



Mull Drilling Company, Inc.  
1700 N. Waterfront Parkway, Bld. 1200  
Wichita, Kansas 67206  
Tel: +1 316.264.6366  
Fax: +1 316.264.6440  
www.mulldrilg.com

January 8, 2022

Colorado Oil & Gas Conservation Commission  
Permitting Division  
1120 Lincoln Street, Suite 801  
Denver, Colorado

**RE:**

***Form 4 Sundry Submittal  
Braukmann Farms #3 Gas Capture Plan  
API# 05-073-06102 – COGCC ID# 218117  
COGCC Doc #402921001***

To whom it may concern:

In this ***Form 4 Sundry*** Submittal you will find the Gas Capture Plan from Mull Drilling Company., Inc. (Mull) for the Braukmann Farms #3 Crude Oil Tank Battery and associated equipment (API# 05-073-06102 – COGCC ID# 218117). Mull is also including all required paperwork and recent Colorado Department of Health & Environment APEN Submittals.

Should there be any questions or concerns feel free to contact us,

A handwritten signature in blue ink that reads "James Beilman".

James Beilman, PG, CPG  
Environmental / Safety Manager  
Tel: +1 316.264.6366 (128)  
Cell: +1 316.807.8880  
JBeilman@Mulldrilling.com



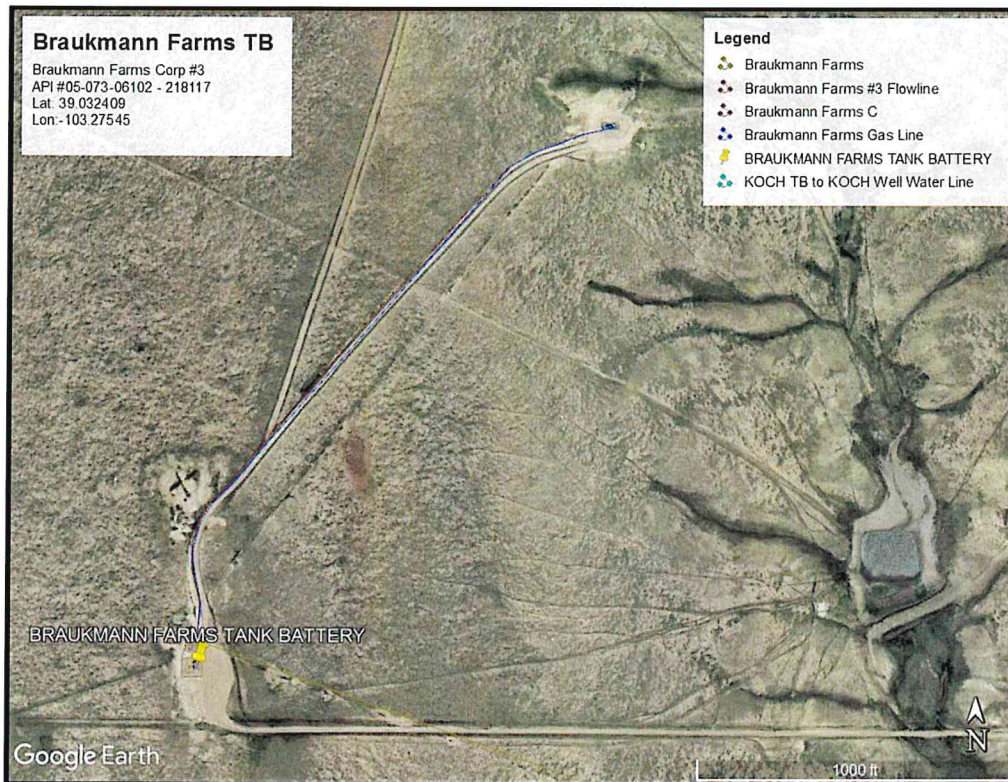


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**Braukmann Farms Crude Oil Tank Battery**  
**05-073-06102 - 218117**  
**CDPHE Permit Number 09LI1365 AIRS ID 073-0077-001**  
**SEWS1, T12S, R53W**  
**Lincoln County, Colorado**

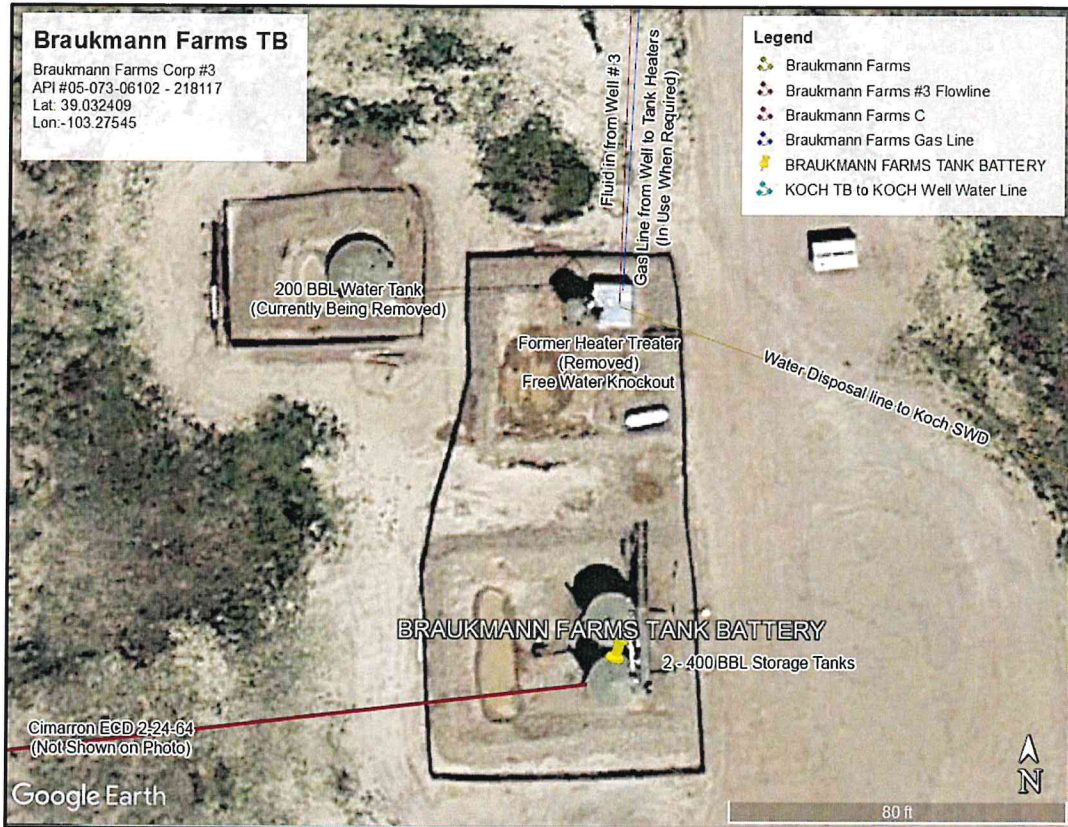
***GAS CAPTURE PLAN***

***Site Map***



Mull Drilling Company., Inc. (Mull) has drafted this plan to comply with Rules 903.d and 903.e.(1).B. The Braukmann Farms Tank Battery and Braukmann Farms Corp #3 well were constructed in 1982. They consist of the consolidated production facilities for 1 - operated well; the location contains a, 2 (400 bbl – Total 800 bbl total) oil storage tanks, 1 200 bbl produced water tanks (slated for removal), 1 produced water knock out, and 1 Cimarron ECD 2-24-64 ECD. Produced water is disposed to the Koch SWD. The Well is electrified with an electric Motor. This is not a request to Vent or Flare.

