EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201512042	ANALYSIS NO. :	13
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 10, 2015 14:48
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	1902
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SEPARATOR SALES GAS BRINGELSON 17-20-9-58		
FIELD DATA		SAMPLE TEMP. :	89.0
SAMPLE PRES. :	82.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF STAIN @ 4.0 PPM (1-7 PPM) @ 14:55		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0011	0.0025		
GLYCOLS	0.0003	0.0018		
HELIUM	0.01	0.00	---	---
HYDROGEN	0.03	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	1.01	1.15	---	---
CARBON DIOXIDE	2.46	4.41	---	---
CARBON MONOXIDE	0.00	0.00	---	---
HYDROGEN SULFIDE	0.00000	0.00000	---	---
TOTAL OTHER SULFURS	0.00000	0.00000	---	---
METHANE	68.77690	44.94760	---	---
ETHANE	11.5578	14.1575	3.0873	3.1042
PROPANE	9.2143	16.5520	2.5356	2.5494
I-BUTANE	0.9344	2.2124	0.3054	0.3071
N-BUTANE	3.3409	7.9104	1.0525	1.0582
I-PENTANE	0.7321	2.1453	0.2623	0.2638
N-PENTANE	0.8886	2.6117	0.3215	0.3232
HEXANES PLUS	1.0336	3.8888	0.4173	0.4194
TOTALS	100.00000	100.00000	7.9819	8.0253

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0337	0.1072
TOLUENE	0.0230	0.0863
ETHYLBENZENE	0.0018	0.0078
XYLENES	0.0060	0.0260
TOTAL BTEX	0.0645	0.2273

BTU @		14.650	14.730
LOW	NET DRY REAL :	1263.3 /scf	1270.2 /scf
	NET WET REAL :	1241.2 /scf	1248.1 /scf
HIGH	GROSS DRY REAL :	1387.5 /scf	1395.1 /scf
	GROSS WET REAL :	1363.2 /scf	1370.9 /scf
	NET DRY REAL :	19554.3 /lb	19661.0 /lb
	GROSS DRY REAL :	21481.6 /lb	21598.9 /lb
	RELATIVE DENSITY (AIR=1):		0.8467
	COMPRESSIBILITY FACTOR :		0.99547

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

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

EMPACT ANALYTICAL SYSTEMS INC.
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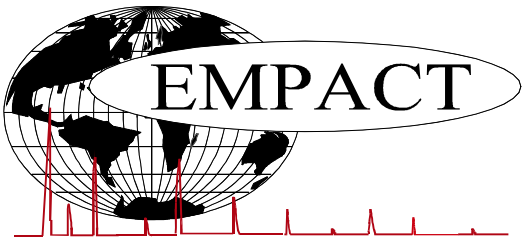
EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201512042	ANALYSIS NO. :	13
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 10, 2015 14:48
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	1902
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SEPARATOR SALES GAS BRINGELSON 17-20-9-58		
FIELD DATA		SAMPLE TEMP. :	89.0
SAMPLE PRES. :	82.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF STAIN @ 4.0 PPM (1-7 PPM) @ 14:55		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.03	0.00
Carbon Dioxide	2.46	4.41
Nitrogen	1.01	1.15
Methane	68.77690	44.94760
Ethane	11.5578	14.1575
Propane	9.2143	16.5520
Isobutane	0.9344	2.2124
n-Butane	3.3409	7.9104
Isopentane	0.6522	1.9170
n-Pentane	0.8886	2.6117
Cyclopentane	0.0799	0.2283
n-Hexane	0.2069	0.7263
Cyclohexane	0.0553	0.1896
Other Hexanes	0.3640	1.2679
Heptanes	0.1907	0.7738
Methycyclohexane	0.0438	0.1752
2,2,4 Trimethylpentane	0.0018	0.0084
Benzene	0.0337	0.1072
Toluene	0.0230	0.0863
Ethylbenzene	0.0018	0.0078
Xylenes	0.0060	0.0260
C8+ Heavies	0.1066	0.5203
Subtotal	99.98860	99.98570
Oxygen/Argon	0.01	0.01
Alcohols	0.0011	0.0025
Glycols	0.0003	0.0018
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201512042	ANALYSIS NO. :	13
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 10, 2015 14:48
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	1902
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SEPARATOR SALES GAS BRINGELSON 17-20-9-58		
FIELD DATA		SAMPLE TEMP. :	89.0
SAMPLE PRES. :	82.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF STAIN @ 4.0 PPM (1-7 PPM) @ 14:55		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.03	0.00	---	---
Oxygen/Argon	---	0.01	0.01	---	---
Nitrogen	---	1.01	1.15	---	---
Carbon Dioxide	---	2.46	4.41	---	---
Methane	P1	68.77690	44.94760	---	---
Ethane	P2	11.5578	14.1575	3.087	3.104
Propane	P3	9.2143	16.5520	2.536	2.549
i-Butane	I4	0.9344	2.2124	0.305	0.307
n-Butane	P4	3.3409	7.9104	1.053	1.058
2,2-Dimethylpropane	I5	0.0026	0.0077	0.001	0.001
Ethanol	X2	0.0003	0.0006	0.000	0.000
i-Pentane	I5	0.6496	1.9093	0.237	0.239
Acetone	X3	0.0005	0.0012	0.000	0.000
i-Propanol	X3	0.0003	0.0007	0.000	0.000
n-Pentane	P5	0.8885	2.6114	0.322	0.323
2,2-Dimethylbutane	I6	0.0021	0.0074	0.001	0.001
Cyclopentane	N5	0.0799	0.2283	0.024	0.024
2,3-Dimethylbutane	I6	0.0101	0.0354	0.004	0.004
2-Methylpentane	I6	0.1484	0.5210	0.061	0.061
3-Methylpentane	I6	0.0777	0.2728	0.032	0.032
UnknownC5s	U5	0.0001	0.0003	0.000	0.000
n-Hexane	P6	0.2069	0.7263	0.085	0.086
2,2-Dimethylpentane	I7	0.0002	0.0008	0.000	0.000
Methylcyclopentane	N6	0.1227	0.4207	0.043	0.043
2,4-Dimethylpentane	I7	0.0050	0.0204	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0003	0.0012	0.000	0.000
Benzene	A6	0.0337	0.1072	0.009	0.009
3,3-Dimethylpentane	I7	0.0002	0.0008	0.000	0.000
Cyclohexane	N6	0.0553	0.1896	0.019	0.019
2-Methylhexane	I7	0.0189	0.0772	0.009	0.009
2,3-Dimethylpentane	I7	0.0095	0.0388	0.004	0.004
1,1-Dimethylcyclopentane	N7	0.0097	0.0388	0.004	0.004
3-Methylhexane	I7	0.0248	0.1012	0.011	0.011

