



PHOENIX
TECHNOLOGY SERVICES

October 28, 2015

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
NFE Federal #60H
Eddy County, NM
API #30-015-43249
Job No. 1514082

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 09 2015

RECEIVED

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	60H	5,034	10,234	09/08/15	09/13/15	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

Provide survey surface to 5034'

Certified mail receipt number: 7015 0640 0000 9907 5173

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1514082

OPERATOR

Apache

WELL NAME

NFE Federal #60H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-43249

PROPOSED DIRECTION

269.60

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
4,971. ft	4,970.21 ft	0.48	268.00	-13.99 ft	38.89 ft	Gyro

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
8-Sep-15	5,034.00 ft	0.80	232.50

SURVEY INSTRUMENT
TYPE
Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
13-Sep-15	10,234.00 ft	90.70	271.00

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
13-Sep-15	10,304.00 ft	90.70	271.00

Mike Miller

PRINT YOUR NAME ABOVE

Mike Miller

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	
	7.37
DECLINATION OR GRID	GRID

9/13/2015

TODAY'S DATE

MWD SUPERVISOR 1

Mike Miller

DIRECTIONAL DRILLER 1

Steven Hawkins

MWD SUPERVISOR 2

Lee Conoly

DIRECTIONAL DRILLER 2

Brant Duplechain



Apache Corporation

Eddy County, NM (NAD27 NME)

NFE Federal

#60H

OH / Job #1514082

Survey: Phoenix MWD Survey

Standard Survey Report

14 September, 2015

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 09 2015

RECEIVED



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #60H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3848.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3848.00usft (Capstar 119)
Well:	#60H	North Reference:	Grid
Wellbore:	OH / Job #1514082	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	#60H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 47.63652 N
		Longitude:	103° 52' 58.30908 W
		Ground Level:	3,837.00 usft

Wellbore	OH / Job #1514082		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM	8/27/2015	7.62
			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
			(°)
			269.60

Survey Program	Date 9/14/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	4,971.00	Phoenix Gyro Survey (OH / Job #1514082)	PHX_SPT_GTD
5,034.00	10,304.00	Phoenix MWD Survey (OH / Job #1514082)	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)	
4,971.00	0.48	268.00	4,970.21	-13.99	38.89	-38.79	0.00	0.00	0.00	
Tie-on to Phoenix Gyro Survey										
5,034.00	0.80	232.50	5,033.21	-14.27	38.28	-38.18	0.79	0.51	-56.35	
First Phoenix MWD Survey										
5,076.00	2.70	257.80	5,075.19	-14.66	37.08	-36.97	4.78	4.52	60.24	
5,119.00	7.70	266.80	5,118.00	-15.03	33.21	-33.10	11.75	11.63	20.93	
5,162.00	13.50	270.10	5,160.24	-15.18	25.31	-25.20	13.56	13.49	7.67	
5,204.00	19.00	274.60	5,200.55	-14.63	13.58	-13.48	13.42	13.10	10.71	
5,247.00	23.90	275.70	5,240.56	-13.20	-2.07	2.17	11.43	11.40	2.56	

