HOBBS OCD

30-025-41199

Phoenix Technology Services
SURVEY DATA CERTIFICATION

SEP 14 2015

RECEIVED

PHOENIX TECHNOLOGY SERVICES

PHOENIX JOB NUMBER	1410114	ENERGY COMPANY	Chevron
WELL NAME	Madera 17 Federal 1H	COUNTY & STATE	Lea County
API WELL NUMBER	30-025-41199	PROPOSED DIRECTION	179.51°

TIE-IN DATA

MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
1,308. ft	1,307.96 ft	0.80	260.70	-2.12 ft	-1.91 ft	Gyro

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
3-Jun-15	1,469.00 ft	0.70	275.40

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
19-Jun-15	15,373.00 ft	89.94	178.33

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
19-Jun-15	15,430.00 ft	89.94	178.33

August Holt

PRINT YOUR NAME ABOVE

August Holt

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.58
DECLINATION OR GRID	GRID

6/19/2015

TODAY'S DATE

MWD SUPERVISOR 1	Rick Reed	DIRECTIONAL DRILLER 1	Craig Cannon
MWD SUPERVISOR 2	August Holt	DIRECTIONAL DRILLER 2	Justi Jackson

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

OCT 08 2015

Chevron

Chevron

Lea County, NM (NAD27 NME)
Madera 17 Federal
1H

OH / Job #1410114

Survey: Phoenix MWD Surveys

Standard Survey Report

19 August, 2015

PHOENIX
TECHNOLOGY SERVICES

Company:	Chevron	**Local Co-ordinate Reference:**	Well 1H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3585.50usft (Ensign 153)
Site:	Madera 17 Federal	**MD Reference:**	KB @ 3585.50usft (Ensign 153)
Well:	1H	**North Reference:**	Grid
Wellbore:	OH / Job #1410114	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Ensign 153)	**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 Madera 17 Federal

Site Position:		**Northing:**	446,173.20 usft	**Latitude:**	32° 13' 25.66151 N
From:	Map	**Easting:**	762,588.30 usft	**Longitude:**	103° 29' 3.13581 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.45 °

Well 1H

Well Position	**+N/-S**	0.00 usft	**Northing:**	446,173.19 usft	**Latitude:**	32° 13' 25.66136 N
	+E/-W	0.00 usft	**Easting:**	762,588.30 usft	**Longitude:**	103° 29' 3.13581 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,561.00 usft

Wellbore OH / Job #1410114

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/28/15	7.03	60.02	48,346

Design Surveys (Ensign 153)

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	179.51

Survey Program **Date** 6/21/15

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
274.00	1,275.00	Teledrift MWD Surveys (OH / Job #141011	MWD	MWD - Standard
1,308.00	15,430.00	Phoenix MWD Surveys (OH / Job #141011	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)
1,275.00	0.90	253.80	1,274.96	-2.01	-1.43	1.99	0.00	0.00	0.00
Tie-in to Teledrift									
1,308.00	0.80	260.70	1,307.96	-2.12	-1.91	2.10	0.43	-0.30	20.91
First Phoenix Survey									
1,469.00	0.70	275.40	1,468.95	-2.21	-4.00	2.17	0.13	-0.06	9.13
1,647.00	0.79	292.58	1,646.93	-1.63	-6.21	1.58	0.13	0.05	9.65
1,826.00	0.63	291.21	1,825.92	-0.80	-8.27	0.73	0.09	-0.09	-0.77
2,004.00	0.64	277.78	2,003.91	-0.31	-10.17	0.23	0.08	0.01	-7.54
2,183.00	0.84	272.12	2,182.89	-0.13	-12.47	0.02	0.12	0.11	-3.16

