



PHOENIX
TECHNOLOGY SERVICES

June 9, 2017

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

HOBBS OCD

JUN 15 2017

RECEIVED

Dear District 1 - Hobbs

Re: BC Operating ✓
Battle 34 Federal #4H ✓
Lea County, NM
API #30-025-42636 ✓
Job No. 61199

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. 606018). 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	4H	1,699	15,879	05/10/17	06/3/17	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

PLANNED DDS

**Phoenix Technology Services
SURVEY DATA CERTIFICATION**



PHOENIX JOB NUMBER 61199

ENERGY COMPANY BC Operating, Inc

WELL NAME Battle 34 Federal #4H

COUNTY & STATE

Lea County, NM

API WELL NUMBER 30-025-42636

PROPOSED DIRECTION 179.92

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
1,610.00 ft	1,609.69 ft	2.19	224.98	-14.32 ft	-20.63 ft	Phoenix Gryo

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
10-May-17	1,699.00 ft	2.19	217.99

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
3-Jun-17	15,879.00 ft	89.86	182.99

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

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
3-Jun-17	15,953.00 ft	89.86	182.99

Michael D Johnson

PRINT YOUR NAME ABOVE

Michael D Johnson

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.44
DECLINATION OR GRID	GRID

Saturday, June 03, 2017

TODAY'S DATE

MWD SUPERVISOR 1

Michael Johnson

DIRECTIONAL DRILLER 1

Vinn Adams

MWD SUPERVISOR 2

Chris Kirkpatrick

DIRECTIONAL DRILLER 2

Ruben Cano

12329 Cutten Rd., Houston, Texas 777066 (713)337-0600 (Voice), (713)337-0599 (Fax)



BC Operating, Inc.

Lea County, NM (NAD27 NME)

Battle 34 Federal

4H

OH / Job #61199

Survey: Phoenix MWD Surveys

Standard Survey Report

04 June, 2017



PLANNED DDS

Company:	BC Operating, Inc.	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3699.50usft (Patterson 244)
Site:	Battle 34 Federal	MD Reference:	GL + KB @ 3699.50usft (Patterson 244)
Well:	4H	North Reference:	Grid
Wellbore:	OH / Job #61199	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 244)	Database:	Compass 5000 GCR

Project	Lea County, NM (NAD27 NME)		
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	Battle 34 Federal
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Site Position:		Northing:	525,599.65 usft	Latitude:	32° 26' 33.42596 N
From:	Map	Easting:	738,250.29 usft	Longitude:	103° 33' 39.77261 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	4H				
Well Position	+N/-S	0.00 usft	Northing:	525,719.42 usft	Latitude: 32° 26' 34.70534 N
	+E/-W	0.00 usft	Easting:	736,929.66 usft	Longitude: 103° 33' 55.17227 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level: 3,671.00 usft

Wellbore	OH / Job #61199
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/17/2017	6.85	60.37	48,305

Design	Surveys (Patterson 244)
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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	179.92

Survey Program		Date	6/4/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
83.21	1,610.00	Phoenix Gyro Surveys (OH / Job #61199)	SPT_GTD	Continuous north-seeking gyro	
1,610.00	15,953.00	Phoenix MWD Surveys (OH / Job #61199)	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)
	1,610.00	2.19	224.98	1,609.69	-14.32	-20.63	14.29	0.00	0.00	0.00
Tie In	1,699.00	2.19	217.99	1,698.62	-16.86	-22.88	16.83	0.30	0.00	-7.85
First Phoenix MWD Survey	1,793.00	0.56	210.63	1,792.59	-18.67	-24.22	18.64	1.74	-1.73	-7.83
	1,887.00	0.44	187.97	1,886.59	-19.42	-24.50	19.39	0.24	-0.13	-24.11
	1,981.00	0.97	309.29	1,980.58	-19.28	-25.17	19.24	1.34	0.56	129.06
	2,076.00	0.82	303.53	2,075.57	-18.39	-26.36	18.36	0.18	-0.16	-6.06
	2,170.00	1.45	355.78	2,169.56	-16.83	-27.01	16.80	1.22	0.67	55.59

