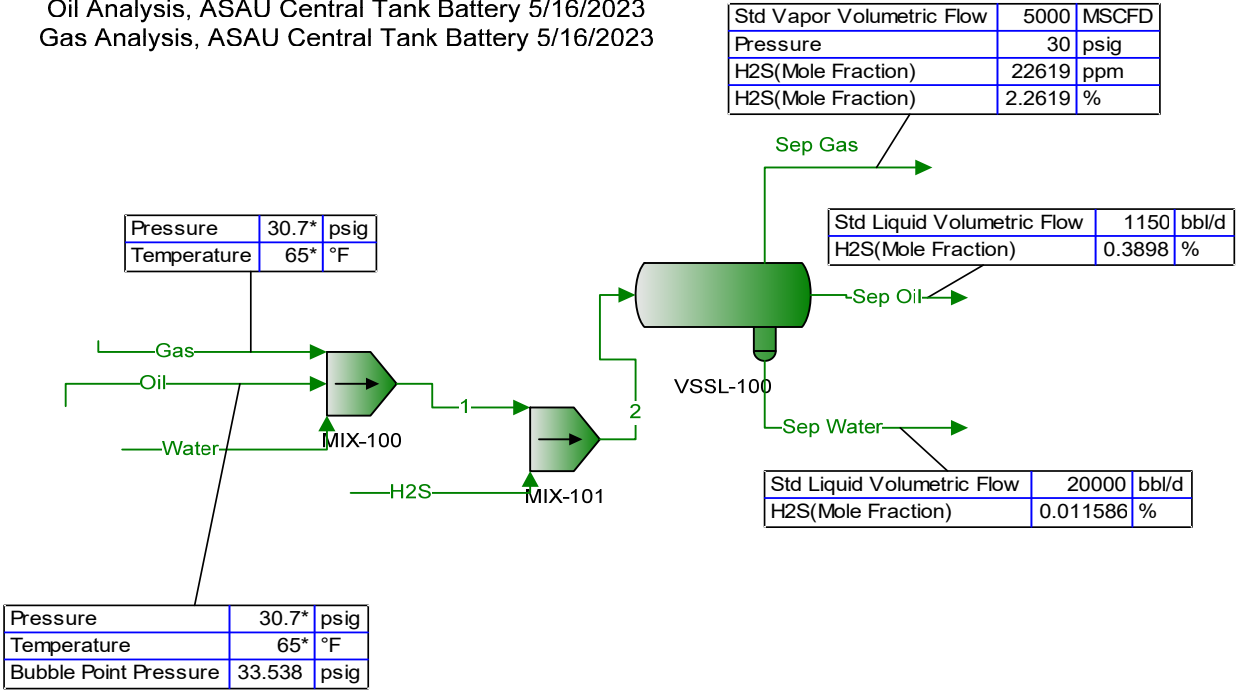
VOC Type: (pick from list)
Natural Gas VOC

Emission Type: (pick from list)
Low Pressure Periodic

Emissions before control and before wt% reduction		
Type of Losses	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Vapor Space Purge / Degassing	497.25	55.34
Planned MSS Emissions		
Air Contaminant	Max. hourly emissions lb/hr	Avg. Annual emissions tpy
Total VOC	8.57	9.54E-01
Total H ₂ S	2.67E+01	2.97E+00
Total Benzene	5.87E+00	6.54E-01

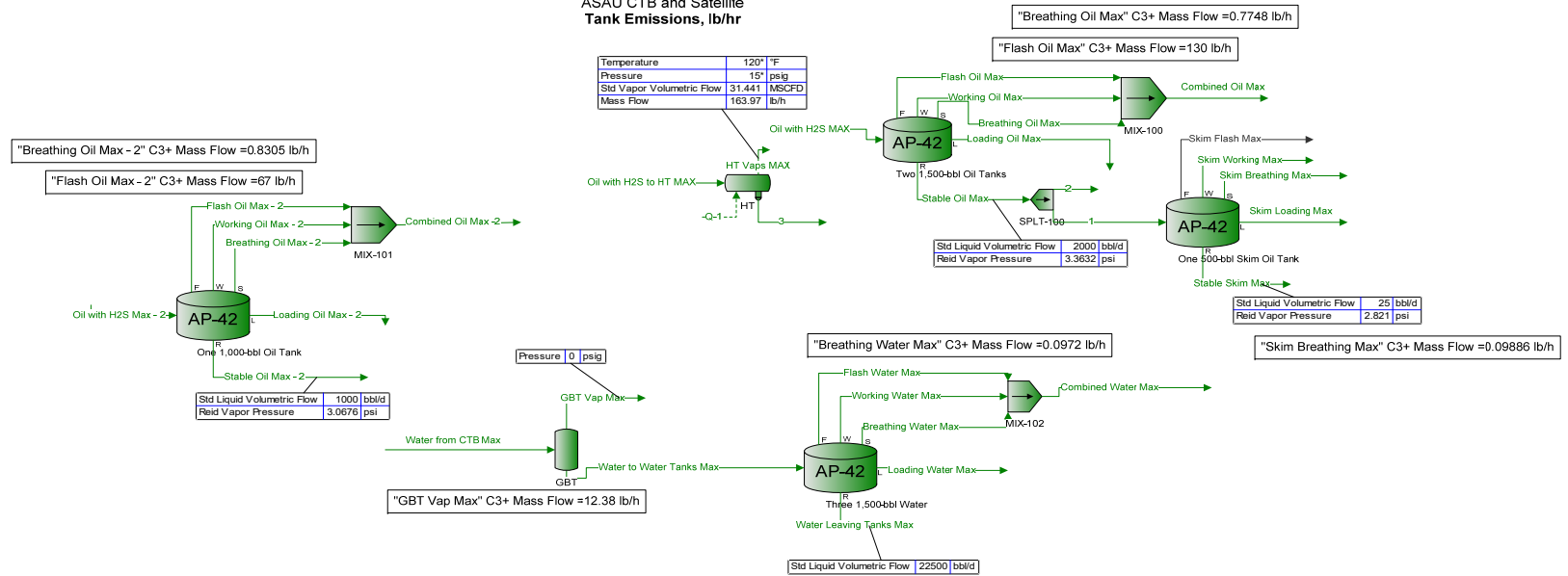
ASAU CTB and Satellite

Oil Analysis, ASAU Central Tank Battery 5/16/2023
Gas Analysis, ASAU Central Tank Battery 5/16/2023



Process Streams		Gas	H2S	Oil	Sep Gas	Sep Oil	Sep Water	Water	1	2
Composition		Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block: --	--	--	VSSL-100	VSSL-100	VSSL-100	--	MIX-100	MIX-101
		To Block: MIX-100	MIX-101	MIX-100	--	--	--	MIX-100	MIX-101	VSSL-100
Mole Fraction		%	%	%	%	%	%	%	%	%
H2S		2.26195*	100*	0.2191*	2.26190	0.389799	0.0115856	0*	0.0779264	0.0868914
Nitrogen		0.0836017*	0*	0.029*	0.0904860	0.000439562	3.52964E-06	0*	0.00296825	0.00296798
Methane		1.52823*	0*	0.0084*	1.58329	0.0218904	0.000126472	0*	0.0520607	0.0520561
CO2		87.4573*	0*	3.4882*	86.6885	3.20930	0.144948	0*	2.99200	2.99173
Ethane		1.76424*	0*	0.1139*	1.81767	0.186640	0.000226169	0*	0.0605396	0.0605342
Propane		2.79776*	0*	0.6902*	2.84435	1.10998	0.000250860	0*	0.0981521	0.0981433
i-Butane		0.593812*	0*	0.3492*	0.581421	0.607335	3.80678E-05	0*	0.0216866	0.0216846
n-Butane		1.44693*	0*	1.041*	1.36009	2.09394	0.000109024	0*	0.0536444	0.0536396
i-Pentane		0.530311*	0*	1.5289*	0.485905	1.99024	2.87988E-05	0*	0.0244961	0.0244939
n-Pentane		0.518810*	0*	1.9411*	0.456833	2.52883	9.83177E-06	0*	0.0258416	0.0258393
iC6		0.416108*	0*	6.8737*	0.475992	6.40297	1.47381E-05	0*	0.0431313	0.0431274
n-Hexane		0.156403*	0*	2.9642*	0.150846	2.99416	2.26801E-06	0*	0.0178155	0.0178140
iC7		0.145003*	0*	6.8009*	0.166651	6.54339	3.91423E-06	0*	0.0335953	0.0335923
n-Heptane		0*	0*	0*	0	0	0	0*	0	0
Benzene		0.126503*	0*	4.0045*	0.163701	3.23179	0.00199931	0*	0.0211815	0.0211796
Toluene		0.0405008*	0*	4.6453*	0.0541002	4.35130	0.000491478	0*	0.0209541	0.0209522
2,2,4-Trimethylpentane		0.0383008*	0*	2.6828*	0.0475545	2.57017	1.11724E-06	0*	0.0126092	0.0126081
nC8		0.0607012*	0*	6.2782*	0.0326834	6.38474	1.53151E-07	0*	0.0285228	0.0285202
Ethylbenzene		0.00890018*	0*	2.3388*	0.00827267	2.28404	6.97228E-05	0*	0.0101587	0.0101578
m-Xylene		0.00350007*	0*	1.2789*	0.00406150	1.24549	2.10217E-05	0*	0.00550844	0.00550794
o-Xylene		0.00130003*	0*	0.4792*	0.00135190	0.465889	1.67780E-05	0*	0.00206361	0.00206342
p-Xylene		0*	0*	0*	0	0	0	0*	0	0
Nonane		0.0168003*	0*	6.855*	0.0104790	6.77159	5.79502E-08	0*	0.0294589	0.0294563
C10		0.00300006*	0*	0*	1.13551E-05	0.0236666	1.76909E-11	0*	0.000102131	0.000102121
Water		0*	0*	0*	0.713856	0.107499	99.8401	100*	96.1743	96.1657
C10+ Oil		0*	0*	45.3895*	1.92673E-08	44.4849	1.09617E-11	0*	0.191271	0.191254
Process Streams		Gas	H2S	Oil	Sep Gas	Sep Oil	Sep Water	Water	1	2
Properties		Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block: --	--	--	VSSL-100	VSSL-100	VSSL-100	--	MIX-100	MIX-101
		To Block: MIX-100	MIX-101	MIX-100	--	--	--	MIX-100	MIX-101	VSSL-100
Property	Units									
Temperature	°F	65*	65*	65*	65.3763	65.3763	65.3763	65*	65.3938	65.3959
Pressure	psig	30.7*	30.7*	30.7*	30*	30	30	30.7*	30.7	30.7
Mole Fraction Vapor	%	100	100	0.193403	100	0	0	0	3.26230	3.27023
Mole Fraction Light Liquid	%	0	0	99.8066	0	100	100	100	0.431215	0.431173
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	96.3065	96.2986
Phase Mole Fraction	%	100	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	44.1645	34.0809	195.727	43.9439	192.825	18.0567	18.0153	19.6544	19.6556
Mass Density	lb/ft^3	0.363667	0.282234	48.9879	0.355895	51.8605	62.3732	62.3287	4.61400	4.60392
Molar Flow	lbmol/h	570.752	1.50436	70.6506	548.991	72.0872	16146.1	16124.3	16765.7	16767.2
Mass Flow	lb/h	25207.0	51.2698	13828.3	24124.8	13900.2	291545	290483	329519	329570
Vapor Volumetric Flow	ft^3/h	69313.4	181.657	282.279	67786.4	268.030	4674.20	4660.51	71417.1	71584.6
Liquid Volumetric Flow	gpm	8641.67	22.6482	35.1932	8451.29	33.4168	582.757	581.050	8903.95	8924.83
Std Vapor Volumetric Flow	MMSCFD	5.19819*	0.0137011*	0.643459	5.00000	0.656543	147.053	146.854	152.695	152.709
Std Liquid Volumetric Flow	sgpm	65.5157	0.128299	33.2371*	62.7036	33.5417	583.333	580.697*	679.450	679.579
Compressibility		0.979123	0.973574	0.0322129	0.979454	0.0294939	0.00229639	0.00233035	0.0343180	0.0343953
Specific Gravity		1.52489	1.17672		1.51727	0.831514	1.00007	0.999358		
API Gravity						38.1957	9.88472	9.99453		
Enthalpy	Btu/h	-8.74024E+07	-13580.2	-1.11373E+07	-8.37346E+07	-1.12698E+07	-1.98839E+09	-1.98484E+09	-2.08338E+09	-2.08340E+09
Mass Enthalpy	Btu/lb	-3467.39	-264.877	-805.399	-3470.89	-810.763	-6820.19	-6832.90	-6322.51	-6321.56
Mass Cp	Btu/(lb*°F)	0.226751	0.245522	0.451914	0.227436	0.453472	0.978324	0.979132	0.901346	0.901262
Ideal Gas CpCv Ratio		1.25375	1.32166	1.02946	1.25428	1.02983	1.32930	1.32940	1.31278	1.31278
Dynamic Viscosity	cP	0.0139220	0.0125913		0.0139241	2.59895	1.04867	1.06249		
Kinematic Viscosity	cSt	2.38989	2.78510		2.44245	3.12853	1.04959	1.06418		
Thermal Conductivity	Btu/(h*ft*°F)	0.00938398	0.00898590		0.00940821	0.0734162	0.342845	0.344737		
Surface Tension	lbf/ft					0.00217117?	0.00505200?	0.00506977		
Net Ideal Gas Heating Value	Btu/ft^3	267.201	586.790	9441.70	266.396	9311.44	0.183604	0	48.8836	48.9319
Net Liquid Heating Value	Btu/lb	2210.95	6332	18159.6	2212.71	18178.7	-1052.11	-1059.76	-3.01857	-2.03306
Gross Ideal Gas Heating Value	Btu/ft^3	289.917	637.100	10061.4	289.359	9925.01	50.4248	50.3100	100.654	100.702
Gross Liquid Heating Value	Btu/lb	2406.17	6892.4	19361.1	2411.04	19386.2	3.77021	0	996.553	997.470

ASAU CTB and Satellite
Tank Emissions, lb/hr



Process Streams	Breathing Oil Max	Breathing Oil Max - 2	Breathing Water Max	Combined Oil Max	Combined Oil Max -2	Combined Water Max	Flash Oil Max
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	MIX-100	MIX-101	MIX-102	Two 1,500-bbl Oil Tanks
	To Block: MIX-100	MIX-101	MIX-102	--	--	--	MIX-100
Mole Fraction	%	%	%	%	%	%	%
H2S	4.08246	2.84898	8.68077	2.94445	2.82321	7.49129	2.82555
Nitrogen	0.0406563	0.117322	4.54849E-06	0.548108	0.537945	7.12974E-05	0.601125
Methane	0.0401808	0.0856038	0.000652429	0.154941	0.155819	0.00519306	0.166931
CO2	56.3691	65.7035	81.6267	63.1422	63.6277	83.7378	63.8499
Ethane	2.52382	1.74509	0.00243177	1.79498	1.71500	0.0144631	1.71884
Propane	9.04749	6.31850	0.00140752	6.60912	6.36754	0.0116021	6.35436
i-Butane	2.33341	1.78309	0.000104298	1.86863	1.83157	0.00133201	1.82007
n-Butane	5.20244	4.05355	0.000522618	4.26004	4.19434	0.00463251	4.16158
i-Pentane	3.56048	2.79374	6.98348E-05	2.97415	2.94479	0.000920743	2.91289
n-Pentane	3.53751	2.79505	4.19090E-06	2.98972	2.96674	0.000114814	2.93249
IC6	5.76138	4.62511	1.14501E-05	5.00111	4.98735	0.000249731	4.92168
n-Hexane	1.85419	1.45657	4.51336E-07	1.59241	1.58692	1.87557E-05	1.56506
IC7	2.00513	1.81542	1.36999E-06	1.97467	2.00063	5.12767E-05	1.97148
n-Heptane	0	0	0	0	0	0	0
Benzene	1.64980	1.91972	1.04499	2.01400	2.08050	0.920305	2.05205
Toluene	0.636992	0.649661	0.308055	0.705284	0.723397	0.270931	0.712419
2,2,4-Trimethylpentane	0.598366	0.533343	2.95553E-07	0.583055	0.590207	1.48308E-05	0.581455
nC8	0.435503	0.413809	3.08456E-09	0.461249	0.471571	4.02578E-07	0.463939
Ethylbenzene	0.118437	0.110304	0.0487772	0.123353	0.125920	0.0432392	0.123867
m-Xylene	0.0572147	0.0547021	0.0175783	0.0610940	0.0625217	0.0154361	0.0614993
p-Xylene	0.0174353	0.0184571	0.00897634	0.0204686	0.0211327	0.00794650	0.0207855
o-Xylene	0	0	0	0	0	0	0
Nonane	0.128027	0.158524	1.12764E-09	0.176914	0.185222	1.83620E-07	0.182021
C10	0	0	3.07206E-14	0	0	1.58799E-11	0
Water	0	0	8.25896	0	0	7.47438	0
C10+ Oil	1.62666E-06	1.64243E-06	8.80122E-10	2.43158E-06	2.60533E-06	3.33303E-09	2.51567E-06
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	0.00124093	0.00113488	0.00714369	0.192462	0.0959420	0.839091	0.167219
Nitrogen	1.23581E-05	4.67350E-05	3.74310E-09	0.0358266	0.0182811	7.98594E-06	0.0355752
Methane	1.22136E-05	3.41000E-05	5.36905E-07	0.0101276	0.00529522	0.000581669	0.00987914
CO2	0.0171343	0.0261727	0.0671733	4.12724	2.16228	9.37938	3.77870
Ethane	0.000767158	0.000695152	2.00118E-06	0.117328	0.0582814	0.00161999	0.101723
Propane	0.00275013	0.00251695	1.15830E-06	0.432000	0.216390	0.00129954	0.376058
i-Butane	0.000709277	0.000710286	8.58305E-08	0.122142	0.0622428	0.000149196	0.107714
n-Butane	0.00158137	0.00161472	4.30080E-07	0.278454	0.142538	0.000518882	0.246287
i-Pentane	0.00108227	0.00111288	5.74694E-08	0.194403	0.100074	0.000103131	0.172388
n-Pentane	0.00107528	0.00111340	3.44883E-09	0.195421	0.100819	1.28602E-05	0.173548
IC6	0.00175127	0.00184240	9.42264E-09	0.326894	0.169487	2.79721E-05	0.291270
n-Hexane	0.000563612	0.000580221	3.71419E-10	0.104086	0.0539287	2.10080E-06	0.0926218
IC7	0.000609492	0.000723166	1.12741E-09	0.129072	0.0679879	5.74344E-06	0.116675
n-Heptane	0	0	0	0	0	0	0
Benzene	0.000501484	0.000764716	0.000859960	0.131643	0.0707023	0.103082	0.121442
Toluene	0.000193624	0.000258790	0.000253509	0.0461003	0.0245834	0.0303467	0.0421617
2,2,4-Trimethylpentane	0.000181883	0.000212456	2.43220E-10	0.0381109	0.0200572	1.66118E-06	0.0344111
nC8	0.000132378	0.000164839	2.53839E-12	0.0301492	0.0160255	4.50923E-08	0.0274564
Ethylbenzene	3.60008E-05	4.39392E-05	4.01404E-05	0.00806290	0.00427916	0.00484317	0.00733059
m-Xylene	1.73914E-05	2.17904E-05	1.44658E-05	0.00399336	0.00212469	0.00172898	0.00363960
o-Xylene	5.29975E-06	7.35231E-06	7.38693E-06	0.00133791	0.000718157	0.000890078	0.00123011
p-Xylene	0	0	0	0	0	0	0
Nonane	3.89160E-05	6.31473E-05	9.27969E-13	0.0115638	0.00629445	2.05671E-08	0.0107722
C10	0	0	2.52810E-17	0	0	1.77869E-12	0
Water	0	0	0.00679656	0	0	0.837197	0
C10+ Oil	4.94449E-10	6.54257E-10	7.24281E-13	1.58938E-07	8.85376E-08	3.73329E-10	1.48880E-07

Process Streams	Breathing Oil Max	Breathing Oil Max - 2	Breathing Water Max	Combined Oil Max	Combined Oil Max -2	Combined Water Max	Flash Oil Max
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	MIX-100	MIX-101	MIX-102	Two 1,500-bbl Oil Tanks
	To Block: MIX-100	MIX-101	MIX-102	--	--	--	MIX-100
Mass Fraction	%	%	%	%	%	%	%
H2S	2.65198	1.89244	7.11999	1.93686	1.85513	6.10697	1.86110
Nitrogen	0.0217085	0.0640575	3.06650E-06	0.296356	0.290552	4.77747E-05	0.325451
Methane	0.0122865	0.0267663	0.000251892	0.0479754	0.0481959	0.00199275	0.0517562
CO2	47.2851	56.3583	86.4547	53.6350	53.9899	88.1509	54.3077
Ethane	1.44649	1.02273	0.00175976	1.04175	0.994270	0.0104025	0.998870
Propane	7.60433	5.43041	0.00149369	5.62498	5.41361	0.0122375	5.41530
i-Butane	2.58505	2.01994	0.000145891	2.09627	2.05251	0.00185185	2.04449
n-Butane	5.76350	4.59199	0.000731033	4.77901	4.70030	0.00644046	4.67472
i-Pentane	4.89638	3.92861	0.000121258	4.14166	4.09641	0.00158901	4.06170
n-Pentane	4.86479	3.93045	7.27690E-06	4.16334	4.12694	0.000198144	4.08903
IC6	9.46339	7.76835	2.37466E-05	8.31825	8.28653	0.000514771	8.19693
n-Hexane	3.04561	2.44646	9.36038E-07	2.64862	2.63668	3.86611E-05	2.60656
IC7	3.82962	3.54549	3.30372E-06	3.81902	3.86511	0.000122901	3.81790
n-Heptane	0	0	0	0	0	0	0
Benzene	2.45632	2.92267	1.96445	3.03639	3.13332	1.71952	3.09784
Toluene	1.11870	1.16668	0.683092	1.25426	1.28510	0.597116	1.26862
2,2,4-Trimethylpentane	1.30280	1.18742	8.12494E-07	1.28548	1.29987	4.05226E-05	1.28365
nC8	0.948206	0.921294	8.47965E-09	1.01693	1.03858	1.09997E-06	1.02421
Ethylbenzene	0.239665	0.228242	0.124626	0.252764	0.257747	0.109804	0.254151
m-Xylene	0.115778	0.113190	0.0449127	0.125188	0.127977	0.0391993	0.126185
p-Xylene	0.0352816	0.0381916	0.0229346	0.0419422	0.0432569	0.0201797	0.0426478
o-Xylene	0	0	0	0	0	0	0
Nonane	0.312979	0.396271	3.48060E-09	0.437943	0.458023	5.63318E-07	0.451182
C10	0	0	1.05193E-13	0	0	5.40450E-11	0
Water	0	0	3.58077	0	0	3.22088	0
C10+ Oil	9.86244E-06	1.01827E-05	6.73758E-09	1.49287E-05	1.59784E-05	2.53600E-08	1.54654E-05
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	0.0422920	0.0386777	0.243463	6.55926	3.26979	28.5969	5.69898
Nitrogen	0.000346194	0.00130921	1.04857E-07	1.00363	0.512117	0.000223713	0.996584
Methane	0.000195936	0.000547048	8.61328E-06	0.162471	0.0849484	0.00933140	0.158486
CO2	0.754072	1.15185	2.95626	181.638	95.1607	412.782	166.299
Ethane	0.0230677	0.0209025	6.01737E-05	3.52793	1.75247	0.0487116	3.05870
Propane	0.121269	0.110987	5.10758E-05	19.0493	9.54185	0.0573040	16.5825
i-Butane	0.0412247	0.0412834	4.98866E-06	7.09914	3.61769	0.00867163	6.26057
n-Butane	0.0919126	0.0938510	2.49972E-05	16.1844	8.28460	0.0301586	14.3147
i-Pentane	0.0780842	0.0802927	4.14634E-06	14.0259	7.22019	0.00744081	12.4376
n-Pentane	0.0775804	0.0803305	2.48829E-07	14.0994	7.27400	0.000927846	12.5213
IC6	0.150916	0.158769	8.11999E-07	28.1702	14.6056	0.00241050	25.1003
n-Hexane	0.0485695	0.0500007	3.20072E-08	8.96969	4.64733	0.000181037	7.98171
IC7	0.0610722	0.0724627	1.12969E-07	12.9333	6.81252	0.000575504	11.6910
n-Heptane	0	0	0	0	0	0	0
Benzene	0.0391718	0.0597334	0.0671730	10.2829	5.52268	8.05195	9.48609
Toluene	0.0178402	0.0238445	0.0233579	4.24761	2.26507	2.79610	3.88472
2,2,4-Trimethylpentane	0.0207762	0.0242685	2.77827E-08	4.35335	2.29110	0.000189754	3.93073
nC8	0.0151214	0.0188294	2.89956E-10	3.44389	1.83057	5.15082E-06	3.13630
Ethylbenzene	0.00382203	0.00466480	0.00426150	0.855997	0.454297	0.514176	0.778252
m-Xylene	0.00184635	0.00231338	0.00153576	0.423955	0.225568	0.183557	0.386398
o-Xylene	0.000562648	0.000780558	0.000784233	0.142039	0.0762431	0.0944952	0.130594
p-Xylene	0	0	0	0	0	0	0
Nonane	0.00499118	0.00809897	1.19017E-10	1.48312	0.807295	2.63784E-06	1.38159
C10	0	0	3.59702E-15	0	0	2.53075E-10	0
Water	0	0	0.122442	0	0	15.0823	0
C10+ Oil	1.57280E-07	2.08113E-07	2.30387E-10	5.05568E-05	2.81630E-05	1.18753E-07	4.73575E-05

Process Streams		Breathing Oil Max	Breathing Oil Max - 2	Breathing Water Max	Combined Oil Max	Combined Oil Max -2	Combined Water Max	Flash Oil Max
Properties		Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	MIX-100	MIX-101	MIX-102	Two 1,500-bbl Oil Tanks
	To Block:	MIX-100	MIX-101	MIX-102	--	--	--	MIX-100
Property	Units							
Temperature	°F	117.086	118.335	94.7225	117.085	118.335	94.7224	117.086
Pressure	psig	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595
Mole Fraction Vapor	%	100	100	97.7540	100	100	98.5903	100
Mole Fraction Light Liquid	%	0	0	2.24598	0	0	1.40974	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	52.4642	51.3070	41.5518	51.8105	51.8657	41.8063	51.7422
Mass Density	lb/ft^3	0.113493	0.110599	0.0952186	0.111975	0.111844	0.0949853	0.111817
Molar Flow	lbmol/h	0.0303966	0.0398347	0.0822933	6.53642	3.39833	11.2009	5.91811
Mass Flow	lb/h	1.59473	2.04380	3.41943	338.655	176.257	468.267	306.216
Vapor Volumetric Flow	ft^3/h	14.0514	18.4793	35.9114	3024.37	1575.91	4929.89	2738.54
Liquid Volumetric Flow	gpm	1.75187	2.30391	4.47727	377.064	196.477	614.636	341.428
Std Vapor Volumetric Flow	MMSCFD	0.000276841	0.000362799	0.000749496	0.0595312	0.0309507	0.102013	0.0538999
Std Liquid Volumetric Flow	sgpm	0.00456011	0.00565319	0.00830722	0.942376	0.489302	1.13867	0.849617
Compressibility		0.990338	0.991683	0.972592	0.991251	0.991322	0.980952	0.991343
Specific Gravity		1.81145	1.77150		1.78888	1.79079		1.78653
API Gravity								
Enthalpy	Btu/h	-3542.72	-5075.08	-12120.5	-812027	-424107	-1.67840E+06	-739964
Mass Enthalpy	Btu/lb	-2221.51	-2483.16	-3544.58	-2397.80	-2406.19	-3584.28	-2416.47
Mass Cp	Btu/(lb*°F)	0.311499	0.292742	0.223336	0.297423	0.297017	0.219982	0.295933
Ideal Gas CpCv Ratio		1.13916	1.15325	1.28236	1.14881	1.14886	1.28250	1.14990
Dynamic Viscosity	cP	0.0117687	0.0125063		0.0122838	0.0123320		0.0123392
Kinematic Viscosity	cSt	6.47351	7.05923		6.84837	6.88333		6.88898
Thermal Conductivity	Btu/(h*ft*°F)	0.0100606	0.0100864		0.0100568	0.0100804		0.0100567
Surface Tension	lbf/ft							
Net Ideal Gas Heating Value	Btu/ft^3	1364.11	1104.24	105.459	1179.81	1172.59	92.6667	1160.55
Net Liquid Heating Value	Btu/lb	9751.99	8059.79	840.816	8532.38	8470.77	724.038	8403.18
Gross Ideal Gas Heating Value	Btu/ft^3	1473.06	1191.13	116.377	1272.62	1264.63	102.367	1251.68
Gross Liquid Heating Value	Btu/lb	10540.1	8702.44	940.539	9212.21	9144.19	812.104	9071.55

Process Streams										Flash Oil Max - 2	Flash Water Max	GBT Vap Max	HT Vaps MAX	Loading Oil Max	Loading Oil Max - 2	Loading Water Max	Oil with H2S MAX	
Composition		Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase:	Total	From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	--								
		To Block:	MIX-101	MIX-102	--	--	--	--	--	--	--	--	--	--	--	--	Two 1,500-bbl Oil Tanks	
Mole Fraction			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
H2S			2.81971	5.48602	4.25146	2.30634	3.51555	5.32677	30.4957								0.2191*	
Nitrogen			0.595109	0.000183825	0.00344143	0.956951	0.706775	0	4.45003E-19								0.029*	
Methane			0.165361	0.0128478	0.121712	0.240048	0.172527	0	4.82663E-17								0.0084*	
CO2			63.3455	87.2968	92.3618	78.2743	44.6115	18.3311	2.38207E-13								3.4882*	
Ethane			1.71091	0.0347458	0.214521	1.62157	1.73953	2.69758	7.14380E-17								0.1139*	
Propane			6.37421	0.0287885	0.240630	4.25320	9.17105	13.7542	6.91288E-17								0.6902*	
i-Butane			1.83816	0.00340171	0.0367753	1.02492	2.85026	4.24605	9.87301E-18								0.3492*	
n-Butane			4.21348	0.0115611	0.104826	2.23765	6.62389	9.87534	2.83801E-17								1.041*	
i-Pentane			2.96532	0.00235523	0.0278737	1.46247	7.09288	4.74670	4.17683E-18								1.5289*	
n-Pentane			2.99007	0.000301306	0.00963681	1.45653	4.80374	7.18087	6.04745E-19								1.9411*	
IC6			5.03658	0.000651432	0.0143988	2.40034	8.14314	12.1800	1.52925E-18								6.8737*	
n-Hexane			1.60463	4.96137E-05	0.00222772	0.762152	2.60121	3.89150	1.88599E-19								2.9642*	
IC7			2.02580	0.000135411	0.00383324	0.959669	3.29236	4.92346	2.60202E-19								6.8009*	
n-Heptane			0	0	0	0	0	0	0								0*	
Benzene			2.10235	0.710100	0.380250	0.993747	3.41115	5.10116	5.79036								4.0045*	
Toluene			0.733418	0.208347	0.117124	0.346269	1.19574	1.78912	1.49885								4.6453*	
2,2,4-Trimethylpentane			0.597935	3.93347E-05	0.00109400	0.283296	0.972318	1.45390	1.42642E-19								2.6828*	
nC8			0.479421	1.07606E-06	0.000150954	0.228420	0.783774	1.17155	1.75618E-21								6.2782*	
Ethylbenzene			0.128042	0.0339031	0.0174230	0.0608639	0.209572	0.313423	0.213074								2.3388*	
m-Xylene			0.0635844	0.0118247	0.00739473	0.0302480	0.104082	0.155643	0.0504159								1.2789*	
o-Xylene			0.0214963	0.00621036	0.00309686	0.0102291	0.0352019	0.0526400	0.0488512								0.4792*	
p-Xylene			0	0	0	0	0	0	0								0*	
Nonane			0.188850	4.91272E-07	5.70998E-05	0.0908030	0.309886	0.462820	8.57264E-22								6.855*	
C10			0	4.25990E-11	1.74557E-08	0	0	0	1.55080E-25								0*	
Water			0	6.15171	2.08027	0	0	0	61.9028								0*	
C10+ Oil			2.73619E-06	7.46822E-09	8.80241E-09	1.49185E-06	4.69176E-06	6.93667E-06	1.01061E-23								45.3895*	
Molar Flow			lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S			0.0843584	0.228787	0.785924	0.0796178	0.0116503	0.00575911	0.158301								0.276065*	
Nitrogen			0.0178041	7.66616E-06	0.000636181	0.0330352	0.00234221	0	2.30998E-21								0.0365399*	
Methane			0.00494717	0.000535800	0.0224997	0.00828675	0.000571746	0	2.50547E-19								0.0105840*	
CO2			1.89513	3.64059	17.0740	2.70213	0.147840	0.0198189	1.23652E-15								4.39512*	
Ethane			0.0511861	0.00144903	0.0396563	0.0559788	0.00576470	0.00291652	3.70831E-19								0.143514*	
Propane			0.190700	0.00120058	0.0444828	0.146826	0.0303924	0.0148706	3.58844E-19								0.869650*	
i-Butane			0.0549930	0.000141864	0.00679826	0.0353814	0.00944560	0.00459067	5.12502E-20								0.439991*	
n-Butane			0.126056	0.000482139	0.0193782	0.0772465	0.0219512	0.0106769	1.47319E-19								1.31166*	
i-Pentane			0.0887146	9.82216E-05	0.00515272	0.0504862	0.0157303	0.00766856	2.16817E-20								1.92641*	
n-Pentane			0.0894550	1.25655E-05	0.00178146	0.0502814	0.0159193	0.00776369	3.13919E-21								2.44578*	
IC6			0.150681	2.71671E-05	0.00266176	0.0828627	0.0269859	0.0131686	7.93827E-21								8.66084*	
n-Hexane			0.0480064	2.06907E-06	0.000411815	0.0263105	0.00862026	0.00420735	9.79005E-22								3.73488*	
IC7			0.0606066	5.64712E-06	0.000708612	0.0331290	0.0109107	0.00532307	1.35069E-21								8.56912*	
n-Heptane			0	0	0	0	0	0	0								0*	
Benzene			0.0628969	0.0296137	0.0702928	0.0343054	0.0113043	0.00551519	0.0300574								5.04566*	
Toluene			0.0219419	0.00868882	0.0216516	0.0119536	0.00396260	0.00193433	0.00778045								5.85307*	
2,2,4-Trimethylpentane			0.0178886	1.64040E-06	0.000202237	0.00977975	0.00322221	0.00157190	7.40449E-22								3.38032*	
nC8			0.0143430	4.48754E-08	2.79053E-05	0.00788536	0.00259738	0.00126664	9.11621E-24								7.91052*	
Ethylbenzene			0.00383067	0.00141388	0.00322082	0.00210110	0.000694511	0.000338861	0.00110605								2.94688*	
m-Xylene			0.00190228	0.000493134	0.00136699	0.00104420	0.000344922	0.000168275	0.000261706								1.61141*	
o-Xylene			0.000643112	0.000258994	0.000572484	0.000353123	0.000116657	5.69125E-05	0.000253584								0.603791*	
p-Xylene			0	0	0	0	0	0	0								0*	
Nonane			0.00564991	2.04878E-08	1.05555E-05	0.00313463	0.00102695	0.000500384	4.45001E-24								8.63728*	
C10			0	1.77653E-12	3.22685E-09	0	0	0	8.05012E-28								0*	
Water			0	0.256549	0.384558	0	0	0	0.321334								0*	
C10+ Oil			8.18597E-08	3.11452E-10	1.62721E-09	5.15005E-08	1.55482E-08	7.49967E-09	5.24604E-26								57.1906*	