**Flow Diagram**



<p><b>903.d:</b> Emissions During Production</p>	<p>Gas at this facility has dropped off significantly during its production. Currently, any available gas is piped to the tanks and burned for beneficial reuse if available, which is not the case at this time. Otherwise the gas is currently routed to the ECD for final combustion.</p>
<p><b>903.e.(1).B.i:</b> Description of the Closest Gas Gathering System</p>	<p>No Gas available to sell after beneficial reuse/use on lease.</p>
<p><b>903. e.(1).B.ii:</b> Company operating the</p>	<p>NA</p>

closest Gas Gathering System	
<b>903. e.(1).B.iv:</b> Production Test Plans	The Original Production Test and analytical are supplied below.
<b>903. e.(1).B.v:</b> Safety Risks	Mull does not currently anticipate any safety risks that will require us to allow gas to escape rather than being captured or combusted during normal operating procedures.
<b>903. e.(1).B.vi:</b> Operational BMPs	<p>Mull intends to use the following list of operational best practices to minimize Venting during active and planned maintenance allowed pursuant to Rule 903.d.(1).B:</p> <p>During maintenance activities, Mull will have appropriate gas control equipment on location to minimize all Venting.</p> <p>All facilities maintain a rigorous LDAR Program. In this case, The Meteor Unit TB is checked semi-annually for leaks and verified (when necessary) with a PID/FID approved by the CDPHE and the COGCC.</p> <p>All tanks have sight glasses for visual inspection of fluids during daily gauging events.</p> <p>All Wells have pressure/trip Murphy switches that will shutdown the well in the event of a leak.</p> <p>Flowback controls have been installed for all liquids unloading events.</p>
<b>903. e.(1).B.vii:</b> Procedures to reduce well liquids unloading events	Mull anticipates Well Liquid Unloading events as required for sales. Flowback controls have been installed at this location to send emitted gases to the tanks and then the combustor.
<b>903. e.(1).B.viii:</b> Anticipated volumes of liquids and gas production	Current Well production displays negligible gas production. As displayed by Mulls latest APEN, Liquids production is anticipated to not exceed 4300 bbl per year. The 12 month rolling total from October 2021 is 3872 bbl (flash gas of approximately 4.49 tpy) As stated, flowback controls are installed on this tank battery.



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April 6, 2020

Colorado Department of Public Health and Environment  
Air Pollution Control Division  
APCD-SS-B1  
4300 Cherry Creek Drive South  
Denver, Co 80246 - 1530

A red stamp with the word "COPY" in a bold, sans-serif font, tilted slightly to the right. To the left of the text is a small blue icon of a document with a folded corner.

**RE: *Braukmann Farms Tank Battery***  
***AIRS ID 073-0077-001***  
***APEN Update – Crude Oil Storage Tank Form APCD-210***

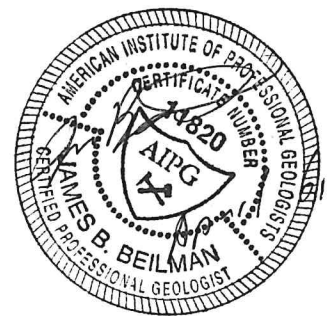
To whom it may concern:

Enclosed you will find the revised APEN update for Mull Drilling Company's (Mull) Braukmann Farms Tank Battery and associated equipment. The APEN update utilized Site Specific Emissions factors that were generated utilizing the original site specific sampling that occurred on August 6, 2014. We also utilized the APCD Spreadsheet and E&P Tanks V.3.0 to calculate the parameters (as was generally done with the original submission).

Should there be any questions or concerns feel free to contact us,

A handwritten signature in black ink, appearing to read "James Beilman".

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Environmental / Safety Manager  
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JBeilman@Mulldrilling.com



2020



# Crude Oil Storage Tank(s) APEN Form APCD-210

Air Pollutant Emission Notice (APEN) and  
Application for Construction Permit

All sections of this APEN and application must be completed for both new and existing facilities, including APEN updates. Incomplete APENs will be rejected and will require re-submittal. *Your APEN will be rejected if it is filled out incorrectly, is missing information, or lacks payment for the filing fee. The re-submittal will require payment for a new filing fee.*

This APEN is to be used for tanks that store crude oil associated with oil and gas industry operations. If your emission source does not fall into this category, there may be a more specific APEN available for your source (e.g. condensate storage tanks, produced water storage tanks, hydrocarbon liquid loading, etc.). In addition, the General APEN (Form APCD-200) is available if the specialty APEN options will not satisfy your reporting needs. A list of all available APEN forms and associated addendum forms can be found on the Air Pollution Control Division (APCD) website.

This emission notice is valid for five (5) years. Submission of a revised APEN is required 30 days prior to expiration of the five-year term, or when a reportable change is made (significant emissions increase, increase production, new equipment, change in fuel type, etc.). See Regulation No. 3, Part A, II.C. for revised APEN requirements.

Permit Number: 09L11365

AIRS ID Number: 073 / 0077 / 001

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

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## Section 1 - Administrative Information

Company Name<sup>1</sup>: Mull Drilling Company

Site Name: Braukmann Farms Crude Oil Tank Battery

Site Location: SESWS1, T12S, R53W

Site Location  
County: Lincoln

NAICS or SIC Code: 1311

Mailing Address:  
(Include Zip Code) 1700 N Waterfront Pkwy Bldg 1200

Wichita, Ks 67206

Contact Person: James Beilman

Phone Number: 316-807-8880

E-Mail Address<sup>2</sup>: Jbeilman@mulldrilling.com

<sup>1</sup> Use the full, legal company name registered with the Colorado Secretary of State. This is the company name that will appear on all documents issued by the APCD. Any changes will require additional paperwork.

<sup>2</sup> Permits, exemption letters, and any processing invoices will be issued by the APCD via e-mail to the address provided.

Permit Number: 09L11365

AIRS ID Number: 073 / 0077 / 001

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

**Section 2 - Requested Action**

- NEW permit OR newly-reported emission source
  - Request coverage under traditional construction permit
  - Request coverage under General Permit GP08

If General Permit coverage is requested, the General Permit registration fee of \$312.50 must be submitted along with the APEN filing fee.

- OR -

- MODIFICATION to existing permit (check each box below that applies)
  - Change in equipment                       Change company name<sup>3</sup>
  - Change permit limit                       Transfer of ownership<sup>4</sup>                       Other (describe below)

- OR -

- APEN submittal for update only (Note blank APENs will not be accepted)

- ADDITIONAL PERMIT ACTIONS -

- APEN submittal for permit exempt/grandfathered source
- Limit Hazardous Air Pollutants (HAPs) with a federally-enforceable limit on Potential To Emit (PTE)

Additional Info & Notes: Permit Update Only

<sup>3</sup> For company name change, a completed Company Name Change Certification Form (Form APCD-106) must be submitted.  
<sup>4</sup> For transfer of ownership, a completed Transfer of Ownership Certification Form (Form APCD-104) must be submitted.

**Section 3 - General Information**

General description of equipment and purpose: Crude Oil Storage

Company equipment Identification No. (optional): \_\_\_\_\_

For existing sources, operation began on: 06/01/1982

For new or reconstructed sources, the projected start-up date is: \_\_\_\_\_

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year

Storage tank(s) located at:  Exploration & Production (E&P) site     Midstream or Downstream (non E&P) site

Will this equipment be operated in any NAAQS nonattainment area?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Are Flash Emissions anticipated from these storage tanks?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
Are these storage tanks subject to Colorado Oil and Gas Conservation Commission (COGCC) 805 series rules? If so, submit Form APCD-105.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Are you requesting ≥ 6 ton/yr VOC emissions (per storage tank), or are uncontrolled actual emissions ≥ 6 ton/yr (per storage tank)?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

Permit Number: **09L11365**

AIRS ID Number: **073 / 0077 / 001**

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

**Section 4 - Storage Tank(s) Information**

	Actual Annual Amount (bbl/year)	Requested Annual Permit Limit <sup>5</sup> (bbl/year)
Crude Oil Throughput:	4269	4300

From what year is the actual annual amount? 2019

Average API gravity of sales oil: 37.03 degrees RVP of sales oil: 2.8

Tank design:  Fixed roof  Internal floating roof  External floating roof

Storage Tank ID	# of Liquid Manifold Storage Vessels in Storage Tank	Total Volume of Storage Tank (bbl)	Installation Date of Most Recent Storage Vessel in Storage Tank (month/year)	Date of First Production (month/year)
001	2	2 @ 400	06/01/1982	06/01/1982

Wells Served by this Storage Tank or Tank Battery <sup>6</sup> (E&P Sites Only)		
API Number	Name of Well	Newly Reported Well
05 - 073 - 06102	Braukmann Farms Corp 3	<input type="checkbox"/>
- -		<input type="checkbox"/>
- -		<input type="checkbox"/>
- -		<input type="checkbox"/>
- -		<input type="checkbox"/>

<sup>5</sup> Requested values will become permit limitations or will be evaluated for exempt status, as applicable, and should consider future process growth. Requested values are required on all APENs, including APEN updates.

