

April 10, 2025

**VIA STEERS**

To: Texas Commission on Environmental Quality

Re: MMGL TXPH, LLC  
CN606186393  
RN105025076  
Permit # 79757  
APD-CERT Submittal  
Zybach 26 Central Tank Battery

Dear Air Permits Initial Review Team:

MMGL TXPH, LLC (MMGL) is submitting this APD-CERT for the Zybach 26 Central Tank Battery (Facility). This APD-CERT is being submitted to certify normal operation Facility emissions which have been updated to reflect current Facility operations. Maintenance, start-up, and shutdown emissions are being claimed under 30 TAC §106.359 and are not being certified with this submittal.

If you have any questions concerning the submittal or wish to discuss the information provided with this letter, please contact Ms. Liz Barksdale, Senior Environmental Analyst, at (972) 628-1480.

Sincerely,  
**MMGL TXHP, LLC**

## **INTRODUCTION**

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MMGL TXPH, LLC (MMGL) owns and operates Zybach 26 Central Tank Battery (Facility), an oil and natural gas production facility located in Hemphill County, Texas. Oil production is expected to be 10 barrels per day (BPD) and water production is expected to be 50 BPD. Maintenance, start-up, and shutdown (MSS) emissions are being claimed under 30 TAC §106.359 and are not being certified with this submittal.

The following supporting documentation has been included in this submittal:

1. List of each source of air emissions at the site and summary of the certified emission rates.
2. Process description.

## **PROCESS DESCRIPTION**

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The Facility receives gas and liquids from the wellhead(s). The gas and liquids from the wellhead(s) are sent to the production unit heater(s), where gas is sent to sales and liquids are sent to the heater treater. From the heater treater, gas is sent to sales, oil is sent to the oil storage tank(s), and produced water is sent to the produced water storage tank(s). Vapors from the storage tank(s) are vented to the atmosphere. Emissions from MSS activities are also included in this application.

During normal operations, the produced water and oil are transported offsite via truck.

Breathing, working and flash losses from the storage tanks were estimated using ProMax.

The gas analysis used in the fugitive calculations is a representative sample and the liquid analysis used in the ProMax is from a representative Facility.

The Facility was constructed prior to August 23, 2011; therefore, the site is not subject to NSPS Subpart OOOO/OOOOa. The tanks are not subject to NSPS Subpart Kb as they are located prior to custody transfer. The site is equipped with intermittent and/or low bleed pneumatic controllers, which are not subject to NSPS Subpart OOOO/OOOOa.

**Texas Commission on Environmental Quality**  
**Form APD – CERT**  
**Certification of Emission Limits**  
**(Page 1)**

<b>I. Company and Site Information</b>
<b>A.</b> Company Name: MMGL TXPH, LLC
<b>B.</b> Responsible Official Name: Sean Craven
Responsible Official's Title: Environmental Manager
Mailing Address: 13727 Noel Road, Suite 1200
City: Dallas
County: Dallas
State: TX
ZIP Code: 75240
Telephone: 972-628-1572
Fax: N/A
Email Address: sean.craven@meritenergy.com
<b>C.</b> Site Name: Zybach 26 Central Tank Battery
Street Address: <i>(if different from above)</i>
If "NO" street address describe the physical location with driving directions:
FROM INTERSECTION OF FM 1046 AND FM 3303 GO 1.7 MILES NORTH ON FM 3303 WEST ON LEASE
ROAD 4 MILES.
City or nearest city: Hemphill
County: Allison
ZIP Code: 79003
<b>D.</b> TCEQ Account Identification Number <i>(leave blank if unknown)</i> :
<b>E.</b> TCEQ Customer Reference Number <i>(leave blank if unknown)</i> : CN606186393
TCEQ Regulated Entity Number <i>(leave blank if unknown)</i> : RN105025076
<b>F.</b> Does the site have a Title V Permit? <span style="float: right;"><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</span>
<b>G.</b> Title V Permit Number:
<b>H.</b> Is this a small business? <span style="float: right;"><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</span>
<b>II. Attach the Following Documentations</b>
<b>A.</b> Copies of a previously completed Form PI-7 and all supporting documentation <i>(if applicable)</i> .
<b>B.</b> A list of each source of air emissions at the site.
<b>C.</b> A summary of the certified emission rates.
<b>D.</b> A process description.

**Texas Commission on Environmental Quality**  
**Form APD – CERT**  
**Certification of Emission Limits**  
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**III. Maintain Records On Site to Demonstrate Continuing Compliance and Make the Records Available on Request**

The emission rates listed on the certification shall reflect the certified emissions for the stationary sources at the site. The records demonstrating compliance with this certification must comply with applicable rules and must be maintained at the site or, for sites that normally operate unattended, at an office within Texas having day-to-day operational control of the site. Records must be kept for at least five years and must be made available upon request. For more information regarding records for permits by rule, see 30 TAC § 106.8, Recordkeeping.

**IV. Purpose of this Certification** *(choose and complete all that are appropriate)*

This certification is intended to establish emission rates below state and federal rule thresholds and triggers for:

☒ 30 TAC § 106.4 for Permits by Rule

☒ Permit by Rule Number: 79757

☐ HRVOC Emissions Cap and Trade Program

☐ Emissions Banking and Trading Program (other than HRVOC)

☐ 30 TAC Chapter 115 for Volatile Organic Compounds

☐ 30 TAC Chapter 117 for Nitrogen Oxides

☐ 40 CFR Part 60, Subpart:

☐ 40 CFR Part 61, Subpart:

☐ 40 CFR Part 63, Subpart:

☐ Title V Permit Major Source Applicability

☐ Other:

**Texas Commission on Environmental Quality**  
**Form APD – CERT**  
**Certification of Emission Limits**  
**(Page 3)**

**V. Certification by Responsible Official**

All representations in this certification of emissions are conditions upon which the stationary source shall operate. This certification reflects the maximum emission rates for the operation of this facility. The facility will operate in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. It shall be unlawful for any person to vary from such representation unless the certification is first revised. The signature below indicates that, based on information and belief formed after reasonable inquiry, the statements, and information contained in the attached documents are true, accurate, and complete.

