

Results of Directional Survey

DD

API number:	30-025-40789		
OGRID:		Operator:	APACHE CORP
		Property:	NORTHEAST DRINKARD UNIT # 428

surface	ULSTR:	K	10	T	21S	R	37E
				2245	FSL	1815	FWL

BH Loc	ULSTR:	K	10	T	21S	R	37E
6971	MD	6949.5	TVD	2602	FSL	2139	FWL

Top Perf/OH	ULSTR:	K	10	T	21S	R	37E
5729	MD	5712.3	TVD	2520	FSL	2068	FWL

Bot Perf/OH	ULSTR:	K	10	T	21S	R	37E
6765	MD	6744.0	TVD	2590	FSL	2130	FWL

	MD	N/S	E/W	VD
	5728	274.52	253.27	5711.29
TOP PERFS/OH	5729	274.60	253.33	5712.29
	5813	281.00	258.33	5795.89
	6752	344.66	313.91	6731.06
BOT PERFS/OH	6765	345.44	314.56	6744.02
	6837	349.77	318.19	6815.80

NEXT TO LAST	6917	353.84	321.69	6895.62
LAST READING	6971	356.90	324.07	6949.50
TD	6971	356.90	324.07	6949.50

Surface Location	2245	FS	1815	FW
Projected BHL	2602	FS	2139	FW
Location of				
Top Perfs/OH	2520	FS	2068	FW
Bottom Perfs/OH	2590	FS	2130	FW

SUMMARY of Subsurface Locations

Surface Location	K-10-21S-37E	2245	FS	1815	FW	Vert. Depth
Top Perfs/OH	K-10-21S-37E	2520	FS	2068	FW	5712.29
Bottom Perfs/OH	K-10-21S-37E	2590	FS	2130	FW	6744.02
Projected TD	K-10-21S-37E	2602	FS	2139	FW	6949.50

MAY 23 2013

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

Northeast Drinkard Unit #428
Lea County, New Mexico

30-025-40789
2245' FSL+ 1815' FWL

K-10-21S-37E

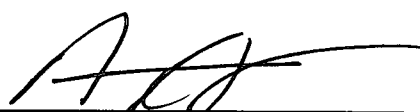
236	2.36	1.10	1.93	4.54	4.54
500	2.64	0.50	0.88	2.31	6.85
750	2.50	0.90	1.58	3.94	10.79
1000	2.50	0.40	0.70	1.75	12.54
1250	2.50	0.60	1.05	2.63	15.17
1272	0.22	0.50	0.88	0.19	15.36

SUR: K - 10-21s-37e, 2245/S & 1815/W
BHL: K - 10-21s-37e, 2602/S & 2139/W
API # 30-025-40789

HOBBS OCD

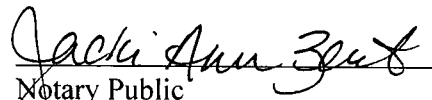
MAY 06 2013

RECEIVED

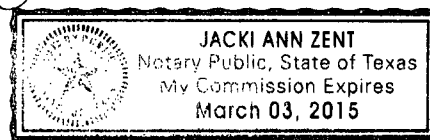


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 20th day of March, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.



Notary Public



HOBBS OCD

MAY 06 2013

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Apache Corporation (873)

Lea County, NM (NAD83 NME)

Northeast Drinkard Unit #428 30-025-40789

Wellbore #1 / Job #1310227

2245' FSL + 1815' FWL
K-10-21S-37E

Survey: Phoenix MWD Survey

SUR: K - 10-21s-37e, 2245/S & 1815/W
BHL: K - 10-21s-37e, 2602/S & 2139/W
API # 30-025-40789

Phoenix Final Survey Report

08 March, 2013





Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #428
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	RF @ 3468.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3468.00usft (Capstar 120)
Well:	#428	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310227	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	Northeast Drinkard Unit		
Site Position:		Northing:	549,246.17 usft
From:	Map	Easting:	907,874.81 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 30' 15.552341 N
		Longitude:	103° 8' 39.810230 W
		Grid Convergence:	0.64 °

