



HPI 30-045-20187

Casing

Gas Analysis Certificate

OIL CONS. DIV DIST. 3

GPA Standard 2261-13

DEC 18 2015

Acquisition Method Name au_report_150_C6+
Last calibration date 7/10/2015 10:21:38 AM

Client:	BP	Project #:	03143-0880
Site Name:	GCU 89E	Meter ID:	3004526187 (CSG)
Sampled by:	Daniel F.	Date Sampled	07-06-15
Analyzed by:	Logan Richter	Date Received:	07-13-15
Sample Pressure:	130 psig	Date Analyzed:	07-15-15
Sample Temperature	N/R	Analysis Time:	Standard

Component Results (14.696)

Name	Qty (Norm) [Mol %]	Wt Percent (%)	GPM
Helium	0.047	0.009	0.005
Oxygen	0.007	0.011	0.001
Nitrogen	0.475	0.658	0.052
Carbon Dioxide	0.946	2.059	0.162
Methane	83.369	66.146	14.144
Ethane	8.343	12.408	2.233
Propane	3.796	8.278	1.046
i-Butane	0.550	1.580	0.180
n-Butane	1.055	3.033	0.333
i-Pentane	0.337	1.202	0.123
n-Pentane	0.276	0.983	0.100
C6+	0.800	3.634	0.349
	100.000	100.000	18.728

Calculations at Pressure Base 14.696

Compressibility (Z) (Dry Gas)	0.99671	C2+	4.365
Density (G) (Dry Gas)	0.69849	C3+	2.132
Component MW Total	20.22	C5+	0.572
Heating Value (Dry Ideal) Total BTU	1203.02	Heating Value (Sat Ideal) Total BTU	1182.03
Heating Value (Dry Real) Total BTU	1207.00	Heating Value (Sat Real) Total BTU	1185.80

HPI 30-045-26187
Bradenhead



Gas Analysis Certificate

GPA Standard 2261-13

Acquisition Method Name au_report_150_C6+
Last calibration date 7/10/2015 10:21:38 AM

Client:	BP	Project #:	03143-0880
Site Name:	GCU 89E	Meter ID:	3004526187 (BHD)
Sampled by:	Daniel F.	Date Sampled	07-06-15
Analyzed by:	Logan Richter	Date Received:	07-13-15
Sample Pressure:	24 psig	Date Analyzed:	07-15-15
Sample Temperature	N/R	Analysis Time:	Standard

Component Results (14.696)

Name	Qty (Norm) [Mol %]	Wt Percent (%)	GPM
Helium	0.012	0.003	0.001
Oxygen	0.006	0.011	0.001
Nitrogen	0.506	0.796	0.056
Carbon Dioxide	0.000	0.000	0.000
Methane	91.275	82.236	15.473
Ethane	5.457	9.215	1.459
Propane	1.811	4.484	0.499
i-Butane	0.396	1.294	0.130
n-Butane	0.334	1.090	0.105
i-Pentane	0.112	0.454	0.041
n-Pentane	0.050	0.204	0.018
C6+	0.041	0.214	0.018
	100.000	100.000	17.800

Calculations at Pressure Base 14.696

Compressibility (Z) (Dry Gas)	0.99752	C2+	2.270
Density (G) (Dry Gas)	0.61480	C3+	0.811
Component MW Total	17.81	C5+	0.077
Heating Value (Dry Ideal) Total BTU	1096.40	Heating Value (Sat Ideal) Total BTU	1077.27
Heating Value (Dry Real) Total BTU	1099.13	Heating Value (Sat Real) Total BTU	1079.86

RJR/gjk

10/20/2015