

OCT 14 2015

Phoenix Technology Services  
SURVEY DATA CERTIFICATION

RECEIVED



PHOENIX JOB NUMBER 1512932

OPERATOR CHEVRON

WELL NAME Antelope Ridge 11-24-34 Federal #3H

COUNTY & STATE

Lea County, NM

API WELL NUMBER 30-025-42318

PROPOSED DIRECTION 359.69

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
1,222 ft	1,221.10 ft	1.0 ft	58.8 ft	5.64 N	42.07 E	Teledrift

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
15-Feb-15	1283	1.02	83.87

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
7-Mar-15	14480	93.33	0.32

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
7-Mar-15	14540	93.33	0.32

Edward LaGarce

PRINT YOUR NAME ABOVE

Edward LaGarce

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.77
DECLINATION OR GRID	GRID

3/7/2015

TODAY'S DATE

MWD SUPERVISOR 1

Edward LaGarce

DIRECTIONAL DRILLER 1

Craig Cannon

MWD SUPERVISOR 2

Michael Chrismer

DIRECTIONAL DRILLER 2

Justin Jackson

1805 Brittmore Road

Houston, Texas 77043

(713)3370609 (Voice), (713)337-0599 (Fax)

DEC 14 2015



HOBBS OCD

OCT 14 2015

RECEIVED

## **Chevron**

**Lea County, NM (NAD27 NME)  
Antelope Ridge 11-24-34 Federal  
#3H**

**WB1 Job #1512932**

**Survey: Phoenix MWD Surveys**

# **Standard Survey Report**

**09 March, 2015**





Survey Report



<b>Company:</b>	Chevron	<b>Local Co-ordinate Reference:</b>	Well #3H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Site:</b>	Antelope Ridge 11-24-34 Federal	<b>MD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Well:</b>	#3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	WB1 Job #1512932	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Ensign 153)	<b>Database:</b>	Compass 5000 GCR

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

<b>Site</b>	Antelope Ridge 11-24-34 Federal				
<b>Site Position:</b>		<b>Northing:</b>	446,908.00 usft	<b>Latitude:</b>	32° 13' 31.97943 N
<b>From:</b>	Map	<b>Easting:</b>	774,505.00 usft	<b>Longitude:</b>	103° 26' 44.35348 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.47 °

<b>Well</b>	#3H					
<b>Well Position</b>	+N-S	0.00 usft	<b>Northing:</b>	446,908.00 usft	<b>Latitude:</b>	32° 13' 31.97943 N
	+E-W	0.00 usft	<b>Easting:</b>	774,505.00 usft	<b>Longitude:</b>	103° 26' 44.35348 W
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,507.00 usft

<b>Wellbore</b>	WB1 Job #1512932				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2014	2/13/2015	7.25	60.11	48,218

<b>Design</b>	Surveys (Ensign 153)				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>		<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (°)</b>
		0.00	0.00	0.00	359.54

<b>Survey Program</b>	<b>Date</b>	3/9/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
481.00	1,222.00	Teledrift Surveys (WB1 Job #1512932)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,283.00	14,540.00	Phoenix MWD Surveys (WB1 Job #15129)	PHX+MWD+BGGM	PHX+MWD+BGGM v3:standard declination	

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)	
1,222.00	1.00	58.80	1,221.10	5.64	42.07	5.30	0.00	0.00	0.00	
<b>Tie-in to Teledrift Surveys</b>										
1,283.00	1.02	83.87	1,282.09	5.97	43.06	5.63	0.72	0.03	41.10	
<b>First Phoenix MWD Survey</b>										
1,462.00	1.06	90.50	1,461.06	6.13	46.30	5.76	0.07	0.02	3.70	
1,641.00	1.17	94.56	1,640.02	5.97	49.78	5.57	0.06	0.06	2.27	
1,820.00	0.37	139.80	1,819.01	5.38	51.98	4.97	0.53	-0.45	25.27	
1,999.00	0.14	159.94	1,998.01	4.74	52.42	4.32	0.14	-0.13	11.25	
2,178.00	0.09	324.33	2,177.01	4.64	52.42	4.22	0.13	-0.03	91.84	



