



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 09 2018

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Apache Corporation

Eddy County, NM (NAD 83 NME)
Cedar Lake Federal CA
302H

OH / Job #61481

Survey: Phoenix MWD Surveys

Standard Survey Report

03 August, 2017

Please provide signature
page for directional survey





Phoenix Technology Services LP Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 302H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	RKB @ 3967.50usft (Trinidad 436)
Site:	Cedar Lake Federal CA	MD Reference:	RKB @ 3967.50usft (Trinidad 436)
Well:	302H	North Reference:	Grid
Wellbore:	OH / Job #61481	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 436)	Database:	Compass 5000 GCR

Project	Eddy County, NM (NAD 83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Cedar Lake Federal CA		
Site Position:	Northing:	675,068.30 usft	Latitude: 32° 51' 17.46895 N
From: Map	Easting:	689,764.00 usft	Longitude: 103° 50' 59.94191 W
Position Uncertainty: 0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.26 °

Well	302H		
Well Position	+N/-S	0.00 usft	Northing: 679,015.90 usft
	+E/-W	0.00 usft	Easting: 684,962.90 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Ground Level:	3,951.00 usft

Wellbore	OH / Job #61481				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/1/2017	7.38	60.80	48,393

Design	Surveys (Trinidad 436)				
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	89.58	

Survey Program	Date 8/3/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
721.00	9,785.00	Phoenix MWD Surveys (OH / Job #61481)	MWD+HDGM
			Description
			OWSG Rev.2 MWD + HDGM

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
600.00	0.56	8.60	600.00	0.15	0.53	0.53	0.00	0.00	0.00
Tie In									
721.00	0.59	332.55	720.99	1.29	0.33	0.34	0.30	0.02	-29.79
First Phoenix MWD Survey									
848.00	0.66	343.07	847.99	2.57	-0.18	-0.16	0.11	0.06	8.28
975.00	0.61	328.93	974.98	3.85	-0.75	-0.72	0.13	-0.04	-11.13
1,103.00	0.59	327.12	1,102.97	4.98	-1.45	-1.42	0.02	-0.02	-1.41
1,293.00	0.31	109.58	1,292.97	5.63	-1.50	-1.46	0.45	-0.15	74.98
1,483.00	0.66	104.39	1,482.96	5.19	0.04	0.08	0.19	0.18	-2.73
1,674.00	1.06	85.27	1,673.94	5.06	2.87	2.91	0.25	0.21	-10.01



