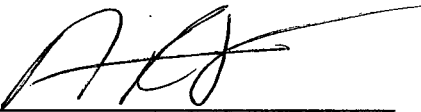


Apache Corporation
303 Veterans Airpark Lane, #3000
Midland, TX 79705

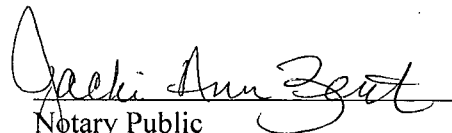
Crow Federal #018H API# 30-015-40992
Eddy County, New Mexico SL: 1805' FSL & 110' FWL, Wh: L 09-17S-31E

235	2.35	0.25	0.44	1.03	1.03
470	4.70	0.10	0.18	0.82	0.82

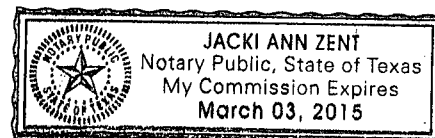


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 21st day of November, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.



Notary Public





Apache Corporation

Eddy County, NM (NAD27 NME)

Crow Federal

#18H AP#30-015-40992

WB1/Job #1311163

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 30 2014

RECEIVED

Survey: Phoenix MWD Surveys

Phoenix Final Survey Report

07 November, 2013



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #18H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3849.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3849.00usft (Capstar 114)
Well:	#18H	North Reference:	Grid
Wellbore:	WB1/Job #1311163	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:	Crow Federal				
Site Position:		Northing:	671,130.90 usft	Latitude:	32° 50' 38.92796 N
From:	Map	Easting:	643,906.80 usft	Longitude:	103° 51' 53.16689 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.25 °

Well	#18H					
Well Position	+N/-S	0.00 usft	Northing:	672,017.60 usft	Latitude:	32° 50' 47.93560 N
	+E/-W	0.00 usft	Easting:	638,480.40 usft	Longitude:	103° 52' 56.72745 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,838.00 usft

Wellbore		WB1/Job #1311163			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	09/04/13	7.50	60.65	48,731

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		Direction:		
		(usft)			(usft)		(usft)		(°)		
		0.00			0.00		0.00		86.13		

Survey Program:		Date	11/07/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
532.00	10,795.00	Phoenix MWD Surveys (WB1/Job #131116)	MWD	MWD - Standard	

Survey							
MD (usft)	Inc (°)	Azi,(azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
450.00	0.10	2.43	450.00	0.55	-0.08	-0.04	0.00
Tie-on to Gyro							
532.00	0.00	241.80	532.00	0.62	-0.07	-0.03	0.12
First Phoenix MWD Survey							
651.00	0.40	15.80	651.00	1.02	0.04	0.11	0.34
737.00	1.50	354.90	736.99	2.43	0.02	0.19	1.32
822.00	2.80	2.30	821.92	5.61	0.01	0.38	1.56
908.00	4.30	358.90	907.76	10.94	0.03	0.77	1.76
993.00	4.70	0.90	992.49	17.60	0.02	1.21	0.51
1,081.00	4.80	9.80	1,080.19	24.84	0.71	2.38	0.84
1,166.00	4.20	13.70	1,164.93	31.37	2.05	4.16	0.79
1,252.00	4.10	16.40	1,250.71	37.37	3.66	6.18	0.26