Process Streams									
Flash Oil Max - 2		Flash Water Max	GBT Vap Max	HT Vaps MAX	Loading Oil Max	Loading Oil Max - 2	Loading Water Max	Oil with H2S MAX	
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	--
	To Block:	MIX-101	MIX-102	--	--	--	--	--	Two 1,500-bbl Oil Tanks
Mass Fraction		%	%	%	%	%	%	%	%
H2S		1.85012	4.42683	3.35197	1.65489	2.09759	2.84424	37.4115	0.0381506*
Nitrogen		0.320957	0.000121926	0.00223026	0.564405	0.346628	0	4.48730E-19	0.00415061*
Methane		0.0510727	0.00488005	0.0451707	0.0810781	0.0484558	0	2.78722E-17	0.000688492*
CO2		53.6719	90.9640	94.0351	72.5272	34.3725	12.6394	3.77361E-13	0.784325*
Ethane		0.990450	0.0247370	0.149225	1.02658	0.915731	1.27082	7.73224E-17	0.0174981*
Propane		5.41136	0.0300565	0.245469	3.94863	7.07997	9.50217	1.09726E-16	0.155496*
i-Butane		2.05689	0.00468128	0.0494480	1.25420	2.90030	3.86651	2.06561E-17	0.103697*
n-Butane		4.71484	0.0159098	0.140950	2.73822	6.74019	8.99260	5.93762E-17	0.309130*
i-Pentane		4.11893	0.00402335	0.0465237	2.22152	5.99567	8.01757	1.08476E-17	0.563581*
n-Pentane		4.15331	0.000514708	0.0160847	2.21251	6.06772	8.11704	1.57057E-18	0.715526*
IC6		8.35610	0.00132916	0.0287052	4.35503	12.2855	16.4446	4.74372E-18	3.02637*
n-Hexane		2.66222	0.000101230	0.00444114	1.38280	3.92442	5.25402	5.85030E-19	1.30509*
IC7		3.90802	0.000321258	0.00888574	2.02457	5.77565	7.72926	9.38520E-19	3.48170*
n-Heptane		0	0	0	0	0	0	0	0*
Benzene		3.16160	1.31329	0.687127	1.63429	4.66481	6.24277	16.2809	1.59814*
Toluene		1.30100	0.454520	0.249655	0.671721	1.92883	2.58268	4.97114	2.18677*
2,2,4-Trimethylpentane		1.31496	0.000106384	0.00289098	0.681320	1.94446	2.60195	5.86516E-19	1.56571*
nC8		1.05433	2.91027E-06	0.000398905	0.549344	1.56741	2.09666	7.22103E-21	3.66402*
Ethylbenzene		0.261708	0.0852207	0.0427914	0.136043	0.389522	0.521319	0.814268	1.26859*
m-Xylene		0.129962	0.0297233	0.0181616	0.0676104	0.193453	0.258882	0.192666	0.693692*
p-Xylene		0.0439369	0.0156107	0.00760596	0.0228642	0.0654281	0.0875566	0.186687	0.259924*
o-Xylene		0	0	0	0	0	0	0	0*
Nonane		0.466312	1.49184E-06	0.000169418	0.245194	0.695815	0.929990	3.95773E-21	4.49190*
C10		0	1.43507E-10	5.74563E-08	0	0	0	7.94258E-25	0*
Water		0	2.62399	0.866986	0	0	0	40.1428	0*
C10+ Oil		1.67565E-05	5.62462E-08	6.47746E-08	9.99106E-06	2.61279E-05	3.45696E-05	1.15716E-22	73.7659*
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S		2.87501	7.79726	26.7850	2.71344	0.397053	0.196275	5.39505	9.40855*
Nitrogen		0.498754	0.000214755	0.0178216	0.925427	0.0656134	0	6.47105E-20	1.02361*
Methane		0.0793647	0.00859555	0.360951	0.132940	0.00917221	0	4.01940E-18	0.169793*
CO2		83.4038	160.221	751.417	118.919	6.50637	0.872218	5.44186E-14	193.427*
Ethane		1.53912	0.0435709	1.19243	1.68323	0.173339	0.0876969	1.11505E-17	4.31532*
Propane		8.40902	0.0529405	1.96150	6.47438	1.34017	0.655727	1.58234E-17	38.3478*
i-Butane		3.19631	0.00824543	0.395130	2.05645	0.548999	0.266820	2.97878E-18	25.5732*
n-Butane		7.32667	0.0280230	1.12630	4.48973	1.27585	0.620562	8.56252E-18	76.2364*
i-Pentane		6.40065	0.00708657	0.371762	3.64252	1.13492	0.553277	1.56431E-18	138.988*
n-Pentane		6.45407	0.000906588	0.128530	3.62774	1.14856	0.560141	2.26489E-19	176.460*
IC6		12.9850	0.00234113	0.229378	7.14072	2.32552	1.13481	6.84083E-19	746.351*
n-Hexane		4.13697	0.000178303	0.0354883	2.26731	0.742854	0.362570	8.43661E-20	321.855*
IC7		6.07290	0.000565853	0.0710043	3.31959	1.09327	0.533382	1.35342E-19	858.642*
n-Heptane		0	0	0	0	0	0	0	0*
Benzene		4.91299	2.31318	5.49070	2.67966	0.883003	0.430802	2.34784	394.126*
Toluene		2.02170	0.800575	1.99494	1.10139	0.365108	0.178226	0.716879	539.292*
2,2,4-Trimethylpentane		2.04339	0.000187381	0.0231013	1.11713	0.368068	0.179556	8.45804E-20	386.129*
nC8		1.63838	5.12605E-06	0.00318758	0.900733	0.296695	0.144686	1.04133E-21	903.606*
Ethylbenzene		0.406684	0.150105	0.341938	0.223063	0.0737328	0.0359752	0.117424	312.856*
m-Xylene		0.201955	0.0523536	0.145126	0.110857	0.0366187	0.0178649	0.0277840	171.075*
o-Xylene		0.0682760	0.0274961	0.0607778	0.0374893	0.0123849	0.00604211	0.0269217	64.1014*
p-Xylene		0	0	0	0	0	0	0	0*
Nonane		0.724629	2.62767E-06	0.00135379	0.402033	0.131711	0.0641768	5.70736E-22	1107.78*
C10		0	2.52768E-10	4.59122E-07	0	0	0	1.14538E-25	0*
Water		0	4.62180	6.92792	0	0	0	5.78892	0*
C10+ Oil		2.60388E-05	9.90700E-08	5.17601E-07	1.63818E-05	4.94576E-06	2.38558E-06	1.66872E-23	18191.8*

Process Streams		Flash Oil Max - 2	Flash Water Max	GBT Vap Max	HT Vaps MAX	Loading Oil Max	Loading Oil Max - 2	Loading Water Max	Oil with H2S MAX
Properties		Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	--
	To Block:	MIX-101	MIX-102	--	--	--	--	--	Two 1,500-bbl Oil Tanks
Property	Units								
Temperature	°F	118.335	94.7225	64.6875	120*	117.086	118.335	94.7225	65*
Pressure	psig	-1.43595	-1.43595	0	15*	-1.43595	-1.43595	-1.43595	30.7*
Mole Fraction Vapor	%	100	100	100	100	100	96.2569	38.2079	0.193403
Mole Fraction Light Liquid	%	0	0	0	0	0	3.74307	2.17741	99.8066
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	59.6147	0
Phase Mole Fraction	%	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	51.9416	42.2353	43.2264	47.4968	57.1193	63.8276	27.7807	195.727
Mass Density	lb/ft^3	0.112014	0.0946010	0.113596	0.229786	0.123986	0.144551	0.163448	48.9879
Molar Flow	lbmol/h	2.99174	4.17036	18.4860	3.45213	0.331394	0.108116	0.519094	126.000
Mass Flow	lb/h	155.396	176.136	799.081	163.965	18.9290	6.90081	14.4208	24661.6
Vapor Volumetric Flow	ft^3/h	1387.29	1861.89	7034.40	713.555	152.671	47.7397	88.2290	503.422
Liquid Volumetric Flow	gpm	172.961	232.131	877.016	88.9627	19.0342	5.95196	11.0000	62.7643
Std Vapor Volumetric Flow	MMSCFD	0.0272476	0.0379821	0.168363	0.0314407	0.00301821	0.000984682	0.00472771	1.14756
Std Liquid Volumetric Flow	sgpm	0.431600	0.428968	1.96215	0.436201	0.0548509	0.0210398	0.0324176	59.2757*
Compressibility		0.991272	0.995044	0.993783	0.986719	0.986957	0.943923	0.378815	0.0322129
Specific Gravity		1.79341	1.45827	1.49249	1.63994	1.97218			
API Gravity									
Enthalpy	Btu/h	-372306	-642918	-2.94121E+06	-489171	-33956.4	-7784.83	-39442.1	-1.98624E+07
Mass Enthalpy	Btu/lb	-2395.86	-3650.12	-3680.74	-2983.38	-1793.88	-1128.10	-2735.08	-805.399
Mass Cp	Btu/(lb*°F)	0.297591	0.214418	0.206590	0.262019	0.335135	0.385717	0.544473	0.451914
Ideal Gas CpCv Ratio		1.14828	1.28274	1.28841	1.19221	1.11652	1.09017	1.27745	1.02946
Dynamic Viscosity	cP	0.0123086	0.0152392	0.0145639	0.0140062	0.0106816			
Kinematic Viscosity	cSt	6.85987	10.0565	8.00374	3.80520	5.37825			
Thermal Conductivity	Btu/(h*ft*°F)	0.0100796	0.00990214	0.00915668	0.0104427	0.00985727			
Surface Tension	lbf/ft								
Net Ideal Gas Heating Value	Btu/ft^3	1181.88	71.1013	61.7871	625.036	1852.12	2768.69	466.410	9441.70
Net Liquid Heating Value	Btu/lb	8525.94	530.356	453.135	4898.87	12182.2	16321.7	5828.40	18159.6
Gross Ideal Gas Heating Value	Btu/ft^3	1274.62	78.7498	67.3312	674.678	1996.82	2984.94	525.436	10061.4
Gross Liquid Heating Value	Btu/lb	9203.49	599.086	501.817	5295.52	13143.6	17607.5	6634.75	19361.1

Process Streams	Oil with H2S Max - 2		Oil with H2S to HT MAX	Skim Breathing Max	Skim Flash Max	Skim Loading Max	Skim Working Max
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	To Block:	One 1,000-bbl Oil Tank	HT	--	--	--	--
Mole Fraction		%	%	%		%	%
H2S		0.2191*	0.2191*	4.29151		6.54204	4.29151
Nitrogen		0.029*	0.029*	0.127147		0	0.127147
Methane		0.0084*	0.0084*	0.0813534		0	0.0813534
CO2		3.4882*	3.4882*	47.7508		0	47.7508
Ethane		0.1139*	0.1139*	2.20484		2.49908	2.20484
Propane		0.6902*	0.6902*	10.3875		19.1377	10.3875
i-Butane		0.3492*	0.3492*	2.96503		5.92333	2.96503
n-Butane		1.041*	1.041*	6.67578		13.5261	6.67578
i-Pentane		1.5289*	1.5289*	4.40821		9.06349	4.40821
n-Pentane		1.9411*	1.9411*	4.32584		8.90065	4.32584
nC6		6.8737*	6.8737*	6.84424		14.0771	6.84424
n-Hexane		2.9642*	2.9642*	2.08785		4.28207	2.08785
nC7		6.8009*	6.8009*	2.51486		5.14082	2.51486
n-Heptane		0*	0*	0		0	0
Benzene		4.0045*	4.0045*	2.80480		5.76945	2.80480
Toluene		4.6453*	4.6453*	0.873150		1.78021	0.873150
2,2,4-Trimethylpentane		2.6828*	2.6828*	0.729296		1.48855	0.729296
nC8		6.2782*	6.2782*	0.516825		1.04341	0.516825
Ethylbenzene		2.3388*	2.3388*	0.137225		0.277082	0.137225
m-Xylene		1.2789*	1.2789*	0.0678147		0.136862	0.0678147
o-Xylene		0.4792*	0.4792*	0.0227599		0.0459047	0.0227599
p-Xylene		0*	0*	0		0	0
Nonane		6.855*	6.855*	0.183198		0.366133	0.183198
C10		0*	0*	0		0	0
Water		0*	0*	0		0	0
C10+ Oil		45.3895*	45.3895*	7.47601E-07		1.32038E-06	7.47601E-07
Molar Flow		lbmol/h	lbmol/h	lbmol/h		lbmol/h	lbmol/h
H2S		0.138117*	0.276065*	0.000134271	0	7.82791E-05	0.000167132
Nitrogen		0.0182811*	0.0365399*	3.97811E-06	0	0	4.95171E-06
Methane		0.00529522*	0.0105840*	2.54535E-06	0	0	3.16830E-06
CO2		2.19890*	4.39512*	0.00149401	0	0	0.00185965
Ethane		0.0718007*	0.143514*	6.89842E-05	0	2.99029E-05	8.58672E-05
Propane		0.435091*	0.869650*	0.000324999	0	0.000228993	0.000404538
i-Butane		0.220130*	0.439991*	9.27687E-05	0	7.08759E-05	0.000115473
n-Butane		0.656229*	1.31166*	0.000208869	0	0.000161847	0.000259987
i-Pentane		0.963794*	1.92641*	0.000137922	0	0.000108450	0.000171677
n-Pentane		1.22364*	2.44578*	0.000135345	0	0.000106501	0.000168469
nC6		4.33307*	8.66084*	0.000214140	0	0.000168440	0.000266548
n-Hexane		1.86858*	3.73488*	6.53238E-05	0	5.12373E-05	8.13111E-05
nC7		4.28718*	8.56912*	7.86839E-05	0	6.15128E-05	9.79409E-05
n-Heptane		0*	0*	0	0	0	0
Benzene		2.52437*	5.04566*	8.77553E-05	0	6.90346E-05	0.000109232
Toluene		2.92832*	5.85307*	2.73188E-05	0	2.13012E-05	3.40047E-05
2,2,4-Trimethylpentane		1.69119*	3.38032*	2.28179E-05	0	1.78114E-05	2.84023E-05
nC8		3.95767*	7.91052*	1.61702E-05	0	1.24850E-05	2.01277E-05
Ethylbenzene		1.47434*	2.94688*	4.29345E-06	0	3.31544E-06	5.34422E-06
m-Xylene		0.806198*	1.61141*	2.12176E-06	0	1.63763E-06	2.64104E-06
o-Xylene		0.302080*	0.603791*	7.12101E-07	0	5.49276E-07	8.86380E-07
p-Xylene		0*	0*	0	0	0	0
Nonane		4.32128*	8.63728*	5.73183E-06	0	4.38098E-06	7.13463E-06
C10		0*	0*	0	0	0	0
Water		0*	0*	0	0	0	0
C10+ Oil		28.6128*	57.1906*	2.33906E-11	0	1.57990E-11	2.91152E-11

Process Streams	Oil with H2S Max - 2		Oil with H2S to HT MAX	Skim Breathing Max	Skim Flash Max	Skim Loading Max	Skim Working Max
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	To Block:	One 1,000-bbl Oil Tank	HT	--	--	--	--
Mass Fraction	%	%	%	%	%	%	%
H2S	0.0381506*	0.0381506*	2.66957	3.34499	2.66957		
Nitrogen	0.00415061*	0.00415061*	0.0650116	0	0.0650116		
Methane	0.000688492*	0.000688492*	0.0238214	0	0.0238214		
CO2	0.784325*	0.784325*	38.3572	0	38.3572		
Ethane	0.0174981*	0.0174981*	1.21009	1.12738	1.21009		
Propane	0.155496*	0.155496*	8.36036	12.6607	8.36036		
i-Butane	0.103697*	0.103697*	3.14551	5.16510	3.14551		
n-Butane	0.309130*	0.309130*	7.08213	11.7947	7.08213		
i-Pentane	0.563581*	0.563581*	5.80512	9.81059	5.80512		
n-Pentane	0.715526*	0.715526*	5.69665	9.63433	5.69665		
nC6	3.02637*	3.02637*	10.7654	18.1998	10.7654		
n-Hexane	1.30509*	1.30509*	3.28400	5.53614	3.28400		
nC7	3.48170*	3.48170*	4.59949	7.72822	4.59949		
n-Heptane	0*	0*	0	0	0		
Benzene	1.59814*	1.59814*	3.99888	6.76117	3.99888		
Toluene	2.18677*	2.18677*	1.46842	2.46083	1.46842		
2,2,4-Trimethylpentane	1.56571*	1.56571*	1.52054	2.55100	1.52054		
nC8	3.66402*	3.66402*	1.07755	1.78814	1.07755		
Ethylbenzene	1.26859*	1.26859*	0.265910	0.441328	0.265910		
m-Xylene	0.693692*	0.693692*	0.131409	0.217990	0.131409		
o-Xylene	0.259924*	0.259924*	0.0441033	0.0731156	0.0441033		
p-Xylene	0*	0*	0	0	0		
Nonane	4.49190*	4.49190*	0.428860	0.704506	0.428860		
C10	0*	0*	0	0	0		
Water	0*	0*	0	0	0		
C10+ Oil	73.7659*	73.7659*	4.34051E-06	6.30115E-06	4.34051E-06		
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	4.70715*	9.40855*	0.00457607	0	0.00266782	0.00569602	
Nitrogen	0.512117*	1.02361*	0.00011440	0	0	0.000138714	
Methane	0.0849484*	0.169793*	4.08337E-05	0	0	5.08273E-05	
CO2	96.7727*	193.427*	0.0657505	0	0	0.0818422	
Ethane	2.15898*	4.31532*	0.00207429	0	0.000899151	0.00258195	
Propane	19.1856*	38.3478*	0.0143310	0	0.0100976	0.0178384	
i-Butane	12.7944*	25.5732*	0.00539192	0	0.00411946	0.00671153	
n-Butane	38.1415*	76.2364*	0.0121399	0	0.00940693	0.0151110	
i-Pentane	69.5365*	138.988*	0.00995092	0	0.00782451	0.0123863	
n-Pentane	88.2840*	176.460*	0.00976499	0	0.00768393	0.0121549	
nC6	373.404*	746.351*	0.0184536	0	0.0145154	0.0229699	
n-Hexane	161.026*	321.855*	0.00562931	0	0.00441539	0.00700701	
nC7	429.583*	858.642*	0.00788428	0	0.00616370	0.00981387	
n-Heptane	0*	0*	0	0	0	0	
Benzene	197.183*	394.126*	0.00685473	0	0.00539242	0.00853235	
Toluene	269.811*	539.292*	0.00251711	0	0.00196266	0.00313314	
2,2,4-Trimethylpentane	193.183*	386.129*	0.00260646	0	0.00203457	0.00324436	
nC8	452.079*	903.606*	0.00184710	0	0.00142614	0.00229915	
Ethylbenzene	156.523*	312.856*	0.000455814	0	0.000351984	0.000567369	
m-Xylene	85.5900*	171.075*	0.000225257	0	0.000173859	0.000280386	
o-Xylene	32.0703*	64.1014*	7.56002E-05	0	5.83138E-05	9.41025E-05	
p-Xylene	0*	0*	0	0	0	0	
Nonane	554.226*	1107.78*	0.000735136	0	0.000561883	0.000915052	
C10	0*	0*	0	0	0	0	
Water	0*	0*	0	0	0	0	
C10+ Oil	9101.48*	18191.8*	7.44035E-09	0	5.02553E-09	9.26129E-09	

Process Streams	Oil with H2S Max - 2		Oil with H2S to HT MAX	Skim Breathing Max	Skim Flash Max	Skim Loading Max	Skim Working Max
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	To Block:	One 1,000-bbl Oil Tank	HT	--	--	--	--
Property	Units						
Temperature	°F	65*	65*	95.6747	95.6747	95.6747	95.6747
Pressure	psig	30.7*	30.7*	-1.43595	-1.43595	-1.43595	-1.43595
Mole Fraction Vapor	%	0.193403	0.193403	99.6144		77.7815	99.6144
Mole Fraction Light Liquid	%	99.8066	99.8066	0.385578		22.2185	0.385578
Mole Fraction Heavy Liquid	%	0	0	0		0	0
Phase Mole Fraction	%	100	100	100		100	100
Molecular Weight	lb/lbmol	195.727	195.727	54.7873		66.6544	54.7873
Mass Density	lb/ft^3	48.9879	48.9879	0.123954		0.195086	0.123954
Molar Flow	lbmol/h	63.0384	126.000	0.00312876	0	0.00119656	0.00389449
Mass Flow	lb/h	12338.3	24661.6	0.171416	0	0.0797557	0.213369
Vapor Volumetric Flow	ft^3/h	251.865	503.422	1.38291	0	0.408823	1.72136
Liquid Volumetric Flow	gpm	31.4013	62.7643	0.172414	0	0.0509702	0.214611
Std Vapor Volumetric Flow	MMSCFD	0.574129	1.14756	2.84955E-05	0	1.08978E-05	3.54695E-05
Std Liquid Volumetric Flow	sgpm	29.6560*	59.2757*	0.000498268	0	0.000252609	0.000620213
Compressibility		0.0322129	0.0322129	0.983418		0.760187	0.983418
Specific Gravity							
API Gravity							
Enthalpy	Btu/h	-9.93728E+06	-1.98624E+07	-332.538		-63.6046	-413.923
Mass Enthalpy	Btu/lb	-805.399	-805.399	-1939.95		-797.493	-1939.95
Mass Cp	Btu/(lb*°F)	0.451914	0.451914	0.320188		0.429298	0.320188
Ideal Gas CpCv Ratio		1.02946	1.02946	1.12895		1.08297	1.12895
Dynamic Viscosity	cP						
Kinematic Viscosity	cSt						
Thermal Conductivity	Btu/(h*ft*°F)						
Surface Tension	lbf/ft						
Net Ideal Gas Heating Value	Btu/ft^3	9441.70	9441.70	1668.17		3314.51	1668.17
Net Liquid Heating Value	Btu/lb	18159.6	18159.6	11432.9		18720.2	11432.9
Gross Ideal Gas Heating Value	Btu/ft^3	10061.4	10061.4	1799.94		3575.30	1799.94
Gross Liquid Heating Value	Btu/lb	19361.1	19361.1	12345.6		20205.0	12345.6

Process Streams	Stable Oil Max	Stable Oil Max - 2	Stable Skim Max	Water from CTB Max	Water Leaving Tanks Max	Water to Water Tanks Max	Working Oil Max
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	--	Three 1,500-bbl Water	GBT	Two 1,500-bbl Oil Tanks
	To Block: SPLT-100	--	--	GBT	--	Three 1,500-bbl Water	MIX-100
Mole Fraction	%	%	%	%	%	%	%
H2S	0.0699828	0.0707160	0.0500650	0.0115856*	0.00268590	0.00728662	4.08246
Nitrogen	0.000597080	0	0	3.52964E-06*	3.21552E-25	4.38025E-08	0.0406563
Methane	0.000382035	0	0	0.000126472*	7.18713E-23	3.19042E-06	0.0401808
CO2	0.224238	0.0614155	0	0.144948*	6.86784E-18	0.0514454	56.3691
Ethane	0.0219197	0.0226681	0.0116203	0.000226169*	1.53379E-22	8.88558E-06	2.52382
Propane	0.366347	0.366701	0.319066	0.000250860*	1.04590E-22	7.12791E-06	9.04749
i-Butane	0.266064	0.264733	0.253330	3.80678E-05*	9.91869E-24	8.18335E-07	2.33341
n-Butane	0.864871	0.861320	0.837454	0.000109024*	3.96748E-23	2.84604E-06	5.20244
i-Pentane	1.44982	1.44822	1.43587	2.87988E-05*	3.99519E-24	5.65670E-07	3.56048
n-Pentane	1.88372	1.88266	1.87220	9.83177E-06*	2.49699E-25	7.05374E-08	3.53751
IC6	6.97616	6.98119	6.97678	1.47381E-05*	8.36225E-25	1.53425E-07	5.76138
n-Hexane	3.03926	3.04268	3.04375	2.26801E-06*	5.22641E-26	1.15228E-08	1.85419
IC7	7.06497	7.07442	7.08643	3.91423E-06*	8.98960E-26	3.15025E-08	2.00513
n-Heptane	0	0	0	0*	0	0	0
Benzene	4.11341	4.11413	4.11958	0.00199931*	0.00105103	0.00161578	1.64980
Toluene	4.86088	4.86877	4.87969	0.000491478*	0.000206895	0.000373218	0.636992
2,2,4-Trimethylpentane	2.79769	2.80204	2.80745	1.11724E-06*	3.94286E-26	9.11148E-09	0.598366
nC8	6.59647	6.60907	6.62516	1.53151E-07*	1.54018E-28	2.47329E-10	0.435503
Ethylbenzene	2.46002	2.46489	2.47098	6.97228E-05*	2.55786E-05	5.21274E-05	0.118437
m-Xylene	1.34553	1.34821	1.35156	2.10217E-05*	4.06433E-06	1.35452E-05	0.0572147
o-Xylene	0.504299	0.505301	0.506571	1.67780E-05*	8.77832E-06	1.36550E-05	0.0174353
p-Xylene	0	0	0	0*	0	0	0
Nonane	7.22039	7.23505	7.25359	5.79502E-08*	6.85870E-29	1.12809E-10	0.128027
C10	0	0	0	1.76909E-11*	3.77353E-33	9.75603E-15	0
Water	0	0	0	99.8401*	99.9960	99.9392	0
C10+ Oil	47.8730	47.9758	48.0989	1.09617E-11*	5.53089E-29	2.04769E-12	1.62666E-06
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	0.0836038	0.0421751	0.000745247	2.11440*	0.489385	1.32848	0.0240014
Nitrogen	0.000713292	0	0	0.000644167*	5.85884E-23	7.98594E-06	0.000239024
Methane	0.000456392	0	0	0.0230814*	1.30953E-20	0.000581669	0.000236229
CO2	0.267882	0.0366282	0	26.4533*	1.25136E-15	9.37938	0.331402
Ethane	0.0261860	0.0135193	0.000172976	0.0412763*	2.79465E-20	0.00161999	0.0148379
Propane	0.437651	0.218701	0.00474949	0.0457824*	1.90569E-20	0.00129954	0.0531915
i-Butane	0.317849	0.157887	0.00377097	0.00694746*	1.80724E-21	0.000149196	0.0137184
n-Butane	1.03320	0.513692	0.0124660	0.0198970*	7.22895E-21	0.000518882	0.0305859
i-Pentane	1.73201	0.863720	0.0213737	0.00525585*	7.27944E-22	0.000103131	0.0209326
n-Pentane	2.25036	1.12282	0.0278688	0.00179432*	4.54965E-23	1.28602E-05	0.0207975
IC6	8.33395	4.16358	0.103853	0.00268973*	1.52365E-22	2.79721E-05	0.0338720
n-Hexane	3.63080	1.81465	0.0453080	0.000413916*	9.52279E-24	2.10080E-06	0.0109011
IC7	8.44004	4.21919	0.105486	0.000714355*	1.63795E-23	5.74344E-06	0.0117884
n-Heptane	0	0	0	0*	0	0	0
Benzene	4.91402	2.45367	0.0613224	0.364878*	0.191503	0.294585	0.00969941
Toluene	5.80697	2.90374	0.0726371	0.0896957*	0.0376974	0.0680441	0.00374497
2,2,4-Trimethylpentane	3.34221	1.67114	0.0417905	0.000203898*	7.18410E-24	1.66118E-06	0.00351788
nC8	7.88037	3.94165	0.0986194	2.79504E-05*	2.80629E-26	4.50923E-08	0.00256038
Ethylbenzene	2.93882	1.47006	0.0367819	0.0127245*	0.00466055	0.00950373	0.000696307
m-Xylene	1.60742	0.804073	0.0201188	0.00383651*	0.000740542	0.00246952	0.000336373
o-Xylene	0.602453	0.301362	0.00754061	0.00306202*	0.00159946	0.00248953	0.000102505
p-Xylene	0	0	0	0*	0	0	0
Nonane	8.62572	4.31499	0.107974	1.05760E-05*	1.24969E-26	2.05671E-08	0.000752691
C10	0	0	0	3.22863E-09*	6.87556E-31	1.77869E-12	0
Water	0	0	0	18221.0*	18219.8	18220.6	0
C10+ Oil	57.1906	28.6128	0.715980	2.00054E-09*	1.00776E-26	3.73329E-10	9.56334E-09

Process Streams	Stable Oil Max	Stable Oil Max - 2	Stable Skim Max	Water from CTB Max	Water Leaving Tanks Max	Water to Water Tanks Max	Working Oil Max
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	--	Three 1,500-bbl Water	GBT	Two 1,500-bbl Oil Tanks
	To Block: SPLT-100	--	--	GBT	--	Three 1,500-bbl Water	MIX-100
Mass Fraction	%	%	%	%	%	%	%
H2S	0.0117144	0.0118184	0.00835157	0.0218672*	0.00508077	0.0137725	2.65198
Nitrogen	8.21518E-05	0	0	5.47594E-06*	4.99972E-25	6.80521E-08	0.0217085
Methane	3.01018E-05	0	0	0.000112364*	6.39964E-23	2.83855E-06	0.0122865
CO2	0.0484700	0.0132542	0	0.353282*	1.67763E-17	0.125565	47.2851
Ethane	0.00323722	0.00334245	0.00171026	0.000376630*	2.55985E-22	1.48177E-05	1.44649
Propane	0.0793427	0.0792936	0.0688652	0.000612616*	2.55985E-22	1.74315E-05	7.60433
i-Butane	0.0759534	0.0754538	0.0720697	0.000122536*	3.19982E-23	2.63785E-06	2.58505
n-Butane	0.246895	0.245492	0.238246	0.000350934*	1.27993E-22	9.17402E-06	5.76350
i-Pentane	0.513763	0.512382	0.507068	0.000115071*	1.59991E-23	2.26344E-06	4.89638
n-Pentane	0.667521	0.666087	0.661158	3.92847E-05*	9.99943E-25	2.82244E-07	4.86479
IC6	2.95269	2.95014	2.94281	7.03375E-05*	3.99977E-24	7.33258E-07	9.46339
n-Hexane	1.28638	1.28579	1.28385	1.08241E-05*	2.49986E-25	5.50703E-08	3.04561
IC7	3.47700	3.47614	3.47558	2.17213E-05*	4.99972E-25	1.75064E-07	3.82962
n-Heptane	0	0	0	0*	0	0	0
Benzene	1.57811	1.57589	1.57505	0.00864886*	0.00455680	0.00699966	2.45632
Toluene	2.19975	2.19984	2.20068	0.00250788*	0.00105808	0.00190713	1.11870
2,2,4-Trimethylpentane	1.56961	1.56956	1.56967	7.06778E-06*	2.49986E-25	5.77218E-08	1.30280
nC8	3.70088	3.70207	3.70420	9.68851E-07*	9.76507E-28	1.56684E-09	0.948206
Ethylbenzene	1.28274	1.28324	1.28402	0.000409938*	0.000150726	0.000306919	0.239665
m-Xylene	0.701607	0.701890	0.702328	0.000123598*	2.39497E-05	7.97524E-05	0.115778
o-Xylene	0.262959	0.263064	0.263236	9.86470E-05*	5.17275E-05	8.03986E-05	0.0352816
p-Xylene	0	0	0	0*	0	0	0
Nonane	4.54835	4.55037	4.55356	4.11615E-07*	4.88253E-28	8.02411E-10	0.312979
C10	0	0	0	1.39400E-10*	2.98006E-32	7.69837E-14	0
Water	0	0	0	99.6112*	99.9891	99.8512	0
C10+ Oil	74.7929	74.8349	74.8875	1.93105E-10*	9.76507E-28	3.61237E-11	9.86244E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	2.84929	1.43736	0.0253987	72.0606*	16.6787	45.2756	0.817988
Nitrogen	0.0199817	0	0	0.0180453*	1.64126E-21	0.000223713	0.00669588
Methane	0.00732165	0	0	0.370282*	2.10081E-19	0.00933140	0.00378969
CO2	11.7893	1.61199	0	1164.20*	5.50715E-14	412.782	14.5848
Ethane	0.787388	0.406511	0.00520121	1.24114*	8.40325E-19	0.0487116	0.446162
Propane	19.2985	9.64375	0.209432	2.01880*	8.40325E-19	0.0573040	2.34551
i-Butane	18.4741	9.17675	0.219177	0.403802*	1.05041E-19	0.00867163	0.797345
n-Butane	60.0520	29.8569	0.724551	1.15646*	4.20162E-19	0.0301586	1.77772
i-Pentane	124.962	62.3163	1.54209	0.379203*	5.25203E-20	0.00744081	1.51026
n-Pentane	162.361	81.0100	2.01070	0.129458*	3.28252E-21	0.000927846	1.50052
IC6	718.181	358.798	8.94961	0.231789*	1.31301E-20	0.00241050	2.91893
n-Hexane	312.885	156.379	3.90443	0.0356694*	8.20629E-22	0.000181037	0.939402
IC7	845.709	422.771	10.5699	0.0715798*	1.64126E-21	0.000575504	1.18122
n-Heptane	0	0	0	0*	0	0	0
Benzene	383.843	191.661	4.79001	28.5013*	14.9586	23.0106	0.757639
Toluene	535.045	267.546	6.69267	8.26442*	3.47337	6.26947	0.345055
2,2,4-Trimethylpentane	381.776	190.891	4.77367	0.0232910*	8.20629E-22	0.000189754	0.401842
nC8	900.163	450.249	11.2651	0.00319273*	3.20558E-24	5.15082E-06	0.292469
Ethylbenzene	312.000	156.069	3.90496	1.35090*	0.494787	1.00896	0.0739234
m-Xylene	170.651	85.3644	2.13591	0.407303*	0.0786197	0.262177	0.0357111
o-Xylene	63.9594	31.9941	0.800549	0.325079*	0.169806	0.264301	0.0108824
p-Xylene	0	0	0	0*	0	0	0
Nonane	1106.29	553.419	13.8482	0.00135643*	1.60279E-24	2.63784E-06	0.0965364
C10	0	0	0	4.59375E-07*	9.78267E-29	2.53075E-10	0
Water	0	0	0	328257*	328235	328250	0
C10+ Oil	18191.8	9101.48	227.747	6.36354E-07*	3.20558E-24	1.18753E-07	3.04201E-06