Company: BC Operating, Inc.
Project: Lea County, NM (NAD27 NME)
Site: Battle 34 Federal
Well: 4H
Wellbore: OH / Job #61199
Design: Surveys (Patterson 244)

Local Co-ordinate Reference: Well 4H
TVD Reference: GL + KB @ 3699.50usft (Patterson 244)
MD Reference: GL + KB @ 3699.50usft (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)
2,264.00	1.39	350.49	2,263.53	-14.52	-27.28	14.49	0.15	-0.06	-5.63
2,359.00	1.36	358.40	2,358.50	-12.26	-27.50	12.22	0.20	-0.03	8.33
2,453.00	1.25	0.42	2,452.48	-10.12	-27.53	10.08	0.13	-0.12	2.15
2,547.00	1.21	2.64	2,546.45	-8.10	-27.48	8.07	0.07	-0.04	2.36
2,641.00	1.41	0.56	2,640.43	-5.96	-27.42	5.92	0.22	0.21	-2.21
2,736.00	1.35	14.39	2,735.40	-3.70	-27.13	3.67	0.36	-0.06	14.56
2,830.00	1.59	28.24	2,829.37	-1.48	-26.24	1.44	0.45	0.26	14.73
2,924.00	1.65	31.26	2,923.33	0.82	-24.92	-0.86	0.11	0.06	3.21
3,018.00	1.55	38.36	3,017.30	2.98	-23.43	-3.01	0.24	-0.11	7.55
3,112.00	1.31	41.11	3,111.27	4.78	-21.93	-4.82	0.27	-0.26	2.93
3,207.00	1.50	47.35	3,206.24	6.45	-20.30	-6.47	0.26	0.20	6.57
3,300.00	1.58	48.57	3,299.21	8.12	-18.45	-8.14	0.09	0.09	1.31
3,394.00	0.61	29.19	3,393.19	9.41	-17.23	-9.44	1.09	-1.03	-20.62
3,488.00	0.85	6.87	3,487.18	10.54	-16.90	-10.57	0.39	0.26	-23.74
3,580.00	0.75	5.52	3,579.17	11.82	-16.76	-11.84	0.11	-0.11	-1.47
3,675.00	0.81	354.84	3,674.16	13.11	-16.76	-13.13	0.17	0.06	-11.24
3,769.00	0.83	1.76	3,768.15	14.45	-16.80	-14.47	0.11	0.02	7.36
3,864.00	0.92	353.54	3,863.14	15.89	-16.87	-15.92	0.16	0.09	-8.65
3,958.00	0.80	341.40	3,957.13	17.27	-17.16	-17.29	0.23	-0.13	-12.91
