



PHOENIX
TECHNOLOGY SERVICES

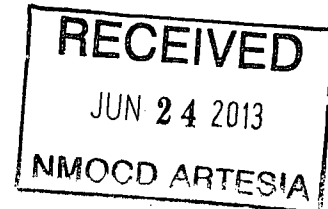
June 12, 2013

Oil Conservation Division
State of New Mexico
811 S. First St.
Artesia, New Mexico 88210

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation
Crow Federal #10H
Eddy Co., NM
API #30-015-40574
Job No. 1310298



Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

Name & Title of Surveyor	Drainhole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Matthew Dice	14H	601	10,637	05/24/13	06/07/13	MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

Kelly Jo Walter

Kelly Jo Walter
Operations Administrator

Certified mail receipt number: 7011 1570 0001 4364 8394

Phoenix Technology Services

SURVEY DATA CERTIFICATION

RECEIVED

JUN 24 2013



PHOENIX
TECHNOLOGY SERVICES

PHOENIX JOB NUMBER

1310557

NMOCD ARTESIA

OPERATOR Apache

WELL NAME

Crow Federal 14H

COUNTY & STATE

Eddy, NM

API WELL NUMBER

30-015-40578

PROPOSED DIRECTION

269.63

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
ft.	.00 ft.	.0 ft.	.0 ft.	.00 ft.	.00 ft.	Surface

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
24-May-13	601 ft.	0.7	199.2

SURVEY INSTRUMENT

TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
7-Jun-13	10,637 ft.	91.1	268.0

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
7-Jun-13	10,637 ft.	91.1	268.0

Matthew Dice

PRINT YOUR NAME ABOVE

Matthew Dice

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	
	7.41
DECLINATION OR GRID	DECLINATION

6/7/2013

TODAY'S DATE

MWD SUPERVISOR 1

Brad Hill

DIRECTIONAL DRILLER 1

Tim Owens

MWD SUPERVISOR 2

Matt Dice

DIRECTIONAL DRILLER 2

Ken Smith

1805 Brittmore Road

Houston, Texas 77043

(713)3370609 (Voice), (713)337-0599 (Fax)



Apache Corporation

Eddy County, NM (NAD27 NME)

Crow Federal

#14H

OH / Job #1310557

Survey: Phoenix MWD Surveys

Apache

07 June, 2013





Phoenix Technology Services
Apache



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #14H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Well:	#14H	North Reference:	Grid
Wellbore:	OH / Job #1310557	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB v5000

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' 38.927956 N
From:	Map	Easting:	643,906.80	usft	Longitude:	103° 51' 53.166888 W
Position Uncertainty:	0.00	Slot Radius:	13-3/16	"	Grid Convergence:	0.25 °

Well		#14H				
Well Position	+N/-S	0.00 usft	Northing:	671,170.90 usft	Latitude:	32° 50' 39.323772 N
	+E/-W	0.00 usft	Easting:	643,906.50 usft	Longitude:	103° 51' 53.168325 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,884.00 usft	

Wellbore		OH / Job #1310557			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	04/25/12	7.66	60.69	48,868

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	269.63

Survey Program		Date - 06/07/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
601.00	10,696.00	Phoenix MWD Surveys (OH / Job #131055	MWD	MWD - Standard



Phoenix Technology Services
Apache



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Crow Federal
Well: #14H
Wellbore: OH / Job #1310557
Design: Surveys (Capstar 114)

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #14H
KB @ 3894.00usft (Capstar 114)
KB @ 3894.00usft (Capstar 114)
Grid
Minimum Curvature
GCR DB v5000