<sup>6</sup> The E&P Storage Tank APEN Addendum (Form APCD-212) should be completed and attached when additional space is needed to report all wells that are serviced by the equipment reported on this APEN form.

**Section 5 - Geographical/Stack Information**

Geographical Coordinates (Latitude/Longitude or UTM)
39.032409; -103.27545

Check box if the following information is not applicable to the source because emissions will not be emitted from a stack. If this is the case, the rest of this section may remain blank.

Operator Stack ID No.	Discharge Height Above Ground Level (Feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)
001	15'			

Indicate the direction of the stack outlet: (check one)

Upward  Downward  Upward with obstructing raincap  
 Horizontal  Other (describe): \_\_\_\_\_

Indicate the stack opening and size: (check one)

Circular Interior stack diameter (inches): \_\_\_\_\_  
 Square/rectangle Interior stack width (inches): 2 Interior stack depth (inches): \_\_\_\_\_  
 Other (describe): \_\_\_\_\_

Permit Number: 09L11365

AIRS ID Number: 073 / 0077 / 001

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

Section 6 - Control Device Information

Check this box if no emission control equipment or practices are used to reduce emissions, and skip to the next section.

Vapor Recovery Unit (VRU) form with fields for Pollutants Controlled, Size, Make/Model, Requested Control Efficiency, and VRU Downtime or Bypassed.

Combustion Device form with fields for Pollutants Controlled (VOC's, HAP's), Rating (6.1 MMBtu/hr), Type (Combustor), Make/Model (Cimarron), Requested Control Efficiency (95%), Manufacturer Guaranteed Control Efficiency (98%), Minimum Temperature (NA), Waste Gas Heat Content (2770 Btu/scf), Constant Pilot Light (checked Yes), and Pilot Burner Rating (0.04 MMBtu/hr).

Closed Loop System form with a description field and a checked checkbox.

Other form with fields for Pollutants Controlled, Description, and Control Efficiency Requested.

Section 7 - Gas/Liquids Separation Technology Information (E&P Sites Only)

What is the pressure of the final separator vessel prior to discharge to the storage tank(s)? 38 psig

Describe the separation process between the well and the storage tanks:

Heater Treater

Permit Number: **09L11365**

AIRS ID Number: **073 / 0077 / 001**

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

**Section 8 - Criteria Pollutant Emissions Information**

Attach all emissions calculations and emission factor documentation to this APEN form<sup>7</sup>.

Is any emission control equipment or practice used to reduce emissions?  Yes  No

If yes, describe the control equipment AND state the collection and control efficiencies (report the overall, or combined, values if multiple emission control methods were identified in Section 6):

Pollutant	Control Equipment Description	Collection Efficiency (% of total emissions captured by control equipment)	Control Efficiency (% reduction of captured emissions)
VOC	ECD		95%
NO <sub>x</sub>			
CO			
HAPs	ECD		95%
Other:			

From what year is the following reported actual annual emissions data? 2019

Use the following table to report the criteria pollutant emissions from source:

Pollutant	Emission Factor <sup>7</sup>			Actual Annual Emissions		Requested Annual Permit Emission Limit(s) <sup>5</sup>	
	Uncontrolled Basis	Units	Source (AP-42, Mfg., etc.)	Uncontrolled Emissions (tons/year)	Controlled Emissions <sup>8</sup> (tons/year)	Uncontrolled Emissions (tons/year)	Controlled Emissions (tons/year)
VOC	1.9737	#/bbl	Site Specific	4.2	0.2	4.7	0.2
NO <sub>x</sub>	0.0680	lb/MMBtu	AP-42	0.0	0.0	0.0	0.0
CO	0.3100	lb/MMBtu	AP-42	0.0	0.0	0.0	0.0

<sup>5</sup> Requested values will become permit limitations or will be evaluated for exempt status, as applicable, and should consider future process growth. Requested values are required on all APENs, including APEN updates.

<sup>7</sup> Attach crude oil laboratory analysis, stack test results, and associated emissions calculations if you are requesting site specific emissions factors according to the guidance in PS Memo 14-03.

<sup>8</sup> Annual emission fees will be based on actual controlled emissions reported. If source has not yet started operating, provide projected emissions.

**Section 9 - Non-Criteria Pollutant Emissions Information**

Does the emissions source have any uncontrolled actual emissions of non-criteria pollutants (e.g. HAP - hazardous air pollutant) equal to or greater than 250 lbs/year?  Yes  No

If yes, use the following table to report the non-criteria pollutant (HAP) emissions from source:

Chemical Name	Chemical Abstract Service (CAS) Number	Emission Factor <sup>7</sup>			Actual Annual Emissions	
		Uncontrolled Basis	Units	Source (AP-42, Mfg., etc.)	Uncontrolled Emissions (lbs/year)	Controlled Emissions <sup>8</sup> (lbs/year)
Benzene	71432	0.0210	lbs/bbl	Site Specific	89.6	4.5
Toluene	108883	0.0117	lbs/bbl	Site Specific	49.9	2.5
Ethylbenzene	100414	0.0019	lbs/bbl	Site Specific	8.0	0.4
Xylene	1330207	0.0066	lbs/bbl	Site Specific	28.2	1.4
n-Hexane	110543	0.2211	lbs/bbl	Site Specific	943.9	47.2
2,2,4-Trimethylpentane	540841	0.0159	lbs/bbl	Site Specific	67.9	3.4

<sup>7</sup> Attach crude oil laboratory analysis, stack test results, and associated emissions calculations if you are requesting site specific emissions factors according to the guidance in PS Memo 14-03.

<sup>8</sup> Annual emission fees will be based on actual controlled emissions reported. If source has not yet started operating, provide projected emissions.

Permit Number: **09L11365**

AIRS ID Number: **073 /0077 /001**

[Leave blank unless APCD has already assigned a permit # and AIRS ID]

**Section 10 - Applicant Certification**

I hereby certify that all information contained herein and information submitted with this application is complete, true, and correct. If this is a registration for coverage under General Permit GP08, I further certify that this source is and will be operated in full compliance with each condition of General Permit GP08.

\_\_\_\_\_  
Signature of Legally Authorized Person (not a vendor or consultant) Date

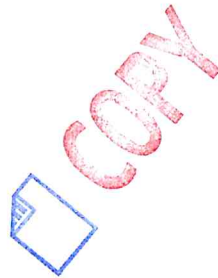
\_\_\_\_\_  
Name (print) Title

Check the appropriate box to request a copy of the:

- Draft permit prior to issuance
- Draft permit prior to public notice

(Checking any of these boxes may result in an increased fee and/or processing time)

This emission notice is valid for five (5) years. Submission of a revised APEN is required 30 days prior to expiration of the five-year term, or when a reportable change is made (significant emissions increase, increase production, new equipment, change in fuel type, etc.). See Regulation No. 3, Part A, II.C. for revised APEN requirements.



Send this form along with \$191.13 and the General Permit registration fee of \$312.50, if applicable, to:

**Colorado Department of Public Health and Environment  
Air Pollution Control Division  
APCD-SS-B1  
4300 Cherry Creek Drive South  
Denver, CO 80246-1530**

Make check payable to:

**Colorado Department of Public Health and Environment**

For more information or assistance call:

**Small Business Assistance Program  
(303) 692-3175  
OR  
(303) 692-3148**

**APCD Main Phone Number  
(303) 692-3150**

\*\*\*\*\*

\* Project Setup Information \*

\*\*\*\*\*

Project File : E:\APEN -- Emissions Tracking - CO\ef Modeling.Analyticals\Model files\2022 Files\Bra...
Flowsheet Selection : Oil Tank with Separator
Calculation Method : AP42
Control Efficiency : 95.00%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No
Component Group : C10+

Filed Name : Mull Drilling Company
Well Name : Braukmann Farms
Date : 2014.09.09

\*\*\*\*\*

\* Data Input \*

\*\*\*\*\*

Separator Pressure (psia) : 56.00
Separator Temperature (F) : 140.0
C10+ SG : 0.78
C10+ MW(lb/lbmol) : 162.17

-- Low Pressure Oil -----

Table with 4 columns: No., Component, Mole%, Wt%. Rows include H2S, O2, CO2, N2, C1-C9, C10+, Benzene, Toluene, E-Benzene, Xylenes, n-C6, and 224Trimethylp.

