

**Gas Analysis Certificate**

30-045-07805

**GPA Standard 2261-13**

Method Name      au\_report\_150\_C6+  
Last calibration date      1/15/2015 1:00:58 PM

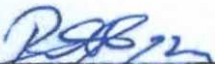
|                    |                    |                |                 |
|--------------------|--------------------|----------------|-----------------|
| Client:            | BP                 | Project #:     | 03143-0880      |
| Site Name:         | GCU Com G 179 - DK | Meter ID:      | 3004507805 (BH) |
| Sampled by:        | Daniel F.          | Date Sampled   | 05-14-15        |
| Analysed by:       | Logan Richter      | Date Received: | 05-15-15        |
| Sample Pressure:   | 213 psig           | Date Analyzed: | 05-20-15        |
| Sample Temperature | N/R                | Analysis Time: | Standard        |

**Component Results (14.696)**

| Name           | Qty (Norm)<br>[Mol %] | Wt Percent<br>(%) | GPM    |
|----------------|-----------------------|-------------------|--------|
| Helium         | 0.000                 | 0.000             | 0.000  |
| Oxygen         | 0.007                 | 0.010             | 0.001  |
| Nitrogen       | 0.485                 | 0.622             | 0.053  |
| Carbon Dioxide | 0.174                 | 0.351             | 0.030  |
| Methane        | 76.738                | 56.415            | 13.027 |
| Ethane         | 11.331                | 15.614            | 3.035  |
| Propane        | 6.641                 | 13.420            | 1.832  |
| i-Butane       | 1.090                 | 2.902             | 0.357  |
| n-Butane       | 2.070                 | 5.514             | 0.654  |
| i-Pentane      | 0.615                 | 2.034             | 0.225  |
| n-Pentane      | 0.504                 | 1.668             | 0.183  |
| C6+            | 0.344                 | 1.450             | 0.150  |
|                | 100.000               | 100.000           | 19.547 |

**Calculations at Pressure Base 14.696**

|                                     |         |                                     |         |
|-------------------------------------|---------|-------------------------------------|---------|
| Compressibility (Z) (Dry Gas)       | 0.99606 | C2+                                 | 6.436   |
| Density (G) (Dry Gas)               | 0.75360 | C3+                                 | 3.402   |
| Component MW Total                  | 21.82   | C5+                                 | 0.559   |
| Heating Value (Dry Ideal) Total BTU | 1308.15 | Heating Value (Sat Ideal) Total BTU | 1285.33 |
| Heating Value (Dry Real) Total BTU  | 1313.33 | Heating Value (Sat Real) Total BTU  | 1290.23 |

  
Reviewed by

05/22/2015  
mm/dd/yyyy



## Gas Analysis Certificate

GPA Standard 2261-13

Method Name au\_report\_150\_C6+  
Last calibration date 1/15/2015 1:00:58 PM

|                     |                    |                |                 |
|---------------------|--------------------|----------------|-----------------|
| Client:             | BP                 | Project #:     | 03143-0880      |
| Site Name:          | GCU Com G 179 - DK | Meter ID:      | 3004507805 (PC) |
| Sampled by:         | Daniel F.          | Date Sampled:  | 05-14-15        |
| Analysed by:        | Logan Richter      | Date Received: | 05-15-15        |
| Sample Pressure:    | N/R                | Date Analyzed: | 05-20-15        |
| Sample Temperature: | N/R                | Analysis Time: | Standard        |

### Component Results (14.696)

| Name           | Qty (Norm)<br>(Mol %) | Wt Percent<br>(%) | GPM    |
|----------------|-----------------------|-------------------|--------|
| Helium         | 0.000                 | 0.000             | 0.000  |
| Oxygen         | 0.005                 | 0.008             | 0.000  |
| Nitrogen       | 0.397                 | 0.567             | 0.044  |
| Carbon Dioxide | 0.354                 | 0.795             | 0.060  |
| Methane        | 85.135                | 69.654            | 14.441 |
| Ethane         | 7.792                 | 11.949            | 2.085  |
| Propane        | 3.767                 | 8.471             | 1.038  |
| i-Butane       | 0.545                 | 1.615             | 0.178  |
| n-Butane       | 1.058                 | 3.135             | 0.334  |
| i-Pentane      | 0.335                 | 1.231             | 0.122  |
| n-Pentane      | 0.299                 | 1.100             | 0.108  |
| C6+            | 0.315                 | 1.475             | 0.137  |
|                | 100.000               | 100.000           | 18.549 |

### Calculations at Pressure Base 14.696

|                                     |         |                                     |         |
|-------------------------------------|---------|-------------------------------------|---------|
| Compressibility (Z) (Dry Gas)       | 0.99691 | C2+                                 | 4.003   |
| Density (G) (Dry Gas)               | 0.67715 | C3+                                 | 1.919   |
| Component MW Total                  | 19.61   | C5+                                 | 0.368   |
| Heating Value (Dry Ideal) Total BTU | 1186.26 | Heating Value (Sat Ideal) Total BTU | 1165.56 |
| Heating Value (Dry Real) Total BTU  | 1189.94 | Heating Value (Sat Real) Total BTU  | 1169.05 |

  
Reviewed by

05/20/2015  
mm/dd/yyyy