



303-637-0150

EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

MAIN PAGE

| | | | |
|------------------|----------------------|----------------|--------------------|
| PROJECT NO. : | 201410002 | ANALYSIS NO. : | 07 |
| COMPANY NAME : | NIGHTHAWK PRODUCTION | ANALYSIS DATE: | OCTOBER 2, 2014 |
| ACCOUNT NO. : | | SAMPLE DATE : | SEPTEMBER 30, 2014 |
| PRODUCER : | | CYLINDER NO. : | 2064 |
| LEASE NO. : | | SAMPLED BY : | JOHN MOSER |
| NAME/DESCRIP : | TREATER WATER 13:55 | | EMPACT |
| | BLACK COMB 12-14 | | |
| ***FIELD DATA*** | | SAMPLE TEMP. : | 96 |
| SAMPLE PRES. : | 19 | AMBIENT TEMP.: | |
| VAPOR PRES. : | | GRAVITY : | |
| COMMENTS : | SPOT; NO PROBE; PH=6 | | |

| <u>COMPONENT</u> | <u>MOLE %</u> | <u>MASS %</u> | <u>VOL %</u> |
|------------------|-----------------|-----------------|-----------------|
| WATER | 99.9966 | 99.9871 | 99.9823 |
| ALCOHOLS | 0.0028 | 0.0115 | 0.0146 |
| NITROGEN (AIR) | 0.0000 | 0.0000 | 0.0000 |
| CARBON DIOXIDE | 0.0000 | 0.0000 | 0.0000 |
| METHANE | 0.0004 | 0.0004 | 0.0013 |
| ETHANE | 0.0001 | 0.0001 | 0.0003 |
| PROPANE | 0.0001 | 0.0002 | 0.0004 |
| I-BUTANE | 0.0000 | 0.0000 | 0.0000 |
| N-BUTANE | 0.0000 | 0.0002 | 0.0003 |
| I-PENTANE | 0.0000 | 0.0001 | 0.0002 |
| N-PENTANE | 0.0000 | 0.0001 | 0.0002 |
| HEXANES PLUS | 0.0000 | 0.0003 | 0.0004 |
| TOTALS | 100.0000 | 100.0000 | 100.0000 |

| <u>BTEX COMPONENTS</u> | <u>MOLE%</u> | <u>MASS%</u> |
|------------------------|---------------|---------------|
| BENZENE | 0.0000 | 0.0000 |
| TOLUENE | 0.0000 | 0.0000 |
| ETHYLBENZENE | 0.0000 | 0.0000 |
| XYLENE | 0.0000 | 0.0000 |
| TOTAL BTEX | 0.0000 | 0.0000 |

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

| | <u>TOTAL</u> | <u>C6+</u> |
|-----------------------------|---------------|-----------------|
| | <u>SAMPLE</u> | <u>FRACTION</u> |
| Specific Gravity (H2O=1) = | 1 | 0.6977 60/60 |
| API Gravity = | 10 | 71.31 60/60 |
| Molecular Weight = | 100.00 | |
| Absolute Density = | 8.34 | 5.88 LBS/GAL |
| Heating Value Liq. Idl Gas= | 0 | |
| Vapor/Liquid = | 0.01 | 23.86 CUFT/GAL |
| Vapor Pressure = | 0.97 | |

*(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 RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



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E & P TANK / GLYCALC INFORMATION

| | | | |
|------------------|----------------------|----------------|--------------------|
| PROJECT NO. : | 201410002 | ANALYSIS NO. : | 07 |
| COMPANY NAME : | NIGHTHAWK PRODUCTION | ANALYSIS DATE: | OCTOBER 2, 2014 |
| ACCOUNT NO. : | | SAMPLE DATE : | SEPTEMBER 30, 2014 |
| PRODUCER : | | CYLINDER NO.: | 2064 |
| LEASE NO. : | | SAMPLED BY : | JOHN MOSER |
| NAME/DESCRIP : | TREATER WATER 13:55 | | EMPACT |
| | BLACK COMB 12-14 | | |
| ***FIELD DATA*** | | SAMPLE TEMP. : | 96 |
| SAMPLE PRES. : | 19 | AMBIENT TEMP.: | |
| VAPOR PRES. : | | GRAVITY : | |
| COMMENTS : | SPOT; NO PROBE; PH=6 | | |

