

Results of Directional Survey

API number:	30-025-41286	DD
OGRID:		Operator: APACHE CORP
	Property:	NORTHEAST DRINKARD UNIT # 355

surface	ULSTR:	X(P)	03	T 21S	R 37E
				1310 FSL	620 FEL

BH Loc	ULSTR:	X(P)	03	T 21S	R 37E
6966 MD		6962.2	TVD	1193 FSL	555 FEL

Top Perf/OH	ULSTR:	X(P)	03	T 21S	R 37E
5653 MD		5651.7	TVD	1262 FSL	596 FEL

Bot Perf/OH	ULSTR:	X(P)	03	T 21S	R 37E
6761 MD		6757.6	TVD	1204 FSL	563 FEL

	MD	N/S	E/W	VD
	5650	-47.65	23.87	5648.72
TOP PERFS/OH	5653	-47.80	23.96	5651.71
	5735	-52.01	26.41	5733.57
	6759	-106.33	57.24	6755.65
BOT PERFS/OH	6761	-106.44	57.32	6757.64
	6844	-111.16	60.80	6840.43

NEXT TO LAST	6912	-114.65	63.37	6908.30
LAST READING	6966	-117.24	65.26	6962.20
TD	6966	-117.24	65.26	6962.20

Surface Location	1310 FS	620 FE
Projected BHL	1193 FS	555 FE
Location of		
Top Perfs/OH	1262 FS	596 FE
Bottom Perfs/OH	1204 FS	563 FE

SUMMARY of Subsurface Locations

Surface Location	X-03-21S-37E	1310 FS	620 FE	Vert. Depth
Top Perfs/OH	X-03-21S-37E	1262 FS	596 FE	5651.71
Bottom Perfs/OH	X-03-21S-37E	1204 FS	563 FE	6757.64
Projected TD	X-03-21S-37E	1193 FS	555 FE	6962.20

MAR 31 2014

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

Northeast Drinkard Unit # 355 30-025-41286
Lea County, New Mexico

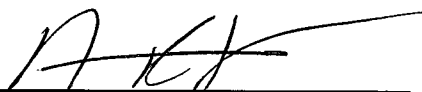
ULP 3-215-37E 1310' FSL + 620' FEL

492	4.92	0.10	0.18	0.86	0.86
738	2.46	0.50	0.88	2.15	3.01
993	2.55	0.40	0.70	1.79	4.80
1250	2.57	1.80	3.15	8.10	12.89

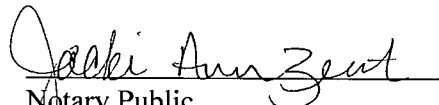
HOBBS OCD

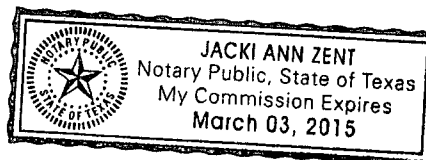
FEB 10 2014

RECEIVED


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 3rd day of December, 2013 by
Archie Brown - General Manager, CapStar Drilling, Inc.


Notary Public





HOBBS OCD

FEB 10 2014

RECEIVED

Apache Corporation

Lea County, NM (NAD83 NME)

NEDU 30-025-41286

UL P 3-215-37E

#355

1310' FSL + 620' FEL

WB1/Job #1310141

Survey: Phoenix MWD Surveys

Phoenix Final Survey Report

19 November, 2013



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #355
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3473.00usft (Capstar 120)
Site:	NEDU	MD Reference:	KB @ 3473.00usft (Capstar 120)
Well:	#355	North Reference:	Grid
Wellbore:	WB1/Job #1310141	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	NEDU		
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' 15.55234 N
		Longitude:	103° 8' 39.81023 W
		Grid Convergence:	0.64 °

Well	#355		
Well Position	+N/-S	0.00 usft	Northing: 549,246.17 usft
	+E/-W	0.00 usft	Easting: 907,874.81 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 30' 15.55234 N
		Longitude:	103° 8' 39.81023 W
		Ground Level:	3,462.00 usft

Wellbore	WB1/Job #1310141				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	11/13/13	7.21	60.45	48,581

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	154.53

Survey Program	Date 11/19/13			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	1,293.00	Gyro Surveys (WB1/Job #1310141)	ISCWSA-GYRO-3	VES Gyro
1,387.00	6,966.00	Phoenix MWD Surveys (WB1/Job #13101)	MWD	MWD - Standard

