

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1411891

ENERGY COMPANY

Chevron

WELL NAME

Brininstool 24-23-33 USA #2H

COUNTY & STATE

Lea County, NM

API WELL NUMBER

30-025-41935

PROPOSED DIRECTION

179.56°

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
1255	1254.74 ft	1.50	54.20	2.93 N	23.41 E	Teledrift

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
15-Oct-14	1,294.00 ft	1.14	62.45

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
3-Nov-14	15839	91.59	176.88

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-Nov-14	15896	91.59	176.88

Edward LaGarce

PRINT YOUR NAME ABOVE

Edward LaGarce

SIGN YOUR NAME ABOVE

11/4/2014

TODAY'S DATE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.74
DECLINATION OR GRID	GRID

MWD SUPERVISOR 1

Zak Dawson

DIRECTIONAL DRILLER 1

Keith Scheppler

MWD SUPERVISOR 2

Brian Pina

DIRECTIONAL DRILLER 2

Craig Cannon

12329 Cutten Rd.,

Houston, Texas 777066

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APR 27 2015



Chevron

**Lea County NM (NAD27 NME)
Brininstool 24-23-33 USA
#2H**

WB1 / Job #1411891

Survey: Phoenix MWD Surveys

Standard Survey Report

04 November, 2014





Phoenix Technology Services Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well #2H
Project:	Lea County NM (NAD27 NME)	TVD Reference:	KB @ 3810.50usft (Ensign 153)
Site:	Brininstool 24-23-33 USA	MD Reference:	KB @ 3810.50usft (Ensign 153)
Well:	#2H	North Reference:	Grid
Wellbore:	WB1 / Job #1411891	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR epdm

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	Brininstool 24-23-33 USA		
Site Position:		Northing:	472,638.00 usft
From:	Map	Easting:	747,350.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 17' 48.69727 N
		Longitude:	103° 31' 58.21838 W
		Grid Convergence:	0.43 °

Well	#2H		
Well Position	+N/-S	0.00 usft	Northing: 472,648.00 usft
	+E/-W	0.00 usft	Easting: 748,930.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 17' 48.67913 N
		Longitude:	103° 31' 39.80804 W
		Ground Level:	3,586.00 usft

Wellbore	WB1 / Job #1411891				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010_14	10/22/14	(°)	(°)	(nT)
			7.16	60.18	48,328

Design	Surveys (Ensign 153)			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	179.58

Survey Program	Date 11/04/14			
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
133.00	1,255.00	Teledrift MWD Surveys (WB1 / Job #14118)	MWD	MWD - Standard
1,294.00	15,896.00	Phoenix MWD Surveys (WB1 / Job #1411)	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)
1,255.00	1.50	54.20	1,254.74	2.93	23.41	-2.75	0.00	0.00	0.00
Tie-In to Teledrift MWD									
1,294.00	1.14	62.45	1,293.73	3.41	24.17	-3.22	1.04	-0.92	21.15
First Phoenix Survey									
1,473.00	1.43	47.72	1,472.88	5.74	27.40	-5.53	0.24	0.16	-8.23
1,852.00	1.34	38.55	1,851.83	8.82	30.30	-8.69	0.18	-0.05	-8.24
1,831.00	1.21	27.22	1,830.58	12.28	32.41	-12.03	0.14	-0.07	-5.21
2,010.00	1.12	10.67	2,009.55	15.68	33.60	-15.42	0.19	-0.05	-8.25
2,189.00	1.28	1.23	2,188.51	19.37	33.98	-19.11	0.13	0.08	-5.27



Phoenix Technology Services Survey Report



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Well:	#2H	North Reference:	Grid
Wellbore:	WB1 / Job #1411891	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR epdm

