Jagadeesan Sethuraman
Air Advocacy & Sustainability Professional
Marathon Oil Company
990 Town and Country Blvd.
Houston, TX 77024
(832) 364-3368
jsethuraman@marathonoil.com

Marathon Oil

September 30, 2024

Ms. Claudia Smith
Minor NSR Permitting Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR Denver,
Colorado 80202-1129

Dear Ms. Smith:

Marathon Oil Company (Marathon) requests withdrawal of the Title V application for the Oates well pad.

- A Title V permit application was submitted on July 13, 2021.
- Beginning March 19, 2022, facility-wide (non-fugitive) actual annual emissions of each criteria pollutant were less than 100 tons per year (tpy).
- Applicable emissions fees were paid for the period of March 19, 2022 to December 31, 2024.
- A Part 2 registration was submitted on June 1, 2023 indicating facility-wide potential annual emissions below 100 tpy for each criteria pollutant.

Wells producing into the facility are listed below.

Well Name	API Number
OATES 21-27H	33-061-04546
SENNESS 11-27TFH	33-061-04545

Please do not hesitate to contact me at the email address or telephone number shown above if you have any questions or require additional information.

Sincerely,
Jagadeesan Sethuraman

Attachment 1

Certificate of Truth, Accuracy, and Completeness

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Parker (First) Jeff

Title Production Manager

Street or P.O. Box 3172 Highway 22 N

City Dickinson State ND ZIP 58601

Telephone (701) 456-7502 Facsimile (701) 456-7545

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) Jeff Parker

Name (typed) Jeff Parker Date 9/26/2024

Attachment 2

Actual Annual Emissions and Fees

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
FEE FILING FORM (FF)

The purpose of this form is to ensure that fee payments made by check are credited to the proper facility and to the proper government account. Send this form, along with form FEE and the check, to the appropriate lockbox bank address listed on the following page. This form is required whenever you pay by check, including for initial fee payment and to pay annual fees. Part 71 fees may be paid by check or electronically, and further information on making payments by check or electronically is provided on the following page.

Source or Facility Name: Oates

Source Location:

EPA Region where Source Located: 8

Mailing Address:

Street/P.O. Box: 3172 Hwy 22 N

City: Dickinson

State: ND ZIP: 58601

Contact Person: Jagadeesan Sethuraman

Title: Air Advocacy & Sustainability Professional

Telephone: (832) 364-3368

Total Fee Payment Remitted: **$8,227.41**

$3,237.08	(3/19/2022 - 3/18/2023)
$2,792.76	(3/19/2023 - 3/18/2024)
$2,197.58	(3/19/2024 - 12/31/2024)

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
FEE CALCUALTION WORKSHEET (FEE)

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): ____ Initial X Annual

Deadline for submitting fee calculation worksheet 3/19/2023

For initial fees, emissions are based on (Check one):

X Actual emissions for the preceding calendar year. (Required in most circumstances.)

____ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations 3/19/2022

____ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name ____

Mailing address: Street or P.O. Box ____

City ____ State ____ ZIP ____

Contact person ____ Title ____

Telephone ____ Part 71 permit no. ____

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) ____

Name (typed) ____ Date / /

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO and GHGs (see instructions). Sum the emissions in each column to calculate subtotals. Subtotals should be reported to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for 2022/2023 (year)

Emission Unit ID	NOx	VOC	SO2	PM10	Lead	Other
HT	0.86	0.05	0.01	0.07		
ENG	--	--	--	--		
FUG	--	4.27	--	--		
LOADING	--	4.05	--	--		
OT	Emissions represented at LP Flare					
WT	Emissions represented at LP Flare					
HP Flare	0.48	2.73	0	--		
LP Flare	3.29	31.51	0	--		
PNE	--	3.38	--	--		
Subtotals	4.63	46.00	0.01	0.07	0	0

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier
Benzene	71-43-2	HAP1
Toluene	108-88-3	HAP2
Ethylbenzene	100-41-4	HAP3
Xylene	1330-20-7	HAP4
n-Hexane	110-54-3	HAP5
2,2,4-Trimethylepentane	540-87-1	HAP6

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. Sum the emissions in each column to calculate subtotals. Report subtotals to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for 2022/2023 (year)

Emission Unit ID	Actual Emissions (Tons/Year)						
	HAP1	HAP2	HAP3	HAP4	HAP5	HAP6	
HT	0.00	0.00	--	--	--	--	
ENG	0.00	0.00	0.00	0.00	0.00	0.00	
FUG	0.01	0.03	0.01	0.03	0.06	0.00	
LOADING	0.01	0.04	0.00	0.01	0.08	0.00	
OT	Emissions represented at LP Flare						
WT	Emissions represented at LP Flare						
HP Flare	0.01	0.03	0.00	0.01	0.05	0.00	
LP Flare	0.12	0.09	0.01	0.03	0.82	0.01	
PNE	0.00	0.00	0.00	0.00	0.00	0.00	
Subtotals	0.16	0.18	0.02	0.09	1.01	0.01	

F. Fee Calculation Worksheet

This worksheet is used to calculate the total fee owed (including the emissions-based fee and the GHG fee adjustment) for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, complete line 1-5 (emissions summary) and then skip down to line 21 (emission calculation). See instructions for more detailed explanation.

EMISSIONS SUMMARY

1. Sum the subtotals from section D of this form (non-HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	50.70
2. Sum the subtotals from section E of this form (HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	1.47
3. Sum lines 1 and 2.	52.17
4. Enter the emissions that were counted twice. If none, enter "0."	1.47
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here. This is the total emissions that count for fees purposes.	50.70
RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "CURRENT" CALENDAR YEAR) Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.	
6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).	
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."	
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."	
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate ($/ton) and enter the result here. This is the underpayment. Go to line 21.	
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate ($/ton) and enter the result here. This is the overpayment. Go to line 21.	

RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "PRECEDING" CALENDAR YEAR) Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.	
11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.	
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.	
13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.	
14. Enter double counted emission from line 13 here. If none, enter "0."	
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.	
of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.	
17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate ($/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate ($/ton) and enter the result on this line. This is the overpayment.	
EMISSION FEE CALCULATION	
21. Multiply line 5 (tons) by the current fee rate ($/ton) and enter the result here. This is the unadjusted emissions fee. Continue on to line 23.	3237.08

GHG FEE ADJUSTMENT	
22. If you are submitting an initial permit application and this is the first time you are paying fees, enter $2,236, otherwise enter “0”. [Note that any updates to the initial application are covered under this one-time charge.]	
23. Enter the number of permit modifications (or related permit actions) you have submitted to the permitting authority since you last paid fees. If none, skip to line 25.	
24. Multiply the number in line 23 by $365 and enter the result.	
25. If you have submitted a permit renewal application since the last time you paid fees enter $520, otherwise enter “0”	
26. Sum line 22, 24, and 25 and enter the result. This is the GHG fee adjustment	0
OTHER ADJUSTMENTS	
26. Add the total on line 21 and the total on line 26 and enter the result.	3237.08
27. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	
28. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	
line 29 is greater than "0," subtract this from line 27 and enter the result here. Otherwise enter the amount on line 27 here. This is the fee adjusted for over/underpayment.	
30. Enter any credit for fee assessment error here. Otherwise, enter "0."	
31. Subtract line 31 from line 30 and enter the result here. Stop here. This is the **TOTAL FEE (AFTER ADJUSTMENTS)** that you must remit to EPA.	3237.08

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
FEE CALCUALTION WORKSHEET (FEE)

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): ________ Initial   X Annual

Deadline for submitting fee calculation worksheet 3/18/2024

For initial fees, emissions are based on (Check one):

X Actual emissions for the preceding calendar year. (Required in most circumstances.)

________ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations 3/19/2023

________ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name ________

Mailing address: Street or P.O. Box ________

City   State   ZIP

Contact person ________ Title ________

Telephone ________ Part 71 permit no. ________

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) ________

Name (typed) ________ Date / /

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO and GHGs (see instructions). Sum the emissions in each column to calculate subtotals. Subtotals should be reported to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for 2023/2024 (year)

Emission Unit ID	NOx	VOC	SO2	PM10	Lead	Other
HT	0.86	0.05	0.01	0.07		
ENG	--	--	--	--		
FUG	--	4.29	--	--		
LOADING	--	0.00	--	--		
OT	Emissions represented at LP Flare					
WT	Emissions represented at LP Flare					
HP Flare	0.05	0.46	0	--		
LP Flare	3.25	31.33	0	--		
PNE	--	3.39	--	--		
Subtotals	4.16	39.51	0.01	0.07	0	0

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier
Benzene	71-43-2	HAP1
Toluene	108-88-3	HAP2
Ethylbenzene	100-41-4	HAP3
Xylene	1330-20-7	HAP4
n-Hexane	110-54-3	HAP5
2,2,4-Trimethylepentane	540-87-1	HAP6

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. Sum the emissions in each column to calculate subtotals. Report subtotals to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for 2023/2024 (year)

Emission Unit ID	Actual Emissions (Tons/Year)						
	HAP1	HAP2	HAP3	HAP4	HAP5	HAP6	
HT	0.00	0.00	--	--	--	--	
ENG	0.00	0.00	0.00	0.00	0.00	0.00	
FUG	0.01	0.03	0.01	0.03	0.06	0.00	
LOADING	0.00	0.00	0.00	0.00	0.00	0.00	
OT	Emissions represented at LP Flare						
WT	Emissions represented at LP Flare						
HP Flare	0.00	0.00	0.00	0.00	0.00	0.00	
LP Flare	0.12	0.08	0.01	0.03	0.82	0.01	
PNE	0.00	0.00	0.00	0.00	0.00	0.00	
Subtotals	0.13	0.12	0.02	0.07	0.88	0.01	

F. Fee Calculation Worksheet

This worksheet is used to calculate the total fee owed (including the emissions-based fee and the GHG fee adjustment) for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, complete line 1-5 (emissions summary) and then skip down to line 21 (emission calculation). See instructions for more detailed explanation.

EMISSIONS SUMMARY

1. Sum the subtotals from section D of this form (non-HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	43.74
2. Sum the subtotals from section E of this form (HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	1.23
3. Sum lines 1 and 2.	44.97
4. Enter the emissions that were counted twice. If none, enter "0."	1.23
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here. This is the total emissions that count for fees purposes.	43.74
RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "CURRENT" CALENDAR YEAR) Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.	
6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).	
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."	
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."	
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate ($/ton) and enter the result here. This is the underpayment. Go to line 21.	
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate ($/ton) and enter the result here. This is the overpayment. Go to line 21.	

RECONCILIATION (WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "PRECEDING" CALENDAR YEAR) Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.	
11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.	
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.	
13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.	
14. Enter double counted emission from line 13 here. If none, enter "0."	
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.	
of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.	
17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate ($/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate ($/ton) and enter the result on this line. This is the overpayment.	
EMISSION FEE CALCULATION	
21. Multiply line 5 (tons) by the current fee rate ($/ton) and enter the result here. This is the unadjusted emissions fee. Continue on to line 23.	2792.76

GHG FEE ADJUSTMENT	
22. If you are submitting an initial permit application and this is the first time you are paying fees, enter $2,236, otherwise enter "0". [Note that any updates to the initial application are covered under this one-time charge.]	
23. Enter the number of permit modifications (or related permit actions) you have submitted to the permitting authority since you last paid fees. If none, skip to line 25.	
24. Multiply the number in line 23 by $365 and enter the result.	
25. If you have submitted a permit renewal application since the last time you paid fees enter $520, otherwise enter "0"	
26. Sum line 22, 24, and 25 and enter the result. This is the GHG fee adjustment	0
OTHER ADJUSTMENTS	
26. Add the total on line 21 and the total on line 26 and enter the result.	2792.76
27. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	
28. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	
line 29 is greater than "0," subtract this from line 27 and enter the result here. Otherwise enter the amount on line 27 here. This is the fee adjusted for over/underpayment.	
30. Enter any credit for fee assessment error here. Otherwise, enter "0."	
31. Subtract line 31 from line 30 and enter the result here. Stop here. This is the **TOTAL FEE (AFTER ADJUSTMENTS)** that you must remit to EPA.	2792.76

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
FEE CALCUALTION WORKSHEET (FEE)

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): ________ Initial   __X__ Annual

Deadline for submitting fee calculation worksheet: 3/19/2025

For initial fees, emissions are based on (Check one):

__X__ Actual emissions for the preceding calendar year. (Required in most circumstances.)

________ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations: 3/19/2024

________ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

(832) 364-3368

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name ________

Mailing address: Street or P.O. Box ________

City ________ State ________ ZIP ________

Contact person ________ Title ________

Telephone ________ Part 71 permit no. ________

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) ________

Name (typed) ________ Date / /

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO and GHGs (see instructions). Sum the emissions in each column to calculate subtotals. Subtotals should be reported to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for 2024 (year)

Emission Unit ID	NOx	VOC	SO2	PM10	Lead	Other
HT	0.68	0.04	0.00	0.05	0.00	0.00
ENG	0.00	0.00	0.00	0.00	0.00	0.00
FUG	0.00	3.37	0.00	0.00	0.00	0.00
LOADING	0.00	0.00	0.00	0.00	0.00	0.00
OT	Emissions represented at LP Flare					
WT	Emissions represented at LP Flare					
HP Flare	0.04	0.36	0.00	0.00	0.00	0.00
LP Flare	2.56	24.65	0.00	0.00	0.00	0.00
PNE	0.00	2.67	0.00	0.00	0.00	0.00
Subtotals	3.27	31.09	0.00	0.05	0	0

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier
Benzene	71-43-2	HAP1
Toluene	108-88-3	HAP2
Ethylbenzene	100-41-4	HAP3
Xylene	1330-20-7	HAP4
n-Hexane	110-54-3	HAP5
2,2,4-Trimethylepentane	540-87-1	HAP6

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. Sum the emissions in each column to calculate subtotals. Report subtotals to the nearest tenth (0.1) of a ton at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for 2024 (year)

Emission Unit ID	Actual Emissions (Tons/Year)						
	HAP1	HAP2	HAP3	HAP4	HAP5	HAP6	
HT	0.00	0.00	0.00	0.00	0.00	0.00	
ENG	0.00	0.00	0.00	0.00	0.00	0.00	
FUG	0.01	0.03	0.01	0.03	0.05	0.00	
LOADING	0.00	0.00	0.00	0.00	0.00	0.00	
OT	Emissions represented at LP Flare						
WT	Emissions represented at LP Flare						
HP Flare	0.00	0.00	0.00	0.00	0.00	0.00	
LP Flare	0.10	0.07	0.01	0.02	0.64	0.01	
PNE	0.00	0.00	0.00	0.00	0.00	0.00	
Subtotals	0.10	0.09	0.01	0.05	0.70	0.01	

F. Fee Calculation Worksheet

This worksheet is used to calculate the total fee owed (including the emissions-based fee and the GHG fee adjustment) for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, complete line 1-5 (emissions summary) and then skip down to line 21 (emission calculation). See instructions for more detailed explanation.

EMISSIONS SUMMARY

1. Sum the subtotals from section D of this form (non-HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	34.42
2. Sum the subtotals from section E of this form (HAP) and enter the total, rounded to the nearest tenth (0.1) of a ton.	0.97
3. Sum lines 1 and 2.	35.38
4. Enter the emissions that were counted twice. If none, enter "0."	0.97
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here. This is the total emissions that count for fees purposes.	34.42

RECONCILIATION
(WHEN INITIAL FEES WERE BASED ON ESTIMATES
FOR THE "CURRENT" CALENDAR YEAR)

Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.

6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).	
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."	
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."	
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate ($/ton) and enter the result here. This is the underpayment. Go to line 21.	
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate ($/ton) and enter the result here. This is the overpayment. Go to line 21.	

RECONCILIATION
(WHEN INITIAL FEES WERE BASED ON ESTIMATES
FOR THE "PRECEDING" CALENDAR YEAR)

Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.

11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.	
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.	
13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.	
14. Enter double counted emission from line 13 here. If none, enter "0."	
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.	
of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.	
17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate ($/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate ($/ton) and enter the result on this line. This is the overpayment.	

