

Results of Directional Survey

DD

API number:	30-025-41051		
OGRID:		Operator:	APACHE CORP
		Property:	NORTHEAST DRINKARD UNIT # 364

surface	ULSTR:	W	03	T 21S	R 37E
				215 FSL	1830 FEL

BH Loc	ULSTR:	W	03	T 21S	R 37E
6953	MD	6950.0	TVD	49 FSL	1877 FEL

Top Perf/OH	ULSTR:	W	03	T 21S	R 37E
5702	MD	5699.6	TVD	82 FSL	1860 FEL

Bot Perf/OH	ULSTR:	W	03	T 21S	R 37E
6723	MD	6720.1	TVD	56 FSL	1875 FEL

	MD	N/S	E/W	VD
	5646	-132.66	-29.77	5643.6
TOP PERFS/OH	5702	-133.47	-30.31	5699.59
	5732	-133.90	-30.60	5729.59
	6671	-157.77	-44.71	6668.14
BOT PERFS/OH	6723	-159.45	-45.07	6720.11
	6756	-160.52	-45.30	6753.09

NEXT TO LAST	6904	-164.99	-46.41	6901.02
LAST READING	6953	-166.33	-46.67	6950.00
TD	6953	-166.33	-46.67	6950.00

Surface Location	215 FS	1830 FE
Projected BHL	49 FS	1877 FE
Location of		
Top Perfs/OH	82 FS	1860 FE
Bottom Perfs/OH	56 FS	1875 FE

SUMMARY of Subsurface Locations

Surface Location	W-03-21S-37E	215 FS	1830 FE	Vert. Depth
Top Perfs/OH	W-03-21S-37E	82 FS	1860 FE	5699.59
Bottom Perfs/OH	W-03-21S-37E	56 FS	1875 FE	6720.11
Projected TD	W-03-21S-37E	49 FS	1877 FE	6950.00

JUN 18 2013

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

Northeast Drinkard Unit #364
Lea County, New Mexico

30-02S-41051
0-3-21S-37E 215' FSL+ 1830' FEL

250	2.50	0.30	0.53	1.31	1.31
500	2.50	0.40	0.70	1.75	3.06
750	2.50	0.50	0.88	2.19	5.25
1000	2.50	0.70	1.23	3.06	8.31
1250	2.50	0.80	1.40	3.50	11.81
1330	0.80	0.80	1.40	1.12	12.93

HOBBS OCD

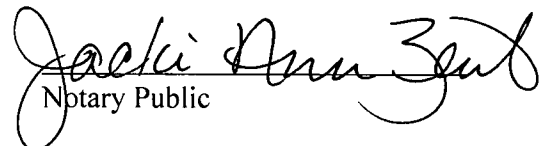
MAY 23 2013

RECEIVED

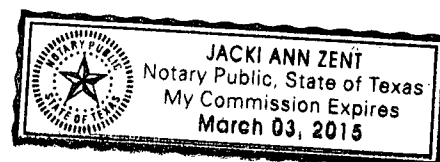


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 22nd day of April, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.



Notary Public





Apache Corporation

Lea County, NM (NAD83 NME)

Northeast Drinkard Unit #364

Wellbore #1 / Job #1310345

30-025-41051

SL 0-3-215-37E

BHL 0-3-215-37E

215' FSL + 1830' FEL

49' FSL + 1877' FEL

Survey: Phoenix MWD Surveys

HOBBS OCD

MAY 23 2013

Phoenix Final Survey Report

RECEIVED

04 April, 2013



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #364
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3443.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	KB @ 3443.00usft (Capstar 120)
Well:	#364	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310345	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	#364		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 30' 4.708097 N
		Longitude:	103° 8' 53.926182 W
		Ground Level:	3,432.00 usft

Wellbore	Wellbore #1 / Job #1310345		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010_14	03/18/13	7.19
			Dip Angle
			(°)
			60.47
			Field Strength
			(nT)
			48,653

