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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201501150	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 30, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	4038
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 14:40		EMPACT
	O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	131
SAMPLE PRES. :	18	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
NITROGEN (AIR)	0.0780	0.0199	0.0183
CARBON DIOXIDE	0.0310	0.0124	0.0113
METHANE	0.1370	0.0200	0.0497
ETHANE	0.2300	0.0631	0.1321
PROPANE	0.8380	0.3373	0.4961
I-BUTANE	0.2180	0.1156	0.1531
N-BUTANE	1.1750	0.6232	0.7957
I-PENTANE	0.5690	0.3746	0.4472
N-PENTANE	0.9870	0.6499	0.7678
HEXANES PLUS	95.7370	97.7840	97.1287
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	2.2031	1.5704
TOLUENE	3.5784	3.0089
ETHYLBENZENE	0.3052	0.2957
XYLENE	2.2566	2.1864
TOTAL BTEX	8.3433	7.0614

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.746	0.7511	60/60
API Gravity =	58.18	56.89	60/60
Molecular Weight =	109.58	112.867	
Absolute Density =	6.22	6.26	LBS/GAL
Heating Value Liq. Idl Gas=	126728	127284	BTU/GAL
Vapor/Liquid =	21.67	21.15	CUFT/GAL
Vapor Pressure =	13.20	1.87	PSIA @100 F

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

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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201501150	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 30, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	4038
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 14:40		EMPACT
	O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	131
SAMPLE PRES. :	18	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0310		0.0124		0.0113	
NITROGEN (AIR)	0.0780		0.0199		0.0183	
METHANE	0.1370		0.0200		0.0497	
ETHANE	0.2300		0.0631		0.1321	
PROPANE	0.8380		0.3373		0.4961	
I-BUTANE	0.2180		0.1156		0.1531	
N-BUTANE	1.1750		0.6232		0.7957	
I-PENTANE	0.5690		0.3746		0.4472	
N-PENTANE	0.9870		0.6499		0.7678	
CYCLOPENTANE (N-C5)	2.1236		1.3591		1.3331	
N-HEXANE	7.8687		6.1894		6.9522	
CYCLOHEXANE (OTHER C6)	3.0066		2.3091		2.1976	
OTHER HEXANES	12.3922		9.6422		10.2664	
OTHER HEPTANES	13.4533		12.2270		12.8272	
METHYLCYCLOHEXANE (OTHER C7)	4.0320		3.6129		3.4773	
2,2,4 TRIMETHYLPENTANE	0.5766		0.5167		0.5113	
BENZENE	2.2031		1.5704		1.3263	
TOLUENE	3.5784		3.0089		2.5662	
ETHYLBENZENE	0.3052		0.2957		0.2522	
XYLENES	2.2566		2.1864		1.8644	
OTHER OCTANES	10.9381		11.3840		11.4611	
OCTANES PLUS	----	47.0791	----	57.8650	----	56.1824
NONANES	12.1505		14.0729		13.8707	
DECANES PLUS	20.8521		29.4093		28.2227	
SUB TOTAL	100.0000		100.0000		100.0000	
TOTAL	100.0000		100.0000		100.0000	

API Gravity =	**58.18**	60/60
Vapor Pressure =	**13.20**	PSIA & 100 F
Average Molecular Weight of Decanes plus =	**154.55**	
Average Specific Gravity of Decanes plus =	**0.7820**	

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BY CARBON NUMBER

PROJECT NO. :	201501150	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 30, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	4038
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 14:40		EMPACT
	O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	131
SAMPLE PRES. :	18	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
NITROGEN		0.0780	0.0199	0.0183
CARBON DIOXIDE		0.0310	0.0124	0.0113
	C1	0.1370	0.0200	0.0497
	C2	0.2300	0.0631	0.1321
	C3	0.8380	0.3373	0.4961
	C4	1.3930	0.7388	0.9488
	C5	3.6796	2.3836	2.5481
	C6	25.4706	19.7111	20.7425
	C7	21.0637	18.8488	18.8707
	C8	14.0765	14.3828	14.0890
	C9	12.1505	14.0729	13.8707
	C10	9.8053	12.3463	11.8660
	C11	4.9967	6.8003	6.4184
	C12	2.1667	3.2203	3.1201
	C13	1.5531	2.5402	2.4607
	C14	0.9965	1.8042	1.7624
	C15	0.8653	1.6773	1.6196
	C16	0.2789	0.5763	0.5529
	C17	0.0746	0.1637	0.1565
	C18	0.0503	0.1169	0.1115
	C19	0.0349	0.0855	0.0810
	C20	0.0180	0.0464	0.0437
	C21	0.0118	0.0319	0.0299
	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. :	201501150	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 30, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	4038
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	OIL TREATER 14:40		EMPACT
	O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	131
SAMPLE PRES. :	18	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0780	0.0199	0.0183
Carbon Dioxide	NHC	0.0310	0.0124	0.0113
Methane	P1	0.1370	0.0200	0.0497
Ethane	P2	0.2300	0.0631	0.1321
Propane	P3	0.8380	0.3373	0.4961
i-Butane	I4	0.2180	0.1156	0.1531
n-Butane	P4	1.1750	0.6232	0.7957
i-Pentane	I5	0.5690	0.3746	0.4472
n-Pentane	P5	0.9870	0.6499	0.7678
Cyclopentane	N5	2.1236	1.3591	1.3331
2,3-Dimethylbutane	I6	0.3242	0.2550	0.2851
2-Methylpentane	I6	4.0946	3.2202	3.6504
3-Methylpentane	I6	2.3457	1.8448	2.0564
n-Hexane	P6	7.8687	6.1894	6.9522
Methylcyclopentane	N6	5.6277	4.3222	4.2745
2,4-Dimethylpentane	I7	0.1738	0.1589	0.1752
Benzene	A6	2.2031	1.5704	1.3263
3,3-Dimethylpentane	I7	0.0370	0.0338	0.0362
Cyclohexane	N6	3.0066	2.3091	2.1976
2-Methylhexane	I7	1.1506	1.0521	1.1497
2,3-Dimethylpentane	I7	0.6781	0.6201	0.6583
1,1-Dimethylcyclopentane	N7	0.1049	0.0940	0.0923
3-Methylhexane	I7	1.6930	1.5481	1.6662
1c,3-Dimethylcyclopentane	N7	0.9028	0.8090	0.8048
1t,3-Dimethylcyclopentane	N7	0.5766	0.5167	0.5113
3-Ethylpentane	I7	0.2352	0.2151	0.2278
1t,2-Dimethylcyclopentane	N7	1.8172	1.6283	1.6057
2,2,4-Trimethylpentane	I8	0.1842	0.1920	0.2048
n-Heptane	P7	4.6740	4.2739	4.6304
1c,2-Dimethylcyclopentane	N7	0.1725	0.1546	0.1484
Methylcyclohexane	N7	4.0320	3.6129	3.4773
2,2-Dimethylhexane	I8	0.2499	0.2605	0.2774
1,1,3-Trimethylcyclopentane	N7	0.0595	0.0609	0.0603
Ethylcyclopentane	N7	0.8572	0.7681	0.7427
2,5-Dimethylhexane	I8	0.0954	0.0995	0.1062
2,2,3-Trimethylpentane	I8	0.0342	0.0357	0.0370
2,4-Dimethylhexane	I8	0.1449	0.1510	0.1605
1c,2t,4-Trimethylcyclopentane	N8	0.4906	0.5024	0.4878
3,3-Dimethylhexane	I8	0.1025	0.1069	0.1116
2,3,3-Trimethylpentane	I8	0.0737	0.0768	0.0784
Toluene	A7	3.5784	3.0089	2.5662
2,3-Dimethylhexane	I8	0.2074	0.2162	0.2251