EMISSION FEE CALCULATION

21. Multiply line 5 (tons) by the current fee rate ($/ton) and enter the result here. This is the unadjusted emissions fee. Continue on to line 23.	2197.58

GHG FEE ADJUSTMENT	
22. If you are submitting an initial permit application and this is the first time you are paying fees, enter $2,236, otherwise enter “0”. [Note that any updates to the initial application are covered under this one-time charge.]	
23. Enter the number of permit modifications (or related permit actions) you have submitted to the permitting authority since you last paid fees. If none, skip to line 25.	
24. Multiply the number in line 23 by $365 and enter the result.	
25. If you have submitted a permit renewal application since the last time you paid fees enter $520, otherwise enter “0”	
26. Sum line 22, 24, and 25 and enter the result. This is the GHG fee adjustment	0
OTHER ADJUSTMENTS	
26. Add the total on line 21 and the total on line 26 and enter the result.	2197.58
27. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	
28. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	
line 29 is greater than "0," subtract this from line 27 and enter the result here. Otherwise enter the amount on line 27 here. This is the fee adjusted for over/underpayment.	
30. Enter any credit for fee assessment error here. Otherwise, enter "0."	
31. Subtract line 31 from line 30 and enter the result here. Stop here. This is the **TOTAL FEE (AFTER ADJUSTMENTS)** that you must remit to EPA.	2197.58

Marathon Oil Company
990 Town & Country Boulevard
Houston, TX 77001-669

Remittance Advice

To	Remittance Address
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION II 290 BROADWAY 17TH FLOOR NEW YORK NY 10007-1866 Attn: Accounts Receivable	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION II 290 BROADWAY 17TH FLOOR NEW YORK NY 10007-1866

Vendor No.: 5005415
Deposit Date: 09/18/2024
Remittance Advice The Payment for the following invoices will be deposited on the above **deposit date** to your bank account **XXXXXX9008, US ENVIRONMENTAL PROTECTION AGENCY,** through the Automated Clearing House (ACH). If you have questions, please contact the AP Supplier Hotline 866-323-1836 or for Joint Venture contact 866-925-6093. You can also email OpenInvoiceSupport@marathonoil.com.

Invoice Number	Inv Date	Document Number/Text	Gross Amount	Disc/WHTax	Net Amount
0924 UN822741	09/13/2024	1900004375 *Oates*	8,227.41	0.00	8,227.41
		Total		**USD**	---------------------- **8,227.41**

Attachment 3

Potential Annual Emissions

Michelle McCracken
HES Professional

Marathon Oil Company
990 Town and Country Blvd.
Houston, TX 77024
(713) 296-3272
mmccracken@marathonoil.com

Marathon Oil

June 2, 2023

Ms. Claudia Smith
Minor NSR Permitting Coordinator
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, Colorado 80202-1129

Dear Ms. Smith:

Enclosed please find an updated Part 2 registration form for the Oates well pad. This submittal addresses the removal of some high-pressure separators. Wells producing into the facility are listed below.

Facility Name	API Number
Oates 21-27H	33-061-04546
Senness 11-27TFH	33-061-04545

Please do not hesitate to contact me if you have any questions regarding this registration.

Sincerely,

Michelle McCracken

Michelle McCracken
Enclosures

EPA Form No. 5900-391
EPA ICR No. 1230.27
OMB Control No. 2060-0003
Approval expires 10/31/2020

United States Environmental Protection Agency
https://www.epa.gov/tribal-air/tribal-minor-new-source-review
April 29, 2019

Part 2: Submit Within 60 Days After Startup of Production -- Emission and Production Information

FEDERAL IMPLEMENTATION PLAN FOR TRUE MINOR SOURCES IN INDIAN COUNTRY IN THE OIL AND NATURAL GAS PRODUCTION AND NATURAL GAS PROCESSING SEGMENTS OF THE OIL AND NATURAL GAS SECTOR

Registration for New True Minor Oil and Natural Gas Sources and Minor Modifications at Existing True Minor Oil and Natural Gas Sources

Please submit information to:

[Reviewing Authority Address Phone]	Claudia Smith Minor NSR Permitting Coordinator U.S. EPA, Region 8 1595 Wynkoop Street, 8P-AR Denver, CO 80202-1129

A. GENERAL SOURCE INFORMATION (See Instructions Below)

1. Company Name Marathon Oil Company		**2. Source Name** Oates well pad	
3. Type of Oil and Natural Gas Operation oil and gas well-site		**4. New Minor Source?** ☐ Yes ☒ No **5. True Source Modification?** ☒ Yes ☐ No	
6. NAICS Code 211111		**7. SIC Code** 1311	
8. U.S. Well ID(s) or API Number(s) [if applicable] 33-061-04546, 33-061-04545			
9. Area of Indian Country Fort Berthold	**10. County** Mountrail	**11a. Latitude** 47.8755109 N	**11b. Longitude** -102.5730261 W

B. CONTACT INFORMATION (See Instructions Below)

1. Owner Name Jeff Parker	Title Production Manager
Mailing Address 3172 Hwy 22N Dickinson, ND 58601	
Email Address jrparker@marathonoil.com	
Telephone Number 701.456.7502	Facsimile Number 701.456.7525
2. Operator Name (if different from owner) **Same**	Title
Mailing Address	
Email Address	
Telephone Number	Facsimile Number
3. Source Contact Michelle McCracken	Title HES Professional
Mailing Address 990 Town & Country Blvd, Houston, TX 77024	
Email Address mmccracken@marathonoil.com	
Telephone Number 713.296.3272	Facsimile Number 701.456.7525

4. Compliance Contact Jeff Parker	Title Production Manager
Mailing Address 3172 Hwy 22N Dickinson, ND 58601	
Email Address jrparker@marathonoil.com	
Telephone Number 701.456.7502	Facsimile Number 701.456.7525

C. EMISSIONS AND OTHER SOURCE INFORMATION

Include all of the following information in the table below and as attachments to this form:

Note: The emission estimates can be based upon actual test data or, in the absence of such data, upon procedures acceptable to the Reviewing Authority. The following procedures are generally acceptable for estimating emissions from air pollution sources: (1) unit-specific emission tests; (2) mass balance calculations; (3) published, verifiable emission factors that are applicable to the unit (i.e., manufacturer specifications); (4) other engineering calculations; or (5) other procedures to estimate emissions specifically approved by the Reviewing Authority. Guidance for estimating emissions can be found at https://www.epa.gov/chief.

■ Narrative description of the operations.

■ Identification and description of any air pollution control equipment and compliance monitoring devices or activities.

■ Type and actual amount (annually) of each fuel that will be used.

■ Type of raw materials used (e.g., water for hydraulic fracturing).

■ Actual, annual production rates.

■ Actual operating schedules.

■ Any existing limitations on source operations affecting emissions or any work practice standards, where applicable, for all regulated New Source Review (NSR) pollutants at your source. Indicate all requirements referenced in the Federal Implementation Plan (FIP) for True Minor Sources in Indian Country in the Oil and Natural Gas Production and Natural Gas Processing Segments of the Oil and Natural Gas Sector that apply to emissions units and air pollution generating activities at the source or proposed. Include statements indicating each emissions unit that is an emissions unit potentially subject to the requirements referenced in the FIP, but does not meet the definition of an affected facility under the referenced requirement, and therefore, is not subject to those requirements.

■ For each emissions unit comprising the new source or modification, estimates of the total allowable (potential to emit) annual emissions at startup of production from the air pollution source for the following air pollutants: particulate matter, PM_{10}, $PM_{2.5}$, sulfur oxides ( ), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compound (VOC), lead (Pb) and lead compounds, fluorides (gaseous and particulate), sulfuric acid mist (H_2SO_4), hydrogen sulfide (H_2S), total reduced sulfur (TRS) and reduced sulfur compounds, including all calculations for the estimates. Allowable annual emissions are defined as: emissions rate of an emissions unit calculated using the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation, or the effect it would have on emissions, is legally and practically enforceable. You must determine the potential for emissions within 30 days from the startup of production.

▣ For each emissions unit comprising the new source or modification, estimates of the total actual annual emissions during the upcoming, consecutive 12 months from the air pollution source for the following air pollutants: particulate matter (PM, PM_{10}, $PM_{2.5}$), sulfur oxides (SO_x), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compound (VOC), lead (Pb) and lead compounds, ammonia (NH_3), fluorides (gaseous and particulate), sulfuric acid mist (H_2SO_4), hydrogen sulfide (H_2S), total reduced sulfur (TRS) and reduced sulfur compounds, including all calculations for the estimates. Estimates of actual emissions must take into account equipment, operating conditions, and air pollution control measures. You should calculate an estimate of the actual annual emissions using estimated operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted.

D. TABLE OF ESTIMATED EMISSIONS

Provide in the table below estimates of the total allowable annual emissions in tons per year (tpy) and total actual annual emissions (tpy) for the following pollutants for all emissions units comprising the new source or modification.

POLLUTANT	TOTAL ALLOWABLE ANNUAL EMISSIONS (TPY)	TOTAL ACTUAL ANNUAL EMISSIONS (TPY)
PM	0.07	0.07
PM_{10}	0.07	0.07
$PM_{2.5}$	0.07	0.07
SO_x	0.02	0.02
NO_x	3.64	3.64
CO	12.34	12.34
VOC	31.44	31.44
Pb	0.00	0.00

POLLUTANT	TOTAL ALLOWABLE ANNUAL EMISSIONS (TPY)	TOTAL ACTUAL ANNUAL EMISSIONS (TPY)
NH3	0.00	0.00
Fluorides	0.00	0.00
H_2SO_4	0.00	0.00
H_2S	0.00	0.00
TRS	0.00	0.00

ATTACHMENT 1

NARRATIVE AND PROCESS FLOW DIAGRAM

Narrative description of the operations:

The Oates well pad includes the following wells: Oates 21-27H and Senness 11-27TFH. The Oates well pad is owned and operated by Marathon Oil Company (Marathon) and located on the Ft. Berthold Indian Reservation in Mountrail County, North Dakota. This oil and gas production facility consists of

Produced fluid from the formation, initially an emulsion comprised of produced oil, natural gas, and produced water flows or is pumped from the wells to heater treaters. Oil is separated from produced water and gas. Oil and produced water are routed to aboveground storage tanks. Gas is routed to sales or is combusted by a control device with a 98% minimum destruction efficiency.

Produced water may be loaded into tanker trucks for off-site disposal or sent to disposal via pipeline. The oil will be loaded onto trucks or pass through a Lease Automated Custody Transfer (LACT) unit prior to shipment via pipeline. Finally, storage tanks will utilize a control device with a 98% minimum destruction efficiency to reduce emissions from these tanks.

Identification and Description of All Emission Units and Air Pollution Generating Activities; Including Portable Equipment:

The following is a narrative of potential emission equipment that may be used at this facility. Site-specific equipment for Marathon facilities may vary depending on gas sales and equipment placement. Please refer to Table 1 (see below) and Attachment 2 for equipment specific to the location.

1. Electrically-operated pumping units extract produced fluid from the formation. The fluid leaves the production well casing head via an underground flowline and enters a heater treater for separation. The heater treater is equipped with a 500,000 to 2,000,000 Btu/hr burner fueled by natural gas from the well or liquefied petroleum gas (LPG) from a pressurize storage tank. Production from locations where wells share common ownership may be commingled. Under this scenario, multiple heater treaters may be used to determine production rates of individual wells for accounting purposes.
2. Natural gas produced from the heater treater is routed to the heater treater burner to provide its fuel, routed to sales, or routed to control devices with a 98% destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (when personnel are on site) or via the Supervisory Control and Data Acquisition (SCADA) network. If the temperature of the sales gas is too high, the site may require the use of one or more natural gas-driven coolers to meet sales temperature specification.
3. Produced oil from the heater treater is routed to multiple vertical above ground fixed-roof storage tanks, where it is stored prior to shipment offsite via pipeline or tanker truck loading via submerged fill lines. Emissions of regulated air pollutants (i.e., Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs)) from working/breathing/flash losses are routed to a control device with a 98% minimum destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (when

personnel are on site) or via SCADA. Individual produced oil storage tanks may be subject to 40 CFR 60, subpart OOOOa (NSPS OOOOa) because VOC emissions from these tanks exceed the six tons per year (TPY) per tank threshold.

4. Produced water is routed from the heater treater to vertical above ground fixed-roof storage tanks, where it is stored prior to tanker truck loading. Emissions from produced water tanks are routed to the same control device with a 98% minimum destruction efficiency equipped with a continuous automatic igniter and pilot flame with a thermocouple. This device is monitored visually (when personnel are on site) or via SCADA. Produced water storage tanks are not subject to NSPS OOOOa because emissions from these tanks do not exceed the six TPY of VOC per tank threshold; however, water tanks share the same vent collection system as the oil tanks and therefore may be subject to the rule.
5. Emissions from oil tanker truck loading are evaluated in the attached calculation spreadsheet. Produced water loading emissions are assumed to be negligible.
6. If additional separation is necessary to meet buyer specifications, a recirculation pump is used to recirculate produced oil from storage tanks to the heater treater. This pump is powered by on-site electrical power or a gasoline-powered spark ignition (SI) reciprocating internal combustion engines (RICE) producing eight horsepower (hp). Each SI RICE used is manufactured after July 1, 2008 and certified in accordance with the requirements for new non-road SI engines (40 CFR Part 90) and is operated in accordance with the manufacturer's instructions (40 CFR 60.4243(a)(1)). Additionally, each SI RICE is subject to the maintenance and recordkeeping requirements for SI RICE in 40 CFR 63, subpart ZZZZ effective October 19, 2013.
7. This facility design may include multiple pneumatic controllers on-site. Marathon uses intermittent bleed pneumatic devices powered by pressurized natural gas for flow control devices and for maintaining process conditions such as liquid level, pressure, delta-pressure, and temperature. These devices are snap-acting that discharge the full volume of the actuator intermittently when control action is necessary but do not bleed continuously. If throttling devices are used, they vent less than six scf/h and are not subject to NSPS OOOOa.
8. The well pad sites may have one or more generators onsite to provide power to facility equipment. For the purpose of this application, calculations were prepared assuming generators operate for 8,760 hours per year. Once the site is connected to electrical power, generators are removed from the site. Generator engines may be fueled by natural gas or propane and are SI RICE, manufactured after July 1, 2008, certified in accordance with the requirements for new non-road SI engines (40 CFR Part 90), operated in accordance with the manufacturer's instructions (40 CFR 60.4243(a) (1)), and subject to the maintenance and recordkeeping requirements for SI RICE in 40 CFR 63, subpart ZZZZ effective October 19, 2013.

Identification and Description of Any Existing Air Pollution Control Equipment and Compliance Monitoring Devices or Activities

Emission Source	Emission Controls	Control Efficiency	Monitoring Type
Produced Oil/Produced Water Storage Tanks	Destruction efficiency control device(s) See Footnote 1 below.	98%	Visually by operator (when on site) or via SCADA
Heater Treater Produced Natural Gas	Destruction efficiency control device	98%	Visually by operator (when on site) or via SCADA
Heater Treater Fuel Gas	See Footnote 2 below	0% (uncontrolled)	See Footnote 3
RICE Engine	See Footnote 3 below	0% (uncontrolled)	See Footnote 3
Truck Loadout (Produced oil and produced water)	Submerged Fill	40%	Viewpoint Program oil production rates See attached calculations
Well Pad Site Generator	See Footnote 3 below	See Footnote 3	See Footnote 3
Pneumatic Controllers	None (uncontrolled)	N/A	---

Footnote 1: The 98% control device usage is noted here, so that use of either a combustor or utility flare to control tank emissions is acceptable on any location.
Footnote 2: The heater treater burner is controlled by a Burner Management System which regulates the flow of fuel gas to the burner to achieve a temperature in the vessel within the desired operational parameters.
Footnote 3: EPA certified engines, Catalytic Converter or Oxidizers if required by NSPS JJJJ.

Type and Amount of Fuels Used

Field gas (produced natural gas) is used at this location to fuel the heater treater burner. Field gas not utilized in the burner is routed to control devices with a 98% minimum destruction efficiency. The contents of the field gas are included in the calculation spreadsheets provided in Part 2. The volume of gas utilized in the burner varies depending on well flow rate, wellhead temperature, and the desired operating temperature range.

Type of Raw Materials Used

The produced fluid is initially an emulsion comprised of produced oil, natural gas, and produced water. Please see the narrative above for a further description of the process.

Production Rates

Production rates vary depending on the facility. The initial production rates are normally higher and decline over time. Production from thirty days is utilized with no decline for existing wells.