Survey Report



<b>Company:</b>	Chevron	<b>Local Co-ordinate Reference:</b>	Well #3H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Site:</b>	Antelope Ridge 11-24-34 Federal	<b>MD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Well:</b>	#3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	WB1 Job #1512932	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Ensign 153)	<b>Database:</b>	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)	
2,357.00	0.28	318.87	2,356.00	5.09	52.05	4.67	0.11	0.11	-3.16	
2,536.00	0.47	344.97	2,535.00	6.12	51.57	5.71	0.14	0.11	14.89	
2,715.00	0.62	344.89	2,713.99	7.77	51.12	7.36	0.08	0.08	-0.04	
2,894.00	0.88	356.70	2,892.98	10.08	50.79	9.67	0.17	0.15	6.60	
3,073.00	1.18	2.88	3,071.95	13.29	50.80	12.88	0.18	0.17	3.34	
3,252.00	1.68	332.45	3,250.89	17.46	49.67	17.06	0.50	0.28	-16.89	
3,431.00	1.20	303.54	3,429.84	20.82	46.90	20.44	0.48	-0.27	-16.15	
3,610.00	1.28	281.09	3,608.80	22.24	43.37	21.89	0.27	0.04	-12.54	
3,789.00	1.72	276.61	3,787.74	22.93	38.74	22.62	0.25	0.25	-2.50	
3,968.00	2.04	278.79	3,966.64	23.73	32.93	23.46	0.18	0.18	1.22	
4,147.00	2.33	279.07	4,145.51	24.79	26.18	24.58	0.16	0.16	0.16	
4,326.00	1.81	286.74	4,324.40	25.22	20.08	25.06	0.46	-0.40	-8.89	
4,504.00	0.89	212.35	4,502.37	24.17	17.01	24.04	0.75	-0.52	-30.56	
4,683.00	0.62	143.87	4,681.36	22.46	17.00	22.34	0.41	-0.04	-38.26	
4,862.00	0.91	117.36	4,860.35	21.04	18.84	20.89	0.25	0.16	-14.81	
5,041.00	1.70	102.58	5,039.30	19.81	22.69	19.63	0.48	0.44	-8.26	
5,151.00	1.67	109.80	5,149.25	18.91	25.79	18.71	0.19	-0.03	6.56	
5,309.00	1.77	122.28	5,307.18	16.83	30.02	16.59	0.24	0.06	7.90	
5,498.00	1.26	181.75	5,496.12	13.30	33.14	13.03	0.60	-0.27	20.88	
5,688.00	0.47	183.45	5,686.10	10.54	33.75	10.27	0.44	-0.42	11.42	
5,866.00	0.62	181.58	5,864.09	8.85	33.68	8.58	0.08	0.08	-1.05	
6,046.00	0.59	202.39	6,044.08	7.02	33.30	6.75	0.12	-0.02	11.56	
6,225.00	0.23	179.25	6,223.07	5.80	32.95	5.54	0.22	-0.20	-12.93	
6,404.00	0.41	287.98	6,402.07	5.64	32.35	5.38	0.30	0.10	80.74	
6,582.00	0.84	308.72	6,580.06	6.66	30.72	6.41	0.27	0.24	11.65	
6,761.00	0.73	306.03	6,759.04	8.15	28.78	7.92	0.06	-0.06	-1.50	
6,940.00	1.14	298.18	6,938.02	9.66	26.28	9.45	0.24	0.23	-4.39	
7,119.00	1.01	324.56	7,116.99	11.78	23.80	11.59	0.28	-0.07	14.74	
7,298.00	0.49	255.74	7,295.98	12.88	22.14	12.70	0.53	-0.29	-38.45	
7,477.00	0.62	262.17	7,474.97	12.56	20.44	12.40	0.08	0.07	3.59	
7,656.00	0.30	232.55	7,653.96	12.14	19.11	11.99	0.22	-0.18	-16.55	
7,835.00	0.58	217.82	7,832.96	11.14	18.18	11.00	0.17	0.16	-8.23	
8,014.00	0.57	155.09	8,011.95	9.62	18.00	9.48	0.33	-0.01	-35.04	
8,193.00	0.29	184.66	8,190.94	8.36	18.34	8.21	0.19	-0.16	16.52	
8,372.00	0.36	236.89	8,369.94	7.60	17.83	7.46	0.16	0.04	29.18	
8,551.00	0.51	321.30	8,548.94	7.92	18.86	7.78	0.33	0.08	47.16	
8,730.00	0.46	342.95	8,727.93	9.23	18.16	9.10	0.11	-0.03	12.09	
8,909.00	0.53	288.35	8,906.93	8.89	15.12	9.77	0.34	0.04	-41.68	
9,088.00	0.66	239.45	9,085.92	9.34	13.40	9.23	0.18	0.07	-16.15	
9,267.00	0.22	286.01	9,264.91	8.79	12.17	8.70	0.26	-0.25	14.84	
9,446.00	0.44	334.29	9,443.91	9.39	11.53	9.30	0.23	0.12	38.15	
9,624.00	1.55	280.59	9,621.88	10.45	8.87	10.38	0.75	0.62	-30.17	
9,803.00	1.59	258.47	9,800.82	10.40	4.05	10.36	0.34	0.02	-12.36	



