CRUDE OIL ASSAY

LEASE #:		NAME/DESCRIP :	**TIMBRO 1-34-10-59** **TANK BATTERY TK#134112**
PROJECT NO. :	**201506097**	ANALYSIS NO. :	**04**
COMPANY NAME :	**CARRIZO OIL & GAS, INC**	ANALYSIS DATE:	JUNE 29, 2015
OFFICE / BRANCH:	COLORADO	SAMPLE DATE :	JUNE 12, 2015 13:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :		CYLINDER NO. :	1L GLASS
LAB PRES:		SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	89	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:			
FIELD COMMENTS:			
LAB COMMENTS:			

SPECIFICATION		TEST METHOD	DETECTION LIMIT	UNITS	RESULTS
API GRAVITY				API 60/60	36.9
RVP @100 DEG F		D323		PSIG	7.2
TOTAL SULFUR		D2622		Wt %	0.3510
VISUAL APPEARANCE					N/A
BS&W		D96			
Crude Oil				Vol %	N/A
Water				Vol %	N/A
Emulsion				Vol %	N/A
Sediment				Vol %	N/A
VISCOSITY		D445			
Average Centipoise	45° F			° F cP	N/A
Average Centipoise	65° F			° F cP	N/A
Average Centipoise	85° F			° F cP	N/A
Kinetic Viscosity	45° F			cSt (mm2/s)	N/A
Kinetic Viscosity	65° F			cSt (mm2/s)	N/A
Kinetic Viscosity	85° F			cSt (mm2/s)	N/A
FLASH POINT		D93	<40	° F	N/A
POUR POINT		D3227	<-110	° F	N/A
CLOUD POINT		D2500		° F	N/A
DISTILLATION:		D86			
Initial Point				° F	N/A
50%				° F	N/A
90%				° F	N/A
Final Boiling Point 100%				° F	N/A
PARAFFINS		Distillation		Wt %	N/A
ASPHALTENES		D6560 M	<0.02	Wt %	N/A
TOTAL CHLORIDE		D86/XFR	<0.001	Wt %	N/A
ORGANIC CHLORIDE		D4929	<0.0001	Vol %	N/A

BDL: BELOW DETECTION LIMIT

N/A: NO TEST PREFORMED FOR THIS PARAMETER

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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201506097	ANALYSIS NO. :	05
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 18, 2015 09:44
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	2012
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 TREATER		EMPACT
FIELD DATA		SAMPLE TEMP. :	170
SAMPLE PRES. :	20	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
ALCOHOLS	0.0597	0.0158	0.0149
NITROGEN (AIR)	0.1170	0.0270	0.0250
CARBON DIOXIDE	0.0190	0.0069	0.0063
METHANE	0.0700	0.0092	0.0230
ETHANE	0.2850	0.0706	0.1487
PROPANE	1.3610	0.4942	0.7313
I-BUTANE	0.4060	0.1943	0.2590
N-BUTANE	1.9470	0.9317	1.1969
I-PENTANE	0.9398	0.5582	0.6712
N-PENTANE	1.5780	0.9374	1.1142
UNKNOWN C1-C5	0.0018	0.0009	0.0012
HEXANES PLUS	93.2157	96.7538	95.8083
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	1.0421	0.6702
TOLUENE	2.3408	1.7757
ETHYLBENZENE	0.7339	0.6415
XYLENE	2.1796	1.9053
TOTAL BTEX	6.2964	4.9927

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.7508	0.7574	60/60
API Gravity =	56.97	55.32	60/60
Molecular Weight =	121.46	126.788	
Absolute Density =	6.26	6.32	LBS/GAL
Heating Value Liq. Idl Gas=	126542	127902	BTU/GAL
Vapor/Liquid =	19.74	19.15	CUFT/GAL
Vapor Pressure =	11.41	1.38	PSIA @100 F

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

***Calculated values may error depending on amount of unknown components in DHA, physical testing may be required.**

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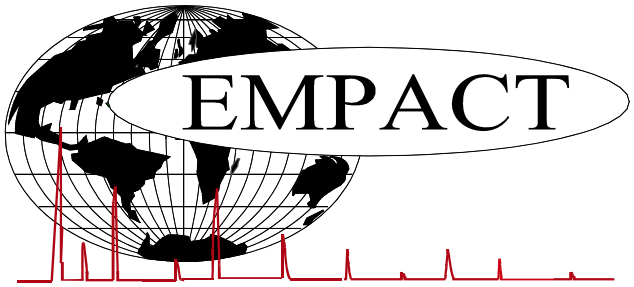