Process Streams		Stable Oil Max	Stable Oil Max - 2	Stable Skim Max	Water from CTB Max	Water Leaving Tanks Max	Water to Water Tanks Max	Working Oil Max
Properties		Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	--	Three 1,500-bbl Water	GBT	Two 1,500-bbl Oil Tanks
		To Block: SPLT-100	--	--	GBT	--	Three 1,500-bbl Water	MIX-100
Property	Units							
Temperature	°F	117.086	118.335	95.6747	65*	94.7225	64.6875	117.086
Pressure	psig	-1.43595	-1.43595	-1.43595	30.7*	-1.43595	0*	-1.43595
Mole Fraction Vapor	%	0	0	0	0	0	0	100
Mole Fraction Light Liquid	%	100	100	100	100	100	100	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	203.602	203.925	204.304	18.0567	18.0165	18.0311	52.4642
Mass Density	lb/ft^3	50.4207	50.3758	50.9825	62.3766	62.0161	62.3471	0.113493
Molar Flow	lbmol/h	119.463	59.6400	1.48856	18250.2	18220.5	18231.7	0.587914
Mass Flow	lb/h	24322.9	12162.1	304.118	329538	328270	328739	30.8444
Vapor Volumetric Flow	ft^3/h	482.400	241.427	5.96515	5283.03	5293.31	5272.72	271.775
Liquid Volumetric Flow	gpm	60.1433	30.1000	0.743707	658.664	659.946	657.378	33.8836
Std Vapor Volumetric Flow	MMSCFD	1.08803	0.543179	0.0135572	166.216	165.945	166.048	0.00535450
Std Liquid Volumetric Flow	sgpm	58.3333	29.1667	0.729167	659.351*	656.25	657.389	0.0881990
Compressibility		0.00865089	0.00865359	0.00891606	0.00233390	0.000647485	0.000755290	0.990338
Specific Gravity		0.808429	0.807709	0.817437	1.00013	0.994345	0.999652	1.81145
API Gravity		38.4275	38.4706	38.4655	9.88463	9.99816	9.95863	
Enthalpy	Btu/h	-1.84161E+07	-9.18773E+06	-232864	-2.24763E+09	-2.23328E+09	-2.24469E+09	-68521.2
Mass Enthalpy	Btu/lb	-757.151	-755.441	-765.701	-6820.56	-6803.19	-6828.19	-2221.51
Mass Cp	Btu/(lb*°F)	0.482263	0.483018	0.469945	0.978363	0.977191	0.978953	0.311499
Ideal Gas CpCv Ratio		1.02582	1.02573	1.02664	1.32932	1.32835	1.32937	1.13916
Dynamic Viscosity	cP	1.73446	1.72068	2.19755	1.05382	0.742221	1.06314	0.0117687
Kinematic Viscosity	cSt	2.14751	2.13235	2.69089	1.05469	0.747151	1.06452	6.47351
Thermal Conductivity	Btu/(h*ft*°F)	0.0707606	0.0706936	0.0720088	0.342667	0.357884	0.343798	0.0100606
Surface Tension	lb/ft	0.00179059	0.00178961	0.00186594	0.00505476?	0.00484819	0.00506681?	
Net Ideal Gas Heating Value	Btu/ft^3	9893.75	9912.88	9932.55	0.183604	0.0642497	0.121141	1364.11
Net Liquid Heating Value	Btu/lb	18293.7	18300.1	18302.4	-1052.11	-1058.31	-1055.77	9751.99
Gross Ideal Gas Heating Value	Btu/ft^3	10542.3	10562.7	10583.5	50.4248	50.3757	50.4076	1473.06
Gross Liquid Heating Value	Btu/lb	19502.4	19509.2	19511.5	3.77021	1.40480	2.55959	10540.1

Process Streams		Working Oil Max - 2		Working Water Max	1	2	3
Composition		Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	SPLT-100	SPLT-100	HT	
	To Block:	MIX-101	MIX-102	One 500-bbl Skim Oil	--	--	
Mole Fraction		%	%	%	%	%	
H2S		2.84898	8.68077	0.0699828	0.0699828	0.160303	
Nitrogen		0.117322	4.54849E-06	0.000597080	0.000597080	0.00285992	
Methane		0.0856038	0.000652429	0.000382035	0.000382035	0.00187456	
CO2		65.7035	81.6267	0.224238	0.224238	1.38150	
Ethane		1.74509	0.00243177	0.0219197	0.0219197	0.0714293	
Propane		6.31850	0.00140752	0.366347	0.366347	0.589831	
i-Butane		1.78309	0.000104298	0.266064	0.266064	0.330165	
n-Butane		4.05355	0.000522618	0.864871	0.864871	1.00729	
i-Pentane		2.79374	6.98348E-05	1.44982	1.44982	1.53077	
n-Pentane		2.79505	4.19090E-06	1.88372	1.88372	1.95475	
i-C6		4.62511	1.14501E-05	6.97616	6.97616	6.99971	
n-Hexane		1.45657	4.51336E-07	3.03926	3.03926	3.02623	
i-C7		1.81542	1.36999E-06	7.06497	7.06497	6.96545	
n-Heptane		0	0	0	0	0	
Benzene		1.91972	1.04499	4.11341	4.11341	4.08931	
Toluene		0.649661	0.308055	4.86088	4.86088	4.76640	
2,2,4-Trimethylpentane		0.533343	2.9553E-07	2.79769	2.79769	2.75039	
nC8		0.413809	3.08456E-09	6.59647	6.59647	6.44862	
Ethylbenzene		0.110304	0.0487772	2.46002	2.46002	2.40297	
m-Xylene		0.0547021	0.0175783	1.34553	1.34553	1.31407	
p-Xylene		0.0184571	0.00897634	0.504299	0.504299	0.492411	
o-Xylene		0	0	0	0	0	
Nonane		0.158524	1.12764E-09	7.22039	7.22039	7.04555	
C10		0	3.07206E-14	0	0	0	
Water		0	8.25896	0	0	0	
C10+ Oil		1.64243E-06	8.80122E-10	47.8730	47.8730	46.6681	
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	
H2S		0.0104488	0.603160	0.00104665	0.0825571	0.196448	
Nitrogen		0.000430286	3.16040E-07	8.92982E-06	0.000704362	0.00350477	
Methane		0.000313956	4.53323E-05	5.71365E-06	0.000450678	0.00229723	
CO2		0.240971	5.67161	0.00335366	0.264528	1.69299	
Ethane		0.00640022	0.000168965	0.000327827	0.0258582	0.0875349	
Propane		0.0231734	9.77979E-05	0.00547902	0.432172	0.722824	
i-Butane		0.00653956	7.24689E-06	0.00397921	0.313870	0.404610	
n-Butane		0.0148666	3.63127E-05	0.0129348	1.02027	1.23441	
i-Pentane		0.0102462	4.85229E-06	0.0216833	1.71032	1.87592	
n-Pentane		0.0102510	2.91194E-07	0.0281726	2.22219	2.39550	
i-C6		0.0169628	7.95578E-07	0.104334	8.22962	8.57798	
n-Hexane		0.00534205	3.13599E-08	0.0454546	3.58534	3.70857	
i-C7		0.00665814	9.51900E-08	0.105662	8.33438	8.53599	
n-Heptane		0	0	0	0	0	
Benzene		0.00704069	0.0726086	0.0615194	4.85250	5.01135	
Toluene		0.00238266	0.0214044	0.0726984	5.73427	5.84111	
2,2,4-Trimethylpentane		0.00195606	2.05357E-08	0.0418417	3.30037	3.37054	
nC8		0.00151767	2.14323E-10	0.0986557	7.78171	7.90263	
Ethylbenzene		0.000404545	0.00338915	0.0367916	2.90203	2.94478	
m-Xylene		0.000200623	0.00122138	0.0201235	1.58729	1.61037	
p-Xylene		6.76922E-05	0.000623697	0.00754221	0.594911	0.603438	
o-Xylene		0	0	0	0	0	
Nonane		0.000581393	7.83508E-11	0.107987	8.51773	8.63415	
C10		0	2.13454E-15	0	0	0	
Water		0	0.573851	0	0	0	
C10+ Oil		6.02370E-09	6.11529E-11	0.715980	56.4747	57.1906	

Process Streams		Working Oil Max - 2		Working Water Max	1	2	3
Composition		Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	SPLT-100	SPLT-100	HT
		To Block:	MIX-101	MIX-102	One 500-bbl Skim Oil	--	--
Mass Fraction		%	%	%	%	%	%
H2S		1.89244	7.11999	0.0117144	0.0117144	0.0273296	
Nitrogen		0.0640575	3.06650E-06	8.21518E-05	8.21518E-05	0.000400776	
Methane		0.0267663	0.000251892	3.01018E-05	3.01018E-05	0.000150436	
CO2		56.3583	86.4547	0.0484700	0.0484700	0.304143	
Ethane		1.02273	0.00175976	0.00323722	0.00323722	0.0107443	
Propane		5.43041	0.00149369	0.0793427	0.0793427	0.130108	
i-Butane		2.01994	0.000145891	0.0759534	0.0759534	0.0959962	
n-Butane		4.59199	0.000731033	0.246895	0.246895	0.292872	
i-Pentane		3.92861	0.000121258	0.513763	0.513763	0.552484	
n-Pentane		3.93045	7.27690E-06	0.667521	0.667521	0.705506	
IC6		7.76835	2.37466E-05	2.95269	2.95269	3.01748	
n-Hexane		2.44646	9.36038E-07	1.28638	1.28638	1.30457	
IC7		3.54549	3.30372E-06	3.47700	3.47700	3.49145	
n-Heptane		0	0	0	0	0	
Benzene		2.92267	1.96445	1.57811	1.57811	1.59789	
Toluene		1.16668	0.683092	2.19975	2.19975	2.19691	
2,2,4-Trimethylpentane		1.18742	8.12494E-07	1.56961	1.56961	1.57163	
nC8		0.921294	8.47965E-09	3.70088	3.70088	3.68487	
Ethylbenzene		0.228242	0.124626	1.28274	1.28274	1.27617	
m-Xylene		0.113190	0.0449127	0.701607	0.701607	0.697882	
p-Xylene		0.0381916	0.0229346	0.262959	0.262959	0.261511	
o-Xylene		0	0	0	0	0	
Nonane		0.396271	3.48060E-09	4.54835	4.54835	4.52033	
C10		0	1.05193E-13	0	0	0	
Water		0	3.58077	0	0	0	
C10+ Oil		1.01827E-05	6.73758E-09	74.7929	74.7929	74.2596	
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	
H2S		0.356103	20.5562	0.0356708	2.81362	6.69511	
Nitrogen		0.0120538	8.85335E-06	0.000250155	0.0197316	0.0981805	
Methane		0.00503663	0.000727241	9.16610E-05	0.00722999	0.0368532	
CO2		10.6050	249.605	0.147593	11.6417	74.5079	
Ethane		0.192448	0.00508062	0.00985744	0.777530	2.63209	
Propane		1.02185	0.00431246	0.241601	19.0569	31.8734	
i-Butane		0.380094	0.000421205	0.231281	18.2428	23.5168	
n-Butane		0.864080	0.00211058	0.751802	59.3002	71.7467	
i-Pentane		0.739250	0.000350087	1.56442	123.398	135.346	
n-Pentane		0.739597	2.10093E-05	2.03262	160.328	172.832	
IC6		1.46178	6.85592E-05	8.99103	709.190	739.211	
n-Hexane		0.460353	2.70245E-06	3.91707	308.968	319.588	
IC7		0.667159	9.53822E-06	10.5876	835.121	855.322	
n-Heptane		0	0	0	0	0	
Benzene		0.549961	5.67159	4.80540	379.037	391.446	
Toluene		0.219535	1.97217	6.69832	528.346	538.191	
2,2,4-Trimethylpentane		0.223438	2.34576E-06	4.77952	376.996	385.012	
nC8		0.173361	2.44817E-08	11.2693	888.893	902.706	
Ethylbenzene		0.0429485	0.359810	3.90598	308.094	312.633	
m-Xylene		0.0212991	0.129668	2.13642	168.515	170.965	
p-Xylene		0.00718655	0.0662148	0.800719	63.1587	64.0640	
o-Xylene		0	0	0	0	0	
Nonane		0.0745666	1.00489E-08	13.8499	1092.44	1107.37	
C10		0	3.03705E-13	0	0	0	
Water		0	10.3381	0	0	0	
C10+ Oil		1.91609E-06	1.94522E-08	227.747	17964.1	18191.8	

Process Streams		Working Oil Max - 2		Working Water Max	1	2	3
Properties		Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block:	One 1,000-bbl Oil Tank	Three 1,500-bbl Water	SPLT-100	SPLT-100	HT
		To Block:	MIX-101	MIX-102	One 500-bbl Skim Oil	--	--
Property	Units						
Temperature	°F	118.335	94.7225	117.086	117.086	120	
Pressure	psig	-1.43595	-1.43595	-1.43595	-1.43595	15	
Mole Fraction Vapor	%	100	97.7540	0	0	0	
Mole Fraction Light Liquid	%	0	2.24598	100	100	100	
Mole Fraction Heavy Liquid	%	0	0	0	0	0	
Phase Mole Fraction	%	100	100	100	100	100	
Molecular Weight	lb/lbmol	51.3070	41.5518	203.602	203.602	199.903	
Mass Density	lb/ft^3	0.110599	0.0952186	50.4207	50.4207	50.3871	
Molar Flow	lbmol/h	0.366755	6.94823	1.49558	117.968	122.548	
Mass Flow	lb/h	18.8171	288.712	304.503	24018.4	24497.6	
Vapor Volumetric Flow	ft^3/h	170.138	3032.09	6.03925	476.361	486.189	
Liquid Volumetric Flow	gpm	21.2120	378.027	0.752945	59.3904	60.6158	
Std Vapor Volumetric Flow	MMSCFD	0.00334027	0.0632818	0.0136212	1.07441	1.11612	
Std Liquid Volumetric Flow	sgpm	0.0520486	0.701400	0.730285*	57.6030	58.8395	
Compressibility		0.991683	0.972592	0.00865089	0.00865089	0.0189388	
Specific Gravity		1.77150		0.808429	0.808429	0.807890	
API Gravity				38.4275	38.4275	38.2289	
Enthalpy	Btu/h	-46725.9	-1.02336E+06	-230555	-1.81856E+07	-1.87251E+07	
Mass Enthalpy	Btu/lb	-2483.16	-3544.58	-757.151	-757.151	-764.363	
Mass Cp	Btu/(lb*°F)	0.292742	0.223336	0.482263	0.482263	0.483887	
Ideal Gas CpCv Ratio		1.15325	1.28236	1.02582	1.02582	1.02622	
Dynamic Viscosity	cP	0.0125063		1.73446	1.73446	1.60483	
Kinematic Viscosity	cSt	7.05923		2.14751	2.14751	1.98833	
Thermal Conductivity	Btu/(h*ft*°F)	0.0100864		0.0707606	0.0707606	0.0704896	
Surface Tension	lbf/ft			0.00179059	0.00179059	0.00194515?	
Net Ideal Gas Heating Value	Btu/ft^3	1104.24	105.459	9893.75	9893.75	9690.06	
Net Liquid Heating Value	Btu/lb	8059.79	840.816	18293.7	18293.7	18248.4	
Gross Ideal Gas Heating Value	Btu/ft^3	1191.13	116.377	10542.3	10542.3	10325.8	
Gross Liquid Heating Value	Btu/lb	8702.44	940.539	19502.4	19502.4	19455.3	

Tank Losses Report Two 1,500-bbl Oil Tanks					
Client Name:	Apache Corporation		Job:		
Location:	ASAU CTB and Satellite		Modified:	2/13/2024 11:07	
Flowsheet:	Emissions pph		Status:	Solved 8:52 AM, 8/14/2024	
Stream Connections					
Stream	Connection Type	Other Block	Stream	Connection Type	
Oil with H2S MAX	Inlet		Flash Oil Max	Flashing Losses Stream	
Working Oil Max	Working Losses Stream	MIX-100	Breathing Oil Max	Standing Losses Stream	
Loading Oil Max	Loading Losses Stream		Stable Oil Max	Residual Liquid Stream	
Working and Standing Properties : Scalar Data					
Tank Geometry	Vertical Cylinder		Roof Type	Cone	
Shell Length	24' ft		Slope of Coned Roof	0.0025	
Shell Diameter	21.5' 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	Midland, TX	
Average Fraction Fill of Tank	50 %		Time Frame	July*	
Minimum Fraction Fill of Tank	10 %		Known Liquid Bulk Temperature?	TRUE	
Material Category	Heavy Crude*		Liquid Bulk Temperature	120" °F	
Insulation	Uninsulated		Use AP 42 Raoult's Vapor Pressure?	TRUE	
Boiled or Riveted Construction?	FALSE		Flashing Temperature	117.086 °F	
Vapor Balanced Tank?	FALSE		Average Daily Maximum Ambient Temperature	93.8 °F	
Known Sum of Increases in Liquid Level?	FALSE		Average Daily Minimum Ambient Temperature	71 °F	
Sum of Increases in Liquid Level	5798.98 ft/yr		Atmospheric Pressure at Tank Location	13.26 psia	
Shell Color	Beige/Cream*		Daily Solar Insolation	2272 Btu/(day*ft^2)	
Shell Paint Condition	Average*		Average Wind Speed	10.7 mph	
Roof Color	Beige/Cream*		Include Short Term Emissions	TRUE	
Roof Paint Condition	Average*				
Composition Subset Properties : Scalar Data					
Component Subset	All Selected*		Species in Results	Selected Species	
Atomic Basis	FALSE		Fraction Denominator	Selected Species	
Details Properties : Scalar Data					
Vapor Space Volume	4437.91 ft^3		Roof Outage	0.223958 ft	
Vapor Density	0.0855600 lb/ft^3		Tank Roof Height	0.671875 ft	
Vapor Space Expansion Factor	0.368557 1/day		Tank Shell Radius	10.75 ft	
Vented Vapor Saturation Factor	0.136741		Vapor Molecular Weight	52.4642 lb/lbmol	
Vapor Space Outage	12.2240 ft		Average Vapor Temperature	556.75 °R	
Average Daily Vapor Temperature Range	34.1718 °R		Average Daily Ambient Temperature	542.07 °R	
Average Daily Vapor Pressure Range	1.14441 psi		Net Working Loss Throughput	2.10532E+06 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	9.74397 psia		Number of Turnovers per Year	302.030	
Average Daily Liquid Surface Temperature	568.213 °R		Annual Net Throughput	750026 bbl/yr	
Average Daily Ambient Temperature Range	22.8 °R		Maximum Liquid Height	21.6 ft	
Tank Roof Surface Solar Absorbance	0.42		Minimum Liquid Height	2.4 ft	
Tank Shell Surface Solar Absorbance	0.42		Working Loss Product Factor	0.75	
Vapor Pressure at Maximum Liquid Surface Temperature	10.3497 psia		Vent Setting Correction Factor	1	
Vapor Pressure at Minimum Liquid Surface Temperature	9.20534 psia		Saturation Factor	0.6	
Maximum Liquid Surface Temperature	576.756 °R		Vapor Pressure of Liquid Loaded	7.14555 psia	
Minimum Liquid Surface Temperature	559.670 °R		Collection Efficiency	70 %	
Liquid Height	12 ft		Annual Net Throughput Per Tank	375013 bbl/yr	
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: Dedicated Normal Service*		Overall Reduction Efficiency	0 %	
Control Efficiency	0" %				
Results Properties : Scalar Data					
Flashing Losses	7349.19 lb/d		Standing Losses per Tank	19.1368 lb/d	
Working Losses	740.266 lb/d		Flashing Losses per Tank	3674.59 lb/d	
Standing Losses	38.2736 lb/d		Working and Standing Losses	778.540 lb/d	
Loading Losses	454.297 lb/d		Working and Standing Losses per Tank	389.270 lb/d	
Working Losses per Tank	370.133 lb/d		Loading Losses per Tank	227.148 lb/d	
Results Properties : Tabulated Data					
Index	Flashing Losses Mass Flows lb/d	Working Losses Mass Flows lb/d	Standing Losses Mass Flows lb/d	Loading Losses Mass Flows lb/d	Working and Standing Losses Mass Flows lb/d
H2S	138.776	19.8317	1.01501	12.0479	20.8467
Nitrogen	23.9180	0.160701	0.00830865	0.0986212	0.169010
Methane	3.80366	0.00909525	0.00470247	0.0558170	0.0595505
CO2	3991.17	350.036	16.0977	214.815	369.134
Ethane	73.4088	10.7079	0.553625	6.57136	11.2619
Propane	397.980	58.2923	2.91045	34.5462	59.2027
i-Butane	150.254	19.1363	0.989394	11.7438	20.1257
n-Butane	343.554	42.8653	2.20590	26.1834	44.8712
i-Pentane	298.502	36.2462	1.87402	22.2441	38.1202
n-Pentane	300.511	36.0124	1.86193	22.1006	37.8743
iC6	602.408	70.0543	3.62198	42.9919	73.6763
n-Hexane	191.561	22.5457	1.16567	13.8361	23.7113
iC7	280.584	28.3494	1.46573	17.3978	29.8151
n-Heptane	0	0	0	0	0
Benzene	227.666	18.1633	0.940124	11.1590	19.1238
Toluene	93.2332	8.28132	0.428165	5.08220	8.70949
2,2,4-Trimethylpentane	94.3376	6.64420	0.498629	5.91859	10.1428
nC8	75.2713	7.91925	0.362913	4.30767	7.38216
Ethylbenzene	18.6760	1.77416	0.0917287	1.08979	1.86588
m-Xylene	9.27355	0.857096	0.0443125	0.525976	0.901378
o-Xylene	3.13426	0.261178	0.0135036	0.160283	0.274682
p-Xylene	0	0	0	0	0
Nonane	33.1682	2.31687	0.119788	1.42185	2.43666
C10	0	0	0	0	0
Water	0	0	0	0	0
C10+ Oil	0.00113658	7.30083E-05	3.77471E-06	4.48047E-05	7.67830E-05
Short Term Properties : Scalar Data					
Maximum Battery Filling Rate	83.3333" bbl/hr		Short-Term Working Losses per Tank	20.9459 lb/h	
Short-Term Number of Storage Tanks	2		Short-Term Loading Losses per Tank	19.7682 lb/h	
Worst-Case Liquid Surface Temperature	117.086 °F		Short-Term Vapor Molecular Weight	53.5448 lb/lbmol	
Maximum Loading Rate	200" bbl/hr		Vapor Pressure at Worst-Case Temperature	10.3497 psia	
Worst-Case Flashing Losses	301.348 lb/h		Short-Term Control Efficiency	0" %	
Short-Term Working Losses	41.8917 lb/h		Short-Term Truck Annual Leak Test Passed	None	
Short-Term Loading Losses	39.5363 lb/h		Short-Term Overall Reduction Efficiency	0 %	
Worst-Case Flashing Losses per Tank	150.674 lb/h		Short-Term Collection Efficiency	70 %	
Short Term Properties : Tabulated Data					
Index	Worst-Case Flashing Losses Mass Flows lb/h	Short-Term Working Losses Mass Flows lb/h	Short-Term Loading Losses Mass Flows lb/h		
H2S	5.60838	1.13545	1.07161		
Nitrogen	0.980740	0.00838901	0.00791733		
Methane	0.155966	0.00474796	0.00448100		
CO2	163.655	16.2728	17.2454		
Ethane	3.01007	0.558979	0.527550		
Propane	16.3189	3.26020	3.07690		
i-Butane	6.16104	1.12631	1.06298		
n-Butane	14.0872	2.52407	2.38216		
i-Pentane	12.2399	2.18575	2.06285		
n-Pentane	12.3222	2.18820	2.06516		
iC6	24.7013	4.32768	4.08435		
n-Hexane	7.89482	1.40428	1.32530		
iC7	11.5052	1.79518	1.69425		
n-Heptane	0	0	0		
Benzene	9.33528	1.14497	1.08059		
Toluene	3.82296	0.539513	0.503516		
2,2,4-Trimethylpentane	3.86824	0.611737	0.577342		
nC8	3.08644	0.465091	0.438941		
Ethylbenzene	0.765879	0.117025	0.110445		
m-Xylene	0.380255	0.0566728	0.0534954		
o-Xylene	0.128518	0.0173503	0.0163748		
p-Xylene	0	0	0		
Nonane	1.35963	0.153355	0.144733		
C10	0	0	0		
Water	0	0	0		
C10+ Oil	4.66046E-05	6.82610E-06	6.44230E-06		
Notes:					

Tank Losses Report One 1,000-bbl Oil Tank					
Client Name:		Apache Corporation		Job:	
Location:		ASAU CTB and Satellite		Modified:	
Flowsheet:		Emissions pph		Status:	
				8/14/2024 8:52 Solved 8:52 AM, 8/14/2024	
Stream Connections					
Stream		Connection Type		Other Block	
Oil with H2S Max - 2		Inlet		Flash Oil Max - 2	
Working Oil Max - 2		Working Losses Stream		Breathing Oil Max - 2	
Loading Oil Max - 2		Loading Losses Stream		Stable Oil Max - 2	
		MIX-101		Flashing Losses Stream	
				Standing Losses Stream	
				Residual Liquid Stream	
				MIX-101	
				MIX-101	
Working and Standing Properties : Scalar Data					
Tank Geometry		Vertical Cylinder		Roof Type	
Shell Length		16' ft		Cone	
Shell Diameter		21.5' ft		Slope of Coned Roof	
Number of Storage Tanks		1		Breather Vent Pressure	
Maximum Fraction Fill of Tank		90 %		Breather Vacuum Pressure	
Average Fraction Fill of Tank		50 %		Location	
Minimum Fraction Fill of Tank		10 %		Midland, TX*	
Material Category		Heavy Crude*		Time Frame	
Insulation		Uninsulated		Known Liquid Bulk Temperature?	
Bolted or Riveted Construction?		FALSE		Liquid Bulk Temperature	
Vapor Balanced Tank?		FALSE		Use AP 42 Raoult's Vapor Pressure?	
Known Sum of Increases in Liquid Level?		FALSE		Flashing Temperature	
Sum of Increases in Liquid Level		5804.85 ft/yr		Average Daily Maximum Ambient Temperature	
Shell Color		Tan*		Average Daily Minimum Ambient Temperature	
Shell Paint Condition		New*		Atmospheric Pressure at Tank Location	
Roof Color		Tan*		Daily Solar Insolation	
Roof Paint Condition		New*		Average Wind Speed	
				Include Short Term Emissions	
				TRUE	
Composition Subset Properties : Scalar Data					
Component Subset		All Selected*		Species in Results	
Atomic Basis		FALSE		Fraction Denominator	
				Selected Species	
				Selected Species	
Details Properties : Scalar Data					
Vapor Space Volume		2985.71 ft^3		Roof Outage	
Vapor Density		0.104617 lb/ft^3		Tank Roof Height	
Vapor Space Expansion Factor		1 1/day		Tank Shell Radius	
Vented Vapor Saturation Factor		0.15753		Vapor Molecular Weight	
Vapor Space Outage		8.22396 ft		Average Vapor Temperature	
Average Daily Vapor Temperature Range		34.5876 °R		Average Daily Ambient Temperature	
Average Daily Vapor Pressure Range		1.91575 psi		Net Working Loss Throughput	
Breather Vent Pressure Setting Range		0.0600000 psi		Working Loss Turnover (Saturation) Factor	
Vapor Pressure at Average Daily Liquid Surface Temperature		12.2697 psia		Number of Turnovers per Year	
Average Daily Liquid Surface Temperature		569.358 °R		Annual Net Throughput	
Average Daily Ambient Temperature Range		22.8 °R		Maximum Liquid Height	
Tank Roof Surface Solar Absorbance		0.43		Minimum Liquid Height	
Tank Shell Surface Solar Absorbance		0.43		Working Loss Product Factor	
Vapor Pressure at Maximum Liquid Surface Temperature		13.2600 psia		Vent Setting Correction Factor	
Vapor Pressure at Minimum Liquid Surface Temperature		11.3442 psia		Saturation Factor	
Maximum Liquid Surface Temperature		578.005 °R		Vapor Pressure of Liquid Loaded	
Minimum Liquid Surface Temperature		560.711 °R		Collection Efficiency	
Liquid Height		8 ft		Annual Net Throughput Per Tank	
				375392 bbl/yr	
Loading Properties : Scalar Data					
Cargo Carrier		Tank Truck or Rail Tank Car		Truck Annual Leak Test Passed	
Land Based Mode of Operation		Submerged Loading of a Clean Cargo Tank		Overall Reduction Efficiency	
Control Efficiency		0 %		None	
				0 %	
Results Properties : Scalar Data					
Flashing Losses		3729.50 lb/d		Standing Losses per Tank	
Working Losses		451.610 lb/d		Flashing Losses per Tank	
Standing Losses		49.0511 lb/d		Working and Standing Losses	
Loading Losses		165.619 lb/d		Working and Standing Losses per Tank	
Working Losses per Tank		451.610 lb/d		Loading Losses per Tank	
				165.619 lb/d	
Results Properties : Tabulated Data					
Index		Flashing Losses Mass Flows		Working Losses Mass Flows	
		lb/d		lb/d	
		lb/d		lb/d	
		lb/d		lb/d	
		lb/d		lb/d	
		lb/d		lb/d	
H2S		69.0002		8.54647	
Nitrogen		11.9701		0.289290	
Methane		1.90475		0.120879	
CO2		2001.69		254.520	
Ethane		36.9388		4.61876	
Propane		201.816		24.5243	
i-Butane		76.7115		9.12224	
n-Butane		175.940		20.7279	
i-Pentane		153.616		17.7420	
n-Pentane		154.898		17.7503	
iC6		311.640		35.0827	
n-Hexane		99.2673		11.0485	
iC7		145.750		16.0118	
n-Heptane		0		0	
Benzene		117.912		13.1891	
Toluene		48.5207		5.26884	
2,2,4-Trimethylpentane		49.0414		5.36252	
nC8		39.3212		4.16066	
Ethylbenzene		9.78041		1.03076	
m-Xylene		4.84693		0.511178	
o-Xylene		1.63862		0.172477	
p-Xylene		0		0	
Nonane		17.3911		1.78960	
C10		0		0	
Water		0		0	
C10+ Oil		0.000624932		4.59861E-05	
				4.99472E-06	
				1.68645E-05	
				5.09808E-05	
Short Term Properties : Scalar Data					
Maximum Battery Filling Rate		41.6667* bbl/hr		Short-Term Working Losses per Tank	
Short-Term Number of Storage Tanks		1		Short-Term Loading Losses per Tank	
Worst-Case Liquid Surface Temperature		118.335 °F		Short-Term Vapor Molecular Weight	
Maximum Loading Rate		200' bbl/hr		Vapor Pressure at Worst-Case Temperature	
Worst-Case Flashing Losses		152.832 lb/h		Short-Term Control Efficiency	
Short-Term Working Losses		25.1044 lb/h		Short-Term Truck Annual Leak Test Passed	
Short-Term Loading Losses		27.1106 lb/h		Short-Term Overall Reduction Efficiency	
Worst-Case Flashing Losses per Tank		152.832 lb/h		Short-Term Collection Efficiency	
				0 %	
				70 %	
Short Term Properties : Tabulated Data					
Index		Worst-Case Flashing Losses Mass Flows		Short-Term Working Losses Mass Flows	
		lb/h		lb/h	
		lb/h		lb/h	
		lb/h		lb/h	
		lb/h		lb/h	
		lb/h		lb/h	
H2S		2.82757		0.480585	
Nitrogen		0.490524		0.0131425	
Methane		0.0780553		0.00549155	
CO2		82.0277		13.1463	
Ethane		1.51372		0.257278	
Propane		8.27028		1.40565	
i-Butane		3.14358		0.534294	
n-Butane		1.20378		1.22472	
i-Pentane		6.29504		1.06993	
n-Pentane		6.34758		1.07886	
iC6		12.7108		2.17057	
n-Hexane		4.09871		0.691534	
iC7		5.97270		1.01514	
n-Heptane		0		0	
Benzene		4.83193		0.821253	
Toluene		1.98534		0.337946	
2,2,4-Trimethylpentane		2.00968		0.341573	
nC8		1.61135		0.273871	
Ethylbenzene		0.399874		0.0679810	
m-Xylene		0.198523		0.0337596	
o-Xylene		0.0671495		0.0123251	
p-Xylene		0		0	
Nonane		0.12673		0.121129	
C10		0		0	
Water		0		0	
C10+ Oil		2.56092E-05		4.35264E-06	
				4.70048E-06	
Notes:					

Tank Losses Report
One 500-bbl Skim Oil Tank

Client Name:

Apache Corporation

Job:

Location:

ASAU CTB and Satellite

Modified:

10/3/2024 11:12

Flowsheet:

Emissions pph

Status:

Solved 11:15 AM, 10/3/2024

Stream

Connection Type

Other Block

Stream

Connection Type

Other Block

1

Inlet

SPLT-100

Skim Flash Max

Flashing Losses Stream

Skim Working Max

Working Losses Stream

Skim Breathing Max

Standing Losses Stream

Skim Loading Max

Loading Losses Stream

Stable Skim Max

Residual Liquid Stream

Working and Standing Properties : Scalar Data

Tank Geometry

Vertical Cylinder

Roof Type

Cone

Shell Length

16' ft

Slope of Coned Roof

0.0025

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

Midland, TX*

Average Fraction Fill of Tank

50 %

Time Frame

July*

Minimum Fraction Fill of Tank

10 %

Known Liquid Bulk Temperature?