Well	#428		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 29' 32.499168 N
		Longitude:	103° 9' 12.904419 W
		Ground Level:	3,457.00 usft

Wellbore	Wellbore #1 / Job #1310227		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010_14	02/27/13	7.20
			Dip Angle (°)
			60.46
			Field Strength (nT)
			48,652

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)
	0.00	0.00	0.00
			Direction (°)
			42.60



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Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3468.00usft (Capstar 120)
Well:	#428	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310227	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey Program	Date	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
	03/08/13	100.00	1,265.00	SDI Gyro Survey (Wellbore #1 / Job #1310	Keeper	Keeper Standard Rate Gyro
		1,336.00	6,971.00	Phoenix MWD Survey (Wellbore #1 / Job #	MWD	MWD - Standard

MD (usft)	Inc (")	Azi (azimuth) (")	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (")/100usft)	Northing (usft)	Easting (usft)
1,265.00	0.86	153.19	2,203.12	1,264.88	-8.07	12.31	2.39	0.00	544,855.50	905,101.05
Tie-on to SDI Gyro										
1,336.00	0.80	127.00	2,132.13	1,335.87	-8.84	12.95	2.25	0.54	544,854.72	905,101.68
Phoenix First MWD Survey										
1,401.00	0.80	71.20	2,067.13	1,400.87	-8.97	13.74	2.70	1.15	544,854.60	905,102.47
1,463.00	1.60	57.80	2,005.15	1,462.85	-8.37	14.88	3.91	1.36	544,855.20	905,103.62
1,527.00	2.20	43.60	1,941.18	1,526.82	-7.01	16.48	6.00	1.18	544,856.56	905,105.22
1,591.00	4.60	35.10	1,877.30	1,590.70	-4.02	18.81	9.77	3.82	544,859.55	905,107.54
1,655.00	5.10	35.50	1,813.53	1,654.47	0.40	21.94	15.14	0.78	544,863.97	905,110.67
1,719.00	4.90	37.10	1,749.77	1,718.23	4.90	25.24	20.69	0.38	544,868.46	905,113.97
1,804.00	5.40	34.60	1,665.11	1,802.89	11.08	29.70	28.26	0.64	544,874.65	905,118.43
1,889.00	5.50	47.60	1,580.50	1,887.50	17.12	34.98	36.28	1.45	544,880.69	905,123.71
1,975.00	4.40	49.30	1,494.82	1,973.18	22.05	40.52	43.66	1.29	544,885.62	905,129.26
2,060.00	4.70	52.90	1,410.09	2,057.91	26.28	45.77	50.33	0.49	544,889.85	905,134.51
2,145.00	4.80	50.60	1,325.38	2,142.62	30.64	51.30	57.27	0.25	544,894.20	905,140.03
2,231.00	5.10	53.90	1,239.70	2,228.30	35.17	57.16	64.59	0.48	544,898.74	905,145.90
2,316.00	5.40	56.20	1,155.05	2,312.95	39.62	63.54	72.18	0.43	544,903.19	905,152.28
2,402.00	4.20	48.70	1,069.36	2,398.64	43.95	69.27	79.24	1.57	544,907.52	905,158.01
2,487.00	4.10	25.80	984.57	2,483.43	48.75	72.93	85.25	1.94	544,912.31	905,161.67
2,572.00	3.80	26.70	899.78	2,568.22	54.00	75.52	90.86	0.36	544,917.56	905,164.25
2,657.00	4.40	32.90	814.99	2,653.01	59.25	78.56	96.79	0.88	544,922.82	905,167.29
2,742.00	3.80	29.60	730.21	2,737.79	64.44	81.72	102.75	0.76	544,928.00	905,170.45