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201506097	ANALYSIS NO. :	05
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 18, 2015 09:44
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	2012
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 TREATER		EMPACT
FIELD DATA		SAMPLE TEMP. :	170
SAMPLE PRES. :	20	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0190		0.0069		0.0063	
NITROGEN (AIR)	0.1170		0.0270		0.0250	
METHANE	0.0700		0.0092		0.0230	
ETHANE	0.2850		0.0706		0.1487	
PROPANE	1.3610		0.4942		0.7313	
I-BUTANE	0.4060		0.1943		0.2590	
N-BUTANE	1.9470		0.9317		1.1969	
I-PENTANE	0.9398		0.5582		0.6712	
N-PENTANE	1.5780		0.9374		1.1142	
CYCLOPENTANE (N-C5)	1.1887		0.6864		0.6774	
UNKNOWN C1-C5	0.0018		0.0009		0.0012	
N-HEXANE	5.4534		3.8693		4.3729	
CYCLOHEXANE (OTHER C6)	2.2409		1.5527		1.4868	
OTHER HEXANES	8.3343		5.8517		6.2597	
OTHER HEPTANES	11.4969		9.4302		9.9702	
METHYLCYCLOHEXANE (OTHER C7)	3.8100		3.0801		2.9827	
2,2,4 TRIMETHYLPENTANE	0.3262		0.2637		0.2626	
BENZENE	1.0421		0.6702		0.5695	
TOLUENE	2.3408		1.7757		1.5237	
ETHYLBENZENE	0.7339		0.6415		0.5504	
XYLENES	2.1796		1.9053		1.6381	
OTHER OCTANES	10.6371		9.9585		10.0879	
OCTANES PLUS	----	57.3086	----	69.8375	----	67.9654
NONANES	10.4042		10.8821		10.7980	
DECANES PLUS	33.0276		46.1864		44.6284	
SUB TOTAL	99.9403		99.9842		99.9851	
ALCOHOLS	0.0597		0.0158		0.0149	
TOTAL	100.0000		100.0000		100.0000	

API Gravity =	**56.97**	60/60
Vapor Pressure =	**11.41**	PSIA & 100 F
Average Molecular Weight of Decanes plus =	**169.85**	
Average Specific Gravity of Decanes plus =	**0.7790**	

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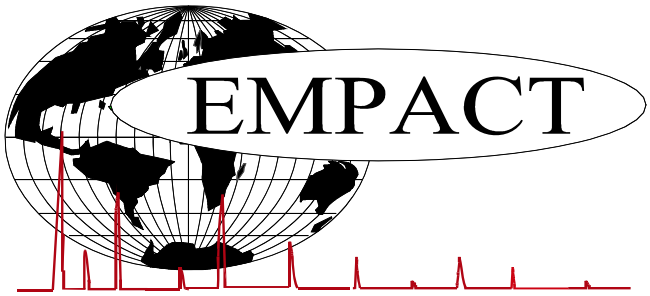

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

BY CARBON NUMBER

PROJECT NO. :	201506097	ANALYSIS NO. :	05
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 18, 2015 09:44
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	2012
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 TREATER		EMPACT
FIELD DATA		SAMPLE TEMP. :	170
SAMPLE PRES. :	20	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
ALCOHOLS		0.0597	0.0158	0.0149
NITROGEN		0.1170	0.0270	0.0250
CARBON DIOXIDE		0.0190	0.0069	0.0063
	C1	0.0700	0.0092	0.0230
	C2	0.2850	0.0706	0.1487
	C3	1.3610	0.4942	0.7313
	C4	2.3548	1.1269	1.4571
	C5	3.7065	2.1820	2.4628
	C6	17.0707	11.9439	12.6889
	C7	17.6477	14.2860	14.4766
	C8	13.8768	12.7690	12.5390
	C9	10.4042	10.8821	10.7980
	C10	11.2054	12.7428	12.3872
	C11	6.1361	7.4977	7.0755
	C12	3.6783	4.8875	4.7452
	C13	2.8480	4.2056	4.1000
	C14	2.5268	4.1272	4.0563
	C15	2.4632	4.3079	4.1853
	C16	1.7021	3.1733	3.0629
	C17	1.0205	2.0204	1.9441
	C18	0.6968	1.4600	1.4008
	C19	0.3169	0.7006	0.6679
	C20	0.1799	0.4185	0.3968
	C21	0.1227	0.2996	0.2826
	C22	0.0832	0.2128	0.2000
	C23	0.0310	0.0829	0.0777
	C24	0.0046	0.0128	0.0120
	C25	0.0035	0.0102	0.0095
	C26	0.0045	0.0136	0.0126
	C27	0.0029	0.0091	0.0084
	C28	0.0012	0.0039	0.0036
	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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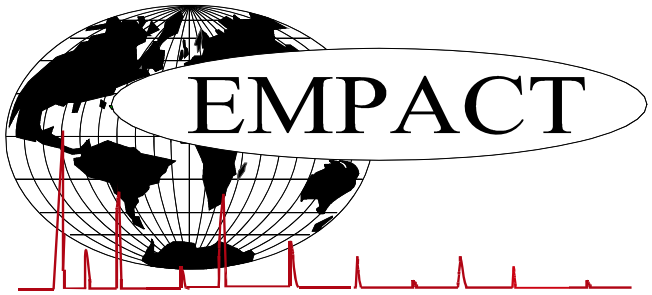