FALSE

Material Category

Heavy Crude*

Liquid Bulk Temperature

84.9901 °F

Insulation

Uninsulated

Use AP 42 Raoult's Vapor Pressure?

FALSE

Boiled or Riveted Construction?

FALSE

Flashing Temperature

95.6747 °F

Vapor Balanced Tank?

FALSE

Average Daily Maximum Ambient Temperature

93.8 °F

Known Sum of Increases in Liquid Level?

FALSE

Average Daily Minimum Ambient Temperature

71 °F

Sum of Increases in Liquid Level

276.026 ft/yr

Atmospheric Pressure at Tank Location

13.26 psia

Shell Color

Rust*

Daily Solar Insolation

2272 Btu/(day*ft²)

Shell Paint Condition

New*

Average Wind Speed

10.7 mph

Roof Color

Rust*

Include Short Term Emissions

TRUE

Roof Paint Condition

New*

Composition Subset Properties : Scalar Data

Component Subset

All Selected*

Species in Results

Selected Species

Atomic Basis

FALSE

Fraction Denominator

Selected Species

Details Properties : Scalar Data

Vapor Space Volume

1540.00 ft³

Roof Outage

0.161458 ft

Vapor Density

0.0529483 lb/ft³

Tank Roof Height

0.484375 ft

Vapor Space Expansion Factor

0.197343 1/day

Tank Shell Radius

7.75 ft

Vented Vapor Saturation Factor

0.262211

Vapor Molecular Weight

53.3035 lb/lbmol

Vapor Space Outage

8.16146 ft

Average Vapor Temperature

549.691 °R

Average Daily Vapor Temperature Range

32.6760 °R

Average Daily Ambient Temperature

542.07 °R

Average Daily Vapor Pressure Range

1.07846 psi

Net Working Loss Throughput

52083.9 ft³/yr

Breather Vent Pressure Setting Range

0.0600000 psi

Working Loss Turnover (Saturation) Factor

1

Vapor Pressure at Average Daily Liquid Surface Temperature

5.85974 psia

Number of Turnovers per Year

21.5645

Average Daily Liquid Surface Temperature

547.176 °R

Annual Net Throughput

9277.50 bbl/yr

Average Daily Ambient Temperature Range

22.8 °R

Maximum Liquid Height

14.4 ft

Tank Roof Surface Solar Absorbance

0.38

Minimum Liquid Height

1.6 ft

Tank Shell Surface Solar Absorbance

0.38

Working Loss Product Factor

0.75

Vapor Pressure at Maximum Liquid Surface Temperature

6.42162 psia

Vent Setting Correction Factor

1

Vapor Pressure at Minimum Liquid Surface Temperature

5.34315 psia

Saturation Factor

0.5

Maximum Liquid Surface Temperature

655.345 °R

Vapor Pressure of Liquid Loaded

2.35177 psia

Minimum Liquid Surface Temperature

539.007 °R

Collection Efficiency

70 %

Liquid Height

8 ft

Annual Net Throughput Per Tank

9277.50 bbl/yr

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 b/d

Standing Losses per Tank

4.11399 b/d

Working Losses

5.12084 b/d

Flashing Losses per Tank

0 b/d

Standing Losses

4.11399 b/d

Working and Standing Losses

9.23484 b/d

Loading Losses

1.91414 b/d

Working and Standing Losses per Tank

9.23484 b/d

Working Losses per Tank

5.12084 b/d

Loading Losses per Tank

1.91414 b/d

Results Properties : Tabulated Data

Index

Flashing Losses Mass Flows

Working Losses Mass Flows

Standing Losses Mass Flows

Loading Losses Mass Flows

Working and Standing Losses Mass Flows

b/d

b/d

b/d

b/d

b/d

H2S

0

0.136704

0.109826

0.0510992

0.246530

Nitrogen

0

0.0032914

0.00267457

0.00124441

0.00600371

Methane

0

0.00121985

0.000980009

0.000455974

0.00219986

CO2

0

1.96421

1.57601

0.734210

3.54229

Ethane

0

0.0619667

0.0497829

0.0231627

0.111750

Propane

0

0.428121

0.343944

0.160029

0.772065

i-Butane

0

0.161077

0.129406

0.0602094

0.290483

n-Butane

0

0.362965

0.291358

0.135682

0.654029

i-Pentane

0

0.297271

0.238822

0.111118

0.536093

n-Pentane

0

0.291717

0.234360

0.109042

0.526076

iC6

0

0.551277

0.442886

0.206064

0.994163

n-Hexane

0

0.168168

0.135103

0.0626602

0.303272

iC7

0

0.235533

0.189223

0.0880406

0.424756

n-Heptane

0

0

0

0

0

Benzene

0

0.204776

0.164513

0.0765440

0.369299

Toluene

0

0.0751954

0.0604106

0.0281075

0.135606

2,2,4-Trimethylpentane

0

0.0778645

0.0625549

0.0291052

0.140419

nC8

0

0.0551797

0.0443303

0.0206268

0.0995100

Ethylbenzene

0

0.0136169

0.01030395

0.00508999

0.0245566

m-Xylene

0

0.00672926

0.00540616

0.00251535

0.0121354

o-Xylene

0

0.00225846

0.00181441

0.000844197

0.00407287

p-Xylene

0

0

0

0

0

Nonane

0

0.0219613

0.0176433

0.00820897

0.0396046

C10

0

0

0

0

0

Water

0

0

0

0

0

C10+ Oil

0

2.22271E-07

1.78568E-07

8.30834E-08

4.00839E-07

Short Term Properties : Scalar Data

Maximum Battery Filling Rate

1.04167 bbl/hr

Short-Term Working Losses per Tank

0.340289 lb/h

Short-Term Number of Storage Tanks

1

Short-Term Loading Losses per Tank

6.14052 lb/h

Worst-Case Liquid Surface Temperature

95.6747 °F

Short-Term Vapor Molecular Weight

54.2312 lb/lbmol

Maximum Loading Rate

65 bbl/hr

Vapor Pressure at Worst-Case Temperature

6.42162 psia

Worst-Case Flashing Losses

0 lb/h

Short-Term Control Efficiency

0 %

Short-Term Working Losses

0.340289 lb/h

Short-Term Truck Annual Leak Test Passed

None

Short-Term Loading Losses

6.14052 lb/h

Short-Term Overall Reduction Efficiency

0 %

Worst-Case Flashing Losses per Tank

0 lb/h

Short-Term Collection Efficiency

70 %

Short Term Properties : Tabulated Data

Index

Worst-Case Flashing Losses Mass Flows

Short-Term Working Losses Mass Flows

Short-Term Loading Losses Mass Flows

lb/h

lb/h

lb/h

H2S

0

0.00798776

0.144139

Nitrogen

0

0.000249772

0.00450713

Methane

0

9.15206E-05

0.00165149

CO2

0

0.141152

0.254709

Ethane

0

0.00358454

0.0646831

Propane

0

0.0255156

0.460429

i-Butane

0

0.00981899

0.177184

n-Butane

0

0.0222863

0.402191

i-Pentane

0

0.0186674

0.336853

n-Pentane

0

0.0184687

0.333268

iC6

0

0.0355365

0.641255

n-Hexane

0

0.0109753

0.198050

iC7

0

0.0155711

0.280980

n-Heptane

0

0

0

Benzene

0

0.0132763

0.239571

Toluene

0

0.0902981

0.0907630

2,2,4-Trimethylpentane

0

0.00517234

0.0933348

nC8

0

0.00379231

0.0684323

Ethylbenzene

0

0.000937414

0.0169156

m-Xylene

0

0.000463820

0.00836984

o-Xylene

0

0.000155983

0.00281472

p-Xylene

0

0

0

Nonane

0

0.00155350

0.0280329

C10

0

0

0

Water

0

0

0

C10+ Oil

0

2.22092E-08

4.00764E-07

Notes:

Tank Losses Report

Three 1,500-bbl Water

Client Name:

Apache Corporation

Job:

Location:

ASAU CTB and Satellite

Modified:

10/3/2024 11:14

Flowsheet:

Emissions pph

Status:

Solved 11:15 AM, 10/3/2024

Stream

Connection Type

Other Block

Stream

Connection Type

Other Block

Water to Water Tanks Max

Inlet

GBT

Flash Water Max

Flashing Losses Stream

MIX-102

Working Water Max

Working Losses Stream

MIX-102

Breathing Water Max

Standing Losses Stream

MIX-102

Loading Water Max

Loading Losses Stream

Water Leaving Tanks Max

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

21.5' ft

Breather Vent Pressure

0.0300000 psig

Number of Storage Tanks

3*

Breather Vacuum Pressure

-0.0300000 psig

Maximum Fraction Fill of Tank

90 %

Location

Midland, TX*

Average Fraction Fill of Tank

50 %

Time Frame

July*

Minimum Fraction Fill of Tank

10 %

Known Liquid Bulk Temperature?

FALSE

Material Category

Light Organics*

Liquid Bulk Temperature

84.7174 °F

Insulation

Uninsulated

Use AP 42 Raoult's Vapor Pressure?

FALSE

Boiled or Riveted Construction?

FALSE

Flashing Temperature

94.7226 °F

Vapor Balanced Tank?

FALSE

Average Daily Maximum Ambient Temperature

93.8 °F

Known Sum of Increases in Liquid Level?

FALSE

Average Daily Minimum Ambient Temperature

71 °F

Sum of Increases in Liquid Level

42537.9 lb/yr

Atmospheric Pressure at Tank Location

13.26 psia

Shell Color

White*

Daily Solar Insolation

2272 Btu/(day*ft²)

Shell Paint Condition

Aged*

Average Wind Speed

10.7 mph

Roof Color

White*

Include Short Term Emissions

TRUE

Roof Paint Condition

Aged*

Composition Subset Properties : Scalar Data

Component Subset

All Selected*

Species in Results

Selected Species

Atomic Basis

FALSE

Fraction Denominator

Selected Species

Details Properties : Scalar Data

Vapor Space Volume

4437.91 ft³

Roof Outage

0.223958 ft

Vapor Density

0.0873731 lb/ft³

Tank Roof Height

0.671875 ft

Vapor Space Expansion Factor

1 1/day

Tank Shell Radius

10.75 ft

Vented Vapor Saturation Factor

0.11281

Vapor Molecular Weight

42.4361 lb/lbmol

Vapor Space Outage

12.2240 ft

Average Vapor Temperature

548.793 °R

Average Daily Vapor Temperature Range

31.2081 °R

Average Daily Ambient Temperature

542.07 °R

Average Daily Vapor Pressure Range

2.21133 psi

Net Working Loss Throughput

1.54434E+07 ft³/3yr

Breather Vent Pressure Setting Range

0.0600000 psi

Working Loss Turnover (Saturation) Factor

1

Vapor Pressure at Average Daily Liquid Surface Temperature

12.1259 psia

Number of Turnovers per Year

2215.52

Average Daily Liquid Surface Temperature

546.590 °R

Annual Net Throughput

8.25262E+06 bbl/yr

Average Daily Ambient Temperature Range

22.8 °R

Maximum Liquid Height

21.6 ft

Tank Roof Surface Solar Absorbance

0.34

Minimum Liquid Height

2.4 ft

Tank Shell Surface Solar Absorbance

0.34

Working Loss Product Factor

1

Vapor Pressure at Maximum Liquid Surface Temperature

13.2600 psia

Vent Setting Correction Factor

1

Vapor Pressure at Minimum Liquid Surface Temperature

11.0487 psia

Saturation Factor

0.6

Maximum Liquid Surface Temperature

554.392 °R

Vapor Pressure of Liquid Loaded

0.955318 psia

Minimum Liquid Surface Temperature

538.788 °R

Collection Efficiency

70 %

Liquid Height

12 ft

Annual Net Throughput Per Tank

2.75087E+06 bbl/yr

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: Dedicated Normal Service*

Overall Reduction Efficiency

0 %

Control Efficiency

0 %

Results Properties : Scalar Data

Flashing Losses

4227.27 lb/d

Standing Losses per Tank

27.3555 lb/d

Working Losses

6929.08 lb/d

Flashing Losses per Tank

1409.09 lb/d

Standing Losses

82.0664 lb/d

Working and Standing Losses

7011.15 lb/d

Loading Losses

346.100 lb/d

Working and Standing Losses per Tank

2337.05 lb/d

Working Losses per Tank

2309.69 lb/d

Loading Losses per Tank

115.367 lb/d

Results Properties : Tabulated Data

Index

Flashing Losses Mass Flows

Working Losses Mass Flows

Standing Losses Mass Flows

Loading Losses Mass Flows

Working and Standing Losses Mass Flows

lb/d

lb/d

lb/d

lb/d

lb/d

H2S

187.134

493.349

5.84312

24.6422

499.193

Nitrogen

0.00515413

0.000212480

2.51657E-06

1.06131E-05

0.000214997

Methane

0.206293

0.0174538

0.000206719

0.000871797

0.0176605

CO2

3845.30

5990.51

0.000599932

269.219

6591.46

Ethane

1.04570

0.121935

0.00144417

0.00609051

0.123379

Propane

0.127057

0.0102582

0.00122582

0.00516966

0.104725

i-Butane

0.197890

0.00101089

0.000119728

0.000504029

0.0102287

n-Butane

0.672552

0.00506338

0.000506932

0.00253010

0.00512538

i-Pentane

0.170078

0.00040208

9.95123E-05

0.000419674

0.000850159

n-Pentane

0.0217581

0.000504222

5.97189E-06

2.51853E-05

0.000510194

iC6

0.0561872

0.00164542

1.94880E-05

8.21868E-05

0.00166491

n-Hexane

0.00427927

6.48588E-05

7.68173E-07

3.23962E-06

6.56270E-05

iC7

0.0135805

0.000228917

2.71124E-06

1.14342E-05

0.000231629

n-Heptane

0

0

0

0

0

Benzene

55.5164

136.118

1.61215

6.79895

137.734

Toluene

19.2138

47.3320

0.560589

2.36418

47.8926

2,2,4-Trimethylpentane

0.00449713

5.62983E-05

6.66785E-05

2.81204E-06

5.69651E-05

nC8

0.000123025

5.87562E-07

6.95895E-09

2.93480E-08

5.94521E-07

Ethylbenzene

5.60251

6.63643

6.95895E-09

0.431330

8.73711

m-Xylene

1.25649

3.11203

0.0365852

0.155442

3.14889

o-Xylene

0.659907

1.58916

0.0188216

0.0793765

1.60798

p-Xylene

0

0

0

0

0

Nonane

6.30640E-06

2.41173E-07

2.85640E-09

1.20463E-08

2.44030E-07

C10

6.06643E-09

7.28893E-12

8.63284E-14

3.64074E-13

7.37526E-12

Water

110.923

248.114

2.93861

12.3930

251.053

C10+ Oil

2.37768E-06

4.66835E-07

5.52929E-09

2.33187E-08

4.72382E-07

Short Term Properties : Scalar Data

Maximum Battery Filling Rate

937.5' bbl/hr

Short-Term Working Losses per Tank

98.5874 lb/h

Short-Term Number of Storage Tanks

3

Short-Term Loading Losses per Tank

1.19753 lb/h

Worst-Case Liquid Surface Temperature

98 °F

Short-Term Vapor Molecular Weight

42.2224 lb/lbmol

Maximum Loading Rate

200' bbl/hr

Vapor Pressure at Worst-Case Temperature

13.2600 psia

Worst-Case Flashing Losses

176.859 lb/h

Short-Term Control Efficiency

0 %

Short-Term Working Losses

295.762 lb/h

Short-Term Truck Annual Leak Test Passed

None

Short-Term Loading Losses

3.50260 lb/h

Short-Term Overall Reduction Efficiency

0 %

Worst-Case Flashing Losses per Tank

58.9530 lb/h

Short-Term Collection Efficiency

70 %

Short Term Properties : Tabulated Data

Index

Worst-Case Flashing Losses Mass Flows

Short-Term Working Losses Mass Flows

Short-Term Loading Losses Mass Flows

lb/h

lb/h

lb/h

H2S

7.84098

21.9493

0.266616

Nitrogen

0.000214448

8.87825E-06

1.07843E-07

Methane

0.00858580

0.000729443

8.86049E-06

CO2

160.812

251.255

3.05198

Ethane

0.0435354

0.00509191

6.18511E-05

Propane

0.0528844

0.0042032

5.24786E-05

i-Butane

0.00823532

0.000421284

5.11731E-06

n-Butane

0.0279918

0.00211450

2.56846E-05

i-Pentane

0.00707761

0.000350309

4.25518E-06

n-Pentane

0.000905175

2.10636E-05

2.55888E-07

iC6

0.00237767

6.86599E-05

8.34006E-07

n-Hexane

0.000178016

2.70766E-06

3.28896E-08

iC7

0.000564979

9.52852E-06

1.15742E-07

n-Heptane

0

0

0

Benzene

2.33289

6.53047

0.0793251

Toluene

0.807018

2.25909

0.0274410

2,2,4-Trimethylpentane

0.000187086

2.33941E-06

2.84167E-08

nC8

5.11737E-06

2.45275E-08

2.97934E-10

Ethylbenzene

0.151397

0.423805

0.00514793

m-Xylene

0.0527286

0.147289

0.0179276

o-Xylene

0.0277440

0.0776640

0.00943379

p-Xylene

0

0

0

Nonane

2.62323E-06

1.00335E-08

1.21876E-10

C10

2.52333E-10

3.03514E-13

3.68677E-15

Water

4.68187

13.1060

0.159197

C10+ Oil

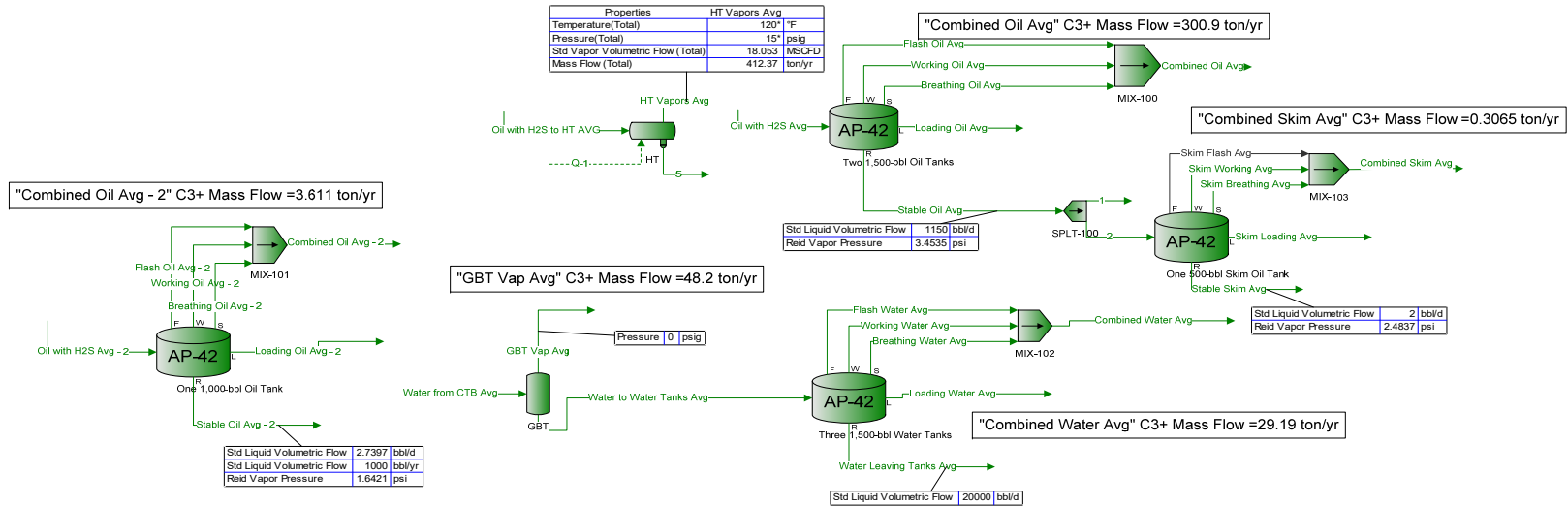
9.91083E-08

1.93486E-08

2.35026E-10

Notes:

ASAU CTB and Satellite
Tank Emissions, tpy



Process Streams		Breathing Oil Avg	Breathing Oil Avg - 2	Breathing Water Avg	Combined Oil Avg	Combined Oil Avg - 2	Combined Skim Avg	Combined Water Avg
Composition		Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-103	MIX-102
	To Block:	MIX-100	MIX-101	MIX-102	--	--	--	--
Mole Fraction		%	%	%	%	%	%	%
H2S		3.92276	1.62543	6.71988	2.96738	2.15882	6.44476	6.34284
Nitrogen		0.0430566	0.0143152	7.80395E-06	0.579152	0.285741	0.0527411	7.58484E-05
Methane		0.0429700	0.0105453	0.00107789	0.163459	0.0827665	0.0337205	0.00552454
CO2		61.1719	9.33667	88.5884	66.6564	34.3698	19.2488	89.0828
Ethane		2.71774	0.628958	0.00418658	1.87046	1.12227	1.94265	0.0153863
Propane		8.52044	7.25894	0.00253876	6.42728	6.80064	19.4638	0.0123427
i-Butane		2.10529	4.77974	0.000215237	1.73021	3.44072	5.09011	0.00141703
n-Butane		4.62696	15.2090	0.000944211	3.87615	10.2571	11.1221	0.00492820
i-Pentane		3.05324	10.2069	0.000139791	2.60468	6.89490	6.83007	0.000979514
n-Pentane		3.00010	10.1010	7.41506E-06	2.58837	6.83193	6.54124	0.000122142
n-C6		4.76839	16.3127	2.19082E-05	4.21966	11.0647	9.81361	0.000265671
n-Hexane		1.51904	5.07045	8.44213E-07	1.32608	3.44581	2.89385	1.99528E-05
n-C7		1.61090	6.22711	3.18130E-06	1.61510	4.24073	3.36591	5.45497E-05
n-Heptane		0	0	0	0	0	0	0
Benzene		1.33603	6.71925	0.645589	1.67663	4.56177	3.95496	0.617084
Toluene		0.502066	2.20056	0.196030	0.568070	1.50147	1.13329	0.187248
2,2,4-Trimethylpentane		0.479516	1.81994	8.17577E-07	0.474492	1.24035	0.963542	1.57774E-05
n-C8		0.333498	1.36570	5.85453E-09	0.361563	0.935933	0.625073	4.28274E-07
Ethylbenzene		0.0909822	0.363301	0.0293231	0.0965486	0.249053	0.165333	0.0281608
m-Xylene		0.0438413	0.179946	0.0119167	0.0477331	0.123385	0.0814736	0.0113742
o-Xylene		0.0132951	0.0605980	0.00529479	0.0159385	0.0415647	0.0272024	0.00507972
p-Xylene		0	0	0	0	0	0	0
Nonane		0.0979835	0.509004	2.77280E-09	0.134635	0.350510	0.205733	1.95341E-07
C10		0	0	7.09374E-14	0	0	0	1.68935E-11
Water		0	0	3.79447	0	0	0	3.68427
C10+ Oil		8.73045E-07	3.81714E-06	2.22633E-09	1.30904E-06	2.80960E-06	3.48985E-07	3.54578E-09
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S		0.00112785	0.000160433	0.00658875	0.105268	0.000387438	9.30384E-05	0.593587
Nitrogen		1.23794E-05	1.41294E-06	7.65166E-09	0.0205455	5.12812E-05	7.61386E-07	7.09818E-06
Methane		1.23545E-05	1.04084E-06	1.05686E-06	0.00579871	1.48539E-05	4.86799E-07	0.000517007
CO2		0.0175878	0.000921546	0.0868596	2.36464	0.00616824	0.000277882	8.33671
Ethane		0.000781390	6.20793E-05	4.10488E-06	0.0663548	0.000201411	2.80446E-05	0.00143991
Propane		0.00244975	0.000716471	2.48922E-06	0.228008	0.00122049	0.000280985	0.00115508
i-Butane		0.000605301	0.000471769	2.11037E-07	0.0613795	0.000617496	7.34823E-05	0.000132611
n-Butane		0.00133032	0.00150116	9.25785E-07	0.137507	0.00184082	0.000160562	0.000461200
i-Pentane		0.000877851	0.00100744	1.37063E-07	0.0924013	0.00123741	9.86009E-05	9.16667E-05
n-Pentane		0.000862572	0.000996983	7.27036E-09	0.0918224	0.00122611	9.44312E-05	1.14306E-05
n-C6		0.00137098	0.00161009	2.14807E-08	0.149693	0.00198576	0.000141672	2.48625E-05
n-Hexane		0.000436745	0.000500462	8.27738E-10	0.0470429	0.000618410	4.17765E-05	1.86726E-06
n-C7		0.000463156	0.000614627	3.11922E-09	0.0572957	0.000761071	4.85913E-05	5.10497E-06
n-Heptane		0	0	0	0	0	0	0
Benzene		0.000384128	0.000663203	0.000632991	0.0594786	0.000818687	5.70950E-05	0.0577491
Toluene		0.000144351	0.000217199	0.000192204	0.0201523	0.000269464	1.63605E-05	0.0175234
2,2,4-Trimethylpentane		0.000137868	0.000179631	8.01623E-10	0.0168327	0.000222602	1.39100E-05	1.47651E-06
n-C8		9.58855E-05	0.000134797	5.74028E-12	0.0128265	0.000167969	9.02375E-06	4.00795E-08
Ethylbenzene		2.61587E-05	3.58585E-05	2.87509E-05	0.00342507	4.46969E-05	2.38680E-06	0.00263539
m-Xylene		1.26050E-05	1.77610E-05	1.16841E-05	0.00169334	2.21436E-05	1.17618E-06	0.00106444
o-Xylene		3.82252E-06	5.98113E-06	5.19146E-06	0.000565419	7.45950E-06	3.92702E-07	0.000475380
p-Xylene		0	0	0	0	0	0	0
Nonane		2.81717E-05	5.02396E-05	2.71869E-12	0.00477618	6.29050E-05	2.97003E-06	1.82807E-08
C10		0	0	6.95531E-17	0	0	0	1.58096E-12
Water		0	0	0.00372042	0	0	0	0.344788
C10+ Oil		2.51013E-10	3.76759E-10	2.18289E-12	4.64383E-08	5.04231E-10	5.03806E-12	3.31827E-10

Process Streams		Breathing Oil Avg	Breathing Oil Avg - 2	Breathing Water Avg	Combined Oil Avg	Combined Oil Avg - 2	Combined Skim Avg	Combined Water Avg
Composition		Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	Status: From Block: To Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-103	MIX-102
Mass Fraction		MIX-100	MIX-101	MIX-102	--	--	--	--
		%	%	%	%	%	%	%
H2S		2.62747	0.777992	5.36361	2.00398	1.18226	3.67596	5.05684
Nitrogen		0.0237050	0.00563195	5.11994E-06	0.321490	0.128625	0.0247268	4.97045E-05
Methane		0.0135479	0.00237589	0.000404979	0.0519623	0.0213359	0.00905354	0.00207325
CO2		52.9094	5.77077	91.3078	58.1296	24.3057	14.1776	91.7116
Ethane		1.60606	0.265605	0.00294825	1.11449	0.542256	0.977613	0.0108227
Propane		7.38401	4.49536	0.00262182	5.61607	4.81872	14.3640	0.0127318
i-Butane		2.40485	3.90159	0.000292984	1.99274	3.21349	4.95134	0.00192666
n-Butane		5.28533	12.4148	0.00128527	4.46428	9.57974	10.8189	0.00670061
i-Pentane		4.32937	10.3423	0.000236208	3.72386	7.99361	8.24721	0.00165319
n-Pentane		4.25401	10.2350	1.25294E-05	3.70053	7.92060	7.89846	0.000206148
iC6		8.07586	19.7426	4.42155E-05	7.20560	15.3218	14.1535	0.000535565
n-Hexane		2.57268	6.13656	1.70381E-06	2.26445	4.77157	4.17361	4.02228E-05
iC7		3.17233	8.76311	7.46561E-06	3.20689	6.82814	5.64459	0.000127865
n-Heptane		0	0	0	0	0	0	0
Benzene		2.05101	7.37112	1.18102	2.59516	5.72580	5.17026	1.12757
Toluene		0.909152	2.84753	0.423007	1.03718	2.22302	1.74758	0.403592
2,2,4-Trimethylpentane		1.07650	2.91962	2.18720E-06	1.07402	2.27670	1.84204	4.21595E-05
nC8		0.748690	2.19091	1.56622E-08	0.818405	1.71793	1.19498	1.14441E-06
Ethylbenzene		0.189833	0.541681	0.0729082	0.203112	0.424873	0.293761	0.0699375
m-Xylene		0.0914743	0.268299	0.0296293	0.100418	0.210489	0.144761	0.0282479
o-Xylene		0.0277400	0.0903514	0.0131648	0.0335303	0.0709075	0.0483328	0.0126155
p-Xylene		0	0	0	0	0	0	0
Nonane		0.246980	0.916835	8.32872E-09	0.342169	0.722371	0.441604	5.86073E-07
C10		0	0	2.36379E-13	0	0	0	5.62281E-11
Water		0	0	1.60095	0	0	0	1.55266
C10+ Oil		5.45786E-06	1.70524E-05	1.65854E-08	8.25114E-06	1.43609E-05	1.85786E-06	2.63844E-08
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S		0.0384382	0.00546770	0.224550	3.58763	0.0132042	0.00317083	20.2300
Nitrogen		0.000346790	3.95812E-05	2.14349E-07	0.575549	0.00143656	2.13290E-05	0.000198844
Methane		0.000198197	1.66977E-05	1.69546E-05	0.0930256	0.000238292	7.80946E-06	0.00829407
CO2		0.774031	0.0405568	3.82265	104.067	0.271461	0.0122294	366.894
Ethane		0.0234956	0.00186667	0.000123430	1.99522	0.00605624	0.000843275	0.0432966
Propane		0.108023	0.0315932	0.000109764	10.0542	0.0538184	0.0123902	0.0509338
i-Butane		0.0351814	0.0274203	1.22659E-05	3.56751	0.0358902	0.00427095	0.00770764
n-Butane		0.0773210	0.0872507	5.38087E-05	7.99219	0.106992	0.00933223	0.0268060
i-Pentane		0.0633359	0.0726852	9.88895E-06	6.66664	0.0892775	0.00711393	0.00661364
n-Pentane		0.0622335	0.0719311	5.24548E-07	6.62488	0.0884621	0.00681310	0.000824701
iC6		0.118145	0.138750	1.85110E-06	12.8998	0.171123	0.0122087	0.00214254
n-Hexane		0.0376367	0.0431275	7.13306E-08	4.05394	0.0532917	0.00360010	0.000160912
iC7		0.0464091	0.0615868	3.12552E-07	5.74114	0.0762608	0.00486894	0.000511527
n-Heptane		0	0	0	0	0	0	0
Benzene		0.0300049	0.0518040	0.0494441	4.64599	0.0639492	0.00445980	4.51089
Toluene		0.0133003	0.0200124	0.0177094	1.85680	0.0248280	0.00150743	1.61458
2,2,4-Trimethylpentane		0.0157485	0.0205190	9.15682E-08	1.92277	0.0254275	0.00158892	0.000168660
nC8		0.0109529	0.0153976	6.55704E-10	1.46515	0.0191869	0.00103077	4.57823E-06
Ethylbenzene		0.00277714	0.00380691	0.00305234	0.363622	0.00474524	0.000253394	0.279787
m-Xylene		0.00133821	0.00188560	0.00124044	0.179773	0.00235087	0.000124869	0.113006
o-Xylene		0.000405818	0.000634987	0.000551152	0.0600277	0.000791938	4.16912E-05	0.0504687
p-Xylene		0	0	0	0	0	0	0
Nonane		0.00361316	0.00644348	3.48686E-10	0.612569	0.00806788	0.000380921	2.34460E-06
C10		0	0	9.89614E-15	0	0	0	2.24942E-10
Water		0	0	0.0670244	0	0	0	6.21146
C10+ Oil		7.98451E-08	1.19844E-07	6.94356E-10	1.47716E-05	1.60391E-07	1.60256E-09	1.05551E-07

