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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201310096	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 17, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	10411
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10		EMPACT
	MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	35	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
NITROGEN (AIR)	0.0399	0.0106	0.0097
CARBON DIOXIDE	0.0374	0.0156	0.0140
METHANE	0.1340	0.0204	0.0501
ETHANE	0.4629	0.1321	0.2732
PROPANE	1.6255	0.6806	0.9891
I-BUTANE	0.5132	0.2832	0.3707
N-BUTANE	2.2583	1.2461	1.5722
I-PENTANE	1.1032	0.7557	0.8918
N-PENTANE	1.7246	1.1814	1.3792
HEXANES PLUS	92.1010	95.6743	94.4500
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	2.0604	1.5280
TOLUENE	3.2218	2.8184
ETHYLBENZENE	0.5689	0.5735
XYLENE	1.7669	1.7810
TOTAL BTEX	7.6180	6.7009

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.7372	0.7467	60/60
API Gravity =	60.44	58	60/60
Molecular Weight =	105.33	110.123	
Absolute Density =	6.15	6.22	LBS/GAL
Heating Value Liq. Idl Gas=	125321	126936	BTU/GAL
Vapor/Liquid =	22.16	21.51	CUFT/GAL
Vapor Pressure =	17.33	1.94	PSIA @100 F

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

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E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201310096	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 17, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	10411
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10		EMPACT
	MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	35	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0374		0.0156		0.0140	
NITROGEN (AIR)	0.0399		0.0106		0.0097	
METHANE	0.1340		0.0204		0.0501	
ETHANE	0.4629		0.1321		0.2732	
PROPANE	1.6255		0.6806		0.9891	
I-BUTANE	0.5132		0.2832		0.3707	
N-BUTANE	2.2583		1.2461		1.5722	
I-PENTANE	1.1032		0.7557		0.8918	
N-PENTANE	1.7246		1.1814		1.3792	
CYCLOPENTANE (N-C5)	1.6180		1.0773		1.0442	
N-HEXANE	7.5832		6.2035		6.8871	
CYCLOHEXANE (OTHER C6)	3.0604		2.4454		2.2998	
OTHER HEXANES	11.9008		9.6426		10.1960	
OTHER HEPTANES	14.5614		13.7742		14.2755	
METHYLCYCLOHEXANE (OTHER C7)	4.3015		4.0100		3.8139	
2,2,4 TRIMETHYLPENTANE	0.8268		0.7708		0.7538	
BENZENE	2.0604		1.5280		1.2752	
TOLUENE	3.2218		2.8184		2.3753	
ETHYLBENZENE	0.5689		0.5735		0.4833	
XYLENES	1.7669		1.7810		1.5012	
OTHER OCTANES	11.3349		12.3056		12.2393	
OCTANES PLUS	----	43.7935	----	54.1749	----	52.2830
NONANES	11.3997		13.7295		13.4045	
DECANES PLUS	17.8963		25.0145		23.9009	
SUB TOTAL	100.0000		100.0000		100.0000	
TOTAL	100.0000		100.0000		100.0000	

API Gravity	=	**60.44**	60/60
Vapor Pressure	=	**17.33**	PSIA & 100 F
Average Molecular Weight of Decanes plus	=	**147.22**	
Average Specific Gravity of Decanes plus	=	**0.7720**	

