



Chevron

Lea County, NM (NAD27 NME)

Salado Draw 19 26 33 Fed

2H

ST01 / Job 1513946

Design: Surveys (Pace X30)

Standard Survey Report

13 October, 2015





Phoenix Technology Services LP

Survey Report



Company: Chevron
 Project: Lea County, NM (NAD27 NME)
 Site: Salado Draw 19 26 33 Fed
 Well: 2H
 Wellbore: ST01 / Job 1513946
 Design: Surveys (Pace X30)

Local Co-ordinate Reference: Well 2H
 TVD Reference: RKB @ 3209.00usft (Pace X30)
 MD Reference: RKB @ 3209.00usft (Pace X30)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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 Salado Draw 19 26 33 Fed

Site Position: Northing: 377,418.00 usft Latitude: 32° 2' 8.12574 N
 From: Map Easting: 723,217.00 usft Longitude: 103° 36' 46.78603 W
 Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.38 °

Well 2H

Well Position +N/-S 0.00 usft Northing: 377,410.00 usft Latitude: 32° 2' 8.11373 N
 +E/-W 0.00 usft Easting: 722,197.00 usft Longitude: 103° 36' 58.63566 W
 Position Uncertainty 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,176.00 usft

Wellbore ST01 / Job 1513946

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/11/2015	7.05	59.77	48,115

Design Surveys (Pace X30)

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 8,502.00
 Vertical Section: Depth From (TVD) (usft) +N/-S (usft) +E/-W (usft) Direction (°)
 0.00 0.00 0.00 179.47

Survey Program Date 8/28/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
152.00	8,502.00	Phoenix MWD Surveys (OH / Job 1513946)	PHX+MWD+HDGM	PHX+MWD+HDGM
8,656.00	13,637.00	Phoenix MWD Surveys (ST01 / Job 15139)	PHX+MWD+HDGM	PHX+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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152.00	0.40	356.77	152.00	0.53	-0.03	-0.53	0.26	0.26	0.00
312.00	0.55	49.50	311.99	1.59	0.52	-1.58	0.28	0.09	32.96
500.00	1.03	86.30	499.98	2.28	2.89	-2.25	0.36	0.26	19.57
685.00	1.34	90.50	684.94	2.37	6.72	-2.31	0.17	0.17	2.27
801.00	1.34	92.82	800.91	2.29	9.43	-2.20	0.05	0.00	2.00
951.00	1.31	94.99	950.87	2.06	12.89	-1.94	0.04	-0.02	1.45
1,128.00	1.45	103.75	1,127.81	1.35	17.08	-1.19	0.14	0.08	4.95
1,305.00	1.54	104.27	1,304.75	0.23	21.56	-0.03	0.05	0.05	0.29
1,483.00	1.20	151.88	1,482.71	-2.00	24.76	2.23	0.65	-0.19	26.75



