



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

Analysis No: LG190360
Cust No: 46600-11635

30-039-07246

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: INDIAN I #1; TBG
County/State: RIO ARriba NM
Location:
Lease/PA/CA:
Formation: PC/MV
Cust. Stn. No.: CC # 62046939 / 62046940

Source: TUBING
Well Flowing: N
Pressure: 168 PSIG
Flow Temp: DEG. F
Ambient Temp: 78 DEG. F
Flow Rate: 0 MCF/D
Sample Method: Purge & Fill
Sample Date: 08/28/2019
Sample Time: 10.40 AM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace: SOUTH
Remarks: N

NMOCD
SEP 19 2019
DISTRICT III

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.1826	0.1829	0.0200	0.00	0.0018
CO2	0.7499	0.7513	0.1280	0.00	0.0114
Methane	84.7862	84.9414	14.4160	856.34	0.4696
Ethane	8.4261	8.4415	2.2600	149.12	0.0875
Propane	3.2261	3.2320	0.8910	81.17	0.0491
Iso-Butane	0.6853	0.6866	0.2250	22.29	0.0138
N-Butane	0.8430	0.8445	0.2670	27.50	0.0169
I-Pentane	0.3499	0.3505	0.1280	14.00	0.0087
N-Pentane	0.2453	0.2457	0.0890	9.83	0.0061
Hexane Plus	0.5056	0.5065	0.2260	26.65	0.0167
Total	100.0000	100.1829	18.6500	1186.90	0.6816

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0032
BTU/CU.FT IDEAL: 1189.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1193.3
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1172.5
DRY BTU @ 15.025: 1217.2
REAL SPECIFIC GRAVITY: 0.6835

CYLINDER #: 019
CYLINDER PRESSURE: 164 PSIG
ANALYSIS DATE: 09/04/2019
ANALYSIS TIME: 03:46:21 PM
ANALYSIS RUN BY: PATRICIA KING

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: 09/09/2019

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: INDIAN I #1; TBG
Stn. No.: CC # 62046939 /
Mtr. No.:

TUBING
PC/MV

09/09/2019
46600-11635

Smpl Date: 08/28/2019
Test Date: 09/04/2019
Run No: LG190360
Nitrogen: 0.1826
CO2: 0.7499
Methane: 84.7862
Ethane: 8.4261
Propane: 3.2261
I-Butane: 0.6853
N-Butane: 0.8430
I-Pentane: 0.3499
N-Pentane: 0.2453
Hexane+: 0.5056
BTU: 1193.3
GPM: 18.6500
SPG: 0.6835



2030 Afton Place
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Analysis No: LG190359
Cust No: 46600-11630

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: INDIAN I #1; INTER
County/State: RIO ARRIBA NM
Location:
Lease/PA/CA:
Formation: PC/MV
Cust. Stn. No.: CC # 62046939 / 62046940

Source: INTERMEDIATE
Well Flowing: N
Pressure: 775 PSIG
Flow Temp: DEG. F
Ambient Temp: 78 DEG. F
Flow Rate: 0 MCF/D
Sample Method: Purge & Fill
Sample Date: 08/28/2019
Sample Time: 10.35 AM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

SOUTH
Heat Trace: N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.7808	0.7824	0.0860	0.00	0.0076
CO2	0.1868	0.1872	0.0320	0.00	0.0028
Methane	86.0722	86.2508	14.6320	869.33	0.4768
Ethane	6.9115	6.9258	1.8530	122.31	0.0718
Propane	3.5964	3.6039	0.9940	90.49	0.0548
Iso-Butane	0.7729	0.7745	0.2540	25.13	0.0155
N-Butane	0.8954	0.8973	0.2830	29.21	0.0180
I-Pentane	0.3253	0.3260	0.1190	13.01	0.0081
N-Pentane	0.2115	0.2119	0.0770	8.48	0.0053
Hexane Plus	0.2472	0.2477	0.1110	13.03	0.0082
Total	100.0000	100.2075	18.4410	1171.00	0.6687

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.003
BTU/CU.FT IDEAL: 1173.7
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1177.2
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1156.7
DRY BTU @ 15.025: 1200.8
REAL SPECIFIC GRAVITY: 0.6704

CYLINDER #: 104
CYLINDER PRESSURE: 775 PSIG
ANALYSIS DATE: 09/04/2019
ANALYSIS TIME: 03:54:16 PM
ANALYSIS RUN BY: PATRICIA KING

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: 09/09/2019

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: INDIAN I #1; INTER
Stn. No.: CC # 62046939 /
Mtr. No.:

INTERMEDIATE
PC/MV

09/09/2019
46600-11630

Smpl Date: 08/28/2019
Test Date: 09/04/2019
Run No: LG190359
Nitrogen: 0.7808
CO2: 0.1868
Methane: 86.0722
Ethane: 6.9115
Propane: 3.5964
I-Butane: 0.7729
N-Butane: 0.8954
I-Pentane: 0.3253
N-Pentane: 0.2115
Hexane+: 0.2472
BTU: 1177.2
GPM: 18.4410
SPG: 0.6704



