

Results of Directional Survey

DD

API number:	30-025-40851		
OGRID:		Operator:	APACHE CORP
		Property:	NORTHEAST DRINKARD UNIT # 427

surface	ULSTR:	E	10	T	21S	R	37E
				2560	FNL	1075	FWL

BH Loc	ULSTR:	L	10	T	21S	R	37E
6955	MD	6950.8	TVD	2527	FSL	995	FWL
				2753	FNL		

Top Perf/OH	ULSTR:	E	10	T	21S	R	37E
5721	MD	5718.0	TVD	2701	FNL	1008	FWL

Bot Perf/OH	ULSTR:	L	10	T	21S	R	37E
6763	MD	6759.0	TVD	2536	FSL	996	FWL
				2744	FNL		

	MD	N/S	E/W	VD
	5646	-138.67	-65.68	5643.01
TOP PERFS/OH	5721	-141.04	-66.60	5717.97
	5731	-141.36	-66.72	5727.96
	6755	-183.19	-78.93	6751.01
BOT PERFS/OH	6763	-183.58	-79.00	6759.00
	6841	-187.40	-79.66	6836.91

NEXT TO LAST	6901	-190.14	-79.97	6896.84
LAST READING	6955	-192.59	-80.01	6950.79
TD	6955	-192.59	-80.01	6950.79

Surface Location	2560	FN	1075	FW
Projected BHL	2753	FN	995	FW
Location of				
Top Perfs/OH	2701	FN	1008	FW
Bottom Perfs/OH	2744	FN	996	FW

SUMMARY of Subsurface Locations

Surface Location	E-10-21S-37E	2560	FN	1075	FW	Vert. Depth
Top Perfs/OH	E-10-21S-37E	2701	FN	1008	FW	5717.97
Bottom Perfs/OH	L-10-21S-37E	2744	FN	996	FW	6759.00
Projected TD	L-10-21S-37E	2753	FN	995	FW	6950.79

JUN 19 2013

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

Northeast Drinkard Unit #427 30-025-40851
Lea County, New Mexico E-10-21S-37E 2560' FNL & 1075' FWL

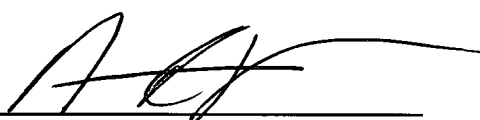
489	4.89	1.00	1.75	8.56	8.56
993	5.04	1.25	2.19	11.03	19.58
1277	2.84	0.30	0.53	1.49	21.07

HOBBS OCD

MAY 24 2013

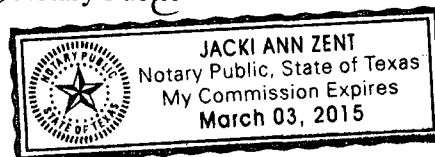
RECEIVED

SUR: E-10-21s-37e, 2560/N & 1075/W
BHL: L-10-21s-37e, 2753/N & 995/W
API # 30-025-40851


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 28th day of March, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





Apache Corporation

Lea County, NM (NAD83 NME)

Northeast Drinkard Unit #427

Wellbore #1 / Job #1310270

30-025-40851

SL E-10-21S-37E

BHL L-10-21S-37E

Survey: Phoenix MWD Survey

Phoenix Final Survey Report

15 March, 2013

SUR: E-10-21s-37e, 2560/N & 1075/W
BHL: L-10-21s-37e, 2753/N & 995/W
API # 30-025-40851

HOBBS OCD

MAY 24 2013

RECEIVED



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #427
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	RF @ 3469.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3469.00usft (Capstar 120)
Well:	#427	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310270	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		Latitude:		32° 30' 15.552341 N			
From:		Map		Easting:		907,874.81 usft		Longitude:		103° 8' 39.810230 W	
Position Uncertainty:		0.00 usft		Slot Radius:		13-3/16 "		Grid Convergence:		0.64 °	

Well	#427					
Well Position	+N/-S	0.00 usft	Northing:	545,264.00 usft	Latitude:	32° 29' 40.785191 N
	+E/-W	0.00 usft	Easting:	863,165.40 usft	Longitude:	103° 17' 22.273644 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	3,458.00 usft