Design	Surveys (Capstar 120)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	(°)
		193.01	



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #364
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3443.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	KB @ 3443.00usft (Capstar 120)
Well:	#364	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310345	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 120)	Database:	GCR DB

Survey Program		Date	04/04/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,265.00	SDI Gyro (Wellbore #1 / Job #1310345)	Keeper	Keeper Standard Rate Gyro	
1,356.00	6,953.00	Phoenix MWD Surveys (Wellbore #1 / Job	MWD	MWD - Standard	

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)	
1,265.00	0.51	120.92	2,178.05	1,264.95	1.55	4.16	548,138.30	906,682.25	-2.45	0.00	
Tie In											
1,356.00	0.60	117.70	2,087.05	1,355.95	1.12	4.93	548,137.87	906,683.02	-2.20	0.10	
First Phoenix MWD Survey											
1,423.00	0.80	143.60	2,020.06	1,422.94	0.58	5.52	548,137.33	906,683.61	-1.81	0.55	
1,485.00	1.00	164.80	1,958.06	1,484.94	-0.29	5.92	548,136.46	906,684.00	-1.05	0.62	
1,551.00	1.60	183.80	1,892.08	1,550.92	-1.76	6.01	548,134.98	906,684.09	0.37	1.11	
1,637.00	2.20	193.00	1,806.13	1,636.87	-4.57	5.56	548,132.18	906,683.64	3.20	0.78	
1,723.00	2.20	197.60	1,720.19	1,722.81	-7.75	4.68	548,129.00	906,682.77	6.50	0.21	
1,808.00	2.00	199.90	1,635.25	1,807.75	-10.70	3.69	548,126.05	906,681.77	9.60	0.26	
1,893.00	1.70	203.40	1,550.29	1,892.71	-13.25	2.68	548,123.49	906,680.77	12.31	0.38	
1,978.00	1.30	201.50	1,465.32	1,977.68	-15.31	1.83	548,121.44	906,679.91	14.50	0.47	
2,063.00	1.60	187.50	1,380.35	2,062.65	-17.38	1.32	548,119.37	906,679.41	16.64	0.54	
2,149.00	2.30	187.60	1,294.40	2,148.60	-20.28	0.93	548,116.46	906,679.02	19.55	0.81	
2,234.00	2.20	187.20	1,209.46	2,233.54	-23.59	0.50	548,113.16	906,678.59	22.87	0.12	
2,319.00	2.00	175.00	1,124.52	2,318.48	-26.69	0.43	548,110.06	906,678.52	25.91	0.57	
2,405.00	2.00	171.10	1,038.57	2,404.43	-29.67	0.79	548,107.08	906,678.88	28.73	0.16	
2,490.00	2.30	192.10	953.63	2,489.37	-32.80	0.66	548,103.95	906,678.75	31.81	0.98	
2,576.00	2.20	194.00	867.70	2,575.30	-36.09	-0.10	548,100.66	906,677.99	35.18	0.15	
2,661.00	1.90	194.10	782.75	2,660.25	-39.04	-0.84	548,097.71	906,677.25	38.22	0.35	
2,747.00	1.80	195.10	696.80	2,746.20	-41.72	-1.53	548,095.02	906,676.55	41.00	0.12	
2,832.00	1.70	195.10	611.84	2,831.16	-44.23	-2.21	548,092.52	906,675.88	43.59	0.12	