Process Streams		Breathing Oil Avg	Breathing Oil Avg - 2	Breathing Water Avg	Combined Oil Avg	Combined Oil Avg - 2	Combined Skim Avg	Combined Water Avg
Properties		Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	Status: From Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-103	MIX-102
	To Block:	MIX-100	MIX-101	MIX-102	--	--	--	--
Property	Units							
Temperature	°F	108.140	109.578	74.9451	108.140	96.5685	75.6400	74.9451
Pressure	psig	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595
Mole Fraction Vapor	%	100	77.9021	99.4548	100	90.0107	85.2341	99.5687
Mole Fraction Light Liquid	%	0	22.0979	0.545203	0	9.98931	14.7659	0.431256
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	50.8822	71.2040	42.6987	50.4650	62.2320	59.7512	42.7480
Mass Density	lb/ft^3	0.111726	0.203082	0.0997652	0.110734	0.156088	0.164671	0.0997651
Molar Flow	lbmol/h	0.0287515	0.00987018	0.0980486	3.54751	0.0179467	0.00144363	9.35838
Mass Flow	lb/h	1.46294	0.702797	4.18655	179.025	1.11686	0.0862586	400.052
Vapor Volumetric Flow	ft^3/h	13.0940	3.46065	41.9640	1616.71	7.15533	0.523825	4009.94
Liquid Volumetric Flow	gpm	1.63250	0.431457	5.23188	201.564	0.892093	0.0653080	499.941
Std Vapor Volumetric Flow	MMSCFD	0.000261857	8.98938E-05	0.000892989	0.0323093	0.000163452	1.31480E-05	0.0852326
Std Liquid Volumetric Flow	sgpm	0.00414182	0.00213391	0.0102124	0.494468	0.00328056	0.000268184	0.976154
Compressibility		0.991033	0.761045	0.989178	0.991712	0.885653	0.837539	0.990321
Specific Gravity		1.75683			1.74243			
API Gravity								
Enthalpy	Btu/h	-3511.83	-664.592	-15126.7	-455291	-1686.47	-107.596	-1.45027E+06
Mass Enthalpy	Btu/lb	-2400.54	-945.640	-3613.17	-2543.17	-1510.01	-1247.36	-3625.21
Mass Cp	Btu/(lb*°F)	0.297412	0.425702	0.210572	0.285844	0.365409	0.382699	0.210094
Ideal Gas CpCv Ratio		1.15197	1.07758	1.28772	1.16061	1.10201	1.10402	1.28768
Dynamic Viscosity	cP	0.0120622			0.0124897			
Kinematic Viscosity	cSt	6.73986			7.04122			
Thermal Conductivity	Btu/(h*ft*°F)	0.00989095			0.00989120			
Surface Tension	lbf/ft							
Net Ideal Gas Heating Value	Btu/ft^3	1179.04	3377.61	73.4736	1033.61	2358.14	2540.43	70.4224
Net Liquid Heating Value	Btu/lb	8682.32	17858.2	553.649	7666.39	14249.9	15993.1	526.740
Gross Ideal Gas Heating	Btu/ft^3	1273.69	3639.00	80.2652	1115.36	2541.31	2742.38	76.9615
Gross Liquid Heating Value	Btu/lb	9388.29	19251.3	614.019	8281.15	15366.8	17275.8	584.799

Process Streams		Flash Oil Avg	Flash Oil Avg - 2	Flash Water Avg	GBT Vap Avg	HT Vapors Avg	Loading Oil Avg	Loading Oil Avg - 2	Loading Water Avg
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks
To Block:	MIX-100	MIX-101	MIX-102	--	--	--	--	--	--
Mole Fraction	%	%	%	%	%	%	%	%	%
H2S	2.85177	2.84939	4.91586	4.25146	2.30634	3.76912	0	45.7015	
Nitrogen	0.644023	0.637146	0.000333378	0.00344143	0.956951	0.726541	0	0	
Methane	0.178039	0.176268	0.0223539	0.121712	0.240048	0.177197	0	0	
CO2	67.3201	66.7791	90.9542	92.3618	78.2743	44.5599	0	0	
Ethane	1.76794	1.76095	0.0577740	0.214521	1.62157	1.79435	0	0	
Propane	6.17400	6.20730	0.0494479	0.240630	4.25320	9.57061	0	0	
i-Butane	1.68483	1.70714	0.00596548	0.0367753	1.02492	2.88729	0	0	
n-Butane	3.78530	3.84608	0.0200065	0.104826	2.23765	6.64430	0	0	
i-Pentane	2.55040	2.60704	0.00415764	0.0278737	1.46247	4.67777	11.2919	0	
n-Pentane	2.53854	2.59963	0.000556355	0.00963681	1.45653	4.71766	13.2265	0	
iC6	4.15327	4.27043	0.00118825	0.0143988	2.40034	7.93599	27.8584	0	
n-Hexane	1.30274	1.34246	9.22739E-05	0.00222772	0.762152	2.53050	9.27961	0	
iC7	1.61561	1.66903	0.000248965	0.00383324	0.959669	3.19436	12.3140	0	
n-Heptane	0	0	0	0	0	0	0	0	
Benzene	1.71785	1.76855	0.509200	0.380250	0.993747	3.31689	12.1926	6.40613	
Toluene	0.576057	0.596388	0.154012	0.117124	0.346269	1.15862	4.56326	1.79223	
2,2,4-Trimethylpentane	0.473884	0.489987	7.23965E-05	0.00109400	0.283296	0.942649	3.68113	0	
nC8	0.364959	0.379536	2.02702E-06	0.000150954	0.228420	0.758712	3.03531	0	
Ethylbenzene	0.0972221	0.101141	0.0237617	0.0174230	0.0608639	0.202848	0.811889	0.258694	
m-Xylene	0.0482041	0.0501581	0.00932103	0.00739473	0.0302480	0.100741	0.403183	0.0817597	
o-Xylene	0.0162584	0.0169231	0.00426574	0.00309686	0.0102291	0.0340713	0.136348	0.0523917	
p-Xylene	0	0	0	0	0	0	0	0	
Nonane	0.139070	0.145313	9.24159E-07	5.70998E-05	0.0908030	0.299832	1.20583	0	
C10	0	0	8.05625E-11	1.74557E-08	0	0	0	0	
Water	0	0	3.26722	2.08027	0	0	0	45.7073	
C10+ Oil	1.36180E-06	1.50518E-06	8.53953E-09	8.80241E-09	1.49185E-06	4.54511E-06	1.77226E-05	0	
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	
H2S	0.0902465	0.000222853	0.0961485	0.698556	0.0457166	0.00738883	0	0.156862	
Nitrogen	0.0203806	4.98317E-05	6.52049E-06	0.000565459	0.0189688	0.00142428	0	0	
Methane	0.00563417	1.37861E-05	0.000437216	0.0199985	0.00475826	0.000347369	0	0	
CO2	2.13039	0.00522284	1.77896	15.1759	1.55156	0.0873534	0	0	
Ethane	0.0559477	0.000137725	0.00112999	0.0352479	0.0321430	0.00351756	0	0	
Propane	0.195381	0.000485477	0.000967144	0.0395379	0.0843075	0.0187618	0	0	
i-Butane	0.0533177	0.000133516	0.000116678	0.00604253	0.0203160	0.00566013	0	0	
n-Butane	0.119789	0.000300805	0.000391305	0.0172240	0.0443549	0.0130252	0	0	
i-Pentane	0.0807095	0.000203898	8.13187E-05	0.00457991	0.0289892	0.00917011	1.35394E-05	0	
n-Pentane	0.0803341	0.000203319	1.08817E-05	0.00158342	0.0288716	0.00924831	1.58590E-05	0	
iC6	0.131433	0.000333993	2.32408E-05	0.00236586	0.0475798	0.0155574	3.34032E-05	0	
n-Hexane	0.0412261	0.000104995	1.80477E-06	0.000366035	0.0151075	0.00496069	1.11266E-05	0	
iC7	0.0511271	0.000130536	4.86947E-06	0.000629838	0.0190227	0.00626209	1.47649E-05	0	
n-Heptane	0	0	0	0	0	0	0	0	
Benzene	0.0543626	0.000138320	0.00995937	0.0624786	0.0196982	0.00650229	1.46193E-05	0.0219878	
Toluene	0.0182298	4.66440E-05	0.00301230	0.0192447	0.00686378	0.00227131	5.47151E-06	0.00615150	
2,2,4-Trimethylpentane	0.0149964	3.83222E-05	1.41599E-06	0.000179755	0.00561554	0.00184793	4.41379E-06	0	
nC8	0.0115494	2.96838E-05	3.96462E-08	2.48032E-05	0.00452778	0.00148735	3.63944E-06	0	
Ethylbenzene	0.00307667	7.91031E-06	0.000464752	0.00286277	0.00120645	0.000397654	9.73483E-07	0.000887919	
m-Xylene	0.00152545	3.92290E-06	0.000182309	0.00121503	0.000599580	0.000197489	4.83430E-07	0.000280625	
o-Xylene	0.000514508	1.32357E-06	8.34330E-05	0.000508843	0.000202763	6.67919E-05	1.63486E-07	0.000179825	
p-Xylene	0	0	0	0	0	0	0	0	
Nonane	0.00440097	1.13651E-05	1.80755E-08	9.38205E-06	0.00179991	0.000587778	1.44584E-06	0	
C10	0	0	1.57571E-12	2.86814E-09	0	0	0	0	
Water	0	0	0.0639031	0.341808	0	0	0	0.156882	
C10+ Oil	4.30952E-08	1.17721E-10	1.67023E-10	1.44632E-09	2.95716E-08	8.91003E-09	2.12500E-11	0	

Process Streams	Flash Oil Avg	Flash Oil Avg - 2	Flash Water Avg	GBT Vap Avg	HT Vapors Avg	Loading Oil Avg	Loading Oil Avg - 2	Loading Water Avg
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks
To Block:	MIX-100	MIX-101	MIX-102	--	--	--	--	--
Mass Fraction	%	%	%	%	%	%	%	%
H2S	1.92783	1.91854	3.90214	3.35197	1.65489	2.26270	0	50.4352
Nitrogen	0.357858	0.352626	0.000217519	0.00223026	0.564405	0.358510	0	0
Methane	0.0566538	0.0558669	0.00835251	0.0451707	0.0810781	0.0500728	0	0
CO2	58.7672	58.0626	93.2314	94.0351	72.5272	34.5435	0	0
Ethane	1.05446	1.04611	0.0404618	0.149225	1.02658	0.950387	0	0
Propane	5.40015	5.40763	0.0507851	0.245469	3.94863	7.43379	0	0
i-Butane	1.94241	1.96028	0.00807571	0.0494480	1.25420	2.95602	0	0
n-Butane	4.36401	4.41642	0.0270836	0.140950	2.73822	6.80247	0	0
i-Pentane	3.64991	3.71609	0.00698665	0.0465237	2.22152	5.94488	9.42784	0
n-Pentane	3.63293	3.70552	0.000934919	0.0160847	2.21251	5.99558	11.0430	0
IC6	7.09932	7.27049	0.00238498	0.0287052	4.35503	12.0465	27.7814	0
n-Hexane	2.22681	2.28557	0.000185206	0.00444114	1.38280	3.84118	9.25396	0
IC7	3.21111	3.30408	0.000581042	0.00888574	2.02457	5.63813	14.2788	0
n-Heptane	0	0	0	0	0	0	0	0
Benzene	2.66162	2.72926	0.926401	0.687127	1.63429	4.56376	11.0211	16.2034
Toluene	1.05281	1.08562	0.330514	0.249655	0.671721	1.88043	4.86554	5.34722
2,2,4-Trimethylpentane	1.07372	1.10578	0.000192613	0.00289098	0.681320	1.89671	4.86598	0
nC8	0.826919	0.856518	5.39294E-06	0.000398905	0.549344	1.52660	4.01230	0
Ethylbenzene	0.204734	0.212138	0.0587561	0.0427914	0.136043	0.379339	0.997454	0.889326
m-Xylene	0.101510	0.105204	0.0230483	0.0181616	0.0676104	0.188393	0.495334	0.281069
o-Xylene	0.0342375	0.0354953	0.0105480	0.00760596	0.0228642	0.0637154	0.167512	0.180110
p-Xylene	0	0	0	0	0	0	0	0
Nonane	0.353795	0.368204	2.76067E-06	0.000169418	0.245194	0.677372	1.78969	0
C10	0	0	2.66978E-10	5.74563E-08	0	0	0	0
Water	0	0	1.37092	0.866986	0	0	0	26.6637
C10+ Oil	8.59228E-06	9.45907E-06	6.32672E-08	6.47746E-08	9.99106E-06	2.54666E-05	6.52371E-05	0
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	3.07568	0.00759501	3.27683	23.8074	1.55806	0.251818	0	5.34598
Nitrogen	0.570930	0.00139595	0.000182661	0.0158404	0.531381	0.0398989	0	0
Methane	0.0903859	0.000221163	0.00701402	0.320826	0.0763341	0.00557265	0	0
CO2	93.7576	0.229855	78.2911	667.885	68.2835	3.84438	0	0
Ethane	1.68229	0.00414126	0.0339778	1.05987	0.966510	0.105770	0	0
Propane	8.61544	0.0214074	0.0426468	1.74345	3.71759	0.827314	0	0
i-Butane	3.09894	0.00776026	0.00678158	0.351205	1.18081	0.328979	0	0
n-Butane	6.96237	0.0174834	0.0227435	1.00110	2.57801	0.757054	0	0
i-Pentane	5.82309	0.0147110	0.00586704	0.330435	2.09153	0.661612	0.000976853	0
n-Pentane	5.79601	0.0146692	0.000785099	0.114242	2.08305	0.667254	0.00114421	0
IC6	11.3263	0.0287820	0.00200278	0.203879	4.10021	1.34066	0.00287853	0
n-Hexane	3.55267	0.00904798	0.000155527	0.0315432	1.30189	0.427489	0.000958836	0
IC7	5.12303	0.0130800	0.000487930	0.0631110	1.90611	0.627474	0.00147947	0
n-Heptane	0	0	0	0	0	0	0	0
Benzene	4.24636	0.0108044	0.777945	4.88032	1.53866	0.507906	0.00114194	1.71751
Toluene	1.67966	0.00429770	0.277549	1.77317	0.632418	0.209275	0.000504136	0.566789
2,2,4-Trimethylpentane	1.71302	0.00437749	0.000161747	0.0205332	0.641455	0.211086	0.000504181	0
nC8	1.31927	0.00339073	4.52872E-06	0.00283323	0.517201	0.169897	0.000415728	0
Ethylbenzene	0.326634	0.000839799	0.0493404	0.303926	0.128083	0.0422170	0.000103350	0.0942659
m-Xylene	0.161950	0.000416475	0.0193548	0.128993	0.0636544	0.0209664	5.13233E-05	0.0297925
o-Xylene	0.0546227	0.000140517	0.00885766	0.0540214	0.0215264	0.00709096	1.73565E-05	0.0190911
p-Xylene	0	0	0	0	0	0	0	0
Nonane	0.564447	0.00145763	2.31827E-06	0.00120330	0.230847	0.0753855	0.000185436	0
C10	0	0	2.24195E-10	4.08084E-07	0	0	0	0
Water	0	0	1.15123	6.15777	0	0	0	2.82627
C10+ Oil	1.37082E-05	3.74460E-08	5.31287E-08	4.60062E-07	9.40646E-06	2.83420E-06	6.75945E-09	0

Process Streams		Flash Oil Avg	Flash Oil Avg - 2	Flash Water Avg	GBT Vap Avg	HT Vapors Avg	Loading Oil Avg	Loading Oil Avg - 2	Loading Water Avg
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Three 1,500-bbl Water Tanks	GBT	HT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks
Property	Units	MIX-100	MIX-101	MIX-102	--	--	--	--	--
Temperature	°F	108.140	109.578	74.9451	64.6875	120*	108.140	109.578	74.9451
Pressure	psig	-1.43595	-1.43595	-1.43595	0	15*	-1.43595	-1.43595	-1.43595
Mole Fraction Vapor	%	100	100	100	100	100	99.7522	0	51.8462
Mole Fraction Light Liquid	%	0	0	0	0	0	0.247774	100	4.08599
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	44.0678
Phase Mole Fraction	%	100	100	100	100	100	100	100	100
Molecular Weight	lb/lbmol	50.4146	50.6164	42.9345	43.2264	47.4968	56.7708	86.4142	30.8821
Mass Density	lb/ft^3	0.110615	0.110784	0.0997646	0.113596	0.229786	0.125523	41.7170	0.138846
Molar Flow	lbmol/h	3.16458	0.00782107	1.95588	16.4310	1.98221	0.196036	0.000119903	0.343231
Mass Flow	lb/h	159.541	0.395874	83.9750	710.251	94.1488	11.1291	0.0103614	10.5997
Vapor Volumetric Flow	ft^3/h	1442.31	3.57338	841.731	6252.42	409.724	88.6619	0.000248373	76.3413
Liquid Volumetric Flow	gpm	179.821	0.445513	104.943	779.522	51.0824	11.0540	3.09659E-05	9.51788
Std Vapor Volumetric Flow	MMSCFD	0.0288217	7.12313E-05	0.0178135	0.149647	0.0180532	0.00178542	1.09203E-06	0.00312602
Std Liquid Volumetric Flow	sgpm	0.439304	0.00109142	0.205138	1.74403	0.250467	0.0322956	2.99807E-05	0.0245373
Compressibility		0.991792	0.991726	0.994647	0.993783	0.986719	0.984188	0.00449625	0.514058
Specific Gravity		1.74068	1.74765	1.48242	1.49249	1.63994		0.668877	
API Gravity								72.0360	
Enthalpy	Btu/h	-408518	-1004.68	-308233	-2.61425E+06	-280882	-20081.7	-8.11046	-19851.7
Mass Enthalpy	Btu/lb	-2560.59	-2537.87	-3670.54	-3680.74	-2983.38	-1804.43	-782.760	-1872.86
Mass Cp	Btu/(lb**F)	0.284432	0.286234	0.208295	0.206590	0.262019	0.331479	0.524227	0.451170
Ideal Gas CpCv Ratio		1.16172	1.15979	1.28755	1.28841	1.19221	1.11901	1.06254	1.27447
Dynamic Viscosity	cP	0.0125426	0.0125118	0.0148226	0.0145639	0.0140062		0.270619	
Kinematic Viscosity	cSt	7.07873	7.05053	9.27528	8.00374	3.80520		0.404971	
Thermal Conductivity	Btu/(h*ft*°F)	0.00989144	0.00991812	0.00939465	0.00915668	0.0104427		0.0640665	
Surface Tension	lbf/ft							0.00115562	
Net Ideal Gas Heating Value	Btu/ft^3	1016.01	1038.28	58.8743	61.7871	625.036	1833.27	4327.80	594.265
Net Liquid Heating Value	Btu/lb	7542.32	7678.31	425.456	453.135	4898.87	12131.7	18865.5	6875.44
Gross Ideal Gas Heating	Btu/ft^3	1096.20	1120.16	64.4580	67.3312	674.678	1976.75	4649.65	654.516
Gross Liquid Heating Value	Btu/lb	8145.94	8292.20	474.816	501.817	5295.52	13090.8	20278.8	7615.89

Process Streams	Oil with H2S Avg	Oil with H2S Avg - 2	Oil with H2S to HT AVG	Skim Breathing Avg	Skim Flash Avg	Skim Loading Avg
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: --	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	To Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	HT	MIX-103	MIX-103	--
Mole Fraction	%	%	%	%		%
H2S	0.2191*	0.2191*	0.2191*	6.44476		0
Nitrogen	0.029*	0.029*	0.029*	0.0527411		0
Methane	0.0084*	0.0084*	0.0084*	0.0337205		0
CO2	3.4882*	3.4882*	3.4882*	19.2488		0
Ethane	0.1139*	0.1139*	0.1139*	1.94265		0
Propane	0.6902*	0.6902*	0.6902*	19.4638		14.1407
i-Butane	0.3492*	0.3492*	0.3492*	5.09011		7.03114
n-Butane	1.041*	1.041*	1.041*	11.1221		16.7189
i-Pentane	1.5289*	1.5289*	1.5289*	6.83007		11.3164
n-Pentane	1.9411*	1.9411*	1.9411*	6.54124		10.9773
i-C6	6.8737*	6.8737*	6.8737*	9.81361		16.7942
n-Hexane	2.9642*	2.9642*	2.9642*	2.89385		4.96135
i-C7	6.8009*	6.8009*	6.8009*	3.36591		5.78091
n-Heptane	0*	0*	0*	0		0
Benzene	4.0045*	4.0045*	4.0045*	3.95496		6.79824
Toluene	4.6453*	4.6453*	4.6453*	1.13329		1.94554
2,2,4-Trimethylpentane	2.6828*	2.6828*	2.6828*	0.963542		1.65450
n-C8	6.2782*	6.2782*	6.2782*	0.625073		1.06566
Ethylbenzene	2.3388*	2.3388*	2.3388*	0.165333		0.281898
m-Xylene	1.2789*	1.2789*	1.2789*	0.0814736		0.138859
o-Xylene	0.4792*	0.4792*	0.4792*	0.0272024		0.0463373
p-Xylene	0*	0*	0*	0		0
Nonane	6.855*	6.855*	6.855*	0.205733		0.347991
C10	0*	0*	0*	0		0
Water	0*	0*	0*	0		0
C10+ Oil	45.3895*	45.3895*	45.3895*	3.48985E-07		5.30617E-07
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	0.158517*	0.000387438*	0.158517*	8.37663E-05	0	0
Nitrogen	0.0209812*	5.12812E-05*	0.0209812*	6.85507E-07	0	0
Methane	0.00607732*	1.48539E-05*	0.00607732*	4.38286E-07	0	0
CO2	2.52368*	0.00616824*	2.52368*	0.000250188	0	0
Ethane	0.0824056*	0.000201411*	0.0824056*	2.52497E-05	0	0
Propane	0.499353*	0.00122049*	0.499353*	0.000252982	0	7.52651E-06
i-Butane	0.252643*	0.000617496*	0.252643*	6.61591E-05	0	3.74237E-06
n-Butane	0.753154*	0.00184082*	0.753154*	0.000144561	0	8.89874E-06
i-Pentane	1.10615*	0.00270358*	1.10615*	8.87744E-05	0	6.02326E-06
n-Pentane	1.40437*	0.00343248*	1.40437*	8.50203E-05	0	5.84276E-06
i-C6	4.97306*	0.0121549*	4.97306*	0.000127553	0	8.93884E-06
n-Hexane	2.14457*	0.00524164*	2.14457*	3.76131E-05	0	2.64071E-06
i-C7	4.92039*	0.0120261*	4.92039*	4.37487E-05	0	3.07693E-06
n-Heptane	0*	0*	0*	0	0	0
Benzene	2.89722*	0.00708122*	2.89722*	5.14050E-05	0	3.61841E-06
Toluene	3.36083*	0.00821436*	3.36083*	1.47301E-05	0	1.03553E-06
2,2,4-Trimethylpentane	1.94098*	0.00474404*	1.94098*	1.25237E-05	0	8.80617E-07
n-C8	4.54222*	0.0111018*	4.54222*	8.12445E-06	0	5.67204E-07
Ethylbenzene	1.69210*	0.00413574*	1.69210*	2.14893E-06	0	1.50043E-07
m-Xylene	0.925273*	0.00226150*	0.925273*	1.05896E-06	0	7.39085E-08
o-Xylene	0.346697*	0.000847377*	0.346697*	3.53565E-07	0	2.46634E-08
p-Xylene	0*	0*	0*	0	0	0
Nonane	4.95953*	0.0121218*	4.95953*	2.67404E-06	0	1.85221E-07
C10	0*	0*	0*	0	0	0
Water	0*	0*	0*	0	0	0
C10+ Oil	32.8389*	0.0802630*	32.8389*	4.53597E-12	0	2.82425E-13

Process Streams	Oil with H2S Avg	Oil with H2S Avg - 2	Oil with H2S to HT AVG	Skim Breathing Avg	Skim Flash Avg	Skim Loading Avg
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: --	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	To Block: Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	HT	MIX-103	MIX-103	--
Mass Fraction	%	%	%	%		%
H2S	0.0381506*	0.0381506*	0.0381506*	3.67596		0
Nitrogen	0.00415061*	0.00415061*	0.00415061*	0.0247268		0
Methane	0.000688492*	0.000688492*	0.000688492*	0.00905354		0
CO2	0.784325*	0.784325*	0.784325*	14.1776		0
Ethane	0.0174981*	0.0174981*	0.0174981*	0.977613		0
Propane	0.155496*	0.155496*	0.155496*	14.3640		8.68243
i-Butane	0.103697*	0.103697*	0.103697*	4.95134		5.69038
n-Butane	0.309130*	0.309130*	0.309130*	10.8189		13.5308
i-Pentane	0.563581*	0.563581*	0.563581*	8.24721		11.3687
n-Pentane	0.715526*	0.715526*	0.715526*	7.89846		11.0280
IC6	3.02637*	3.02637*	3.02637*	14.1535		20.1519
n-Hexane	1.30509*	1.30509*	1.30509*	4.17361		5.95328
IC7	3.48170*	3.48170*	3.48170*	5.64459		8.06576
n-Heptane	0*	0*	0*	0		0
Benzene	1.59814*	1.59814*	1.59814*	5.17026		7.39413
Toluene	2.18677*	2.18677*	2.18677*	1.74758		2.49606
2,2,4-Trimethylpentane	1.56571*	1.56571*	1.56571*	1.84204		2.63156
nC8	3.66402*	3.66402*	3.66402*	1.19498		1.69498
Ethylbenzene	1.26859*	1.26859*	1.26859*	0.293761		0.416723
m-Xylene	0.693692*	0.693692*	0.693692*	0.144761		0.205271
o-Xylene	0.259924*	0.259924*	0.259924*	0.0483328		0.0684992
p-Xylene	0*	0*	0*	0		0
Nonane	4.49190*	4.49190*	4.49190*	0.441604		0.621465
C10	0*	0*	0*	0		0
Water	0*	0*	0*	0		0
C10+ Oil	73.7659*	73.7659*	73.7659*	1.85786E-06		2.35021E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	5.40239*	0.0132042*	5.40239*	0.00285483	0	0
Nitrogen	0.587756*	0.00143656*	0.587756*	1.92034E-05	0	0
Methane	0.0974952*	0.000238292*	0.0974952*	7.03118E-06	0	0
CO2	111.066*	0.271461*	111.066*	0.0110107	0	0
Ethane	2.47786*	0.00605624*	2.47786*	0.000759235	0	0
Propane	22.0193*	0.0538184*	22.0193*	0.0111554	0	0.000331886
i-Butane	14.6842*	0.0358902*	14.6842*	0.00384531	0	0.000217515
n-Butane	43.7750*	0.106992*	43.7750*	0.00840219	0	0.000517214
i-Pentane	79.8070*	0.195060*	79.8070*	0.00640497	0	0.000434571
n-Pentane	101.323*	0.247649*	101.323*	0.00613411	0	0.000421548
IC6	428.555*	1.04745*	428.555*	0.0109920	0	0.000770308
n-Hexane	184.809*	0.451701*	184.809*	0.00324132	0	0.000227564
IC7	493.033*	1.20504*	493.033*	0.00438371	0	0.000308314
n-Heptane	0*	0*	0*	0	0	0
Benzene	226.307*	0.553127*	226.307*	0.00401534	0	0.000282641
Toluene	309.662*	0.756858*	309.662*	0.00135721	0	9.54119E-05
2,2,4-Trimethylpentane	221.715*	0.541905*	221.715*	0.00143057	0	0.000100592
nC8	518.851*	1.26815*	518.851*	0.000928044	0	6.47909E-05
Ethylbenzene	179.642*	0.439071*	179.642*	0.000228141	0	1.59293E-05
m-Xylene	98.2316*	0.240092*	98.2316*	0.000112425	0	7.84649E-06
o-Xylene	36.8071*	0.0899618*	36.8071*	3.75363E-05	0	2.61839E-06
p-Xylene	0*	0*	0*	0	0	0
Nonane	636.085*	1.55468*	636.085*	0.000342959	0	2.37555E-05
C10	0*	0*	0*	0	0	0
Water	0*	0*	0*	0	0	0
C10+ Oil	10445.8*	25.5309*	10445.8*	1.44285E-09	0	8.98368E-11

Process Streams		Oil with H2S Avg	Oil with H2S Avg - 2	Oil with H2S to HT AVG	Skim Breathing Avg	Skim Flash Avg	Skim Loading Avg
Properties		Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	Status:	--	--	--	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank	One 500-bbl Skim Oil Tank
	From Block:	--	--	--			
	To Block:	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	HT	MIX-103	MIX-103	--
Property	Units						
Temperature	°F	65*	65*	65*	75.6400	75.6400	75.6400
Pressure	psig	30.7*	30.7*	30.7*	-1.43595	-1.43595	-1.43595
Mole Fraction Vapor	%	0.193403	0.193403	0.193403	85.2341		43.3749
Mole Fraction Light Liquid	%	99.8066	99.8066	99.8066	14.7659		56.6251
Mole Fraction Heavy Liquid	%	0	0	0	0		0
Phase Mole Fraction	%	100	100	100	100		100
Molecular Weight	lb/lbmol	195.727	195.727	195.727	59.7512		71.8169
Mass Density	lb/ft^3	48.9879	48.9879	48.9879	0.164671		0.390391
Molar Flow	lbmol/h	72.3491	0.176832	72.3491	0.00129976	0	5.32257E-05
Mass Flow	lb/h	14160.7	34.6108	14160.7	0.0776622	0	0.00382251
Vapor Volumetric Flow	ft^3/h	289.065	0.706517	289.065	0.471621	0	0.00979148
Liquid Volumetric Flow	gpm	36.0393	0.0880853	36.0393	0.0587995	0	0.00122076
Std Vapor Volumetric Flow	MMSCFD	0.658928	0.00161052	0.658928	1.18377E-05	0	4.84760E-07
Std Liquid Volumetric Flow	sgpm	34.0361*	0.0831892*	34.0361*	0.000241457	0	1.19601E-05
Compressibility		0.0322129	0.0322129	0.0322129	0.837539		0.424621
Specific Gravity							
API Gravity							
Enthalpy	Btu/h	-1.14050E+07	-27875.5	-1.14050E+07	-96.8729		-3.30284
Mass Enthalpy	Btu/lb	-805.399	-805.399	-805.399	-1247.36		-864.051
Mass Cp	Btu/(lb*°F)	0.451914	0.451914	0.451914	0.382699		0.470041
Ideal Gas CpCv Ratio		1.02946	1.02946	1.02946	1.10402		1.07821
Dynamic Viscosity	cP						
Kinematic Viscosity	cSt						
Thermal Conductivity	Btu/(h*ft*°F)						
Surface Tension	lbf/ft						
Net Ideal Gas Heating Value	Btu/ft^3	9441.70	9441.70	9441.70	2540.43		3645.31
Net Liquid Heating Value	Btu/lb	18159.6	18159.6	18159.6	15993.1		19113.7
Gross Ideal Gas Heating	Btu/ft^3	10061.4	10061.4	10061.4	2742.38		3930.08
Gross Liquid Heating Value	Btu/lb	19361.1	19361.1	19361.1	17275.8		20618.4

