



303-637-0150

**EXTENDED NATURAL GAS ANALYSIS (\*DHA)**

**MAIN PAGE**

PROJECT NO. :	201504094	ANALYSIS NO. :	08
COMPANY NAME :	NIGHTHAWK PRODUCTION COMPANY	ANALYSIS DATE:	APRIL 23, 2015
ACCOUNT NO. :		SAMPLE DATE :	APRIL 16, 2015
PRODUCER :		CYLINDER NO. :	1848
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	SALES GAS 13:00 MARY JANE 8-5		
***FIELD DATA***		SAMPLE TEMP. :	54
SAMPLE PRES. :	27	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 0.75 PPM (1-7PPM) 13:05		

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.650</u>	<u>GPM @ 14.730</u>
ALCOHOLS	0.0418	0.0475		
HELIUM	1.30	0.17	---	---
HYDROGEN	0.06	0.00	---	---
OXYGEN/ARGON	0.33	0.35	---	---
NITROGEN	57.48	52.97	---	---
CARBON DIOXIDE	1.29	1.87	---	---
METHANE	18.07400	9.53980	---	---
ETHANE	5.2379	5.1817	1.3960	1.4036
PROPANE	7.6974	11.1670	2.1135	2.1250
I-BUTANE	1.1805	2.2574	0.3847	0.3868
N-BUTANE	4.0656	7.7743	1.2771	1.2840
I-PENTANE	0.8484	2.0120	0.3078	0.3094
N-PENTANE	1.1551	2.7419	0.4177	0.4200
HEXANES PLUS	1.2393	3.9184	0.5389	0.5410
<u>TOTALS</u>	<u>100.00000</u>	<u>100.00000</u>	<u>6.4357</u>	<u>6.4698</u>

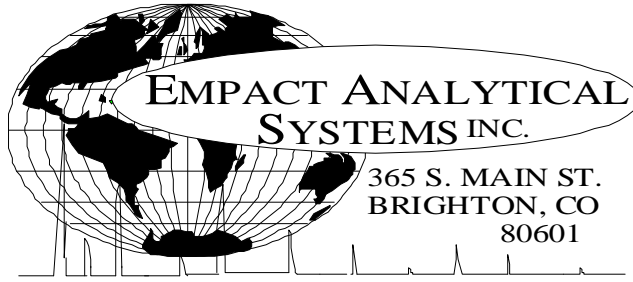
<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>	<u>BTU @</u>	<u>14.650</u>	<u>14.730</u>
BENZENE	0.0054	0.0139	<b>LOW</b> NET DRY REAL :	719.5 /scf	723.4 /scf
TOLUENE	0.0150	0.0455	NET WET REAL :	706.9 /scf	710.8 /scf
ETHYLBENZENE	0.0000	0.0000	<b>HIGH</b> GROSS DRY REAL :	784.8 /scf	789.1 /scf
XYLENES	0.0057	0.0199	GROSS WET REAL :	771.1 /scf	775.4 /scf
<u>TOTAL BTEX</u>	<u>0.0261</u>	<u>0.0793</u>	NET DRY REAL :	8991.6 /lb	9040.7 /lb
			GROSS DRY REAL :	9809.6 /lb	9863.2 /lb

RELATIVE DENSITY (AIR=1): 1.0494  
 COMPRESSIBILITY FACTOR : 0.99760

(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.  
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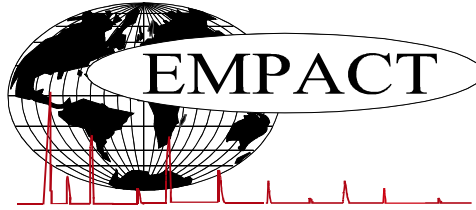
**EXTENDED NATURAL GAS ANALYSIS (\*DHA)**