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #428
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	RF @ 3468.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3468.00usft (Capstar 120)
Well:	#428	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310227	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,828.00	5.10	40.60	644.47	2,823.53	69.82	85.61	109.34	1.80	544,933.39	905,174.35	
2,913.00	4.30	42.70	559.76	2,908.24	75.03	90.23	116.31	0.96	544,938.60	905,178.97	
2,998.00	4.90	35.70	475.03	2,992.97	80.32	94.51	123.10	0.97	544,943.89	905,183.25	
3,084.00	5.20	37.50	389.36	3,078.64	86.39	99.03	130.62	0.39	544,949.96	905,187.76	
3,169.00	5.00	38.60	304.70	3,163.30	92.34	103.68	138.16	0.26	544,955.91	905,192.42	
3,255.00	5.80	36.80	219.08	3,248.92	98.75	108.63	146.22	0.95	544,962.32	905,197.36	
3,340.00	5.40	33.90	134.49	3,333.51	105.51	113.43	154.44	0.58	544,969.08	905,202.16	
3,425.00	4.80	30.00	49.83	3,418.17	111.91	117.44	161.87	0.81	544,975.48	905,206.17	
3,511.00	5.70	38.00	-35.81	3,503.81	118.39	121.87	169.64	1.35	544,981.96	905,210.60	
3,596.00	5.50	38.60	-120.41	3,588.41	124.90	127.01	177.91	0.25	544,988.47	905,215.74	
3,681.00	5.40	38.80	-205.02	3,673.02	131.20	132.05	185.96	0.12	544,994.77	905,220.79	
3,767.00	5.00	40.30	-290.67	3,758.67	137.22	137.01	193.75	0.49	545,000.78	905,225.75	
3,852.00	4.80	38.70	-375.36	3,843.36	142.82	141.63	200.99	0.28	545,006.38	905,230.37	
3,937.00	5.90	41.60	-459.99	3,927.99	148.86	146.76	208.91	1.33	545,012.43	905,235.49	
4,022.00	5.80	40.70	-544.55	4,012.55	155.38	152.46	217.57	0.16	545,018.95	905,241.19	
4,108.00	5.60	43.40	-630.12	4,098.12	161.72	158.18	226.11	0.39	545,025.29	905,246.91	
4,193.00	5.40	41.90	-714.73	4,182.73	167.71	163.70	234.26	0.29	545,031.28	905,252.43	
4,278.00	5.40	43.20	-799.35	4,267.35	173.61	169.11	242.25	0.14	545,037.17	905,257.84	
4,363.00	5.40	46.40	-883.97	4,351.97	179.28	174.74	250.25	0.35	545,042.85	905,263.47	
4,448.00	5.20	45.10	-968.61	4,436.61	184.76	180.36	258.08	0.27	545,048.33	905,269.10	
4,534.00	5.10	49.30	-1,054.26	4,522.26	190.00	186.02	265.77	0.45	545,053.57	905,274.76	
4,619.00	5.10	48.00	-1,138.93	4,606.93	194.99	191.69	273.29	0.14	545,058.56	905,280.43	
4,704.00	5.20	48.10	-1,223.58	4,691.58	200.09	197.37	280.88	0.12	545,063.66	905,286.10	
4,790.00	4.80	49.50	-1,309.26	4,777.26	205.03	203.01	288.33	0.49	545,068.60	905,291.74	
4,875.00	5.20	36.50	-1,393.94	4,861.94	210.44	208.00	295.70	1.41	545,074.01	905,296.74	
4,960.00	5.10	33.70	-1,478.59	4,946.59	216.68	212.39	303.26	0.32	545,080.25	905,301.12	
5,045.00	4.80	34.30	-1,563.28	5,031.28	222.76	216.49	310.51	0.36	545,086.33	905,305.22	



