

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

**MAIN PAGE**

LEASE #:		NAME/DESCRIP :	<b>TAOS 1-10 SALES GAS</b>
PROJECT NO. :	<b>201701044</b>	ANALYSIS NO. :	<b>01</b>
COMPANY NAME :	<b>NIGHTHAWK PRODUCTION CO</b>	ANALYSIS DATE:	JANUARY 16, 2017 10:01
OFFICE / BRANCH:	HIGHLANDS RANCH, CO	SAMPLE DATE :	JANUARY 11, 2017 08:30
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

**\*\*\*FIELD DATA\*\*\***

SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	25 psig	CYLINDER NO. :	1366
LAB PRES:	psig	SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	73 °f	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:	°f	H2S BY STAIN TUBE:	<b>17</b> ppm
H2O BY STAIN TUBE:	- #/mmcf	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:	NO PROBE		
LAB COMMENTS:			

<u>COMPONENT</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.730</u>	<u>GPM @ 14.650</u>
ALCOHOLS	0.0078	0.0082		
HELIUM	0.55	0.07	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.37	0.39	---	---
NITROGEN	50.2300	46.2400	---	---
CARBON DIOXIDE	2.53	3.66	---	---
METHANE	26.19300	13.81070	---	---
ETHANE	3.3107	3.2716	0.8875	0.8827
PROPANE	5.9618	8.6396	1.6463	1.6374
I-BUTANE	1.4878	2.8419	0.4885	0.4858
N-BUTANE	4.7504	9.0739	1.5016	1.4934
I-PENTANE	1.2514	2.9642	0.4563	0.4538
N-PENTANE	1.6508	3.9142	0.5990	0.5958
HEXANES PLUS	1.7063	5.1157	0.7032	0.6999
<b>TOTALS</b>	<b>100.00000</b>	<b>100.00000</b>	<b>6.2824</b>	<b>6.2488</b>

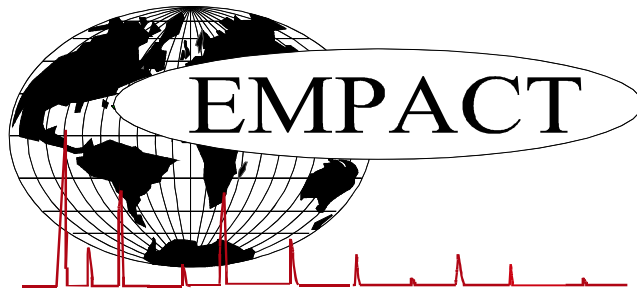
<u>BTEX COMPONENTS</u>	<u>MOLE%</u>	<u>WT%</u>	<u>BTU @ 14.730</u>	<u>14.650</u>
BENZENE	0.0046	0.0118	<b>LOW</b> NET DRY REAL :	806.8 /scf
TOLUENE	0.0034	0.0103	NET WET REAL :	792.8 /scf
ETHYLBENZENE	0.0011	0.0038	<b>HIGH</b> GROSS DRY REAL :	881.6 /scf
XYLENES	0.0020	0.0070	GROSS WET REAL :	866.3 /scf
<b>TOTAL BTEX</b>	<b>0.0111</b>	<b>0.0329</b>	NET DRY REAL :	10086.2 /lb
			GROSS DRY REAL :	11014.2 /lb

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

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

**RELATIVE DENSITY (AIR=1):** 1.0497  
**COMPRESSIBILITY FACTOR :** 0.99724

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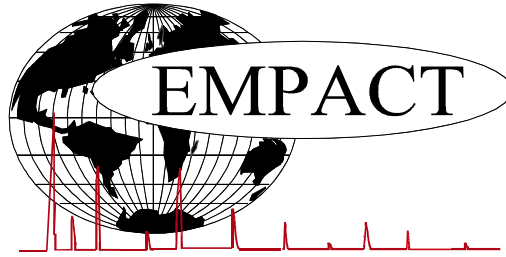
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**GLYCALC INFORMATION**