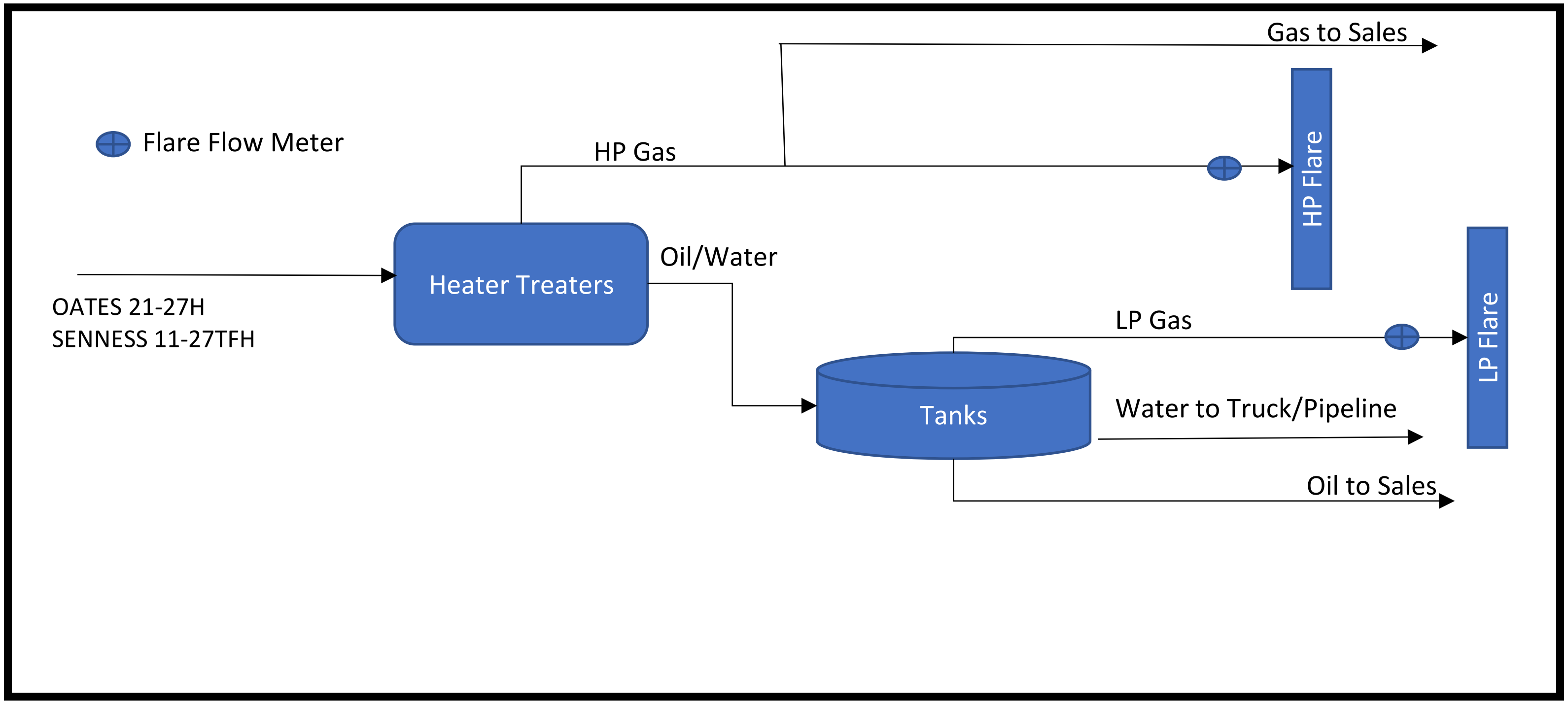
Operating Schedules

The well pad is anticipated to operate 24-hours per day, 7-days per week, and 52-weeks per year for a total of 8,760 hours per year. Exceptions to this operating schedule may include but are not limited to, shutdowns associated with extreme weather conditions, scheduled maintenance, operation updates, and temporary shut-in (if required).

Any Existing Limitations on Source Operation Affecting Emissions or Any Work Practice Standards, Where Applicable, for All Regulated NSR Pollutants at Your Source

Some emissions for this facility may be regulated under 40 CFR part 60, subpart OOOOa. Marathon will comply with the applicable requirements. In accordance with this rule, controls to reduce VOC emissions by 95% for storage tanks emitting six tons or more per year of VOC may be required. This reduction requirement applies to tanks used in oil and gas production, natural gas processing, and transmission and storage. The calculations for this facility indicate that with controls, the emissions from tanks may exceed the six-ton per year per tank threshold. Additionally, the New Source Performance Standards will require a Leak Detection and Repair Program to reduce emissions from fugitive emission sources.

MARATHON OIL COMPANY
OATES WELL PAD PROCESS FLOW DIAGRAM



ATTACHMENT 2

EMISSIONS CALCULATIONS

Calculation Basis

Background

The Oates well pad has two existing wells. This submittal addresses the removal of some high-pressure separators.

General Emission Calculations

Throughput

Throughput is based on 30 days of actual production data with no decline. Any days of no production are replaced with an average production from the day prior and the day after the day or days with no production or with forecasted production.

Equipment

This site has the following separation equipment in order of highest operating pressure to lowest operating pressure:

- Heater treater(s)

The site also has:

- Oil tanks
- Water tanks
- High pressure flare(s) to control gas from the from the heater treater(s)
- Low pressure flare(s) to control flash and working & breathing emissions from the oil and water tanks
- Truck loading point(s) as a backup to the pipeline LACT(s) for both oil and water
- Pneumatic device(s) (only at some locations)

Model

Pressurized oil sample(s) and a gas sample(s) are collected from the highest pressure separation equipment for analysis to model the emissions from the facility. The analyses are used in a process simulation, Promax, along with normal operating temperatures and pressures through the separation equipment to model emissions. If the analyses do not meet QA/QC criteria, another set of samples are collected, or representative analyses or sales gas analysis are used. Samples are good if:

- Pressure on the sample vessel is within 15% of the pressure on the vessel sampled (from SCADA,account for pressure loss across sample valve),
- Passes lab QA/QC, and
- Methane is within 3 mole % of gas sales analysis.

Because the gas sample is collected off the highest pressure vessel and it may contain liquids, a flare scrubber (which is actually present in the field) is included in the model. If the sales gas analysis is used, the scrubber will be removed from the model.

User defined inputs into modelling software:

- Oil sample composition
- Gas sample composition
- Separation equipment operating temperatures and pressures
- Site ambient conditions (for tank emissions)
- Production throughputs for crude oil, produced water, and volume of gas flared from the highest pressure separation equipment.

The oil and gas sample compositions are used to estimate fugitive emissions using a count of major equipment at the site and default component counts are used based on the approach provided in EPA's Mandatory Reporting Rule for Greenhouse Gases (GHG MRR), 40 CFR Part 98, Subpart W, Table W-1B.

The gas sample composition is used to estimate emissions from the highest pressure separation equipment that is not sold. The majority of the gas is sold but a small amount of flared gas is included for times when some or all gas cannot be sold. Only the gas from the highest pressure separation equipment can be sold unless there is a VRU.

The heater treater temperature and pressure used in the model are the expected average over the course of the year. The heater treater was modelled as adiabatic.

Flash from the oil and water tanks is also modelled and working and breathing losses are estimated using the most current method from EPA AP-42. The total oil production is divided among the number of tanks in service to estimate the emissions from a single tank. Those emissions are then multiplied by the number of tanks in service. Tanks are modelled as adiabatic with no quench. Water tank emissions are assumed to contain 1% VOC for the purposes of estimating emissions. All emissions from storage tanks are controlled by the low pressure flare with a 98% destruction efficiency.

Emissions from truck loading are calculated using the most current method from AP-42. Water loading emissions are de-minimus.

6. 2023-05-26 Oates Part 2 PTE Emissions Summary

AIR PERMITTING ANALYSIS

Company Name: Marathon Oil Company

Facility Name: Oates CTB

Field: Fort Berthold Reservation

Date Prepared: 6/3/2023

Prepared By: Marathon Oil Company

	Annual Averaged		Annual Total	
Produced Gas	455	mscfd	166,080	mscf/yr
Well Gas Flared	[redacted]		13,620	mscf/yr
Oil Production	169	bbls/day	61,682	bbls/yr
Produced Water Production	182	bbls/day	66,430	bbls/yr
Heater Treater Temp. / Pressure	110	deg F	59	psig
HP Flare Control Efficiency	98%			
LP Flare Control Efficiency	98%			
Operating Period	365	days	8760	hours

Emission Sources	NOx	CO	VOC	HAPs	n-Hexane	PM_{10}	SO_2
Boilers and/or Heaters	0.86	0.72	0.05	--	--	0.07	0.01
Engines and/or Turbines	-	-	-	0.00	0.00	-	-
Equipment Fugitives	--	--	2.18	0.13	0.08	--	--
Oil Truck Loading	--	--	7.72	0.43	0.31	--	--
Oil Tanks	Emissions represented at LP Flare						
Water Tank	Emissions represented at LP Flare						
High Pressure Flare	0.76	3.16	4.44	0.21	0.15	0.00	--
Low Pressure Flare	2.03	8.46	13.04	0.68	0.49	0.00	--
Pneumatics	--	--	4.02	0.20	0.20	--	--
Total (TPY)	**3.64**	**12.34**	**31.44**	**1.65**	**1.23**	**0.07**	**0.01**

6. 2023-05-26 Oates Part 2 PTE Heater Burners

Heater ID:	Treater 1	Treater 2	Treater 3	Treater 4
Heater Rating (MMBtu/hr)	1.00	1.00		
Heater Fuel Source	High Pressure Gas	High Pressure Gas		
Fuel Heat Value (Btu/scf)	1,020	1,020		
Operating Hours	8,760	8,760		
Fuel Usage (Mscf/year)(1)	8,588	8,588		

(1) Fuel Usage = (Heater Treater Rating, MMBtu/hr) x (8760 hours/year) / (Fuel Heat Value, Btu/scf) x (1,000 Mscf/MMscf)

Emissions Factors (lb/MMscf) - From AP42, Ch.1.4, Tables 1.4-1 & 1.4-2 dated July 1998				
NOx	CO	VOC	PM	SO_2
100	84	5.5	7.6	0.6

Note: If the actual maximum fuel usage is provided, the above emission factors are adjusted by the ratio of the actual fuel heat value to 1020 Btu/scf.

Heater/Boiler Emissions (Tons/year)(2)						
Heater ID:	Fuel Usage (Mscf/yr)	NOx	CO	VOC	PM	SO_2
Treater 1	8,588	0.43	0.36	0.02	0.03	2.58E-03
Treater 2	8,588	0.43	0.36	0.02	0.03	2.58E-03
	Total	**0.86**	**0.72**	**0.05**	**0.07**	**0.01**

(2) Emissions in TPY = (Fuel Usage Mscf/year) x (Emission Factor lb/MMscf) / (2000 lb/ton) x (1000 Mscf/MMscf)
(3) All PM emissions were assumed to be PM10 based on footnote (c) to Table 1.4-2 of AP-42 (dated 7/98).

Calculation Basis:
Natural gas-fired single-burner heater treaters will be used to heat the oil/water/gas mixture to help promote three phase separation.
External combustion emissions were calculated in accordance with AP-42 Section 1.4 (July 1998), Natural Gas Combustion, Tables 1.4-1, 1.4-2, and 1.4-3., using emission factors for Small Boilers (less than 100 MMBtu/hr rating).
All heaters are assumed to run 8760 hours per year.
Emissions of HAPs are assumed to be deminimis.

Default Component Counts - Light Oil Service (per major piece of equipment)[1]				
Equipment	Valves	Flanges	Connectors	Other Components
Wellhead	2	10	4	1
Separators	0	12	10	0
Heater Treater	2	12	20	0
Header	0	10	4	0

(1) From MRR Subpart W Table W-1C.

Default Component Counts - Gas Service (per major piece of equipment)[1]				
Equipment	Valves	Connectors	Open-Ended Lines	Pressure Relief Valves
Wellhead	11	36	1	0
Separators	34	106	6	2
Meters/Piping	14	51	1	1
Compressors	73	179	3	4
In-Line heaters	14	65	2	1

(1) From MRR Subpart W Table W-1C.

Total Fugitive Emissions (Tons/year)		
VOC	HAPs	n-Hexane
2.18	0.13	0.08
Operating Period	8,760	hours

Major Equipment Counts[2]	
Wellhead	2
Header	0
Separator	0
Heater Treater	2
Meters	1
Compressors	0
In-Line Heaters	0
Pumps	8

(2) Actual count of major equipment at facility

Component Type	Number of Components in Gas Service[3]	Gas Emission Factor (lb/hr per Component)[4]	VOC Emissions (TPY) from Gas Components[5]	HAP Emissions (TPY) from Gas Components[5]	n-Hexane Emissions (TPY) from Gas Components[5]	Number of Components in Oil Service[3]	Oil Emission Factor (lb/hr per Component)[4]	VOC Emissions (TPY) from Oil Components[5]	HAP Emissions (TPY) from Oil Components[5]	n-Hexane Emissions (TPY) from Oil Components[5]
Valves	36	0.010	0.57	0.03	0.03	8	0.006	0.19	0.01	0.01
Pumps	0	0.01	0.00E+00	0.00E+00	0.00E+00	8	0.029	9.93E-01	6.63E-02	2.78E-02
Flanges	0	8.60E-04	0.00E+00	0.00E+00	0.00E+00	44	2.43E-04	0.05	3.09E-03	1.30E-03
Compressors	0	0.019	0.00E+00	0.00E+00	0.00E+00	0	0.017	0.00E+00	0.00E+00	0.00E+00
Relief Valves	1	0.019	0.03	1.56E-03	1.56E-03	0	0.017	0.00E+00	0.00E+00	0.00E+00
Open-ended Lines	3	4.41E-03	0.02	1.06E-03	1.06E-03	0	0.003	0.00E+00	0.00E+00	0.00E+00
Connectors	123	4.40E-04	0.09	4.34E-03	4.34E-03	48	4.63E-04	0.10	0.01	2.70E-03
Other	0	0.019	0.00E+00	0.00E+00	0.00E+00	2	0.017	0.14	0.01	0.00

(3) The number of components for a particular type of equipment were calculated as follows: (Number of Components) = (Equipment Count) x (Components per Equipment for service)

(4) Factors taken from EPA document EPA-453/R-95-017; November, 1995; pp. 2-15.

(5) Per Service Type and Per Component Type: (VOC or HAP Emissions, TPY) = (Component Count) x (Emission Factor, lb/hr/component) x (8760 hours per year) x (wts%VOC or HAP) x (1 ton per 2000 lb)

Calculation Basis:

Site specific component counts are not available so default component counts are used based on the approach provided in EPA's Mandatory Reporting Rule for Greenhouse Gases (GHG MMR), 40 CFR Part 98, Subpart W, Table W-1B. Actual counts were compiled for major equipment (i.e. wellheads, separators, in-line heaters, etc.), and default component counts were applied to each equipment type.

Oil produced at the site will have an API gravity of greater than 20° API; therefore, all hydrocarbon liquids are considered "light oil". There are no "heavy oil" components at this site.

6. 2023-05-26 Oates Part 2 PTE Pneumatics

Pneumatic Devices					
Type	Count	Bleed Rate (scf/hr/component)	VOC (TPY)	HAP (TPY)	n-Hexane
Valves	6	6	4.02	0.20	0.20
Pumps	0	0	0.00E+00	0.00E+00	0.00E+00

Total Fugitive Emissions (Tons/year)		
VOC	HAPs	n-Hexane
4.02	**0.20**	**0.20**

Calculation Basis: Emissions are estimated using the estimated controller count (for those that vent to atmosphere), an emission factor for pneumatics that is the same as what would be considered a covered continuous venting pneumatic device, and a gas composition. Note: devices used are snap acting versus throttling. The gas composition used is that of the high pressure separator gas composition.
Where pneumatic pumps are used, the manufacturer specified bleed rate will be used.

