



PHOENIX
TECHNOLOGY SERVICES

September 29, 2015

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

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 13 2015

RECEIVED

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation
NFE Federal #43H
Eddy County, NM
API #30-015-42903
Job No. 1513994

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	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Mike Miller	43H	4,773	10,162	08/06/15	08/11/15	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,

Claudia Carreon

Claudia Carreon
Operations Administrator

Certified mail receipt number: 7015 0640 0000 9907 5111

Phoenix Technology Services
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1513994

OPERATOR

Apache

WELL NAME

NFE Federal #43H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-42903

PROPOSED DIRECTION

89.60

TIE-IN DATA

MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
4,680. ft	4,679.86 ft	0.71	299.79	-3.26 ft	-12.08 ft	Gyro

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
6-Aug-15	4,773.00 ft	0.30	349.00

SURVEY INSTRUMENT
TYPE

Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
11-Aug-15	10,162.00 ft	90.10	88.60

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

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
11-Aug-15	10,237.00 ft	90.10	88.60

Mike Miller

PRINT YOUR NAME ABOVE

Mike Miller

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.42
DECLINATION OR GRID	GRID

8/11/2015

TODAY'S DATE

MWD SUPERVISOR 1

Mike Miller

DIRECTIONAL DRILLER 1

Steven Hawkins

MWD SUPERVISOR 2

Jay Conyers

DIRECTIONAL DRILLER 2

Brant Duplechain

12329 Cutten Rd., Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)



Apache Corporation

Eddy County, NM (NAD27 NME)

NFE Federal

#43H

OH / Job #1513994

Survey: Phoenix MWD Survey

Standard Survey Report

12 August, 2015



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #43H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3769.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3769.00usft (Capstar 119)
Well:	#43H	North Reference:	Grid
Wellbore:	OH / Job #1513994	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 119)	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	NFE Federal		
Site Position:		Northing:	673,264.70 usft
From:	Map	Easting:	633,303.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 0.49036 N
		Longitude:	103° 53' 57.34966 W
		Grid Convergence:	0.24 °

Well	#43H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	
		Latitude:	32° 51' 42.84555 N
		Longitude:	103° 54' 2.35235 W
		Ground Level:	3,758.00 usft

Wellbore	OH / Job #1513994		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM	7/29/2015	7.65
			Dip Angle
			(°)
			Field Strength
			(nT)
			60.80
			48,584

Design	Surveys (Capstar 119)		
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
			(°)
			89.60

Survey Program	Date 8/12/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	4,680.00	Phoenix Gyro Survey (OH / Job #1513994)	PHX_SPT_GTD
4,773.00	10,237.00	Phoenix MWD Survey (OH / Job #1513994)	PHX+MWD+HDGM
			Description
			PHX Continuous north-seeking gyro
			PHX+MWD+HDGM

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)	
4,680.00	0.71	299.79	4,679.86	-3.26	-12.08	-12.10	0.00	0.00	0.00	
Tie-on to Phoenix Gyro Survey										
4,773.00	0.30	349.00	4,772.86	-2.73	-12.62	-12.64	0.60	-0.44	52.91	
First Phoenix MWD Survey										
4,816.00	3.60	96.70	4,815.83	-2.78	-11.30	-11.32	8.61	7.67	250.47	
4,858.00	8.90	97.10	4,857.57	-3.33	-6.77	-6.79	12.62	12.62	0.95	
4,901.00	14.80	92.90	4,899.63	-4.02	2.03	2.00	13.86	13.72	-9.77	
4,943.00	19.60	91.10	4,939.74	-4.43	14.44	14.40	11.50	11.43	-4.29	
4,986.00	22.30	90.80	4,979.90	-4.68	29.81	29.77	6.28	6.28	-0.70	

