



PHOENIX
TECHNOLOGY SERVICES

March 25, 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 #29H
Eddy County, NM
API #30-015-42585
Job No. 1512834

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	29H	4,525	9,511	03/18/15	03/22/15	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

RED 3/31/15
NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 30 2015

RECEIVED

Certified mail receipt number: 7014 2120 0004 3423 7286

Phoenix Technology Services
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1512834

OPERATOR

Apache

WELL NAME NFE Federal #29H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-42585

PROPOSED DIRECTION

269.62

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
4,425. ft	4,424.81 ft	0.52	59.00	-11.43 ft	-10.80 ft	Gyro

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
18-Mar-15	4,525.00 ft	0.50	337.90

SURVEY INSTRUMENT
TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
22-Mar-15	9,511.00 ft	92.50	269.50

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
22-Mar-15	9,580.00 ft	92.50	269.50

Mike Miller

PRINT YOUR NAME ABOVE

Mike Miller

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.28
DECLINATION OR GRID	GRID

3/22/2015

TODAY'S DATE

MWD SUPERVISOR 1

Mike Miller

DIRECTIONAL DRILLER 1

Steven Hawkins

MWD SUPERVISOR 2

Mike Rachal

DIRECTIONAL DRILLER 2

Brant Duplechain



NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 30 2015

RECEIVED

Apache Corporation

Eddy County, NM (NAD27 NME)

NFE Federal

#29H

WB1 / Job #1512834

Survey: Phoenix MWD Survey

Standard Survey Report

23 March, 2015



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #29H
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3764.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3764.00usft (Capstar 119)
Well:	#29H	North Reference:	Grid
Wellbore:	WB1 / Job #1512834	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	#29H					
Well Position	+N-S	0.00 usft	Northing:	676,438.90 usft	Latitude:	32° 51' 31.91534 N
	+E-W	0.00 usft	Easting:	632,910.40 usft	Longitude:	103° 54' 1.80517 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,753.00 usft

Wellbore		WB1 / Job #1512834			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	3/18/2015	7.51	60.62	48,529

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)
				Direction	
				(°)	
		0.00		0.00	
		0.00		0.00	
				269.62	

Survey Program	Date:	3/23/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	4,425.00	Phoenix Gyro Survey (WB1 / Job #151283)	NS-GYRO-MS	North sensing gyrocompassing m/s
4,525.00	9,580.00	Phoenix MWD Survey (WB1 / Job #15128)	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination

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)
4,425.00	0.52	59.00	4,424.81	-11.43	-10.80	10.87	0.00	0.00	0.00
Tie-on to Phoenix Gyro Survey									
4,525.00	0.50	337.90	4,524.80	-10.80	-10.57	10.64	0.66	-0.02	-81.10
First Phoenix MWD Survey									
4,620.00	0.70	336.20	4,619.80	-9.88	-10.96	11.03	0.21	0.21	-1.79
4,715.00	0.50	336.30	4,714.79	-8.97	-11.36	11.42	0.21	-0.21	0.11
4,778.00	0.50	319.50	4,777.79	-8.51	-11.65	11.71	0.23	0.00	-26.67
4,810.00	2.90	266.60	4,809.78	-8.45	-12.55	12.61	8.21	7.50	-165.31
4,841.00	7.00	265.10	4,840.65	-8.66	-15.22	15.27	13.23	13.23	-4.84

