



Well Name: FREEMAN 1B; BHD

API #: 3004532254

Source: BRADENHEAD

Sample Type: GAS

Analysis No: HS2021159

Cust No: 35825-13885

Well/Lease Information

Customer Name: HILCORP (BHD PROJECT)

Well Name: FREEMAN 1B; BHD

County/State: SAN JUAN NM

Location:

Lease/PA/CA:

Formation:

Cust. Stn. No.: 3004532254

Source: BRADENHEAD

Well Flowing: Y

Pressure: 159 PSIG

Flow Temp: DEG. F

Ambient Temp: DEG. F

Flow Rate: MCF/D

Sample Method:

Sample Date: 07/28/2021

Sample Time: 4.28 PM

Sampled By:

Sampled by (CO): HILCORP

Heat Trace: AREA 2 / RUN 0211

Remarks: N

Analysis

Component:	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.7944	0.7874	0.0880	0.00	0.0077
CO2	0.0000	0.0000	0.0000	0.00	0.0000
Methane	93.1476	92.3215	15.8250	940.79	0.5159
Ethane	4.0300	3.9943	1.0800	71.32	0.0418
Propane	1.2368	1.2258	0.3410	31.12	0.0188
Iso-Butane	0.2670	0.2646	0.0880	8.68	0.0054
N-Butane	0.2789	0.2764	0.0880	9.10	0.0056
I-Pentane	0.0935	0.0927	0.0340	3.74	0.0023
N-Pentane	0.0597	0.0592	0.0220	2.39	0.0015
Hexane Plus	0.0921	0.0913	0.0410	4.85	0.0030
Total	100.0000	99.1132	17.6070	1072.00	0.6021

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0024
 BTU/CU.FT IDEAL: 1074.5
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1077.1
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1058.4
 DRY BTU @ 15.025: 1098.7
 REAL SPECIFIC GRAVITY: 0.6033

CYLINDER #: 052
 CYLINDER PRESSURE: 143 PSIG
 ANALYSIS DATE: 08/04/2021
 ANALYSIS TIME: 03:15:45 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: 08/06/2021

GC Method: C6+ Gas



HILCORP (BHD PROJECT)
WELL ANALYSIS COMPARISON

Lease: FREEMAN 1B; BHD
Stn. No.: 3004532254
Mtr. No.:

BRADENHEAD

08/06/2021
35825-13885

Smpl Date: 07/28/2021
Test Date: 08/04/2021
Run No: HS2021159

Nitrogen: 0.7944
CO2: 0.0000
Methane: 93.1476
Ethane: 4.0300
Propane: 1.2368
I-Butane: 0.2670
N-Butane: 0.2789
I-Pentane: 0.0935
N-Pentane: 0.0597
Hexane+: 0.0921

BTU: 1077.1
GPM: 17.6070
SPG: 0.6033



Well Name: FREEMAN 1B; CSG

API #: 3004532254

Source: CASING

Sample Type: GAS

Analysis No: HS2021160

Cust No: 35825-13890

Well/Lease Information

Customer Name: HILCORP (BHD PROJECT)

Well Name: FREEMAN 1B; CSG

County/State: SAN JUAN NM

Location:

Lease/PA/CA:

Formation:

Cust. Stn. No.: 3004532254

Source: CASING

Well Flowing: Y

Pressure: 40 PSIG

Flow Temp: DEG. F

Ambient Temp: DEG. F

Flow Rate: MCF/D

Sample Method:

Sample Date: 07/28/2021

Sample Time: 4.46 PM

Sampled By:

Sampled by (CO): HILCORP

Heat Trace: AREA 2 / RUN 0211

Remarks: N

Analysis

Component:	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2232	0.2214	0.0250	0.00	0.0022
CO2	1.0421	1.0335	0.1780	0.00	0.0158
Methane	82.7995	82.1197	14.0810	836.27	0.4586
Ethane	9.0666	8.9922	2.4320	160.45	0.0941
Propane	3.6735	3.6433	1.0150	92.43	0.0559
Iso-Butane	0.7100	0.7042	0.2330	23.09	0.0142
N-Butane	0.9455	0.9377	0.2990	30.85	0.0190
I-Pentane	0.3803	0.3772	0.1400	15.22	0.0095
N-Pentane	0.2549	0.2528	0.0930	10.22	0.0063
Hexane Plus	0.9044	0.8970	0.4050	47.67	0.0299
Total	100.0000	99.1790	18.9010	1216.19	0.7057