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	-3,894.00	0.00	0.00	0.00	0.00	0.00	671,170.90	643,906.50
601.00	0.70	199.20	-3,293.01	600.99	-3.47	-1.21	1.23	0.12	671,167.43	643,905.29
First Phoenix MWD Survey										
671.00	0.70	206.20	-3,223.02	670.98	-4.25	-1.54	1.56	0.12	671,166.65	643,904.96
756.00	0.50	219.30	-3,138.02	755.98	-5.01	-2.00	2.03	0.28	671,165.89	643,904.50
842.00	0.70	200.30	-3,052.03	841.97	-5.79	-2.42	2.46	0.33	671,165.11	643,904.08
928.00	0.70	214.20	-2,966.04	927.96	-6.72	-2.90	2.94	0.20	671,164.18	643,903.60
1,013.00	1.20	251.50	-2,881.05	1,012.95	-7.43	-4.03	4.08	0.91	671,163.47	643,902.47
1,099.00	1.50	284.70	-2,795.07	1,098.93	-7.43	-5.98	6.02	0.96	671,163.47	643,900.52
1,184.00	1.70	291.30	-2,710.10	1,183.90	-6.69	-8.23	8.27	0.32	671,164.21	643,898.27
1,270.00	1.80	295.10	-2,624.14	1,269.86	-5.65	-10.64	10.68	0.18	671,165.25	643,895.86
1,355.00	1.50	302.30	-2,539.18	1,354.82	-4.49	-12.79	12.82	0.43	671,166.41	643,893.71
1,441.00	0.80	326.40	-2,453.20	1,440.80	-3.39	-14.07	14.09	0.97	671,167.51	643,892.43
1,527.00	0.70	321.90	-2,367.20	1,526.80	-2.48	-14.73	14.74	0.13	671,168.42	643,891.77
1,612.00	0.70	333.10	-2,282.21	1,611.79	-1.61	-15.28	15.29	0.16	671,169.29	643,891.22
1,698.00	0.40	335.40	-2,196.21	1,697.79	-0.86	-15.65	15.65	0.35	671,170.04	643,890.85
1,782.00	0.40	348.80	-2,112.22	1,781.78	-0.31	-15.83	15.83	0.11	671,170.59	643,890.67
1,868.00	0.40	11.70	-2,026.22	1,867.78	0.28	-15.82	15.82	0.18	671,171.18	643,890.68
1,954.00	0.50	20.70	-1,940.22	1,953.78	0.92	-15.63	15.62	0.14	671,171.82	643,890.87
2,039.00	0.60	17.20	-1,855.22	2,038.78	1.70	-15.37	15.36	0.12	671,172.60	643,891.13
2,125.00	0.60	11.60	-1,769.23	2,124.77	2.57	-15.14	15.13	0.07	671,173.47	643,891.36
2,210.00	0.80	15.80	-1,684.24	2,209.76	3.57	-14.89	14.87	0.24	671,174.47	643,891.61
2,296.00	0.90	359.50	-1,598.24	2,295.76	4.83	-14.73	14.70	0.30	671,175.73	643,891.77
2,382.00	1.20	33.30	-1,512.26	2,381.74	6.25	-14.25	14.21	0.78	671,177.15	643,892.25
2,467.00	1.80	39.00	-1,427.29	2,466.71	8.04	-12.92	12.87	0.73	671,178.94	643,893.58
2,553.00	1.80	40.90	-1,341.33	2,552.67	10.11	-11.18	11.12	0.07	671,181.01	643,895.32
2,638.00	1.50	46.10	-1,256.37	2,637.63	11.89	-9.51	9.43	0.39	671,182.79	643,896.99



Phoenix Technology Services

Apache



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Crow Federal
Well: #14H
Wellbore: OH / Job #1310557
Design: Surveys (Capstar 114)

