



Company Name: Apache Corporation
West Blinbry Drinkard Unit #179
Lea County, NM
Rig: Sendero #19
Created By: Shelly Peterkin
Date: 4/4/2017

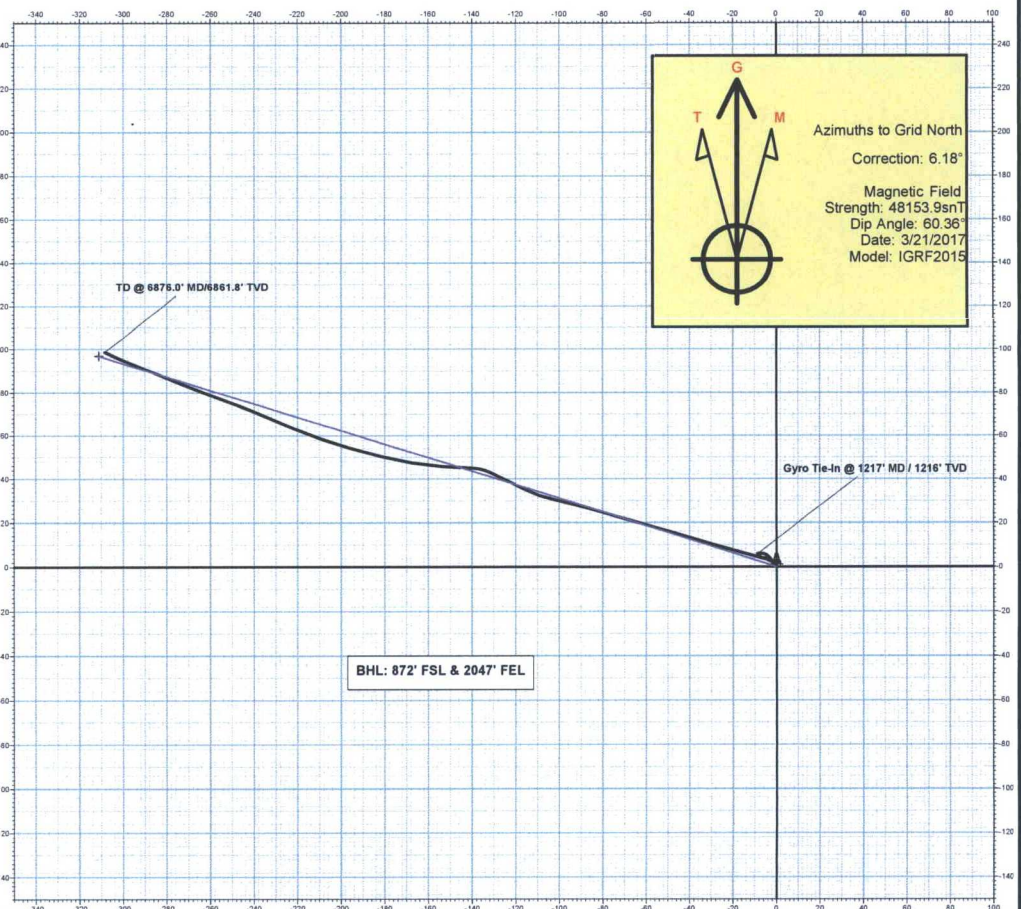
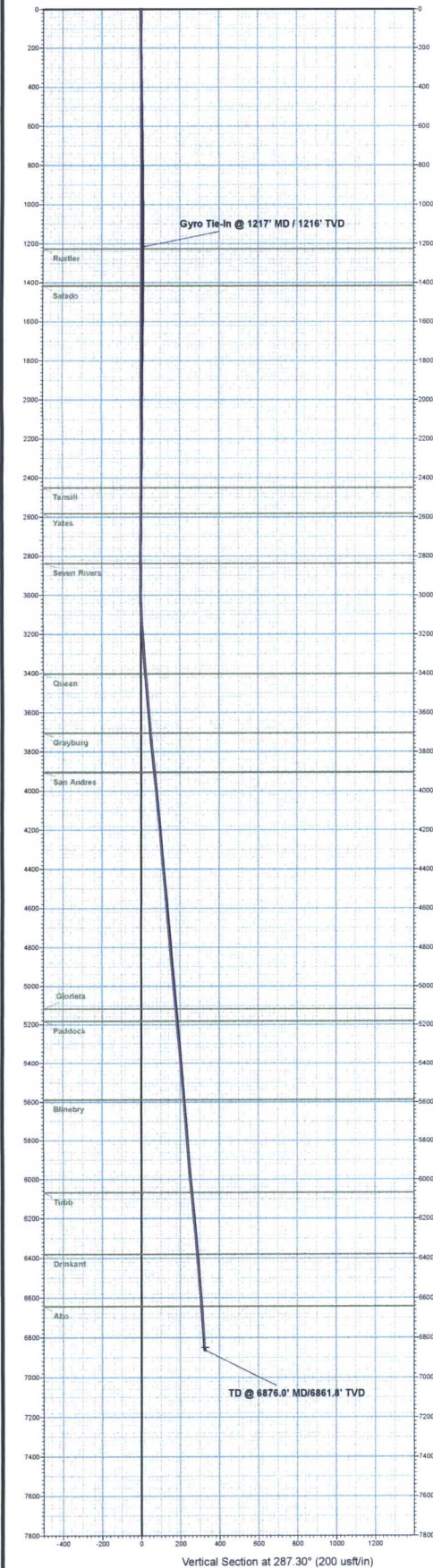
West Blinbry Drinkard Unit #179
Lea County, NM
Q170386 & WT-170322
Design #1