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,293.00	0.70	162.75	1,292.97	-5.93	2.77	6.54	0.00
1,387.00	0.60	168.70	1,386.97	-6.96	3.03	7.59	0.13
First Phoenix Survey							
1,472.00	0.50	160.80	1,471.96	-7.75	3.24	8.39	0.15
1,557.00	0.20	129.90	1,556.96	-8.19	3.48	8.89	0.40
1,643.00	0.50	114.10	1,642.96	-8.44	3.94	9.31	0.36
1,728.00	0.50	140.40	1,727.96	-8.88	4.51	9.96	0.27
1,814.00	0.70	104.70	1,813.95	-9.30	5.26	10.66	0.48
1,899.00	1.00	76.40	1,898.94	-9.26	6.48	11.15	0.60
1,985.00	1.40	73.80	1,984.92	-8.79	8.22	11.47	0.47
2,070.00	1.80	76.90	2,069.89	-8.20	10.52	11.92	0.48

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Site:	NEDU	MD Reference:	KB @ 3473.00usft (Capstar 120)
Well:	#355	North Reference:	Grid
Wellbore:	WB1/Job #1310141	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)	
2,155.00	1.60	67.50	2,154.85	-7.44	12.91	12.27	0.40	
2,240.00	1.10	101.20	2,239.83	-7.14	14.81	12.82	1.08	
2,325.00	1.30	107.20	2,324.81	-7.59	16.53	13.96	0.28	
2,411.00	1.30	124.80	2,410.79	-8.43	18.27	15.47	0.46	
2,496.00	0.60	155.90	2,495.78	-9.39	19.24	16.75	0.99	
2,581.00	0.50	166.50	2,580.77	-10.16	19.51	17.56	0.17	
2,667.00	0.40	204.10	2,666.77	-10.79	19.47	18.12	0.35	
2,752.00	0.50	207.80	2,751.77	-11.39	19.18	18.53	0.12	
2,837.00	0.40	224.30	2,836.77	-11.93	18.80	18.86	0.19	
2,922.00	0.30	224.60	2,921.76	-12.30	18.43	19.04	0.12	
3,007.00	0.40	238.10	3,006.76	-12.62	18.03	19.15	0.15	
3,092.00	0.60	230.00	3,091.76	-13.06	17.43	19.29	0.25	
3,177.00	0.40	242.20	3,176.76	-13.49	16.83	19.41	0.27	
3,263.00	0.30	239.60	3,262.75	-13.74	16.37	19.45	0.12	
3,348.00	0.40	252.90	3,347.75	-13.94	15.90	19.42	0.15	
3,433.00	0.50	193.80	3,432.75	-14.39	15.52	19.67	0.53	
3,518.00	0.30	202.20	3,517.75	-14.95	15.35	20.10	0.24	
3,604.00	0.40	234.30	3,603.75	-15.34	15.02	20.31	0.25	
3,689.00	0.40	213.10	3,688.75	-15.76	14.62	20.51	0.17	
3,774.00	0.40	229.20	3,773.74	-16.20	14.23	20.75	0.13	
3,859.00	0.40	206.30	3,858.74	-16.66	13.88	21.01	0.19	
3,945.00	0.30	192.20	3,944.74	-17.15	13.70	21.37	0.15	
4,030.00	0.40	227.90	4,029.74	-17.57	13.43	21.64	0.28	
4,115.00	0.50	226.90	4,114.74	-18.02	12.94	21.83	0.12	
4,200.00	0.30	262.70	4,199.73	-18.30	12.45	21.88	0.37	
4,285.00	0.30	256.30	4,284.73	-18.38	12.01	21.76	0.04	
4,370.00	0.40	176.60	4,369.73	-18.73	11.81	21.99	0.54	
4,455.00	0.30	217.10	4,454.73	-19.21	11.69	22.37	0.31	
4,540.00	0.30	265.80	4,539.73	-19.40	11.34	22.39	0.29	
4,626.00	0.30	233.70	4,625.73	-19.55	10.93	22.35	0.19	
4,711.00	0.20	275.70	4,710.73	-19.67	10.60	22.32	0.24	
4,796.00	0.30	277.40	4,795.73	-19.62	10.24	22.12	0.12	
4,882.00	0.20	250.20	4,881.73	-19.64	9.87	21.98	0.18	
4,967.00	0.40	267.00	4,966.72	-19.71	9.44	21.85	0.25	
5,052.00	0.20	175.30	5,051.72	-19.87	9.15	21.88	0.53	
5,138.00	1.10	162.00	5,137.72	-20.81	9.42	22.84	1.05	
5,223.00	2.20	157.40	5,222.68	-23.09	10.30	25.28	1.30	
5,308.00	3.00	153.80	5,307.59	-26.59	11.91	29.13	0.96	
5,393.00	4.30	151.40	5,392.42	-31.39	14.41	34.53	1.54	
5,479.00	4.60	148.80	5,478.16	-37.17	17.74	41.19	0.42	
5,564.00	4.10	150.40	5,562.91	-42.72	21.01	47.61	0.61	
5,650.00	3.50	149.20	5,648.72	-47.65	23.87	53.29	0.70	
5,735.00	3.30	150.40	5,733.57	-52.01	26.41	58.31	0.25	
5,821.00	3.30	151.40	5,819.43	-56.33	28.82	63.25	0.07	
5,906.00	3.30	148.20	5,904.29	-60.56	31.28	68.13	0.22	

