



PHOENIX
TECHNOLOGY SERVICES

September 19, 2015

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

Dear District 2 - Artesia

Attention: Regulatory Department

Apache Corporation
NFE Federal #42H
Eddy County, NM
API #30-015-42902
Job No. 1513886

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 13 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	42H	4,753	9,431	07/22/15	07/27/15	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,

Alva J. Dunigan

Alva J. Dunigan
Operations Administrator

Certified mail receipt number: 7015 0640 0000 9907 5111

Phoenix Technology Services
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 1513886

OPERATOR Apache

WELL NAME NFE Federal #42H

COUNTY & STATE Eddy County, NM

API WELL NUMBER 30-015-42902

PROPOSED DIRECTION 90.88

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
4,662. ft	4,661.89 ft	0.81	340.65	1.81 ft	2.52 ft	Gyro

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
22-Jul-15	4,753.00 ft	1.00	323.40

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
27-Jul-15	9,431.00 ft	92.90	269.80

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
27-Jul-15	9,510.00 ft	92.90	269.80

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

27-Jul-15

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

#42H

OH / Job #1513886

Survey: Phoenix MWD Survey

Standard Survey Report

28 July, 2015



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #42H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3769.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3769.00usft (Capstar 119)
Well:	#42H	North Reference:	Grid
Wellbore:	OH / Job #1513886	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	#42H		
Well Position	+N/-S	0.00 usft	Northing: 677,518.30 usft
	+E/-W	0.00 usft	Easting: 632,859.40 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 51' 42.59816 N
		Longitude:	103° 54' 2.35121 W
		Ground Level:	3,758.00 usft

Wellbore	OH / Job #1513886		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	7/2/2015	7.65
		Dip Angle (°)	60.80
		Field Strength (nT)	48,592

Design	Surveys (Capstar 119)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
		Direction (°)	269.62

Survey Program	Date 7/28/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.00	4,662.00	Phoenix Gyro Surveys (OH / Job #151388	PHX_SPT_GTD
4,753.00	9,510.00	Phoenix MWD Survey (OH / Job #1513886	PHX+MWD+HDGM
			Description
			PHX Continuous north-seeking gyro
			PHX+MWD+HDGM

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)
4,662.00	0.81	340.65	4,661.89	1.81	2.52	-2.53	0.00	0.00	0.00
Tie-on to Phoenix Gyro Survey									
4,753.00	1.00	323.40	4,752.88	3.05	1.83	-1.85	0.36	0.21	-18.96
First Phoenix MWD Survey									
4,795.00	4.80	281.50	4,794.82	3.70	-0.11	0.08	9.79	9.05	-99.76
4,838.00	10.90	277.00	4,837.40	4.55	-5.91	5.88	14.25	14.19	-10.47
4,880.00	17.70	276.90	4,878.07	5.80	-16.20	16.16	16.19	16.19	-0.24
4,923.00	24.40	276.50	4,918.18	7.60	-31.53	31.48	15.58	15.58	-0.93
4,966.00	28.50	276.00	4,956.67	9.67	-50.57	50.50	9.55	9.53	-1.16

