

Apache Corporation

Eddy County, NM (NAD27 NME)

SB State

#4 AP1#30-015-42003

SL: 2515' FNL + 800' FWL WL: E 02-185-27E

WB1/Job #1410350

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 16 2014

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Design: Surveys (Capstar 120)

Standard Survey Report

24 March, 2014

Survey Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #4
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3562.00usft (Capstar 120)
Site:	SB State	MD Reference:	KB @ 3562.00usft (Capstar 120)
Well:	#4	North Reference:	Grid
Wellbore:	WB1/Job #1410350	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	Compass 5000 GCR DB

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	SB State				
Site Position:		Northing:	646,167.30 usft	Latitude:	32° 46' 34.97110 N
From:	Map	Easting:	524,175.20 usft	Longitude:	104° 15' 16.83912 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.04 °

Well	#4				
Well Position	+N/-S	0.00 usft	Northing:	646,167.30 usft	Latitude: 32° 46' 34.97110 N
	+E/-W	0.00 usft	Easting:	524,175.20 usft	Longitude: 104° 15' 16.83912 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level: 3,551.00 usft

Wellbore	WB1/Job #1410350				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	02/24/14	7.74	60.50	48,575

Design	Surveys (Capstar 120)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	36.58	

Survey Program	Date	03/24/14			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	282.00	Gyrodata Surveys (WB1/Job #1410350)	NS-GYRO-MS	North sensing gyrocompassing m/s	
282.00	4,114.00	Phoenix MWD Surveys (WB1/Job #14103)	MWD	MWD - Standard	

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.33	257.10	100.00	-0.06	-0.28	-0.22	0.33	0.33	0.00
200.00	0.49	238.74	200.00	-0.35	-0.93	-0.83	0.21	0.16	-18.36
282.00	0.47	223.26	281.99	-0.78	-1.46	-1.49	0.16	-0.02	-18.88
Tie In to Gyro Surveys									
397.00	0.40	256.40	396.99	-1.22	-2.17	-2.27	0.22	-0.06	28.82
First Phoenix MWD Survey									
487.00	1.30	20.20	486.98	-0.33	-2.12	-1.53	1.73	1.00	137.56
588.00	2.10	29.80	587.94	2.35	-0.81	1.41	0.84	0.79	9.50

