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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 31, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	6842
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10		EMPACT
	BRINGLESON 4-34-9-58		
FIELD DATA		SAMPLE TEMP. :	162
SAMPLE PRES. :	28	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
NITROGEN (AIR)	0.0256	0.0069	0.0063
CARBON DIOXIDE	0.0291	0.0123	0.0111
METHANE	0.0701	0.0108	0.0265
ETHANE	0.3322	0.0961	0.1985
PROPANE	1.6078	0.6824	0.9906
I-BUTANE	0.4335	0.2425	0.3171
N-BUTANE	2.2025	1.2320	1.5526
I-PENTANE	1.2784	0.8878	1.0463
N-PENTANE	2.3913	1.6605	1.9364
HEXANES PLUS	91.6295	95.1687	93.9146
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	1.8047	1.3567
TOLUENE	3.2594	2.8904
ETHYLBENZENE	0.7968	0.8142
XYLENE	2.2398	2.2887
TOTAL BTEX	8.1007	7.3500

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.736	0.7457	60/60
API Gravity =	60.76	58.25	60/60
Molecular Weight =	103.90	108.606	
Absolute Density =	6.14	6.22	LBS/GAL
Heating Value Liq. Idl Gas=	125326	126713	BTU/GAL
Vapor/Liquid =	22.50	21.81	CUFT/GAL
Vapor Pressure =	13.13	2.00	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. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 31, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	6842
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10 BRINGLESON 4-34-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	162
SAMPLE PRES. :	28	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0291		0.0123		0.0111	
NITROGEN (AIR)	0.0256		0.0069		0.0063	
METHANE	0.0701		0.0108		0.0265	
ETHANE	0.3322		0.0961		0.1985	
PROPANE	1.6078		0.6824		0.9906	
I-BUTANE	0.4335		0.2425		0.3171	
N-BUTANE	2.2025		1.2320		1.5526	
I-PENTANE	1.2784		0.8878		1.0463	
N-PENTANE	2.3913		1.6605		1.9364	
CYCLOPENTANE (N-C5)	1.6487		1.1128		1.0774	
N-HEXANE	7.6039		6.3075		6.9938	
CYCLOHEXANE (OTHER C6)	3.2141		2.6034		2.4456	
OTHER HEXANES	12.3453		10.1342		10.6707	
OTHER HEPTANES	15.1570		14.5121		15.0036	
METHYLCYCLOHEXANE (OTHER C7)	4.6928		4.4348		4.2131	
2,2,4 TRIMETHYLPENTANE	0.9695		0.9162		0.8949	
BENZENE	1.8047		1.3567		1.1310	
TOLUENE	3.2594		2.8904		2.4333	
ETHYLBENZENE	0.7968		0.8142		0.6853	
XYLENES	2.2398		2.2887		1.9305	
OTHER OCTANES	12.1439		13.3843		13.3461	
OCTANES PLUS	----	41.9036	----	51.8168	----	49.9461
NONANES	11.4126		13.9369		13.5428	
DECANES PLUS	14.3410		20.4765		19.5465	
SUB TOTAL	100.0000		100.0000		100.0000	
TOTAL	100.0000		100.0000		100.0000	

API Gravity =	**60.76**	60/60
Vapor Pressure =	**13.13**	PSIA & 100 F
Average Molecular Weight of Decanes plus =	**148.35**	
Average Specific Gravity of Decanes plus =	**0.7730**	