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201506097	ANALYSIS NO. :	05
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 18, 2015 09:44
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	2012
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 TREATER		EMPACT
FIELD DATA		SAMPLE TEMP. :	170
SAMPLE PRES. :	20	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.1170	0.0270	0.0250
Carbon Dioxide	NHC	0.0190	0.0069	0.0063
Methane	P1	0.0700	0.0092	0.0230
Ethane	P2	0.2850	0.0706	0.1487
Propane	P3	1.3610	0.4942	0.7313
i-Butane	I4	0.4060	0.1943	0.2590
Methanol	X1	0.0597	0.0158	0.0149
n-Butane	P4	1.9470	0.9317	1.1969
2,2-Dimethylpropane	I5	0.0228	0.0135	0.0170
i-Pentane	I5	0.9170	0.5447	0.6542
UnknownC4s	U4	0.0018	0.0009	0.0012
n-Pentane	P5	1.5780	0.9374	1.1142
2,2-Dimethylbutane	I6	0.0237	0.0168	0.0193
Cyclopentane	N5	1.1887	0.6864	0.6774
2,3-Dimethylbutane	I6	0.2269	0.1610	0.1811
2-Methylpentane	I6	1.6203	1.1497	1.3113
3-Methylpentane	I6	2.7422	1.9457	2.1821
n-Hexane	P6	5.4534	3.8693	4.3729
2,2-Dimethylpentane	I7	0.0011	0.0009	0.0010
Methylcyclopentane	N6	3.7192	2.5771	2.5643
2,4-Dimethylpentane	I7	0.1618	0.1335	0.1481
2,2,3-Trimethylbutane	I7	0.0115	0.0095	0.0103
Benzene	A6	1.0421	0.6702	0.5695
3,3-Dimethylpentane	I7	0.0160	0.0132	0.0142
Cyclohexane	N6	2.2409	1.5527	1.4868
2-Methylhexane	I7	0.6393	0.5274	0.5798
2,3-Dimethylpentane	I7	0.8754	0.7222	0.7714
1,1-Dimethylcyclopentane	N7	0.3168	0.2561	0.2531
3-Methylhexane	I7	1.1379	0.9387	1.0165
1c,3-Dimethylcyclopentane	N7	0.5506	0.4451	0.4455
1t,3-Dimethylcyclopentane	N7	0.3262	0.2637	0.2626
3-Ethylpentane	I7	0.4086	0.3371	0.3591
1t,2-Dimethylcyclopentane	N7	1.5894	1.2849	1.2749
2,2,4-Trimethylpentane	I8	0.0186	0.0175	0.0188
UnknownC6s	U6	0.0020	0.0014	0.0016
n-Heptane	P7	4.0952	3.3784	3.6826
1c,2-Dimethylcyclopentane	N7	0.1376	0.1112	0.1074
Methylcyclohexane	N7	3.8100	3.0801	2.9827
2,2-Dimethylhexane	I8	0.2933	0.2758	0.2955
1,1,3-Trimethylcyclopentane	N7	0.0325	0.0300	0.0299
Ethylcyclopentane	N7	0.5547	0.4484	0.4362
2,5-Dimethylhexane	I8	0.0985	0.0926	0.0995
2,2,3-Trimethylpentane	I8	0.0177	0.0166	0.0173
2,4-Dimethylhexane	I8	0.1963	0.1846	0.1974