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Wellbore:	WB1/Job #1310141	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)	
5,991.00	3.60	150.30	5,989.14	-64.96	33.89	73.22	0.38	
6,077.00	3.40	151.30	6,074.98	-69.54	36.45	78.46	0.24	
6,162.00	3.40	150.30	6,159.83	-73.94	38.91	83.49	0.07	
6,247.00	3.00	148.80	6,244.69	-78.03	41.31	88.21	0.48	
6,333.00	3.30	157.20	6,330.56	-82.24	43.44	92.93	0.64	
6,418.00	3.40	156.90	6,415.42	-86.81	45.37	97.89	0.12	
6,503.00	3.60	150.90	6,500.26	-91.46	47.66	103.07	0.49	
6,589.00	4.00	149.20	6,586.07	-96.40	50.51	108.75	0.48	
6,674.00	4.00	145.30	6,670.86	-101.38	53.72	114.63	0.32	
6,759.00	4.20	143.80	6,755.65	-106.33	57.24	120.61	0.27	
6,844.00	3.90	143.40	6,840.43	-111.16	60.80	126.51	0.35	
6,912.00	3.40	143.90	6,908.30	-114.65	63.37	130.76	0.74	
Last Phoenix Survey								
6,966.00	3.40	143.90	6,962.20	-117.24	65.26	133.91	0.00	
Projection to TD								

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,387.00	1,386.97	-6.96	3.03	First Phoenix Survey	
6,912.00	6,908.30	-114.65	63.37	Last Phoenix Survey	
6,966.00	6,962.20	-117.24	65.26	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____

Phoenix Technology Services

Apache Corporation

NEDU #355
Lea County, NM (NAD83 NME)
WB1/Job #1310141
Phoenix MWD Surveys

Surface Loc.:
Northing: (Y) 907874.81
Easting: (X) 549246.17
KB Elev: 3473.00'
GL Elev: 3462.00'

Survey Type Information:
H 100.00 - 1293.00 GYRO SURVEYS : ISCWSA-GYRO-3
H 1387.00 - 6966.00 PHOENIX MWD SURVEYS : MWD