4,053.00	0.54	312.94	4,052.13	18.20	-17.70	-18.22	0.44	-0.27	-29.96
4,147.00	0.71	321.67	4,146.12	18.96	-18.39	-18.98	0.21	0.18	9.29
4,241.00	0.90	306.20	4,240.11	19.85	-19.34	-19.88	0.31	0.20	-16.46
4,335.00	1.00	308.01	4,334.10	20.79	-20.58	-20.82	0.11	0.11	1.93
4,430.00	0.96	299.27	4,429.08	21.69	-21.93	-21.72	0.16	-0.04	-9.20
4,524.00	1.30	288.95	4,523.07	22.42	-23.63	-22.46	0.42	0.36	-10.98
4,618.00	1.21	287.15	4,617.04	23.06	-25.58	-23.10	0.10	-0.10	-1.91
4,712.00	1.21	282.01	4,711.02	23.56	-27.50	-23.60	0.12	0.00	-5.47
4,807.00	1.57	334.04	4,806.00	24.94	-29.05	-24.98	1.33	0.38	54.77
4,900.00	1.74	334.63	4,898.96	27.36	-30.22	-27.40	0.18	0.18	0.63
4,994.00	0.68	312.81	4,992.94	29.03	-31.24	-29.07	1.21	-1.13	-23.21
5,089.00	0.63	305.68	5,087.93	29.72	-32.08	-29.76	0.10	-0.05	-7.51
5,182.00	0.56	294.06	5,180.93	30.20	-32.91	-30.25	0.15	-0.08	-12.49
5,277.00	0.51	294.53	5,275.92	30.57	-33.71	-30.61	0.05	-0.05	0.49
5,304.00	0.51	301.58	5,302.92	30.68	-33.93	-30.73	0.23	0.00	26.11
5,369.00	0.57	303.34	5,367.92	31.01	-34.44	-31.06	0.10	0.09	2.71
5,464.00	0.53	309.50	5,462.91	31.55	-35.18	-31.60	0.08	-0.04	6.48
5,558.00	0.54	288.49	5,556.91	31.96	-35.93	-32.01	0.21	0.01	-22.35
5,652.00	0.67	297.62	5,650.90	32.36	-36.84	-32.41	0.17	0.14	9.71
5,747.00	0.54	285.11	5,745.90	32.73	-37.76	-32.79	0.19	-0.14	-13.17
5,842.00	0.57	287.82	5,840.89	32.99	-38.65	-33.05	0.04	0.03	2.85
5,936.00	0.61	302.64	5,934.89	33.41	-39.51	-33.46	0.17	0.04	15.77
6,031.00	0.61	283.67	6,029.88	33.80	-40.43	-33.86	0.21	0.00	-19.97
6,125.00	0.51	278.74	6,123.88	33.98	-41.33	-34.04	0.12	-0.11	-5.24