WELL DETAILS: West Blinbry Drinkard Unit #179							
+N/-S	+E/-W	Northing	Ground Level:	3442.0	Latitude	Slot	
0.0	0.0	538001.70	Easting	860438.50	32° 28' 25.147 N	103° 9' 52.566 W	

ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1217.0	0.30	283.93	1216.9	6.0	-8.5	9.9	11.3	Gyro Tie-In @ 1217' MD / 1216' TVD
6876.0	3.70	295.70	6861.8	96.7	-308.3	323.7	351.3	TD @ 6876.0' MD/6861.8' TVD

PROJECT DETAILS: Lea County, NM	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - WBDR #179	8850.0	96.9	-311.1	538099.60	860125.40	32° 28' 25.140 N	103° 9' 55.185 W



Customer Apache Coi Creation Date 3/31/2017
 Project Lea County Profile Type
 Field Lea County Your Ref
 Structure Sec 16, T21 Job Numbe
 Wellhead West Bline| Kelly Bushi 3453
 Profile Wellbore # Print Date 5/4/2017

MD (ft)	Incl. Deg.	Azim. Deg.	Sub-Sea (ft)	TVD (ft)	Local N Coc (ft)	Local E Coc (ft)	Global N Cr (ft)	Global E Cc (ft)	Dogleg (°/100ft)	Vertical Sec (ft)
0	0	0	-3453	0	0	0	538001.7	860436.5	0	0
92.8	0.23	347.51	-3360.2	92.8	0.182	-0.04	538001.9	860436.5	0.248	0.09
154.6	0.74	295.11	-3298.4	154.598	0.472	-0.428	538002.2	860436.1	1.014	0.55
241	0.78	326.72	-3212.01	240.99	1.201	-1.256	538002.9	860435.2	0.481	1.56
331.3	0.91	329.9	-3121.72	331.28	2.335	-1.953	538004	860434.5	0.153	2.56
421.4	0.8	324.46	-3031.63	421.37	3.466	-2.678	538005.2	860433.8	0.152	3.59
512.7	0.74	316.96	-2940.34	512.662	4.415	-3.451	538006.1	860433	0.128	4.61
598.9	0.66	302.16	-2854.14	598.856	5.086	-4.251	538006.8	860432.2	0.229	5.57
713.2	0.63	294.85	-2739.85	713.149	5.701	-5.378	538007.4	860431.1	0.077	6.83
797.8	0.48	278.18	-2655.26	797.745	5.947	-6.151	538007.6	860430.3	0.259	7.64
881.7	0.3	268.1	-2571.36	881.643	5.989	-6.718	538007.7	860429.8	0.229	8.2
966	0.3	267.44	-2487.06	965.942	5.972	-7.16	538007.7	860429.3	0.004	8.61
1049.4	0.34	275.33	-2403.66	1049.34	5.986	-7.624	538007.7	860428.9	0.071	9.06