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #364
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3443.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	KB @ 3443.00usft (Capstar 120)
Well:	#364	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310345	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)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)	
2,918.00	1.60	188.20	525.87	2,917.13	-46.65	-2.71	548,090.10	906,675.37	46.06	0.26	
3,003.00	1.20	181.70	440.90	3,002.10	-48.72	-2.91	548,088.03	906,675.18	48.12	0.51	
3,088.00	2.00	203.00	355.93	3,087.07	-50.97	-3.52	548,085.78	906,674.57	50.45	1.16	
3,174.00	1.80	203.50	269.98	3,173.02	-53.59	-4.64	548,083.16	906,673.45	53.26	0.23	
3,259.00	1.50	195.80	185.01	3,257.99	-55.89	-5.48	548,080.86	906,672.61	55.68	0.44	
3,345.00	2.20	201.40	99.06	3,343.94	-58.50	-6.39	548,078.24	906,671.70	58.44	0.84	
3,430.00	1.80	198.40	14.11	3,428.89	-61.29	-7.40	548,075.46	906,670.69	61.38	0.49	
3,515.00	1.60	192.50	-70.85	3,513.85	-63.72	-8.08	548,073.03	906,670.01	63.90	0.31	
3,601.00	2.30	194.00	-156.80	3,599.80	-66.56	-8.76	548,070.19	906,669.33	66.83	0.82	
3,686.00	2.20	194.80	-241.74	3,684.74	-69.79	-9.59	548,066.95	906,668.50	70.16	0.12	
3,771.00	2.20	195.40	-326.67	3,769.67	-72.95	-10.44	548,063.80	906,667.65	73.42	0.03	
3,857.00	2.10	197.40	-412.61	3,855.61	-76.04	-11.35	548,060.71	906,666.74	76.64	0.15	
3,942.00	2.10	198.40	-497.56	3,940.56	-79.00	-12.30	548,057.74	906,665.78	79.75	0.04	
4,027.00	2.00	195.30	-582.50	4,025.50	-81.91	-13.19	548,054.84	906,664.90	82.78	0.18	
4,112.00	1.80	192.90	-667.45	4,110.45	-84.64	-13.88	548,052.10	906,664.21	85.60	0.25	
4,197.00	1.80	192.30	-752.41	4,195.41	-87.25	-14.46	548,049.50	906,663.63	88.27	0.02	
4,282.00	1.70	200.00	-837.37	4,280.37	-89.74	-15.17	548,047.01	906,662.91	90.85	0.30	
4,367.00	1.60	200.30	-922.34	4,365.34	-92.04	-16.02	548,044.71	906,662.07	93.28	0.12	
4,453.00	1.60	198.80	-1,008.30	4,451.30	-94.30	-16.82	548,042.45	906,661.27	95.67	0.05	
4,538.00	1.70	196.40	-1,093.27	4,536.27	-96.63	-17.56	548,040.12	906,660.53	98.10	0.14	
4,623.00	1.80	200.00	-1,178.23	4,621.23	-99.10	-18.37	548,037.65	906,659.72	100.69	0.17	
4,709.00	1.80	197.30	-1,264.19	4,707.19	-101.65	-19.24	548,035.09	906,658.85	103.38	0.10	
4,794.00	1.90	199.30	-1,349.14	4,792.14	-104.26	-20.10	548,032.49	906,657.99	106.11	0.14	
4,879.00	1.80	199.90	-1,434.10	4,877.10	-106.84	-21.02	548,029.90	906,657.07	108.83	0.12	
4,964.00	1.70	198.00	-1,519.06	4,962.06	-109.30	-21.86	548,027.45	906,656.23	111.41	0.14	
5,050.00	2.40	201.10	-1,605.00	5,048.00	-112.19	-22.90	548,024.56	906,655.18	114.47	0.82	
5,135.00	2.50	199.90	-1,689.92	5,132.92	-115.60	-24.18	548,021.15	906,653.91	118.07	0.13	



