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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201402111	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	3707
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	L.P. OIL TREATER @ 13:45 WALKER 12-1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	VOL %
NITROGEN (AIR)	0.0347	0.0091	0.0083
CARBON DIOXIDE	0.0461	0.0190	0.0172
METHANE	0.1990	0.0298	0.0737
ETHANE	0.7134	0.2004	0.4172
PROPANE	2.4345	1.0029	1.4669
I-BUTANE	0.6556	0.3559	0.4689
N-BUTANE	2.8904	1.5692	1.9926
I-PENTANE	1.2798	0.8625	1.0242
N-PENTANE	1.9610	1.3216	1.5528
HEXANES PLUS	89.7855	94.6296	92.9782
TOTALS	100.0000	100.0000	100.0000

BTEX COMPONENTS	**MOLE%**	**MASS%**
BENZENE	1.7555	1.2808
TOLUENE	3.5004	3.0127
ETHYLBENZENE	0.9598	0.9519
XYLENE	2.2182	2.1999
TOTAL BTEX	8.4339	7.4453

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

	TOTAL SAMPLE	**C6+ FRACTION**	
Specific Gravity (H2O=1) =	0.7417	0.7552	60/60
API Gravity =	59.28	55.87	60/60
Molecular Weight =	107.06	113.335	
Absolute Density =	6.18	6.29	LBS/GAL
Heating Value Liq. Idl Gas=	125130	127819	BTU/GAL
Vapor/Liquid =	21.90	21.19	CUFT/GAL
Vapor Pressure =	24.25	1.61	PSIA @100 F

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

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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

E & P TANK / GLYCALC INFORMATION

PROJECT NO. :	201402111	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	3707
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	L.P. OIL TREATER @ 13:45 WALKER 12-1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	Mole %		Wt %		LV %	
CARBON DIOXIDE	0.0461		0.0190		0.0172	
NITROGEN (AIR)	0.0347		0.0091		0.0083	
METHANE	0.1990		0.0298		0.0737	
ETHANE	0.7134		0.2004		0.4172	
PROPANE	2.4345		1.0029		1.4669	
I-BUTANE	0.6556		0.3559		0.4689	
N-BUTANE	2.8904		1.5692		1.9926	
I-PENTANE	1.2798		0.8625		1.0242	
N-PENTANE	1.9610		1.3216		1.5528	
CYCLOPENTANE (N-C5)	1.0563		0.6920		0.6750	
N-HEXANE	5.3485		4.3047		4.8090	
CYCLOHEXANE (OTHER C6)	2.5102		1.9733		1.8678	
OTHER HEXANES	8.9778		7.1566		7.6139	
OTHER HEPTANES	13.0154		12.0984		12.6191	
METHYLCYCLOHEXANE (OTHER C7)	4.1154		3.7746		3.6131	
2,2,4 TRIMETHYLPENTANE	0.7819		0.7171		0.7058	
BENZENE	1.7555		1.2808		1.0758	
TOLUENE	3.5004		3.0127		2.5554	
ETHYLBENZENE	0.9598		0.9519		0.8073	
XYLENES	2.2182		2.1999		1.8671	
OTHER OCTANES	12.5391		13.3831		13.4481	
OCTANES PLUS	----	49.5060	----	60.3365	----	58.1491
NONANES	12.7652		15.1084		14.7445	
DECANES PLUS	20.2418		27.9761		26.5763	
SUB TOTAL	100.0000		100.0000		100.0000	
TOTAL	100.0000		100.0000		100.0000	

API Gravity =	**59.28**	60/60
Vapor Pressure =	**24.25**	PSIA & 100 F
Average Molecular Weight of Decanes plus =	**147.96**	
Average Specific Gravity of Decanes plus =	**0.7770**	

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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

BY CARBON NUMBER

PROJECT NO. :	201402111	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	3707
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	L.P. OIL TREATER @ 13:45		EMPACT
	WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT / CARBON NUMBER		MOLE%	MASS %	VOLUME %
NITROGEN		0.0347	0.0091	0.0083
CARBON DIOXIDE		0.0461	0.0190	0.0172
	C1	0.1990	0.0298	0.0737
	C2	0.7134	0.2004	0.4172
	C3	2.4345	1.0029	1.4669
	C4	3.5460	1.9251	2.4615
	C5	4.2971	2.8761	3.2520
	C6	18.5920	14.7154	15.3665
	C7	20.6312	18.8857	18.7876
	C8	16.4990	17.2520	16.8283
	C9	12.7652	15.1084	14.7445
	C10	10.5863	13.5651	12.9581
	C11	5.0767	6.9989	6.4971
	C12	2.5144	3.7566	3.5931
	C13	1.1642	1.9457	1.8732
	C14	0.6678	1.2375	1.2022
	C15	0.1953	0.3875	0.3721
	C16	0.0192	0.0406	0.0387
	C17	0.0050	0.0113	0.0108
	C18	0.0040	0.0095	0.0090
	C19	0.0038	0.0095	0.0090
	C20	0.0029	0.0077	0.0072
	C21	0.0015	0.0042	0.0039
	C22	0.0007	0.0020	0.0019
	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

