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

303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201505153	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	JUNE 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2015 14:05
PRODUCER :		CYLINDER NO. :	1108
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS PROSPER FARMS 4-65 11-12 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	125	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 1.0 PPM (1-7PPM) 14:10 SAMPLED DURING FLOW BACK OPERATIONS; RESAMPLE		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
GLYCOLS	0.0001	0.0006		
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.01	---	---
NITROGEN	1.04	1.20	---	---
CARBON DIOXIDE	2.31	4.19	---	---
METHANE	68.56530	45.35940	---	---
ETHANE	13.1782	16.3408	3.5197	3.5389
PROPANE	8.5344	15.5191	2.3481	2.3609
I-BUTANE	1.0146	2.4318	0.3314	0.3332
N-BUTANE	2.9634	7.1028	0.9332	0.9383
I-PENTANE	0.6800	2.0182	0.2443	0.2456
N-PENTANE	0.7941	2.3627	0.2874	0.2889
HEXANES PLUS	0.9099	3.4646	0.3592	0.3610
TOTALS	100.00000	100.00000	8.0233	8.0668

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0375	0.1208
TOLUENE	0.0238	0.0904
ETHYLBENZENE	0.0012	0.0052
XYLENES	0.0067	0.0293
TOTAL BTEX	0.0692	0.2457

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1251.5 **/scf**	1258.3 **/scf**
	NET WET REAL :	1229.6 **/scf**	1236.4 **/scf**
HIGH	GROSS DRY REAL :	1375.2 **/scf**	1382.7 **/scf**
	GROSS WET REAL :	1351.2 **/scf**	1358.7 **/scf**
	NET DRY REAL :	19607.7 **/lb**	19714.7 **/lb**
	GROSS DRY REAL :	21546.1 **/lb**	21663.8 **/lb**
	RELATIVE DENSITY (AIR=1):		0.8363
	COMPRESSIBILITY FACTOR :		0.99555

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

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

EMPACT ANALYTICAL SYSTEMS INC.
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BRIGHTON, CO
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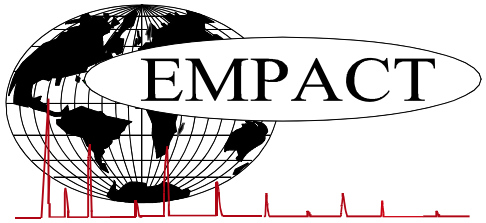
EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201505153	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	JUNE 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2015 14:05
PRODUCER :		CYLINDER NO. :	1108
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS PROSPER FARMS 4-65 11-12 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	125	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 1.0 PPM (1-7PPM) 14:10 SAMPLED DURING FLOW BACK OPERATIONS; RESAMPLE		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	2.31	4.19
Nitrogen	1.04	1.20
Methane	68.56530	45.35940
Ethane	13.1782	16.3408
Propane	8.5344	15.5191
Isobutane	1.0146	2.4318
n-Butane	2.9634	7.1028
Isopentane	0.6202	1.8452
n-Pentane	0.7941	2.3627
Cyclopentane	0.0598	0.1730
n-Hexane	0.1846	0.6560
Cyclohexane	0.0504	0.1749
Other Hexanes	0.3114	1.0989
Heptanes	0.1551	0.6371
Methycyclohexane	0.0417	0.1688
2,2,4 Trimethylpentane	0.0019	0.0090
Benzene	0.0375	0.1208
Toluene	0.0238	0.0904
Ethylbenzene	0.0012	0.0052
Xylenes	0.0067	0.0293
C8+ Heavies	0.0956	0.4742
Subtotal	99.98990	99.98940
Oxygen/Argon	0.01	0.01
Glycols	0.0001	0.0006
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201505153	ANALYSIS NO. :	01
COMPANY NAME :	CONOCO PHILLIPS	ANALYSIS DATE:	JUNE 01, 2015
ACCOUNT NO. :		SAMPLE DATE :	MAY 29, 2015 14:05
PRODUCER :		CYLINDER NO. :	1108
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS PROSPER FARMS 4-65 11-12 1H		
FIELD DATA		SAMPLE TEMP. :	110
SAMPLE PRES. :	125	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 1.0 PPM (1-7PPM) 14:10 SAMPLED DURING FLOW BACK OPERATIONS; RESAMPLE		

