



WARREN LS 5A
30-045-25227
Casing Sample

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: SO180188
Cust No: 15950-11375

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: WARREN LS 5A; CSG
County/State: SAN JUAN NM
Location:
Field:
Formation: PC
Cust. Stn. No.: API # 3004525227

Source: CASING
Well Flowing: Y
Pressure: 76 PSIA
Flow Temp: DEG. F
Ambient Temp: 78 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 08/13/2018
Sample Time: 11.11 AM
Sampled By: SCOTT WILLARD
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

NMOC
FEB 13 2019
DISTRICT III

needed water analysis

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.3377	0.3340	0.0370	0.00	0.0033
CO2	0.1856	0.1835	0.0320	0.00	0.0028
Methane	84.7027	83.7652	14.4030	855.50	0.4692
Ethane	7.5969	7.5128	2.0380	134.44	0.0789
Propane	3.9445	3.9008	1.0900	99.25	0.0601
Iso-Butane	0.6936	0.6859	0.2280	22.56	0.0139
N-Butane	1.0415	1.0300	0.3290	33.98	0.0209
I-Pentane	0.3446	0.3408	0.1260	13.79	0.0086
N-Pentane	0.2740	0.2710	0.1000	10.98	0.0068
Hexane Plus	0.8789	0.8692	0.3930	46.33	0.0291
Total	100.0000	98.8932	18.7760	1216.82	0.6935

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0033
BTU/CU.FT IDEAL: 1219.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1223.7
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1202.4
DRY BTU @ 15.025: 1248.2
REAL SPECIFIC GRAVITY: 0.6955

CYLINDER #: 96846
CYLINDER PRESSURE: 68 PSIG
ANALYSIS DATE: 09/07/2018
ANALYSIS TIME: 09:21:26 AM
ANALYSIS RUN BY: CAMERON MANGAN

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: 09/12/2018



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: WARREN LS 5A; CSG
Stn. No.: API # 3004525227
Mtr. No.:

CASING
PC

09/12/2018
15950-11375

Smpl Date: 08/13/2018
Test Date: 09/07/2018
Run No: SO180188
Nitrogen: 0.3377
CO2: 0.1856
Methane: 84.7027
Ethane: 7.5969
Propane: 3.9445
I-Butane: 0.6936
N-Butane: 1.0415
I-Pentane: 0.3446
N-Pentane: 0.2740
Hexane+: 0.8789
BTU: 1223.7
GPM: 18.7760
SPG: 0.6955



WARREN LS 5A
30-045-25227
Tubing Sample

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: SO180189
Cust No: 15950-11380

Well/Lease Information

Customer Name: BP - SOUTH BHD PROJECT
Well Name: WARREN LS 5A; TBG
County/State: SAN JUAN NM
Location:
Field:
Formation: PC
Cust. Stn. No.: API # 3004525227

Source: TUBING
Well Flowing: Y
Pressure: 23 PSIA
Flow Temp: DEG. F
Ambient Temp: 74 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 08/13/2018
Sample Time: 11.03 AM
Sampled By: SCOTT WILLARD
Sampled by (CO): PESCO

Heat Trace: N
Remarks:

NMOC
FEB 13 2019
DISTRICT III

Analysis

Component:	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.5144	0.5093	0.0570	0.00	0.0050
CO2	0.6449	0.6385	0.1100	0.00	0.0098
Methane	76.0385	75.2853	12.9400	767.99	0.4212
Ethane	11.0651	10.9555	2.9710	195.82	0.1149
Propane	6.8081	6.7407	1.8830	171.30	0.1037
Iso-Butane	1.4945	1.4797	0.4910	48.60	0.0300
N-Butane	1.6308	1.6146	0.5160	53.20	0.0327
I-Pentane	0.5495	0.5441	0.2020	21.98	0.0137
N-Pentane	0.3788	0.3750	0.1380	15.18	0.0094
Hexane Plus	0.8754	0.8667	0.3920	46.14	0.0290
Total	100.0000	99.0094	19.7000	1320.22	0.7693

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0041
BTU/CU.FT IDEAL: 1323.3
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1328.7
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1305.6
DRY BTU @ 15.025: 1355.3
REAL SPECIFIC GRAVITY: 0.7722

CYLINDER #: 7031
CYLINDER PRESSURE: 20 PSIG
ANALYSIS DATE: 09/07/2018
ANALYSIS TIME: 08:01:15 AM
ANALYSIS RUN BY: CAMERON MANGAN

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: 09/12/2018



BP - SOUTH BHD PROJECT
WELL ANALYSIS COMPARISON

Lease: WARREN LS 5A; TBG
Stn. No.: API # 3004525227
Mtr. No.:

TUBING
PC

09/12/2018
15950-11380

Smpl Date: 08/13/2018
Test Date: 09/07/2018
Run No: SO180189

Nitrogen: 0.5144
CO2: 0.6449
Methane: 76.0385
Ethane: 11.0651
Propane: 6.8081
I-Butane: 1.4945
N-Butane: 1.6308
I-Pentane: 0.5495
N-Pentane: 0.3788
Hexane+: 0.8754

BTU: 1328.7
GPM: 19.7000
SPG: 0.7722