

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 1610090

OPERATOR Chevron

WELL NAME SD EA 19 Fed P6 5H

COUNTY & STATE

Lea County, NM

API WELL NUMBER 30-025-42797

PROPOSED DIRECTION 185.99

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
834.00 ft	833.80 ft	1.9°	60.3°	8.72 N	13.01 E	Well Benders

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
5-Mar-16	962 ft	1.9°	60.9°

SURVEY INSTRUMENT
TYPE
Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
11-Mar-16	9,372 ft	74.5	174.1

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

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
11-Mar-16	9,423 ft	82.5	175

Robert Brewer

PRINT YOUR NAME ABOVE

Robert Brewer

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.60°
DECLINATION OR GRID	GRID

03/11/16

TODAY'S DATE

MWD SUPERVISOR 1

Robert Brewer

DIRECTIONAL DRILLER 1

Casey Tubbe

MWD SUPERVISOR 2

Michael Johnson

DIRECTIONAL DRILLER 2

Justin Jackson

12329 Cutten Rd., Houston, Texas 77066 (713)337-0600 (Voice), (713)337-0599 (Fax)



Chevron

Lea County, NM (NAD27 NME)
SD EA 19 Fed
P6 5H

OH / Job 1610090

Survey: Phoenix MWD Surveys

Standard Survey Report

22 March, 2016





Phoenix Technology Services

Survey Report



Company: Chevron
Project: Lea County, NM (NAD27 NME)
Site: SD EA 19 Fed
Well: P6 5H
Wellbore: OH / Job 1610090
Design: Surveys (Pace X30)

Local Co-ordinate Reference: Well P6 5H
TVD Reference: RKB @ 3232.00usft (Pace X30)
MD Reference: RKB @ 3232.00usft (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)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site SD EA 19 Fed

Site Position: Northing: 377,402.00 usft Latitude: 32° 2' 7.86475 N
From: Map Easting: 724,767.00 usft Longitude: 103° 36' 28.78145 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.38 "

Well P6 5H

Well Position +N/-S 0.00 usft Northing: 377,402.00 usft Latitude: 32° 2' 7.86475 N
 +E/-W 0.00 usft Easting: 724,767.00 usft Longitude: 103° 36' 28.78145 W
Position Uncertainty 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,205.00 usft

Wellbore OH / Job 1610090

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/27/2016	6.98	59.77	48,056

Design Surveys (Pace X30)

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	185.99

Survey Program Date 3/22/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
182.47	834.00	Wellbenders MWD Surveys (OH / Job 161	MWD	MWD - Standard
962.00	9,423.00	Phoenix MWD Surveys (OH / Job 1610090	PHX+MWD+HDGM	PHX+OWSG 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)
834.00	1.80	60.30	833.80	8.72	13.01	-10.03	0.00	0.00	0.00
Tie-in to Wellbenders									
962.00	1.90	60.90	961.73	10.81	16.70	-12.49	0.02	0.00	0.47
First Phoenix MWD Survey									
1,143.00	1.40	348.90	1,142.67	14.42	18.82	-16.31	1.12	-0.28	-40.88
1,321.00	1.60	350.80	1,320.61	18.99	17.92	-20.76	0.12	0.11	2.08
1,498.00	1.60	328.00	1,497.55	23.52	16.21	-25.09	0.35	0.00	-12.77
1,675.00	1.80	333.00	1,674.47	28.10	13.64	-29.37	0.14	0.11	2.82
1,853.00	2.70	269.90	1,852.35	30.58	8.18	-31.27	1.39	0.51	-35.45



Phoenix Technology Services

Survey Report



Company: Chevron
Project: Lea County, NM (NAD27 NME)
Site: SD EA 19 Fed
Well: P6 5H
Wellbore: OH / Job 1610090
Design: Surveys (Pace X30)