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BY CARBON NUMBER

PROJECT NO. :	201310096	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 17, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	10411
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10		EMPACT
	MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	35	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
NITROGEN		0.0399	0.0106	0.0097
CARBON DIOXIDE		0.0374	0.0156	0.0140
	C1	0.1340	0.0204	0.0501
	C2	0.4629	0.1321	0.2732
	C3	1.6255	0.6806	0.9891
	C4	2.7715	1.5293	1.9429
	C5	4.4458	3.0144	3.3152
	C6	24.6048	19.8195	20.6581
	C7	22.0847	20.6026	20.4647
	C8	14.4975	15.4309	14.9776
	C9	11.3997	13.7295	13.4045
	C10	9.6166	12.5501	12.0536
	C11	4.7296	6.7621	6.4007
	C12	2.3167	3.5059	3.3337
	C13	0.7821	1.3426	1.2894
	C14	0.4230	0.7967	0.7690
	C15	0.0283	0.0571	0.0545
	C16	0.0000	0.0000	0.0000
	C17	0.0000	0.0000	0.0000
	C18	0.0000	0.0000	0.0000
	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. :	201310096	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 17, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	10411
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	SEPARATOR @ 14:10 MURPHY FAMILY 4-64-25 1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	35	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0399	0.0106	0.0097
Carbon Dioxide	NHC	0.0374	0.0156	0.0140
Methane	P1	0.1340	0.0204	0.0501
Ethane	P2	0.4629	0.1321	0.2732
Propane	P3	1.6255	0.6806	0.9891
i-Butane	I4	0.5132	0.2832	0.3707
n-Butane	P4	2.2583	1.2461	1.5722
2,2-Dimethylpropane	I5	0.0084	0.0058	0.0072
i-Pentane	I5	1.0948	0.7499	0.8846
n-Pentane	P5	1.7246	1.1814	1.3792
2,2-Dimethylbutane	I6	0.0495	0.0405	0.0456
Cyclopentane	N5	1.6180	1.0773	1.0442
2,3-Dimethylbutane	I6	0.3844	0.3145	0.3474
2-Methylpentane	I6	4.1478	3.3938	3.8017
3-Methylpentane	I6	2.3754	1.9436	2.1409
n-Hexane	P6	7.5832	6.2035	6.8871
2,2-Dimethylpentane	I7	0.0187	0.0178	0.0192
Methylcyclopentane	N6	4.9437	3.9502	3.8604
2,4-Dimethylpentane	I7	0.2961	0.2817	0.3069
2,2,3-Trimethylbutane	I7	0.0269	0.0256	0.0271
Benzene	A6	2.0604	1.5280	1.2752
3,3-Dimethylpentane	I7	0.0240	0.0228	0.0241
Cyclohexane	N6	3.0604	2.4454	2.2998
2-Methylhexane	I7	1.2313	1.1714	1.2649
2,3-Dimethylpentane	I7	0.8992	0.8554	0.8973
1,1-Dimethylcyclopentane	N7	0.3694	0.3444	0.3342
3-Methylhexane	I7	1.8762	1.7849	1.8984
1c,3-Dimethylcyclopentane	N7	0.9212	0.8588	0.8443
1t,3-Dimethylcyclopentane	N7	0.8268	0.7708	0.7538
3-Ethylpentane	I7	0.0992	0.0944	0.0988
1t,2-Dimethylcyclopentane	N7	1.8428	1.7179	1.6741
2,2,4-Trimethylpentane	I8	0.1705	0.1849	0.1949
n-Heptane	P7	5.1273	4.8777	5.2221
1c,2-Dimethylcyclopentane	N7	0.1514	0.1411	0.1338
Methylcyclohexane	N7	4.3015	4.0100	3.8139