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Wellbore:	Wellbore #1 / Job #1310227	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)		
5,130.00	6.20	37.60	-1,647.88	5,115.88	229.33	221.29	318.60	1.69	545,092.90	905,310.03		
5,216.00	5.80	37.30	-1,733.41	5,201.41	236.47	226.76	327.55	0.47	545,100.04	905,315.50		
5,301.00	5.70	36.50	-1,817.98	5,285.98	243.28	231.87	336.03	0.15	545,106.85	905,320.61		
5,386.00	5.70	33.50	-1,902.56	5,370.56	250.19	236.72	344.39	0.35	545,113.76	905,325.45		
5,472.00	5.20	34.20	-1,988.18	5,456.18	256.98	241.26	352.47	0.59	545,120.55	905,330.00		
5,557.00	4.60	31.40	-2,072.86	5,540.86	263.07	245.20	359.62	0.76	545,126.64	905,333.94		
5,642.00	4.30	35.60	-2,157.61	5,625.61	268.57	248.83	366.13	0.52	545,132.14	905,337.57		
5,728.00	5.60	37.50	-2,243.29	5,711.29	274.52	253.27	373.51	1.52	545,138.09	905,342.00		
5,813.00	5.50	38.60	-2,327.89	5,795.89	281.00	258.33	381.70	0.17	545,144.57	905,347.07		
5,898.00	5.10	38.50	-2,412.52	5,880.52	287.14	263.23	389.53	0.47	545,150.71	905,351.96		
5,983.00	5.10	40.00	-2,497.19	5,965.19	292.99	268.01	397.08	0.16	545,156.56	905,356.74		
6,068.00	5.00	37.30	-2,581.86	6,049.86	298.83	272.68	404.54	0.30	545,162.40	905,361.41		
6,154.00	5.70	41.40	-2,667.48	6,135.48	305.01	277.77	412.54	0.93	545,168.58	905,366.51		
6,240.00	4.90	38.60	-2,753.11	6,221.11	311.09	282.89	420.47	0.98	545,174.66	905,371.63		
6,325.00	4.40	40.00	-2,837.83	6,305.83	316.42	287.25	427.35	0.60	545,179.99	905,375.99		
6,410.00	5.70	45.50	-2,922.50	6,390.50	321.88	292.36	434.82	1.63	545,185.45	905,381.09		
6,496.00	5.30	44.20	-3,008.11	6,476.11	327.72	298.17	443.06	0.49	545,191.29	905,386.91		
6,581.00	5.40	44.50	-3,092.74	6,560.74	333.39	303.71	450.98	0.12	545,196.96	905,392.45		
6,667.00	5.00	41.40	-3,178.38	6,646.38	339.09	309.03	458.77	0.57	545,202.65	905,397.76		
6,752.00	5.00	41.00	-3,263.06	6,731.06	344.66	313.91	466.18	0.04	545,208.23	905,402.64		
6,837.00	4.00	38.70	-3,347.80	6,815.80	349.77	318.19	472.84	1.20	545,213.34	905,406.93		
6,917.00	3.70	42.90	-3,427.62	6,895.62	353.84	321.69	478.21	0.51	545,217.40	905,410.43		
Phoenix Last MWD Survey												
6,971.00	3.70	42.90	-3,481.50	6,949.50	356.39	324.07	481.69	0.00	545,219.96	905,412.80		
Projection to Bit												



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #428
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	RF @ 3468.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3468.00usft (Capstar 120)
Well:	#428	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310227	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,265.00	1,264.88	-8.07	12.31	Gyro Tie-on SDI Gyro
1,336.00	1,335.87	-8.84	12.95	Phoenix First MWD Survey
6,917.00	6,895.62	353.84	321.69	Phoenix Last MWD Survey
6,971.00	6,949.50	356.39	324.07	Projection to Bit

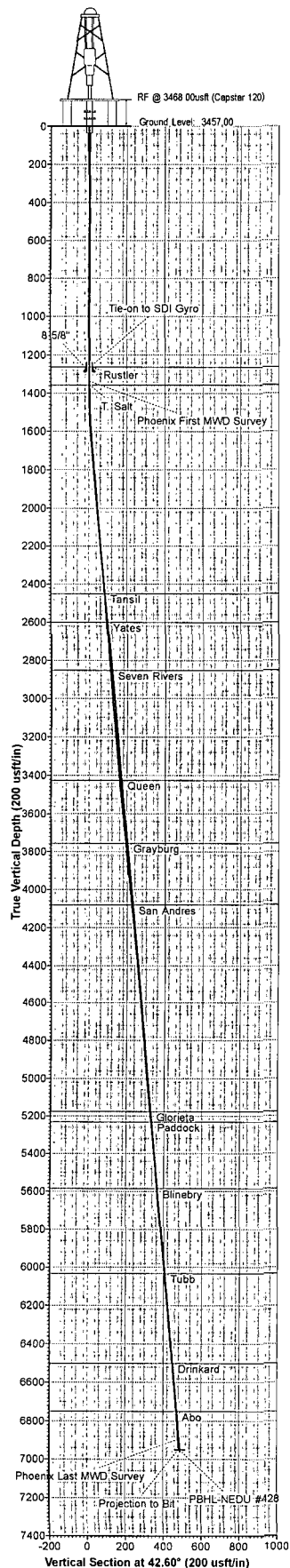
Checked By: _____	Approved By: _____	Date: _____
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Project: Lea County, NM (NAD83 NME)
 Site: Northeast Drinkard Unit
 Well: #428
 Wellbore: Wellbore #1 / Job #1310227
 Design: Plan #3 03-02-13