Local Co-ordinate Reference: Well #14H
TVD Reference: KB @ 3894.00usft (Capstar 114)
MD Reference: KB @ 3894.00usft (Capstar 114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,724.00	0.40	89.30	-1,170.38	2,723.62	12.67	-8.40	8.31	1.44	671,183.57	643,898.10	
2,810.00	0.50	65.00	-1,084.38	2,809.62	12.83	-7.76	7.67	0.25	671,183.73	643,898.74	
2,895.00	0.50	81.10	-999.38	2,894.62	13.05	-7.05	6.97	0.16	671,183.95	643,899.45	
2,981.00	0.60	57.60	-913.39	2,980.61	13.35	-6.30	6.22	0.28	671,184.25	643,900.20	
3,067.00	0.80	94.70	-827.39	3,066.61	13.54	-5.32	5.24	0.56	671,184.44	643,901.18	
3,152.00	1.10	115.80	-742.41	3,151.59	13.14	-4.00	3.91	0.54	671,184.04	643,902.50	
3,238.00	1.40	120.80	-656.43	3,237.57	12.24	-2.35	2.27	0.37	671,183.14	643,904.15	
3,324.00	1.20	118.60	-570.45	3,323.55	11.27	-0.66	0.59	0.24	671,182.17	643,905.84	
3,367.00	1.20	117.60	-527.46	3,366.54	10.85	0.14	-0.21	0.05	671,181.75	643,906.64	
3,475.00	1.20	125.20	-419.48	3,474.52	9.67	2.06	-2.12	0.15	671,180.57	643,908.56	
3,575.00	1.00	115.10	-319.50	3,574.50	8.70	3.71	-3.76	0.28	671,179.60	643,910.21	
3,663.00	0.80	118.00	-231.51	3,662.49	8.08	4.95	-5.00	0.23	671,178.98	643,911.45	
3,747.00	2.10	219.10	-147.53	3,746.47	6.61	4.49	-4.53	2.84	671,177.51	643,910.99	
3,834.00	2.50	210.40	-60.60	3,833.40	3.74	2.53	-2.55	0.61	671,174.64	643,909.03	
3,919.00	1.40	281.10	24.36	3,918.36	2.34	0.57	-0.58	2.86	671,173.24	643,907.07	
4,004.00	1.40	277.60	109.33	4,003.33	2.68	-1.48	1.46	0.10	671,173.58	643,905.02	
4,089.00	1.50	274.00	194.31	4,088.31	2.89	-3.62	3.60	0.16	671,173.79	643,902.88	
4,175.00	1.50	268.40	280.28	4,174.28	2.94	-5.87	5.85	0.17	671,173.84	643,900.63	
4,260.00	0.40	236.00	365.26	4,259.26	2.74	-7.22	7.21	1.39	671,173.64	643,899.28	
4,346.00	0.70	229.70	451.26	4,345.26	2.23	-7.87	7.86	0.36	671,173.13	643,898.63	
4,432.00	0.90	230.30	537.25	4,431.25	1.46	-8.79	8.78	0.23	671,172.36	643,897.71	
4,517.00	0.70	95.30	622.25	4,516.25	0.99	-8.79	8.78	1.74	671,171.89	643,897.71	
4,603.00	0.70	93.40	708.24	4,602.24	0.91	-7.74	7.74	0.03	671,171.81	643,898.76	
4,688.00	0.80	66.20	793.24	4,687.24	1.12	-6.68	6.67	0.43	671,172.02	643,899.82	
4,773.00	0.80	77.80	878.23	4,772.23	1.48	-5.56	5.55	0.19	671,172.38	643,900.94	
4,859.00	0.70	87.90	964.22	4,858.22	1.63	-4.45	4.44	0.19	671,172.53	643,902.05	
4,945.00	0.60	88.90	1,050.21	4,944.21	1.66	-3.47	3.46	0.12	671,172.56	643,903.03	



Phoenix Technology Services

Apache



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Crow Federal
Well: #14H
Wellbore: OH / Job #1310557
Design: Surveys (Capstar 114)

