PHOENIX
TECHNOLOGY SERVICES

May 5, 2015

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

NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 17 2016
RECEIVED

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation
Hummingbird Federal Com #2H
Eddy County, NM
API #30-015-42632
Job No. 1410362

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	
Burton Fowles	2H	5,328	10,535	4/16/15	4/20/15	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,

Bobbi Jo Jorgensen

Bobbi Jo Jorgensen
Operations Administrator

Certified mail receipt number: 7011 1570 0001 4365 0540

12329 Cutten Rd. Houston, TX 77066 • Phone (713) 337-0600 • Fax (713) 337-0599
www.phxtech.com

Phoenix Technology Services
SURVEY DATA CERTIFICATION

PHOENIX TECHNOLOGY SERVICES

PHOENIX JOB NUMBER	1410362	OPERATOR	Apache
WELL NAME	Hummingbird Federal Com #2H	COUNTY & STATE	Eddy County, NM
API WELL NUMBER	30-015-42632	PROPOSED DIRECTION	89.6

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
5,100 ft	5,099.11 ft	2.2	313.33	29.59 N	40.06 W	GYRO

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
16-Apr-15	5,328 ft	3.00	333.1

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
20-Apr-15	10,535 ft	91.5	87.9

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
20-Apr-15	10,607 ft	91.5	87.9

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

Burton P. Fowles

PRINT YOUR NAME ABOVE

Burton P. Fowles

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.26
DECLINATION OR GRID	GRID

4/21/2015

TODAY'S DATE

MWD SUPERVISOR 1	Burton Fowles	DIRECTIONAL DRILLER 1	Ian Hobbs
MWD SUPERVISOR 2	Jay Conyers	DIRECTIONAL DRILLER 2	Josh Ashley

12329 Cutten Road Houston, Texas 77066 (713)337-0600 (Voice), (713)337-0599 (Fax)

Apache
EXPLORING WHAT'S POSSIBLE

Apache Corporation

Eddy County, NM (NAD27 NME)
Hummingbird Federal Com
#2H

WB1/Job #1410362

Survey: Phoenix MWD Survey

Standard Survey Report

05 May, 2015

PHOENIX
TECHNOLOGY SERVICES

Company:	Apache Corporation	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 4014.00usft (Capstar 114)
Site:	Hummingbird Federal Com	**MD Reference:**	KB @ 4014.00usft (Capstar 114)
Well:	#2H	**North Reference:**	Grid
Wellbore:	WB1/Job #1410362	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Capstar 114)	**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 Hummingbird Federal Com

Site Position:		**Northing:**	677,262.80 usft	**Latitude:**	32° 51' 39.07462 N
From:	Map	**Easting:**	655,481.80 usft	**Longitude:**	103° 49' 37.14798 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.27 °

Well #2H

Well Position	**+N/-S**	0.00 usft	**Northing:**	677,354.10 usft	**Latitude:**	32° 51' 40.03477 N
	+E/-W	0.00 usft	**Easting:**	654,281.50 usft	**Longitude:**	103° 49' 51.21461 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	4,003.00 usft

Wellbore WB1/Job #1410362

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/7/2015	7.53	60.87	48,622

Design Surveys (Capstar 114)

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	89.60

Survey Program **Date** 4/21/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
117.00	5,100.00	Pheonix Gyro Survey (WB1/Job #1410362	NS-GYRO-MS	North sensing gyrocompassing m/s
5,328.00	10,607.00	Phoenix MWD Survey (WB1/Job #141036	PHX+MWD+HDGM	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)
5,100.00	2.20	313.33	5,099.11	29.59	-40.06	-39.85	0.00	0.00	0.00
Tie-on to Phoenix Gyro Survey									
5,328.00	3.00	333.10	5,326.88	37.92	-45.94	-45.67	0.52	0.35	8.67
First Phoenix MWD Survey									
5,371.00	3.00	335.10	5,369.82	39.94	-46.92	-46.64	0.24	0.00	4.65
5,414.00	3.00	341.90	5,412.76	42.03	-47.75	-47.45	0.83	0.00	15.81
5,456.00	2.30	42.20	5,454.72	43.70	-47.52	-47.22	6.50	-1.67	143.57
5,499.00	5.00	93.00	5,497.64	44.24	-45.07	-44.76	9.23	6.28	118.14
5,542.00	10.10	95.50	5,540.25	43.78	-39.44	-39.14	11.88	11.86	5.81

