



Apache Corporation

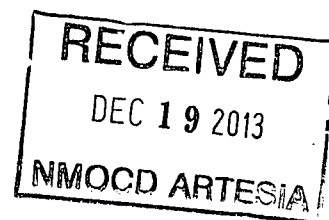
Eddy County, New Mexico (NAD 83)

Sec 32, T17S, R28E

AB State 647 #10 API #30-015-41494

Wellbore #1

Survey: MWD



DDC Survey Report

22 October, 2013





DDC
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AB State 647 #10
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3688.0usft (Capstar #118)
Site:	Sec 32, T17S, R28E	MD Reference:	WELL @ 3688.0usft (Capstar #118)
Well:	AB State 647 #10	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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

Site	Sec 32, T17S, R28E		
Site Position:		Northing:	651,211.44 usft
From:	Map	Easting:	582,974.92 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 47' 24.499 N
		Longitude:	104° 11' 52.221 W
		Grid Convergence:	0.07 °

Well	AB State 647 #10		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 47' 12.305 N
		Longitude:	104° 12' 3.140 W
		Ground Level:	3,677.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	10/10/2013	7.63
			Dip Angle
			(°)
			60.54
			Field Strength
			(nT)
			48,651

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			170.43

Survey Program:	Date 10/22/2013		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		Description
400.0	5,076.0	MWD (Wellbore #1)	

Survey			
Measured	Inclination	Azimuth	Vertical
Depth	(°)	(°)	Depth
(usft)			(usft)
		+N/-S	+E/-W
		(usft)	(usft)
		Vertical	Dogleg
		Section	Rate
		(usft)	(°/100usft)
			Build
			Rate
			(°/100usft)
			Turn
			Rate
			(°/100usft)
0.0	0.36	213.27	0.0
0.0	0.36	213.27	400.0
550.0	0.30	193.70	550.0
656.0	1.60	178.40	656.0
827.0	1.50	158.00	826.9
912.0	2.00	169.60	911.9
997.0	2.90	172.10	996.8
1,082.0	4.10	167.00	1,081.6
1,168.0	4.30	164.30	1,167.4
1,253.0	4.50	164.50	1,252.2
			-2.1
			-1.4
			1.8
			0.00
			0.00
			0.00
			0.08
			1.24
			0.33
			0.72
			1.07
			1.46
			0.33
			0.24
			0.00
			0.00
			-0.04
			-13.05
			-14.43
			-11.93
			-6.00
			-3.14
			0.24