-- Sales Oil -----

Production Rate (bbl/day) : 11.97
Days of Annual Operation : 365
API Gravity : 31.50
Reid Vapor Pressure (psia) : 2.80
Bulk Temperature : 109.0

-- Tank and Shell Data -----

Diameter (ft) : 12.00
Shell Height (ft) : 20.00
Cone Roof Slope : 0.06
Average Liquid Height (ft) : 10.00
Vent Pressure Range (psia) : 0.25
Solar Absorbance : 0.68

-- Meteorological Data -----

City : Denver, CO  
 Min Ambient Temperature (F) : 37.2  
 Max Ambient Temperature (F) : 64.5  
 Total Solar Insolation (F) : 1501.00  
 Ambient Pressure (psia) : 12.63  
 Ambient Temperature (F) : 140.0

\*\*\*\*\*  
 \* Calculation Results \*  
 \*\*\*\*\*

-- Emission Summary -----

	Uncontrolled ton	Controlled ton
Total HAPs	0.6040	0.0302
Total HC	4.5250	0.2262
VOCs, C2+	4.2950	0.2148
VOCs, C3+	3.8940	0.1947
CO2	0.1740	
CH4	0.2300	

Uncontrolled Recovery Information:

Vapor (mscfd) : 0.1826  
 HC Vapor (mscfd) : 0.1736  
 CO2 (mscfd) : 0.0100  
 CH4 (mscfd) : 0.0300  
 GOR (SCF/STB) : 15.2565

-- Emission Composition -----

NoComponent	Uncontrolled ton	Controlled ton
1 H2S	0.0000	0.0000
2 O2	0.0000	0.0000
3 CO2	0.1740	0.1740
4 N2	0.0120	0.0120
5 C1	0.2300	0.0115
6 C2	0.4010	0.0201
7 C3	0.7220	0.0361
8 i-C4	0.1400	0.0070
9 n-C4	0.4430	0.0222
10 i-C5	0.1090	0.0055
11 n-C5	0.2480	0.0124
12 C6	0.8310	0.0415
13 Benzene	0.0460	0.0023
14 Toluene	0.0250	0.0012
15 E-Benzene	0.0040	0.0002
16 Xylenes	0.0140	0.0007
17 n-C6	0.4810	0.0240
18 224Trimethylp	0.0350	0.0018
19 Pseudo Comp1	0.5060	0.0253
20 Pseudo Comp2	0.2460	0.0123
21 Pseudo Comp3	0.0310	0.0016
22 Pseudo Comp4	0.0140	0.0007
23 Pseudo Comp5	0.0010	0.0000
24 Total	4.7130	0.2357

-- Stream Data -----

NoComponent	MW lb/lbmol	LP Oil mole %	Flash Oil mole %	Sales Oil mole %	Flash Gas mole %	W&S Gas mole %	Total Emission mole %
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3 CO2	44.01	0.1060	0.0403	0.0046	5.2516	1.1735	4.4872
4 N2	28.01	0.0080	0.0007	0.0000	0.5786	0.0003	0.4702
5 C1	16.04	0.3290	0.0774	0.0000	20.0475	0.0002	16.2899
6 C2	30.07	0.4680	0.2723	0.1053	15.8010	12.4706	15.1768
7 C3	44.10	1.0791	0.8732	0.6439	17.2167	24.7440	18.6277

8 i-C4	58.12	0.2960	0.2685	0.2359	2.4532	3.9973	2.7426
9 n-C4	58.12	1.2401	1.1573	1.0589	7.7274	12.7136	8.6620
10 i-C5	72.15	0.5306	0.5178	0.5020	1.5326	2.5052	1.7149
11 n-C5	72.15	1.5226	1.4973	1.4654	3.5022	5.6327	3.9015
12 C6	84.00	11.8341	11.8540	11.8487	10.2726	15.4547	11.2440
13 Benzene	78.11	0.8167	0.8194	0.8203	0.6072	0.9088	0.6637
14 Toluene	92.14	1.1180	1.1286	1.1371	0.2893	0.3960	0.3093
15 E-Benzene	106.17	0.3566	0.3607	0.3641	0.0367	0.0464	0.0385
16 Xylenes	106.17	1.5975	1.6160	1.6314	0.1465	0.1826	0.1532
17 n-C6	86.18	6.7311	6.7430	6.7407	5.7951	8.7070	6.3409
18 224Trimethylp	114.23	0.9315	0.9393	0.9453	0.3215	0.4580	0.3471
19 Pseudo Comp1	96.00	19.2181	19.3910	19.5318	5.6710	7.4207	5.9990
20 Pseudo Comp2	113.68	25.1833	25.4743	25.7171	2.3830	2.8114	2.4633
21 Pseudo Comp3	134.00	8.8691	8.9790	9.0705	0.2592	0.2748	0.2621
22 Pseudo Comp4	152.60	9.8614	9.9860	10.0895	0.1027	0.0991	0.1020
23 Pseudo Comp5	205.15	7.9032	8.0040	8.0877	0.0042	0.0031	0.0040
		LP Oil	Flash Oil	Sales Oil	Flash Gas	W&S Gas	Total Emission
MW (lb/lbmol):		113.87	114.67	115.12	51.17	63.93	53.57
Stream Mole Ratio:		1.0000	0.9874	0.9845	0.0126	0.0029	0.0155
Stream Weight Ratio:		113.87	113.22	113.33	0.64	0.19	0.83
Total Emission (ton):					3.657	1.054	4.710
Heating Value (BTU/scf):					2718.18	3493.65	2863.54
Gas Gravity (Gas/Air):					1.77	2.21	1.85
Bubble Pt. @100F (psia):		19.13	8.40	4.12			
RVP @100F (psia):		51.36	33.59	24.73			
Spec. Gravity @100F:		0.70	0.70	0.70			

Crude Oil Storage Tank(s) Emissions Inventory



Section 01 - Administrative Information

Facility AIRs ID:	730077001	09L11365	
	Cheyenne	Plant	Point

Section 02 - Equipment Description Details

Detailed Emissions Unit Description: **Crude Oil Storage**

Emission Control Device Description: **Cimmaron Combustor**

Requested Overall VOC & HAP Control Efficiency %: **95.0**

Section 03 - Processing Rate Information for Emissions Estimates

Primary Emissions - Storage Tank(s)

Actual Throughput =	4269.0 Barrels (bbl) per year	Requested Permit Limit Throughput =	4800.0 Barrels (bbl) per year	Requested Monthly Throughput =	407.7 Barrels (bbl) per month
---------------------	-------------------------------	-------------------------------------	-------------------------------	--------------------------------	-------------------------------

Potential to Emit (PTE) Throughput = 5000.0 Barrels (bbl) per year

Secondary Emissions - Combustion Device(s)

Heat content of waste gas =		Btu/scf	
Volume of waste gas emitted per BBL of liquids produced =		scf/bbl	
Actual heat content of waste gas routed to combustion device =			0.0 MMBTU per year
Requested heat content of waste gas routed to combustion device =			0.0 MMBTU per year
Potential to Emit (PTE) heat content of waste gas routed to combustion device =			0.0 MMBTU per year

Control Device

Pilot Fuel Use Rate:		scfh	0.0 MMscf/yr
Pilot Fuel Gas Heating Value:		Btu/scf	0.0 MMBTU/yr

Section 04 - Emissions Factors & Methodologies

Will this storage tank emit flash emissions? **Yes**

Emission Factors	Crude Oil Tank		Emission Factor Source
	Uncontrolled	Controlled	
	(lb/bbl) (Crude Oil Throughput)	(lb/bbl) (Crude Oil Throughput)	
VOC	1.9737	0.0987	Site Specific E.F. (includes flash)
Benzene	0.0210	0.0011	Site Specific E.F. (includes flash)
Toluene	0.0117	0.0006	Site Specific E.F. (includes flash)
Ethylbenzene	0.0019	0.0001	Site Specific E.F. (includes flash)
Xylene	0.0066	0.0003	Site Specific E.F. (includes flash)
n-Hexane	0.2211	0.0111	Site Specific E.F. (includes flash)
224 TMP	0.0159	0.0008	Site Specific E.F. (includes flash)
Pollutant	Control Device		Emission Factor Source
	Uncontrolled	Uncontrolled	
	(lb/MMBtu) (Waste Heat Combusted)	(lb/bbl) (Crude Oil Throughput)	
PM10	0.0075	0.0000	AP-42 Table 1.4-2 (PM10/PM2.5)
PM2.5	0.0075	0.0000	AP-42 Table 1.4-2 (PM10/PM2.5)
NOx	0.0680	0.0000	AP-42 Chapter 13.5 Industrial Flares (NOx)
CO	0.3100	0.0000	AP-42 Chapter 13.5 Industrial Flares (CO)
Pollutant	Pilot Light Emissions		Emission Factor Source
	Uncontrolled	Uncontrolled	
	(lb/MMBtu) (Waste Heat Combusted)	(lb/MMscf) (Pilot Gas Throughput)	
PM10	0.0075	0.0000	AP-42 Table 1.4-2 (PM10/PM2.5)
PM2.5	0.0075	0.0000	AP-42 Table 1.4-2 (PM10/PM2.5)
NOx	0.0680	0.0000	AP-42 Chapter 13.5 Industrial Flares (NOx)
CO	0.3100	0.0000	AP-42 Chapter 13.5 Industrial Flares (CO)