1c,2t,4-Trimethylcyclopentane	N8	0.3897	0.3600	0.3517
3,3-Dimethylhexane	I8	0.0268	0.0252	0.0265
2,3,4-Trimethylpentane	I8	0.0469	0.0441	0.0457
2,3,3-Trimethylpentane	I8	0.0346	0.0325	0.0334
Toluene	A7	2.3408	1.7757	1.5237
2,3-Dimethylhexane	I8	0.1617	0.1521	0.1593
2-Methyl-3-ethylpentane	I8	0.1263	0.1188	0.1231
1,1,2-Trimethylcyclopentane	N8	0.0289	0.0267	0.0258
2-Methylheptane	I8	1.2729	1.1971	1.2764
4-Methylheptane	I8	0.2639	0.2482	0.2583
3-Methyl-3-ethylpentane	I8	0.1540	0.1448	0.1485
3,4-Dimethylhexane	I8	0.0395	0.0371	0.0384
1c,2c,4-Trimethylcyclopentane	N8	0.0258	0.0238	0.0230
1c,3-Dimethylcyclohexane	N8	0.0209	0.0193	0.0188
3-Methylheptane	I8	0.2889	0.2717	0.2872
1c,2t,3-Trimethylcyclopentane	N8	1.2211	1.1281	1.0921
3-Ethylhexane	I8	0.2348	0.2208	0.2309
1t,4-Dimethylcyclohexane	N8	0.4078	0.3767	0.3684
1,1-Dimethylcyclohexane	N8	0.0868	0.0802	0.0766
2,2,5-Trimethylhexane	I9	0.0243	0.0257	0.0270
3c-Ethylmethylcyclopentane	N8	0.0027	0.0025	0.0024
3t-Ethylmethylcyclopentane	N8	0.1821	0.1682	0.1636
2t-Ethylmethylcyclopentane	N8	0.1482	0.1369	0.1328
1,1-Methylethylcyclopentane	N8	0.5161	0.4768	0.4554
2,2,4-Trimethylhexane	I9	0.0354	0.0374	0.0390
1t,2-Dimethylcyclohexane	N8	0.5215	0.4818	0.4633
1c,2c,3-Trimethylcyclopentane	N8	0.0441	0.0407	0.0390
UnknownC7s	U7	0.6423	0.5299	0.5776
n-Octane	P8	2.3327	2.1939	2.3282
1c,4-Dimethylcyclohexane	N8	0.8246	0.7618	0.7259
i-Propylcyclopentane	I8	0.0291	0.0269	0.0258
2,4,4-Trimethylhexane	I9	0.0032	0.0034	0.0035
2,2,3,4-Tetramethylpentane	I9	0.0162	0.0171	0.0177
2,3,4-Trimethylhexane	I9	0.0055	0.0058	0.0060
1c,2-Dimethylcyclohexane	N8	0.1675	0.1547	0.1450
2,3,5-Trimethylhexane	I9	0.0897	0.0947	0.0978
2,2-Dimethylheptane	I9	0.0053	0.0056	0.0059
1,1,4-Trimethylcyclohexane	N9	1.0216	1.0618	1.0262
2,2,3-Trimethylhexane	I9	0.3351	0.3539	0.3619
2,4-Dimethylheptane	I9	0.0099	0.0105	0.0109
4,4-Dimethylheptane	I9	0.0436	0.0460	0.0480
Ethylcyclohexane	N8	0.4419	0.4083	0.3867
n-Propylcyclopentane	N8	0.2414	0.2230	0.2142
1c,3c,5-Trimethylcyclohexane	N9	0.0192	0.0200	0.0193
2,5-Dimethylheptane	I9	0.0795	0.0840	0.0874
3,3-Dimethylheptane	I9	0.0746	0.0788	0.0820
3,5-Dimethylheptane	I9	0.0545	0.0576	0.0599
2,6-Dimethylheptane	I9	0.0391	0.0413	0.0434
1,1,3-Trimethylcyclohexane	N9	0.0256	0.0266	0.0257
Ethylbenzene	A8	0.7339	0.6415	0.5504
1c,2t,4t-Trimethylcyclohexane	N9	0.2591	0.2693	0.2553
2,3-Dimethylheptane	I9	0.1224	0.1293	0.1328
1,3-Dimethylbenzene (m-Xylene)	A8	0.6318	0.5523	0.4766
1,4-Dimethylbenzene (p-Xylene)	A8	0.9161	0.8008	0.6933
3,4-Dimethylheptane	I9	0.1209	0.1277	0.1302
3,4-Dimethylheptane (2)	I9	0.1177	0.1243	0.1268
4-Ethylheptane	I9	0.0155	0.0164	0.0171
4-Methyloctane	I9	0.3058	0.3229	0.3342
2-Methyloctane	I9	0.3015	0.3184	0.3328
1c,2t,4c-Trimethylcyclohexane	I9	0.0865	0.0913	0.0938
3-Ethylheptane	I9	0.1045	0.1103	0.1132
3-Methyloctane	I9	0.4006	0.4230	0.4377
3,3-Diethylpentane	I9	0.0330	0.0349	0.0345
1c,2t,3-Trimethylcyclohexane	N9	0.0763	0.0793	0.0752
1,1,2-Trimethylcyclohexane	N9	0.0317	0.0329	0.0312
1,2-Dimethylbenzene (o-Xylene)	A8	0.6317	0.5522	0.4682
i-Butylcyclopentane	N9	0.3322	0.3453	0.3299
UnknownC8s	U8	0.0557	0.0524	0.0556
n-Nonane	P9	2.0773	2.1936	2.2799
1,1-Methylethylcyclohexane	N9	0.4864	0.5136	0.5354
i-Propylbenzene	A9	0.2027	0.2006	0.1733
i-Propylcyclohexane	N9	0.0860	0.0894	0.0832
2,2-Dimethyloctane	I10	0.0733	0.0859	0.0867
2,4-Dimethyloctane	I10	0.0461	0.0540	0.0545