**GLYCALC INFORMATION**

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COMPANY NAME :	NIGHTHAWK PRODUCTION COMPANY	ANALYSIS DATE:	APRIL 23, 2015
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LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
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SAMPLE PRES. :	27	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 0.75 PPM (1-7PPM) 13:05		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	1.30	0.17
Hydrogen	0.06	0.00
Carbon Dioxide	1.29	1.87
Nitrogen	57.48	52.97
Methane	18.07400	9.53980
Ethane	5.2379	5.1817
Propane	7.6974	11.1670
Isobutane	1.1805	2.2574
n-Butane	4.0656	7.7743
Isopentane	0.8203	1.9472
n-Pentane	1.1551	2.7419
Cyclopentane	0.0281	0.0648
n-Hexane	0.2266	0.6424
Cyclohexane	0.0704	0.1949
Other Hexanes	0.3281	0.9261
Heptanes	0.2727	0.8945
Methycyclohexane	0.0818	0.2643
2,2,4 Trimethylpentane	0.0039	0.0147
Benzene	0.0054	0.0139
Toluene	0.0150	0.0455
Ethylbenzene	0.0000	0.0000
Xylenes	0.0057	0.0199
C8+ Heavies	0.2297	0.9022
<u>Subtotal</u>	<u>99.62820</u>	<u>99.60250</u>
Oxygen/Argon	0.33	0.35
Alcohols	0.0418	0.0475
<b>Total</b>	<b>100.00000</b>	<b>100.00000</b>

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



**EXTENDED NATURAL GAS ANALYSIS (\*DHA)  
DHA COMPONENT LIST**

PROJECT NO. :	201504094	ANALYSIS NO. :	08
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SAMPLE PRES. :	27	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 0.75 PPM (1-7PPM) 13:05		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	1.30	0.17	---	---
Hydrogen	---	0.06	0.00	---	---
Oxygen/Argon	---	0.33	0.35	---	---
Nitrogen	---	57.48	52.97	---	---
Carbon Dioxide	---	1.29	1.87	---	---
Methane	P1	18.07400	9.53980	---	---
Ethane	P2	5.2379	5.1817	1.396	1.404
Propane	P3	7.6974	11.1670	2.114	2.125
i-Butane	I4	1.1805	2.2574	0.385	0.387
Methanol	X1	0.0344	0.0363	0.004	0.004
n-Butane	P4	4.0656	7.7743	1.277	1.284
2,2-Dimethylpropane	I5	0.0096	0.0228	0.004	0.004
Ethanol	X2	0.0074	0.0112	0.001	0.001
i-Pentane	I5	0.8107	1.9244	0.296	0.297
n-Pentane	P5	1.1551	2.7419	0.418	0.420
2,2-Dimethylbutane	I6	0.0047	0.0133	0.002	0.002
Cyclopentane	N5	0.0281	0.0648	0.008	0.008
2,3-Dimethylbutane	I6	0.0178	0.0505	0.007	0.007
2-Methylpentane	I6	0.1610	0.4565	0.067	0.067
3-Methylpentane	I6	0.0799	0.2265	0.033	0.033
n-Hexane	P6	0.2266	0.6424	0.093	0.093
2,2-Dimethylpentane	I7	0.0023	0.0076	0.001	0.001
Methylcyclopentane	N6	0.0623	0.1725	0.022	0.022
2,4-Dimethylpentane	I7	0.0060	0.0198	0.003	0.003
Benzene	A6	0.0054	0.0139	0.002	0.002
3,3-Dimethylpentane	I7	0.0015	0.0049	0.001	0.001
Cyclohexane	N6	0.0704	0.1949	0.024	0.024
2-Methylhexane	I7	0.0348	0.1147	0.016	0.016
2,3-Dimethylpentane	I7	0.0181	0.0597	0.008	0.008
1,1-Dimethylcyclopentane	N7	0.0061	0.0197	0.002	0.002
3-Methylhexane	I7	0.0495	0.1632	0.023	0.023
1c,3-Dimethylcyclopentane	N7	0.0158	0.0510	0.007	0.007
1t,3-Dimethylcyclopentane	N7	0.0116	0.0375	0.005	0.005
3-Ethylpentane	I7	0.0023	0.0076	0.001	0.001
1t,2-Dimethylcyclopentane	N7	0.0255	0.0824	0.012	0.012
2,2,4-Trimethylpentane	I8	0.0039	0.0147	0.002	0.002
UnknownC6s	U6	0.0024	0.0068	0.001	0.001
n-Heptane	P7	0.0892	0.2941	0.041	0.041
1c,2-Dimethylcyclopentane	N7	0.0042	0.0136	0.002	0.002
Methylcyclohexane	N7	0.0818	0.2643	0.033	0.033
2,2-Dimethylhexane	I8	0.0070	0.0263	0.003	0.003

