



EXPLORING WHAT'S POSSIBLE

3001542188

Apache Corporation

Eddy County, NM (NAD27 NME)

Lee Federal

#68 API #30-DIS-42188

SL: 2120' FNL 370' FEL UL: H 20-17S-31E

WB1 / Job #1411889

Design: Surveys (Capstar 114)

Standard Survey Report

27 October, 2014

NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 26 2015
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PHOENIX
TECHNOLOGY SERVICES

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #68
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3738.00usft (Capstar 114)
Site:	Lee Federal	MD Reference:	KB @ 3738.00usft (Capstar 114)
Well:	#68	North Reference:	Grid
Wellbore:	WB1 / Job #1411889	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR epdm

Project	Eddy County, NM (NAD27 NME)		
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	Lee Federal		
Site Position:		Northing:	664,811.60 usft
From:	Map	Easting:	634,967.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 36.77792 N
		Longitude:	103° 53' 38.26184 W
		Grid Convergence:	0.24 °

Well	#68		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 49' 16.85040 N
		Longitude:	103° 53' 2.20448 W
		Ground Level:	3,727.00 usft

Wellbore	WB1 / Job #1411889		
Magnetics	Model Name	Sample Date	Declination
	BGGM2014	10/17/2014	7.54
			Dip Angle
			60.60
			Field Strength
			48,560

Design	Surveys (Capstar 114)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			167.78

Survey Program	Date 10/27/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		Description
100.00	327.00	Gyrodata Gyro Survey (WB1 / Job #14118	NS-GYRO-MS
327.00	6,411.00	Phoenix MWD Survey (WB1 / Job #14118	PHX+MWD+BGGM
			North sensing gyrocompassing m/s
			PHX+MWD+BGGM v3:standard declination

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.11	251.73	100.00	-0.03	-0.09	0.01	0.11	0.11	0.00	
200.00	0.21	246.58	200.00	-0.13	-0.35	0.06	0.10	0.10	-5.15	
300.00	0.04	17.34	300.00	-0.17	-0.51	0.06	0.24	-0.17	130.76	
327.00	0.14	297.81	327.00	-0.15	-0.53	0.03	0.51	0.37	-294.56	
Tie-on Gyrodata Gyro Survey										
488.00	0.10	86.70	488.00	-0.05	-0.57	-0.07	0.14	-0.02	92.48	
First Phoenix MWD Survey										
603.00	0.00	287.90	603.00	-0.04	-0.47	-0.06	0.09	-0.09	0.00	

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Well:	#68	North Reference:	Grid
Wellbore:	WB1 / Job #1411889	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR epdm