Wellbore	Wellbore #1 / Job #1310270				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	02/27/13	7.26	60.44	48,639

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	205.34	



Phoenix Technology Services

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Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3469.00usft (Capstar 120)
Well:	#427	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310270	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey Program		Date	03/15/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
101.83	1,254.16	VES Gyro (Wellbore #1 / Job #1310270)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,337.00	6,955.00	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)
1,254.16	0.11	271.33	2,214.86	1,254.14	-4.69	3.13	2.90	0.00	545,259.31	863,168.53
Tie-on to VES Gyro										
1,337.00	0.10	290.30	2,132.02	1,336.98	-4.66	2.98	2.94	0.04	545,259.34	863,168.38
Phoenix First MWD Survey										
1,423.00	1.70	225.20	2,046.04	1,422.96	-5.53	2.00	4.14	1.93	545,258.47	863,167.40
1,488.00	1.50	220.60	1,981.06	1,487.94	-6.86	0.76	5.87	0.37	545,257.14	863,166.16
1,551.00	1.40	221.70	1,918.08	1,550.92	-8.06	-0.28	7.40	0.16	545,255.94	863,165.12
1,635.00	1.40	223.60	1,834.11	1,634.89	-9.57	-1.67	9.36	0.06	545,254.43	863,163.73
1,721.00	2.40	214.90	1,748.16	1,720.84	-11.81	-3.43	12.14	1.21	545,252.19	863,161.97
1,805.00	2.30	215.10	1,664.23	1,804.77	-14.63	-5.40	15.53	0.12	545,249.37	863,160.00
1,891.00	2.00	209.60	1,578.29	1,890.71	-17.34	-7.14	18.73	0.42	545,246.66	863,158.26
1,976.00	2.00	212.20	1,493.34	1,975.66	-19.89	-8.66	21.68	0.11	545,244.11	863,156.74
2,061.00	1.80	205.90	1,408.39	2,060.61	-22.34	-10.03	24.49	0.34	545,241.66	863,155.37
2,147.00	1.30	207.30	1,322.42	2,146.58	-24.43	-11.07	26.81	0.58	545,239.57	863,154.33
2,232.00	1.50	205.50	1,237.44	2,231.56	-26.29	-11.99	28.89	0.24	545,237.71	863,153.41
2,317.00	1.10	202.40	1,152.47	2,316.53	-28.05	-12.78	30.82	0.48	545,235.95	863,152.62
2,403.00	0.90	199.40	1,066.48	2,402.52	-29.45	-13.32	32.31	0.24	545,234.55	863,152.08
2,487.00	1.70	197.50	982.50	2,486.50	-31.26	-13.92	34.21	0.95	545,232.74	863,151.48
2,573.00	1.60	189.80	896.54	2,572.46	-33.66	-14.50	36.63	0.28	545,230.34	863,150.90
2,659.00	1.20	199.70	810.56	2,658.44	-35.69	-15.01	38.68	0.54	545,228.31	863,150.39
2,744.00	1.10	178.00	725.58	2,743.42	-37.34	-15.28	40.29	0.52	545,226.66	863,150.12
2,830.00	2.70	206.20	639.63	2,829.37	-39.98	-16.15	43.05	2.10	545,224.02	863,149.25



