

Apache Corporation (873)
303 Veterans Airpark Lane, #3000
Midland, TX 79705

NFE Federal #053H
Eddy County, New Mexico

30-015-42908

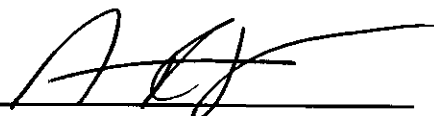
460' FNL + 1025' FEL A-06-17S-31E LOT 1

227	2.27	0.25	0.44	0.99	0.99
400	1.73	0.75	1.31	2.27	3.26
729	3.29	0.80	1.40	4.61	7.87
985	2.56	0.50	0.88	2.24	10.11
1207	2.22	0.90	1.58	3.50	13.61
1463	2.56	1.00	1.75	4.48	18.09
1719	2.56	0.70	1.23	3.14	21.22
1979	2.60	0.30	0.53	1.37	22.59
2234	2.55	0.20	0.35	0.89	23.48
2491	2.57	0.20	0.35	0.90	24.38
2745	2.54	0.20	0.35	0.89	25.27
3005	2.60	0.30	0.53	1.37	26.63
3307	3.02	0.30	0.53	1.59	28.22
3741	4.34	0.30	0.53	2.28	30.50
3999	2.58	0.50	0.88	2.26	32.75
4353	3.54	1.50	2.63	9.29	42.05

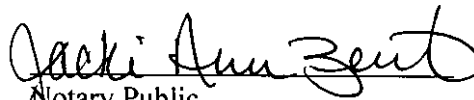
NM OIL CONSERVATION
ARTESIA DISTRICT

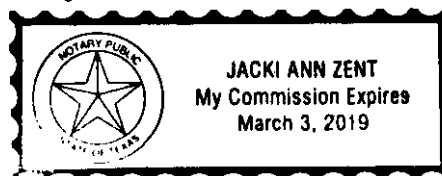
OCT 07 2010

RECEIVED


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 29th day of May, 2015 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





TECHNOLOGY SERVICES USA INC.

Celebrating 20 Years of Focused Solutions

3610 Elkins Road, Midland, Texas 79705 T. 432.684.0057 F. 432.686.7964 www.phxtech.com

May 19, 2015

NM OIL CONSERVATION

ARTESIA DISTRICT

OCT 07 2015

RECEIVED

Apache Corporation
Attention: Regulatory Department
303 Veterans Airpark Lane, Suite 3000,
Midland, TX 79705

Re: Apache Corporation
NFE Federal #53H
Eddy County, NM
API #30-015-42908
Job No. 1513561

*A-06-17S-31E LOT 1
460' FNL & 1025' FEL*

Dear Regulatory Department;

Phoenix Technology Services, Inc. has filed the Survey Data Certification, Surveys, and Lease Plat for the above referenced well with the State of New Mexico Oil Conservation Division – District 2 via certified mail. A copy of the filing is attached for your records.

Name of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Noe Garza	53H	0	3,762.68	05/14/15	05/14/15	Gyro ✓

Thank you for the opportunity to be of service. Please contact me if you have any questions or require additional information.

Best Regards,

Alicia Marquez
Operations Administrator

SURVEY CERTIFICATION FORM

3610 Elkins Road Midland, TX 79705 t:432-684-0057 f: 432-686-7964



Company: Apache

Job #: 1513561

Well Name: NFE Federal 53H

County/State: Eddy County, New Mexico

Survey Instrument Type: North Seek Rate Gyro ✓

API # 30-015-42908

TIE-IN DATA

Measure Depth (ft)	Vertical Depth (ft)	Inclination (°)	Azimuth (°)	N-S Coordinates	E-W Coordinates	Data Source
0	0	0	0	0	0	Surface

First Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
2015-05-15	0	0	0

Last Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
2015-05-15	3762.68	0.41	143.22

Projected TD Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
0	0	0	0

Grid Correction
-1.25

Gyro Operator: Phoenix Technology Services USA Ltd.