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1c,3-Dimethylcyclopentane	N7	0.0147	0.0588	0.007	0.007
1t,3-Dimethylcyclopentane	N7	0.0130	0.0520	0.006	0.006
3-Ethylpentane	I7	0.0010	0.0041	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0257	0.1028	0.012	0.012
2,2,4-Trimethylpentane	I8	0.0018	0.0084	0.001	0.001
UnknownC6s	U6	0.0030	0.0106	0.001	0.001
n-Heptane	P7	0.0544	0.2221	0.025	0.025
1c,2-Dimethylcyclopentane	N7	0.0020	0.0080	0.001	0.001
Methylcyclohexane	N7	0.0438	0.1752	0.018	0.018
2,2-Dimethylhexane	I8	0.0010	0.0046	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0025	0.0115	0.001	0.001
Ethylcyclopentane	N7	0.0069	0.0276	0.003	0.003
2,5-Dimethylhexane	I8	0.0007	0.0033	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0003	0.0014	0.000	0.000
2,4-Dimethylhexane	I8	0.0008	0.0037	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0030	0.0137	0.001	0.001
3,3-Dimethylhexane	I8	0.0003	0.0014	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0044	0.0201	0.002	0.002
2,3,4-Trimethylpentane	I8	0.0001	0.0005	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0005	0.0023	0.000	0.000
Toluene	A7	0.0230	0.0863	0.008	0.008
2,3-Dimethylhexane	I8	0.0015	0.0070	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0006	0.0028	0.000	0.000
1,1,2-Trimethylcyclopentane	N8	0.0002	0.0009	0.000	0.000
2-Methylheptane	I8	0.0086	0.0400	0.004	0.004
4-Methylheptane	I8	0.0015	0.0070	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0016	0.0075	0.001	0.001
3,4-Dimethylhexane	I8	0.0003	0.0014	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0002	0.0009	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0002	0.0009	0.000	0.000
3-Methylheptane	I8	0.0012	0.0056	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0075	0.0343	0.004	0.004
3-Ethylhexane	I8	0.0020	0.0093	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0020	0.0091	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0023	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0012	0.0055	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0012	0.0055	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0034	0.0156	0.002	0.002
2,2,4-Trimethylhexane	I9	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0026	0.0119	0.001	0.001
1c,2c,3-Trimethylcyclopentane	N8	0.0005	0.0023	0.000	0.000
UnknownC7s	U7	0.0019	0.0077	0.001	0.001
n-Octane	P8	0.0128	0.0596	0.007	0.007
1c,4-Dimethylcyclohexane	N8	0.0018	0.0082	0.001	0.001
i-Propylcyclopentane	I8	0.0002	0.0009	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0011	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0003	0.0016	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0003	0.0016	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0005	0.0023	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0037	0.0190	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0009	0.0047	0.000	0.000
2,4-Dimethylheptane	I9	0.0004	0.0021	0.000	0.000
4,4-Dimethylheptane	I9	0.0003	0.0016	0.000	0.000
Ethylcyclohexane	N8	0.0014	0.0064	0.001	0.001
n-Propylcyclopentane	N8	0.0003	0.0014	0.000	0.000

