



Apache Corporation

Eddy County, New Mexico

Sec 17, T17-S, R31-E

Lee Federal #76 AP#30-015-41551

Wellbore #1

Design: Wellbore #1

DDC Survey Report

08 January, 2014





DDC
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well Lee Federal #76
Project:	Eddy County, New Mexico	TVD Reference:	WELL @ 3679.0usft (Original Well Elev)
Site:	Sec 17, T17-S, R31-E	MD Reference:	WELL @ 3679.0usft (Original Well Elev)
Well:	Lee Federal #76	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 17, T17-S, R31-E		
Site Position:		Northing:	666,003.30 usft
From:	Map	Easting:	635,885.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 48.532 N
		Longitude:	103° 53' 27.445 W
		Grid Convergence:	0.24 °

Well	Lee Federal #76		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	
			usft
		Latitude:	32° 49' 48.532 N
		Longitude:	103° 53' 27.445 W
		Ground Level:	3,679.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	6/6/2013	7.54
			Dip Angle
			(°)
			60.64
			Field Strength
			(nT)
			48,746

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
			(°)
			116.96

Survey Program	Date 1/8/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
59.8	318.0	GYRO (Wellbore #1)	Good_gyro
386.0	6,414.0	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
59.8	0.08	184.28	59.8	0.0	0.0	0.0	0.13	0.13	0.00
146.4	0.05	205.75	146.4	-0.1	0.0	0.0	0.04	-0.03	24.79
229.2	0.05	199.69	229.2	-0.2	-0.1	0.0	0.01	0.00	-7.32
318.0	3.85	220.18	317.9	-2.5	-2.0	-0.6	4.28	4.28	23.07
Tie In @ 318' MD / 318' TVD									
318.1	3.85	220.18	318.0	-2.5	-2.0	-0.6	0.00	0.00	0.00
386.0	3.30	227.30	385.8	-5.6	-4.9	-1.8	1.04	-0.81	10.49
445.0	3.30	218.10	444.7	-8.1	-7.2	-2.8	0.90	0.00	-15.59
531.0	2.90	210.20	530.6	-11.9	-9.8	-3.4	0.68	-0.47	-9.19



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Well:	Lee Federal #76	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)
647.0	2.10	199.30	646.5	-16.4	-12.0	-3.2	0.80	-0.69	-9.40
759.0	1.90	159.20	758.4	-20.1	-12.0	-1.6	1.24	-0.18	-35.80
887.0	2.50	129.00	886.3	-23.9	-9.1	2.7	1.00	0.47	-23.59
1,015.0	2.80	105.70	1,014.2	-26.5	-3.9	8.5	0.87	0.23	-18.20
1,101.0	2.00	94.20	1,100.1	-27.1	-0.4	12.0	1.08	-0.93	-13.37
1,229.0	1.40	94.10	1,228.0	-27.4	3.4	15.5	0.47	-0.47	-0.08
1,358.0	1.50	91.20	1,357.0	-27.6	6.7	18.4	0.10	0.08	-2.25
1,486.0	1.50	106.70	1,485.0	-28.1	9.9	21.6	0.32	0.00	12.11
1,571.0	2.40	105.80	1,569.9	-28.9	12.7	24.4	1.06	1.06	-1.06
1,657.0	3.10	99.50	1,655.8	-29.8	16.7	28.4	0.89	0.81	-7.33
1,742.0	3.60	103.00	1,740.7	-30.7	21.6	33.2	0.64	0.59	4.12
1,828.0	4.00	105.70	1,826.5	-32.2	27.1	38.8	0.51	0.47	3.14
1,914.0	4.50	109.90	1,912.2	-34.1	33.2	45.0	0.68	0.58	4.88
2,042.0	4.80	111.40	2,039.8	-37.8	42.9	55.4	0.25	0.23	1.17
2,171.0	5.00	113.20	2,168.3	-42.0	53.1	66.3	0.20	0.16	1.40
2,299.0	5.00	116.70	2,295.9	-46.7	63.2	77.5	0.24	0.00	2.73
2,384.0	5.10	120.00	2,380.5	-50.2	69.8	85.0	0.36	0.12	3.88
2,470.0	5.40	120.10	2,466.2	-54.2	76.6	92.8	0.35	0.35	0.12
2,556.0	5.40	118.40	2,551.8	-58.1	83.6	100.9	0.19	0.00	-1.98
2,641.0	5.80	116.50	2,636.4	-61.9	91.0	109.2	0.52	0.47	-2.24
2,727.0	6.10	114.50	2,721.9	-65.8	99.1	118.1	0.42	0.35	-2.33
2,812.0	6.50	108.40	2,806.4	-69.2	107.7	127.4	0.92	0.47	-7.18
2,898.0	6.70	107.80	2,891.8	-72.2	117.1	137.1	0.25	0.23	-0.70
3,069.0	6.80	107.20	3,061.7	-78.3	136.3	157.0	0.07	0.06	-0.35
3,202.0	6.60	111.40	3,193.7	-83.4	150.9	172.3	0.40	-0.15	3.16
3,330.0	7.20	111.40	3,320.8	-89.0	165.2	187.6	0.47	0.47	0.00
3,462.0	8.00	110.60	3,451.7	-95.3	181.5	205.0	0.61	0.61	-0.61
3,592.0	7.30	115.20	3,580.5	-102.0	197.5	222.2	0.72	-0.54	3.54
3,678.0	6.20	113.70	3,665.9	-106.1	206.7	232.3	1.30	-1.28	-1.74
Crossed Hard Line @ 3715' MD / 3703' TVD									
3,715.0	5.55	114.25	3,702.7	-107.7	210.1	236.1	1.77	-1.77	1.50
3,763.0	4.70	115.20	3,750.5	-109.5	214.0	240.4	1.77	-1.76	1.97
3,849.0	3.60	115.40	3,836.3	-112.1	219.7	246.6	1.28	-1.28	0.23
3,935.0	2.30	117.10	3,922.2	-114.1	223.6	251.1	1.51	-1.51	1.98
4,020.0	1.50	101.90	4,007.1	-115.1	226.3	253.8	1.10	-0.94	-17.88
4,149.0	0.40	142.80	4,136.1	-115.8	228.2	255.9	0.95	-0.85	31.71
4,277.0	0.50	140.60	4,264.1	-116.6	228.8	256.8	0.08	0.08	-1.72
4,406.0	0.50	136.20	4,393.1	-117.4	229.5	257.8	0.03	0.00	-3.41
4,577.0	0.40	121.80	4,564.1	-118.3	230.6	259.1	0.09	-0.06	-8.42
4,748.0	0.30	65.90	4,735.1	-118.4	231.5	260.0	0.20	-0.06	-32.69
4,919.0	0.70	76.80	4,906.1	-118.0	232.9	261.1	0.24	0.23	6.37
5,090.0	0.40	248.70	5,077.1	-118.0	233.4	261.5	0.64	-0.18	100.53
5,261.0	0.30	261.30	5,248.1	-118.2	232.4	260.7	0.07	-0.06	7.37