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

303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201402111	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	3707
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	L.P. OIL TREATER @ 13:45 WALKER 12-1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	VOL %
Nitrogen	NHC	0.0347	0.0091	0.0083
Carbon Dioxide	NHC	0.0461	0.0190	0.0172
Methane	P1	0.1990	0.0298	0.0737
Ethane	P2	0.7134	0.2004	0.4172
Propane	P3	2.4345	1.0029	1.4669
i-Butane	I4	0.6556	0.3559	0.4689
n-Butane	P4	2.8904	1.5692	1.9926
2,2-Dimethylpropane	I5	0.0077	0.0052	0.0065
i-Pentane	I5	1.2721	0.8573	1.0177
n-Pentane	P5	1.9610	1.3216	1.5528
2,2-Dimethylbutane	I6	0.0330	0.0266	0.0302
Cyclopentane	N5	1.0563	0.6920	0.6750
2,3-Dimethylbutane	I6	0.3091	0.2488	0.2766
2-Methylpentane	I6	3.0550	2.4593	2.7726
3-Methylpentane	I6	1.8407	1.4818	1.6427
n-Hexane	P6	5.3485	4.3047	4.8090
2,2-Dimethylpentane	I7	0.0236	0.0221	0.0240
Methylcyclopentane	N6	3.7400	2.9401	2.8918
2,4-Dimethylpentane	I7	0.2386	0.2233	0.2448
2,2,3-Trimethylbutane	I7	0.0153	0.0143	0.0153
Benzene	A6	1.7555	1.2808	1.0758
3,3-Dimethylpentane	I7	0.0306	0.0286	0.0305
Cyclohexane	N6	2.5102	1.9733	1.8678
2-Methylhexane	I7	1.1617	1.0873	1.1816
2,3-Dimethylpentane	I7	0.6993	0.6545	0.6910
1,1-Dimethylcyclopentane	N7	0.3288	0.3016	0.2946
3-Methylhexane	I7	1.7481	1.6362	1.7514
1c,3-Dimethylcyclopentane	N7	0.8497	0.7793	0.7710
1t,3-Dimethylcyclopentane	N7	0.7819	0.7171	0.7058
3-Ethylpentane	I7	0.1544	0.1445	0.1522
1t,2-Dimethylcyclopentane	N7	1.6893	1.5494	1.5196
2,2,4-Trimethylpentane	I8	0.1061	0.1132	0.1201
n-Heptane	P7	4.4973	4.2093	4.5355
1c,2-Dimethylcyclopentane	N7	0.1647	0.1511	0.1442
Methylcyclohexane	N7	4.1154	3.7746	3.6131

2,2-Dimethylhexane	I8	0.4652	0.4964	0.5258
Ethylcyclopentane	N7	0.6321	0.5798	0.5576
2,5-Dimethylhexane	I8	0.1592	0.1699	0.1804
2,2,3-Trimethylpentane	I8	0.0217	0.0232	0.0239
2,4-Dimethylhexane	I8	0.2586	0.2759	0.2916
1c,2t,4-Trimethylcyclopentane	N8	0.4134	0.4333	0.4184
3,3-Dimethylhexane	I8	0.0503	0.0537	0.0558
2,3,4-Trimethylpentane	I8	0.1099	0.1173	0.1201
2,3,3-Trimethylpentane	I8	0.0042	0.0045	0.0046
Toluene	A7	3.5004	3.0127	2.5554
2,3-Dimethylhexane	I8	0.1722	0.1837	0.1902
2-Methyl-3-ethylpentane	I8	0.1785	0.1905	0.1951
1,1,2-Trimethylcyclopentane	N8	0.0108	0.0113	0.0108
2-Methylheptane	I8	1.4724	1.5711	1.6559
4-Methylheptane	I8	0.5091	0.5432	0.5587
3-Methyl-3-ethylpentane	I8	0.0927	0.0989	0.1003
3,4-Dimethylhexane	I8	0.1065	0.1136	0.1163
1c,2c,4-Trimethylcyclopentane	N8	0.0397	0.0416	0.0398
1c,3-Dimethylcyclohexane	N8	0.0359	0.0376	0.0362
3-Methylheptane	I8	0.6395	0.6824	0.7130
1c,2t,3-Trimethylcyclopentane	N8	1.0251	1.0744	1.0281
3-Ethylhexane	I8	0.1877	0.2003	0.2071
1t,4-Dimethylcyclohexane	N8	0.5304	0.5559	0.5374
1,1-Dimethylcyclohexane	N8	0.1502	0.1574	0.1486
3c-Ethylmethylcyclopentane	N8	0.0072	0.0075	0.0072
3t-Ethylmethylcyclopentane	N8	0.2417	0.2533	0.2436
2t-Ethylmethylcyclopentane	N8	0.2018	0.2115	0.2028
1,1-Methylethylcyclopentane	N8	0.7115	0.7458	0.7042
2,2,4-Trimethylhexane	I9	0.0676	0.0810	0.0835
1t,2-Dimethylcyclohexane	N8	0.6718	0.7041	0.6692
1t,3-Dimethylcyclohexane	N8	0.0040	0.0042	0.0039
n-Octane	P8	2.6610	2.8393	2.9783
1c,4-Dimethylcyclohexane	N8	0.6043	0.6334	0.5966
i-Propylcyclopentane	I8	0.0870	0.0912	0.0866
2,4,4-Trimethylhexane	I9	0.0229	0.0274	0.0280
2,2,3,4-Tetramethylpentane	I9	0.0200	0.0240	0.0246
2,3,4-Trimethylhexane	I9	0.0205	0.0246	0.0251
1c,2-Dimethylcyclohexane	N8	0.2416	0.2532	0.2345
2,3,5-Trimethylhexane	I9	0.0833	0.0998	0.1019
2,2-Dimethylheptane	I9	0.0213	0.0255	0.0265
1,1,4-Trimethylcyclohexane	N9	1.0216	1.2047	1.1509
2,2,3-Trimethylhexane	I9	0.6288	0.7533	0.7615
2,4-Dimethylheptane	I9	0.0857	0.1027	0.1058
4,4-Dimethylheptane	I9	0.0846	0.1014	0.1045
Ethylcyclohexane	N8	0.7481	0.7841	0.7341
n-Propylcyclopentane	N8	0.2804	0.2939	0.2790
1c,3c,5-Trimethylcyclohexane	N9	0.0536	0.0632	0.0604
2,5-Dimethylheptane	I9	0.0944	0.1131	0.1163
3,3-Dimethylheptane	I9	0.1136	0.1361	0.1400
3,5-Dimethylheptane	I9	0.0810	0.0970	0.0998
2,6-Dimethylheptane	I9	0.0706	0.0846	0.0880
1,1,3-Trimethylcyclohexane	N9	0.1036	0.1222	0.1167
Ethylbenzene	A8	0.9598	0.9519	0.8073
1c,2t,4t-Trimethylcyclohexane	N9	0.3931	0.4636	0.4344
2,3-Dimethylheptane	I9	0.0198	0.0237	0.0241
1,3-Dimethylbenzene (m-Xylene)	A8	0.6061	0.6011	0.5127
1,4-Dimethylbenzene (p-Xylene)	A8	0.8234	0.8166	0.6988
3,4-Dimethylheptane	I9	0.5252	0.6292	0.6343
3,4-Dimethylheptane (2)	I9	0.1976	0.2367	0.2386
4-Ethylheptane	I9	0.0429	0.0514	0.0530
4-Methyloctane	I9	0.2715	0.3253	0.3328
2-Methyloctane	I9	0.3993	0.4784	0.4943
1c,2t,4c-Trimethylcyclohexane	I9	0.0829	0.0993	0.1009
3-Ethylheptane	I9	0.0966	0.1157	0.1174
3-Methyloctane	I9	0.5189	0.6217	0.6360
3,3-Diethylpentane	I9	0.0728	0.0872	0.0852
1c,2t,3-Trimethylcyclohexane	N9	0.0984	0.1160	0.1087