PROJECT NO. :	201701044	ANALYSIS NO. :	01
COMPANY NAME :	NIGHTHAWK PRODUCTION CO	ANALYSIS DATE:	JANUARY 16, 2017 10:01
ACCOUNT NO. :		SAMPLE DATE :	JANUARY 11, 2017 08:30
PRODUCER :		CYLINDER NO. :	1366
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TAOS 1-10 SALES GAS		
***FIELD DATA***		SAMPLE TEMP. :	73
SAMPLE PRES. :	25	AMBIENT TEMP.:	
COMMENTS :	NO PROBE SPOT		

<u>Componet</u>	<u>Mole %</u>	<u>Wt %</u>
Helium	0.55	0.07
Hydrogen	0.00	0.00
Carbon Dioxide	2.53	3.66
Nitrogen	50.23	46.24
Methane	26.19300	13.81070
Ethane	3.3107	3.2716
Propane	5.9618	8.6396
Isobutane	1.4878	2.8419
n-Butane	4.7504	9.0739
Isopentane	1.2065	2.8607
n-Pentane	1.6508	3.9142
Cyclopentane	0.0449	0.1035
n-Hexane	0.4400	1.2461
Cyclohexane	0.1064	0.2943
Other Hexanes	0.6261	1.7646
Heptanes	0.3075	1.0077
Methycyclohexane	0.0904	0.2917
2,2,4 Trimethylpentane	0.0012	0.0045
Benzene	0.0046	0.0118
Toluene	0.0034	0.0103
Ethylbenzene	0.0011	0.0038
Xylenes	0.0020	0.0070
C8+ Heavies	0.1236	0.4739
<u>Subtotal</u>	<u>99.62220</u>	<u>99.60180</u>
Oxygen/Argon	0.37	0.39
Alcohols	0.0078	0.0082
<b>Total</b>	<b>100.00000</b>	<b>100.00000</b>

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

**DHA COMPONENT LIST**

PROJECT NO. :	201701044	ANALYSIS NO. :	01
COMPANY NAME :	NIGHTHAWK PRODUCTION CO	ANALYSIS DATE:	JANUARY 16, 2017 10:01
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PRODUCER :		CYLINDER NO. :	1366
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	TAOS 1-10 SALES GAS		
***FIELD DATA***		SAMPLE TEMP. :	73
SAMPLE PRES. :	25	AMBIENT TEMP.:	
COMMENTS :	NO PROBE SPOT		