Phoenix Technology Services LP Survey Report



Company: Apache Corporation
Project: Eddy County, NM (NAD 83 NME)
Site: Cedar Lake Federal CA
Well: 302H
Wellbore: OH / Job #61481
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well 302H
TVD Reference: RKB @ 3967.50usft (Trinidad 436)
MD Reference: RKB @ 3967.50usft (Trinidad 436)
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)
1,863.00	1.11	89.87	1,862.91	5.21	6.44	6.48	0.05	0.03	2.43
2,053.00	0.90	112.48	2,052.88	4.64	9.66	9.69	0.23	-0.11	11.90
2,243.00	0.35	83.48	2,242.87	4.14	11.62	11.65	0.33	-0.29	-15.26
2,432.00	0.27	59.66	2,431.86	4.43	12.57	12.61	0.08	-0.04	-12.60
2,622.00	0.18	20.88	2,621.86	4.93	13.07	13.10	0.09	-0.05	-20.41
2,812.00	0.34	332.13	2,811.86	5.71	12.91	12.95	0.14	0.08	-25.66
3,002.00	0.51	330.08	3,001.86	6.94	12.22	12.28	0.09	0.09	-1.08
3,192.00	0.75	316.20	3,191.84	8.57	10.94	11.00	0.15	0.13	-7.31
3,381.00	0.85	318.16	3,380.83	10.51	9.15	9.23	0.05	0.05	1.04
3,463.00	0.83	322.07	3,462.82	11.43	8.38	8.46	0.07	-0.02	4.77
3,629.00	1.53	324.96	3,628.78	14.19	6.37	6.47	0.42	0.42	1.74
3,691.00	1.32	339.61	3,690.76	15.54	5.64	5.76	0.68	-0.34	23.63
3,754.00	0.54	79.02	3,753.76	16.28	5.68	5.80	2.39	-1.24	157.79
3,881.00	2.05	124.27	3,880.72	15.11	8.15	8.26	1.35	1.19	35.63
3,944.00	1.93	155.99	3,943.69	13.51	9.51	9.61	1.74	-0.19	50.35
4,008.00	1.73	172.31	4,007.65	11.57	10.08	10.16	0.87	-0.31	25.50
4,134.00	1.79	173.21	4,133.59	7.73	10.57	10.62	0.05	0.05	0.71
4,261.00	1.81	182.79	4,260.53	3.76	10.70	10.73	0.24	0.02	7.54
4,388.00	1.86	184.37	4,387.47	-0.30	10.45	10.45	0.06	0.04	1.24
4,514.00	1.92	184.17	4,513.40	-4.45	10.14	10.11	0.05	0.05	-0.16
4,691.00	1.86	184.39	4,690.30	-10.27	9.70	9.63	0.03	-0.03	0.12
4,773.00	4.74	105.50	4,772.19	-12.50	12.87	12.78	5.79	3.51	-96.21
4,836.00	14.29	90.21	4,834.25	-13.23	23.18	23.08	15.55	15.16	-24.27
4,899.00	20.99	87.51	4,894.26	-12.77	42.25	42.15	10.71	10.63	-4.29
4,962.00	26.88	87.12	4,951.82	-11.56	67.77	67.68	9.35	9.35	-0.62
5,026.00	34.89	89.11	5,006.70	-10.55	100.57	100.49	12.62	12.52	3.11
5,089.00	41.63	90.70	5,056.14	-10.52	139.56	139.48	10.81	10.70	2.52
5,152.00	45.35	91.03	5,101.84	-11.18	182.90	182.82	5.92	5.90	0.52
5,215.00	53.23	91.11	5,142.90	-12.07	230.61	230.52	12.51	12.51	0.13
5,277.00	61.16	86.67	5,176.47	-10.97	282.65	282.56	14.13	12.79	-7.16
5,340.00	67.42	86.50	5,203.79	-7.59	339.29	339.22	9.94	9.94	-0.27
5,403.00	73.79	89.11	5,224.70	-5.34	398.63	398.58	10.84	10.11	4.14
5,466.00	81.11	91.37	5,238.38	-5.62	460.08	460.03	12.13	11.62	3.59
5,533.00	86.78	93.28	5,245.45	-8.33	526.62	526.54	8.92	8.46	2.85
5,655.00	87.23	92.21	5,251.82	-14.16	648.31	648.19	0.95	0.37	-0.88
5,780.00	86.86	91.10	5,258.27	-17.77	773.09	772.94	0.93	-0.30	-0.89
5,903.00	87.45	89.81	5,264.37	-18.74	895.93	895.77	1.15	0.48	-1.05
6,028.00	87.25	88.65	5,270.15	-17.06	1,020.78	1,020.63	0.94	-0.16	-0.93
6,154.00	87.09	87.11	5,276.37	-12.41	1,146.54	1,146.42	1.23	-0.13	-1.22
6,280.00	87.20	87.86	5,282.65	-6.89	1,272.26	1,272.18	0.60	0.09	0.60
6,342.00	88.29	87.61	5,285.09	-4.44	1,334.17	1,334.10	1.80	1.76	-0.40
6,405.00	89.16	88.29	5,286.49	-2.19	1,397.11	1,397.06	1.75	1.38	1.08
6,468.00	90.79	88.45	5,286.52	-0.39	1,460.08	1,460.04	2.60	2.59	0.25