Emissions (TPY) = Count of devices * Bleed Rate (scf/hr/controller) * Gas Molecular Weight (lb/lbmole) * Weight Percent VOC or HAP * 1/molar volume conversion (379.3 scf/lbmole) * 8760 hr/yr * 1 ton/2000 lb

Gas Composition (High Pressure Separator Gas)	
Date of Analysis:	9/1/2020
Component	**wt%**
Water	0.00E+00
H2S	0.00E+00
Nitrogen	2.74%
Carbon Dioxide	1.33%
Methane	33.81%
Ethane	25.39%
Propane	20.07%
Isobutane	2.60%
n-Butane	8.25%
Isopentane	1.63%
n-Pentane	2.34%
2-Methylpentane	0.00E+00
3-Methylpentane	0.00E+00
n-Hexane	1.83%
Cyclohexane	0.00%
Heptane	0.00%
Methylcyclohexane	0.00%
Benzene	0.00%
Toluene	0.00%
Ethylbenzene	0.00E+00
o-Xylene	0.00E+00
2,2,4-Trimethylpentane	0.00E+00
Octane	0.00%
Nonane	0.00%
Decane	0.00E+00
Decanes+	0.00E+00
Gas wt %VOC	**36.72%**
Gas wt %HAPs	**1.83%**

Flowsheet Information				
Tank Losses Stencil Name		Oil Tank Losses		
Tank Losses Stencil Reference Stream		Oil Tank Feed		
Separator Name		Oil Tank		
Separator Inlet Stream		Oil Tank Feed		
Separator Pressure [psia]	Inlet | Outlet	72.7	13.7	
Separator Temperature [°F]	Inlet | Outlet	110.0	89.8	

Tank Characteristics				
Tank Type		Vertical Cylinder		
Time Frame		Year		
Material Category		Light Organics		
Number of Tanks		3.0		
Shell Height	[ft]	25.000		
Diameter [ft]	[ft]	13.500		
Maximum Liquid Height	[%] | [ft]	90.000	22.500	
Average Liquid Height	[%] | [ft]	50.000	12.500	
Minimum Liquid Height	[%] | [ft]	10.000	2.500	
Sum of Increases in Liquid Level	[ft/yr]	-		
Tank Volume	[gal] | [bbl]	26768.817	637.353	
Insulation		Uninsulated		
Bolted or Riveted Construction		FALSE		
Vapor Balance Tank		FALSE		
Paint Characteristics				
Shell Color		Tan		
Shell Paint Condition		Average		
Roof Color		Tan		
Roof Paint Condition		Average		
Roof Characteristics				
Type		Cone		
Diameter	[ft]	-		
Slope	[ft/ft]	0.063		
Breather Vent Settings				
Breather Vacuum Pressure	[psig]	-0.030		
Breather Vent Pressure	[psig]	0.030		

Loading Loss Parameters		
Cargo Carrier		
Land Based Mode of Operation		
Marine Based Mode of Operation		
Overall Reduction Efficiency	[%]	
Maximum Hourly Loading Rate	[bbl/h]	

Meteorological Data				
Location		Williston, ND		
Average Atmospheric Pressure	[psia]	13.720		
Maximum Average Temperature	[°F]	53.200		
Minimum Average Temperature	[°F]	29.900		
Solar Insolation	[BTU/ft^2*day]	1193.000		
Average Wind Speed	[mph]	8.900		
Tank Conditions				
Flashing Temperature	[°F]	89.814		
Maximum Liquid Surface Temperature	[°F]	89.814		
Average Liquid Surface Temperature	[°F]	82.563		
Set Bulk Temperature to Stream Temperature?		TRUE		
Bulk Liquid Temperature	[°F]	110.000		
Net Throughput	[bbl/day] | [bbl/yr]	170.739	62319.670	
Net Throughput Per Tank	[bbl/day] | [bbl/yr]	56.913	20773.223	
Turnovers Per Tank	[per day]	40.737		
Residual Liquid	[bbl/day]	168.190		
Residual Liquid Per Tank	[bbl/day]	56.063		
Raoult's Law Used for Vapor Pressure Calc?		FALSE		
VP @ Minimum Liquid Surface Temperature	[psia]	11.646		
VP @ Maximum Liquid Surface Temperature	[psia]	13.720		
True Vapor Pressure	[psia]	12.649		

6. 2023-05-26 Oates Part 2 PTE Water Tanks

Produced Water Production	182	BWPD
Oil Production	169	BOPD
Percent Oil in Produced Water	1%	Percent
Number of Water Tanks	1	
Number of Oil Tanks	3	

	Uncontrolled Water Flash			Uncontrolled Water W&S		
Component	Oil Flash Mass Flow (lb/hr)	Ratioed Water Flash Mass Flow (lb/hr)	Water Flash Mass Flow 99% Reduction (lb/hr)	Oil W&B Mass Flow (lb/hr)	Ratioed Water W&S Mass Flow (lb/hr)	Water W&B Mass Flow 99% Reduction (lb/hr)
Water	0.26	0.28	0.00	0.04	0.01	1.23E-04
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrogen	0.09	0.09	9.17E-04	0.00	0.00	4.44E-06
Carbon Dioxide	0.23	0.25	2.53E-03	0.03	0.01	9.09E-05
Methane	2.76	2.97	0.03	0.12	0.04	0.00
Ethane	8.32	8.96	0.09	1.19	0.40	0.00
Propane	13.14	14.15	0.14	1.83	0.61	0.01
Isobutane	2.29	2.47	0.02	0.31	0.10	0.00
n-Butane	7.61	8.20	0.08	1.04	0.35	0.00
Isopentane	1.74	1.88	0.02	0.23	0.08	7.75E-04
n-Pentane	2.30	2.48	0.02	0.30	0.10	0.00
2-Methylpentane	0.45	0.49	0.00	0.06	0.02	1.96E-04
3-Methylpentane	0.51	0.55	5.48E-03	0.07	0.02	2.20E-04
n-Hexane	1.40	1.51	0.02	0.18	0.06	6.03E-04
Cyclohexane	0.20	0.21	2.13E-03	0.03	0.01	8.51E-05
Heptane	2.00	2.15	0.02	0.25	0.08	8.38E-04
Methylcyclohexane	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	0.17	0.18	1.79E-03	0.02	0.01	7.22E-05
Toluene	0.28	0.31	3.06E-03	0.04	0.01	1.20E-04
Ethylbenzene	0.04	0.04	4.24E-04	4.86E-03	1.62E-03	1.62E-05
o-Xylene	0.05	0.05	5.03E-04	0.01	1.92E-03	1.92E-05
2,2,4-Trimethylpentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Octane	0.60	0.65	6.51E-03	0.07	0.02	2.47E-04
Nonane	0.03	0.03	3.30E-04	0.00	0.00	1.22E-05
Decane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Oil 10+	1.71E-04	1.84E-04	1.84E-06	1.67E-05	5.56E-06	5.56E-08
Total	44.48	47.91	0.48	5.83	1.94	0.02
Total VOC	32.82	35.35	0.35	4.45	1.48	0.01
Total HAPs	1.94	2.09	0.02	0.25	0.08	8.31E-04

Maximum Annual Emission Rates and Composition to LP Flare

ProMax Stream:	Pilot Gas	Propane Pilot	Oil Flash	Oil W&B	Water Flash	Water Tank W&B	Sweep Blanket Gas	Total to Flare	Destruction Efficiency	Flare Exhaust (controlled)
Component	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(%)	(tpy)
Water	0.13	0.00E+00	1.15	0.16	0.01	5.38E-04	13.38	**14.83**	0%	**14.83**
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**	98%	**0.00E+00**
Nitrogen	0.28	0.00E+00	0.37	0.01	4.02E-03	1.95E-05	28.76	**29.43**	0%	**29.43**
Carbon Dioxide	0.13	0.00E+00	1.03	0.12	0.01	3.98E-04	13.79	**15.08**	0%	**15.08**
Methane	3.46	0.00E+00	12.08	0.54	0.13	0.00	355.45	**371.66**	98%	**7.43**
Ethane	2.63	0.00E+00	36.45	5.23	0.39	0.02	270.16	**314.88**	98%	**6.30**
Propane	2.12	17.93	57.55	8.03	0.62	0.03	217.82	**304.08**	98%	**6.08**
Isobutane	0.30	0.00E+00	10.04	1.37	0.11	0.00	30.36	**42.18**	98%	**0.84**
n-Butane	0.93	0.00E+00	33.35	4.54	0.36	0.02	95.40	**134.59**	98%	**2.69**
Isopentane	0.20	0.00E+00	7.64	1.02	0.08	0.00	20.61	**29.56**	98%	**0.59**
n-Pentane	0.26	0.00E+00	10.08	1.33	0.11	0.00	27.19	**38.99**	98%	**0.78**
2-Methylpentane	0.05	0.00E+00	1.98	0.26	0.02	8.58E-04	5.39	**7.70**	98%	**0.15**
3-Methylpentane	0.06	0.00E+00	2.23	0.29	0.02	9.64E-04	6.10	**8.70**	98%	**0.17**
n-Hexane	0.17	0.00E+00	6.15	0.79	0.07	0.00	17.19	**24.37**	98%	**0.49**
Cyclohexane	0.02	0.00E+00	0.87	0.11	0.01	3.73E-04	2.41	**3.42**	98%	**0.07**
Heptane	0.25	0.00E+00	8.76	1.10	0.09	0.00	26.20	**36.41**	98%	**0.73**
Methylcyclohexane	0.00E+00	0.00E+00	0.00	0.00	0.00E+00	0.00E+00	0.00	**0.00**	98%	**0.00**
Benzene	0.02	0.00E+00	0.73	0.09	0.01	3.16E-04	1.96	**2.81**	98%	**0.06**
Toluene	0.04	0.00E+00	1.24	0.16	1.34E-02	5.26E-04	3.60	**5.05**	98%	**0.10**
Ethylbenzene	5.28E-03	0.00E+00	0.17	0.02	1.86E-03	7.09E-05	0.54	**0.74**	98%	**0.01**
o-Xylene	0.01	0.00E+00	0.20	0.03	2.21E-03	8.40E-05	0.65	**0.89**	98%	**0.02**
2,2,4-Trimethylpentane	0.00	0.00E+00	0.00	0.00	0.00E+00	0.00E+00	0.00	**0.00**	98%	**0.00**
Octane	0.08	0.00E+00	2.65	0.32	0.03	1.08E-03	8.60	**11.69**	98%	**0.23**
Nonane	0.00	0.00E+00	0.13	0.02	1.44E-03	5.33E-05	0.47	**0.63**	98%	**0.01**
Oil 10+	5.12E-05	0.00E+00	7.47E-04	7.31E-05	8.04E-06	2.44E-07	0.01	**0.01**	98%	**1.23E-04**
Total	**11.15**	**17.93**	**194.84**	**25.55**	**2.10**	**0.09**	**1146.04**	**1,397.69**	--	**86.10**
Total VOC	**4.52**	**17.93**	**143.77**	**19.48**	**1.55**	**0.06**	**464.50**	**651.81**	--	**13.04**
Total HAP	**0.23**	**0.00E+00**	**8.50**	**1.09**	**0.09**	**0.00**	**23.94**	**33.86**	--	**0.68**
Annual Hours (Hrs)	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**	**8,760**	--		
Heating Value HHV (Btu/scf)	1,542	2,557	2,370	2,518	2,370	2,518	1,542	**1,644**		
Heating Value LHV (Btu/scf)	1,407	2,557	2,179	2,318	2,179	2,318	1,407	**1,504**		
Molecular Weight	27.44	44.10	42.07	44.79	42.07	44.79	27.44	--		
Volumetric Flow (scf/hr)	35.20	35.20	401	49.42	4.32	0.16	3618.75	**4,144**		
Volumetric Flow (MMscf/yr)	0.31	0.31	3.51	0.43	0.04	1.44E-03	31.70	**35.69**		
H2S PPM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**		

Criteria Pollutant Emissions from Flare [a]

Component	Emission Factor	Emission Factor Units
NO_X	0.068	lb/MMBtu
CO	0.31	lb/MMBtu
SO_2	--	--
PM_{10}	0.00	lb/MMscf
$PM_{2.5}$	0.00	lb/MMscf
H_2S	--	--

Constants	
H_2S Molecular Weight	34.08
SO_2 Molecular Weight	64.06
Gas Constant (scf/lb-mol)	379.30

Variables	
Flare Destruction Efficiency	98%
Number of Pilots	2
Volume of Gas/Tip (scf/hr)	35.20
Operating Hours	8,760

Oil Tank Flash GOR (scf/bbl)	56.98
Tank Total GOR (scf/bbl)	64.64

Combustion Emissions from Flare

	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	Totals (tpy)
Total NOx	0.02	0.03	0.28	0.04	3.05E-03	1.23E-04	1.66	**2.03**
Total CO	0.07	0.12	1.19	0.16	0.01	5.18E-04	6.92	**8.46**
Total SO2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Total PM_{10}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Total $PM_{2.5}$	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

Footnotes:

[a] Flare CO and NOx emission factors from AP-42, Table 13.5-1 & 13.5-2, February 2018. PM_{10} and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

HP Flare Annual Emissions

Maximum Annual Emission Rates and Composition to HP Flare							
ProMax Stream:	Pilot Gas	Propane Pilot	HP Flared Gas	Heater Treater Gas	Total to Flare	Destruction Efficiency	Flare Exhaust (controlled)
Component	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(%)	(tpy)
Water	0.13	0.00E+00	0.00	5.75	5.88	0%	**5.88**
H2S	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	98%	**0.00E+00**
Nitrogen	0.28	0.00E+00	0.00	12.36	12.64	0%	**12.64**
Carbon Dioxide	0.13	0.00E+00	0.00	5.92	6.06	0%	**6.06**
Methane	3.46	0.00E+00	0.00	152.72	156.18	98%	**3.12**
Ethane	2.63	0.00E+00	0.00	116.07	118.70	98%	**2.37**
Propane	2.12	17.93	0.00	93.59	113.63	98%	**2.27**
Isobutane	0.30	0.00E+00	0.00	13.04	13.34	98%	**0.27**
n-Butane	0.93	0.00E+00	0.00	40.99	41.92	98%	**0.84**
Isopentane	0.20	0.00E+00	0.00	8.86	9.06	98%	**0.18**
n-Pentane	0.26	0.00E+00	0.00	11.68	11.95	98%	**0.24**
2-Methylpentane	0.05	0.00E+00	0.00	2.32	2.37	98%	**0.05**
3-Methylpentane	0.06	0.00E+00	0.00	2.62	2.68	98%	**0.05**
n-Hexane	0.17	0.00E+00	0.00	7.39	7.55	98%	**0.15**
Cyclohexane	0.02	0.00E+00	0.00	1.03	1.06	98%	**0.02**
Heptane	0.25	0.00E+00	0.00	11.26	11.51	98%	**0.23**
Methylcyclohexane	0.00E+00	0.00E+00	0.00	0.00	0.00	98%	**0.00E+00**
Benzene	0.02	0.00E+00	0.00	0.84	0.86	98%	**0.02**
Toluene	0.04	0.00E+00	0.00	1.55	1.58	98%	**0.03**
Ethylbenzene	5.28E-03	0.00E+00	0.00	0.23	0.24	98%	**0.00**
o-Xylene	0.01	0.00E+00	0.00	0.28	0.29	98%	**0.01**
2,2,4-Trimethylpentane	0.00	0.00E+00	0.00E+00	0.00	0.00	98%	**0.00**
Octane	0.08	0.00E+00	0.00	3.70	3.78	98%	**0.08**
Nonane	0.00	0.00E+00	0.00	0.20	0.21	98%	**0.00**
Decane	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	98%	**0.00E+00**
Oil 10+	5.12E-05	0.00E+00	0.00	0.00	0.00	98%	**4.62E-05**
Total	**11.15**	**17.93**	**0.00**	**492.40**	**521.47**	--	**34.51**
Total VOC	**4.52**	**17.93**	**0.00**	**199.57**	**222.02**	--	**4.44**
Total HAP	**0.23**	**0.00E+00**	**0.00**	**10.29**	**10.52**	--	**0.21**
Annual Hours (Hrs)	**8,760**	**8,760**	**0**	**720**	**--**		
Heating Value HHV (Btu/scf)	1,542	2,557	[redacted]	1,542	**1,544**		
Heating Value LHV (Btu/scf)	1,407	2,557	[redacted]	1,407	**1,410**		
Molecular Weight	27.44	44.10	[redacted]	27.44	--		
Volumetric Flow (scf/hr)	35.20	35.20	0	18,917	**18,987**		
Volumetric Flow (MMscf/yr)	0.31	0.31	0.00	13.62	**14.24**		
H2S PPM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**		

Combustion Emissions from Flare					Totals
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Total NOx	0.02	0.03		0.71	**0.76**
Total CO	0.07	0.12		2.97	**3.16**
Total SO2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Total PM_{10}	0.00E+00	0.00E+00	0.00	0.00E+00	**0.00E+00**
Total $PM_{2.5}$	0.00E+00	0.00E+00	0.00	0.00E+00	**0.00E+00**

Criteria Pollutant Emissions from Flare[a]		
Component	**Emission Factor**	**Emission Factor Units**
NO_X	0.068	lb/MMBtu
CO	0.31	lb/MMBtu
SO_2	--	--
PM_{10}	0.00	lb/MMscf
$PM_{2.5}$	0.00	lb/MMscf
H_2S	--	--

Constants	
H_2S Molecular Weight	34.08
SO_2 Molecular Weight	64.06
Gas Constant (scf/lb-mol)	379.30

Variables	
Flare Destruction Efficiency	98%
Number of Pilots	2
Volume of Gas/Tip (scf/hr)	35.20
HT Gas Op hours	720
HP Sep Operating Hours	0

Footnotes:

[a] Flare CO and NOx emission factors from AP-42, Table 13.5-1 & 13.5-2, February 2018. PM_{10} and $PM_{2.5}$ emission factors from AP-42, Table 1.4-1 and 1.4-2, July 1998. SO_2 emissions assume 100% conversion of H_2S to SO_2.