| <u>COMPONENT</u> | <u>Mole %</u> | <u>Wt %</u> | <u>LV %</u> | |
|------------------------------|---------------|-------------|-------------|--------|
| CARBON DIOXIDE | 0.0000 | 0.0000 | 0.0000 | |
| NITROGEN (AIR) | 0.0000 | 0.0000 | 0.0000 | |
| METHANE | 0.0004 | 0.0004 | 0.0013 | |
| ETHANE | 0.0001 | 0.0001 | 0.0003 | |
| PROPANE | 0.0001 | 0.0002 | 0.0004 | |
| I-BUTANE | 0.0000 | 0.0000 | 0.0000 | |
| N-BUTANE | 0.0000 | 0.0002 | 0.0003 | |
| I-PENTANE | 0.0000 | 0.0001 | 0.0002 | |
| N-PENTANE | 0.0000 | 0.0001 | 0.0002 | |
| CYCLOPENTANE (N-C5) | 0.0000 | 0.0000 | 0.0000 | |
| N-HEXANE | 0.0000 | 0.0001 | 0.0002 | |
| CYCLOHEXANE (OTHER C6) | 0.0000 | 0.0000 | 0.0000 | |
| OTHER HEXANES | 0.0000 | 0.0000 | 0.0000 | |
| OTHER HEPTANES | 0.0000 | 0.0001 | 0.0001 | |
| METHYLCYCLOHEXANE (OTHER C7) | 0.0000 | 0.0001 | 0.0001 | |
| 2,2,4 TRIMETHYLPENTANE | 0.0000 | 0.0000 | 0.0000 | |
| BENZENE | 0.0000 | 0.0000 | 0.0000 | |
| TOLUENE | 0.0000 | 0.0000 | 0.0000 | |
| ETHYLBENZENE | 0.0000 | 0.0000 | 0.0000 | |
| XYLENES | 0.0000 | 0.0000 | 0.0000 | |
| OTHER OCTANES | 0.0000 | 0.0000 | 0.0000 | |
| OCTANES PLUS | ---- | 0.0000 | ---- | 0.0000 |
| NONANES | 0.0000 | 0.0000 | 0.0000 | |
| DECANES PLUS | 0.0000 | 0.0000 | 0.0000 | |
| SUB TOTAL | 0.0006 | 0.0014 | 0.0031 | |
| WATER | 99.9966 | 99.9871 | 99.9823 | |
| ALCOHOLS | 0.0028 | 0.0115 | 0.0146 | |
| TOTAL | 100.0000 | 100.0000 | 100.0000 | |

API Gravity = 10.00 60/60
 Vapor Pressure = 0.97 PSIA & 100 F

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.



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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

BY CARBON NUMBER

| | | | |
|------------------|----------------------|----------------|--------------------|
| PROJECT NO. : | 201410002 | ANALYSIS NO. : | 07 |
| COMPANY NAME : | NIGHTHAWK PRODUCTION | ANALYSIS DATE: | OCTOBER 2, 2014 |
| ACCOUNT NO. : | | SAMPLE DATE : | SEPTEMBER 30, 2014 |
| PRODUCER : | | CYLINDER NO. : | 2064 |
| LEASE NO. : | | SAMPLED BY : | JOHN MOSER |
| NAME/DESCRIP : | TREATER WATER 13:55 | | EMPACT |
| | BLACK COMB 12-14 | | |
| ***FIELD DATA*** | | SAMPLE TEMP. : | 96 |
| SAMPLE PRES. : | 19 | AMBIENT TEMP.: | |
| VAPOR PRES. : | | GRAVITY : | |
| COMMENTS : | SPOT; NO PROBE; PH=6 | | |