Measured Depth (ft)	Incl. (°)	Azim. (°)	Sub-Sea Depth (ft)	Vertical Depth (ft)	Local Coor (+N/-S) (ft)	(+E/-W) (ft)	UTM Coor Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Annotation
1293	0.7	162.75	-2180.03	1292.97	-5.93	2.77	549240.2	907877.6	6.54	0	
1387	0.6	168.7	-2086.03	1386.97	-6.96	3.03	549239.2	907877.8	7.59	0.13	First Phoenix Survey - MWD
1472	0.5	160.8	-2001.04	1471.96	-7.75	3.24	549238.4	907878.1	8.39	0.15	
1557	0.2	129.9	-1916.04	1556.96	-8.19	3.48	549238	907878.3	8.89	0.4	
1643	0.5	114.1	-1830.04	1642.96	-8.44	3.94	549237.7	907878.8	9.31	0.36	
1728	0.5	140.4	-1745.04	1727.96	-8.88	4.51	549237.3	907879.3	9.96	0.27	
1814	0.7	104.7	-1659.05	1813.95	-9.3	5.26	549236.9	907880.1	10.66	0.48	
1899	1	76.4	-1574.06	1898.94	-9.26	6.48	549236.9	907881.3	11.15	0.6	
1985	1.4	73.8	-1488.08	1984.92	-8.79	8.22	549237.4	907883	11.47	0.47	
2070	1.8	76.9	-1403.11	2069.89	-8.2	10.52	549238	907885.3	11.92	0.48	
2155	1.6	67.5	-1318.15	2154.85	-7.44	12.91	549238.7	907887.7	12.27	0.4	
2240	1.1	101.2	-1233.17	2239.83	-7.14	14.81	549239	907889.6	12.82	1.08	
2325	1.3	107.2	-1148.19	2324.81	-7.59	16.53	549238.6	907891.3	13.96	0.28	
2411	1.3	124.8	-1062.21	2410.79	-8.43	18.27	549237.7	907893.1	15.47	0.46	
2496	0.6	155.9	-977.22	2495.78	-9.39	19.24	549236.8	907894.1	16.75	0.99	
2581	0.5	166.5	-892.23	2580.77	-10.16	19.51	549236	907894.3	17.56	0.17	
2667	0.4	204.1	-806.23	2666.77	-10.79	19.47	549235.4	907894.3	18.12	0.35	
2752	0.5	207.8	-721.23	2751.77	-11.39	19.18	549234.8	907894	18.53	0.12	
2837	0.4	224.3	-636.23	2836.77	-11.93	18.8	549234.2	907893.6	18.86	0.19	
2922	0.3	224.6	-551.24	2921.76	-12.3	18.43	549233.9	907893.2	19.04	0.12	
3007	0.4	238.1	-466.24	3006.76	-12.62	18.03	549233.6	907892.8	19.15	0.15	
3092	0.6	230	-381.24	3091.76	-13.06	17.43	549233.1	907892.2	19.29	0.25	
3177	0.4	242.2	-296.24	3176.76	-13.49	16.83	549232.7	907891.6	19.41	0.27	
3263	0.3	239.6	-210.25	3262.75	-13.74	16.37	549232.4	907891.2	19.45	0.12	
3348	0.4	252.9	-125.25	3347.75	-13.94	15.9	549232.2	907890.7	19.42	0.15	
3433	0.5	193.8	-40.25	3432.75	-14.39	15.52	549231.8	907890.3	19.67	0.53	
3518	0.3	202.2	44.75	3517.75	-14.95	15.35	549231.2	907890.2	20.1	0.24	
3604	0.4	234.3	130.75	3603.75	-15.34	15.02	549230.8	907889.8	20.31	0.25	
3689	0.4	213.1	215.75	3688.75	-15.76	14.62	549230.4	907889.4	20.51	0.17	
3774	0.4	229.2	300.74	3773.74	-16.2	14.23	549230	907889	20.75	0.13	
3859	0.4	206.3	385.74	3858.74	-16.66	13.88	549229.5	907888.7	21.01	0.19	
3945	0.3	192.2	471.74	3944.74	-17.15	13.7	549229	907888.5	21.37	0.15	
4030	0.4	227.9	556.74	4029.74	-17.57	13.43	549228.6	907888.2	21.64	0.28	
4115	0.5	226.9	641.74	4114.74	-18.02	12.94	549228.2	907887.8	21.83	0.12	
4200	0.3	262.7	726.73	4199.73	-18.3	12.45	549227.9	907887.3	21.88	0.37	
4285	0.3	256.3	811.73	4284.73	-18.38	12.01	549227.8	907886.8	21.76	0.04	
4370	0.4	176.6	896.73	4369.73	-18.73	11.81	549227.4	907886.6	21.99	0.54	
4455	0.3	217.1	981.73	4454.73	-19.21	11.69	549227	907886.5	22.37	0.31	
4540	0.3	265.8	1066.73	4539.73	-19.4	11.34	549226.8	907886.2	22.39	0.29	
4626	0.3	233.7	1152.73	4625.73	-19.55	10.93	549226.6	907885.7	22.35	0.19	
4711	0.2	275.7	1237.73	4710.73	-19.67	10.6	549226.5	907885.4	22.32	0.24	
4796	0.3	277.4	1322.73	4795.73	-19.62	10.24	549226.6	907885.1	22.12	0.12	
4882	0.2	250.2	1408.73	4881.73	-19.64	9.87	549226.5	907884.7	21.98	0.18	
4967	0.4	267	1493.72	4966.72	-19.71	9.44	549226.5	907884.3	21.85	0.25	
5052	0.2	175.3	1578.72	5051.72	-19.87	9.15	549226.3	907884	21.88	0.53	
5138	1.1	162	1664.72	5137.72	-20.81	9.42	549225.4	907884.2	22.84	1.05	
5223	2.2	157.4	1749.68	5222.68	-23.09	10.3	549223.1	907885.1	25.28	1.3	
5308	3	153.8	1834.59	5307.59	-26.59	11.91	549219.6	907886.7	29.13	0.96	
5393	4.3	151.4	1919.42	5392.42	-31.39	14.41	549214.8	907889.2	34.53	1.54	
5479	4.6	148.8	2005.16	5478.16	-37.17	17.74	549209	907892.6	41.19	0.42	
5564	4.1	150.4	2089.91	5562.91	-42.72	21.01	549203.5	907895.8	47.61	0.61	
5650	3.5	149.2	2175.72	5648.72	-47.65	23.87	549198.5	907898.7	53.29	0.7	
5735	3.3	150.4	2260.57	5733.57	-52.01	26.41	549194.2	907901.2	58.31	0.25	
5821	3.3	151.4	2346.43	5819.43	-56.33	28.82	549189.8	907903.6	63.25	0.07	
5906	3.3	148.2	2431.29	5904.29	-60.56	31.28	549185.6	907906.1	68.13	0.22	
5991	3.6	150.3	2516.14	5989.14	-64.96	33.89	549181.2	907908.7	73.22	0.38	
6077	3.4	151.3	2601.98	6074.98	-69.54	36.45	549176.6	907911.3	78.46	0.24	
6162	3.4	150.3	2686.83	6159.83	-73.94	38.91	549172.2	907913.7	83.49	0.07	
6247	3	148.8	2771.69	6244.69	-78.03	41.31	549168.1	907916.1	88.21	0.48	
6333	3.3	157.2	2857.56	6330.56	-82.24	43.44	549163.9	907918.3	92.93	0.64	
6418	3.4	156.9	2942.42	6415.42	-86.81	45.37	549159.4	907920.2	97.89	0.12	
6503	3.6	150.9	3027.26	6500.26	-91.46	47.66	549154.7	907922.5	103.07	0.49	
6589	4	149.2	3113.07	6586.07	-96.4	50.51	549149.8	907925.3	108.75	0.48	
6674	4	145.3	3197.86	6670.86	-101.38	53.72	549144.8	907928.5	114.63	0.32	
6759	4.2	143.8	3282.65	6755.65	-106.33	57.24	549139.8	907932.1	120.61	0.27	
6844	3.9	143.4	3367.43	6840.43	-111.16	60.8	549135	907935.6	126.51	0.35	
6912	3.4	143.9	3435.3	6908.3	-114.65	63.37	549131.5	907938.2	130.76	0.74	Last Phoenix Survey
6966	3.4	143.9	3489.2	6962.2	-117.24	65.26	549128.9	907940.1	133.91	0	Projection to TD