1,1,2-Trimethylcyclohexane	N9	0.0255	0.0301	0.0282
1,2-Dimethylbenzene (o-Xylene)	A8	0.7887	0.7822	0.6556
i-Butylcyclopentane	N9	0.3730	0.4398	0.4153
UnknownC8s	U8	0.1213	0.1294	0.1357
n-Nonane	P9	1.9138	2.2929	2.3556
1,1-Methylethylcyclohexane	N9	0.4882	0.5849	0.6027
i-Propylbenzene	A9	0.3294	0.3698	0.3158
i-Propylcyclohexane	N9	0.1162	0.1370	0.1260
2,2-Dimethyloctane	I10	0.0892	0.1186	0.1183
2,4-Dimethyloctane	I10	0.0916	0.1217	0.1214
2,6-Dimethyloctane	I10	0.0177	0.0235	0.0242
2,5-Dimethyloctane	I10	0.0386	0.0513	0.0512
n-Butylcyclopentane	N9	0.3380	0.4429	0.4088
3,3-Dimethyloctane	I10	0.1333	0.1772	0.1768
n-Propylbenzene	A9	0.5154	0.5786	0.4942
3,6-Dimethyloctane	I10	0.3822	0.5080	0.5066
3-Methyl-5-ethylheptane	I10	0.5217	0.6250	0.6350
1,3-Methylethylbenzene	A9	0.3789	0.4254	0.3603
1,4-Methylethylbenzene	A9	0.1855	0.2083	0.1764
1,3,5-Trimethylbenzene	A9	0.1482	0.1664	0.1419
2,3-Dimethyloctane	I10	0.0637	0.0847	0.0845
5-Methylnonane	I10	0.3019	0.4012	0.4039
1,2-Methylethylbenzene	A9	0.5720	0.6422	0.5410
2-Methylnonane	I10	0.1089	0.1447	0.1469
3-Ethyloctane	I10	0.0349	0.0464	0.0463
3-Methylnonane	I10	0.1785	0.2372	0.2385
1,2,4-Trimethylbenzene	A9	0.0093	0.0104	0.0088
t-Butylbenzene	A10	0.6639	0.8324	0.7090
i-Butylcyclohexane	N10	0.2774	0.3635	0.3303
1t-Methyl-2-n-propylcyclohexane	I10	0.0584	0.0700	0.0711
i-Butylbenzene	A10	0.0773	0.0969	0.0838
sec-Butylbenzene	A10	0.0512	0.0642	0.0550
UnknownC9s	U9	1.8051	2.1626	2.2218
n-Decane	P10	1.3246	1.7604	1.7781
1,2,3-Trimethylbenzene	A9	0.2746	0.3083	0.2545
1,3-Methyl-i-propylbenzene	A10	0.1353	0.1519	0.1280
1,4-Methyl-i-propylbenzene	A10	0.0693	0.0778	0.0655
Sec-Butylcyclohexane	N10	0.3666	0.4803	0.4359
1,2-Methyl-i-propylbenzene	A10	0.1877	0.2353	0.1981
3-Ethylnonane	I10	0.0599	0.0796	0.0808
1,3-Diethylbenzene	A10	0.1259	0.1578	0.1348
1,3-Methyl-n-propylbenzene	A10	0.0490	0.0614	0.0526
1,4-Diethylbenzene	A10	0.1761	0.2208	0.1890
1,4-Methyl-n-propylbenzene	A10	0.0662	0.0830	0.0713
n-Butylbenzene	A10	0.1555	0.1950	0.1670
1,3-Dimethyl-5-ethylbenzene	A10	0.0787	0.0987	0.0842
1,2-Diethylbenzene	A10	0.1094	0.1372	0.1151
1,2-Methyl-n-propylbenzene	A10	0.0924	0.1158	0.0978
1,4-Dimethyl-2-ethylbenzene	A10	0.1168	0.1464	0.1231
1,3-Dimethyl-4-ethylbenzene	A10	0.0385	0.0483	0.0407
1,2-Dimethyl-4-ethylbenzene	A10	0.1982	0.2485	0.2097
1,3-Dimethyl-2-ethylbenzene	A10	0.2012	0.2523	0.2091
1t,2c,4-Trimethylcyclopentane	A10	0.5378	0.5637	0.5560
1,2-Dimethyl-3-ethylbenzene	A10	0.1352	0.1695	0.1402
1,2-Ethyl-i-propylbenzene	A10	0.1359	0.1704	0.1434
1,4-Methyl-t-butylbenzene	A11	0.1516	0.1901	0.1600
UnknownC10s	U10	2.8887	3.8392	3.8779
n-Undecane	P11	1.0229	1.4935	1.4876
1,4-Ethyl-i-propylbenzene	A11	0.1702	0.2134	0.1796
1,2,4,5-Tetramethylbenzene	A11	0.2037	0.2554	0.2127
1,2-Methyl-n-butylbenzene	A11	0.1136	0.1424	0.1199
1,2,3,5-Tetramethylbenzene	A11	0.0934	0.1171	0.0971
1,2-Methyl-t-butylbenzene	A11	0.1570	0.1968	0.1657
5-Methylindan	A11	0.0233	0.0371	0.0366
4-Methylindan	A11	0.0069	0.0110	0.0108
1,2-Ethyl-n-propylbenzene	A11	0.1263	0.1583	0.1332
2-Methylindan	A11	0.1067	0.1698	0.1673

