



PHOENIX
TECHNOLOGY SERVICES

May 11, 2017

Oil Conservation Division
State of New Mexico
811 S. First St.
Artesia, New Mexico 88210

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Black Mountain Operating, LLC.
Cypress 1H
Eddy County, NM
API #30-015-44046
Job No. 60975

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 15 2017

RECEIVED

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

Name & Title of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Michael Johnson	1H	506	13,859	4/8/17	4/26/17	MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

Brittany Carley

Brittany Carley
Operations Administrator

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 60975

ENERGY COMPANY Black Mountain Operating, LLC

WELL NAME Cypress 1H

COUNTY & STATE

Eddy Co, NM

API WELL NUMBER 30-015-44046

PROPOSED DIRECTION 91.71°

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
433.00 ft	432.83 ft	3.11°	305.39°	6.56 ft	-6.68 ft	Gyro

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
8-Apr-17	506.00 ft	3.30°	317.00°

SURVEY INSTRUMENT
TYPE
Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
26-Apr-17	13,859.00 ft	87.23°	89.22°

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
26-Apr-17	13,922.00 ft	87.23°	89.22°

Michael D Johnson

PRINT YOUR NAME ABOVE

Michael Johnson

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.38°
DECLINATION OR GRID	GRID

Wednesday, April 26, 2017

TODAY'S DATE

MWD SUPERVISOR 1

Michael Johnson

DIRECTIONAL DRILLER 1

Ruben Cano

MWD SUPERVISOR 2

DIRECTIONAL DRILLER 2

Vinn Adams

12329 Cutten Rd.,

Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 15 2017

RECEIVED

Black Mountain Operating, LLC

Eddy County, NM (NAD27)

Cypress

1H

OH/ Job #60975

Survey: Phoenix MWD Survey

Standard Survey Report

28 April, 2017



Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Project	Eddy County, NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Cypress
Site Position:
From: Map
Position Uncertainty: 0.00 usft
Northing: 477,919.00 usft
Easting: 540,426.00 usft
Slot Radius: 13-3/16 "
Latitude: 32° 18' 49.85202 N
Longitude: 104° 12' 8.91725 W
Grid Convergence: 0.07 °

Well 1H
Well Position +N/-S 0.00 usft
+E/-W 0.00 usft
Position Uncertainty 0.00 usft
Northing: 477,919.00 usft
Easting: 540,426.00 usft
Wellhead Elevation: 0.00 usft
Latitude: 32° 18' 49.85202 N
Longitude: 104° 12' 8.91725 W
Ground Level: 3,146.00 usft

Wellbore: OH/ Job #60975

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/10/2017	7.45	60.12	48,135

Design Surveys (Patterson 244)

Audit Notes:

Version: 1.0
Phase: ACTUAL
Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	91.71

Survey Program Date 4/28/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
506.00	13,922.00	Phoenix MWD Survey (OH/ Job #60975)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
433.00	3.11	305.39	432.83	6.56	-6.68	-6.87	0.00	0.00	0.00
Tie In									
506.00	3.30	317.00	505.72	9.24	-9.73	-10.00	0.92	0.26	15.90
First Phoenix MWD Survey									
597.00	0.71	310.17	596.65	11.52	-11.94	-12.28	2.85	-2.85	-7.51
689.00	0.38	165.02	688.65	11.60	-12.30	-12.64	1.14	-0.36	-157.77
780.00	0.49	201.69	779.65	10.94	-12.37	-12.69	0.32	0.12	40.30
871.00	0.86	169.83	870.64	9.91	-12.39	-12.68	0.56	0.41	-35.01
963.00	1.01	171.29	962.63	8.43	-12.15	-12.39	0.17	0.16	1.59
1,054.00	1.22	172.02	1,053.61	6.68	-11.89	-12.08	0.23	0.23	0.80

