



PHOENIX
TECHNOLOGY SERVICES

October 20, 2014

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

NM OIL CONSERVATION

ARTESIA DISTRICT

OCT 24 2014

RECEIVED

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation
Palmillo 14 State 1H
Eddy County, NM
API #30-015-39027
Job No. 1411057

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	
Shane King	1H	6810	11,807	08/15/14	08/23/14	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,

Dana Robinson

Dana Robinson
Operations Administrator
Certified mail receipt number: _____

7011 1570 0001 4365 2490

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

PHOENIX JOB NUMBER

1411057

OPERATOR

Apache Corp

WELL NAME

Palmillo 14 State 1H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-39027

PROPOSED DIRECTION

89.55

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
6,800 ft	6,798.94 ft	2.58	277.4	46.84 N	45.13 W	GYRO

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
15-Aug-14	6,810 ft	2.5	280.8

SURVEY INSTRUMENT

TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
23-Aug-14	11,807 ft	88.1	91.5

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
23-Aug-14	11,874 ft	88.1	91.5

Shane King

PRINT YOUR NAME ABOVE

Shane King

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED

7.53

DECLINATION OR GRID

GRID

8/23/2014

TODAY'S DATE

MWD SUPERVISOR 1

Shane King

DIRECTIONAL DRILLER 1

Chris Leonard

MWD SUPERVISOR 2

Jeff Secrease

DIRECTIONAL DRILLER 2

Dustin Gordon

1805 Brittmore Road

Houston, Texas 77043

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

DISTRICT IV
1625 N. French Dr., Hobbs, NM 88240
DISTRICT IV
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT IV
1000 Rio Brazos Rd., Santa Fe, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised July 16, 2010

Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name PALMILLO "14" STATE	Well Number 1H
OGRID No.	Operator Name KEYSTONE PETROLEUM NM LLC	Elevation 3454'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	14	19 S	28 E		2080	SOUTH	330	WEST	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
I	14	19 S	28 E		1980	SOUTH	330	EAST	EDDY
Dedicated Acres	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

SURFACE LOCATION Lat - N 32°39'32.95" Long - W 104°09'15.04" NMSPC- N 603557.4 E 555136.6 (NAD-27)		PROPOSED BOTTOM HOLE LOCATION Lat - N 32°39'33.22" Long - W 104°08'22.00" NMSPC- N 603592.7 E 559670.5 (NAD-27)		OPERATOR CERTIFICATION I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature _____ Date _____ Printed Name _____ Email Address _____
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. Date Surveyed _____ Signature _____ Seal of Professional Surveyor 7977 Certificate No. Gary L. Jones 7977 BASIN SURVEYS 24283				



Apache Corporation

Eddy County, NM (NAD27 NME)

Palmillo 14 State Com

#1H

WB1/Job #1411057

Survey: Phoenix MWD Survey

Standard Survey Report

25 August, 2014



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3479.00usft (Pioneer 28)
Site:	Palmillo 14 State Corn	MD Reference:	KB @ 3479.00usft (Pioneer 28)
Well:	#1H	North Reference:	Grid
Wellbore:	WB1/Job #1411057	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 28)	Database:	GCR DB

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		Palmillo 14 State Corn			
Site Position:		Northing:	602,138.10 usft	Latitude:	32° 39' 18.90442 N
From:	Map	Easting:	555,133.20 usft	Longitude:	104° 9' 15.10476 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.10 °

Well		#1H				
Well Position	+N/-S	0.00 usft	Northing:	603,557.40 usft	Latitude:	32° 39' 32.94925 N
	+E/-W	0.00 usft	Easting:	555,136.60 usft	Longitude:	104° 9' 15.03697 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,454.00 usft

Wellbore	WB1/Job #1411057				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	07/31/14	7.63	60.40	48,468

Design	Surveys (Pioneer 28)				
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	89.55	

Survey Program	Date	08/25/14			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	6,800.00	Gyrodata Gyro Surveys (WB1/Job #1411057)	NS-GYRO-MS	North sensing gyrocompassing m/s	
6,810.00	11,874.00	Phoenix MWD Survey (WB1/Job #1411057)	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)	
6,800.00	2.58	277.44	6,798.94	46.84	-45.13	-44.76	0.00	0.00	0.00	
Tie-on to Gyrodata Gyro Survey										
6,810.00	2.50	280.80	6,808.93	46.91	-45.57	-45.20	1.69	-0.80	33.60	
First Phoenix MWD Survey										
6,842.00	2.00	282.00	6,840.91	47.16	-46.80	-46.43	1.57	-1.56	3.75	
6,873.00	1.00	288.70	6,871.89	47.36	-47.58	-47.21	3.27	-3.23	21.61	
6,905.00	0.30	54.60	6,903.89	47.49	-47.78	-47.41	3.75	-2.19	393.44	
6,936.00	1.60	91.70	6,934.89	47.53	-47.28	-46.91	4.43	4.19	119.68	
6,968.00	3.20	95.00	6,966.86	47.44	-45.95	-45.57	5.02	5.00	10.31	