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 154.530° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Grid Convergence at Surface is 0.639'.

Based upon Minimum Curvature type calculations, at a Measured Depth of 6966.00ft.,
the Bottom Hole Displacement is 134.18ft., in the Direction of 154.530° (Grid).

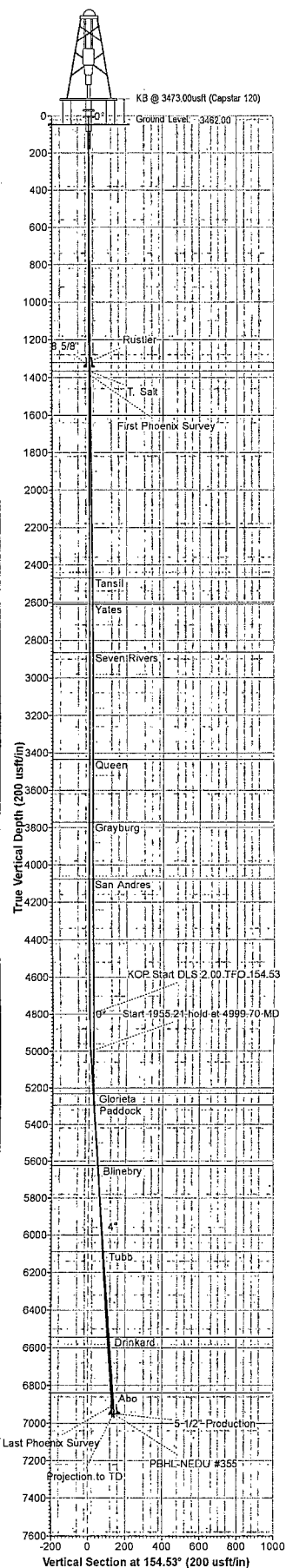
Project: Lea County, NM (NAD83 NME)
 Site: NEDU
 Well: #355
 Wellbore: WB1/Job #1310141
 Design: Plan #3 11-11-13
 Rig: Capstar 120



PHOENIX
 TECHNOLOGY SERVICES



Azimuths to Grid North
 True North: -0.64°
 Magnetic North: 6.57°
 Magnetic Field
 Strength: 48581.1nT
 Dip Angle: 60.45°
 Date: 11/13/2013
 Model: BGGM2013



WELL DETAILS					
	+N-S	+E-W	Northing	Ground Level	3482.00
	0.00	0.00	549246.17	Easting	907874.81
				Latitude	32° 30' 15.55234 N
				Longitude	103° 8' 39.81023 W