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,146.00	1.27	166.81	1,145.59	4.71	-11.52	-11.66	0.13	0.05	-5.66
1,238.00	2.05	151.59	1,237.55	2.27	-10.51	-10.57	0.97	0.85	-16.54
1,330.00	0.57	115.76	1,329.53	0.63	-9.31	-9.33	1.76	-1.61	-38.95
1,422.00	0.36	57.34	1,421.52	0.58	-8.66	-8.67	0.53	-0.23	-63.50
1,514.00	0.77	72.90	1,513.52	0.92	-7.82	-7.85	0.47	0.45	16.91
1,608.00	1.21	77.69	1,607.51	1.32	-6.25	-6.28	0.48	0.47	5.10
1,702.00	2.04	80.57	1,701.47	1.81	-3.63	-3.68	0.89	0.88	3.06
1,796.00	0.41	224.62	1,795.45	1.84	-2.21	-2.27	2.54	-1.73	153.24
1,890.00	1.64	244.91	1,889.43	1.03	-3.67	-3.70	1.34	1.31	21.59
1,985.00	1.55	252.20	1,984.40	0.06	-6.12	-6.12	0.23	-0.09	7.67
2,078.00	1.47	252.98	2,077.36	-0.67	-8.46	-8.44	0.09	-0.09	0.84
2,094.00	1.51	257.79	2,093.36	-0.78	-8.86	-8.84	0.82	0.25	30.06
2,202.00	2.10	267.09	2,201.30	-1.18	-12.23	-12.19	0.61	0.55	8.61
2,264.00	2.13	263.83	2,263.26	-1.36	-14.51	-14.46	0.20	0.05	-5.26
2,358.00	1.89	218.26	2,357.21	-2.77	-17.21	-17.12	1.67	-0.26	-48.48
2,452.00	2.06	205.21	2,451.15	-5.51	-18.89	-18.71	0.51	0.18	-13.88
2,546.00	1.15	257.06	2,545.12	-7.25	-20.52	-20.30	1.73	-0.97	55.16
2,640.00	1.19	286.93	2,639.10	-7.18	-22.38	-22.15	0.64	0.04	31.78
2,734.00	1.24	282.87	2,733.08	-6.67	-24.30	-24.09	0.11	0.05	-4.32
2,828.00	1.25	287.62	2,827.06	-6.13	-26.27	-26.08	0.11	0.01	5.05
2,922.00	1.35	284.48	2,921.03	-5.54	-28.32	-28.14	0.13	0.11	-3.34
3,017.00	1.43	284.08	3,016.01	-4.97	-30.55	-30.39	0.08	0.08	-0.42
3,112.00	1.49	279.98	3,110.98	-4.47	-32.92	-32.77	0.13	0.06	-4.32
3,206.00	1.55	273.97	3,204.94	-4.17	-35.39	-35.25	0.18	0.06	-6.39
3,300.00	1.65	274.06	3,298.91	-3.99	-38.01	-37.87	0.11	0.11	0.10
3,395.00	1.61	273.81	3,393.87	-3.80	-40.71	-40.58	0.04	-0.04	-0.26
3,489.00	2.84	225.08	3,487.80	-5.36	-43.67	-43.49	2.29	1.31	-51.84
3,583.00	3.83	214.90	3,581.64	-9.58	-47.12	-46.81	1.22	1.05	-10.83
3,677.00	3.84	216.85	3,675.43	-14.67	-50.80	-50.34	0.14	0.01	2.07
3,772.00	3.87	216.20	3,770.22	-19.81	-54.60	-53.99	0.06	0.03	-0.68
3,866.00	3.95	216.73	3,864.00	-24.96	-58.41	-57.64	0.09	0.09	0.56
3,960.00	3.90	214.69	3,957.78	-30.18	-62.17	-61.24	0.16	-0.05	-2.17
4,054.00	3.90	217.04	4,051.56	-35.36	-65.91	-64.83	0.17	0.00	2.50
4,148.00	3.89	217.83	4,145.34	-40.43	-69.80	-68.56	0.06	-0.01	0.84
4,243.00	3.94	219.40	4,240.12	-45.50	-73.84	-72.45	0.12	0.05	1.65
4,337.00	3.86	221.11	4,333.90	-50.38	-77.97	-76.44	0.15	-0.09	1.82
4,431.00	3.92	224.63	4,427.69	-55.05	-82.31	-80.63	0.26	0.06	3.74
4,526.00	3.83	225.95	4,522.47	-59.57	-86.87	-85.06	0.13	-0.09	1.39
4,620.00	3.84	227.84	4,616.26	-63.86	-91.46	-89.52	0.13	0.01	2.01
4,714.00	3.86	227.22	4,710.05	-68.13	-96.12	-94.04	0.05	0.02	-0.66
4,808.00	5.79	221.25	4,803.71	-73.84	-101.57	-99.32	2.12	2.05	-6.35
4,902.00	6.73	220.35	4,897.15	-81.60	-108.26	-105.78	1.01	1.00	-0.96
4,997.00	6.59	220.32	4,991.51	-90.00	-115.39	-112.65	0.15	-0.15	-0.03