2,2-Dimethylhexane	I8	0.2792	0.3028	0.3187
1,1,3-Trimethylcyclopentane	N7	0.1220	0.1300	0.1272
Ethylcyclopentane	N7	0.7289	0.6795	0.6493
2,5-Dimethylhexane	I8	0.1290	0.1399	0.1476
2,2,3-Trimethylpentane	I8	0.0228	0.0247	0.0253
2,4-Dimethylhexane	I8	0.2563	0.2780	0.2919
1c,2t,4-Trimethylcyclopentane	N8	0.3895	0.4150	0.3982
3,3-Dimethylhexane	I8	0.0622	0.0675	0.0696
2,3,4-Trimethylpentane	I8	0.1144	0.1241	0.1263
2,3,3-Trimethylpentane	I8	0.0013	0.0014	0.0014
Toluene	A7	3.2218	2.8184	2.3753
2,3-Dimethylhexane	I8	0.1890	0.2050	0.2109
2-Methyl-3-ethylpentane	I8	0.1676	0.1818	0.1850
1,1,2-Trimethylcyclopentane	N8	0.0199	0.0212	0.0201
2-Methylheptane	I8	1.3348	1.4476	1.5160
4-Methylheptane	I8	0.4192	0.4546	0.4646
3-Methyl-3-ethylpentane	I8	0.1369	0.1485	0.1496
3,4-Dimethylhexane	I8	0.1098	0.1191	0.1212
1c,2c,4-Trimethylcyclopentane	N8	0.0388	0.0413	0.0392
1c,3-Dimethylcyclohexane	N8	0.0333	0.0355	0.0340
3-Methylheptane	I8	0.4329	0.4695	0.4874
1c,2t,3-Trimethylcyclopentane	N8	1.0142	1.0805	1.0273
3-Ethylhexane	I8	0.1643	0.1782	0.1831
1t,4-Dimethylcyclohexane	N8	0.5219	0.5560	0.5341
1,1-Dimethylcyclohexane	N8	0.1159	0.1235	0.1159
2,2,5-Trimethylhexane	I9	0.0159	0.0194	0.0200
3c-Ethylmethylcyclopentane	N8	0.0045	0.0048	0.0046
3t-Ethylmethylcyclopentane	N8	0.2404	0.2561	0.2447
2t-Ethylmethylcyclopentane	N8	0.1855	0.1976	0.1883
1,1-Methylethylcyclopentane	N8	0.7385	0.7868	0.7382
2,2,4-Trimethylhexane	I9	0.0666	0.0811	0.0830
1t,2-Dimethylcyclohexane	N8	0.6239	0.6647	0.6277
n-Octane	P8	2.1725	2.3561	2.4557
1c,4-Dimethylcyclohexane	N8	0.8625	0.9189	0.8600
i-Propylcyclopentane	I8	0.0854	0.0910	0.0859
2,4,4-Trimethylhexane	I9	0.0240	0.0292	0.0296
2,2,3,4-Tetramethylpentane	I9	0.0170	0.0207	0.0211
2,3,4-Trimethylhexane	I9	0.0177	0.0216	0.0219
1c,2-Dimethylcyclohexane	N8	0.2083	0.2219	0.2042
2,3,5-Trimethylhexane	I9	0.0681	0.0829	0.0841
2,2-Dimethylheptane	I9	0.0167	0.0203	0.0209
1,1,4-Trimethylcyclohexane	N9	0.9671	1.1591	1.1002
2,2,3-Trimethylhexane	I9	0.4582	0.5580	0.5605
2,4-Dimethylheptane	I9	0.0572	0.0696	0.0713
4,4-Dimethylheptane	I9	0.0882	0.1074	0.1100
Ethylcyclohexane	N8	0.6270	0.6680	0.6214
n-Propylcyclopentane	N8	0.2167	0.2309	0.2178
1c,3c,5-Trimethylcyclohexane	N9	0.0459	0.0550	0.0522
2,5-Dimethylheptane	I9	0.0973	0.1185	0.1211
3,3-Dimethylheptane	I9	0.1067	0.1299	0.1328
3,5-Dimethylheptane	I9	0.0667	0.0812	0.0830
2,6-Dimethylheptane	I9	0.0623	0.0759	0.0784
1,1,3-Trimethylcyclohexane	N9	0.0776	0.0930	0.0883
Ethylbenzene	A8	0.5689	0.5735	0.4833
1c,2t,4t-Trimethylcyclohexane	N9	0.3158	0.3785	0.3524
2,3-Dimethylheptane	I9	0.0013	0.0016	0.0016
1,3-Dimethylbenzene (m-Xylene)	A8	0.4874	0.4913	0.4164
1,4-Dimethylbenzene (p-Xylene)	A8	0.6147	0.6196	0.5268
3,4-Dimethylheptane	I9	0.4904	0.5972	0.5982
3,4-Dimethylheptane (2)	I9	0.2132	0.2596	0.2600
4-Ethylheptane	I9	0.0904	0.1101	0.1127
4-Methyloctane	I9	0.2486	0.3027	0.3077
2-Methyloctane	I9	0.3327	0.4051	0.4159
1c,2t,4c-Trimethylcyclohexane	I9	0.1422	0.1732	0.1749
3-Ethylheptane	I9	0.0822	0.1001	0.1009
3-Methyloctane	I9	0.3612	0.4398	0.4470
3,3-Diethylpentane	I9	0.0613	0.0746	0.0724