Map System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone Name: New Mexico Eastern Zone
 Local Origin: Well #428, Grid North
 Latitude: 32° 29' 32.499168 N
 Longitude: 103° 9' 12.904419 W
 Grid East: 905088.73
 Grid North: 544863.57
 Scale Factor: 1.000
 Geomagnetic Model: IGRF2010_14
 Sample Date: 27-Feb-13
 Magnetic Declination: 7.20°
 Dip Angle from Horizontal: 60.46°
 Magnetic Field Strength: 48652
 To convert a Magnetic Direction to a Grid Direction, Add 6.56°
 To convert a Magnetic Direction to a True Direction, Add 7.20° East
 To convert a True Direction to a Grid Direction, Subtract 0.63°



WELL DETAILS							
	+N/-S	+E/-W	North	Ground Level: Easting	3457.00	Latitude	Longitude
	0.00	0.00	544863.57	905088.73	32° 29' 32.499168 N	103° 9' 12.904419 W	

SECTION DETAILS											
Sec	MD	Inc	Asl	TVD	+N/-S	+E/-W	Dlog	TFace	Vsect	Target	Annotation
1	1265.00	0.86	153.19	1264.88	-8.07	12.31	0.00	0.00	2.38		Gyro Tie On/Start 122.00 hold at 1265.00 MD
2	1387.00	0.86	153.19	1386.87	-9.71	13.14	0.00	0.00	1.75		KOP/Start DLS 2.00 TFO -120.95
3	1663.43	5.14	40.47	1662.94	-2.13	22.12	2.00	-120.95	13.40		Start 5308.40 hold at 1663.43 MD
4	6971.83	5.14	40.47	6950.00	359.64	330.73	0.00	0.00	488.59	PBHL-NEDU #428	TD at 6971.83

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	North	Easting	Latitude	Longitude
PBHL-NEDU #428	6950.00	359.64	330.73	545223.20	905419.482° 29' 36.021025 N	103° 9' 8.997046 W	Circle (Radius: 25.00)

PROJECT DETAILS: Lea County, NM (NAD83 NME)
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone
 System Datum: Mean Sea Level