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #427
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	RF @ 3469.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3469.00usft (Capstar 120)
Well:	#427	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310270	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)	
2,915.00	2.00	201.70	554.70	2,914.30	-43.16	-17.58	46.53	0.85	545,220.84	863,147.82	
3,000.00	2.80	200.50	469.77	2,999.23	-46.48	-18.86	50.08	0.94	545,217.52	863,146.54	
3,086.00	2.40	196.90	383.86	3,085.14	-50.17	-20.12	53.95	0.50	545,213.83	863,145.28	
3,170.00	2.40	190.10	299.94	3,169.06	-53.59	-20.94	57.39	0.34	545,210.41	863,144.46	
3,255.00	2.20	185.20	215.01	3,253.99	-56.96	-21.40	60.64	0.33	545,207.04	863,144.00	
3,341.00	1.80	186.40	129.06	3,339.94	-59.95	-21.70	63.47	0.47	545,204.05	863,143.70	
3,426.00	2.60	197.60	44.12	3,424.88	-63.11	-22.43	66.64	1.06	545,200.89	863,142.97	
3,512.00	2.50	199.70	-41.79	3,510.79	-66.74	-23.65	70.44	0.16	545,197.26	863,141.75	
3,597.00	2.60	197.90	-126.71	3,595.71	-70.32	-24.87	74.19	0.15	545,193.68	863,140.53	
3,682.00	2.50	190.60	-211.63	3,680.63	-73.97	-25.80	77.90	0.40	545,190.03	863,139.60	
3,768.00	2.20	187.00	-297.55	3,766.55	-77.46	-26.35	81.28	0.39	545,186.54	863,139.05	
3,853.00	2.60	206.60	-382.48	3,851.48	-80.80	-27.41	84.76	1.07	545,183.20	863,137.99	
3,938.00	2.60	203.30	-467.39	3,936.39	-84.29	-29.03	88.61	0.18	545,179.71	863,136.37	
4,024.00	2.60	202.30	-553.30	4,022.30	-87.89	-30.55	92.51	0.05	545,176.11	863,134.85	
4,109.00	2.50	203.30	-638.22	4,107.22	-91.38	-32.01	96.29	0.13	545,172.62	863,133.39	
4,195.00	2.40	201.90	-724.14	4,193.14	-94.77	-33.42	99.96	0.14	545,169.23	863,131.98	
4,280.00	2.40	191.50	-809.07	4,278.07	-98.17	-34.44	103.46	0.51	545,165.83	863,130.96	
4,365.00	2.40	210.50	-893.99	4,362.99	-101.44	-35.70	106.96	0.93	545,162.56	863,129.70	
4,451.00	2.70	205.00	-979.91	4,448.91	-104.83	-37.47	110.78	0.45	545,159.17	863,127.93	
4,536.00	2.90	191.40	-1,064.81	4,533.81	-108.75	-38.74	114.87	0.81	545,155.25	863,126.66	
4,621.00	2.60	217.10	-1,149.71	4,618.71	-112.40	-40.33	118.84	1.48	545,151.60	863,125.07	
4,707.00	2.60	209.20	-1,235.63	4,704.63	-115.66	-42.46	122.70	0.42	545,148.34	863,122.94	
4,792.00	2.60	206.30	-1,320.54	4,789.54	-119.07	-44.25	126.55	0.15	545,144.93	863,121.15	
4,878.00	2.40	236.50	-1,406.46	4,875.46	-121.81	-46.62	130.04	1.53	545,142.19	863,118.78	
4,963.00	2.40	236.40	-1,491.39	4,960.39	-123.78	-49.59	133.09	0.00	545,140.22	863,115.81	
5,049.00	2.20	233.00	-1,577.32	5,046.32	-125.77	-52.40	136.10	0.28	545,138.23	863,113.00	
5,134.00	2.20	235.30	-1,662.25	5,131.25	-127.68	-55.05	138.95	0.10	545,136.32	863,110.35	



