



Well Name: ZACHRY #18E; BHD
 API #: 3004524105
 Source: BRADENHEAD
 Sample Type: GAS
 Analysis No: MS20240088
 Cust No: 53400-11630

Well/Lease Information

Customer Name: MORNINGSTAR
 Well Name: ZACHRY #18E; BHD
 County/State: SAN JUAN NM
 Location:
 Lease/PA/CA: SF080724-A
 Formation: DK
 Cust. Stn. No.: 3004524105
 14633261

Source: BRADENHEAD
 Well Flowing: N
 Pressure: 50 PSIG
 Flow Temp: 54 DEG. F
 Ambient Temp: DEG. F
 Flow Rate: 0 MCF/D
 Sample Method: Purge & Fill
 Sample Date: 05/01/2024
 Sample Time: 8.20 AM
 Sampled By: ESTEVAN WORTMAN
 Sampled by (CO): MORNINGSTAR

Heat Trace: N
 Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.8749	0.8656	0.0960	0.00	0.0085
CO2	0.0193	0.0191	0.0030	0.00	0.0003
Methane	90.5084	89.5470	15.3800	914.13	0.5013
Ethane	4.9460	4.8935	1.3260	87.53	0.0513
Propane	2.1829	2.1597	0.6030	54.92	0.0332
Iso-Butane	0.4494	0.4446	0.1470	14.61	0.0090
N-Butane	0.4843	0.4792	0.1530	15.80	0.0097
I-Pentane	0.1905	0.1885	0.0700	7.62	0.0047
N-Pentane	0.1109	0.1097	0.0400	4.45	0.0028
Hexane Plus	0.2334	0.2309	0.1040	12.30	0.0077
Total	100.0000	98.9378	17.9220	1111.37	0.6286

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0026
 BTU/CU.FT IDEAL: 1113.9
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1116.8
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1097.4
 DRY BTU @ 15.025: 1139.2
 REAL SPECIFIC GRAVITY: 0.63

CYLINDER #: 4034
 CYLINDER PRESSURE: 34 PSIG
 ANALYSIS DATE: 05/08/2024
 ANALYSIS TIME: 09:13:27 AM
 ANALYSIS RUN BY: ALEXIS MITCHELL

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: 05/09/2024

GC Method: C6+ Gas



MORNINGSTAR
WELL ANALYSIS COMPARISON

Lease:	ZACHRY #18E; BHD	BRADENHEAD	05/09/2024
Stn. No.:	3004524105	DK	53400-11630
Mtr. No.:	14633261		

Smpl Date:	05/01/2024	04/08/2021
Test Date:	05/08/2024	04/15/2021
Run No:	MS20240088	MS2021059
Nitrogen:	0.8749	0.8394
CO2:	0.0193	0.0050
Methane:	90.5084	90.5097
Ethane:	4.9460	5.0147
Propane:	2.1829	2.1846
I-Butane:	0.4494	0.4489
N-Butane:	0.4843	0.4810
I-Pentane:	0.1905	0.1842
N-Pentane:	0.1109	0.1055
Hexane+:	0.2334	0.2270
BTU:	1116.8	1117.2
GPM:	17.9220	17.9270
SPG:	0.6300	0.6296



Well Name: ZACHRY #18E; CSG

API #: 3004524105

Source: CASING

Sample Type: GAS

Analysis No: MS20240089

Cust No: 53400-11635

Well/Lease Information

Customer Name: MORNINGSTAR
 Well Name: ZACHRY #18E; CSG
 County/State: SAN JUAN NM
 Location:
 Lease/PA/CA: SF080724-A
 Formation: DK
 Cust. Stn. No.: 3004524105
 14633261

Source: CASING
 Well Flowing: N
 Pressure: 50 PSIG
 Flow Temp: 54 DEG. F
 Ambient Temp: DEG. F
 Flow Rate: 0 MCF/D
 Sample Method: Purge & Fill
 Sample Date: 05/01/2024
 Sample Time: 8.22 AM
 Sampled By: ESTEVAN WORTMAN
 Sampled by (CO): MORNINGSTAR

Heat Trace: N

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.7148	0.7129	0.0790	0.00	0.0069
CO2	0.2375	0.2369	0.0410	0.00	0.0036
Methane	85.2657	85.0419	14.4960	861.18	0.4723
Ethane	7.0354	7.0169	1.8870	124.51	0.0730
Propane	4.1300	4.1192	1.1410	103.91	0.0629
Iso-Butane	0.5776	0.5761	0.1900	18.78	0.0116
N-Butane	1.0089	1.0063	0.3190	32.91	0.0202
I-Pentane	0.2855	0.2848	0.1050	11.42	0.0071
N-Pentane	0.2222	0.2216	0.0810	8.91	0.0055
Hexane Plus	0.5224	0.5210	0.2340	27.54	0.0173
Total	100.0000	99.7376	18.5730	1189.17	0.6805

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0031
 BTU/CU.FT IDEAL: 1191.9
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1195.6
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1174.8
 DRY BTU @ 15.025: 1219.5
 REAL SPECIFIC GRAVITY: 0.6823

CYLINDER #: 7040
 CYLINDER PRESSURE: 61 PSIG
 ANALYSIS DATE: 05/08/2024
 ANALYSIS TIME: 09:26:24 AM
 ANALYSIS RUN BY: ALEXIS MITCHELL

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: 05/09/2024

GC Method: C6+ Gas



MORNINGSTAR
WELL ANALYSIS COMPARISON

Lease:	ZACHRY #18E; CSG	CASING	05/09/2024
Stn. No.:	3004524105	DK	53400-11635
Mtr. No.:	14633261		

Smpl Date:	05/01/2024	04/08/2021
Test Date:	05/08/2024	04/15/2021
Run No:	MS20240089	MS2021060
Nitrogen:	0.7148	0.6463
CO2:	0.2375	0.0263
Methane:	85.2657	84.2175
Ethane:	7.0354	7.3196
Propane:	4.1300	4.4441
I-Butane:	0.5776	0.6752
N-Butane:	1.0089	1.2055
I-Pentane:	0.2855	0.3793
N-Pentane:	0.2222	0.3063
Hexane+:	0.5224	0.7799
BTU:	1195.6	1228.7
GPM:	18.5730	18.7900
SPG:	0.6823	0.6994

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 342677

CONDITIONS

Operator: MorningStar Operating LLC 400 W 7th St Fort Worth, TX 76102	OGRID: 330132
	Action Number: 342677
	Action Type: [UF-GA] Gas Analysis (GAS ANALYSIS)

CONDITIONS

Created By	Condition	Condition Date
mkuehling	for record	5/10/2024