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #43H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3769.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3769.00usft (Capstar 119)
Well:	#43H	North Reference:	Grid
Wellbore:	OH / Job #1513994	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 119)	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)
5,028.00	27.60	89.50	5,017.96	-4.71	47.52	47.48	12.69	12.62	-3.10
5,071.00	31.70	88.40	5,055.32	-4.31	68.78	68.75	9.62	9.53	-2.56
5,114.00	36.70	88.20	5,090.88	-3.59	92.93	92.90	11.63	11.63	-0.47
5,156.00	41.20	89.20	5,123.53	-3.00	119.32	119.30	10.82	10.71	2.38
5,199.00	45.40	90.40	5,154.82	-2.91	148.80	148.78	9.95	9.77	2.79
5,241.00	51.40	92.00	5,182.69	-3.59	180.19	180.16	14.57	14.29	3.81
5,284.00	57.70	91.50	5,207.62	-4.65	215.18	215.14	14.68	14.65	-1.16
5,326.00	61.60	90.70	5,228.84	-5.34	251.41	251.37	9.43	9.29	-1.90
5,369.00	67.00	91.00	5,247.48	-5.92	290.14	290.09	12.57	12.56	0.70
5,411.00	70.10	90.60	5,262.84	-6.46	329.22	329.17	7.43	7.38	-0.95
5,454.00	74.50	90.40	5,275.91	-6.82	370.17	370.12	10.24	10.23	-0.47
5,497.00	78.30	89.80	5,286.02	-6.89	411.96	411.90	8.94	8.84	-1.40
5,539.00	82.00	88.90	5,293.20	-6.42	453.33	453.27	9.06	8.81	-2.14
5,560.00	84.30	88.60	5,295.70	-5.96	474.17	474.12	11.04	10.95	-1.43
5,602.00	89.40	86.70	5,298.01	-4.24	516.06	516.02	12.96	12.14	-4.52
5,645.00	90.40	86.30	5,298.09	-1.62	558.98	558.95	2.50	2.33	-0.93
5,687.00	90.60	86.60	5,297.72	0.98	600.90	600.89	0.86	0.48	0.71
5,815.00	89.10	87.60	5,298.06	7.46	728.73	728.76	1.41	-1.17	0.78
5,943.00	87.80	89.30	5,301.52	10.92	856.63	856.68	1.67	-1.02	1.33
6,071.00	89.50	90.10	5,304.53	11.59	984.58	984.64	1.47	1.33	0.63
6,199.00	88.20	90.10	5,307.10	11.37	1,112.55	1,112.61	1.02	-1.02	0.00
6,327.00	84.90	90.20	5,314.80	11.03	1,240.30	1,240.35	2.58	-2.58	0.08
6,455.00	85.60	89.50	5,325.40	11.37	1,367.86	1,367.91	0.77	0.55	-0.55
6,583.00	87.80	88.70	5,332.77	13.37	1,495.62	1,495.68	1.83	1.72	-0.63
6,710.00	89.00	89.90	5,336.32	14.93	1,622.56	1,622.63	1.34	0.94	0.94
6,838.00	90.50	89.90	5,336.88	15.15	1,750.56	1,750.62	1.17	1.17	0.00
6,966.00	87.10	89.70	5,339.56	15.59	1,878.51	1,878.57	2.66	-2.66	-0.16
7,094.00	88.80	89.40	5,344.14	16.60	2,006.42	2,006.48	1.35	1.33	-0.23
7,222.00	89.60	89.30	5,345.92	18.05	2,134.40	2,134.47	0.63	0.63	-0.08
7,350.00	87.80	89.60	5,348.83	19.28	2,262.35	2,262.43	1.43	-1.41	0.23
7,478.00	89.30	90.20	5,352.07	19.50	2,390.31	2,390.38	1.26	1.17	0.47
7,606.00	90.80	89.60	5,351.95	19.73	2,518.30	2,518.38	1.26	1.17	-0.47
7,734.00	89.10	89.30	5,352.07	20.96	2,646.29	2,646.37	1.35	-1.33	-0.23
7,862.00	90.10	89.70	5,352.96	22.07	2,774.28	2,774.37	0.84	0.78	0.31
7,990.00	90.80	89.80	5,351.95	22.63	2,902.28	2,902.36	0.55	0.55	0.08
8,117.00	90.10	89.90	5,350.96	22.96	3,029.27	3,029.36	0.56	-0.55	0.08
8,245.00	89.90	91.40	5,350.96	21.51	3,157.26	3,157.33	1.18	-0.16	1.17
8,373.00	89.00	92.60	5,352.18	17.04	3,285.17	3,285.21	1.17	-0.70	0.94
8,500.00	88.20	90.40	5,355.29	13.72	3,412.08	3,412.09	1.84	-0.63	-1.73
8,628.00	87.90	88.40	5,359.64	15.06	3,539.99	3,540.01	1.58	-0.23	-1.56
8,756.00	88.70	88.70	5,363.44	18.30	3,667.89	3,667.93	0.67	0.63	0.23
8,883.00	89.70	89.20	5,365.21	20.62	3,794.86	3,794.91	0.88	0.79	0.39
9,011.00	90.90	89.20	5,364.54	22.41	3,922.84	3,922.90	0.94	0.94	0.00