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3479.00usft (Pioneer 28)
Site:	Palmillo 14 State Com	MD Reference:	KB @ 3479.00usft (Pioneer 28)
Well:	#1H	North Reference:	Grid
Wellbore:	WB1/Job #1411057	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 28)	Database:	GCR DB

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)
6,999.00	4.80	93.80	6,997.78	47.28	-43.79	-43.42	5.17	5.16	-3.87
7,031.00	6.40	91.30	7,029.63	47.15	-40.67	-40.30	5.06	5.00	-7.81
7,062.00	8.70	87.00	7,060.36	47.23	-36.60	-36.23	7.63	7.42	-13.87
7,093.00	12.50	83.70	7,090.82	47.72	-30.92	-30.55	12.41	12.26	-10.65
7,124.00	17.50	81.10	7,120.76	48.81	-22.98	-22.59	16.27	16.13	-8.39
7,156.00	23.10	81.40	7,150.76	50.50	-12.01	-11.61	17.50	17.50	0.94
7,187.00	28.30	83.20	7,178.68	52.28	1.31	1.72	16.96	16.77	5.81
7,218.00	32.20	86.00	7,205.46	53.72	16.85	17.27	13.38	12.58	9.03
7,250.00	35.80	87.30	7,231.98	54.76	34.71	35.14	11.48	11.25	4.06
7,281.00	39.70	88.40	7,256.49	55.46	53.67	54.11	12.77	12.58	3.55
7,313.00	44.00	90.10	7,280.32	55.73	75.02	75.45	13.90	13.44	5.31
7,344.00	48.40	92.70	7,301.78	55.16	97.37	97.80	15.43	14.19	8.39
7,375.00	52.70	94.00	7,321.47	53.76	121.26	121.68	14.24	13.87	4.19
7,407.00	55.30	94.40	7,340.28	51.86	147.08	147.48	8.19	8.13	1.25
7,438.00	58.40	94.90	7,357.23	49.75	172.95	173.33	10.09	10.00	1.61
7,469.00	60.70	95.40	7,372.94	47.35	199.56	199.93	7.55	7.42	1.61
7,501.00	63.60	95.30	7,387.88	44.72	227.73	228.07	9.07	9.06	-0.31
7,532.00	64.70	95.30	7,401.40	42.14	255.51	255.83	3.55	3.55	0.00
7,564.00	67.70	95.30	7,414.31	39.44	284.66	284.96	9.38	9.38	0.00
7,595.00	71.80	95.40	7,425.04	36.72	313.61	313.89	13.23	13.23	0.32
7,626.00	75.20	95.30	7,433.84	33.95	343.20	343.45	10.97	10.97	-0.32
7,658.00	77.50	95.30	7,441.39	31.08	374.16	374.39	7.19	7.19	0.00
7,689.00	80.30	95.30	7,447.36	28.27	404.44	404.65	9.03	9.03	0.00
7,720.00	82.90	94.90	7,451.89	25.55	434.99	435.18	8.48	8.39	-1.29
7,760.00	86.00	95.00	7,455.76	22.11	474.65	474.81	7.75	7.75	0.25
7,854.00	86.40	95.30	7,461.99	13.69	568.06	568.15	0.53	0.43	0.32
7,948.00	87.30	95.30	7,467.15	5.02	661.52	661.54	0.96	0.96	0.00
8,043.00	88.50	94.60	7,470.63	-3.17	756.10	756.05	1.46	1.26	-0.74
8,137.00	93.40	93.60	7,469.07	-9.89	849.81	849.71	5.32	5.21	-1.06
8,231.00	92.10	91.50	7,464.56	-14.06	943.61	943.47	2.63	-1.38	-2.23
8,326.00	91.30	90.10	7,461.75	-15.39	1,038.55	1,038.40	1.70	-0.84	-1.47
8,420.00	90.10	89.00	7,460.60	-14.65	1,132.54	1,132.39	1.73	-1.28	-1.17
8,514.00	89.30	87.30	7,461.09	-11.62	1,226.48	1,226.35	2.00	-0.85	-1.81
8,608.00	89.10	87.30	7,462.40	-7.19	1,320.37	1,320.27	0.21	-0.21	0.00
8,702.00	89.00	87.30	7,463.96	-2.76	1,414.25	1,414.19	0.11	-0.11	0.00
8,796.00	88.70	87.00	7,465.85	1.91	1,508.12	1,508.09	0.45	-0.32	-0.32
8,890.00	88.20	87.10	7,468.39	6.75	1,601.96	1,601.96	0.54	-0.53	0.11
8,984.00	87.60	87.90	7,471.83	10.84	1,695.80	1,695.84	1.06	-0.64	0.85
9,079.00	86.90	90.50	7,476.39	12.17	1,790.68	1,790.72	2.83	-0.74	2.74
9,173.00	88.10	91.60	7,480.49	10.45	1,884.57	1,884.59	1.73	1.28	1.17
9,267.00	89.30	92.00	7,482.63	7.50	1,978.50	1,978.49	1.35	1.28	0.43
9,361.00	89.10	91.10	7,483.94	4.95	2,072.45	2,072.43	0.98	-0.21	-0.96
9,455.00	88.60	90.50	7,485.83	3.64	2,166.42	2,166.38	0.83	-0.53	-0.64