Truck Loading Losses Calculations

Promax Stream Speciation	32 - Oil Tool W&B	
Controlled/Uncontrolled	UNCONTROLLED	
Oil Loaded	**61,685**	**bbls / yr**

Promax Report Results		
LL= 12.46 * SPM/T * (1-EFF/100)		
Saturation Factor (S) =	0.6	
Average True Vapor Pressure of Liquid Loaded (P)=	12.65	psi
Average Surface Temperature of Liquid Loaded (T)[a]=	542.23	Rankin
Molecular Weight (M)[a]=	44.79	lb/lb-mole
Control Efficiency * Collection Efficiency (EFF)[e]=	0	%
Hydrocarbon Content[a]=	100.00	Weight %
VOC Content[a]=	76.27	Weight %
HAP Conent[a]=	4.27	Weight %
Average Uncontrolled LL[b] =	7.8111	lb/1000 gallon
Average Uncontrolled LL[b] =	0.3281	lb/bbl
Average Uncontrolled LL[b] =	0.2502	lb VOC/bbl
Estimated Throughput=	61,685	bbl/Year

	TPY
Total Emissions	10.12
Total VOC Emissions	7.72
Total HAP Emissions	0.43

Component	Total Speciated Vapors Emitted During Loading (Fugitives)	
	Mass Fraction	ton / yr[d]
Water	0.63	0.06
H2S	0.00E+00	0.00E+00
Nitrogen	0.02	2.31E-03
Carbon Dioxide	0.47	0.05
Methane	2.13	0.22
Ethane	20.48	2.07
Propane	31.43	3.18
Isobutane	5.38	0.54
n-Butane	17.75	1.80
Isopentane	3.99	0.40
n-Pentane	5.22	0.53
2-Methylpentane	1.01	0.10
3-Methylpentane	1.13	0.11
n-Hexane	3.10	0.31
Cyclohexane	0.44	0.04
Heptane	4.31	0.44
Methylcyclohexane	0.00	0.00E+00
Benzene	0.37	0.04
Toluene	0.62	6.25E-02
Ethylbenzene	0.08	8.43E-03
o-Xylene	0.10	9.99E-03
2,2,4-Trimethylpentane	0.00	0.00E+00
Octane	1.27	0.13
Nonane	0.06	6.33E-03
Decane	0.00E+00	0.00E+00
Oil 10+	2.86E-04	2.90E-05
Total	100.00	10.12
Total VOC	76.27	7.72
Total HAP	4.27	0.43

Footnotes:

[a]Values were obtained from Promax.

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

[c]Oil tanks are only trucked out when transfer to pipeline is unavailable.

[d]The component speciation was obtained from Promax Stream 'Oil Tool Loading' and multiplied by the total hydrocarbon emissions.

[e]Loading emissions are uncontrolled.

Process Streams	Heater Treater Gas	HP Flared Gas	HT Flared Gas	Inlet Gas	Inlet Oil	Inlet Separator Gas	Inlet Water	Oil Flash	Oil Loadout	Oil Tank Feed	Pilot Gas	Sales	Sales Gas	Sat. Gas	Sweep Blanket Gas
Composition — Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total — From Block:	Heater Treater	SPLT-104	SPLT-105	--	--	HP Separator	--	Oil Tank	Oil Tank	MIX-102	SPLT-102	SPLT-102	MIX-101	Inlet Mixer	SPLT-102
To Block:	SPLT-105	--	MIX-101	Inlet Mixer	Inlet Mixer	SPLT-104	Inlet Mixer	--	--	Oil Tank	--	--	SPLT-102	SPLT-100	--
Std Vapor Volumetric Flow	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD
Water	0.00809222	0	0.00807420	0*	0*	0	1.35046*	0.000132206	2.51763E-05	0.000157382	7.51221E-06	0.00654012	0.00809222	1.35046	0.00154459
H2S	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
N2	0.0111855	0	0.0111606	0.0111811*	3.42749E-05*	0	0*	2.76906E-05	5.85064E-07	2.82757E-05	1.03837E-05	0.00904008	0.0111855	0.0112154	0.00213501
CO2	0.00341286	0	0.00340525	0.00345307*	3.29039E-05*	0	0*	4.85614E-05	7.62532E-06	5.61867E-05	3.16824E-06	0.00275826	0.00341286	0.00348598	0.000651424
C1	0.241376	0	0.240838	0.240536*	0.00257062*	0	0*	0.00156547	9.52462E-05	0.00166072	0.000224075	0.195079	0.241376	0.243107	0.0460723
C2	0.0978773	0	0.0976593	0.0963570*	0.00494793*	0	0*	0.00252070	0.000871083	0.00339178	9.08619E-05	0.0791042	0.0978773	0.101305	0.0186822
C3	0.0538125	0	0.0536927	0.0519326*	0.00796412*	0	0*	0.00271367	0.00335719	0.00607085	4.99555E-05	0.0434912	0.0538125	0.0598968	0.0102714
iC4	0.00569076	0	0.00567808	0.00511069*	0.00194133*	0	0*	0.000359018	0.00100144	0.00136046	5.28287E-06	0.00459926	0.00569076	0.00705202	0.00108621
nC4	0.0178809	0	0.0178411	0.0161973*	0.00754459*	0	0*	0.00119305	0.00466390	0.00585695	1.65993E-05	0.0144513	0.0178809	0.0237419	0.00341299
iC5	0.00311238	0	0.00310545	0.00258395*	0.00289280*	0	0*	0.000220228	0.00214372	0.00236395	2.88930E-06	0.00251542	0.00311238	0.00547676	0.000594072
nC5	0.00410536	0	0.00409622	0.00370059*	0.00441187*	0	0*	0.000290645	0.00371615	0.00400679	3.81111E-06	0.00331795	0.00410536	0.00811245	0.000783605
2-Methylpentane	0.000681752	0	0.000680234	0*	0.00209077*	0	0*	4.76728E-05	0.00136129	0.00140896	6.32887E-07	0.000550991	0.000681752	0.00209077	0.000130128
3-Methylpentane	0.000771151	0	0.000769433	0*	0.00252263*	0	0*	5.37348E-05	0.00169760	0.00175134	7.15878E-07	0.000623243	0.000771151	0.00252263	0.000147192
nC6	0.00217298	0	0.00216814	0.00242400*	0.00574996*	0	0*	0.000148424	0.00585246	0.00600088	2.01723E-06	0.00175620	0.00217298	0.00817396	0.000414764
Cyclohexane	0.000311417	0	0.000310724	0*	0.00141350*	0	0*	2.14326E-05	0.00108044	0.00110187	2.89096E-07	0.000251687	0.000311417	0.00141350	5.94413E-05
C7	0.00284846	0	0.00284212	0*	0.0244846*	0	0*	0.000181712	0.0214544	0.0216361	2.64430E-06	0.00230212	0.00284846	0.0244846	0.000543696
Methylcyclohexane	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
Benzene	0.000272815	0	0.000272207	0*	0.000851389*	0	0*	1.93625E-05	0.000553074	0.000572436	2.53261E-07	0.000220489	0.000272815	0.000851389	5.20732E-05
Toluene	0.000426020	0	0.000425071	0*	0.00343572*	0	0*	2.80769E-05	0.00297441	0.00300248	3.95485E-07	0.000344309	0.000426020	0.00343572	8.13159E-05
Ethylbenzene	5.57434E-05	0	5.56193E-05	0*	0.00118317*	0	0*	3.37613E-06	0.00112332	0.00112669	5.17480E-08	4.50517E-05	5.57434E-05	0.00118317	1.06399E-05
o-Xylene	6.67537E-05	0	6.66051E-05	0*	0.00166987*	0	0*	4.01073E-06	0.00159778	0.00160179	6.19691E-08	5.39503E-05	6.67537E-05	0.00166987	1.27415E-05
2,2,4-Trimethylpentane	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
C8	0.000820206	0	0.000818379	0*	0.0184221*	0	0*	4.82305E-05	0.0175536	0.0176019	7.61417E-07	0.000662889	0.000820206	0.0184221	0.000156556
C9	4.02028E-05	0	4.01133E-05	0*	0.00248013*	0	0*	2.17311E-06	0.00243776	0.00243993	3.73213E-08	3.24919E-05	4.02028E-05	0.00248013	7.67366E-06
C10	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
C10+	2.39193E-07	0	2.38660E-07	0*	0.0404554*	0	0*	6.47876E-09	0.0404551	0.0404551	2.22049E-10	1.93315E-07	2.39193E-07	0.0404554	4.56556E-08
Mole Fraction															
Water	0.0177846		0.0177846	0*	0*		1*	0.0137293	0.000220799	0.00127277	0.0177846	0.0177846	0.0177846	0.702985	0.0177846
H2S	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
N2	0.0245827		0.0245827	0.025794*	0.00025*		0*	0.00287562	5.13109E-06	0.000228670	0.0245827	0.0245827	0.0245827	0.00583819	0.0245827
CO2	0.00750056		0.00750056	0.007966*	0.00024*		0*	0.00504300	6.68751E-05	0.000454391	0.00750056	0.00750056	0.00750056	0.00181463	0.00750056
C1	0.530481		0.530481	0.5549*	0.01875*		0*	0.162571	0.000835322	0.0134305	0.530481	0.530481	0.530481	0.126550	0.530481
C2	0.215109		0.215109	0.222289*	0.03609*		0*	0.261770	0.00763952	0.0274299	0.215109	0.215109	0.215109	0.0527346	0.215109
C3	0.118266		0.118266	0.119805*	0.05809*		0*	0.281809	0.0294430	0.0490960	0.118266	0.118266	0.118266	0.0311794	0.118266
iC4	0.0125068		0.0125068	0.01179*	0.01416*		0*	0.0372833	0.00878276	0.0110022	0.0125068	0.0125068	0.0125068	0.00367095	0.0125068
nC4	0.0392975		0.0392975	0.037366*	0.05503*		0*	0.123896	0.0409030	0.0473661	0.0392975	0.0392975	0.0392975	0.0123589	0.0392975
iC5	0.00684020		0.00684020	0.005961*	0.0211*		0*	0.0228703	0.0188007	0.0191176	0.00684020	0.00684020	0.00684020	0.00285094	0.00684020
nC5	0.00902251		0.00902251	0.008537*	0.03218*		0*	0.0301829	0.0325911	0.0324036	0.00902251	0.00902251	0.00902251	0.00422296	0.00902251
2-Methylpentane	0.00149831		0.00149831	0*	0.01525*		0*	0.00495073	0.0119387	0.0113945	0.00149831	0.00149831	0.00149831	0.00108836	0.00149831
3-Methylpentane	0.00169479		0.00169479	0*	0.0184*		0*	0.00558026	0.0148882	0.0141634	0.00169479	0.00169479	0.00169479	0.00131316	0.00169479
nC6	0.00477564		0.00477564	0.005592*	0.04194*		0*	0.0154136	0.0513268	0.0485301	0.00477564	0.00477564	0.00477564	0.00425498	0.00477564
Cyclohexane	0.000684413		0.000684413	0*	0.01031*		0*	0.00222573	0.00947562	0.00891104	0.000684413	0.000684413	0.000684413	0.000735800	0.000684413
C7	0.00626018		0.00626018	0*	0.17859*		0*	0.0188705	0.188158	0.174974	0.00626018	0.00626018	0.00626018	0.0127455	0.00626018
Methylcyclohexane	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
Benzene	0.000599576		0.000599576	0*	0.00621*		0*	0.00201076	0.00485053	0.00462938	0.000599576	0.000599576	0.000599576	0.000443193	0.000599576
Toluene	0.000936280		0.000936280	0*	0.02506*		0*	0.00291573	0.0260859	0.0242816	0.000936280	0.000936280	0.000936280	0.00178847	0.000936280
Ethylbenzene	0.000122509		0.000122509	0*	0.00863*		0*	0.000350605	0.00985165	0.00911175	0.000122509	0.000122509	0.000122509	0.000615902	0.000122509
o-Xylene	0.000146707		0.000146707	0*	0.01218*		0*	0.000416507	0.0140127	0.0129539	0.000146707	0.000146707	0.000146707	0.000869257	0.000146707
2,2,4-Trimethylpentane	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
C8	0.00180260		0.00180260	0*	0.13437*		0*	0.00500864	0.153948	0.142349	0.00180260	0.00180260	0.00180260	0.00958966	0.00180260
C9	8.83553E-05		8.83553E-05	0*	0.01809*		0*	0.000225673	0.0213794	0.0197321	8.83553E-05	8.83553E-05	8.83553E-05	0.00129104	8.83553E-05
C10	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
C10+	5.25683E-07		5.25683E-07	0*	0.29508*		0*	6.72807E-07	0.354797	0.327167	5.25683E-07	5.25683E-07	5.25683E-07	0.0210591	5.25683E-07
Mass Fraction															
Water	0.0116768		0.0116768	0*	0*		1*	0.00587866	2.73916E-05	0.000167141	0.0116768	0.0116768	0.0116768	0.453610	0.0116768
H2S	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
N2	0.0250977		0.0250977	0.0274463*	5.36612E-05*		0*	0.00191463	9.89815E-07	4.66945E-05	0.0250977	0.0250977	0.0250977	0.00585787	0.0250977
CO2	0.0120304		0.0120304	0.0133164*	8.09305E-05*		0*	0.00527502	2.02670E-05	0.000145769	0.0120304	0.0120304	0.0120304	0.00286043	0.0120304
C1	0.310155		0.310155	0.338131*	0.00230477*		0*	0.0619873	9.22791E-05	0.00157055	0.310155	0.310155	0.310155	0.0727157	0.310155
C2	0.235731		0.235731	0.253885*	0.00831498*		0*	0.187080	0.00158184	0.00601221	0.235731	0.235731	0.235731	0.0567950	0.235731
C3	0.190061		0.190061	0.200664*	0.0196269*		0*	0.295352	0.00894037	0.0157809	0.190061	0.190061	0.190061	0.0492446	0.190061
iC4	0.0264927		0.0264927	0.0260288*	0.00630609*		0*	0.0515045	0.00351521	0.00466137	0.0264927	0.0264927	0.0264927	0.00764215	0.0264927
nC4	0.0832426		0.0832426	0.0824931*	0.0245073*		0*	0.171154	0.0163710	0.0200678	0.0832426	0.0832426	0.0832426	0.0257287	0.0832426
iC5	0.0179861		0.0179861	0.0163361*	0.0116645*		0*	0.0392183	0.00934075	0.0100543	0.0179861	0.0179861	0.0179861	0.00736737	0.0179861
nC5	0.0237244		0.0237244	0.0233956*	0.0177897*		0*	0.0517582	0.0161922	0.0170417	0.0237244	0.0237244	0.0237244	0.0109129	0.0237244
2-Methylpentane	0.00470570		0.00470570	0*	0.0100695*		0*	0.0101401	0.00708464	0.00715761	0.00470570	0.00470570	0.00470570	0.00335930	0.00470570
3-Methylpentane	0.00532276		0.00532276	0*	0.0121494*		0*	0.0114295	0.00883495	0.00889692	0.00532276	0.00532276	0.00532276	0.00405319	0.00532276
nC6	0.0149987		0.0149987	0.0183041*	0.0276928*		0*	0.0315701	0.0304583	0.0304849	0.0149987	0.0149987	0.0149987	0.0131334	0.0149987
Cyclohexane	0.00209923		0.00209923	0*	0.00664839*		0*	0.00445210	0.00549148	0.00546666	0.00209923	0.00209923	0.00209923	0.00221798	0.00209923
C7	0.0228613		0.0228613	0*	0.137116*		0*	0.0449415	0.129830	0.127803	0.0228613	0.0228613	0.0228613	0.0457435	0.0228613
Methylcyclohexane	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
Benzene	0.00170687		0.00170687	0*	0.00371675*		0*	0.00373307	0.00260906	0.00263591	0.00170687	0.00170687	0.00170687	0.00123995	0.00170687
Toluene	0.00314402		0.00314402	0*	0.0176920*		0*	0.00638523	0.0165511	0.0163083	0.00314402	0.00314402	0.00314402	0.00590226	0.00314402
Ethylbenzene	0.000474012		0.000474012	0*	0.00702016*		0*	0.000884683	0.00720226	0.00705137	0.000474012	0.000474012	0.000474012	0.00234201	0.000474012
o-Xylene	0.000567638		0.000567638	0*	0.00990794*		0*	0.00105097	0.0102443	0.0100248	0.000567638	0.000567638	0.000567638	0.00330541	0.000567638
2,2,4-Trimethylpentane	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
C8	0.00750433		0.00750433	0*	0.117607*		0*	0.0135983	0.121095	0.118528	0.00750433	0.00750433	0.00750433	0.0392350	0.00750433
C9	0.000412996		0.000412996	0*	0.0177774*		0*	0.000687929	0.0188821	0.0184475	0.000412996	0.000412996	0.000412996	0.00593075	0.000412996
C10	0		0	0*	0*		0*	0	0	0	0	0	0	0	0
C10+	4.59230E-06		4.59230E-06	0*	0.541954*		0*	3.83308E-06	0.585634	0.571647	4.59230E-06	4.59230E-06	4.59230E-06	0.180802	4.59230E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	16.0068	0	15.9711	0*	0*	0	2671.27*	0.261509	0.0497998	0.311309	0.0148595	12.9366	16.0068	2671.27	3.05527
H2S	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
N2	34.4045	0	34.3279	34.3910*	0.105423*	0	0*	0.0851714	0.00179955	0.0869710	0.0319385	27.8057	34.4045	34.4965	6.56691
CO2	16.4915	0	16.4547	16.6858*	0.158997*	0	0*	0.234656	0.0368468	0.271503	0.0153094	13.3284	16.4915	16.8448	3.14779
C1	425.167	0	424.220	423.688*	4.52797*	0	0*	2.75747	0.167770	2.92524	0.394693	343.619	425.167	428.216	81.1532
C2	323.144	0	322.425	318.125*	16.3357*	0	0*	8.32215	2.87590	11.1981	0.299983	261.165	323.144	334.461	61.6797
C3	260.540	0	259.960	251.438*	38.5592*	0	0*	13.1386	16.2542	29.3928	0.241865	210.568	260.540	289.997	49.7302
iC4	36.3168	0	36.2359	32.6149*	12.3890*	0	0*	2.29115	6.39090	8.68205	0.0337137	29.3511	36.3168	45.0040	6.93191
nC4	114.111	0	113.857	103.366*	48.1474*	0	0*	7.61370	29.7637	37.3774	0.105932	92.2241	114.111	151.514	21.7807
iC5	24.6557	0	24.6008	20.4696*	22.9162*	0	0*	1.74460	16.9821	18.7267	0.0228885	19.9267	24.6557	43.3858	4.70612
nC5	32.5219	0	32.4495	29.3153*	34.9499*	0	0*	2.30243	29.4386	31.7410	0.0301909	26.2841	32.5219	64.2653	6.20757
2-Methylpentane	6.45067	0	6.43630	0*	19.7827*	0	0*	0.451075	12.8804	13.3314	0.00598831	5.21342	6.45067	19.7827	1.23126
3-Methylpentane	7.29655	0	7.28030	0*	23.8689*	0	0*	0.508434	16.0626	16.5710	0.00677357	5.89706	7.29655	23.8689	1.39272
nC6	20.5605	0	20.5147	22.9356*	54.4055*	0	0*	1.40438	55.3754	56.7797	0.0190868	16.6170	20.5605	77.3412	3.92446
Cyclohexane	2.87767	0	2.87126	0*	13.0615*	0	0*	0.198049	9.98389	10.1819	0.00267141	2.32573	2.87767	13.0615	0.549271
C7	31.3388	0	31.2690	0*	269.380*	0	0*	1.99920	236.041	238.040	0.0290926	25.3279	31.3388	269.380	5.98174
Methylcyclohexane	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
Benzene	2.33981	0	2.33460	0*	7.30197*	0	0*	0.166063	4.74346	4.90952	0.00217210	1.89103	2.33981	7.30197	0.446607
Toluene	4.30989	0	4.30029	0*	34.7579*	0	0*	0.284043	30.0910	30.3750	0.00400097	3.48324	4.30989	34.7579	0.822643
Ethylbenzene	0.649786	0	0.648339	0*	13.7919*	0	0*	0.0393546	13.0942	13.1336	0.000603212	0.525156	0.649786	13.7919	0.124027
o-Xylene	0.778130	0	0.776397	0*	19.4653*	0	0*	0.0467520	18.6249	18.6716	0.000722357	0.628883	0.778130	19.4653	0.148524
2,2,4-Trimethylpentane	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
C8	10.2871	0	10.2642	0*	231.051*	0	0*	0.604911	220.159	220.764	0.00954976	8.31401	10.2871	231.051	1.96353
C9	0.566144	0	0.564883	0*	34.9257*	0	0*	0.0306021	34.3289	34.3595	0.000525565	0.457556	0.566144	34.9257	0.108062
C10	0	0	0	0*	0*	0	0*	0	0	0	0	0	0	0	0
C10+	0.00629523	0	0.00628121	0*	1064.73*	0	0*	0.000170512	1064.72	1064.72	5.84401E-06	0.00508779	0.00629523	1064.73	0.00120159