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BY CARBON NUMBER

PROJECT NO. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 31, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	6842
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10		EMPACT
	BRINGLESON 4-34-9-58		
FIELD DATA		SAMPLE TEMP. :	162
SAMPLE PRES. :	28	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
NITROGEN		0.0256	0.0069	0.0063
CARBON DIOXIDE		0.0291	0.0123	0.0111
	C1	0.0701	0.0108	0.0265
	C2	0.3322	0.0961	0.1985
	C3	1.6078	0.6824	0.9906
	C4	2.6360	1.4745	1.8697
	C5	5.3184	3.6611	4.0601
	C6	24.9680	20.4018	21.2411
	C7	23.1092	21.8373	21.6500
	C8	16.1500	17.4034	16.8568
	C9	11.4126	13.9369	13.5428
	C10	8.4304	11.0887	10.5751
	C11	3.0553	4.4564	4.2547
	C12	1.6815	2.6256	2.5152
	C13	0.4431	0.7742	0.7438
	C14	0.1632	0.3116	0.3004
	C15	0.2075	0.4243	0.4044
	C16	0.2798	0.6098	0.5774
	C17	0.0778	0.1801	0.1700
	C18	0.0024	0.0058	0.0055
	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. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 31, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
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LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10 BRINGLESON 4-34-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	162
SAMPLE PRES. :	28	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0256	0.0069	0.0063
Carbon Dioxide	NHC	0.0291	0.0123	0.0111
Methane	P1	0.0701	0.0108	0.0265
Ethane	P2	0.3322	0.0961	0.1985
Propane	P3	1.6078	0.6824	0.9906
i-Butane	I4	0.4335	0.2425	0.3171
n-Butane	P4	2.2025	1.2320	1.5526
2,2-Dimethylpropane	I5	0.0070	0.0049	0.0060
i-Pentane	I5	1.2714	0.8829	1.0403
n-Pentane	P5	2.3913	1.6605	1.9364
2,2-Dimethylbutane	I6	0.0451	0.0374	0.0421
Cyclopentane	N5	1.6487	1.1128	1.0774
2,3-Dimethylbutane	I6	0.4520	0.3749	0.4137
2-Methylpentane	I6	4.0651	3.3717	3.7727
3-Methylpentane	I6	2.3644	1.9611	2.1577
n-Hexane	P6	7.6039	6.3075	6.9938
2,2-Dimethylpentane	I7	0.0262	0.0253	0.0273
Methylcyclopentane	N6	5.4187	4.3891	4.2845
2,4-Dimethylpentane	I7	0.3004	0.2897	0.3152
2,2,3-Trimethylbutane	I7	0.0185	0.0178	0.0188
Benzene	A6	1.8047	1.3567	1.1310
3,3-Dimethylpentane	I7	0.0369	0.0356	0.0376
Cyclohexane	N6	3.2141	2.6034	2.4456
2-Methylhexane	I7	1.3334	1.2859	1.3870
2,3-Dimethylpentane	I7	0.8018	0.7732	0.8102
1,1-Dimethylcyclopentane	N7	0.3721	0.3516	0.3408
3-Methylhexane	I7	1.8726	1.8059	1.9185
1c,3-Dimethylcyclopentane	N7	1.0505	0.9928	0.9749
1t,3-Dimethylcyclopentane	N7	0.9695	0.9162	0.8949
3-Ethylpentane	I7	0.1611	0.1554	0.1624
1t,2-Dimethylcyclopentane	N7	2.1006	1.9851	1.9323
2,2,4-Trimethylpentane	I8	0.0903	0.0993	0.1045
n-Heptane	P7	5.1853	5.0006	5.3476
1c,2-Dimethylcyclopentane	N7	0.1447	0.1367	0.1295
Methylcyclohexane	N7	4.6928	4.4348	4.2131
2,2-Dimethylhexane	I8	0.5144	0.5655	0.5945
Ethylcyclopentane	N7	0.7834	0.7403	0.7066
2,5-Dimethylhexane	I8	0.1605	0.1765	0.1860
2,2,3-Trimethylpentane	I8	0.0280	0.0308	0.0315
2,4-Dimethylhexane	I8	0.2518	0.2768	0.2903
1c,2t,4-Trimethylcyclopentane	N8	0.4625	0.4995	0.4787