2,6-Dimethyloctane	I10	0.0138	0.0162	0.0169
2,5-Dimethyloctane	I10	0.0475	0.0556	0.0561
n-Butylcyclopentane	N9	0.3492	0.4033	0.3766
3,3-Dimethyloctane	I10	0.1609	0.1885	0.1903
n-Propylbenzene	A9	0.1424	0.1409	0.1217
3,6-Dimethyloctane	I10	0.1837	0.2152	0.2171
3-Methyl-5-ethylheptane	I10	0.2565	0.2709	0.2785
1,3-Methylethylbenzene	A9	0.3132	0.3099	0.2655
1,4-Methylethylbenzene	A9	0.1357	0.1343	0.1151
1,3,5-Trimethylbenzene	A9	0.1434	0.1419	0.1224
2,3-Dimethyloctane	I10	0.0818	0.0958	0.0966
5-Methylnonane	I10	0.2615	0.3063	0.3119
1,2-Methylethylbenzene	A9	0.4330	0.4285	0.3652
2-Methylnonane	I10	0.1074	0.1258	0.1292
3-Ethyloctane	I10	0.0767	0.0898	0.0906
3-Methylnonane	I10	0.1557	0.1824	0.1855
1,2,4-Trimethylbenzene	A9	0.0182	0.0180	0.0153
t-Butylbenzene	A10	0.3400	0.3757	0.3237
i-Butylcyclohexane	N10	0.2462	0.2843	0.2613
1t-Methyl-2-n-propylcyclohexane	I10	0.0547	0.0578	0.0594
i-Butylbenzene	A10	0.0435	0.0481	0.0421
sec-Butylbenzene	A10	0.0537	0.0593	0.0514
UnknownC9s	U9	1.5808	1.6693	1.7350
n-Decane	P10	1.7569	2.0581	2.1031
1,2,3-Trimethylbenzene	A9	0.2459	0.2433	0.2031
1,3-Methyl-i-propylbenzene	A10	0.1194	0.1182	0.1007
1,4-Methyl-i-propylbenzene	A10	0.1307	0.1293	0.1102
Sec-Butylcyclohexane	N10	0.3973	0.4588	0.4212
1,2-Methyl-i-propylbenzene	A10	0.2086	0.2305	0.1963
3-Ethylnonane	I10	0.0558	0.0654	0.0672
1,3-Diethylbenzene	A10	0.1852	0.2047	0.1769
1,3-Methyl-n-propylbenzene	A10	0.0279	0.0308	0.0267
1,4-Diethylbenzene	A10	0.2191	0.2421	0.2097
1,4-Methyl-n-propylbenzene	A10	0.1190	0.1315	0.1143
n-Butylbenzene	A10	0.1524	0.1684	0.1459
1,3-Dimethyl-5-ethylbenzene	A10	0.1041	0.1150	0.0993
1,2-Diethylbenzene	A10	0.1862	0.2058	0.1747
1,2-Methyl-n-propylbenzene	A10	0.0254	0.0281	0.0240
1,4-Dimethyl-2-ethylbenzene	A10	0.0051	0.0056	0.0048
1,3-Dimethyl-4-ethylbenzene	A10	0.1287	0.1422	0.1211
1,2-Dimethyl-4-ethylbenzene	A10	0.1585	0.1752	0.1496
1,3-Dimethyl-2-ethylbenzene	A10	0.0486	0.0537	0.0450
1t,2c,4-Trimethylcyclopentane	A10	0.4410	0.4074	0.4065
1,2-Dimethyl-3-ethylbenzene	A10	0.1813	0.2003	0.1676
1,2-Ethyl-i-propylbenzene	A10	0.2100	0.2321	0.1976
1,4-Methyl-t-butylbenzene	A11	0.2097	0.2317	0.1973
UnknownC10s	U10	3.8183	4.4728	4.5705
n-Undecane	P11	1.4441	1.8585	1.8728
1,4-Ethyl-i-propylbenzene	A11	0.0725	0.0801	0.0682
1,2,4,5-Tetramethylbenzene	A11	0.1483	0.1639	0.1381
1,2-Methyl-n-butylbenzene	A11	0.0463	0.0512	0.0436
1,2,3,5-Tetramethylbenzene	A11	0.1046	0.1156	0.0969
1,2-Methyl-t-butylbenzene	A11	0.1256	0.1388	0.1182
5-Methylindan	A11	0.0279	0.0391	0.0390
4-Methylindan	A11	0.0091	0.0128	0.0128
1,2-Ethyl-n-propylbenzene	A11	0.1887	0.2085	0.1775
2-Methylindan	A11	0.0774	0.1085	0.1082
1,3-Methyl-n-butylbenzene	A11	0.0692	0.0765	0.0651
1,3-Di-i-propylbenzene	A11	0.1389	0.1535	0.1307
sec-Pentylbenzene	A11	0.1484	0.1640	0.1396
n-Pentylbenzene	A11	0.0575	0.0702	0.0610
1t-M-2-(4MP)cyclopentane	P12	0.0180	0.0252	0.0251
1,2-Di-n-propylbenzene	A11	0.2160	0.2387	0.2033
1,4-Di-i-propylbenzene	A11	0.1491	0.1648	0.1403
Tetrahydronaphthalene	A10	0.1256	0.1388	0.1182
t-Decahydronaphthalene	A10	0.1648	0.1821	0.1551
Naphthalene	A10	0.0325	0.0343	0.0292
1-t-Butyl-3,5-dimethylbenzene	A12	0.0647	0.0715	0.0609
1,4-Ethyl-t-butylbenzene	A11	0.2484	0.2745	0.2337
UnknownC11s	U11	2.0579	2.6484	2.6688
n-Dodecane	P12	1.2098	1.6967	1.6909
1,3-Di-n-propylbenzene	A12	0.0204	0.0225	0.0192
1,3,5-Triethylbenzene	A12	0.4016	0.3974	0.3428
1,2,4-Triethylbenzene	A12	0.0795	0.0787	0.0670