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #42H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3769.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3769.00usft (Capstar 119)
Well:	#42H	North Reference:	Grid
Wellbore:	OH / Job #1513886	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)
5,008.00	30.80	275.50	4,993.17	11.75	-71.24	71.16	5.51	5.48	-1.19
5,051.00	33.50	272.80	5,029.57	13.39	-94.06	93.97	7.11	6.28	-6.28
5,094.00	38.00	268.50	5,064.47	13.62	-119.16	119.07	11.98	10.47	-10.00
5,136.00	42.10	265.20	5,096.61	12.10	-146.13	146.04	10.99	9.76	-7.86
5,179.00	45.90	263.50	5,127.54	9.15	-175.84	175.78	9.25	8.84	-3.95
5,221.00	48.60	263.40	5,156.05	5.63	-206.48	206.44	6.43	6.43	-0.24
5,264.00	52.30	264.80	5,183.42	2.23	-239.45	239.43	8.96	8.60	3.26
5,306.00	57.30	265.70	5,207.63	-0.60	-273.65	273.64	12.03	11.90	2.14
5,349.00	63.90	266.80	5,228.72	-3.04	-311.01	311.02	15.51	15.35	2.56
5,391.00	68.40	267.10	5,245.70	-5.08	-349.36	349.38	10.73	10.71	0.71
5,434.00	75.30	267.30	5,259.09	-7.07	-390.14	390.18	16.05	16.05	0.47
5,476.00	80.10	267.70	5,268.03	-8.86	-431.13	431.18	11.47	11.43	0.95
5,503.00	84.00	268.50	5,271.77	-9.74	-457.85	457.90	14.74	14.44	2.96
5,545.00	88.80	270.50	5,274.40	-10.11	-499.75	499.81	12.38	11.43	4.76
5,673.00	89.10	271.00	5,276.75	-8.43	-627.72	627.76	0.46	0.23	0.39
5,801.00	91.40	270.30	5,276.19	-6.98	-755.70	755.73	1.88	1.80	-0.55
5,928.00	92.00	270.30	5,272.42	-6.32	-882.64	882.66	0.47	0.47	0.00
6,056.00	92.00	270.20	5,267.96	-5.76	-1,010.56	1,010.58	0.08	0.00	-0.08
6,184.00	90.10	269.90	5,265.61	-5.65	-1,138.53	1,138.55	1.50	-1.48	-0.23
6,312.00	90.70	270.10	5,264.72	-5.65	-1,266.53	1,266.54	0.49	0.47	0.16
6,440.00	91.40	270.70	5,262.37	-4.75	-1,394.50	1,394.50	0.72	0.55	0.47
6,567.00	90.70	269.80	5,260.05	-4.20	-1,521.48	1,521.47	0.90	-0.55	-0.71
6,695.00	90.60	269.30	5,258.59	-5.20	-1,649.47	1,649.46	0.40	-0.08	-0.39
6,823.00	91.40	269.10	5,256.36	-6.99	-1,777.43	1,777.44	0.64	0.63	-0.16
6,951.00	91.70	269.00	5,252.90	-9.11	-1,905.37	1,905.39	0.25	0.23	-0.08
7,078.00	92.00	268.90	5,248.80	-11.44	-2,032.28	2,032.31	0.25	0.24	-0.08
7,206.00	90.30	268.60	5,246.23	-14.23	-2,160.22	2,160.27	1.35	-1.33	-0.23
7,333.00	90.90	268.60	5,244.90	-17.33	-2,287.17	2,287.24	0.47	0.47	0.00
7,461.00	89.30	269.90	5,244.67	-19.01	-2,415.16	2,415.23	1.61	-1.25	1.02
7,589.00	89.30	269.70	5,246.24	-19.46	-2,543.15	2,543.22	0.16	0.00	-0.16
7,717.00	89.60	270.00	5,247.47	-19.79	-2,671.14	2,671.21	0.33	0.23	0.23
7,845.00	90.40	270.00	5,247.47	-19.79	-2,799.14	2,799.21	0.63	0.63	0.00
7,973.00	90.20	270.10	5,246.80	-19.68	-2,927.14	2,927.20	0.17	-0.16	0.08
8,101.00	90.60	270.50	5,245.90	-19.01	-3,055.13	3,055.19	0.44	0.31	0.31
8,229.00	91.30	271.20	5,243.78	-17.11	-3,183.10	3,183.14	0.77	0.55	0.55
8,356.00	91.10	270.00	5,241.12	-15.78	-3,310.06	3,310.09	0.96	-0.16	-0.94
8,484.00	90.80	269.70	5,239.00	-16.12	-3,438.04	3,438.07	0.33	-0.23	-0.23
8,612.00	90.70	269.50	5,237.32	-17.01	-3,566.03	3,566.06	0.17	-0.08	-0.16
8,740.00	90.20	269.50	5,236.32	-18.13	-3,694.02	3,694.06	0.39	-0.39	0.00
8,868.00	91.00	270.00	5,234.98	-18.68	-3,822.01	3,822.05	0.74	0.63	0.39
8,995.00	90.60	270.10	5,233.20	-18.57	-3,949.00	3,949.03	0.32	-0.31	0.08
9,123.00	92.90	269.80	5,229.30	-18.69	-4,076.93	4,076.96	1.81	1.80	-0.23
9,251.00	92.10	269.50	5,223.71	-19.47	-4,204.80	4,204.84	0.67	-0.63	-0.23

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Well:	#42H	North Reference:	Grid
Wellbore:	OH / Job #1513886	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)
9,379.00	92.50	269.50	5,218.58	-20.58	-4,332.69	4,332.74	0.31	0.31	0.00
9,431.00	92.90	269.80	5,216.13	-20.90	-4,384.64	4,384.68	0.96	0.77	0.58
Last Phoenix MWD Survey									
9,510.00	92.90	269.80	5,212.13	-21.18	-4,463.53	4,463.58	0.00	0.00	0.00
Projection to TD									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,662.00	4,661.89	1.81	2.52	Tie-on to Phoenix Gyro Survey
4,753.00	4,752.88	3.05	1.83	First Phoenix MWD Survey
9,431.00	5,216.13	-20.90	-4,384.64	Last Phoenix MWD Survey
9,510.00	5,212.13	-21.18	-4,463.53	Projection to TD

Checked By: _____ Approved By: _____ Date: _____