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)
2,367.00	1.27	1.62	2,366.47	23.30	34.06	-23.03	0.01	0.01	0.22
2,546.00	1.32	1.75	2,545.42	27.34	34.18	-27.08	0.03	0.03	0.07
2,725.00	0.74	359.34	2,724.39	30.56	34.23	-30.29	0.32	-0.32	-1.35
2,904.00	0.75	18.40	2,903.38	32.82	34.59	-32.56	0.14	0.01	10.85
3,083.00	0.26	169.24	3,082.37	33.54	35.03	-33.27	0.55	-0.27	84.27
3,262.00	0.25	48.30	3,261.37	33.40	35.40	-33.13	0.25	-0.01	-67.56
3,441.00	0.62	35.51	3,440.37	34.45	36.25	-34.17	0.21	0.21	-7.15
3,619.00	0.95	47.14	3,618.35	36.23	37.89	-35.94	0.20	0.19	6.53
3,798.00	0.80	31.06	3,797.33	36.31	39.63	-38.01	0.16	-0.08	-8.98
3,977.00	0.58	32.45	3,976.31	40.15	40.76	-39.83	0.12	-0.12	0.78
4,156.00	0.42	3.25	4,155.31	41.57	41.28	-41.25	0.17	-0.09	-16.31
4,335.00	3.00	75.17	4,334.22	43.42	45.85	-43.07	1.62	1.44	40.18
4,513.00	2.52	90.29	4,512.02	44.80	54.26	-44.18	0.49	-0.27	8.49
4,692.00	2.06	114.14	4,690.88	43.26	61.13	-42.79	0.59	-0.26	13.32
4,871.00	1.53	59.86	4,869.80	43.14	66.14	-42.63	0.95	-0.30	-30.32
5,039.00	1.83	70.92	5,037.73	45.15	70.61	-44.60	0.26	0.18	6.58
5,206.00	2.24	75.78	5,204.62	46.82	76.30	-46.23	0.27	0.25	2.91
5,249.00	2.10	76.08	5,247.59	47.22	77.87	-46.62	0.33	-0.33	0.70
5,428.00	0.72	123.21	5,426.54	47.39	82.00	-46.76	0.95	-0.77	26.33
5,607.00	1.15	266.29	5,605.53	46.66	81.15	-46.03	0.99	0.24	79.93
5,786.00	1.72	265.19	5,784.47	46.32	78.68	-45.72	0.32	0.32	-0.61
5,964.00	2.06	266.28	5,962.37	45.99	70.79	-45.45	0.21	0.20	1.74
6,144.00	2.18	275.98	6,142.25	46.25	64.12	-45.76	0.17	0.06	4.26
6,323.00	1.77	274.56	6,321.14	46.63	57.98	-46.38	0.23	-0.23	-0.79
6,501.00	1.80	268.49	6,499.06	46.97	52.44	-46.57	0.11	0.02	-3.41
6,681.00	1.81	268.88	6,678.96	46.84	46.62	-46.48	0.06	0.06	0.22
6,859.00	1.78	274.90	6,856.87	47.02	40.90	-46.70	0.13	-0.07	3.38
7,038.00	1.33	273.99	7,035.80	47.40	36.05	-47.12	0.25	-0.25	-0.51
7,218.00	1.47	266.16	7,215.75	47.47	31.66	-47.23	0.11	0.08	-3.24
7,396.00	1.39	264.01	7,393.69	47.17	27.23	-46.96	0.07	-0.04	-2.33
7,575.00	2.08	207.70	7,572.62	44.07	23.56	-43.89	0.98	0.39	-31.46
7,754.00	1.46	191.20	7,751.54	38.93	21.60	-38.76	0.44	-0.34	-9.22
7,933.00	1.65	177.90	7,930.47	34.06	21.25	-33.92	0.22	0.09	-7.43
8,112.00	1.76	172.56	8,109.39	28.78	21.70	-28.61	0.11	0.06	-2.98
8,292.00	1.57	142.69	8,289.32	24.08	23.55	-23.90	0.49	-0.11	-18.59
8,470.00	1.64	125.85	8,467.25	20.65	27.10	-20.44	0.27	0.04	-9.46
8,649.00	1.71	137.14	8,646.17	17.19	30.99	-18.95	0.19	0.04	6.31
8,828.00	0.81	225.76	8,825.14	14.35	31.90	-14.10	1.05	-0.50	49.51
9,007.00	1.61	9.67	9,004.12	15.94	31.42	-15.70	1.29	0.45	80.51
9,186.00	1.25	23.43	9,183.07	20.21	32.63	-19.98	0.27	-0.20	7.58
9,357.00	1.78	47.81	9,354.01	23.71	35.34	-23.44	0.48	0.31	14.26
9,535.00	1.52	40.29	9,531.93	27.37	38.91	-27.07	0.19	-0.15	-4.22
9,715.00	1.08	22.25	9,711.89	30.76	41.10	-30.44	0.33	-0.24	-10.02