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3479.00usft (Pioneer 28)
Site:	Palmillo 14 State Com	MD Reference:	KB @ 3479.00usft (Pioneer 28)
Well:	#1H	North Reference:	Grid
Wellbore:	WB1/Job #1411057	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Pioneer 28)	Database:	GCR DB

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)
9,549.00	88.10	89.70	7,488.53	3.48	2,260.38	2,260.34	1.00	-0.53	-0.85
9,643.00	88.10	89.20	7,491.65	4.38	2,354.33	2,354.29	0.53	0.00	-0.53
9,737.00	87.90	88.60	7,494.93	6.18	2,448.25	2,448.22	0.67	-0.21	-0.64
9,831.00	87.40	88.20	7,498.78	8.81	2,542.13	2,542.13	0.68	-0.53	-0.43
9,925.00	87.20	88.20	7,503.21	11.76	2,635.98	2,636.00	0.21	-0.21	0.00
10,019.00	88.30	88.90	7,506.90	14.13	2,729.88	2,729.91	1.39	1.17	0.74
10,114.00	88.00	88.50	7,509.97	16.29	2,824.81	2,824.85	0.53	-0.32	-0.42
10,208.00	87.40	88.40	7,513.74	18.83	2,918.69	2,918.75	0.65	-0.64	-0.11
10,303.00	87.00	88.30	7,518.38	21.56	3,013.54	3,013.62	0.43	-0.42	-0.11
10,398.00	86.50	88.10	7,523.77	24.54	3,108.34	3,108.44	0.57	-0.53	-0.21
10,492.00	86.50	89.00	7,529.51	26.91	3,202.14	3,202.25	0.96	0.00	0.96
10,586.00	86.80	89.10	7,535.00	28.47	3,295.96	3,296.08	0.34	0.32	0.11
10,680.00	86.00	88.20	7,540.90	30.68	3,389.75	3,389.89	1.28	-0.85	-0.96
10,774.00	84.70	87.60	7,548.52	34.11	3,483.37	3,483.53	1.52	-1.38	-0.64
10,868.00	84.40	88.80	7,557.45	37.05	3,576.90	3,577.08	1.31	-0.32	1.28
10,962.00	84.30	90.80	7,566.71	37.38	3,670.44	3,670.62	2.12	-0.11	2.13
11,056.00	84.90	92.10	7,575.55	35.01	3,763.99	3,764.15	1.52	0.64	1.38
11,151.00	85.60	91.70	7,583.42	31.87	3,858.61	3,858.74	0.85	0.74	-0.42
11,245.00	84.50	92.20	7,591.53	28.68	3,952.20	3,952.31	1.28	-1.17	0.53
11,339.00	85.60	92.30	7,599.64	25.01	4,045.78	4,045.85	1.18	1.17	0.11
11,433.00	88.00	92.50	7,604.89	21.08	4,139.54	4,139.58	2.56	2.55	0.21
11,527.00	88.00	92.50	7,608.17	16.98	4,233.40	4,233.40	0.00	0.00	0.00
11,621.00	87.90	91.80	7,611.53	13.45	4,327.27	4,327.24	0.75	-0.11	-0.74
11,715.00	87.80	91.90	7,615.06	10.42	4,421.15	4,421.10	0.15	-0.11	0.11
11,807.00	88.10	91.50	7,618.35	7.69	4,513.06	4,512.98	0.54	0.33	-0.43
Last Phonenix MWD Survey									
11,827.86	88.10	91.50	7,619.04	7.15	4,533.90	4,533.81	0.00	0.00	0.00
330' Hardline Crossing at 11827.86' MD									
11,874.00	88.10	91.50	7,620.57	5.94	4,580.00	4,579.90	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)	
6,800.00	6,798.94	46.84	-45.13	Tie-on to Gyrodata Gyro Survey
6,810.00	6,808.93	46.91	-45.57	First Phonenix MWD Survey
11,807.00	7,618.35	7.69	4,513.06	Last Phonenix MWD Survey
11,827.86	7,619.04	7.15	4,533.90	330' Hardline Crossing at 11827.86' MD
11,874.00	7,620.57	5.94	4,580.00	Projection to TD

Checked By: _____ Approved By: _____ Date: _____