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Site:	Battle 34 Federal	MD Reference:	GL + KB @ 3699.50usft (Patterson 244)
Well:	4H	North Reference:	Grid
Wellbore:	OH / Job #61199	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 244)	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)
6,220.00	0.60	290.19	6,218.87	34.22	-42.21	-34.28	0.15	0.09	12.05
6,314.00	0.67	282.10	6,312.87	34.50	-43.21	-34.56	0.12	0.07	-8.61
6,409.00	0.65	294.64	6,407.86	34.84	-44.25	-34.91	0.15	-0.02	13.20
6,504.00	0.48	294.97	6,502.86	35.24	-45.10	-35.30	0.18	-0.18	0.35
6,597.00	0.57	299.32	6,595.85	35.63	-45.85	-35.69	0.11	0.10	4.68
6,691.00	0.49	279.56	6,689.85	35.92	-46.66	-35.99	0.21	-0.09	-21.02
6,785.00	0.56	280.77	6,783.85	36.08	-47.50	-36.14	0.08	0.07	1.29
6,880.00	0.65	284.53	6,878.84	36.30	-48.48	-36.37	0.10	0.09	3.96
6,975.00	0.57	279.56	6,973.84	36.51	-49.47	-36.58	0.10	-0.08	-5.23
7,069.00	0.51	262.78	7,067.83	36.54	-50.35	-36.61	0.18	-0.06	-17.85
7,164.00	0.54	241.85	7,162.83	36.27	-51.16	-36.34	0.20	0.03	-22.03
7,258.00	1.39	15.68	7,256.82	37.16	-51.24	-37.23	1.92	0.90	142.37
7,352.00	1.10	22.51	7,350.80	39.09	-50.59	-39.16	0.35	-0.31	7.27
7,447.00	0.89	17.27	7,445.78	40.64	-50.02	-40.71	0.24	-0.22	-5.52
7,541.00	0.62	18.74	7,539.77	41.82	-49.64	-41.89	0.29	-0.29	1.56
7,635.00	0.50	40.11	7,633.77	42.61	-49.21	-42.68	0.25	-0.13	22.73
7,729.00	0.36	59.21	7,727.77	43.08	-48.69	-43.15	0.21	-0.15	20.32
7,823.00	0.31	69.59	7,821.77	43.32	-48.20	-43.38	0.08	-0.05	11.04
7,918.00	0.48	98.89	7,916.76	43.35	-47.57	-43.41	0.27	0.18	30.84
8,012.00	0.54	88.57	8,010.76	43.30	-46.74	-43.36	0.12	0.06	-10.98
8,107.00	0.46	82.33	8,105.76	43.36	-45.91	-43.42	0.10	-0.08	-6.57
8,201.00	0.34	88.91	8,199.75	43.41	-45.26	-43.48	0.14	-0.13	7.00
8,296.00	0.35	99.62	8,294.75	43.37	-44.69	-43.43	0.07	0.01	11.27
8,390.00	0.21	142.40	8,388.75	43.19	-44.30	-43.25	0.26	-0.15	45.51
8,485.00	0.28	115.45	8,483.75	42.95	-43.99	-43.01	0.14	0.07	-28.37
8,578.00	0.34	140.32	8,576.75	42.64	-43.61	-42.70	0.16	0.06	26.74
8,672.00	1.06	335.14	8,670.74	43.21	-43.79	-43.27	1.48	0.77	-175.72
8,767.00	0.84	345.77	8,765.73	44.69	-44.33	-44.75	0.30	-0.23	11.19
8,861.00	0.78	319.41	8,859.72	45.84	-44.92	-45.90	0.40	-0.06	-28.04
8,955.00	1.14	302.51	8,953.71	46.83	-46.12	-46.89	0.48	0.38	-17.98
9,049.00	1.49	315.05	9,047.68	48.19	-47.78	-48.26	0.48	0.37	13.34
9,144.00	1.82	339.03	9,142.65	50.48	-49.19	-50.55	0.80	0.35	25.24
9,238.00	1.34	329.02	9,236.61	52.81	-50.29	-52.88	0.59	-0.51	-10.65
9,332.00	1.03	291.75	9,330.59	54.07	-51.64	-54.14	0.86	-0.33	-39.65
9,426.00	0.61	263.91	9,424.58	54.33	-52.92	-54.40	0.60	-0.45	-29.62
9,521.00	0.72	125.64	9,519.58	53.93	-52.94	-54.00	1.31	0.12	-145.55
9,615.00	1.00	123.07	9,613.57	53.14	-51.77	-53.21	0.30	0.30	-2.73
9,709.00	1.36	148.82	9,707.55	51.73	-50.51	-51.80	0.67	0.38	27.39
9,803.00	0.95	156.30	9,801.53	50.07	-49.62	-50.14	0.46	-0.44	7.96
9,897.00	0.71	157.44	9,895.52	48.81	-49.08	-48.88	0.26	-0.26	1.21
9,992.00	1.31	137.34	9,990.51	47.47	-48.12	-47.54	0.72	0.63	-21.16
10,099.00	1.31	136.96	10,097.48	45.68	-46.45	-45.74	0.01	0.00	-0.36
10,193.00	1.25	138.97	10,191.45	44.12	-45.05	-44.18	0.08	-0.06	2.14
10,287.00	1.30	136.49	10,285.43	42.57	-43.64	-42.63	0.08	0.05	-2.64