1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,5-Dimethylheptane	I9	0.0005	0.0026	0.000	0.000
3,3-Dimethylheptane	I9	0.0003	0.0016	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0002	0.0010	0.000	0.000
Ethylbenzene	I8	0.0018	0.0078	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0009	0.0046	0.001	0.001
2,3-Dimethylheptane	I9	0.0008	0.0042	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0027	0.0117	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0014	0.0061	0.001	0.001
3,4-Dimethylheptane	I9	0.0006	0.0031	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0003	0.0016	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
4-Methyloctane	I9	0.0008	0.0042	0.000	0.000
2-Methyloctane	I9	0.0006	0.0031	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0004	0.0020	0.000	0.000
3-Ethylheptane	I9	0.0003	0.0016	0.000	0.000
3-Methyloctane	I9	0.0008	0.0042	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0004	0.0020	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0005	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0019	0.0082	0.001	0.001
i-Butylcyclopentane	N9	0.0007	0.0036	0.000	0.000
UnknownC8s	U8	0.0033	0.0154	0.002	0.002
n-Nonane	P9	0.0040	0.0209	0.002	0.002
i-Propylbenzene	A9	0.0007	0.0034	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
n-Butylcyclopentane	N9	0.0006	0.0031	0.000	0.000
3,3-Dimethyloctane	I10	0.0003	0.0018	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0024	0.000	0.000
3,6-Dimethyloctane	I10	0.0004	0.0023	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0005	0.0029	0.000	0.000
1,3-Methylethylbenzene	A9	0.0005	0.0024	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0010	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0005	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
5-Methylnonane	I10	0.0004	0.0023	0.000	0.000
1,2-Methylethylbenzene	A9	0.0003	0.0015	0.000	0.000
2-Methylnonane	I10	0.0001	0.0006	0.000	0.000
3-Methylnonane	I10	0.0002	0.0011	0.000	0.000
1,2,4-Trimethylbenzene	A9	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0004	0.0022	0.000	0.000
i-Butylcyclohexane	N10	0.0002	0.0011	0.000	0.000
UnknownC9s	U9	0.0053	0.0277	0.003	0.003
n-Decane	P10	0.0009	0.0052	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0002	0.0010	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
Sec-Butylcyclohexane	A10	0.0002	0.0011	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Diethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Methyl-n-propylbenzene	A10	0.0001	0.0005	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0005	0.000	0.000

1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
t-Decahydronaphthalene	A9	0.0001	0.0006	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Dimethyl-2-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Methyl-t-butylbenzene	A11	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0033	0.0191	0.002	0.002
n-Undecane	P11	0.0003	0.0019	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0005	0.000	0.000
1,2-Methyl-t-butylbenzene	A11	0.0001	0.0006	0.000	0.000
2-Methylindan	A11	0.0001	0.0005	0.000	0.000
Triethylene Glycol	GL6	0.0003	0.0018	0.000	0.000
UnknownC11s	U11	0.0009	0.0057	0.001	0.001
n-Dodecane	P12	0.0002	0.0014	0.000	0.000
UnknownC12s	U12	0.0003	0.0019	0.000	0.000
UnknownC13s	U13	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	7.9819	8.0253

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0337	0.1072
TOLUENE	0.0230	0.0863
ETHYLBENZENE	0.0018	0.0078
XYLENES	0.0060	0.0260
TOTAL BTEX	0.0645	0.2273

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1263.3 **/scf**	1270.2 **/scf**
	NET WET REAL :	1241.2 **/scf**	1248.1 **/scf**
HIGH	GROSS DRY REAL :	1387.5 **/scf**	1395.1 **/scf**
	GROSS WET REAL :	1363.2 **/scf**	1370.9 **/scf**
	NET DRY REAL :	19554.3 **/lb**	19661.0 **/lb**
	GROSS DRY REAL :	21481.6 **/lb**	21598.9 **/lb**

RELATIVE DENSITY (AIR=1): 0.8467

COMPRESSIBILITY FACTOR : 0.99547

(CALC: GPA STD 2145 & TP-17 @14.696 & 60 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 RESPONSIBLITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBLITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.