Gyro Supervisor:

To the best of my knowledge I certify this survey data to be correct and true

Date: 2015-05-15

Print Name: Noe Garza

Signature:



Company:

Apache

Job Number:

1513561

Calculation Method

Minimum Curvature

Well:

NFE Federal 53H

Grid Corr.:

-1.25

Proposed Azimuth

Location:

Eddy County, New Mexico

Lat:

32.87

RKB - MSL in feet

11 Feet

Rig:

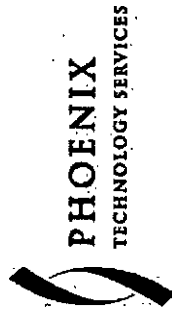
Capstar 114

Tie Into:

-103.90

Surface

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Enter Tie-In Survey on Line 10													
TIE IN	0	0.00	0	0	0	0	0	0					
Gyro	72.81	0.27	57.90	73	72.81	0.09	0.09 N	0.15 E	0.17	57.90	0.37	0.37	79.52
	158.42	0.31	322.86	86	158.42	0.38	0.38 N	0.18 E	0.42	24.73	0.50	0.05	309.50
	244.43	0.17	324.41	86	244.43	0.67	0.67 N	0.04 W	0.67	356.73	0.16	-0.16	1.80
	330.24	0.36	129.30	86	330.24	0.60	0.60 N	0.10 E	0.61	9.03	0.61	0.22	-227.37
	416.05	0.40	144.95	86	416.05	0.19	0.19 N	0.48 E	0.51	68.37	0.13	0.05	18.24
	501.87	0.41	154.30	86	501.86	-0.33	0.33 S	0.78 E	0.85	113.06	0.08	0.01	10.89
	587.68	0.50	160.92	86	587.67	-0.96	0.96 S	1.04 E	1.42	132.88	0.12	0.10	7.71
	673.49	0.52	173.58	86	673.48	-1.70	1.70 S	1.20 E	2.09	144.77	0.13	0.02	14.75
	759.30	0.56	170.34	86	759.28	-2.50	2.50 S	1.32 E	2.83	152.26	0.06	0.05	-3.78
	845.11	0.57	167.93	86	845.09	-3.34	3.34 S	1.48 E	3.65	156.11	0.03	0.01	-2.81
	930.92	0.51	166.62	86	930.90	-4.12	4.12 S	1.65 E	4.44	158.14	0.07	-0.07	-1.53
	1016.73	0.42	129.50	86	1016.70	-4.70	4.70 S	1.99 E	5.10	157.08	0.36	-0.10	-43.26
	1102.54	0.65	98.72	86	1102.51	-4.97	4.97 S	2.71 E	5.66	151.40	0.42	0.27	-35.87
	1188.35	0.79	105.00	86	1188.31	-5.20	5.20 S	3.76 E	6.42	144.10	0.19	0.16	7.32
	1274.16	0.89	104.10	86	1274.11	-5.51	5.51 S	4.98 E	7.43	137.90	0.12	0.12	-1.05
	1359.97	0.94	103.49	86	1359.91	-5.84	5.84 S	6.31 E	8.60	132.78	0.06	0.06	-0.71
	1445.79	0.79	98.32	86	1445.72	-6.09	6.09 S	7.58 E	9.72	128.77	0.20	-0.17	-6.02
	1531.60	0.70	105.42	86	1531.53	-6.31	6.31 S	8.67 E	10.73	126.06	0.15	-0.10	8.27
	1617.41	0.61	100.80	86	1617.33	-6.54	6.54 S	9.63 E	11.64	124.19	0.12	-0.10	-5.38
	1703.22	0.44	96.23	86	1703.14	-6.66	6.66 S	10.40 E	12.35	122.63	0.20	-0.20	-5.33
	1789.03	0.32	89.16	86	1788.94	-6.69	6.69 S	10.97 E	12.85	121.39	0.15	-0.14	-8.24
	1874.84	0.25	85.00	86	1874.75	-6.67	6.67 S	11.39 E	13.20	120.35	0.09	-0.08	-4.85
	1960.65	0.19	97.20	86	1960.56	-6.67	6.67 S	11.72 E	13.49	119.65	0.09	-0.07	14.22
	2046.46	0.14	105.49	86	2046.37	-6.72	6.72 S	11.96 E	13.72	119.32	0.06	-0.06	9.66
	2132.27	0.10	117.18	86	2132.18	-6.78	6.78 S	12.13 E	13.90	119.20	0.05	-0.05	13.62
	2218.08	0.12	140.58	86	2217.99	-6.89	6.89 S	12.26 E	14.06	119.33	0.06	0.02	27.27
	2303.89	0.18	145.15	86	2303.80	-7.07	7.07 S	12.39 E	14.26	119.69	0.07	0.07	5.33
	2389.71	0.17	154.66	86	2389.62	-7.29	7.29 S	12.52 E	14.49	120.21	0.04	-0.01	11.08