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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)
674.00	3.70	36.10	673.83	5.96	1.61	5.75	1.89	1.86	7.33
759.00	6.20	30.00	758.50	12.15	5.52	13.05	3.00	2.94	-7.18
844.00	6.10	25.10	843.01	20.22	9.73	22.03	0.63	-0.12	-5.76
929.00	6.90	36.10	927.47	28.43	14.66	31.57	1.74	0.94	12.94
1,015.00	6.20	31.90	1,012.91	36.55	20.15	41.36	0.99	-0.81	-4.88
1,100.00	5.50	29.00	1,097.47	44.01	24.56	49.97	0.89	-0.82	-3.41
1,185.00	6.50	47.40	1,182.01	50.83	30.07	58.74	2.53	1.18	21.65
1,271.00	6.20	46.50	1,267.48	57.32	37.02	68.09	0.37	-0.35	-1.05
1,356.00	5.50	42.40	1,352.04	63.49	43.10	76.67	0.96	-0.82	-4.82
1,442.00	6.60	40.30	1,437.56	70.30	49.08	85.70	1.30	1.28	-2.44
1,527.00	6.70	39.00	1,521.98	77.88	55.36	95.53	0.21	0.12	-1.53
1,613.00	8.20	37.30	1,607.26	86.66	62.23	106.67	1.76	1.74	-1.98
1,698.00	8.10	36.80	1,691.40	96.27	69.49	118.72	0.14	-0.12	-0.59
1,783.00	8.20	36.10	1,775.54	105.97	76.65	130.77	0.17	0.12	-0.82
1,869.00	8.10	34.70	1,860.67	115.90	83.71	142.96	0.26	-0.12	-1.63
1,954.00	8.40	42.10	1,944.79	125.43	91.28	155.13	1.30	0.35	8.71
2,039.00	7.50	50.20	2,028.98	133.59	99.71	166.70	1.69	-1.06	9.53
2,124.00	4.10	47.40	2,113.53	139.20	106.21	175.08	4.01	-4.00	-3.29
2,210.00	4.90	19.60	2,199.28	144.74	109.70	181.61	2.67	0.93	-32.33
2,295.00	6.10	18.90	2,283.88	152.44	112.39	189.39	1.41	1.41	-0.82
2,380.00	7.50	26.90	2,368.28	161.66	116.36	199.16	1.98	1.65	9.41
2,465.00	8.40	29.30	2,452.47	172.02	121.91	210.79	1.13	1.06	2.82
2,551.00	8.30	26.90	2,537.56	183.03	127.79	223.13	0.42	-0.12	-2.79
2,636.00	8.10	34.80	2,621.69	193.42	133.98	235.17	1.35	-0.24	9.29
2,721.00	7.70	33.30	2,705.88	203.10	140.53	246.84	0.53	-0.47	-1.76
2,807.00	7.10	42.00	2,791.17	211.86	147.25	257.88	1.48	-0.70	10.12
2,892.00	5.40	47.60	2,875.66	218.46	153.72	267.04	2.12	-2.00	6.59
2,978.00	4.10	60.20	2,961.37	222.72	159.37	273.83	1.93	-1.51	14.65
3,063.00	2.60	74.60	3,046.22	224.74	163.87	278.13	2.01	-1.76	16.94
3,149.00	2.50	71.60	3,132.13	225.85	167.53	281.20	0.19	-0.12	-3.49
3,234.00	2.20	107.30	3,217.07	225.95	170.85	283.26	1.73	-0.35	42.00
3,320.00	0.90	144.30	3,303.04	224.91	172.82	283.60	1.83	-1.51	43.02
3,405.00	1.10	141.50	3,388.02	223.73	173.71	283.19	0.24	0.24	-3.29
3,491.00	0.90	141.50	3,474.01	222.56	174.65	282.80	0.23	-0.23	0.00
3,576.00	0.90	147.60	3,559.00	221.47	175.42	282.39	0.11	0.00	7.18
3,662.00	0.70	147.80	3,644.99	220.46	176.06	281.96	0.23	-0.23	0.23
3,747.00	0.50	116.30	3,729.99	219.85	176.67	281.84	0.45	-0.24	-37.06
3,833.00	0.40	119.60	3,815.98	219.54	177.27	281.94	0.12	-0.12	3.84
3,918.00	0.60	122.90	3,900.98	219.15	177.90	282.00	0.24	0.24	3.88
4,003.00	0.50	122.90	3,985.98	218.71	178.59	282.06	0.12	-0.12	0.00
4,066.00	0.50	94.80	4,048.97	218.54	179.09	282.22	0.39	0.00	-44.60
Final Phoenix MWD Survey									
4,114.00	0.50	94.80	4,096.97	218.50	179.51	282.44	0.00	0.00	0.00
Projection to TD									

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Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
282.00	281.99	-0.78	-1.46	Tie In to Gyro Surveys
397.00	396.99	-1.22	-2.17	First Phoenix MWD Survey
4,066.00	4,048.97	218.54	179.09	Final Phoenix MWD Survey
4,114.00	4,096.97	218.50	179.51	Projection to TD

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

SB State #004 AP#30-015-42003

Eddy County, New Mexico SL: 2515' FNL + 800' FWL W. E 02-18S-27E

328

3.28

0.50

0.88

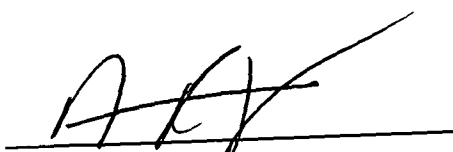
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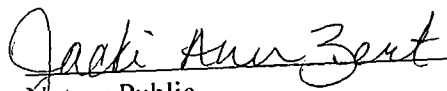
NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 16 2014

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Archie Brown - General Manager

The attached instrument was acknowledged before me on the 7th day of April, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public