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #29H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3764.00usft (Capstar 119)
Site:	NFE Federal	MD Reference:	KB @ 3764.00usft (Capstar 119)
Well:	#29H	North Reference:	Grid
Wellbore:	WB1 / Job #1512834	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)
4,873.00	11.30	267.10	4,872.24	-8.98	-20.29	20.35	13.47	13.44	6.25
4,904.00	15.70	270.00	4,902.38	-9.14	-27.52	27.58	14.36	14.19	9.35
4,936.00	20.00	272.70	4,932.83	-8.88	-37.32	37.38	13.68	13.44	8.44
4,968.00	24.20	274.10	4,962.47	-8.15	-49.34	49.39	13.23	13.13	4.38
4,999.00	25.90	274.00	4,990.55	-7.23	-62.43	62.48	5.49	5.48	-0.32
5,031.00	27.20	270.60	5,019.18	-6.66	-76.72	76.76	6.25	4.06	-10.63
5,062.00	30.10	268.80	5,046.38	-6.75	-91.58	91.62	9.76	9.35	-5.81
5,094.00	33.60	268.80	5,073.56	-7.10	-108.46	108.50	10.94	10.94	0.00
5,126.00	38.00	268.80	5,099.51	-7.50	-127.17	127.21	13.75	13.75	0.00
5,157.00	41.80	269.50	5,123.29	-7.79	-147.04	147.09	12.34	12.26	2.26
5,188.00	44.80	270.50	5,145.84	-7.78	-168.30	168.35	9.93	9.68	3.23
5,220.00	47.70	270.90	5,167.97	-7.50	-191.41	191.46	9.11	9.06	1.25
5,251.00	51.00	271.60	5,188.16	-6.98	-214.92	214.97	10.78	10.65	2.26
5,283.00	54.00	271.60	5,207.64	-6.27	-240.30	240.34	9.38	9.38	0.00
5,314.00	57.00	271.60	5,225.20	-5.56	-265.83	265.86	9.68	9.68	0.00
5,346.00	59.60	270.90	5,242.01	-4.97	-293.05	293.08	8.34	8.13	-2.19
5,378.00	63.00	269.60	5,257.38	-4.85	-321.11	321.14	11.21	10.63	-4.06
5,409.00	66.50	269.50	5,270.60	-5.07	-349.15	349.17	11.29	11.29	-0.32
5,441.00	69.60	269.80	5,282.56	-5.25	-378.82	378.85	9.73	9.69	0.94
5,473.00	72.20	270.00	5,293.03	-5.30	-409.06	409.09	8.15	8.13	0.63
5,504.00	74.10	271.00	5,302.01	-5.04	-438.72	438.75	6.86	6.13	3.23
5,535.00	76.00	271.60	5,310.01	-4.36	-468.67	468.69	6.41	6.13	1.94
5,567.00	78.90	271.60	5,316.96	-3.49	-499.89	499.90	9.06	9.06	0.00
5,599.00	83.20	271.00	5,321.94	-2.77	-531.48	531.49	13.56	13.44	-1.88
5,646.00	90.50	269.20	5,324.52	-2.70	-578.38	578.38	16.00	15.53	-3.83
5,677.00	92.50	269.20	5,323.71	-3.13	-609.36	609.37	6.45	6.45	0.00
5,709.00	92.80	268.70	5,322.23	-3.71	-641.32	641.33	1.82	0.94	-1.56
5,741.00	93.10	268.60	5,320.58	-4.47	-673.27	673.28	0.99	0.94	-0.31
5,836.00	94.30	268.80	5,314.45	-6.62	-768.05	768.07	1.28	1.26	0.21
5,931.00	93.40	267.20	5,308.07	-9.93	-862.77	862.82	1.93	-0.95	-1.68
6,026.00	93.30	265.80	5,302.52	-15.72	-957.43	957.51	1.47	-0.11	-1.47
6,120.00	90.10	269.30	5,299.73	-19.73	-1,051.27	1,051.38	5.04	-3.40	3.72
6,215.00	91.30	269.40	5,298.57	-20.81	-1,146.26	1,146.37	1.27	1.26	0.11
6,310.00	90.20	270.10	5,297.33	-21.22	-1,241.25	1,241.36	1.37	-1.16	0.74
6,406.00	88.50	270.90	5,298.42	-20.38	-1,337.23	1,337.34	1.96	-1.77	0.83
6,500.00	89.60	270.50	5,299.98	-19.24	-1,431.21	1,431.31	1.25	1.17	-0.43
6,596.00	90.60	270.60	5,299.81	-18.31	-1,527.21	1,527.29	1.05	1.04	0.10
6,691.00	91.50	270.80	5,298.07	-17.15	-1,622.18	1,622.26	0.97	0.95	0.21
6,785.00	91.10	271.70	5,295.94	-15.10	-1,716.13	1,716.20	1.05	-0.43	0.96
6,880.00	90.90	270.70	5,294.28	-13.11	-1,811.10	1,811.15	1.07	-0.21	-1.05
6,975.00	91.10	270.40	5,292.62	-12.20	-1,906.08	1,906.12	0.38	0.21	-0.32
7,069.00	90.10	269.60	5,291.64	-12.20	-2,000.07	2,000.11	1.36	-1.06	-0.85
7,164.00	90.70	269.70	5,290.97	-12.78	-2,095.07	2,095.11	0.64	0.63	0.11