Local Co-ordinate Reference: Well P6 5H
TVD Reference: RKB @ 3232.00usft (Pace X30)
MD Reference: RKB @ 3232.00usft (Pace X30)
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)
2,030.00	3.20	265.20	2,029.12	30.16	-0.91	-29.90	0.31	0.28	-2.66
2,207.00	4.50	269.70	2,205.72	29.71	-12.78	-28.21	0.75	0.73	2.54
2,384.00	5.80	269.60	2,382.03	29.61	-28.36	-26.49	0.62	0.62	-0.06
2,561.00	5.80	268.80	2,558.15	29.36	-45.94	-24.41	0.12	0.11	-0.45
2,738.00	6.50	269.70	2,734.13	29.13	-64.90	-22.19	0.40	0.40	0.51
2,916.00	5.40	271.90	2,911.17	29.35	-83.35	-20.49	0.63	-0.62	1.24
3,093.00	4.00	267.00	3,087.57	29.30	-97.83	-18.93	0.82	-0.79	-2.77
3,271.00	4.20	262.60	3,265.12	28.14	-110.50	-16.45	0.21	0.11	-2.47
3,448.00	3.60	259.10	3,441.70	26.25	-122.38	-13.33	0.36	-0.34	-1.98
3,625.00	3.10	259.70	3,618.40	24.35	-132.55	-10.37	0.28	-0.28	0.34
3,803.00	3.70	270.00	3,796.09	23.49	-143.03	-8.42	0.48	0.34	5.79
3,980.00	4.20	272.30	3,972.67	23.75	-155.22	-7.41	0.30	0.28	1.30
4,158.00	3.40	272.80	4,150.28	24.27	-167.00	-6.69	0.45	-0.45	0.28
4,335.00	3.80	276.30	4,326.93	25.17	-178.07	-6.43	0.26	0.23	1.98
4,512.00	3.60	265.70	4,503.58	25.39	-189.44	-5.47	0.40	-0.11	-5.99
4,689.00	3.90	265.80	4,680.18	24.53	-200.99	-3.41	0.17	0.17	0.06
4,793.00	4.00	268.90	4,783.93	24.21	-208.14	-2.34	0.23	0.10	2.98
4,970.00	4.10	267.50	4,960.49	23.81	-220.64	-0.64	0.08	0.06	-0.79
5,147.00	4.50	278.90	5,137.00	24.61	-233.82	-0.06	0.53	0.23	6.44
5,325.00	4.30	279.10	5,314.47	26.75	-247.31	-0.77	0.11	-0.11	0.11
5,502.00	4.40	279.90	5,490.96	28.96	-260.55	-1.60	0.07	0.06	0.45
5,680.00	4.20	281.30	5,668.46	31.41	-273.66	-2.66	0.13	-0.11	0.79
5,857.00	4.00	278.40	5,845.01	33.59	-286.13	-3.52	0.16	-0.11	-1.64
6,034.00	3.90	278.40	6,021.59	35.37	-298.19	-4.03	0.06	-0.06	0.00
6,211.00	3.80	277.30	6,198.19	36.99	-309.96	-4.42	0.07	-0.06	-0.62
6,389.00	3.80	279.50	6,375.80	38.71	-321.63	-4.91	0.08	0.00	1.24
6,566.00	4.00	277.50	6,552.39	40.49	-333.54	-5.44	0.14	0.11	-1.13
6,743.00	3.70	278.50	6,728.99	42.14	-345.31	-5.85	0.17	-0.17	0.56
6,921.00	4.30	270.10	6,906.55	43.00	-357.66	-5.41	0.47	0.34	-4.72
7,098.00	4.40	275.60	7,083.04	43.67	-371.05	-4.69	0.24	0.06	3.11
7,275.00	4.10	276.60	7,259.56	45.06	-384.09	-4.71	0.17	-0.17	0.56
7,453.00	4.30	276.50	7,437.08	46.55	-397.05	-4.83	0.11	0.11	-0.06
7,631.00	3.50	282.20	7,614.67	48.45	-408.99	-5.48	0.50	-0.45	3.20
7,808.00	4.10	271.00	7,791.28	49.71	-420.59	-5.51	0.54	0.34	-6.33
7,986.00	4.30	275.40	7,968.80	50.44	-433.60	-4.89	0.21	0.11	2.47
8,163.00	3.50	282.80	8,145.39	50.39	-445.57	-3.59	0.66	-0.45	-7.12
8,340.00	3.70	282.10	8,322.04	48.93	-456.58	-0.98	0.12	0.11	-0.40
8,518.00	3.30	286.80	8,499.71	47.85	-467.39	1.22	0.28	-0.22	2.64
8,646.00	2.50	282.60	8,627.55	47.29	-473.84	2.45	0.65	-0.63	-3.28
8,751.00	8.60	213.90	8,732.04	40.47	-480.49	9.93	6.85	5.81	-46.38
8,795.00	17.20	208.40	8,774.90	32.00	-485.43	18.87	19.72	19.55	-12.50
8,840.00	23.60	210.20	8,817.05	18.35	-493.14	33.25	14.29	14.22	4.00
8,884.00	27.40	210.80	8,856.76	2.03	-502.75	50.48	8.66	8.64	1.36



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Survey Report



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Local Co-ordinate Reference: Well P6 5H
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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)
8,928.00	31.70	210.40	8,895.03	-16.64	-513.79	70.21	9.78	9.77	-0.91
8,973.00	34.40	208.90	8,932.74	-37.97	-525.92	92.69	8.27	6.00	-3.33
9,017.00	36.10	202.20	8,968.69	-60.87	-536.83	116.60	9.60	3.86	-15.23
9,061.00	40.50	198.10	9,003.21	-86.47	-546.17	143.03	11.54	10.00	-9.32
9,106.00	43.50	196.10	9,036.65	-115.24	-555.01	172.57	7.30	6.67	-4.44
9,150.00	47.20	192.30	9,067.58	-145.58	-562.65	203.54	10.41	8.41	-8.64
9,194.00	50.70	191.00	9,096.47	-176.08	-569.34	236.56	8.26	7.95	-2.95
9,239.00	55.70	186.90	9,123.42	-213.65	-574.90	272.52	13.29	11.11	-9.11
9,283.00	60.90	181.90	9,146.55	-250.95	-577.73	309.91	15.26	11.82	-11.36
9,328.00	68.10	176.80	9,165.92	-291.52	-577.21	350.20	18.98	16.00	-11.33
9,372.00	74.50	174.10	9,180.02	-333.04	-573.89	391.15	15.66	14.55	-6.14
Final Phoenix MWD Survey									
9,423.00	82.50	175.00	9,190.18	-382.75	-569.15	440.09	15.78	15.69	1.76
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
834.00	833.80	8.72	13.01	Tie-in to Wellbenders
962.00	961.73	10.81	16.70	First Phoenix MWD Survey
9,372.00	9,180.02	-333.04	-573.89	Final Phoenix MWD Survey
9,423.00	9,190.18	-382.75	-569.15	Projection to TD

Checked By: _____ Approved By: _____ Date: _____