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Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3469.00usft (Capstar 120)
Well:	#427	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310270	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)	
5,219.00	2.00	233.60	-1,747.20	5,216.20	-129.49	-57.58	141.67	0.25	545,134.51	863,107.82	
5,304.00	1.90	226.80	-1,832.15	5,301.15	-131.33	-59.80	144.29	0.30	545,132.67	863,105.60	
5,390.00	1.80	228.20	-1,918.10	5,387.10	-133.21	-61.85	146.86	0.13	545,130.79	863,103.55	
5,475.00	1.50	222.40	-2,003.07	5,472.07	-134.92	-63.60	149.16	0.40	545,129.08	863,101.80	
5,561.00	1.50	205.80	-2,089.04	5,558.04	-136.76	-64.84	151.36	0.50	545,127.24	863,100.56	
5,646.00	1.30	201.10	-2,174.01	5,643.01	-138.67	-65.68	153.43	0.27	545,125.33	863,099.72	
5,731.00	2.60	201.10	-2,258.96	5,727.96	-141.36	-66.72	156.32	1.53	545,122.64	863,098.68	
5,817.00	2.50	199.70	-2,344.88	5,813.88	-144.95	-68.05	160.13	0.14	545,119.05	863,097.35	
5,902.00	2.50	199.00	-2,429.80	5,898.80	-148.45	-69.28	163.82	0.04	545,115.55	863,096.12	
5,988.00	2.20	193.80	-2,515.72	5,984.72	-151.82	-70.28	167.30	0.43	545,112.18	863,095.12	
6,073.00	2.20	199.30	-2,600.66	6,069.66	-154.95	-71.21	170.52	0.25	545,109.05	863,094.19	
6,158.00	2.10	194.40	-2,685.60	6,154.60	-158.00	-72.14	173.67	0.25	545,106.00	863,093.26	
6,243.00	2.00	189.50	-2,770.55	6,239.55	-160.97	-72.77	176.63	0.24	545,103.03	863,092.63	
6,329.00	2.00	185.90	-2,856.49	6,325.49	-163.94	-73.17	179.48	0.15	545,100.06	863,092.23	
6,414.00	2.70	206.50	-2,941.42	6,410.42	-167.21	-74.22	182.89	1.28	545,096.79	863,091.18	
6,499.00	2.70	200.20	-3,026.33	6,495.33	-170.88	-75.80	186.88	0.35	545,093.12	863,089.60	
6,585.00	2.70	196.10	-3,112.23	6,581.23	-174.73	-77.07	190.90	0.22	545,089.27	863,088.33	
6,670.00	3.00	193.10	-3,197.13	6,666.13	-178.82	-78.12	195.05	0.39	545,085.18	863,087.28	
6,755.00	3.00	187.90	-3,282.01	6,751.01	-183.19	-78.93	199.34	0.32	545,080.81	863,086.47	
6,841.00	2.70	191.90	-3,367.91	6,836.91	-187.40	-79.66	203.46	0.42	545,076.60	863,085.74	
6,901.00	2.60	180.80	-3,427.84	6,896.84	-190.14	-79.97	206.07	0.87	545,073.86	863,085.43	
Phoenix Last MWD Survey											
6,955.00	2.60	180.80	-3,481.79	6,950.79	-192.59	-80.01	208.30	0.00	545,071.41	863,085.39	
Projection to Bit											



Phoenix Technology Services
Phoenix Final Survey Report



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Site:	Northeast Drinkard Unit	MD Reference:	RF @ 3469.00usft (Capstar 120)
Well:	#427	North Reference:	Gnd
Wellbore:	Wellbore #1 / Job #1310270	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)	
1,254.16	1,254.14	-4.69	3.13	Tie-on to VES Gyro
1,337.00	1,336.98	-4.66	2.98	Phoenix First MWD Survey
6,901.00	6,896.84	-190.14	-79.97	Phoenix Last MWD Survey
6,955.00	6,950.79	-192.59	-80.01	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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Phoenix Technology Services

Apache Corporation

Northeast Drinkard Unit #427
Lea County, NM (NAD83 NME)
Wellbore #1 / Job #1310270
Phoenix MWD Survey
RF Elev: 3469.00'
GL Elev: 3458.00'

Surface Loc.:

Northing: (Y) 863165.40

Easting: (X) 545264.00

Survey Type Information:

H 101.83 - 1254.16 VES GYRO : NS-GYRO-MS

H 1337.00 - 6955.00 PHOENIX MWD SURVEY : MWD

SUR: E-10-21s-37e, 2560/N & 1075/W
BHL: L-10-21s-37e, 2753/N & 995/W
API # 30-025-40851