Phoenix Technology Services

Survey Report



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Site:	Brininstool 24-23-33 USA	MD Reference:	KB @ 3810.50usft (Ensign 153)
Well:	#2H	North Reference:	Grid
Wellbore:	WB1 / Job #1411891	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR epdm

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)
9,894.00	0.75	25.87	9,890.86	33.37	42.25	-33.05	0.19	-0.18	1.81
10,072.00	0.59	318.29	10,068.85	35.09	42.12	-34.76	0.43	-0.09	-38.98
10,252.00	1.23	318.33	10,248.83	37.20	40.19	-36.89	0.36	0.36	1.13
10,341.00	1.21	321.00	10,337.81	38.64	38.97	-38.34	0.07	-0.02	3.00
10,433.00	0.86	312.67	10,429.80	39.87	37.85	-39.57	0.41	-0.38	-9.05
10,522.00	0.81	296.05	10,518.79	40.53	36.93	-40.24	0.37	-0.28	-18.87
10,612.00	0.85	274.67	10,608.78	40.79	35.84	-40.52	0.40	0.27	-23.76
10,701.00	1.44	178.98	10,697.77	39.73	35.20	-39.46	1.96	0.88	-107.54
10,746.00	6.16	188.19	10,742.66	36.77	34.86	-36.50	10.54	10.48	20.51
10,790.00	10.45	193.55	10,786.19	30.55	33.59	-30.29	9.80	9.75	12.18
10,835.00	14.24	194.76	10,830.14	21.23	31.23	-20.99	8.44	8.42	2.69
10,880.00	17.79	198.47	10,873.39	9.35	27.64	-9.14	8.21	7.89	8.24
10,924.00	21.58	195.55	10,914.81	-4.82	23.34	5.00	8.80	8.61	-6.64
10,969.00	23.07	187.08	10,956.43	-21.23	18.53	21.37	3.55	3.31	3.40
11,014.00	25.52	189.42	10,997.45	-38.80	12.71	38.80	5.85	5.44	5.20
11,059.00	30.81	185.49	11,037.11	-59.06	8.41	59.11	12.45	11.76	-8.73
11,104.00	38.88	193.00	11,073.99	-84.00	0.14	84.00	18.38	18.11	-5.53
11,148.00	48.04	191.35	11,108.41	-113.04	-6.10	112.99	16.29	16.09	-3.75
11,193.00	50.85	187.85	11,136.26	-146.23	-11.87	146.14	12.17	10.89	-7.78
11,238.00	54.85	185.09	11,163.43	-181.86	-15.69	181.73	10.14	8.89	-6.13