Process Streams	Skim Working Avg	Stable Oil Avg	Stable Oil Avg - 2	Stable Skim Avg	Water from CTB Avg	Water Leaving Tanks Avg
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	One 500-bbl Skim Oil Tank	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	Three 1,500-bbl Water Tanks
	To Block:	MIX-103	SPLT-100	--	--	--
Mole Fraction	%	%	%	%	%	%
H2S	6.44476	0.0773949	0	0	0.0115856*	0.00362572
Nitrogen	0.0527411	0.000633366	0	0	3.52964E-06*	0
Methane	0.0337205	0.000404949	0	0	0.000126472*	0
CO2	19.2488	0.231159	0	0	0.144948*	0
Ethane	1.94265	0.0233292	0	0	0.000226169*	0
Propane	19.4638	0.394388	0	0.162601	0.000250860*	0
i-Butane	5.09011	0.277993	0	0.219502	3.80678E-05*	0
n-Butane	11.1221	0.894816	0	0.770504	0.000109024*	0
i-Pentane	6.83007	1.47343	0.922788	1.40832	2.87988E-05*	0
n-Pentane	6.54124	1.90773	1.38866	1.85141	9.83177E-06*	0
i-C6	9.81361	7.01055	6.40030	6.97647	1.47381E-05*	0
n-Hexane	2.89385	3.04866	2.90980	3.05055	2.26801E-06*	0
i-C7	3.36591	7.06829	7.09008	7.11329	3.91423E-06*	0
n-Heptane	0	0	0	0	0*	0
Benzene	3.95496	4.12453	3.94155	4.12659	0.00199931*	0.00126014
Toluene	1.13329	4.85553	5.00041	4.90077	0.000491478*	0.000265235
2,2,4-Trimethylpentane	0.963542	2.79666	2.84573	2.81894	1.11724E-06*	0
n-C8	0.625073	6.58327	6.88163	6.65569	1.53151E-07*	0
Ethylbenzene	0.165333	2.45441	2.57485	2.48224	6.97228E-05*	3.58853E-05
m-Xylene	0.0814736	1.34238	1.40942	1.35771	2.10217E-05*	6.98064E-06
p-Xylene	0.0272024	0.503086	0.528633	0.508871	1.67780E-05*	1.07276E-05
o-Xylene	0	0	0	0	0*	0
Nonane	0.205733	7.20151	7.58971	7.28654	5.79502E-08*	0
C10	0	0	0	0	1.76909E-11*	0
Water	0	0	0	0	99.8401*	99.9948
C10+ Oil	3.48985E-07	47.7298	50.5164	48.3100	1.09617E-11*	0
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	9.27210E-06	0.0532489	0	0	1.87935*	0.587207
Nitrogen	7.58788E-08	0.000435766	0	0	0.000572557*	0
Methane	4.85139E-08	0.000278611	0	0	0.0205155*	0
CO2	2.76934E-05	0.159041	0	0	23.5126*	0
Ethane	2.79489E-06	0.0160508	0	0	0.0366878*	0
Propane	2.80026E-05	0.271345	0	0.000193119	0.0406929*	0
i-Butane	7.32316E-06	0.191264	0	0.000260700	0.00617514*	0
n-Butane	1.60014E-05	0.615647	0	0.000915120	0.0176852*	0
i-Pentane	9.82644E-06	1.01374	0.00146617	0.00167265	0.00467158*	0
n-Pentane	9.41090E-06	1.31255	0.00220637	0.00219890	0.00159485*	0
i-C6	1.41189E-05	4.82337	0.0101691	0.00828589	0.00239073*	0
n-Hexane	4.16339E-06	2.09753	0.00462323	0.00362310	0.000367903*	0
i-C7	4.84255E-06	4.86309	0.0112651	0.00844838	0.000634943*	0
n-Heptane	0	0	0	0	0*	0
Benzene	5.69002E-06	2.83774	0.00626254	0.00490111	0.324316*	0.204088
Toluene	1.63047E-06	3.34068	0.00794490	0.00582060	0.0797246*	0.0429565
2,2,4-Trimethylpentane	1.38625E-06	1.92415	0.00452144	0.00334803	0.000181232*	0
n-C8	8.99296E-07	4.52939	0.0109339	0.00790490	2.48432E-05*	0
Ethylbenzene	2.37865E-07	1.68868	0.00409104	0.00294813	0.0113100*	0.00581184
m-Xylene	1.17216E-07	0.923579	0.00223936	0.00161254	0.00341002*	0.00113056
p-Xylene	3.91362E-08	0.346131	0.000839918	0.000604381	0.00272163*	0.00173740
o-Xylene	0	0	0	0	0*	0
Nonane	2.95989E-07	4.95475	0.0120589	0.00865416	9.40033E-06*	0
C10	0	0	0	0	2.86972E-09*	0
Water	0	0	0	0	16195.5*	16194.8
C10+ Oil	5.02087E-13	32.8389	0.0802630	0.0573773	1.77815E-09*	0

Process Streams	Skim Working Avg	Stable Oil Avg	Stable Oil Avg - 2	Stable Skim Avg	Water from CTB Avg	Water Leaving Tanks Avg
Composition	Status: Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block: One 500-bbl Skim Oil Tank	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	--	Three 1,500-bbl Water Tanks
To Block:	MIX-103	SPLT-100	--	--	GBT	--
Mass Fraction	%	%	%	%	%	%
H2S	3.67596	0.0129796	0	0	0.0218672*	0.00685844
Nitrogen	0.0247268	8.73092E-05	0	0	5.47594E-06*	0
Methane	0.00905354	3.19676E-05	0	0	0.000112364*	0
CO2	14.1776	0.0500606	0	0	0.353282*	0
Ethane	0.977613	0.00345190	0	0	0.000376630*	0
Propane	14.3640	0.0855773	0	0.0349821	0.000612616*	0
i-Butane	4.95134	0.0795088	0	0.0622457	0.000122536*	0
n-Butane	10.8189	0.255926	0	0.218497	0.000350934*	0
i-Pentane	8.24721	0.523116	0.315826	0.495746	0.000115071*	0
n-Pentane	7.89846	0.677305	0.475272	0.651717	3.92847E-05*	0
IC6	14.1535	2.97286	2.61638	2.93324	7.03375E-05*	0
n-Hexane	4.17361	1.29280	1.18950	1.28259	1.08241E-05*	0
IC7	5.64459	3.48522	3.37011	3.47756	2.17213E-05*	0
n-Heptane	0	0	0	0	0*	0
Benzene	5.17026	1.58537	1.46050	1.57267	0.00864886*	0.00546334
Toluene	1.74758	2.20149	2.18556	2.20310	0.00250788*	0.00135642
2,2,4-Trimethylpentane	1.84204	1.57201	1.54200	1.57105	7.06778E-06*	0
nC8	1.19498	3.70046	3.72892	3.70934	9.68851E-07*	0
Ethylbenzene	0.293761	1.28224	1.29673	1.28574	0.000409938*	0.000211455
m-Xylene	0.144761	0.701288	0.709804	0.703260	0.000123598*	4.11337E-05
o-Xylene	0.0483328	0.262823	0.266227	0.263583	9.86470E-05*	6.32129E-05
p-Xylene	0	0	0	0	0*	0
Nonane	0.441604	4.54504	4.61760	4.55958	4.11615E-07*	0
C10	0	0	0	0	1.39400E-10*	0
Water	0	0	0	0	99.6112*	99.9860
C10+ Oil	1.85786E-06	74.7104	76.2256	74.9751	1.93105E-10*	0
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	0.000316001	1.81477	0	0	64.0499*	20.0125
Nitrogen	2.12562E-06	0.0122073	0	0	0.0160393*	0
Methane	7.78282E-07	0.00446961	0	0	0.329120*	0
CO2	0.00121877	6.99930	0	0	1034.78*	0
Ethane	8.40398E-05	0.482633	0	0	1.10317*	0
Propane	0.00123479	11.9651	0	0.00851571	1.79438*	0
i-Butane	0.000425638	11.1167	0	0.0151525	0.358913*	0
n-Butane	0.000930039	35.7828	0	0.0531888	1.02790*	0
i-Pentane	0.000708966	73.1404	0.105782	0.120680	0.337049*	0
n-Pentane	0.000678985	94.6986	0.159187	0.158648	0.115067*	0
IC6	0.00121670	415.655	0.876328	0.714040	0.206022*	0
n-Hexane	0.000358782	180.755	0.398409	0.312222	0.0317041*	0
IC7	0.000485233	487.291	1.12878	0.846545	0.0636225*	0
n-Heptane	0	0	0	0	0*	0
Benzene	0.000444458	221.661	0.489178	0.382835	25.3329*	15.9417
Toluene	0.000150229	307.805	0.732030	0.536301	7.34570*	3.95794
2,2,4-Trimethylpentane	0.000158350	219.793	0.516477	0.382441	0.0207018*	0
nC8	0.000102725	517.386	1.24896	0.902965	0.00283781*	0
Ethylbenzene	2.52530E-05	179.278	0.434325	0.312988	1.20073*	0.617014
m-Xylene	1.24443E-05	98.0518	0.237741	0.171195	0.362025*	0.120026
o-Xylene	4.15489E-06	36.7470	0.0891699	0.0641641	0.288941*	0.184451
p-Xylene	0	0	0	0	0*	0
Nonane	3.79622E-05	635.473	1.54662	1.10994	0.00120564*	0
C10	0	0	0	0	4.08308E-07*	0
Water	0	0	0	0	291766*	291753
C10+ Oil	1.59709E-10	10445.8	25.5309	18.2512	5.65613E-07*	0

Process Streams		Skim Working Avg	Stable Oil Avg	Stable Oil Avg - 2	Stable Skim Avg	Water from CTB Avg	Water Leaving Tanks Avg
Properties		Status: Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block: One 500-bbl Skim Oil Tank	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	One 500-bbl Skim Oil Tank	--	Three 1,500-bbl Water Tanks
To Block:		MIX-103	SPLT-100	--	--	GBT	--
Property	Units						
Temperature	°F	75.6400	108.140	109.578	75.6400	65*	74.9451
Pressure	psig	-1.43595	-1.43595	-1.43595	-1.43595	30.7*	-1.43595
Mole Fraction Vapor	%	85.2341	0	0	0	0	0
Mole Fraction Light Liquid	%	14.7659	100	100	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0
Phase Mole Fraction	%	100	100	100	100	100	100
Molecular Weight	lb/lbmol	59.7512	203.217	210.806	204.961	18.0567	18.0169
Mass Density	lb/ft^3	0.164671	50.6477	50.8419	51.5288	62.3766	62.2341
Molar Flow	lbmol/h	0.000143870	68.8016	0.158885	0.118769	16221.4	16195.6
Mass Flow	lb/h	0.00859643	13981.7	33.4939	24.3430	292904	291794
Vapor Volumetric Flow	ft^3/h	0.0522038	276.058	0.658785	0.472416	4695.74	4688.65
Liquid Volumetric Flow	gpm	0.00650852	34.4176	0.0821343	0.0588986	585.443	584.559
Std Vapor Volumetric Flow	MMSCFD	1.31032E-06	0.626619	0.00144706	0.00108170	147.738	147.503
Std Liquid Volumetric Flow	sgpm	2.67269E-05	33.5417	0.0799087	0.0583370	586.054*	583.333
Compressibility		0.837539	0.00873128	0.00899994	0.00918113	0.00233390	0.000669098
Specific Gravity			0.812068	0.815183	0.826196	1.00013	0.997842
API Gravity			38.4655	37.7581	38.4129	9.88463	9.99813
Enthalpy	Btu/h	-10.7229	-1.06483E+07	-25356.5	-18859.0	-1.99777E+09	-1.99071E+09
Mass Enthalpy	Btu/lb	-1247.36	-761.590	-757.047	-774.719	-6820.56	-6822.32
Mass Cp	Btu/(lb*°F)	0.382699	0.477169	0.476929	0.458317	0.978363	0.978253
Ideal Gas CpCv Ratio		1.10402	1.02625	1.02524	1.02748	1.32932	1.32906
Dynamic Viscosity	cP		1.88878	2.08563	2.82607	1.05382	0.935887
Kinematic Viscosity	cSt		2.32810	2.56091	3.42383	1.05469	0.938802
Thermal Conductivity	Btu/(h*ft*°F)		0.0712611	0.0714652	0.0731755	0.342667	0.349307
Surface Tension	lbf/ft		0.00181859	0.00184037	0.00193350	0.00505476?	0.00499488
Net Ideal Gas Heating Value	Btu/ft^3	2540.43	9875.23	10241.8	9964.38	0.183604	0.0805188
Net Liquid Heating Value	Btu/lb	15993.1	18294.0	18290.0	18302.2	-1052.11	-1057.94
Gross Ideal Gas Heating	Btu/ft^3	2742.38	10522.7	10910.8	10617.2	50.4248	50.3923
Gross Liquid Heating Value	Btu/lb	17275.8	19503.0	19494.3	19510.9	3.77021	1.76133

Process Streams	Water to Water Tanks Avg	Working Oil Avg	Working Oil Avg - 2	Working Water Avg	1	2	5
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	GBT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks	SPLT-100	HT
	To Block:	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-102	--	One 500-bbl Skim Oil Tank
Mole Fraction	%	%	%	%	%	%	%
H2S	0.00728662	3.92276	1.62543	6.71988	0.0773949	0.0773949	0.160303
Nitrogen	4.38025E-08	0.0430566	0.0143152	7.80395E-06	0.000633366	0.000633366	0.00285992
Methane	3.19042E-06	0.0429700	0.0105453	0.00107789	0.000404949	0.000404949	0.00187456
CO2	0.0514454	61.1719	9.33667	88.5884	0.231159	0.231159	1.38150
Ethane	8.88558E-06	2.71774	0.628958	0.00418658	0.0233292	0.0233292	0.0714293
Propane	7.12791E-06	8.52044	7.25894	0.00253876	0.394388	0.394388	0.589831
i-Butane	8.18335E-07	2.10529	4.77974	0.000215237	0.277993	0.277993	0.330165
n-Butane	2.84604E-06	4.62696	15.2090	0.000944211	0.894816	0.894816	1.00729
i-Pentane	5.65670E-07	3.05324	10.2069	0.000139791	1.47343	1.47343	1.53077
n-Pentane	7.05374E-08	3.00010	10.1010	7.41506E-06	1.90773	1.90773	1.95475
IC6	1.53425E-07	4.76839	16.3127	2.19082E-05	7.01055	7.01055	6.99971
n-Hexane	1.15228E-08	1.51904	5.07045	8.44213E-07	3.04866	3.04866	3.02623
IC7	3.15025E-08	1.61090	6.22711	3.18130E-06	7.06829	7.06829	6.96545
n-Heptane	0	0	0	0	0	0	0
Benzene	0.00161578	1.33603	6.71925	0.645589	4.12453	4.12453	4.08931
Toluene	0.000373218	0.502066	2.20056	0.196030	4.85553	4.85553	4.76640
2,2,4-Trimethylpentane	9.11148E-09	0.479516	1.81994	8.17577E-07	2.79666	2.79666	2.75039
nC8	2.47329E-10	0.333498	1.36570	5.85453E-09	6.58327	6.58327	6.44862
Ethylbenzene	5.21274E-05	0.0909822	0.363301	0.0293231	2.45441	2.45441	2.40297
m-Xylene	1.35452E-05	0.0438413	0.179946	0.0119167	1.34238	1.34238	1.31407
o-Xylene	1.36550E-05	0.0132951	0.0605980	0.00529479	0.503086	0.503086	0.492411
p-Xylene	0	0	0	0	0	0	0
Nonane	1.12809E-10	0.0979835	0.509004	2.77280E-09	7.20151	7.20151	7.04555
C10	9.75603E-15	0	0	7.09374E-14	0	0	0
Water	99.9392	0	0	3.79447	0	0	0
C10+ Oil	2.04769E-12	8.73045E-07	3.81714E-06	2.22633E-09	47.7298	47.7298	46.6681
Molar Flow	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
H2S	1.18079	0.0138937	4.15235E-06	0.490850	0.0531559	9.30384E-05	0.112800
Nitrogen	7.09818E-06	0.000152498	3.65698E-08	5.70035E-07	0.000435004	7.61386E-07	0.00201244
Methane	0.000517007	0.000152191	2.69392E-08	7.87342E-05	0.000278124	4.86799E-07	0.00131907
CO2	8.33671	0.216659	2.38516E-05	6.47089	0.158763	0.000277882	0.972118
Ethane	0.00143991	0.00962570	1.60674E-06	0.000305807	0.0160228	2.80446E-05	0.0502626
Propane	0.00115508	0.0301777	1.85438E-05	0.000185443	0.270871	0.000474104	0.415046
i-Butane	0.000132611	0.00745652	1.22104E-05	1.57219E-05	0.190929	0.000334183	0.232327
n-Butane	0.000461200	0.0163878	3.88532E-05	6.89694E-05	0.614572	0.00107568	0.708799
i-Pentane	9.16667E-05	0.0108140	2.60745E-05	1.02110E-05	1.01197	0.00177125	1.07716
n-Pentane	1.14306E-05	0.0106258	2.58040E-05	5.41630E-07	1.31025	0.00229333	1.37550
IC6	2.48625E-05	0.0168887	4.16726E-05	1.60027E-06	4.81494	0.00842756	4.92548
n-Hexane	1.86726E-06	0.00538013	1.29530E-05	6.16651E-08	2.09386	0.00366488	2.12946
IC7	5.10497E-06	0.00570548	1.59078E-05	2.32376E-07	4.85460	0.00849698	4.90137
n-Heptane	0	0	0	0	0	0	0
Benzene	0.261837	0.00473195	1.71651E-05	0.0471567	2.83278	0.00495821	2.87752
Toluene	0.0604799	0.00177822	5.62156E-06	0.0143189	3.33484	0.00583696	3.35397
2,2,4-Trimethylpentane	1.47651E-06	0.00169835	4.64923E-06	5.97195E-08	1.92079	0.00336194	1.93537
nC8	4.00795E-08	0.00118118	3.48882E-06	4.27641E-10	4.52148	0.00791392	4.53769
Ethylbenzene	0.00844724	0.000322241	9.28092E-07	0.00214189	1.68573	0.00295052	1.69089
m-Xylene	0.00219500	0.000155277	4.59692E-07	0.000870447	0.921966	0.00161371	0.924673
o-Xylene	0.00221278	4.70885E-05	1.54804E-07	0.000386755	0.345527	0.000604774	0.346494
p-Xylene	0	0	0	0	0	0	0
Nonane	1.82807E-08	0.000347038	1.30031E-06	2.02538E-10	4.94610	0.00865713	4.95773
C10	1.58096E-12	0	0	5.18159E-15	0	0	0
Water	16195.1	0	0	0.277165	0	0	0
C10+ Oil	3.31827E-10	3.09216E-09	9.75131E-12	1.62621E-10	32.7815	0.0573773	32.8389

Process Streams	Water to Water Tanks Avg	Working Oil Avg	Working Oil Avg - 2	Working Water Avg	1	2	5
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	GBT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks	SPLT-100	SPLT-100
	To Block:	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-102	--	One 500-bbl Skim Oil Tank
Mass Fraction	%	%	%	%	%	%	%
H2S	0.0137725	2.62747	0.777992	5.36361	0.0129796	0.0129796	0.0273296
Nitrogen	6.80521E-08	0.0237050	0.00563195	5.11994E-06	8.73092E-05	8.73092E-05	0.000400776
Methane	2.83855E-06	0.0135479	0.00237589	0.000404979	3.19676E-05	3.19676E-05	0.000150436
CO2	0.125565	52.9094	5.77077	91.3078	0.0500606	0.0500606	0.304143
Ethane	1.48177E-05	1.60606	0.265605	0.00294825	0.00345190	0.00345190	0.0107443
Propane	1.74315E-05	7.38401	4.49536	0.00262182	0.0855773	0.0855773	0.130108
i-Butane	2.63785E-06	2.40485	3.90159	0.000292984	0.0795088	0.0795088	0.0959962
n-Butane	9.17402E-06	5.28533	12.4148	0.00128527	0.255926	0.255926	0.292872
i-Pentane	2.26344E-06	4.32937	10.3423	0.000236208	0.523116	0.523116	0.552484
n-Pentane	2.82244E-07	4.25401	10.2350	1.25294E-05	0.677305	0.677305	0.705506
IC6	7.33258E-07	8.07586	19.7426	4.42155E-05	2.97286	2.97286	3.01748
n-Hexane	5.50703E-08	2.57268	6.13656	1.70381E-06	1.29280	1.29280	1.30457
IC7	1.75064E-07	3.17233	8.76311	7.46561E-06	3.48522	3.48522	3.49145
n-Heptane	0	0	0	0	0	0	0
Benzene	0.00699966	2.05101	7.37112	1.18102	1.58537	1.58537	1.59789
Toluene	0.00190713	0.909152	2.84753	0.423007	2.20149	2.20149	2.19691
2,2,4-Trimethylpentane	5.77218E-08	1.07650	2.91962	2.18720E-06	1.57201	1.57201	1.57163
nC8	1.56684E-09	0.748690	2.19091	1.56622E-08	3.70046	3.70046	3.68487
Ethylbenzene	0.000306919	0.189833	0.541681	0.0729082	1.28224	1.28224	1.27617
m-Xylene	7.97524E-05	0.0914743	0.268299	0.0296293	0.701288	0.701288	0.697882
o-Xylene	8.03986E-05	0.0277400	0.0903514	0.0131648	0.262823	0.262823	0.261511
p-Xylene	0	0	0	0	0	0	0
Nonane	8.02411E-10	0.246980	0.916835	8.32872E-09	4.54504	4.54504	4.52033
C10	7.69837E-14	0	0	2.36379E-13	0	0	0
Water	99.8512	0	0	1.60095	0	0	0
C10+ Oil	3.61237E-11	5.45786E-06	1.70524E-05	1.65854E-08	74.7104	74.7104	74.2596
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
H2S	40.2425	0.473508	0.000141516	16.7286	1.81160	0.00317083	3.84433
Nitrogen	0.000198844	0.00427199	1.02444E-06	1.59686E-05	0.0121860	2.13290E-05	0.0563753
Methane	0.00829407	0.00244152	4.32172E-07	0.00126309	0.00446180	7.80946E-06	0.0211611
CO2	366.894	9.53505	0.00104970	284.781	6.98707	0.0122294	42.7824
Ethane	0.0432966	0.289435	4.83132E-05	0.00919531	0.481790	0.000843275	1.51135
Propane	0.0509338	1.33071	0.000817699	0.00817721	11.9442	0.0209059	18.3017
i-Butane	0.00770764	0.433389	0.000709694	0.000913790	11.0972	0.0194234	13.5034
n-Butane	0.0268060	0.952494	0.00225823	0.00400865	35.7203	0.0625210	41.1970
i-Pentane	0.00661364	0.780216	0.00188125	0.000736710	73.0126	0.127794	77.7155
n-Pentane	0.000824701	0.766635	0.00186173	3.90779E-05	94.5331	0.165461	99.2404
IC6	0.00214254	1.45539	0.00359115	0.000137904	414.929	0.726248	424.455
n-Hexane	0.000160912	0.463635	0.00111623	5.31401E-06	180.439	0.315822	183.507
IC7	0.000511527	0.571700	0.00159400	2.32846E-05	486.440	0.851414	491.126
n-Heptane	0	0	0	0	0	0	0
Benzene	20.4526	0.369621	0.00134080	3.68350	221.274	0.387295	224.768
Toluene	5.57252	0.163843	0.000517962	1.31932	307.267	0.537808	309.029
2,2,4-Trimethylpentane	0.000168660	0.194000	0.000531074	6.82167E-06	219.409	0.384030	221.074
nC8	4.57823E-06	0.134925	0.000398523	4.88488E-08	516.482	0.903996	518.334
Ethylbenzene	0.896801	0.0342107	9.85309E-05	0.227394	178.965	0.313242	179.514
m-Xylene	0.233032	0.0164850	4.88032E-05	0.0924110	97.8805	0.171320	98.1679
o-Xylene	0.234920	0.00499915	1.64348E-05	0.0410599	36.6828	0.0642058	36.7855
p-Xylene	0	0	0	0	0	0	0
Nonane	2.34460E-06	0.0445094	0.000166771	2.59765E-08	634.362	1.11032	635.854
C10	2.24942E-10	0	0	7.37245E-13	0	0	0
Water	291760	0	0	4.99320	0	0	0
C10+ Oil	1.05551E-07	9.83587E-07	3.10180E-09	5.17284E-08	10427.5	18.2512	10445.8

Process Streams		Water to Water Tanks Avg		Working Oil Avg	Working Oil Avg - 2	Working Water Avg	1	2	5
Properties		Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		From Block:	GBT	Two 1,500-bbl Oil Tanks	One 1,000-bbl Oil Tank	Tanks	SPLT-100	SPLT-100	HT
		To Block:	Three 1,500-bbl Water Tanks	MIX-100	MIX-101	MIX-102	--	One 500-bbl Skim Oil Tank	--
Property	Units								
Temperature	°F	64.6875		108.140		109.578		74.9451	
Pressure	psig	0*		-1.43595		-1.43595		-1.43595	
Mole Fraction Vapor	%	0		100		77.9021		99.4548	
Mole Fraction Light Liquid	%	100		0		22.0979		0.545203	
Mole Fraction Heavy Liquid	%	0		0		0		0	
Phase Mole Fraction	%	100		100		100		100	
Molecular Weight	lb/lbmol	18.0311		50.8822		71.2040		42.6987	
Mass Density	lb/ft^3	62.3471		0.111726		0.203082		0.0997652	
Molar Flow	lbmol/h	16205.0		0.354180		0.000255461		7.30445	
Mass Flow	lb/h	292194		18.0215		0.0181899		311.891	
Vapor Volumetric Flow	ft^3/h	4686.58		161.301		0.0895688		3126.25	
Liquid Volumetric Flow	gpm	584.300		20.1102		0.0111670		389.766	
Std Vapor Volumetric Flow	MMSCFD	147.589		0.00322574		2.32664E-06		0.0665261	
Std Liquid Volumetric Flow	sgpm	584.309		0.0510218		5.52300E-05		0.760804	
Compressibility		0.000755290		0.991033		0.761045		0.989178	
Specific Gravity		0.999652		1.75683				0.812068	
API Gravity		9.95863						38.4655	
Enthalpy	Btu/h	-1.99516E+09		-43261.2		-17.2011		-1.12691E+06	
Mass Enthalpy	Btu/lb	-6828.19		-2400.54		-945.640		-3613.17	
Mass Cp	Btu/(lb**F)	0.978953		0.297412		0.425702		0.210572	
Ideal Gas CpCv Ratio		1.32937		1.15197		1.07758		1.28772	
Dynamic Viscosity	cP	1.06314		0.0120622				1.88878	
Kinematic Viscosity	cSt	1.06452		6.73986				2.32810	
Thermal Conductivity	Btu/(h*ft**F)	0.343798		0.00989095				0.0712611	
Surface Tension	lbf/ft	0.00506681?						0.00181859	
Net Ideal Gas Heating Value	Btu/ft^3	0.121141		1179.04		3377.61		73.4736	
Net Liquid Heating Value	Btu/lb	-1055.77		8682.32		17858.2		553.649	
Gross Ideal Gas Heating	Btu/ft^3	50.4076		1273.69		3639.00		80.2652	
Gross Liquid Heating Value	Btu/lb	2.55959		9388.29		19251.3		614.019	

Tank Losses Report
Two 1,500-bbl Oil Tanks

Client Name:Apache Corporation

Location:ASAU CTB and Satellite

Flowsheet:Emissions Ipy

Job:

Modified:2/13/2024 11:09

Status:Solved 8:44 AM, 8/14/2024

StreamConnection TypeOther BlockStreamConnection TypeOther Block

Oil with H2S AvgInletFlash Oil AvgFlashing Losses StreamMIX-100

Working Oil AvgWorking Losses StreamBreathing Oil AvgStanding Losses StreamMIX-100

Loading Oil AvgLoading Losses StreamStable Oil AvgResidual Liquid StreamSPL-T-100

Working and Standing Properties : Scalar Data

Tank GeometryVertical CylinderRoof TypeCone

Shell Length24" ftSlope of Coned Roof0.0625

Shell Diameter21.5" ftBreather Vent Pressure0.0300000 psig

Number of Storage Tanks2"Breather Vacuum Pressure-0.0300000 psig

Maximum Fraction Fill of Tank90 %LocationMidland, TX

Average Fraction Fill of Tank50 %Time FrameYear

Minimum Fraction Fill of Tank10 %Known Liquid Bulk Temperature?TRUE

Material CategoryHeavy Crude*Liquid Bulk Temperature120" °F

InsulationUninsulatedUse AP 42 Rule's Vapor Pressure?TRUE

Botled or Riveted Construction?FALSEFlashing Temperature108.140 °F

Vapor Balanced Tank?FALSEAverage Daily Maximum Ambient Temperature76.7 °F

Known Sum of Increases in Liquid Level?FALSEAverage Daily Minimum Ambient Temperature51.4 °F

Sum of Increases in Liquid Level3319.31 ft/yrAtmospheric Pressure at Tank Location13.26 psia

Shell ColorBeige/Cream*Daily Solar Insolation1698 Btu/(day/ft^2)

Shell Paint ConditionAverage*Average Wind Speed11 mph

Roof ColorBeige/Cream*Include Short Term EmissionsFALSE

Roof Paint ConditionAverage*

Composition Subset Properties : Scalar Data

Component SubsetAll Selected*Species in ResultsSelected Species

Atomic BasisFALSEFraction DenominatorSelected Species

Composition Subset Properties : Tabulated Data

IndexSelected Components

H2STRUE

NitrogenTRUE

MethaneTRUE

CO2TRUE

EthaneTRUE

PropaneTRUE

i-ButaneTRUE

n-ButaneTRUE

i-PentaneTRUE

n-PentaneTRUE

iC6TRUE

n-HexaneTRUE

iC7TRUE

n-HeptaneTRUE

BenzeneTRUE

TolueneTRUE

2,2,4-TrimethylpentaneTRUE

nC8TRUE

EthylbenzeneTRUE

m-XyleneTRUE

o-XyleneTRUE

p-XyleneTRUE

NonaneTRUE

C10TRUE

WaterTRUE

C10+ OilTRUE

Details Properties : Scalar Data

Vapor Space Volume4437.91 ft^3Roof Outage0.223958 ft

Vapor Density0.0873351 lb/ft^3Tank Roof Height0.617875 ft

Vapor Space Expansion Factor0.337073 1/dayTank Shell Radius10.75 ft

Vented Vapor Saturation Factor0.134374Vapor Molecular Weight50.8822 lb/lbmol

Vapor Space Outage12.2240 ftAverage Vapor Temperature539.810 °R

Average Daily Vapor Temperature Range32.2817 °RAverage Daily Ambient Temperature523.72 °R

Average Daily Vapor Pressure Range0.980707 psiNet Working Loss Throughput1.20508E+06 ft^3/yr

Breather Vent Pressure Setting Range0.0600000 psiWorking Loss Turnover (Saturation) Factor1

Vapor Pressure at Average Daily Liquid Surface Temperature9.94323 psiaNumber of Turnovers per Year172.881

Average Daily Liquid Surface Temperature559.740 °RAnnual Net Throughput429311 bbl/yr

Average Daily Ambient Temperature Range25.3 °RMaximum Liquid Height21.6 ft

Tank Roof Surface Solar Absorptance0.42Minimum Liquid Height2.4 ft

Tank Shell Surface Solar Absorptance0.42Working Loss Product Factor0.75

Vapor Pressure at Maximum Liquid Surface Temperature10.4645 psiaVent Setting Correction Factor1

Vapor Pressure at Minimum Liquid Surface Temperature9.47780 psiaSaturation Factor0.6

Maximum Liquid Surface Temperature567.810 °RVapor Pressure of Liquid Loaded7.38465 psia

Minimum Liquid Surface Temperature551.670 °RCollection Efficiency70 %

Liquid Height12 ftAnnual Net Throughput Per Tank214655 bbl/yr

Loading Properties : Scalar Data

Cargo CarrierTank Truck or Rail Tank CarTruck Annual Leak Test PassedNone

Land Based Mode of OperationSubmerged Loading: Dedicated Normal Service*Overall Reduction Efficiency0 %

Control Efficiency0" %

Results Properties : Scalar Data

Flashing Losses698.788 ton/yrStanding Losses per Tank3.20383 ton/yr

Working Losses78.9340 ton/yrFlashing Losses per Tank349.394 ton/yr

Standing Losses6.40766 ton/yrWorking and Standing Losses85.3417 ton/yr

Loading Losses48.7455 ton/yrWorking and Standing Losses per Tank42.6708 ton/yr

Working Losses per Tank39.4670 ton/yrLoading Losses per Tank24.3727 ton/yr

Results Properties : Tabulated Data

Flashing Losses Mass FlowsWorking Losses Mass FlowsStanding Losses Mass FlowsLoading Losses Mass FlowsWorking and Standing Losses Mass Flows

Indexton/yrton/yrton/yrton/yrton/yr

H2S13.47152.073970.1683591.280772.24233

Nitrogen2.500670.01871130.001518940.01155510.0202303

Methane0.3958900.01069390.000681020.00603970.0115620

CO2410.65841.76353.3902625.790945.1538

Ethane7.368441.267730.1029110.7828811.37064

Propane37.73565.828490.4731423.599373.630164

i-Butane13.57341.698250.1540951.172262.05234

n-Butane30.49524.171920.3386662.576384.51059

i-Pentane25.50513.417342.110373.69476

n-Pentane25.38653.357862.073643.63044

iC649.60926.374613.336626.89208

n-Hexane15.56072.030720.1648491.254062.19557

iC722.43892.504040.2032721.546372.70732

n-Heptane00000

Benzene18.59911.618940.1314220.9997731.75036

Toluene7.356920.7176300.06825540.4431700.778986

2,2,4-Trimethylpentane7.503030.8497210.06897820.5247430.918700

nC85.778410.5909710.04797350.3649530.638945

Ethylbenzene1.430660.1498430.01216390.09253510.162007

m-Xylene0.7083400.07220440.005861370.04458960.0780648

o-Xylene0.2392480.02189630.001777480.01352200.0236738

p-Xylene00000

Nonane2.472280.1949510.01582570.1203920.210777

C1000000

Water00000

C10+ Oil6.00419E-054.30811E-063.49722E-072.66046E-064.65783E-06

Notes:

Tank Losses Report
One 1,000-bbl Oil Tank

Client Name:

Apache Corporation

Location:

ASAU CTB and Satellite

Flowsheet:

Emissions Ipy

Job:

Modified:

Status:

8/14/2024 8:41

Solved 9:08 PM, 8/22/2024

Stream

Connection Type

Other Block

Stream

Connection Type

Other Block

Oil with H2S Avg - 2

Inlet

MIX-101

Flash Oil Avg - 2

Flashing Losses Stream

MIX-101

Working Oil Avg - 2

Working Losses Stream

Standing Losses Stream

Breathing Oil Avg - 2

Standing Losses Stream

MIX-101

Loading Oil Avg - 2

Loading Losses Stream

Residual Liquid Stream

Working and Standing Properties : Scalar Data

Tank Geometry

Vertical Cylinder

Roof Type

Cone

Shell Length

16' ft

Slope of Coned Roof

0.0625

Shell Diameter

21.5' 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

Midland, TX

Average Fraction Fill of Tank

50 %

Time Frame

Year

Minimum Fraction Fill of Tank

10 %

Known Liquid Bulk Temperature?

TRUE

Material Category

Heavy Crude*

Liquid Bulk Temperature

120* °F

Insulation

Uninsulated

Use AP 42 Raoult's Vapor Pressure?

FALSE

Botled or Riveted Construction?

FALSE

Flashing Temperature

109.578 °F

Vapor Balanced Tank?

FALSE

Average Daily Maximum Ambient Temperature

76.7 °F

Known Sum of Increases in Liquid Level?