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,091.00	6.55	220.17	5,084.89	-98.21	-122.34	-119.35	0.05	-0.04	-0.16
5,185.00	6.42	219.80	5,178.29	-106.34	-129.16	-125.93	0.15	-0.14	-0.39
5,279.00	6.25	218.93	5,271.72	-114.36	-135.74	-132.27	0.21	-0.18	-0.93
5,374.00	6.18	219.25	5,366.16	-122.34	-142.23	-138.51	0.08	-0.07	0.34
5,468.00	5.80	219.77	5,459.64	-129.91	-148.47	-144.52	0.41	-0.40	0.55
5,562.00	6.49	223.16	5,553.10	-137.44	-155.14	-150.97	0.83	0.73	3.61
5,656.00	6.17	224.92	5,646.53	-144.89	-162.34	-157.94	0.40	-0.34	1.87
5,751.00	5.46	225.20	5,741.04	-151.69	-169.15	-164.55	0.75	-0.75	0.29
5,844.00	4.85	226.68	5,833.66	-157.51	-175.15	-170.37	0.67	-0.66	1.59
5,939.00	6.94	224.23	5,928.16	-164.38	-182.08	-177.09	2.22	2.20	-2.58
6,033.00	7.19	223.88	6,021.44	-172.68	-190.12	-184.88	0.27	0.27	-0.37
6,127.00	7.20	221.97	6,114.70	-181.30	-198.13	-192.63	0.25	0.01	-2.03
6,222.00	6.98	221.18	6,208.98	-190.07	-205.91	-200.15	0.25	-0.23	-0.83
6,317.00	6.58	218.96	6,303.31	-198.65	-213.14	-207.11	0.50	-0.42	-2.34
6,411.00	6.26	219.51	6,396.72	-206.79	-219.78	-213.51	0.35	-0.34	0.59
6,505.00	6.17	219.14	6,490.17	-214.67	-226.23	-219.73	0.10	-0.10	-0.39
6,599.00	5.37	214.25	6,583.69	-222.22	-231.90	-225.16	1.00	-0.85	-5.20
6,694.00	6.22	226.10	6,678.21	-229.46	-238.11	-231.15	1.54	0.89	12.47
6,788.00	6.63	230.26	6,771.62	-236.46	-245.95	-238.78	0.66	0.44	4.43
6,882.00	6.27	228.13	6,865.03	-243.36	-253.95	-246.57	0.46	-0.38	-2.27
6,975.00	5.16	228.15	6,957.56	-249.54	-260.84	-253.28	1.19	-1.19	0.02
7,069.00	6.20	230.28	7,051.10	-255.60	-267.90	-260.15	1.13	1.11	2.27
7,163.00	6.67	232.63	7,144.51	-262.16	-276.14	-268.19	0.57	0.50	2.50
7,258.00	5.80	233.96	7,238.94	-268.33	-284.41	-276.27	0.93	-0.92	1.40
7,353.00	4.84	235.76	7,333.53	-273.41	-291.60	-283.31	1.03	-1.01	1.89
7,447.00	3.99	239.79	7,427.25	-277.29	-297.70	-289.30	0.96	-0.90	4.29
7,541.00	3.36	241.83	7,521.06	-280.24	-302.96	-294.46	0.68	-0.67	2.17
7,635.00	3.27	251.27	7,614.90	-282.40	-307.93	-299.36	0.59	-0.10	10.04
7,730.00	4.42	270.80	7,709.69	-283.22	-314.15	-305.56	1.82	1.21	20.56
7,824.00	3.37	256.00	7,803.48	-283.83	-320.46	-311.84	1.54	-1.12	-15.74
7,919.00	0.94	200.25	7,898.41	-285.24	-323.44	-314.78	3.10	-2.56	-58.68
8,013.00	1.39	160.59	7,992.39	-287.04	-323.32	-314.61	0.95	0.48	-42.19
8,107.00	2.30	197.30	8,086.34	-289.92	-323.51	-314.71	1.54	0.97	39.05
8,201.00	3.43	191.17	8,180.23	-294.48	-324.61	-315.68	1.24	1.20	-6.52
8,296.00	1.34	212.36	8,275.14	-298.20	-325.76	-316.71	2.35	-2.20	22.31
8,391.00	0.98	262.72	8,370.12	-299.24	-327.16	-318.08	1.09	-0.38	53.01
8,430.00	0.90	260.24	8,409.12	-299.34	-327.79	-318.71	0.23	-0.21	-6.36
8,493.00	0.93	95.94	8,472.11	-299.47	-327.77	-318.68	2.88	0.05	-260.79
8,524.00	4.64	86.35	8,503.07	-299.42	-326.27	-317.18	12.02	11.97	-30.94
8,556.00	9.50	84.68	8,534.82	-299.09	-322.34	-313.27	15.20	15.19	-5.22
8,587.00	14.07	83.79	8,565.16	-298.45	-316.05	-307.00	14.75	14.74	-2.87
8,619.00	18.21	82.17	8,595.89	-297.35	-307.22	-298.21	13.01	12.94	-5.06
8,650.00	21.81	83.18	8,625.01	-296.00	-296.70	-287.74	11.67	11.61	3.26
8,681.00	24.63	86.79	8,653.50	-294.96	-284.53	-275.60	10.19	9.10	11.65