Company: Apache
Well: NFE Federal 53H
Location: Eddy County, New Mexico
Rig: Capstar 114

Job Number: 1513561
Grid Corr.: -1.25
Lat: 32.87
Long: -103.90
Calculation Method: Minimum Curvature
Proposed Azimuth: 11 Feet
RKB - MSL in feet: Surface
Tie Into:

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N/S (ft)	E/W (ft)	Closure Distance (ft)	Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
	2475.52	0.18	150.86	86	2475.43	-7.52	7.52 S	12.64 E	14.71	120.76	0.02	0.01	-4.43
	2561.33	0.15	137.49	86	2561.24	-7.72	7.72 S	12.78 E	14.94	121.14	0.06	-0.03	-15.58
	2647.14	0.17	142.36	86	2647.05	-7.91	7.91 S	12.94 E	15.16	121.44	0.03	0.02	5.68
	2732.95	0.13	146.85	86	2732.86	-8.09	8.09 S	13.07 E	15.37	121.76	0.05	-0.05	5.23
	2818.76	0.15	141.70	86	2818.67	-8.26	8.26 S	13.19 E	15.56	122.05	0.03	0.02	-6.00
	2904.57	0.15	134.92	86	2904.48	-8.43	8.43 S	13.34 E	15.78	122.28	0.02	0.00	-7.90
	2990.38	0.19	151.61	86	2990.29	-8.63	8.63 S	13.49 E	16.01	122.62	0.07	0.05	19.45
	3076.19	0.21	161.44	86	3076.10	-8.91	8.91 S	13.60 E	16.26	123.21	0.05	0.02	11.46
	3162.00	0.22	158.33	86	3161.91	-9.21	9.21 S	13.72 E	16.52	123.88	0.02	0.01	-3.62
	3247.81	0.21	147.97	86	3247.72	-9.49	9.49 S	13.86 E	16.80	124.41	0.05	-0.01	-12.07
	3333.63	0.24	146.64	86	3333.54	-9.78	9.78 S	14.04 E	17.11	124.85	0.04	0.03	-1.55
	3419.44	0.23	145.14	86	3419.35	-10.07	10.07 S	14.24 E	17.44	125.27	0.01	-0.01	-1.75
	3505.25	0.25	140.65	86	3505.15	-10.36	10.36 S	14.46 E	17.78	125.62	0.03	0.02	-5.23
	3591.06	0.32	140.11	86	3590.96	-10.68	10.68 S	14.73 E	18.20	125.96	0.08	0.08	-0.63
	3676.87	0.36	146.06	86	3676.77	-11.09	11.09 S	15.03 E	18.68	126.42	0.06	0.05	6.93
	3762.68	0.41	143.22	86	3762.58	-11.56	11.56 S	15.37 E	19.23	126.96	0.06	0.06	-3.31



PHOENIX
TECHNOLOGY SERVICES

NM OIL CONSERVATION

ARTESIA DISTRICT

OCT 07 2015

RECEIVED

January 22, 2015

Apache Corporation
Attention: Regulatory Department
303 Veterans Airpark Lane, Suite 3000,
Midland, TX 79705

Re: Apache Corporation
NFE Federal # 53H
Eddy County, NM
API #30-015-42908
Job No. 1513528

A-06-175-31E LOT 1
460' FNL + 1025' FEL

Received
JUL 20 2015
Apache Corp
Permian

Dear Regulatory Department;

Phoenix Technology Services, Inc. has filed the Survey Data Certification, Surveys, and Lease Plat for the above referenced well with the State of New Mexico Oil Conservation Division – District 2 via certified mail. A copy of the filing is attached for your records.