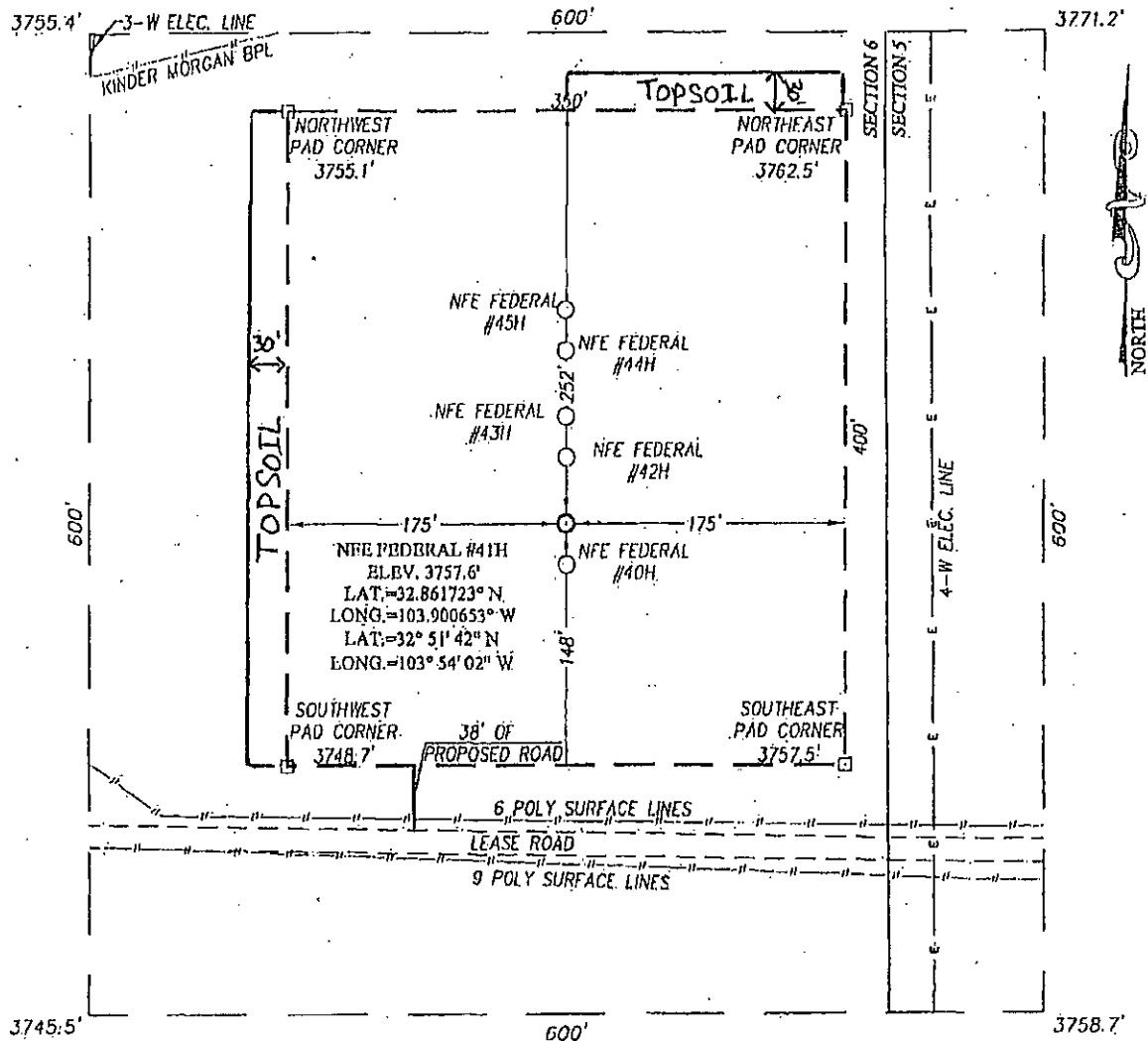
Company:	Apache Corporation	Local Co-ordinate Reference:	Well #43H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3769.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3769.00usft (Capstar 119)
Well:	#43H	North Reference:	Grid
Wellbore:	OH / Job #1513994	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 119)	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)	
9,139.00	89.60	87.60	5,363.99	25.99	4,050.78	4,050.87	1.61	-1.02	-1.25	
9,267.00	88.00	88.60	5,366.67	30.23	4,178.68	4,178.79	1.47	-1.25	0.78	
9,395.00	89.20	89.00	5,369.79	32.91	4,306.61	4,306.74	0.99	0.94	0.31	
9,522.00	89.10	89.30	5,371.68	34.79	4,433.58	4,433.72	0.25	-0.08	0.24	
9,650.00	89.60	89.10	5,373.13	36.58	4,561.56	4,561.71	0.42	0.39	-0.16	
9,778.00	90.20	89.00	5,373.35	38.70	4,689.54	4,689.70	0.48	0.47	-0.08	
9,906.00	89.20	89.90	5,374.02	39.93	4,817.53	4,817.69	1.05	-0.78	0.70	
10,034.00	88.90	89.30	5,376.15	40.82	4,945.51	4,945.68	0.52	-0.23	-0.47	
10,162.00	90.10	88.60	5,377.26	43.17	5,073.48	5,073.66	1.09	0.94	-0.55	
Last Phoenix MWD Survey										
10,237.00	90.10	88.60	5,377.13	45.00	5,148.46	5,148.65	0.00	0.00	0.00	