Process Streams	To Flare	VRT to Flare	VRT to Sales	Water Flash	Water Loadout	Water Tank feed	1	2	3	6	8	9	10	11	12	14	15	18	21
Composition — Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total — From Block:	MIX-108	SPLT-103	SPLT-103	Water Tank	Water Tank	MIX-100	SPLT-104	SPLT-105	Heater Treater	MIX-103	VRU	--	Heater Treater	SPLT-101	SPLT-101	VRT	VRT	--	SPLT-100
To Block:	--	MIX-108	MIX-103	--	--	Water Tank	MIX-101	MIX-103	MIX-100	VRU	MIX-101	--	SPLT-101	MIX-102	VRT	MIX-102	SPLT-103	--	HP Separator
Std Vapor Volumetric Flow	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD
Water	0	0	0	5.51094E-06	1.34220	1.34221	0	1.80216E-05	1.34221	1.80216E-05	1.80216E-05	6.53371E-06*	0.000157382	0.000157382	0	0	0	6.53371E-06*	0
H2S	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
N2	0	0	0	1.43901E-06	1.79777E-07	1.61879E-06	0	2.49104E-05	1.61879E-06	2.49104E-05	2.49104E-05	1.51835E-07*	2.82757E-05	2.82757E-05	0	0	0	1.51835E-07*	0
CO2	0	0	0	2.90143E-06	1.40335E-05	1.69350E-05	0	7.60054E-06	1.69350E-05	7.60054E-06	7.60054E-06	1.97891E-06*	5.61867E-05	5.61867E-05	0	0	0	1.97891E-06*	0
C1	0	0	0	5.58398E-05	1.43149E-05	7.01547E-05	0	0.000537552	7.01547E-05	0.000537552	0.000537552	2.47182E-05*	0.00166072	0.00166072	0	0	0	2.47182E-05*	0
C2	0	0	0	2.63971E-05	9.48990E-06	3.58870E-05	0	0.000217976	3.58870E-05	0.000217976	0.000217976	0.000509270*	0.00339178	0.00339178	0	0	0	0.000126806*	0
C3	0	0	0	1.06830E-05	2.68393E-06	1.33669E-05	0	0.000119842	1.33669E-05	0.000119842	0.000119842	0.00297858*	0.00607085	0.00607085	0	0	0	0.000132692*	0
iC4	0	0	0	6.92726E-07	1.11805E-07	8.04530E-07	0	1.26735E-05	8.04530E-07	1.26735E-05	1.26735E-05	0.000952265*	0.00136046	0.00136046	0	0	0	1.72346E-05*	0
nC4	0	0	0	3.27075E-06	7.56689E-07	4.02744E-06	0	3.98213E-05	4.02744E-06	3.98213E-05	3.98213E-05	0.00450164*	0.00585695	0.00585695	0	0	0	5.68672E-05*	0
iC5	0	0	0	3.67947E-07	5.67611E-08	4.24708E-07	0	6.93138E-06	4.24708E-07	6.93138E-06	6.93138E-06	0.00211436*	0.00236395	0.00236395	0	0	0	1.02900E-05*	0
nC5	0	0	0	2.76332E-07	1.92037E-08	2.95536E-07	0	9.14278E-06	2.95536E-07	9.14278E-06	9.14278E-06	0.00367769*	0.00400679	0.00400679	0	0	0	1.34797E-05*	0
2-Methylpentane	0	0	0	5.24696E-08	4.70118E-09	5.71707E-08	0	1.51828E-06	5.71707E-08	1.51828E-06	1.51828E-06	0.00135508*	0.00140896	0.00140896	0	0	0	2.17583E-06*	0
3-Methylpentane	0	0	0	1.18670E-07	2.48556E-08	1.43525E-07	0	1.71738E-06	1.43525E-07	1.71738E-06	1.71738E-06	0.00169062*	0.00175134	0.00175134	0	0	0	2.44667E-06*	0
nC6	0	0	0	9.24454E-08	4.23729E-09	9.66827E-08	0	4.83930E-06	9.66827E-08	4.83930E-06	4.83930E-06	0.00583334*	0.00600088	0.00600088	0	0	0	6.70174E-06*	0
Cyclohexane	0	0	0	1.14688E-07	9.06663E-08	2.05354E-07	0	6.93536E-07	2.05354E-07	6.93536E-07	6.93536E-07	0.00107768*	0.00110187	0.00110187	0	0	0	9.68683E-07*	0
C7	0	0	0	7.85532E-08	2.51844E-09	8.10716E-08	0	6.34362E-06	8.10716E-08	6.34362E-06	6.34362E-06	0.0214315*	0.0216361	0.0216361	0	0	0	8.00880E-06*	0
Methylcyclohexane	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
Benzene	0	0	0	2.08229E-07	5.92932E-06	6.13755E-06	0	6.07568E-07	6.13755E-06	6.07568E-07	6.07568E-07	0.000550547*	0.000572436	0.000572436	0	0	0	8.85567E-07*	0
Toluene	0	0	0	3.18955E-07	6.89421E-06	7.21316E-06	0	9.48760E-07	7.21316E-06	9.48760E-07	9.48760E-07	0.00297085*	0.00300248	0.00300248	0	0	0	1.24731E-06*	0
Ethylbenzene	0	0	0	3.78540E-08	6.94739E-07	7.32593E-07	0	1.24142E-07	7.32593E-07	1.24142E-07	1.24142E-07	0.00112290*	0.00112669	0.00112669	0	0	0	1.46063E-07*	0
o-Xylene	0	0	0	4.65343E-08	1.28205E-06	1.32859E-06	0	1.48663E-07	1.32859E-06	1.48663E-07	1.48663E-07	0.00159729*	0.00160179	0.00160179	0	0	0	1.73069E-07*	0
2,2,4-Trimethylpentane	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
C8	0	0	0	1.08255E-08	1.55463E-10	1.09810E-08	0	1.82663E-06	1.09810E-08	1.82663E-06	1.82663E-06	0.0175477*	0.0176019	0.0176019	0	0	0	2.07203E-06*	0
C9	0	0	0	3.46159E-10	4.22070E-12	3.50380E-10	0	8.95330E-08	3.50380E-10	8.95330E-08	8.95330E-08	0.00243750*	0.00243993	0.00243993	0	0	0	9.08678E-08*	0
C10	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
C10+	0	0	0	2.09750E-14	3.40559E-18	2.09784E-14	0	5.32690E-10	2.09784E-14	5.32690E-10	5.32690E-10	0.0404551*	0.0404551	0.0404551	0	0	0	2.22274E-10*	0
Mole Fraction																			
Water				0.0508115	0.999958	0.999881		0.0177846	0.999881	0.0177846	0.0177846	5.79038E-05*	0.00127277	0.00127277	0.00127277			0.0157186*	0.702985
H2S				0	0	0		0	0	0	0	0*	0	0	0			0*	0
N2				0.0132678	1.33936E-07	1.20592E-06		0.0245827	1.20592E-06	0.0245827	0.0245827	1.34561E-06*	0.000228670	0.000228670	0.000228670			0.000365280*	0.00583819
CO2				0.0267515	1.04552E-05	1.26157E-05		0.00750056	1.26157E-05	0.00750056	0.00750056	1.75378E-05*	0.000454391	0.000454391	0.000454391			0.00476080*	0.00181463
C1				0.514849	1.06647E-05	5.22618E-05		0.530481	5.22618E-05	0.530481	0.530481	0.000219060*	0.0134305	0.0134305	0.0134305			0.0594661*	0.126550
C2				0.243384	7.07009E-06	2.67341E-05		0.215109	2.67341E-05	0.215109	0.215109	0.00451332*	0.0274299	0.0274299	0.0274299			0.305064*	0.0527346
C3				0.0984984	1.99956E-06	9.95771E-06		0.118266	9.95771E-06	0.118266	0.118266	0.0263971*	0.0490960	0.0490960	0.0490960			0.319225*	0.0311794
iC4				0.00638700	8.32958E-08	5.99336E-07		0.0125068	5.99336E-07	0.0125068	0.0125068	0.00843927*	0.0110022	0.0110022	0.0110022			0.0414624*	0.00367095
nC4				0.0301567	5.63743E-07	3.00025E-06		0.0392975	3.00025E-06	0.0392975	0.0392975	0.0398950*	0.0473661	0.0473661	0.0473661			0.136809*	0.0123589
iC5				0.00339251	4.22877E-08	3.16387E-07		0.00684020	3.16387E-07	0.00684020	0.00684020	0.0187381*	0.0191176	0.0191176	0.0191176			0.0247554*	0.00285094
nC5				0.00254781	1.43070E-08	2.20160E-07		0.00902251	2.20160E-07	0.00902251	0.00902251	0.0325928*	0.0324036	0.0324036	0.0324036			0.0324291*	0.00422296
2-Methylpentane				0.000483775	3.50243E-09	4.25894E-08		0.00149831	4.25894E-08	0.00149831	0.00149831	0.0120091*	0.0113945	0.0113945	0.0113945			0.00523453*	0.00108836
3-Methylpentane				0.00109415	1.85177E-08	1.06919E-07		0.00169479	1.06919E-07	0.00169479	0.00169479	0.0149828*	0.0141634	0.0141634	0.0141634			0.00588612*	0.00131316
nC6				0.000852356	3.15683E-09	7.20239E-08		0.00477564	7.20239E-08	0.00477564	0.00477564	0.0516969*	0.0485301	0.0485301	0.0485301			0.0161228*	0.00425498
Cyclohexane				0.00105743	6.75475E-08	1.52979E-07		0.000684413	1.52979E-07	0.000684413	0.000684413	0.00955072*	0.00891104	0.00891104	0.00891104			0.00233042*	0.000735800
C7				0.000724269	1.87627E-09	6.03944E-08		0.00626018	6.03944E-08	0.00626018	0.00626018	0.189933*	0.174974	0.174974	0.174974			0.0192673*	0.0127455
Methylcyclohexane				0	0	0		0	0	0	0	0*	0	0	0			0*	0
Benzene				0.00191989	4.41741E-06	4.57218E-06		0.000599576	4.57218E-06	0.000599576	0.000599576	0.00487912*	0.00462938	0.00462938	0.00462938			0.00213047*	0.000443193
Toluene				0.00294080	5.13626E-06	5.37346E-06		0.000936280	5.37346E-06	0.000936280	0.000936280	0.0263286*	0.0242816	0.0242816	0.0242816			0.00300073*	0.00178847
Ethylbenzene				0.000349018	5.17589E-07	5.45746E-07		0.000122509	5.45746E-07	0.000122509	0.000122509	0.00995150*	0.00911175	0.00911175	0.00911175			0.000351392*	0.000615902
o-Xylene				0.000429051	9.55144E-07	9.89733E-07		0.000146707	9.89733E-07	0.000146707	0.000146707	0.0141557*	0.0129539	0.0129539	0.0129539			0.000416364*	0.000869257
2,2,4-Trimethylpentane				0	0	0		0	0	0	0	0*	0	0	0			0*	0
C8				9.98125E-05	1.15822E-10	8.18031E-09		0.00180260	8.18031E-09	0.00180260	0.00180260	0.155513*	0.142349	0.142349	0.142349			0.00498482*	0.00958966
C9				3.19163E-06	3.14447E-12	2.61016E-10		8.83553E-05	2.61016E-10	8.83553E-05	8.83553E-05	0.0216019*	0.0197321	0.0197321	0.0197321			0.000218607*	0.00129104
C10				0	0	0		0	0	0	0	0*	0	0	0			0*	0
C10+				1.93391E-10	2.53721E-18	1.56279E-14		5.25683E-07	1.56279E-14	5.25683E-07	5.25683E-07	0.358526*	0.327167	0.327167	0.327167			5.34738E-07*	0.0210591
Mass Fraction																			
Water				0.0354464	0.999891	0.999780		0.0116768	0.999780	0.0116768	0.0116768	7.13151E-06	0.000167141	0.000167141	0.000167141			0.00632226	0.453610
H2S				0	0	0		0	0	0	0	0	0	0	0			0	0
N2				0.0143925	2.08254E-07	1.87499E-06		0.0250977	1.87499E-06	0.0250977	0.0250977	2.57702E-07	4.66945E-05	4.66945E-05	4.66945E-05			0.000228460	0.00585787
CO2				0.0455893	2.55392E-05	3.08158E-05		0.0120304	3.08158E-05	0.0120304	0.0120304	5.27659E-06	0.000145769	0.000145769	0.000145769			0.00467783	0.00286043
C1				0.319831	9.49624E-06	4.65340E-05		0.310155	4.65340E-05	0.310155	0.310155	2.40252E-05	0.00157055	0.00157055	0.00157055			0.0212990	0.0727157
C2				0.283388	1.17998E-05	4.46169E-05		0.235731	4.46169E-05	0.235731	0.235731	0.000927787	0.00601221	0.00601221	0.00601221			0.204800	0.0567950
C3				0.168188	4.89395E-06	2.43708E-05		0.190061	2.43708E-05	0.190061	0.190061	0.00795765	0.0157809	0.0157809	0.0157809			0.314275	0.0492446
iC4				0.0143750	2.68717E-07	1.93342E-06		0.0264927	1.93342E-06	0.0264927	0.0264927	0.00335336	0.00466137	0.00466137	0.00466137			0.0538040	0.00764215
nC4				0.0678726	1.81867E-06	9.67863E-06		0.0832426	9.67863E-06	0.0832426	0.0832426	0.0158523	0.0200678	0.0200678	0.0200678			0.177531	0.0257287
iC5				0.00947806	1.69345E-07	1.26696E-06		0.0179861	1.26696E-06	0.0179861	0.0179861	0.00924247	0.0100543	0.0100543	0.0100543			0.0398766	0.00736737
nC5				0.00711813	5.72938E-08	8.81622E-07		0.0237244	8.81622E-07	0.0237244	0.0237244	0.0160762	0.0170417	0.0170417	0.0170417			0.0522375	0.0109129
2-Methylpentane				0.00161434	1.67526E-08	2.03704E-07		0.00470570	2.03704E-07	0.00470570	0.00470570	0.00707503	0.00715761	0.00715761	0.00715761			0.0100711	0.00335930
3-Methylpentane				0.00365114	8.85727E-08	5.11392E-07		0.00532276	5.11392E-07	0.00532276	0.00532276	0.00882694	0.00889692	0.00889692	0.00889692			0.0113248	0.00405319
nC6				0.00284429	1.50996E-08	3.44488E-07		0.0149987	3.44488E-07	0.0149987	0.0149987	0.0304565	0.0304849	0.0304849	0.0304849			0.0310200	0.0131334
Cyclohexane				0.00344607	3.15531E-07	7.14577E-07		0.00209923	7.14577E-07	0.00209923	0.00209923	0.00549506	0.00546666	0.00546666	0.00546666			0.00437881	0.00221798
C7				0.00281025	1.04352E-08	3.35883E-07		0.0228613	3.35883E-07	0.0228613	0.0228613	0.130110	0.127803	0.127803	0.127803			0.0431037	0.0457435
Methylcyclohexane				0	0	0		0	0	0	0	0	0	0	0			0	0
Benzene				0.00580715	1.91520E-05	1.98223E-05		0.00170687	1.98223E-05	0.00170687	0.00170687	0.00260550	0.00263591	0.00263591	0.00263591			0.00371543	0.00123995
Toluene				0.0104924	2.62675E-05	2.74795E-05		0.00314402	2.74795E-05	0.00314402	0.00314402	0.0165845	0.0163083	0.0163083	0.0163083			0.00617284	0.00590226
Ethylbenzene				0.00143482	3.04997E-06	3.21579E-06		0.000474012	3.21579E-06	0.000474012	0.000474012	0.00722276	0.00705137	0.00705137	0.00705137			0.000832898	0.00234201
o-Xylene				0.00176384	5.62834E-06	5.83196E-06		0.000567638	5.83196E-06	0.000567638	0.000567638	0.0102741	0.0100248	0.0100248	0.0100248			0.000986899	0.00330541
2,2,4-Trimethylpentane				0	0	0		0	0	0	0	0	0	0	0			0	0
C8				0.000441498	7.34337E-10	5.18632E-08		0.00750433	5.18632E-08	0.00750433	0.00750433	0.121444	0.118528	0.118528	0.118528			0.0127128	0.0392350
C9				1.58510E-05	2.23847E-11	1.85805E-09		0.000412996	1.85805E-09	0.000412996	0.000412996	0.0189408	0.0184475	0.0184475	0.0184475			0.000625974	0.00593075
C10				0	0	0		0	0	0	0	0	0	0	0			0	0
C10+				1.79504E-09	3.37562E-17	2.07914E-13		4.59230E-06	2.07914E-13	4.59230E-06	4.59230E-06	0.587519	0.571647	0.571647	0.571647			2.86172E-06	0.180802
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0	0	0	0.0109009	2654.94	2654.95	0	0.0356476	2654.95	0.0356476	0.0356476	0.0129240*	0.311309	0.311309	0	0	0	0.0129240*	0
H2S	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
N2	0	0	0	0.00442614	0.000552963	0.00497910	0	0.0766200	0.00497910	0.0766200	0.0766200	0.000467018*	0.0869710	0.0869710	0	0	0	0.000467018*	0
CO2	0	0	0	0.0140202	0.0678124	0.0818326	0	0.0367271	0.0818326	0.0367271	0.0367271	0.00956243*	0.271503	0.271503	0	0	0	0.00956243*	0
C1	0	0	0	0.0983581	0.0252147	0.123573	0	0.946862	0.123573	0.946862	0.946862	0.0435394*	2.92524	2.92524	0	0	0	0.0435394*	0
C2	0	0	0	0.0871508	0.0313312	0.118482	0	0.719653	0.118482	0.719653	0.719653	1.68137*	11.1981	11.1981	0	0	0	0.418652*	0
C3	0	0	0	0.0517230	0.0129946	0.0647176	0	0.580231	0.0647176	0.580231	0.580231	14.4211*	29.3928	29.3928	0	0	0	0.642442*	0
iC4	0	0	0	0.00442078	0.000713506	0.00513428	0	0.0808786	0.00513428	0.0808786	0.0808786	6.07708*	8.68205	8.68205	0	0	0	0.109986*	0
nC4	0	0	0	0.0208730	0.00482897	0.0257020	0	0.254128	0.0257020	0.254128	0.254128	28.7282*	37.3774	37.3774	0	0	0	0.362910*	0
iC5	0	0	0	0.00291480	0.000449650	0.00336445	0	0.0549090	0.00336445	0.0549090	0.0549090	16.7495*	18.7267	18.7267	0	0	0	0.0815158*	0
nC5	0	0	0	0.00218905	0.000152128	0.00234118	0	0.0724273	0.00234118	0.0724273	0.0724273	29.1339*	31.7410	31.7410	0	0	0	0.106784*	0
2-Methylpentane	0	0	0	0.000496462	4.44820E-05	0.000540944	0	0.0143658	0.000540944	0.0143658	0.0143658	12.8216*	13.3314	13.3314	0	0	0	0.0205875*	0
3-Methylpentane	0	0	0	0.00112284	0.000235181	0.00135802	0	0.0162497	0.00135802	0.0162497	0.0162497	15.9965*	16.5710	16.5710	0	0	0	0.0231502*	0
nC6	0	0	0	0.000874709	4.00928E-05	0.000914802	0	0.0457889	0.000914802	0.0457889	0.0457889	55.1944*	56.7797	56.7797	0	0	0	0.0634112*	0
Cyclohexane	0	0	0	0.00105978	0.000837808	0.00189758	0	0.00640866	0.00189758	0.00640866	0.00640866	9.95835*	10.1819	10.1819	0	0	0	0.00895118*	0
C7	0	0	0	0.000864241	2.77079E-05	0.000891949	0	0.0697925	0.000891949	0.0697925	0.0697925	235.789*	238.040	238.040	0	0	0	0.0881127*	0
Methylcyclohexane	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
Benzene	0	0	0	0.00178588	0.0508530	0.0526389	0	0.00521083	0.0526389	0.00521083	0.00521083	4.72179*	4.90952	4.90952	0	0	0	0.00759510*	0
Toluene	0	0	0	0.00322675	0.0697461	0.0729729	0	0.00959826	0.0729729	0.00959826	0.00959826	30.0550*	30.3750	30.3750	0	0	0	0.0126185*	0
Ethylbenzene	0	0	0	0.000441254	0.00809838	0.00853964	0	0.00144709	0.00853964	0.00144709	0.00144709	13.0893*	13.1336	13.1336	0	0	0	0.00170261*	0
o-Xylene	0	0	0	0.000542438	0.0149445	0.0154870	0	0.00173292	0.0154870	0.00173292	0.00173292	18.6191*	18.6716	18.6716	0	0	0	0.00201742*	0
2,2,4-Trimethylpentane	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
C8	0	0	0	0.000135775	1.94983E-06	0.000137725	0	0.0229097	0.000137725	0.0229097	0.0229097	220.085*	220.764	220.764	0	0	0	0.0259876*	0
C9	0	0	0	4.87468E-06	5.94366E-08	4.93411E-06	0	0.00126082	4.93411E-06	0.00126082	0.00126082	34.3253*	34.3595	34.3595	0	0	0	0.00127962*	0
C10	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0*	0
C10+	0	0	0	5.52032E-10	8.96306E-14	5.52122E-10	0	1.40197E-05	5.52122E-10	1.40197E-05	1.40197E-05	1064.72*	1064.72	1064.72	0	0	0	5.84994E-06*	0

