

Results of Directional Survey

DD

API number:	30-025-41728			
OGRID:		Operator:	APACHE CORP	
		Property:	NORTH MONUMENT G/SA UNIT	# 439

surface	ULSTR:	B	32	T 19S	R 37E
				160 FNL	1775 FEL

BH Loc	ULSTR:	O	29	T 19S	R 37E
4000	MD	3944.6	TVD	5 FSL	1338 FEL

Top Perf/OH	ULSTR:	B	32	T 19S	R 37E
3781	MD	3733.0	TVD	14 FNL	1379 FEL

Bot Perf/OH	ULSTR:	B	32	T 19S	R 37E
3899	MD	3846.5	TVD	3 FNL	1350 FEL

	MD	N/S	E/W	VD
	3777	145.70	394.67	3729.13
TOP PERFS/OH	3781	146.07	395.66	3732.99
	3872	154.54	418.13	3820.76
	3872	154.54	418.13	3820.76
BOT PERFS/OH	3899	156.89	424.61	3846.52
	3950	161.32	436.86	3895.17

NEXT TO LAST	3950	161.32	436.86	3895.17
LAST READING	4000	165.49	436.86	3944.56
TD	4000	165.49	436.86	3944.56

Surface Location	160	FN	1775	FE
Projected BHL	5	FS	1338	FE
Location of				
Top Perfs/OH	14	FN	1379	FE
Bottom Perfs/OH	3	FN	1350	FE

SUMMARY of Subsurface Locations

Surface Location	B-32-19S-37E	160	FN	1775	FE	Vert. Depth
Top Perfs/OH	B-32-19S-37E	14	FN	1379	FE	3732.99
Bottom Perfs/OH	B-32-19S-37E	3	FN	1350	FE	3846.52
Projected TD	O-29-19S-37E	5	FS	1338	FE	3944.56

OCT 16 2014

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

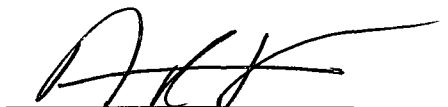
North Monument G/SA Unit #439 *30-025-41728*
Lea County, New Mexico *WL B Sec 32 T19S R 37E 160' FNL 1775' FEL*

300	3.00	0.70	1.23	3.68	3.68
510	2.10	0.90	1.58	3.31	6.98
672	1.62	1.30	2.28	3.69	10.67
1051	3.79	1.20	2.10	7.96	18.63
1241	1.90	0.90	1.58	2.99	21.62

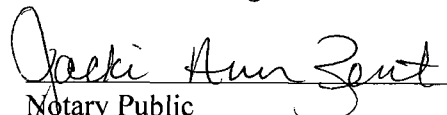
HOBBS OCD

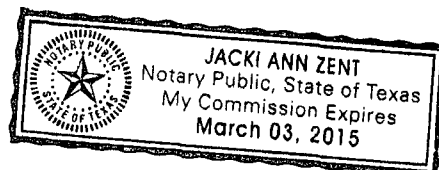
OCT 10 2014

RECEIVED


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 20th day of August, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





PHOENIX
TECHNOLOGY SERVICES

Apache Corporation

**Lea County, NM (NAD83 NME)
NMGSAU
#439**

Wellbore #1 Job #1411369

Survey: Phoenix MWD Survey

Standard Survey Report

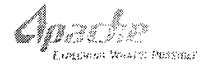
10 August, 2014

Apache
EXPLORING WHAT'S POSSIBLE



Phoenix Technology Services

Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #439
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB: 11' @ 3583.00usft (Capstar 119)
Site:	NMGSAU	MD Reference:	KB: 11' @ 3583.00usft (Capstar 119)
Well:	#439	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1411369	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 119)	Database:	Compass 5000 GCR DB

Project:	Lea County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	NMGSAU
Site Position:	Northing: 582,973.08 usft Latitude: 32° 35' 53.14439 N
From: Map	Easting: 870,597.88 usft Longitude: 103° 15' 51.08348 W
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16 " Grid Convergence: 0.58 °

Well:	#439
Well Position	+N/-S 0.00 usft Northing: 592,193.27 usft Latitude: 32° 37' 24.58020 N
	+E/-W 0.00 usft Easting: 868,443.43 usft Longitude: 103° 16' 15.18728 W
Position Uncertainty	0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,572.00 usft

Wellbore	Wellbore #1 Job #1411369
Magnetics	Model Name Sample Date Declination Dip Angle Field Strength
	BGGM2013 08/05/14 7.20 60.52 48,552

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 Direction
	(usft) (usft) (usft) (°)
	0.00 0.00 0.00 70.87

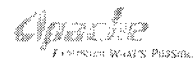
Survey Program	Date 08/10/14
From To	Survey (Wellbore) Tool Name Description
(usft) (usft)	
1,407.00 4,000.00	Phoenix MWD Survey (Wellbore #1 Job #1) PHX+MWD+BGGM PHX+MWD+BGGM v3: standard declination