3,3-Dimethylhexane	I8	0.0486	0.0534	0.0550
2,3,4-Trimethylpentane	I8	0.1237	0.1360	0.1383
2,3,3-Trimethylpentane	I8	0.0045	0.0049	0.0049
Toluene	A7	3.2594	2.8904	2.4333
2,3-Dimethylhexane	I8	0.2581	0.2838	0.2917
2-Methyl-3-ethylpentane	I8	0.1679	0.1846	0.1877
1,1,2-Trimethylcyclopentane	N8	0.0088	0.0095	0.0090
2-Methylheptane	I8	1.4033	1.5428	1.6139
4-Methylheptane	I8	0.4455	0.4898	0.5000
3-Methyl-3-ethylpentane	I8	0.0680	0.0748	0.0753
3,4-Dimethylhexane	I8	0.1009	0.1109	0.1127
1c,2c,4-Trimethylcyclopentane	N8	0.0310	0.0335	0.0318
1c,3-Dimethylcyclohexane	N8	0.0268	0.0289	0.0276
3-Methylheptane	I8	0.6363	0.6996	0.7255
1c,2t,3-Trimethylcyclopentane	N8	1.1114	1.2003	1.1400
3-Ethylhexane	I8	0.1642	0.1805	0.1852
1t,4-Dimethylcyclohexane	N8	0.4884	0.5275	0.5061
1,1-Dimethylcyclohexane	N8	0.1295	0.1399	0.1311
3c-Ethylmethylcyclopentane	N8	0.0027	0.0029	0.0028
3t-Ethylmethylcyclopentane	N8	0.2434	0.2629	0.2509
2t-Ethylmethylcyclopentane	N8	0.2060	0.2225	0.2117
1,1-Methylethylcyclopentane	N8	0.7459	0.8055	0.7548
2,2,4-Trimethylhexane	I9	0.0586	0.0723	0.0739
1t,2-Dimethylcyclohexane	N8	0.6638	0.7169	0.6763
1t,3-Dimethylcyclohexane	N8	0.0058	0.0063	0.0059
n-Octane	P8	2.6323	2.8940	3.0129
1c,4-Dimethylcyclohexane	N8	0.6556	0.7080	0.6619
i-Propylcyclopentane	I8	0.1045	0.1129	0.1064
2,4,4-Trimethylhexane	I9	0.0268	0.0331	0.0335
2,2,3,4-Tetramethylpentane	I9	0.0214	0.0264	0.0269
2,3,4-Trimethylhexane	I9	0.0260	0.0321	0.0325
1c,2-Dimethylcyclohexane	N8	0.2369	0.2558	0.2352
2,3,5-Trimethylhexane	I9	0.0691	0.0853	0.0865
2,2-Dimethylheptane	I9	0.0170	0.0210	0.0216
1,1,4-Trimethylcyclohexane	N9	1.1156	1.3555	1.2852
2,2,3-Trimethylhexane	I9	0.4952	0.6113	0.6133
2,4-Dimethylheptane	I9	0.0245	0.0302	0.0309
4,4-Dimethylheptane	I9	0.0717	0.0885	0.0905
Ethylcyclohexane	N8	0.6286	0.6789	0.6308
n-Propylcyclopentane	N8	0.2469	0.2666	0.2512
1c,3c,5-Trimethylcyclohexane	N9	0.0547	0.0665	0.0630
2,5-Dimethylheptane	I9	0.1011	0.1248	0.1274
3,3-Dimethylheptane	I9	0.1032	0.1274	0.1301
3,5-Dimethylheptane	I9	0.0795	0.0981	0.1001
2,6-Dimethylheptane	I9	0.0672	0.0830	0.0857
1,1,3-Trimethylcyclohexane	N9	0.1049	0.1275	0.1209
Ethylbenzene	A8	0.7968	0.8142	0.6853
1c,2t,4t-Trimethylcyclohexane	N9	0.3414	0.4148	0.3858
2,3-Dimethylheptane	I9	0.0173	0.0214	0.0216
1,3-Dimethylbenzene (m-Xylene)	A8	0.6305	0.6443	0.5455
1,4-Dimethylbenzene (p-Xylene)	A8	0.9631	0.9841	0.8358
3,4-Dimethylheptane	I9	0.1761	0.2174	0.2175
3,4-Dimethylheptane (2)	I9	0.1771	0.2186	0.2187
4-Ethylheptane	I9	0.0414	0.0511	0.0523
4-Methyloctane	I9	0.2726	0.3365	0.3417
2-Methyloctane	I9	0.3396	0.4192	0.4299
1c,2t,4c-Trimethylcyclohexane	I9	0.0536	0.0662	0.0668
3-Ethylheptane	I9	0.0735	0.0907	0.0913
3-Methyloctane	I9	0.4544	0.5609	0.5695
3,3-Diethylpentane	I9	0.0657	0.0811	0.0787
1c,2t,3-Trimethylcyclohexane	N9	0.0877	0.1066	0.0991
1,1,2-Trimethylcyclohexane	N9	0.0285	0.0346	0.0322
1,2-Dimethylbenzene (o-Xylene)	A8	0.6462	0.6603	0.5492
i-Butylcyclopentane	N9	0.2962	0.3599	0.3373
UnknownC8s	U8	0.0166	0.0182	0.0189
n-Nonane	P9	1.6248	2.0057	2.0451
1,1-Methylethylcyclohexane	N9	0.5628	0.6947	0.7105
i-Propylbenzene	A9	0.2928	0.3387	0.2871
i-Propylcyclohexane	N9	0.1003	0.1219	0.1113
2,2-Dimethyloctane	I10	0.0607	0.0831	0.0822
2,4-Dimethyloctane	I10	0.0732	0.1002	0.0992
2,6-Dimethyloctane	I10	0.0109	0.0149	0.0152
2,5-Dimethyloctane	I10	0.0363	0.0497	0.0492

