



30-045-07182

## Gas Analysis Certificate

GPA Standard 2261-13

Method Name C6+ Excel Recalc2  
Last calibration date 6/19/2015 8:47:52 AM

|                    |               |                |                  |
|--------------------|---------------|----------------|------------------|
| Client:            | BP            | Project #:     | 03143-0880       |
| Site Name:         | GCU 040-FC    | Meter ID:      | 3004507182 (CSG) |
| Sampled by:        | Brandon K.    | Date Sampled   | 052815           |
| Analyzed by:       | Logan Richter | Date Received: | 060215           |
| Sample Pressure:   | 11 psig       | Date Analyzed: | 060315           |
| Sample Temperature | NA            | Analysis Time: | Standard         |

## Component Results (14.696)

| Name           | Qty (Norm)<br>(Mol %) | Wt Percent<br>(%) | GPM    |
|----------------|-----------------------|-------------------|--------|
| Helium         | 0.250                 | 0.056             | 0.025  |
| Oxygen         | 0.004                 | 0.007             | 0.000  |
| Nitrogen       | 0.173                 | 0.273             | 0.019  |
| Carbon Dioxide | 1.933                 | 4.805             | 0.330  |
| Methane        | 92.229                | 83.568            | 15.632 |
| Ethane         | 3.714                 | 6.308             | 0.993  |
| Propane        | 0.976                 | 2.431             | 0.269  |
| i-Butane       | 0.210                 | 0.689             | 0.069  |
| n-Butane       | 0.279                 | 0.914             | 0.088  |
| i-Pentane      | 0.131                 | 0.534             | 0.048  |
| n-Pentane      | 0.102                 | 0.414             | 0.037  |
| C6+            | 0.000                 | 0.000             | 0.000  |
|                | 100.000               | 100.000           | 17.510 |

## Calculations at Pressure Base 14.696

|                                     |         |                                     |         |
|-------------------------------------|---------|-------------------------------------|---------|
| Compressibility (Z) (Dry Gas)       | 0.99764 | C2+                                 | 1.503   |
| Density (G) (Dry Gas)               | 0.61131 | C3+                                 | 0.510   |
| Component MW Total                  | 17.71   | C5+                                 | 0.085   |
| Heating Value (Dry Ideal) Total BTU | 1047.03 | Heating Value (Sat Ideal) Total BTU | 1028.75 |
| Heating Value (Dry Real) Total BTU  | 1049.50 | Heating Value (Sat Real) Total BTU  | 1031.10 |

*BSK*  
Reviewed by

07/01/2015  
mm dd/yyyy



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Last calibration date 6/19/2015 8:47:52 AM

|                     |               |                |                  |
|---------------------|---------------|----------------|------------------|
| Client:             | BP            | Project #:     | 03143-0880       |
| Site Name:          | GCU 040-FC    | Meter ID:      | 3004507182 (BHD) |
| Sampled by:         | Brandon K.    | Date Sampled:  | 052815           |
| Analyzed by:        | Logan Richter | Date Received: | 060215           |
| Sample Pressure:    | 34 psig       | Date Analyzed: | 060315           |
| Sample Temperature: | NA            | Analysis Time: | Standard         |

### Component Results (14.696)

| Name           | Qty (Norm)<br>[Mol %] | Wt Percent<br>(%) | GPM    |
|----------------|-----------------------|-------------------|--------|
| Helium         | 0.313                 | 0.072             | 0.032  |
| Oxygen         | 0.006                 | 0.010             | 0.000  |
| Nitrogen       | 0.486                 | 0.789             | 0.053  |
| Carbon Dioxide | 0.069                 | 0.176             | 0.012  |
| Methane        | 93.173                | 86.604            | 15.792 |
| Ethane         | 4.271                 | 7.441             | 1.142  |
| Propane        | 1.096                 | 2.800             | 0.302  |
| i-Butane       | 0.225                 | 0.759             | 0.074  |
| n-Butane       | 0.200                 | 0.674             | 0.063  |
| i-Pentane      | 0.097                 | 0.404             | 0.035  |
| n-Pentane      | 0.065                 | 0.270             | 0.023  |
| C6+            | 0.000                 | 0.000             | 0.000  |
|                | 100.000               | 100.000           | 17.528 |

### Calculations at Pressure Base 14.696

|                                     |         |                                     |         |
|-------------------------------------|---------|-------------------------------------|---------|
| Compressibility (Z) (Dry Gas)       | 0.99769 | C2+                                 | 1.639   |
| Density (G) (Dry Gas)               | 0.59591 | C3+                                 | 0.497   |
| Component MW Total                  | 17.26   | C5+                                 | 0.059   |
| Heating Value (Dry Ideal) Total BTU | 1064.52 | Heating Value (Sat Ideal) Total BTU | 1045.95 |
| Heating Value (Dry Real) Total BTU  | 1066.98 | Heating Value (Sat Real) Total BTU  | 1048.28 |

  
Reviewed by

07/01/2015  
mm dd/yyyy