



NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 06 2018

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Apache Corporation

Eddy County, NM (NAD 83 NME)

Cedar Lake Federal CA

725H

30-015-44399

OH / Job #61656

Survey: Phoenix MWD Surveys

Standard Survey Report

16 October, 2017





Phoenix Technology Services LP

Survey Report



Company:	Apache Corporation	Well:	Well 725H
Location:	Eddy County, NM (NAD 83 NME)	GL + KB @ 3739.50usft (Trinidad 436)	
Site:	Cedar Lake Federal CA	GL + KB @ 3739.50usft (Trinidad 436)	
Well:	725H	Grid	
Wellhead:	OH / Job #61656	Minimum Curvature	
Location:	Surveys (Trinidad 436)	Compass 5000 GCR	

Location:	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:	725H					
Well Position	+N/-S	0.00 usft	Northing:	672,499.40 usft	Latitude:	32° 50' 52.89564 N
	+E/-W	0.00 usft	Easting:	669,744.20 usft	Longitude:	103° 54' 54.75473 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,723.00 usft	

Wellhead:	OH / Job #61656			
HDGM	9/16/2017	7.47	60.75	48,343

Depth:		Surveys (Trinidad 436)		
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Station	Depth from 1.00	1.00	1.00	1.00
	0.00	0.00	0.00	81.47

Survey Depth				
51.00	356.00	Phoenix Gyro Surveys (OH / Job #61656)	MWD+HDGM	OWSG Rev.2 MWD + HDGM
528.00	9,385.00	Phoenix MWD Surveys (OH / Job #61656)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Survey									
356.00	0.77	224.69	355.99	-0.39	-0.91	-0.96	0.00	0.00	0.00
Tie In									
528.00	0.93	186.77	527.98	-2.60	-1.89	-2.25	0.33	0.09	-22.05
First Phoenix MWD Survey									
651.00	0.21	279.81	650.97	-3.55	-2.23	-2.73	0.78	-0.59	75.64
775.00	0.30	295.43	774.97	-3.37	-2.75	-3.21	0.09	0.07	12.60
900.00	0.36	280.33	899.97	-3.16	-3.43	-3.86	0.08	0.05	-12.08
1,025.00	0.32	307.28	1,024.97	-2.88	-4.09	-4.47	0.13	-0.03	21.56
1,149.00	0.24	347.35	1,148.96	-2.42	-4.42	-4.73	0.17	-0.06	32.31

Company	Apache Corporation	Well 725H
Project	Eddy County, NM (NAD 83 NME)	GL + KB @ 3739.50usft (Trinidad 436)
Site	Cedar Lake Federal CA	GL + KB @ 3739.50usft (Trinidad 436)
Well	725H	Grid
Volume	OH / Job #61656	Minimum Curvature
Drilling	Surveys (Trinidad 436)	Compass 5000 GCR