Name: Sean Craven

Title: Environmental Manager

Original Signature Required: Signed electronically in STEERS

Date:

*Reminder: The original of this certification must be sent to the TCEQ through ePermits. A copy must also be maintained on site or, for sites that normally operate unattended, at an office within Texas having day-to-day operational control of the site.*

Texas Commission on Environmental Quality  
Form APD - CERT  
Certification of Emission Limits

EMISSION RATE DATA									
FIN	Facility Name	EPN	Point Name	Authorization Type	Authorization Date	Permit or Registration Number (if applicable)	Air Contaminant Name	Maximum Certified Emission Rates	
								lb/hr	T/yr
PU-1	Production Unit Heater (0.75 MMBtu/hr)	PU-1	Production Unit Heater (0.75 MMBtu/hr)	PBR	10/12/2020	79757	NOx	0.06	0.27
				PBR	10/12/2020	79757	CO	0.05	0.22
				PBR	10/12/2020	79757	VOC	<0.01	0.01
				PBR	10/12/2020	79757	SO2	<0.01	<0.01
				PBR	10/12/2020	79757	PM10	<0.01	0.02
PU-2	Production Unit Heater (0.75 MMBtu/hr)	PU-2	Production Unit Heater (0.75 MMBtu/hr)	PBR	10/12/2020	79757	NOx	0.06	0.27
				PBR	10/12/2020	79757	CO	0.05	0.22
				PBR	10/12/2020	79757	VOC	<0.01	0.01
				PBR	10/12/2020	79757	SO2	<0.01	<0.01
				PBR	10/12/2020	79757	PM10	<0.01	0.02
PU-3	Production Unit Heater (2 MMBtu/hr)	PU-3	Production Unit Heater (2 MMBtu/hr)	PBR	10/12/2020	79757	NOx	0.16	0.71
				PBR	10/12/2020	79757	CO	0.14	0.60
				PBR	10/12/2020	79757	VOC	<0.01	0.04
				PBR	10/12/2020	79757	SO2	<0.01	<0.01
				PBR	10/12/2020	79757	PM10	0.01	0.05
HT-1	Heater Treater (0.5 MMBtu/hr)	HT-1	Heater Treater (0.5 MMBtu/hr)	PBR	10/12/2020	79757	NOx	0.04	0.18
				PBR	10/12/2020	79757	CO	0.03	0.15
				PBR	10/12/2020	79757	VOC	<0.01	<0.01
				PBR	10/12/2020	79757	SO2	<0.01	<0.01
				PBR	10/12/2020	79757	PM10	<0.01	0.01
T-1	Oil Storage Tank (300-bbl)	T-1	Oil Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	0.13	0.56
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-2	Oil Storage Tank (300-bbl)	T-2	Oil Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	0.13	0.56
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-3	Oil Storage Tank (300-bbl)	T-3	Oil Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	0.13	0.56
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-4	Produced Water Storage Tank (300-bbl)	T-4	Produced Water Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	<0.01	0.02
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-5	Produced Water Storage Tank (300-bbl)	T-5	Produced Water Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	<0.01	0.02
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-6	Produced Water Storage Tank (300-bbl)	T-6	Produced Water Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	0.00	0.02
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-7	Produced Water Storage Tank (300-bbl)	T-7	Produced Water Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	<0.01	0.02
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
T-8	Produced Water Storage Tank (300-bbl)	T-8	Produced Water Storage Tank (300-bbl)	PBR	10/12/2020	79757	VOC	<0.01	0.02
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
LOAD	Loading Emissions	LOAD	Loading Emissions	PBR	10/12/2020	79757	VOC	16.00	0.12
				PBR	10/12/2020	79757	H2S	<0.01	<0.001
FUG	Site Fugitives	FUG	Site Fugitives	PBR	10/12/2020	79757	VOC	1.68	7.37
				PBR	10/12/2020	79757	H2S	<0.001	<0.001
MSS	Maintenance, Startup, Shutdown Emissions	MSS	Maintenance, Startup, Shutdown Emissions	PBR	10/12/2020	79757	VOC	8.19	0.27
						<b>Emission Totals:</b>	NOx	-	<b>1.42</b>
							CO	-	<b>1.19</b>
							VOC	-	<b>9.60</b>
							SO <sub>2</sub>	-	<b>0.01</b>
							PM <sub>10</sub>	-	<b>0.11</b>

# SUMMARY TABLE

ESTIMATED EMISSIONS															
EPN/Emission Source	Specific VOC or Other Pollutants	VOC		NO <sub>x</sub>		CO		PM <sub>10</sub>		PM <sub>2.5</sub>		H <sub>2</sub> S		SO <sub>2</sub>	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
PU-1 / Production Unit Heater (0.75 MMBtu/hr)		<0.01	0.01	0.06	0.27	0.05	0.22	<0.01	0.02	<0.01	0.02	--	--	<0.01	<0.01
PU-2 / Production Unit Heater (0.75 MMBtu/hr)		<0.01	0.01	0.06	0.27	0.05	0.22	<0.01	0.02	<0.01	0.02	--	--	<0.01	<0.01
PU-3 / Production Unit Heater (2 MMBtu/hr)		<0.01	0.04	0.16	0.71	0.14	0.60	0.01	0.05	0.01	0.05	--	--	<0.01	<0.01
HT-1 / Heater Treater (0.5 MMBtu/hr)		<0.01	<0.01	0.04	0.18	0.03	0.15	<0.01	0.01	<0.01	0.01	--	--	<0.01	<0.01
T-1 / Oil Storage Tank (300-bbl)		0.13	0.56	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-2 / Oil Storage Tank (300-bbl)		0.13	0.56	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-3 / Oil Storage Tank (300-bbl)		0.13	0.56	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-4 / Produced Water Storage Tank (300-bbl)		<0.01	0.02	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-5 / Produced Water Storage Tank (300-bbl)		<0.01	0.02	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-6 / Produced Water Storage Tank (300-bbl)		<0.01	0.02	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-7 / Produced Water Storage Tank (300-bbl)		<0.01	0.02	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
T-8 / Produced Water Storage Tank (300-bbl)		<0.01	0.02	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
LOAD / Loading Emissions		16.00	0.12	--	--	--	--	--	--	--	--	<0.01	<0.001	--	--
FUG / Site Fugitives		1.68	7.37	--	--	--	--	--	--	--	--	<0.001	<0.001	--	--
MSS / Tank Cleaning		8.13	0.02	--	--	--	--	--	--	--	--	--	--	--	--
MSS / General MSS		0.06	0.25	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL EMISSIONS (TPY):			9.60		1.42		1.19		0.11		0.11		<0.001		0.009
MAXIMUM OPERATING SCHEDULE:		Hours/Day		24		Days/Week		7		Weeks/Year		52		Hours/Year	