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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)
1,660.00	1.46	219.96	1,659.67	-5.37	24.18	5.59	0.85	0.15	38.46
1,837.00	1.53	195.43	1,836.61	-9.37	22.10	9.58	0.36	0.04	-13.86
2,014.00	1.43	193.49	2,013.55	-13.80	20.96	13.99	0.06	-0.06	-1.10
2,191.00	1.57	194.91	2,190.49	-18.29	19.82	18.47	0.08	0.08	0.80
2,369.00	1.87	195.88	2,368.41	-23.44	18.41	23.61	0.17	0.17	0.43
2,546.00	1.25	199.02	2,545.34	-28.05	17.00	28.20	0.35	-0.35	1.89
2,723.00	0.78	188.53	2,722.32	-31.07	16.19	31.21	0.28	-0.27	-5.93
2,900.00	0.83	183.71	2,899.30	-33.54	15.93	33.68	0.05	0.03	-2.72
3,078.00	1.07	217.62	3,077.28	-36.14	14.83	36.27	0.34	0.13	19.05
3,256.00	1.02	205.47	3,255.25	-38.89	13.14	39.01	0.13	-0.03	-6.83
3,433.00	1.04	141.15	3,432.22	-41.56	13.47	41.68	0.62	0.01	-36.34
3,610.00	1.25	195.85	3,609.19	-44.67	13.95	44.79	0.60	0.12	30.90
3,787.00	1.21	188.53	3,786.15	-48.37	13.14	48.49	0.09	-0.02	-4.14
3,965.00	1.21	191.93	3,964.11	-52.07	12.47	52.18	0.04	0.00	1.91
4,142.00	0.90	171.90	4,141.08	-55.27	12.28	55.39	0.27	-0.18	-11.32
4,319.00	1.04	152.18	4,318.06	-58.07	13.23	58.19	0.20	0.08	-11.14
4,496.00	1.60	159.41	4,495.01	-61.81	14.85	61.94	0.33	0.32	4.08
4,605.00	1.40	166.64	4,603.97	-64.53	15.69	64.67	0.25	-0.18	6.63
4,776.00	1.46	176.87	4,774.92	-68.73	16.29	68.88	0.15	0.04	5.98
4,954.00	1.17	225.03	4,952.88	-72.28	15.13	72.42	0.62	-0.16	27.06
5,131.00	1.44	249.21	5,129.83	-74.35	11.77	74.45	0.34	0.15	13.66
5,309.00	1.58	263.87	5,307.77	-75.40	7.24	75.47	0.23	0.08	8.24
5,486.00	1.51	272.11	5,484.71	-75.58	2.49	75.60	0.13	-0.04	4.66
5,663.00	1.59	278.26	5,661.64	-75.14	-2.27	75.12	0.10	0.05	3.47
5,841.00	1.37	282.69	5,839.58	-74.32	-6.79	74.25	0.14	-0.12	2.49
6,018.00	1.36	280.60	6,016.53	-73.47	-10.92	73.36	0.03	-0.01	-1.18
6,195.00	0.38	327.55	6,193.51	-72.59	-13.30	72.46	0.64	-0.55	26.53
6,372.00	0.29	291.56	6,370.51	-71.93	-14.03	71.79	0.13	-0.05	-20.33
6,550.00	0.33	308.48	6,548.51	-71.44	-14.85	71.30	0.06	0.02	9.51
6,727.00	0.25	301.94	6,725.51	-70.92	-15.58	70.77	0.05	-0.05	-3.69
6,905.00	0.22	275.78	6,903.50	-70.68	-16.25	70.53	0.06	-0.02	-14.70
7,082.00	0.19	278.87	7,080.50	-70.60	-16.88	70.44	0.02	-0.02	1.75
7,260.00	0.18	197.49	7,258.50	-70.82	-17.25	70.66	0.14	-0.01	-45.72
7,437.00	0.61	214.73	7,435.50	-71.86	-17.88	71.69	0.25	0.24	9.74
7,615.00	0.99	213.81	7,613.48	-73.92	-19.27	73.74	0.21	0.21	-0.52
7,792.00	0.82	211.42	7,790.46	-76.27	-20.78	76.07	0.10	-0.10	-1.35
7,970.00	0.84	196.66	7,968.44	-78.61	-21.82	78.40	0.12	0.01	-8.29
8,147.00	0.96	191.97	8,145.42	-81.30	-22.50	81.09	0.08	0.07	-2.65
8,325.00	0.87	175.53	8,323.39	-84.11	-22.70	83.89	0.16	-0.05	-9.24
8,502.00	1.06	178.72	8,500.37	-87.08	-22.56	86.87	0.11	0.11	1.80
Tie-in to OH									
8,656.00	13.08	177.60	8,652.92	-105.99	-21.80	105.78	7.81	7.81	-0.73
First ST Survey									