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,713.00	27.30	89.93	8,682.27	-294.57	-270.53	-261.62	9.38	8.34	9.81
8,744.00	30.53	90.45	8,709.40	-294.63	-255.55	-246.64	10.45	10.42	1.68
8,775.00	33.66	90.64	8,735.66	-294.78	-239.08	-230.17	10.10	10.10	0.61
8,807.00	36.32	91.01	8,761.88	-295.05	-220.73	-211.83	8.34	8.31	1.16
8,838.00	39.01	90.31	8,786.41	-295.26	-201.79	-192.89	8.79	8.68	-2.26
8,869.00	42.18	89.06	8,809.95	-295.15	-181.62	-172.73	10.56	10.23	-4.03
8,901.00	45.04	87.74	8,833.12	-294.52	-159.56	-150.70	9.38	8.94	-4.13
8,932.00	48.15	87.39	8,854.42	-293.57	-137.07	-128.24	10.07	10.03	-1.13
8,963.00	50.66	88.35	8,874.59	-292.69	-113.55	-104.76	8.43	8.10	3.10
8,995.00	52.97	89.87	8,894.37	-292.31	-88.40	-79.63	8.13	7.22	4.75
9,026.00	55.75	91.81	8,912.43	-292.69	-63.21	-54.45	10.31	8.97	6.26
9,057.00	59.04	93.13	8,929.13	-293.82	-37.13	-28.34	11.20	10.61	4.26
9,089.00	62.16	93.26	8,944.84	-295.37	-9.29	-0.47	9.76	9.75	0.41
9,120.00	64.22	91.58	8,958.82	-296.53	18.35	27.19	8.22	6.65	-5.42
9,152.00	66.72	90.07	8,972.11	-296.95	47.45	56.29	8.91	7.81	-4.72
9,183.00	69.70	88.60	8,983.61	-296.61	76.23	85.05	10.57	9.61	-4.74
9,288.00	81.69	85.49	9,009.52	-291.30	177.64	186.25	11.77	11.42	-2.96
9,319.00	83.32	86.46	9,013.56	-289.15	208.29	216.83	6.10	5.26	3.13
9,351.00	83.60	86.53	9,017.20	-287.20	240.03	248.49	0.90	0.88	0.22
9,382.00	85.77	88.12	9,020.08	-285.76	270.86	279.26	8.66	7.00	5.13
9,415.00	89.16	89.02	9,021.54	-284.94	303.81	312.18	10.63	10.27	2.73
9,445.00	87.96	88.52	9,022.29	-284.30	333.79	342.13	4.33	-4.00	-1.67
9,477.00	88.77	88.77	9,023.20	-283.54	365.77	374.07	2.65	2.53	0.78
9,508.00	88.12	88.72	9,024.04	-282.86	396.75	405.02	2.10	-2.10	-0.16
9,540.00	86.95	88.17	9,025.42	-282.00	428.71	436.93	4.04	-3.66	-1.72
9,571.00	86.80	88.19	9,027.11	-281.01	459.65	467.83	0.49	-0.48	0.06
9,603.00	86.83	88.25	9,028.89	-280.02	491.58	499.72	0.21	0.09	0.19
9,634.00	86.61	87.57	9,030.66	-278.89	522.51	530.60	2.30	-0.71	-2.19
9,666.00	87.06	86.66	9,032.43	-277.28	554.42	562.45	3.17	1.41	-2.84
9,698.00	87.06	86.43	9,034.07	-275.36	586.32	594.28	0.72	0.00	-0.72
9,729.00	87.14	86.26	9,035.64	-273.38	617.22	625.10	0.61	0.26	-0.55
9,761.00	88.49	86.43	9,036.86	-271.34	649.13	656.94	4.25	4.22	0.53
9,792.00	88.60	86.45	9,037.65	-269.42	680.06	687.80	0.36	0.35	0.06
9,824.00	88.21	86.16	9,038.54	-267.36	711.98	719.64	1.52	-1.22	-0.91
9,855.00	88.43	86.01	9,039.45	-265.24	742.89	750.48	0.86	0.71	-0.48
9,902.00	91.37	87.14	9,039.53	-262.44	789.80	797.28	6.70	6.26	2.40
9,949.00	91.79	87.12	9,038.23	-260.08	836.73	844.12	0.89	0.89	-0.04
9,997.00	88.80	87.29	9,037.98	-257.74	884.66	891.96	6.24	-6.23	0.35
10,044.00	88.26	87.28	9,039.19	-255.52	931.60	938.81	1.15	-1.15	-0.02
10,091.00	88.26	87.03	9,040.62	-253.19	978.52	985.64	0.53	0.00	-0.53
10,138.00	87.71	86.85	9,042.27	-250.68	1,025.42	1,032.44	1.23	-1.17	-0.38
10,185.00	89.20	87.10	9,043.54	-248.20	1,072.34	1,079.27	3.21	3.17	0.53
10,232.00	89.78	87.14	9,043.95	-245.84	1,119.27	1,126.11	1.24	1.23	0.09