FALSE

Average Daily Minimum Ambient Temperature

51.4 °F

Sum of Increases in Liquid Level

16.2349 ft/yr

Atmospheric Pressure at Tank Location

13.26 psia

Shell Color

Tan*

Daily Solar Insolation

1698 Btu/(day*ft^2)

Shell Paint Condition

New*

Average Wind Speed

11 mph

Roof Color

Tan*

Include Short Term Emissions

FALSE

Roof Paint Condition

New*

Composition Subset Properties : Scalar Data

Component Subset

All Selected*

Species in Results

Selected Species

Atomic Basis

FALSE

Fraction Denominator

Selected Species

Composition Subset Properties : Tabulated Data

Index

Selected Components

H2S

TRUE

Nitrogen

TRUE

Methane

TRUE

CO2

TRUE

Ethane

TRUE

Propane

TRUE

i-Butane

TRUE

n-Butane

TRUE

i-Pentane

TRUE

n-Pentane

TRUE

iC6

TRUE

n-Hexane

TRUE

iC7

TRUE

n-Heptane

TRUE

Benzene

TRUE

Toluene

TRUE

2,2,4-Trimethylpentane

TRUE

nC8

TRUE

Ethylbenzene

TRUE

m-Xylene

TRUE

o-Xylene

TRUE

p-Xylene

TRUE

Nonane

TRUE

C10

TRUE

Water

TRUE

C10+ Oil

TRUE

Details Properties : Scalar Data

Vapor Space Volume

2985.71 ft^3

Roof Outage

0.223958 ft

Vapor Density

0.105880 lb/ft^3

Tank Roof Height

0.671875 ft

Vapor Space Expansion Factor

1 1/day

Tank Shell Radius

10.75 ft

Vented Vapor Saturation Factor

0.156725

Vapor Molecular Weight

49.9537 lb/lbmol

Vapor Space Outage

8.22396 ft

Average Vapor Temperature

542.706 °R

Average Daily Vapor Temperature Range

32.2414 °R

Average Daily Ambient Temperature

523.72 °R

Average Daily Vapor Pressure Range

1.77732 psia

Net Working Loss Throughput

5894.10 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

12.3445 psia

Number of Turnovers per Year

1.26835

Average Daily Liquid Surface Temperature

561.188 °R

Annual Net Throughput

1049.89 bbl/yr

Average Daily Ambient Temperature Range

25.3 °R

Maximum Liquid Height

14.4 ft

Tank Roof Surface Solar Absorptance

0.43

Minimum Liquid Height

1.6 ft

Tank Shell Surface Solar Absorptance

0.43

Working Loss Product Factor

0.75

Vapor Pressure at Maximum Liquid Surface Temperature

13.2600 psia

Vent Setting Correction Factor

1

Vapor Pressure at Minimum Liquid Surface Temperature

11.4827 psia

Saturation Factor

0.5

Maximum Liquid Surface Temperature

569.248 °R

Vapor Pressure of Liquid Loaded

2.21633 psia

Minimum Liquid Surface Temperature

553.128 °R

Collection Efficiency

70 %

Liquid Height

8 ft

Annual Net Throughput Per Tank

1049.89 bbl/yr

Loading Properties : Scalar Data

Cargo Carrier

Tank, Truck or Rail Tank Car

Truck Annual Leak Test Passed

None

and Based Mode of Operation

Submerged Loading of a Clean Cargo Tank

Overall Reduction Efficiency

0 %

Control Efficiency

0* %

Results Properties : Scalar Data

Flashing Losses

1.73393 ton/yr

Standing Losses per Tank

3.07625 ton/yr

Working Losses

0.0796716 ton/yr

Flashing Losses per Tank

1.73393 ton/yr

Standing Losses

3.07825 ton/yr

Working and Standing Losses

3.15792 ton/yr

Loading Losses

0.0453827 ton/yr

Working and Standing Losses per Tank

3.15792 ton/yr

Working Losses per Tank

0.0796716 ton/yr

Loading Losses per Tank

0.0453827 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

H2S

0.0332662

0.000619839

0.0239485

0.000353074

0.0245684

Nitrogen

0.00611428

4.48707E-06

0.000173366

2.55504E-06

0.000177853

Methane

0.000968692

1.89291E-06

7.31359E-05

1.07825E-06

7.50288E-05

CO2

1.00676

0.00459767

0.177639

0.00261894

0.182236

Ethane

0.0181387

0.000211612

0.00817600

0.000120539

0.00838761

Propane

0.0937645

0.00358152

0.138378

0.00204012

0.141960

i-Butane

0.0339899

0.00310846

0.120101

0.00177065

0.123209

n-Butane

0.0765775

0.00989105

0.382158

0.00565317

0.392049

i-Pentane

0.0644343

0.00823986

0.318361

0.00469361

0.326601

n-Pentane

0.0842511

0.00815437

0.315058

0.00464492

0.323213

iC6

0.126065

0.0157282

0.607726

0.00895973

0.623455

n-Hexane

0.0396301

0.00488909

0.188899

0.00278494

0.193768

iC7

0.0572903

0.00698171

0.269750

0.00397694

0.276732

n-Heptane

0

0

0

0

0

Benzene

0.0473234

0.00587269

0.226901

0.00334522

0.232774

Toluene

0.0188239

0.00226867

0.0876941

0.00129229

0.0899228

2,2,4-Trimethylpentane

0.0191734

0.00232611

0.0898731

0.00132500

0.0921992

nC8

0.0148514

0.00174553

0.0674416

0.000994294

0.0691871

Ethylbenzene

0.00367832

0.000431565

0.0166743

0.000245830

0.0171058

m-Xylene

0.00162416

0.000213758

0.00825891

0.000121761

0.00847267

o-Xylene

0.000615463

7.19844E-05

0.00278124

4.10040E-05

0.00285323

p-Xylene

0

0

0

0

0

Nonane

0.00638440

0.000730457

0.0282225

0.000416085

0.0289529

C10

0

0

0

0

0

Water

0

0

0

0

0

C10+ Oil

1.64014E-07

1.35859E-08

5.24915E-07

7.73884E-09

5.38501E-07

Notes:

Tank Losses Report

One 500-bbl Skim Oil Tank

Client Name:

Apache Corporation

Job:

Location:

ASAU CTB and Satellite

Modified:

10/3/2024 11:11

Flowsheet:

Emissions Ipy

Status:

Solved 11:15 AM, 10/3/2024

Stream

Connection Type

Other Block

Stream

Connection Type

Other Block

2

Inlet

SPLT-100

Skim Flash Avg

Flashing Losses Stream

MIX-103

Skim Working Avg

Working Losses Stream

Skim Breathing Avg

Standing Losses Stream

MIX-103

Skim Loading Avg

Loading Losses Stream

Stable Skim Avg

Residual Liquid Stream

Working and Standing Properties : Scalar Data

Tank Geometry

Vertical Cylinder

Roof Type

Cone

Shell Length

16' 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

Midland, TX

Average Fraction Fill of Tank

50 %

Time Frame

Year

Minimum Fraction Fill of Tank

10 %

Known Liquid Bulk Temperature?

FALSE

Material Category

Heavy Crude*

Liquid Bulk Temperature

65.9857 °F

Insulation

Uninsulated

Use AP 42 Raoult's Vapor Pressure?

FALSE

Bolted or Riveted Construction?

FALSE

Flashing Temperature

75.6400 °F

Vapor Balanced Tank?

FALSE

Average Daily Maximum Ambient Temperature

76.7 °F

Known Sum of Increases in Liquid Level?

FALSE

Average Daily Minimum Ambient Temperature

51.4 °F

Sum of Increases in Liquid Level

21.9275 ft/yr

Atmospheric Pressure at Tank Location

13.26 psia

Shell Color

Rust*

Daily Solar Insolation

1698 Btu/(day*ft^2)

Shell Paint Condition

New*

Average Wind Speed

11 mph

Roof Color

Rust*

Include Short Term Emissions

FALSE

Roof Paint Condition

New*

Composition Subset Properties : Scalar Data

Component Subset

All Selected*

Species in Results

Selected Species

Atomic Basis

FALSE

Fraction Denominator

Selected Species

Composition Subset Properties : Tabulated Data

Index

Selected Components

H2S

TRUE

Nitrogen

TRUE

Methane

TRUE

CO2

TRUE

Ethane

TRUE

Propane

TRUE

i-Butane

TRUE

n-Butane

TRUE

i-Pentane

TRUE

n-Pentane

TRUE

iC6

TRUE

n-Hexane

TRUE

iC7

TRUE

n-Heptane

TRUE

Benzene

TRUE

Toluene

TRUE

2,2,4-Trimethylpentane

TRUE

nC8

TRUE

Ethylbenzene

TRUE

m-Xylene

TRUE

o-Xylene

TRUE

p-Xylene

TRUE

Nonane

TRUE

C10

TRUE

Water

TRUE

C10+ Oil

TRUE

Details Properties : Scalar Data

Vapor Space Volume

1540.00 ft^3

Roof Outage

0.161458 ft

Vapor Density

0.0435290 lb/ft^3

Tank Roof Height

0.484375 ft

Vapor Space Expansion Factor

0.154566 1/day

Tank Shell Radius

7.75 ft

Vented Vapor Saturation Factor

0.322676

Vapor Molecular Weight

50.9629 lb/lbmol

Vapor Space Outage

8.16146 ft

Average Vapor Temperature

529.416 °R

Average Daily Vapor Temperature Range

31.0966 °R

Average Daily Ambient Temperature

523.72 °R

Average Daily Vapor Pressure Range

0.863895 psi

Net Working Loss Throughput

4137.54 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

4.85272 psia

Number of Turnovers per Year

1.71308

Average Daily Liquid Surface Temperature

527.536 °R

Annual Net Throughput

737.004 bbl/yr

Average Daily Ambient Temperature Range

25.3 °R

Maximum Liquid Height

14.4 ft

Tank Roof Surface Solar Absorptance

0.38

Minimum Liquid Height

1.6 ft

Tank Shell Surface Solar Absorptance

0.38

Working Loss Product Factor

0.75

Vapor Pressure at Maximum Liquid Surface Temperature

5.30184 psia

Vent Settling Correction Factor

1

Vapor Pressure at Minimum Liquid Surface Temperature

4.43794 psia

Saturation Factor

0.5

Maximum Liquid Surface Temperature

535.310 °R

Vapor Pressure of Liquid Loaded

1.27093 psia

Minimum Liquid Surface Temperature

519.762 °R

Collection Efficiency

70 %

Liquid Height

8 ft

Annual Net Throughput Per Tank

737.004 bbl/yr

Loading Properties : Scalar Data

Cargo Carrier

Tank, Truck or Rail Tank Car

Truck Annual Leak Test Passed

None

and 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

0.340160 ton/yr

Working Losses

0.0376524 ton/yr

Flashing Losses per Tank

0 ton/yr

Standing Losses

0.340160 ton/yr

Working and Standing Losses

0.377813 ton/yr

Loading Losses

0.0167426 ton/yr

Working and Standing Losses per Tank

0.377813 ton/yr

Working Losses per Tank

0.0376524 ton/yr

Loading Losses per Tank

0.0167426 ton/yr

Results Properties : Tabulated Data

Flashing Losses Mass Flows

Working Losses Mass Flows

Standing Losses Mass Flows

Loading Losses Mass Flows

Working and Standing Losses Mass Flows

Index

ton/yr

ton/yr

ton/yr

ton/yr

ton/yr

H2S

0

0.00138409

0.0125042

0.000615450

0.0138882

Nitrogen

0

9.31023E-06

8.41109E-05

4.13991E-06

9.34211E-05

Methane

0

3.40887E-06

3.07860E-05

1.51580E-06

3.42054E-05

CO2

0

0.00533822

0.0482267

0.00237370

0.0535649

Ethane

0

0.000368094

0.00332545

0.000163678

0.00369354

Propane

0

0.00540840

0.0488607

0.00240491

0.0542691

i-Butane

0

0.00186429

0.0168425

0.000623981

0.0187068

n-Butane

0

0.00407357

0.0368016

0.00181136

0.0408752

i-Pentane

0

0.00310527

0.0280538

0.00138080

0.0311590

n-Pentane

0

0.00297396

0.0268674

0.00132241

0.0298414

iC6

0

0.00532914

0.0481447

0.00236967

0.0534739

n-Hexane

0

0.00157146

0.0141970

0.000698770

0.0157684

iC7

0

0.00212532

0.0192006

0.000945049

0.0213260

n-Heptane

0

0

0

0

0

Benzene

0

0.00194873

0.0173972

0.000865635

0.0195339

Toluene

0

0.000659004

0.00594456

0.000292589

0.00660259

2,2,4-Trimethylpentane

0

0.000693571

0.00626588

0.000308405

0.00695945

nC8

0

0.000449936

0.00406483

0.000200070

0.00451477

Ethylbenzene

0

0.000110608

0.000999260

4.91832E-05

0.00110987

m-Xylene

0

5.45060E-05

0.000494240

2.42367E-05

0.000546926

o-Xylene

0

1.81984E-05

0.000164409

8.09215E-06

0.000182607

p-Xylene

0

0

0

0

0

Nonane

0

0.000166274

0.00150216

7.39358E-05

0.00166844

C10

0

0

0

0

0

Water

0

0

0

0

0

C10+ Oil

0

6.99527E-10

6.31969E-09

3.11053E-10

7.01922E-09

Notes:

Tank Losses Report
Three 1,500-bbl Water Tanks

Client Name:Apache Corporation

Location:ASAU CTB and Satellite

Flowsheet:Emissions Ipy

Job:

Modified:10/3/2024 11:14

Status:Solved 11:15 AM, 10/3/2024

StreamConnections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Water to Water Tanks Avg	Inlet	GBT	Flash Water Avg	Flashing Losses Stream	MIX-102
Working Water Avg	Working Losses Stream	MIX-102	Breathing Water Avg	Standing Losses Stream	MIX-102
Loading Water Avg	Loading Losses Stream		Water Leaving Tanks Avg	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	21.5" ft	Breather Vent Pressure	0.0300000 psig
Number of Storage Tanks	3	Breather Vacuum Pressure	-0.0300000 psig
Maximum Fraction Fill of Tank	90 %	Location	Midland, TX
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	65.7820 °F
Insulation	Uninsulated	Use AP 42 Raoult's Vapor Pressure?	FALSE
Bolted or Riveted Construction?	FALSE	Flashing Temperature	74.9451 °F
Vapor Balanced Tank?	FALSE	Average Daily Maximum Ambient Temperature	76.7 °F
Known Sum of Increases in Liquid Level?	FALSE	Average Daily Minimum Ambient Temperature	51.4 °F
Sum of Increases in Liquid Level	37698.3 ft/yr	Atmospheric Pressure at Tank Location	13.26 psia
Shell Color	White*	Daily Solar Insolation	1698 Btu/(day/ft^2)
Shell Paint Condition	Aged*	Average Wind Speed	11 mph
Roof Color	White*	Include Short Term Emissions	FALSE
Roof Paint Condition	Aged*		

Composition Subset Properties : Scalar Data

Component Subset	All Selected*	Species in Results	Selected Species
Atomic Basis	FALSE	Fraction Denominator	Selected Species

Composition Subset Properties : Tabulated Data

Index	Selected Components
H2S	TRUE
Nitrogen	TRUE
Methane	TRUE
CO2	TRUE
Ethane	TRUE
Propane	TRUE
i-Butane	TRUE
n-Butane	TRUE
i-Pentane	TRUE
n-Pentane	TRUE
iC6	TRUE
n-Hexane	TRUE
iC7	TRUE
n-Heptane	TRUE
Benzene	TRUE
Toluene	TRUE
2,2,4-Trimethylpentane	TRUE
nC8	TRUE
Ethylbenzene	TRUE
m-Xylene	TRUE
o-Xylene	TRUE
p-Xylene	TRUE
Nonane	TRUE
C10	TRUE
Water	TRUE
C10+ Oil	TRUE

Details Properties : Scalar Data

Vapor Space Volume	4437.91 ft^3	Roof Outage	0.223958 ft
Vapor Density	0.0915281 lb/ft^3	Tank Roof Height	0.671875 ft
Vapor Space Expansion Factor	1 1/day	Tank Shell Radius	10.75 ft
Vented Vapor Saturation Factor	0.113409	Vapor Molecular Weight	43.0404 lb/lbmol
Vapor Space Outage	12.2240 ft	Average Vapor Temperature	528.745 °R
Average Daily Vapor Temperature Range	30.0668 °R	Average Daily Ambient Temperature	523.72 °R
Average Daily Vapor Pressure Range	2.32786 psi	Net Working Loss Throughput	1.36856E+07 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	12.0667 psia	Number of Turnovers per Year	1963.35
Average Daily Liquid Surface Temperature	527.098 °R	Annual Net Throughput	7.31331E+06 bbl/yr
Average Daily Ambient Temperature Range	25.3 °R	Maximum Liquid Height	21.6 ft
Tank Roof Surface Solar Absorptance	0.34	Minimum Liquid Height	2.4 ft
Tank Shell Surface Solar Absorptance	0.34	Working Loss Product Factor	1
Vapor Pressure at Maximum Liquid Surface Temperature	13.2600 psia	Vent Setting Correction Factor	1
Vapor Pressure at Minimum Liquid Surface Temperature	10.9321 psia	Saturation Factor	0.6
Maximum Liquid Surface Temperature	534.615 °R	Vapor Pressure of Liquid Loaded	0.688004 psia
Minimum Liquid Surface Temperature	519.582 °R	Collection Efficiency	70 %
Liquid Height	12 ft	Annual Net Throughput Per Tank	2.43777E+06 bbl/yr

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: Dedicated Normal Service*	Overall Reduction Efficiency	0 %
Control Efficiency	0* %		

Results Properties : Scalar Data

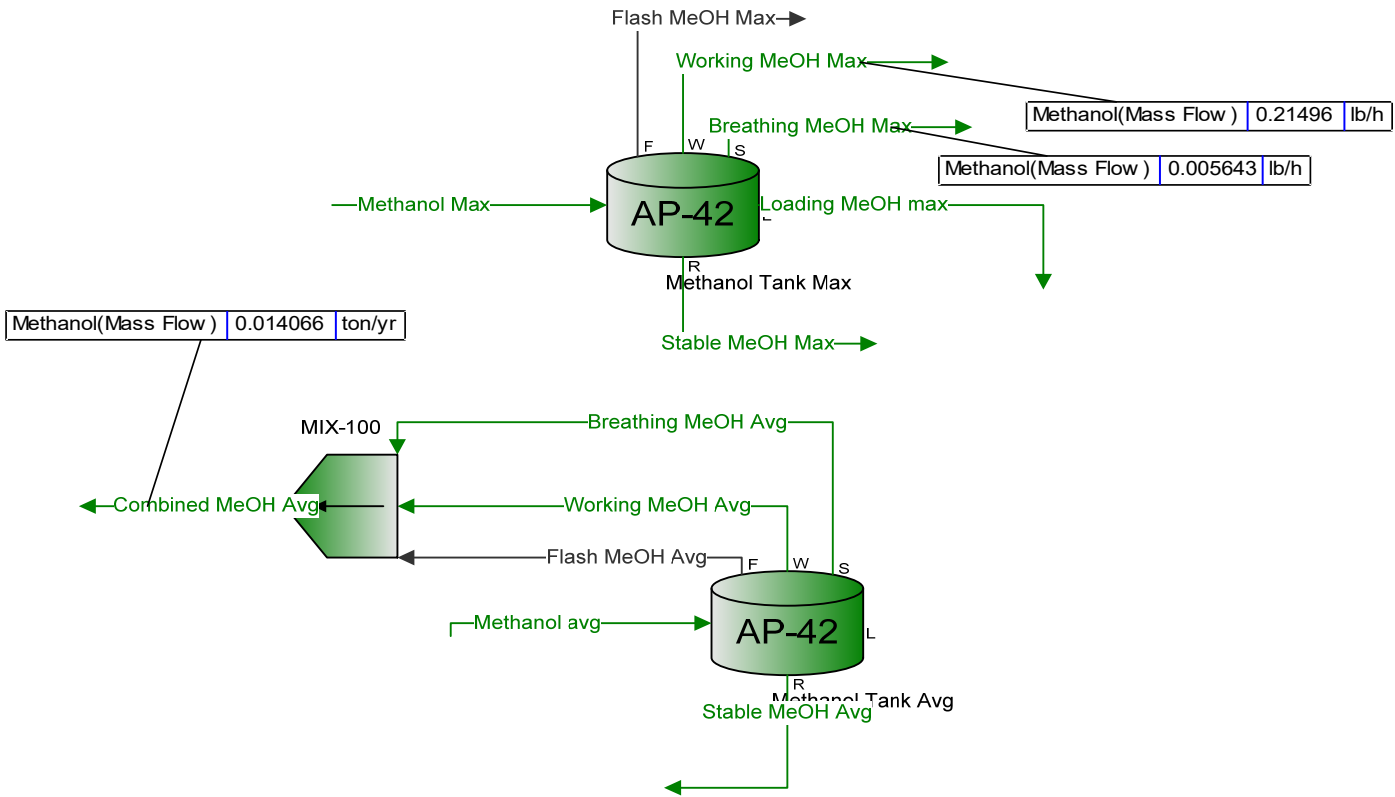
Flashing Losses	367.811 ton/yr	Standing Losses per Tank	6.11236 ton/yr
Working Losses	1363.08 ton/yr	Flashing Losses per Tank	122.604 ton/yr
Standing Losses	18.3371 ton/yr	Working and Standing Losses	1384.42 ton/yr
Loading Losses	46.4267 ton/yr	Working and Standing Losses per Tank	461.473 ton/yr
Working Losses per Tank	455.360 ton/yr	Loading Losses per Tank	15.4756 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
H2S	14.3525	73.2713	0.983530	2.49015	74.2548
Nitrogen	0.000800596	6.99426E-05	9.38849E-07	2.37702E-06	7.08814E-05
Methane	0.0307214	0.0053204	7.42613E-05	0.000188018	0.00550800
CO2	342.915	1247.34	16.7432	42.3912	1264.08
Ethane	0.148823	0.0402755	0.000540623	0.00136877	0.0408161
Propane	0.186793	0.0358162	0.000480765	0.00121722	0.0362699
i-Butane	0.0297033	0.00400240	5.37247E-05	0.000136023	0.00413819
n-Butane	0.0996165	0.0175579	0.000235682	0.000596711	0.0177536
i-Pentane	0.0256976	0.00322679	4.3136E-05	0.000109663	0.00327010
n-Pentane	0.00343873	0.000171161	2.29752E-06	5.81697E-06	0.000173459
iC6	0.00877219	0.000604020	8.10784E-06	2.05278E-05	0.000612128
n-Hexane	0.000681207	2.32764E-05	3.12428E-07	7.91020E-07	2.35878E-05
iC7	0.00213713	0.000101986	1.36898E-06	3.46604E-06	0.000103355
n-Heptane	0	0	0	0	0
Benzene	3.40740	16.1337	0.216565	0.548310	16.3503
Toluene	1.21566	5.77862	0.0775672	0.196388	5.85619
2,2,4-Trimethylpentane	0.000708450	2.98789E-05	4.01069E-07	1.01544E-06	3.02800E-05
nC8	1.98358E-05	2.13958E-07	2.87198E-09	7.27142E-09	2.16830E-07
Ethylbenzene	0.216111	0.965985	0.0133692	0.0339488	1.00935
m-Xylene	0.0847740	0.404760	0.00543315	0.0137559	0.410149
o-Xylene	0.0387966	0.179842	0.00241404	0.00611199	0.182256
p-Xylene	0	0	0	0	0
Nonane	0.01540E-05	1.13777E-07	1.52724E-09	3.86675E-09	1.15304E-07
C10	9.81973E-10	3.22913E-12	4.33451E-14	1.09743E-13	3.27248E-12
Water	5.04239	21.8702	0.293567	0.743266	22.1638
C10+ Oil	2.32704E-07	2.26570E-07	3.04128E-09	7.70006E-09	2.29611E-07

Notes:

ASAU CTB and Satellite
Miscellaneous Tanks



Process Streams		Breathing MeOH Avg		Breathing MeOH Max		Combined MeOH Avg		Flash MeOH Avg		Flash MeOH Max		Loading MeOH max		Methanol avg		Methanol Max		Stable MeOH Avg		Stable MeOH Max		Working MeOH Avg		Working MeOH Max	
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	
Phase: Total	From Block:	Methanol Tank Avg	Methanol Tank Avg	MIX-100	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Avg	Methanol Tank Max		
	To Block:	MIX-100	--	--	--	MIX-100	--	--	--	--	--	--	--	Methanol Tank Avg	Methanol Tank Avg	--	--	--	--	--	MIX-100	--			
Property	Units																								
Temperature	°F	78.8385	99.8734	78.8385	78.8385	78.8385	99.8734	99.8734	99.8734	99.8734	70°	70°	78.8385	99.8734	78.8385	99.8734	78.8385	99.8734	78.8385	99.8734	78.8385	99.8734	78.8385		
Pressure	psig	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	0°	0°	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595	-1.43595		
Mole Fraction Vapor	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mole Fraction Light Liquid	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
Mole Fraction Heavy Liquid	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Phase Mole Fraction	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
Molecular Weight	lb/mol	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419	32.0419		
Mass Density	lb/ft³	50.0968	49.2151	50.0968	50.0968	49.2151	50.0968	50.4487	50.4487	50.4487	50.4487	50.4487	50.0968	49.2151	50.0968	49.2151	50.0968	49.2151	50.0968	49.2151	50.0968	49.2151	50.0968		
Molar Flow	lbmol/h	6.89871E-05	0.00017614	0.000100228	0.00017614	0.000100228	0	0	0.0219229	0.141852	0.103552	0.141752	103.545	3.12410E-05	0.00670859	0.00670859	3.12410E-05	0.00670859	0.00670859	0.00670859	0.00670859	0.00670859	0.00670859		
Mass Flow	lb/h	0.00221047	0.00564302	0.00321149	0.00564302	0.00321149	0	0	0.702452	4.54521	3.3318	4.54519	3317.78	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012	0.00010012		
Vapor Volumetric Flow	ft³/h	4.41328E-05	0.000114680	0.000114680	0.000114680	0.000114680	0	0	0.0142731	0.0900956	0.067968	0.0900956	67.4139	1.98957E-05	0.000436768	0.000436768	1.98957E-05	0.000436768	0.000436768	0.000436768	0.000436768	0.000436768	0.000436768		
Liquid Volumetric Flow	ft³/h	0.002285E-06	0.00012395E-06	0.00012395E-06	0.00012395E-06	0.00012395E-06	0	0	0.01177950	0.01177950	0.01177950	0.01177950	0.0113609	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06	0.000445E-06		
Std Vapor Volumetric Flow	MMSCFD	6.28308E-07	0.160398E-06	0.160398E-06	0.160398E-06	0.160398E-06	0	0	0.000195966	0.00129193	0.943112	0.943112	0.00129102	0.943050	2.94531E-07	0.943050	2.94531E-07	0.943050	2.94531E-07	0.943050	2.94531E-07	0.943050	2.94531E-07		
Sid Liquid Volumetric Flow	sgpm	5.51772E-06	1.41727E-05	0.86584E-06	5.51772E-06	1.41727E-05	0	0	0.00176425	0.0114155°	8.33333°	8.33333°	0.0114075	8.33278	0.0114075	8.33278	0.0114075	8.33278	0.0114075	8.33278	0.0114075	8.33278	0.0114075		
Compressibility		0.00146785	0.00143769	0.00146785	0.00146785	0.00143769	0.00146785	0.00164209	0.00164209	0.00164209	0.00164209	0.00164209	0.00146785	0.00143769	0.00146785	0.00143769	0.00146785	0.00143769	0.00146785	0.00143769	0.00146785	0.00143769	0.00146785		
Specific Gravity		0.803076	0.789099	0.803076	0.803076	0.789099	0.803076	0.789099	0.803076	0.789099	0.803076	0.803076	0.803076	0.789099	0.803076	0.789099	0.803076	0.789099	0.803076	0.789099	0.803076	0.789099	0.803076		
API Gravity		42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370	42.0370		
Enthalpy	Btu/h	-7.11378	-18.0824	-18.0824	-18.0824	-18.0824	-18.0824	-2250.93	-2250.93	-14653.5	-14653.5	-14653.5	-10697.1E+07	-14617.1	-10697.1E+07	-14617.1	-10697.1E+07	-14617.1	-10697.1E+07	-14617.1	-10697.1E+07	-14617.1	-10697.1E+07		
Mass Enthalpy	Btu/lb	-3218.21	-3204.39	-3218.21	-3218.21	-3204.39	-3218.21	-3204.39	-3204.39	-3223.96	-3223.96	-3223.96	-3218.21	-3204.39	-3218.21	-3204.39	-3218.21	-3204.39	-3218.21	-3204.39	-3218.21	-3204.39	-3218.21		
Mass Cp	Btu/(lb**F)	0.652241	0.662700	0.652241	0.652241	0.662700	0.652241	0.648511	0.648511	0.648511	0.648511	0.648511	0.652241	0.662700	0.652241	0.662700	0.652241	0.662700	0.652241	0.662700	0.652241	0.662700	0.652241		
Ideal Gas Cp/Cv Ratio		1.23203	1.22707	1.23203	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203	1.22707	1.23203		
Dynamic Viscosity	cP	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.573706	0.573706	0.573706	0.573706	0.573706	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966	0.460966		
Kinematic Viscosity	cSt	0.670443	0.584722	0.670443	0.670443	0.584722	0.670443	0.584722	0.712583	0.712583	0.712583	0.712583	0.670443	0.584722	0.670443	0.584722	0.670443	0.584722	0.670443	0.584722	0.670443	0.584722	0.670443		
Thermal Conductivity	Btu/(h**ft**F)	0.115346	0.113448	0.115346	0.115346	0.113448	0.115346	0.113448	0.116143	0.116143	0.116143	0.116143	0.115346	0.113448	0.115346	0.113448	0.115346	0.113448	0.115346	0.113448	0.115346	0.113448	0.115346		
Surface Tension	lbf/ft	0.00152040	0.00144125	0.00152040	0.00152040	0.00144125	0.00152040	0.00155359	0.00155359	0.00155359	0.00155359	0.00155359	0.00152040	0.00144125	0.00152040	0.00144125	0.00152040	0.00144125	0.00152040	0.00144125	0.00152040	0.00144125	0.00152040		
Net Ideal Gas Heating Value	Btu/lb	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100	766.100		
Net Liquid Heating Value	Btu/lb	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557	8557		
Gross Ideal Gas Heating Value	Btu/ft³	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700	866.700		
Gross Liquid Heating Value	Btu/lb	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749	9749		

