



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

Analysis No: LG180170
Cust No: 46600-11250

30-045 24909

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON #1E; BHD
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC #3132373A

Source: BRADENHEAD
Well Flowing: N
Pressure: 70 PSIG
Flow Temp: DEG. F
Ambient Temp: DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 06/21/2018
Sample Time: 1.40 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

NMOCD

JUL 05 2018

DISTRICT III

Heat Trace: N

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.4252	0.4279	0.0470	0.00	0.0041
CO2	0.0027	0.0027	0.0000	0.00	0.0000
Methane	90.5017	91.0802	15.3790	914.07	0.5013
Ethane	5.8427	5.8800	1.5660	103.40	0.0607
Propane	2.1041	2.1175	0.5810	52.94	0.0320
Iso-Butane	0.3732	0.3756	0.1220	12.14	0.0075
N-Butane	0.4265	0.4292	0.1350	13.91	0.0086
I-Pentane	0.1342	0.1351	0.0490	5.37	0.0033
N-Pentane	0.0787	0.0792	0.0290	3.15	0.0020
Hexane Plus	0.1110	0.1117	0.0500	5.85	0.0037
Total	100.0000	100.6391	17.9580	1110.83	0.6232

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0026
BTU/CU.FT IDEAL: 1113.4
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1116.3
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1096.9
DRY BTU @ 15.025: 1138.7
REAL SPECIFIC GRAVITY: 0.6245

CYLINDER #: 6055
CYLINDER PRESSURE: 57 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 10:59:18 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

GC Method: C6+ Gas

Last Cal/Verify: 06/27/2018



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: RICHARDSON #1E; BHD
Stn. No.: CC #3132373A
Mtr. No.:

BRADENHEAD
DK

06/27/2018
46600-11250

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180170

Nitrogen: 0.4252
CO2: 0.0027
Methane: 90.5017
Ethane: 5.8427
Propane: 2.1041
I-Butane: 0.3732
N-Butane: 0.4265
I-Pentane: 0.1342
N-Pentane: 0.0787
Hexane+: 0.1110

BTU: 1116.3
GPM: 17.9580
SPG: 0.6245



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

Analysis No: LG180171
Cust No: 46600-11255

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON #1E; CSG
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC #3132373A

Source: CASING
Well Flowing:
Pressure: 28 PSIG
Flow Temp: DEG. F
Ambient Temp: 86 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 06/21/2018
Sample Time: 1.35 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	2.3687	2.3223	0.2620	0.00	0.0229
CO2	0.0173	0.0170	0.0030	0.00	0.0003
Methane	80.0589	78.4922	13.6220	808.59	0.4434
Ethane	6.5012	6.3740	1.7450	115.05	0.0675
Propane	4.2051	4.1228	1.1630	105.80	0.0640
Iso-Butane	1.8004	1.7652	0.5910	58.55	0.0361
N-Butane	2.0123	1.9729	0.6370	65.65	0.0404
I-Pentane	1.1923	1.1690	0.4380	47.70	0.0297
N-Pentane	0.7108	0.6969	0.2590	28.49	0.0177
Hexane Plus	1.1330	1.1108	0.5070	59.72	0.0375
Total	100.0000	98.0431	19.2270	1289.56	0.7596

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0039
BTU/CU.FT IDEAL: 1292.5
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1297.6
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1275.0
DRY BTU @ 15.025: 1323.6
REAL SPECIFIC GRAVITY: 0.7622

CYLINDER #: 6230
CYLINDER PRESSURE: 30 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 12:32:18 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: 06/27/2018

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: RICHARDSON #1E; CSG
Stn. No.: CC #3132373A
Mtr. No.:

CASING
DK

06/27/2018
46600-11255

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180171

Nitrogen: 2.3687
CO2: 0.0173
Methane: 80.0589
Ethane: 6.5012
Propane: 4.2051
I-Butane: 1.8004
N-Butane: 2.0123
I-Pentane: 1.1923
N-Pentane: 0.7108
Hexane+: 1.1330

BTU: 1297.6
GPM: 19.2270
SPG: 0.7622



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

Analysis No: LG180172
Cust No: 46600-11260

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON #1E; TBG
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC #3132373A

Source: TUBING
Well Flowing: N
Pressure: 80 PSIG
Flow Temp: DEG. F
Ambient Temp: 86 DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 06/21/2018
Sample Time: 1.30 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace: N

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	4.4582	4.5156	0.4920	0.00	0.0431
CO2	1.3938	1.4118	0.2390	0.00	0.0212
Methane	75.4283	76.3996	12.8350	761.83	0.4178
Ethane	5.8906	5.9665	1.5810	104.25	0.0612
Propane	6.1375	6.2165	1.6970	154.43	0.0934
Iso-Butane	2.3553	2.3856	0.7740	76.59	0.0473
N-Butane	1.8871	1.9114	0.5970	61.56	0.0379
I-Pentane	0.9370	0.9491	0.3440	37.49	0.0233
N-Pentane	0.4906	0.4969	0.1790	19.67	0.0122
Hexane Plus	1.0216	1.0348	0.4570	53.85	0.0338
Total	100.0000	101.2878	19.1950	1269.66	0.7912

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.004
BTU/CU.FT IDEAL: 1272.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1277.7
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1255.5
DRY BTU @ 15.025: 1303.3
REAL SPECIFIC GRAVITY: 0.7941

CYLINDER #: 7056
CYLINDER PRESSURE: 78 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 10:41:47 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: 06/27/2018

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: RICHARDSON #1E; TBG
Stn. No.: CC #3132373A
Mtr. No.:

TUBING
DK

06/27/2018
46600-11260

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180172

Nitrogen: 4.4582
CO2: 1.3938
Methane: 75.4283
Ethane: 5.8906
Propane: 6.1375
I-Butane: 2.3553
N-Butane: 1.8871
I-Pentane: 0.9370
N-Pentane: 0.4906
Hexane+: 1.0216

BTU: 1277.7
GPM: 19.1950
SPG: 0.7941