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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)
6,531.00	90.76	88.50	5,285.67	1.28	1,523.05	1,523.02	0.09	-0.05	0.08
6,594.00	90.67	88.68	5,284.88	2.83	1,586.03	1,586.01	0.32	-0.14	0.29
6,657.00	90.56	88.61	5,284.20	4.32	1,649.01	1,649.00	0.21	-0.17	-0.11
6,720.00	90.56	88.87	5,283.59	5.71	1,711.99	1,711.99	0.41	0.00	0.41
6,783.00	90.42	89.08	5,283.05	6.83	1,774.98	1,774.98	0.40	-0.22	0.33
6,846.00	90.53	88.89	5,282.53	7.95	1,837.96	1,837.97	0.35	0.17	-0.30
6,909.00	90.39	89.13	5,282.02	9.04	1,900.95	1,900.97	0.44	-0.22	0.38
6,971.00	90.22	89.63	5,281.69	9.71	1,962.95	1,962.97	0.85	-0.27	0.81
7,034.00	90.17	89.76	5,281.48	10.05	2,025.95	2,025.97	0.22	-0.08	0.21
7,097.00	89.89	88.03	5,281.44	11.26	2,088.93	2,088.96	2.78	-0.44	-2.75
7,160.00	89.91	88.20	5,281.55	13.33	2,151.90	2,151.94	0.27	0.03	0.27
7,223.00	89.91	88.20	5,281.65	15.31	2,214.87	2,214.92	0.00	0.00	0.00
7,287.00	89.78	88.33	5,281.82	17.25	2,278.84	2,278.90	0.29	-0.20	0.20
7,350.00	89.58	88.98	5,282.18	18.73	2,341.82	2,341.89	1.08	-0.32	1.03
7,413.00	89.44	89.12	5,282.72	19.77	2,404.81	2,404.89	0.31	-0.22	0.22
7,476.00	89.33	88.93	5,283.39	20.84	2,467.80	2,467.88	0.35	-0.17	-0.30
7,539.00	89.19	88.58	5,284.21	22.21	2,530.78	2,530.87	0.60	-0.22	-0.56
7,603.00	89.05	89.16	5,285.19	23.48	2,594.75	2,594.86	0.93	-0.22	0.91
7,666.00	89.02	88.89	5,286.25	24.55	2,657.74	2,657.84	0.43	-0.05	-0.43
7,728.00	89.05	88.81	5,287.29	25.79	2,719.72	2,719.83	0.14	0.05	-0.13
7,791.00	88.80	89.31	5,288.48	26.82	2,782.70	2,782.82	0.89	-0.40	0.79
7,854.00	88.69	89.08	5,289.86	27.71	2,845.67	2,845.80	0.40	-0.17	-0.37
7,917.00	88.57	89.76	5,291.36	28.35	2,908.65	2,908.78	1.10	-0.19	1.08
7,980.00	88.63	90.18	5,292.90	28.38	2,971.63	2,971.76	0.67	0.10	0.67
8,043.00	88.57	89.43	5,294.44	28.59	3,034.61	3,034.74	1.19	-0.10	-1.19
8,106.00	88.32	90.19	5,296.15	28.80	3,097.59	3,097.72	1.27	-0.40	1.21
8,169.00	88.29	89.60	5,298.01	28.92	3,160.56	3,160.69	0.94	-0.05	-0.94
8,232.00	89.08	90.99	5,299.46	28.59	3,223.54	3,223.67	2.54	1.25	2.21
8,295.00	88.88	90.74	5,300.58	27.64	3,286.53	3,286.64	0.51	-0.32	-0.40
8,358.00	89.52	90.43	5,301.46	27.00	3,349.52	3,349.62	1.13	1.02	-0.49
8,421.00	90.48	90.75	5,301.46	26.35	3,412.51	3,412.61	1.61	1.52	0.51
8,483.00	90.42	91.43	5,300.97	25.17	3,474.50	3,474.59	1.10	-0.10	1.10
8,546.00	90.34	91.10	5,300.56	23.78	3,537.48	3,537.56	0.54	-0.13	-0.52
8,609.00	90.09	91.55	5,300.32	22.32	3,600.46	3,600.53	0.82	-0.40	0.71
8,672.00	89.97	91.71	5,300.29	20.53	3,663.44	3,663.49	0.32	-0.19	0.25
8,735.00	89.86	90.66	5,300.38	19.23	3,726.42	3,726.46	1.68	-0.17	-1.67
8,798.00	90.28	90.28	5,300.30	18.71	3,789.42	3,789.46	0.90	0.67	-0.60
8,861.00	90.17	89.78	5,300.06	18.68	3,852.42	3,852.45	0.81	-0.17	-0.79
8,924.00	89.83	90.32	5,300.06	18.62	3,915.42	3,915.45	1.01	-0.54	0.86
8,987.00	89.75	90.37	5,300.29	18.25	3,978.42	3,978.45	0.15	-0.13	0.08
9,049.00	89.44	90.44	5,300.72	17.81	4,040.42	4,040.44	0.51	-0.50	0.11
9,112.00	89.52	89.51	5,301.30	17.83	4,103.41	4,103.43	1.48	0.13	-1.48
9,174.00	89.47	88.99	5,301.84	18.65	4,165.40	4,165.43	0.84	-0.08	-0.84
9,237.00	89.11	88.83	5,302.62	19.84	4,228.39	4,228.42	0.63	-0.57	-0.25