<u>COMPONENT</u>	<u>PIANO #</u>	<u>MOLE %</u>	<u>MASS %</u>	<u>GPM @ 14.730</u>	<u>GPM @ 14.650</u>
Helium	---	0.55	0.07	---	---
Oxygen/Argon	---	0.37	0.39	---	---
Nitrogen	---	50.23	46.24	---	---
Carbon Dioxide	---	2.53	3.66	---	---
Methane	P1	26.19300	13.81070	---	---
Ethane	P2	3.3107	3.2716	0.888	0.883
Propane	P3	5.9618	8.6396	1.646	1.637
i-Butane	I4	1.4878	2.8419	0.489	0.486
Methanol	X1	0.0078	0.0082	0.001	0.001
n-Butane	P4	4.7504	9.0739	1.502	1.493
2,2-Dimethylpropane	I5	0.0098	0.0232	0.004	0.004
i-Pentane	I5	1.1967	2.8375	0.439	0.437
n-Pentane	P5	1.6495	3.9111	0.599	0.596
2,2-Dimethylbutane	I6	0.0072	0.0204	0.003	0.003
Cyclopentane	N5	0.0449	0.1035	0.013	0.013
2,3-Dimethylbutane	I6	0.0246	0.0697	0.010	0.010
2-Methylpentane	I6	0.1495	0.4234	0.062	0.062
3-Methylpentane	I6	0.3129	0.8862	0.128	0.127
UnknownC5s	U5	0.0013	0.0031	0.000	0.000
n-Hexane	P6	0.4400	1.2461	0.181	0.180
2,2-Dimethylpentane	I7	0.0002	0.0007	0.000	0.000
Methylcyclopentane	N6	0.1306	0.3612	0.046	0.046
2,4-Dimethylpentane	I7	0.0067	0.0221	0.003	0.003
2,2,3-Trimethylbutane	I7	0.0005	0.0016	0.000	0.000
Benzene	A6	0.0046	0.0118	0.001	0.001
3,3-Dimethylpentane	I7	0.0005	0.0016	0.000	0.000
Cyclohexane	N6	0.1064	0.2943	0.036	0.036
2-Methylhexane	I7	0.0321	0.1057	0.015	0.015
2,3-Dimethylpentane	I7	0.0102	0.0336	0.005	0.005
1,1-Dimethylcyclopentane	N7	0.0104	0.0336	0.004	0.004
3-Methylhexane	I7	0.0473	0.1558	0.022	0.022
1c,3-Dimethylcyclopentane	N7	0.0183	0.0591	0.008	0.008
1t,3-Dimethylcyclopentane	N7	0.0148	0.0478	0.007	0.007
3-Ethylpentane	I7	0.0035	0.0115	0.002	0.002
1t,2-Dimethylcyclopentane	N7	0.0344	0.1110	0.016	0.016
2,2,4-Trimethylpentane	I8	0.0012	0.0045	0.001	0.001

UnknownC6s	U6	0.0013	0.0037	0.001	0.001
n-Heptane	P7	0.1091	0.3593	0.050	0.050
1c,2-Dimethylcyclopentane	N7	0.0022	0.0071	0.001	0.001
Methylcyclohexane	N7	0.0904	0.2917	0.036	0.036
2,2-Dimethylhexane	I8	0.0068	0.0255	0.003	0.003
1,1,3-Trimethylcyclopentane	N7	0.0015	0.0055	0.001	0.001
Ethylcyclopentane	N7	0.0041	0.0132	0.002	0.002
2,5-Dimethylhexane	I8	0.0013	0.0049	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0004	0.0015	0.000	0.000
2,4-Dimethylhexane	I8	0.0025	0.0094	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0056	0.0206	0.003	0.003
3,3-Dimethylhexane	I8	0.0005	0.0019	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0082	0.0302	0.004	0.004
2,3,4-Trimethylpentane	I8	0.0002	0.0008	0.000	0.000
Toluene	A7	0.0034	0.0103	0.001	0.001
2,3-Dimethylhexane	I8	0.0024	0.0090	0.001	0.001
2-Methyl-3-ethylpentane	I8	0.0006	0.0023	0.000	0.000
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0004	0.000	0.000
2-Methylheptane	I8	0.0140	0.0526	0.007	0.007
4-Methylheptane	I8	0.0035	0.0132	0.002	0.002
3-Methyl-3-ethylpentane	I8	0.0005	0.0019	0.000	0.000
3,4-Dimethylhexane	I8	0.0006	0.0023	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0004	0.0015	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0002	0.0007	0.000	0.000
3-Methylheptane	I8	0.0042	0.0158	0.002	0.002
1c,2t,3-Trimethylcyclopentane	N8	0.0117	0.0432	0.006	0.006
3-Ethylhexane	I8	0.0018	0.0068	0.001	0.001
1t,4-Dimethylcyclohexane	N8	0.0034	0.0126	0.002	0.002
1,1-Dimethylcyclohexane	N8	0.0008	0.0030	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0009	0.0033	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0008	0.0030	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0020	0.0074	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0002	0.0009	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0034	0.0126	0.002	0.002
UnknownC7s	U7	0.0117	0.0385	0.005	0.005
n-Octane	P8	0.0199	0.0747	0.010	0.010
1c,4-Dimethylcyclohexane	N8	0.0010	0.0037	0.001	0.001
i-Propylcyclopentane	I8	0.0001	0.0004	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0003	0.0013	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0006	0.0022	0.000	0.000
2,2-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0033	0.0137	0.002	0.002
2,2,3-Trimethylhexane	I9	0.0015	0.0063	0.001	0.001
2,4-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
4,4-Dimethylheptane	I9	0.0003	0.0013	0.000	0.000
Ethylcyclohexane	N8	0.0014	0.0052	0.001	0.001
n-Propylcyclopentane	N8	0.0005	0.0018	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0008	0.000	0.000
2,5-Dimethylheptane	I9	0.0003	0.0013	0.000	0.000
3,3-Dimethylheptane	I9	0.0003	0.0013	0.000	0.000
3,5-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0004	0.000	0.000
Ethylbenzene	I8	0.0011	0.0038	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0002	0.0008	0.000	0.000
2,3-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000