1c,2t,3-Trimethylcyclohexane	N9	0.1273	0.1526	0.1421
1,1,2-Trimethylcyclohexane	N9	0.0427	0.0512	0.0477
1,2-Dimethylbenzene (o-Xylene)	A8	0.6648	0.6701	0.5580
i-Butylcyclopentane	N9	0.2087	0.2501	0.2347
UnknownC8s	U8	0.0728	0.0790	0.0823
n-Nonane	P9	1.4417	1.7556	1.7921
1,1-Methylethylcyclohexane	N9	0.5563	0.6774	0.6936
i-Propylbenzene	A9	0.3930	0.4485	0.3806
i-Propylcyclohexane	N9	0.1208	0.1448	0.1323
2,2-Dimethyloctane	I10	0.0683	0.0923	0.0915
2,4-Dimethyloctane	I10	0.0683	0.0923	0.0915
2,6-Dimethyloctane	I10	0.0076	0.0103	0.0105
2,5-Dimethyloctane	I10	0.0253	0.0342	0.0339
n-Butylcyclopentane	N9	0.2060	0.2743	0.2516
3,3-Dimethyloctane	I10	0.1511	0.2041	0.2024
n-Propylbenzene	A9	0.3517	0.4013	0.3406
3,6-Dimethyloctane	I10	0.3010	0.4066	0.4029
3-Methyl-5-ethylheptane	I10	0.5693	0.6932	0.6998
1,3-Methylethylbenzene	A9	0.2852	0.3255	0.2739
1,4-Methylethylbenzene	A9	0.0708	0.0808	0.0680
1,3,5-Trimethylbenzene	A9	0.1291	0.1473	0.1248
2,3-Dimethyloctane	I10	0.0814	0.1100	0.1090
5-Methylnonane	I10	0.1933	0.2611	0.2612
1,2-Methylethylbenzene	A9	0.3774	0.4307	0.3605
2-Methylnonane	I10	0.0494	0.0667	0.0673
3-Ethyloctane	I10	0.1143	0.1544	0.1530
3-Methylnonane	I10	0.1930	0.2607	0.2605
1,2,4-Trimethylbenzene	A9	0.0360	0.0411	0.0344
t-Butylbenzene	A10	0.1545	0.1969	0.1666
i-Butylcyclohexane	N10	0.2618	0.3487	0.3148
1t-Methyl-2-n-propylcyclohexane	I10	0.1358	0.1654	0.1670
i-Butylbenzene	A10	0.0675	0.0860	0.0739
sec-Butylbenzene	A10	0.0570	0.0726	0.0618
UnknownC9s	U9	2.2881	2.7863	2.8442
n-Decane	P10	1.0869	1.4682	1.4735
1,2,3-Trimethylbenzene	A9	0.1724	0.1967	0.1613
1,3-Methyl-i-propylbenzene	A10	0.0881	0.1005	0.0841
1,4-Methyl-i-propylbenzene	A10	0.1050	0.1198	0.1003
Sec-Butylcyclohexane	N10	0.2410	0.3210	0.2894
1,2-Methyl-i-propylbenzene	A10	0.1665	0.2122	0.1775
3-Ethylnonane	I10	0.0414	0.0559	0.0564
1,3-Diethylbenzene	A10	0.1519	0.1936	0.1643
1,3-Methyl-n-propylbenzene	A10	0.0817	0.1041	0.0886
1,4-Diethylbenzene	A10	0.1182	0.1506	0.1281
1,4-Methyl-n-propylbenzene	A10	0.0522	0.0665	0.0568
n-Butylbenzene	A10	0.1185	0.1510	0.1285
1,3-Dimethyl-5-ethylbenzene	A10	0.0795	0.1013	0.0859
1,2-Diethylbenzene	A10	0.1044	0.1330	0.1109
1,2-Methyl-n-propylbenzene	A10	0.0867	0.1105	0.0927
1,4-Dimethyl-2-ethylbenzene	A10	0.0944	0.1203	0.1005
1,3-Dimethyl-4-ethylbenzene	A10	0.0326	0.0415	0.0347
1,2-Dimethyl-4-ethylbenzene	A10	0.1047	0.1334	0.1118
1,3-Dimethyl-2-ethylbenzene	A10	0.1537	0.1959	0.1613
1t,2c,4-Trimethylcyclopentane	A10	0.4824	0.5139	0.5037
1,2-Dimethyl-3-ethylbenzene	A10	0.0820	0.1045	0.0859
1,2-Ethyl-i-propylbenzene	A10	0.0647	0.0824	0.0689
1,4-Methyl-t-butylbenzene	A11	0.1854	0.2363	0.1976
UnknownC10s	U10	3.3440	4.5172	4.5336
n-Undecane	P11	0.7954	1.1804	1.1683
1,4-Ethyl-i-propylbenzene	A11	0.1045	0.1332	0.1114
1,2,4,5-Tetramethylbenzene	A11	0.1219	0.1553	0.1285
1,2-Methyl-n-butylbenzene	A11	0.0564	0.0719	0.0601
1,2,3,5-Tetramethylbenzene	A11	0.0995	0.1268	0.1044
1,2-Methyl-t-butylbenzene	A11	0.0648	0.0826	0.0691
5-Methylindan	A11	0.0144	0.0233	0.0228
4-Methylindan	A11	0.0116	0.0188	0.0184
1,2-Ethyl-n-propylbenzene	A11	0.0616	0.0785	0.0657

