



Well Name: GCU COM G 179
API# 30-045-07805
Casing Sampled: Bradenhead
Sample Type: Gas

Analysis No: SO190038
Cust No: 15950-11540

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM G #179; BHD
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Stn. No.: API 3004507805

Source: BRADENHEAD
Well Flowing: Y
Pressure: 144.2 PSIA
Flow Temp: DEG. F
Ambient Temp: 56 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/17/2019
Sample Time: 11.02 AM
Sampled By: EUGENIA HAMILTON
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

NMOC
JUL 11 2019
DISTRICT III

Analysis

Component:	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.5162	0.5098	0.0570	0.00	0.0050
CO2	0.0056	0.0055	0.0010	0.00	0.0001
Methane	94.2283	93.0647	16.0070	951.71	0.5219
Ethane	4.0893	4.0388	1.0960	72.37	0.0425
Propane	0.7526	0.7433	0.2080	18.94	0.0115
Iso-Butane	0.0376	0.0371	0.0120	1.22	0.0008
N-Butane	0.0551	0.0544	0.0170	1.80	0.0011
I-Pentane	0.0347	0.0343	0.0130	1.39	0.0009
N-Pentane	0.0226	0.0223	0.0080	0.91	0.0006
Hexane Plus	0.2580	0.2548	0.1150	13.60	0.0085
Total	100.0000	98.7650	17.5340	1061.92	0.5927

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0023
BTU/CU.FT IDEAL: 1064.4
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1066.8
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1048.2
DRY BTU @ 15.025: 1088.2
REAL SPECIFIC GRAVITY: 0.5939

CYLINDER #: 8001
CYLINDER PRESSURE: 135 PSIG
ANALYSIS DATE: 04/23/2019
ANALYSIS TIME: 04:40:50 AM
ANALYSIS RUN BY: SHYANN ELLEDGE

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.

GPA Standard: GPA-2261

GC: Danalyzer Model 500

Last Cal/Verify: 04/30/2019

GC Method: C6+ Gas



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM G #179; BHD
Stn. No.: API 3004507805
Mtr. No.:

BRADENHEAD
DK

04/30/2019
15950-11540

Smpl Date: 04/17/2019
Test Date: 04/23/2019
Run No: SO190038

Nitrogen: 0.5162
CO2: 0.0056
Methane: 94.2283
Ethane: 4.0893
Propane: 0.7526
I-Butane: 0.0376
N-Butane: 0.0551
I-Pentane: 0.0347
N-Pentane: 0.0226
Hexane+: 0.2580

BTU: 1066.8
GPM: 17.5340
SPG: 0.5939



Well Name: GCU COM G 179
API# 30 - 045 - 07805
Casing Sampled: Casing
Sample Type: Gas

Analysis No: SO190039
Cust No: 15950-11545

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM G #179; CSG
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Stn. No.: API 3004507805

Source: CASING
Well Flowing: Y
Pressure: 96.1 PSIA
Flow Temp: DEG. F
Ambient Temp: 56 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/17/2019
Sample Time: 11.01 AM
Sampled By: EUGENIA HAMILTON
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3263	0.3212	0.0360	0.00	0.0032
CO2	1.2891	1.2691	0.2210	0.00	0.0196
Methane	74.3231	73.1678	12.6540	750.66	0.4117
Ethane	11.3007	11.1251	3.0350	199.99	0.1173
Propane	6.6719	6.5682	1.8460	167.87	0.1016
Iso-Butane	1.1640	1.1459	0.3830	37.85	0.0234
N-Butane	2.3256	2.2895	0.7360	75.87	0.0467
I-Pentane	0.8463	0.8331	0.3110	33.86	0.0211
N-Pentane	0.7296	0.7183	0.2660	29.25	0.0182
Hexane Plus	1.0234	1.0075	0.4580	53.94	0.0339
Total	100.0000	98.4457	19.9460	1349.29	0.7965

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0045
BTU/CU.FT IDEAL: 1352.4
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1358.4
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1334.8
DRY BTU @ 15.025: 1385.6
REAL SPECIFIC GRAVITY: 0.7997

CYLINDER #: 7084
CYLINDER PRESSURE: 94 PSIG
ANALYSIS DATE: 04/24/2019
ANALYSIS TIME: 02:04:32 AM
ANALYSIS RUN BY: SHYANN ELLEDGE

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.

GPA Standard: GPA-2261

GC: Danalyzer Model 500

GC Method: C6+ Gas

Last Cal/Verify: 04/30/2019



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM G #179; CSG
Stn. No.: API 3004507805
Mtr. No.:

CASING
DK

04/30/2019
15950-11545

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190039
Nitrogen: 0.3263
CO2: 1.2891
Methane: 74.3231
Ethane: 11.3007
Propane: 6.6719
I-Butane: 1.1640
N-Butane: 2.3256
I-Pentane: 0.8463
N-Pentane: 0.7296
Hexane : 1.0234
BTU: 1358.4
GPM: 19.9460
SPG: 0.7997



Well Name: GCU Com G 179
API# 30-045-07805
Casing Sampled: Tubing
Sample Type: GAD

Analysis No: SO190040
Cust No: 15950-11505

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM C #179; TBG
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Str. No.: API 3004507805

Source: TUBING
Well Flowing: Y
Pressure: 81.9 PSIA
Flow Temp: DEG. F
Ambient Temp: 56 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/17/2019
Sample Time: 11.01 AM
Sampled By: EUGENIA HAMILTON
Sampled by (CO):