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #364
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3443.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	KB @ 3443.00usft (Capstar 120)
Well:	#364	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310345	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)	Northing (usft)	Easting (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,221.00	2.30	198.60	-1,775.85	5,218.85	-118.99	-25.36	548,017.75	906,652.72	121.65	0.24	
5,306.00	2.20	197.30	-1,860.78	5,303.78	-122.17	-26.39	548,014.58	906,651.69	124.97	0.13	
5,391.00	2.20	194.70	-1,945.72	5,388.72	-125.30	-27.29	548,011.44	906,650.79	128.23	0.12	
5,476.00	1.90	195.30	-2,030.67	5,473.67	-128.24	-28.08	548,008.51	906,650.01	131.27	0.35	
5,561.00	1.70	201.50	-2,115.62	5,558.62	-130.77	-28.91	548,005.97	906,649.18	133.93	0.33	
5,646.00	1.10	208.80	-2,200.60	5,643.60	-132.66	-29.77	548,004.09	906,648.32	135.96	0.73	
5,732.00	0.90	220.10	-2,286.59	5,729.59	-133.90	-30.60	548,002.85	906,647.49	137.35	0.33	
5,817.00	1.00	217.50	-2,371.57	5,814.57	-135.00	-31.48	548,001.75	906,646.61	138.62	0.13	
5,902.00	1.40	212.40	-2,456.56	5,899.56	-136.47	-32.49	548,000.28	906,645.60	140.28	0.49	
5,988.00	1.60	213.00	-2,542.53	5,985.53	-138.36	-33.71	547,998.39	906,644.38	142.40	0.23	
6,073.00	2.00	214.20	-2,627.48	6,070.48	-140.58	-35.19	547,996.17	906,642.90	144.90	0.47	
6,159.00	1.80	216.60	-2,713.44	6,156.44	-142.91	-36.84	547,993.84	906,641.25	147.53	0.25	
6,244.00	1.30	221.00	-2,798.41	6,241.41	-144.71	-38.26	547,992.04	906,639.82	149.61	0.60	
6,330.00	1.50	222.60	-2,884.38	6,327.38	-146.27	-39.67	547,990.48	906,638.42	151.45	0.24	
6,415.00	1.80	207.80	-2,969.34	6,412.34	-148.27	-41.04	547,988.48	906,637.05	153.71	0.61	
6,500.00	2.60	202.70	-3,054.28	6,497.28	-151.23	-42.41	547,985.52	906,635.68	156.90	0.97	
6,586.00	2.40	199.50	-3,140.20	6,583.20	-154.73	-43.76	547,982.02	906,634.33	160.61	0.28	
6,671.00	1.90	194.50	-3,225.14	6,668.14	-157.77	-44.71	547,978.98	906,633.38	163.79	0.63	
6,756.00	1.90	189.70	-3,310.09	6,753.09	-160.52	-45.30	547,976.22	906,632.79	166.60	0.19	
6,841.00	1.80	197.90	-3,395.05	6,838.05	-163.18	-45.95	547,973.57	906,632.14	169.34	0.33	
6,904.00	1.60	190.70	-3,458.02	6,901.02	-164.99	-46.41	547,971.76	906,631.67	171.20	0.46	
Current MWD Survey											
6,953.00	1.60	190.70	-3,507.00	6,950.00	-166.33	-46.67	547,970.41	906,631.42	172.57	0.00	
Projection to Bit											



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #364
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3443.00usft (Capstar 120)
Site:	Northeast Drinkard Unit	MD Reference:	KB @ 3443.00usft (Capstar 120)
Well:	#364	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310345	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	1,264.95	1.55	4.16	Tie In
1,356.00	1,355.95	1.12	4.93	First Phoenix MWD Survey
6,904.00	6,901.02	-164.99	-46.41	Current MWD Survey
6,953.00	6,950.00	-166.33	-46.67	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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APACHE CORP

Eunice

Lea County, NM

Northeast Drinkard Unit #364

VH - Job #320313-KW-342

30-025-41051

SL 0-3-215-37E 215' FSL + 1830' FEL

BHL 0-3-215-37E 49' FSL + 1877' FEL

Survey: Gyro

SDI Standard Survey Report

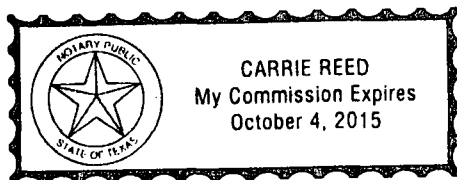
This survey is correct to the best of my knowledge and is supported by actual field data.