1,3-Methyl-n-butylbenzene	A11	0.1557	0.1952	0.1643
1,3-Di-i-propylbenzene	A11	0.1634	0.2049	0.1725
sec-Pentylbenzene	A11	0.0907	0.1137	0.0957
1t-M-2-(4MP)cyclopentane	P12	0.0842	0.1340	0.1320
1,2-Di-n-propylbenzene	A11	0.0982	0.1231	0.1036
1,4-Di-i-propylbenzene	A11	0.1544	0.1936	0.1630
Tetrahydronaphthalene	A10	0.0153	0.0192	0.0162
t-Decahydronaphthalene	A10	0.1535	0.1925	0.1620
Naphthalene	A10	0.0782	0.0936	0.0788
1-t-Butyl-3,5-dimethylbenzene	A12	0.0595	0.0746	0.0628
1,4-Ethyl-t-butylbenzene	A11	0.1661	0.2082	0.1752
UnknownC11s	U11	1.6866	2.4626	2.4529
n-Dodecane	P12	0.6114	0.9728	0.9583
1,3-Di-n-propylbenzene	A12	0.0588	0.0737	0.0620
1,3,5-Triethylbenzene	A12	0.0951	0.1068	0.0911
1,2,4-Triethylbenzene	A12	0.2867	0.3219	0.2711
1,4-Methyl-n-pentylbenzene	A12	0.0561	0.0703	0.0592
n-Hexylbenzene	A12	0.0852	0.1291	0.1111
1,2,3,4,5-Pentamethylbenzene	A13	0.1264	0.1585	0.1334
2-Methylnaphthalene	A11	0.1814	0.2409	0.2028
1-Methylnaphthalene	A11	0.2046	0.2718	0.1966
UnknownC12s	U12	1.1774	1.8734	1.8455
n-Tridecane	P13	0.2281	0.3928	0.3824
UnknownC13s	U13	0.8097	1.3944	1.3574
n-Tetradecane	P14	0.0334	0.0619	0.0601
UnknownC14s	U14	0.6344	1.1756	1.1421
n-Pentadecane	P15	0.0174	0.0345	0.0331
UnknownC15s	U15	0.1779	0.3530	0.3390
n-Hexadecane	P16	0.0026	0.0055	0.0052
UnknownC16s	U16	0.0166	0.0351	0.0335
n-Heptadecane	P17	0.0031	0.0070	0.0067
UnknownC17s	U17	0.0019	0.0043	0.0041
n-Octadecane	P18	0.0024	0.0057	0.0054
UnknownC18s	U18	0.0016	0.0038	0.0036
n-Nonadecane	P19	0.0038	0.0095	0.0090
n-Eicosane	P20	0.0029	0.0077	0.0072
n-Heneicosane	P21	0.0015	0.0042	0.0039
n-Docosane	P22	0.0007	0.0020	0.0019
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. :	201402111	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	1043
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	L.P. OIL TREATER @ 13:55 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0043	0.0043		
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	0.21	0.18	---	---
CARBON DIOXIDE	3.51	4.80	---	---
METHANE	39.65180	19.75340	---	---
ETHANE	21.6630	20.2278	5.8103	5.8420
PROPANE	22.3509	30.6056	6.1753	6.2090
I-BUTANE	2.4783	4.4731	0.8134	0.8178
N-BUTANE	7.0524	12.7289	2.2300	2.2422
I-PENTANE	1.2168	2.7206	0.4393	0.4418
N-PENTANE	1.2069	2.7041	0.4384	0.4408
HEXANES PLUS	0.6456	1.7922	0.2531	0.2546
TOTALS	100.00000	100.00000	16.1598	16.2482

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0377	0.0914
TOLUENE	0.0098	0.0280
ETHYLBENZENE	0.0007	0.0023
XYLENES	0.0021	0.0068
TOTAL BTEX	0.0503	0.1285