Ethylcyclopentane	N7	0.0058	0.0187	0.002	0.002
2,5-Dimethylhexane	I8	0.0023	0.0087	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0044	0.0166	0.002	0.002
2,4-Dimethylhexane	I8	0.0042	0.0158	0.002	0.002
1c,2t,4-Trimethylcyclopentane	N8	0.0078	0.0288	0.004	0.004
1t,2c,4-Trimethylcyclopentane	N8	0.0081	0.0299	0.004	0.004
Toluene	A7	0.0150	0.0455	0.005	0.005
2-Methylheptane	I8	0.0200	0.0752	0.010	0.010
4-Methylheptane	I8	0.0080	0.0301	0.004	0.004
3-Methyl-3-ethylpentane	I8	0.0014	0.0053	0.001	0.001
3-Methylheptane	I8	0.0021	0.0079	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0218	0.0805	0.011	0.011
3-Ethylhexane	I8	0.0047	0.0177	0.002	0.002
1t,4-Dimethylcyclohexane	N8	0.0074	0.0273	0.004	0.004
3t-Ethylmethylcyclopentane	N8	0.0034	0.0126	0.002	0.002
2t-Ethylmethylcyclopentane	N8	0.0011	0.0041	0.001	0.001
1,1-Methylethylcyclopentane	N8	0.0034	0.0126	0.002	0.002
2,2,4-Trimethylhexane	I9	0.0023	0.0097	0.001	0.001
1t,2-Dimethylcyclohexane	N8	0.0083	0.0306	0.004	0.004
1t,3-Dimethylcyclohexane	N8	0.0025	0.0092	0.001	0.001
n-Octane	P8	0.0324	0.1218	0.017	0.017
1c,4-Dimethylcyclohexane	N8	0.0094	0.0347	0.005	0.005
1,1,4-Trimethylcyclohexane	N9	0.0075	0.0312	0.004	0.004
2,4-Dimethylheptane	I9	0.0006	0.0025	0.000	0.000
Ethylcyclohexane	N8	0.0046	0.0170	0.002	0.002
1,3-Dimethylbenzene (m-Xylene)	A8	0.0029	0.0101	0.001	0.001
4-Methyloctane	I9	0.0040	0.0169	0.002	0.002
2-Methyloctane	I9	0.0029	0.0122	0.002	0.002
1c,2t,3-Trimethylcyclohexane	N9	0.0006	0.0025	0.000	0.000
3-Methyloctane	I9	0.0045	0.0190	0.003	0.003
1,2-Dimethylbenzene (o-Xylene)	A8	0.0028	0.0098	0.001	0.001
n-Nonane	P9	0.0086	0.0363	0.005	0.005
1,1-Methylethylcyclohexane	N9	0.0048	0.0199	0.003	0.003
UnknownC9s	U9	0.0095	0.0401	0.005	0.005
n-Decane	P10	0.0033	0.0155	0.002	0.002
1,2,3-Trimethylbenzene	A9	0.0027	0.0107	0.002	0.002
1,2-Ethyl-i-propylbenzene	A10	0.0019	0.0093	0.001	0.001
n-Undecane	P11	0.0010	0.0051	0.001	0.001
Tetrahydronaphthalene	A10	0.0021	0.0092	0.002	0.002
1,3-Di-n-propylbenzene	A12	0.0030	0.0160	0.002	0.002
UnknownC11s	U11	0.0018	0.0092	0.001	0.001
n-Dodecane	P12	0.0005	0.0028	0.000	0.000
1,4-Methyl-n-pentylbenzene	A12	0.0023	0.0123	0.002	0.002
n-Tridecane	P13	0.0005	0.0030	0.000	0.000
UnknownC13s	U13	0.0010	0.0061	0.001	0.001
<b>TOTAL</b>		<b>100.00000</b>	<b>100.00000</b>	<b>6.4407</b>	<b>6.4748</b>

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.650	14.730
BENZENE	0.0054	0.0139	<b>LOW</b> NET DRY REAL :	719.5 /scf	723.4 /scf
TOLUENE	0.0150	0.0455	NET WET REAL :	706.9 /scf	710.8 /scf
ETHYLBENZENE	0.0000	0.0000	<b>HIGH</b> GROSS DRY REAL :	784.8 /scf	789.1 /scf
XYLENES	0.0057	0.0199	GROSS WET REAL :	771.1 /scf	775.4 /scf
<b>TOTAL BTEX</b>	<b>0.0261</b>	<b>0.0793</b>	NET DRY REAL :	8991.6 /lb	9040.7 /lb
			GROSS DRY REAL :	9809.6 /lb	9863.2 /lb

RELATIVE DENSITY (AIR=1): 1.0494  
 COMPRESSIBILITY FACTOR : 0.99760

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

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