1,3-Dimethylbenzene (m-Xylene)	A8	0.0010	0.0035	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0004	0.0014	0.000	0.000
3,4-Dimethylheptane	I9	0.0004	0.0017	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0004	0.000	0.000
4-Ethylheptane	I9	0.0002	0.0009	0.000	0.000
4-Methyloctane	I9	0.0006	0.0025	0.000	0.000
2-Methyloctane	I9	0.0007	0.0030	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0002	0.0008	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0009	0.000	0.000
3-Methyloctane	I9	0.0011	0.0046	0.001	0.001
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0004	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0001	0.0004	0.000	0.000
3,3-Diethylpentane	I9	0.0001	0.0004	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0006	0.0021	0.000	0.000
i-Butylcyclopentane	N9	0.0005	0.0021	0.000	0.000
UnknownC8s	U8	0.0006	0.0023	0.000	0.000
n-Nonane	P9	0.0023	0.0097	0.001	0.001
1,1-Methylethylcyclohexane	N9	0.0006	0.0025	0.000	0.000
i-Propylbenzene	A9	0.0003	0.0012	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0008	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
n-Butylcyclopentane	N9	0.0003	0.0013	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
n-Propylbenzene	A9	0.0003	0.0012	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0005	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0005	0.000	0.000
1,3-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	0.0005	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0004	0.000	0.000
3-Methylnonane	I10	0.0001	0.0005	0.000	0.000
t-Butylbenzene	A10	0.0001	0.0004	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0036	0.0152	0.002	0.002
n-Decane	P10	0.0003	0.0014	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0004	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0004	0.000	0.000
UnknownC10s	U10	0.0007	0.0033	0.000	0.000
n-Undecane	P11	0.0001	0.0005	0.000	0.000
n-Pentadecane	P15	0.0001	0.0007	0.000	0.000
UnknownC15s	U15	0.0001	0.0007	0.000	0.000
<b>TOTAL</b>		<b>100.00000</b>	<b>100.00000</b>	<b>6.2834</b>	<b>6.2498</b>

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.730	14.650
BENZENE	0.0046	0.0118	<b>LOW</b> NET DRY REAL :	806.8 /scf	802.4 /scf
TOLUENE	0.0034	0.0103	NET WET REAL :	792.8 /scf	788.4 /scf
ETHYLBENZENE	0.0011	0.0038	<b>HIGH</b> GROSS DRY REAL :	881.6 /scf	876.8 /scf
XYLENES	0.0020	0.0070	GROSS WET REAL :	866.3 /scf	861.4 /scf
<b>TOTAL BTEX</b>	<b>0.0111</b>	<b>0.0329</b>	NET DRY REAL :	<b>10086.2 /lb</b>	<b>10031.4 /lb</b>
			GROSS DRY REAL :	<b>11014.2 /lb</b>	<b>10954.3 /lb</b>

RELATIVE DENSITY (AIR=1): 1.0497  
 COMPRESSIBILITY FACTOR : 0.99724

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

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