2-Methylindan	A11	0.0744	0.1203	0.1178
1,3-Methyl-n-butylbenzene	A11	0.0803	0.1023	0.0856
1,3-Di-i-propylbenzene	A11	0.0651	0.0830	0.0694
sec-Pentylbenzene	A11	0.1474	0.1878	0.1571
n-Pentylbenzene	A11	0.0362	0.0510	0.0435
1t-M-2-(4MP)cyclopentane	P12	0.0246	0.0398	0.0390
1,2-Di-n-propylbenzene	A11	0.0612	0.0780	0.0652
1,4-Di-i-propylbenzene	A11	0.0729	0.0929	0.0777
Tetrahydronaphthalene	A10	0.0359	0.0458	0.0383
t-Decahydronaphthalene	A10	0.1146	0.1460	0.1221
Naphthalene	A10	0.0867	0.1055	0.0882
1-t-Butyl-3,5-dimethylbenzene	A12	0.0936	0.1193	0.0998
1,4-Ethyl-t-butylbenzene	A11	0.0435	0.0554	0.0463
UnknownC11s	U11	2.4586	3.6487	3.6112
n-Dodecane	P12	0.4920	0.7957	0.7789
1,3-Di-n-propylbenzene	A12	0.0514	0.0655	0.0548
1,3,5-Triethylbenzene	A12	0.1171	0.1336	0.1132
1,2,4-Triethylbenzene	A12	0.2550	0.2910	0.2435
1,4-Methyl-n-pentylbenzene	A12	0.0325	0.0414	0.0346
n-Hexylbenzene	A12	0.0364	0.0561	0.0480
1,2,3,4,5-Pentamethylbenzene	A13	0.0554	0.0706	0.0590
2-Methylnaphthalene	A11	0.0707	0.0955	0.0799
1-Methylnaphthalene	A11	0.1038	0.1401	0.1007
UnknownC12s	U12	1.2141	1.9635	1.9219
n-Tridecane	P13	0.0993	0.1738	0.1681
UnknownC13s	U13	0.6274	1.0982	1.0623
n-Tetradecane	P14	0.0085	0.0160	0.0154
UnknownC14s	U14	0.4145	0.7807	0.7536
n-Pentadecane	P15	0.0003	0.0006	0.0006
UnknownC15s	U15	0.0280	0.0565	0.0539
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. :	201310096	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 18, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	1037
LEASE NO. :		SAMPLED BY :	JOHN MOSER- EMPACT
NAME/DESCRIP :	SALES GAS TO BURNER @ 14:25 MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	54
SAMPLE PRES. :	1.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF H2S STAIN @ 6.0 PPM @ 14:30		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0022	0.0049		
HELIUM	0.01	0.00	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.02	0.02	---	---
NITROGEN	1.10	1.16	---	---
CARBON DIOXIDE	2.45	4.06	---	---
METHANE	61.79860	37.29070	---	---
ETHANE	13.6750	15.4671	3.6564	3.6764
PROPANE	11.8893	19.7203	3.2745	3.2924
I-BUTANE	1.4402	3.1487	0.4711	0.4737
N-BUTANE	4.4080	9.6371	1.3892	1.3968
I-PENTANE	0.9825	2.6592	0.3518	0.3537
N-PENTANE	1.0757	2.9193	0.3899	0.3920
HEXANES PLUS	1.1385	3.9127	0.4617	0.4642
TOTALS	100.00000	100.00000	9.9946	10.0492