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1641.8 **/scf**	1650.8 **/scf**
	NET WET REAL :	1613.1 **/scf**	1622.1 **/scf**
HIGH	GROSS DRY REAL :	1793.8 **/scf**	1803.6 **/scf**
	GROSS WET REAL :	1762.4 **/scf**	1772.2 **/scf**
	NET DRY REAL :	19364.4 **/lb**	19470.2 **/lb**
	GROSS DRY REAL :	21152.9 **/lb**	21268.5 **/lb**
	RELATIVE DENSITY (AIR=1):		1.1105
	COMPRESSIBILITY FACTOR :		0.99150

(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

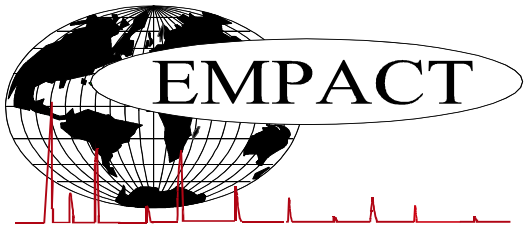
303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201402111	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	1043
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	L.P. OIL TREATER @ 13:55 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	3.51	4.80
Nitrogen	0.21	0.18
Methane	39.65180	19.75340
Ethane	21.6630	20.2278
Propane	22.3509	30.6056
Isobutane	2.4783	4.4731
n-Butane	7.0524	12.7289
Isopentane	1.1271	2.5252
n-Pentane	1.2069	2.7041
Cyclopentane	0.0897	0.1954
n-Hexane	0.1399	0.3744
Cyclohexane	0.0326	0.0852
Other Hexanes	0.2948	0.7837
Heptanes	0.0765	0.2361
Methycyclohexane	0.0175	0.0533
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0377	0.0914
Toluene	0.0098	0.0280
Ethylbenzene	0.0007	0.0023
Xylenes	0.0021	0.0068
C8+ Heavies	0.0340	0.1310
Subtotal	99.98570	99.98570
Oxygen/Argon	0.01	0.01
Alcohols	0.0043	0.0043
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201402111	ANALYSIS NO. :	02
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	1043
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	L.P. OIL TREATER @ 13:55 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	85
SAMPLE PRES. :	29	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.00	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.01	0.01	---	---
Nitrogen	---	0.21	0.18	---	---
Carbon Dioxide	---	3.51	4.80	---	---
Methane	P1	39.65180	19.75340	---	---
Ethane	P2	21.6630	20.2278	5.810	5.842
Propane	P3	22.3509	30.6056	6.175	6.209
i-Butane	I4	2.4783	4.4731	0.813	0.818
Methanol	X1	0.0043	0.0043	0.001	0.001
n-Butane	P4	7.0524	12.7289	2.230	2.242
2,2-Dimethylpropane	I5	0.0056	0.0125	0.002	0.002
i-Pentane	I5	1.1215	2.5127	0.411	0.414
n-Pentane	P5	1.2066	2.7034	0.438	0.441
2,2-Dimethylbutane	I6	0.0025	0.0067	0.001	0.001
Cyclopentane	N5	0.0897	0.1954	0.026	0.026
2,3-Dimethylbutane	I6	0.0137	0.0367	0.006	0.006
2-Methylpentane	I6	0.1317	0.3525	0.055	0.056
3-Methylpentane	I6	0.0626	0.1675	0.025	0.025
UnknownC5s	U5	0.0003	0.0007	0.000	0.000
n-Hexane	P6	0.1399	0.3744	0.057	0.058
2,2-Dimethylpentane	I7	0.0003	0.0009	0.000	0.000
Methylcyclopentane	N6	0.0843	0.2203	0.030	0.030
2,4-Dimethylpentane	I7	0.0029	0.0090	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0001	0.0003	0.000	0.000
Benzene	A6	0.0377	0.0914	0.011	0.011
3,3-Dimethylpentane	I7	0.0003	0.0009	0.000	0.000
Cyclohexane	N6	0.0326	0.0852	0.011	0.011
2-Methylhexane	I7	0.0098	0.0305	0.005	0.005
2,3-Dimethylpentane	I7	0.0046	0.0143	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0027	0.0082	0.001	0.001
3-Methylhexane	I7	0.0106	0.0330	0.005	0.005
1c,3-Dimethylcyclopentane	N7	0.0062	0.0189	0.003	0.003
1t,3-Dimethylcyclopentane	N7	0.0054	0.0165	0.002	0.002
3-Ethylpentane	I7	0.0007	0.0022	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0108	0.0329	0.005	0.005