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #18H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3849.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3849.00usft (Capstar 114)
Well:	#18H	North Reference:	Grid
Wellbore:	WB1/Job #1311163	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,337.00	4.00	8.90	1,335.49	43.22	4.98	7.88	0.63
1,423.00	4.30	11.30	1,421.27	49.34	6.07	9.39	0.40
1,508.00	3.60	358.50	1,506.07	55.14	6.63	10.33	1.32
1,594.00	3.70	354.40	1,591.89	60.60	6.29	10.36	0.32
1,679.00	3.70	359.70	1,676.72	66.07	6.01	10.45	0.40
1,765.00	3.80	359.50	1,762.53	71.69	5.97	10.79	0.12
1,851.00	3.70	4.30	1,848.35	77.31	6.15	11.35	0.38
1,936.00	3.70	3.20	1,933.17	82.78	6.51	12.08	0.08
2,022.00	3.60	7.30	2,019.00	88.23	7.01	12.94	0.32
2,107.00	4.00	349.90	2,103.81	93.80	6.82	13.14	1.43
2,193.00	4.00	344.00	2,189.60	99.63	5.47	12.18	0.48
2,279.00	3.80	354.30	2,275.41	105.35	4.36	11.46	0.85
2,364.00	3.60	358.00	2,360.23	110.82	3.99	11.46	0.37
2,450.00	3.70	357.20	2,446.05	116.29	3.76	11.60	0.13
2,535.00	3.60	359.90	2,530.88	121.70	3.62	11.83	0.23
2,621.00	3.60	357.20	2,616.71	127.10	3.48	12.05	0.20
2,707.00	3.40	0.50	2,702.55	132.35	3.37	12.30	0.33
2,792.00	3.60	359.40	2,787.39	137.53	3.37	12.64	0.25
2,877.00	3.50	358.60	2,872.23	142.80	3.28	12.91	0.13
2,966.00	3.50	359.70	2,961.06	148.23	3.20	13.19	0.08
3,052.00	3.40	1.10	3,046.91	153.40	3.23	13.58	0.15
3,137.00	3.60	3.80	3,131.75	158.59	3.46	14.15	0.30
3,219.00	3.80	5.60	3,213.58	163.86	3.89	14.94	0.28
3,305.00	3.90	3.60	3,299.38	169.61	4.35	15.79	0.19
3,390.00	4.10	5.90	3,384.18	175.52	4.85	16.68	0.30
3,463.00	4.10	6.20	3,456.99	180.71	5.40	17.58	0.03
3,559.00	4.10	5.70	3,552.75	187.54	6.11	18.75	0.04
3,644.00	4.00	2.60	3,637.53	193.52	6.55	19.59	0.28
3,730.00	4.00	2.30	3,723.32	199.52	6.80	20.25	0.02
3,815.00	4.00	2.10	3,808.12	205.44	7.03	20.88	0.02
3,901.00	3.90	3.30	3,893.91	211.36	7.31	21.56	0.15
3,987.00	3.60	4.40	3,979.73	216.97	7.68	22.31	0.36
4,072.00	4.40	4.70	4,064.52	222.88	8.16	23.18	0.94
4,158.00	4.40	3.00	4,150.27	229.46	8.60	24.07	0.15
4,243.00	4.30	2.50	4,235.02	235.90	8.91	24.81	0.13
4,329.00	4.10	1.00	4,320.79	242.20	9.10	25.43	0.27
4,415.00	3.90	1.00	4,406.58	248.20	9.21	25.94	0.23
4,503.00	3.90	2.90	4,494.38	254.18	9.41	26.55	0.15
4,589.00	3.90	1.40	4,580.18	260.02	9.63	27.16	0.12
4,674.00	3.90	358.90	4,664.98	265.80	9.65	27.56	0.20
4,763.00	4.30	348.80	4,753.75	272.10	8.94	27.28	0.93
4,851.00	4.40	346.70	4,841.50	278.62	7.52	26.31	0.21
4,940.00	3.60	343.60	4,930.28	284.63	5.95	25.14	0.93
5,026.00	3.80	343.60	5,016.10	289.95	4.38	23.94	0.23
5,111.00	2.90	341.40	5,100.96	294.69	2.90	22.78	1.07