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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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)
10,382.00	1.27	157.02	10,380.41	40.82	-42.49	-40.88	0.48	-0.03	21.61
10,429.00	6.03	163.49	10,427.30	37.97	-41.58	-38.03	10.15	10.13	13.77
10,476.00	12.81	169.62	10,473.64	30.47	-39.94	-30.53	14.56	14.43	13.04
10,524.00	16.37	174.06	10,520.08	18.51	-38.28	-18.56	7.77	7.42	9.25
10,571.00	21.37	175.92	10,564.55	3.37	-36.98	-3.42	10.71	10.64	3.96
10,619.00	26.49	176.39	10,608.40	-16.05	-35.69	16.00	10.67	10.67	0.98
10,665.00	29.80	178.81	10,648.96	-37.72	-34.80	37.68	7.61	7.20	5.26
10,712.00	33.86	181.75	10,688.89	-62.50	-34.96	62.45	9.24	8.64	6.26
10,760.00	38.55	181.12	10,727.61	-90.84	-35.66	90.79	9.80	9.77	-1.31
10,807.00	43.09	180.84	10,763.17	-121.55	-36.18	121.50	9.67	9.66	-0.60
10,853.00	48.30	177.94	10,795.29	-154.44	-35.80	154.39	12.19	11.33	-6.30
10,900.00	53.65	177.83	10,824.87	-190.92	-34.45	190.87	11.38	11.38	-0.23
10,947.00	58.90	179.34	10,850.96	-229.98	-33.50	229.94	11.48	11.17	3.21
10,994.00	64.56	179.75	10,873.21	-271.36	-33.18	271.31	12.07	12.04	0.87
11,041.00	68.72	179.67	10,891.84	-314.50	-32.96	314.45	8.85	8.85	-0.17
11,089.00	71.56	179.97	10,908.15	-359.64	-32.82	359.59	5.95	5.92	0.63
11,136.00	75.55	179.84	10,921.45	-404.70	-32.74	404.66	8.49	8.49	-0.28
11,183.00	78.52	179.85	10,931.99	-450.50	-32.62	450.46	6.32	6.32	0.02
11,230.00	81.09	179.50	10,940.31	-496.75	-32.35	496.71	5.52	5.47	-0.74
11,324.00	87.31	180.32	10,949.81	-590.23	-32.21	590.18	6.67	6.62	0.87
11,417.00	90.16	181.14	10,951.86	-683.19	-33.40	683.14	3.19	3.06	0.88
11,512.00	90.31	179.94	10,951.47	-778.18	-34.29	778.13	1.27	0.16	-1.26
11,606.00	90.18	179.97	10,951.07	-872.18	-34.22	872.13	0.14	-0.14	0.03
11,700.00	89.40	180.70	10,951.41	-966.17	-34.77	966.13	1.14	-0.83	0.78
11,794.00	90.22	180.64	10,951.72	-1,060.17	-35.87	1,060.12	0.87	0.87	-0.06
11,888.00	89.75	179.86	10,951.75	-1,154.16	-36.28	1,154.11	0.97	-0.50	-0.83
11,983.00	91.30	179.94	10,950.88	-1,249.16	-36.11	1,249.11	1.63	1.63	0.08
12,077.00	88.74	180.13	10,950.85	-1,343.15	-36.17	1,343.10	2.73	-2.72	0.20
12,172.00	90.11	179.75	10,951.80	-1,438.14	-36.07	1,438.09	1.50	1.44	-0.40
12,266.00	88.92	179.38	10,952.59	-1,532.13	-35.35	1,532.08	1.33	-1.27	-0.39
12,361.00	89.10	179.10	10,954.24	-1,627.11	-34.09	1,627.06	0.35	0.19	-0.29
12,456.00	89.73	178.87	10,955.21	-1,722.09	-32.41	1,722.04	0.71	0.66	-0.24
12,551.00	89.31	179.65	10,956.00	-1,817.08	-31.18	1,817.03	0.93	-0.44	0.82
12,645.00	90.94	179.56	10,955.80	-1,911.07	-30.54	1,911.03	1.74	1.73	-0.10
12,739.00	90.72	179.51	10,954.44	-2,005.06	-29.77	2,005.02	0.24	-0.23	-0.05
12,834.00	89.39	179.15	10,954.34	-2,100.05	-28.66	2,100.01	1.45	-1.40	-0.38
12,929.00	90.34	178.47	10,954.57	-2,195.03	-26.69	2,194.99	1.23	1.00	-0.72
13,023.00	88.74	178.26	10,955.32	-2,288.99	-24.01	2,288.95	1.72	-1.70	-0.22
13,118.00	90.02	177.63	10,956.35	-2,383.92	-20.60	2,383.89	1.50	1.35	-0.66
13,212.00	89.64	179.01	10,956.63	-2,477.87	-17.85	2,477.85	1.52	-0.40	1.47
13,306.00	90.38	178.76	10,956.61	-2,571.85	-16.02	2,571.83	0.83	0.79	-0.27
13,401.00	86.69	179.13	10,959.04	-2,666.79	-14.27	2,666.77	3.90	-3.88	0.39
13,495.00	86.98	179.02	10,964.23	-2,760.63	-12.75	2,760.61	0.33	0.31	-0.12