**TABLE 1**  
**POTENTIAL EMISSIONS SUMMARY**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Emissions Source	EPN	NO <sub>x</sub>		VOC		CO		PM <sub>10</sub> /PM <sub>2.5</sub>		SO <sub>2</sub>		H <sub>2</sub> S		TOTAL HAPs	
		(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Production Unit Heater (0.75 MMBtu/hr)	PU-1	0.06	0.27	0.003	0.01	0.05	0.22	0.005	0.02	0.0004	0.002	--	--	--	--
Production Unit Heater (0.75 MMBtu/hr)	PU-2	0.06	0.27	0.003	0.01	0.05	0.22	0.005	0.02	0.0004	0.002	--	--	--	--
Production Unit Heater (2 MMBtu/hr)	PU-3	0.16	0.71	0.01	0.04	0.14	0.60	0.01	0.05	0.001	0.004	--	--	--	--
Heater Treater (0.5 MMBtu/hr)	HT-1	0.04	0.18	0.002	0.01	0.03	0.15	0.003	0.01	0.0002	0.001	--	--	--	--
Oil Storage Tank (300-bbl)	T-1	--	--	0.13	0.56	--	--	--	--	--	--	<0.001	<0.001	0.01	0.02
Oil Storage Tank (300-bbl)	T-2	--	--	0.13	0.56	--	--	--	--	--	--	<0.001	<0.001	0.01	0.02
Oil Storage Tank (300-bbl)	T-3	--	--	0.13	0.56	--	--	--	--	--	--	<0.001	<0.001	0.01	0.02
Produced Water Storage Tank (300-bbl)	T-4	--	--	0.004	0.02	--	--	--	--	--	--	<0.001	<0.001	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-5	--	--	0.004	0.02	--	--	--	--	--	--	<0.001	<0.001	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-6	--	--	0.004	0.02	--	--	--	--	--	--	<0.001	<0.001	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-7	--	--	0.004	0.02	--	--	--	--	--	--	<0.001	<0.001	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-8	--	--	0.004	0.02	--	--	--	--	--	--	<0.001	<0.001	0.0002	0.001
Loading Emissions	LOAD	--	--	16.00	0.12	--	--	--	--	--	--	0.003	<0.001	0.86	0.01
Site Fugitives	FUG	--	--	1.68	7.37	--	--	--	--	--	--	<0.001	<0.001	0.08	0.36
Tank Cleaning	MSS	--	--	8.13	0.02	--	--	--	--	--	--	--	--	--	--
General MSS	MSS	--	--	0.06	0.25	--	--	--	--	--	--	--	--	--	--
<b>Total Facility Emissions</b>		<b>0.32</b>	<b>1.42</b>	<b>26.29</b>	<b>9.60</b>	<b>0.27</b>	<b>1.19</b>	<b>0.02</b>	<b>0.11</b>	<b>0.00</b>	<b>0.01</b>	<b>0.003</b>	<b>&lt;0.001</b>	<b>0.96</b>	<b>0.45</b>

Note: General MSS is based on default TCEQ MSS calculations.

**TABLE 2**

**POTENTIAL EMISSIONS**  
**PRODUCTION UNIT HEATER (PU-1)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Pollutant	Max Firing Rate (MMBtu/hr)	Gas Heating Value (MMBtu/scf)	Emission Factors (lb/MMSCF) <sup>1</sup>	Potential Emission Rates <sup>2</sup>	
				(lb/hr)	(T/yr)
NOx	0.75	1,235	100.00	0.06	0.27
VOC	0.75	1,235	5.50	0.003	0.01
CO	0.75	1,235	84.00	0.05	0.22
PM	0.75	1,235	7.60	0.005	0.02
SO2	0.75	1,235	0.60	0.0004	0.002

Notes:

1. Emission factors obtained from AP-42 Table 1.4-1 through 1.4-3 for commercial boilers.
2. Potential emissions based on AP-42 emission factors, maximum firing rate, fuel heating value, and 8,760 hours per year of operation. Heater only burns sweet gas.

**TABLE 3**

**POTENTIAL EMISSIONS**  
**PRODUCTION UNIT HEATER (PU-2)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Pollutant	Max Firing Rate (MMBtu/hr)	Gas Heating Value (MMBtu/scf)	Emission Factors (lb/MMSCF) <sup>1</sup>	Potential Emission Rates <sup>2</sup>	
				(lb/hr)	(T/yr)
NOx	0.75	1,235	100.00	0.06	0.27
VOC	0.75	1,235	5.50	0.003	0.01
CO	0.75	1,235	84.00	0.05	0.22
PM	0.75	1,235	7.60	0.005	0.02
SO2	0.75	1,235	0.60	0.0004	0.002

Notes:

1. Emission factors obtained from AP-42 Table 1.4-1 through 1.4-3 for commercial boilers.
2. Potential emissions based on AP-42 emission factors, maximum firing rate, fuel heating value, and 8,760 hours per year of operation. Heater only burns sweet gas.

**TABLE 4**

**POTENTIAL EMISSIONS**  
**PRODUCTION UNIT HEATER (PU-3)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Pollutant	Max Firing Rate (MMBtu/hr)	Gas Heating Value (MMBtu/scf)	Emission Factors (lb/MMSCF) <sup>1</sup>	Potential Emission Rates <sup>2</sup>	
				(lb/hr)	(T/yr)
NOx	2.00	1,235	100.00	0.16	0.71
VOC	2.00	1,235	5.50	0.01	0.04
CO	2.00	1,235	84.00	0.14	0.60
PM	2.00	1,235	7.60	0.01	0.05
SO2	2.00	1,235	0.60	0.001	0.004

Notes:

1. Emission factors obtained from AP-42 Table 1.4-1 through 1.4-3 for commercial boilers.
2. Potential emissions based on AP-42 emission factors, maximum firing rate  
fuel heating value, and 8,760 hours per year of operation. Heater only burns sweet gas.