2-Methyl-3-ethylpentane	I8	0.1085	0.1131	0.1165
1,1,2-Trimethylcyclopentane	N8	0.0287	0.0294	0.0282
2-Methylheptane	I8	1.2781	1.3323	1.4119
4-Methylheptane	I8	0.3333	0.3474	0.3593
3-Methyl-3-ethylpentane	I8	0.1694	0.1766	0.1800
3,4-Dimethylhexane	I8	0.0747	0.0779	0.0802
1c,2c,4-Trimethylcyclopentane	N8	0.0361	0.0370	0.0356
1c,3-Dimethylcyclohexane	N8	0.0160	0.0164	0.0159
3-Methylheptane	I8	0.4312	0.4495	0.4723
1c,2t,3-Trimethylcyclopentane	N8	0.9141	0.9360	0.9006
3-Ethylhexane	I8	0.2710	0.2825	0.2937
1t,4-Dimethylcyclohexane	N8	0.4125	0.4224	0.4106
1,1-Dimethylcyclohexane	N8	0.1411	0.1445	0.1372
3t-Ethylmethylcyclopentane	N8	0.2794	0.2861	0.2766
2t-Ethylmethylcyclopentane	N8	0.2419	0.2477	0.2388
1,1-Methylethylcyclopentane	N8	0.7169	0.7341	0.6970
2,2,4-Trimethylhexane	I9	0.0440	0.0515	0.0534
1t,2-Dimethylcyclohexane	N8	0.5670	0.5806	0.5549
1t,3-Dimethylcyclohexane	N8	0.0096	0.0098	0.0093
UnknownC7s	U7	0.3209	0.2934	0.3179
n-Octane	P8	2.0425	2.1292	2.2458
1c,4-Dimethylcyclohexane	N8	0.8898	0.9112	0.8630
i-Propylcyclopentane	I8	0.0718	0.0735	0.0702
2,2,3,4-Tetramethylpentane	I9	0.0836	0.0979	0.1009
1c,2-Dimethylcyclohexane	N8	0.0811	0.0830	0.0773
2,3,5-Trimethylhexane	I9	0.0611	0.0715	0.0734
2,2-Dimethylheptane	I9	0.0540	0.0632	0.0659
1,1,4-Trimethylcyclohexane	N9	1.0774	1.2412	1.1923
2,2,3-Trimethylhexane	I9	0.2692	0.3151	0.3203
2,4-Dimethylheptane	I9	0.1215	0.1422	0.1473
4,4-Dimethylheptane	I9	0.1196	0.1400	0.1451
Ethylcyclohexane	N8	0.5528	0.5661	0.5329
n-Propylcyclopentane	N8	0.1230	0.1260	0.1203
1c,3c,5-Trimethylcyclohexane	N9	0.0529	0.0609	0.0585
2,5-Dimethylheptane	I9	0.0836	0.0978	0.1012
3,3-Dimethylheptane	I9	0.0770	0.0901	0.0932
3,5-Dimethylheptane	I9	0.0504	0.0590	0.0610
2,6-Dimethylheptane	I9	0.0582	0.0681	0.0712
1,1,3-Trimethylcyclohexane	N9	0.0332	0.0382	0.0367
Ethylbenzene	A8	0.3052	0.2957	0.2522
1c,2t,4t-Trimethylcyclohexane	N9	0.5678	0.6541	0.6163
2,3-Dimethylheptane	I9	0.2279	0.2667	0.2724
1,3-Dimethylbenzene (m-Xylene)	A8	0.9875	0.9568	0.8207
1,4-Dimethylbenzene (p-Xylene)	A8	0.4371	0.4235	0.3644
3,4-Dimethylheptane	I9	0.1985	0.2323	0.2355
3,4-Dimethylheptane (2)	I9	0.2353	0.2754	0.2792
4-Methyloctane	I9	0.3132	0.3666	0.3771
2-Methyloctane	I9	0.2810	0.3289	0.3417
1c,2t,4c-Trimethylcyclohexane	I9	0.1097	0.1284	0.1312
3-Ethylheptane	I9	0.0662	0.0775	0.0791
3-Methyloctane	I9	0.3718	0.4352	0.4476
3,3-Diethylpentane	I9	0.0359	0.0420	0.0413
1c,2t,3-Trimethylcyclohexane	N9	0.1168	0.1346	0.1268
1,1,2-Trimethylcyclohexane	N9	0.0436	0.0502	0.0473
1,2-Dimethylbenzene (o-Xylene)	A8	0.8320	0.8061	0.6793
i-Butylcyclopentane	N9	0.2626	0.3025	0.2872
UnknownC8s	U8	0.1414	0.1474	0.1555
n-Nonane	P9	1.8742	2.1937	2.2661
1,1-Methylethylcyclohexane	N9	0.4487	0.5252	0.5442
i-Propylbenzene	A9	0.4111	0.4509	0.3872
i-Propylcyclohexane	N9	0.1044	0.1203	0.1112
2,2-Dimethyloctane	I10	0.0761	0.0988	0.0991
2,4-Dimethyloctane	I10	0.0878	0.1140	0.1143
2,5-Dimethyloctane	I10	0.0310	0.0403	0.0404
n-Butylcyclopentane	N9	0.3329	0.4261	0.3955
3,3-Dimethyloctane	I10	0.2052	0.2664	0.2673
n-Propylbenzene	A9	0.0930	0.1020	0.0876
3,6-Dimethyloctane	I10	0.2707	0.3515	0.3524
3-Methyl-5-ethylheptane	I10	0.3117	0.3648	0.3727
1,3-Methylethylbenzene	A9	0.4188	0.4594	0.3912
1,4-Methylethylbenzene	A9	0.2152	0.2360	0.2010
1,3,5-Trimethylbenzene	A9	0.1941	0.2129	0.1826
2,3-Dimethyloctane	I10	0.0788	0.1023	0.1026
5-Methylnonane	I10	0.2558	0.3321	0.3361