Company:	BC Operating, Inc.	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	GL + KB @ 3699.50usft (Patterson 244)
Site:	Battle 34 Federal	MD Reference:	GL + KB @ 3699.50usft (Patterson 244)
Well:	4H	North Reference:	Grid
Wellbore:	OH / Job #61199	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 244)	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)
13,589.00	90.17	178.45	10,966.57	-2,854.57	-10.68	2,854.55	3.45	3.39	-0.61
13,683.00	89.08	178.88	10,967.18	-2,948.54	-8.49	2,948.53	1.25	-1.16	0.46
13,778.00	89.12	178.88	10,968.68	-3,043.51	-6.63	3,043.50	0.04	0.04	0.00
13,872.00	90.71	178.76	10,968.82	-3,137.49	-4.70	3,137.48	1.70	1.69	-0.13
13,992.00	89.11	179.57	10,969.00	-3,257.47	-2.95	3,257.46	1.49	-1.33	0.68
14,087.00	88.26	179.33	10,971.18	-3,352.44	-2.04	3,352.43	0.93	-0.89	-0.25
14,139.00	88.25	179.35	10,972.77	-3,404.41	-1.44	3,404.41	0.04	-0.02	0.04
14,275.00	88.26	178.66	10,976.91	-3,540.33	0.92	3,540.33	0.51	0.01	-0.51
14,369.00	91.89	179.11	10,976.79	-3,634.29	2.75	3,634.29	3.89	3.86	0.48
14,463.00	93.34	179.65	10,972.50	-3,728.19	3.77	3,728.19	1.65	1.54	0.57
14,558.00	91.41	180.44	10,968.56	-3,823.10	3.69	3,823.10	2.19	-2.03	0.83
14,652.00	87.98	179.66	10,969.06	-3,917.08	3.61	3,917.09	3.74	-3.65	-0.83
14,747.00	87.57	179.18	10,972.75	-4,012.01	4.57	4,012.01	0.66	-0.43	-0.51
14,841.00	88.28	178.02	10,976.15	-4,105.92	6.87	4,105.92	1.45	0.76	-1.23
14,936.00	88.69	177.60	10,978.66	-4,200.81	10.50	4,200.82	0.62	0.43	-0.44
15,030.00	90.99	178.53	10,978.93	-4,294.75	13.67	4,294.77	2.64	2.45	0.99
15,124.00	91.84	178.68	10,976.61	-4,388.69	15.96	4,388.71	0.92	0.90	0.16
15,218.00	90.91	178.58	10,974.35	-4,482.64	18.20	4,482.66	1.00	-0.99	-0.11
15,313.00	88.47	177.65	10,974.86	-4,577.58	21.33	4,577.60	2.75	-2.57	-0.98
15,406.00	89.48	178.50	10,976.53	-4,670.51	24.45	4,670.54	1.42	1.09	0.91
15,501.00	90.28	179.29	10,976.73	-4,765.49	26.28	4,765.52	1.18	0.84	0.83
15,595.00	90.68	175.63	10,975.94	-4,859.38	30.45	4,859.42	3.92	0.43	-3.89
15,689.00	90.95	176.06	10,974.60	-4,953.12	37.26	4,953.17	0.54	0.29	0.46
15,784.00	89.99	179.66	10,973.82	-5,048.03	40.81	5,048.09	3.92	-1.01	3.79
15,879.00	89.86	182.99	10,973.95	-5,143.00	38.61	5,143.04	3.51	-0.14	3.51
Final Phoenix MWD Survey									
15,953.00	89.86	182.99	10,974.13	-5,216.90	34.75	5,216.94	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,610.00	1,609.69	-14.32	-20.63	Tie In
1,699.00	1,698.62	-16.86	-22.88	First Phoenix MWD Survey
15,879.00	10,973.95	-5,143.00	38.61	Final Phoenix MWD Survey
15,953.00	10,974.13	-5,216.90	34.75	Projection to TD