Local Co-ordinate Reference: Well #14H
TVD Reference: KB @ 3894.00usft (Capstar 114)
MD Reference: KB @ 3894.00usft (Capstar 114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR:DB V5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
5,030.00	0.50	96.80	1,135.21	5,029.21	1.62	-2.66	2.65	0.15	671,172.52	643,903.84	
5,116.00	0.40	82.40	1,221.21	5,115.21	1.62	-1.99	1.98	0.17	671,172.52	643,904.51	
5,147.00	0.60	93.40	1,252.21	5,146.21	1.62	-1.72	1.71	0.71	671,172.52	643,904.78	
5,198.00	0.80	253.30	1,303.20	5,197.20	1.50	-1.79	1.78	2.70	671,172.40	643,904.71	
5,240.00	4.00	274.90	1,345.16	5,239.16	1.54	-3.53	3.52	7.78	671,172.44	643,902.97	
5,283.00	8.20	266.70	1,387.91	5,281.91	1.49	-8.09	8.08	9.95	671,172.39	643,898.41	
5,326.00	12.20	270.00	1,430.22	5,324.22	1.32	-15.70	15.69	9.40	671,172.22	643,890.80	
5,369.00	16.00	275.00	1,471.92	5,365.92	1.83	-26.15	26.14	9.27	671,172.73	643,880.35	
5,412.00	20.00	275.50	1,512.81	5,406.81	3.06	-39.38	39.36	9.31	671,173.96	643,867.12	
5,454.00	25.20	273.80	1,551.57	5,445.57	4.34	-55.46	55.43	12.48	671,175.24	643,851.04	
5,497.00	30.80	272.80	1,589.52	5,483.52	5.48	-75.61	75.57	13.07	671,176.38	643,830.89	
5,540.00	35.70	270.40	1,625.47	5,519.47	6.11	-99.17	99.12	11.80	671,177.01	643,807.33	
5,583.00	42.10	268.40	1,658.92	5,552.92	5.79	-126.15	126.11	15.17	671,176.69	643,780.35	
5,625.00	48.70	266.40	1,688.40	5,582.40	4.41	-156.00	155.97	16.07	671,175.31	643,750.50	
5,668.00	55.70	266.40	1,714.74	5,608.74	2.28	-189.89	189.87	16.28	671,173.18	643,716.61	
5,711.00	60.70	268.20	1,737.39	5,631.39	0.57	-226.38	226.37	12.16	671,171.47	643,680.12	
5,753.00	66.80	268.40	1,755.96	5,649.96	-0.54	-264.02	264.02	14.53	671,170.36	643,642.48	
5,796.00	73.40	267.50	1,770.58	5,664.58	-2.00	-304.40	304.41	15.47	671,168.90	643,602.10	
5,839.00	80.00	266.40	1,780.47	5,674.47	-4.23	-346.16	346.18	15.55	671,166.67	643,560.34	
5,882.00	85.80	266.30	1,785.78	5,679.78	-6.94	-388.73	388.77	13.49	671,163.96	643,517.77	
5,925.00	89.60	267.80	1,787.51	5,681.51	-9.15	-431.63	431.68	9.50	671,161.75	643,474.87	
6,010.00	93.00	270.20	1,785.58	5,679.58	-10.64	-516.58	516.63	4.90	671,160.26	643,389.92	
6,096.00	91.70	270.40	1,782.06	5,676.06	-10.19	-602.50	602.55	1.53	671,160.71	643,304.00	
6,182.00	91.50	270.30	1,779.65	5,673.65	-9.66	-688.46	688.51	0.26	671,161.24	643,218.04	
6,267.00	91.30	271.10	1,777.58	5,671.58	-8.62	-773.43	773.47	0.97	671,162.28	643,133.07	
6,353.00	90.90	269.90	1,775.93	5,669.93	-7.87	-859.41	859.44	1.47	671,163.03	643,047.09	
6,438.00	90.80	270.10	1,774.67	5,668.67	-7.87	-944.40	944.43	0.26	671,163.03	642,962.10	