1,2-Methylethylbenzene	A9	0.3714	0.4074	0.3451
2-Methylnonane	I10	0.1384	0.1797	0.1834
3-Ethyloctane	I10	0.0019	0.0025	0.0025
3-Methylnonane	I10	0.1566	0.2033	0.2055
1,2,4-Trimethylbenzene	A9	0.0167	0.0183	0.0155
t-Butylbenzene	A10	0.3135	0.3840	0.3289
i-Butylcyclohexane	N10	0.1811	0.2318	0.2118
1t-Methyl-2-n-propylcyclohexane	I10	0.0512	0.0599	0.0612
i-Butylbenzene	A10	0.0845	0.1035	0.0900
sec-Butylbenzene	A10	0.0591	0.0724	0.0623
UnknownC9s	U9	2.4242	2.8375	2.9312
n-Decane	P10	1.3774	1.7884	1.8163
1,2,3-Trimethylbenzene	A9	0.2298	0.2521	0.2092
1,3-Methyl-i-propylbenzene	A10	0.1222	0.1340	0.1135
1,4-Methyl-i-propylbenzene	A10	0.0625	0.0686	0.0581
Sec-Butylcyclohexane	N10	0.3618	0.4631	0.4226
1,2-Methyl-i-propylbenzene	A10	0.1712	0.2097	0.1775
3-Ethylnonane	I10	0.0622	0.0808	0.0825
1,3-Diethylbenzene	A10	0.1520	0.1862	0.1599
1,3-Methyl-n-propylbenzene	A10	0.0622	0.0762	0.0657
1,4-Diethylbenzene	A10	0.1924	0.2357	0.2029
1,4-Methyl-n-propylbenzene	A10	0.1327	0.1625	0.1404
n-Butylbenzene	A10	0.0653	0.0800	0.0689
1,3-Dimethyl-5-ethylbenzene	A10	0.0745	0.0912	0.0782
1,2-Diethylbenzene	A10	0.1458	0.1786	0.1507
1,2-Methyl-n-propylbenzene	A10	0.1065	0.1304	0.1107
1,4-Dimethyl-2-ethylbenzene	A10	0.1434	0.1756	0.1485
1,3-Dimethyl-4-ethylbenzene	A10	0.0465	0.0570	0.0483
1,2-Dimethyl-4-ethylbenzene	A10	0.2434	0.2981	0.2529
1,3-Dimethyl-2-ethylbenzene	A10	0.1853	0.2270	0.1892
1t,2c,4-Trimethylcyclopentane	A10	0.3126	0.3201	0.3175
1,2-Dimethyl-3-ethylbenzene	A10	0.0792	0.0970	0.0807
1,2-Ethyl-i-propylbenzene	A10	0.1453	0.1780	0.1506
1,4-Methyl-t-butylbenzene	A11	0.1177	0.1442	0.1220
UnknownC10s	U10	2.9325	3.8076	3.8671
n-Undecane	P11	1.0030	1.4307	1.4329
1,4-Ethyl-i-propylbenzene	A11	0.0385	0.0472	0.0399
1,2,4,5-Tetramethylbenzene	A11	0.2049	0.2510	0.2102
1,2-Methyl-n-butylbenzene	A11	0.0943	0.1155	0.0978
1,2,3,5-Tetramethylbenzene	A11	0.1526	0.1869	0.1558
1,2-Methyl-t-butylbenzene	A11	0.1190	0.1458	0.1234
5-Methylindan	A11	0.0186	0.0289	0.0286
4-Methylindan	A11	0.0074	0.0115	0.0114
1,2-Ethyl-n-propylbenzene	A11	0.1405	0.1721	0.1457
2-Methylindan	A11	0.1119	0.1739	0.1723
1,3-Methyl-n-butylbenzene	A11	0.0717	0.0878	0.0743
1,3-Di-i-propylbenzene	A11	0.1215	0.1488	0.1259
sec-Pentylbenzene	A11	0.0884	0.1083	0.0917
n-Pentylbenzene	A11	0.0764	0.1034	0.0894
1t-M-2-(4MP)cyclopentane	P12	0.0746	0.1160	0.1149
1,2-Di-n-propylbenzene	A11	0.1204	0.1475	0.1248
1,4-Di-i-propylbenzene	A11	0.1179	0.1444	0.1222
Tetrahydronaphthalene	A10	0.0433	0.0530	0.0449
t-Decahydronaphthalene	A10	0.1942	0.2379	0.2013
Naphthalene	A10	0.0875	0.1023	0.0866
1-t-Butyl-3,5-dimethylbenzene	A12	0.0537	0.0658	0.0557
1,4-Ethyl-t-butylbenzene	A11	0.0733	0.0898	0.0760
UnknownC11s	U11	1.9695	2.8094	2.8138
n-Dodecane	P12	0.6359	0.9885	0.9792
1,3-Di-n-propylbenzene	A12	0.0477	0.0584	0.0494
1,3,5-Triethylbenzene	A12	0.0181	0.0198	0.0170
1,2,4-Triethylbenzene	A12	0.2032	0.2229	0.1887
1,4-Methyl-n-pentylbenzene	A12	0.0241	0.0295	0.0250
n-Hexylbenzene	A12	0.0695	0.1029	0.0890
1,2,3,4,5-Pentamethylbenzene	A13	0.1591	0.1949	0.1650
2-Methylnaphthalene	A11	0.1984	0.2575	0.2179
1-Methylnaphthalene	A11	0.1508	0.1957	0.1424
UnknownC12s	U12	1.0399	1.6165	1.6012
n-Tridecane	P13	0.4769	0.8023	0.7853
UnknownC13s	U13	0.9171	1.5430	1.5104
n-Tetradecane	P14	0.3410	0.6174	0.6031
UnknownC14s	U14	0.6555	1.1868	1.1593
n-Pentadecane	P15	0.1750	0.3392	0.3275
UnknownC15s	U15	0.6903	1.3381	1.2921

n-Hexadecane	P16	0.0922	0.1905	0.1828
UnknownC16s	U16	0.1867	0.3858	0.3701
n-Heptadecane	P17	0.0477	0.1047	0.1001
UnknownC17s	U17	0.0269	0.0590	0.0564
n-Octadecane	P18	0.0197	0.0458	0.0437
UnknownC18s	U18	0.0306	0.0711	0.0678
n-Nonadecane	P19	0.0211	0.0517	0.0490
UnknownC19s	U19	0.0138	0.0338	0.0320
n-Eicosane	P20	0.0180	0.0464	0.0437
n-Heneicosane	P21	0.0118	0.0319	0.0299
TOTAL		100.0000	100.0000	100.0000

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

303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201501150	ANALYSIS NO. :	02
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 31, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANAURY 27, 2015
PRODUCER :		CYLINDER NO. :	0264
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS 14:50 O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	47
SAMPLE PRES. :	69	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN 1.0 PPM (1-7PPM) 14:55		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0019	0.0042		
HELIUM	0.04	0.01	---	---
HYDROGEN	0.04	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	1.69	1.86	---	---
CARBON DIOXIDE	2.41	4.18	---	---
METHANE	68.10100	43.01730	---	---
ETHANE	10.0351	11.8813	2.6810	2.6957
PROPANE	9.1041	15.8073	2.5058	2.5195
I-BUTANE	0.9958	2.2790	0.3255	0.3273
N-BUTANE	3.6873	8.4386	1.1607	1.1671
I-PENTANE	0.9421	2.6666	0.3355	0.3374
N-PENTANE	1.1724	3.3307	0.4246	0.4270
HEXANES PLUS	1.7703	6.5150	0.7276	0.7314
TOTALS	100.00000	100.00000	8.1607	8.2054

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0609	0.1873
TOLUENE	0.0430	0.1560
ETHYLBENZENE	0.0063	0.0263
XYLENES	0.0126	0.0528
TOTAL BTEX	0.1228	0.4224

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1295.7 **/scf**	1302.8 **/scf**
	NET WET REAL :	1273.0 **/scf**	1280.2 **/scf**
HIGH	GROSS DRY REAL :	1421.9 **/scf**	1429.7 **/scf**
	GROSS WET REAL :	1397.0 **/scf**	1404.8 **/scf**
	NET DRY REAL :	19392.5 **/lb**	19498.4 **/lb**
	GROSS DRY REAL :	21284.9 **/lb**	21401.2 **/lb**
	RELATIVE DENSITY (AIR=1):		0.8758
	COMPRESSIBILITY FACTOR :		0.99537

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

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

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

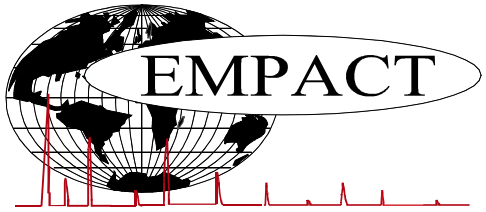
303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201501150	ANALYSIS NO. :	02
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 31, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANAURY 27, 2015
PRODUCER :		CYLINDER NO. :	0264
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS 14:50 O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	47
SAMPLE PRES. :	69	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN 1.0 PPM (1-7PPM) 14:55		