1,4-Methyl-n-pentylbenzene	A12	0.1213	0.1340	0.1141
n-Hexylbenzene	A12	0.1654	0.2210	0.1923
1,2,3,4,5-Pentamethylbenzene	A13	0.2843	0.3142	0.2676
2-Methylnaphthalene	A11	0.3511	0.4111	0.3501
1-Methylnaphthalene	A11	0.2454	0.2873	0.2103
UnknownC12s	U12	1.5976	2.2405	2.2329
n-Tridecane	P13	1.0659	1.6179	1.5934
UnknownC13s	U13	1.4978	2.2735	2.2390
n-Tetradecane	P14	0.9865	1.6113	1.5836
UnknownC14s	U14	1.5403	2.5159	2.4727
n-Pentadecane	P15	0.8400	1.4691	1.4273
UnknownC15s	U15	1.6232	2.8388	2.7580
n-Hexadecane	P16	0.6444	1.2014	1.1596
UnknownC16s	U16	1.0577	1.9719	1.9033
n-Heptadecane	P17	0.3011	0.5961	0.5736
UnknownC17s	U17	0.7194	1.4243	1.3705
n-Octadecane	P18	0.1662	0.3482	0.3341
UnknownC18s	U18	0.5306	1.1118	1.0667
n-Nonadecane	P19	0.1355	0.2996	0.2856
UnknownC19s	U19	0.1814	0.4010	0.3823
n-Eicosane	P20	0.0538	0.1252	0.1187
UnknownC20s	U20	0.1261	0.2933	0.2781
n-Heneicosane	P21	0.0634	0.1548	0.1460
UnknownC21s	U21	0.0593	0.1448	0.1366
n-Docosane	P22	0.0448	0.1146	0.1077
UnknownC22s	U22	0.0384	0.0982	0.0923
n-Tricosane	P23	0.0168	0.0449	0.0421
UnknownC23s	U23	0.0142	0.0380	0.0356
n-Tetracosane	P24	0.0036	0.0100	0.0094
UnknownC24s	U24	0.0010	0.0028	0.0026
n-Pentacosane	P25	0.0035	0.0102	0.0095
n-Hexacosane	P26	0.0045	0.0136	0.0126
n-Heptacosane	P27	0.0029	0.0091	0.0084
n-Octacosane	P28	0.0012	0.0039	0.0036
TOTAL		100.0000	100.0000	100.0000

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

LEASE #:		NAME/DESCRIP :	**TIMBRO 1-34-10-59 SALES GAS**
PROJECT NO. :	**201506097**	ANALYSIS NO. :	**06**
COMPANY NAME :	**CARRIZO OIL & GAS, INC**	ANALYSIS DATE:	JUNE 25, 2015 09:14
OFFICE / BRANCH:	COLORADO	SAMPLE DATE :	JUNE 12, 2015 11:55
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

*****FIELD DATA*****

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT	
SAMPLE PRES. :	81	psig	CYLINDER NO. :	1159	
LAB PRES:		psig	SAMPLED BY :	GALE MCENDREE	
SAMPLE TEMP. :	104	ºf	SAMPLING COMPANY	EMPACT	
AMBIENT TEMP.:		ºf	H2S BY STAIN TUBE:	<1	ppm
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	-	Mol %

FIELD COMMENTS: NO PROBE

LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.730	GPM @ 14.650
ALCOHOLS	0.0028	0.0038		
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	1.0900	1.1800	---	---
CARBON DIOXIDE	2.40	4.07	---	---
METHANE	64.37370	39.78840	---	---
ETHANE	12.5333	14.5197	3.3679	3.3497
PROPANE	11.2124	19.0488	3.1040	3.0871
I-BUTANE	1.1681	2.6158	0.3838	0.3818
N-BUTANE	4.0816	9.1400	1.2926	1.2856
I-PENTANE	0.8707	2.4133	0.3133	0.3117
N-PENTANE	1.0494	2.9170	0.3818	0.3798
HEXANES PLUS	1.2080	4.2932	0.4931	0.4906
TOTALS	100.00000	100.00000	9.3365	9.2863

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0387	0.1165
TOLUENE	0.0279	0.0991
ETHYLBENZENE	0.0021	0.0086
XYLENES	0.0054	0.0221
TOTAL BTEX	0.0741	0.2463

	BTU @	14.730	14.650
LOW	NET DRY REAL :	1342.0 **/scf**	1334.8 **/scf**
	NET WET REAL :	1318.7 **/scf**	1311.4 **/scf**
HIGH	GROSS DRY REAL :	1472.1 **/scf**	1464.1 **/scf**
	GROSS WET REAL :	1446.5 **/scf**	1438.5 **/scf**
	NET DRY REAL :	19643.9 **/lb**	19537.2 **/lb**
	GROSS DRY REAL :	21551.8 **/lb**	21434.8 **/lb**

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

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

RELATIVE DENSITY (AIR=1): 0.8954

COMPRESSIBILITY FACTOR : 0.99489

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201506097	ANALYSIS NO. :	06
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 25, 2015 09:14
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	1159
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 SALES GAS		
FIELD DATA		SAMPLE TEMP. :	104
SAMPLE PRES. :	81	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.40	4.07
Nitrogen	1.09	1.18
Methane	64.37370	39.78840
Ethane	12.5333	14.5197
Propane	11.2124	19.0488
Isobutane	1.1681	2.6158
n-Butane	4.0816	9.1400
Isopentane	0.7811	2.1712
n-Pentane	1.0494	2.9170
Cyclopentane	0.0896	0.2421
n-Hexane	0.2427	0.8058
Cyclohexane	0.0645	0.2091
Other Hexanes	0.4208	1.3862
Heptanes	0.2248	0.8623
Methycyclohexane	0.0551	0.2084
2,2,4 Trimethylpentane	0.0025	0.0110
Benzene	0.0387	0.1165
Toluene	0.0279	0.0991
Ethylbenzene	0.0021	0.0086
Xylenes	0.0054	0.0221
C8+ Heavies	0.1235	0.5641
Subtotal	99.98720	99.98620
Oxygen/Argon	0.01	0.01
Alcohols	0.0028	0.0038
Total	100.00000	100.00000