Process Streams		Breathing MeOH Avg		Breathing MeOH Max		Combined MeOH Avg		Flash MeOH Avg		Flash MeOH Max		Loading MeOH max		Methanol avg		Methanol Max		Stable MeOH Avg		Stable MeOH Max		Working MeOH Avg		Working MeOH Max	
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	
Phase:	Aqueous Liquid	From Block:	Methanol Tank Avg	Methanol Tank Avg	MIX-100	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max	Methanol Tank Avg	Methanol Tank Max		
		To Block:	MIX-100	--	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--	MIX-100	--		
Property	Units																								
Temperature	°F		78.8385	99.8734	78.8385		99.8734	78.8385		99.8734	70		70	78.8385		99.8734	78.8385		99.8734	78.8385		99.8734	78.8385		
Pressure	psig		-1.43595	-1.43595	-1.43595		-1.43595	-1.43595		-1.43595	0		0	-1.43595		-1.43595	-1.43595		-1.43595	-1.43595		-1.43595	-1.43595		
Mole Fraction Vapor	%		0	0	0		0	0		0	0		0	0		0	0		0	0		0	0		
Mole Fraction Light Liquid	%		100	100	100		100	100		100	100		100	100		100	100		100	100		100	100		
Mole Fraction Heavy Liquid	%		0	0	0		0	0		0	0		0	0		0	0		0	0		0	0		
Phase Mole Fraction	%		100	100	100		100	100		100	100		100	100		100	100		100	100		100	100		
Molecular Weight	lb/lbmol		32.0419	32.0419	32.0419		32.0419	32.0419		32.0419	32.0419		32.0419	32.0419		32.0419	32.0419		32.0419	32.0419		32.0419	32.0419		
Mass Density	lb/ft³		50.0688	49.2151	50.0688		49.2151	50.4487		50.4487	50.4487		50.4487	50.0688		49.2151	50.0688		49.2151	50.0688		49.2151	50.0688		
Molar Flow	lbmol/h		6.89871E+05	0.000176125	0.000100228		0.0219229	0.141852		0.141852	0.13552		0.141752	0.13552		0.141752	0.13552		0.141752	0.13552		0.00670859	0.00670859		
Mass Flow	lb/h		0.00221047	0.00564302	0.00321149		0.702452	4.54521		4.54521	3.7318		3.7318	4.54521		3.7318	4.54521		3.7318	4.54521		0.00100102	0.214856		
Vapor Volumetric Flow	m³/h		4.41328E-05	0.000114660	0.000114660		0.0142731	0.0900956		0.0900956	66.4139		66.4139	0.0900956		66.4139	0.0900956		66.4139	0.0900956		0.00436768	0.00436768		
Liquid Volumetric Flow	gpm		5.30228E-06	0.000000006	0.000000006		0.142951007	7.99400E-06		7.99400E-06	9.119897		9.119897	7.99400E-06		9.119897	7.99400E-06		9.119897	7.99400E-06		0.00028546	0.00028546		
Std Vapor Volumetric Flow	sgm		6.28308E-07	0.16389E-06	9.12839E-07		0.000196666	0.00129193		0.00129193	0.94312		0.94312	0.00129193		0.94312	0.00129193		0.94312	0.00129193		0.109935E-05	0.109935E-05		
Liquid Liquid Volumetric Flow	MMSCFD		5.51772E-06	1.41772E-05	8.06584E-06		0.00176425	0.0114155		0.0114155	8.33333		8.33333	0.0114155		8.33333	0.0114155		8.33333	0.0114155		0.000539873	0.000539873		
Compressibility			0.00146785	0.00143769	0.00146785		0.00164209	0.00164209		0.00164209	0.00164209		0.00164209	0.00146785		0.00146785	0.00146785		0.00146785	0.00146785		0.00143769	0.00143769		
Specific Gravity			0.803076	0.789099	0.803076		0.789099	0.808878		0.808878	0.808878		0.808878	0.803076		0.789099	0.803076		0.789099	0.803076		0.789099	0.789099		
API Gravity			42.0370	42.0370	42.0370		42.0370	42.0364		42.0364	42.0364		42.0364	42.0370		42.0370	42.0370		42.0370	42.0370		42.0370	42.0370		
Enthalpy	Btu/h		-7.11378	-18.0824	-10.3353		-2250.93	-14653.5		-14653.5	-1.06971E+07		-1.06971E+07	-1.06971E+07		-1.06971E+07	-1.06971E+07		-1.06971E+07	-1.06971E+07		-3.22150	-3.22150		
Mass Enthalpy	Btu/lb		-3218.21	-3204.39	-3218.21		-3204.39	-3223.96		-3223.96	-3218.21		-3218.21	-3218.21		-3204.39	-3218.21		-3204.39	-3218.21		-688.802	-688.802		
Mass Cp	Btu/(lb**F)		0.652241	0.662700	0.652241		0.648511	0.648511		0.648511	0.652241		0.652241	0.652241		0.652241	0.652241		0.652241	0.652241		0.662700	0.662700		
Ideal Gas Cp Cv Ratio			1.23203	1.22707	1.23203		1.22707	1.23410		1.23410	1.23203		1.23203	1.23203		1.22707	1.23203		1.22707	1.23203		1.22707	1.22707		
Dynamic Viscosity	cP		0.537906	0.460966	0.537906		0.460966	0.575846		0.575846	0.537906		0.537906	0.460966		0.460966	0.537906		0.460966	0.537906		0.460966	0.460966		
Kinematic Viscosity	cSt		0.670443	0.584722	0.670443		0.584722	0.712583		0.712583	0.712583		0.712583	0.670443		0.584722	0.670443		0.584722	0.670443		0.584722	0.584722		
Thermal Conductivity	Btu/(h**ft**F)		0.115346	0.113448	0.115346		0.113448	0.116143		0.116143	0.113448		0.113448	0.115346		0.113448	0.115346		0.113448	0.115346		0.113448	0.113448		
Surface Tension	lb/ft		0.00152040	0.00144125	0.00152040		0.00144125	0.00155359		0.00155359	0.00155359		0.00155359	0.00152040		0.00144125	0.00152040		0.00144125	0.00152040		0.00144125	0.00144125		
Net Ideal Gas Heating Value	Btu/lb**3		766.100	766.100	766.100		766.100	766.100		766.100	766.100		766.100	766.100		766.100	766.100		766.100	766.100		766.100	766.100		
Net Liquid Heating Value	Btu/lb		8557	8557	8557		8557	8557		8557	8557		8557	8557		8557	8557		8557	8557		8557	8557		
Gross Ideal Gas Heating Value	Btu/lb**3		866.700	866.700	866.700		866.700	866.700		866.700	866.700		866.700	866.700		866.700	866.700		866.700	866.700		866.700	866.700		
Gross Liquid Heating Value	Btu/lb		9749	9749	9749		9749	9749		9749	9749		9749	9749		9749	9749		9749	9749		9749	9749		

Tank Losses Report Methanol Tank Avg					
Client Name:		Apache Corporation		Job:	
Location:		ASAU CTB and Satellite		Modified:	
Flowsheet:		Misc Tanks		Status:	
Solved 8:56 AM, 8/14/2024					
Stream Connections					
Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Methanol avg	Inlet		Flash MeOH Avg	Flashing Losses Stream	MIX-100
Working MeOH Avg	Working Losses Stream	MIX-100	Breathing MeOH Avg	Standing Losses Stream	MIX-100
Stable MeOH Avg	Residual Liquid Stream				
Working and Standing Properties : Scalar Data					
Tank Geometry	Horizontal Cylinder*		Shell Paint Condition	Average	
Shell Length	5.5' ft		Breather Vent Pressure	0.0300000 psig	
Shell Diameter	4' ft		Breather Vacuum Pressure	-0.0300000 psig	
Number of Storage Tanks	1		Location	Midland, TX*	
Maximum Fraction Fill of Tank	90 %		Time Frame	Year*	
Average Fraction Fill of Tank	50 %		Known Liquid Bulk Temperature?	FALSE	
Minimum Fraction Fill of Tank	10 %		Liquid Bulk Temperature	67.0045 °F	
Material Category	Light Organics*		Use AP 42 Raoult's Vapor Pressure?	TRUE	
Insulation	Uninsulated		Flashing Temperature	78.8385 °F	
Underground Tank?	FALSE		Average Daily Maximum Ambient Temperature	76.7 °F	
Bolted or Riveted Construction?	FALSE		Average Daily Minimum Ambient Temperature	51.4 °F	
Vapor Balanced Tank?	FALSE		Atmospheric Pressure at Tank Location	13.26 psia	
Known Sum of Increases in Liquid Level?	FALSE		Daily Solar Insolation	1698 Btu/(day*ft^2)	
Sum of Increases in Liquid Level	62.7817 ft/yr		Average Wind Speed	11 mph	
Shell Color	Light Grey*		Include Short Term Emissions	FALSE	
Composition Subset Properties : Scalar Data					
Component Subset	All Selected*		Species in Results	Selected Species	
Atomic Basis	FALSE		Fraction Denominator	Selected Species	
Composition Subset Properties : Tabulated Data					
Index	Selected Components				
Methanol	TRUE				
Details Properties : Scalar Data					
Vapor Space Volume	34.5575 ft^3		Minimum Liquid Surface Temperature	520.140 °R	
Vapor Density	0.0111149 lb/ft^3		Effective Height	3.14159 ft	
Vapor Space Expansion Factor	0.160889 1/day		Liquid Height	2 ft	
Vented Vapor Saturation Factor	0.858466		Roof Outage	0 ft	
Effective Shell Diameter	5.29257 ft		Vapor Molecular Weight	32.0419 lb/lbmol	
Vapor Space Outage	1.57080 ft		Average Vapor Temperature	531.974 °R	
Average Daily Vapor Temperature Range	36.7378 °R		Average Daily Ambient Temperature	523.72 °R	
Average Daily Vapor Pressure Range	1.09191 psi		Net Working Loss Throughput	788.938 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	1.98034 psia		Number of Turnovers per Year	19.6193	
Average Daily Liquid Surface Temperature	529.324 °R		Annual Net Throughput	140.530 bbl/yr	
Average Daily Ambient Temperature Range	25.3 °R		Maximum Liquid Height	3.6 ft	
Tank Roof Surface Solar Absorptance	0.58		Minimum Liquid Height	0.4 ft	
Tank Shell Surface Solar Absorptance	0.58		Working Loss Product Factor	1	
Vapor Pressure at Maximum Liquid Surface Temperature	2.58997 psia		Vent Setting Correction Factor	1	
Vapor Pressure at Minimum Liquid Surface Temperature	1.49806 psia		Annual Net Throughput Per Tank	140.530 bbl/yr	
Maximum Liquid Surface Temperature	538.509 °R				
Results Properties : Scalar Data					
Flashing Losses	0 ton/yr		Standing Losses per Tank	0.00968187 ton/yr	
Working Losses	0.00438447 ton/yr		Flashing Losses per Tank	0 ton/yr	
Standing Losses	0.00968187 ton/yr		Working and Standing Losses	0.0140663 ton/yr	
Working Losses per Tank	0.00438447 ton/yr		Working and Standing Losses per Tank	0.0140663 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	Working and Standing Losses Mass Flows ton/yr	
Methanol	0	0.00438447	0.00968187	0.0140663	
Notes:					

Tank Losses Report Methanol Tank Max					
Client Name:		Apache Corporation		Job:	
Location:		ASAU CTB and Satellite		Modified:	
Flowsheet:		Misc Tanks		Status:	
				4/16/2023 10:38 Solved 8:56 AM, 8/14/2024	
Stream Connections					
Stream		Connection Type		Other Block	
Methanol Max		Inlet			
Working MeOH Max		Working Losses Stream		Flash MeOH Max	
Loading MeOH max		Loading Losses Stream		Breathing MeOH Max	
				Stable MeOH Max	
				Flashing Losses Stream	
				Standing Losses Stream	
				Residual Liquid Stream	
Working and Standing Properties : Scalar Data					
Tank Geometry		Horizontal Cylinder*		Average	
Shell Length		5.5' ft		Breather Vent Pressure	
Shell Diameter		4' ft		Breather Vacuum Pressure	
Number of Storage Tanks		1		Location	
Maximum Fraction Fill of Tank		90 %		Time Frame	
Average Fraction Fill of Tank		50 %		Known Liquid Bulk Temperature?	
Minimum Fraction Fill of Tank		10 %		Liquid Bulk Temperature	
Material Category		Light Organics*		Use AP 42 Raoult's Vapor Pressure?	
Insulation		Uninsulated		Flashing Temperature	
Underground Tank?		FALSE		Average Daily Maximum Ambient Temperature	
Bolted or Riveted Construction?		FALSE		Average Daily Minimum Ambient Temperature	
Vapor Balanced Tank?		FALSE		Atmospheric Pressure at Tank Location	
Known Sum of Increases in Liquid Level?		FALSE		Daily Solar Insolation	
Sum of Increases in Liquid Level		46599.1 ft/yr		Average Wind Speed	
Shell Color		Light Grey*		Include Short Term Emissions	
				TRUE	
Composition Subset Properties : Scalar Data					
Component Subset		All Selected*		Species in Results	
Atomic Basis		FALSE		Fraction Denominator	
				Selected Species	
				Selected Species	
Composition Subset Properties : Tabulated Data					
Index		Selected Components			
Methanol		TRUE			
Details Properties : Scalar Data					
Vapor Space Volume		34.5575 ft^3		Effective Height	
Vapor Density		0.0190582 lb/ft^3		Liquid Height	
Vapor Space Expansion Factor		0.266077 1/day		Roof Outage	
Vented Vapor Saturation Factor		0.772842		Vapor Molecular Weight	
Effective Shell Diameter		5.29257 ft		Average Vapor Temperature	
Vapor Space Outage		1.57080 ft		Average Daily Ambient Temperature	
Average Daily Vapor Temperature Range		39.8997 °R		Net Working Loss Throughput	
Average Daily Vapor Pressure Range		1.94241 psi		Working Loss Turnover (Saturation) Factor	
Breather Vent Pressure Setting Range		0.0600000 psi		Number of Turnovers per Year	
Vapor Pressure at Average Daily Liquid Surface Temperature		3.53055 psia		Annual Net Throughput	
Average Daily Liquid Surface Temperature		549.569 °R		Maximum Liquid Height	
Average Daily Ambient Temperature Range		22.8 °R		Minimum Liquid Height	
Tank Roof Surface Solar Absorptance		0.58		Working Loss Product Factor	
Tank Shell Surface Solar Absorptance		0.58		Vent Setting Correction Factor	
Vapor Pressure at Maximum Liquid Surface Temperature		4.61400 psia		Saturation Factor	
Vapor Pressure at Minimum Liquid Surface Temperature		2.67159 psia		Vapor Pressure of Liquid Loaded	
Maximum Liquid Surface Temperature		559.543 °R		Collection Efficiency	
Minimum Liquid Surface Temperature		539.594 °R		Annual Net Throughput Per Tank	
				104307 bbl/yr	
Loading Properties : Scalar Data					
Cargo Carrier		Tank Truck or Rail Tank Car		Truck Annual Leak Test Passed	
Land Based Mode of Operation		Submerged Loading: Dedicated Normal Service*		Overall Reduction Efficiency	
Control Efficiency		0 %		None	
				0 %	
Results Properties : Scalar Data					
Flashing Losses		0 lb/d		Standing Losses per Tank	
Working Losses		5.15894 lb/d		Flashing Losses per Tank	
Standing Losses		0.135432 lb/d		Working and Standing Losses	
Loading Losses		16.8588 lb/d		Working and Standing Losses per Tank	
Working Losses per Tank		5.15894 lb/d		Loading Losses per Tank	
				16.8588 lb/d	
Results Properties : Tabulated Data					
Index		Flashing Losses Mass Flows		Working Losses Mass Flows	
		lb/d		lb/d	
Methanol		0		5.15894	
				0.135432	
				16.8588	
				5.29437	
Short Term Properties : Scalar Data					
Maximum Battery Filling Rate		11.9048 bbl/hr		Short Term Working Losses per Tank	
Short-Term Number of Storage Tanks		1		Short-Term Loading Losses per Tank	
Worst-Case Liquid Surface Temperature		99.8734 °F		Short-Term Vapor Molecular Weight	
Maximum Loading Rate		11.9048 bbl/hr		Vapor Pressure at Worst-Case Temperature	
Worst-Case Flashing Losses		0 lb/h		Short-Term Control Efficiency	
Short-Term Working Losses		1.64564 lb/h		Short-Term Truck Annual Leak Test Passed	
Short-Term Loading Losses		0.987644 lb/h		Short-Term Overall Reduction Efficiency	
Worst-Case Flashing Losses per Tank		0 lb/h		Short-Term Collection Efficiency	
				70 %	
Short Term Properties : Tabulated Data					
Index		Worst-Case Flashing Losses Mass Flows		Short-Term Working Losses Mass Flows	
		lb/h		lb/h	
Methanol		0		1.64564	
				0.987644	
Notes:					

Section 6 – State Regulatory Applicability

Apache Corporation (CN600126361)
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Texas Administrative Code (TAC)	
30 TAC §101	Apache will comply with all general air quality rules.
30 TAC §111	Apache will comply with all applicable visible emissions and particulate matter requirements.
30 TAC §112	Apache will comply with all applicable requirements.
30 TAC §113	Refer to Section 7 - Federal Regulatory Applicability.
30 TAC §115	The site is not located in an applicable county.
30 TAC §117	The site is not located in an applicable county.
30 TAC §122	The site is not subject to Chapter 122.

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Air Quality Standard Permit for Oil and Gas Handling and Production Facilities	
(a)(1)	Gaines County is not a Barnett Shale county; therefore, Apache is registering under this standard permit voluntarily.
(a)(2)	The site was previously authorized under permit-by-rule registration number 26926; with this registration, Apache requests that permit 26926 be voided.
(a)(3)	Apache will comply with any other applicable provisions of the Texas Health and Safety Code, Texas Water Code, rules of the Texas Commission on Environmental Quality (TCEQ), or any additional local, state or federal regulations.
(a)(4)	Emissions from upsets, emergencies, or malfunctions are not authorized by this standard permit. The standard permit does not regulate methane, ethane, or carbon dioxide.
(b)(1)- (b)(8)	The definitions and scope from this standard permit are utilized as appropriate.
(c)(1)	All project(s) are incorporated into the registration with this application.
(c)(2)	New, changed, or replacement facilities shall not exceed the thresholds for major source or major modification as defined in 30 TAC §116.12, Nonattainment and Prevention of Signification Deterioration Review Definitions, and in Federal Clean Air Act §112(g) or §112(j); All facilities shall comply with all applicable 40 CFR, Parts 60, 61, and 63 requirements; and All facilities shall comply with all applicable requirements of 30 TAC Chapters §111, §112, §113, §115, and §117.
(c)(3)	Apache shall meet all applicable requirements in this standard permit; shall not misrepresent or fail to fully disclose all relevant facts in obtaining the permit, and shall not be indebted to the state for failure to make payment of penalties or taxes imposed by the statutes or rules within the commission's jurisdiction.
(c)(4)	All facilities are included in this registration and meet all applicable requirements specified in this standard permit.
(d)(1)	The site consists of specific facilities and groups of facilities that have been evaluated for this standard permit.
(d)(2)	The site does not consist of any facilities that are not authorized under this standard permit.
(e)(1)	All facilities which have the potential to emit air contaminants will be maintained in good working order and operated properly during facility operations. Apache will establish and maintain a program to replace, repair, and/or maintain facilities to keep them in good working order. This program meets the requirements of this standard permit.
(e)(2)	All new facilities are operated at least 50 feet from any property line or receptor, whichever is closer.
(e)(3)	This site does not have engines.
(e)(4)	This site does not have open-topped tanks or ponds.
(e)(5)	All process equipment and storage facilities meet the BACT requirements listed in Table 10 in paragraph (m) of this standard permit.
(e)(6)	Fugitive components associated with this project will meet the applicable requirements of this standard permit.
(e)(7)	Tanks and vessels utilize a paint color that minimizes the effects of solar heating. Paint shall be applied according to paint producers recommended application requirements if provided and in sufficient quantity as to be considered solar resistant. Paint shall be maintained in good condition and will not compromise tank integrity.

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Air Quality Standard Permit for Oil and Gas Handling and Production Facilities	
(e)(8)	All emission estimation methods used in this application were used with monitoring data generated in accordance with Table 8 in subsection (m) of this section where monitoring is required. All emission estimation methods are used in a way that is consistent with protocols established by the commission or promulgated in federal regulations (NSPS, NESHAPS). Where control of emissions is relied upon to meet subsection (k) of this section, control monitoring is implemented as required.
(e)(9)	There are no process reboilers, heaters, or furnaces used for control of waste gas streams.
(e)(10)	The vapor recovery units (VRUs) meet the appropriate design, monitoring and record-keeping in Table 7 and Table 8 in paragraph (m) of this standard permit.
(e)(11)	The site does not have flares.
(e)(12)	The site does not have thermal oxidation or vapor combustion control devices.
(f)(1)	This paragraph is not applicable, as all previous claims under this standard permit were submitted after December 31, 2015.
(f)(2)	This paragraph is not applicable, as all previous claims under this standard permit were submitted after December 31, 2015.
(f)(3)	Facilities, groups of facilities or planned MSS from facilities registered under this standard permit are not also authorized by a permit under 30 TAC §116.111, General Application.
(f)(4)	Prior to construction or implementation of changes, a notification and the appropriate \$50 fee was submitted through the ePermits system on 02/22/2024.
(f)(5)	This registration meets the requirements of this paragraph and includes the appropriate \$850 registration fee.
(f)(6)	This paragraph is not applicable, as the site is not changing authorization.
(f)(7)	This application is being submitted to the commission via the ePermits system and includes the PI-1S Standard Permit Registration Form and associated backup.
(g)	The site complies with all applicable requirements of 30 TAC §116.610 (except the emission limitations of §116.610(a)(1)); §116.611; §116.614; and §116.615 (except the notification requirements).
(h)(1)	Total maximum estimated annual emissions of any air contaminant does not exceed the limits for a major stationary source or major modification for PSD and NNSR as specified in 30 TAC §116.12.
(h)(2)	Emissions meet the limitations established in paragraph (k) of this standard permit.
(h)(3)	Maximum emissions after any operator limitations or controls are less than the values stated in the table found in this paragraph.
(i)(1)	Planned MSS emissions are included in this registration.
(i)(2)	Releases of air contaminants during, or as result of, planned MSS are quantified and meet the emission limits of this standard permit, as applicable.
(i)(3)	Other planned MSS activities that are listed in this paragraph are authorized by this standard permit and only require recordkeeping of the activity.
(i)(4)	Engine/compressor start-ups associated with preventative system shutdown activities have the option to be authorized as part of typical operations if: (A) Prior to operation, alternative operating scenarios to divert gas or liquid streams are registered and certified with all supporting documentation; (B) Engine/compressor shutdowns shall result in no greater than 4 lbs/hr of natural gas emissions; and (C) Emissions which result from subsequent compressor start-up activities are controlled to a minimum 98% efficiency for VOC and H ₂ S.

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Air Quality Standard Permit for Oil and Gas Handling and Production Facilities	
(j)(1)	Sampling and demonstrations of compliance include the requirements listed in Table 7 in paragraph (m) of this standard permit.
(j)(2)	Monitoring and records for demonstrations of compliance include the requirements listed in Table 8 in paragraph (m) of this standard permit.
(k)(1)	See 'Section 8 - Impacts Evaluation' of this application for impacts evaluations required under this standard permit.
(k)(2)	Distance measurements were determined as required by this standard permit.
(k)(3)	See 'Section 8 - Impacts Evaluation' of this application for impacts evaluations required under this standard permit.
(k)(4)	Evaluations of emissions meet the following: (A) For all evaluations of NO_x to NO₂ a conversion factor of 0.20 for 4 stroke rich and lean burn engines and 0.50 for 2-stroke engines may be used. (B) The maximum predicted concentration or rate at the property boundary or receptor, whichever is appropriate, must not exceed a state or federal ambient air standard or ESL.
(k)(5)	See 'Section 8 - Impacts Evaluation' of this application for impacts evaluations required under this standard permit.
(k)(6)	Impacts evaluation comply with the methods listed in this standard permit.
(l)	The site complies with the requirements in paragraphs (a)-(k) of this standard permit; therefore, this paragraph does not apply.
(m)	Tables 1 - 10 are used as required by this standard permit.

Apache Corporation
ASAU CTB and Satellite
Emission Limitations - Non-Rule Standard Permit

Air Quality Standard Permit for Oil and Gas Handling and Production Facilities: (h) Emission Limitations. Total maximum estimated registered or certified emissions shall meet the most stringent of the following. All emissions estimates must be based on representative worst-case operations and planned MSS activities.

NRSP(h): Emission Limitations

Air Contaminant	Steady-state or <30 psig periodic releases lb/hr			≥ 30 psig periodic lb/hr up to 600 hr/yr			Total tpy		
	Emission Limit	Facility Emissions	Exceed?	Emission Limit	Facility Emissions	Exceed?	Emission Limit	Facility Emissions	Exceed?
Total VOC							250	13.22	No
Total crude oil or condensate VOC	145	13.89	No	318	4.14	No			
Total natural gas VOC	750	0.59	No	1635	--	No			
Benzene	7	1.13	No	15.4	0.10	No	10.2	0.98	No
Hydrogen Sulfide	10.8	1.76	No	9.8	0.78	No	47	2.66	No
Sulfur Dioxide	93.2	4.41E-04	No				250	1.93E-03	No
Nitrogen Oxides	121	0.07	No				250	0.32	No
Carbon Monoxide	104	0.06	No				250	0.27	No
PM ₁₀ and PM _{2.5}	28	0.69	No				15	0.10	No

NRSP(k): Emission Limits Based on Impacts Evaluation

Distance to Nearest Property Line (mi)	Distance to Nearest Receptor (mi)	Air Contaminant	De Minimis Limits (lb/hr)	Project Emissions (lb/hr)	Impact Evaluation required?
0.0189	1.0	Benzene	0.039	1.23E+00	No
		H2S	0.025	2.54E+00	Yes
		SO2	2	4.41E-04	No
		NOx	4	7.35E-02	No

Section 7 – Federal Regulatory Applicability

Apache Corporation (CN600126361)
 ASAU CTB and Satellite (RN102213592)
 October 2024
 Federal Regulatory Applicability

Federal Subpart	Summary of Requirement	Site Applicability
NSPS A	General provisions for the Standards of Performance for New Stationary Sources.	Apache will comply with all general provisions for each stationary source that contains an affected facility.
NSPS Kb	Except as provided in §60.110(b),(d) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m ³) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.	GBT-1 is considered a process tank as it is used within the process before the material is transferred for by-product storage within the process; therefore, GBT-1 does not meet the definition of storage vessel(s) and is excluded from this subpart. OTK-1 - OTK-2, OTK-4, SLOPTK-1, PWTK-1 - PWTK-3 each exceed 75 m ³ but have a design capacity less than 1,589.874 m ³ and are used for petroleum or condensate stored, processed, or treated prior to custody transfer; therefore, this subpart does not apply.
NSPS IIII	The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in §60.4200(a)(1)-(4).	This site does not have any stationary CI-ICE; therefore, this subpart does not apply.
NSPS JJJJ	The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in §60.4230(a)(1)-(6).	This site does not have any stationary SI-ICE; therefore, this subpart does not apply.
NSPS OOOO	This subpart establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO ₂) emissions from affected facilities in the crude oil and natural gas production source category that commence construction, modification, or reconstruction after August 23, 2011, and on or before September 18, 2015.	Reciprocating compressors constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015 are located at a well site and therefore are not subject to the requirements of this subpart. The site does not have centrifugal compressors with wet gas seals, storage tanks, natural gas processing, or pneumatic controllers constructed, modified or reconstructed after August 23, 2011, and on or before September 18, 2015. Therefore, this subpart does not apply.
NSPS OOOOa	This subpart establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO ₂) emissions from affected facilities in the crude oil and natural gas production source category that commence construction, modification, or reconstruction after September 18, 2015, and on or before December 6, 2022.	The storage vessels have potential emissions less than six (6) tons per year (tpy) VOC and are not subject to the requirements of this subpart. New wells have been added to the well site after September 18, 2015 and on or before December 6, 2022; therefore, the well site is subject to the fugitive source monitoring requirements of this subpart. Reciprocating compressors constructed after September 18, 2015 and on or before December 6, 2022, are located at a well site and therefore are not subject to the requirements of this subpart. The site does not have centrifugal compressors with wet gas seals, pneumatic pumps, or natural gas processing or sweetening units constructed, modified or reconstructed after September 18, 2015, and on or before December 6, 2022 and will not be subject to the requirements of this subpart for those affected facilities. Apache will comply with all applicable requirements.
NSPS OOOOb	This subpart establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The GHG standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after December 6, 2022. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO ₂) emissions from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after December 6, 2022.	The site does not have affected facilities under this subpart. Therefore, this subpart does not apply.
MACT A	General provisions for the National Emission Standards for Hazardous Air Pollutants for Source Categories.	Apache will comply with all general provisions for each relevant source category.
MACT HH	This subpart applies to the owners and operators of the emission points, specified in §63.760(b) that are located at oil and natural gas production facilities that meet the specified criteria in §63.760(a)(1) and either §63.760(a)(2) or (a)(3).	The site is an area source of hazardous air pollutants (HAPs) and does not contain an affected facility under this subpart.
MACT ZZZZ	This subpart establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.	This site does not have any stationary RICE; therefore, this subpart does not apply.

Section 8 – Impacts Evaluation

Apache Corporation
ASAU CTB and Satellite
H2S Impact Analysis

Full Impacts Review

A full impacts review must be done for all of the following as applicable:

- H₂S Hourly Steady State
- H₂S Hourly Low Pressure Periodic
- H₂S Hourly High Pressure Periodic

The maximum acceptable emission rate can be found on an hourly steady state basis, hourly periodic (low pressure) basis, hourly periodic (high pressure) basis, and annual basis, which can be expressed as $E_{\text{max, hourly, steady state}}$, $E_{\text{max, hourly, periodic (low pressure)}}$, $E_{\text{max, hourly, periodic (high pressure)}}$, and $E_{\text{max, annual}}$, respectively.

The equations for $E_{\text{max, hourly}}$ and $E_{\text{max, annual}}$ are:

$$E_{\text{max, hourly}} = (WR_{\text{EPN}_1}) \times \left(\frac{P \text{ or } ESL}{G_{\text{hourly, EPN}_1}} \right) + \dots + (WR_{\text{EPN}_x}) \times \left(\frac{P \text{ or } ESL}{G_{\text{hourly, EPN}_x}} \right)$$

$$E_{\text{max, annual}} = \left(\frac{8,760}{2,000} \right) \times (WR_{\text{EPN}_1}) \times \left(\frac{P \text{ or } ESL}{0.08 \times G_{\text{hourly, EPN}_1}} \right) + \dots + \left(\frac{8,760}{2,000} \right) \times (WR_{\text{EPN}_x}) \times \left(\frac{P \text{ or } ESL}{0.08 \times G_{\text{hourly, EPN}_x}} \right)$$

H ₂ S Hourly SAAQS (µg/m ³):	162
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H ₂ S Hourly Steady State - Impact Review										
FIN	EPN	Source Name	Which impacts table corresponds to this EPN?	Steady state hourly estimated emissions for each EPN (lbs/hr)	WR _{EPNx}	AAQS _{H2S} , hourly (µg/m ³)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G _{EPNx}	E _{max, EPNx, hourly, steady state} (lb/hr)
OTK-1 - OTK-2	OTK-1 - OTK-2 / VRU-1, VRU-2	Two 1,500-bbl Crude Oil Tanks Controlled by VRUs	Proc. Vessel Vent	6.88E-02	8.54E-02	162	300	20	168	0.082
OTK-4	OTK-4 / VRU-1, VRU-2	One 1,000-bbl Crude Oil Tank Controlled by VRUs	Proc. Vessel Vent	3.39E-02	4.22E-02	162	300	20	168	0.041
HT	HT / VRU-1, VRU-2	Heater Treater Off Gas Controlled by VRUs	Proc. Vessel Vent	6.11E-02	7.59E-02	162	300	20	168	0.073
FWKO	FWKO / VRU-1, VRU-2	FWKO Off Gas Controlled by VRUs	Proc. Vessel Vent	6.11E-02	7.59E-02	162	300	20	168	0.073
SLOPTK-1	OTK-1 - OTK-2 / VRU-3, VRU-4	One 500-bbl Skim Oil Tank Controlled by VRUs	Proc. Vessel Vent	1.26E-04	1.56E-04	162	100	20	168	0.000
PWTK-1 - PWTK-3	PWTK-1 - PWTK-3 / VRU-3, VRU-4	Three 1,500-bbl Produced Water Tanks Controlled by VRUs	Proc. Vessel Vent	3.00E-01	3.73E-01	162	150	20	168	0.359
GBT-1	GBT-1 / VRU-3, VRU-4	One Gunbarrel Separator Controlled by VRUs	Proc. Vessel Vent	2.68E-01	3.33E-01	162	150	20	168	0.321
HT-1	HT-1	0.750-mmBtu/hr Heater Treater	Flare/Therm. Dest. Dev.	5.28E-06	6.56E-06	162	100	15	58	1.83E-05
FUG	FUG	Fugitives	Fugitive	1.22E-02	1.51E-02	162	100	3	2625	0.001
				E _{estimated, total, hourly, steady state} (lb/hr)	Total	Passed				0.95
				8.05E-01	1.0					

H ₂ S Hourly Low Pressure Periodic - Impact Review										
FIN	EPN	Source Name	Which impacts table corresponds to this EPN?	Periodic (low P) hourly estimated emissions for each EPN (lbs/hr)	WR _{EPNx}	AAQS _{H2S} , hourly (µg/m ³)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G _{EPNx}	E _{max,EPNx} , hourly,periodic(low pressure) (lb/hr)
OTK-1 - OTK-2, OTK-4	OTK-1 - OTK-2, OTK-4 / VRU-1, VRU-2	Tank Forced Ventilation 1 Controlled by VRUs	Proc. Vessel Vent	1.18E-01	1.52E-01	162	400	20	168	1.46E-01
SLOPTK-1, PWTK-1 - PWTK-3	OTK-1 - OTK-2, OTK-4 / VRU-3, VRU-4	Tank Forced Ventilation 2 Controlled by VRUs	Proc. Vessel Vent	3.54E-01	4.56E-01	162	150	20	168	4.39E-01
MSS	MSS	Miscellaneous MSS Activities	Low P. Blowd./Purg./Pig.	8.07E-04	1.04E-03	162	100	3	4304	3.91E-05
MSS-TK1	MSS-TK1	Tank Non-Forced Ventilation 1	Tank Hatch	9.61E-02	1.24E-01	162	400	20	174.6	1.15E-01
MSS-TK2	MSS-TK2	Tank Non-Forced Ventilation 2	Tank Hatch	2.08E-01	2.68E-01	162	150	20	183	2.37E-01
				E _{estimated,total} , hourly,periodic (low pressure) (lb/hr)	Total		Passed			E _{max,total} , hourly,periodic(low pressure) (lb/hr)
				7.77E-01	1.0					0.94

H ₂ S Hourly Low Pressure Periodic - Impact Review										
FIN	EPN	Source Name	Which impacts table corresponds to this EPN?	(low P) hourly estimated emissions for each EPN (lbs/hr)	WR _{EPNx}	AAQS _{H2S} , hourly (µg/m ³)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G _{EPNx}	E _{max,EPNx} , hourly,periodic(low pressure) (lb/hr)
SLOAD	SLOAD	Skim Oil Truck Loading	Loading	1.79E-01	1.00E+00	162	100	10	739.2	2.19E-01
				E _{estimated,total} , hourly,periodic (low pressure) (lb/hr)	Total		Passed			E _{max,total} , hourly,periodic(low pressure) (lb/hr)
				1.79E-01	1.0					0.22

*Tank MSS (Tank Forced Ventilation 1, Tank Forced Ventilation 2, MSS, MSS-TK1, and MSS-TK2) and Skim Oil Truck Loading (SLOAD) cannot be performed simultaneously. Each scenario has been evaluated to ensure compliance with H₂S emissions impacts.

H ₂ S Hourly High Pressure Periodic - Impact Review										
FIN	EPN	Source Name	Which impacts table corresponds to this EPN?	Periodic (high P) hourly estimated emissions for each EPN (lbs/hr)	WR _{EPNx}	AAQS _{H2S} , hourly (µg/m ³)	Distance from emission point to nearest property line (ft)	Height of emission release point (ft)	G _{EPNx}	E _{max,EPNx} , hourly,periodic(high pressure) (lb/hr)
MSS-BD	MSS-BD	Vessel and VRU Compressor Blowdowns	High P. Blowd./Purg./Pig.	7.78E-01	1.00E+00	162	400	10	25	6.48
				E _{estimated,total} , hourly,periodic (high pressure) (lb/hr)	Total		Passed			E _{max,total} , hourly,periodic(high pressure) (lb/hr)
				7.78E-01	1.0					6.48