Componet	Mole %	Wt %
Helium	0.04	0.01
Hydrogen	0.04	0.00
Carbon Dioxide	2.41	4.18
Nitrogen	1.69	1.86
Methane	68.10100	43.01730
Ethane	10.0351	11.8813
Propane	9.1041	15.8073
Isobutane	0.9958	2.2790
n-Butane	3.6873	8.4386
Isopentane	0.8178	2.3233
n-Pentane	1.1724	3.3307
Cyclopentane	0.1243	0.3433
n-Hexane	0.3384	1.1483
Cyclohexane	0.0944	0.3128
Other Hexanes	0.5780	1.9446
Heptanes	0.3412	1.3366
Methycyclohexane	0.0735	0.2842
2,2,4 Trimethylpentane	0.0002	0.0009
Benzene	0.0609	0.1873
Toluene	0.0430	0.1560
Ethylbenzene	0.0063	0.0263
Xylenes	0.0126	0.0528
C8+ Heavies	0.2218	1.0652
Subtotal	99.98810	99.98580
Oxygen/Argon	0.01	0.01
Alcohols	0.0019	0.0042
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201501150	ANALYSIS NO. :	02
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	JANUARY 31, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANAURY 27, 2015
PRODUCER :		CYLINDER NO. :	0264
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS 14:50 O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	47
SAMPLE PRES. :	69	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN 1.0 PPM (1-7PPM) 14:55		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.04	0.01	---	---
Hydrogen	---	0.04	0.00	---	---
Oxygen/Argon	---	0.01	0.01	---	---
Nitrogen	---	1.69	1.86	---	---
Carbon Dioxide	---	2.41	4.18	---	---
Methane	P1	68.10100	43.01730	---	---
Ethane	P2	10.0351	11.8813	2.681	2.696
Propane	P3	9.1041	15.8073	2.506	2.520
i-Butane	I4	0.9958	2.2790	0.326	0.327
n-Butane	P4	3.6868	8.4375	1.161	1.167
2,2-Dimethylpropane	I5	0.0025	0.0071	0.001	0.001
Ethanol	X2	0.0009	0.0016	0.000	0.000
i-Pentane	I5	0.8153	2.3162	0.297	0.299
Acetone	X3	0.0004	0.0009	0.000	0.000
i-Propanol	X3	0.0002	0.0005	0.000	0.000
UnknownC4s	U4	0.0005	0.0011	0.000	0.000
n-Pentane	P5	1.1723	3.3304	0.425	0.427
t-Butanol	X4	0.0004	0.0012	0.000	0.000
2,2-Dimethylbutane	I6	0.0026	0.0088	0.001	0.001
Cyclopentane	N5	0.1243	0.3433	0.037	0.037
2,3-Dimethylbutane	I6	0.0199	0.0675	0.008	0.008
2-Methylpentane	I6	0.2248	0.7628	0.093	0.094
3-Methylpentane	I6	0.1207	0.4096	0.049	0.049
UnknownC5s	U5	0.0001	0.0003	0.000	0.000
n-Hexane	P6	0.3384	1.1483	0.139	0.140
2,2-Dimethylpentane	I7	0.0001	0.0004	0.000	0.000
Methylcyclopentane	N6	0.2097	0.6949	0.074	0.075
2,4-Dimethylpentane	I7	0.0082	0.0324	0.004	0.004
2,2,3-Trimethylbutane	I7	0.0002	0.0008	0.000	0.000
Benzene	A6	0.0609	0.1873	0.017	0.017
3,3-Dimethylpentane	I7	0.0002	0.0008	0.000	0.000
Cyclohexane	N6	0.0944	0.3128	0.032	0.032
2-Methylhexane	I7	0.0398	0.1570	0.018	0.018
2,3-Dimethylpentane	I7	0.0176	0.0695	0.008	0.008
1,1-Dimethylcyclopentane	N7	0.0073	0.0282	0.003	0.003
3-Methylhexane	I7	0.0475	0.1874	0.022	0.022
1c,3-Dimethylcyclopentane	N7	0.0245	0.0947	0.011	0.011
1t,3-Dimethylcyclopentane	N7	0.0213	0.0823	0.010	0.010
3-Ethylpentane	I7	0.0039	0.0154	0.002	0.002
1t,2-Dimethylcyclopentane	N7	0.0479	0.1852	0.022	0.022
2,2,4-Trimethylpentane	I8	0.0002	0.0009	0.000	0.000

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UnknownC6s	U6	0.0003	0.0010	0.000	0.000
n-Heptane	P7	0.1015	0.4004	0.047	0.047
1c,2-Dimethylcyclopentane	N7	0.0043	0.0166	0.002	0.002
Methylcyclohexane	N7	0.0735	0.2842	0.029	0.029
2,2-Dimethylhexane	I8	0.0046	0.0207	0.002	0.002
Ethylcyclopentane	N7	0.0150	0.0580	0.006	0.006
2,5-Dimethylhexane	I8	0.0020	0.0090	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0004	0.0018	0.000	0.000
2,4-Dimethylhexane	I8	0.0036	0.0162	0.002	0.002
1c,2t,4-Trimethylcyclopentane	N8	0.0067	0.0296	0.003	0.003
3,3-Dimethylhexane	I8	0.0004	0.0018	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0080	0.0354	0.004	0.004
2,3,4-Trimethylpentane	I8	0.0016	0.0072	0.001	0.001
Toluene	A7	0.0430	0.1560	0.014	0.014
2,3-Dimethylhexane	I8	0.0028	0.0126	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0019	0.0085	0.001	0.001
1,1,2-Trimethylcyclopentane	N8	0.0002	0.0009	0.000	0.000
2-Methylheptane	I8	0.0166	0.0747	0.009	0.009
4-Methylheptane	I8	0.0044	0.0198	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0008	0.0036	0.000	0.000
3,4-Dimethylhexane	I8	0.0006	0.0027	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0003	0.0013	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0003	0.0013	0.000	0.000
3-Methylheptane	I8	0.0074	0.0333	0.004	0.004
1c,2t,3-Trimethylcyclopentane	N8	0.0099	0.0437	0.005	0.005
3-Ethylhexane	I8	0.0014	0.0063	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0033	0.0146	0.002	0.002
1,1-Dimethylcyclohexane	N8	0.0012	0.0053	0.001	0.001
3t-Ethylmethylcyclopentane	N8	0.0027	0.0119	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0024	0.0106	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0076	0.0336	0.004	0.004
2,2,4-Trimethylhexane	I9	0.0003	0.0015	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0050	0.0221	0.003	0.003
1t,3-Dimethylcyclohexane	N8	0.0001	0.0004	0.000	0.000
UnknownC7s	U7	0.0019	0.0075	0.001	0.001
n-Octane	P8	0.0233	0.1048	0.012	0.012
1c,4-Dimethylcyclohexane	N8	0.0035	0.0155	0.002	0.002
i-Propylcyclopentane	I8	0.0006	0.0026	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0002	0.0010	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0004	0.0020	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0002	0.0010	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0014	0.0062	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0066	0.0328	0.003	0.003
2,2,3-Trimethylhexane	I9	0.0028	0.0141	0.001	0.001
2,4-Dimethylheptane	I9	0.0010	0.0050	0.001	0.001
4,4-Dimethylheptane	I9	0.0002	0.0010	0.000	0.000
Ethylcyclohexane	N8	0.0040	0.0177	0.002	0.002
n-Propylcyclopentane	N8	0.0016	0.0071	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,5-Dimethylheptane	I9	0.0006	0.0030	0.000	0.000
3,3-Dimethylheptane	I9	0.0006	0.0030	0.000	0.000
3,5-Dimethylheptane	I9	0.0004	0.0020	0.000	0.000
2,6-Dimethylheptane	I9	0.0005	0.0025	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0004	0.0020	0.000	0.000
Ethylbenzene	I8	0.0063	0.0263	0.002	0.002
1c,2t,4t-Trimethylcyclohexane	N9	0.0011	0.0055	0.001	0.001
2,3-Dimethylheptane	I9	0.0004	0.0020	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0043	0.0180	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0048	0.0201	0.002	0.002
3,4-Dimethylheptane	I9	0.0003	0.0015	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0009	0.0045	0.000	0.000
4-Ethylheptane	I9	0.0002	0.0010	0.000	0.000
4-Methyloctane	I9	0.0018	0.0091	0.001	0.001