**TABLE 5**

**POTENTIAL EMISSIONS**  
**HEATER TREATER (HT-1)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Pollutant	Max Firing Rate (MMBtu/hr)	Gas Heating Value (MMBtu/scf)	Emission Factors (lb/MMSCF) <sup>1</sup>	Potential Emission Rates <sup>2</sup>	
				(lb/hr)	(T/yr)
NOx	0.50	1,235	100.00	0.04	0.18
VOC	0.50	1,235	5.50	0.002	0.01
CO	0.50	1,235	84.00	0.03	0.15
PM	0.50	1,235	7.60	0.003	0.01
SO2	0.50	1,235	0.60	0.0002	0.001

Notes:

1. Emission factors obtained from AP-42 Table 1.4-1 through 1.4-3 for commercial boilers.
2. Potential emissions based on AP-42 emission factors, maximum firing rate  
fuel heating value, and 8,760 hours per year of operation. Heater only burns sweet gas.

**TABLE 6**  
**POTENTIAL EMISSIONS**  
**STORAGE TANKS**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Source	EU-ID	Annual Throughput <sup>1</sup> (gallons/year)	Tank Capacity (gallons)	Potential VOC Emissions					Potential H2S Emissions			Potential HAP Emissions		
				Annual Breathing Losses <sup>2</sup> (T/yr)	Annual Working Losses <sup>2</sup> (T/yr)	Annual Flash Losses <sup>3</sup> (T/yr)	Total VOC Emissions <sup>4</sup>		H2S <sup>5</sup> (% of VOC)	H2S Tank Emissions <sup>6</sup>		HAP <sup>5</sup> (% of VOC)	HAP Tank Emissions <sup>6</sup>	
							(lb/hr)	(T/yr)		(lb/hr)	(T/yr)		(lb/hr)	(T/yr)
Oil Storage Tank (300-bbl)	T-1	51,100	12,600	0.21	0.08	0.26	0.13	0.56	0.01%	0.00002	0.0001	4.32%	0.01	0.02
Oil Storage Tank (300-bbl)	T-2	51,100	12,600	0.21	0.08	0.26	0.13	0.56	0.01%	0.00002	0.0001	4.32%	0.01	0.02
Oil Storage Tank (300-bbl)	T-3	51,100	12,600	0.21	0.08	0.26	0.13	0.56	0.01%	0.00002	0.0001	4.32%	0.01	0.02
Produced Water Storage Tank (300-bbl)	T-4	153,300	12,600	0.01	0.003	0.01	0.004	0.02	0.06%	0.000002	0.00001	5.41%	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-5	153,300	12,600	0.01	0.003	0.01	0.004	0.02	0.06%	0.000002	0.00001	5.41%	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-6	153,300	12,600	0.01	0.003	0.01	0.004	0.02	0.06%	0.000002	0.00001	5.41%	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-7	153,300	12,600	0.01	0.003	0.01	0.004	0.02	0.06%	0.000002	0.00001	5.41%	0.0002	0.001
Produced Water Storage Tank (300-bbl)	T-8	153,300	12,600	0.01	0.003	0.01	0.004	0.02	0.06%	0.000002	0.00001	5.41%	0.0002	0.001

Notes:

1. Based on maximum annual oil throughput value of 3,650-bbl/yr and maximum annual produced water throughput value of 18,250-bbl/yr.
2. Annual breathing and working losses were determined using ProMax simulation.
3. Annual flash emissions from the storage tanks were determined using ProMax simulation.
4. Total VOC Emissions = ((Breathing Losses (T/yr) + Working Losses (T/yr))) + Flash Emissions (T/yr)
5. HAP/H2S percent of VOC determined using ProMax simulation.
6. Total H2S or HAP Emissions = Total VOC Emissions x H2S or HAP (%).

**TABLE 7**  
**POTENTIAL EMISSIONS**  
**TRUCK LOADING (LOAD)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Material Name	EU-ID	Saturation Factor <sup>1</sup> (S)	True Vapor Pressure <sup>2</sup> (P)		Molecular Weight of Vapors <sup>2</sup> (M) (lb/lb-mole)	Temp of Loaded Liquid <sup>2</sup> (F)		Emission Factor <sup>1</sup> (lb VOC/10 <sup>3</sup> gal)		Annual Throughput <sup>3</sup> (gals)	Estimated Hourly Throughput <sup>3</sup> (gal)	Weight Percent of VOC in HC Vapors (%)	Total Uncontrolled VOC Emissions		Total H2S Emissions		Total HAP Emissions	
			Max	Avg		Max	Avg	Max	Avg				(lb/hr) <sup>4</sup>	(T/yr) <sup>5</sup>	(lb/hr) <sup>4</sup>	(T/yr) <sup>5</sup>	(lb/hr) <sup>4</sup>	(T/yr) <sup>5</sup>
Oil Produced Water	C LOAD	0.6	8.36	6.83	37	95	65.32	4.12	3.55	153,300	8,000	95.02%	15.85	0.12	0.001	1.07E-05	0.86	0.01
	PW LOAD	0.6	13.26	12.49	20	95	65.32	3.61	3.59	766,500	8,000	100.00%	0.15	0.0004	0.002	--	0.15	0.0004
<b>Total</b>													<b>16.00</b>	<b>0.12</b>	<b>0.003</b>	<b>1.07E-05</b>	<b>1.01</b>	<b>0.01</b>

Notes:

1. Per AP-42, 5th Edition (6/08), Section 5.2, Equation 1: Saturation Factor = 0.6 for submerged loading: dedicated normal service
2. True vapor pressure, weight of vapors and temp of loaded liquid obtained from Promax.
3. Throughput is the amount of oil/water loaded out from the storage tanks. It is estimated that one truck can load 8,000 gallons in one hour.
4. Uncontrolled Hourly VOC/HAP Emissions calculated from Promax.
5. Uncontrolled Annual VOC/HAP Emissions calculated using Promax.