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Well:	1H	**North Reference:**	Grid
Wellbore:	OH / Job #1410114	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Ensign 153)	**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)
2,362.00	1.09	271.54	2,361.87	-0.04	-15.48	-0.10	0.14	0.14	-0.32
2,541.00	1.26	281.34	2,540.83	0.40	-19.11	-0.56	0.15	0.09	5.47
2,720.00	0.70	292.68	2,719.80	1.21	-22.05	-1.39	0.33	-0.31	6.34
2,899.00	0.64	312.41	2,898.79	2.30	-23.80	-2.50	0.13	-0.03	11.02
3,079.00	0.69	310.42	3,078.78	3.68	-25.37	-3.90	0.03	0.03	-1.11
3,258.00	0.56	327.55	3,257.77	5.12	-26.66	-5.35	0.13	-0.07	9.57
3,437.00	0.74	327.64	3,436.76	6.83	-27.74	-7.07	0.10	0.10	0.05
3,616.00	0.61	338.61	3,615.74	8.70	-28.71	-8.94	0.10	-0.07	6.13
3,795.00	0.37	342.36	3,794.74	10.14	-29.23	-10.38	0.14	-0.13	2.09
3,973.00	0.20	116.69	3,972.74	10.54	-29.13	-10.79	0.30	-0.10	75.47
4,153.00	0.78	149.49	4,152.73	9.35	-28.23	-9.59	0.35	0.32	18.22
4,332.00	1.11	158.26	4,331.70	6.69	-26.97	-6.92	0.20	0.18	4.90
4,511.00	1.11	115.06	4,510.67	4.34	-24.75	-4.55	0.46	0.00	-24.13
4,690.00	1.53	130.06	4,689.63	2.07	-21.35	-2.25	0.30	0.23	8.38
4,869.00	1.35	147.80	4,868.57	-1.25	-18.40	1.10	0.27	-0.10	9.91
5,048.00	1.50	146.05	5,047.52	-4.98	-15.97	4.84	0.09	0.08	-0.98
5,147.00	1.34	139.91	5,146.49	-6.94	-14.50	6.82	0.22	-0.16	-6.20
5,377.00	1.15	146.00	5,376.43	-10.91	-11.48	10.81	0.10	-0.08	2.65
5,557.00	1.18	138.88	5,556.39	-13.81	-9.25	13.73	0.08	0.02	-3.96
5,736.00	1.01	149.92	5,735.36	-16.56	-7.25	16.50	0.15	-0.09	6.17
5,915.00	0.52	120.70	5,914.35	-18.34	-5.76	18.29	0.34	-0.27	-16.32
6,094.00	0.76	22.61	6,093.34	-17.66	-4.60	17.62	0.55	0.13	-54.80
6,273.00	0.66	15.64	6,272.32	-15.57	-3.87	15.54	0.07	-0.06	-3.89
6,451.00	0.57	10.05	6,450.31	-13.71	-3.44	13.68	0.06	-0.05	-3.14
6,631.00	0.62	358.42	6,630.30	-11.85	-3.31	11.83	0.07	0.03	-6.46
6,810.00	0.63	353.02	6,809.29	-9.91	-3.45	9.88	0.03	0.01	-3.02
6,989.00	0.62	338.95	6,988.28	-8.03	-3.92	8.00	0.09	-0.01	-7.86
7,168.00	0.70	319.57	7,167.27	-6.29	-4.98	6.25	0.13	0.04	-10.83
7,347.00	0.80	323.47	7,346.26	-4.46	-6.43	4.40	0.06	0.06	2.18
7,526.00	0.42	299.52	7,525.25	-3.13	-7.75	3.06	0.25	-0.21	-13.38
7,705.00	0.53	299.07	7,704.24	-2.40	-9.04	2.33	0.06	0.06	-0.25
7,884.00	0.95	306.90	7,883.22	-1.11	-10.95	1.02	0.24	0.23	4.37
8,062.00	0.98	304.38	8,061.20	0.64	-13.39	-0.75	0.03	0.02	-1.42
8,241.00	0.57	318.59	8,240.18	2.17	-15.24	-2.30	0.25	-0.23	7.94
8,420.00	0.26	319.22	8,419.18	3.14	-16.09	-3.28	0.17	-0.17	0.35
8,598.00	0.25	309.25	8,597.18	3.69	-16.66	-3.84	0.03	-0.01	-5.60
8,777.00	0.37	264.88	8,776.17	3.89	-17.54	-4.04	0.14	0.07	-24.79
8,956.00	0.91	263.72	8,955.16	3.68	-19.52	-3.85	0.30	0.30	-0.65
9,135.00	0.52	34.58	9,134.16	4.20	-20.48	-4.37	0.73	-0.22	73.11
9,323.00	0.55	298.47	9,322.15	5.33	-20.79	-5.51	0.42	0.02	-51.12
9,501.00	0.90	290.48	9,500.14	6.22	-22.85	-6.42	0.20	0.20	-4.49
9,680.00	0.95	94.65	9,679.13	6.60	-22.68	-6.79	1.02	0.03	91.72
9,859.00	0.72	172.80	9,858.11	5.36	-21.06	-5.54	0.60	-0.13	43.66