2-Methyloctane	I9	0.0021	0.0106	0.001	0.001
1c,2t,3-Trimethylcyclohexane	N9	0.0005	0.0025	0.000	0.000
3-Ethylheptane	I9	0.0006	0.0030	0.000	0.000
3-Methyloctane	I9	0.0027	0.0136	0.002	0.002
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0005	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	0.0035	0.0147	0.001	0.001
i-Butylcyclopentane	N9	0.0012	0.0060	0.001	0.001
UnknownC8s	U8	0.0002	0.0009	0.000	0.000
n-Nonane	P9	0.0088	0.0445	0.005	0.005
1,1-Methylethylcyclohexane	N9	0.0011	0.0055	0.001	0.001
i-Propylbenzene	A9	0.0016	0.0076	0.001	0.001
i-Propylcyclohexane	N9	0.0004	0.0020	0.000	0.000
2,2-Dimethyloctane	I10	0.0004	0.0022	0.000	0.000
2,4-Dimethyloctane	I10	0.0003	0.0017	0.000	0.000
2,5-Dimethyloctane	I10	0.0002	0.0011	0.000	0.000
n-Butylcyclopentane	N9	0.0016	0.0080	0.001	0.001
3,3-Dimethyloctane	I10	0.0007	0.0039	0.000	0.000
n-Propylbenzene	A9	0.0010	0.0047	0.000	0.000
3,6-Dimethyloctane	I10	0.0014	0.0078	0.001	0.001
3-Methyl-5-ethylheptane	I10	0.0016	0.0090	0.001	0.001
1,3-Methylethylbenzene	A9	0.0014	0.0066	0.001	0.001
1,4-Methylethylbenzene	A9	0.0005	0.0024	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0006	0.0028	0.000	0.000
2,3-Dimethyloctane	I10	0.0003	0.0017	0.000	0.000
5-Methylnonane	I10	0.0011	0.0062	0.001	0.001
1,2-Methylethylbenzene	A9	0.0021	0.0099	0.001	0.001
2-Methylnonane	I10	0.0001	0.0006	0.000	0.000
3-Ethyloctane	I10	0.0002	0.0011	0.000	0.000
3-Methylnonane	I10	0.0008	0.0045	0.000	0.000
1,2,4-Trimethylbenzene	A9	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0014	0.0074	0.001	0.001
i-Butylcyclohexane	N10	0.0007	0.0039	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0006	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
sec-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0067	0.0338	0.004	0.004
n-Decane	P10	0.0039	0.0219	0.002	0.002
1,2,3-Trimethylbenzene	A9	0.0006	0.0028	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0003	0.0016	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0003	0.0016	0.000	0.000
Sec-Butylcyclohexane	A10	0.0010	0.0055	0.001	0.001
1,2-Methyl-i-propylbenzene	A10	0.0005	0.0026	0.000	0.000
3-Ethylnonane	I10	0.0001	0.0006	0.000	0.000
1,3-Diethylbenzene	A10	0.0004	0.0021	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Diethylbenzene	A10	0.0003	0.0016	0.000	0.000
1,4-Methyl-n-propylbenzene	A10	0.0004	0.0021	0.000	0.000
n-Butylbenzene	A10	0.0002	0.0011	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0002	0.0011	0.000	0.000
1,2-Diethylbenzene	A10	0.0003	0.0016	0.000	0.000
t-Decahydronaphthalene	A9	0.0003	0.0018	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0002	0.0011	0.000	0.000
1,4-Dimethyl-2-ethylbenzene	A10	0.0003	0.0016	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0004	0.0021	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0003	0.0016	0.000	0.000
1,2-Dimethyl-3-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,2-Ethyl-i-propylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Methyl-t-butylbenzene	A11	0.0002	0.0012	0.000	0.000
UnknownC10s	U10	0.0084	0.0471	0.005	0.005
n-Undecane	P11	0.0013	0.0080	0.001	0.001
1,4-Ethyl-i-propylbenzene	A11	0.0001	0.0006	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0002	0.0011	0.000	0.000

1,2-Methyl-n-butylbenzene	A11	0.0001	0.0006	0.000	0.000
1,2,3,5-Tetramethylbenzene	A11	0.0002	0.0011	0.000	0.000
1,2-Methyl-t-butylbenzene	A11	0.0001	0.0006	0.000	0.000
1,2-Ethyl-n-propylbenzene	A11	0.0002	0.0012	0.000	0.000
2-Methylindan	A11	0.0001	0.0005	0.000	0.000
sec-Pentylbenzene	A11	0.0001	0.0006	0.000	0.000
n-Pentylbenzene	A11	0.0001	0.0006	0.000	0.000
1t-M-2-(4MP)cyclopentane	P12	0.0001	0.0007	0.000	0.000
1,2-Di-n-propylbenzene	A11	0.0001	0.0006	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0002	0.0013	0.000	0.000
Naphthalene	A10	0.0001	0.0005	0.000	0.000
1,3-Di-n-propylbenzene	A12	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0042	0.0259	0.003	0.003
n-Dodecane	P12	0.0005	0.0034	0.000	0.000
1,2,4-Triethylbenzene	A12	0.0001	0.0006	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0001	0.0006	0.000	0.000
UnknownC12s	U12	0.0013	0.0080	0.001	0.001
n-Tridecane	P13	0.0002	0.0015	0.000	0.000
UnknownC13s	U13	0.0005	0.0036	0.000	0.000
UnknownC14s	U14	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	8.1607	8.2054

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0609	0.1873
TOLUENE	0.0430	0.1560
ETHYLBENZENE	0.0063	0.0263
XYLENES	0.0126	0.0528
TOTAL BTEX	0.1228	0.4224

		BTU @	14.650	14.730
LOW	NET DRY REAL :		1295.7 **/scf**	1302.8 **/scf**
	NET WET REAL :		1273.0 **/scf**	1280.2 **/scf**
HIGH	GROSS DRY REAL :		1421.9 **/scf**	1429.7 **/scf**
	GROSS WET REAL :		1397.0 **/scf**	1404.8 **/scf**
	NET DRY REAL :		19392.5 **/lb**	19498.4 **/lb**
	GROSS DRY REAL :		21284.9 **/lb**	21401.2 **/lb**
	RELATIVE DENSITY (AIR=1):			0.8758
	COMPRESSIBILITY FACTOR :			0.99537

(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.