DDC
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AB State 647 #10
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3688.0usft (Capstar #118)
Site:	Sec 32, T17S, R28E	MD Reference:	WELL @ 3688.0usft (Capstar #118)
Well:	AB State 647 #10	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
1,338.0	4.00	174.20	1,336.9	-38.8	5.9	39.2	1.03	-0.59	11.41
1,424.0	4.20	177.20	1,422.7	-44.9	6.3	45.4	0.34	0.23	3.49
1,509.0	4.40	173.10	1,507.5	-51.3	6.9	51.7	0.43	0.24	-4.82
1,594.0	5.00	169.60	1,592.2	-58.2	7.9	58.7	0.78	0.71	-4.12
1,680.0	5.00	181.60	1,677.8	-65.6	8.5	66.1	1.21	0.00	13.95
1,765.0	4.80	178.40	1,762.5	-72.8	8.5	73.2	0.40	-0.24	-3.76
1,851.0	4.40	162.80	1,848.3	-79.6	9.6	80.1	1.52	-0.47	-18.14
1,936.0	4.90	154.30	1,933.0	-86.0	12.1	86.8	1.00	0.59	-10.00
2,021.0	5.60	167.20	2,017.6	-93.3	14.6	94.4	1.61	0.82	15.18
2,107.0	5.60	168.80	2,103.2	-101.5	16.4	102.8	0.18	0.00	1.86
2,192.0	4.90	166.80	2,187.9	-109.1	18.0	110.6	0.85	-0.82	-2.35
2,363.0	4.50	171.70	2,358.3	-122.9	20.6	124.6	0.33	-0.23	2.87
2,533.0	4.70	175.30	2,527.7	-136.4	22.2	138.2	0.21	0.12	2.12
Crossed Hard Line @ 2691' MD / 2685' TVD									
2,690.6	4.70	176.87	2,684.8	-149.3	23.1	151.0	0.08	0.00	0.99
2,704.0	4.70	177.00	2,698.2	-150.4	23.1	152.1	0.08	0.00	0.99
2,832.0	3.90	179.30	2,825.8	-160.0	23.4	161.6	0.64	-0.63	1.80
2,918.0	2.80	171.70	2,911.7	-165.0	23.8	166.6	1.38	-1.28	-8.84
3,003.0	2.10	173.70	2,996.6	-168.6	24.2	170.3	0.83	-0.82	2.35
3,088.0	1.40	179.30	3,081.5	-171.2	24.4	172.8	0.85	-0.82	6.59
3,174.0	0.40	197.80	3,167.5	-172.5	24.4	174.1	1.20	-1.16	21.51
3,259.0	0.00	140.10	3,252.5	-172.8	24.3	174.4	0.47	-0.47	0.00
3,344.0	0.10	20.20	3,337.5	-172.7	24.3	174.3	0.12	0.12	0.00
3,430.0	0.10	344.00	3,423.5	-172.6	24.3	174.2	0.07	0.00	-42.09
3,600.0	0.40	5.30	3,593.5	-171.8	24.3	173.5	0.18	0.18	12.53
3,771.0	0.30	9.80	3,764.5	-170.8	24.4	172.5	0.06	-0.06	2.63
3,942.0	0.30	24.80	3,935.5	-169.9	24.7	171.7	0.05	0.00	8.77
4,113.0	0.30	29.90	4,106.5	-169.2	25.1	171.0	0.02	0.00	2.98
4,241.0	0.40	322.20	4,234.5	-168.5	25.0	170.3	0.31	0.08	-52.89
4,412.0	0.40	3.70	4,405.5	-167.4	24.7	169.2	0.17	0.00	24.27
4,583.0	0.90	16.30	4,576.5	-165.6	25.1	167.4	0.30	0.29	7.37
4,668.0	1.10	17.20	4,661.5	-164.1	25.5	166.1	0.24	0.24	1.06
4,711.0	1.00	26.90	4,704.5	-163.4	25.8	165.4	0.47	-0.23	22.56
4,796.0	0.20	74.70	4,789.5	-162.7	26.3	164.8	1.03	-0.94	56.24
4,881.0	0.40	33.90	4,874.5	-162.4	26.6	164.6	0.33	0.24	-48.00
5,026.0	0.50	13.20	5,019.5	-161.4	27.0	163.6	0.13	0.07	-14.28
TD @ 5076' MD / 5070' TVD									
5,076.0	0.50	13.20	5,069.5	-161.0	27.1	163.2	0.00	0.00	0.00



DDC
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AB State 647 #10
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3688.0usft (Capstar #118)
Site:	Sec 32, T17S, R28E	MD Reference:	WELL @ 3688.0usft (Capstar #118)
Well:	AB State 647 #10	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
400.0	400.0	-2.1	-1.4	Tie In @ 400' MD / 400' TVD
2,690.6	2,684.8	-149.3	23.1	Crossed Hard Line @ 2691' MD / 2685' TVD
5,076.0	5,069.5	-161.0	27.1	TD @ 5076' MD / 5070' TVD

Checked By: _____ Approved By: _____ Date: _____



Apache Corporation

Eddy County, New Mexico (NAD 83)

Sec 32, T17S, R28E

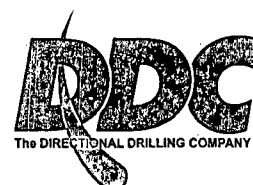
AB State 647 #10 *API #30-015-41494*

Wellbore #1

Survey: MWD

Survey Report - Geographic

22 October, 2013





DDC
Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AB State 647 #10
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3688.0usft (Capstar #118)
Site:	Sec 32, T17S, R28E	MD Reference:	WELL @ 3688.0usft (Capstar #118)
Well:	AB State 647 #10	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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

Site	Sec 32, T17S, R28E		
Site Position:		Northing:	651,211.44 usft
From:	Map	Easting:	582,974.92 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 47' 24.499 N
		Longitude:	104° 11' 52.221 W
		Grid Convergence:	0.07 °