Measured Depth (ft)	Incl.	Azim.	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coord (+N/-S) (ft)	(+E/-W) (ft)	UTM Coord Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Annotation
1254.16	0.11	271.33	-2214.86	1254.14	-4.69	3.13	545259.3	863168.5	2.9	0	Tie-on to VES Gyro
1337	0.1	290.3	-2132.02	1336.98	-4.66	2.98	545259.3	863168.4	2.94	0.04	Phoenix First MWD Survey - MWD
1423	1.7	225.2	-2046.04	1422.96	-5.53	2	545258.5	863167.4	4.14	1.93	
1488	1.5	220.6	-1981.06	1487.94	-6.86	0.76	545257.1	863166.2	5.87	0.37	
1551	1.4	221.7	-1918.08	1550.92	-8.06	-0.28	545255.9	863165.1	7.4	0.16	
1635	1.4	223.6	-1834.11	1634.89	-9.57	-1.67	545254.4	863163.7	9.36	0.06	
1721	2.4	214.9	-1748.16	1720.84	-11.81	-3.43	545252.2	863162	12.14	1.21	
1805	2.3	215.1	-1664.23	1804.77	-14.63	-5.4	545249.4	863160	15.53	0.12	
1891	2	209.6	-1578.29	1890.71	-17.34	-7.14	545246.7	863158.3	18.73	0.42	
1976	2	212.2	-1493.34	1975.66	-19.89	-8.66	545244.1	863156.7	21.68	0.11	
2061	1.8	205.9	-1408.39	2060.61	-22.34	-10.03	545241.7	863155.4	24.49	0.34	
2147	1.3	207.3	-1322.42	2146.58	-24.43	-11.07	545239.6	863154.3	26.81	0.58	
2232	1.5	205.5	-1237.44	2231.56	-26.29	-11.99	545237.7	863153.4	28.89	0.24	
2317	1.1	202.4	-1152.47	2316.53	-28.05	-12.78	545236	863152.6	30.82	0.48	
2403	0.9	199.4	-1066.48	2402.52	-29.45	-13.32	545234.6	863152.1	32.31	0.24	
2487	1.7	197.5	-982.5	2486.5	-31.26	-13.92	545232.7	863151.5	34.21	0.95	
2573	1.6	189.8	-896.54	2572.46	-33.66	-14.5	545230.3	863150.9	36.63	0.28	
2659	1.2	199.7	-810.56	2658.44	-35.69	-15.01	545228.3	863150.4	38.68	0.54	