Survey	
Measured Depth Inclination Azimuth Vertical Depth +N/-S +E/-W Vertical Section Dogleg Rate Build Rate Turn Rate	
(usft) (°) (°) (usft) (usft) (usft) (usft) (°/100usft) (°/100usft) (°/100usft)	
1,262.00 1.04 188.86 1,261.79 -21.90 -0.24 -7.40 0.00 0.00 0.00	
Tie in to Scientific Gyro Surveys	
1,407.00 0.90 216.30 1,406.77 -24.12 -1.12 -8.96 0.33 -0.10 18.92	
First Phoenix MWD Survey	
1,502.00 0.80 88.90 1,501.77 -24.70 -0.90 -8.94 1.60 -0.11 -134.11	
1,597.00 2.80 75.30 1,596.72 -24.10 2.01 -6.00 2.14 2.11 -14.32	
1,692.00 2.50 80.90 1,691.61 -23.19 6.30 -1.64 0.42 -0.32 5.89	
1,786.00 5.30 63.10 1,785.39 -20.90 12.20 4.68 3.21 2.98 -18.94	
1,880.00 5.60 65.80 1,878.97 -17.05 20.26 13.55 0.42 0.32 2.87	
1,975.00 8.70 53.00 1,973.22 -10.83 30.22 25.01 3.65 3.26 -13.47	



Phoenix Technology Services

Survey Report



Company: Apache Corporation
Project: Lea County, NM (NAD83 NME)
Site: NMGSAU
Well: #439
Wellbore: Wellbore #1 Job #1411369
Design: Surveys (Capstar 119)

Local Co-ordinate Reference: Well #439
TVD Reference: KB: 11' @ 3583.00usft (Capstar 119)
MD Reference: KB: 11' @ 3583.00usft (Capstar 119)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 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)
2,069.00	9.00	53.70	2,066.10	-2.20	41.83	38.80	0.34	0.32	0.74
2,164.00	12.10	55.70	2,159.49	7.82	56.04	55.51	3.29	3.26	2.11
2,259.00	12.40	57.90	2,252.32	18.85	72.91	75.06	0.58	0.32	2.32
2,354.00	14.10	69.70	2,344.81	28.29	92.41	96.58	3.35	1.79	12.42
2,449.00	13.80	70.30	2,437.01	36.12	113.93	119.48	0.35	-0.32	0.63
2,544.00	12.20	71.30	2,529.57	43.16	134.11	140.84	1.70	-1.68	1.05
2,639.00	10.30	71.20	2,622.74	49.11	151.66	159.38	2.00	-2.00	-0.11
2,734.00	8.90	68.10	2,716.41	54.59	166.52	175.21	1.57	-1.47	-3.26
2,828.00	10.80	69.10	2,809.02	60.45	181.49	191.28	2.03	2.02	1.06
2,924.00	11.40	72.90	2,903.22	66.45	198.96	209.75	0.99	0.63	3.96
3,019.00	12.40	77.70	2,996.18	71.38	217.90	229.26	1.48	1.05	5.05
3,113.00	13.60	72.70	3,087.77	76.82	238.32	250.33	1.75	1.28	-5.32
3,209.00	12.60	69.20	3,181.27	83.89	258.88	272.08	1.33	-1.04	-3.65
3,304.00	12.80	66.20	3,273.95	91.82	278.20	292.92	0.73	0.21	-3.16
3,398.00	16.70	63.90	3,364.84	101.96	299.86	316.72	4.19	4.15	-2.45
3,493.00	16.40	62.70	3,455.90	114.12	324.04	343.54	0.48	-0.32	-1.26
3,588.00	15.30	62.80	3,547.29	126.00	347.10	369.23	1.16	-1.16	0.11
3,682.00	16.20	68.90	3,637.76	136.39	370.37	394.61	2.00	0.96	6.49
3,777.00	15.60	69.20	3,729.13	145.70	394.67	420.63	0.64	-0.63	0.32
3,872.00	15.00	69.50	3,820.76	154.54	418.13	445.69	0.64	-0.63	0.32
3,950.00	14.60	70.70	3,896.17	161.32	436.86	465.61	0.65	-0.51	1.54
Final Phoenix MWD Survey									
4,000.00	14.60	70.70	3,944.56	165.49	448.76	478.21	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)	
1,262.00	1,261.79	-21.90	-0.24	Tie in to Scientific Gyro Surveys
1,407.00	1,406.77	-24.12	-1.12	First Phoenix MWD Survey
3,950.00	3,896.17	161.32	436.86	Final Phoenix MWD Survey
4,000.00	3,944.56	165.49	448.76	Projection to TD

Checked By: _____

Approved By: _____

Date: _____