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	---	1.04	1.20	---	---
Carbon Dioxide	---	2.31	4.19	---	---
Methane	P1	68.56530	45.35940	---	---
Ethane	P2	13.1782	16.3408	3.520	3.539
Propane	P3	8.5344	15.5191	2.348	2.361
i-Butane	I4	1.0146	2.4318	0.331	0.333
n-Butane	P4	2.9634	7.1028	0.933	0.938
2,2-Dimethylpropane	I5	0.0031	0.0092	0.001	0.001
i-Pentane	I5	0.6171	1.8360	0.225	0.227
n-Pentane	P5	0.7940	2.3624	0.287	0.289
2,2-Dimethylbutane	I6	0.0023	0.0082	0.001	0.001
Cyclopentane	N5	0.0598	0.1730	0.018	0.018
2,3-Dimethylbutane	I6	0.0128	0.0455	0.005	0.005
2-Methylpentane	I6	0.1357	0.4822	0.056	0.056
3-Methylpentane	I6	0.0672	0.2388	0.027	0.027
UnknownC5s	U5	0.0001	0.0003	0.000	0.000
n-Hexane	P6	0.1846	0.6560	0.076	0.077
2,2-Dimethylpentane	I7	0.0002	0.0008	0.000	0.000
Methylcyclopentane	N6	0.0932	0.3235	0.033	0.033
2,4-Dimethylpentane	I7	0.0049	0.0203	0.002	0.002
2,2,3-Trimethylbutane	I7	0.0001	0.0004	0.000	0.000
Benzene	A6	0.0375	0.1208	0.010	0.010
3,3-Dimethylpentane	I7	0.0008	0.0033	0.000	0.000
Cyclohexane	N6	0.0504	0.1749	0.017	0.017
2-Methylhexane	I7	0.0156	0.0645	0.007	0.007
2,3-Dimethylpentane	I7	0.0101	0.0417	0.005	0.005
1,1-Dimethylcyclopentane	N7	0.0076	0.0308	0.003	0.003
3-Methylhexane	I7	0.0190	0.0785	0.009	0.009
1c,3-Dimethylcyclopentane	N7	0.0070	0.0283	0.003	0.003
1t,3-Dimethylcyclopentane	N7	0.0104	0.0421	0.005	0.005
3-Ethylpentane	I7	0.0022	0.0091	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0182	0.0737	0.008	0.008
2,2,4-Trimethylpentane	I8	0.0019	0.0090	0.001	0.001
UnknownC6s	U6	0.0002	0.0007	0.000	0.000
n-Heptane	P7	0.0487	0.2012	0.022	0.022
1c,2-Dimethylcyclopentane	N7	0.0010	0.0040	0.000	0.000
Methylcyclohexane	N7	0.0417	0.1688	0.017	0.017
2,2-Dimethylhexane	I8	0.0025	0.0118	0.001	0.001

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1,1,3-Trimethylcyclopentane	N7	0.0005	0.0023	0.000	0.000
Ethylcyclopentane	N7	0.0037	0.0150	0.001	0.001
2,5-Dimethylhexane	I8	0.0008	0.0038	0.000	0.000
2,2,3-Trimethylpentane	I8	0.0010	0.0047	0.001	0.001
2,4-Dimethylhexane	I8	0.0009	0.0043	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0021	0.0097	0.001	0.001
3,3-Dimethylhexane	I8	0.0002	0.0010	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0022	0.0102	0.001	0.001
2,3,4-Trimethylpentane	I8	0.0005	0.0024	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0003	0.0014	0.000	0.000
Toluene	A7	0.0238	0.0904	0.008	0.008
2,3-Dimethylhexane	I8	0.0013	0.0061	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0004	0.0019	0.000	0.000
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
2-Methylheptane	I8	0.0046	0.0217	0.002	0.002
4-Methylheptane	I8	0.0030	0.0141	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0007	0.0033	0.000	0.000
3,4-Dimethylhexane	I8	0.0026	0.0123	0.001	0.001
1c,2c,4-Trimethylcyclopentane	N8	0.0005	0.0023	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0005	0.000	0.000
3-Methylheptane	I8	0.0014	0.0066	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0050	0.0231	0.003	0.003
3-Ethylhexane	I8	0.0026	0.0123	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0020	0.0092	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0006	0.0028	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0002	0.0011	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0010	0.0046	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0005	0.0023	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0025	0.0116	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0003	0.0016	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0024	0.0111	0.001	0.001
1c,2c,3-Trimethylcyclopentane	N8	0.0005	0.0023	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0019	0.0088	0.001	0.001
UnknownC7s	U7	0.0051	0.0211	0.002	0.002
n-Octane	P8	0.0085	0.0400	0.004	0.004
1c,4-Dimethylcyclohexane	N8	0.0032	0.0148	0.002	0.002
2,3,5-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0002	0.0011	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0005	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0003	0.0014	0.000	0.000
2,2-Dimethylheptane	I9	0.0004	0.0021	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0037	0.0193	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0003	0.0016	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
4,4-Dimethylheptane	I9	0.0016	0.0085	0.001	0.001
Ethylcyclohexane	N8	0.0008	0.0037	0.000	0.000
n-Propylcyclopentane	N8	0.0004	0.0019	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0016	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0011	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0005	0.000	0.000
Ethylbenzene	I8	0.0012	0.0052	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0010	0.0052	0.001	0.001
2,3-Dimethylheptane	I9	0.0007	0.0037	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0032	0.0140	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0008	0.0035	0.000	0.000
3,4-Dimethylheptane	I9	0.0001	0.0005	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0011	0.0058	0.001	0.001
4-Ethylheptane	I9	0.0002	0.0011	0.000	0.000
4-Methyloctane	I9	0.0008	0.0043	0.000	0.000
2-Methyloctane	I9	0.0007	0.0037	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0003	0.0016	0.000	0.000