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201501150	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	FEBRUARY 3, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 15:25 O'HARE 1-29-11-57		EMPACT
FIELD DATA		SAMPLE TEMP. :	91
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

COMPONENT	MOLE %	MASS %	VOL %
ALCOHOLS	0.0008	0.0002	0.0002
NITROGEN (AIR)	0.0570	0.0104	0.0099
CARBON DIOXIDE	0.0230	0.0066	0.0062
METHANE	0.0420	0.0044	0.0113
ETHANE	0.1290	0.0254	0.0547
PROPANE	0.6760	0.1949	0.2951
I-BUTANE	0.2320	0.0882	0.1203
N-BUTANE	1.3690	0.5202	0.6839
I-PENTANE	0.8140	0.3840	0.4722
N-PENTANE	1.4130	0.6665	0.8108
UNKNOWN C1-C5	0.0003	0.0001	0.0001
HEXANES PLUS	95.2439	98.0991	97.5353
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	MOLE%	MASS%
BENZENE	0.7525	0.3843
TOLUENE	1.9672	1.1850
ETHYLBENZENE	0.6120	0.4248
XYLENE	1.8810	1.3057
TOTAL BTEX	5.2127	3.2998

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

	TOTAL SAMPLE	C6+ FRACTION	
Specific Gravity (H2O=1) =	0.7678	0.7729	60/60
API Gravity =	52.79	51.58	60/60
Molecular Weight =	152.96	158.242	
Absolute Density =	6.4	6.44	LBS/GAL
Heating Value Liq. Idl Gas=	125325	126717	BTU/GAL
Vapor/Liquid =	16.78	16.45	CUFT/GAL
Vapor Pressure =	6.55	0.92	PSIA @100 F

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

EMPACT ANALYTICAL SYSTEMS INC.
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303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201501150	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	FEBRUARY 3, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 15:25 O'HARE 1-29-11-57		EMPACT
FIELD DATA		SAMPLE TEMP. :	91
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0230		0.0066		0.0062	
NITROGEN (AIR)	0.0570		0.0104		0.0099	
METHANE	0.0420		0.0044		0.0113	
ETHANE	0.1290		0.0254		0.0547	
PROPANE	0.6760		0.1949		0.2951	
I-BUTANE	0.2320		0.0882		0.1203	
N-BUTANE	1.3690		0.5202		0.6839	
I-PENTANE	0.8140		0.3840		0.4722	
N-PENTANE	1.4130		0.6665		0.8108	
CYCLOPENTANE (N-C5)	0.7637		0.3502		0.3537	
UNKNOWN C1-C5	0.0003		0.0001		0.0001	
N-HEXANE	3.5571		2.0054		2.3182	
CYCLOHEXANE (OTHER C6)	1.5344		0.8443		0.8274	
OTHER HEXANES	5.4942		3.0615		3.3490	
OTHER HEPTANES	8.0622		5.2453		5.6623	
METHYLCYCLOHEXANE (OTHER C7)	2.5485		1.6360		1.6213	
2,2,4 TRIMETHYLPENTANE	0.4385		0.2815		0.2868	
BENZENE	0.7525		0.3843		0.3342	
TOLUENE	1.9672		1.1850		1.0406	
ETHYLBENZENE	0.6120		0.4248		0.3730	
XYLENES	1.8810		1.3057		1.1479	
OTHER OCTANES	7.8494		5.8602		6.1062	
OCTANES PLUS	----	70.5641	----	83.3871	----	82.0286
NONANES	9.5166		7.8615		7.8740	
DECANES PLUS	50.2666		67.6534		66.2407	
SUB TOTAL	99.9992		99.9998		99.9998	
ALCOHOLS	0.0008		0.0002		0.0002	
TOTAL	100.0000		100.0000		100.0000	

API Gravity	=	**52.79**	60/60
Vapor Pressure	=	**6.55**	PSIA & 100 F
Average Molecular Weight of Decanes plus	=	**205.86**	
Average Specific Gravity of Decanes plus	=	**0.7870**	

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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

BY CARBON NUMBER

PROJECT NO. :	201501150	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	FEBRUARY 3, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 15:25		EMPACT
	O'HARE 1-29-11-57		
FIELD DATA		SAMPLE TEMP. :	91
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
ALCOHOLS		0.0008	0.0002	0.0002
NITROGEN		0.0570	0.0104	0.0099
CARBON DIOXIDE		0.0230	0.0066	0.0062
	C1	0.0420	0.0044	0.0113
	C2	0.1290	0.0254	0.0547
	C3	0.6760	0.1949	0.2951
	C4	1.6013	0.6085	0.8043
	C5	2.9907	1.4007	1.6367
	C6	11.3382	6.2955	6.8288
	C7	12.5779	8.0663	8.3242
	C8	10.7809	7.8722	7.9139
	C9	9.5166	7.8615	7.8740
	C10	10.2107	9.1645	9.0089
	C11	6.7120	6.5286	6.3211
	C12	4.6264	4.8753	4.8326
	C13	4.2467	5.0025	4.9994
	C14	3.6558	4.7417	4.7693
	C15	3.5915	4.9878	4.9591
	C16	2.8335	4.1948	4.1437
	C17	2.3071	3.6271	3.5718
	C18	2.3305	3.8777	3.8075
	C19	1.8858	3.3107	3.2300
	C20	1.3278	2.4528	2.3799
	C21	1.1895	2.3064	2.2264
	C22	0.9969	2.0244	1.9475
	C23	0.7883	1.6731	1.6049
	C24	0.6927	1.5337	1.4674
	C25	0.4924	1.1354	1.0860
	C26	0.5116	1.2266	1.1656
	C27	0.3509	0.8735	0.8294
	C28	0.2758	0.7119	0.6746
	C29	0.2699	0.7213	0.6820
	C30+	0.9708	2.6836	2.5336
	Total	100.0000	100.0000	100.0000

EMPACT ANALYTICAL SYSTEMS INC.
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303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201501150	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	FEBRUARY 3, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 15:25 O'HARE 1-29-11-57		EMPACT
FIELD DATA		SAMPLE TEMP. :	91
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0570	0.0104	0.0099
Carbon Dioxide	NHC	0.0230	0.0066	0.0062
Methane	P1	0.0420	0.0044	0.0113
Ethane	P2	0.1290	0.0254	0.0547
Propane	P3	0.6760	0.1949	0.2951
i-Butane	I4	0.2320	0.0882	0.1203
n-Butane	P4	1.3690	0.5202	0.6839
2,2-Dimethylpropane	I5	0.0100	0.0047	0.0060
Ethanol	X2	0.0008	0.0002	0.0002
i-Pentane	I5	0.8040	0.3793	0.4662
UnknownC4s	U4	0.0003	0.0001	0.0001
n-Pentane	P5	1.4130	0.6665	0.8108
2,2-Dimethylbutane	I6	0.0120	0.0068	0.0080
Cyclopentane	N5	0.7637	0.3502	0.3537
2,3-Dimethylbutane	I6	0.1378	0.0776	0.0893
2-Methylpentane	I6	1.7219	0.9702	1.1324
3-Methylpentane	I6	1.0366	0.5841	0.6704
n-Hexane	P6	3.5571	2.0054	2.3182
2,2-Dimethylpentane	I7	0.0008	0.0005	0.0006
Methylcyclopentane	N6	2.5850	1.4223	1.4483
2,4-Dimethylpentane	I7	0.0990	0.0649	0.0737
2,2,3-Trimethylbutane	I7	0.0056	0.0037	0.0041
Benzene	A6	0.7525	0.3843	0.3342
3,3-Dimethylpentane	I7	0.0026	0.0017	0.0019
Cyclohexane	N6	1.5344	0.8443	0.8274
2-Methylhexane	I7	0.6916	0.4531	0.5098
2,3-Dimethylpentane	I7	0.3788	0.2482	0.2713
1,1-Dimethylcyclopentane	N7	0.1246	0.0800	0.0809
3-Methylhexane	I7	0.9954	0.6521	0.7227
1c,3-Dimethylcyclopentane	N7	0.4900	0.3146	0.3223
1t,3-Dimethylcyclopentane	N7	0.4385	0.2815	0.2868
3-Ethylpentane	I7	0.0794	0.0520	0.0567
1t,2-Dimethylcyclopentane	N7	1.1020	0.7074	0.7183
2,2,4-Trimethylpentane	I8	0.0278	0.0208	0.0228
UnknownC6s	U6	0.0009	0.0005	0.0006
n-Heptane	P7	2.9884	1.9577	2.1839
1c,2-Dimethylcyclopentane	N7	0.0962	0.0618	0.0611
Methylcyclohexane	N7	2.5485	1.6360	1.6213
2,2-Dimethylhexane	I8	0.1422	0.1062	0.1165
Ethylcyclopentane	N7	0.5221	0.3352	0.3337
2,5-Dimethylhexane	I8	0.0545	0.0407	0.0447
2,2,3-Trimethylpentane	I8	0.0308	0.0230	0.0245