1133.7	0.31	258.95	-2319.36	1133.639	5.965	-8.097	538007.7	860428.4	0.115	9.5
1217	0.3	283.93	-2236.06	1216.938	5.974	-8.53	538007.7	860428	0.159	9.92
1378	0.2	153.1	-2075.06	1377.937	5.825	-8.812	538007.5	860427.7	0.284	10.15
1546	0.5	137.8	-1907.07	1545.934	5.021	-8.187	538006.7	860428.3	0.185	9.31
1715	0.4	132.3	-1738.07	1714.929	4.077	-7.255	538005.8	860429.2	0.064	8.14
1883	0.7	76.2	-1570.08	1882.922	3.928	-5.825	538005.6	860430.7	0.346	6.73
2052	0.4	132.3	-1401.09	2051.915	3.777	-4.386	538005.5	860432.1	0.344	5.31
2221	0.5	133.5	-1232.09	2220.909	2.872	-3.415	538004.6	860433.1	0.059	4.11
2389	0.6	90.6	-1064.1	2388.902	2.358	-2.003	538004.1	860434.5	0.246	2.61
2557	0.5	74.9	-896.105	2556.895	2.54	-0.416	538004.2	860436.1	0.107	1.15
2725	0.3	100.1	-728.109	2724.891	2.654	0.725	538004.4	860437.2	0.156	0.1
2893	0.3	137.4	-560.111	2892.889	2.253	1.455	538004	860438	0.114	-0.72
2953	0.2	132	-500.112	2952.888	2.067	1.64	538003.8	860438.1	0.171	-0.95
3035	1.1	277.1	-418.116	3034.884	2.069	0.965	538003.8	860437.5	1.548	-0.31
3145	3.4	285.2	-308.208	3144.792	3.055	-3.231	538004.8	860433.3	2.106	3.99
3229	4.6	284.6	-224.415	3228.585	4.557	-8.895	538006.3	860427.6	1.429	9.85
3312	4.3	285.6	-141.665	3311.335	6.233	-15.112	538007.9	860421.4	0.373	16.28
3480	5.1	285.1	25.769	3478.769	9.872	-28.388	538011.6	860408.1	0.477	30.04
3648	4.4	287.6	193.191	3646.191	13.766	-41.74	538015.5	860394.8	0.434	43.95
3816	6	285.1	360.494	3813.494	18.002	-56.361	538019.7	860380.1	0.962	59.16
3984	5.6	285.4	527.634	3980.634	22.466	-72.741	538024.2	860363.8	0.239	76.13
4152	5.3	286.9	694.874	4147.874	26.898	-88.068	538028.6	860348.4	0.198	92.08
4320	4.7	281	862.235	4315.235	30.467	-102.249	538032.2	860334.3	0.47	106.68
4489	5.7	296.4	1030.546	4483.546	35.52	-116.564	538037.2	860319.9	1.011	121.85