Crude Oil Storage Tank(s) Emissions Inventory



Section 05 - Emissions Inventory

Criteria Pollutants	Potential to Emit Uncontrolled (tons/year)	Actual Emissions		Requested Permit Limits		Requested Monthly Limits Controlled (lbs/month)
		Uncontrolled (tons/year)	Controlled (tons/year)	Uncontrolled (tons/year)	Controlled (tons/year)	
VOC	4.9	4.2	0.2	4.7	0.2	40.2
PM10	0.0	0.0	0.0	0.0	0.0	0.0
PM2.5	0.0	0.0	0.0	0.0	0.0	0.0
NOx	0.0	0.0	0.0	0.0	0.0	0.0
CO	0.0	0.0	0.0	0.0	0.0	0.0
Hazardous Air Pollutants	Potential to Emit Uncontrolled (lbs/year)	Actual Emissions		Requested Permit Limits		
		Uncontrolled (lbs/year)	Controlled (lbs/year)	Uncontrolled (lbs/year)	Controlled (lbs/year)	
Benzene	105.0	89.6	4.5	100.8	5.0	
Toluene	58.5	49.9	2.5	56.2	2.8	
Ethylbenzene	9.4	8.0	0.4	9.0	0.4	
Xylene	33.0	28.2	1.4	31.7	1.6	
n-Hexane	1105.5	943.9	47.2	1061.3	53.1	
224 TMP	79.5	67.9	3.4	76.3	3.8	

Section 06 - Regulatory Summary Analysis

Regulation 3, Parts A, B	Not enough information
Regulation 7, Section XVII.B, C.1, C.3	Storage Tank is not subject to Regulation 7, Section XVII
Regulation 7, Section XVII.C.2	Storage Tank is not subject to Regulation 7, Section XVII.C.2
Regulation 6, Part A, NSPS Subpart Kb	Not enough information
Regulation 6, Part A, NSPS Subpart OOOO	Not enough information
NSPS Subpart OOOOa	Not enough information
Regulation 8, Part E, MACT Subpart HH	Not enough information

(See regulatory applicability worksheet for detailed analysis)

Section 07 - Initial and Periodic Sampling and Testing Requirements

Does the company use the state default emissions factors to estimate emissions? **Yes**

If yes, are the uncontrolled actual or requested emissions estimated to be greater than or equal to 20 tons VOC per year? **No**

If yes, the permit will contain an "Initial Compliance" testing requirement to develop a site specific emissions factor based on guidelines in PS Memo 14-03

Does the company use a site specific emissions factor to estimate emissions? **Yes**

If yes and if there are flash emissions, are the emissions factors based on a pressurized liquid sample of crude oil drawn at the facility being permitted? **Yes**

If no, the permit will contain an "Initial Compliance" testing requirement to develop a site specific emissions factor based on guidelines in PS Memo 14-03.

Does the company request a control device efficiency greater than 95% for a flare or combustion device? **No**

If yes, the permit will contain an initial compliance test condition to demonstrate the destruction efficiency of the combustion device based on inlet and outlet concentration sampling

Section 08 - Technical Analysis Notes

[Empty box for technical analysis notes]

Section 09 - Inventory SCC Coding and Emissions Factors

AIRS Point #	Process #	SCC Code	Pollutant	Uncontrolled Emissions		Units
				Factor	Control %	
0	01		PM10	0.00	0	lb/1,000 gallons crude oil throughput
			PM2.5	0.00	0	lb/1,000 gallons crude oil throughput
			NOx	0.00	0	lb/1,000 gallons crude oil throughput
			VOC	47.0	95	lb/1,000 gallons crude oil throughput
			CO	0.00	0	lb/1,000 gallons crude oil throughput
			Benzene	0.50	95	lb/1,000 gallons crude oil throughput
			Toluene	0.28	95	lb/1,000 gallons crude oil throughput
			Ethylbenzene	0.04	95	lb/1,000 gallons crude oil throughput
			Xylene	0.16	95	lb/1,000 gallons crude oil throughput
			n-Hexane	5.26	95	lb/1,000 gallons crude oil throughput
			224 TMP	0.38	95	lb/1,000 gallons crude oil throughput



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**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**MAIN PAGE**

PROJECT NO. :	201408038	ANALYSIS NO. :	05
COMPANY NAME :	MULL DRILLING	ANALYSIS DATE:	AUGUST 8, 2014
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 6, 2014
PRODUCER :		CYLINDER NO. :	17422
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 9:20 BRAUKMANN FARMS		EMPACT
<b>***FIELD DATA***</b>			
SAMPLE PRES. :	56	SAMPLE TEMP. :	140
VAPOR PRES. :		AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE	GRAVITY :	

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>VOL %</u>
ALCOHOLS	0.0027	0.0014	0.0013
NITROGEN (AIR)	0.0080	0.0019	0.0017
CARBON DIOXIDE	0.1060	0.0402	0.0365
METHANE	0.3290	0.0454	0.1125
ETHANE	0.4680	0.1211	0.2526
PROPANE	1.0790	0.4096	0.6003
I-BUTANE	0.2960	0.1481	0.1955
N-BUTANE	1.2400	0.6203	0.7892
I-PENTANE	0.5306	0.3295	0.3928
N-PENTANE	0.8540	0.5303	0.6243
UNKNOWN C1-C5	0.0008	0.0005	0.0006
HEXANES PLUS	95.0859	97.7517	96.9927
<b>TOTALS</b>	<b>100.0000</b>	<b>100.0000</b>	<b>100.0000</b>

<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>MASS%</u>
BENZENE	0.8166	0.5490
TOLUENE	1.1179	0.8865
ETHYLBENZENE	0.3566	0.3259
XYLENE	1.5974	1.4597
<b>TOTAL BTEX</b>	<b>3.8885</b>	<b>3.2211</b>

(CALC: GPA STD 2145-94 & TP-17 @14.696 & 60 F)

	<u>TOTAL</u>	<u>C6+</u>
	<u>SAMPLE</u>	<u>FRACTION</u>
Specific Gravity (H2O=1) =	0.7433	0.7487 60/60
API Gravity =	58.87	57.49 60/60
Molecular Weight =	116.18	119.789
Absolute Density =	6.2	6.24 LBS/GAL
Heating Value Liq. Idl Gas=	126126	127337 BTU/GAL
Vapor/Liquid =	20.31	19.90 CUFT/GAL
Vapor Pressure =	24.80	1.59 PSIA @100 F

*\*(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730*

*THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES. THE USE OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF ITS APPLICATION.*



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**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

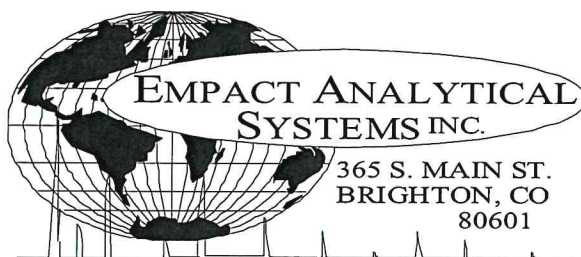
**E & P TANK / GLYCALC INFORMATION**

PROJECT NO. :	201408038	ANALYSIS NO. :	05
COMPANY NAME :	MULL DRILLING	ANALYSIS DATE:	AUGUST 8, 2014
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 6, 2014
PRODUCER :		CYLINDER NO. :	17422
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 9:20 BRAUKMANN FARMS		EMPACT
***FIELD DATA***		SAMPLE TEMP. :	140
SAMPLE PRES. :	56	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