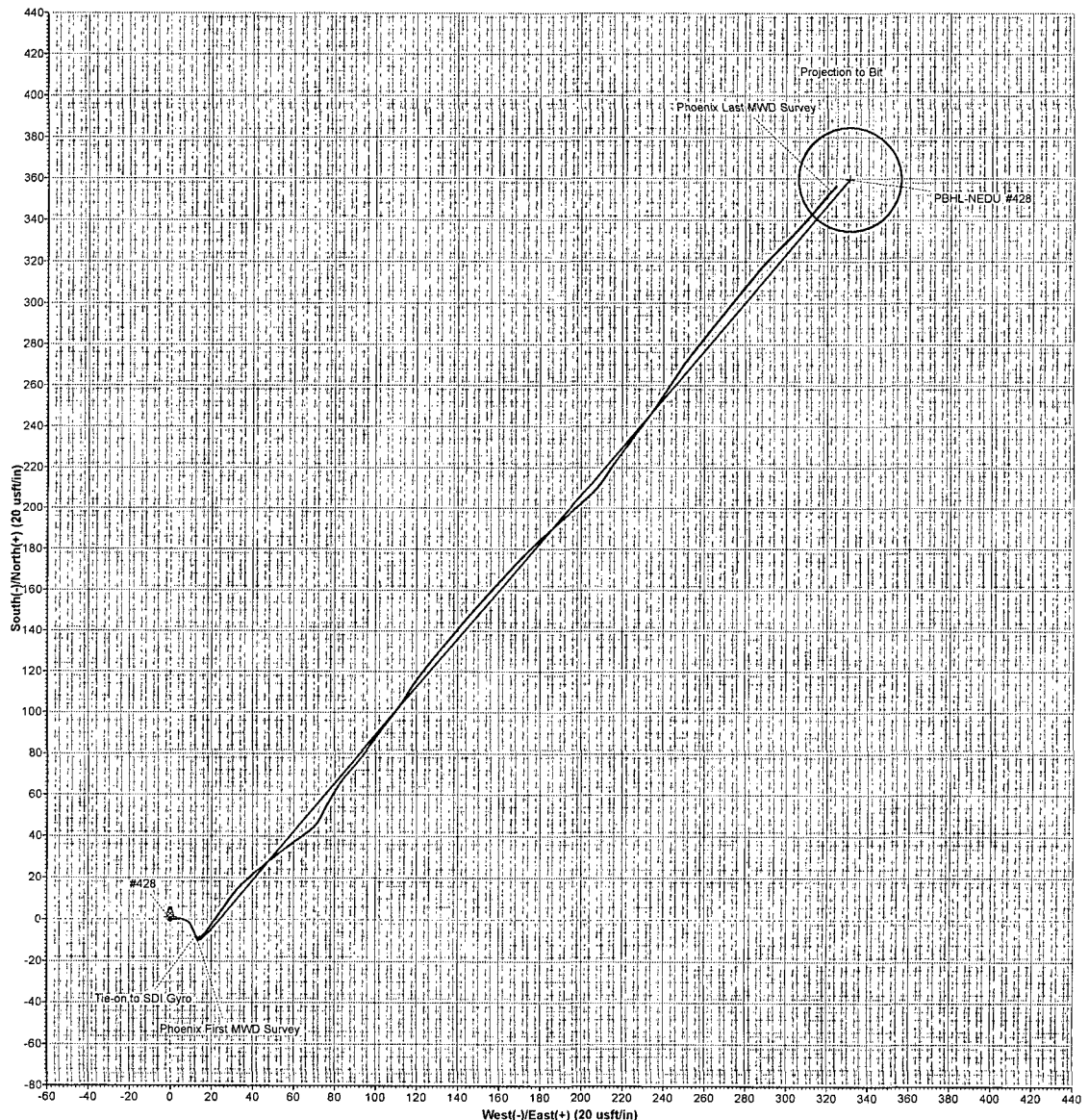
SITE DETAILS: Northeast Drinkard Unit
 Site Centre Northing: 549246.17
 Easting: 907874.81
 Positional Uncertainty: 0.00
 Convergence: 0.64
 Local North: Grid

CASING DETAILS			
TVD	MD	Name	Size
1287.00	1287.12	8 5/8"	8 5/8"

LEGEND
 — #428, Wellbore #1 / Job #1310227, Surveys (Capstar 120) VO
 — Plan #3 03-02-13

Map System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone Name: New Mexico Eastern Zone
 Local Origin: Well #428, Grid North
 Latitude: 32° 29' 32.499168 N
 Longitude: 103° 9' 12.904419 W
 Grid East: 905088.73
 Grid North: 544863.57
 Scale Factor: 1.000
 Geomagnetic Model: IGRF2010_14
 Sample Date: 27-Feb-13
 Magnetic Declination: 7.20°
 Dip Angle from Horizontal: 60.46°
 Magnetic Field Strength: 48652
 To convert a Magnetic Direction to a Grid Direction, Add 6.56°
 To convert a Magnetic Direction to a True Direction, Add 7.20° East
 To convert a True Direction to a Grid Direction, Subtract 0.63°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
1355.00	1355.13	T. Salt		
2450.00	2453.67	Tansil		
2600.00	2604.27	Yates		
2851.00	2856.29	Seven Rivers		
3425.00	3432.60	Queen		
3755.00	3763.93	Grayburg		
4080.00	4090.25	San Andres		
5176.00	5190.67	Glorieta		
5232.00	5248.90	Paddock		
5586.00	5602.33	Blinberry		
6032.00	6050.10	Tubb		
6500.00	6520.01	Drinkard		
6750.00	6771.02	Abo		