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0491	0.1443
TOLUENE	0.0257	0.0891
ETHYLBENZENE	0.0006	0.0024
XYLENES	0.0067	0.0268
TOTAL BTEX	0.0821	0.2626

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1365.3 **/scf**	1372.8 **/scf**
	NET WET REAL :	1341.4 **/scf**	1348.9 **/scf**
HIGH	GROSS DRY REAL :	1497.1 **/scf**	1505.3 **/scf**
	GROSS WET REAL :	1470.9 **/scf**	1479.1 **/scf**
	NET DRY REAL :	19510.2 **/lb**	19616.8 **/lb**
	GROSS DRY REAL :	21393.1 **/lb**	21510.0 **/lb**
	RELATIVE DENSITY (AIR=1):		0.9170
	COMPRESSIBILITY FACTOR :		0.99458

(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

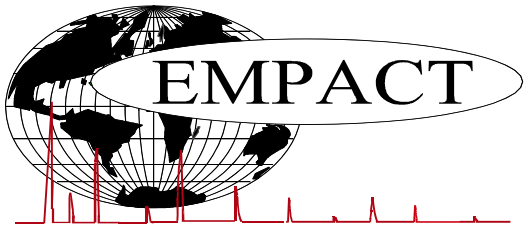
303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201310096	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 18, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	1037
LEASE NO. :		SAMPLED BY :	JOHN MOSER- EMPACT
NAME/DESCRIP :	SALES GAS TO BURNER @ 14:25 MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	54
SAMPLE PRES. :	1.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF H2S STAIN @ 6.0 PPM @ 14:30		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	2.45	4.06
Nitrogen	1.10	1.16
Methane	61.79860	37.29070
Ethane	13.6750	15.4671
Propane	11.8893	19.7203
Isobutane	1.4402	3.1487
n-Butane	4.4080	9.6371
Isopentane	0.8873	2.4080
n-Pentane	1.0757	2.9193
Cyclopentane	0.0952	0.2512
n-Hexane	0.2343	0.7595
Cyclohexane	0.0597	0.1890
Other Hexanes	0.4161	1.3387
Heptanes	0.2019	0.7558
Methycyclohexane	0.0452	0.1669
2,2,4 Trimethylpentane	0.0002	0.0009
Benzene	0.0491	0.1443
Toluene	0.0257	0.0891
Ethylbenzene	0.0006	0.0024
Xylenes	0.0067	0.0268
C8+ Heavies	0.0990	0.4393
Subtotal	99.97780	99.97510
Oxygen/Argon	0.02	0.02
Alcohols	0.0022	0.0049
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201310096	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 18, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	1037
LEASE NO. :		SAMPLED BY :	JOHN MOSER- EMPACT
NAME/DESCRIP :	SALES GAS TO BURNER @ 14:25 MURPHY FAMILY 4-64-25 1H		
FIELD DATA		SAMPLE TEMP. :	54
SAMPLE PRES. :	1.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; PROBE; LENGTH OF H2S STAIN @ 6.0 PPM @ 14:30		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.01	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.02	0.02	---	---
Nitrogen	---	1.10	1.16	---	---
Carbon Dioxide	---	2.45	4.06	---	---
Methane	P1	61.79860	37.29070	---	---
Ethane	P2	13.6750	15.4671	3.656	3.676
Propane	P3	11.8893	19.7203	3.275	3.292
i-Butane	I4	1.4402	3.1487	0.471	0.474
n-Butane	P4	4.4080	9.6371	1.389	1.397
2,2-Dimethylpropane	I5	0.0035	0.0095	0.001	0.001
Ethanol	X2	0.0003	0.0005	0.000	0.000
i-Pentane	I5	0.8838	2.3985	0.323	0.325
Acetone	X3	0.0015	0.0033	0.001	0.001
i-Propanol	X3	0.0002	0.0005	0.000	0.000
n-Pentane	P5	1.0756	2.9190	0.390	0.392
t-Butanol	X4	0.0002	0.0006	0.000	0.000
2,2-Dimethylbutane	I6	0.0024	0.0078	0.001	0.001
Cyclopentane	N5	0.0952	0.2512	0.028	0.028
2,3-Dimethylbutane	I6	0.0112	0.0363	0.005	0.005
2-Methylpentane	I6	0.1784	0.5783	0.074	0.075
3-Methylpentane	I6	0.0906	0.2937	0.037	0.037
UnknownC5s	U5	0.0001	0.0003	0.000	0.000
n-Hexane	P6	0.2343	0.7595	0.096	0.097
2,2-Dimethylpentane	I7	0.0008	0.0030	0.000	0.000
Methylcyclopentane	N6	0.1335	0.4226	0.047	0.047
2,4-Dimethylpentane	I7	0.0061	0.0230	0.003	0.003
2,2,3-Trimethylbutane	I7	0.0001	0.0004	0.000	0.000
Benzene	A6	0.0491	0.1443	0.014	0.014
3,3-Dimethylpentane	I7	0.0005	0.0019	0.000	0.000
Cyclohexane	N6	0.0597	0.1890	0.020	0.020
2-Methylhexane	I7	0.0250	0.0942	0.012	0.012
2,3-Dimethylpentane	I7	0.0119	0.0448	0.005	0.005
1,1-Dimethylcyclopentane	N7	0.0050	0.0185	0.002	0.002
3-Methylhexane	I7	0.0286	0.1078	0.013	0.013
1c,3-Dimethylcyclopentane	N7	0.0143	0.0528	0.007	0.007