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #18H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3849.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3849.00usft (Capstar 114)
Well:	#18H	North Reference:	Grid
Wellbore:	WB1/Job #1311163	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,197.00	1.20	350.60	5,186.90	297.64	2.06	22.14	2.01	
5,282.00	1.40	357.30	5,271.88	299.56	1.86	22.08	0.30	
5,368.00	1.40	354.60	5,357.85	301.65	1.72	22.07	0.08	
5,453.00	1.30	350.60	5,442.83	303.64	1.46	21.95	0.16	
5,539.00	0.20	68.00	5,528.82	304.66	1.44	22.00	1.48	
5,625.00	0.20	80.80	5,614.82	304.74	1.73	22.29	0.05	
5,668.00	0.20	87.60	5,657.82	304.75	1.88	22.44	0.06	
5,711.00	3.60	97.30	5,700.79	304.58	3.29	23.84	7.91	
5,754.00	8.60	95.20	5,743.53	304.12	7.84	28.34	11.64	
5,796.00	13.60	91.10	5,784.74	303.74	15.91	36.37	12.04	
5,839.00	18.40	90.10	5,826.06	303.63	27.75	48.18	11.18	
5,882.00	23.40	90.50	5,866.22	303.54	43.09	63.48	11.63	
5,925.00	28.80	91.90	5,904.82	303.13	61.99	82.31	12.64	
5,967.00	34.50	92.90	5,940.56	302.19	84.00	104.21	13.63	
6,010.00	39.60	92.80	5,974.86	300.90	109.87	129.93	11.86	
6,053.00	44.70	92.50	6,006.73	299.57	138.68	158.59	11.87	
6,096.00	49.70	92.10	6,035.94	298.31	170.20	189.95	11.65	
6,138.00	54.60	91.30	6,061.70	297.33	203.34	222.94	11.76	
6,181.00	60.40	90.60	6,084.80	296.74	239.58	259.07	13.56	
6,224.00	65.00	90.10	6,104.51	296.51	277.78	297.16	10.75	
6,267.00	68.90	90.30	6,121.35	296.37	317.34	336.62	9.08	
6,310.00	75.00	90.10	6,134.66	296.23	358.21	377.38	14.19	
6,352.00	80.90	89.70	6,143.43	296.30	399.26	418.35	14.08	
6,396.00	86.80	88.90	6,148.14	296.84	442.99	462.01	13.53	
6,438.00	88.40	88.70	6,149.90	297.72	484.94	503.93	3.84	
6,481.00	89.50	89.30	6,150.69	298.47	527.92	546.87	2.91	
6,567.00	89.60	89.20	6,151.36	299.59	613.91	632.74	0.16	
6,652.00	88.30	87.20	6,152.92	302.26	698.85	717.66	2.81	
6,738.00	88.90	88.70	6,155.02	305.34	784.77	803.59	1.88	
6,824.00	90.30	90.70	6,155.62	305.79	870.76	889.41	2.84	
6,909.00	90.00	89.40	6,155.40	305.71	955.76	974.21	1.57	
6,995.00	90.50	89.30	6,155.02	306.69	1,041.75	1,060.07	0.59	
7,080.00	89.20	90.00	6,155.25	307.21	1,126.75	1,144.91	1.74	
7,166.00	87.60	90.20	6,157.65	307.06	1,212.71	1,230.67	1.87	
7,251.00	87.50	89.60	6,161.28	307.21	1,297.63	1,315.41	0.71	
7,337.00	87.00	89.40	6,165.41	307.96	1,383.53	1,401.16	0.63	
7,423.00	87.50	88.80	6,169.53	309.31	1,469.42	1,486.94	0.91	
7,508.00	87.80	89.00	6,173.02	310.94	1,554.33	1,571.77	0.42	
7,594.00	87.80	88.90	6,176.32	312.51	1,640.25	1,657.61	0.12	
7,679.00	87.20	90.30	6,180.03	313.10	1,725.17	1,742.37	1.79	
7,765.00	87.40	90.10	6,184.08	312.80	1,811.07	1,828.05	0.33	
7,850.00	87.70	89.80	6,187.71	312.88	1,895.99	1,912.79	0.50	
7,936.00	87.60	89.10	6,191.24	313.70	1,981.92	1,998.57	0.82	
8,022.00	87.50	88.90	6,194.92	315.20	2,067.83	2,084.38	0.26	