Projection to TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
4,680.00	4,679.86	-3.26	-12.08	Tie-on to Phoenix Gyro Survey	
4,773.00	4,772.86	-2.73	-12.62	First Phoenix MWD Survey	
10,162.00	5,377.26	43.17	5,073.48	Last Phoenix MWD Survey	
10,237.00	5,377.13	45.00	5,148.46	Projection to TD	

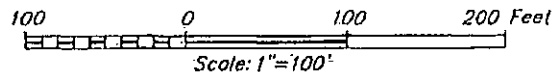
Checked By: _____	Approved By: _____	Date: _____
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SECTION 6, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.
BDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #221 (SKELLY RD.) GO NORTH APPROX. 1.3 MILES. TURN RIGHT AND GO NORTHEAST APPROX. 0.8 MILES. TURN RIGHT AND GO EAST APPROX. 0.6 MILES. TURN LEFT AND GO NORTH APPROX. 1.0 MILES. TURN LEFT AND GO WEST APPROX. 0.1 MILES TO ROAD SURVEY. FOLLOW ROAD SURVEY NORTH 38 FEET TO THIS LOCATION.



APACHE CORPORATION

NFE FEDERAL

#40H #41H #42H #43H #44H #45H

TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
 BDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz

Survey Date: 4/13/12	CAD Date: 5/2/12	Drawn By: AF
V.O. No.: 12110714	Rev.:	Rel. W.O.:

Sheet 1 of 1