

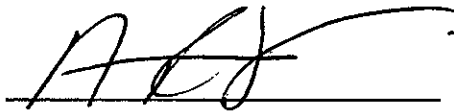
Apache Corporation
303 Veterans Airpark Lane, #3000
Midland, TX 79705

Crow Federal #40H
Eddy County, New Mexico

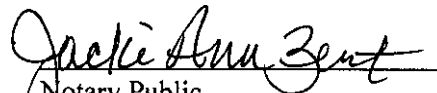
API # 30-015-42762

2208' FSL + 10' FWL
Sec. 4, T17S, R31E

265	2.65	0.25	0.44	1.16	1.16
507	2.42	0.50	0.88	2.12	3.28
650	1.43	0.50	0.88	1.25	4.53


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 30th day of March, 2015 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





Apache Corporation

Eddy County, NM (NAD27 NME)

Crow Federal

#40H

WB1 / Job #1512792

Survey: Phoenix MWD Surveys

Standard Survey Report

23 March, 2015



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #40H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3951.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3951.00usft (Capstar 114)
Well:	#40H	North Reference:	Grid
Wellbore:	WB1 / Job #1512792	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR

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	Crow Federal		
Site Position:	Map	Northings:	671,130.90 usft
From:		Easting:	643,906.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 38.92796 N
		Longitude:	103° 51' 53.18689 W
		Grid Convergence:	0.25 °

Well	#40H		
Well Position	+N/-S	0.00 usft	Northings:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 51' 44.31673 N
		Longitude:	103° 51' 56.08010 W
		Ground Level:	3,940.00 usft

Wellbore	WB1 / Job #1512792		
Magnetics	Model Name	Sample Date	Declination
	BGGM2014	3/11/2015	7.49
			60.63
			48,536

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
			269.59

Survey Program	Date	3/23/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	580.00	Gyrodata Surveys (WB1 / Job #1512792)	NS-GYRO-MS	North sensing gyrocompassing m/s
708.00	9,989.00	Phoenix MWD Surveys (WB1 / Job #1512)	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination

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)
580.00	0.43	115.53	559.98	-3.59	1.70	-1.67	0.00	0.00	0.00
Tie-on to Gyrodata Gyro Survey									
708.00	0.30	168.70	707.98	-4.21	2.28	-2.25	0.23	-0.09	35.93
First Phoenix MWD Survey									
836.00	0.70	325.00	835.98	-3.89	1.89	-1.86	0.77	0.31	122.11
964.00	1.60	285.90	963.95	-2.76	-0.27	0.29	0.89	0.70	-30.55
1,096.00	2.20	282.60	1,095.88	-1.71	-4.52	4.53	0.46	0.45	-2.50
1,224.00	2.60	291.80	1,223.77	-0.09	-9.61	9.61	0.43	0.31	7.19
1,352.00	3.20	290.70	1,351.60	2.25	-15.65	15.63	0.47	0.47	-0.86

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #40H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3951.00usft (Capstar 114)
Site:	Crow Federal	MDI Reference:	KB @ 3951.00usft (Capstar 114)
Well:	#40H	North Reference:	Grid
Wellbore:	WB1 / Job #1512792	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR

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)	
1,480.00	3.60	300.30	1,479.38	5.54	-22.46	22.42	0.54	0.31	7.50	
1,608.00	3.00	324.20	1,607.17	10.28	-27.89	27.82	1.16	-0.47	18.67	
1,737.00	1.70	327.80	1,736.06	14.64	-30.89	30.78	1.01	-1.01	2.79	
1,865.00	1.30	28.90	1,864.02	17.52	-31.20	31.07	1.22	-0.31	47.73	
1,993.00	0.80	44.30	1,992.00	19.43	-29.87	29.73	0.45	-0.39	12.03	
2,122.00	0.70	63.10	2,120.99	20.43	-28.54	28.39	0.20	-0.08	14.57	
2,250.00	0.50	65.10	2,248.98	21.02	-27.33	27.18	0.16	-0.16	1.56	
2,378.00	0.50	37.60	2,376.98	21.70	-26.49	26.33	0.19	0.00	-21.48	
2,507.00	0.70	334.60	2,505.97	22.85	-26.48	26.32	0.50	0.16	-48.84	
2,638.00	0.80	320.30	2,636.96	24.28	-27.41	27.23	0.16	0.08	-10.92	
2,769.00	1.00	315.50	2,767.95	25.80	-28.79	28.61	0.16	0.15	-3.66	
2,897.00	0.70	299.60	2,895.93	26.98	-30.26	30.06	0.30	-0.23	-12.42	
3,026.00	1.00	294.50	3,024.92	27.84	-31.97	31.77	0.24	0.23	-3.95	
3,152.00	1.20	288.50	3,150.89	28.71	-34.22	34.01	0.18	0.16	-4.76	
3,280.00	1.40	269.90	3,278.86	29.14	-37.05	36.84	0.36	0.16	-14.53	
3,448.00	1.30	286.80	3,446.81	29.03	-41.01	40.80	0.07	-0.06	-1.85	
3,531.00	1.40	274.10	3,529.79	29.05	-42.96	42.75	0.24	0.12	8.80	
3,615.00	2.00	189.60	3,613.76	27.67	-44.23	44.03	2.77	0.71	-100.60	
3,743.00	3.00	177.60	3,741.64	22.13	-44.46	44.30	0.88	0.78	-9.38	
3,871.00	3.10	176.10	3,869.46	15.33	-44.08	43.97	0.10	0.08	-1.17	
3,999.00	3.20	180.60	3,997.27	8.30	-43.89	43.83	0.21	0.08	3.52	
4,127.00	0.80	182.60	4,125.18	3.83	-43.96	43.94	1.88	-1.88	1.56	
4,255.00	1.20	193.20	4,253.16	1.64	-44.31	44.30	0.34	0.31	8.28	
4,383.00	1.20	192.40	4,381.13	-0.98	-44.90	44.91	0.01	0.00	-0.63	
4,511.00	1.40	190.50	4,509.10	-3.82	-45.48	45.50	0.16	0.16	-1.48	
4,639.00	1.20	195.90	4,637.07	-6.65	-46.13	46.18	0.18	-0.16	4.22	
4,739.00	1.20	208.90	4,737.05	-8.57	-46.92	46.98	0.27	0.00	13.00	
4,829.00	4.80	261.40	4,826.92	-9.96	-51.10	51.17	4.64	4.00	58.33	
4,872.00	9.30	269.30	4,869.58	-10.27	-56.36	56.43	10.68	10.47	18.37	
4,915.00	14.20	273.90	4,911.67	-9.98	-65.10	65.17	11.59	11.40	10.70	
4,957.00	19.20	274.20	4,951.88	-9.10	-77.14	77.20	11.91	11.90	0.71	
5,000.00	24.90	272.90	4,991.72	-8.12	-93.24	93.30	13.30	13.26	-3.02	
5,043.00	30.40	271.40	5,029.80	-7.40	-113.17	113.22	12.89	12.79	-3.49	
5,086.00	34.70	269.60	5,066.04	-7.22	-136.30	136.35	10.25	10.00	-4.19	
5,128.00	40.20	269.00	5,099.37	-7.54	-161.83	161.88	13.12	13.10	-1.43	
5,171.00	44.40	269.20	5,131.16	-7.99	-190.76	190.81	9.77	9.77	0.47	
5,214.00	48.10	271.10	5,160.90	-7.90	-221.81	221.86	9.18	8.60	4.42	
5,256.00	52.10	270.80	5,187.83	-7.38	-254.02	254.07	9.54	9.52	-0.71	
5,299.00	56.20	270.70	5,213.01	-6.91	-288.86	288.91	9.54	9.53	-0.23	
5,342.00	60.70	271.80	5,235.50	-6.10	-325.49	325.52	10.69	10.47	2.56	
5,385.00	65.80	272.20	5,254.85	-4.76	-363.85	363.87	11.89	11.86	0.93	
5,428.00	72.00	272.70	5,270.32	-3.04	-403.91	403.92	14.46	14.42	1.16	
5,470.00	76.00	271.30	5,281.90	-1.64	-444.25	444.25	10.05	9.52	-3.33	

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #40H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3951.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3951.00usft (Capstar 114)
Well:	#40H	North Reference:	Grid
Wellbore:	WB1 / Job #1512792	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR

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)
5,513.00	80.40	269.60	5,290.69	-1.31	-486.33	486.32	10.94	10.23	-3.95
5,556.00	84.30	268.40	5,296.41	-2.06	-528.93	528.93	9.48	9.07	-2.79
5,601.00	90.00	270.80	5,298.65	-2.37	-573.85	573.85	13.74	12.67	5.33
5,729.00	90.80	271.30	5,297.76	-0.02	-701.82	701.81	0.74	0.63	0.39
5,858.00	90.20	269.50	5,296.63	0.88	-830.81	830.78	1.47	-0.47	-1.40
5,989.00	91.30	269.00	5,294.92	-0.84	-961.79	961.77	0.92	0.84	-0.38
6,117.00	90.60	269.30	5,292.79	-2.74	-1,089.75	1,089.75	0.59	-0.55	0.23
6,246.00	91.10	268.20	5,290.88	-5.55	-1,218.71	1,218.71	0.94	0.39	-0.85
6,374.00	91.30	268.30	5,288.20	-9.46	-1,346.62	1,346.65	0.17	0.16	0.08
6,502.00	91.30	268.50	5,285.30	-13.03	-1,474.54	1,474.59	0.16	0.00	0.16
6,630.00	91.40	268.20	5,282.28	-16.71	-1,602.45	1,602.53	0.25	0.08	-0.23
6,759.00	92.00	269.10	5,278.45	-19.75	-1,731.35	1,731.45	0.84	0.47	0.70
6,887.00	92.40	268.60	5,273.54	-22.32	-1,859.23	1,859.34	0.50	0.31	-0.39
7,015.00	92.40	268.00	5,268.18	-26.11	-1,987.06	1,987.20	0.47	0.00	-0.47
7,143.00	92.70	268.90	5,262.48	-29.57	-2,114.89	2,115.04	0.74	0.23	0.70
7,271.00	90.40	269.20	5,259.02	-31.69	-2,242.81	2,242.98	1.81	-1.80	0.23
7,402.00	90.40	270.50	5,258.11	-32.04	-2,373.81	2,373.98	0.99	0.00	0.99
7,531.00	90.30	270.50	5,257.32	-30.91	-2,502.80	2,502.96	0.08	-0.08	0.00
7,659.00	90.00	270.00	5,256.98	-30.35	-2,630.80	2,630.95	0.46	-0.23	-0.39
7,787.00	89.50	269.50	5,257.54	-30.91	-2,758.79	2,758.95	0.55	-0.39	-0.39
7,916.00	90.60	269.00	5,257.43	-32.60	-2,887.78	2,887.94	0.94	0.85	-0.39
8,044.00	92.00	269.60	5,254.53	-34.16	-3,015.74	3,015.90	1.19	1.09	0.47
8,172.00	91.80	268.70	5,250.28	-36.06	-3,143.65	3,143.83	0.72	-0.16	-0.70
8,301.00	91.20	271.40	5,246.91	-35.95	-3,272.59	3,272.77	2.14	-0.47	2.09
8,429.00	90.90	271.00	5,244.56	-33.27	-3,400.54	3,400.69	0.39	-0.23	-0.31
8,556.00	90.40	270.20	5,243.12	-31.94	-3,527.53	3,527.66	0.74	-0.39	-0.63
8,684.00	89.90	270.00	5,242.78	-31.71	-3,655.52	3,655.66	0.42	-0.39	-0.16
8,812.00	89.80	269.80	5,243.12	-31.94	-3,783.52	3,783.66	0.17	-0.08	-0.16
8,940.00	89.40	270.10	5,244.01	-32.05	-3,911.52	3,911.65	0.39	-0.31	0.23
9,068.00	90.60	269.30	5,244.01	-32.72	-4,039.52	4,039.65	1.13	0.94	-0.63
9,196.00	90.80	268.90	5,242.45	-34.73	-4,167.49	4,167.63	0.35	0.16	-0.31
9,325.00	90.60	268.30	5,240.87	-37.88	-4,296.44	4,296.60	0.49	-0.16	-0.47
9,456.00	90.50	267.00	5,239.62	-43.25	-4,427.32	4,427.52	1.00	-0.08	-0.99
9,584.00	91.80	268.70	5,237.05	-48.05	-4,555.20	4,555.43	1.67	1.02	1.33
9,712.00	91.90	268.30	5,232.91	-51.40	-4,683.09	4,683.34	0.32	0.08	-0.31
9,839.00	91.60	267.00	5,229.04	-56.61	-4,809.92	4,810.20	1.05	-0.24	-1.02
9,925.00	91.60	266.80	5,226.63	-61.26	-4,895.76	4,896.07	0.23	0.00	-0.23
Last Phoenix MWD Survey									
9,989.00	91.60	266.80	5,224.85	-64.83	-4,959.64	4,959.97	0.00	0.00	0.00
Projection to TD									

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Site:	Crow Federal	MD Reference:	KB @ 3951.00usft (Capstar 114)
Well:	#40H	North Reference:	Grid
Wellbore:	WB1 / Job #1512792	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	Compass 5000 GCR

Survey Annotations				
Measured Depth, (usft)	Vertical Depth, (usft)	Local Coordinates		Comment
		N-S (usft)	E-W (usft)	
560.00	559.98	-3.59	1.70	Tie-on to Gyrodata Gyro Survey
708.00	707.98	-4.21	2.28	First Phoenix MWD Survey
9,925.00	5,226.63	-61.26	-4,895.76	Last Phoenix MWD Survey
9,989.00	5,224.85	-64.83	-4,959.64	Projection to TD

Checked By: _____ Approved By: _____ Date: _____