Survey Report



<b>Company:</b>	Chevron	<b>Local Co-ordinate Reference:</b>	Well #3H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Site:</b>	Antelope Ridge 11-24-34 Federal	<b>MD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Well:</b>	#3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	WB1 Job #1512932	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Ensign 153)	<b>Database:</b>	Compass 5000 GCR

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)
9,983.00	1.76	267.84	9,980.74	9.79	-1.16	9.80	0.18	0.09	5.21
10,163.00	1.18	323.75	10,160.69	11.18	-5.01	11.22	0.82	-0.32	31.06
10,342.00	1.23	328.51	10,339.65	14.31	-7.11	14.36	0.06	0.03	2.66
10,511.00	0.83	324.90	10,508.62	16.81	-8.59	16.88	0.36	-0.36	-2.14
10,614.00	6.75	345.91	10,611.36	22.95	-10.39	23.04	5.99	5.94	20.40
10,659.00	13.75	351.51	10,655.62	30.82	-11.82	30.91	15.69	15.56	12.44
10,704.00	19.48	353.86	10,698.72	43.58	-13.42	43.69	12.82	12.73	5.22
10,748.00	25.09	355.69	10,739.42	60.19	-14.91	60.31	12.65	12.75	4.16
10,793.00	29.37	358.68	10,779.43	80.75	-15.88	80.87	9.98	9.51	6.64
10,838.00	31.24	359.32	10,818.28	103.45	-16.27	103.58	4.22	4.16	1.42
10,882.00	31.60	357.41	10,855.82	126.37	-16.93	126.51	2.41	0.82	-4.34
10,927.00	37.49	355.20	10,892.88	151.82	-18.61	151.97	13.38	13.09	-4.91
10,972.00	44.14	354.55	10,926.91	181.10	-21.24	181.26	14.81	14.78	-1.44
11,017.00	44.23	357.00	10,959.19	212.37	-23.55	212.55	3.80	0.20	5.44
11,061.00	45.89	359.09	10,990.27	243.50	-24.61	243.69	5.05	3.77	4.75
11,106.00	47.87	3.15	11,021.03	276.32	-23.95	276.50	7.92	4.40	9.02
11,151.00	52.88	3.09	11,049.72	310.92	-22.06	311.09	11.13	11.13	-0.13
11,195.00	60.89	1.15	11,073.74	347.72	-20.73	347.87	18.57	18.20	-4.41
11,240.00	67.34	358.82	11,083.38	388.18	-20.76	388.33	15.07	14.33	-5.18
11,285.00	77.13	357.25	11,107.09	430.95	-22.24	431.11	22.01	21.76	-3.49
11,305.00	81.53	356.92	11,110.79	450.57	-23.24	450.75	22.06	22.00	-1.65
11,342.00	88.96	356.30	11,113.86	487.36	-25.42	487.54	20.15	20.08	-1.68
11,432.00	90.73	355.36	11,114.10	577.11	-31.97	577.35	2.23	1.67	-1.04
11,521.00	90.39	355.04	11,113.23	665.80	-39.42	666.09	0.52	-0.38	-0.36
11,611.00	90.11	355.16	11,112.84	755.47	-47.10	755.82	0.34	-0.31	0.13
11,700.00	91.15	355.07	11,111.86	844.14	-54.68	844.55	1.17	1.17	-0.10
11,790.00	93.81	355.75	11,107.97	933.76	-61.88	934.22	3.05	2.96	0.76
11,879.00	94.54	356.36	11,101.49	1,022.31	-67.98	1,022.62	1.07	0.82	0.69
11,969.00	92.97	358.05	11,095.59	1,112.00	-72.36	1,112.55	2.56	-1.74	1.88
12,058.00	92.32	359.10	11,091.49	1,200.88	-74.57	1,201.44	1.39	-0.73	1.18
12,148.00	92.54	0.08	11,087.67	1,290.79	-75.22	1,291.36	1.12	0.24	1.09
12,237.00	92.99	1.10	11,083.38	1,379.68	-74.30	1,380.24	1.25	0.51	1.15
12,327.00	94.42	1.57	11,077.56	1,469.47	-72.21	1,470.00	1.67	1.59	0.52
12,416.00	94.51	1.78	11,070.63	1,558.16	-69.61	1,558.67	0.26	0.10	0.24
12,506.00	94.99	1.93	11,063.16	1,647.80	-66.71	1,648.29	0.56	0.53	0.17
12,595.00	94.95	3.41	11,055.47	1,736.37	-62.58	1,736.82	1.66	-0.04	1.66
12,685.00	94.26	4.35	11,048.24	1,825.87	-56.51	1,826.27	1.29	-0.77	1.04
12,774.00	92.75	3.43	11,042.80	1,914.50	-50.48	1,914.84	1.99	-1.70	-1.03
12,864.00	92.21	2.99	11,038.91	2,004.27	-45.45	2,004.57	0.77	-0.60	-0.49
12,953.00	93.36	2.56	11,034.57	2,093.06	-41.15	2,093.32	1.40	1.31	-0.48
13,043.00	92.57	2.62	11,029.90	2,182.85	-37.08	2,183.07	0.90	-0.90	0.07
13,132.00	92.77	1.98	11,025.75	2,271.88	-33.52	2,271.87	0.75	0.22	-0.72
13,221.00	93.95	1.53	11,020.53	2,360.48	-30.80	2,360.65	1.42	1.33	-0.51
13,311.00	92.88	2.75	11,015.17	2,450.26	-27.44	2,450.40	1.80	-1.19	1.36



