

30-025-44288



PHOENIX
TECHNOLOGY SERVICES

May 15, 2018

Oil Conservation Division
State of New Mexico
1625 N. French Drive
Hobbs, New Mexico 88240

Dear District 1 - Hobbs

Re: 3 Bear Field Services
Libby Berry Fee SWD #1
Lea County, NM
API #30-025-44288
Job No. 62593

HOBBS OCD
MAY 22 2018
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. 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	
Eric Hermida	1	580	14,551	3/28/18	4/26/18	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
MWD Operations Administrator- EOW

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job #: 62593
 Client: 3 BEARS FIELD SERVICES
 County & State: LEA COUNTY, NM
 Well: LIBBY BERRY FEE SWD #1
 API No: 30-025-44288
 Proposed Direction: 0,0

TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
500.00	499.98	.81	216.73	-3.75	-1.33	GYRO
Data Source Company:						3 BEARS FIELD SERVICES

SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
28-Mar-18	580 ft	1.60°	62.90°

Last Survey Date	Last Survey Depth	INC	AZM
26-Apr-18	14,551 ft	2.36°	46.10°

Survey Instrument Type
Phoenix MWD

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
26-Apr-18	14,615 ft	2.36°	46.10°

CORRECTION INFORMATION

Magnetic Declination Used	6.70 degrees
Grid Convergence Used	0.44 degrees
Total Correction	6.26 degrees

Corrected to True/Grid North
GRID NORTH

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

Eric Hermida
Signature

April 26, 2018
Date



3 Bear Field Services, LLC

Lea County, NM (NAD83)

Libby Berry Fee SWD

1

ST01 / 62593

Survey: Phoenix MWD Surveys

Standard Survey Report

15 May, 2018



Survey Report

Company:	3 Bear Field Services, LLC	Local Co-ordinate Reference:	Well 1
Project:	Lea County, NM (NAD83)	TVD Reference:	RKB @ 3728.00usft (Silver Oak 8)
Site:	Libby Berry Fee SWD	MD Reference:	RKB @ 3728.00usft (Silver Oak 8)
Well:	1	North Reference:	Grid
Wellbore:	ST01 / 62593	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 8)	Database:	USA Compass

Project	Lea County, NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Libby Berry Fee SWD		
Site Position:		Northing:	562,750.30 usft
From:	Map	Easting:	790,535.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 32' 40.04572 N
		Longitude:	103° 31' 28.68221 W
		Grid Convergence:	0.44 °

Well	1		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 32' 40.04572 N
		Longitude:	103° 31' 28.68221 W
		Ground Level:	3,707.00 usft

Wellbore	ST01 / 62593		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/31/2017	6.70	60.53	48,253.70000000

Design	Surveys (Silver Oak 8)		
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Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 500.00

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

Survey Program	Date 5/15/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.00	500.00	Phoenix Gyro Surveys (OH)	SPT_GTD
580.00	14,615.00	Phoenix MWD Surveys (ST01 / 62593)	MWD+HDGM
			Description
			Continuous north-seeking gyro
			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)
500.00	0.81	216.73	499.98	-3.75	-1.33	-3.75	0.00	0.00	0.00
Tie In									
580.00	1.60	62.90	579.97	-3.69	-0.68	-3.69	2.94	0.99	-192.29
First Phoenix MWD Survey									
675.00	2.00	66.00	674.92	-2.41	2.02	-2.41	0.43	0.42	3.26
770.00	1.10	66.00	769.89	-1.37	4.37	-1.37	0.95	-0.95	0.00
863.00	0.90	41.60	862.88	-0.46	5.67	-0.46	0.50	-0.22	-26.24
956.00	0.70	358.40	955.87	0.65	6.14	0.65	0.66	-0.22	-46.45
1,049.00	0.60	347.60	1,048.86	1.70	6.02	1.70	0.17	-0.11	-11.61

Survey Report

Company:	3 Bear Field Services, LLC	Local Co-ordinate Reference:	Well 1
Project:	Lea County, NM (NAD83)	TVD Reference:	RKB @ 3728.00usft (Silver Oak 8)
Site:	Libby Berry Fee SWD	MD Reference:	RKB @ 3728.00usft (Silver Oak 8)
Well:	1	North Reference:	Grid
Wellbore:	ST01 / 62593	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 8)	Database:	USA Compass