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Site:	NFE Federal	MD Reference:	KB @ 3848.00usft (Capstar 119)
Well:	#60H	North Reference:	Grid
Wellbore:	OH / Job #1514082	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)
5,289.00	28.20	273.10	5,278.29	-11.82	-20.46	20.54	10.59	10.24	-6.19
5,332.00	32.50	271.40	5,315.39	-10.98	-42.16	42.24	10.20	10.00	-3.95
5,375.00	36.90	269.40	5,350.73	-10.84	-66.63	66.71	10.57	10.23	-4.65
5,417.00	41.60	268.50	5,383.25	-11.33	-93.19	93.27	11.27	11.19	-2.14
5,460.00	45.50	269.90	5,414.41	-11.73	-122.81	122.89	9.34	9.07	3.26
5,502.00	49.50	271.00	5,442.78	-11.48	-153.77	153.84	9.72	9.52	2.62
5,545.00	53.00	270.60	5,469.69	-11.02	-187.29	187.37	8.17	8.14	-0.93
5,587.00	57.70	270.50	5,493.56	-10.69	-221.83	221.90	11.19	11.19	-0.24
5,630.00	61.00	271.60	5,515.48	-10.00	-258.81	258.88	7.98	7.67	2.56
5,673.00	66.70	272.50	5,534.42	-8.61	-297.37	297.42	13.39	13.26	2.09
5,715.00	72.40	272.30	5,549.09	-6.97	-336.67	336.71	13.58	13.57	-0.48
5,758.00	78.40	271.20	5,559.93	-5.70	-378.25	378.28	14.17	13.95	-2.56
5,800.00	84.00	269.50	5,566.35	-5.46	-419.73	419.76	13.92	13.33	-4.05
5,843.00	89.20	268.40	5,568.90	-6.24	-462.63	462.67	12.36	12.09	-2.56
5,885.00	89.90	268.50	5,569.23	-7.38	-504.62	504.66	1.68	1.67	0.24
5,928.00	90.40	268.50	5,569.12	-8.50	-547.60	547.65	1.16	1.16	0.00
6,056.00	92.00	267.90	5,566.43	-12.52	-675.51	675.58	1.33	1.25	-0.47
6,183.00	92.00	269.50	5,562.00	-15.40	-802.39	802.48	1.26	0.00	1.26
6,311.00	90.00	270.10	5,559.77	-15.85	-930.36	930.45	1.63	-1.56	0.47
6,439.00	90.70	269.60	5,558.99	-16.18	-1,058.36	1,058.45	0.67	0.55	-0.39
6,567.00	90.40	269.00	5,557.76	-17.75	-1,186.34	1,186.44	0.52	-0.23	-0.47
6,695.00	90.50	270.20	5,556.75	-18.64	-1,314.33	1,314.43	0.94	0.08	0.94
6,823.00	90.30	269.90	5,555.86	-18.53	-1,442.33	1,442.43	0.28	-0.16	-0.23
6,951.00	90.80	269.90	5,554.63	-18.75	-1,570.33	1,570.42	0.39	0.39	0.00
7,078.00	90.70	269.30	5,552.97	-19.64	-1,697.31	1,697.41	0.48	-0.08	-0.47
7,206.00	91.20	268.80	5,550.85	-21.76	-1,825.27	1,825.38	0.55	0.39	-0.39
7,334.00	91.60	267.90	5,547.72	-25.45	-1,953.18	1,953.31	0.77	0.31	-0.70
7,462.00	90.60	268.10	5,545.26	-29.91	-2,081.08	2,081.24	0.80	-0.78	0.16
7,590.00	91.30	270.10	5,543.14	-31.92	-2,209.04	2,209.21	1.66	0.55	1.56
7,718.00	91.20	269.50	5,540.35	-32.37	-2,337.01	2,337.17	0.48	-0.08	-0.47
7,845.00	91.80	271.00	5,537.02	-31.82	-2,463.96	2,464.12	1.27	0.47	1.18
7,974.00	92.40	270.40	5,532.29	-30.24	-2,592.86	2,593.01	0.66	0.47	-0.47
8,101.00	92.30	270.20	5,527.09	-29.58	-2,719.75	2,719.89	0.18	-0.08	-0.16
8,229.00	91.40	269.90	5,522.95	-29.46	-2,847.68	2,847.82	0.74	-0.70	-0.23
8,357.00	91.40	270.00	5,519.83	-29.58	-2,975.64	2,975.78	0.08	0.00	0.08
8,485.00	91.40	270.30	5,516.70	-29.24	-3,103.61	3,103.73	0.23	0.00	0.23
8,612.00	90.90	270.40	5,514.15	-28.47	-3,230.58	3,230.70	0.40	-0.39	0.08
8,740.00	90.90	270.90	5,512.14	-27.01	-3,358.55	3,358.66	0.39	0.00	0.39
8,868.00	90.60	268.80	5,510.46	-27.35	-3,486.53	3,486.64	1.66	-0.23	-1.64
8,995.00	91.50	268.60	5,508.14	-30.23	-3,613.48	3,613.60	0.73	0.71	-0.16
9,123.00	91.70	269.60	5,504.56	-32.24	-3,741.41	3,741.55	0.80	0.16	0.78
9,251.00	90.40	267.00	5,502.22	-36.04	-3,869.32	3,869.48	2.27	-1.02	-2.03
9,379.00	90.00	268.80	5,501.77	-40.73	-3,997.23	3,997.41	1.44	-0.31	1.41

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Well:	#60H	North Reference:	Grid
Wellbore:	OH / Job #1514082	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 119)	Database:	Compass 5000 GCR