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)
732.00	0.20	13.50	732.00	0.18	-0.42	-0.26	0.16	0.16	0.00
860.00	0.20	75.80	860.00	0.45	-0.15	-0.47	0.16	0.00	48.67
988.00	0.80	85.30	987.99	0.58	0.96	-0.36	0.47	0.47	7.42
1,117.00	0.90	80.60	1,116.98	0.82	2.86	-0.19	0.09	0.08	-3.64
1,245.00	1.00	88.20	1,244.96	1.01	4.97	0.06	0.13	0.08	5.94
1,377.00	1.40	119.70	1,376.93	0.25	7.52	1.34	0.57	0.30	23.86
1,505.00	1.90	160.40	1,504.88	-2.52	9.59	4.49	0.97	0.39	31.80
1,633.00	2.20	168.10	1,632.80	-6.92	10.81	9.06	0.32	0.23	6.02
1,762.00	1.90	183.40	1,761.72	-11.48	11.19	13.59	0.48	-0.23	11.86
1,890.00	2.00	176.30	1,889.65	-15.83	11.21	17.84	0.20	0.08	-5.55
2,018.00	1.90	187.10	2,017.57	-20.16	11.09	22.05	0.30	-0.08	8.44
2,146.00	1.90	191.20	2,145.50	-24.35	10.42	26.00	0.11	0.00	3.20
2,274.00	1.60	190.90	2,273.44	-28.19	9.67	29.59	0.23	-0.23	-0.23
2,402.00	2.20	173.40	2,401.37	-32.38	9.61	33.68	0.65	0.47	-13.67
2,530.00	2.20	176.70	2,529.28	-37.28	10.03	38.56	0.10	0.00	2.58
2,658.00	2.30	178.10	2,657.18	-42.30	10.26	43.51	0.09	0.08	1.09
2,787.00	2.30	178.10	2,786.08	-47.47	10.43	48.60	0.00	0.00	0.00
2,915.00	2.60	181.40	2,913.96	-52.94	10.45	53.95	0.26	0.23	2.58
3,043.00	2.70	189.60	3,041.82	-58.81	9.87	59.57	0.31	0.08	6.41
3,173.00	2.80	171.80	3,171.67	-64.98	9.81	65.58	0.66	0.08	-13.69
3,307.00	3.00	176.80	3,305.50	-71.72	10.48	72.31	0.24	0.15	3.73
3,447.00	3.00	179.60	3,445.31	-79.04	10.71	79.51	0.10	0.00	2.00
3,575.00	2.80	173.80	3,573.15	-85.50	11.07	85.90	0.28	-0.16	-4.53
3,703.00	2.30	131.20	3,701.03	-90.30	13.34	91.07	1.49	-0.39	-33.28
3,834.00	2.20	138.90	3,831.93	-93.92	16.97	95.39	0.24	-0.08	5.88
3,962.00	2.30	138.90	3,959.83	-97.71	20.27	99.79	0.08	0.08	0.00
4,090.00	2.30	130.90	4,087.73	-101.33	23.90	104.09	0.25	0.00	-6.25
4,222.00	2.60	167.80	4,219.62	-105.99	26.54	109.20	1.19	0.23	27.95
4,353.00	2.60	165.10	4,350.48	-111.76	27.93	115.14	0.09	0.00	-2.06
4,482.00	2.90	163.60	4,479.33	-117.72	29.60	121.32	0.24	0.23	-1.16
4,610.00	2.70	166.90	4,607.18	-123.76	31.20	127.56	0.20	-0.16	2.58
4,738.00	2.50	169.60	4,735.05	-129.45	32.39	133.37	0.18	-0.16	2.11
4,867.00	2.50	176.70	4,863.93	-135.02	33.06	138.96	0.24	0.00	5.50
4,995.00	2.60	169.40	4,991.80	-140.66	33.75	144.62	0.27	0.08	-5.70
5,124.00	2.30	166.40	5,120.68	-146.05	34.90	150.13	0.25	-0.23	-2.33
5,252.00	2.20	155.60	5,248.58	-150.79	36.52	155.10	0.34	-0.08	-8.44
5,380.00	2.00	160.80	5,376.50	-155.13	38.27	159.72	0.22	-0.16	4.06
5,511.00	1.90	155.60	5,507.42	-159.27	39.92	164.11	0.16	-0.08	-3.97
5,640.00	1.80	154.00	5,636.35	-163.04	41.69	168.17	0.09	-0.08	-1.24
5,768.00	1.70	148.80	5,764.30	-166.47	43.55	171.92	0.15	-0.08	-4.06
5,896.00	2.80	181.90	5,892.20	-171.22	44.43	176.74	1.30	0.86	25.86
6,023.00	2.60	178.00	6,019.06	-177.20	44.43	182.59	0.21	-0.16	-3.07
6,151.00	2.70	181.80	6,146.92	-183.11	44.44	188.37	0.16	0.08	2.97

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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)	
6,280.00	2.40	184.30	6,275.79	-188.84	44.14	193.91	0.25	-0.23	1.94	
6,361.00	2.20	184.60	6,356.73	-192.08	43.89	197.02	0.25	-0.25	0.37	
Last Phoenix MWD Survey										
6,411.00	2.20	184.60	6,406.69	-194.00	43.73	198.86	0.00	0.00	0.00	
Projecton to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
327.00	327.00	-0.15	-0.53	Tie-on Gyrodata Gyro Survey	
488.00	488.00	-0.05	-0.57	First Phoenix MWD Survey	
6,361.00	6,356.73	-192.08	43.89	Last Phoenix MWD Survey	
6,411.00	6,406.69	-194.00	43.73	Projection to TD	

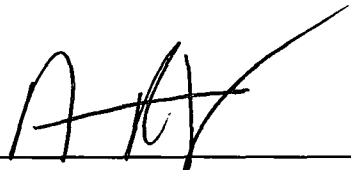
Checked By: _____ Approved By: _____ Date: _____

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

Lee Federal #068 API# 30-015-42188
Eddy County, New Mexico SL: 2120' FNL & 370' FEL UL: H 20-178-31E

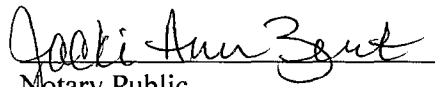
122	1.22	0.50	0.88	1.07	1.07
270	1.48	0.75	1.31	1.94	3.01

NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 26 2015
RECEIVED



Archie Brown - General Manager

The attached instrument was acknowledged before me on the 4th day of November, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.



Notary Public