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Well:	Lee Federal #76	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)
5,430.0	0.40	266.00	5,417.1	-118.4	231.3	259.9	0.06	0.06	2.78
5,603.0	0.50	252.90	5,590.1	-118.6	230.0	258.8	0.08	0.06	-7.57
5,732.0	0.60	248.20	5,719.1	-119.0	228.9	258.0	0.08	0.08	-3.64
5,903.0	0.70	249.40	5,890.1	-119.7	227.0	256.7	0.06	0.06	0.70
6,074.0	0.80	251.20	6,061.0	-120.5	224.9	255.1	0.06	0.06	1.05
6,245.0	0.60	290.80	6,232.0	-120.6	223.0	253.4	0.30	-0.12	23.16
6,367.0	0.60	299.60	6,354.0	-120.0	221.8	252.1	0.08	0.00	7.21
TD @ 6414' MD / 6401' TVD									
6,414.0	0.60	299.60	6,401.0	-119.8	221.4	251.6	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
318.1	318.0	-2.5	-2.0	Tie In @ 318' MD / 318' TVD
3,715.0	3,702.7	-107.7	210.1	Crossed Hard Line @ 3715' MD / 3703' TVD
6,414.0	6,401.0	-119.8	221.4	TD @ 6414' MD / 6401' TVD

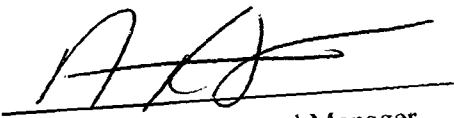
Checked By: _____ Approved By: _____ Date: _____

Apache Corporation
303 Veterans Airpark Lane, #3000
Midland, TX 79705

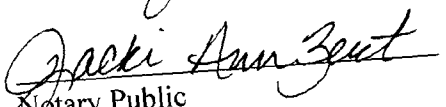
Lee Federal #076 API # 30-015-41551
Eddy County, New Mexico SL: 1090' FSL & 2520' FEL WL: 0 17-178-31E

250	2.50	0.75	1.31	3.28
350	1.00	0.50	0.88	0.88
				3.28
				4.16

RECEIVED
MAR 27 2014
NMOOD ARTESIA


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 17th day of January, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public

JACKI ANN ZENT
Notary Public, State of Texas
My Commission Expires
March 03, 2015