n-Butylcyclopentane	N9	0.3314	0.4474	0.4099
3,3-Dimethyloctane	I10	0.1241	0.1699	0.1683
n-Propylbenzene	A9	0.3753	0.4341	0.3680
3,6-Dimethyloctane	I10	0.2554	0.3498	0.3462
3-Methyl-5-ethylheptane	I10	0.4659	0.5751	0.5799
1,3-Methylethylbenzene	A9	0.3126	0.3616	0.3039
1,4-Methylethylbenzene	A9	0.1441	0.1667	0.1401
1,3,5-Trimethylbenzene	A9	0.1679	0.1942	0.1644
2,3-Dimethyloctane	I10	0.0500	0.0685	0.0678
5-Methylnonane	I10	0.2180	0.2985	0.2982
1,2-Methylethylbenzene	A9	0.4117	0.4763	0.3983
2-Methylnonane	I10	0.0660	0.0904	0.0911
3-Ethyloctane	I10	0.1134	0.1553	0.1537
3-Methylnonane	I10	0.2133	0.2921	0.2915
1,2,4-Trimethylbenzene	A9	0.0188	0.0218	0.0182
t-Butylbenzene	A10	0.3965	0.5122	0.4330
i-Butylcyclohexane	N10	0.2112	0.2851	0.2571
1t-Methyl-2-n-propylcyclohexane	I10	0.0840	0.1037	0.1046
i-Butylbenzene	A10	0.0492	0.0636	0.0546
sec-Butylbenzene	A10	0.0993	0.1283	0.1090
UnknownC9s	U9	2.0213	2.4952	2.5442
n-Decane	P10	1.0255	1.4043	1.4078
1,2,3-Trimethylbenzene	A9	0.1872	0.2166	0.1774
1,3-Methyl-i-propylbenzene	A10	0.1035	0.1197	0.1001
1,4-Methyl-i-propylbenzene	A10	0.0846	0.0979	0.0819
Sec-Butylcyclohexane	N10	0.2435	0.3287	0.2960
1,2-Methyl-i-propylbenzene	A10	0.0979	0.1265	0.1057
3-Ethylnonane	I10	0.0332	0.0455	0.0458
1,3-Diethylbenzene	A10	0.0891	0.1151	0.0976
1,3-Methyl-n-propylbenzene	A10	0.0418	0.0540	0.0459
1,4-Diethylbenzene	A10	0.0927	0.1197	0.1017
1,4-Methyl-n-propylbenzene	A10	0.1273	0.1644	0.1402
n-Butylbenzene	A10	0.1032	0.1333	0.1133
1,3-Dimethyl-5-ethylbenzene	A10	0.0653	0.0844	0.0715
1,2-Diethylbenzene	A10	0.0318	0.0411	0.0342
1,2-Methyl-n-propylbenzene	A10	0.0534	0.0690	0.0578
1,4-Dimethyl-2-ethylbenzene	A10	0.0742	0.0959	0.0801
1,3-Dimethyl-4-ethylbenzene	A10	0.0380	0.0491	0.0410
1,2-Dimethyl-4-ethylbenzene	A10	0.2116	0.2733	0.2289
1,3-Dimethyl-2-ethylbenzene	A10	0.0588	0.0760	0.0625
1t,2c,4-Trimethylcyclopentane	A10	0.6019	0.6500	0.6363
1,2-Dimethyl-3-ethylbenzene	A10	0.1590	0.2054	0.1686
1,2-Ethyl-i-propylbenzene	A10	0.0416	0.0537	0.0449
1,4-Methyl-t-butylbenzene	A11	0.0278	0.0359	0.0300
UnknownC10s	U10	2.3499	3.2179	3.2259
n-Undecane	P11	0.5745	0.8643	0.8544
1,4-Ethyl-i-propylbenzene	A11	0.0824	0.1064	0.0889
1,2,4,5-Tetramethylbenzene	A11	0.0571	0.0738	0.0610
1,2-Methyl-n-butylbenzene	A11	0.0512	0.0661	0.0552
1,2,3,5-Tetramethylbenzene	A11	0.0546	0.0705	0.0580
1,2-Methyl-t-butylbenzene	A11	0.0588	0.0760	0.0635
5-Methylindan	A11	0.0218	0.0357	0.0349
4-Methylindan	A11	0.0168	0.0275	0.0269
1,2-Ethyl-n-propylbenzene	A11	0.0517	0.0668	0.0558
2-Methylindan	A11	0.0179	0.0293	0.0286
1,3-Methyl-n-butylbenzene	A11	0.0254	0.0328	0.0274
1,3-Di-i-propylbenzene	A11	0.0192	0.0248	0.0207
sec-Pentylbenzene	A11	0.0894	0.1155	0.0965
n-Pentylbenzene	A11	0.0139	0.0198	0.0169
1t-M-2-(4MP)cyclopentane	P12	0.0167	0.0274	0.0268
1,2-Di-n-propylbenzene	A11	0.0354	0.0457	0.0382
1,4-Di-i-propylbenzene	A11	0.0357	0.0461	0.0385
Tetrahydronaphthalene	A10	0.0198	0.0256	0.0214
t-Decahydronaphthalene	A10	0.1038	0.1341	0.1120
Naphthalene	A10	0.0516	0.0637	0.0532
1-t-Butyl-3,5-dimethylbenzene	A12	0.0256	0.0331	0.0276
1,4-Ethyl-t-butylbenzene	A11	0.0619	0.0800	0.0668
UnknownC11s	U11	1.7008	2.5587	2.5295
n-Dodecane	P12	0.2783	0.4563	0.4461
1,3-Di-n-propylbenzene	A12	0.0237	0.0306	0.0256
1,3,5-Triethylbenzene	A12	0.0402	0.0465	0.0393
1,2,4-Triethylbenzene	A12	0.1750	0.2024	0.1692
1,4-Methyl-n-pentylbenzene	A12	0.0259	0.0335	0.0280