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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)
8,701.00	19.17	175.86	8,696.13	-118.45	-21.05	118.25	13.57	13.53	-3.87
8,745.00	24.57	176.42	8,736.95	-134.80	-19.96	134.61	12.28	12.27	1.27
8,790.00	30.07	178.69	8,776.91	-155.43	-19.31	155.24	12.66	12.22	7.27
8,834.00	35.02	182.65	8,814.00	-179.08	-19.84	178.89	11.81	11.25	6.73
8,878.00	41.04	182.82	8,848.64	-206.14	-21.13	205.94	13.68	13.68	0.39
8,923.00	46.56	181.81	8,881.10	-237.25	-22.37	237.04	12.36	12.27	-2.24
8,967.00	53.06	180.87	8,909.48	-270.84	-23.15	270.61	14.86	14.77	-2.14
9,011.00	55.38	180.90	8,935.21	-306.53	-23.70	306.29	5.27	5.27	0.07
9,056.00	56.76	180.90	8,960.33	-343.86	-24.29	343.62	3.07	3.07	0.00
9,100.00	58.16	181.17	8,983.99	-380.94	-24.96	380.70	3.22	3.16	0.61
9,144.00	59.38	181.64	9,006.80	-418.56	-25.88	418.30	2.92	2.77	1.07
9,189.00	60.49	181.66	9,029.35	-457.48	-27.00	457.22	2.47	2.47	0.04
9,233.00	60.40	180.75	9,051.05	-495.75	-27.81	495.47	1.81	-0.20	-2.07
9,278.00	63.94	180.15	9,072.06	-535.54	-28.11	535.25	7.95	7.87	-1.33
9,322.00	68.19	180.24	9,089.90	-575.74	-28.25	575.46	9.66	9.66	0.20
9,366.00	71.34	180.48	9,105.12	-617.02	-28.51	616.73	7.18	7.16	0.55
9,411.00	75.02	180.93	9,118.14	-660.09	-29.04	659.79	8.23	8.18	1.00
9,455.00	76.98	181.27	9,128.78	-702.77	-29.86	702.46	4.52	4.45	0.77
9,499.00	80.18	181.84	9,137.49	-745.88	-31.04	745.56	7.38	7.27	1.30
9,545.00	84.23	179.50	9,143.73	-791.44	-31.56	791.11	10.14	8.80	-5.09
9,634.00	87.29	178.89	9,150.31	-880.17	-30.32	879.85	3.51	3.44	-0.69
9,722.00	87.12	180.08	9,154.60	-968.06	-29.53	967.75	1.36	-0.19	1.35
9,811.00	87.85	180.60	9,158.51	-1,056.97	-30.05	1,056.65	1.01	0.82	0.58
9,900.00	88.74	180.52	9,161.16	-1,145.93	-30.92	1,145.80	1.00	1.00	-0.09
9,988.00	89.91	180.96	9,162.19	-1,233.92	-32.06	1,233.57	1.42	1.33	0.50
10,077.00	90.03	182.05	9,162.24	-1,322.88	-34.40	1,322.51	1.23	0.13	1.22
10,165.00	90.11	181.04	9,162.13	-1,410.85	-36.77	1,410.45	1.15	0.09	-1.15
10,254.00	89.78	178.95	9,162.22	-1,498.84	-36.76	1,499.44	2.38	-0.37	-2.35
10,343.00	87.29	177.89	9,164.49	-1,588.77	-34.31	1,588.39	3.04	-2.80	-1.19
10,431.00	87.96	177.17	9,168.14	-1,676.62	-30.52	1,676.26	1.12	0.76	-0.82
10,520.00	88.52	176.99	9,170.87	-1,765.46	-25.99	1,765.14	0.66	0.63	-0.20
10,609.00	90.76	176.23	9,171.43	-1,854.29	-20.73	1,854.02	2.66	2.52	-0.85
10,698.00	90.25	176.00	9,170.65	-1,943.09	-14.70	1,942.87	0.63	-0.57	-0.26
10,786.00	92.51	178.01	9,168.53	-2,030.93	-10.10	2,030.75	3.44	2.57	2.28
10,875.00	92.18	178.31	9,164.89	-2,119.81	-7.24	2,119.65	0.50	-0.37	0.34
10,963.00	93.02	178.98	9,160.90	-2,207.69	-5.17	2,207.55	1.22	0.95	0.76
11,052.00	93.75	178.20	9,155.64	-2,296.51	-2.98	2,296.38	1.20	0.82	-0.88
11,141.00	93.13	177.18	9,150.30	-2,385.27	0.60	2,385.18	1.34	-0.70	-1.15
11,229.00	92.32	178.37	9,146.12	-2,473.11	4.01	2,473.04	1.63	-0.92	1.35
11,318.00	92.41	179.50	9,142.44	-2,562.01	5.67	2,561.96	1.27	0.10	1.27
11,406.00	91.37	179.99	9,139.54	-2,649.96	6.06	2,649.91	1.31	-1.18	0.56
11,495.00	91.56	181.77	9,137.27	-2,738.92	4.69	2,738.85	2.01	0.21	2.00
11,584.00	91.48	183.73	9,134.91	-2,827.78	0.42	2,827.67	2.20	-0.09	2.20
11,672.00	89.27	185.46	9,134.33	-2,915.49	-6.63	2,915.30	3.19	-2.51	1.97