Phoenix Technology Services LP

Survey Report



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Project: Eddy County, NM (NAD 83 NME)
Site: Cedar Lake Federal CA
Well: 302H
Wellbore: OH / Job #61481
Design: Surveys (Trinidad 436)

Local Co-ordinate Reference: Well 302H
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MD Reference: RKB @ 3967.50usft (Trinidad 436)
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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)
9,300.00	88.71	88.25	5,303.82	21.45	4,291.36	4,291.40	1.12	-0.63	-0.92
9,363.00	88.60	88.82	5,305.30	23.06	4,354.32	4,354.37	0.92	-0.17	0.90
9,426.00	88.35	89.13	5,306.98	24.19	4,417.28	4,417.34	0.63	-0.40	0.49
9,489.00	87.82	87.80	5,309.08	25.87	4,480.23	4,480.29	2.27	-0.84	-2.11
9,553.00	87.48	88.09	5,311.71	28.17	4,544.13	4,544.21	0.70	-0.53	0.45
9,616.00	87.56	87.71	5,314.43	30.47	4,607.03	4,607.13	0.62	0.13	-0.60
9,678.00	87.43	86.76	5,317.14	33.46	4,668.90	4,669.02	1.55	-0.21	-1.53
9,713.00	87.03	87.00	5,318.83	35.36	4,703.80	4,703.94	1.33	-1.14	0.69
Final Phoenix MWD Survey									
9,785.00	87.03	87.00	5,322.56	39.13	4,775.61	4,775.77	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
600.00	600.00	0.15	0.53	Tie In
721.00	720.99	1.29	0.33	First Phoenix MWD Survey
9,713.00	5,318.83	35.36	4,703.80	Final Phoenix MWD Survey
9,785.00	5,322.56	39.13	4,775.61	Projection to TD

Phoenix Technology Services
Survey Report 03-Aug-2017 07:42:21

Apache Corporation

Cedar Lake Federal CA 302H
Eddy County, NM (NAD 83 NME)
OH / Job #61481
Phoenix MWD Surveys

Surface Loc.:

Northing: (Y) 679015.90
Easting: (X) 684962.90
RKB Elev: 3967.50'
GL Elev: 3951.00'

Survey Type Information:

H 721.00 - 9785.00 PHOENIX MWD SURVEYS : MWD+HDGM

Measured Depth (ft)	Incl.	Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coord (+N/-S) (ft)	(+E/-W) (ft)	UTM Coord Northings (ft)	Eastings (ft)
600	0.56	8.6	-3367.5	600	0.15	0.53	679016.1	684963.4
721	0.59	332.55	-3246.51	720.99	1.29	0.33	679017.2	684963.2
848	0.66	343.07	-3119.51	847.99	2.57	-0.18	679018.5	684962.7
975	0.61	328.93	-2992.52	974.98	3.85	-0.75	679019.8	684962.2
1103	0.59	327.12	-2864.53	1102.97	4.98	-1.45	679020.9	684961.5
1293	0.31	109.58	-2674.53	1292.97	5.63	-1.5	679021.5	684961.4
1483	0.66	104.39	-2484.54	1482.96	5.19	0.04	679021.1	684962.9
1674	1.06	85.27	-2293.56	1673.94	5.06	2.87	679021	684965.8
1863	1.11	89.87	-2104.59	1862.91	5.21	6.44	679021.1	684969.3
2053	0.9	112.48	-1914.62	2052.88	4.64	9.66	679020.5	684972.6
2243	0.35	83.48	-1724.63	2242.87	4.14	11.62	679020	684974.5
2432	0.27	59.66	-1535.64	2431.86	4.43	12.57	679020.3	684975.5
2622	0.18	20.88	-1345.64	2621.86	4.93	13.07	679020.8	684976
2812	0.34	332.13	-1155.64	2811.86	5.71	12.91	679021.6	684975.8
3002	0.51	330.08	-965.64	3001.86	6.94	12.22	679022.8	684975.1
3192	0.75	316.2	-775.66	3191.84	8.57	10.94	679024.5	684973.8
3381	0.85	318.16	-586.67	3380.83	10.51	9.15	679026.4	684972.1
3463	0.83	322.07	-504.68	3462.82	11.43	8.38	679027.3	684971.3
3629	1.53	324.96	-338.72	3628.78	14.19	6.37	679030.1	684969.3
3691	1.32	339.61	-276.74	3690.76	15.54	5.64	679031.4	684968.5
3754	0.54	79.02	-213.74	3753.76	16.28	5.68	679032.2	684968.6
3881	2.05	124.27	-86.78	3880.72	15.11	8.15	679031	684971.1
3944	1.93	155.99	-23.82	3943.68	13.51	9.51	679029.4	684972.4

4008	1.73	172.31	40.15	4007.65	11.57	10.08	679027.5	684973
4134	1.79	173.21	166.09	4133.59	7.73	10.57	679023.6	684973.5
4261	1.81	182.79	293.03	4260.53	3.76	10.7	679019.7	684973.6
4388	1.86	184.37	419.97	4387.47	-0.3	10.45	679015.6	684973.4
4514	1.92	184.17	545.9	4513.4	-4.45	10.14	679011.5	684973
4691	1.86	184.39	722.8	4690.3	-10.27	9.7	679005.6	684972.6
4773	4.74	105.5	804.69	4772.19	-12.5	12.87	679003.4	684975.8
4836	14.29	90.21	866.75	4834.25	-13.23	23.18	679002.7	684986.1
4899	20.99	87.51	926.76	4894.26	-12.77	42.25	679003.1	685005.2
4962	26.88	87.12	984.32	4951.82	-11.56	67.77	679004.3	685030.7
5026	34.89	89.11	1039.2	5006.7	-10.55	100.57	679005.4	685063.5
5089	41.63	90.7	1088.64	5056.14	-10.52	139.56	679005.4	685102.5
5152	45.35	91.03	1134.34	5101.84	-11.18	182.9	679004.7	685145.8
5215	53.23	91.11	1175.4	5142.9	-12.07	230.61	679003.8	685193.5
5277	61.16	86.67	1208.97	5176.47	-10.97	282.65	679004.9	685245.6
5340	67.42	86.5	1236.29	5203.79	-7.59	339.29	679008.3	685302.2
5403	73.79	89.11	1257.2	5224.7	-5.34	398.63	679010.6	685361.5
5466	81.11	91.37	1270.88	5238.38	-5.62	460.08	679010.3	685423
5533	86.78	93.28	1277.95	5245.45	-8.33	526.62	679007.6	685489.5
5655	87.23	92.21	1284.32	5251.82	-14.16	648.31	679001.7	685611.2
5780	86.86	91.1	1290.77	5258.27	-17.77	773.09	678998.1	685736
5903	87.45	89.81	1296.87	5264.37	-18.74	895.93	678997.2	685858.8
6028	87.25	88.65	1302.65	5270.15	-17.06	1020.78	678998.8	685983.7
6154	87.09	87.11	1308.87	5276.37	-12.41	1146.54	679003.5	686109.4
6280	87.2	87.86	1315.15	5282.65	-6.89	1272.26	679009	686235.2
6342	88.29	87.61	1317.59	5285.09	-4.44	1334.17	679011.5	686297.1
6405	89.16	88.29	1318.99	5286.49	-2.19	1397.11	679013.7	686360
6468	90.79	88.45	1319.02	5286.52	-0.39	1460.08	679015.5	686423
6531	90.76	88.5	1318.17	5285.67	1.28	1523.05	679017.2	686486
6594	90.67	88.68	1317.38	5284.88	2.83	1586.03	679018.7	686548.9
6657	90.56	88.61	1316.7	5284.2	4.32	1649.01	679020.2	686611.9
6720	90.56	88.87	1316.09	5283.59	5.71	1711.99	679021.6	686674.9
6783	90.42	89.08	1315.55	5283.05	6.83	1774.98	679022.7	686737.9
6846	90.53	88.89	1315.03	5282.53	7.95	1837.96	679023.9	686800.9
6909	90.39	89.13	1314.52	5282.02	9.04	1900.95	679024.9	686863.9
6971	90.22	89.63	1314.19	5281.69	9.71	1962.95	679025.6	686925.9
7034	90.17	89.76	1313.98	5281.48	10.05	2025.95	679026	686988.9
7097	89.89	88.03	1313.94	5281.44	11.26	2088.93	679027.2	687051.8
7160	89.91	88.2	1314.05	5281.55	13.33	2151.9	679029.2	687114.8
7223	89.91	88.2	1314.15	5281.65	15.31	2214.87	679031.2	687177.8
7287	89.78	88.33	1314.32	5281.82	17.25	2278.84	679033.2	687241.7
7350	89.58	88.98	1314.68	5282.18	18.73	2341.82	679034.6	687304.7
7413	89.44	89.12	1315.22	5282.72	19.77	2404.81	679035.7	687367.7
7476	89.33	88.93	1315.89	5283.39	20.84	2467.8	679036.7	687430.7
7539	89.19	88.58	1316.71	5284.21	22.21	2530.78	679038.1	687493.7
7603	89.05	89.16	1317.69	5285.19	23.48	2594.75	679039.4	687557.7
7666	89.02	88.89	1318.75	5286.25	24.55	2657.74	679040.5	687620.6