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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201512042	ANALYSIS NO. :	14
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 09, 2015 18:36
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	6018
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR BRINGELSON 17-20-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	136.0
SAMPLE PRES. :	19.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
ALCOHOLS	0.3986	0.1241	0.1172
NITROGEN (AIR)	0.0080	0.0018	0.0017
CARBON DIOXIDE	0.0180	0.0063	0.0058
METHANE	0.0420	0.0054	0.0135
ETHANE	0.2640	0.0632	0.1332
PROPANE	1.2290	0.4315	0.6391
I-BUTANE	0.3210	0.1485	0.1981
N-BUTANE	1.7990	0.8324	1.0703
I-PENTANE	0.8194	0.4707	0.5659
N-PENTANE	1.4120	0.8110	0.9649
HEXANES PLUS	93.6890	97.1051	96.2903
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	1.0048	0.6248
TOLUENE	2.2172	1.6264
ETHYLBENZENE	0.6688	0.5653
XYLENE	1.5110	1.2772
TOTAL BTEX	5.4018	4.0937

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.7511	0.7574	60/60
API Gravity =	56.89	55.32	60/60
Molecular Weight =	125.61	130.951	
Absolute Density =	6.26	6.31	LBS/GAL
Heating Value Liq. Idl Gas=	125984	127656	BTU/GAL
Vapor/Liquid =	19.03	18.53	CUFT/GAL
Vapor Pressure =	9.33	1.31	PSIA @100 F

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

EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201512042	ANALYSIS NO. :	14
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 09, 2015 18:36
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	6018
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR BRINGELSON 17-20-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	136.0
SAMPLE PRES. :	19.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0180		0.0063		0.0058	
NITROGEN (AIR)	0.0080		0.0018		0.0017	
METHANE	0.0420		0.0054		0.0135	
ETHANE	0.2640		0.0632		0.1332	
PROPANE	1.2290		0.4315		0.6391	
I-BUTANE	0.3210		0.1485		0.1981	
N-BUTANE	1.7990		0.8324		1.0703	
I-PENTANE	0.8194		0.4707		0.5659	
N-PENTANE	1.4120		0.8110		0.9649	
CYCLOPENTANE (N-C5)	1.1757		0.6564		0.6484	
N-HEXANE	5.2581		3.6083		4.0815	
CYCLOHEXANE (OTHER C6)	2.1950		1.4707		1.4096	
OTHER HEXANES	8.1130		5.5076		5.8953	
OTHER HEPTANES	10.6883		8.4766		8.9686	
METHYLCYCLOHEXANE (OTHER C7)	3.5152		2.7478		2.6633	
2,2,4 TRIMETHYLPENTANE	0.2621		0.2384		0.2560	
BENZENE	1.0048		0.6248		0.5314	
TOLUENE	2.2172		1.6264		1.3969	
ETHYLBENZENE	0.6688		0.5653		0.4855	
XYLENES	1.5110		1.2772		1.0956	
OTHER OCTANES	10.3497		9.3449		9.5497	
OCTANES PLUS	----	59.5217	----	72.3865	----	70.6953
NONANES	10.4478		10.5646		10.5466	
DECANES PLUS	36.2823		50.3961		48.7619	
SUB TOTAL	99.6014		99.8759		99.8828	
ALCOHOLS	0.3986		0.1241		0.1172	
TOTAL	100.0000		100.0000		100.0000	

API Gravity =	**56.89**	60/60
Vapor Pressure =	**9.33**	PSIA & 100 F
Average Molecular Weight of Decanes plus =	**174.47**	
Average Specific Gravity of Decanes plus =	**0.7740**	

EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

BY CARBON NUMBER

PROJECT NO. :	201512042	ANALYSIS NO. :	14
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 09, 2015 18:36
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	6018
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR		EMPACT
	BRINGELSON 17-20-9-58		
FIELD DATA		SAMPLE TEMP. :	136.0
SAMPLE PRES. :	19.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
ALCOHOLS		0.3986	0.1241	0.1172
NITROGEN		0.0080	0.0018	0.0017
CARBON DIOXIDE		0.0180	0.0063	0.0058
	C1	0.0420	0.0054	0.0135
	C2	0.2640	0.0632	0.1332
	C3	1.2290	0.4315	0.6391
	C4	2.1200	0.9809	1.2684
	C5	3.4071	1.9381	2.1792
	C6	16.5709	11.2114	11.9178
	C7	16.4207	12.8508	13.0288
	C8	12.7916	11.4258	11.3868
	C9	10.4478	10.5646	10.5466
	C10	9.9192	10.8858	10.6067
	C11	7.2978	8.6856	8.2630
	C12	4.3642	5.5864	5.4192
	C13	3.2980	4.7064	4.5914
	C14	2.8639	4.5232	4.4495
	C15	2.7989	4.7332	4.6027
	C16	1.9289	3.4772	3.3594
	C17	1.4835	2.8401	2.7354
	C18	1.2693	2.5717	2.4697
	C19	0.5352	1.1442	1.0918
	C20	0.2381	0.5356	0.5082
	C21	0.1312	0.3098	0.2925
	C22	0.0804	0.1988	0.1870
	C23	0.0403	0.1042	0.0978
	C24	0.0182	0.0490	0.0458
	C25	0.0053	0.0149	0.0140
	C26	0.0041	0.0120	0.0111
	C27	0.0031	0.0094	0.0087
	C28	0.0015	0.0047	0.0044
	C29	0.0008	0.0026	0.0024
	C30+	0.0004	0.0013	0.0012
	Total	100.0000	100.0000	100.0000

EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201512042	ANALYSIS NO. :	14
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 09, 2015 18:36
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 14:50
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	6018
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR BRINGELSON 17-20-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	136.0
SAMPLE PRES. :	19.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0080	0.0018	0.0017
Carbon Dioxide	NHC	0.0180	0.0063	0.0058
Methane	P1	0.0420	0.0054	0.0135
Ethane	P2	0.2640	0.0632	0.1332
Propane	P3	1.2290	0.4315	0.6391
i-Butane	I4	0.3210	0.1485	0.1981
Methanol	X1	0.2980	0.0760	0.0716
n-Butane	P4	1.7990	0.8324	1.0703
2,2-Dimethylpropane	I5	0.0034	0.0020	0.0025
i-Pentane	I5	0.8160	0.4687	0.5634
i-Propanol	X3	0.1006	0.0481	0.0456
n-Pentane	P5	1.4120	0.8110	0.9649
2,2-Dimethylbutane	I6	0.0187	0.0128	0.0147
Cyclopentane	N5	1.1757	0.6564	0.6484
2,3-Dimethylbutane	I6	0.1969	0.1351	0.1521
2-Methylpentane	I6	1.5787	1.0831	1.2364
3-Methylpentane	I6	2.6713	1.8327	2.0573
n-Hexane	P6	5.2581	3.6083	4.0815
2,2-Dimethylpentane	I7	0.0013	0.0010	0.0011
Methylcyclopentane	N6	3.6389	2.4381	2.4282
2,4-Dimethylpentane	I7	0.1220	0.0973	0.1080
2,2,3-Trimethylbutane	I7	0.0091	0.0073	0.0079
Benzene	A6	1.0048	0.6248	0.5314
3,3-Dimethylpentane	I7	0.0103	0.0082	0.0088
Cyclohexane	N6	2.1950	1.4707	1.4096
2-Methylhexane	I7	0.6615	0.5277	0.5807
2,3-Dimethylpentane	I7	0.6024	0.4805	0.5137
1,1-Dimethylcyclopentane	N7	0.2853	0.2230	0.2205
3-Methylhexane	I7	0.3733	0.2978	0.3228
1c,3-Dimethylcyclopentane	N7	0.7584	0.5928	0.5939
1t,3-Dimethylcyclopentane	N7	0.5770	0.4510	0.4494
3-Ethylpentane	I7	0.1228	0.0980	0.1045
1t,2-Dimethylcyclopentane	N7	1.2156	0.9502	0.9436
2,2,4-Trimethylpentane	I8	0.2621	0.2384	0.2560
UnknownC6s	U6	0.0085	0.0058	0.0066
n-Heptane	P7	3.8084	3.0380	3.3146
1c,2-Dimethylcyclopentane	N7	0.1175	0.0918	0.0887
Methylcyclohexane	N7	3.5152	2.7478	2.6633
2,2-Dimethylhexane	I8	0.2433	0.2213	0.2374
1,1,3-Trimethylcyclopentane	N7	0.0581	0.0519	0.0518
Ethylcyclopentane	N7	0.4750	0.3713	0.3616
2,5-Dimethylhexane	I8	0.0670	0.0609	0.0655

