



Well Name: GCU Com H 180E
API# 30 - 045- 24869
Casing Sampled: Bradenhead
Sample Type: Gas
(505) 525-0022

Analysis No: SO190027
Cust No: 15950-10640

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU COM H #180E; BHD
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: PC
Cust. Stn. No.: API 3004524869

Source: BRADENHEAD
Well Flowing: Y
Pressure: 260.2 PSIA
Flow Temp: DEG. F
Ambient Temp: 50 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 04/09/2019
Sample Time: 9.12 AM
Sampled By: EUGENIA HAMILTON
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

NMOCB
DISTRICT III

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3220	0.3159	0.0360	0.00	0.0031
CO2	0.0000	0.0000	0.0000	0.00	0.0000
Methane	90.5156	88.8145	15.3810	914.21	0.5014
Ethane	5.8761	5.7657	1.5750	103.99	0.0610
Propane	2.1350	2.0949	0.5900	53.72	0.0325
Iso-Butane	0.3943	0.3869	0.1290	12.82	0.0079
N-Butane	0.4280	0.4200	0.1350	13.96	0.0086
I-Pentane	0.1348	0.1323	0.0490	5.39	0.0034
N-Pentane	0.0811	0.0796	0.0290	3.25	0.0020
Hexane Plus	0.1131	0.1110	0.0510	5.96	0.0037
Total	100.0000	98.1208	17.9750	1113.31	0.6236

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0026
BTU/CU.FT IDEAL: 1115.9
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1118.8
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1099.3
DRY BTU @ 15.025: 1141.2
REAL SPECIFIC GRAVITY: 0.625

CYLINDER #: 7077
CYLINDER PRESSURE: 259 PSIG
ANALYSIS DATE: 04/10/2019
ANALYSIS TIME: 11:08:30 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: 04/12/2019

GC Method: C6+ Gas



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM H #180E; BHD
Stn. No.: API 3004524869
Mtr. No.:

BRADENHEAD
PC

04/12/2019
15950-10640

Smpl Date:	04/09/2019	06/22/2018
Test Date:	04/10/2019	07/05/2018
Run No:	SO190027	SO180042
Nitrogen:	0.3220	0.4263
CO2:	0.0000	0.0018
Methane:	90.5156	90.1109
Ethane:	5.8761	5.7369
Propane:	2.1350	2.2186
I-Butane:	0.3943	0.4258
N-Butane:	0.4280	0.5569
I-Pentane:	0.1348	0.1988
N-Pentane:	0.0811	0.1357
Hexane+:	0.1131	0.1883
BTU:	1118.8	1128.4
GPM:	17.9750	18.0340
SPG:	0.6250	0.6324



Well Name: SCU Com H180E
 API# 30-045-24869
 Casing Sampled: Production
 Sample Type: Gas

(505) 325-6622

Analysis No: SO190028
 Cust No: 15950-10645

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
 Well Name: GCU COM H #180E; CSG
 County/State: SAN JUAN NM
 Location:
 Lease/PA/CA:
 Formation: PC
 Cust. Stn. No.: API 3004524869

Source: CASING
 Well Flowing: Y
 Pressure: 18.8 PSIA
 Flow Temp: DEG. F
 Ambient Temp: 50 DEG. F
 Flow Rate: MCF/D
 Sample Method: Purge & Fill
 Sample Date: 04/09/2019
 Sample Time: 9.22 AM
 Sampled By: EUGENIA HAMILTON
 Sampled by (CO): PESCO

Heat Trace: N
 Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	1.1048	1.0863	0.1220	0.00	0.0107
CO2	0.9398	0.9240	0.1610	0.00	0.0143
Methane	75.5820	74.3139	12.8640	763.38	0.4186
Ethane	10.8722	10.6898	2.9190	192.41	0.1129
Propane	6.4070	6.2995	1.7720	161.21	0.0975
Iso-Butane	0.7165	0.7045	0.2350	23.30	0.0144
N-Butane	2.0441	2.0098	0.6470	66.68	0.0410
I-Pentane	0.5066	0.4981	0.1860	20.27	0.0126
N-Pentane	0.5870	0.5772	0.2140	23.53	0.0146
Hexane Plus	1.2400	1.2192	0.5550	65.36	0.0410
Total	100.0000	98.3223	19.6750	1316.14	0.7777

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0042
 BTU/CU.FT IDEAL: 1319.2
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1324.7
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1301.7
 DRY BTU @ 15.025: 1351.2
 REAL SPECIFIC GRAVITY: 0.7807

CYLINDER #: 7004
 CYLINDER PRESSURE: 19 PSIG
 ANALYSIS DATE: 04/10/2019
 ANALYSIS TIME: 11:40:36 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: 04/12/2019

GC Method: C6+ Gas



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM H #180E; CSG
Stn. No.: API 3004524869
Mtr. No.:

CASING
PC

04/12/2019
15950-10645

Smpl Date:	04/09/2019	06/22/2018
Test Date:	04/10/2019	07/05/2018
Run No:	SO190028	SO180043
Nitrogen:	1.1048	1.0528
CO2:	0.9398	0.0849
Methane:	75.5820	86.6052
Ethane:	10.8722	5.6667
Propane:	6.4070	3.3340
I-Butane:	0.7165	0.6262
N-Butane:	2.0441	0.9448
I-Pentane:	0.5066	0.3422
N-Pentane:	0.5870	0.2807
Hexane+:	1.2400	1.0625
BTU:	1324.7	1197.6
GPM:	19.6750	18.5050
SPG:	0.7807	0.6849