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSecl	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4800.00	0.00	0.00	4800.00	0.00	0.00	0.00	0.00	0.00	KOP Start DLS 2.00 TFO 154.53
3	4999.70	3.99	154.53	4999.54	-5.28	2.99	2.00	154.53	6.98	Start 1955.21 hold at 4999.70 MD
4	6954.91	3.99	154.53	6950.00	-129.23	61.55	0.00	143.14	PBHL-NEDU #355	TD at 6954.91

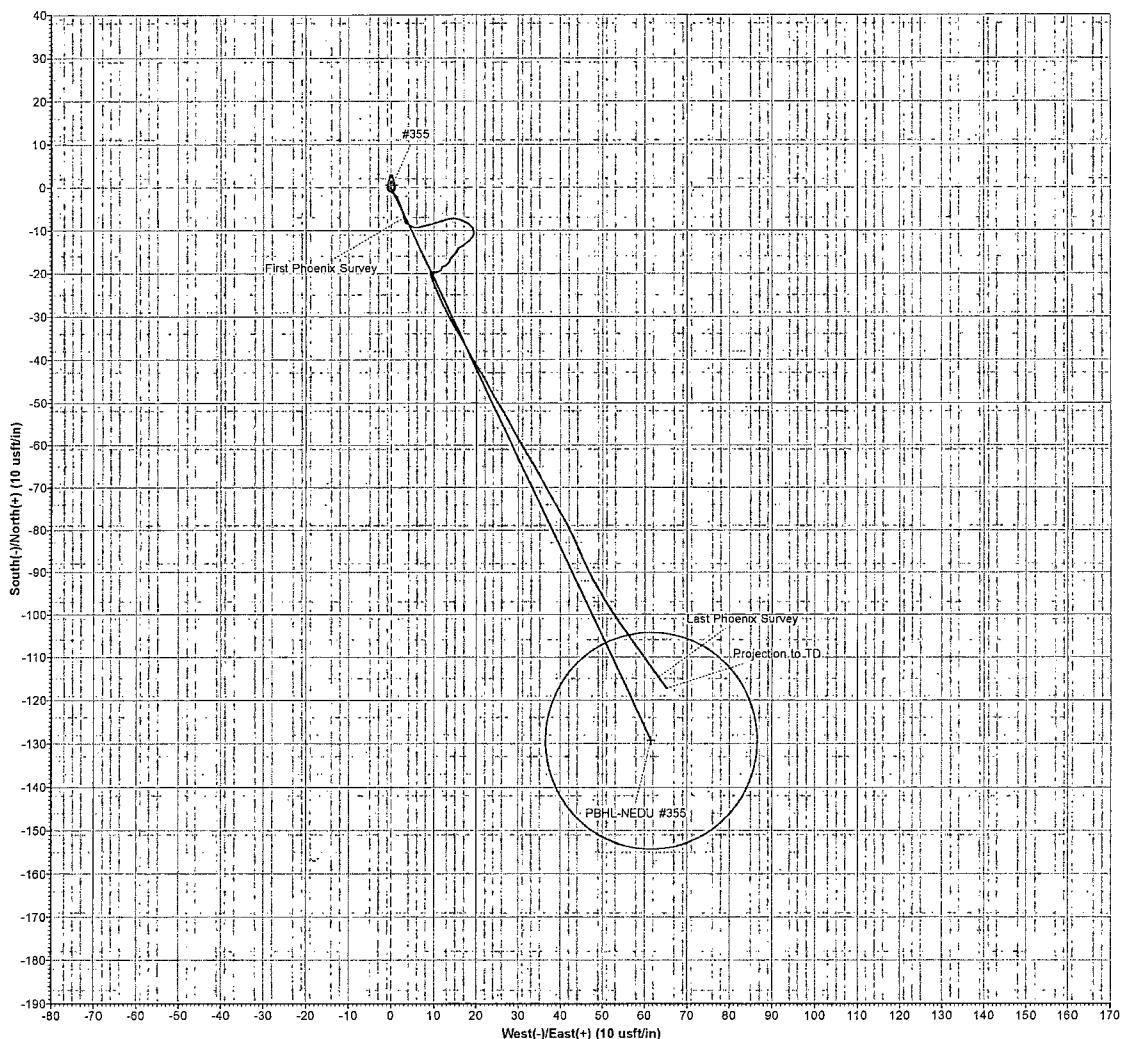
DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL-NEDU #355	6950.00	-129.23	61.55	549116.94	907936.36	32° 30' 14.26699 N	103° 8' 39.10840 W	Circle (Radius: 25.00)	