7728	89.05	88.81	1319.79	5287.29	25.79	2719.72	679041.7	687682.6
7791	88.8	89.31	1320.98	5288.48	26.82	2782.7	679042.7	687745.6
7854	88.69	89.08	1322.36	5289.86	27.71	2845.67	679043.6	687808.6
7917	88.57	89.76	1323.86	5291.36	28.35	2908.65	679044.3	687871.6
7980	88.63	90.18	1325.4	5292.9	28.38	2971.63	679044.3	687934.5
8043	88.57	89.43	1326.94	5294.44	28.59	3034.61	679044.5	687997.5
8106	88.32	90.19	1328.65	5296.15	28.8	3097.59	679044.7	688060.5
8169	88.29	89.6	1330.51	5298.01	28.92	3160.56	679044.8	688123.5
8232	89.08	90.99	1331.96	5299.46	28.59	3223.54	679044.5	688186.4
8295	88.88	90.74	1333.08	5300.58	27.64	3286.53	679043.5	688249.4
8358	89.52	90.43	1333.96	5301.46	27	3349.52	679042.9	688312.4
8421	90.48	90.75	1333.96	5301.46	26.35	3412.51	679042.3	688375.4
8483	90.42	91.43	1333.47	5300.97	25.17	3474.5	679041.1	688437.4
8546	90.34	91.1	1333.06	5300.56	23.78	3537.48	679039.7	688500.4
8609	90.09	91.55	1332.82	5300.32	22.32	3600.46	679038.2	688563.4
8672	89.97	91.71	1332.79	5300.29	20.53	3663.44	679036.4	688626.3
8735	89.86	90.66	1332.88	5300.38	19.23	3726.42	679035.1	688689.3
8798	90.28	90.28	1332.8	5300.3	18.71	3789.42	679034.6	688752.3
8861	90.17	89.78	1332.55	5300.05	18.68	3852.42	679034.6	688815.3
8924	89.83	90.32	1332.55	5300.05	18.62	3915.42	679034.5	688878.3
8987	89.75	90.37	1332.79	5300.29	18.25	3978.42	679034.2	688941.3
9049	89.44	90.44	1333.22	5300.72	17.81	4040.42	679033.7	689003.3
9112	89.52	89.51	1333.8	5301.3	17.83	4103.41	679033.7	689066.3
9174	89.47	88.99	1334.34	5301.84	18.65	4165.4	679034.6	689128.3
9237	89.11	88.83	1335.12	5302.62	19.84	4228.39	679035.7	689191.3
9300	88.71	88.25	1336.32	5303.82	21.45	4291.36	679037.4	689254.3
9363	88.6	88.82	1337.8	5305.3	23.06	4354.32	679039	689317.2
9426	88.35	89.13	1339.48	5306.98	24.19	4417.28	679040.1	689380.2
9489	87.82	87.8	1341.58	5309.08	25.87	4480.23	679041.8	689443.1
9553	87.48	88.09	1344.21	5311.71	28.17	4544.13	679044.1	689507
9616	87.56	87.71	1346.93	5314.43	30.47	4607.03	679046.4	689569.9
9678	87.43	86.76	1349.64	5317.14	33.46	4668.9	679049.4	689631.8
9713	87.03	87	1351.33	5318.83	35.36	4703.8	679051.3	689666.7
9785	87.03	87	1355.06	5322.56	39.13	4775.61	679055	689738.5