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Well:	1H	**North Reference:**	Grid
Wellbore:	OH / Job #1410114	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Ensign 153)	**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)
10,038.00	2.04	188.73	10,037.06	1.10	-21.41	-1.28	0.76	0.74	8.90
10,217.00	0.82	150.95	10,216.00	-3.17	-21.27	2.99	0.83	-0.68	-21.11
10,287.00	0.78	132.25	10,286.00	-3.93	-20.67	3.76	0.38	-0.06	-26.71
10,374.00	2.82	160.47	10,372.95	-6.35	-19.52	6.18	2.49	2.34	32.44
10,419.00	7.95	173.44	10,417.74	-10.49	-18.79	10.32	11.64	11.40	28.82
10,464.00	12.80	180.15	10,461.99	-18.57	-18.45	18.41	11.09	10.78	14.91
10,509.00	17.78	177.54	10,505.38	-30.42	-18.17	30.27	11.17	11.07	-5.80
10,553.00	25.24	176.24	10,546.29	-46.52	-17.26	46.37	16.99	16.95	-2.95
10,598.00	31.73	176.86	10,585.82	-67.93	-15.98	67.79	14.44	14.42	1.38
10,643.00	37.94	179.37	10,622.74	-93.61	-15.18	93.47	14.16	13.80	5.58
10,688.00	42.06	180.00	10,657.21	-122.52	-15.03	122.39	9.20	9.16	1.40
10,733.00	46.14	178.00	10,689.52	-153.83	-14.46	153.70	9.58	9.07	-4.44
10,777.00	49.02	178.42	10,719.19	-186.29	-13.45	186.17	6.58	6.55	0.95
10,822.00	50.87	176.78	10,748.15	-220.70	-12.00	220.59	4.97	4.11	-3.64
10,866.00	52.99	176.64	10,775.28	-255.28	-10.02	255.18	4.82	4.82	-0.32
10,911.00	57.73	175.96	10,800.85	-292.21	-7.62	292.14	10.61	10.53	-1.51
10,956.00	63.77	176.17	10,822.83	-331.36	-4.93	331.31	13.43	13.42	0.47
11,001.00	70.68	177.47	10,840.24	-372.77	-2.64	372.73	15.58	15.36	2.89
11,046.00	75.18	178.24	10,853.45	-415.74	-1.03	415.72	10.13	10.00	1.71
11,090.00	78.69	179.07	10,863.39	-458.58	-0.03	458.57	8.19	7.98	1.89
11,135.00	80.19	180.05	10,871.64	-502.82	0.31	502.80	3.96	3.33	2.18
11,167.00	82.44	180.28	10,876.47	-534.45	0.22	534.43	7.07	7.03	0.72
11,212.00	84.07	180.58	10,881.76	-579.14	-0.12	579.11	3.68	3.62	0.67
11,301.00	85.33	181.04	10,889.98	-667.74	-1.37	667.71	1.51	1.42	0.52
11,391.00	86.54	180.57	10,896.36	-757.51	-2.63	757.46	1.44	1.34	-0.52
11,480.00	87.93	180.18	10,900.65	-846.40	-3.22	846.34	1.62	1.56	-0.44
11,569.00	89.05	180.14	10,903.00	-935.37	-3.46	935.30	1.26	1.26	-0.04
11,659.00	88.88	180.57	10,904.62	-1,025.35	-4.02	1,025.28	0.51	-0.19	0.48
11,748.00	89.78	180.66	10,905.66	-1,114.34	-4.98	1,114.26	1.02	1.01	0.10
11,839.00	89.58	181.22	10,906.17	-1,205.32	-6.47	1,205.23	0.65	-0.22	0.62
11,928.00	89.36	180.45	10,906.99	-1,294.31	-7.77	1,294.20	0.90	-0.25	-0.87
12,017.00	89.41	180.12	10,907.95	-1,383.30	-8.21	1,383.18	0.37	0.06	-0.37
12,107.00	89.89	180.36	10,908.50	-1,473.30	-8.59	1,473.17	0.60	0.53	0.27
12,197.00	89.55	179.33	10,908.94	-1,563.30	-8.34	1,563.17	1.21	-0.38	-1.14
12,286.00	89.50	178.17	10,909.68	-1,652.27	-6.40	1,652.16	1.30	-0.06	-1.30
12,375.00	88.66	178.62	10,911.11	-1,741.23	-3.91	1,741.13	1.07	-0.94	0.51
12,465.00	88.86	177.84	10,913.05	-1,831.16	-1.13	1,831.08	0.89	0.22	-0.87
12,554.00	89.52	178.12	10,914.31	-1,920.10	2.01	1,920.04	0.81	0.74	0.31
12,644.00	88.83	179.07	10,915.61	-2,010.06	4.21	2,010.02	1.30	-0.77	1.06
12,733.00	88.10	179.69	10,917.99	-2,099.02	5.18	2,098.99	1.08	-0.82	0.70
12,823.00	88.21	179.70	10,920.89	-2,188.97	5.66	2,188.94	0.12	0.12	0.01
12,912.00	89.94	179.43	10,922.33	-2,277.95	6.33	2,277.93	1.97	1.94	-0.30
13,001.00	91.04	179.44	10,921.56	-2,366.94	7.21	2,366.92	1.24	1.24	0.01
13,091.00	90.31	179.69	10,920.50	-2,456.94	7.89	2,456.91	0.86	-0.81	0.28