**TABLE 8**  
**POTENTIAL EMISSIONS**  
**SITEWIDE FUGITIVES (FUG)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Component Type	Type of Service	Estimated Equipment At Site <sup>1</sup>	Emission Factor lb/hr/component <sup>2</sup>	% VOC <sup>3</sup>	% H2S	% HAP <sup>3</sup>	VOC Emissions		H2S Emissions		HAP Emissions	
							(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Flanges	Light Oil	140	0.000243	99.99%	--	5.45%	0.03	0.15	--	--	0.002	0.01
	Water/Oil	140	0.000006	99.99%	--	5.45%	0.001	0.004	--	--	0.00005	0.0002
Valves	Gas	325	0.009920	25.65%	0.004%	1.18%	0.83	3.62	0.0001	0.0005	0.04	0.17
	Light Oil	72	0.005500	99.99%	--	5.45%	0.40	1.73	--	--	0.02	0.09
Connectors	Water/Oil	72	0.000216	99.99%	--	5.45%	0.02	0.07	--	--	0.001	0.004
	Gas	993	0.000440	25.65%	0.004%	1.18%	0.11	0.49	0.00002	0.0001	0.005	0.02
Open-Ended Lines	Light Oil	92	0.000463	99.99%	--	5.45%	0.04	0.19	--	--	0.002	0.01
	Water/Oil	92	0.000243	99.99%	--	5.45%	0.02	0.10	--	--	0.001	0.005
Other	Gas	38	0.004410	25.65%	0.004%	1.18%	0.04	0.19	0.00001	0.00003	0.002	0.01
	Light Oil	4	0.016500	99.99%	--	5.45%	0.07	0.29	--	--	0.004	0.02
	Water/Oil	4	0.030900	99.99%	--	5.45%	0.12	0.54	--	--	0.01	0.03
Total Component Count		1972				Total	1.68	7.37	1.39E-04	6.08E-04	0.08	0.36

Notes:

1. Number of each component and type of service estimated based on a similar site.
2. Emission factors based on EPA's oil and gas production operations factors for process piping fugitive emissions.
3. Percent VOC, H2S, and HAP based on a representative sample and ProMax (refer to Tables 10 & 11).

TABLE 9

**POTENTIAL EMISSIONS FROM MSS ACTIVITIES (MSS)**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Summary of MSS Activities						
Activity	VOC <sup>1</sup>		PM		Other HAPs	
	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Engine, compressor, turbine and other combustion facilities maintenance	0.06	0.25	-	-	-	-
Repair, adjustment, calibration, lubrication and cleaning of site process equipment			-	-	-	-
Replacement of piping components, pneumatic controllers, boiler refractories, wet and dry seals, meters, instruments, analyzers, screens and filters			-	-	-	-
Turbine or engine component swaps			-	-	-	-
Piping used to bypass a facility during maintenance			-	-	-	-
Pigging and purging of piping	73.18	0.37	-	-	-	-
Abrasive blasting, surface preparation and surface coating of facilities and structures used at the site	8.13	0.02	0.68	0.001	0.08	0.0002
<b>Total =</b>	<b>81.37</b>	<b>0.63</b>	<b>0.68</b>	<b>0.001</b>	<b>0.08</b>	<b>0.0002</b>

**MSS - Pigging Operations**

Description	Pigging
Number of Events per Year	10
Number of Events per hour	1
Volume per Event, scf	5000
Stream Specific Gravity	0.7467
Air MW, lb/mole	28.96
Fuel Stream Density, lb/scf	0.057
VOC Percentage in Gas Stream, wt%	25.65%
VOC Hourly Emission Rate (lb/hr):	73.18
VOC Annual Emission Rate (T/yr):	0.37

**MSS - Sandblasting**

Description	Sandblasting	
Application Rate <sup>1</sup>	2,000	lb/hr
Operating Hours	4	hr/yr
PM10 Emission Factor <sup>1</sup>	0.00034	lb/lb usage
PM2.5 Emission Factor <sup>1</sup>	0.00005	lb/lb usage
PM10 Emissions	<b>0.68</b>	<b>lb/hr</b>
PM10 Emissions	<b>0.001</b>	<b>T/yr</b>
PM2.5 Emissions	<b>0.10</b>	<b>lb/hr</b>
PM2.5 Emissions	<b>&lt;0.01</b>	<b>T/yr</b>

**MSS - Solvent Cleaning**

Description	Solvent Cleaning	
Annual Usage	5	gal/yr
Maximum Hourly Usage	1	gal/hr
Density	6.5	lb/gal
VOC Wt%	100%	-
Dipropylene Glycol Methyl Ether Wt%	1%	-
HAP Emissions	<b>0.08</b>	<b>lb/hr</b>
HAP Emissions	<b>0.0002</b>	<b>T/yr</b>
VOC Emissions	<b>8.13</b>	<b>lb/hr</b>
VOC Emissions	<b>0.02</b>	<b>T/yr</b>

Notes:

1. Defaults from TCEQ emissions spreadsheet.

TABLE 10

**GAS ANALYSIS  
ZYBACH 26  
MMGL TXPH, LLC  
HEMPHILL COUNTY, TEXAS**

Component	Molecular Weight	Mole % <sup>1</sup>	lb/100 mole	Wt % Total	Wt % Hydrocarbon	Wt % VOC <sup>2</sup>
Hydrogen Sulfide	34.08	0.0023%	0.001	0.004%	--	--
Nitrogen	28.01	0.80%	0.23	1.04%	--	--
Carbon Dioxide	44.01	0.25%	0.11	0.50%	--	--
Methane	16.04	79.31%	12.72	58.89%	58.89%	--
Ethane	30.07	10.28%	3.09	14.31%	14.31%	--
Propane	44.10	4.67%	2.06	9.54%	9.54%	9.69%
i-Butane	58.12	0.74%	0.43	1.99%	1.99%	2.02%
n-Butane	58.12	1.58%	0.92	4.25%	4.25%	4.32%
i-Pentane	72.15	0.47%	0.34	1.57%	1.57%	1.60%
n-Pentane	72.15	0.56%	0.41	1.88%	1.88%	1.91%
Other Hexanes	86.17	0.27%	0.23	1.07%	1.07%	1.09%
Heptanes	100.20	0.50%	0.50	2.33%	2.33%	2.37%
Octanes+	114.23	0.28%	0.32	1.46%	1.46%	1.49%
Benzene	78.11	0.01%	0.01	0.05%	0.05%	0.06%
Toluene	92.14	0.03%	0.02	0.12%	0.12%	0.12%
Ethylbenzene	106.17	0.001%	0.001	0.005%	0.005%	0.005%
Xylenes	106.17	0.01%	0.01	0.05%	0.05%	0.05%
n-Hexane	86.17	0.23%	0.20	0.93%	0.93%	0.94%
Total	--	100.00%	21.60	100.00%	98.45%	25.65%

## Notes:

1. Representative gas analysis and extended HAPs based on a sample taken 08/15/2024. H<sub>2</sub>S is represented as 23 ppm to allow for changes in gas quality.
2. Wt % VOC is the VOC % in the hydrocarbon portion of the gas.