Well	AB State 647 #10		
Well Position	+N/-S	0.0 usft	Northing: 649,977.94 usft
	+E/-W	0.0 usft	Easting: 582,044.38 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 47' 12.305 N
		Longitude:	104° 12' 3.140 W
		Ground Level:	3,677.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	10/10/2013	7.63
		Dip Angle (°)	60.54
		Field Strength (nT)	48,651

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
		Direction (°)	170.43

Survey Program	Date 10/22/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
400.0	5,076.0	MWD (Wellbore #1)	Description

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.36	213.27	0.0	0.0	0.0	649,977.94	582,044.38	32° 47' 12.305 N	104° 12' 3.140 W
400.0	0.36	213.27	400.0	-2.1	-1.4	649,975.84	582,043.00	32° 47' 12.285 N	104° 12' 3.156 W
Tie In @ 400' MD / 400' TVD									
550.0	0.30	193.70	550.0	-2.9	-1.7	649,975.07	582,042.65	32° 47' 12.277 N	104° 12' 3.160 W
656.0	1.60	178.40	656.0	-4.6	-1.8	649,973.32	582,042.63	32° 47' 12.260 N	104° 12' 3.161 W
827.0	1.50	158.00	826.9	-9.1	-0.8	649,968.86	582,043.53	32° 47' 12.216 N	104° 12' 3.150 W
912.0	2.00	169.60	911.9	-11.6	-0.2	649,966.37	582,044.22	32° 47' 12.191 N	104° 12' 3.142 W
997.0	2.90	172.10	996.8	-15.2	0.4	649,962.78	582,044.78	32° 47' 12.155 N	104° 12' 3.136 W
1,082.0	4.10	167.00	1,081.6	-20.3	1.4	649,957.69	582,045.76	32° 47' 12.105 N	104° 12' 3.124 W
1,168.0	4.30	164.30	1,167.4	-26.4	2.9	649,951.59	582,047.32	32° 47' 12.045 N	104° 12' 3.106 W
1,253.0	4.50	164.50	1,252.2	-32.6	4.7	649,945.31	582,049.08	32° 47' 11.982 N	104° 12' 3.086 W
1,338.0	4.00	174.20	1,336.9	-38.8	5.9	649,939.14	582,050.27	32° 47' 11.921 N	104° 12' 3.072 W