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,279.00	87.65	89.42	9,045.01	-244.43	1,166.24	1,173.01	6.64	-4.53	4.85
10,326.00	87.79	89.41	9,046.88	-243.95	1,213.20	1,219.94	0.30	0.30	-0.02
10,373.00	90.56	90.20	9,047.56	-243.79	1,260.19	1,266.90	6.13	5.89	1.68
10,420.00	88.49	90.20	9,047.95	-243.95	1,307.18	1,313.88	4.40	-4.40	0.00
10,467.00	87.28	90.18	9,049.68	-244.11	1,354.15	1,360.83	2.57	-2.57	-0.04
10,514.00	89.47	91.17	9,051.01	-244.66	1,401.12	1,407.80	5.11	4.66	2.11
10,562.00	87.98	89.90	9,052.08	-245.11	1,449.11	1,455.78	4.08	-3.10	-2.65
10,609.00	86.22	88.49	9,054.46	-244.45	1,496.04	1,502.67	4.80	-3.74	-3.00
10,656.00	87.59	88.94	9,057.00	-243.40	1,542.96	1,549.53	3.07	2.91	0.96
10,703.00	89.81	89.65	9,058.06	-242.82	1,589.94	1,596.48	4.96	4.72	1.51
10,750.00	87.37	89.45	9,059.22	-242.45	1,636.92	1,643.43	5.21	-5.19	-0.43
10,797.00	85.20	89.42	9,062.26	-241.99	1,683.81	1,690.29	4.62	-4.62	-0.06
10,845.00	85.07	89.32	9,066.33	-241.46	1,731.64	1,738.07	0.34	-0.27	-0.21
10,892.00	85.29	88.93	9,070.28	-240.75	1,778.47	1,784.86	0.95	0.47	-0.83
10,939.00	85.12	88.86	9,074.21	-239.84	1,825.29	1,831.64	0.39	-0.36	-0.15
10,986.00	86.55	88.50	9,077.63	-238.76	1,872.16	1,878.45	3.14	3.04	-0.77
11,033.00	87.96	86.98	9,079.88	-236.91	1,919.06	1,925.28	4.41	3.00	-3.23
11,080.00	89.97	88.30	9,080.73	-234.98	1,966.01	1,972.15	5.12	4.28	2.81
11,128.00	89.36	87.00	9,081.01	-233.01	2,013.97	2,020.03	2.99	-1.27	-2.71
11,143.00	89.69	87.02	9,081.13	-232.23	2,028.95	2,034.98	2.20	2.20	0.13
11,175.00	90.11	86.50	9,081.19	-230.42	2,060.90	2,066.86	2.09	1.31	-1.63
11,206.00	90.70	86.65	9,080.97	-228.57	2,091.84	2,097.73	1.96	1.90	0.48
11,238.00	89.39	85.55	9,080.94	-226.39	2,123.77	2,129.58	5.35	-4.09	-3.44
11,269.00	87.84	87.06	9,081.69	-224.39	2,154.69	2,160.43	6.98	-5.00	4.87
11,301.00	88.51	89.32	9,082.71	-223.38	2,186.66	2,192.35	7.36	2.09	7.06
11,332.00	92.07	91.23	9,082.55	-223.53	2,217.65	2,223.33	13.03	11.48	6.16
11,363.00	92.27	91.34	9,081.38	-224.23	2,248.62	2,254.31	0.74	0.65	0.35
11,394.00	89.39	89.70	9,080.93	-224.51	2,279.61	2,285.30	10.69	-9.29	-5.29
11,426.00	88.07	88.83	9,081.64	-224.10	2,311.60	2,317.26	4.94	-4.13	-2.72
11,457.00	86.05	88.09	9,083.23	-223.27	2,342.54	2,348.16	6.94	-6.52	-2.39
11,488.00	85.09	87.75	9,085.62	-222.14	2,373.43	2,379.00	3.28	-3.10	-1.10
11,520.00	83.35	87.21	9,088.85	-220.74	2,405.24	2,410.75	5.69	-5.44	-1.69
11,551.00	83.29	86.96	9,092.45	-219.18	2,435.99	2,441.44	0.82	-0.19	-0.81
11,583.00	83.89	86.99	9,096.03	-217.50	2,467.74	2,473.13	1.88	1.88	0.09
11,614.00	84.67	86.32	9,099.12	-215.70	2,498.53	2,503.86	3.31	2.52	-2.16
11,646.00	85.35	85.50	9,101.90	-213.43	2,530.33	2,535.57	3.32	2.13	-2.56
11,693.00	85.07	85.64	9,105.82	-209.81	2,577.03	2,582.14	0.67	-0.60	0.30
11,741.00	86.81	86.39	9,109.22	-206.48	2,624.79	2,629.78	3.95	3.63	1.56
11,788.00	88.23	87.44	9,111.26	-203.96	2,671.67	2,676.57	3.76	3.02	2.23
11,835.00	88.23	87.12	9,112.71	-201.73	2,718.60	2,723.41	0.68	0.00	-0.68
11,882.00	87.73	86.94	9,114.36	-199.29	2,765.51	2,770.22	1.13	-1.06	-0.38
11,930.00	89.78	87.23	9,115.41	-196.85	2,813.43	2,818.05	4.31	4.27	0.60
11,977.00	89.78	86.97	9,115.59	-194.47	2,860.37	2,864.90	0.55	0.00	-0.55