LEGEND	
—●—	#355, WB1/Job #1310141, Surveys (Capstar 120) V0
—	Plan #3 11-11-13

CASING DETAILS			
TVD	MD	Name	Size
1343.00	1343.00	8 5/8"	8 5/8"
6950.00	6954.91	5 1/2" Production	5 1/2"

Map System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone Name: New Mexico Eastern Zone
 Local Origin: Well #355, Grid North
 Latitude: 32° 30' 15.55234 N
 Longitude: 103° 8' 39.81023 W
 Grid East: 907874.81
 Grid North: 549246.17
 Scale Factor: 1.000
 Geomagnetic Model: BGGM2013
 Sample Date: 19-Nov-13
 Magnetic Declination: 7.21°
 Dip Angle from Horizontal: 60.45°
 Magnetic Field Strength: 48581
 To convert a Magnetic Direction to a Grid Direction, Add 6.57°
 To convert a Magnetic Direction to a True Direction, Add 7.21° East
 To convert a True Direction to a Grid Direction, Subtract 0.64°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
1318.00	1318.00	Rustler		
1365.00	1365.00	T. Salt		
2459.00	2459.00	Tansil		
2608.00	2608.00	Yates		
2864.00	2864.00	Seven Rivers		
3434.00	3434.00	Queen		
3771.00	3771.00	Grayburg		
4076.00	4076.00	San Andres		
5230.00	5230.72	Clarieta		
5294.00	5294.88	Paddock		
5624.00	5625.68	Blinberry		
6087.00	6089.81	Tubb		
6541.00	6544.91	Drinkard		
6840.00	6844.64	Abo		



APACHE CORP

Eunice

Lea County, NM (Grid North)

Northeast Drinkard Unit #355 30-025-41286

VH - Job #321113-KW-1192

UL P 3-215-37E 1310' FSL + 620' FEL

HOBBS OCD

Survey: Gyro

FEB 10 2014

RECEIVED

SDI Survey Report

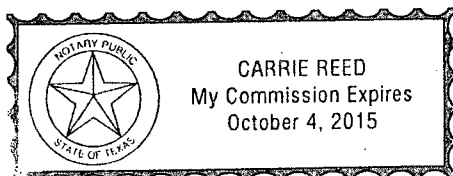
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 30th of November, 2013.

[Signature]

Notary Signature
County of Midland
State of Texas



SDI

SDI Survey Report

Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #355
Project:	Eunice	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Lea County, NM (Grid North)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Northeast Drinkard Unit #355	North Reference:	Grid
Wellbore:	VH - Job #321113-KW-1192	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #321113-KW-1192	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 (Grid North)				
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:		0.0 usft	Slot Radius:	0"	Grid Convergence:	0.63 °

Well:	Northeast Drinkard Unit #355, Vertical					
Well Position	+N/-S	0.0 usft	Northing:	549,227.93 usft	Latitude:	32° 30' 15.550 N
	+E/-W	0.0 usft	Easting:	866,545.26 usft	Longitude:	103° 8' 39.810 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft	

Wellbore	VH - Job #321113-KW-1192				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/15/2013	7.11	60.46	48,614

Design		VH - Job #321113-KW-1192			
Audit Notes:					
Version:		1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	154.97

Survey Program		Date	11/27/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,293.0	Gyro (VH - Job #321113-KW-1192)	Keeper	Keeper Gyro	

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
100.0	0.20	289.36	100.0	0.1	-0.2	289.36	0.2
200.0	0.08	229.94	200.0	0.1	-0.4	280.48	0.4
300.0	0.18	178.47	300.0	-0.1	-0.4	253.11	0.5
400.0	0.26	155.85	400.0	-0.5	-0.3	214.07	0.6
500.0	0.17	134.81	500.0	-0.8	-0.1	189.63	0.8
600.0	0.33	126.45	600.0	-1.1	0.2	169.53	1.1
700.0	0.31	122.49	700.0	-1.4	0.7	154.75	1.5
800.0	0.38	142.86	800.0	-1.8	1.1	148.96	2.1
900.0	0.35	149.69	900.0	-2.3	1.4	148.31	2.7
1,000.0	0.42	158.08	1,000.0	-2.9	1.7	149.48	3.4
1,100.0	0.63	160.13	1,100.0	-3.8	2.1	151.55	4.3

SDI

SDI Survey Report

Company:	APACHE CORP	Local Co-ordinate Reference:	Well Northeast Drinkard Unit #355
Project:	Eunice	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Lea County, NM (Grid North)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Northeast Drinkard Unit #355	North Reference:	Grid
Wellbore:	VH - Job #321113-KW-1192	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #321113-KW-1192	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,200.0	0.67	161.66	1,200.0	-4.9	2.4	153.50	5.4	
1,293.0	0.70	162.75	1,293.0	-5.9	2.8	154.97	6.5	