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

n-Heptane	P7	0.0191	0.0594	0.009	0.009
1c,2-Dimethylcyclopentane	N7	0.0008	0.0024	0.000	0.000
Methylcyclohexane	N7	0.0175	0.0533	0.007	0.007
2,2-Dimethylhexane	I8	0.0011	0.0039	0.001	0.001
Ethylcyclopentane	N7	0.0022	0.0067	0.001	0.001
2,5-Dimethylhexane	I8	0.0003	0.0011	0.000	0.000
2,4-Dimethylhexane	I8	0.0006	0.0021	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0012	0.0042	0.001	0.001
3,3-Dimethylhexane	I8	0.0001	0.0003	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0013	0.0045	0.001	0.001
2,3,4-Trimethylpentane	I8	0.0003	0.0011	0.000	0.000
Toluene	A7	0.0098	0.0280	0.003	0.003
2,3-Dimethylhexane	I8	0.0003	0.0011	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0003	0.0011	0.000	0.000
2-Methylheptane	I8	0.0028	0.0099	0.001	0.001
4-Methylheptane	I8	0.0008	0.0028	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0001	0.0003	0.000	0.000
3,4-Dimethylhexane	I8	0.0001	0.0003	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0003	0.000	0.000
3-Methylheptane	I8	0.0012	0.0042	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0018	0.0063	0.001	0.001
3-Ethylhexane	I8	0.0002	0.0007	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0006	0.0021	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0002	0.0007	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0004	0.0014	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0003	0.0011	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0011	0.0038	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0010	0.0035	0.001	0.001
n-Octane	P8	0.0037	0.0131	0.002	0.002
1c,4-Dimethylcyclohexane	N8	0.0003	0.0011	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0003	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0003	0.0011	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0011	0.0043	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0004	0.0016	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0008	0.000	0.000
Ethylcyclohexane	N8	0.0006	0.0021	0.000	0.000
n-Propylcyclopentane	N8	0.0002	0.0007	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0002	0.0008	0.000	0.000
Ethylbenzene	I8	0.0007	0.0023	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0002	0.0008	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0008	0.0026	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0008	0.0026	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0004	0.000	0.000
4-Methyloctane	I9	0.0002	0.0008	0.000	0.000
2-Methyloctane	I9	0.0003	0.0012	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0004	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0004	0.000	0.000
3-Methyloctane	I9	0.0003	0.0012	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0005	0.0016	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0008	0.000	0.000
UnknownC8s	U8	0.0002	0.0007	0.000	0.000
n-Nonane	P9	0.0009	0.0036	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0002	0.0008	0.000	0.000

i-Propylbenzene	A9	0.0002	0.0007	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0004	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0004	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0008	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0004	0.000	0.000
n-Propylbenzene	A9	0.0002	0.0007	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0004	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0009	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0007	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0004	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0004	0.000	0.000
5-Methylnonane	I10	0.0001	0.0004	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0004	0.000	0.000
2-Methylnonane	I10	0.0001	0.0004	0.000	0.000
3-Methylnonane	I10	0.0001	0.0004	0.000	0.000
t-Butylbenzene	A10	0.0002	0.0008	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0004	0.000	0.000
UnknownC9s	U9	0.0006	0.0024	0.000	0.000
n-Decane	P10	0.0003	0.0013	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0004	0.000	0.000
Sec-Butylcyclohexane	A10	0.0001	0.0004	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0004	0.000	0.000
UnknownC10s	U10	0.0005	0.0022	0.000	0.000
n-Undecane	P11	0.0003	0.0015	0.000	0.000
1,3-Di-i-propylbenzene	A11	0.0001	0.0005	0.000	0.000
sec-Pentylbenzene	A11	0.0001	0.0005	0.000	0.000
n-Dodecane	P12	0.0004	0.0021	0.000	0.000
1,2,4-Triethylbenzene	A12	0.0001	0.0005	0.000	0.000
1,2,3,4,5-Pentamethylbenzene	A13	0.0001	0.0005	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0004	0.000	0.000
UnknownC12s	U12	0.0001	0.0005	0.000	0.000
n-Tridecane	P13	0.0005	0.0029	0.000	0.000
UnknownC13s	U13	0.0002	0.0011	0.000	0.000
n-Tetradecane	P14	0.0003	0.0019	0.000	0.000
UnknownC14s	U14	0.0003	0.0019	0.000	0.000
n-Pentadecane	P15	0.0002	0.0013	0.000	0.000
UnknownC15s	U15	0.0003	0.0020	0.000	0.000
n-Hexadecane	P16	0.0001	0.0007	0.000	0.000
TOTAL		100.00000	100.00000	16.1608	16.2492

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0377	0.0914
TOLUENE	0.0098	0.0280
ETHYLBENZENE	0.0007	0.0023
XYLENES	0.0021	0.0068
TOTAL BTEX	0.0503	0.1285

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1641.8 **/scf**	1650.8 **/scf**
	NET WET REAL :	1613.1 **/scf**	1622.1 **/scf**
HIGH	GROSS DRY REAL :	1793.8 **/scf**	1803.6 **/scf**
	GROSS WET REAL :	1762.4 **/scf**	1772.2 **/scf**
	NET DRY REAL :	19364.4 **/lb**	19470.2 **/lb**
	GROSS DRY REAL :	21152.9 **/lb**	21268.5 **/lb**

RELATIVE DENSITY (AIR=1): 1.1105

COMPRESSIBILITY FACTOR : 0.99150

(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 ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201402111	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	0794
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	SALES GAS @ 14:05 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	36
SAMPLE PRES. :	2.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 10 PPM (2.5-60 PPM) @ 14:10		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0048	0.0086		
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.06	0.07	---	---
NITROGEN	1.16	1.25	---	---
CARBON DIOXIDE	2.68	4.53	---	---
METHANE	61.67720	37.98620	---	---
ETHANE	14.6174	16.8742	3.9073	3.9286
PROPANE	12.3428	20.8950	3.3992	3.4178
I-BUTANE	1.3403	2.9907	0.4379	0.4403
N-BUTANE	3.8588	8.6105	1.2156	1.2222
I-PENTANE	0.7520	2.0778	0.2705	0.2721
N-PENTANE	0.7855	2.1758	0.2846	0.2862
HEXANES PLUS	0.7212	2.5312	0.2853	0.2869
TOTALS	100.00000	100.00000	9.8004	9.8541

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0360	0.1080
TOLUENE	0.0168	0.0594
ETHYLBENZENE	0.0016	0.0065
XYLENES	0.0040	0.0163
TOTAL BTEX	0.0584	0.1902

