

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

API # 30-015-42000

UL C Sec 19 T17 S, R31E 295' FNL + 1140' FWL

Tony Federal #054
Eddy County, New Mexico

226
327

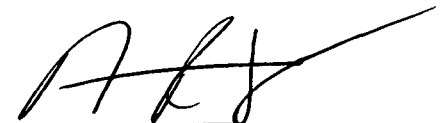
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0.50
1.00

0.88
1.75

1.98
1.77

1.98
3.75



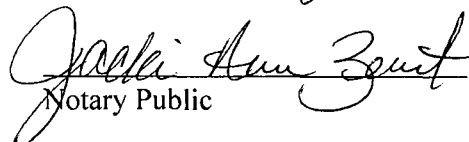
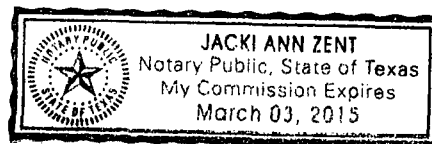
Archie Brown - General Manager

The attached instrument was acknowledged before me on the 12th day of May, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 20 2015

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Notary Public



NM OIL CONSERVATION

ARTESIA DISTRICT

JAN 20 2015

RECEIVED

Apache Corporation

Eddy County, NM (NAD27 NME)

Tony Federal

#54

WB1/Job #1410679

Design: Surveys (Capstar 114)

Standard Survey Report

08 May, 2014



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #54
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3725.00usft (Capstar 114)
Site:	Tony Federal	MD Reference:	KB @ 3725.00usft (Capstar 114)
Well:	#54	North Reference:	Grid
Wellbore:	WB1/Job #1410679	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	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						Tony Federal					
Site Position:				Northing:		666,516.20 usft		Latitude:		32° 49' 53.88921 N	
From:		Map		Easting:		628,898.80 usft		Longitude:		103° 54' 49.29676 W	
Position Uncertainty:		0.00 usft		Slot Radius:		13-3/16 "		Grid Convergence:		0.23 °	

Well	#54					
Well Position	+N/-S	0.00 usft	Northing:	664,573.80 usft	Latitude:	32° 49' 34.65525 N
	+E/-W	0.00 usft	Easting:	629,244.90 usft	Longitude:	103° 54' 45.33116 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,714.00 usft

Wellbore	WB1/Job #1410679				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	04/15/14	7.56	60.60	48,631

Design		Surveys (Capstar 114)		
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	256.52

Survey Program	Date 05/08/14			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	200.00	Gyro Surveys (WB1/Job #1410679)	NS-GYRO-MS	North sensing gyrocompassing m/s
300.00	6,410.00	Phoenix MWD Surveys (WB1/Job #14106)	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	0.45	30.88	100.00	0.34	0.20	-0.27	0.45	0.45	0.00
200.00	0.95	21.50	199.99	1.45	0.71	-1.02	0.51	0.50	-9.38
300.00	1.96	25.27	299.96	3.76	1.74	-2.57	1.01	1.01	3.77
Tie In to Gyro Surveys									
377.00	2.10	28.90	376.91	6.19	2.98	-4.35	0.25	0.18	4.71
First Phoenix MWD Survey									
465.00	1.30	20.90	464.87	8.53	4.12	-6.00	0.95	-0.91	-9.09
550.00	0.70	15.10	549.86	9.94	4.60	-6.79	0.71	-0.71	-6.82

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Well:	#54	North Reference:	Grid
Wellbore:	WB1/Job #1410679	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