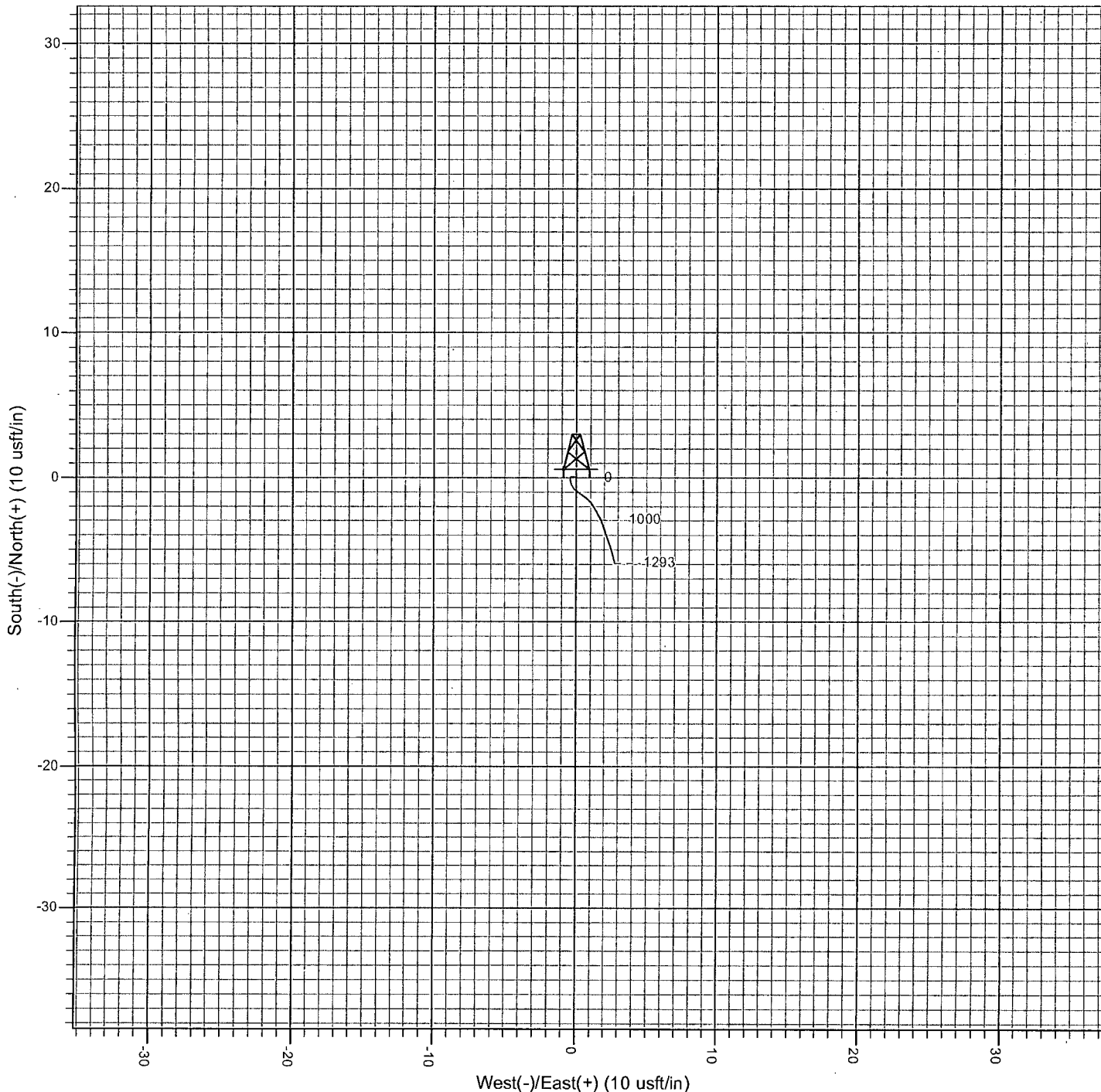


Scientific Drilling

Project: Eunice
Lea County, NM (Grid North)
Well: Northeast Drinkard Unit #355
Wellbore: VH - Job #321113-KW-1192
Design: VH - Job #321113-KW-1192

WELL DETAILS: Northeast Drinkard Unit #355
WELL @ 0.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.0	0.0	549227.93	866545.26	0.0	32° 30' 15.550 N	103° 8' 39.810 W	



PROJECT DETAILS: Eunice	SITE DETAILS: Lea County, NM (Grid North)
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: 0.0
Zone: New Mexico East 3001	Convergence: 0.63
System Datum: Mean Sea Level	Local North: Grid