<u>COMPONENT</u>	<u>Mole %</u>	<u>Wt %</u>	<u>LV %</u>			
CARBON DIOXIDE	0.1060	0.0402	0.0365			
NITROGEN (AIR)	0.0080	0.0019	0.0017			
METHANE	0.3290	0.0454	0.1125			
ETHANE	0.4680	0.1211	0.2526			
PROPANE	1.0790	0.4096	0.6003			
I-BUTANE	0.2960	0.1481	0.1955			
N-BUTANE	1.2400	0.6203	0.7892			
I-PENTANE	0.5306	0.3295	0.3928			
N-PENTANE	0.8540	0.5303	0.6243			
CYCLOPENTANE (N-C5)	0.6715	0.4053	0.3961			
UNKNOWN C1-C5	0.0008	0.0005	0.0006			
N-HEXANE	6.7307	4.9932	5.5892			
CYCLOHEXANE (OTHER C6)	3.1002	2.2457	2.1297			
OTHER HEXANES	8.7331	6.4260	6.9153			
OTHER HEPTANES	13.8610	11.8774	12.4508			
METHYLCYCLOHEXANE (OTHER C7)	5.3558	4.5263	4.3409			
2,2,4 TRIMETHYLPENTANE	0.9314	0.7871	0.7761			
BENZENE	0.8166	0.5490	0.4620			
TOLUENE	1.1179	0.8865	0.7534			
ETHYLBENZENE	0.3566	0.3259	0.2769			
XYLENES	1.5974	1.4597	1.2414			
OTHER OCTANES	13.1620	12.9703	13.1399			
OCTANES PLUS	----	54.6991	----	65.8423	----	63.9553
NONANES	12.0196	13.1253	12.9134			
DECANES PLUS	26.6321	37.1740	35.6076			
<u>SUB TOTAL</u>	<u>99.9973</u>	<u>99.9986</u>	<u>99.9987</u>			
<u>ALCOHOLS</u>	<u>0.0027</u>	<u>0.0014</u>	<u>0.0013</u>			
<u>TOTAL</u>	<u>100.0000</u>	<u>100.0000</u>	<u>100.0000</u>			

API Gravity	=	58.87	60/60
Vapor Pressure	=	24.80	PSIA & 100 F
Average Molecular Weight of Decanes plus	=	162.17	
Average Specific Gravity of Decanes plus	=	0.7770	

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**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**  
**BY CARBON NUMBER**

PROJECT NO. :	201408038	ANALYSIS NO. :	05
COMPANY NAME :	MULL DRILLING	ANALYSIS DATE:	AUGUST 8, 2014
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 6, 2014
PRODUCER :		CYLINDER NO. :	17422
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 9:20 BRAUKMANN FARMS		EMPACT
***FIELD DATA***		SAMPLE TEMP. :	140
SAMPLE PRES. :	56	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

<u>COMPONENT / CARBON NUMBER</u>	<u>MOLE%</u>	<u>MASS %</u>	<u>VOLUME %</u>
ALCOHOLS	0.0027	0.0014	0.0013
NITROGEN	0.0080	0.0019	0.0017
CARBON DIOXIDE	0.1060	0.0402	0.0365
C1	0.3290	0.0454	0.1125
C2	0.4680	0.1211	0.2526
C3	1.0790	0.4096	0.6003
C4	1.5360	0.7684	0.9847
C5	2.0569	1.2656	1.4138
C6	19.3806	14.2139	15.0962
C7	20.3347	17.2902	17.5451
C8	16.0474	15.5430	15.4343
C9	12.0196	13.1253	12.9134
C10	9.5476	11.2571	10.7976
C11	5.4174	6.9415	6.5198
C12	3.1776	4.3770	4.2028
C13	2.8219	4.3492	4.1965
C14	2.3608	4.0312	3.9239
C15	2.1675	3.9629	3.8130
C16	0.8845	1.7238	1.6478
C17	0.2223	0.4601	0.4385
C18	0.0325	0.0712	0.0677
C19	0.0000	0.0000	0.0000
C20	0.0000	0.0000	0.0000
C21	0.0000	0.0000	0.0000
C22	0.0000	0.0000	0.0000
C23	0.0000	0.0000	0.0000
C24	0.0000	0.0000	0.0000
C25	0.0000	0.0000	0.0000
C26	0.0000	0.0000	0.0000
C27	0.0000	0.0000	0.0000
C28	0.0000	0.0000	0.0000
C29	0.0000	0.0000	0.0000
C30+	0.0000	0.0000	0.0000
<b>Total</b>	<b>100.0000</b>	<b>100.0000</b>	<b>100.0000</b>

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**EXTENDED NATURAL GAS LIQUID ANALYSIS (\*DHA)**

**DHA COMPONENT LIST**

PROJECT NO. :	201408038	ANALYSIS NO. :	05
COMPANY NAME :	MULL DRILLING	ANALYSIS DATE:	AUGUST 8, 2014
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 6, 2014
PRODUCER :		CYLINDER NO. :	17422
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 9:20 BRAUKMANN FARMS		EMPACT
***FIELD DATA***		SAMPLE TEMP. :	140
SAMPLE PRES. :	56	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

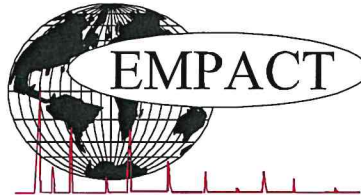
COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0080	0.0019	0.0017
Carbon Dioxide	NHC	0.1060	0.0402	0.0365
Methane	P1	0.3290	0.0454	0.1125
Ethane	P2	0.4680	0.1211	0.2526
Propane	P3	1.0790	0.4096	0.6003
i-Butane	I4	0.2960	0.1481	0.1955
n-Butane	P4	1.2400	0.6203	0.7892
2,2-Dimethylpropane	I5	0.0256	0.0159	0.0198
Ethanol	X2	0.0013	0.0005	0.0005
i-Pentane	I5	0.5050	0.3136	0.3730
n-Pentane	P5	0.8540	0.5303	0.6243
t-Butanol	X4	0.0014	0.0009	0.0008
2,2-Dimethylbutane	I6	0.0729	0.0541	0.0615
Cyclopentane	N5	0.6715	0.4053	0.3961
2,3-Dimethylbutane	I6	0.3701	0.2745	0.3058
2-Methylpentane	I6	3.3094	2.4548	2.7728
3-Methylpentane	I6	1.9975	1.4817	1.6458
UnknownC5s	U5	0.0008	0.0005	0.0006
n-Hexane	P6	6.7307	4.9932	5.5892
2,2-Dimethylpentane	I7	0.0383	0.0330	0.0360
Methylcyclopentane	N6	2.9832	2.1609	2.1294
2,4-Dimethylpentane	I7	0.1770	0.1526	0.1676
2,2,3-Trimethylbutane	I7	0.0214	0.0185	0.0198
Benzene	A6	0.8166	0.5490	0.4620
3,3-Dimethylpentane	I7	0.0283	0.0244	0.0260
Cyclohexane	N6	3.1002	2.2457	2.1297
2-Methylhexane	I7	1.2025	1.0371	1.1292
2,3-Dimethylpentane	I7	0.4494	0.3876	0.4100
1,1-Dimethylcyclopentane	N7	0.4486	0.3791	0.3710
3-Methylhexane	I7	1.6978	1.4642	1.5703
1c,3-Dimethylcyclopentane	N7	1.0125	0.8557	0.8482
1t,3-Dimethylcyclopentane	N7	0.9314	0.7871	0.7761
3-Ethylpentane	I7	0.1491	0.1286	0.1357
1t,2-Dimethylcyclopentane	N7	1.6128	1.3630	1.3393
2,2,4-Trimethylpentane	I8	0.0469	0.0461	0.0490
n-Heptane	P7	5.6141	4.8417	5.2269
1c,2-Dimethylcyclopentane	N7	0.1569	0.1326	0.1268
Methylcyclohexane	N7	5.3558	4.5263	4.3409
2,2-Dimethylhexane	I8	0.7851	0.7719	0.8192
Ethylcyclopentane	N7	0.2648	0.2238	0.2156
2,5-Dimethylhexane	I8	0.1101	0.1083	0.1152
2,2,3-Trimethylpentane	I8	0.0201	0.0198	0.0204