APACHE CORP

Eunice
Lea County, NM
Northeast Drinkard Unit #428
VH - Job #320313-KW-232

HOBBS OCD

MAY 06 2013

RECEIVED

SUR: K - 10-21s-37e, 2245/S & 1815/W
BHL: K - 10-21s-37e, 2602/S & 2139/W
API # 30-025-40789

Survey: Gyro

SDI Standard Survey Report

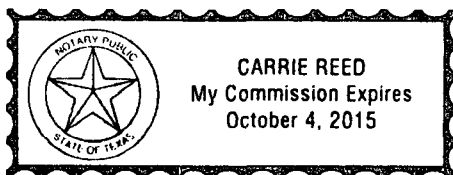
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 1st of April, 2013.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #428
Project:	Eunice	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Northeast Drinkard Unit #428	North Reference:	Grid
Wellbore:	VH - Job #320313-KW-232	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-KW-232	Database:	EDM-Regulatory

Project	Eunice		
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		Lea County, NM			
Site Position:		Northing:	550,762.04 usft	Latitude:	32° 30' 31.140 N
From:	Lat/Long	Easting:	862,794.70 usft	Longitude:	103° 9' 23.400 W
Position Uncertainty:	0.00 usft	Slot Radius:	0"	Grid Convergence:	0.63 °

Well	Northeast Drinkard Unit #428, Directional					
Well Position	+N/-S	0.00 usft	Northing:	544,990.39 usft	Latitude:	32° 29' 33.930 N
	+E/-W	0.00 usft	Easting:	863,765.59 usft	Longitude:	103° 9' 12.810 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	0.00 usft

Wellbore	VH - Job #320313-KW-232				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/02/13	7.20	60.46	48,677

Design		VH - Job #320313-KW-232		
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	42.60

Survey Program		Date	04/06/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,265.00	Gyro (VH - Job #320313-KW-232)	Keeper	Keeper Gyro	

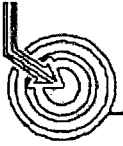
Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.89	81.61	100.00	0.11	0.77	81.61	0.78
200.00	0.99	77.67	199.98	0.41	2.38	80.20	2.42
300.00	0.93	93.41	299.97	0.55	4.03	82.27	4.07
400.00	0.78	105.32	399.96	0.32	5.50	86.68	5.51
500.00	0.68	114.56	499.95	-0.11	6.70	90.92	6.70
600.00	0.81	117.17	599.94	-0.68	7.87	94.92	7.90
700.00	0.80	126.96	699.93	-1.42	9.05	98.91	9.16
800.00	0.84	161.74	799.92	-2.54	9.84	104.45	10.16
900.00	0.96	150.37	899.91	-3.96	10.48	110.69	11.21
1,000.00	0.74	153.82	999.90	-5.27	11.18	115.22	12.36
1,100.00	0.55	158.70	1,099.89	-6.29	11.64	118.39	13.23

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #428
Project:	Eunice	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	Northeast Drinkard Unit #428	North Reference:	Grid
Wellbore:	VH - Job #320313-KW-232	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-KW-232	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200.00	0.65	162.96	1,199.89	-7.28	11.98	121.29	14.02
1,265.00	0.86	153.19	1,264.88	-8.07	12.31	123.25	14.72