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)
1,143.00	0.70	334.40	1,142.86	2.70	5.66	2.70	0.19	0.11	-14.04
1,237.00	0.50	324.60	1,236.85	3.55	5.18	3.55	0.24	-0.21	-10.43
1,330.00	0.50	313.00	1,329.85	4.16	4.64	4.16	0.11	0.00	-12.47
1,424.00	0.40	301.40	1,423.84	4.61	4.06	4.61	0.14	-0.11	-12.34
1,518.00	0.40	292.10	1,517.84	4.90	3.48	4.90	0.07	0.00	-9.89
1,613.00	0.40	278.90	1,612.84	5.08	2.85	5.08	0.10	0.00	-13.89
1,745.00	0.34	12.58	1,744.84	5.53	2.48	5.53	0.41	-0.05	70.97
1,869.00	0.25	53.30	1,868.84	6.05	2.77	6.05	0.18	-0.07	32.84
2,057.00	0.09	357.77	2,056.83	6.44	3.10	6.44	0.11	-0.09	-29.54
2,244.00	0.21	136.35	2,243.83	6.34	3.33	6.34	0.15	0.06	74.11
2,431.00	0.20	44.19	2,430.83	6.33	3.79	6.33	0.16	-0.01	-49.28
2,621.00	0.20	122.85	2,620.83	6.39	4.30	6.39	0.13	0.00	41.40
2,811.00	0.34	63.05	2,810.83	6.46	5.08	6.46	0.16	0.07	-31.47
3,001.00	0.85	66.59	3,000.82	7.28	6.88	7.28	0.27	0.27	1.86
3,191.00	1.55	68.33	3,190.78	8.79	10.56	8.79	0.37	0.37	0.92
3,381.00	1.92	69.79	3,380.69	10.83	15.93	10.83	0.20	0.19	0.77
3,570.00	1.56	59.22	3,569.60	13.24	21.12	13.24	0.25	-0.19	-5.59
3,760.00	1.20	48.14	3,759.55	15.90	24.82	15.90	0.24	-0.19	-5.83
3,950.00	1.35	45.68	3,949.50	18.79	27.90	18.79	0.08	0.08	-1.29
4,139.00	1.18	34.75	4,138.45	21.94	30.60	21.94	0.16	-0.09	-5.78
4,328.00	0.92	40.05	4,327.42	24.70	32.69	24.70	0.15	-0.14	2.80
4,518.00	1.02	22.46	4,517.40	27.43	34.32	27.43	0.16	0.05	-9.26
4,708.00	0.98	35.60	4,707.37	30.32	35.91	30.32	0.12	-0.02	6.92
4,899.00	1.09	16.15	4,898.34	33.39	37.37	33.39	0.19	0.06	-10.18
5,089.00	0.96	13.25	5,088.31	36.67	38.23	36.67	0.07	-0.07	-1.53
5,279.00	1.02	22.45	5,278.28	39.79	39.24	39.79	0.09	0.03	4.84
5,466.00	0.82	10.32	5,465.25	42.64	40.12	42.64	0.15	-0.11	-6.49
5,656.00	0.84	359.37	5,655.23	45.37	40.35	45.37	0.08	0.01	-5.76
5,739.00	0.90	4.45	5,738.22	46.63	40.39	46.63	0.12	0.07	6.12
5,944.00	1.15	358.65	5,943.19	50.29	40.47	50.29	0.13	0.12	-2.83
6,133.00	1.46	319.34	6,132.15	54.01	38.85	54.01	0.49	0.16	-20.80
6,320.00	1.45	325.04	6,319.09	57.76	35.95	57.76	0.08	-0.01	3.05
6,508.00	2.10	295.08	6,507.00	61.17	31.46	61.17	0.59	0.35	-15.94
6,696.00	1.70	301.24	6,694.90	64.08	25.96	64.08	0.24	-0.21	3.28
6,913.00	1.13	287.05	6,911.83	66.37	21.16	66.37	0.31	-0.26	-6.54
7,070.00	2.04	265.79	7,068.77	66.62	16.89	66.62	0.68	0.58	-13.54
7,257.00	1.91	266.77	7,255.66	66.20	10.46	66.20	0.07	-0.07	0.52
7,382.00	2.92	265.59	7,380.54	65.84	5.21	65.84	0.81	0.81	-0.94
7,445.00	2.86	265.25	7,443.46	65.59	2.04	65.59	0.10	-0.10	-0.54
7,633.00	2.39	264.89	7,631.27	64.85	-6.54	64.85	0.25	-0.25	-0.19
7,819.00	2.20	267.68	7,817.12	64.36	-13.97	64.36	0.12	-0.10	1.50
8,007.00	3.38	267.32	8,004.89	63.95	-23.11	63.95	0.63	0.63	-0.19
8,196.00	2.98	268.68	8,193.60	63.58	-33.58	63.58	0.22	-0.21	0.72



Survey Report

Company: 3 Bear Field Services, LLC
Project: Lea County, NM (NAD83)
Site: Libby Berry Fee SWD
Well: 1
Wellbore: ST01 / 62593
Design: Surveys (Silver Oak 8)

