



Well Name: GCU Com C. 144
API# 30 - 045 - 08263
Casing Sampled: Bradenhead
Sample Type: gas

Analysis No: SO190035
Cust No: 15950-11525

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM C #144; BHD
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Str. No.: API 3004508263

Source: BRADENHEAD
Well Flowing: Y
Pressure: 90.7 PSIA
Flow Temp: DEG. F
Ambient Temp: 43 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/17/2019
Sample Time: 8.53 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	0.4407	0.4298	0.0490	0.00	0.0043
CO2	0.0122	0.0119	0.0020	0.00	0.0002
Methane	86.8984	84.7486	14.7720	877.67	0.4813
Ethane	7.5410	7.3544	2.0220	133.45	0.0783
Propane	3.0020	2.9277	0.8290	75.53	0.0457
Iso-Butane	0.4540	0.4428	0.1490	14.76	0.0091
N-Butane	0.7832	0.7638	0.2480	25.55	0.0157
I-Pentane	0.2431	0.2371	0.0890	9.73	0.0061
N-Pentane	0.1999	0.1950	0.0730	8.01	0.0050
Hexane Plus	0.4255	0.4150	0.1900	22.43	0.0141
Total	100.0000	97.5261	18.4230	1167.14	0.6597

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.003
BTU/CU.FT IDEAL: 1169.8
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1173.2
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1152.8
DRY BTU @ 15.025: 1196.7
REAL SPECIFIC GRAVITY: 0.6614

CYLINDER #: 7061
CYLINDER PRESSURE: 68 PSIG
ANALYSIS DATE: 04/23/2019
ANALYSIS TIME: 04:41:27 AM
ANALYSIS RUN BY: RICHARD WILSON

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 #144; BHD
Stn. No.: API 3004508263
Mtr. No.:

BRADENHEAD
DK

04/30/2019
15950-11525

Smpl Date: 04/17/2019
Test Date: 04/23/2019
Run No: SO190035

Nitrogen: 0.4407
CO2: 0.0122
Methane: 86.8984
Ethane: 7.5410
Propane: 3.0020
I-Butane: 0.4540
N-Butane: 0.7832
I-Pentane: 0.2431
N-Pentane: 0.1999
Hexane+: 0.4255

BTU: 1173.2
GPM: 18.4230
SPG: 0.6614



Well Name: GCU Com C 144
API# 30-045-08243
Casing Sampled: Casing
Sample Type: gas

Analysis No: SO190036
Cust No: 15950-11530

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM C #144; CSG
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Str. No.: API 3004508263

Source: CASING
Well Flowing: Y
Pressure: 39.4 PSIA
Flow Temp: DEG. F
Ambient Temp: 43 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/17/2019
Sample Time: 8.56 AM
Sampled By: EUGENIA HAMILTON
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3943	0.3847	0.0440	0.00	0.0038
CO2	1.4688	1.4331	0.2520	0.00	0.0223
Methane	72.7236	70.9538	12.3850	734.51	0.4028
Ethane	12.1212	11.8262	3.2560	214.51	0.1258
Propane	6.6552	6.4933	1.8420	167.45	0.1013
Iso-Butane	1.0103	0.9857	0.3320	32.85	0.0203
N-Butane	2.2656	2.2105	0.7180	73.91	0.0455
I-Pentane	0.7950	0.7757	0.2920	31.81	0.0198
N-Pentane	0.7736	0.7548	0.2820	31.01	0.0193
Hexane Plus	1.7924	1.7488	0.8030	94.48	0.0593
Total	100.0000	97.5666	20.2060	1380.53	0.8203

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0048
BTU/CU.FT IDEAL: 1383.7
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1390.4
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1366.2
DRY BTU @ 15.025: 1418.2
REAL SPECIFIC GRAVITY: 0.8239

CYLINDER #: 7087
CYLINDER PRESSURE: 36 PSIG
ANALYSIS DATE: 04/24/2019
ANALYSIS TIME: 02:21:09 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 C #144; CSG
Stn. No.: API 3004508263
Mtr. No.:

CASING
DK

04/30/2019
15950-11530

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190036

Nitrogen: 0.3943
CO2: 1.4688
Methane: 72.7236
Ethane: 12.1212
Propane: 6.6552
I-Butane: 1.0103
N-Butane: 2.2656
I-Pentane: 0.7950
N-Pentane: 0.7736
Hexane+: 1.7924

BTU: 1390.4
GPM: 20.2060
SPG: 0.8239



Well Name: GCU Com C 144
 API# 30-045-08263
 Casing Sampled: Tubing
 Sample Type: gas
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Analysis No: SO190037
 Cust No: 15950-11535

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
 Well Name: GCU COM C #144; TBG
 County/State: SAN JUAN NM
 Location:
 Lease/PA/CA:
 Formation: DK
 Cust. Str. No.: API 3004508263