Sharton

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 #364
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 #364	North Reference:	Grid
Wellbore:	VH - Job #320313-KW-342	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-KW-342	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 #364, Directional					
Well Position	+N/-S	0.00 usft	Northing:	548,118.97 usft	Latitude:	32° 30' 4.710 N
	+E/-W	0.00 usft	Easting:	865,348.16 usft	Longitude:	103° 8' 53.930 W
Position Uncertainty	.	0.00 usft	Wellhead Elevation:	usft	Ground Level:	0.00 usft

Wellbore	VH - Job #320313-KW-342				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/28/13	7.19	60.47	48,676

Design	VH - Job #320313-KW-342				
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	193.01	

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-342)	Keeper	Keeper Gyro	

Survey								
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance	
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.56	286.75	100.00	0.14	-0.47	286.75	0.49	
200.00	0.40	285.27	199.99	0.37	-1.27	286.36	1.33	
300.00	0.35	300.25	299.99	0.62	-1.87	288.30	1.97	
400.00	0.22	294.03	399.99	0.85	-2.31	290.21	2.46	
500.00	0.10	9.55	499.99	1.02	-2.47	292.33	2.67	
600.00	0.26	38.81	599.99	1.28	-2.32	298.89	2.65	
700.00	0.46	63.36	699.99	1.64	-1.82	312.01	2.44	
800.00	0.64	75.69	799.98	1.95	-0.92	334.89	2.16	
900.00	0.80	82.59	899.98	2.18	0.32	8.29	2.20	
1,000.00	0.61	87.42	999.97	2.30	1.54	33.89	2.77	
1,100.00	0.76	105.34	1,099.96	2.14	2.71	51.68	3.46	

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #364
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 #364	North Reference:	Grid
Wellbore:	VH - Job #320313-KW-342	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320313-KW-342	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	0.44	114.35	1,199.96	1.81	3.70	63.95	4.12
1,265.00	0.51	120.92	1,264.95	1.56	4.18	69.54	4.46