2,2,3-Trimethylpentane	I8	0.0305	0.0277	0.0289
2,4-Dimethylhexane	I8	0.1572	0.1430	0.1530
1c,2t,4-Trimethylcyclopentane	N8	0.2496	0.2230	0.2180
3,3-Dimethylhexane	I8	0.0294	0.0267	0.0281
2,3,4-Trimethylpentane	I8	0.0230	0.0209	0.0217
2,3,3-Trimethylpentane	I8	0.0658	0.0598	0.0615
Toluene	A7	2.2172	1.6264	1.3969
2-Methyl-3-ethylpentane	I8	0.0480	0.0437	0.0453
1,1,2-Trimethylcyclopentane	N8	0.1063	0.0950	0.0918
2-Methylheptane	I8	0.8396	0.7635	0.8148
4-Methylheptane	I8	0.2638	0.2399	0.2499
3-Methyl-3-ethylpentane	I8	0.1294	0.1177	0.1208
3,4-Dimethylhexane	I8	0.0635	0.0577	0.0598
1c,2c,4-Trimethylcyclopentane	N8	0.0204	0.0182	0.0176
1c,3-Dimethylcyclohexane	N8	0.0318	0.0284	0.0277
3-Methylheptane	I8	0.0694	0.0631	0.0668
1c,2t,3-Trimethylcyclopentane	N8	1.0552	0.9426	0.9133
3-Ethylhexane	I8	0.2872	0.2612	0.2734
1t,4-Dimethylcyclohexane	N8	0.3727	0.3329	0.3259
1,1-Dimethylcyclohexane	N8	0.0685	0.0612	0.0585
2,2,5-Trimethylhexane	I9	0.0276	0.0282	0.0296
3t-Ethylmethylcyclopentane	N8	0.1937	0.1730	0.1684
2t-Ethylmethylcyclopentane	N8	0.1783	0.1593	0.1547
1,1-Methylethylcyclopentane	N8	0.5455	0.4873	0.4659
2,2,4-Trimethylhexane	I9	0.0357	0.0365	0.0381
1t,2-Dimethylcyclohexane	N8	0.4126	0.3686	0.3547
1c,2c,3-Trimethylcyclopentane	N8	0.0857	0.0766	0.0734
1t,3-Dimethylcyclohexane	N8	0.0337	0.0301	0.0286
UnknownC7s	U7	1.4903	1.1888	1.2970
n-Octane	P8	2.7298	2.4825	2.6368
1c,4-Dimethylcyclohexane	N8	0.2348	0.2098	0.2001
i-Propylcyclopentane	I8	0.0305	0.0272	0.0262
2,4,4-Trimethylhexane	I9	0.0105	0.0107	0.0111
2,2,3,4-Tetramethylpentane	I9	0.0482	0.0492	0.0511
2,3,4-Trimethylhexane	I9	0.0186	0.0190	0.0196
1c,2-Dimethylcyclohexane	N8	0.1145	0.1023	0.0959
2,3,5-Trimethylhexane	I9	0.0530	0.0541	0.0559
2,2-Dimethylheptane	I9	0.0202	0.0206	0.0216
1,1,4-Trimethylcyclohexane	N9	0.5670	0.5698	0.5512
2,2,3-Trimethylhexane	I9	0.2332	0.2381	0.2437
2,4-Dimethylheptane	I9	0.0309	0.0315	0.0329
4,4-Dimethylheptane	I9	0.0659	0.0673	0.0702
Ethylcyclohexane	N8	0.3268	0.2919	0.2767
n-Propylcyclopentane	N8	0.1057	0.0944	0.0908
1c,3c,5-Trimethylcyclohexane	N9	0.0441	0.0443	0.0429
2,5-Dimethylheptane	I9	0.1180	0.1205	0.1255
3,3-Dimethylheptane	I9	0.0745	0.0761	0.0793
3,5-Dimethylheptane	I9	0.0325	0.0332	0.0346
2,6-Dimethylheptane	I9	0.0370	0.0378	0.0398
1,1,3-Trimethylcyclohexane	N9	0.0153	0.0154	0.0149
Ethylbenzene	A8	0.6688	0.5653	0.4855
1c,2t,4t-Trimethylcyclohexane	N9	0.2985	0.3000	0.2847
2,3-Dimethylheptane	I9	0.1446	0.1476	0.1518
1,3-Dimethylbenzene (m-Xylene)	A8	0.3685	0.3115	0.2691
1,4-Dimethylbenzene (p-Xylene)	A8	0.4659	0.3938	0.3412
3,4-Dimethylheptane	I9	0.4315	0.4406	0.4498
3,4-Dimethylheptane (2)	I9	0.2590	0.2645	0.2700
4-Methyloctane	I9	0.1780	0.1818	0.1883
2-Methyloctane	I9	0.2375	0.2425	0.2537
1c,2t,4c-Trimethylcyclohexane	I9	0.1202	0.1227	0.1262
3-Ethylheptane	I9	0.0885	0.0904	0.0929
3-Methyloctane	I9	0.1998	0.2040	0.2113
3,3-Diethylpentane	I9	0.0736	0.0752	0.0744
1c,2t,3-Trimethylcyclohexane	N9	0.0936	0.0941	0.0893
1,1,2-Trimethylcyclohexane	N9	0.1063	0.1068	0.1013
1,2-Dimethylbenzene (o-Xylene)	A8	0.6766	0.5719	0.4853
i-Butylcyclopentane	N9	0.1920	0.1930	0.1846
UnknownC8s	U8	1.1365	1.0335	1.0978
n-Nonane	P9	2.1894	2.2356	2.3257
1,1-Methylethylcyclohexane	N9	0.2461	0.2513	0.2622
i-Propylbenzene	A9	0.2403	0.2299	0.1988
i-Propylcyclohexane	N9	0.0638	0.0641	0.0597
2,2-Dimethyloctane	I10	0.0610	0.0691	0.0698
2,4-Dimethyloctane	I10	0.0367	0.0416	0.0420