2744	1.1	178	-725.58	2743.42	-37.34	-15.28	545226.7	863150.1	40.29	0.52
2830	2.7	206.2	-639.63	2829.37	-39.98	-16.15	545224	863149.3	43.05	2.1
2915	2	201.7	-554.7	2914.3	-43.16	-17.58	545220.8	863147.8	46.53	0.85
3000	2.8	200.5	-469.77	2999.23	-46.48	-18.86	545217.5	863146.5	50.08	0.94
3086	2.4	196.9	-383.86	3085.14	-50.17	-20.12	545213.8	863145.3	53.95	0.5
3170	2.4	190.1	-299.94	3169.06	-53.59	-20.94	545210.4	863144.5	57.39	0.34
3255	2.2	185.2	-215.01	3253.99	-56.96	-21.4	545207	863144	60.64	0.33
3341	1.8	186.4	-129.06	3339.94	-59.95	-21.7	545204.1	863143.7	63.47	0.47
3426	2.6	197.6	-44.12	3424.88	-63.11	-22.43	545200.9	863143	66.64	1.06
3512	2.5	199.7	41.79	3510.79	-66.74	-23.65	545197.3	863141.8	70.44	0.16
3597	2.6	197.9	126.71	3595.71	-70.32	-24.87	545193.7	863140.5	74.19	0.15
3682	2.5	190.6	211.63	3680.63	-73.97	-25.8	545190	863139.6	77.9	0.4
3768	2.2	187	297.55	3766.55	-77.46	-26.35	545186.5	863139.1	81.28	0.39
3853	2.6	206.6	382.48	3851.48	-80.8	-27.41	545183.2	863138	84.76	1.07
3938	2.6	203.3	467.39	3936.39	-84.29	-29.03	545179.7	863136.4	88.61	0.18
4024	2.6	202.3	553.3	4022.3	-87.89	-30.55	545176.1	863134.9	92.51	0.05
4109	2.5	203.3	638.22	4107.22	-91.38	-32.01	545172.6	863133.4	96.29	0.13
4195	2.4	201.9	724.14	4193.14	-94.77	-33.42	545169.2	863132	99.96	0.14
4280	2.4	191.5	809.07	4278.07	-98.17	-34.44	545165.8	863131	103.46	0.51
4365	2.4	210.5	893.99	4362.99	-101.44	-35.7	545162.6	863129.7	106.96	0.93
4451	2.7	205	979.91	4448.91	-104.83	-37.47	545159.2	863127.9	110.78	0.45
4536	2.9	191.4	1064.81	4533.81	-108.75	-38.74	545155.3	863126.7	114.87	0.81
4621	2.6	217.1	1149.71	4618.71	-112.4	-40.33	545151.6	863125.1	118.84	1.48
4707	2.6	209.2	1235.63	4704.63	-115.66	-42.46	545148.3	863122.9	122.7	0.42
4792	2.6	206.3	1320.54	4789.54	-119.07	-44.25	545144.9	863121.2	126.55	0.15
4878	2.4	236.5	1406.46	4875.46	-121.81	-46.62	545142.2	863118.8	130.04	1.53
4963	2.4	236.4	1491.39	4960.39	-123.78	-49.59	545140.2	863115.8	133.09	0
5049	2.2	233	1577.32	5046.32	-125.77	-52.4	545138.2	863113	136.1	0.28
5134	2.2	235.3	1662.25	5131.25	-127.68	-55.05	545136.3	863110.4	138.95	0.1
5219	2	233.6	1747.2	5216.2	-129.49	-57.58	545134.5	863107.8	141.67	0.25
5304	1.9	226.8	1832.15	5301.15	-131.33	-59.8	545132.7	863105.6	144.29	0.3
5390	1.8	228.2	1918.1	5387.1	-133.21	-61.85	545130.8	863103.6	146.86	0.13
5475	1.5	222.4	2003.07	5472.07	-134.92	-63.6	545129.1	863101.8	149.16	0.4
5561	1.5	205.8	2089.04	5558.04	-136.76	-64.84	545127.2	863100.6	151.36	0.5
5646	1.3	201.1	2174.01	5643.01	-138.67	-65.68	545125.3	863099.7	153.43	0.27
5731	2.6	201.1	2258.96	5727.96	-141.36	-66.72	545122.6	863098.7	156.32	1.53
5817	2.5	199.7	2344.88	5813.88	-144.95	-68.05	545119.1	863097.4	160.13	0.14
5902	2.5	199	2429.8	5898.8	-148.45	-69.28	545115.6	863096.1	163.82	0.04
5988	2.2	193.8	2515.72	5984.72	-151.82	-70.28	545112.2	863095.1	167.3	0.43
6073	2.2	199.3	2600.66	6069.66	-154.95	-71.21	545109.1	863094.2	170.52	0.25
6158	2.1	194.4	2685.6	6154.6	-158	-72.14	545106	863093.3	173.67	0.25
6243	2	189.5	2770.55	6239.55	-160.97	-72.77	545103	863092.6	176.63	0.24
6329	2	185.9	2856.49	6325.49	-163.94	-73.17	545100.1	863092.2	179.48	0.15

6414	2.7	206.5	2941.42	6410.42	-167.21	-74.22	545096.8	863091.2	182.89	1.28
6499	2.7	200.2	3026.33	6495.33	-170.88	-75.8	545093.1	863089.6	186.88	0.35
6585	2.7	196.1	3112.23	6581.23	-174.73	-77.07	545089.3	863088.3	190.9	0.22
6670	3	193.1	3197.13	6666.13	-178.82	-78.12	545085.2	863087.3	195.05	0.39
6755	3	187.9	3282.01	6751.01	-183.19	-78.93	545080.8	863086.5	199.34	0.32
6841	2.7	191.9	3367.91	6836.91	-187.4	-79.66	545076.6	863085.7	203.46	0.42
6901	2.6	180.8	3427.84	6896.84	-190.14	-79.97	545073.9	863085.4	206.07	0.87 Pheonix Last MWD Survey
6955	2.6	180.8	3481.79	6950.79	-192.59	-80.01	545071.4	863085.4	208.3	0 Projection to Bit