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0034
 BTU/CU.FT IDEAL: 1219.0
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1223.2
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1201.9
 DRY BTU @ 15.025: 1247.7
 REAL SPECIFIC GRAVITY: 0.7078

CYLINDER #: 019
 CYLINDER PRESSURE: 39 PSIG
 ANALYSIS DATE: 08/04/2021
 ANALYSIS TIME: 03:18:29 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: 08/06/2021

GC Method: C6+ Gas



HILCORP (BHD PROJECT)
WELL ANALYSIS COMPARISON

Lease:	FREEMAN 1B; CSG	CASING	08/06/2021
Stn. No.:	3004532254		35825-13890
Mtr. No.:			

Smpl Date: 07/28/2021
Test Date: 08/04/2021
Run No: HS2021160

Nitrogen: 0.2232
CO2: 1.0421
Methane: 82.7995
Ethane: 9.0666
Propane: 3.6735
I-Butane: 0.7100
N-Butane: 0.9455
I-Pentane: 0.3803
N-Pentane: 0.2549
Hexane+: 0.9044

BTU: 1223.2
GPM: 18.9010
SPG: 0.7078



Well Name: FREEMAN 1B; TBG

API #: 3004532254

Source: TUBING

Sample Type: GAS

Analysis No: HS2021161

Cust No: 35825-13895

Well/Lease Information

Customer Name: HILCORP (BHD PROJECT)

Well Name: FREEMAN 1B; TBG

County/State: SAN JUAN NM

Location:

Lease/PA/CA:

Formation:

Cust. Stn. No.: 3004532254

Source: TUBING

Well Flowing: Y

Pressure: 40 PSIG

Flow Temp: DEG. F

Ambient Temp: DEG. F

Flow Rate: MCF/D

Sample Method:

Sample Date: 07/28/2021

Sample Time: 4.37 PM

Sampled By:

Sampled by (CO): HILCORP

Heat Trace: AREA 2 / RUN 0211

Remarks: N

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2242	0.2213	0.0250	0.00	0.0022
CO2	1.0458	1.0322	0.1790	0.00	0.0159
Methane	82.7722	81.6993	14.0770	836.00	0.4585
Ethane	9.0327	8.9156	2.4230	159.85	0.0938
Propane	3.6725	3.6249	1.0150	92.40	0.0559
Iso-Butane	0.7203	0.7110	0.2360	23.42	0.0145
N-Butane	0.9557	0.9433	0.3020	31.18	0.0192
I-Pentane	0.3818	0.3769	0.1400	15.28	0.0095
N-Pentane	0.2565	0.2532	0.0930	10.28	0.0064
Hexane Plus	0.9383	0.9261	0.4200	49.46	0.0311
Total	100.0000	98.7038	18.9100	1217.87	0.7068

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0034
 BTU/CU.FT IDEAL: 1220.7
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1224.9
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1203.6
 DRY BTU @ 15.025: 1249.4
 REAL SPECIFIC GRAVITY: 0.7089

CYLINDER #: 015
 CYLINDER PRESSURE: 34 PSIG
 ANALYSIS DATE: 08/04/2021
 ANALYSIS TIME: 03:31:35 PM
 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: 08/06/2021

GC Method: C6+ Gas



HILCORP (BHD PROJECT)
WELL ANALYSIS COMPARISON

Lease:	FREEMAN 1B; TBG	TUBING	08/06/2021
Stn. No.:	3004532254		35825-13895
Mtr. No.:			

Smpl Date: 07/28/2021
Test Date: 08/04/2021
Run No: HS2021161

Nitrogen: 0.2242
CO2: 1.0458
Methane: 82.7722
Ethane: 9.0327
Propane: 3.6725
I-Butane: 0.7203
N-Butane: 0.9557
I-Pentane: 0.3818
N-Pentane: 0.2565
Hexane+: 0.9383

BTU: 1224.9
GPM: 18.9100
SPG: 0.7089

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 44458

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 44458
	Action Type: [UF-GA] Gas Analysis (GAS ANALYSIS)

CONDITIONS

Created By	Condition	Condition Date
mkuehling	None	10/18/2021