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1t,3-Dimethylcyclopentane	N7	0.0128	0.0473	0.006	0.006
3-Ethylpentane	I7	0.0021	0.0079	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0271	0.1001	0.012	0.012
2,2,4-Trimethylpentane	I8	0.0002	0.0009	0.000	0.000
n-Heptane	P7	0.0584	0.2201	0.027	0.027
1c,2-Dimethylcyclopentane	N7	0.0019	0.0070	0.001	0.001
Methylcyclohexane	N7	0.0452	0.1669	0.018	0.018
2,2-Dimethylhexane	I8	0.0027	0.0116	0.001	0.001
Ethylcyclopentane	N7	0.0073	0.0270	0.003	0.003
2,5-Dimethylhexane	I8	0.0012	0.0052	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0001	0.0004	0.000	0.000
2,4-Dimethylhexane	I8	0.0021	0.0090	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0037	0.0156	0.002	0.002
3,3-Dimethylhexane	I8	0.0002	0.0009	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0042	0.0177	0.002	0.002
2,3,4-Trimethylpentane	I8	0.0009	0.0039	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0004	0.000	0.000
Toluene	A7	0.0257	0.0891	0.009	0.009
2,3-Dimethylhexane	I8	0.0016	0.0069	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0012	0.0052	0.001	0.001
2-Methylheptane	I8	0.0094	0.0404	0.005	0.005
4-Methylheptane	I8	0.0027	0.0116	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0001	0.0004	0.000	0.000
3,4-Dimethylhexane	I8	0.0003	0.0013	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0002	0.0008	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0002	0.0008	0.000	0.000
3-Methylheptane	I8	0.0043	0.0185	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0055	0.0232	0.003	0.003
3-Ethylhexane	I8	0.0005	0.0021	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0019	0.0080	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0007	0.0030	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0014	0.0059	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0012	0.0051	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0039	0.0165	0.002	0.002
2,2,4-Trimethylhexane	I9	0.0002	0.0010	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0030	0.0127	0.002	0.002
n-Octane	P8	0.0129	0.0554	0.007	0.007
1c,4-Dimethylcyclohexane	N8	0.0010	0.0042	0.001	0.001
i-Propylcyclopentane	I8	0.0003	0.0013	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0010	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	0.0009	0.0038	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0040	0.0190	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0013	0.0063	0.001	0.001
2,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
Ethylcyclohexane	N8	0.0019	0.0080	0.001	0.001
n-Propylcyclopentane	N8	0.0007	0.0030	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0014	0.000	0.000
3,3-Dimethylheptane	I9	0.0003	0.0014	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	0.0001	0.0005	0.000	0.000
Ethylbenzene	I8	0.0006	0.0024	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0025	0.0119	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0044	0.0176	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0008	0.0032	0.000	0.000