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #18H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3849.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3849.00usft (Capstar 114)
Well:	#18H	North Reference:	Grid
Wellbore:	WB1/Job #1311163	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V: Sec (usft)	DLeg (%/100usft)	
8,107.00	89.10	90.00	6,197.44	316.02	2,152.78	2,169.20	2.28	
8,193.00	89.10	89.40	6,198.79	316.47	2,238.77	2,255.02	0.70	
8,278.00	89.30	89.00	6,199.97	317.65	2,323.75	2,339.89	0.53	
8,364.00	89.40	88.60	6,200.95	319.46	2,409.73	2,425.79	0.48	
8,449.00	89.20	89.60	6,201.99	320.79	2,494.71	2,510.67	1.20	
8,535.00	90.00	89.60	6,202.59	321.39	2,580.70	2,596.51	0.93	
8,620.00	88.70	90.10	6,203.55	321.61	2,665.70	2,681.32	1.64	
8,704.00	89.00	90.60	6,205.24	321.10	2,749.68	2,765.08	0.69	
8,789.00	89.50	91.00	6,206.35	319.91	2,834.66	2,849.79	0.75	
8,877.00	89.70	90.90	6,206.97	318.46	2,922.65	2,937.48	0.25	
8,966.00	90.30	90.80	6,206.97	317.13	3,011.64	3,026.17	0.68	
9,051.00	88.50	90.50	6,207.86	316.17	3,096.62	3,110.90	2.15	
9,137.00	88.20	90.10	6,210.33	315.72	3,182.59	3,196.64	0.58	
9,225.00	88.30	89.60	6,213.02	315.95	3,270.54	3,284.41	0.58	
9,310.00	88.00	89.50	6,215.76	316.62	3,355.50	3,369.21	0.37	
9,396.00	88.30	89.30	6,218.54	317.52	3,441.45	3,455.03	0.42	
9,482.00	88.60	89.10	6,220.87	318.72	3,527.41	3,540.87	0.42	
9,568.00	88.50	90.30	6,223.04	319.17	3,613.38	3,626.68	1.40	
9,653.00	88.80	90.60	6,225.05	318.50	3,698.35	3,711.41	0.50	
9,739.00	88.70	90.20	6,226.92	317.90	3,784.33	3,797.15	0.48	
9,828.00	89.00	89.30	6,228.71	318.29	3,873.31	3,885.96	1.07	
9,916.00	89.20	88.20	6,230.09	320.21	3,961.27	3,973.85	1.27	
10,002.00	88.20	89.30	6,232.04	322.08	4,047.23	4,059.74	1.73	
10,087.00	88.00	89.10	6,234.86	323.27	4,132.17	4,144.57	0.33	
10,173.00	88.00	88.80	6,237.86	324.85	4,218.11	4,230.41	0.35	
10,258.00	88.40	88.40	6,240.53	326.92	4,303.04	4,315.29	0.67	
10,343.00	88.40	88.40	6,242.90	329.29	4,387.97	4,400.19	0.00	
10,430.00	88.40	87.70	6,245.33	332.25	4,474.89	4,487.11	0.80	
10,514.00	88.60	87.90	6,247.53	335.48	4,558.80	4,571.04	0.34	
10,603.00	88.70	87.70	6,249.63	338.89	4,647.71	4,659.98	0.25	
10,690.00	88.90	87.60	6,251.45	342.46	4,734.62	4,746.93	0.26	
10,742.00	88.90	87.50	6,252.45	344.68	4,786.56	4,798.91	0.19	
Last Phoenix MWD Survey								
10,795.00	88.90	87.50	6,253.47	346.99	4,839.50	4,851.88	0.00	
Projection to Bit								



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #18H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3849.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3849.00usft (Capstar 114)
Well:	#18H	North Reference:	Grid
Wellbore:	WB1/Job #1311163	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
450.00	450.00	0.55	-0.08	Tie-on to Gyro
532.00	532.00	0.62	-0.07	First Phoenix MWD Survey
10,742.00	6,252.45	344.68	4,786.56	Last Phoenix MWD Survey
10,795.00	6,253.47	346.99	4,839.50	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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