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)
681.00	0.70	11.00	680.85	11.49	4.96	-7.50	0.04	0.00	-3.13
810.00	1.00	22.10	809.83	13.31	5.53	-8.48	0.26	0.23	8.60
938.00	0.70	344.90	937.82	15.10	5.75	-9.11	0.48	-0.23	-29.06
1,067.00	1.00	289.00	1,066.81	16.23	4.48	-8.14	0.65	0.23	-43.33
1,195.00	1.10	283.80	1,194.79	16.88	2.23	-6.11	0.11	0.08	-4.06
1,323.00	1.70	253.00	1,322.75	16.62	-0.78	-3.12	0.74	0.47	-24.06
1,452.00	1.80	251.10	1,451.69	15.41	-4.52	0.81	0.09	0.08	-1.47
1,580.00	1.80	251.60	1,579.63	14.12	-8.33	4.81	0.01	0.00	0.39
1,708.00	2.10	249.30	1,707.55	12.66	-12.43	9.14	0.24	0.23	-1.80
1,835.00	2.40	250.30	1,834.45	10.94	-17.11	14.09	0.24	0.24	0.79
1,964.00	2.60	253.50	1,963.33	9.20	-22.46	19.70	0.19	0.16	2.48
2,092.00	2.70	259.00	2,091.19	7.80	-28.21	25.61	0.21	0.08	4.30
2,220.00	2.30	254.80	2,219.07	6.55	-33.64	31.19	0.34	-0.31	-3.28
2,349.00	2.10	242.40	2,347.98	4.77	-38.24	36.07	0.40	-0.16	-9.61
2,477.00	1.60	234.80	2,475.91	2.66	-41.78	40.00	0.43	-0.39	-5.94
2,608.00	1.90	237.50	2,606.85	0.44	-45.10	43.76	0.24	0.23	2.06
2,737.00	1.50	236.50	2,735.79	-1.64	-48.31	47.37	0.31	-0.31	-0.78
2,868.00	1.40	232.10	2,866.75	-3.57	-51.01	50.43	0.11	-0.08	-3.36
2,996.00	1.40	230.90	2,994.71	-5.52	-53.45	53.27	0.02	0.00	-0.94
3,125.00	1.60	233.70	3,123.67	-7.58	-56.13	56.35	0.17	0.16	2.17
3,253.00	1.50	233.60	3,251.62	-9.63	-58.92	59.54	0.08	-0.08	-0.08
3,382.00	2.20	226.40	3,380.55	-12.34	-62.07	63.23	0.57	0.54	-5.58
3,453.00	2.40	225.70	3,451.50	-14.32	-64.12	65.69	0.28	0.28	-0.99
3,554.00	2.30	228.10	3,552.41	-17.15	-67.14	69.29	0.14	-0.10	2.38
3,685.00	2.10	282.00	3,683.33	-18.41	-71.45	73.77	1.53	-0.15	41.15
3,813.00	1.60	275.60	3,811.26	-17.75	-75.52	77.57	0.42	-0.39	-5.00
3,942.00	1.60	232.90	3,940.21	-18.66	-78.75	80.93	0.90	0.00	-33.10
4,070.00	1.60	236.00	4,068.16	-20.73	-81.65	84.24	0.07	0.00	2.42
4,198.00	1.60	239.90	4,196.11	-22.63	-84.68	87.62	0.09	0.00	3.05
4,326.00	1.50	240.10	4,324.07	-24.36	-87.68	90.94	0.08	-0.08	0.16
4,454.00	1.60	275.80	4,452.02	-25.01	-90.91	94.24	0.75	0.08	27.89
4,583.00	1.80	274.30	4,580.97	-24.68	-94.72	97.87	0.16	0.16	-1.16
4,711.00	1.50	277.20	4,708.91	-24.32	-98.39	101.35	0.24	-0.23	2.27
4,839.00	2.20	292.10	4,836.85	-23.19	-102.33	104.91	0.66	0.55	11.64
4,967.00	2.20	292.20	4,964.75	-21.33	-106.88	108.91	0.00	0.00	0.08
5,095.00	2.20	268.70	5,092.66	-20.46	-111.61	113.30	0.70	0.00	-18.36
5,223.00	2.20	263.60	5,220.57	-20.79	-116.51	118.14	0.15	0.00	-3.98
5,351.00	1.70	238.20	5,348.49	-22.06	-120.56	122.38	0.77	-0.39	-19.84
5,480.00	1.80	238.00	5,477.43	-24.15	-123.91	126.12	0.08	0.08	-0.16
5,608.00	1.90	242.00	5,605.37	-26.21	-127.48	130.08	0.13	0.08	3.13
5,736.00	2.00	243.60	5,733.29	-28.20	-131.36	134.31	0.09	0.08	1.25
5,865.00	1.80	241.70	5,862.22	-30.16	-135.16	138.47	0.16	-0.16	-1.47
5,993.00	1.90	239.70	5,990.16	-32.18	-138.76	142.44	0.09	0.08	-1.56

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Survey									
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6,121.00	1.80	243.80	6,118.09	-34.14	-142.40	146.43	0.13	-0.08	3.20
6,250.00	1.90	244.10	6,247.02	-35.97	-146.14	150.50	0.08	0.08	0.23
6,358.00	1.80	250.90	6,354.97	-37.31	-149.35	153.93	0.22	-0.09	6.30
Last Phoenix MWD Survey									
6,410.00	1.80	250.90	6,406.94	-37.84	-150.89	155.56	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	299.96	3.76	1.74	Tie In to Gyro Surveys
377.00	376.91	6.19	2.98	First Phoenix MWD Survey
6,358.00	6,354.97	-37.31	-149.35	Last Phoenix MWD Survey
6,410.00	6,406.94	-37.84	-150.89	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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