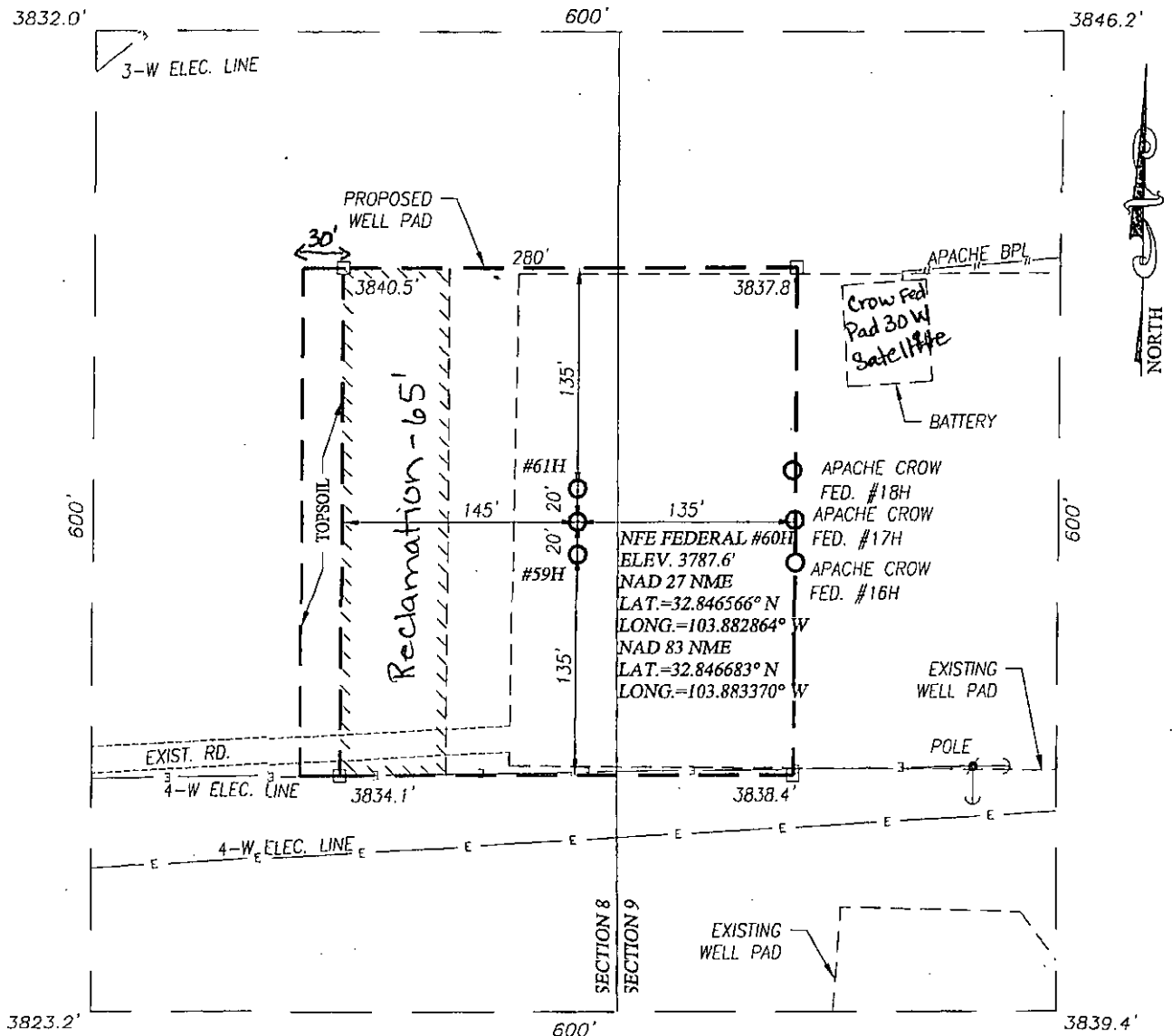
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,506.00	91.50	269.70	5,500.11	-42.39	-4,124.20	4,124.40	1.38	1.18	0.71
9,634.00	91.40	270.70	5,496.87	-41.94	-4,252.16	4,252.35	0.78	-0.08	0.78
9,762.00	91.70	270.70	5,493.41	-40.38	-4,380.10	4,380.28	0.23	0.23	0.00
9,890.00	91.40	270.40	5,489.94	-39.15	-4,508.05	4,508.21	0.33	-0.23	-0.23
10,017.00	90.90	269.70	5,487.40	-39.04	-4,635.02	4,635.18	0.68	-0.39	-0.55
10,146.00	90.60	270.90	5,485.71	-38.36	-4,764.01	4,764.16	0.96	-0.23	0.93
10,234.00	90.70	271.00	5,484.71	-36.91	-4,851.99	4,852.13	0.16	0.11	0.11
Last Phoenix MWD Survey									
10,304.00	90.70	271.00	5,483.85	-35.68	-4,921.97	4,922.10	0.00	0.00	0.00
Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,971.00	4,970.21	-13.99	38.89	Tie-on to Phoenix Gyro Survey
5,034.00	5,033.21	-14.27	38.28	First Phoenix MWD Survey
10,234.00	5,484.71	-36.91	-4,851.99	Last Phoenix MWD Survey
10,304.00	5,483.85	-35.68	-4,921.97	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

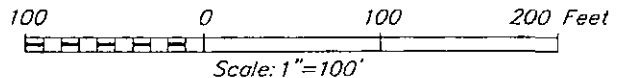
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

Exhibit #1A



NOTE:
1) SEE "LOCATION VERIFICATION MAP"
FOR PROPOSED ROAD LOCATION.

////// DENOTES AREA TO BE RECLAIMED



DIRECTIONS TO NFE FEDERAL #60H:

FROM THE INTERSECTION OF U.S. HWY 82 AND CO. RD. 221 (SKELLY) GO NORTH 1.3 MILES TURN RIGHT AND GO NORTHEAST 0.5 MILES TURN RIGHT AND GO EAST APPROX. 1.5 MILES TO THIS LOCATION.

APACHE CORPORATION

NFE FEDERAL #60H WELL
LOCATED 1775 FEET FROM THE SOUTH LINE
AND 25 FEET FROM THE EAST LINE OF SECTION 8,
TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY 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
TBPLS# 10021000

Survey Date: 10/27/14

CAD Date: 11/5/14

Drawn By: LSL

W.O. No.: 15130015

Rev: 12/18/14

Rel. W.O.: 14110983

Sheet 1 of 1



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