

Results of Directional Survey

DD

API number:	30-025-41037		
OGRID:		Operator:	APACHE CORP
		Property:	NORTH MONUMENT G/SA UNIT # 385

surface	ULSTR:	I	19	T	19S	R	37E
				1330	FSL	1130	FEL

BH Loc	ULSTR:	O	19	T	19S	R	37E
4114	MD	4106.5	TVD	1281	FSL	1329	FEL

Top Perf/OH	ULSTR:	P	19	T	19S	R	37E
3849	MD	3843.0	TVD	1288	FSL	1302	FEL

Bot Perf/OH	ULSTR:	P	19	T	19S	R	37E
3940	MD	3933.6	TVD	1285	FSL	1309	FEL

	MD	N/S	E/W	VD
	3787	-39.92	-166.64	3781.25
TOP PERFS/OH	3849	-42.18	-171.53	3843.01
	3915	-44.58	-176.73	3908.76
	3915	-44.58	-176.73	3908.76
BOT PERFS/OH	3940	-45.13	-179.42	3933.61
	4065	-47.89	-192.84	4057.85

NEXT TO LAST	4065	-47.89	-192.84	4057.85
LAST READING	4114	-48.84	-198.57	4106.51
TD	4114	-48.84	-198.57	4106.51

Surface Location	1330	FS	1130	FE
Projected BHL	1281	FS	1329	FE
Location of				
Top Perfs/OH	1288	FS	1302	FE
Bottom Perfs/OH	1285	FS	1309	FE

SUMMARY of Subsurface Locations

Surface Location	I-19-19S-37E	1330	FS	1130	FE	Vert. Depth
Top Perfs/OH	P-19-19S-37E	1288	FS	1302	FE	3843.01
Bottom Perfs/OH	P-19-19S-37E	1285	FS	1309	FE	3933.61
Projected TD	O-19-19S-37E	1281	FS	1329	FE	4106.51

OCT 22 2013

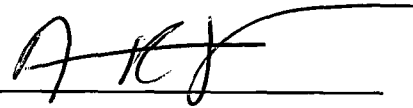
Apache Corporation
303 Veterans Airpark Lane, #3000
Midland, TX 79705

North Monument G/SA Unit #385
Lea County, New Mexico

API 30-025-410347

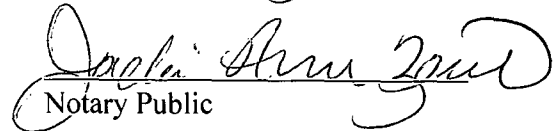
SL 1330' FSL - 1130' FSL; I-19-195-374,

250	2.50	0.30	0.53	1.31	1.31
503	2.53	0.50	0.88	2.21	3.53
750	2.47	0.20	0.35	0.86	4.39
1220	4.70	0.20	0.35	1.65	6.04
1354	1.34	0.40	0.70	0.94	6.97
1531	1.77	2.90	5.08	8.98	15.96
1658	1.27	3.80	6.65	8.45	24.40
1786	1.28	3.80	6.65	8.51	32.91
1914	1.28	5.00	8.75	11.20	44.11
2043	1.29	4.80	8.40	10.84	54.95
2378	3.35	2.30	4.03	13.48	68.43
2764	3.86	2.40	4.20	16.21	84.65
3068	3.04	3.90	6.83	20.75	105.39
3276	2.08	4.00	7.00	14.56	119.95
3404	1.28	4.80	8.40	10.75	130.71
3531	1.27	5.40	9.45	12.00	142.71
3659	1.28	5.10	8.93	11.42	154.13
3787	1.28	4.40	7.70	9.86	163.99
3915	1.28	5.80	10.15	12.99	176.98
4065	1.50	6.80	11.90	17.85	194.83



Archie Brown - General Manager

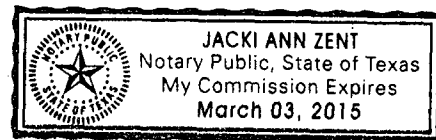
The attached instrument was acknowledged before me on the 15th day of May, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public

HOBBS OCD

OCT 03 2013

RECEIVED





HOBBS OCD

OCT 03 2013

RECEIVED

Apache Corporation

Lea County, NM (NAD83 NME)

NMGSAU

#385

OH / Job #1310453

Survey: Phoenix MWD Survey

Phoenix Final Survey Report

11 May, 2013

API # 30-025-41037





Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #385
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3693.00usft (Capstar 120)
Site:	NMGSAU	MD Reference:	KB @ 3693.00usft (Capstar 120)
Well:	#385	North Reference:	True
Wellbore:	OH / Job #1310453	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	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' 53.144390 N
		Longitude:	103° 15' 51.083479 W
		Grid Convergence:	0.58 °