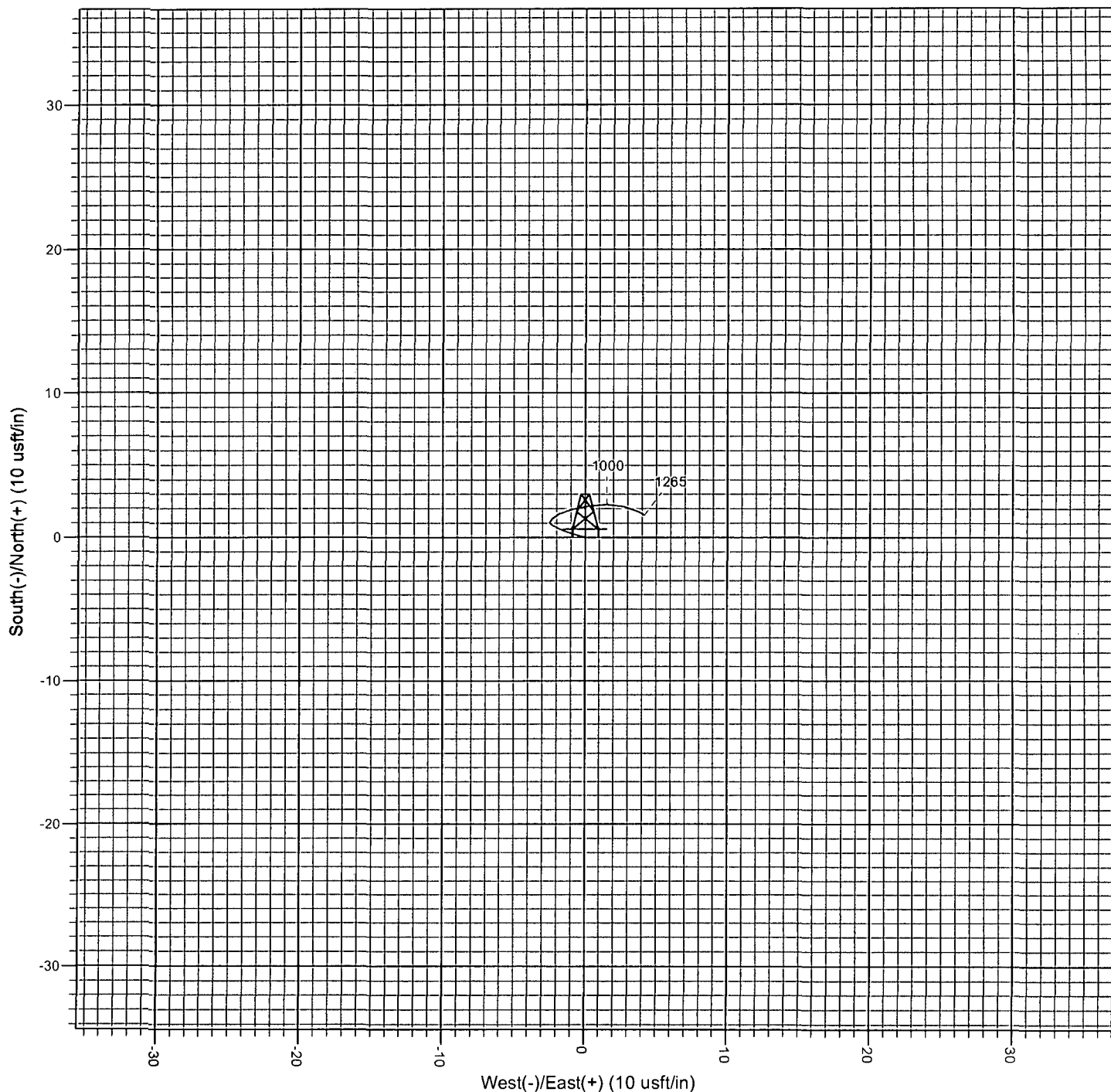


Scientific Drilling

Project: Eunice
Lea County, NM
Well: Northeast Drinkard Unit #364
Wellbore: VH - Job #320313-KW-342
Design: VH - Job #320313-KW-342

WELL DETAILS: Northeast Drinkard Unit #364
WELL @ 0.00usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	548118.97	865348.16	32° 30' 4.710 N	103° 8' 53.930 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

Phoenix Technology Services

Apache Corporation

Northeast Drinkard Unit #364
 Lea County, NM (NAD83 NME)
 Wellbore #1 / Job #1310345
 Phoenix MWD Surveys

Surface Loc.:

Northing: (Y) 906678.09

Easting: (X) 548136.75

KB Elev: 3443.00'

GL Elev: 3432.00'

Survey Type Information:

H 100.00 - 1265.00 SDI GYRO : KEEPER

H 1356.00 - 6953.00 PHOENIX MWD SURVEYS : MWD

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
1265	0.51	120.92	-2178.05	1264.95	1.55	4.16	548138.3	906682.3	-2.45		0 Tie In
1356	0.6	117.7	-2087.05	1355.95	1.12	4.93	548137.9	906683	-2.2		0.1 First Phoenix MWD Survey - MWD
1423	0.8	143.6	-2020.06	1422.94	0.58	5.52	548137.3	906683.6	-1.81	0.55	
1485	1	164.8	-1958.06	1484.94	-0.29	5.92	548136.5	906684	-1.05	0.62	
1551	1.6	183.8	-1892.08	1550.92	-1.76	6.01	548135	906684.1	0.37	1.11	
1637	2.2	193	-1806.13	1636.87	-4.57	5.56	548132.2	906683.6	3.2	0.78	
1723	2.2	197.6	-1720.19	1722.81	-7.75	4.68	548129	906682.8	6.5	0.21	
1808	2	199.9	-1635.25	1807.75	-10.7	3.69	548126.1	906681.8	9.6	0.26	
1893	1.7	203.4	-1550.29	1892.71	-13.25	2.68	548123.5	906680.8	12.31	0.38	
1978	1.3	201.5	-1465.32	1977.68	-15.31	1.83	548121.4	906679.9	14.5	0.47	
2063	1.6	187.5	-1380.35	2062.65	-17.38	1.32	548119.4	906679.4	16.64	0.54	
2149	2.3	187.6	-1294.4	2148.6	-20.28	0.93	548116.5	906679	19.55	0.81	
2234	2.2	187.2	-1209.46	2233.54	-23.59	0.5	548113.2	906678.6	22.87	0.12	
2319	2	175	-1124.52	2318.48	-26.69	0.43	548110.1	906678.5	25.91	0.57	
2405	2	171.1	-1038.57	2404.43	-29.67	0.79	548107.1	906678.9	28.73	0.16	
2490	2.3	192.1	-953.63	2489.37	-32.8	0.66	548104	906678.8	31.81	0.98	
2576	2.2	194	-867.7	2575.3	-36.09	-0.1	548100.7	906678	35.18	0.15	
2661	1.9	194.1	-782.75	2660.25	-39.04	-0.84	548097.7	906677.3	38.22	0.35	
2747	1.8	195.1	-696.8	2746.2	-41.72	-1.53	548095	906676.6	41	0.12	
2832	1.7	195.1	-611.84	2831.16	-44.23	-2.21	548092.5	906675.9	43.59	0.12	
2918	1.6	188.2	-525.87	2917.13	-46.65	-2.71	548090.1	906675.4	46.06	0.26	
3003	1.2	181.7	-440.9	3002.1	-48.72	-2.91	548088	906675.2	48.12	0.51	
3088	2	203	-355.93	3087.07	-50.97	-3.52	548085.8	906674.6	50.45	1.16	
3174	1.8	203.5	-269.98	3173.02	-53.59	-4.64	548083.2	906673.5	53.26	0.23	
3259	1.5	195.8	-185.01	3257.99	-55.89	-5.48	548080.9	906672.6	55.68	0.44	
3345	2.2	201.4	-99.06	3343.94	-58.5	-6.39	548078.2	906671.7	58.44	0.84	
3430	1.8	198.4	-14.11	3428.89	-61.29	-7.4	548075.5	906670.7	61.38	0.49	
3515	1.6	192.5	70.85	3513.85	-63.72	-8.08	548073	906670	63.9	0.31	
3601	2.3	194	156.8	3599.8	-66.56	-8.76	548070.2	906669.3	66.83	0.82	
3686	2.2	194.8	241.74	3684.74	-69.79	-9.59	548067	906668.5	70.16	0.12	
3771	2.2	195.4	326.67	3769.67	-72.95	-10.44	548063.8	906667.7	73.42	0.03	
3857	2.1	197.4	412.61	3855.61	-76.04	-11.35	548060.7	906666.7	76.64	0.15	
3942	2.1	198.4	497.56	3940.56	-79	-12.3	548057.7	906665.8	79.75	0.04	
4027	2	195.3	582.5	4025.5	-81.91	-13.19	548054.8	906664.9	82.78	0.18	
4112	1.8	192.9	667.45	4110.45	-84.64	-13.88	548052.1	906664.2	85.6	0.25	
4197	1.8	192.3	752.41	4195.41	-87.25	-14.46	548049.5	906663.6	88.27	0.02	
4282	1.7	200	837.37	4280.37	-89.74	-15.17	548047	906662.9	90.85	0.3	
4367	1.6	200.3	922.34	4365.34	-92.04	-16.02	548044.7	906662.1	93.28	0.12	
4453	1.6	198.8	1008.3	4451.3	-94.3	-16.82	548042.5	906661.3	95.67	0.05	
4538	1.7	196.4	1093.27	4536.27	-96.63	-17.56	548040.1	906660.5	98.1	0.14	
4623	1.8	200	1178.23	4621.23	-99.1	-18.37	548037.7	906659.7	100.69	0.17	
4709	1.8	197.3	1264.19	4707.19	-101.65	-19.24	548035.1	906658.9	103.38	0.1	
4794	1.9	199.3	1349.14	4792.14	-104.26	-20.1	548032.5	906658	106.11	0.14	
4879	1.8	199.9	1434.1	4877.1	-106.84	-21.02	548029.9	906657.1	108.83	0.12	
4964	1.7	198	1519.06	4962.06	-109.3	-21.86	548027.5	906656.2	111.41	0.14	