2,4-Dimethylhexane	I8	0.1304	0.0974	0.1066
1c,2t,4-Trimethylcyclopentane	N8	0.2533	0.1858	0.1857
3,3-Dimethylhexane	I8	0.0154	0.0115	0.0124
2,3,4-Trimethylpentane	I8	0.0685	0.0512	0.0543
2,3,3-Trimethylpentane	I8	0.0010	0.0007	0.0007
Toluene	A7	1.9672	1.1850	1.0406
2,3-Dimethylhexane	I8	0.1384	0.1034	0.1108
2-Methyl-3-ethylpentane	I8	0.1021	0.0763	0.0809
1,1,2-Trimethylcyclopentane	N8	0.0071	0.0052	0.0051
2-Methylheptane	I8	0.9716	0.7256	0.7918
4-Methylheptane	I8	0.2881	0.2152	0.2292
3-Methyl-3-ethylpentane	I8	0.0266	0.0199	0.0209
3,4-Dimethylhexane	I8	0.0198	0.0148	0.0157
1c,2c,4-Trimethylcyclopentane	N8	0.0240	0.0176	0.0174
1c,3-Dimethylcyclohexane	N8	0.0095	0.0070	0.0070
3-Methylheptane	I8	0.2621	0.1957	0.2117
1c,2t,3-Trimethylcyclopentane	N8	0.8034	0.5894	0.5839
3-Ethylhexane	I8	0.1323	0.0988	0.1058
1t,4-Dimethylcyclohexane	N8	0.1891	0.1387	0.1388
1,1-Dimethylcyclohexane	N8	0.0644	0.0472	0.0461
2,2,5-Trimethylhexane	I9	0.0054	0.0045	0.0048
3c-Ethylmethylcyclopentane	N8	0.0011	0.0008	0.0008
3t-Ethylmethylcyclopentane	N8	0.1744	0.1279	0.1273
2t-Ethylmethylcyclopentane	N8	0.1515	0.1111	0.1103
1,1-Methylethylcyclopentane	N8	0.5374	0.3942	0.3854
2,2,4-Trimethylhexane	I9	0.0220	0.0184	0.0196
1t,2-Dimethylcyclohexane	N8	0.3775	0.2769	0.2725
1t,3-Dimethylcyclohexane	N8	0.0081	0.0059	0.0057
UnknownC7s	U7	0.0472	0.0309	0.0345
n-Octane	P8	2.2135	1.6531	1.7953
1c,4-Dimethylcyclohexane	N8	0.2837	0.2081	0.2029
i-Propylcyclopentane	I8	0.0597	0.0438	0.0431
2,4,4-Trimethylhexane	I9	0.0116	0.0097	0.0103
2,2,3,4-Tetramethylpentane	I9	0.0127	0.0107	0.0114
2,3,4-Trimethylhexane	I9	0.0097	0.0081	0.0086
1c,2-Dimethylcyclohexane	N8	0.0833	0.0611	0.0586
2,3,5-Trimethylhexane	I9	0.0714	0.0599	0.0633
2,2-Dimethylheptane	I9	0.0120	0.0101	0.0108
1,1,4-Trimethylcyclohexane	N9	0.8211	0.6777	0.6703
2,2,3-Trimethylhexane	I9	0.2960	0.2482	0.2598
2,4-Dimethylheptane	I9	0.0264	0.0221	0.0236
4,4-Dimethylheptane	I9	0.0300	0.0252	0.0269
Ethylcyclohexane	N8	0.4325	0.3173	0.3075
n-Propylcyclopentane	N8	0.1578	0.1158	0.1138
1c,3c,5-Trimethylcyclohexane	N9	0.0214	0.0177	0.0175
2,5-Dimethylheptane	I9	0.0692	0.0580	0.0618
3,3-Dimethylheptane	I9	0.0631	0.0529	0.0563
3,5-Dimethylheptane	I9	0.0555	0.0465	0.0495
2,6-Dimethylheptane	I9	0.0507	0.0425	0.0458
1,1,3-Trimethylcyclohexane	N9	0.0593	0.0489	0.0484
Ethylbenzene	A8	0.6120	0.4248	0.3730
1c,2t,4t-Trimethylcyclohexane	N9	0.2926	0.2415	0.2343
2,3-Dimethylheptane	I9	0.0747	0.0626	0.0658
1,3-Dimethylbenzene (m-Xylene)	A8	0.6334	0.4397	0.3883
1,4-Dimethylbenzene (p-Xylene)	A8	0.6490	0.4505	0.3991
3,4-Dimethylheptane	I9	0.1038	0.0870	0.0908
3,4-Dimethylheptane (2)	I9	0.1041	0.0873	0.0911
4-Ethylheptane	I9	0.0485	0.0407	0.0434
4-Methyloctane	I9	0.2492	0.2090	0.2214
2-Methyloctane	I9	0.3095	0.2595	0.2776
1c,2t,4c-Trimethylcyclohexane	I9	0.0458	0.0384	0.0404
3-Ethylheptane	I9	0.0325	0.0272	0.0286
3-Methyloctane	I9	0.3849	0.3228	0.3419
3,3-Diethylpentane	I9	0.0423	0.0355	0.0359
1c,2t,3-Trimethylcyclohexane	N9	0.0673	0.0555	0.0538
1,1,2-Trimethylcyclohexane	N9	0.0232	0.0191	0.0185
1,2-Dimethylbenzene (o-Xylene)	A8	0.5986	0.4155	0.3605
i-Butylcyclopentane	N9	0.2813	0.2322	0.2270
UnknownC8s	U8	0.0450	0.0336	0.0365
n-Nonane	P9	1.8923	1.5868	1.6878
1,1-Methylethylcyclohexane	N9	0.1684	0.1412	0.1506
i-Propylbenzene	A9	0.3390	0.2664	0.2355
i-Propylcyclohexane	N9	0.0668	0.0551	0.0525
2,2-Dimethyloctane	I10	0.0556	0.0517	0.0534