**TABLE 11**  
**LIQUID ANALYSIS**  
**ZYBACH 26**  
**MMGL TXPH, LLC**  
**HEMPHILL COUNTY, TEXAS**

Component	Molecular Weight	Mole % <sup>1</sup>	lb/100 mole	Wt % Total	Wt % Hydrocarbon	Wt % VOC <sup>2</sup>
Water	18.01	0.09%	0.02	0.01%	--	--
Nitrogen	28.01	0.00002%	0.00001	0.000005%	--	--
Ethane	30.07	0.05%	0.02	0.01%	0.01%	--
Propane	44.10	0.91%	0.40	0.37%	0.37%	0.37%
i-Butane	58.12	0.42%	0.25	0.23%	0.23%	0.23%
n-Butane	58.12	1.39%	0.81	0.75%	0.75%	0.75%
i-Pentane	72.15	1.06%	0.77	0.71%	0.71%	0.71%
n-Pentane	72.15	1.69%	1.22	1.13%	1.13%	1.13%
Other Hexanes	86.17	1.31%	1.13	1.05%	1.05%	1.05%
Heptanes	100.20	14.32%	14.35	13.32%	13.32%	13.32%
Octanes+	114.23	72.59%	82.92	76.96%	76.96%	76.97%
Benzene	78.11	0.17%	0.13	0.12%	0.12%	0.12%
Toluene	92.14	1.18%	1.09	1.01%	1.01%	1.01%
Ethylbenzene	106.17	0.23%	0.25	0.23%	0.23%	0.23%
Xylenes	106.17	2.29%	2.43	2.25%	2.25%	2.25%
n-Hexane	86.17	2.29%	1.97	1.83%	1.83%	1.83%
Total	--	100.00%	107.75	100.00%	99.99%	99.99%

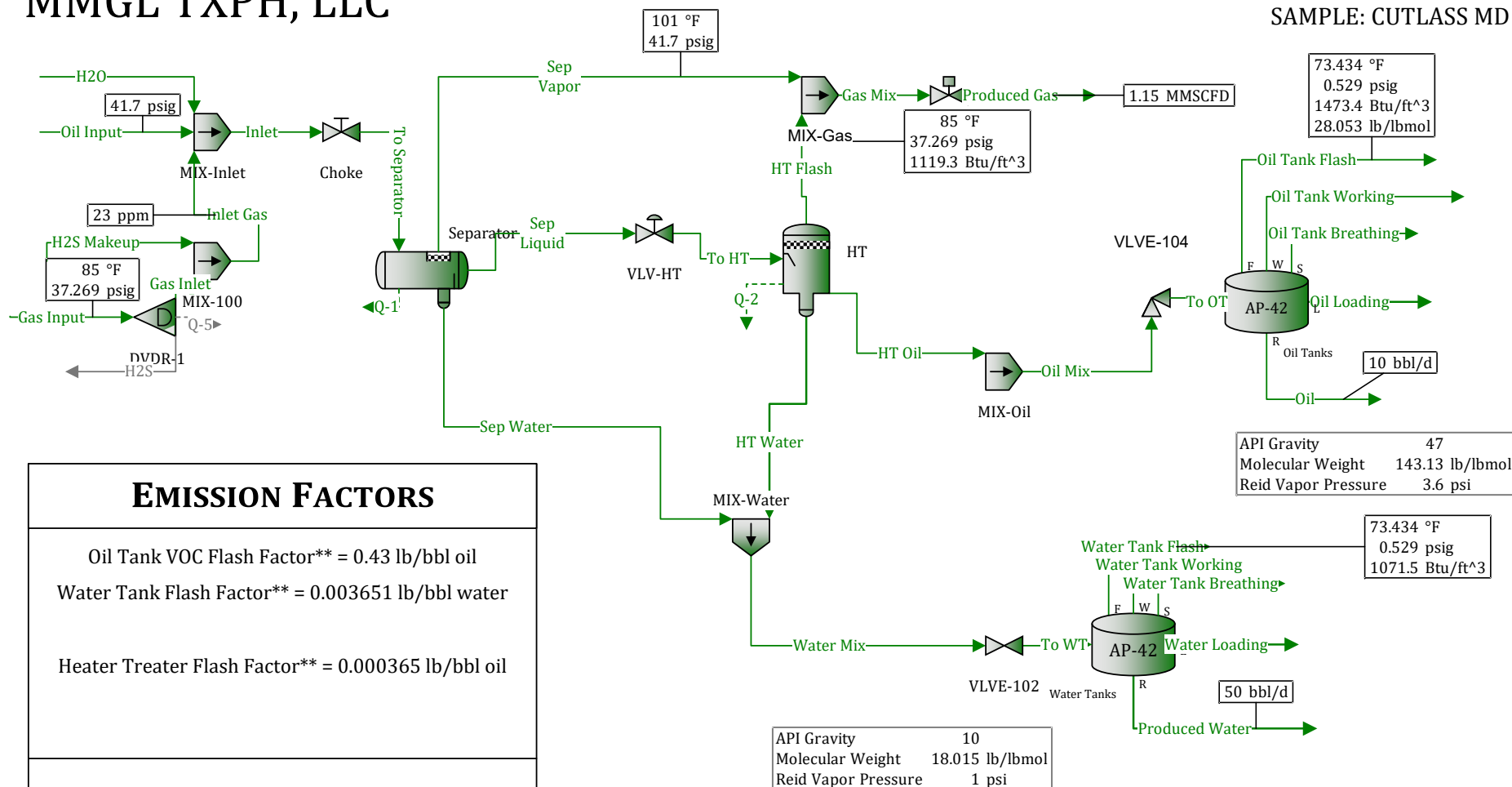
Notes:

1. Liquid analysis based on ProMax.
2. Wt % VOC is the VOC % in the hydrocarbon portion of the gas.

# MMGL TXPH, LLC

FACILITY: ZYBACH 26 CTB

SAMPLE: CUTLASS MD 1H



## EMISSION FACTORS

Oil Tank VOC Flash Factor\*\* = 0.43 lb/bbl oil  
 Water Tank Flash Factor\*\* = 0.003651 lb/bbl water  
 Heater Treater Flash Factor\*\* = 0.000365 lb/bbl oil

Oil Tank Total Volume Factor\*\*\* = 12.91 SCF/bbl oil  
 Water Tank Volume Factor\*\*\* = 0.4039 SCF/bbl water  
 Heater Treater Volume Factor\*\*\* = 0.03053 SCF/bbl oil

HC FLASH HAPS	LOADING HAPS	LOADING PARAMETERS
Benzene = 0.2 wt% of VOC	Benzene = 0.2 wt% of VOC	Bulk Liquid Temp = 65.3 °F
Toluene = 0.45 wt% of VOC	Toluene = 0.46 wt% of VOC	True Vapor Pressure = 6.83 psia
Ethylbenzene = 0.03 wt% of VOC	Ethylbenzene = 0.03 wt% of VOC	Vapor Molecular Weight (Oil) = 36.6 lb/lbmol
Xylenes = 0.27 wt% of VOC	Xylenes = 0.27 wt% of VOC	Vapor Molecular Weight (Water) = 20.213 lb/lbmol
n-Hexane = 3.36 wt% of VOC	n-Hexane = 3.52 wt% of VOC	Liquid Density = 6.5 lb/gal

\*GOR is the total flash volume from all vessels per barrel of stock tank oil.