Well	#385		
Well Position	+N/-S	0.00 usft	Northing: 598,975.90 usft
	+E/-W	0.00 usft	Easting: 863,769.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 38' 32.145028 N
		Longitude:	103° 17' 9.049237 W
		Ground Level:	3,682.00 usft

Wellbore	OH / Job #1310453				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	04/18/13	7.25	60.58	48,713

Design		Surveys (Capstar 120)		
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	264.22

Survey Program	Date	05/11/13			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,482.00	4,114.00	Phoenix MWD Survey (OH / Job #1310453)	MWD	MWD - Standard	

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,354.00	2.65	248.80	1,353.52	-11.32	-29.18	30.17	0.20	
Phoenix First MWD Survey								
1,482.00	2.90	248.80	1,481.37	-13.56	-34.96	36.15	0.20	
1,610.00	3.80	253.30	1,609.15	-15.95	-42.04	43.43	0.73	
1,738.00	3.80	352.70	1,736.98	-12.96	-46.65	47.71	4.53	
1,866.00	5.00	278.00	1,864.69	-7.97	-52.71	53.25	4.23	
1,994.00	4.80	279.50	1,992.22	-6.31	-63.52	63.83	0.19	
2,122.00	3.10	271.60	2,119.91	-5.33	-72.26	72.43	1.39	
2,250.00	2.80	278.00	2,247.74	-4.80	-78.82	78.90	0.35	
2,378.00	2.30	279.80	2,375.61	-3.93	-84.44	84.41	0.40	
2,507.00	3.50	275.50	2,504.45	-3.11	-90.92	90.77	0.94	



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #385
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3693.00usft (Capstar 120)
Site:	NMGSAU	MD Reference:	KB @ 3693.00usft (Capstar 120)
Well:	#385	North Reference:	True
Wellbore:	OH / Job #1310453	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,635.00	2.90	271.60	2,632.25	-2.64	-98.04	97.81	0.50
2,763.00	2.40	243.70	2,760.11	-3.74	-103.68	103.53	1.07
2,891.00	3.30	227.60	2,887.96	-7.41	-108.80	109.00	0.93
3,019.00	3.90	221.70	3,015.70	-13.15	-114.42	115.16	0.55
3,147.00	4.20	227.40	3,143.38	-19.57	-120.77	122.12	0.39
3,275.00	4.00	231.50	3,271.06	-25.52	-127.71	129.63	0.28
3,403.00	4.80	231.10	3,398.68	-31.66	-135.37	137.87	0.63
3,531.00	5.40	270.40	3,526.21	-34.99	-145.57	148.35	2.71
3,659.00	5.10	260.40	3,653.68	-35.89	-157.20	160.01	0.75
3,787.00	4.40	231.20	3,781.25	-39.92	-166.64	169.81	1.94
3,915.00	5.80	255.80	3,908.76	-44.58	-176.73	180.33	2.00
4,065.00	6.80	260.60	4,057.85	-47.89	-192.84	196.69	0.75
Phoenix Last MWD Survey							
4,114.00	6.80	260.60	4,106.51	-48.84	-198.57	202.48	0.00
Projection to TD							

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,354.00	1,353.52	-11.32	-29.18	Phoenix First MWD Survey
4,065.00	4,057.85	-47.89	-192.84	Phoenix Last MWD Survey
4,114.00	4,106.51	-48.84	-198.57	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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PHOENIX TECHNOLOGY SERVICES INC.
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 1310453

OPERATOR Apache Corp

WELL NAME NMGSAU #385

COUNTY & STATE

LEA COUNTY

API WELL NUMBER	30-025-41037
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PROPOSED DIRECTION	264.22
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TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
ft	0.00	. ft	0	0.00 N	0.00 E	PHOENIX MWD

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
08-May-13	1,354 ft	0.4	114.2

SURVEY INSTRUMENT
TYPE
PHOENIX MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
09-May-13	4,065 ft	6.8	260.6

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
09 May 13	4,114 ft	6.8	260.6

JIA LEWIS

PRINT YOUR NAME ABOVE

Jia Lewis

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.25
DECLINATION OR GRID	DEC

05/09/13

TODAY'S DATE

MWD SUPERVISOR 1 Jia Lewis

DIRECTIONAL DRILLER 1

TRAVIS GIBSON

MWD SUPERVISOR 2 NONE

DIRECTIONAL DRILLER 2

NONE

1805 Brittmore Road

Houston, Texas 77043

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