Name of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Burton Fowles	53H	3,803	10,564	05/14/15	05/22/15	MWD

Thank you for the opportunity to be of service. Please contact me if you have any questions or require additional information.

Best Regards,

Alva J. Dunigan

Received

JUL 20 2015

Alva J. Dunigan
Operations Administrator

Apache Corp
Permian

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1513528

OPERATOR

Apache

WELL NAME

NFE Federal #53H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-42908

PROPOSED DIRECTION

89.27

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
3,763 ft	3,762.58 ft	0.41	143.22	11.56 S	15.37 E	GYRO

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
14-May-15	3,803 ft	0.30	89.2

SURVEY INSTRUMENT

TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
22-May-15	10,564 ft	89.6	88.9

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-May-15	10,637 ft	89.6	88.9

Burton P. Fowles

PRINT YOUR NAME ABOVE

Burton P. Fowles

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	
7.43	
DECLINATION OR GRID	GRID

5/22/2015

TODAY'S DATE

MWD SUPERVISOR 1

Burton Fowles

DIRECTIONAL DRILLER 1

Ian Hobbs

MWD SUPERVISOR 2

Jimmy Confer

DIRECTIONAL DRILLER 2

Tim Owens

12329 Cutten Road

Houston, Texas 77066

(713) 337-0609 (Voice), (713) 337-0599 (Fax)



NM OIL CONSERVATION

ARTESIA DISTRICT

OCT 07 2015

RECEIVED

Apache Corporation

Eddy County, NM (NAD27 NME)

NFE Federal

#53H

WB1 / Job #1513528

Survey: Phoenix MWD Survey

Standard Survey Report

22 May, 2015



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #53H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3779.00usft (Capstar 114)
Site:	NFE Federal	MD Reference:	KB @ 3779.00usft (Capstar 114)
Well:	#53H	North Reference:	Grid
Wellbore:	WB1 / Job #1513528	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	NFE Federal			
Site Position:		Northing:	673,264.70 usft	Latitude: 32° 51' 0.49036 N
From: Map		Easting:	633,303.50 usft	Longitude: 103° 53' 57.34966 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.24 "

Well	#53H			
Well Position	+N-S	0.00 usft	Northing:	680,267.20 usft
	+E-W	0.00 usft	Easting:	632,019.10 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft
			Ground Level:	3,768.00 usft

Wellbore	WB1 / Job #1513528				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	5/6/2015	7.67	60.82	48,574

Design	Surveys (Capstar 114)			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	89.61

Survey Program	Date 5/22/2015				
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
72.81	3,762.68	Phoenix Gyro Survey (WB1 / Job #151352	NS-GYRO-MS	North sensing gyrocompassing m/s	
3,803.00	10,637.00	Phoenix MWD Survey (WB1 / Job #15135	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)
3,762.68	0.41	143.22	3,762.58	-11.56	15.37	15.29	0.00	0.00	0.00
Tie-on to Phoenix Gyro Survey									
3,803.00	0.30	89.20	3,802.90	-11.68	15.56	15.48	0.84	-0.27	-133.98
First Phoenix MWD Survey									
3,930.00	0.40	128.70	3,929.90	-11.95	16.24	16.16	0.20	0.08	31.10
4,056.00	0.40	123.50	4,055.89	-12.47	16.95	16.86	0.03	0.00	-4.13
4,184.00	0.50	134.90	4,183.89	-13.11	17.72	17.63	0.10	0.08	8.91
4,311.00	0.80	159.90	4,310.88	-14.33	18.41	18.31	0.32	0.24	19.69
4,353.00	1.50	101.40	4,352.88	-14.71	19.05	18.95	3.05	1.67	-139.29