Station	Offset (ft)	Angle (deg)	Station	Offset (ft)	Angle (deg)	Station	Offset (ft)	Angle (deg)	Station
1,274.00	0.14	8.43	1,273.96	-2.01	-4.46	-4.71	0.10	-0.08	16.86
1,399.00	0.09	47.72	1,398.96	-1.79	-4.36	-4.58	0.07	-0.04	31.43
1,523.00	0.14	323.14	1,522.96	-1.61	-4.38	-4.57	0.13	0.04	-68.21
1,648.00	0.04	13.79	1,647.96	-1.44	-4.46	-4.63	0.09	-0.08	40.52
1,771.00	0.06	143.86	1,770.96	-1.45	-4.42	-4.58	0.07	0.02	105.75
1,896.00	0.09	123.53	1,895.96	-1.56	-4.29	-4.48	0.03	0.02	-16.26
2,020.00	0.09	50.33	2,019.96	-1.55	-4.14	-4.32	0.09	0.00	-59.03
2,143.00	0.06	325.19	2,142.96	-1.44	-4.10	-4.27	0.08	-0.02	-69.22
2,268.00	0.14	90.18	2,267.96	-1.38	-3.99	-4.15	0.14	0.06	99.99
2,391.00	0.14	99.60	2,390.96	-1.41	-3.69	-3.86	0.02	0.00	7.66
2,516.00	0.08	113.96	2,515.96	-1.47	-3.46	-3.64	0.05	-0.05	11.49
2,640.00	0.20	77.22	2,639.96	-1.46	-3.17	-3.35	0.12	0.10	-29.63
2,765.00	0.21	118.69	2,764.96	-1.52	-2.75	-2.95	0.12	0.01	33.18
2,890.00	0.14	93.47	2,889.96	-1.64	-2.40	-2.62	0.08	-0.06	-20.18
3,014.00	0.25	79.73	3,013.96	-1.60	-1.98	-2.20	0.10	0.09	-11.08
3,138.00	0.27	89.49	3,137.96	-1.55	-1.42	-1.64	0.04	0.02	7.87
3,201.00	0.28	66.13	3,200.96	-1.48	-1.13	-1.34	0.18	0.02	-37.08
3,325.00	0.34	101.33	3,324.96	-1.43	-0.50	-0.70	0.16	0.05	28.39
3,449.00	0.35	84.35	3,448.95	-1.47	0.24	0.02	0.08	0.01	-13.69
3,568.00	0.04	144.06	3,567.95	-1.47	0.63	0.40	0.28	-0.26	50.18
3,692.00	0.20	81.50	3,691.95	-1.47	0.87	0.64	0.15	0.13	-50.45
3,817.00	0.30	122.20	3,816.95	-1.61	1.36	1.10	0.16	0.08	32.56
3,942.00	0.30	48.24	3,941.95	-1.57	1.88	1.63	0.29	0.00	-59.17
4,066.00	0.19	16.54	4,065.95	-1.15	2.18	1.99	0.14	-0.09	-25.56
4,190.00	0.50	34.10	4,189.95	-0.51	2.54	2.44	0.26	0.25	14.16
4,314.00	0.48	41.38	4,313.94	0.33	3.19	3.20	0.05	-0.02	5.87
4,439.00	0.34	0.14	4,438.94	1.09	3.54	3.66	0.25	-0.11	-32.99
4,564.00	0.58	26.99	4,563.94	2.03	3.82	4.08	0.25	0.19	21.48
4,688.00	0.50	41.46	4,687.93	2.99	4.47	4.86	0.13	-0.06	11.67
4,732.00	0.34	78.52	4,731.93	3.16	4.72	5.14	0.70	-0.36	84.23
4,760.00	0.28	65.76	4,759.93	3.21	4.87	5.29	0.33	-0.21	-45.57
4,821.00	5.81	65.37	4,820.82	4.55	7.81	8.40	9.07	9.07	-0.64
4,884.00	13.90	65.75	4,882.84	9.00	17.63	18.77	12.84	12.84	0.60
4,946.00	20.41	58.43	4,942.05	17.73	33.65	35.90	11.04	10.50	-11.81
5,008.00	25.74	56.18	4,999.07	30.89	54.06	58.04	8.71	8.60	-3.63
5,070.00	31.11	57.35	5,053.58	47.04	78.75	84.85	8.71	8.66	1.89
5,132.00	36.17	63.00	5,105.19	64.00	108.56	116.85	9.59	8.16	9.11
5,194.00	43.80	66.18	5,152.67	81.00	144.55	154.96	12.74	12.31	5.13
5,255.00	51.56	64.90	5,193.71	99.69	185.56	198.29	12.82	12.72	-2.10
5,318.00	57.96	64.98	5,230.04	121.47	232.14	247.59	10.16	10.16	0.13
5,381.00	66.54	61.25	5,259.35	146.72	281.78	300.42	14.59	13.62	-5.92
5,443.00	73.68	56.72	5,280.44	176.77	331.67	354.22	13.41	11.52	-7.31
5,505.00	81.45	57.35	5,293.78	209.69	382.43	409.30	12.57	12.53	1.02



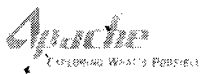
Phoenix Technology Services LP

Survey Report



Company	Apache Corporation	Well 725H
Project	Eddy County, NM (NAD 83 NME)	GL + KB @ 3739.50usft (Trinidad 436)
Site	Cedar Lake Federal CA	GL + KB @ 3739.50usft (Trinidad 436)
Well	725H	Grid
Wells	OH / Job #61656	Minimum Curvature
Program	Surveys (Trinidad 436)	Compass 5000 GCR