11,282.00	58.57	183.20	11,187.58	-218.53	-18.34	218.39	9.18	8.45	-4.30
11,327.00	61.83	181.39	11,209.94	-257.54	-19.89	257.38	8.04	7.24	-4.02
11,372.00	65.75	180.01	11,229.81	-297.91	-20.38	297.74	9.14	8.71	-3.07
11,416.00	69.85	178.91	11,248.44	-338.63	-19.99	338.47	9.80	9.32	-2.50
11,461.00	74.93	178.33	11,260.05	-381.50	-18.95	381.34	11.36	11.29	-1.29
11,508.00	81.09	178.45	11,269.39	-425.48	-17.71	425.33	13.69	13.69	0.27
11,550.00	86.83	177.93	11,274.02	-469.19	-16.33	469.05	13.10	13.05	-1.18
11,595.00	87.50	177.85	11,278.24	-514.10	-14.60	513.98	1.61	1.49	-0.62
11,684.00	88.91	177.81	11,279.03	-602.99	-11.08	602.88	1.59	1.58	0.18
11,774.00	90.25	178.41	11,279.89	-692.93	-8.11	692.85	1.83	1.49	0.67
11,863.00	90.84	178.72	11,279.00	-781.80	-5.88	781.83	0.56	0.44	0.35
11,953.00	90.89	178.61	11,277.80	-871.87	-3.78	871.82	0.30	0.28	-0.12
12,042.00	91.43	178.38	11,276.00	-960.82	-1.43	960.78	0.67	0.61	-0.28
12,132.00	92.16	177.68	11,273.18	-1,050.72	1.88	1,050.70	1.11	0.81	-0.78
12,221.00	90.82	177.69	11,270.86	-1,139.82	5.27	1,139.82	1.51	-1.51	0.01
12,310.00	92.52	178.60	11,268.27	-1,228.53	8.15	1,228.55	2.17	1.91	1.02
12,400.00	93.25	178.73	11,263.74	-1,318.39	10.25	1,318.43	0.82	0.81	0.14
12,489.00	94.03	178.28	11,258.09	-1,407.18	12.58	1,407.23	1.01	0.88	-0.51
12,579.00	94.32	178.82	11,251.54	-1,496.91	14.83	1,496.98	0.88	0.32	0.60
12,669.00	92.91	179.42	11,245.86	-1,586.72	18.21	1,586.80	1.70	-1.57	0.67
12,758.00	92.88	179.24	11,241.38	-1,675.60	17.25	1,675.88	0.21	-0.08	-0.20
12,847.00	93.08	178.82	11,236.77	-1,764.46	18.91	1,764.56	0.74	0.25	-0.70
12,937.00	93.90	178.71	11,231.29	-1,854.27	21.01	1,854.38	0.92	0.91	0.10
13,026.00	94.03	178.97	11,225.14	-1,943.04	22.80	1,943.16	0.33	0.15	0.29