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1331.0 **/scf**	1338.3 **/scf**
	NET WET REAL :	1307.7 **/scf**	1315.0 **/scf**
HIGH	GROSS DRY REAL :	1460.4 **/scf**	1468.4 **/scf**
	GROSS WET REAL :	1434.9 **/scf**	1442.8 **/scf**
	NET DRY REAL :	19419.4 **/lb**	19525.4 **/lb**
	GROSS DRY REAL :	21304.2 **/lb**	21420.5 **/lb**
	RELATIVE DENSITY (AIR=1):		0.8981
	COMPRESSIBILITY FACTOR :		0.99476

(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

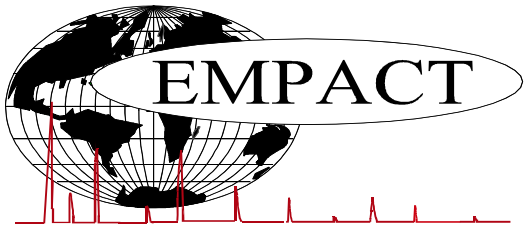
303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201402111	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	0794
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	SALES GAS @ 14:05 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	36
SAMPLE PRES. :	2.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 10 PPM (2.5-60 PPM) @ 14:10		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.68	4.53
Nitrogen	1.16	1.25
Methane	61.67720	37.98620
Ethane	14.6174	16.8742
Propane	12.3428	20.8950
Isobutane	1.3403	2.9907
n-Butane	3.8588	8.6105
Isopentane	0.6856	1.8990
n-Pentane	0.7855	2.1758
Cyclopentane	0.0664	0.1788
n-Hexane	0.1418	0.4691
Cyclohexane	0.0387	0.1250
Other Hexanes	0.2731	0.8968
Heptanes	0.1146	0.4374
Methycyclohexane	0.0288	0.1086
2,2,4 Trimethylpentane	0.0001	0.0004
Benzene	0.0360	0.1080
Toluene	0.0168	0.0594
Ethylbenzene	0.0016	0.0065
Xylenes	0.0040	0.0163
C8+ Heavies	0.0657	0.3037
Subtotal	99.93520	99.92140
Oxygen/Argon	0.06	0.07
Alcohols	0.0048	0.0086
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201402111	ANALYSIS NO. :	03
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	0794
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	SALES GAS @ 14:05 WALKER 12-1H		
FIELD DATA		SAMPLE TEMP. :	36
SAMPLE PRES. :	2.0	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 10 PPM (2.5-60 PPM) @ 14:10		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.00	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.06	0.07	---	---
Nitrogen	---	1.16	1.25	---	---
Carbon Dioxide	---	2.68	4.53	---	---
Methane	P1	61.67720	37.98620	---	---
Ethane	P2	14.6174	16.8742	3.907	3.929
Propane	P3	12.3428	20.8950	3.399	3.418
i-Butane	I4	1.3403	2.9907	0.438	0.440
Methanol	X1	0.0022	0.0027	0.000	0.000
n-Butane	P4	3.8588	8.6105	1.216	1.222
2,2-Dimethylpropane	I5	0.0033	0.0091	0.001	0.001
i-Pentane	I5	0.6823	1.8899	0.250	0.251
Acetone	X3	0.0025	0.0056	0.001	0.001
n-Pentane	P5	0.7855	2.1758	0.285	0.286
t-Butanol	X4	0.0001	0.0003	0.000	0.000
2,2-Dimethylbutane	I6	0.0019	0.0063	0.001	0.001
Cyclopentane	N5	0.0664	0.1788	0.020	0.020
2,3-Dimethylbutane	I6	0.0114	0.0377	0.005	0.005
2-Methylpentane	I6	0.1154	0.3818	0.048	0.048
3-Methylpentane	I6	0.0573	0.1896	0.023	0.023
n-Hexane	P6	0.1418	0.4691	0.058	0.058
2,2-Dimethylpentane	I7	0.0004	0.0015	0.000	0.000
Methylcyclopentane	N6	0.0871	0.2814	0.031	0.031
2,4-Dimethylpentane	I7	0.0036	0.0139	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0001	0.0004	0.000	0.000
Benzene	A6	0.0360	0.1080	0.010	0.010
3,3-Dimethylpentane	I7	0.0003	0.0011	0.000	0.000
Cyclohexane	N6	0.0387	0.1250	0.013	0.013
2-Methylhexane	I7	0.0142	0.0546	0.007	0.007
2,3-Dimethylpentane	I7	0.0064	0.0246	0.003	0.003
1,1-Dimethylcyclopentane	N7	0.0036	0.0135	0.001	0.001
3-Methylhexane	I7	0.0157	0.0604	0.007	0.007
1c,3-Dimethylcyclopentane	N7	0.0089	0.0335	0.004	0.004
1t,3-Dimethylcyclopentane	N7	0.0079	0.0298	0.004	0.004
3-Ethylpentane	I7	0.0012	0.0046	0.001	0.001