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to RKB. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.
Vertical Section is from Slot and calculated along an Azimuth of 89.583° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Grid Convergence at Surface is 0.254°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 9785.00ft.,
the Bottom Hole Displacement is 4775.77ft., in the Direction of 89.583° (Grid).

Vertical Section (ft)	Dogleg Rate (°/100ft, Annotation)
0.53	0 Tie In
0.34	0.3 First Phoenix MWD Survey
-0.16	0.11
-0.72	0.13
-1.42	0.02
-1.46	0.45
0.08	0.19
2.91	0.25
6.48	0.05
9.69	0.23
11.65	0.33
12.61	0.08
13.1	0.09
12.95	0.14
12.28	0.09
11	0.15
9.23	0.05
8.46	0.07
6.47	0.42
5.76	0.68
5.8	2.39
8.26	1.35
9.61	1.74

10.16	0.87
10.62	0.05
10.73	0.24
10.45	0.06
10.11	0.05
9.63	0.03
12.78	5.79
23.08	15.55
42.15	10.71
67.68	9.35
100.49	12.62
139.48	10.81
182.82	5.92
230.52	12.51
282.56	14.13
339.22	9.94
398.58	10.84
460.03	12.13
526.54	8.92
648.19	0.95
772.94	0.93
895.77	1.15
1020.63	0.94
1146.42	1.23
1272.18	0.6
1334.1	1.8
1397.06	1.75
1460.04	2.6
1523.02	0.09
1586.01	0.32
1648.99	0.21
1711.99	0.41
1774.98	0.4
1837.97	0.35
1900.97	0.44
1962.97	0.85
2025.97	0.22
2088.96	2.78
2151.94	0.27
2214.92	0
2278.9	0.29
2341.89	1.08
2404.89	0.31
2467.88	0.35
2530.87	0.6
2594.86	0.93
2657.84	0.43

2719.83	0.14
2782.82	0.89
2845.8	0.4
2908.78	1.1
2971.76	0.67
3034.74	1.19
3097.72	1.27
3160.69	0.94
3223.67	2.54
3286.64	0.51
3349.62	1.13
3412.61	1.61
3474.59	1.1
3537.56	0.54
3600.53	0.82
3663.49	0.32
3726.46	1.68
3789.46	0.9
3852.45	0.81
3915.45	1.01
3978.45	0.15
4040.44	0.51
4103.43	1.48
4165.43	0.84
4228.42	0.63
4291.4	1.12
4354.37	0.92
4417.34	0.63
4480.29	2.27
4544.21	0.7
4607.13	0.62
4669.02	1.55
4703.94	1.33 Final Phoenix MWD Survey
4775.77	0 Projection to TD