

Results of Directional Survey

API number:	30-025-41751	D	
OGRID:		Operator:	APACHE CORP
		Property:	NORTH MONUMENT G/SA UNIT # 435

surface	ULSTR:	I	29	T 19S	R 37E
				2498 FSL	180 FEL

BH Loc	ULSTR:	H	29	T 19S	R 37E
3982	MD	3965.6	TVD	2574 FNL	4 FEL
				2706 FSL	

Top Perf/OH	ULSTR:	H	29	T 19S	R 37E
3758	MD	3742.3	TVD	2587 FNL	16 FEL
				2693 FSL	

Bot Perf/OH	ULSTR:	H	29	T 19S	R 37E
3938	MD	3921.7	TVD	2576 FNL	6 FEL
				2704 FSL	

	MD	N/S	E/W	VD
	3459	177.15	146.72	3444.38
TOP PERFS/OH	3758	195.10	163.76	3742.33
	3932	205.54	173.68	3915.72
	3932	205.54	173.68	3915.72
BOT PERFS/OH	3938	205.81	173.95	3921.71
	3982	207.77	175.89	3965.62

NEXT TO LAST	3932	205.54	173.68	3915.72
LAST READING	3982	207.77	175.89	3965.62
TD	3982	207.77	175.89	3965.62

Surface Location	2498	FS	180	FE
Projected BHL	2706	FS	4	FE
Location of				
Top Perfs/OH	2693	FS	16	FE
Bottom Perfs/OH	2704	FS	6	FE

SUMMARY of Subsurface Locations

Surface Location	I-29-19S-37E	2498	FS	180	FE	Vert. Depth
Top Perfs/OH	H-29-19S-37E	2693	FS	16	FE	3742.33
Bottom Perfs/OH	H-29-19S-37E	2704	FS	6	FE	3921.71
Projected TD	H-29-19S-37E	2706	FS	4	FE	3965.62



PHOENIX
TECHNOLOGY SERVICES

HOBBS OCD

SEP 25 2014

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Apache Corporation

Lea County, NM (NAD83 NME)

NMGSAU

#435

Wellbore #1 Job #1411196

Survey: Phoenix MWD Surveys

Planning Report

18 July, 2014

Apache
EXPLORING WHAT'S POSSIBLE



Phoenix Technology Services Planning Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #435
Project:	Lea County NM (NAD83 NME)	TVD Reference:	KB: 11' @ 3625.00usft (Capstar 119)
Site:	NMGSAU	MD Reference:	KB: 11' @ 3625.00usft (Capstar 119)
Well:	#435	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1411196	Survey Calculation Method:	Minimum Curvature
Design:	Capstar 119 (Surveys)	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
From:	Map	Easting:	870,597.88 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 35' 53.14439 N
		Longitude:	103° 15' 51.08348 W
		Grid Convergence:	0.58 °

Well	#435					
Well Position	+N-S	0.00 usft	Northing:	594,883.34 usft	Latitude:	32° 37' 51.03760 N
	+E-W	0.00 usft	Easting:	870,031.44 usft	Longitude:	103° 15' 56.30556 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,614.00 usft

Wellbore	Wellbore #1 Job #1411196				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	BGGM2013	2014/07/03	7.21	60.53	48,568

Design	Capstar 119 (Surveys)			
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	40.63

Survey Program	Date	2014/07/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
1,439.00	3,982.00	Phoenix MWD Surveys (Wellbore #1 Job #	PHX+MWD+BGGM	PHX+MWD+BGGM v3:standard declination

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #435
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB: 11' @ 3625.00usft (Capstar 119)
Site:	NMGSAU	MD Reference:	KB: 11' @ 3625.00usft (Capstar 119)
Well:	#435	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1411196	Survey Calculation Method:	Minimum Curvature
Design:	Capstar 119 (Surveys)	Database:	Compass 5000 GCR DB

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)
0.00	0.00	0.00	-3,625.00	0.00	0.00	0.00	594,883.34	870,031.44	0.00	0.00
1,439.00	0.40	271.90	-2,186.01	1,438.99	0.17	-5.02	594,883.51	870,026.42	-3.14	0.03
First Phoenix MWD Survey										
1,692.00	5.10	42.30	-1,933.33	1,691.67	8.52	1.67	594,891.86	870,033.12	7.55	2.12
1,945.00	8.00	37.30	-1,682.01	1,942.99	30.85	19.91	594,914.19	870,051.36	36.38	1.17
2,198.00	8.20	39.80	-1,431.53	2,193.47	58.71	42.13	594,942.06	870,073.57	71.99	0.16
2,449.00	8.20	34.90	-1,183.09	2,441.91	87.15	63.83	594,970.49	870,095.27	107.70	0.28
2,702.00	7.30	40.30	-932.40	2,692.60	114.20	84.55	594,997.55	870,115.99	141.73	0.46
2,954.00	6.50	41.20	-682.23	2,942.77	137.15	104.30	595,020.49	870,135.74	172.00	0.32
3,206.00	7.10	50.80	-432.00	3,193.00	157.72	125.76	595,041.07	870,157.21	201.59	0.51
3,459.00	5.90	42.80	-180.62	3,444.38	177.15	146.72	595,060.49	870,178.16	229.98	0.59
3,932.00	3.60	44.70	290.72	3,915.72	205.54	173.68	595,088.89	870,205.13	269.09	0.49
Final Phoenix MWD Survey										
3,982.00	3.60	44.70	340.62	3,965.62	207.77	175.89	595,091.12	870,207.34	272.22	0.00
Projection to TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,439.00	1,438.99	0.17	-5.02	First Phoenix MWD Survey	
3,932.00	3,915.72	205.54	173.68	Final Phoenix MWD Survey	
3,982.00	3,965.62	207.77	175.89	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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