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Site:	NFE Federal	MD Reference:	KB @ 3764.00usft (Capstar 119)
Well:	#29H	North Reference:	Grid
Wellbore:	WB1 / Job #1512834	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)
7,260.00	90.30	268.10	5,290.13	-14.63	-2,191.04	2,191.09	1.72	-0.42	-1.67
7,355.00	91.20	268.40	5,288.89	-17.53	-2,285.99	2,286.06	1.00	0.95	0.32
7,450.00	90.20	268.60	5,287.73	-20.01	-2,380.95	2,381.03	1.07	-1.05	0.21
7,544.00	90.40	268.90	5,287.24	-22.06	-2,474.92	2,475.02	0.38	0.21	0.32
7,639.00	91.40	268.80	5,285.75	-23.97	-2,569.89	2,569.99	1.06	1.05	-0.11
7,734.00	90.30	270.20	5,284.34	-24.80	-2,664.87	2,664.98	1.87	-1.16	1.47
7,828.00	91.00	269.80	5,283.27	-24.80	-2,758.87	2,758.97	0.86	0.74	-0.43
7,923.00	90.80	270.30	5,281.78	-24.72	-2,853.86	2,853.96	0.57	-0.21	0.53
8,017.00	91.50	271.30	5,279.89	-23.40	-2,947.83	2,947.92	1.30	0.74	1.06
8,113.00	89.70	271.70	5,278.89	-20.89	-3,043.78	3,043.86	1.92	-1.88	0.42
8,207.00	90.90	272.70	5,278.39	-17.28	-3,137.71	3,137.76	1.66	1.28	1.06
8,302.00	90.40	271.60	5,277.32	-13.72	-3,232.64	3,232.66	1.27	-0.53	-1.16
8,397.00	89.30	270.90	5,277.57	-11.65	-3,327.61	3,327.61	1.37	-1.16	-0.74
8,492.00	89.80	268.80	5,278.31	-11.90	-3,422.60	3,422.61	2.27	0.53	-2.21
8,587.00	90.90	268.70	5,277.73	-13.97	-3,517.58	3,517.59	1.16	1.16	-0.11
8,682.00	92.50	268.30	5,274.91	-16.45	-3,612.50	3,612.53	1.74	1.68	-0.42
8,777.00	90.80	269.10	5,272.18	-18.61	-3,707.43	3,707.47	1.98	-1.79	0.84
8,872.00	91.40	268.80	5,270.35	-20.35	-3,802.40	3,802.45	0.71	0.63	-0.32
8,965.00	90.40	267.90	5,268.89	-23.03	-3,895.34	3,895.41	1.45	-1.08	-0.97
9,060.00	91.10	268.30	5,267.65	-26.17	-3,990.28	3,990.37	0.85	0.74	0.42
9,155.00	92.00	268.00	5,265.08	-29.24	-4,085.20	4,085.30	1.00	0.95	-0.32
9,250.00	90.30	270.30	5,263.17	-30.65	-4,180.16	4,180.27	3.01	-1.79	2.42
9,344.00	90.60	269.60	5,262.43	-30.73	-4,274.15	4,274.26	0.81	0.32	-0.74
9,439.00	91.40	269.80	5,260.78	-31.23	-4,369.14	4,369.25	0.87	0.84	0.21
9,511.00	92.50	269.50	5,258.33	-31.67	-4,441.09	4,441.21	1.58	1.53	-0.42
Last Phoenix MWD Survey									
9,580.00	92.50	269.50	5,255.32	-32.27	-4,510.03	4,510.14	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)	
4,425.00	4,424.81	-11.43	-10.80	Tie-on to Phoenix Gyro Survey
4,525.00	4,524.80	-10.80	-10.57	First Phoenix MWD Survey
9,511.00	5,258.33	-31.67	-4,441.09	Last Phoenix MWD Survey
9,580.00	5,255.32	-32.27	-4,510.03	Projection to TD

Checked By: _____ Approved By: _____ Date: _____

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

NM OIL CONSERVATION

Form C-102

ARTESIA DISTRICT

Revised August 1, 2011

MAR 30 2015

Submit one copy to appropriate District Office

RECEIVED ☐ AMENDED REPORT

8/3

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-42585	Pool Code 96831	Pool Name Cedar Lake; Glorieta - Yeso
Property Code 308724	Property Name NFE FEDERAL	Well Number 29H
OGRID No. 873	Operator Name APACHE CORPORATION	Elevation 3753'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	6	17-S	31-E		985	SOUTH	155	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
7	6	17-S	31-E		985	SOUTH	330	WEST	EDDY
Dedicated Acres 151.47	Joint 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

CORNER COORDINATES TABLE Ⓐ - Y=676741.8 N, X=628067.0 E Ⓑ - Y=676775.0 N, X=633063.5 E Ⓒ - Y=675422.0 N, X=628071.2 E Ⓓ - Y=675455.2 N, X=633070.9 E	GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=676438.9 N X=632910.4 E LAT.=32.858865° N LONG.=103.900501° W LAT.=32° 51' 32" N LONG.=103° 54' 02" W BOTTOM HOLE LOCATION Y=676408.9 N X=628398.0 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Sorina L. Flores</i> 12/1/14 Signature Date Sorina L. Flores Printed Name Sorina.Flores@apachecorp.com E-mail Address
DETAIL		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. APRIL 5, 2012 Date of Survey Signature & Seal of Professional Surveyor: Certificate Number Gary Eidson 12641 Ronald J. Eidson 3239 DSS WSC W.O.: 12.11.0709
ACREAGE 31.47 acres 40 acres 40 acres 40 acres 330' B.H. GRID AZ.=269°37'06" S.L. SEE DETAIL HORIZ. DIST.=4513.6'		