Station	Elev (ft)	Lat (N)	Long (W)	Dist (ft)	Angle (deg)	Dist (ft)	Angle (deg)	Dist (ft)	Angle (deg)	Dist (ft)
5,568.00	88.85	58.81	5,299.11	242.85	435.68	466.88	11.97	11.75	2.32	
5,629.00	89.30	60.30	5,300.09	273.75	488.26	523.46	2.55	0.74	2.44	
5,691.00	89.39	61.37	5,300.80	303.97	542.40	581.48	1.73	0.15	1.73	
5,753.00	89.21	62.22	5,301.56	333.27	597.03	639.85	1.40	-0.29	1.37	
5,815.00	88.80	63.20	5,302.63	361.69	652.12	698.55	1.71	-0.66	1.58	
5,876.00	88.93	64.44	5,303.84	388.59	706.85	756.67	2.04	0.21	2.03	
5,938.00	88.54	65.92	5,305.21	414.61	763.11	816.16	2.47	-0.63	2.39	
6,000.00	88.54	68.16	5,306.79	438.79	820.17	876.18	3.61	0.00	3.61	
6,061.00	89.05	69.36	5,308.07	460.88	877.02	935.67	2.14	0.84	1.97	
6,123.00	89.08	71.76	5,309.09	481.51	935.47	996.54	3.87	0.05	3.87	
6,184.00	88.77	73.86	5,310.23	499.54	993.73	1,056.83	3.48	-0.51	3.44	
6,246.00	89.08	74.90	5,311.39	516.23	1,053.43	1,118.34	1.75	0.50	1.68	
6,309.00	89.19	76.28	5,312.35	531.90	1,114.44	1,181.00	2.20	0.17	2.19	
6,371.00	89.16	76.26	5,313.24	546.62	1,174.66	1,242.74	0.06	-0.05	-0.03	
6,434.00	88.66	78.28	5,314.44	560.50	1,236.10	1,305.56	3.30	-0.79	3.21	
6,495.00	88.38	79.88	5,316.01	572.05	1,295.97	1,366.48	2.66	-0.46	2.62	
6,558.00	89.08	80.85	5,317.41	582.59	1,358.07	1,429.45	1.90	1.11	1.54	
6,620.00	89.41	82.78	5,318.23	591.42	1,419.43	1,491.44	3.16	0.53	3.11	
6,682.00	88.93	84.31	5,319.12	598.39	1,481.02	1,553.39	2.59	-0.77	2.47	
6,745.00	88.82	85.83	5,320.36	603.80	1,543.78	1,616.25	2.42	-0.17	2.41	
6,808.00	89.44	87.04	5,321.32	607.72	1,606.65	1,679.01	2.16	0.98	1.92	
6,870.00	89.97	87.92	5,321.64	610.44	1,668.59	1,740.67	1.66	0.85	1.42	
6,932.00	90.56	88.15	5,321.35	612.57	1,730.55	1,802.26	1.02	0.95	0.37	
6,994.00	91.29	89.21	5,320.35	613.99	1,792.52	1,863.76	2.08	1.18	1.71	
7,057.00	90.95	90.38	5,319.12	614.22	1,855.51	1,926.08	1.93	-0.54	1.86	
7,119.00	90.89	90.53	5,318.12	613.73	1,917.50	1,987.32	0.26	-0.10	0.24	
7,181.00	89.27	91.29	5,318.04	612.74	1,979.49	2,048.47	2.89	-2.61	1.23	
7,244.00	89.44	90.60	5,318.74	611.70	2,042.48	2,110.61	1.13	0.27	-1.10	
7,305.00	88.38	90.23	5,319.91	611.26	2,103.46	2,170.86	1.84	-1.74	-0.61	
7,367.00	88.74	90.15	5,321.46	611.06	2,165.44	2,232.12	0.59	0.58	-0.13	
7,429.00	87.62	89.55	5,323.43	611.22	2,227.41	2,293.43	2.05	-1.81	-0.97	
7,491.00	86.86	88.38	5,326.42	612.34	2,289.33	2,354.82	2.25	-1.23	-1.89	
7,553.00	87.00	88.14	5,329.74	614.22	2,351.21	2,416.30	0.45	0.23	-0.39	
7,615.00	87.82	87.63	5,332.54	616.50	2,413.10	2,477.85	1.56	1.32	-0.82	
7,677.00	88.35	88.50	5,334.61	618.60	2,475.03	2,539.40	1.64	0.85	1.40	
7,739.00	88.71	88.86	5,336.20	620.02	2,536.99	2,600.89	0.82	0.58	0.58	
7,802.00	89.08	88.86	5,337.42	621.28	2,599.97	2,663.36	0.59	0.59	0.00	
7,863.00	89.02	89.67	5,338.43	622.06	2,660.96	2,723.79	1.33	-0.10	1.33	
7,925.00	89.02	90.72	5,339.49	621.85	2,722.95	2,785.06	1.69	0.00	1.69	
7,987.00	89.11	90.08	5,340.50	621.42	2,784.94	2,846.30	1.04	0.15	-1.03	
8,048.00	89.11	89.55	5,341.45	621.61	2,845.93	2,906.65	0.87	0.00	-0.87	
8,111.00	89.11	90.46	5,342.43	621.61	2,908.92	2,968.94	1.44	0.00	1.44	
8,172.00	89.58	91.40	5,343.12	620.62	2,969.91	3,029.11	1.73	0.77	1.54	
8,235.00	89.61	91.68	5,343.57	618.92	3,032.88	3,091.13	0.44	0.05	0.44	