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #53H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3779.00usft (Capstar 114)
Site:	NFE Federal	MD Reference:	KB @ 3779.00usft (Capstar 114)
Well:	#53H	North Reference:	Grid
Wellbore:	WB1 / Job #1513528	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)
4,395.00	4.00	74.40	4,394.83	-14.43	21.00	20.90	6.55	5.95	-64.29
4,436.00	7.40	60.20	4,435.62	-12.73	24.67	24.59	8.92	8.29	-34.63
4,478.00	10.20	58.60	4,477.12	-9.45	30.19	30.13	6.69	6.67	-3.81
4,521.00	12.10	70.40	4,519.31	-5.95	37.69	37.65	6.88	4.42	27.44
4,564.00	16.40	71.10	4,560.98	-2.47	47.69	47.67	10.01	10.00	1.63
4,607.00	21.00	73.60	4,601.70	1.67	60.83	60.84	10.86	10.70	5.81
4,649.00	25.60	75.60	4,640.26	6.05	76.84	76.88	11.11	10.95	4.76
4,695.00	31.60	78.10	4,680.63	11.02	98.28	98.36	13.30	13.04	5.43
4,736.00	37.80	80.90	4,714.33	15.22	121.22	121.32	15.61	15.12	6.83
4,779.00	44.50	83.00	4,746.69	19.15	149.23	149.35	15.91	15.58	4.88
4,821.00	51.70	82.80	4,774.72	23.01	180.23	180.38	17.15	17.14	-0.48
4,864.00	58.80	84.20	4,799.21	26.99	215.31	215.49	16.73	16.51	3.26
4,907.00	65.90	87.30	4,819.16	29.78	253.26	253.46	17.70	16.51	7.21
4,949.00	70.60	87.90	4,834.72	31.41	292.23	292.44	11.27	11.19	1.43
4,992.00	74.90	88.40	4,847.47	32.73	333.26	333.48	10.06	10.00	1.16
5,034.00	78.80	88.50	4,857.02	33.84	374.14	374.36	9.29	9.29	0.24
5,080.00	82.80	88.10	4,864.37	35.18	419.52	419.75	8.74	8.70	-0.87
5,123.00	86.80	88.60	4,868.27	36.42	462.32	462.55	9.37	9.30	1.16
5,166.00	89.00	88.60	4,869.85	37.47	505.27	505.51	5.12	5.12	0.00
5,294.00	91.30	88.70	4,869.51	40.48	633.23	633.49	1.80	1.80	0.08
5,422.00	93.10	87.90	4,864.60	44.28	761.07	761.35	1.54	1.41	-0.63
5,551.00	90.60	90.10	4,860.43	46.52	889.96	890.26	2.58	-1.94	1.71
5,679.00	88.30	91.60	4,861.66	44.63	1,017.93	1,018.21	2.15	-1.80	1.17
5,810.00	89.40	91.40	4,864.29	41.20	1,148.86	1,149.11	0.85	0.84	-0.15
5,938.00	88.90	91.60	4,866.19	37.85	1,278.80	1,277.03	0.42	-0.39	0.16
6,070.00	90.80	92.10	4,866.54	33.59	1,408.73	1,408.92	1.49	1.44	0.38
6,196.00	90.00	92.40	4,865.66	28.64	1,534.62	1,534.78	0.68	-0.63	0.24
6,327.00	88.40	92.20	4,867.48	23.38	1,665.50	1,665.62	1.23	-1.22	-0.15
6,455.00	89.10	91.20	4,870.28	19.59	1,793.41	1,793.50	0.95	0.55	-0.78
6,583.00	90.10	90.80	4,871.17	17.35	1,921.39	1,921.46	0.84	0.78	-0.31
6,715.00	89.30	90.50	4,871.86	15.85	2,053.38	2,053.44	0.65	-0.61	-0.23
6,843.00	89.90	89.40	4,872.76	15.97	2,181.37	2,181.43	0.98	0.47	-0.86
6,971.00	90.80	88.50	4,871.97	18.31	2,309.34	2,309.41	0.99	0.70	-0.70
7,098.00	89.80	89.20	4,871.31	20.86	2,436.31	2,436.40	0.96	-0.79	0.55
7,226.00	89.40	89.60	4,872.20	22.20	2,564.30	2,564.40	0.44	-0.31	0.31
7,354.00	89.00	89.60	4,873.99	23.09	2,692.29	2,692.38	0.31	-0.31	0.00
7,482.00	87.40	90.70	4,878.01	22.76	2,820.22	2,820.31	1.52	-1.25	0.86
7,611.00	88.50	90.90	4,882.51	20.96	2,949.12	2,949.20	0.94	0.93	0.16
7,739.00	89.50	89.80	4,884.63	20.18	3,077.10	3,077.17	1.11	0.70	-0.86
7,867.00	88.20	89.60	4,887.20	20.85	3,205.07	3,205.14	1.03	-1.02	-0.16
7,995.00	89.50	88.90	4,889.77	22.52	3,333.03	3,333.11	1.15	1.02	-0.55
8,124.00	90.20	89.70	4,890.11	24.10	3,462.02	3,462.10	0.82	0.54	0.62
8,252.00	91.50	89.40	4,888.21	25.10	3,590.00	3,590.09	1.04	1.02	-0.23