3,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0004	0.0019	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
4-Methyloctane	I9	0.0007	0.0034	0.000	0.000
2-Methyloctane	I9	0.0008	0.0039	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0002	0.0009	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
3-Methyloctane	I9	0.0010	0.0048	0.001	0.001
1c,2t,4c-Trimethylcyclohexane	I9	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	0.0015	0.0060	0.001	0.001
i-Butylcyclopentane	N9	0.0005	0.0024	0.000	0.000
n-Nonane	P9	0.0026	0.0125	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0004	0.0019	0.000	0.000
i-Propylbenzene	A9	0.0008	0.0036	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0009	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
2,5-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Butylcyclopentane	N9	0.0005	0.0024	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Propylbenzene	A9	0.0004	0.0018	0.000	0.000
3,6-Dimethyloctane	I10	0.0003	0.0016	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0005	0.0027	0.000	0.000
1,3-Methylethylbenzene	A9	0.0003	0.0014	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	0.0001	0.0005	0.000	0.000
5-Methylnonane	I10	0.0002	0.0011	0.000	0.000
1,2-Methylethylbenzene	A9	0.0004	0.0018	0.000	0.000
3-Ethyloctane	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
i-Butylcyclohexane	N10	0.0001	0.0005	0.000	0.000
1t-Methyl-2-n-propylcyclohexane	I10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0028	0.0135	0.002	0.002
n-Decane	P10	0.0006	0.0032	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-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
UnknownC10s	U10	0.0014	0.0075	0.001	0.001
n-Undecane	P11	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0003	0.0018	0.000	0.000
TOTAL		100.00000	100.00000	9.9956	10.0502

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0491	0.1443
TOLUENE	0.0257	0.0891
ETHYLBENZENE	0.0006	0.0024
XYLENES	0.0067	0.0268
TOTAL BTEX	0.0821	0.2626

	BTU @	14.650		14.730
LOW	NET DRY REAL :	1365.3	**/scf**	1372.8 **/scf**
	NET WET REAL :	1341.4	**/scf**	1348.9 **/scf**
HIGH	GROSS DRY REAL :	1497.1	**/scf**	1505.3 **/scf**
	GROSS WET REAL :	1470.9	**/scf**	1479.1 **/scf**
	NET DRY REAL :	19510.2	**/lb**	19616.8 **/lb**
	GROSS DRY REAL :	21393.1	**/lb**	21510.0 **/lb**

RELATIVE DENSITY (AIR=1): 0.9170

COMPRESSIBILITY FACTOR : 0.99458

(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.

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

CRUDE OIL ASSAY

PROJECT NO. :	201310096	ANALYSIS NO. :	04
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	OCTOBER 18, 2013
ACCOUNT NO. :		SAMPLE DATE :	OCTOBER 15, 2013
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK @ 14:40 MURPHY FAMILY 4-64-25 1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	64
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

SPECIFICATION		TEST METHOD	UNITS	RESULTS
API GRAVITY			API 60/60	37.7
RVP @100 DEG F		D323	PSIG	8.8
TOTAL SULFUR		D2622	WT %	N/A
TOTAL CHLORIDE		D4929	ug/g	N/A
ORGANIC CHLORIDE		D4929	ug/g	N/A
FLASH POINT		D93	° F	N/A
HEATING VALUE		D4809	BTU/ LB	N/A
VISUAL APPEARANCE				DARK BROWN
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