n-Hexylbenzene	A12	0.0160	0.0250	0.0213
1,2,3,4,5-Pentamethylbenzene	A13	0.0249	0.0322	0.0269
2-Methylnaphthalene	A11	0.0313	0.0428	0.0358
1-Methylnaphthalene	A11	0.0277	0.0379	0.0272
UnknownC12s	U12	1.0801	1.7708	1.7313
n-Tridecane	P13	0.0340	0.0603	0.0583
UnknownC13s	U13	0.3842	0.6817	0.6586
n-Tetradecane	P14	0.0202	0.0386	0.0372
UnknownC14s	U14	0.1430	0.2730	0.2632
n-Pentadecane	P15	0.1254	0.2564	0.2444
UnknownC15s	U15	0.0821	0.1679	0.1600
n-Hexadecane	P16	0.0948	0.2066	0.1956
UnknownC16s	U16	0.1850	0.4032	0.3818
n-Heptadecane	P17	0.0060	0.0139	0.0131
UnknownC17s	U17	0.0718	0.1662	0.1569
n-Octadecane	P18	0.0003	0.0007	0.0007
UnknownC18s	U18	0.0021	0.0051	0.0048
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. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 30, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	0350
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS @ 14:25 BRINGLESON 4-34-9-58		
FIELD DATA		SAMPLE TEMP. :	89
SAMPLE PRES. :	120	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :			