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

1t,2-Dimethylcyclopentane	N7	0.0159	0.0599	0.007	0.007
2,2,4-Trimethylpentane	I8	0.0001	0.0004	0.000	0.000
n-Heptane	P7	0.0312	0.1200	0.014	0.014
1c,2-Dimethylcyclopentane	N7	0.0013	0.0049	0.001	0.001
Methylcyclohexane	N7	0.0288	0.1086	0.012	0.012
2,2-Dimethylhexane	I8	0.0020	0.0087	0.001	0.001
Ethylcyclopentane	N7	0.0039	0.0147	0.002	0.002
2,5-Dimethylhexane	I8	0.0006	0.0026	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0001	0.0004	0.000	0.000
2,4-Dimethylhexane	I8	0.0012	0.0053	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0022	0.0095	0.001	0.001
3,3-Dimethylhexane	I8	0.0001	0.0004	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0024	0.0103	0.001	0.001
2,3,4-Trimethylpentane	I8	0.0005	0.0022	0.000	0.000
Toluene	A7	0.0168	0.0594	0.006	0.006
2,3-Dimethylhexane	I8	0.0006	0.0026	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0006	0.0026	0.000	0.000
2-Methylheptane	I8	0.0052	0.0228	0.003	0.003
4-Methylheptane	I8	0.0014	0.0061	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0001	0.0004	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0009	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0004	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0004	0.000	0.000
3-Methylheptane	I8	0.0024	0.0105	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0036	0.0155	0.002	0.002
3-Ethylhexane	I8	0.0004	0.0018	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0013	0.0056	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0021	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0008	0.0035	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0007	0.0030	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0021	0.0091	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0020	0.0086	0.001	0.001
1t,3-Dimethylcyclohexane	N8	0.0001	0.0004	0.000	0.000
n-Octane	P8	0.0073	0.0320	0.004	0.004
1c,4-Dimethylcyclohexane	N8	0.0007	0.0030	0.000	0.000
i-Propylcyclopentane	I8	0.0002	0.0008	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
1c,2-Dimethylcyclohexane	N8	0.0006	0.0026	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0023	0.0111	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0008	0.0039	0.000	0.000
2,4-Dimethylheptane	I9	0.0004	0.0020	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
Ethylcyclohexane	N8	0.0012	0.0052	0.001	0.001
n-Propylcyclopentane	N8	0.0004	0.0017	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0010	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0003	0.0015	0.000	0.000
Ethylbenzene	I8	0.0016	0.0065	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0004	0.0019	0.000	0.000
2,3-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0017	0.0069	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0010	0.0041	0.000	0.000
3,4-Dimethylheptane	I9	0.0008	0.0039	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0003	0.0015	0.000	0.000

4-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
4-Methyloctane	I9	0.0005	0.0025	0.000	0.000
2-Methyloctane	I9	0.0005	0.0025	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0010	0.000	0.000
3-Methyloctane	I9	0.0006	0.0030	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0005	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0013	0.0053	0.000	0.000
i-Butylcyclopentane	N9	0.0005	0.0024	0.000	0.000
UnknownC8s	U8	0.0004	0.0018	0.000	0.000
n-Nonane	P9	0.0019	0.0094	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0003	0.0015	0.000	0.000
i-Propylbenzene	A9	0.0004	0.0018	0.000	0.000
i-Propylcyclohexane	N9	0.0001	0.0005	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	0.0004	0.0019	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	0.0004	0.0022	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0004	0.0022	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	0.0002	0.0009	0.000	0.000
5-Methylnonane	I10	0.0002	0.0011	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0005	0.000	0.000
2-Methylnonane	I10	0.0003	0.0016	0.000	0.000
3-Methylnonane	I10	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0004	0.0021	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0017	0.0084	0.001	0.001
n-Decane	P10	0.0006	0.0033	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0002	0.0009	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
t-Decahydronaphthalene	A9	0.0001	0.0006	0.000	0.000
1,4-Dimethyl-2-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0005	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	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0019	0.0104	0.001	0.001
n-Undecane	P11	0.0004	0.0024	0.000	0.000
1,2,4,5-Tetramethylbenzene	A11	0.0001	0.0005	0.000	0.000
1,2,3,5-Tetramethylbenzene	A11	0.0001	0.0005	0.000	0.000
1,3-Di-i-propylbenzene	A11	0.0001	0.0006	0.000	0.000
sec-Pentylbenzene	A11	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0004	0.0024	0.000	0.000
n-Dodecane	P12	0.0003	0.0020	0.000	0.000
1,2,4-Triethylbenzene	A12	0.0001	0.0006	0.000	0.000
UnknownC12s	U12	0.0002	0.0012	0.000	0.000
n-Tridecane	P13	0.0001	0.0007	0.000	0.000
n-Tetradecane	P14	0.0001	0.0008	0.000	0.000
n-Pentadecane	P15	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	9.8014	9.8551

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0360	0.1080
TOLUENE	0.0168	0.0594
ETHYLBENZENE	0.0016	0.0065
XYLENES	0.0040	0.0163
TOTAL BTEX	0.0584	0.1902

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1331.0 **/scf**	1338.3 **/scf**
	NET WET REAL :	1307.7 **/scf**	1315.0 **/scf**
HIGH	GROSS DRY REAL :	1460.4 **/scf**	1468.4 **/scf**
	GROSS WET REAL :	1434.9 **/scf**	1442.8 **/scf**
	NET DRY REAL :	19419.4 **/lb**	19525.4 **/lb**
	GROSS DRY REAL :	21304.2 **/lb**	21420.5 **/lb**
	RELATIVE DENSITY (AIR=1):		0.8981
	COMPRESSIBILITY FACTOR :		0.99476

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

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

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

CRUDE OIL ASSAY

PROJECT NO. :	201402111	ANALYSIS NO. :	04
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	FEBRUARY 27, 2014
ACCOUNT NO. :		SAMPLE DATE :	FEBRUARY 25, 2014
PRODUCER :		CYLINDER NO. :	1L GLASS JAR
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	PRODUCTION TANK @ 14:20 WALKER 12-1H		EMPACT
FIELD DATA		SAMPLE TEMP. :	44
SAMPLE PRES. :		AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT		

SPECIFICATION	TEST METHOD	UNITS	RESULTS
API GRAVITY		API 60/60	38.8
RVP @100 DEG F	D323	PSIG	11
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			RED/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