2,4-Dimethyloctane	I10	0.0541	0.0503	0.0519
2,6-Dimethyloctane	I10	0.0303	0.0282	0.0301
2,5-Dimethyloctane	I10	0.0094	0.0087	0.0090
n-Butylcyclopentane	N9	0.3050	0.2797	0.2673
3,3-Dimethyloctane	I10	0.0662	0.0616	0.0636
n-Propylbenzene	A9	0.4844	0.3806	0.3365
3,6-Dimethyloctane	I10	0.3177	0.2955	0.3051
3-Methyl-5-ethylheptane	I10	0.5137	0.4308	0.4532
1,3-Methylethylbenzene	A9	0.3971	0.3120	0.2736
1,4-Methylethylbenzene	A9	0.3098	0.2434	0.2134
1,3,5-Trimethylbenzene	A9	0.1636	0.1286	0.1135
2,3-Dimethyloctane	I10	0.1944	0.1808	0.1867
5-Methylnonane	I10	0.4110	0.3823	0.3984
1,2-Methylethylbenzene	A9	0.3010	0.2365	0.2063
2-Methylnonane	I10	0.0276	0.0257	0.0270
3-Ethyloctane	I10	0.0813	0.0756	0.0781
3-Methylnonane	I10	0.1759	0.1636	0.1703
1,2,4-Trimethylbenzene	A9	0.0666	0.0523	0.0456
t-Butylbenzene	A10	0.2282	0.2002	0.1765
i-Butylcyclohexane	N10	0.1834	0.1682	0.1582
1t-Methyl-2-n-propylcyclohexane	I10	0.0853	0.0715	0.0752
i-Butylbenzene	A10	0.0878	0.0770	0.0689
sec-Butylbenzene	A10	0.1481	0.1300	0.1152
UnknownC9s	U9	1.0989	0.9215	0.9801
n-Decane	P10	1.6119	1.4994	1.5680
1,2,3-Trimethylbenzene	A9	0.2265	0.1780	0.1521
1,3-Methyl-i-propylbenzene	A10	0.0968	0.0761	0.0664
1,4-Methyl-i-propylbenzene	A10	0.1086	0.0853	0.0744
Sec-Butylcyclohexane	N10	0.4420	0.4053	0.3808
1,2-Methyl-i-propylbenzene	A10	0.2066	0.1813	0.1580
3-Ethylnonane	I10	0.0561	0.0522	0.0549
1,3-Diethylbenzene	A10	0.2042	0.1792	0.1585
1,3-Methyl-n-propylbenzene	A10	0.0733	0.0643	0.0571
1,4-Diethylbenzene	A10	0.2858	0.2508	0.2223
1,4-Methyl-n-propylbenzene	A10	0.0972	0.0853	0.0759
n-Butylbenzene	A10	0.1600	0.1404	0.1245
1,3-Dimethyl-5-ethylbenzene	A10	0.2451	0.2151	0.1900
1,2-Diethylbenzene	A10	0.0702	0.0616	0.0535
1,2-Methyl-n-propylbenzene	A10	0.1566	0.1374	0.1201
1,4-Dimethyl-2-ethylbenzene	A10	0.1811	0.1589	0.1384
1,3-Dimethyl-4-ethylbenzene	A10	0.0908	0.0797	0.0695
1,2-Dimethyl-4-ethylbenzene	A10	0.2462	0.2160	0.1887
1,3-Dimethyl-2-ethylbenzene	A10	0.0223	0.0196	0.0168
1t,2c,4-Trimethylcyclopentane	A10	0.3279	0.2406	0.2457
1,2-Dimethyl-3-ethylbenzene	A10	0.2409	0.2114	0.1810
1,2-Ethyl-i-propylbenzene	A10	0.0505	0.0443	0.0386
1,4-Methyl-t-butylbenzene	A11	0.1352	0.1186	0.1034
UnknownC10s	U10	2.1561	2.0056	2.0973
n-Undecane	P11	1.4423	1.4739	1.5200
1,4-Ethyl-i-propylbenzene	A11	0.1802	0.1581	0.1378
1,2,4,5-Tetramethylbenzene	A11	0.0637	0.0559	0.0482
1,2-Methyl-n-butylbenzene	A11	0.2865	0.2514	0.2191
1,2,3,5-Tetramethylbenzene	A11	0.0445	0.0391	0.0336
1,2-Methyl-t-butylbenzene	A11	0.1874	0.1644	0.1433
5-Methylindan	A11	0.0195	0.0217	0.0221
4-Methylindan	A11	0.1349	0.1502	0.1532
1,2-Ethyl-n-propylbenzene	A11	0.2506	0.2199	0.1916
2-Methylindan	A11	0.0963	0.1072	0.1093
1,3-Methyl-n-butylbenzene	A11	0.1988	0.1744	0.1520
1,3-Di-i-propylbenzene	A11	0.0667	0.0585	0.0510
sec-Pentylbenzene	A11	0.1584	0.1390	0.1211
n-Pentylbenzene	A11	0.1042	0.1010	0.0899
1t-M-2-(4MP)cyclopentane	P12	0.0185	0.0206	0.0210
1,2-Di-n-propylbenzene	A11	0.1263	0.1108	0.0966
1,4-Di-i-propylbenzene	A11	0.2351	0.2063	0.1798
Tetrahydronaphthalene	A10	0.0256	0.0225	0.0196
t-Decahydronaphthalene	A10	0.2025	0.1777	0.1549
Naphthalene	A10	0.1824	0.1528	0.1332
1-t-Butyl-3,5-dimethylbenzene	A12	0.0939	0.0824	0.0718
1,4-Ethyl-t-butylbenzene	A11	0.0987	0.0866	0.0755
UnknownC11s	U11	2.2945	2.3448	2.4181
n-Dodecane	P12	1.3239	1.4744	1.5038
1,3-Di-n-propylbenzene	A12	0.0818	0.0718	0.0626
1,3,5-Triethylbenzene	A12	0.0453	0.0356	0.0314

1,2,4-Triethylbenzene	A12	0.5120	0.4023	0.3507
1,4-Methyl-n-pentylbenzene	A12	0.1748	0.1534	0.1337
n-Hexylbenzene	A12	0.2167	0.2299	0.2048
1,2,3,4,5-Pentamethylbenzene	A13	0.3543	0.3109	0.2709
2-Methylnaphthalene	A11	0.4035	0.3751	0.3269
1-Methylnaphthalene	A11	0.1847	0.1717	0.1286
UnknownC12s	U12	2.1595	2.4049	2.4528
n-Tridecane	P13	1.2975	1.5639	1.5762
UnknownC13s	U13	2.5949	3.1277	3.1523
n-Tetradecane	P14	1.2693	1.6463	1.6559
UnknownC14s	U14	2.3865	3.0954	3.1134
n-Pentadecane	P15	1.2089	1.6789	1.6692
UnknownC15s	U15	2.3826	3.3089	3.2899
n-Hexadecane	P16	1.0589	1.5676	1.5485
UnknownC16s	U16	1.7746	2.6272	2.5952
n-Heptadecane	P17	0.8797	1.3830	1.3619
UnknownC17s	U17	1.4274	2.2441	2.2099
n-Octadecane	P18	0.7415	1.2338	1.2115
UnknownC18s	U18	1.5890	2.6439	2.5960
n-Nonadecane	P19	0.7785	1.3667	1.3334
UnknownC19s	U19	1.1073	1.9440	1.8966
n-Eicosane	P20	0.5997	1.1078	1.0749
UnknownC20s	U20	0.7281	1.3450	1.3050
n-Heneicosane	P21	0.5223	1.0127	0.9776
UnknownC21s	U21	0.6672	1.2937	1.2488
n-Docosane	P22	0.4537	0.9213	0.8863
UnknownC22s	U22	0.5432	1.1031	1.0612
n-Tricosane	P23	0.3903	0.8284	0.7946
UnknownC23s	U23	0.3980	0.8447	0.8103
n-Tetracosane	P24	0.3466	0.7674	0.7342
UnknownC24s	U24	0.3461	0.7663	0.7332
n-Pentacosane	P25	0.2553	0.5887	0.5631
UnknownC25s	U25	0.2371	0.5467	0.5229
n-Hexacosane	P26	0.2311	0.5541	0.5265
UnknownC26s	U26	0.2805	0.6725	0.6391
n-Heptacosane	P27	0.1494	0.3719	0.3531
UnknownC27s	U27	0.2015	0.5016	0.4763
n-Octacosane	P28	0.1168	0.3015	0.2857
UnknownC28s	U28	0.1590	0.4104	0.3889
n-Nonacosane	P29	0.1017	0.2718	0.2570
UnknownC29s	U29	0.1682	0.4495	0.4250
n-Triacontane Plus	P30	0.9708	2.6836	2.5336
TOTAL		100.0000	100.0000	100.0000

CRUDE OIL ASSAY

PROJECT NO. :	201501150	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	FEBRUARY 3, 2015
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 27, 2015
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK 15:25 O'HARE 1-29-11-57		EMPACT
FIELD DATA		SAMPLE TEMP. :	91
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

SPECIFICATION		TEST METHOD	UNITS	RESULTS
API GRAVITY			API 60/60	32.1
RVP @100 DEG F		D323	PSIG	5.4
TOTAL SULFUR		D2622	WT %	0.64
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
DISTILLATION:	@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