DDC
Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AB State 647 #10
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3688.0usft (Capstar #118)
Site:	Sec 32, T17S, R28E	MD Reference:	WELL @ 3688.0usft (Capstar #118)
Well:	AB State 647 #10	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,424.0	4.20	177.20	1,422.7	-44.9	6.3	649,933.01	582,050.73	32° 47' 11.861 N	104° 12' 3.067 W	
1,509.0	4.40	173.10	1,507.5	-51.3	6.9	649,926.67	582,051.27	32° 47' 11.798 N	104° 12' 3.060 W	
1,594.0	5.00	169.60	1,592.2	-58.2	7.9	649,919.79	582,052.33	32° 47' 11.730 N	104° 12' 3.048 W	
1,680.0	5.00	181.60	1,677.8	-65.6	8.5	649,912.36	582,052.90	32° 47' 11.656 N	104° 12' 3.041 W	
1,765.0	4.80	178.40	1,762.5	-72.8	8.5	649,905.10	582,052.90	32° 47' 11.585 N	104° 12' 3.041 W	
1,851.0	4.40	162.80	1,848.3	-79.6	9.6	649,898.35	582,053.97	32° 47' 11.518 N	104° 12' 3.029 W	
1,936.0	4.90	154.30	1,933.0	-86.0	12.1	649,891.96	582,056.51	32° 47' 11.455 N	104° 12' 2.999 W	
2,021.0	5.60	167.20	2,017.6	-93.3	14.6	649,884.65	582,059.01	32° 47' 11.382 N	104° 12' 2.970 W	
2,107.0	5.60	168.80	2,103.2	-101.5	16.4	649,876.44	582,060.75	32° 47' 11.301 N	104° 12' 2.950 W	
2,192.0	4.90	166.80	2,187.9	-109.1	18.0	649,868.84	582,062.38	32° 47' 11.226 N	104° 12' 2.931 W	
2,263.0	4.50	171.70	2,258.3	-122.9	20.6	649,855.09	582,065.02	32° 47' 11.090 N	104° 12' 2.900 W	
2,533.0	4.70	175.30	2,527.7	-136.4	22.2	649,841.55	582,066.55	32° 47' 10.956 N	104° 12' 2.882 W	
2,690.6	4.70	176.87	2,684.8	-149.3	23.1	649,828.67	582,067.44	32° 47' 10.828 N	104° 12' 2.872 W	
Crossed Hard Line @ 2691' MD / 2685' TVD										
2,704.0	4.70	177.00	2,698.2	-150.4	23.1	649,827.57	582,067.49	32° 47' 10.817 N	104° 12' 2.872 W	
2,832.0	3.90	179.30	2,825.8	-160.0	23.4	649,817.98	582,067.82	32° 47' 10.722 N	104° 12' 2.868 W	
2,918.0	2.80	171.70	2,911.7	-165.0	23.8	649,812.98	582,068.16	32° 47' 10.673 N	104° 12' 2.864 W	
3,003.0	2.10	173.70	2,996.6	-168.6	24.2	649,809.37	582,068.63	32° 47' 10.637 N	104° 12' 2.859 W	
3,088.0	1.40	179.30	3,081.5	-171.2	24.4	649,806.79	582,068.82	32° 47' 10.612 N	104° 12' 2.856 W	
3,174.0	0.40	197.80	3,167.5	-172.5	24.4	649,805.45	582,068.74	32° 47' 10.598 N	104° 12' 2.857 W	
3,259.0	0.00	140.10	3,252.5	-172.8	24.3	649,805.17	582,068.65	32° 47' 10.596 N	104° 12' 2.858 W	
3,344.0	0.10	20.20	3,337.5	-172.7	24.3	649,805.24	582,068.67	32° 47' 10.596 N	104° 12' 2.858 W	
3,430.0	0.10	344.00	3,423.5	-172.6	24.3	649,805.38	582,068.68	32° 47' 10.598 N	104° 12' 2.858 W	
3,600.0	0.40	5.30	3,593.5	-171.8	24.3	649,806.12	582,068.69	32° 47' 10.605 N	104° 12' 2.858 W	
3,771.0	0.30	9.80	3,764.5	-170.8	24.4	649,807.15	582,068.82	32° 47' 10.615 N	104° 12' 2.856 W	
3,942.0	0.30	24.80	3,935.5	-169.9	24.7	649,808.00	582,069.09	32° 47' 10.624 N	104° 12' 2.853 W	
4,113.0	0.30	29.90	4,106.5	-169.2	25.1	649,808.79	582,069.50	32° 47' 10.631 N	104° 12' 2.848 W	
4,241.0	0.40	322.20	4,234.5	-168.5	25.0	649,809.44	582,069.39	32° 47' 10.638 N	104° 12' 2.850 W	
4,412.0	0.40	3.70	4,405.5	-167.4	24.7	649,810.50	582,069.06	32° 47' 10.648 N	104° 12' 2.854 W	
4,583.0	0.90	16.30	4,576.5	-165.6	25.1	649,812.39	582,069.48	32° 47' 10.667 N	104° 12' 2.849 W	
4,668.0	1.10	17.20	4,661.5	-164.1	25.5	649,813.81	582,069.91	32° 47' 10.681 N	104° 12' 2.844 W	
4,711.0	1.00	26.90	4,704.5	-163.4	25.8	649,814.54	582,070.20	32° 47' 10.688 N	104° 12' 2.840 W	
4,796.0	0.20	74.70	4,789.5	-162.7	26.3	649,815.24	582,070.68	32° 47' 10.695 N	104° 12' 2.835 W	
4,881.0	0.40	33.90	4,874.5	-162.4	26.6	649,815.52	582,070.99	32° 47' 10.698 N	104° 12' 2.831 W	
5,026.0	0.50	13.20	5,019.5	-161.4	27.0	649,816.56	582,071.41	32° 47' 10.708 N	104° 12' 2.826 W	
5,076.0	0.50	13.20	5,069.5	-161.0	27.1	649,816.98	582,071.51	32° 47' 10.712 N	104° 12' 2.825 W	
TD @ 5076' MD / 5070' TVD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
400.0	400.0	-2.1	-1.4	Tie In @ 400' MD / 400' TVD	
2,690.6	2,684.8	-149.3	23.1	Crossed Hard Line @ 2691' MD / 2685' TVD	
5,076.0	5,069.5	-161.0	27.1	TD @ 5076' MD / 5070' TVD	

Checked By: _____ Approved By: _____ Date: _____