



Well Name: GCU 133E
API# 30-045-25234
Casing Sampled: Bradenhead
Sample Type Gas

Analysis No: SO190032
Cust No: 15950-11510

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: GCU #133E; BHD
County/State: SAN JUAN NM
Location:
Lease/PA/CA:
Formation: DK
Cust. Str. No.: API 3004525234

Source: BRADENHEAD
Well Flowing: Y
Pressure: 144.9 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: 7.37 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	0.2998	0.2924	0.0330	0.00	0.0029
CO2	0.0053	0.0052	0.0010	0.00	0.0001
Methane	85.9726	83.8389	14.6150	868.32	0.4762
Ethane	8.3142	8.1079	2.2300	147.14	0.0863
Propane	3.3335	3.2508	0.9210	83.87	0.0508
Iso-Butane	0.4924	0.4802	0.1620	16.01	0.0099
N-Butane	0.8082	0.7881	0.2550	26.37	0.0162
I-Pentane	0.2532	0.2469	0.0930	10.13	0.0063
N-Pentane	0.1896	0.1849	0.0690	7.60	0.0047
Hexane Plus	0.3312	0.3230	0.1480	17.46	0.0110
Total	100.0000	97.5183	18.5270	1176.90	0.6643

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.003
BTU/CU.FT IDEAL: 1179.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1183.2
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1162.6
DRY BTU @ 15.025: 1206.9
REAL SPECIFIC GRAVITY: 0.6661

CYLINDER #: 7098
CYLINDER PRESSURE: 143 PSIG
ANALYSIS DATE: 04/24/2019
ANALYSIS TIME: 01:17:00 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 #133E; BHD
Stn. No.: API 3004525234
Mtr. No.:

BRADENHEAD
DK

04/30/2019
15950-11510

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190032

Nitrogen: 0.2998
CO2: 0.0053
Methane: 85.9726
Ethane: 8.3142
Propane: 3.3335
I-Butane: 0.4924
N-Butane: 0.8082
I-Pentane: 0.2532
N-Pentane: 0.1896
Hexane+: 0.3312

BTU: 1183.2
GPM: 18.5270
SPG: 0.6661



Well Name: GCU 133 E
 API# 30-045-25234
 Casing Sampled: PRODUCTION
 Sample Type GAS
 (000) 020 000

Analysis No: SO190033
 Cust No: 15950-11515

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
 Well Name: GCU #133E; CSG
 County/State: SAN JUAN NM
 Location:
 Lease/PA/CA:
 Formation: DK
 Cust. Str. No.: API 3004525234

Source: CASING
 Well Flowing: Y
 Pressure: 51.0 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: 7.38 AM
 Sampled By: EUGENIA HAMILTON
 Sampled by (CO): PESCO

Heat Trace: N
 Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3099	0.3017	0.0340	0.00	0.0030
CO2	1.3671	1.3310	0.2340	0.00	0.0208
Methane	83.6089	81.4007	14.2200	844.45	0.4631
Ethane	7.7999	7.5939	2.0930	138.03	0.0810
Propane	3.2149	3.1300	0.8890	80.89	0.0489
Iso-Butane	0.5146	0.5010	0.1690	16.73	0.0103
N-Butane	0.9765	0.9507	0.3090	31.86	0.0196
I-Pentane	0.3473	0.3381	0.1270	13.90	0.0087
N-Pentane	0.3225	0.3140	0.1170	12.93	0.0080
Hexane Plus	1.5384	1.4978	0.6880	81.09	0.0509
Total	100.0000	97.3589	18.8800	1219.88	0.7143

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0035
 BTU/CU.FT IDEAL: 1222.7
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1227.0
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1205.7
 DRY BTU @ 15.025: 1251.6
 REAL SPECIFIC GRAVITY: 0.7166

CYLINDER #: 7021
 CYLINDER PRESSURE: 54 PSIG
 ANALYSIS DATE: 04/24/2019
 ANALYSIS TIME: 01:51:00 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 #133E; CSG
Stn. No.: API 3004525234
Mtr. No.:

CASING
DK

04/30/2019
15950-11515

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190033
Nitrogen: 0.3099
CO2: 1.3671
Methane: 83.6089
Ethane: 7.7999
Propane: 3.2149
I-Butane: 0.5146
N-Butane: 0.9765
I-Pentane: 0.3473
N-Pentane: 0.3225
Hexane+: 1.5384
BTU: 1227.0
GPM: 18.8800
SPG: 0.7166



Well Name: GCU 133 E
 API# 30 - 045 - 25234
 Casing Sampled: Tubing
 Sample Type Gas

