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303-637-0150

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
FIELD DATA		SAMPLE TEMP. :	140
SAMPLE PRES. :	56	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

<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
TOTALS	100.0000	100.0000	100.0000

<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
TOTAL BTEX	3.8885	3.2211

(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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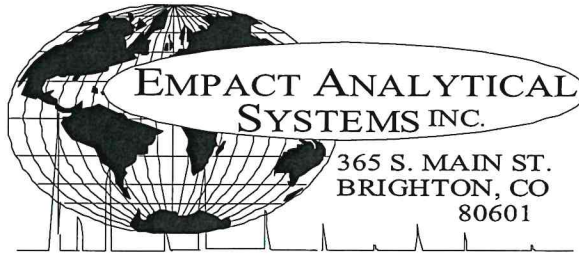
E & P TANK / GLYCALC INFORMATION

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	

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.



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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
Total	100.0000	100.0000	100.0000

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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		

<u>COMPONENT</u>	<u>PIANO #</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>VOL %</u>
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-Ethylcyclohexane	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-Ethylnonane	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&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%
AND OTHER COMPONENTS < 0.05%

TOTAL 100.00%

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