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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)
13,180.00	89.75	180.52	10,920.46	-2,545.93	7.73	2,545.91	1.12	-0.63	0.93
13,270.00	89.39	181.01	10,921.13	-2,635.92	6.53	2,635.88	0.68	-0.40	0.54
13,359.00	88.22	180.29	10,922.99	-2,724.90	5.52	2,724.84	1.54	-1.31	-0.81
13,449.00	87.62	178.98	10,926.26	-2,814.83	6.09	2,814.78	1.60	-0.67	-1.46
13,538.00	88.29	178.62	10,929.43	-2,903.76	7.95	2,903.72	0.85	0.75	-0.40
13,627.00	89.89	177.71	10,930.85	-2,992.69	10.80	2,992.68	2.07	1.80	-1.02
13,717.00	90.86	178.17	10,930.26	-3,082.63	14.04	3,082.64	1.19	1.08	0.51
13,806.00	91.09	178.89	10,928.74	-3,171.59	16.32	3,171.61	0.85	0.26	0.81
13,895.00	90.84	179.10	10,927.24	-3,260.56	17.88	3,260.60	0.37	-0.28	0.24
13,984.00	90.45	179.63	10,926.24	-3,349.55	18.87	3,349.59	0.74	-0.44	0.60
14,074.00	90.00	180.75	10,925.89	-3,439.55	18.57	3,439.58	1.34	-0.50	1.24
14,163.00	88.69	180.14	10,926.91	-3,528.54	17.88	3,528.56	1.62	-1.47	-0.69
14,253.00	89.30	179.50	10,928.48	-3,618.52	18.16	3,618.55	0.98	0.68	-0.71
14,342.00	89.52	178.58	10,929.40	-3,707.51	19.65	3,707.54	1.06	0.25	-1.03
14,432.00	88.83	178.92	10,930.70	-3,797.47	21.62	3,797.52	0.85	-0.77	0.38
14,521.00	89.30	178.65	10,932.15	-3,886.44	23.50	3,886.50	0.61	0.53	-0.30
14,611.00	90.06	179.11	10,932.65	-3,976.42	25.26	3,976.49	0.99	0.84	0.51
14,700.00	89.83	179.47	10,932.74	-4,065.42	26.36	4,065.49	0.48	-0.26	0.40
14,789.00	88.88	179.79	10,933.74	-4,154.41	26.94	4,154.49	1.13	-1.07	0.36
14,879.00	88.91	179.32	10,935.47	-4,244.39	27.64	4,244.47	0.52	0.03	-0.52
14,968.00	89.36	178.84	10,936.82	-4,333.36	29.07	4,333.46	0.74	0.51	-0.54
15,058.00	89.81	177.85	10,937.47	-4,423.32	31.67	4,423.43	1.21	0.50	-1.10
15,147.00	90.67	177.25	10,937.10	-4,512.24	35.47	4,512.38	1.18	0.97	-0.67
15,237.00	90.45	177.37	10,936.22	-4,602.14	39.69	4,602.31	0.28	-0.24	0.13
15,253.00	90.40	177.45	10,936.10	-4,618.12	40.42	4,618.30	0.59	-0.31	0.49
HL Crossing: 15253' MD									
15,326.00	90.17	177.81	10,935.74	-4,691.06	43.44	4,691.26	0.59	-0.31	0.49
15,373.00	89.94	178.33	10,935.69	-4,738.03	45.02	4,738.24	1.21	-0.49	1.11
Final Phoenix Survey									
15,430.00	89.94	178.33	10,935.75	-4,795.01	46.68	4,795.23	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,275.00	1,274.96	-2.01	-1.43	Tie-in to Teledrift
1,308.00	1,307.96	-2.12	-1.91	First Phoenix Survey
15,253.00	10,936.10	-4,618.12	40.42	HL Crossing: 15253' MD
15,373.00	10,935.69	-4,738.03	45.02	Final Phoenix Survey
15,430.00	10,935.75	-4,795.01	46.68	Projection to TD

Checked By: _____ Approved By: _____ Date: _____