

API: 30-015-42024

Lot 1, Sec 1, T18S, R27E, 126' FNL + 141' FEL



Apache Corporation

Eddy County, New Mexico

Sec 1, T18S, R27E

AAO Federal #14

Wellbore #1

Design: Wellbore #1

DDC Survey Report

13 March, 2014





DDC
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well AAO Federal #14
Project:	Eddy County New Mexico	TVD Reference:	Well @ 3676.0usft
Site:	Sec.1 T18S R27E	MD Reference:	Well @ 3676.0usft
Well:	AAO Federal #14	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		
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:	Sec.1 T18S R27E		
Site Position:		Northing:	645,438.80 usft
From:	Map	Easting:	530,705.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 46' 27.708 N
		Longitude:	104° 14' 0.354 W
		Grid Convergence:	0.05 °

Well:	AAO Federal #14		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 46' 58.094 N
		Longitude:	104° 13' 24.432 W
		Ground Level:	3,665.0 usft

Wellbore:	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2/26/2014	7.60
			Dip Angle
			(°)
			60.52
			Field Strength
			(nT)
			48,608

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
			(°)
			223.30

Survey Program:	Date: 3/13/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	500.0	GyroData Gyro Survey (Wellbore #1)	Good_gyro
539.0	4,520.0	MWD (Wellbore #1)	MWD default
			Description
			Good Gyro
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.99	124.46	100.0	-0.5	0.7	-0.1	0.99	0.99	0.00	
200.0	1.05	119.67	200.0	-1.4	2.2	-0.5	0.10	0.06	-4.79	
300.0	1.88	106.03	299.9	-2.3	4.6	-1.4	0.89	0.83	-13.64	
400.0	1.89	167.43	399.9	-4.4	6.5	-1.3	1.92	0.01	61.40	
500.0	2.72	209.09	499.8	-8.1	5.7	2.0	1.81	0.83	41.66	
TIE IN @ 500' MD / 499.8'										
500.1	2.72	209.09	499.9	-8.1	5.7	2.0	0.00	0.00	0.00	
539.0	1.90	150.50	538.8	-9.5	5.6	3.0	6.09	-2.11	-150.62	
667.0	2.70	203.40	666.7	-14.1	5.5	6.5	1.70	0.63	41.33	



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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)
795.0	3.70	234.40	794.5	-19.2	0.9	13.4	1.53	0.78	24.22
881.0	5.40	235.10	880.2	-23.2	-4.7	20.1	1.98	1.98	0.81
966.0	7.20	230.10	964.7	-28.9	-12.0	29.3	2.21	2.12	-5.88
1,051.0	7.50	228.00	1,049.0	-36.0	-20.3	40.1	0.47	0.35	-2.47
1,222.0	7.60	228.80	1,218.5	-50.9	-37.1	62.5	0.08	0.06	0.47
1,308.0	7.90	231.30	1,303.8	-58.4	-46.0	74.0	0.52	0.35	2.91
1,436.0	8.20	230.90	1,430.5	-69.6	-59.9	91.7	0.24	0.23	-0.31
1,521.0	7.60	227.60	1,514.7	-77.2	-68.8	103.4	0.88	-0.71	-3.88
1,649.0	7.80	226.80	1,641.5	-88.9	-81.3	120.5	0.18	0.16	-0.63
1,735.0	8.30	228.80	1,726.7	-97.0	-90.3	132.5	0.67	0.58	2.33
1,906.0	7.90	222.50	1,896.0	-113.8	-107.5	156.5	0.57	-0.23	-3.68
1,991.0	7.60	221.00	1,980.2	-122.3	-115.1	168.0	0.43	-0.35	-1.76
2,162.0	7.40	221.00	2,149.7	-139.2	-129.8	190.3	0.12	-0.12	0.00
2,247.0	7.00	222.60	2,234.1	-147.1	-136.9	200.9	0.53	-0.47	1.88
2,333.0	8.20	227.30	2,319.3	-155.1	-144.9	212.3	1.57	1.40	5.47
2,503.0	8.00	225.40	2,487.6	-171.6	-162.2	236.2	0.20	-0.12	-1.12
2,631.0	7.30	223.80	2,614.5	-183.8	-174.2	253.2	0.57	-0.55	-1.25
2,759.0	7.10	220.20	2,741.5	-195.7	-185.0	269.3	0.39	-0.16	-2.81
CROSSED HARDLINE @ 2828' MD / 2810' TVD									
2,827.5	6.61	218.63	2,809.5	-202.0	-190.2	277.4	0.76	-0.71	-2.29
2,930.0	5.90	215.80	2,911.4	-210.9	-196.9	288.5	0.76	-0.70	-2.76
3,101.0	4.80	216.50	3,081.6	-223.8	-206.3	304.3	0.64	-0.64	0.41
3,186.0	3.70	223.60	3,166.4	-228.6	-210.3	310.6	1.43	-1.29	8.35
3,315.0	1.90	224.50	3,295.2	-233.1	-214.7	316.9	1.40	-1.40	0.70
3,400.0	0.70	187.40	3,380.2	-234.7	-215.7	318.7	1.65	-1.41	-43.65
3,571.0	0.20	246.10	3,551.2	-235.8	-216.2	319.9	0.36	-0.29	34.33
3,699.0	0.50	190.40	3,679.2	-236.5	-216.5	320.5	0.33	0.23	-43.52
3,827.0	0.20	32.50	3,807.2	-236.8	-216.4	320.8	0.54	-0.23	-123.36
3,955.0	0.30	63.40	3,935.2	-236.5	-216.0	320.3	0.13	0.08	24.14
4,083.0	0.10	308.10	4,063.2	-236.3	-215.8	320.0	0.28	-0.16	-90.08
4,168.0	0.30	30.20	4,148.2	-236.0	-215.8	319.7	0.36	0.24	96.59
4,296.0	0.60	16.30	4,276.2	-235.1	-215.4	318.8	0.25	0.23	-10.86
4,473.0	0.60	1.90	4,453.2	-233.3	-215.1	317.3	0.08	0.00	-8.14
TD @ 4520' MD / 4500' TVD									
4,520.0	0.60	1.90	4,500.2	-232.8	-215.1	316.9	0.00	0.00	0.00



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Design Annotations:				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.1	499.9	-8.1	5.7	TIE IN @ 500' MD / 499.8
2,827.5	2,809.5	-202.0	-190.2	CROSSED HARDLINE @ 2828' MD / 2810' TVD
4,520.0	4,500.2	-232.8	-215.1	TD @ 4520' MD / 4500' TVD

Checked By: _____ Approved By: _____ Date: _____