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North
 Vertical depths are relative to RF. Northings and Eastings are relative to Well

The Dogleg Severity is in Degrees per 100 feet.
 Vertical Section is from Slot and calculated along an Azimuth of 205.340° (Grid)

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is 0.561°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 6955.00ft.
 the Bottom Hole Displacement is 208.55ft., in the Direction of 205.340° (Grid)

SUR: E-10-21s-37e, 2560/N & 1075/W
BHL: L-10-21s-37e, 2753/N & 995/W
API # 30-025-40851

APACHE CORP

Eunice

Lea County, NM

Northeast Drinkard Unit #427

VH - Job #320313-K-264

30-025-40851

Surf Loc E-10-21S-37E

BHL L-10-21S-37E

Survey: drop Gyro

SDI Standard Survey Report

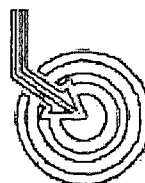
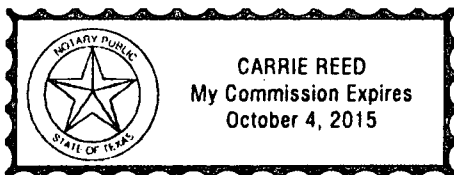
This survey is correct to the best of my knowledge and is supported by actual field data.

RL Sharts

Notarized this date 1st of April, 2013.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #427
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 #427	North Reference:	Grid
Wellbore:	VH - Job #320313-K-264	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-K-264	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 #427, Directional					
Well Position	+N/-S	0.00 usft	Northing:	545,293.80 usft	Latitude:	32° 29' 37.000 N
	+E/-W	0.00 usft	Easting:	863,146.17 usft	Longitude:	103° 9' 20.002 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	0.00 usft

Wellbore	VH - Job #320313-K-264				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/10/13	7.20	60.46	48,675

Design		VH - Job #320313-K-264		
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	205.34

Survey Program		Date	04/06/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
101.83	1,254.16	drop Gyro (VH - Job #320313-K-264)	Keeper	Keeper Gyro	

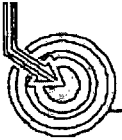
Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101.83	0.19	99.53	101.83	-0.03	0.17	99.53	0.17
129.42	0.18	141.35	129.42	-0.07	0.24	106.21	0.25
218.34	0.21	163.79	218.34	-0.33	0.37	132.04	0.50
303.66	0.37	150.05	303.66	-0.72	0.55	142.64	0.91
389.59	0.50	152.67	389.59	-1.30	0.86	146.36	1.56
480.86	0.42	136.42	480.85	-1.89	1.28	146.01	2.28
565.87	0.62	145.42	565.86	-2.50	1.75	144.94	3.05
657.44	0.62	154.19	657.42	-3.35	2.25	146.13	4.04
742.75	0.55	153.90	742.73	-4.13	2.63	147.54	4.90
828.06	0.34	154.17	828.04	-4.73	2.92	148.31	5.56
913.37	0.19	144.44	913.35	-5.07	3.11	148.46	5.95

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #427
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 #427	North Reference:	Grid
Wellbore:	VH - Job #320313-K-264	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-K-264	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
998.30	0.13	352.57	998.28	-5.09	3.18	147.99	6.01
1,083.71	0.13	22.25	1,083.69	-4.91	3.21	146.83	5.86
1,168.78	0.09	344.20	1,168.76	-4.75	3.23	145.84	5.74
1,254.16	0.11	271.33	1,254.14	-4.69	3.13	146.30	5.63