Heat Trace: N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3639	0.3570	0.0400	0.00	0.0035
CO2	1.6510	1.6196	0.2830	0.00	0.0251
Methane	78.6978	77.1995	13.3880	794.85	0.4359
Ethane	10.6858	10.4824	2.8680	189.11	0.1109
Propane	4.9218	4.8281	1.3610	123.84	0.0749
Iso-Butane	0.7554	0.7410	0.2480	24.56	0.0152
N-Butane	1.2807	1.2563	0.4050	41.78	0.0257
I-Pentane	0.3855	0.3782	0.1410	15.42	0.0096
N-Pentane	0.2998	0.2941	0.1090	12.02	0.0075
Hexane Plus	0.9583	0.9401	0.4290	50.51	0.0317
Total	100.0000	98.0963	19.2720	1252.09	0.7400

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0037
BTU/CU.FT IDEAL: 1255.0
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1259.6
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1237.7
DRY BTU @ 15.025: 1284.8
REAL SPECIFIC GRAVITY: 0.7425

CYLINDER #: 198
CYLINDER PRESSURE: 81 PSIG
ANALYSIS DATE: 04/24/2019
ANALYSIS TIME: 02:50:46 PM
ANALYSIS RUN BY: SHYANN ELLEDGE

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.

GPA Standard: GPA-2261

GC: Danalyzer Model 500

Last Cal/Verify: 04/30/2019

GC Method: C6+ Gas



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM C #179; TBG
Stn. No.: API 3004507805
Mtr. No.:

TUBING
DK

04/30/2019
15950-11505

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190040
Nitrogen: 0.3639
CO2: 1.6510
Methane: 78.6978
Ethane: 10.6858
Propane: 4.9218
I-Butane: 0.7554
N-Butane: 1.2807
I-Pentane: 0.3855
N-Pentane: 0.2998
Hexane+: 0.9583
BTU: 1259.6
GPM: 19.2720
SPG: 0.7425



ANALYSIS REPORT

Well Name: GCU Com G 179
API# 30 - 045 - 07805
Casing Sampled: Bradenhead
Sample Type: GAS

Lab #: 721237 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM G 179 Bradenhead 30-045-07805 Co. Lab#:
Company: BP America, Inc
API/Well:
Container: IsoTube®
Field/Site Name: SJS Bradenhead
Location: Farmington NM
Formation:
Sampling Point:
Date Sampled: 5/23/2019 17:18 Date Received: 5/31/2019 Date Reported: 6/25/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0083			
Hydrogen -----	nd			
Argon -----	nd			
Oxygen -----	0.011			
Nitrogen -----	0.51			
Carbon Dioxide -----	nd			
Methane -----	94.31	-44.60	-244.7	
Ethane -----	4.07	-29.37		
Ethylene -----	nd			
Propane -----	0.755	-20.40		
Propylene -----	nd			
Iso-butane -----	0.0383			
N-butane -----	0.0595			
Iso-pentane -----	0.0434			
N-pentane -----	0.0307			
Hexanes + -----	0.168			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1062
Specific gravity, calculated: 0.590

Remarks: Insufficient concentration for i/nC4 and i/nC5 analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



ANALYSIS REPORT

Well Name: GCU Com G 179
API# 30-045-07805
Casing Sampled: Production
Sample Type: Gas

Lab #: 721238 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM G 179 Prod. Casing 30-045-07805 Co. Lab#:
Company: BP America, Inc
API/Well:
Container: IsoTube®
Field/Site Name: SJS Bradenhead
Location: Farmington NM
Formation:
Sampling Point:
Date Sampled: 5/23/2019 17:12 Date Received: 5/31/2019 Date Reported: 6/25/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0340			
Hydrogen -----	0.0103			
Argon -----	nd			
Oxygen -----	0.011			
Nitrogen -----	0.36			
Carbon Dioxide -----	1.04			
Methane -----	75.38	-43.02	-212.7	
Ethane -----	11.16	-31.32		
Ethylene -----	nd			
Propane -----	6.59	-28.93		
Propylene -----	nd			
Iso-butane -----	1.19	-29.99		
N-butane -----	2.30	-27.81		
Iso-pentane -----	0.751	-27.88		
N-pentane -----	0.608	-27.22		
Hexanes + -----	0.566			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1328
Specific gravity, calculated: 0.774

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



ANALYSIS REPORT

Well Name: GCU Com G 179
API# 30-045-07805
Casing Sampled: Tubing
Sample Type: Gas

Lab #: 721239 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM G 179 Tubing 30-045-07805 Co. Lab#:
Company: BP America, Inc
API/Well:
Container: IsoTube®
Field/Site Name: SJS Bradenhead
Location: Farmington NM
Formation:
Sampling Point:
Date Sampled: 5/23/2019 17:08 Date Received: 5/31/2019 Date Reported: 6/25/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0400			
Hydrogen -----	nd			
Argon -----	0.0051			
Oxygen -----	nd			
Nitrogen -----	0.39			
Carbon Dioxide -----	1.56			
Methane -----	79.42	-42.69	-208.2	
Ethane -----	10.60	-31.01		
Ethylene -----	nd			
Propane -----	4.93	-28.47		
Propylene -----	nd			
Iso-butane -----	0.778	-29.57		
N-butane -----	1.30	-27.38		
Iso-pentane -----	0.361	-27.61		
N-pentane -----	0.264	-26.45		
Hexanes + -----	0.356			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1230

Specific gravity, calculated: 0.721

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.