2,6-Dimethyloctane	I10	0.0635	0.0719	0.0750
2,5-Dimethyloctane	I10	0.0533	0.0604	0.0610
n-Butylcyclopentane	N9	0.2116	0.2363	0.2209
3,3-Dimethyloctane	I10	0.1566	0.1774	0.1792
n-Propylbenzene	A9	0.2064	0.1975	0.1708
3,6-Dimethyloctane	I10	0.1975	0.2237	0.2259
3-Methyl-5-ethylheptane	I10	0.5220	0.5330	0.5484
1,3-Methylethylbenzene	A9	0.2213	0.2118	0.1816
1,4-Methylethylbenzene	A9	0.1807	0.1729	0.1483
1,3,5-Trimethylbenzene	A9	0.0969	0.0927	0.0801
2,3-Dimethyloctane	I10	0.1746	0.1978	0.1997
5-Methylnonane	I10	0.1315	0.1490	0.1519
1,2-Methylethylbenzene	A9	0.4160	0.3981	0.3396
2-Methylnonane	I10	0.1129	0.1279	0.1315
3-Ethyloctane	I10	0.0775	0.0878	0.0887
3-Methylnonane	I10	0.1036	0.1173	0.1194
1,2,4-Trimethylbenzene	A9	0.0134	0.0128	0.0109
t-Butylbenzene	A10	0.2502	0.2673	0.2305
i-Butylcyclohexane	N10	0.1895	0.2116	0.1947
1t-Methyl-2-n-propylcyclohexane	I10	0.0611	0.0624	0.0642
i-Butylbenzene	A10	0.0465	0.0497	0.0435
sec-Butylbenzene	A10	0.0754	0.0806	0.0699
UnknownC9s	U9	2.2974	2.3459	2.4404
n-Decane	P10	1.4827	1.6795	1.7178
1,2,3-Trimethylbenzene	A9	0.2092	0.2002	0.1673
1,3-Methyl-i-propylbenzene	A10	0.0931	0.0891	0.0760
1,4-Methyl-i-propylbenzene	A10	0.1406	0.1345	0.1147
Sec-Butylcyclohexane	N10	0.0873	0.0975	0.0896
1,2-Methyl-i-propylbenzene	A10	0.2266	0.2421	0.2063
3-Ethylnonane	I10	0.0906	0.1026	0.1055
1,3-Diethylbenzene	A10	0.1710	0.1827	0.1580
1,3-Methyl-n-propylbenzene	A10	0.1104	0.1180	0.1024
1,4-Diethylbenzene	A10	0.0775	0.0828	0.0718
1,4-Methyl-n-propylbenzene	A10	0.0165	0.0176	0.0153
n-Butylbenzene	A10	0.1459	0.1559	0.1352
1,3-Dimethyl-5-ethylbenzene	A10	0.0773	0.0826	0.0714
1,2-Diethylbenzene	A10	0.2205	0.2356	0.2002
1,2-Methyl-n-propylbenzene	A10	0.0421	0.0450	0.0385
1,4-Dimethyl-2-ethylbenzene	A10	0.0780	0.0833	0.0709
1,3-Dimethyl-4-ethylbenzene	A10	0.0635	0.0679	0.0579
1,2-Dimethyl-4-ethylbenzene	A10	0.1382	0.1477	0.1262
1,3-Dimethyl-2-ethylbenzene	A10	0.0711	0.0760	0.0638
1t,2c,4-Trimethylcyclopentane	A10	0.3203	0.2861	0.2858
1,2-Dimethyl-3-ethylbenzene	A10	0.1693	0.1809	0.1515
1,2-Ethyl-i-propylbenzene	A10	0.1335	0.1427	0.1216
1,4-Methyl-t-butylbenzene	A11	0.2360	0.2522	0.2150
UnknownC10s	U10	3.2653	3.6986	3.7828
n-Undecane	P11	1.3740	1.7098	1.7245
1,4-Ethyl-i-propylbenzene	A11	0.0484	0.0517	0.0441
1,2,4,5-Tetramethylbenzene	A11	0.1518	0.1622	0.1368
1,2-Methyl-n-butylbenzene	A11	0.1524	0.1628	0.1388
1,2,3,5-Tetramethylbenzene	A11	0.1113	0.1189	0.0998
1,2-Methyl-t-butylbenzene	A11	0.1764	0.1885	0.1607
5-Methylindan	A11	0.0465	0.0631	0.0630
4-Methylindan	A11	0.0672	0.0911	0.0909
1,2-Ethyl-n-propylbenzene	A11	0.2218	0.2370	0.2020
2-Methylindan	A11	0.0896	0.1215	0.1212
1,3-Methyl-n-butylbenzene	A11	0.1059	0.1132	0.0965
1,3-Di-i-propylbenzene	A11	0.1308	0.1398	0.1192
sec-Pentylbenzene	A11	0.1231	0.1315	0.1121
n-Pentylbenzene	A11	0.1199	0.1415	0.1231
1t-M-2-(4MP)cyclopentane	P12	0.1180	0.1600	0.1596
1,2-Di-n-propylbenzene	A11	0.1723	0.1841	0.1569
1,4-Di-i-propylbenzene	A11	0.1862	0.1990	0.1696
Tetrahydronaphthalene	A10	0.1489	0.1591	0.1356
t-Decahydronaphthalene	A10	0.1899	0.2029	0.1729
Naphthalene	A10	0.0457	0.0466	0.0397
1-t-Butyl-3,5-dimethylbenzene	A12	0.1296	0.1385	0.1180
1,4-Ethyl-t-butylbenzene	A11	0.1325	0.1416	0.1207
UnknownC11s	U11	3.0464	3.7909	3.8235
n-Dodecane	P12	1.3098	1.7762	1.7718
1,3-Di-n-propylbenzene	A12	0.1206	0.1289	0.1099
1,3,5-Triethylbenzene	A12	0.4452	0.4260	0.3677
1,2,4-Triethylbenzene	A12	0.0797	0.0763	0.0651