Well Name: GCU Com H 180 E
 API# 30-045-24849
 Casing Sampled: Tubing
 Sample Type: GAS
 (300) 525 5555

Analysis No: SO190029
 Cust No: 15950-10650

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT	Source: TUBING
Well Name: GCU COM H #180E; TBG	Well Flowing: Y
County/State: SAN JUAN NM	Pressure: 18.9 PSIA
Location:	Flow Temp: DEG. F
Lease/PA/CA:	Ambient Temp: 54 DEG. F
Formation: PC	Flow Rate: MCF/D
Cust. Stn. No.: API 3004524869	Sample Method: Purge & Fill
	Sample Date: 04/09/2019
	Sample Time: 9.46 AM
	Sampled By: EUGENIA HAMILTON
	Sampled by (CO): PESCO

Heat Trace: N

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.8595	0.8291	0.0950	0.00	0.0083
CO2	0.9552	0.9214	0.1640	0.00	0.0145
Methane	73.7670	71.1560	12.5590	745.05	0.4086
Ethane	11.1480	10.7534	2.9940	197.29	0.1157
Propane	7.1108	6.8591	1.9670	178.91	0.1083
Iso-Butane	0.8288	0.7995	0.2720	26.95	0.0166
N-Butane	2.6295	2.5364	0.8330	85.78	0.0528
I-Pentane	0.6434	0.6206	0.2360	25.74	0.0160
N-Pentane	0.6932	0.6687	0.2520	27.79	0.0173
Hexane Plus	1.3646	1.3163	0.6110	71.93	0.0452
Total	100.0000	96.4605	19.9830	1359.44	0.8033

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z):	1.0045	CYLINDER #:	7013
BTU/CU.FT IDEAL:	1362.6	CYLINDER PRESSURE:	16 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1368.7	ANALYSIS DATE:	04/10/2019
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1344.9	ANALYSIS TIME:	02:11:13 PM
DRY BTU @ 15.025:	1396.1	ANALYSIS RUN BY:	SHYANN ELLEDGE
REAL SPECIFIC GRAVITY:	0.8066		

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: 04/12/2019

GC Method: C6+ Gas



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: GCU COM H #180E; TBG
Stn. No.: API 3004524869
Mtr. No.:

TUBING
PC

04/12/2019
15950-10650

Smpl Date:	04/09/2019	06/22/2018
Test Date:	04/10/2019	07/05/2018
Run No:	SO190029	SO180044
Nitrogen:	0.8595	0.9140
CO2:	0.9552	0.8984
Methane:	73.7670	78.0726
Ethane:	11.1480	10.8494
Propane:	7.1108	5.6937
I-Butane:	0.8288	0.5749
N-Butane:	2.6295	1.4886
I-Pentane:	0.6434	0.3388
N-Pentane:	0.6932	0.3529
Hexane+:	1.3646	0.8167
BTU:	1368.7	1269.4
GPM:	19.9830	19.2990
SPG:	0.8066	0.7424



ANALYSIS REPORT

Well Name: GCU Com H 180E
API# 30-045-24869
Casing Sampled: Braden head
Sample Type: Gas

Lab #: 721243 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM H 180E Bradenhead 30-045-24869 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 12:53 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 -----	0.0082			
Hydrogen -----	nd			
Argon -----	nd			
Oxygen -----	0.013			
Nitrogen -----	0.34			
Carbon Dioxide -----	nd			
Methane -----	90.55	-42.82	-206.2	
Ethane -----	5.86	-29.47		
Ethylene -----	nd			
Propane -----	2.15	-27.18		
Propylene -----	0.0001			
Iso-butane -----	0.378	-28.40		
N-butane -----	0.426	-26.63		
Iso-pentane -----	0.125	-26.85		
N-pentane -----	0.0727	-26.25		
Hexanes + -----	0.0783			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1115

Specific gravity, calculated: 0.622

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 H 180E
API# 30-045-24869
Casing Sampled: Production
Sample Type: gas

Lab #: 721244 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM H 180E Prod. Casing 30-045-24869 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 12:46 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 -----	0.0822			
Hydrogen -----	nd			
Argon -----	0.0093			
Oxygen -----	0.014			
Nitrogen -----	1.30			
Carbon Dioxide -----	0.52			
Methane -----	80.76	-49.94	-267.5	
Ethane -----	9.21	-36.36		
Ethylene -----	nd			
Propane -----	5.34	-31.64		
Propylene -----	nd			
Iso-butane -----	0.513	-32.07		
N-butane -----	1.56	-29.44		
Iso-pentane -----	0.276	-27.96		
N-pentane -----	0.254	-28.56		
Hexanes + -----	0.165			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1216

Specific gravity, calculated: 0.705

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. %.



Well Name: GCU Com H 180E
API# 30 - 045 - 24869
Casing Sampled: Tubing
Sample Type GRS

ANALYSIS REPORT

Lab #: 721245 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU COM H 180E Tubing 30-045-24869 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 12:49 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 -----	0.0789			
Hydrogen -----	nd			
Argon -----	0.0091			
Oxygen -----	0.013			
Nitrogen -----	1.21			
Carbon Dioxide -----	0.55			
Methane -----	81.76	-49.87	-273.1	
Ethane -----	9.36	-36.30		
Ethylene -----	nd			
Propane -----	4.66	-31.55		
Propylene -----	nd			
Iso-butane -----	0.414	-32.00		
N-butane -----	1.25	-29.58		
Iso-pentane -----	0.239	-28.29		
N-pentane -----	0.248	-28.98		
Hexanes + -----	0.209			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1199

Specific gravity, calculated: 0.693

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. %.