

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

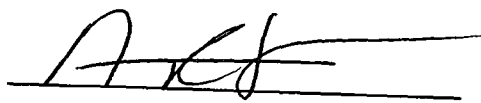
Crow Federal Com #34H API# 30-015-42139
Eddy County, New Mexico SL: 905' FSL + 570' FWL UL: M 03-178-31E

258	2.58	0.50	0.88	2.26	2.26
493	2.35	1.00	1.75	4.11	6.37
650	1.57	1.00	1.75	2.75	9.12

NM OIL CONSERVATION
ARTESIA DISTRICT

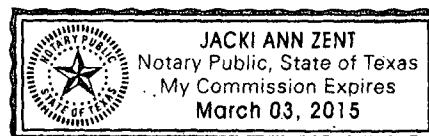
APR 29 2015

RECEIVED


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 25th day of July, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





NM OIL CONSERVATION
ARTESIA DISTRICT

APR 29 2015

RECEIVED

Apache Corporation

Eddy County, NM (NAD27 NME)

Crow Federal Com

#34H API #30-015-42139

SL: 905' FSL + 570' FWL WL: M 03-178-31E

WB1/Job #1410978

Survey: Phoenix MWD Surveys

Standard Survey Report

10 July, 2014



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #34H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3941.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3941.00usft (Capstar 114)
Well:	#34H	North Reference:	Grid
Wellbore:	WB1/Job #1410978	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
From:	Map	Easting:	643,906.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 38.92796 N
		Longitude:	103° 51' 53.16689 W
		Grid Convergence:	0.25 °

Well	#34H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	
			Latitude:
			Longitude:
			Ground Level:

Wellbore	WB1/Job #1410978		
Magnetics	Model Name	Sample Date	Declination
			(°)
	BGGM2013	06/10/14	7.53
			Dip Angle
			(°)
			Field Strength
			(nT)

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
			(°)

Survey Program	Date 07/09/14		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	600.00	Gyro Surveys (WB1/Job #1410978)	NS-GYRO-MS
694.00	10,587.00	Phoenix MWD Surveys (WB1/Job #14109)	PHX+MWD+BGGM
			Description
			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)	
600.00	0.88	127.62	599.97	3.87	2.43	-2.45	0.00	0.00	0.00	
694.00	0.20	332.50	693.97	3.58	2.92	-2.95	1.13	-0.72	-165.02	
Fist Phoenix MWD Survey										
822.00	0.30	306.10	821.97	3.97	2.55	-2.58	0.12	0.08	-20.63	
951.00	0.40	340.70	950.97	4.60	2.13	-2.16	0.18	0.08	26.82	
1,079.00	0.50	219.40	1,078.96	4.59	1.62	-1.66	0.61	0.08	-94.77	
1,207.00	0.80	197.10	1,206.96	3.30	1.01	-1.03	0.30	0.23	-17.42	
1,335.00	1.40	201.30	1,334.93	0.99	0.18	-0.18	0.47	0.47	3.28	
1,463.00	1.60	199.70	1,462.89	-2.15	-0.99	1.01	0.16	0.16	-1.25	
1,592.00	2.20	200.00	1,591.82	-8.17	-2.45	2.49	0.47	0.47	0.23	

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Site:	Crow Federal	MD Reference:	KB @ 3941.00usft (Capstar 114)
Well:	#34H	North Reference:	Grid
Wellbore:	WB1/Job #1410978	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