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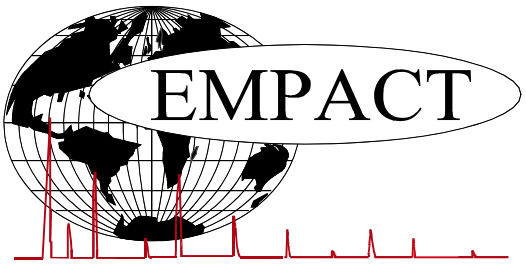

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201506097	ANALYSIS NO. :	06
COMPANY NAME :	CARRIZO OIL & GAS, INC	ANALYSIS DATE:	JUNE 25, 2015 09:14
ACCOUNT NO. :		SAMPLE DATE :	JUNE 12, 2015 11:55
PRODUCER :		CYLINDER NO. :	1159
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TIMBRO 1-34-10-59 SALES GAS		
FIELD DATA		SAMPLE TEMP. :	104
SAMPLE PRES. :	81	AMBIENT TEMP.:	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.730	GPM @ 14.650
Helium	---	0.00	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.01	0.01	---	---
Nitrogen	---	1.09	1.18	---	---
Carbon Dioxide	---	2.40	4.07	---	---
Methane	P1	64.37370	39.78840	---	---
Ethane	P2	12.5333	14.5197	3.368	3.350
Propane	P3	11.2124	19.0488	3.104	3.087
i-Butane	I4	1.1681	2.6158	0.384	0.382
Methanol	X1	0.0025	0.0031	0.000	0.000
n-Butane	P4	4.0816	9.1400	1.293	1.286
2,2-Dimethylpropane	I5	0.0037	0.0103	0.001	0.001
i-Pentane	I5	0.7774	2.1609	0.286	0.285
n-Pentane	P5	1.0492	2.9165	0.382	0.380
2,2-Dimethylbutane	I6	0.0026	0.0086	0.001	0.001
n-Propanol	X3	0.0003	0.0007	0.000	0.000
Cyclopentane	N5	0.0896	0.2421	0.026	0.026
2,3-Dimethylbutane	I6	0.0151	0.0501	0.006	0.006
2-Methylpentane	I6	0.1720	0.5711	0.072	0.071
3-Methylpentane	I6	0.0898	0.2982	0.037	0.037
UnknownC5s	U5	0.0002	0.0005	0.000	0.000
n-Hexane	P6	0.2427	0.8058	0.101	0.100
2,2-Dimethylpentane	I7	0.0001	0.0004	0.000	0.000
Methylcyclopentane	N6	0.1409	0.4569	0.050	0.050
2,4-Dimethylpentane	I7	0.0059	0.0228	0.003	0.003
2,2,3-Trimethylbutane	I7	0.0003	0.0012	0.000	0.000
Benzene	A6	0.0387	0.1165	0.011	0.011
3,3-Dimethylpentane	I7	0.0002	0.0008	0.000	0.000
Cyclohexane	N6	0.0645	0.2091	0.022	0.022
2-Methylhexane	I7	0.0195	0.0753	0.009	0.009
2,3-Dimethylpentane	I7	0.0136	0.0525	0.006	0.006
1,1-Dimethylcyclopentane	N7	0.0124	0.0469	0.005	0.005
3-Methylhexane	I7	0.0221	0.0853	0.010	0.010
1c,3-Dimethylcyclopentane	N7	0.0097	0.0367	0.004	0.004
1t,3-Dimethylcyclopentane	N7	0.0172	0.0651	0.008	0.008