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11,761.00	87.82	184.36	9,136.59	-3,004.13	-14.24	3,003.87	2.04	-1.63	-1.24
11,850.00	88.83	182.06	9,139.35	-3,092.94	-19.22	3,092.63	2.74	0.91	-2.58
11,939.00	88.86	181.09	9,141.30	-3,181.88	-21.67	3,181.55	1.12	0.26	-1.09
12,028.00	88.77	180.53	9,143.14	-3,270.88	-22.92	3,270.50	0.64	-0.10	-0.63
12,117.00	87.60	180.35	9,145.95	-3,359.81	-23.81	3,359.45	1.33	-1.31	-0.20
12,205.00	88.95	180.78	9,150.14	-3,447.70	-24.47	3,447.33	0.89	-0.74	0.49
12,294.00	88.41	181.99	9,153.74	-3,536.60	-26.62	3,536.20	2.13	1.64	1.36
12,382.00	88.32	180.61	9,156.25	-3,624.54	-28.62	3,624.12	1.57	-0.10	-1.57
12,471.00	88.18	179.76	9,158.97	-3,713.50	-28.91	3,713.07	0.97	-0.16	-0.96
12,559.00	89.47	179.20	9,160.77	-3,801.47	-28.11	3,801.05	1.60	1.47	-0.64
12,648.00	88.83	177.55	9,162.10	-3,890.42	-25.59	3,890.02	1.99	-0.72	-1.85
12,737.00	90.25	176.89	9,162.81	-3,979.31	-21.27	3,978.95	1.76	1.60	-0.74
12,825.00	90.95	177.69	9,161.89	-4,067.21	-17.11	4,066.88	1.21	0.80	0.91
12,914.00	93.46	178.18	9,158.46	-4,156.08	-13.90	4,155.77	2.87	2.82	0.55
13,003.00	93.67	178.47	9,152.93	-4,244.87	-11.31	4,244.58	0.40	0.24	0.33
13,091.00	93.22	180.37	9,147.64	-4,332.70	-10.42	4,332.42	2.22	-0.51	2.16
13,180.00	92.54	179.48	9,143.17	-4,421.59	-10.30	4,421.30	1.26	-0.76	-1.00
13,268.00	92.21	179.52	9,139.52	-4,509.51	-9.54	4,509.23	0.38	-0.38	0.05
13,357.00	93.47	179.43	9,135.11	-4,598.39	-8.72	4,598.11	1.42	1.42	-0.10
13,445.00	92.38	179.03	9,130.62	-4,686.27	-7.54	4,686.00	1.32	-1.24	-0.45
13,534.00	92.46	179.36	9,126.87	-4,775.18	-6.29	4,774.92	0.38	0.09	0.37
13,573.00	92.27	179.61	9,125.26	-4,814.14	-5.94	4,813.88	0.80	-0.49	0.64
Final ST Survey									
13,637.00	92.27	179.61	9,122.72	-4,878.09	-5.50	4,877.83	0.00	0.00	0.00
Projection to ST TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,502.00	8,500.37	-87.08	-22.56	Tie-in to OH
8,656.00	8,652.92	-105.99	-21.80	First ST Survey
13,573.00	9,125.26	-4,814.14	-5.94	Final ST Survey
13,637.00	9,122.72	-4,878.09	-5.50	Projection to ST TD

Checked By: _____ Approved By: _____ Date: _____