Phoenix Technology Services
Apache



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #14H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3894.00usft (Capstar 114)
Site:	Crow Federal	MD Reference:	KB @ 3894.00usft (Capstar 114)
Well:	#14H	North Reference:	Grid
Wellbore:	OH / Job #1310557	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
6,523.00	91.70	269.30	1,772.81	5,666.81	-8.32	-1,029.38	1,029.41	1.42	671,162.58	642,877.12	
6,608.00	91.10	268.30	1,770.73	5,664.73	-10.10	-1,114.33	1,114.38	1.37	671,160.80	642,792.17	
6,694.00	90.90	268.10	1,769.23	5,663.23	-12.80	-1,200.28	1,200.34	0.33	671,158.10	642,706.22	
6,779.00	92.70	269.10	1,766.56	5,660.56	-14.87	-1,285.21	1,285.28	2.42	671,156.03	642,621.29	
6,864.00	92.00	269.10	1,763.08	5,657.08	-16.21	-1,370.12	1,370.20	0.82	671,154.69	642,536.38	
6,950.00	91.70	268.00	1,760.30	5,654.30	-18.38	-1,456.05	1,456.14	1.33	671,152.52	642,450.45	
7,035.00	92.40	270.50	1,757.26	5,651.26	-19.50	-1,540.98	1,541.07	3.05	671,151.40	642,365.52	
7,120.00	91.80	269.90	1,754.15	5,648.15	-19.20	-1,625.92	1,626.01	1.00	671,151.70	642,280.58	
7,205.00	91.10	270.40	1,752.00	5,646.00	-18.98	-1,710.89	1,710.98	1.01	671,151.92	642,195.61	
7,291.00	92.20	269.30	1,749.52	5,643.52	-19.20	-1,796.86	1,796.94	1.81	671,151.70	642,109.64	
7,377.00	92.20	268.40	1,746.22	5,640.22	-20.93	-1,882.77	1,882.87	1.05	671,149.97	642,023.73	
7,462.00	92.60	269.30	1,742.66	5,636.66	-22.63	-1,967.68	1,967.79	1.16	671,148.27	641,938.82	
7,548.00	92.60	271.50	1,738.76	5,632.76	-22.03	-2,053.59	2,053.68	2.56	671,148.87	641,852.91	
7,633.00	91.80	271.70	1,735.49	5,629.49	-19.66	-2,138.49	2,138.57	0.97	671,151.24	641,768.01	
7,719.00	91.90	271.40	1,732.72	5,626.72	-17.33	-2,224.41	2,224.48	0.37	671,153.57	641,682.09	
7,805.00	91.20	270.40	1,730.39	5,624.39	-15.98	-2,310.37	2,310.42	1.42	671,154.92	641,596.13	
7,890.00	91.50	269.50	1,728.39	5,622.39	-16.06	-2,395.34	2,395.40	1.12	671,154.84	641,511.16	
7,976.00	90.90	270.20	1,726.59	5,620.59	-16.28	-2,481.32	2,481.38	1.07	671,154.62	641,425.18	
8,061.00	90.90	269.50	1,725.25	5,619.25	-16.51	-2,566.31	2,566.37	0.82	671,154.39	641,340.19	
8,147.00	91.30	269.10	1,723.60	5,617.60	-17.56	-2,652.29	2,652.35	0.66	671,153.34	641,254.21	
8,232.00	91.60	269.70	1,721.45	5,615.45	-18.45	-2,737.26	2,737.32	0.79	671,152.45	641,169.24	
8,318.00	92.30	269.80	1,718.52	5,612.52	-18.82	-2,823.21	2,823.27	0.82	671,152.08	641,083.29	
8,403.00	91.10	269.90	1,716.00	5,610.00	-19.04	-2,908.17	2,908.23	1.42	671,151.86	640,998.33	
8,489.00	89.80	269.60	1,715.33	5,609.33	-19.42	-2,994.16	2,994.22	1.55	671,151.48	640,912.34	
8,574.00	89.90	269.60	1,715.55	5,609.55	-20.01	-3,079.16	3,079.22	0.12	671,150.89	640,827.34	
8,664.00	90.20	269.90	1,715.47	5,609.47	-20.40	-3,169.16	3,169.22	0.47	671,150.50	640,737.34	
8,747.00	90.10	268.50	1,715.25	5,609.25	-21.56	-3,252.15	3,252.22	1.69	671,149.34	640,654.35	



Phoenix Technology Services

Apache



Company: Apache Corporation
Project: Eddy County, NM (NAD27-NME)
Site: Crow Federal
Well: #14H
Wellbore: OH / Job #1310557
Design: Surveys (Capstar 114)