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3-Ethylpentane	I7	0.0055	0.0212	0.002	0.002
1t,2-Dimethylcyclopentane	N7	0.0313	0.1184	0.014	0.014
2,2,4-Trimethylpentane	I8	0.0025	0.0110	0.001	0.001
UnknownC6s	U6	0.0004	0.0013	0.000	0.000
n-Heptane	P7	0.0671	0.2591	0.031	0.031
1c,2-Dimethylcyclopentane	N7	0.0016	0.0060	0.001	0.001
Methylcyclohexane	N7	0.0551	0.2084	0.022	0.022
2,2-Dimethylhexane	I8	0.0041	0.0180	0.002	0.002
1,1,3-Trimethylcyclopentane	N7	0.0014	0.0060	0.001	0.001
Ethylcyclopentane	N7	0.0084	0.0318	0.003	0.003
2,5-Dimethylhexane	I8	0.0011	0.0048	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0016	0.0070	0.001	0.001
2,4-Dimethylhexane	I8	0.0013	0.0057	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0039	0.0169	0.002	0.002
3,3-Dimethylhexane	I8	0.0005	0.0022	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0046	0.0199	0.002	0.002
2,3,4-Trimethylpentane	I8	0.0008	0.0035	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0005	0.0022	0.000	0.000
Toluene	A7	0.0279	0.0991	0.009	0.009
2,3-Dimethylhexane	I8	0.0012	0.0053	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0011	0.0048	0.001	0.001
1,1,2-Trimethylcyclopentane	N8	0.0003	0.0013	0.000	0.000
2-Methylheptane	I8	0.0096	0.0423	0.005	0.005
4-Methylheptane	I8	0.0024	0.0106	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0014	0.0062	0.001	0.001
3,4-Dimethylhexane	I8	0.0008	0.0035	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0008	0.0035	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0003	0.0013	0.000	0.000
3-Methylheptane	I8	0.0037	0.0163	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0050	0.0216	0.003	0.003
3-Ethylhexane	I8	0.0028	0.0123	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0040	0.0173	0.002	0.002
1,1-Dimethylcyclohexane	N8	0.0008	0.0035	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0004	0.0020	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0017	0.0074	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0026	0.0112	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0018	0.0078	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0005	0.0025	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0028	0.0121	0.001	0.001
1c,2c,3-Trimethylcyclopentane	N8	0.0013	0.0056	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0012	0.0052	0.001	0.001
UnknownC7s	U7	0.0085	0.0328	0.004	0.004
n-Octane	P8	0.0062	0.0273	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0094	0.0406	0.005	0.005
i-Propylcyclopentane	I8	0.0003	0.0013	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0002	0.0010	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	0.0002	0.0010	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0003	0.0013	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0027	0.0131	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0002	0.0010	0.000	0.000
2,4-Dimethylheptane	I9	0.0003	0.0015	0.000	0.000
4,4-Dimethylheptane	I9	0.0006	0.0030	0.000	0.000
Ethylcyclohexane	N8	0.0011	0.0047	0.000	0.000
n-Propylcyclopentane	N8	0.0006	0.0026	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0004	0.0019	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0015	0.000	0.000

3,3-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0010	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0010	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0003	0.0015	0.000	0.000
Ethylbenzene	I8	0.0021	0.0086	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0005	0.0024	0.000	0.000
2,3-Dimethylheptane	I9	0.0004	0.0020	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0020	0.0082	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0013	0.0053	0.001	0.001
3,4-Dimethylheptane	I9	0.0004	0.0020	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0015	0.0074	0.001	0.001
4-Ethylheptane	I9	0.0002	0.0010	0.000	0.000
4-Methyloctane	I9	0.0009	0.0044	0.001	0.001
2-Methyloctane	I9	0.0006	0.0030	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0008	0.0039	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0010	0.000	0.000
3-Methyloctane	I9	0.0003	0.0015	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0010	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0002	0.0010	0.000	0.000
3,3-Diethylpentane	I9	0.0002	0.0010	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0021	0.0086	0.001	0.001
i-Butylcyclopentane	N9	0.0009	0.0044	0.000	0.000
UnknownC8s	U8	0.0041	0.0180	0.002	0.002
n-Nonane	P9	0.0018	0.0089	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0016	0.0078	0.001	0.001
i-Propylbenzene	A9	0.0003	0.0014	0.000	0.000
i-Propylcyclohexane	N9	0.0003	0.0015	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Butylcyclopentane	N9	0.0006	0.0029	0.000	0.000
3,3-Dimethyloctane	I10	0.0002	0.0011	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0005	0.000	0.000
3,6-Dimethyloctane	I10	0.0003	0.0017	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0003	0.0017	0.000	0.000
1,3-Methylethylbenzene	A9	0.0004	0.0018	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0009	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0005	0.000	0.000
2,3-Dimethyloctane	I10	0.0002	0.0011	0.000	0.000
5-Methylnonane	I10	0.0003	0.0017	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0009	0.000	0.000
2-Methylnonane	I10	0.0001	0.0005	0.000	0.000
3-Methylnonane	I10	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0003	0.0015	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0005	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
sec-Butylbenzene	A10	0.0002	0.0010	0.000	0.000
UnknownC9s	U9	0.0094	0.0465	0.005	0.005
n-Decane	P10	0.0007	0.0038	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
Sec-Butylcyclohexane	A10	0.0001	0.0005	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,3-Methyl-n-propylbenzene	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
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0005	0.000	0.000

1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC10s	U10	0.0026	0.0143	0.002	0.002
n-Undecane	P11	0.0003	0.0018	0.000	0.000
UnknownC11s	U11	0.0008	0.0048	0.001	0.001
n-Dodecane	P12	0.0001	0.0006	0.000	0.000
UnknownC12s	U12	0.0001	0.0006	0.000	0.000
UnknownC13s	U13	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	9.3365	9.2863

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0387	0.1165
TOLUENE	0.0279	0.0991
ETHYLBENZENE	0.0021	0.0086
XYLENES	0.0054	0.0221
TOTAL BTEX	0.0741	0.2463

	BTU @	14.730		14.650
LOW	NET DRY REAL :	1342.0	**/scf**	1334.8 **/scf**
	NET WET REAL :	1318.7	**/scf**	1311.4 **/scf**
HIGH	GROSS DRY REAL :	1472.1	**/scf**	1464.1 **/scf**
	GROSS WET REAL :	1446.5	**/scf**	1438.5 **/scf**
	NET DRY REAL :	19643.9	**/lb**	19537.2 **/lb**
	GROSS DRY REAL :	21551.8	**/lb**	21434.8 **/lb**

RELATIVE DENSITY (AIR=1): 0.8954

(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F) COMPRESSIBILITY FACTOR : 0.99489

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

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