5050	2.4	201.1	1605	5048	-112.19	-22.9	548024.6	906655.2	114.47	0.82
5135	2.5	199.9	1689.92	5132.92	-115.6	-24.18	548021.2	906653.9	118.07	0.13
5221	2.3	198.6	1775.85	5218.85	-118.99	-25.36	548017.8	906652.7	121.65	0.24
5306	2.2	197.3	1860.78	5303.78	-122.17	-26.39	548014.6	906651.7	124.97	0.13
5391	2.2	194.7	1945.72	5388.72	-125.3	-27.29	548011.4	906650.8	128.23	0.12
5476	1.9	195.3	2030.67	5473.67	-128.24	-28.08	548008.5	906650	131.27	0.35
5561	1.7	201.5	2115.62	5558.62	-130.77	-28.91	548006	906649.2	133.93	0.33
5646	1.1	208.8	2200.6	5643.6	-132.66	-29.77	548004.1	906648.3	135.96	0.73
5732	0.9	220.1	2286.59	5729.59	-133.9	-30.6	548002.9	906647.5	137.35	0.33
5817	1	217.5	2371.57	5814.57	-135	-31.48	548001.8	906646.6	138.62	0.13
5902	1.4	212.4	2456.56	5899.56	-136.47	-32.49	548000.3	906645.6	140.28	0.49
5988	1.6	213	2542.53	5985.53	-138.36	-33.71	547998.4	906644.4	142.4	0.23
6073	2	214.2	2627.48	6070.48	-140.58	-35.19	547996.2	906642.9	144.9	0.47
6159	1.8	216.6	2713.44	6156.44	-142.91	-36.84	547993.8	906641.3	147.53	0.25
6244	1.3	221	2798.41	6241.41	-144.71	-38.26	547992	906639.8	149.61	0.6
6330	1.5	222.6	2884.38	6327.38	-146.27	-39.67	547990.5	906638.4	151.45	0.24
6415	1.8	207.8	2969.34	6412.34	-148.27	-41.04	547988.5	906637.1	153.71	0.61
6500	2.6	202.7	3054.28	6497.28	-151.23	-42.41	547985.5	906635.7	156.9	0.97
6586	2.4	199.5	3140.2	6583.2	-154.73	-43.76	547982	906634.3	160.61	0.28
6671	1.9	194.5	3225.14	6668.14	-157.77	-44.71	547979	906633.4	163.79	0.63
6756	1.9	189.7	3310.09	6753.09	-160.52	-45.3	547976.2	906632.8	166.6	0.19
6841	1.8	197.9	3395.05	6838.05	-163.18	-45.95	547973.6	906632.1	169.34	0.33
6904	1.6	190.7	3458.02	6901.02	-164.99	-46.41	547971.8	906631.7	171.2	0.46 Current MWD Survey
6953	1.6	190.7	3507	6950	-166.33	-46.67	547970.4	906631.4	172.57	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 KB. 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 193.010° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Grid Convergence at Surface is 0.637°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 6953.00ft.,
the Bottom Hole Displacement is 172.76ft., in the Direction of 193.010° (Grid).