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0012	0.0025		
HELIUM	0.02	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	1.21	1.38	---	---
CARBON DIOXIDE	2.27	4.08	---	---
METHANE	68.19300	44.63490	---	---
ETHANE	11.5781	14.2040	3.0925	3.1094
PROPANE	10.1847	18.3230	2.8031	2.8184
I-BUTANE	0.9893	2.3460	0.3235	0.3252
N-BUTANE	3.3346	7.9075	1.0505	1.0563
I-PENTANE	0.6514	1.9120	0.2343	0.2356
N-PENTANE	0.7563	2.2263	0.2734	0.2749
HEXANES PLUS	0.7914	2.9738	0.3162	0.3179
TOTALS	100.00000	100.00000	8.0935	8.1377

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0274	0.0873
TOLUENE	0.0173	0.0650
ETHYLBENZENE	0.0025	0.0108
XYLENES	0.0038	0.0165
TOTAL BTEX	0.0510	0.1796

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1263.5 **/scf**	1270.4 **/scf**
	NET WET REAL :	1241.4 **/scf**	1248.4 **/scf**
HIGH	GROSS DRY REAL :	1387.9 **/scf**	1395.5 **/scf**
	GROSS WET REAL :	1363.6 **/scf**	1371.2 **/scf**
	NET DRY REAL :	19577.4 **/lb**	19684.3 **/lb**
	GROSS DRY REAL :	21507.8 **/lb**	21625.2 **/lb**
	RELATIVE DENSITY (AIR=1):		0.8454
	COMPRESSIBILITY FACTOR :		0.99542

(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

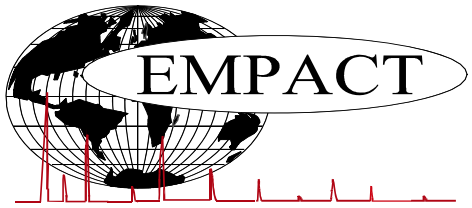
EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 30, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	0350
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS @ 14:25 BRINGLESON 4-34-9-58		
FIELD DATA		SAMPLE TEMP. :	89
SAMPLE PRES. :	120	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :			

SPOT; PROBE; LENTGTH OF H2S STAIN @ 18.0 PPM @ 14:30

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	2.27	4.08
Nitrogen	1.21	1.38
Methane	68.19300	44.63490
Ethane	11.5781	14.2040
Propane	10.1847	18.3230
Isobutane	0.9893	2.3460
n-Butane	3.3346	7.9075
Isopentane	0.5852	1.7226
n-Pentane	0.7563	2.2263
Cyclopentane	0.0662	0.1894
n-Hexane	0.1594	0.5604
Cyclohexane	0.0415	0.1425
Other Hexanes	0.2872	1.0017
Heptanes	0.1404	0.5696
Methycyclohexane	0.0319	0.1278
2,2,4 Trimethylpentane	0.0001	0.0005
Benzene	0.0274	0.0873
Toluene	0.0173	0.0650
Ethylbenzene	0.0025	0.0108
Xylenes	0.0038	0.0165
C8+ Heavies	0.0799	0.3917
Subtotal	99.98880	99.98750
Oxygen/Argon	0.01	0.01
Alcohols	0.0012	0.0025
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201305177	ANALYSIS NO. :	01
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 30, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	0350
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS @ 14:25 BRINGLESON 4-34-9-58		
FIELD DATA		SAMPLE TEMP. :	89
SAMPLE PRES. :	120	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :			