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #53H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3779.00usft (Capstar 114)
Site:	NFE Federal	MD Reference:	KB @ 3779.00usft (Capstar 114)
Well:	#53H	North Reference:	Grid
Wellbore:	WB1 / Job #1513528	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)
8,380.00	89.50	90.40	4,887.09	25.33	3,717.98	3,718.07	1.75	-1.56	0.78
8,511.00	89.20	89.90	4,888.58	24.99	3,848.97	3,849.06	0.45	-0.23	-0.38
8,639.00	89.40	90.00	4,890.14	25.10	3,976.97	3,977.04	0.17	0.16	0.08
8,768.00	88.40	90.10	4,892.62	24.98	4,105.94	4,106.01	0.78	-0.78	0.08
8,896.00	89.30	89.80	4,895.19	25.10	4,233.91	4,233.99	0.74	0.70	-0.23
9,024.00	88.30	89.40	4,897.87	25.99	4,361.88	4,361.96	0.84	-0.78	-0.31
9,152.00	89.80	89.20	4,899.99	27.55	4,489.85	4,489.93	1.18	1.17	-0.16
9,281.00	89.00	89.20	4,901.34	29.35	4,618.83	4,618.92	0.62	-0.62	0.00
9,409.00	88.90	89.50	4,903.69	30.81	4,746.80	4,746.90	0.25	-0.08	0.23
9,537.00	90.00	89.30	4,904.92	32.15	4,874.78	4,874.89	0.87	0.86	-0.16
9,665.00	89.20	89.90	4,905.81	33.04	5,002.78	5,002.88	0.78	-0.63	0.47
9,793.00	91.00	89.80	4,905.59	33.37	5,130.77	5,130.88	1.41	1.41	-0.08
9,921.00	90.70	91.20	4,903.69	32.26	5,258.75	5,258.84	1.12	-0.23	1.09
10,053.00	88.10	91.90	4,905.07	28.69	5,390.68	5,390.75	2.04	-1.97	0.53
10,181.00	89.60	92.20	4,907.64	24.11	5,518.57	5,518.60	1.20	1.17	0.23
10,312.00	86.00	90.30	4,912.67	21.25	5,649.41	5,649.43	3.11	-2.75	-1.45
10,441.00	88.00	89.40	4,919.42	21.59	5,778.23	5,778.24	1.70	1.55	-0.70
10,564.00	89.60	88.90	4,921.99	23.42	5,901.18	5,901.21	1.36	1.30	-0.41
Final Phoenix MWD Survey									
10,637.00	89.60	88.90	4,922.50	24.82	5,974.17	5,974.20	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)	
3,762.68	3,762.58	-11.56	15.37	Tie-on to Phoenix Gyro Survey
3,803.00	3,802.90	-11.68	15.56	First Phoenix MWD Survey
10,564.00	4,921.99	23.42	5,901.18	Final Phoenix MWD Survey
10,637.00	4,922.50	24.82	5,974.17	Projection to TD

Checked By: _____ Approved By: _____ Date: _____