Company:	Apache Corporation	**Local Co-ordinate Reference:**	Well #2H
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Site:	Hummingbird Federal Com	**MD Reference:**	KB @ 4014.00usft (Capstar 114)
Well:	#2H	**North Reference:**	Grid
Wellbore:	WB1/Job #1410362	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Capstar 114)	**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)
5,584.00	16.50	98.70	5,581.10	42.53	-29.87	-29.57	15.33	15.24	7.62
5,627.00	22.50	100.90	5,621.62	40.05	-15.74	-15.46	14.06	13.95	5.12
5,670.00	29.20	100.30	5,660.29	36.61	2.68	2.93	15.59	15.58	-1.40
5,712.00	35.00	97.70	5,695.86	33.16	24.71	24.95	14.19	13.81	-6.19
5,755.00	41.10	93.50	5,729.71	30.64	51.07	51.28	15.40	14.19	-9.77
5,798.00	47.30	92.20	5,760.52	29.17	81.00	81.20	14.57	14.42	-3.02
5,840.00	51.40	92.80	5,787.88	27.78	112.83	113.02	9.82	9.76	1.43
5,883.00	56.80	92.80	5,813.08	26.08	147.60	147.78	12.56	12.56	0.00
5,926.00	60.70	92.40	5,835.39	24.41	184.32	184.48	9.10	9.07	-0.93
5,969.00	67.00	92.30	5,854.33	22.83	222.87	223.02	14.65	14.65	-0.23
6,012.00	70.80	92.40	5,869.81	21.19	262.94	263.08	8.84	8.84	0.23
6,054.00	73.80	92.90	5,882.57	19.33	302.91	303.03	7.23	7.14	1.19
6,097.00	77.40	93.00	5,893.27	17.19	344.49	344.60	8.38	8.37	0.23
6,140.00	81.40	93.40	5,901.17	14.83	386.68	386.78	9.35	9.30	0.93
6,183.00	87.90	92.10	5,905.18	12.78	429.42	429.50	15.41	15.12	-3.02
6,226.00	91.20	90.60	5,905.52	11.77	472.40	472.47	8.43	7.67	-3.49
6,268.00	89.70	89.70	5,905.19	11.66	514.40	514.47	4.16	-3.57	-2.14
6,354.00	88.20	88.80	5,906.76	12.78	600.38	600.45	2.03	-1.74	-1.05
6,482.00	89.60	89.90	5,909.22	14.24	728.34	728.42	1.39	1.09	0.86
6,613.00	91.80	89.20	5,907.62	15.26	859.32	859.40	1.76	1.68	-0.53
6,742.00	90.50	90.80	5,905.03	15.26	988.28	988.37	1.60	-1.01	1.24
6,873.00	89.80	91.60	5,904.69	12.52	1,119.25	1,119.31	0.81	-0.53	0.61
7,004.00	88.70	90.50	5,906.40	10.12	1,250.21	1,250.25	1.19	-0.84	-0.84
7,132.00	89.90	90.10	5,907.97	9.45	1,378.20	1,378.23	0.99	0.94	-0.31
7,260.00	88.80	89.70	5,909.42	9.67	1,506.19	1,506.22	0.91	-0.86	-0.31
7,388.00	89.40	88.70	5,911.43	11.46	1,634.16	1,634.20	0.91	0.47	-0.78
7,517.00	88.00	88.70	5,914.36	14.39	1,763.09	1,763.15	1.09	-1.09	0.00
7,645.00	89.30	88.40	5,917.37	17.62	1,891.01	1,891.09	1.04	1.02	-0.23
7,776.00	89.30	90.40	5,918.97	19.00	2,021.99	2,022.07	1.53	0.00	1.53
7,904.00	91.00	90.90	5,918.64	17.54	2,149.97	2,150.04	1.38	1.33	0.39
8,033.00	90.40	89.70	5,917.06	16.87	2,278.96	2,279.02	1.04	-0.47	-0.93
8,161.00	90.30	89.60	5,916.28	17.65	2,406.95	2,407.02	0.11	-0.08	-0.08
8,289.00	91.80	90.30	5,913.93	17.76	2,534.93	2,534.99	1.29	1.17	0.55
8,417.00	91.50	90.20	5,910.25	17.20	2,662.87	2,662.93	0.25	-0.23	-0.08
8,545.00	90.10	89.10	5,908.46	17.99	2,790.85	2,790.91	1.39	-1.09	-0.86
8,674.00	90.50	88.80	5,907.79	20.35	2,919.83	2,919.90	0.39	0.31	-0.23
8,802.00	88.90	89.30	5,908.46	22.47	3,047.81	3,047.89	1.31	-1.25	0.39
8,930.00	89.70	88.60	5,910.02	24.82	3,175.77	3,175.87	0.83	0.63	-0.55
9,059.00	90.40	87.20	5,909.91	29.54	3,304.68	3,304.81	1.21	0.54	-1.09
9,185.00	89.00	88.80	5,910.57	33.94	3,430.60	3,430.75	1.69	-1.11	1.27
9,313.00	90.10	91.10	5,911.57	34.05	3,558.58	3,558.73	1.99	0.86	1.80
9,441.00	92.20	91.90	5,909.00	30.70	3,686.50	3,686.63	1.76	1.64	0.63
9,569.00	91.00	90.20	5,905.43	28.36	3,814.43	3,814.53	1.63	-0.94	-1.33

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Wellbore:	WB1/Job #1410362	**Survey Calculation Method:**	Minimum Curvature
Design:	Surveys (Capstar 114)	**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)
9,698.00	90.80	90.50	5,903.40	27.57	3,943.41	3,943.50	0.28	-0.16	0.23
9,829.00	89.80	90.30	5,902.72	26.66	4,074.40	4,074.49	0.78	-0.76	-0.15
9,957.00	90.60	89.00	5,902.27	27.44	4,202.39	4,202.48	1.19	0.63	-1.02
10,086.00	89.90	90.40	5,901.71	28.11	4,331.39	4,331.48	1.21	-0.54	1.09
10,214.00	91.00	89.60	5,900.70	28.11	4,459.38	4,459.47	1.06	0.86	-0.63
10,341.00	88.90	88.10	5,900.81	30.66	4,586.34	4,586.45	2.03	-1.65	-1.18
10,472.00	91.00	88.60	5,900.93	34.43	4,717.28	4,717.41	1.65	1.60	0.38
10,535.00	91.50	87.90	5,899.55	36.36	4,780.24	4,780.37	1.37	0.79	-1.11
Last Phoenix MWD Survey									
10,607.00	91.50	87.90	5,897.67	39.00	4,852.16	4,852.32	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,100.00	5,099.11	29.59	-40.06	Tie-on to Phoenix Gyro Survey
5,328.00	5,326.88	37.92	-45.94	First Phoenix MWD Survey
10,535.00	5,899.55	36.36	4,780.24	Last Phoenix MWD Survey
10,607.00	5,897.67	39.00	4,852.16	Projection to TD

Checked By: _____ Approved By: _____ Date: _____