| <u>COMPONENT / CARBON NUMBER</u> | <u>MOLE%</u> | <u>MASS %</u> | <u>VOLUME %</u> |
|--------------------------------------|-----------------|-----------------|-----------------|
| WATER | 99.9966 | 99.9871 | 99.9823 |
| ALCOHOLS | 0.0028 | 0.0115 | 0.0146 |
| NITROGEN | 0.0000 | 0.0000 | 0.0000 |
| CARBON DIOXIDE | 0.0000 | 0.0000 | 0.0000 |
| C1 | 0.0004 | 0.0004 | 0.0013 |
| C2 | 0.0001 | 0.0001 | 0.0003 |
| C3 | 0.0001 | 0.0002 | 0.0004 |
| C4 | 0.0000 | 0.0002 | 0.0003 |
| C5 | 0.0000 | 0.0002 | 0.0004 |
| C6 | 0.0000 | 0.0001 | 0.0002 |
| C7 | 0.0000 | 0.0002 | 0.0002 |
| C8 | 0.0000 | 0.0000 | 0.0000 |
| C9 | 0.0000 | 0.0000 | 0.0000 |
| C10 | 0.0000 | 0.0000 | 0.0000 |
| C11 | 0.0000 | 0.0000 | 0.0000 |
| C12 | 0.0000 | 0.0000 | 0.0000 |
| C13 | 0.0000 | 0.0000 | 0.0000 |
| C14 | 0.0000 | 0.0000 | 0.0000 |
| C15 | 0.0000 | 0.0000 | 0.0000 |
| 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 |
| <u>Total</u> | <u>100.0000</u> | <u>100.0000</u> | <u>100.0000</u> |

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EXTENDED NATURAL GAS LIQUID ANALYSIS (*DHA)

DHA COMPONENT LIST

| | | | |
|------------------|-----------------------------------------|----------------|--------------------|
| PROJECT NO. : | 201410002 | ANALYSIS NO. : | 07 |
| COMPANY NAME : | NIGHTHAWK PRODUCTION | ANALYSIS DATE: | OCTOBER 2, 2014 |
| ACCOUNT NO. : | | SAMPLE DATE : | SEPTEMBER 30, 2014 |
| PRODUCER : | | CYLINDER NO. : | 2064 |
| LEASE NO. : | | SAMPLED BY : | JOHN MOSER |
| NAME/DESCRIP : | TREATER WATER 13:55 BLACK COMB 12-14 | | EMPACT |
| ***FIELD DATA*** | | SAMPLE TEMP. : | 96 |
| SAMPLE PRES. : | 19 | AMBIENT TEMP.: | |
| VAPOR PRES. : | | GRAVITY : | |
| COMMENTS : | SPOT; NO PROBE; PH=6 | | |

| <u>COMPONENT</u> | <u>PIANO #</u> | <u>MOLE %</u> | <u>MASS %</u> | <u>VOL %</u> |
|-------------------|----------------|-----------------|-----------------|-----------------|
| Water | W | 99.9966 | 99.9871 | 99.9823 |
| Nitrogen | NHC | 0.0000 | 0.0000 | 0.0000 |
| Carbon Dioxide | NHC | 0.0000 | 0.0000 | 0.0000 |
| Methane | P1 | 0.0004 | 0.0004 | 0.0013 |
| Ethane | P2 | 0.0001 | 0.0001 | 0.0003 |
| Propane | P3 | 0.0001 | 0.0002 | 0.0004 |
| i-Butane | I4 | 0.0000 | 0.0000 | 0.0000 |
| Methanol | X1 | 0.0001 | 0.0002 | 0.0003 |
| n-Butane | P4 | 0.0000 | 0.0002 | 0.0003 |
| i-Pentane | I5 | 0.0000 | 0.0001 | 0.0002 |
| i-Propanol | X3 | 0.0000 | 0.0002 | 0.0003 |
| n-Pentane | P5 | 0.0000 | 0.0001 | 0.0002 |
| t-Butanol | X4 | 0.0027 | 0.0111 | 0.0140 |
| n-Hexane | P6 | 0.0000 | 0.0001 | 0.0002 |
| n-Heptane | P7 | 0.0000 | 0.0001 | 0.0001 |
| Methylcyclohexane | N7 | 0.0000 | 0.0001 | 0.0001 |
| <u>TOTAL</u> | | <u>100.0000</u> | <u>100.0000</u> | <u>100.0000</u> |

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