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.02	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.01	---	---
Nitrogen	---	1.21	1.38	---	---
Carbon Dioxide	---	2.27	4.08	---	---
Methane	P1	68.19300	44.63490	---	---
Ethane	P2	11.5781	14.2040	3.093	3.109
Propane	P3	10.1847	18.3230	2.803	2.818
i-Butane	I4	0.9893	2.3460	0.324	0.325
n-Butane	P4	3.3346	7.9075	1.051	1.056
2,2-Dimethylpropane	I5	0.0021	0.0062	0.001	0.001
Ethanol	X2	0.0009	0.0017	0.000	0.000
i-Pentane	I5	0.5831	1.7164	0.213	0.215
i-Propanol	X3	0.0001	0.0002	0.000	0.000
n-Pentane	P5	0.7562	2.2260	0.273	0.275
t-Butanol	X4	0.0002	0.0006	0.000	0.000
2,2-Dimethylbutane	I6	0.0016	0.0056	0.001	0.001
Cyclopentane	N5	0.0662	0.1894	0.020	0.020
2,3-Dimethylbutane	I6	0.0106	0.0373	0.004	0.004
2-Methylpentane	I6	0.1165	0.4096	0.048	0.048
3-Methylpentane	I6	0.0609	0.2141	0.025	0.025
UnknownC5s	U5	0.0001	0.0003	0.000	0.000
n-Hexane	P6	0.1594	0.5604	0.065	0.066
2,2-Dimethylpentane	I7	0.0004	0.0016	0.000	0.000
Methylcyclopentane	N6	0.0976	0.3351	0.034	0.034
2,4-Dimethylpentane	I7	0.0036	0.0147	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0001	0.0004	0.000	0.000
Benzene	A6	0.0274	0.0873	0.008	0.008
3,3-Dimethylpentane	I7	0.0003	0.0012	0.000	0.000
Cyclohexane	N6	0.0415	0.1425	0.014	0.014
2-Methylhexane	I7	0.0165	0.0674	0.008	0.008
2,3-Dimethylpentane	I7	0.0077	0.0315	0.003	0.003
1,1-Dimethylcyclopentane	N7	0.0038	0.0152	0.002	0.002
3-Methylhexane	I7	0.0192	0.0785	0.009	0.009
1c,3-Dimethylcyclopentane	N7	0.0110	0.0441	0.005	0.005
1t,3-Dimethylcyclopentane	N7	0.0099	0.0397	0.005	0.005
3-Ethylpentane	I7	0.0011	0.0045	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0203	0.0813	0.009	0.009
2,2,4-Trimethylpentane	I8	0.0001	0.0005	0.000	0.000
n-Heptane	P7	0.0395	0.1615	0.018	0.018
1c,2-Dimethylcyclopentane	N7	0.0014	0.0056	0.001	0.001
Methylcyclohexane	N7	0.0319	0.1278	0.013	0.013
2,2-Dimethylhexane	I8	0.0024	0.0112	0.001	0.001

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Ethylcyclopentane	N7	0.0055	0.0220	0.002	0.002
2,5-Dimethylhexane	I8	0.0009	0.0042	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0001	0.0005	0.000	0.000
2,4-Dimethylhexane	I8	0.0014	0.0065	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0028	0.0128	0.001	0.001
3,3-Dimethylhexane	I8	0.0002	0.0009	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0033	0.0151	0.002	0.002
2,3,4-Trimethylpentane	I8	0.0006	0.0028	0.000	0.000
Toluene	A7	0.0173	0.0650	0.006	0.006
2,3-Dimethylhexane	I8	0.0013	0.0061	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0007	0.0033	0.000	0.000
2-Methylheptane	I8	0.0064	0.0298	0.003	0.003
4-Methylheptane	I8	0.0017	0.0079	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0002	0.0009	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0009	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0002	0.0009	0.000	0.000
3-Methylheptane	I8	0.0023	0.0107	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0047	0.0215	0.002	0.002
3-Ethylhexane	I8	0.0007	0.0033	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0015	0.0069	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0023	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0010	0.0046	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0009	0.0041	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0028	0.0128	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0002	0.0011	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0022	0.0101	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0005	0.000	0.000
UnknownC7s	U7	0.0001	0.0004	0.000	0.000
n-Octane	P8	0.0095	0.0443	0.005	0.005
1c,4-Dimethylcyclohexane	N8	0.0009	0.0041	0.000	0.000
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	0.0001	0.0005	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0005	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0005	0.0023	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0029	0.0149	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0010	0.0052	0.001	0.001
2,4-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
Ethylcyclohexane	N8	0.0015	0.0069	0.001	0.001
n-Propylcyclopentane	N8	0.0005	0.0023	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
2,5-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
Ethylbenzene	I8	0.0025	0.0108	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0005	0.0026	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0019	0.0082	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0005	0.0022	0.000	0.000
3,4-Dimethylheptane	I9	0.0013	0.0068	0.001	0.001
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	0.0006	0.0031	0.000	0.000
2-Methyloctane	I9	0.0006	0.0031	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
3-Methyloctane	I9	0.0007	0.0037	0.000	0.000

