



Well Name: ZACHRY #18E; CSG

API #:

Source: CASING

Sample Type: GAS

Analysis No: MS2021060

Cust No: 53400-11635

Well/Lease Information

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

Source: CASING
 Well Flowing: Y
 Pressure: 47 PSIG
 Flow Temp: 71 DEG. F
 Ambient Temp: DEG. F
 Flow Rate: 25 MCF/D
 Sample Method: Purge & Fill
 Sample Date: 04/08/2021
 Sample Time: 1.30 PM
 Sampled By: JEREMY BARNEY
 Sampled by (CO): MORNING STAR

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.6463	0.6260	0.0710	0.00	0.0063
CO2	0.0263	0.0255	0.0050	0.00	0.0004
Methane	84.2175	81.5705	14.3210	850.60	0.4665
Ethane	7.3196	7.0895	1.9630	129.53	0.0760
Propane	4.4441	4.3044	1.2280	111.82	0.0677
Iso-Butane	0.6752	0.6540	0.2220	21.96	0.0135
N-Butane	1.2055	1.1676	0.3810	39.33	0.0242
I-Pentane	0.3793	0.3674	0.1390	15.18	0.0094
N-Pentane	0.3063	0.2967	0.1110	12.28	0.0076
Hexane Plus	0.7799	0.7554	0.3490	41.11	0.0258
Total	100.0000	96.8570	18.7900	1221.80	0.6974

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0033
 BTU/CU.FT IDEAL: 1224.6
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1228.7
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1207.3
 DRY BTU @ 15.025: 1253.3
 REAL SPECIFIC GRAVITY: 0.6994

CYLINDER #: 4060
 CYLINDER PRESSURE: 92 PSIG
 ANALYSIS DATE: 04/15/2021
 ANALYSIS TIME: 03:30:08 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: 04/16/2021

GC Method: C6+ Gas



MORNINGSTAR
WELL ANALYSIS COMPARISON

Lease:	ZACHRY #18E; CSG	CASING	04/16/2021
Stn. No.:			53400-11635
Mtr. No.:	14633261		

Smpl Date: 04/08/2021
Test Date: 04/15/2021
Run No: MS2021060

Nitrogen: 0.6463
CO2: 0.0263
Methane: 84.2175
Ethane: 7.3196
Propane: 4.4441
I-Butane: 0.6752
N-Butane: 1.2055
I-Pentane: 0.3793
N-Pentane: 0.3063
Hexane+: 0.7799

BTU: 1228.7
GPM: 18.7900
SPG: 0.6994



Well Name: ZACHRY #18E; BHD

API #:

Source: BRADENHEAD

Sample Type: GAS

Analysis No: MS2021059

Cust No: 53400-11630

Well/Lease Information

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

Source: BRADENHEAD
 Well Flowing: Y
 Pressure: PSIG
 Flow Temp: DEG. F
 Ambient Temp: DEG. F
 Flow Rate: MCF/D
 Sample Method: Purge & Fill
 Sample Date: 04/08/2021
 Sample Time: 1.30 PM
 Sampled By: JEREMY BARNEY
 Sampled by (CO): MORNING STAR

Heat Trace: N
 Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.8394	0.8268	0.0930	0.00	0.0081
CO2	0.0050	0.0049	0.0010	0.00	0.0001
Methane	90.5097	89.1527	15.3800	914.15	0.5013
Ethane	5.0147	4.9395	1.3440	88.75	0.0521
Propane	2.1846	2.1518	0.6030	54.97	0.0333
Iso-Butane	0.4489	0.4422	0.1470	14.60	0.0090
N-Butane	0.4810	0.4738	0.1520	15.69	0.0097
I-Pentane	0.1842	0.1814	0.0680	7.37	0.0046
N-Pentane	0.1055	0.1039	0.0380	4.23	0.0026
Hexane Plus	0.2270	0.2236	0.1010	11.97	0.0075
Total	100.0000	98.5006	17.9270	1111.71	0.6282

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0026
 BTU/CU.FT IDEAL: 1114.3
 BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1117.2
 BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1097.8
 DRY BTU @ 15.025: 1139.6
 REAL SPECIFIC GRAVITY: 0.6296

CYLINDER #: 6100
 CYLINDER PRESSURE: 81 PSIG
 ANALYSIS DATE: 04/15/2021
 ANALYSIS TIME: 03:45:53 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: 04/16/2021

GC Method: C6+ Gas



MORNINGSTAR
WELL ANALYSIS COMPARISON

Lease: ZACHRY #18E; BHD
Stn. No.:
Mtr. No.: 14633261

BRADENHEAD

04/16/2021
53400-11630

Smpl Date: 04/08/2021
Test Date: 04/15/2021
Run No: MS2021059

Nitrogen: 0.8394
CO2: 0.0050
Methane: 90.5097
Ethane: 5.0147
Propane: 2.1846
I-Butane: 0.4489
N-Butane: 0.4810
I-Pentane: 0.1842
N-Pentane: 0.1055
Hexane+: 0.2270

BTU: 1117.2
GPM: 17.9270
SPG: 0.6296

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

CONDITIONS

Action 25008

CONDITIONS OF APPROVAL

Operator:	MORNINGSTAR OPERATING LLC	400 W 7th St	Fort Worth, TX76102	OGRID:	330132	Action Number:	25008	Action Type:	GAS ANALYSIS
OCD Reviewer	Condition								
mkuehling	None								