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,024.00	90.00	87.17	9,115.68	-192.07	2,907.31	2,911.75	0.63	0.47	0.43
12,071.00	91.77	88.23	9,114.95	-190.19	2,954.26	2,958.62	4.39	3.77	2.26
12,118.00	92.69	88.59	9,113.12	-188.88	3,001.21	3,005.51	2.10	1.96	0.77
12,165.00	92.52	88.66	9,110.99	-187.76	3,048.15	3,052.39	0.39	-0.36	0.15
12,212.00	89.08	89.05	9,110.33	-186.82	3,095.13	3,099.32	7.37	-7.32	0.83
12,259.00	88.88	89.86	9,111.17	-186.37	3,142.12	3,146.28	1.77	-0.43	1.72
12,307.00	91.20	90.73	9,111.13	-186.62	3,190.11	3,194.26	5.16	4.83	1.81
12,354.00	89.94	87.97	9,110.67	-186.08	3,237.10	3,241.21	6.45	-2.68	-5.87
12,401.00	86.89	85.28	9,111.97	-183.32	3,283.99	3,288.00	8.65	-6.49	-5.72
12,448.00	89.19	87.81	9,113.57	-180.49	3,330.87	3,334.77	7.27	4.89	5.38
12,495.00	89.72	87.11	9,114.02	-178.41	3,377.82	3,381.64	1.87	1.13	-1.49
12,543.00	90.11	86.65	9,114.09	-175.80	3,425.75	3,429.47	1.26	0.81	-0.96
12,590.00	89.83	84.25	9,114.12	-172.07	3,472.60	3,476.19	5.14	-0.60	-5.11
12,637.00	88.85	84.36	9,114.66	-167.40	3,519.36	3,522.79	2.10	-2.09	0.23
12,684.00	91.34	84.68	9,114.58	-162.92	3,566.14	3,569.42	5.34	5.30	0.68
12,731.00	91.46	83.88	9,113.43	-158.23	3,612.90	3,616.01	1.72	0.26	-1.70
12,779.00	88.32	82.78	9,113.52	-152.66	3,660.56	3,663.49	6.93	-6.54	-2.29
12,826.00	88.93	82.87	9,114.65	-146.79	3,707.18	3,709.91	1.31	1.30	0.19
12,873.00	88.23	83.54	9,115.82	-141.23	3,753.84	3,756.38	2.06	-1.49	1.43
12,933.00	91.12	84.21	9,116.16	-134.83	3,813.49	3,815.81	4.94	4.82	1.12
12,980.00	94.15	82.66	9,114.00	-129.46	3,860.12	3,862.27	7.24	6.45	-3.30
13,028.00	94.12	82.06	9,110.54	-123.10	3,907.57	3,909.51	1.25	-0.06	-1.25
13,075.00	96.59	82.22	9,106.15	-116.70	3,953.93	3,955.65	5.27	5.26	0.34
13,122.00	96.37	82.09	9,100.85	-110.33	4,000.19	4,001.70	0.54	-0.47	-0.28
13,169.00	96.48	85.20	9,095.58	-105.16	4,046.60	4,047.94	6.58	0.23	6.62