1,4-Methyl-n-pentylbenzene	A12	0.1424	0.1522	0.1297
n-Hexylbenzene	A12	0.1477	0.1908	0.1662
1,2,3,4,5-Pentamethylbenzene	A13	0.3358	0.3588	0.3058
2-Methylnaphthalene	A11	0.3146	0.3561	0.3035
1-Methylnaphthalene	A11	0.2907	0.3291	0.2411
UnknownC12s	U12	1.8712	2.5375	2.5312
n-Tridecane	P13	1.1877	1.7432	1.7183
UnknownC13s	U13	1.7745	2.6044	2.5673
n-Tetradecane	P14	1.1032	1.7424	1.7140
UnknownC14s	U14	1.7607	2.7808	2.7355
n-Pentadecane	P15	0.9202	1.5561	1.5132
UnknownC15s	U15	1.8787	3.1771	3.0895
n-Hexadecane	P16	0.7186	1.2954	1.2515
UnknownC16s	U16	1.2103	2.1818	2.1079
n-Heptadecane	P17	0.5800	1.1104	1.0695
UnknownC17s	U17	0.9035	1.7297	1.6659
n-Octadecane	P18	0.3561	0.7215	0.6929
UnknownC18s	U18	0.9132	1.8502	1.7768
n-Nonadecane	P19	0.1465	0.3132	0.2989
UnknownC19s	U19	0.3887	0.8310	0.7929
n-Eicosane	P20	0.0929	0.2090	0.1983
UnknownC20s	U20	0.1452	0.3266	0.3099
n-Heneicosane	P21	0.0644	0.1521	0.1436
UnknownC21s	U21	0.0668	0.1577	0.1489
n-Docosane	P22	0.0286	0.0707	0.0665
UnknownC22s	U22	0.0518	0.1281	0.1205
n-Tricosane	P23	0.0121	0.0313	0.0294
UnknownC23s	U23	0.0282	0.0729	0.0684
n-Tetracosane	P24	0.0045	0.0121	0.0113
UnknownC24s	U24	0.0137	0.0369	0.0345
n-Pentacosane	P25	0.0030	0.0084	0.0079
UnknownC25s	U25	0.0023	0.0065	0.0061
n-Hexacosane	P26	0.0037	0.0108	0.0100
UnknownC26s	U26	0.0004	0.0012	0.0011
n-Heptacosane	P27	0.0031	0.0094	0.0087
n-Octacosane	P28	0.0015	0.0047	0.0044
n-Nonacosane	P29	0.0008	0.0026	0.0024
n-Triacontane Plus	P30	0.0004	0.0013	0.0012
TOTAL		100.0000	100.0000	100.0000

CRUDE OIL ASSAY

PROJECT NO. :	201512042	ANALYSIS NO. :	15
COMPANY NAME :	CARRIZO OIL & GAS, INC.	ANALYSIS DATE:	DECEMBER 14, 2015
ACCOUNT NO. :		SAMPLE DATE :	DECEMBER 04, 2015 15:30
PRODUCER :	CARRIZO OIL & GAS, INC.	CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK BRINGELSON 17-20-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	108
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

SPECIFICATION		TEST METHOD	UNITS	RESULTS
API GRAVITY			API 60/60	34.8
RVP @100 DEG F		D323	PSIG	5.2
TOTAL SULFUR		D2622	WT %	.362
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
BS&W		D96		
Crude Oil			VOL %	N/A
Water			VOL %	N/A
Emulsion			VOL %	N/A
Sediment			VOL %	N/A
DISTILLATION:		D86		
INITIAL POINT			DEG F	N/A
50%			DEG F	N/A
90%			DEG F	N/A
END POINT			DEG F	N/A
VISCOSITY:	@TEMP	D445		
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 PREFORMED FOR THIS PARAMETER