Process Streams	Units	Heater Treater Gas	HP Flared Gas	HT Flared Gas	Inlet Gas	Inlet Oil	Inlet Separator Gas	Inlet Water	Oil Flash	Oil Loadout	Oil Tank Feed	Pilot Gas	Sales	Sales Gas	Sat. Gas	Sweep Blanket Gas
Properties — Status:		Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total — From Block:		Heater Treater	SPLT-104	SPLT-105	--	--	HP Separator	--	Oil Tank	Oil Tank	MIX-102	SPLT-102	SPLT-102	MIX-101	Inlet Mixer	SPLT-102
To Block:		SPLT-105	--	MIX-101	Inlet Mixer	Inlet Mixer	SPLT-104	Inlet Mixer	--	--	Oil Tank	--	--	SPLT-102	SPLT-100	--
Property	Units															
Temperature	°F	110*	89	110	110*	110*	89*	110*	89.8136*	89.8136	110	110.129	110.129	110.129	104.118	110.129
Pressure	psig	59*	102	59	59*	59*	102*	59*	0*	0	59	59	59	59	59	59
Molecular Weight	lb/lbmol	27.4386		27.4386	26.3270	130.510		18.0153	42.0738	145.218	137.186	27.4386	27.4386	27.4386	27.9193	27.4386
Mass Flow	lb/h	1370.82	0	1367.77	1253.03	1964.61	0	2671.27	44.4844	1818.07	1862.55	1.27257	1107.89	1370.82	5888.91	261.653
Std Vapor Volumetric Flow	MMSCFD	0.455013	0*	0.454*	0.433476*	0.137100	0	1.35046	0.00962945	0.114023	0.123653	0.0004224*	0.367741	0.455013	1.92104	0.08685*
Std Liquid Volumetric Flow	sgpm	6.78424	0	6.76914	6.42360	5.44106*	0	5.34006*	0.181688	4.92891	5.11060	0.00629798	5.48301	6.78424	17.2047	1.29493
Net Ideal Gas Heating Value	Btu/ft^3	1407.44		1407.44	1368.06	6554.50		0	2179.14	7279.40	6882.22	1407.44	1407.44	1407.44	776.479	1407.44
Gross Ideal Gas Heating Value	Btu/ft^3	1542.45		1542.45	1500.18	7032.14		50.3100	2369.71	7804.56	7381.32	1542.45	1542.45	1542.45	875.746	1542.45

Process Streams	Units	To Flare	VRT to Flare	VRT to Sales	Water Flash	Water Loadout	Water Tank feed	1	2	3	6	8	9	10	11	12	14	15	18	21
Properties — Status:		Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total — From Block:		MIX-108	SPLT-103	SPLT-103	Water Tank	Water Tank	MIX-100	SPLT-104	SPLT-105	Heater Treater	MIX-103	VRU	--	Heater Treater	SPLT-101	SPLT-101	VRT	VRT	--	SPLT-100
To Block:		--	MIX-108	MIX-103	--	--	Water Tank	MIX-101	MIX-103	MIX-100	VRU	MIX-101	--	SPLT-101	MIX-102	VRT	MIX-102	SPLT-103	--	HP Separator
Property	Units																			
Temperature	°F				89.8136*	89.8136	110	89	110	110	110	167.686	89.8136	110	110	110			89.8136	
Pressure	psig	8	8	8	0*	0	59	102	59	59	59	102*	-3.84495	59	59	59	8	8*	0.862829	59
Molecular Weight	lb/lbmol				25.8244	18.0165	18.0171		27.4386	18.0171	27.4386	27.4386	146.274	137.186	137.186	137.186			44.7901	27.9193
Mass Flow	lb/h	0	0	0	0.307532	2655.23	2655.54	0	3.05286	2655.54	3.05286	3.05286	1812.24	1862.55	1862.55	0	0	0	2.04420	0
Std Vapor Volumetric Flow	MMSCFD	0	0	0	0.000108459	1.34226	1.34237	0	0.00101333	1.34237	0.00101333	0.00101333	0.112837	0.123653	0.123653	0	0	0	0.000415668	0
Std Liquid Volumetric Flow	sgpm	0	0	0	0.00154580	5.30833	5.30988	0	0.0151087	5.30988	0.0151087	0.0151087	4.90555	5.11060	5.11060	0	0	0	0.00818650	0
Net Ideal Gas Heating Value	Btu/ft^3				1264.95	0.0734528	0.175650		1407.44	0.175650	1407.44	1407.44	7331.55	6882.22	6882.22	6882.22			2317.59	776.479
Gross Ideal Gas Heating Value	Btu/ft^3				1389.36	50.3861	50.4943		1542.45	50.4943	1542.45	1542.45	7860.12	7381.32	7381.32	7381.32			2518.16	875.746