Phoenix Technology Services LP Survey Report



Client	Apache Corporation	Well 725H
Location	Eddy County, NM (NAD 83 NME)	GL + KB @ 3739.50usft (Trinidad 436)
Site	Cedar Lake Federal CA	GL + KB @ 3739.50usft (Trinidad 436)
Well	725H	Grid
Work	OH / Job #61656	Minimum Curvature
Notes	Surveys (Trinidad 436)	Compass 5000 GCR

Station	North	East	Upland	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
8,296.00	89.75	92.15	5,343.91	616.88	3,093.85	3,151.12	0.80	0.23	0.77	
8,358.00	89.91	91.94	5,344.09	614.67	3,155.81	3,212.07	0.43	0.26	-0.34	
8,420.00	89.08	90.92	5,344.64	613.12	3,217.78	3,273.13	2.12	-1.34	-1.65	
8,482.00	89.33	91.33	5,345.50	611.91	3,279.77	3,334.25	0.77	0.40	0.66	
8,544.00	89.36	91.06	5,346.21	610.61	3,341.75	3,395.35	0.44	0.05	-0.44	
8,606.00	88.85	89.75	5,347.18	610.17	3,403.74	3,456.59	2.27	-0.82	-2.11	
8,668.00	88.74	89.06	5,348.48	610.82	3,465.72	3,517.98	1.13	-0.18	-1.11	
8,730.00	88.82	89.00	5,349.80	611.87	3,527.70	3,579.43	0.16	0.13	-0.10	
8,792.00	89.16	88.20	5,350.90	613.38	3,589.67	3,640.94	1.40	0.55	-1.29	
8,854.00	89.13	88.46	5,351.82	615.19	3,651.63	3,702.49	0.42	-0.05	0.42	
8,917.00	88.93	88.41	5,352.89	616.91	3,714.60	3,765.02	0.33	-0.32	-0.08	
8,979.00	88.49	87.82	5,354.28	618.95	3,776.55	3,826.58	1.19	-0.71	-0.95	
9,041.00	88.51	87.99	5,355.91	621.21	3,838.49	3,888.17	0.28	0.03	0.27	
9,103.00	89.05	88.74	5,357.23	622.98	3,900.45	3,949.71	1.49	0.87	1.21	
9,165.00	88.96	88.62	5,358.30	624.41	3,962.42	4,011.21	0.24	-0.15	-0.19	
9,227.00	88.80	88.59	5,359.51	625.92	4,024.39	4,072.72	0.26	-0.26	-0.05	
9,289.00	88.77	88.61	5,360.83	627.43	4,086.36	4,134.22	0.06	-0.05	0.03	
9,325.00	88.88	88.50	5,361.57	628.34	4,122.34	4,169.94	0.43	0.31	-0.31	
Final Phoenix MWD Survey										
9,385.00	88.88	88.50	5,362.74	629.91	4,182.31	4,229.48	0.00	0.00	0.00	
Projection to TD										

Station	North	East	Upland	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad	Trinidad
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
356.00	355.99	-0.39	-0.91	Tie In						
528.00	527.98	-2.60	-1.89	First Phoenix MWD Survey						
9,325.00	5,361.57	628.34	4,122.34	Final Phoenix MWD Survey						
9,385.00	5,362.74	629.91	4,182.31	Projection to TD						