Local Co-ordinate Reference: Well #14H
TVD Reference: KB @ 3894.00usft (Capstar 114)
MD Reference: KB @ 3894.00usft (Capstar 114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,833.00	90.50	269.00	1,714.80	5,608.80	-23.44	-3,338.13	3,338.21	0.74	671,147.46	640,568.37	
8,919.00	90.90	268.80	1,713.75	5,607.75	-25.09	-3,424.10	3,424.19	0.52	671,145.81	640,482.40	
9,004.00	91.20	268.80	1,712.19	5,606.19	-26.87	-3,509.07	3,509.17	0.35	671,144.03	640,397.43	
9,084.00	91.80	268.40	1,710.10	5,604.10	-28.82	-3,589.02	3,589.13	0.90	671,142.08	640,317.48	
9,174.00	92.20	268.40	1,706.96	5,600.96	-31.34	-3,678.93	3,679.05	0.44	671,139.56	640,227.57	
9,260.00	91.30	269.50	1,704.33	5,598.33	-32.91	-3,764.87	3,765.01	1.65	671,137.99	640,141.63	
9,346.00	90.30	269.80	1,703.13	5,597.13	-33.44	-3,850.86	3,851.00	1.21	671,137.46	640,055.64	
9,431.00	90.10	270.70	1,702.84	5,596.84	-33.06	-3,935.86	3,935.99	1.08	671,137.84	639,970.64	
9,517.00	90.30	270.80	1,702.54	5,596.54	-31.94	-4,021.85	4,021.97	0.26	671,138.96	639,884.65	
9,603.00	90.20	270.20	1,702.16	5,596.16	-31.19	-4,107.85	4,107.96	0.71	671,139.71	639,798.65	
9,688.00	90.70	269.80	1,701.49	5,595.49	-31.19	-4,192.84	4,192.96	0.75	671,139.71	639,713.66	
9,774.00	90.80	269.50	1,700.37	5,594.37	-31.71	-4,278.83	4,278.95	0.37	671,139.19	639,627.67	
9,859.00	91.00	269.50	1,699.03	5,593.03	-32.46	-4,363.82	4,363.94	0.24	671,138.44	639,542.68	
9,944.00	91.20	269.40	1,697.40	5,591.40	-33.27	-4,448.80	4,448.92	0.26	671,137.63	639,457.70	
10,030.00	91.30	269.00	1,695.52	5,589.52	-34.47	-4,534.77	4,534.90	0.48	671,136.43	639,371.73	
10,116.00	91.60	269.10	1,693.35	5,587.35	-35.90	-4,620.73	4,620.87	0.37	671,135.00	639,285.77	
10,201.00	92.10	269.30	1,690.60	5,584.60	-37.08	-4,705.68	4,705.82	0.63	671,133.82	639,200.82	
10,287.00	90.00	269.10	1,689.03	5,583.03	-38.28	-4,791.65	4,791.80	2.45	671,132.62	639,114.85	
10,372.00	90.20	268.50	1,688.88	5,582.88	-40.06	-4,876.63	4,876.79	0.74	671,130.84	639,029.87	
10,458.00	90.50	268.40	1,688.35	5,582.35	-42.39	-4,962.60	4,962.77	0.37	671,128.51	638,943.90	
10,549.00	90.60	268.10	1,687.48	5,581.48	-45.17	-5,053.55	5,053.74	0.35	671,125.73	638,852.95	
10,637.00	91.10	268.00	1,686.18	5,580.18	-48.16	-5,141.49	5,141.69	0.58	671,122.74	638,765.01	
Last Phoenix MWD Survey											
10,696.00	91.10	268.00	1,685.04	5,579.04	-50.22	-5,200.44	5,200.66	0.00	671,120.68	638,706.06	
Projection to TD											



Phoenix Technology Services

Apache



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Crow Federal
Well: #14H
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Design: Surveys (Capstar,114)

Local Co-ordinate Reference: Well #14H
TVD Reference: KB @ 3894.00usft (Capstar,114)
MD Reference: KB @ 3894.00usft (Capstar,114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
601.00	600.99	-3.47	-1.21	First Phoenix MWD Survey
10,637.00	5,580.18	-48.16	-5,141.49	Last Phoenix MWD Survey
10,696.00	5,579.04	-50.22	-5,200.44	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number: 30-015-40578	Pool Code: 26770	Pool Name: Frenj Glorieta-Yeso
Property Code: 308711	Property Name: CROW FEDERAL	Well Number: 1411
OGRID No. 873	Operator Name: APACHE CORPORATION	Elevation: 3884'

					Surface Location.				
UE or lot No.	Section	Township	Range	Lot 10n	Feet from the	North/South line	Feet from the	East/West line	County
M	10	17-S	31-E		923	SOUTH	250	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.: M	Section 9	Township 17-S	Range 31-E	Lot Idn.	Feet from the 923	North/South line SOUTH	Feet from the 330	East/West line WEST	County EDDY
Dedicated Acres 200	Join or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SECTION 9	SECTION 10	
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GRID: AZ = 269°37'45"
 HORIZ. DIST. = 5202.5'

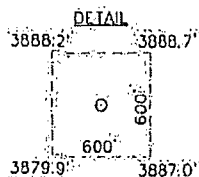
SEE DETAIL

OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

CORNER COORDINATES TABLE

- (D) - $Y=670256.5$ N, $X=644981.6$ E



GEODETIC COORDINATES
NAD, 27 NME

SURFACE LOCATION.

Y=671170.9 N
X=643906.5 W
LAT.=32 844257' N
LONG.=103.684769' W
LAT.=32° 50' 39" N
LONG.=103° 51' 53" W
BOTTOM HOLE LOCATION

BOTTOM HOLE LOCATION.

$$Y=671137.3 \text{ N}$$

$$X=638705.4 \text{ E}$$

OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such interest) or working interest, or to a voluntary pooling agreement or a compulsory pooling order; hereafter entered by the division:

Signature: Lorina P. Flores Date: 1/31/13

Sorina L. Flores
Printed Name

E-mail Address: sorina.flores@apache.com.com

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

MARCH 27, 2012:

Date of Survey: _____
Signature & Seal of Professional Surveyor: _____