2,4-Dimethylhexane	I8	0.1735	0.1706	0.1806
1c,2t,4-Trimethylcyclopentane	N8	0.5500	0.5312	0.5139
3,3-Dimethylhexane	I8	0.0585	0.0575	0.0598
2,3,4-Trimethylpentane	I8	0.0209	0.0205	0.0210
2,3,3-Trimethylpentane	I8	0.0023	0.0023	0.0023
Toluene	A7	1.1179	0.8865	0.7534
2,3-Dimethylhexane	I8	0.3122	0.3070	0.3185
2-Methyl-3-ethylpentane	I8	0.0614	0.0604	0.0620
1,1,2-Trimethylcyclopentane	N8	0.0048	0.0046	0.0044
2-Methylheptane	I8	1.4829	1.4580	1.5396
4-Methylheptane	I8	0.3752	0.3689	0.3802
3-Methyl-3-ethylpentane	I8	0.1044	0.1026	0.1042
3,4-Dimethylhexane	I8	0.0793	0.0780	0.0800
1c,2c,4-Trimethylcyclopentane	N8	0.0336	0.0324	0.0310
1c,3-Dimethylcyclohexane	N8	0.0433	0.0418	0.0403
3-Methylheptane	I8	0.6826	0.6711	0.7026
1c,2t,3-Trimethylcyclopentane	N8	1.3785	1.3313	1.2764
3-Ethylhexane	I8	0.2159	0.2123	0.2199
1t,4-Dimethylcyclohexane	N8	0.5795	0.5597	0.5422
1,1-Dimethylcyclohexane	N8	0.1506	0.1454	0.1375
3c-Ethylmethylcyclopentane	N8	0.0084	0.0081	0.0078
3t-Ethylmethylcyclopentane	N8	0.1157	0.1117	0.1076
2t-Ethylmethylcyclopentane	N8	0.0985	0.0951	0.0914
1,1-Methylethylcyclopentane	N8	0.2931	0.2831	0.2678
2,2,4-Trimethylhexane	I9	0.0384	0.0424	0.0438
1t,2-Dimethylcyclohexane	N8	0.6735	0.6505	0.6194
1c,2c,3-Trimethylcyclopentane	N8	0.0010	0.0010	0.0009
1t,3-Dimethylcyclohexane	N8	0.0019	0.0018	0.0017
UnknownC7s	U7	0.0561	0.0484	0.0523
n-Octane	P8	3.8392	3.7746	3.9670
1c,4-Dimethylcyclohexane	N8	0.6437	0.6217	0.5867
i-Propylcyclopentane	I8	0.0796	0.0769	0.0732
2,4,4-Trimethylhexane	I9	0.0383	0.0423	0.0433
2,2,3,4-Tetramethylpentane	I9	0.0219	0.0242	0.0249
2,3,4-Trimethylhexane	I9	0.0357	0.0394	0.0403
1c,2-Dimethylcyclohexane	N8	0.1893	0.1828	0.1696
2,3,5-Trimethylhexane	I9	0.1143	0.1262	0.1291
2,2-Dimethylheptane	I9	0.0193	0.0213	0.0221
1,1,4-Trimethylcyclohexane	N9	1.0167	1.1047	1.0574
2,2,3-Trimethylhexane	I9	0.5164	0.5701	0.5774
2,4-Dimethylheptane	I9	0.0256	0.0283	0.0292
4,4-Dimethylheptane	I9	0.0621	0.0686	0.0708
Ethylcyclohexane	N8	0.5701	0.5506	0.5165
n-Propylcyclopentane	N8	0.2783	0.2688	0.2557
1c,3c,5-Trimethylcyclohexane	N9	0.0427	0.0464	0.0444
2,5-Dimethylheptane	I9	0.0582	0.0643	0.0663
3,3-Dimethylheptane	I9	0.0805	0.0889	0.0916
3,5-Dimethylheptane	I9	0.0511	0.0564	0.0581
2,6-Dimethylheptane	I9	0.0727	0.0803	0.0837
1,1,3-Trimethylcyclohexane	N9	0.1732	0.1882	0.1801
Ethylbenzene	A8	0.3566	0.3259	0.2769
1c,2t,4t-Trimethylcyclohexane	N9	0.2223	0.2415	0.2267
2,3-Dimethylheptane	I9	0.3550	0.3919	0.3988
1,3-Dimethylbenzene (m-Xylene)	A8	0.8424	0.7698	0.6579
1,4-Dimethylbenzene (p-Xylene)	A8	0.2573	0.2351	0.2016
3,4-Dimethylheptane	I9	0.0441	0.0487	0.0492
3,4-Dimethylheptane (2)	I9	0.1293	0.1427	0.1441
4-Ethylheptane	I9	0.0512	0.0565	0.0583
4-Methyloctane	I9	0.2868	0.3166	0.3245
2-Methyloctane	I9	0.3998	0.4414	0.4569
1c,2t,4c-Trimethylcyclohexane	I9	0.0623	0.0688	0.0700
3-Ethylheptane	I9	0.1081	0.1193	0.1213
3-Methyloctane	I9	0.6097	0.6731	0.6899
3,3-Diethylpentane	I9	0.0436	0.0481	0.0471
1c,2t,3-Trimethylcyclohexane	N9	0.0534	0.0580	0.0545
1,1,2-Trimethylcyclohexane	N9	0.0352	0.0382	0.0359
1,2-Dimethylbenzene (o-Xylene)	A8	0.4977	0.4548	0.3819
i-Butylcyclopentane	N9	0.3152	0.3425	0.3241
UnknownC8s	U8	0.0295	0.0290	0.0305
n-Nonane	P9	2.9300	3.2345	3.3294
1,1-Methylethylcyclohexane	N9	0.3967	0.4379	0.4521
i-Propylbenzene	A9	0.3086	0.3192	0.2731
i-Propylcyclohexane	N9	0.1171	0.1272	0.1172
2,2-Dimethyloctane	I10	0.0473	0.0579	0.0579