\*\*Flash Factors are the pounds of VOC emissions per barrel of stock tank oil/stock tank water.

\*\*\*Volume Factors are the total flash volume per barrel of stock tank oil/stock tank water.

LAST EDIT: 1/21/2025



# Certificate of Analysis

Number: 1030-24080790-005A

Houston Laboratories

8820 Interchange Drive

Houston, TX 77054

Phone 713-660-0901

Liz Morgan  
Merit Energy Company  
13727 Noel Road, Suite 1200  
Dallas, TX 75240

Station Name: Cutlass MD 1H  
Cylinder No: 000356  
Instrument 1: HGC 19A + 19B, Front TCD #19A  
Instrument 2: HGC 7A, HP6890 Signal 1  
Instrument 3: HGC 19A + 19B, Rear TCD #19B  
Instrument 4: High Temp, HTSD  
Analyzed: 09/03/2024 09:47:05 by SMS

Report Date: 09/10/2024  
Sampled By: TL  
Sample Of: Liquid Spot  
Sample Date: 08/15/2024  
Sample Conditions: 41.7 psig, @ 101.3 °F  
Received Date: 08/23/2024  
Login Date: 08/26/2024  
Method: GPA 2103M

## Analytical Data

Components	Mol. %	MW	Wt. %	Sp. Gravity	L.V. %
Nitrogen	0.037	28.013	0.008	0.8069	0.008
Methane	0.900	16.043	0.110	0.3000	0.282
Carbon Dioxide	0.009	44.010	0.003	0.8172	0.003
Ethane	1.065	30.069	0.244	0.3563	0.527
Propane	1.968	44.096	0.661	0.5072	1.004
Iso-Butane	0.763	58.122	0.338	0.5628	0.463
n-Butane	2.532	58.122	1.121	0.5842	1.478
Iso-Pentane	1.750	72.149	0.962	0.6251	1.185
n-Pentane	2.794	72.149	1.536	0.6307	1.876
i-Hexanes	2.775	86.175	1.822	0.6641	2.113
n-Hexane	3.354	86.175	2.202	0.6641	2.554
2,2,4-Trimethylpentane	0.055	114.229	0.048	0.6964	0.053
Benzene	0.252	78.112	0.150	0.8844	0.131
Heptanes	13.941	100.202	10.642	0.6882	11.909
Toluene	1.801	92.138	1.264	0.8719	1.117
Octanes	19.536	114.229	17.001	0.7066	18.532
Ethylbenzene	0.346	106.165	0.280	0.8716	0.247
Xylenes	2.990	106.165	2.418	0.8732	2.133
Nonanes	9.922	128.255	9.695	0.7222	10.338
Decanes Plus	33.210	195.626	49.495	0.8654	44.047
	100.000		100.000		100.000

### Calculated Physical Properties

	Total	C10+
Specific Gravity at 60°F	0.7702	0.8654
API Gravity at 60°F	52.227	32.010
Molecular Weight	131.260	195.626
Pounds per Gallon (in Vacuum)	6.421	7.215
Pounds per Gallon (in Air)	6.414	7.207
Cu. Ft. Vapor per Gallon @ 14.696 psia	18.564	13.996

Andy Hartman, Laboratory Director

Quality Assurance:

The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated. The test results apply to the sample as received.



# Certificate of Analysis

Number: 1030-24080790-005A

Houston Laboratories

8820 Interchange Drive

Houston, TX 77054

Phone 713-660-0901

Liz Morgan  
Merit Energy Company  
13727 Noel Road, Suite 1200  
Dallas, TX 75240

Station Name: Cutlass MD 1H  
Method: GPA 2103M  
Cylinder No: 000356  
Instrument 1: HGC 19A + 19B, Front TCD #19A  
Instrument 2: High Temp, HTSD  
Analyzed: 09/03/2024 09:47:05 by SMS

Report Date: 09/10/2024  
Sampled By: TL  
Sample Of: Liquid Spot  
Sample Date: 08/15/2024  
Sample Conditions: 41.7 psig, @ 101.3 °F  
Received Date: 08/23/2024  
Login Date: 08/26/2024

## Analytical Data

Components	Mol. %	Wt. %	L.V. %
Nitrogen	0.037	0.008	0.008
Methane	0.900	0.110	0.282
Carbon Dioxide	0.009	0.003	0.003
Ethane	1.065	0.244	0.527
Propane	1.968	0.661	1.004
Iso-Butane	0.763	0.338	0.463
n-Butane	2.532	1.121	1.478
Iso-Pentane	1.750	0.962	1.185
n-Pentane	2.794	1.536	1.876
i-Hexanes	2.775	1.822	2.113
n-Hexane	3.354	2.202	2.554
2,2,4-Trimethylpentane	0.055	0.048	0.053
Benzene	0.252	0.150	0.131
Heptanes	13.941	10.642	11.909
Toluene	1.801	1.264	1.117
Octanes	19.536	17.001	18.532
Ethylbenzene	0.346	0.280	0.247
Xylenes	2.990	2.418	2.133
Nonanes	9.922	9.695	10.338
C10	8.544	9.176	8.602
C11	5.910	7.007	6.465
C12	4.016	5.217	4.749
C13	3.249	4.593	4.133
C14	2.440	3.730	3.322
C15	1.813	2.980	2.630
C16	1.299	2.304	2.014
C17	1.057	2.002	1.734
C18	0.809	1.622	1.396
C19	0.642	1.350	1.155
C20	0.534	1.173	0.998
C21	0.405	0.941	0.796
C22	0.375	0.900	0.757
C23	0.291	0.725	0.606
C24	0.252	0.653	0.544
C25	0.214	0.575	0.477
C26	0.177	0.493	0.407
C27	0.157	0.451	0.371
C28	0.129	0.384	0.315
C29	0.110	0.336	0.275
C30 Plus	0.787	2.883	2.301
	100.000	100.000	100.000



