



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

Analysis No: LG180167
Cust No: 46600-11235

30-045 06808 N

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON COM #3; BHD
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC # 3132375A

Source: BRADENHEAD
Well Flowing: N
Pressure: 130 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: 1.00 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

NMDCD

JUN 05 2018

DISTRICT III

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	2.6509	2.6155	0.2920	0.00	0.0256
CO2	0.0093	0.0092	0.0020	0.00	0.0001
Methane	91.7406	90.5146	15.5850	926.58	0.5082
Ethane	3.4787	3.4322	0.9320	61.56	0.0361
Propane	1.3801	1.3617	0.3810	34.72	0.0210
Iso-Butane	0.3020	0.2980	0.0990	9.82	0.0061
N-Butane	0.2591	0.2556	0.0820	8.45	0.0052
I-Pentane	0.0830	0.0819	0.0300	3.32	0.0021
N-Pentane	0.0403	0.0398	0.0150	1.62	0.0010
Hexane Plus	0.0560	0.0553	0.0250	2.95	0.0019
Total	100.0000	98.6638	17.4430	1049.03	0.6072

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0023
BTU/CU.FT IDEAL: 1051.5
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1053.9
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1035.6
DRY BTU @ 15.025: 1075.0
REAL SPECIFIC GRAVITY: 0.6084

CYLINDER #: 4142
CYLINDER PRESSURE: 122 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 10:41:35 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: 06/27/2018



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: RICHARDSON COM #3; BHD
Stn. No.: CC # 3132375A
Mtr. No.:

BRADENHEAD
DK

06/27/2018
46600-11235

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180167
Nitrogen: 2.6509
CO2: 0.0093
Methane: 91.7406
Ethane: 3.4787
Propane: 1.3801
I-Butane: 0.3020
N-Butane: 0.2591
I-Pentane: 0.0830
N-Pentane: 0.0403
Hexane+: 0.0560
BTU: 1053.9
GPM: 17.4430
SPG: 0.6084



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

Analysis No: LG180168
Cust No: 46600-11240

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON COM #3; CSG
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC #3132375A

Source: CASING
Well Flowing: N
Pressure: 150 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: 1.10 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.5905	0.5917	0.0650	0.00	0.0057
CO2	0.7125	0.7140	0.1220	0.00	0.0108
Methane	85.8730	86.0536	14.5990	867.32	0.4757
Ethane	7.5457	7.5616	2.0240	133.54	0.0783
Propane	2.8380	2.8440	0.7840	71.41	0.0432
Iso-Butane	0.4456	0.4465	0.1460	14.49	0.0089
N-Butane	0.7613	0.7629	0.2410	24.84	0.0153
I-Pentane	0.2740	0.2746	0.1000	10.96	0.0068
N-Pentane	0.2303	0.2308	0.0840	9.23	0.0057
Hexane Plus	0.7291	0.7306	0.3260	38.43	0.0241
Total	100.0000	100.2103	18.4910	1170.21	0.6746

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0031
BTU/CU.FT IDEAL: 1172.9
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1176.6
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1156.1
DRY BTU @ 15.025: 1200.2
REAL SPECIFIC GRAVITY: 0.6765

CYLINDER #: 5025
CYLINDER PRESSURE: 143 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 10:25:35 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 COM #3; CSG
Stn. No.: CC #3132375A
Mtr. No.:

CASING
DK

06/27/2018
46600-11240

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180168

Nitrogen: 0.5905
CO2: 0.7125
Methane: 85.8730
Ethane: 7.5457
Propane: 2.8380
I-Butane: 0.4456
N-Butane: 0.7613
I-Pentane: 0.2740
N-Pentane: 0.2303
Hexane+: 0.7291

BTU: 1176.6
GPM: 18.4910
SPG: 0.6765



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

Analysis No: LG180169
Cust No: 46600-11245

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: RICHARDSON COM #3; TBG
County/State: SAN JUAN NM
Location:
Field: SOUTH
Formation: DK
Cust. Stn. No.: CC #3132375A

Source: TUBING
Well Flowing: N
Pressure: 145 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: 1.20 PM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.6606	0.6531	0.0730	0.00	0.0064
CO2	0.8310	0.8215	0.1420	0.00	0.0126
Methane	86.2316	85.2499	14.6580	870.94	0.4776
Ethane	7.4679	7.3829	2.0020	132.16	0.0775
Propane	2.8488	2.8164	0.7870	71.68	0.0434
Iso-Butane	0.4296	0.4247	0.1410	13.97	0.0086
N-Butane	0.6795	0.6718	0.2150	22.17	0.0136
I-Pentane	0.2158	0.2133	0.0790	8.63	0.0054
N-Pentane	0.1728	0.1708	0.0630	6.93	0.0043
Hexane Plus	0.4624	0.4571	0.2070	24.37	0.0153
Total	100.0000	98.8615	18.3670	1150.85	0.6648

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0029
BTU/CU.FT IDEAL: 1153.5
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1156.9
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1136.8
DRY BTU @ 15.025: 1180.1
REAL SPECIFIC GRAVITY: 0.6665

CYLINDER #: 6017
CYLINDER PRESSURE: 145 PSIG
ANALYSIS DATE: 06/26/2018
ANALYSIS TIME: 10:33:14 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: 06/27/2018



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: RICHARDSON COM #3; TBG
Stn. No.: CC #3132375A
Mtr. No.:

TUBING
DK

06/27/2018
46600-11245

Smpl Date: 06/21/2018
Test Date: 06/26/2018
Run No: LG180169

Nitrogen: 0.6606
CO2: 0.8310
Methane: 86.2316
Ethane: 7.4679
Propane: 2.8488
I-Butane: 0.4296
N-Butane: 0.6795
I-Pentane: 0.2158
N-Pentane: 0.1728
Hexane+: 0.4624

BTU: 1156.9
GPM: 18.3670
SPG: 0.6665