3-Ethylheptane	I9	0.0001	0.0005	0.000	0.000
3-Methyloctane	I9	0.0006	0.0032	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0027	0.0118	0.001	0.001
i-Butylcyclopentane	N9	0.0008	0.0042	0.000	0.000
UnknownC8s	U8	0.0019	0.0090	0.001	0.001
n-Nonane	P9	0.0027	0.0143	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0012	0.0062	0.001	0.001
i-Propylbenzene	A9	0.0004	0.0020	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
n-Butylcyclopentane	N9	0.0006	0.0031	0.000	0.000
3,3-Dimethyloctane	I10	0.0002	0.0012	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0025	0.000	0.000
3,6-Dimethyloctane	I10	0.0005	0.0029	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0005	0.0029	0.000	0.000
1,3-Methylethylbenzene	A9	0.0006	0.0030	0.000	0.000
1,4-Methylethylbenzene	A9	0.0003	0.0015	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0002	0.0010	0.000	0.000
2,3-Dimethyloctane	I10	0.0004	0.0024	0.000	0.000
5-Methylnonane	I10	0.0003	0.0018	0.000	0.000
1,2-Methylethylbenzene	A9	0.0003	0.0015	0.000	0.000
2-Methylnonane	I10	0.0002	0.0012	0.000	0.000
3-Ethyloctane	I10	0.0001	0.0006	0.000	0.000
3-Methylnonane	I10	0.0002	0.0012	0.000	0.000
t-Butylbenzene	A10	0.0006	0.0033	0.000	0.000
i-Butylcyclohexane	N10	0.0002	0.0012	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
sec-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0043	0.0227	0.002	0.002
n-Decane	P10	0.0008	0.0047	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0003	0.0015	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	0.0001	0.0006	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0003	0.0017	0.000	0.000
3-Ethylnonane	I10	0.0001	0.0007	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
t-Decahydronaphthalene	A9	0.0001	0.0006	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0005	0.000	0.000
1,4-Dimethyl-2-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,3-Dimethyl-4-ethylbenzene	A10	0.0001	0.0005	0.000	0.000
1,2-Dimethyl-4-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-Ethyl-i-propylbenzene	A10	0.0001	0.0006	0.000	0.000
UnknownC10s	U10	0.0023	0.0135	0.001	0.001
n-Undecane	P11	0.0004	0.0026	0.000	0.000
1,4-Ethyl-i-propylbenzene	A11	0.0001	0.0006	0.000	0.000
1,2-Methyl-n-butylbenzene	A11	0.0001	0.0006	0.000	0.000
1,2-Methyl-t-butylbenzene	A11	0.0001	0.0006	0.000	0.000
2-Methylindan	A11	0.0001	0.0005	0.000	0.000
Triethylene Glycol	GL6	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0006	0.0039	0.000	0.000
n-Dodecane	P12	0.0002	0.0014	0.000	0.000
n-Pentadecane	P15	0.0001	0.0009	0.000	0.000
TOTAL		100.00000	100.00000	8.0233	8.0668

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0375	0.1208
TOLUENE	0.0238	0.0904
ETHYLBENZENE	0.0012	0.0052
XYLENES	0.0067	0.0293

	BTU @	14.650		14.730
LOW	NET DRY REAL :	1251.5 **/scf**		1258.3 **/scf**
	NET WET REAL :	1229.6 **/scf**		1236.4 **/scf**
HIGH	GROSS DRY REAL :	1375.2 **/scf**		1382.7 **/scf**
	GROSS WET REAL :	1351.2 **/scf**		1358.7 **/scf**

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TOTAL BTEX	0.0692	0.2457	NET DRY REAL :	19607.7 **/lb**	19714.7 **/lb**
			GROSS DRY REAL :	21546.1 **/lb**	21663.8 **/lb**
			RELATIVE DENSITY (AIR=1):		0.8363
(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F)			COMPRESSIBILITY FACTOR :		0.99555

**(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.

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