Process Streams	22	25	26	27	28	31	32 - Oil Tool W&B
Composition Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total From Block:	SPLT-100	--	--	--	HP Separator	MIX-104	MIX-105
To Block:	MIX-104	MIX-105	--	MIX-105	MIX-104	Heater Treater	--
Std Vapor Volumetric Flow	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD	MMSCFD
Water	1.35046	1.16681E-05*	0.000132206*	6.97442E-06*	0	1.35046	1.86426E-05
H2S	0	0*	0*	0*	0	0	0
N2	0.0112154	2.71153E-07*	2.76906E-05*	1.62077E-07*	0	0.0112154	4.33229E-07
CO2	0.00348598	3.53402E-06*	4.85614E-05*	2.11239E-06*	0	0.00348598	5.64641E-06
C1	0.243107	4.41426E-05*	0.00156547*	2.63854E-05*	0	0.243107	7.05281E-05
C2	0.101305	0.000226454*	0.00252070*	0.000135359*	0	0.101305	0.000361813
C3	0.0598968	0.000236965*	0.00271367*	0.000141642*	0	0.0598968	0.000378607
iC4	0.00705202	3.07781E-05*	0.000359018*	1.83971E-05*	0	0.00705202	4.91752E-05
nC4	0.0237419	0.000101555*	0.00119305*	6.07029E-05*	0	0.0237419	0.000162258
iC5	0.00547676	1.83763E-05*	0.000220228*	1.09841E-05*	0	0.00547676	2.93605E-05
nC5	0.00811245	2.40726E-05*	0.000290645*	1.43890E-05*	0	0.00811245	3.84616E-05
2-Methylpentane	0.00209077	3.88567E-06*	4.76728E-05*	2.32259E-06*	0	0.00209077	6.20826E-06
3-Methylpentane	0.00252263	4.36936E-06*	5.37348E-05*	2.61170E-06*	0	0.00252263	6.98106E-06
nC6	0.00817396	1.19682E-05*	0.000148424*	7.15378E-06*	0	0.00817396	1.91220E-05
Cyclohexane	0.00141350	1.72991E-06*	2.14326E-05*	1.03402E-06*	0	0.00141350	2.76393E-06
C7	0.0244846	1.43024E-05*	0.000181712*	8.54900E-06*	0	0.0244846	2.28514E-05
Methylcyclohexane	0	0*	0*	0*	0	0	0
Benzene	0.000851389	1.58148E-06*	1.93625E-05*	9.45299E-07*	0	0.000851389	2.52678E-06
Toluene	0.00343572	2.22748E-06*	2.80769E-05*	1.33144E-06*	0	0.00343572	3.55892E-06
Ethylbenzene	0.00118317	2.60844E-07*	3.37613E-06*	1.55915E-07*	0	0.00118317	4.16758E-07
o-Xylene	0.00166987	3.09073E-07*	4.01073E-06*	1.84743E-07*	0	0.00166987	4.93816E-07
2,2,4-Trimethylpentane	0	0*	0*	0*	0	0	0
C8	0.0184221	3.70030E-06*	4.82305E-05*	2.21179E-06*	0	0.0184221	5.91209E-06
C9	0.00248013	1.62275E-07*	2.17311E-06*	9.69969E-08*	0	0.00248013	2.59272E-07
C10	0	0*	0*	0*	0	0	0
C10+	0.0404554	3.96944E-10*	6.47876E-09*	2.37266E-10*	0	0.0404554	6.34211E-10
Mole Fraction							
Water	0.702985	0.0157186*	0.0137293*	0.0157186*		0.702985	0.0157186
H2S	0	0*	0*	0*		0	0
N2	0.00583819	0.000365280*	0.00287562*	0.000365280*		0.00583819	0.000365280
CO2	0.00181463	0.00476080*	0.00504300*	0.00476080*		0.00181463	0.00476080
C1	0.126550	0.0594661*	0.162571*	0.0594661*		0.126550	0.0594661
C2	0.0527346	0.305064*	0.261770*	0.305064*		0.0527346	0.305064
C3	0.0311794	0.319225*	0.281809*	0.319225*		0.0311794	0.319225
iC4	0.00367095	0.0414624*	0.0372833*	0.0414624*		0.00367095	0.0414624
nC4	0.0123589	0.136809*	0.123896*	0.136809*		0.0123589	0.136809
iC5	0.00285094	0.0247554*	0.0228703*	0.0247554*		0.00285094	0.0247554
nC5	0.00422296	0.0324291*	0.0301829*	0.0324291*		0.00422296	0.0324291
2-Methylpentane	0.00108836	0.00523453*	0.00495073*	0.00523453*		0.00108836	0.00523453
3-Methylpentane	0.00131316	0.00588612*	0.00558026*	0.00588612*		0.00131316	0.00588612
nC6	0.00425498	0.0161228*	0.0154136*	0.0161228*		0.00425498	0.0161228
Cyclohexane	0.000735800	0.00233042*	0.00222573*	0.00233042*		0.000735800	0.00233042
C7	0.0127455	0.0192673*	0.0188705*	0.0192673*		0.0127455	0.0192673
Methylcyclohexane	0	0*	0*	0*		0	0
Benzene	0.000443193	0.00213047*	0.00201076*	0.00213047*		0.000443193	0.00213047
Toluene	0.00178847	0.00300073*	0.00291573*	0.00300073*		0.00178847	0.00300073
Ethylbenzene	0.000615902	0.000351392*	0.000350605*	0.000351392*		0.000615902	0.000351392
o-Xylene	0.000869257	0.000416364*	0.000416507*	0.000416364*		0.000869257	0.000416364
2,2,4-Trimethylpentane	0	0*	0*	0*		0	0
C8	0.00958966	0.00498482*	0.00500864*	0.00498482*		0.00958966	0.00498482
C9	0.00129104	0.000218607*	0.000225673*	0.000218607*		0.00129104	0.000218607
C10	0	0*	0*	0*		0	0
C10+	0.0210591	5.34738E-07*	6.72807E-07*	5.34738E-07*		0.0210591	5.34738E-07
Mass Fraction							
Water	0.453610	0.00632226	0.00587866	0.00632226		0.453610	0.00632226
H2S	0	0	0	0		0	0
N2	0.00585787	0.000228460	0.00191463	0.000228460		0.00585787	0.000228460
CO2	0.00286043	0.00467783	0.00527502	0.00467783		0.00286043	0.00467783
C1	0.0727157	0.0212990	0.0619873	0.0212990		0.0727157	0.0212990
C2	0.0567950	0.204800	0.187080	0.204800		0.0567950	0.204800
C3	0.0492446	0.314275	0.295352	0.314275		0.0492446	0.314275
iC4	0.00764215	0.0538040	0.0515045	0.0538040		0.00764215	0.0538040
nC4	0.0257287	0.177531	0.171154	0.177531		0.0257287	0.177531
iC5	0.00736737	0.0398766	0.0392183	0.0398766		0.00736737	0.0398766
nC5	0.0109129	0.0522375	0.0517582	0.0522375		0.0109129	0.0522375
2-Methylpentane	0.00335930	0.0100711	0.0101401	0.0100711		0.00335930	0.0100711
3-Methylpentane	0.00405319	0.0113248	0.0114295	0.0113248		0.00405319	0.0113248
nC6	0.0131334	0.0310200	0.0315701	0.0310200		0.0131334	0.0310200
Cyclohexane	0.00221798	0.00437881	0.00445210	0.00437881		0.00221798	0.00437881
C7	0.0457435	0.0431037	0.0449415	0.0431037		0.0457435	0.0431037
Methylcyclohexane	0	0	0	0		0	0
Benzene	0.00123995	0.00371543	0.00373307	0.00371543		0.00123995	0.00371543
Toluene	0.00590226	0.00617284	0.00638523	0.00617284		0.00590226	0.00617284
Ethylbenzene	0.00234201	0.000832898	0.000884683	0.000832898		0.00234201	0.000832898
o-Xylene	0.00330541	0.000986899	0.00105097	0.000986899		0.00330541	0.000986899
2,2,4-Trimethylpentane	0	0	0	0		0	0
C8	0.0392350	0.0127128	0.0135983	0.0127128		0.0392350	0.0127128
C9	0.00593075	0.000625974	0.000687929	0.000625974		0.00593075	0.000625974
C10	0	0	0	0		0	0
C10+	0.180802	2.86172E-06	3.83308E-06	2.86172E-06		0.180802	2.86172E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Water	2671.27	0.0230801*	0.261509*	0.0137957*	0	2671.27	0.0368758
H2S	0	0*	0*	0*	0	0	0
N2	34.4965	0.000834017*	0.0851714*	0.000498518*	0	34.4965	0.00133254
CO2	16.8448	0.0170769*	0.234656*	0.0102074*	0	16.8448	0.0272844
C1	428.216	0.0777543*	2.75747*	0.0464762*	0	428.216	0.124230
C2	334.461	0.747644*	8.32215*	0.446890*	0	334.461	1.19453
C3	289.997	1.14730*	13.1386*	0.685775*	0	289.997	1.83307
iC4	45.0040	0.196417*	2.29115*	0.117405*	0	45.0040	0.313822
nC4	151.514	0.648097*	7.61370*	0.387388*	0	151.514	1.03549
iC5	43.3858	0.145574*	1.74460*	0.0870141*	0	43.3858	0.232588
nC5	64.2653	0.190699*	2.30243*	0.113987*	0	64.2653	0.304685
2-Methylpentane	19.7827	0.0367658*	0.451075*	0.0219761*	0	19.7827	0.0587419
3-Methylpentane	23.8689	0.0413424*	0.508434*	0.0247117*	0	23.8689	0.0660541
nC6	77.3412	0.113242*	1.40438*	0.0676883*	0	77.3412	0.180930
Cyclohexane	13.0615	0.0159853*	0.198049*	0.00955494*	0	13.0615	0.0255403
C7	269.380	0.157355*	1.99920*	0.0940560*	0	269.380	0.251411
Methylcyclohexane	0	0*	0*	0*	0	0	0
Benzene	7.30197	0.0135636*	0.166063*	0.00810740*	0	7.30197	0.0216710
Toluene	34.7579	0.0225346*	0.284043*	0.0134697*	0	34.7579	0.0360043
Ethylbenzene	13.7919	0.00304058*	0.0393546*	0.00181745*	0	13.7919	0.00485804
o-Xylene	19.4653	0.00360278*	0.0467520*	0.00215350*	0	19.4653	0.00575628
2,2,4-Trimethylpentane	0	0*	0*	0*	0	0	0
C8	231.051	0.0464095*	0.604911*	0.0277404*	0	231.051	0.0741500
C9	34.9257	0.00228519*	0.0306021*	0.00136593*	0	34.9257	0.00365111
C10	0	0*	0*	0*	0	0	0
C10+	1064.73	1.04470E-05*	0.000170512*	6.24452E-06*	0	1064.73	1.66916E-05

Process Streams		22	25	26	27	28	31	32 - Oil Tool W&B
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	SPLT-100	--	--	--	HP Separator	MIX-104	MIX-105
	To Block:	MIX-104	MIX-105	--	MIX-105	MIX-104	Heater Treater	--
Property	**Units**							
Temperature	°F	104.118	89.8136	89.8136	89.8136	89	104.118	89.8136
Pressure	psig	59	0.862829	-2.11631E-07	0.862829	102	59	0.862829
Molecular Weight	lb/lbmol	27.9193	44.7901	42.0738	44.7901		27.9193	44.7901
Mass Flow	lb/h	5888.91	3.65061	44.4844	2.18209	0	5888.91	5.83269
Std Vapor Volumetric Flow	MMSCFD	1.92104	0.000742315	0.00962945	0.000443705	0	1.92104	0.00118602
Std Liquid Volumetric Flow	sgpm	17.2047	0.0146197	0.181688	0.00873869	0	17.2047	0.0233584
Net Ideal Gas Heating Value	Btu/ft^3	776.479	2317.59	2179.14	2317.59		776.479	2317.59
Gross Ideal Gas Heating Value	Btu/ft^3	875.746	2518.16	2369.71	2518.16		875.746	2518.16

ATTACHMENT 3

PRODUCTION DATA

OATES PRODUCTION

Row Labels	Sum of Oil	Sum of Water	Sum of Gas Prod	Sum of HP Flare
12-Nov	175.445	207.54	442.81	298.925
13-Nov	164.405	212.66	418.88	287.825
14-Nov	135.62	124.97	325.14	276.08
15-Nov	184.01	193.88	462.19	279.2
16-Nov	179.25	204.54	450.24	343.32
17-Nov	193.57	217.33	486.2	212.06
18-Nov	189.83	194.53	476.8	184.54
19-Nov	194.06	217.24	487.44	338.85
20-Nov	183.31	203.76	460.43	441.96
21-Nov	179.49	189.14	450.84	151.87
22-Nov	173.79	202.97	436.52	55.68
23-Nov	173.83	188.96	502.02	0
24-Nov	171.32	188.69	494.66	0
25-Nov	166.03	187.73	483.43	0
26-Nov	171.02	178.9	473.78	0
27-Nov	161.8	187.4	406.41	122.41
28-Nov	191.76	194.97	485.49	46.17
29-Nov	163.36	182.15	470.67	0
30-Nov	135.44	153.73	364.67	0
1-Dec	169.69	182.49	464.61	0
2-Dec	175.52	176.11	538.88	380.99
3-Dec	173.43	188.57	487.58	246.89
4-Dec	176.4	179.35	496.11	223.19
5-Dec	148.08	140.27	417.56	164.67
6-Dec	169.2	172.84	475.86	219.27
7-Dec	169.8	173.22	477.53	264.24
8-Dec	168.15	177.83	472.89	260.48
9-Dec	163.93	181.76	461.04	241.96
10-Dec	164.96	174.21	463.93	190.67
11-Dec	92.56	70.55	257.86	114.73
Grand Total	**5059.06**	**5448.29**	**13592.47**	**5345.98**
Average	168.64	181.61	453.08	N/A

ATTACHMENT 4

SAMPLING DATA

SPL-inc.
5057 Owan Industrial Part
Drive Unit 5
Williston, ND 58801

EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS

Company:	Marathon	Sample Name:	**Glisar 14-32 SWF Pressurized Liquid**
Sample Date:	9/30/2020	Lab ID Number:	20100003-007A
Sample Facility:	Glisar 14-32 SWF	Date Tested:	10/2/2020
Sample Equipment:	Treater	Test Method:	GPA 2186M
Sample Location:	ND	Date Reported:	10/2/2020
Sample Pressure:	76 PSIG		
Sample Temperature:	132°F		
Sampling Method:	GPA-2174		
Type Sample:	Spot		

Components	Mole¾	Weight%	Liq. Vol.%
Carbon Dioxide	0.024	0.008	0.007
Nitrogen	0.025	0.006	0.005
Methane	1.875	0.234	0.564
Ethane	3.609	0.843	1.711
Propane	5.809	1.990	2.837
iso-Butane	1.416	0.639	0.822
n-Butane	5.503	**2.484**	3.075
iso-Pentane	2.110	1.183	1.368
n-Pentane	3.218	1.804	2.068
2-Methylpentane	1.525	1.021	1.128
3-Methylpentane	1.840	1.232	1.331
Other Hexanes	1.031	0.690	0.763
Heptanes	17.859	13.294	13.740
Octanes	13.437	11.506	11.631
Nonanes	1.809	1.802	1.798
Decanes+	29.508	54.572	50.877
Benzene	0.621	0.377	0.308
Toluene	2.506	1.793	1.487
Ethylbenzene	0.863	0.712	0.590
m-Xylene	0.920	0.759	0.631
p-Xylene	0.149	0.123	0.102
o-Xylene	0.149	0.123	0.100
n-Hexane	4.194	2.807	3.057
2,2,4-Trimethylpentane	0.000	0.000	0.000
Totals	**100.000**	**100.000**	**100.000**

CALCULATED SAMPLE CHARACTERISTICS

	Total	C10+
RELATIVE SPECIFIC GRAVITY	**0.72349**	**0.7768**
API GRAVITY AT 60/60 F	**64.1**	**50.67**
TRUE VAPOR PRESSURE AT 100 F, PSIA	**141.289**	**0.0009**
AVERAGE MOLECULAR WEIGHT	**128.742**	**239.7**
AVERAGE BOILING POINT, F	**252.406**	**558.3**
BTU/ GALLON OF LIQUID AT 14.73 PSIA	**122,641**	**130,310**
LBS/ GALLON OF LIQUID	**6.032**	**6.476**

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-16, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

QUALITY CONTROL DATA

Company:	Marathon	Sample Name:	Glisar 14-32 SWF
Date Sampled:	9/30/2020	Date Tested:	10/2/2020

Page 2 of 2

Analysis Summary - Meter Daily

September 2020

Meter #: 610009582
Name: GLISAR 14-32TFH
Press. Base: 14.730 psia Temp. Base: 60.0 F
ORM_DAILY_GRSLANDS_CHARLESON2100_2
Mole Percent

Day	Relative Density	Heating Value	CO2	N2	C1	C2	C3	IC4	NC4	IC5	NC5	Neo	C6	C7	C8	C9	C10	O2	H2	CO	He	Ar	H2S	H2O
1	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
2	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
3	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
4	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
5	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
6	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
7	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
8	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
9	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
10	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
11	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
12	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
13	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
14	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
15	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
16	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
17	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
18	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
19	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
20	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
21	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
22	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
23	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
24	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
25	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
26	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
27	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
28	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
29	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
30	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	
Avg	0.9152	1488.11W	0.7966	2.5794	55.4900	22.2289	11.9805	1.1790	3.7366	0.5961	0.8537		0.5592										0.0000	