Certificate of Analysis  
Number: 1030-24080790-005A

Houston Laboratories  
8820 Interchange Drive  
Houston, TX 77054  
Phone 713-660-0901

Liz Morgan  
Merit Energy Company  
13727 Noel Road, Suite 1200  
Dallas, TX 75240

Station Name: Cutlass MD 1H  
Method: GPA 2103M  
Cylinder No: 000356  
Instrument 1: HGC 19A + 19B, Front TCD #19A  
Instrument 2: High Temp, HTSD  
Analyzed: 09/03/2024 09:47:05 by SMS

Report Date: 09/10/2024  
Sampled By: TL  
Sample Of: Liquid Spot  
Sample Date: 08/15/2024  
Sample Conditions: 41.7 psig, @ 101.3 °F  
Received Date: 08/23/2024  
Login Date: 08/26/2024

Calculated Physical Properties	Total	C30+
Specific Gravity at 60°F	0.7702	0.9235
API Gravity at 60°F	52.227	21.722
Molecular Weight	131.260	458.288
Pounds per Gallon (in Vacuum)	6.421	7.699
Pounds per Gallon (in Air)	6.414	7.691
Cu. Ft. Vapor per Gallon @ 14.696 psia	18.564	6.375

Andy Hartman, Laboratory Director

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated. The test results apply to the sample as received.



# Certificate of Analysis

Number: 9050-24080051-005A

**Meno Laboratory**  
104 East US Highway 60  
Meno, OK 73760

Sean Craven  
Merit Energy  
1510 East Thomas Rd  
Kalkaska, MI 49646

Aug. 21, 2024

Station Name: CUTLASS MD 1H  
Method: GPA 2286  
Cylinder No: 2500-01215  
Analyzed: 08/20/2024 14:51:44 by DL

Sampled By: Tim Lebsack  
Sample Of: Natural Gas Spot  
Sample Date: 08/15/2024  
Sample Conditions: 50.0 psia, @ 85.0 °F

## Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia	
Nitrogen	0.805	1.047		GPM TOTAL C2+
Carbon Dioxide	0.246	0.502		5.701
Methane	79.309	59.047		
Ethane	10.278	14.343	2.752	
Propane	4.674	9.565	1.289	
Iso-Butane	0.738	1.991	0.242	
n-Butane	1.581	4.265	0.499	
Iso-Pentane	0.471	1.577	0.172	
n-Pentane	0.564	1.888	0.205	
i-Hexanes	0.268	1.048	0.107	
n-Hexane	0.233	0.922	0.095	
Benzene	0.015	0.053	0.004	
Cyclohexane	0.190	0.740	0.064	
i-Heptanes	0.231	0.994	0.094	
n-Heptane	0.081	0.373	0.037	
Toluene	0.027	0.116	0.009	
i-Octanes	0.218	1.063	0.095	
n-Octane	0.022	0.121	0.011	
Ethylbenzene	0.001	0.007	0.000	
Xylenes	0.011	0.058	0.004	
i-Nonanes	0.023	0.160	0.013	
n-Nonane	0.005	0.027	0.003	
Decane Plus	0.009	0.093	0.006	
	100.000	100.000	5.701	

Calculated Physical Properties	Total	C10+
Calculated Molecular Weight	21.55	145.80
<b>GPA 2172 Calculation:</b>		
<b>Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia &amp; 60°F</b>		
Real Gas Dry BTU	1289.0	7953.0
Water Sat. Gas Base BTU	1266.5	7784.6
Relative Density Real Gas	0.7461	5.0341
Compressibility Factor	0.9962	

**Comments:** H2S Field Content 0 %

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



# Certificate of Analysis

Number: 9050-24080051-005A

**Meno Laboratory**  
104 East US Highway 60  
Meno, OK 73760

Sean Craven  
Merit Energy  
1510 East Thomas Rd  
Kalkaska, MI 49646

Aug. 21, 2024

Station Name: CUTLASS MD 1H  
Method: GPA 2286  
Cylinder No: 2500-01215  
Analyzed: 08/20/2024 14:51:44 by DL

Sampled By: Tim Lebsack  
Sample Of: Natural Gas Spot  
Sample Date: 08/15/2024  
Sample Conditions: 50.0 psia, @ 85.0 °F

## Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	0.805	1.047		GPM TOTAL C2+	5.701
Carbon Dioxide	0.246	0.502		GPM TOTAL C3+	2.949
Methane	79.309	59.047		GPM TOTAL iC5+	0.919
Ethane	10.278	14.343	2.752		
Propane	4.674	9.565	1.289		
Iso-Butane	0.738	1.991	0.242		
n-Butane	1.581	4.265	0.499		
Iso-Pentane	0.471	1.577	0.172		
n-Pentane	0.564	1.888	0.205		
Hexanes	0.501	1.970	0.202		
Heptanes Plus	0.833	3.805	0.340		
	100.000	100.000	5.701		

<b>Calculated Physical Properties</b>	<b>Total</b>
Relative Density Real Gas	0.7461
Calculated Molecular Weight	21.55
Compressibility Factor	0.9962
<b>GPA 2172 Calculation:</b>	
<b>Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia &amp; 60°F</b>	
Real Gas Dry BTU	1289
Water Sat. Gas Base BTU	1267
<b>Comments:</b> H2S Field Content 0 %	

Hydrocarbon Laboratory Manager

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n-Butane	1.581	4.265	0.499		
Iso-pentane	0.471	1.577	0.172		
n-Pentane	0.564	1.888	0.205		
Hexanes Plus	1.334	5.775	0.542		
	100.000	100.000	5.701		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.7461	3.1923
Calculated Molecular Weight	21.55	92.46
Compressibility Factor	0.9962	

### GPA 2172 Calculation:

#### Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia & 60°F

Real Gas Dry BTU	1289.00	4987.97
Water Sat. Gas Base BTU	1266.50	4900.96

**Comments:** H2S Field Content 0 %

Hydrocarbon Laboratory Manager

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