Survey Report



<b>Company:</b>	Chevron	<b>Local Co-ordinate Reference:</b>	Well #3H
<b>Project:</b>	Lea County, NM (NAD27 NME)	<b>TVD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Site:</b>	Antelope Ridge 11-24-34 Federal	<b>MD Reference:</b>	RKB @ 3531.50usft (Ensign 153)
<b>Well:</b>	#3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	WB1 Job #1512932	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Ensign 153)	<b>Database:</b>	Compass 5000 GCR

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)
13,400.00	92.83	1.62	11,010.90	2,539.09	-24.05	2,539.20	1.30	-0.28	-1.27
13,490.00	93.39	0.70	11,006.17	2,628.94	-22.23	2,629.04	1.32	0.84	-1.02
13,580.00	92.24	0.63	11,001.75	2,718.83	-21.19	2,718.91	1.28	-1.28	-0.08
13,669.00	94.54	359.57	10,996.49	2,807.66	-21.03	2,807.74	2.84	2.58	-1.19
13,759.00	93.70	359.47	10,990.02	2,897.43	-21.78	2,897.51	0.94	-0.93	-0.11
13,848.00	92.52	359.96	10,985.19	2,986.29	-22.23	2,986.37	1.44	-1.33	0.55
13,938.00	92.83	359.52	10,980.99	3,076.19	-22.63	3,076.28	0.60	0.34	-0.49
14,027.00	93.47	359.84	10,976.10	3,165.06	-23.13	3,165.14	0.80	0.72	0.36
14,116.00	93.81	359.69	10,970.45	3,253.88	-23.49	3,253.96	0.42	0.38	-0.17
14,206.00	93.50	0.35	10,964.71	3,343.69	-23.46	3,343.77	0.81	-0.34	0.73
14,296.00	93.97	0.86	10,958.85	3,433.50	-22.51	3,433.57	0.77	0.52	0.57
14,385.00	93.56	1.16	10,953.01	3,522.29	-20.95	3,522.34	0.57	-0.46	0.34
14,480.00	93.33	0.32	10,947.30	3,617.11	-19.72	3,617.15	0.92	-0.24	-0.88
<b>Final Phoenix MWD Survey</b>									
14,540.00	93.33	0.32	10,943.81	3,677.01	-19.39	3,677.04	0.00	0.00	0.00
<b>Projection to TD</b>									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
1,222.00	1,221.10	5.97	43.06	Tie-in to Teledrift Surveys
1,283.00	1,282.09	3,617.11	-19.72	First Phoenix MWD Survey
14,480.00	10,947.30	3,677.01	-19.39	Final Phoenix MWD Survey
14,540.00	10,943.81			Projection to TD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_