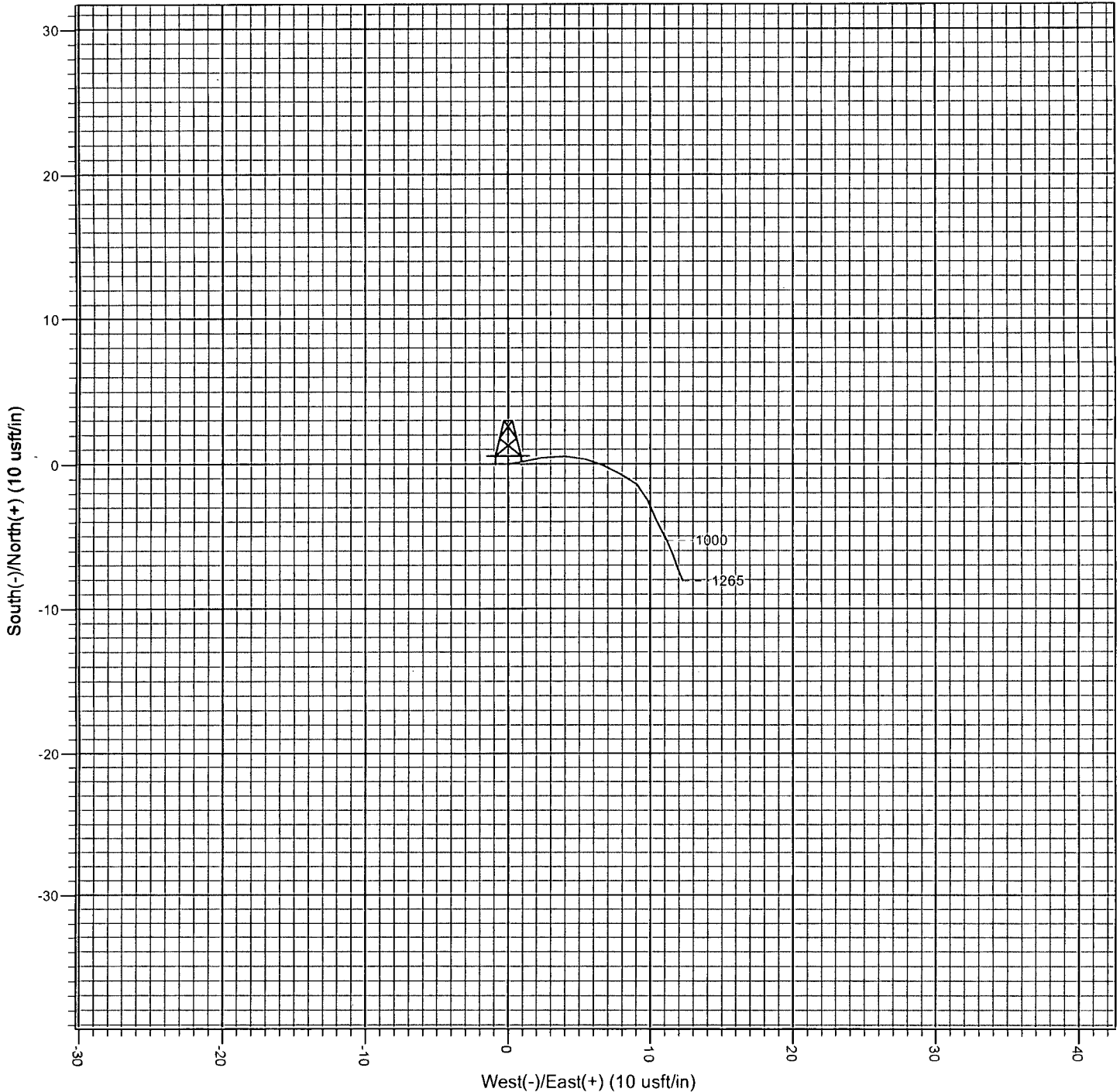


Scientific Drilling

Project: Eunice
Lea County, NM
Well: Northeast Drinkard Unit #428
Wellbore: VH - Job #320313-KW-232
Design: VH - Job #320313-KW-232

WELL DETAILS: Northeast Drinkard Unit #428
WELL @ 0.00usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	544990.39	863765.59	32° 29' 33.930 N	103° 9' 12.810 W	



PROJECT DETAILS: Eunice	SITE DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 30' 31.140 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 9' 23.400 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.00
Zone: New Mexico East 3001	Convergence: 0.63
System Datum: Mean Sea Level	Local North: Grid