Local Co-ordinate Reference: Well 1
TVD Reference: RKB @ 3728.00usft (Silver Oak 8)
MD Reference: RKB @ 3728.00usft (Silver Oak 8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
8,384.00	2.83	266.13	8,381.36	63.15	-43.10	63.15	0.11	-0.08	-1.36
8,573.00	2.61	276.74	8,570.15	63.34	-52.03	63.34	0.29	-0.12	5.61
8,760.00	2.43	287.97	8,756.97	65.07	-60.03	65.07	0.28	-0.10	6.01
8,947.00	1.74	272.58	8,943.84	66.42	-66.64	66.42	0.47	-0.37	-8.23
9,135.00	2.41	211.50	9,131.74	63.18	-71.55	63.18	1.16	0.36	-32.49
9,324.00	1.91	217.42	9,320.61	57.29	-75.54	57.29	0.29	-0.26	3.13
9,486.00	1.84	210.13	9,482.52	52.89	-78.49	52.89	0.15	-0.04	-4.50
9,512.00	2.16	213.64	9,508.50	52.12	-78.97	52.12	1.32	1.23	13.50
9,698.00	1.96	216.18	9,694.38	46.64	-82.79	46.64	0.12	-0.11	1.37
9,886.00	1.76	233.40	9,882.28	42.32	-87.00	42.32	0.31	-0.11	9.16
10,073.00	2.30	236.73	10,069.17	38.55	-92.45	38.55	0.30	0.29	1.78
10,261.00	1.88	243.30	10,257.04	35.10	-98.36	35.10	0.26	-0.22	3.49
10,447.00	2.22	255.32	10,442.92	32.81	-104.57	32.81	0.29	0.18	6.46
10,633.00	1.28	252.66	10,628.83	31.28	-110.04	31.28	0.51	-0.51	-1.43
10,821.00	1.76	232.72	10,816.77	28.91	-114.34	28.91	0.38	0.26	-10.61
11,007.00	1.21	251.63	11,002.71	26.56	-118.47	26.56	0.39	-0.30	10.17
11,194.00	0.86	254.80	11,189.68	25.57	-121.70	25.57	0.19	-0.19	1.70
11,382.00	0.36	228.47	11,377.67	24.81	-123.51	24.81	0.30	-0.27	-14.01
11,572.00	0.20	157.15	11,567.66	24.10	-123.82	24.10	0.18	-0.08	-37.54
11,762.00	0.22	162.37	11,757.66	23.45	-123.58	23.45	0.01	0.01	2.75
11,950.00	0.49	48.51	11,945.66	23.64	-122.87	23.64	0.33	0.14	-60.56
12,139.00	0.98	56.49	12,134.64	25.07	-120.92	25.07	0.26	0.26	4.22
12,327.00	1.47	56.69	12,322.60	27.28	-117.56	27.28	0.26	0.26	0.11
12,515.00	1.50	61.82	12,510.54	29.77	-113.38	29.77	0.07	0.02	2.73
12,702.00	1.79	69.87	12,697.46	31.93	-108.48	31.93	0.20	0.16	4.30
12,888.00	1.77	62.36	12,883.37	34.26	-103.21	34.26	0.13	-0.01	-4.04
13,077.00	1.14	63.21	13,072.31	36.46	-98.94	36.46	0.33	-0.33	0.45
13,267.00	1.60	73.02	13,262.25	38.09	-94.72	38.09	0.27	0.24	5.16
13,457.00	2.63	58.33	13,452.12	41.15	-88.47	41.15	0.61	0.54	-7.73
13,648.00	2.05	64.21	13,642.96	44.94	-81.67	44.94	0.33	-0.30	3.08
13,838.00	1.67	69.34	13,832.86	47.39	-76.02	47.39	0.22	-0.20	2.70
14,028.00	1.76	68.26	14,022.78	49.45	-70.72	49.45	0.05	0.05	-0.57
14,218.00	1.92	60.67	14,212.68	52.09	-65.23	52.09	0.15	0.08	-3.99
14,407.00	2.09	50.67	14,401.57	55.82	-59.80	55.82	0.21	0.09	-5.29
14,551.00	2.36	46.10	14,545.46	59.54	-55.64	59.54	0.22	0.19	-3.17
Final Phoenix MWD Survey									
14,615.00	2.36	46.10	14,609.40	61.37	-53.74	61.37	0.00	0.00	0.00
Projection to TD									



Survey Report

Company: 3 Bear Field Services, LLC
Project: Lea County, NM (NAD83)
Site: Libby Berry Fee SWD
Well: 1
Wellbore: ST01 / 62593
Design: Surveys (Silver Oak 8)

Local Co-ordinate Reference: Well 1
TVD Reference: RKB @ 3728.00usft (Silver Oak 8)
MD Reference: RKB @ 3728.00usft (Silver Oak 8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	499.98	-3.75	-1.33	Tie In
580.00	579.97	-3.69	-0.68	First Phoenix MWD Survey
14,551.00	14,545.46	59.54	-55.64	Final Phoenix MWD Survey
14,615.00	14,609.40	61.37	-53.74	Projection to TD