Source: TUBING
 Well Flowing: Y
 Pressure: 39.2 PSIA
 Flow Temp: DEG. F
 Ambient Temp: 43 DEG. F
 Flow Rate: MCF/D
 Sample Method: Purge & Fill
 Sample Date: 04/17/2019
 Sample Time: 8.57 AM
 Sampled By: EUGENIA HAMILTON
 Sampled by (CO): PESCO

Heat Trace: N
 Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.4828	0.4713	0.0530	0.00	0.0047
CO2	1.3477	1.3155	0.2310	0.00	0.0205
Methane	77.5432	75.6905	13.1960	783.19	0.4295
Ethane	10.7420	10.4854	2.8840	190.10	0.1115
Propane	5.0099	4.8902	1.3860	126.05	0.0763
Iso-Butane	0.7154	0.6983	0.2350	23.26	0.0144
N-Butane	1.4517	1.4170	0.4590	47.36	0.0291
I-Pentane	0.4307	0.4204	0.1580	17.23	0.0107
N-Pentane	0.3947	0.3853	0.1440	15.82	0.0098
Hexane Plus	1.8819	1.8369	0.8420	99.20	0.0623
Total	100.0000	97.6108	19.5880	1302.21	0.7688

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0041
 BTU/CU.FT IDEAL: 1305.2
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1310.6
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1287.8
 DRY BTU @ 15.025: 1336.8
 REAL SPECIFIC GRAVITY: 0.7716

CYLINDER #: 4932
 CYLINDER PRESSURE: 43 PSIG
 ANALYSIS DATE: 04/24/2019
 ANALYSIS TIME: 02:31:00 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 C #144; TBG
Stn. No.: API 3004508263
Mtr. No.:

TUBING
DK

04/30/2019
15950-11535

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190037

Nitrogen: 0.4828
CO2: 1.3477
Methane: 77.5432
Ethane: 10.7420
Propane: 5.0099
I-Butane: 0.7154
N-Butane: 1.4517
I-Pentane: 0.4307
N-Pentane: 0.3947
Hexane+: 1.8819

BTU: 1310.6
GPM: 19.5880
SPG: 0.7716



ANALYSIS REPORT

Well Name: GCU Com C144
API# 30-045-08263
Casing Sampled: Bradenhead
Sample Type: GAS

Lab #: 721231 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM C 144 Bradenhead 30-045-08263 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 16:27 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 -----	0.0300			
Hydrogen -----	0.0169			
Argon -----	0.0056			
Oxygen -----	0.011			
Nitrogen -----	0.44			
Carbon Dioxide -----	nd			
Methane -----	86.94	-41.06	-201.2	
Ethane -----	7.59	-30.11		
Ethylene -----	0.0001			
Propane -----	3.13	-28.16		
Propylene -----	0.0003			
Iso-butane -----	0.470	-28.85		
N-butane -----	0.752	-27.11		
Iso-pentane -----	0.200	-27.13		
N-pentane -----	0.153	-26.42		
Hexanes + -----	0.261			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1163

Specific gravity, calculated: 0.654

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 C 144
API# 30-045-08263
Casing Sampled: Production
Sample Type GRS

Lab #: 721232 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM C 144 Prod. Casing 30-045-08263 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 16:30 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 -----	nd			
Argon -----	0.0055			
Oxygen -----	0.012			
Nitrogen -----	0.45			
Carbon Dioxide -----	1.43			
Methane -----	76.09	-42.32	-213.7	
Ethane -----	11.73	-31.65		
Ethylene -----	nd			
Propane -----	5.95	-29.29		
Propylene -----	nd			
Iso-butane -----	0.898	-29.94		
N-butane -----	1.88	-28.02		
Iso-pentane -----	0.565	-27.93		
N-pentane -----	0.501	-27.35		
Hexanes + -----	0.450			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1288

Specific gravity, calculated: 0.756

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 C 144
API# 30 - 045 - 08263
Casing Sampled: Tubing
Sample Type: Gas

Lab #: 721233 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM C 144 Tubing 30-045-08263 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 16:23 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 -----	0.0556			
Hydrogen -----	0.0105			
Argon -----	0.0090			
Oxygen -----	0.018			
Nitrogen -----	0.87			
Carbon Dioxide -----	1.01			
Methane -----	81.95	-42.20	-215.6	
Ethane -----	9.02	-30.49		
Ethylene -----	nd			
Propane -----	3.98	-27.30		
Propylene -----	nd			
Iso-butane -----	0.735	-28.07		
N-butane -----	1.17	-26.15		
Iso-pentane -----	0.356	-27.14		
N-pentane -----	0.326	-25.93		
Hexanes + -----	0.494			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1207

Specific gravity, calculated: 0.702

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. %.