2030 Afton Place
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Analysis No: LG190358
Cust No: 46600-11625

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: INDIAN I #1; CSG
County/State: RIO ARriba NM
Location:
Lease/PA/CA:
Formation: PC/MV
Cust. Stn. No.: CC # 62046939 / 62046940

Source: CASING
Well Flowing: N
Pressure: 775 PSIG
Flow Temp: DEG. F
Ambient Temp: 78 DEG. F
Flow Rate: 0 MCF/D
Sample Method: Purge & Fill
Sample Date: 08/28/2019
Sample Time: 10.50 AM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace: SOUTH
N

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.4844	0.4859	0.0530	0.00	0.0047
CO2	0.1867	0.1873	0.0320	0.00	0.0028
Methane	84.7436	85.0111	14.4100	855.91	0.4694
Ethane	6.9653	6.9873	1.8680	123.26	0.0723
Propane	3.9816	3.9942	1.1000	100.18	0.0606
Iso-Butane	0.9587	0.9617	0.3150	31.18	0.0192
N-Butane	1.1175	1.1210	0.3530	36.46	0.0224
I-Pentane	0.5004	0.5020	0.1840	20.02	0.0125
N-Pentane	0.3585	0.3596	0.1300	14.37	0.0089
Hexane Plus	0.7033	0.7055	0.3150	37.07	0.0233
Total	100.0000	100.3156	18.7600	1218.45	0.6962

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0033
BTU/CU.FT IDEAL: 1221.3
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1225.3
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1204.0
DRY BTU @ 15.025: 1249.8
REAL SPECIFIC GRAVITY: 0.6982

CYLINDER #: 042
CYLINDER PRESSURE: 880 PSIG
ANALYSIS DATE: 09/04/2019
ANALYSIS TIME: 03:38:40 PM
ANALYSIS RUN BY: PATRICIA KING

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: 09/09/2019

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: INDIAN I #1; CSG
Stn. No.: CC # 62046939 /
Mtr. No.:

CASING
PC/MV

09/09/2019
46600-11625

Smpl Date: 08/28/2019
Test Date: 09/04/2019
Run No: LG190358

Nitrogen: 0.4844
CO2: 0.1867
Methane: 84.7436
Ethane: 6.9653
Propane: 3.9816
I-Butane: 0.9587
N-Butane: 1.1175
I-Pentane: 0.5004
N-Pentane: 0.3585
Hexane+: 0.7033

BTU: 1225.3
GPM: 18.7600
SPG: 0.6982



2030 Afton Place
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Analysis No: LG190357
Cust No: 46600-11620

Well/Lease Information

Customer Name: LOGOS OPERATING LLC
Well Name: INDIAN I #1; BHD
County/State: RIO ARriba NM
Location:
Lease/PA/CA:
Formation: PC/MV
Cust. Stn. No.: CC #62046939 / 62046940

Source: BRADENHEAD
Well Flowing: N
Pressure: 32 PSIG
Flow Temp: DEG. F
Ambient Temp: 78 DEG. F
Flow Rate: 0 MCF/D
Sample Method: Purge & Fill
Sample Date: 08/28/2019
Sample Time: 10.30 AM
Sampled By: EUGENE BURBANK
Sampled by (CO): LOGOS

Heat Trace: SOUTH
N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.5612	0.5620	0.0620	0.00	0.0054
CO2	0.1465	0.1467	0.0250	0.00	0.0022
Methane	86.7987	86.9202	14.7540	876.67	0.4808
Ethane	6.8764	6.8860	1.8440	121.69	0.0714
Propane	3.3598	3.3645	0.9280	84.54	0.0512
Iso-Butane	0.7053	0.7063	0.2310	22.94	0.0142
N-Butane	0.8664	0.8676	0.2740	28.26	0.0174
I-Pentane	0.3031	0.3035	0.1110	12.13	0.0076
N-Pentane	0.1940	0.1943	0.0710	7.78	0.0048
Hexane Plus	0.1886	0.1889	0.0840	9.94	0.0062
Total	100.0000	100.1400	18.3840	1163.94	0.6611

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0029
BTU/CU.FT IDEAL: 1166.6
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1170.0
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1149.6
DRY BTU @ 15.025: 1193.4
REAL SPECIFIC GRAVITY: 0.6628

CYLINDER #: 2001
CYLINDER PRESSURE: 29 PSIG
ANALYSIS DATE: 09/04/2019
ANALYSIS TIME: 04:03:57 AM
ANALYSIS RUN BY: PATRICIA KING

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: 09/09/2019

GC Method: C6+ Gas



LOGOS OPERATING LLC
WELL ANALYSIS COMPARISON

Lease: INDIAN I #1; BHD
Stn. No.: CC #62046939 /
Mtr. No.:

BRADENHEAD
PC/MV

09/09/2019
46600-11620

Smpl Date: 08/28/2019
Test Date: 09/04/2019
Run No: LG190357
Nitrogen: 0.5612
CO2: 0.1465
Methane: 86.7987
Ethane: 6.8764
Propane: 3.3598
I-Butane: 0.7053
N-Butane: 0.8664
I-Pentane: 0.3031
N-Pentane: 0.1940
Hexane+: 0.1886
BTU: 1170.0
GPM: 18.3840
SPG: 0.6628