2,4-Dimethyloctane	I10	0.0817	0.1001	0.1000
2,6-Dimethyloctane	I10	0.0056	0.0069	0.0071
2,5-Dimethyloctane	I10	0.0454	0.0556	0.0556
n-Butylcyclopentane	N9	0.2790	0.3368	0.3115
3,3-Dimethyloctane	I10	0.1082	0.1325	0.1325
n-Propylbenzene	A9	0.4900	0.5069	0.4338
3,6-Dimethyloctane	I10	0.1236	0.1514	0.1513
3-Methyl-5-ethylheptane	I10	0.1399	0.1544	0.1572
1,3-Methylethylbenzene	A9	0.2444	0.2528	0.2145
1,4-Methylethylbenzene	A9	0.2150	0.2224	0.1887
1,3,5-Trimethylbenzene	A9	0.2399	0.2482	0.2121
2,3-Dimethyloctane	I10	0.0669	0.0819	0.0818
5-Methylnonane	I10	0.3400	0.4164	0.4200
1,2-Methylethylbenzene	A9	0.2269	0.2347	0.1981
2-Methylnonane	I10	0.0426	0.0522	0.0531
3-Ethyl-octane	I10	0.0373	0.0457	0.0457
3-Methylnonane	I10	0.1776	0.2175	0.2191
1,2,4-Trimethylbenzene	A9	0.0333	0.0344	0.0290
t-Butylbenzene	A10	0.5115	0.5909	0.5042
i-Butylcyclohexane	N10	0.1831	0.2211	0.2013
1t-Methyl-2-n-propylcyclohexane	I10	0.0294	0.0325	0.0331
i-Butylbenzene	A10	0.0470	0.0543	0.0470
sec-Butylbenzene	A10	0.0218	0.0252	0.0216
UnknownC9s	U9	1.2281	1.3557	1.3955
n-Decane	P10	2.0999	2.5716	2.6025
1,2,3-Trimethylbenzene	A9	0.2275	0.2353	0.1946
1,3-Methyl-i-propylbenzene	A10	0.0588	0.0608	0.0513
1,4-Methyl-i-propylbenzene	A10	0.0463	0.0479	0.0404
Sec-Butylcyclohexane	N10	0.4347	0.5248	0.4772
1,2-Methyl-i-propylbenzene	A10	0.2005	0.2316	0.1953
3-Ethyl-nonane	I10	0.0466	0.0571	0.0581
1,3-Diethylbenzene	A10	0.1194	0.1379	0.1180
1,3-Methyl-n-propylbenzene	A10	0.0573	0.0662	0.0568
1,4-Diethylbenzene	A10	0.2346	0.2710	0.2324
1,4-Methyl-n-propylbenzene	A10	0.0457	0.0528	0.0455
n-Butylbenzene	A10	0.0489	0.0565	0.0485
1,3-Dimethyl-5-ethylbenzene	A10	0.0748	0.0864	0.0739
1,2-Diethylbenzene	A10	0.1621	0.1873	0.1574
1,2-Methyl-n-propylbenzene	A10	0.1140	0.1317	0.1115
1,4-Dimethyl-2-ethylbenzene	A10	0.1242	0.1435	0.1209
1,3-Dimethyl-4-ethylbenzene	A10	0.0434	0.0501	0.0423
1,2-Dimethyl-4-ethylbenzene	A10	0.2252	0.2602	0.2200
1,3-Dimethyl-2-ethylbenzene	A10	0.0898	0.1037	0.0861
1t,2c,4-Trimethylcyclopentane	A10	0.7835	0.7567	0.7478
1,2-Dimethyl-3-ethylbenzene	A10	0.0845	0.0976	0.0809
1,2-Ethyl-i-propylbenzene	A10	0.0607	0.0701	0.0591
1,4-Methyl-t-butylbenzene	A11	0.1565	0.1808	0.1525
UnknownC10s	U10	2.1385	2.6188	2.6502
n-Undecane	P11	1.7612	2.3695	2.3647
1,4-Ethyl-i-propylbenzene	A11	0.0478	0.0552	0.0466
1,2,4,5-Tetramethylbenzene	A11	0.1201	0.1387	0.1157
1,2-Methyl-n-butylbenzene	A11	0.1041	0.1203	0.1015
1,2,3,5-Tetramethylbenzene	A11	0.1439	0.1662	0.1380
1,2-Methyl-t-butylbenzene	A11	0.1519	0.1755	0.1480
5-Methylindan	A11	0.0246	0.0361	0.0356
4-Methylindan	A11	0.0079	0.0116	0.0115
1,2-Ethyl-n-propylbenzene	A11	0.2064	0.2384	0.2010
2-Methylindan	A11	0.0699	0.1025	0.1012
1,3-Methyl-n-butylbenzene	A11	0.1203	0.1390	0.1172
1,3-Di-i-propylbenzene	A11	0.0799	0.0923	0.0778
sec-Pentylbenzene	A11	0.1318	0.1523	0.1284
n-Pentylbenzene	A11	0.0831	0.1060	0.0913
1t-M-2-(4MP)cyclopentane	P12	0.0449	0.0658	0.0650
1,2-Di-n-propylbenzene	A11	0.1068	0.1234	0.1041
1,4-Di-i-propylbenzene	A11	0.1801	0.2081	0.1755
Tetrahydronaphthalene	A10	0.0498	0.0575	0.0485
t-Decahydronaphthalene	A10	0.0614	0.0709	0.0598
Naphthalene	A10	0.1341	0.1479	0.1247
1-t-Butyl-3,5-dimethylbenzene	A12	0.0329	0.0380	0.0320
1,4-Ethyl-t-butylbenzene	A11	0.0581	0.0671	0.0566
UnknownC11s	U11	1.4679	1.9749	1.9709
n-Dodecane	P12	1.4840	2.1757	2.1474
1,3-Di-n-propylbenzene	A12	0.0929	0.1073	0.0905
1,3,5-Triethylbenzene	A12	0.0294	0.0304	0.0260

1,2,4-Triethylbenzene	A12	0.4969	0.5140	0.4337
1,4-Methyl-n-pentylbenzene	A12	0.0320	0.0370	0.0312
n-Hexylbenzene	A12	0.0775	0.1082	0.0933
1,2,3,4,5-Pentamethylbenzene	A13	0.2981	0.3444	0.2904
2-Methylnaphthalene	A11	0.2152	0.2634	0.2221
1-Methylnaphthalene	A11	0.1799	0.2202	0.1596
UnknownC12s	U12	0.8871	1.3006	1.2837
n-Tridecane	P13	1.2646	2.0067	1.9572
UnknownC13s	U13	1.2592	1.9981	1.9489
n-Tetradecane	P14	1.0278	1.7550	1.7083
UnknownC14s	U14	1.3330	2.2762	2.2156
n-Pentadecane	P15	0.7648	1.3983	1.3454
UnknownC15s	U15	1.4027	2.5646	2.4676
n-Hexadecane	P16	0.2152	0.4194	0.4009
UnknownC16s	U16	0.6693	1.3044	1.2469
n-Heptadecane	P17	0.0248	0.0513	0.0489
UnknownC17s	U17	0.1975	0.4088	0.3896
UnknownC18s	U18	0.0325	0.0712	0.0677
<u>TOTAL</u>		<u>100.0000</u>	<u>100.0000</u>	<u>100.0000</u>

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



**COPY**

**CRUDE OIL ASSAY**

PROJECT NO. :	201408038	ANALYSIS NO. :	06
COMPANY NAME :	MULL DRILLING	ANALYSIS DATE:	AUGUST 11, 2014
ACCOUNT NO. :		SAMPLE DATE :	AUGUST 6, 2014
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 9:30 BRAUKMANN FARMS		EMPACT
***FIELD DATA***		SAMPLE TEMP. :	109
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

<u>SPECIFICATION</u>	<u>TEST METHOD</u>	<u>UNITS</u>	<u>RESULTS</u>
API GRAVITY		API 60/60	31.5
RVP @100 DEG F	D323	PSIG	2.8
TOTAL SULFUR	D2622	WT %	N/A
TOTAL CHLORIDE	D4929	ug/g	N/A
ORGANIC CHLORIDE	D4929	ug/g	N/A
FLASH POINT	D93	° F	N/A
HEATING VALUE	D4809	BTU/ LB	N/A
VISUAL APPEARANCE			BLACK, THICK
<u>BS&amp;W</u>	D96		
Crude Oil		VOL %	N/A
Water		VOL %	N/A
Emulsion		VOL %	N/A
Sediment		VOL %	N/A
<u>DISTILLATION:</u>	D86		
INITIAL POINT		DEG F	N/A
50%		DEG F	N/A
90%		DEG F	N/A
END POINT		DEG F	N/A
<u>DISTILLATION:</u>	<u>@TEMP</u>		
Average Centipoise	20°C		N/A
Average Centipoise	30°C		N/A
Average Centipoise	80°C		N/A
Kinetic Viscosity	20°C	cSt (mm2/s)	N/A
Kinetic Viscosity	30°C	cSt (mm2/s)	N/A
Kinetic Viscosity	80°C	cSt (mm2/s)	N/A

**ND: NOT DETECTED**

**N/A: NO TEST PERFORMED FOR THIS PARAMETER**

*The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.*

DFSPC015

REPORT OF ANALYSIS



F.S.: 19120      REMARKS: SAMPLE NEEDS EVALUATION

STATE: COLORADO

COUNTY: LINCOLN  
DISTRICT

FIELD: CLIFFORD

WELL NAME: BRAUKMANN FARMS NO. 3  
API:

LOCATION: SEC. 1, T12S, R53W

SPOT:

OWNER: MULL DRILLING CO., INC.

DATE PUBLISHED: 0000

DATE SAMPLED: 03/07/91

DATE COMPLETED: 11/00/82

SAMPLED BY: CARL SMALLEY

ELEVATION, FT: 5,017      GL

NAME OF PRODUCING FORMATION: PENN-MORROW

DEPTH IN FEET: 6,852

THICKNESS IN FEET: 3

SHUT IN WELLHEAD PRES., PSIG: NOT GIVEN      OPEN FLOW, MCF/D: NOT GIVEN

ANALYSIS:

METHANE	47.3 %	NORMAL PENTANE	0.5 %	OXYGEN	2.4 %
ETHANE	11.6 %	ISOPENTANE	0.1 %	ARGON	0.2 %
PROPANE	9.0 %	CYCLOPENTANE	0.1 %	HYDROGEN	0.1 %
NORMAL BUTANE	2.5 %	HEXANES PLUS	0.1 %	H2S	0.0 %
ISOBUTANE	1.2 %	NITROGEN	22.5 %	CO2	2.4 %
SPECIFIC GRAV:	0.901			HELIUM	0.25 %
TRACE DENOTES HELIUM < 0.005%				TOTAL	100.00%
AND OTHER COMPONENTS < 0.05%					

CALCULATED GROSS BTU/CU. FT., DRY AT 60 DEG. F AND 30 IN MERCURY: 1,076