3,3-Diethylpentane	I9	0.0001	0.0005	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0014	0.0061	0.001	0.001
i-Butylcyclopentane	N9	0.0005	0.0026	0.000	0.000
n-Nonane	P9	0.0026	0.0136	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0003	0.0016	0.000	0.000
i-Propylbenzene	A9	0.0004	0.0020	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0005	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
2,5-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
n-Butylcyclopentane	N9	0.0005	0.0026	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
n-Propylbenzene	A9	0.0004	0.0020	0.000	0.000
3,6-Dimethyloctane	I10	0.0003	0.0018	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0004	0.0023	0.000	0.000
1,3-Methylethylbenzene	A9	0.0004	0.0020	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0010	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0010	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
5-Methylnonane	I10	0.0002	0.0011	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0010	0.000	0.000
3-Methylnonane	I10	0.0002	0.0011	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0016	0.000	0.000
i-Butylcyclohexane	N10	0.0002	0.0011	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	0.0028	0.0147	0.002	0.002
n-Decane	P10	0.0008	0.0047	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0005	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
1,3-Diethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Diethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,2-Diethylbenzene	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
UnknownC10s	U10	0.0026	0.0151	0.002	0.002
n-Undecane	P11	0.0003	0.0019	0.000	0.000
UnknownC11s	U11	0.0007	0.0045	0.000	0.000
n-Dodecane	P12	0.0001	0.0007	0.000	0.000
UnknownC12s	U12	0.0002	0.0013	0.000	0.000
n-Tridecane	P13	0.0001	0.0007	0.000	0.000
n-Hexadecane	P16	0.0001	0.0009	0.000	0.000
n-Heptadecane	P17	0.0001	0.0010	0.000	0.000
UnknownC20s	U20	0.0001	0.0011	0.000	0.000
TOTAL		100.00000	100.00000	8.0935	8.1377

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0274	0.0873
TOLUENE	0.0173	0.0650
ETHYLBENZENE	0.0025	0.0108
XYLENES	0.0038	0.0165
TOTAL BTEX	0.0510	0.1796

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1263.5 **/scf**	1270.4 **/scf**
	NET WET REAL :	1241.4 **/scf**	1248.4 **/scf**
HIGH	GROSS DRY REAL :	1387.9 **/scf**	1395.5 **/scf**
	GROSS WET REAL :	1363.6 **/scf**	1371.2 **/scf**
	NET DRY REAL :	19577.4 **/lb**	19684.3 **/lb**
	GROSS DRY REAL :	21507.8 **/lb**	21625.2 **/lb**

RELATIVE DENSITY (AIR=1): 0.8454

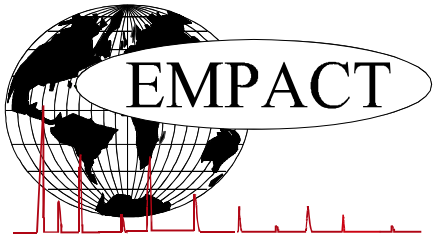
COMPRESSIBILITY FACTOR : 0.99542

(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



CRUDE OIL ASSAY

PROJECT NO. :	201305177	ANALYSIS NO. :	03
COMPANY NAME :	CARRIZO OIL & GAS	ANALYSIS DATE:	MAY 30, 2013
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2013
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK @ 14:35 BRINGLESON 4-34-9-58		EMPACT
FIELD DATA		SAMPLE TEMP. :	103
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

SPECIFICATION	TEST METHOD	UNITS	RESULTS
API GRAVITY		API 60/60	33.5
RVP @100 DEG F	D323	PSIG	5.7
SULFUR	D2622	WT %	0.449
VISUAL APPEARANCE			VISCOUS, DARK BROWN

ND: NOT DETECTED