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)
1,720.00	1.60	195.50	1,719.75	-10.20	-3.77	3.84	0.48	-0.47	-3.52
1,848.00	1.20	204.30	1,847.71	-13.15	-4.79	4.89	0.35	-0.31	6.88
1,976.00	0.60	237.80	1,975.69	-14.72	-5.91	6.02	0.60	-0.47	26.17
2,107.00	0.50	350.00	2,106.69	-14.53	-6.59	6.70	0.70	-0.08	85.65
2,236.00	0.70	344.90	2,235.68	-13.21	-6.90	6.99	0.16	0.16	-3.95
2,364.00	1.00	351.40	2,363.67	-11.35	-7.27	7.35	0.25	0.23	5.08
2,492.00	1.00	345.00	2,491.65	-9.17	-7.72	7.79	0.09	0.00	-5.00
2,620.00	0.80	332.90	2,619.63	-7.29	-8.42	8.47	0.21	-0.16	-9.45
2,749.00	1.00	324.30	2,748.62	-5.58	-9.49	9.53	0.19	0.16	-6.67
2,877.00	1.00	306.70	2,876.60	-4.00	-11.03	11.06	0.24	0.00	-13.75
3,005.00	0.90	305.00	3,004.58	-2.76	-12.75	12.77	0.08	-0.08	-1.33
3,134.00	1.10	288.70	3,133.56	-1.78	-14.76	14.77	0.27	0.16	-12.64
3,262.00	0.80	306.50	3,261.54	-0.86	-16.64	16.64	0.33	-0.23	13.91
3,390.00	0.70	287.70	3,389.53	-0.09	-18.10	18.10	0.21	-0.08	-14.69
3,450.00	0.70	292.20	3,449.53	0.16	-18.79	18.79	0.09	0.00	7.50
3,594.00	0.50	294.40	3,593.52	0.75	-20.18	20.17	0.14	-0.14	1.53
3,722.00	0.30	92.10	3,721.52	0.97	-20.35	20.34	0.61	-0.16	123.20
3,850.00	1.20	89.00	3,849.51	0.98	-18.67	18.67	0.70	0.70	-2.42
3,978.00	1.40	88.50	3,977.47	1.05	-15.77	15.76	0.16	0.16	-0.39
4,106.00	1.40	89.30	4,105.43	1.11	-12.64	12.64	0.02	0.00	0.63
4,234.00	1.30	91.80	4,233.40	1.08	-9.63	9.62	0.09	-0.08	1.95
4,362.00	1.30	94.10	4,361.37	0.93	-6.73	6.72	0.04	0.00	1.80
4,491.00	1.20	103.30	4,490.34	0.52	-3.96	3.95	0.17	-0.08	7.13
4,619.00	0.70	102.80	4,618.32	0.04	-1.89	1.89	0.39	-0.39	-0.39
4,752.00	0.60	109.10	4,751.31	-0.37	-0.44	0.44	0.09	-0.08	4.74
4,832.00	2.60	269.40	4,831.29	-0.53	-1.86	1.86	3.96	2.50	200.38
4,874.00	7.10	270.30	4,873.13	-0.52	-5.41	5.41	10.72	10.71	2.14
4,917.00	12.40	273.30	4,915.49	-0.25	-12.68	12.68	12.38	12.33	6.98
4,960.00	18.40	274.50	4,956.93	0.55	-24.06	24.06	13.97	13.95	2.79
5,003.00	24.80	273.10	4,996.89	1.58	-39.85	39.84	14.93	14.88	-3.26
5,046.00	30.90	272.10	5,034.89	2.47	-59.91	59.89	14.23	14.19	-2.33
5,088.00	37.50	270.90	5,069.61	3.06	-83.50	83.47	15.80	15.71	-2.86
5,131.00	44.40	269.70	5,102.06	3.19	-111.66	111.63	16.15	16.05	-2.79
5,174.00	50.10	268.60	5,131.24	2.71	-143.22	143.19	13.39	13.26	-2.56
5,217.00	54.20	269.30	5,157.62	2.09	-177.16	177.14	9.62	9.53	1.63
5,260.00	58.20	270.10	5,181.54	1.91	-212.88	212.86	9.43	9.30	1.86
5,302.00	62.40	269.90	5,202.34	1.91	-249.36	249.34	10.01	10.00	-0.48
5,345.00	66.50	269.80	5,220.88	1.81	-288.14	288.12	9.54	9.53	-0.23
5,388.00	70.00	269.50	5,236.81	1.56	-328.07	328.06	8.17	8.14	-0.70
5,431.00	72.60	269.50	5,250.60	1.21	-368.80	368.78	6.05	6.05	0.00
5,473.00	76.70	269.10	5,261.72	0.71	-409.29	409.27	9.80	9.76	-0.95
5,516.00	81.00	268.80	5,270.03	-0.06	-451.46	451.45	10.02	10.00	-0.70
5,559.00	83.80	269.20	5,275.72	-0.80	-494.07	494.07	6.58	6.51	0.93

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Well:	#34H	North Reference:	Grid
Wellbore:	WB1/Job.#1410978	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB

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)
5,602.00	88.00	269.50	5,278.79	-1.29	-536.95	536.95	9.79	9.77	0.70
5,645.00	91.70	270.40	5,278.90	-1.33	-579.94	579.94	8.86	8.60	2.09
5,773.00	92.00	270.10	5,274.77	-0.77	-707.87	707.86	0.33	0.23	-0.23
5,901.00	92.00	270.10	5,270.30	-0.55	-835.80	835.78	0.00	0.00	0.00
6,030.00	90.60	268.00	5,267.38	-2.69	-964.73	964.73	1.96	-1.09	-1.63
6,158.00	90.20	265.70	5,266.48	-9.72	-1,092.53	1,092.57	1.82	-0.31	-1.80
6,292.00	91.60	268.00	5,264.38	-17.08	-1,226.30	1,226.39	2.01	1.04	1.72
6,421.00	90.40	269.60	5,262.13	-19.78	-1,355.24	1,355.35	1.55	-0.93	1.24
6,548.00	90.00	269.70	5,261.68	-20.56	-1,482.24	1,482.35	0.32	-0.31	0.08
6,676.00	89.80	271.40	5,261.91	-19.33	-1,610.23	1,610.33	1.34	-0.16	1.33
6,804.00	91.00	271.00	5,261.01	-16.65	-1,738.20	1,738.27	0.99	0.94	-0.31
6,932.00	90.30	270.30	5,259.56	-15.20	-1,866.18	1,866.24	0.77	-0.55	-0.55
7,060.00	90.90	270.10	5,258.22	-14.75	-1,994.17	1,994.22	0.49	0.47	-0.16
7,188.00	90.80	269.50	5,256.32	-15.20	-2,122.15	2,122.21	0.48	-0.08	-0.47
7,317.00	90.40	268.50	5,254.97	-17.45	-2,251.12	2,251.19	0.83	-0.31	-0.78
7,445.00	91.50	269.40	5,252.85	-19.79	-2,379.08	2,379.16	1.11	0.86	0.70
7,573.00	91.40	268.90	5,249.61	-21.69	-2,507.03	2,507.12	0.40	-0.08	-0.39
7,702.00	91.20	271.00	5,246.68	-21.80	-2,635.99	2,636.07	1.63	-0.16	1.63
7,830.00	91.10	270.10	5,244.11	-20.58	-2,763.95	2,764.03	0.71	-0.08	-0.70
7,958.00	91.60	270.10	5,241.10	-20.35	-2,891.92	2,891.99	0.39	0.39	0.00
8,087.00	91.40	269.80	5,237.72	-20.46	-3,020.87	3,020.94	0.28	-0.16	-0.23
8,215.00	91.20	270.20	5,234.82	-20.46	-3,148.84	3,148.90	0.35	-0.16	0.31
8,352.00	90.00	268.90	5,233.38	-21.54	-3,285.82	3,285.89	1.29	-0.88	-0.95
8,480.00	89.60	268.30	5,233.83	-24.67	-3,413.78	3,413.87	0.56	-0.31	-0.47
8,611.00	89.70	268.40	5,234.63	-28.44	-3,544.73	3,544.84	0.11	0.08	0.08
8,739.00	90.50	269.00	5,234.40	-31.34	-3,672.69	3,672.82	0.78	0.63	0.47
8,867.00	91.00	268.30	5,232.73	-34.36	-3,800.64	3,800.79	0.67	0.39	-0.55
8,996.00	91.30	269.50	5,230.14	-36.84	-3,929.59	3,929.75	0.96	0.23	0.93
9,124.00	91.40	269.20	5,227.12	-38.29	-4,057.55	4,057.72	0.25	0.08	-0.23
9,252.00	90.30	269.50	5,225.23	-39.74	-4,185.52	4,185.70	0.89	-0.86	0.23
9,380.00	90.90	270.20	5,223.89	-40.07	-4,313.51	4,313.69	0.72	0.47	0.55
9,508.00	90.40	269.20	5,222.43	-40.74	-4,441.50	4,441.68	0.87	-0.39	-0.78
9,637.00	90.20	269.50	5,221.76	-42.21	-4,570.49	4,570.68	0.28	-0.16	0.23
9,765.00	89.80	270.40	5,221.76	-42.32	-4,698.49	4,698.67	0.77	-0.31	0.70
9,896.00	89.60	269.50	5,222.44	-42.43	-4,829.49	4,829.67	0.70	-0.15	-0.69
10,025.00	89.50	271.00	5,223.46	-41.87	-4,958.48	4,958.65	1.17	-0.08	1.16
10,153.00	89.70	271.70	5,224.35	-38.85	-5,086.44	5,086.59	0.57	0.16	0.55
10,282.00	89.40	271.10	5,225.36	-35.70	-5,215.39	5,215.52	0.52	-0.23	-0.47
10,410.00	89.80	270.40	5,226.26	-34.03	-5,343.38	5,343.49	0.63	0.31	-0.55
10,520.00	89.40	270.00	5,227.03	-33.64	-5,453.38	5,453.48	0.51	-0.36	-0.36
Last Phoenix MWD Survey									
10,587.00	89.40	270.00	5,227.73	-33.64	-5,520.37	5,520.47	0.00	0.00	0.00
Projection to TD									



Phoenix Technology Services
Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #34H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3941.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3941.00usft (Capstar 114)
Well:	#34H	North Reference:	Grid
Wellbore:	WB1/Job #1410978	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)	
	599.97			Tie-on to Gyro Survey
694.00	693.97	3.58	2.92	Fist Phoenix MWD Survey
10,520.00	5,227.03	-33.64	-5,453.38	Last Phoenix MWD Survey
10,587.00	5,227.73	-33.64	-5,520.37	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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