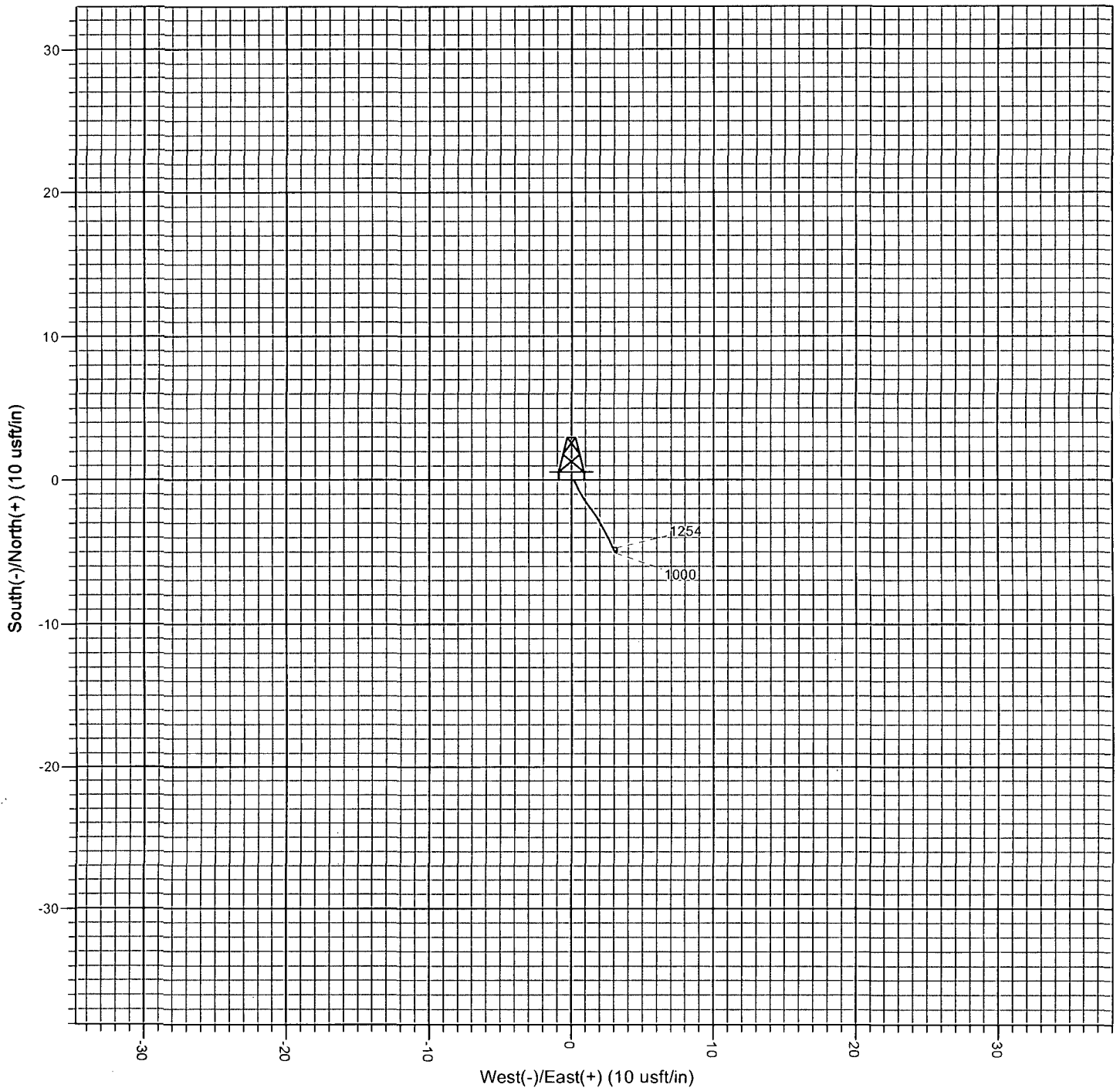


Scientific Drilling

Project: Eunice
Lea County, NM
Well: Northeast Drinkard Unit #427
Wellbore: VH - Job #320313-K-264
Design: VH - Job #320313-K-264

WELL DETAILS: Northeast Drinkard Unit #427
WELL @ 0.00usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	545293.80	863146.17	32° 29' 37.000 N	103° 9' 20.002 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