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13,116.00	94.60	178.45	11,218.37	-2,032.76	24.82	2,032.89	0.86	0.63	-0.58
13,205.00	94.88	178.95	11,211.01	-2,121.43	26.84	2,121.58	0.84	0.31	0.56
13,295.00	93.47	180.23	11,204.46	-2,211.19	27.48	2,211.33	2.11	-1.57	1.42
13,385.00	93.90	180.36	11,198.68	-2,301.00	27.02	2,301.14	0.50	0.48	0.14
13,474.00	94.26	180.22	11,192.34	-2,389.77	26.57	2,389.91	0.43	0.40	-0.16
13,564.00	92.58	179.78	11,186.97	-2,479.61	26.57	2,479.74	1.93	-1.87	-0.46
13,653.00	92.80	179.44	11,182.80	-2,568.51	27.17	2,568.64	0.45	0.25	-0.38
13,742.00	93.30	178.32	11,178.08	-2,657.37	28.91	2,657.51	1.38	0.56	-1.28
13,832.00	94.34	178.12	11,172.07	-2,747.12	31.70	2,747.28	1.18	1.16	-0.22
13,922.00	94.86	178.49	11,164.83	-2,836.79	34.35	2,836.97	0.73	0.80	0.41
14,011.00	93.08	179.52	11,158.68	-2,925.56	35.89	2,925.75	2.33	-2.02	1.16
14,100.00	92.80	178.49	11,154.09	-3,014.43	37.44	3,014.62	1.20	-0.31	-1.16
14,190.00	93.11	177.57	11,149.45	-3,104.25	40.52	3,104.47	1.08	0.34	-1.02
14,279.00	93.27	175.80	11,144.50	-3,192.96	45.68	3,193.22	1.99	0.18	-1.99
14,368.00	93.42	176.18	11,139.30	-3,281.59	51.89	3,281.89	0.44	0.17	0.40
14,458.00	94.15	177.10	11,133.36	-3,371.24	57.17	3,371.58	1.32	0.81	1.04
14,547.00	94.06	177.80	11,128.99	-3,459.92	61.04	3,460.29	0.90	-0.10	0.90
14,637.00	93.78	178.99	11,120.84	-3,549.68	63.48	3,550.06	1.25	-0.31	1.21
14,726.00	93.78	178.20	11,114.97	-3,638.47	64.88	3,638.87	0.24	0.00	0.24
14,815.00	94.20	178.70	11,108.78	-3,727.24	66.51	3,727.64	0.73	0.47	-0.56
14,905.00	95.44	178.65	11,101.22	-3,816.90	68.58	3,817.31	1.38	1.38	-0.06
14,994.00	95.69	179.51	11,092.59	-3,905.47	70.01	3,905.89	1.00	0.28	0.97
15,084.00	94.51	179.70	11,084.59	-3,995.11	70.62	3,995.53	1.33	-1.31	0.21
15,173.00	93.22	180.10	11,078.59	-4,083.90	70.78	4,084.33	1.52	-1.45	0.45
15,263.00	93.17	180.46	11,073.57	-4,173.78	70.34	4,174.18	0.40	-0.08	0.40
15,352.00	93.81	180.51	11,068.15	-4,262.59	69.59	4,263.00	0.72	0.72	0.06
15,441.00	92.86	180.58	11,062.98	-4,351.44	68.74	4,351.84	1.07	-1.07	0.08
15,531.00	91.90	180.49	11,059.24	-4,441.35	67.90	4,441.74	1.07	-1.07	-0.10
15,620.00	91.49	179.52	11,056.61	-4,530.31	67.89	4,530.70	1.18	-0.46	-1.09
15,710.00	91.09	178.41	11,054.58	-4,620.28	69.52	4,620.67	1.31	-0.44	-1.23
15,799.00	91.49	177.54	11,052.58	-4,709.20	72.66	4,709.62	1.08	0.45	-0.98
15,839.00	91.59	176.88	11,051.50	-4,749.13	74.61	4,749.57	1.67	0.25	-1.65
Final Phoenix Survey									
15,887.85	91.59	176.88	11,050.14	-4,787.89	77.27	4,788.34	0.00	0.00	0.00
HL Crossing: 15887.85' MD									
15,896.00	91.59	176.88	11,049.92	-4,806.03	77.71	4,806.48	0.00	0.00	0.00
Projection to TD									



Phoenix Technology Services
Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well #2H
Project:	Lea County NM (NAD27 NME)	TVD Reference:	KB @ 3610.50usft (Ensign 153)
Site:	Brininstool 24-23-33 USA	MD Reference:	KB @ 3610.50usft (Ensign 153)
Well:	#2H	North Reference:	Grid
Wellbore:	WB1 / Job #1411891	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR apdm

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,255.00	1,254.74	2.83	23.41	Tie-in to Teledrift MWD
1,294.00	1,293.73	3.41	24.17	First Phoenix Survey
15,838.00	11,051.50	-4,749.13	74.61	Final Phoenix Survey
15,887.85	11,050.14	-4,787.88	77.27	HL Crossing: 15887.85' MD
15,896.00	11,048.92	-4,806.03	77.71	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

324' fsl 1902 fwl