13,216.00	95.97	86.73	9,090.49	-101.87	4,093.21	4,094.42	3.41	-1.09	3.26
13,263.00	91.74	88.35	9,087.33	-99.86	4,140.04	4,141.18	9.63	-9.00	3.45
13,311.00	89.36	89.30	9,086.87	-98.87	4,188.03	4,189.11	5.34	-4.96	1.98
13,358.00	88.93	90.73	9,087.57	-98.89	4,235.02	4,236.09	3.18	-0.91	3.04
13,405.00	88.77	90.42	9,088.51	-99.36	4,282.01	4,283.07	0.74	-0.34	-0.66
13,452.00	89.52	90.86	9,089.21	-99.88	4,329.00	4,330.05	1.85	1.60	0.94
13,500.00	90.28	91.39	9,089.30	-100.83	4,376.99	4,378.05	1.93	1.58	1.10
13,547.00	89.36	90.79	9,089.45	-101.72	4,423.98	4,425.05	2.34	-1.96	-1.28
13,594.00	88.74	90.69	9,090.22	-102.33	4,470.97	4,472.03	1.34	-1.32	-0.21
13,641.00	88.88	90.58	9,091.20	-102.85	4,517.96	4,519.01	0.38	0.30	-0.23
13,688.00	88.52	89.82	9,092.27	-103.01	4,564.94	4,565.99	1.79	-0.77	-1.62
13,735.00	88.41	89.88	9,093.53	-102.89	4,611.93	4,612.94	0.27	-0.23	0.13
13,782.00	88.07	89.76	9,094.97	-102.74	4,658.90	4,659.90	0.77	-0.72	-0.26
13,830.00	87.81	89.60	9,096.69	-102.47	4,706.87	4,707.83	0.64	-0.54	-0.33
13,859.00	87.23	89.22	9,097.95	-102.17	4,735.84	4,736.78	2.39	-2.00	-1.31
Final Phoenix MWD Survey									
13,922.00	87.23	89.22	9,100.99	-101.32	4,798.76	4,799.65	0.00	0.00	0.00
Projection to TD									

Phoenix Technology Services LP

Survey Report



Company: Black Mountain Operating, LLC
Project: Eddy County, NM (NAD27)
Site: Cypress
Well: 1H
Wellbore: OH/ Job #60975
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Site Cypress
TVD Reference: GL + KB @ 3174.00usft (Patterson 244)
MD Reference: GL + KB @ 3174.00usft (Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
433.00	432.83	6.56	-6.68	Tie In
506.00	505.72	9.24	-9.73	First Phoenix MWD Survey
13,859.00	9,097.95	-102.17	4,735.84	Final Phoenix MWD Survey
13,922.00	9,100.99	-101.32	4,798.76	Projection to TD