Analysis No: SO190034
 Cust No: 15950-11520

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT	Source: TUBING
Well Name: GCU #133E; TBG	Well Flowing: Y
County/State: SAN JUAN NM	Pressure: 51.7 PSIA
Location:	Flow Temp: DEG. F
Lease/PA/CA:	Ambient Temp: 43 DEG. F
Formation: DK	Flow Rate: MCF/D
Cust. Str. No.: API 3004525234	Sample Method: Purge & Fill
	Sample Date: 04/17/2019
	Sample Time: 7.40 AM
	Sampled By: EUGENIA HAMILTON
	Sampled by (CO): PESCO
Heat Trace: N	
Remarks:	

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2862	0.2794	0.0320	0.00	0.0028
CO2	0.7773	0.7589	0.1330	0.00	0.0118
Methane	84.0778	82.0832	14.2990	849.19	0.4657
Ethane	7.9345	7.7463	2.1290	140.42	0.0824
Propane	3.3968	3.3162	0.9390	85.47	0.0517
Iso-Butane	0.5219	0.5095	0.1710	16.97	0.0105
N-Butane	1.0616	1.0364	0.3360	34.63	0.0213
I-Pentane	0.4319	0.4217	0.1580	17.28	0.0108
N-Pentane	0.4295	0.4193	0.1560	17.22	0.0107
Hexane Plus	1.0825	1.0568	0.4840	57.06	0.0358
Total	100.0000	97.6277	18.8370	1218.23	0.7034

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z):	1.0034	CYLINDER #:	8003
BTU/CU.FT IDEAL:	1221.0	CYLINDER PRESSURE:	53 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1225.2	ANALYSIS DATE:	04/24/2019
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1203.9	ANALYSIS TIME:	01:38:29 AM
DRY BTU @ 15.025:	1249.7	ANALYSIS RUN BY:	SHYANN ELLEDGE
REAL SPECIFIC GRAVITY:	0.7056		

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 #133E; TBG
Stn. No.: API 3004525234
Mtr. No.:

TUBING
DK

04/30/2019
15950-11520

Smpl Date: 04/17/2019
Test Date: 04/24/2019
Run No: SO190034
Nitrogen: 0.2862
CO2: 0.7773
Methane: 84.0778
Ethane: 7.9345
Propane: 3.3968
I-Butane: 0.5219
N-Butane: 1.0616
I-Pentane: 0.4319
N-Pentane: 0.4295
Hexane+: 1.0825
BTU: 1225.2
GPM: 18.8370
SPG: 0.7056



ANALYSIS REPORT

Well Name: GCU 133 E
API# 30-045-25234
Casing Sampled: Bradenhead
Sample Type: GRS

Lab #: 721234 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU 133E Bradenhead 30-045-25234 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 16:00 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 -----	0.0265			
Hydrogen -----	0.250			
Argon -----	nd			
Oxygen -----	0.013			
Nitrogen -----	0.32			
Carbon Dioxide -----	nd			
Methane -----	85.75	-41.30	-201.9	
Ethane -----	8.33	-30.20		
Ethylene -----	nd			
Propane -----	3.34	-27.98		
Propylene -----	0.0001			
Iso-butane -----	0.509	-28.87		
N-butane -----	0.826	-27.10		
Iso-pentane -----	0.236	-26.83		
N-pentane -----	0.171	-26.09		
Hexanes + -----	0.231			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1175

Specific gravity, calculated: 0.660

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 133 E
API# 30 - 045 - 25234
Casing Sampled: Production
Sample Type: GAS

Lab #: 721235 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU 133E Prod. Casing 30-045-25234 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 16:03 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 -----	0.0319			
Hydrogen -----	0.638			
Argon -----	nd			
Oxygen -----	0.013			
Nitrogen -----	0.31			
Carbon Dioxide -----	0.62			
Methane -----	84.22	-41.26	-198.2	
Ethane -----	7.95	-30.55		
Ethylene -----	nd			
Propane -----	3.44	-28.69		
Propylene -----	nd			
Iso-butane -----	0.526	-29.38		
N-butane -----	1.05	-27.92		
Iso-pentane -----	0.367	-27.79		
N-pentane -----	0.343	-27.28		
Hexanes + -----	0.495			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1189

Specific gravity, calculated: 0.679

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 133 E
API# 30-045-25234
Casing Sampled: Tubing
Sample Type: Gas

Lab #: 721236 Job #: 41736 IS-104125 Co. Job#:
Sample Name: GCU 133E Tubing 30-045-25234 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 15:55 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 -----	0.0342			
Hydrogen -----	nd			
Argon -----	nd			
Oxygen -----	0.015			
Nitrogen -----	0.35			
Carbon Dioxide -----	1.22			
Methane -----	86.32	-40.54	-198.5	
Ethane -----	7.28	-29.69		
Ethylene -----	nd			
Propane -----	2.76	-27.90		
Propylene -----	nd			
Iso-butane -----	0.448	-28.86		
N-butane -----	0.776	-27.14		
Iso-pentane -----	0.245	-27.45		
N-pentane -----	0.205	-26.76		
Hexanes + -----	0.343			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1150

Specific gravity, calculated: 0.664

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. %.