4656	5.6	295.9	1196.735	4649.735	42.767	-131.322	538044.5	860305.2	0.067	138.1
4747	5	273.3	1287.355	4740.355	44.935	-139.276	538046.6	860297.2	2.369	146.34
4910	4.9	272.8	1449.747	4902.747	45.684	-153.32	538047.4	860283.2	0.067	159.97
5078	4.9	280.8	1617.135	5070.135	47.379	-167.535	538049.1	860269	0.406	174.04
5247	4.9	283.1	1785.518	5238.518	50.367	-181.655	538052.1	860254.8	0.116	188.41
5416	5.1	287.4	1953.875	5406.875	54.249	-195.852	538055.9	860240.6	0.251	203.12
5585	4.4	287.8	2122.294	5575.294	58.477	-209.193	538060.2	860227.3	0.415	217.12
5754	4.7	293.8	2290.762	5743.762	63.253	-221.7	538065	860214.8	0.333	230.48
5921	4.5	293.2	2457.224	5910.224	68.595	-233.982	538070.3	860202.5	0.123	243.8
6089	5.8	290.9	2624.542	6077.542	74.22	-247.97	538075.9	860188.5	0.783	258.82
6258	5.1	291	2792.777	6245.777	79.958	-262.961	538081.7	860173.5	0.414	274.84
6426	4.9	292	2960.138	6413.138	85.322	-276.584	538087	860159.9	0.13	289.44
6595	4.6	292.9	3128.557	6581.557	90.663	-289.519	538092.4	860147	0.183	303.38
6762	4.2	291.6	3295.065	6748.065	95.52	-301.374	538097.2	860135.1	0.247	316.15
6829	3.7	295.7	3361.905	6814.905	97.361	-305.603	538099.1	860130.9	0.857	320.73
6876	3.7	295.7	3408.807	6861.807	98.676	-308.336	538100.4	860128.2	0	323.73



Apache Corporation

Lea County, NM

Sec 16, T21S, 37E

West Blinebry Drinkard Unit #179

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

04 May, 2017





Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well West Blinebry Drinkard Unit #179
Project:	Lea County, NM	TVD Reference:	Well @ 3453.0usft
Site:	Sec 16, T21S, 37E	MD Reference:	Well @ 3453.0usft
Well:	West Blinebry Drinkard Unit #179	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM5002

Project	Lea County, NM		
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	Sec 16, T21S, 37E		
Site Position:		Northing:	538,001.70 usft
From:	Map	Easting:	860,436.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 28' 25.147 N
		Longitude:	103° 9' 52.566 W
		Grid Convergence:	0.63 °

Well	West Blinebry Drinkard Unit #179		
Well Position	+N/-S	0.0 usft	Northing: 538,001.70 usft
	+E/-W	0.0 usft	Easting: 860,436.50 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 28' 25.147 N
		Longitude:	103° 9' 52.566 W
		Ground Level:	3,442.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/21/2017	6.81
			Dip Angle (°)
			60.36
			Field Strength (nT)
			48,154

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			287.30

Survey Program	Date	5/4/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
92.8	1,217.0	Phoenix Gyros (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
1,378.0	6,876.0	MWD Surveys (Wellbore #1)	MWD default	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	538,001.70	860,436.50	32° 28' 25.147 N	103° 9' 52.566 W
92.8	0.23	347.51	92.8	0.2	0.0	538,001.88	860,436.46	32° 28' 25.149 N	103° 9' 52.566 W
154.6	0.74	295.11	154.6	0.5	-0.4	538,002.17	860,436.07	32° 28' 25.152 N	103° 9' 52.571 W
241.0	0.78	326.72	241.0	1.2	-1.3	538,002.90	860,435.24	32° 28' 25.159 N	103° 9' 52.581 W
331.3	0.91	329.90	331.3	2.3	-2.0	538,004.04	860,434.55	32° 28' 25.171 N	103° 9' 52.589 W
421.4	0.80	324.46	421.4	3.5	-2.7	538,005.17	860,433.82	32° 28' 25.182 N	103° 9' 52.597 W
512.7	0.74	316.96	512.7	4.4	-3.5	538,006.12	860,433.05	32° 28' 25.191 N	103° 9' 52.606 W
598.9	0.66	302.16	598.9	5.1	-4.3	538,006.79	860,432.25	32° 28' 25.198 N	103° 9' 52.615 W
713.2	0.63	294.85	713.1	5.7	-5.4	538,007.40	860,431.12	32° 28' 25.204 N	103° 9' 52.628 W
797.8	0.48	278.18	797.7	5.9	-6.2	538,007.65	860,430.35	32° 28' 25.207 N	103° 9' 52.637 W
881.7	0.30	268.10	881.6	6.0	-6.7	538,007.69	860,429.78	32° 28' 25.207 N	103° 9' 52.644 W



Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well West Blinbry Drinkard Unit #179
Project:	Lea County, NM	TVD Reference:	Well @ 3453.0usft
Site:	Sec 16, T21S, 37E	MD Reference:	Well @ 3453.0usft
Well:	West Blinbry Drinkard Unit #179	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM5002

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
966.0	0.30	267.44	965.9	6.0	-7.2	538,007.67	860,429.34	32° 28' 25.207 N	103° 9' 52.649 W
1,049.4	0.34	275.33	1,049.3	6.0	-7.6	538,007.69	860,428.88	32° 28' 25.207 N	103° 9' 52.654 W
1,133.7	0.31	258.95	1,133.6	6.0	-8.1	538,007.67	860,428.40	32° 28' 25.207 N	103° 9' 52.660 W
1,217.0	0.30	283.93	1,216.9	6.0	-8.5	538,007.68	860,427.97	32° 28' 25.207 N	103° 9' 52.665 W
Gyro Tie-In @ 1217' MD / 1216' TVD									
1,378.0	0.20	153.10	1,377.9	5.8	-8.8	538,007.53	860,427.69	32° 28' 25.206 N	103° 9' 52.668 W
1,546.0	0.50	137.80	1,545.9	5.0	-8.2	538,006.72	860,428.31	32° 28' 25.198 N	103° 9' 52.661 W
1,715.0	0.40	132.30	1,714.9	4.1	-7.3	538,005.78	860,429.24	32° 28' 25.188 N	103° 9' 52.650 W
1,883.0	0.70	76.20	1,882.9	3.9	-5.8	538,005.63	860,430.67	32° 28' 25.187 N	103° 9' 52.634 W
2,052.0	0.40	132.30	2,051.9	3.8	-4.4	538,005.48	860,432.11	32° 28' 25.185 N	103° 9' 52.617 W
2,221.0	0.50	133.50	2,220.9	2.9	-3.4	538,004.57	860,433.08	32° 28' 25.176 N	103° 9' 52.606 W
2,389.0	0.60	90.60	2,388.9	2.4	-2.0	538,004.06	860,434.50	32° 28' 25.171 N	103° 9' 52.589 W
2,557.0	0.50	74.90	2,556.9	2.5	-0.4	538,004.24	860,436.08	32° 28' 25.172 N	103° 9' 52.571 W
2,725.0	0.30	100.10	2,724.9	2.7	0.7	538,004.36	860,437.22	32° 28' 25.173 N	103° 9' 52.557 W
2,893.0	0.30	137.40	2,892.9	2.3	1.5	538,003.96	860,437.95	32° 28' 25.169 N	103° 9' 52.549 W
2,953.0	0.20	132.00	2,952.9	2.1	1.6	538,003.77	860,438.14	32° 28' 25.168 N	103° 9' 52.547 W
3,035.0	1.10	277.10	3,034.9	2.1	1.0	538,003.77	860,437.46	32° 28' 25.168 N	103° 9' 52.555 W
3,145.0	3.40	285.20	3,144.8	3.1	-3.2	538,004.76	860,433.27	32° 28' 25.178 N	103° 9' 52.603 W
3,229.0	4.60	284.60	3,228.6	4.6	-8.9	538,006.26	860,427.60	32° 28' 25.193 N	103° 9' 52.669 W
3,312.0	4.30	285.60	3,311.3	6.2	-15.1	538,007.93	860,421.39	32° 28' 25.211 N	103° 9' 52.742 W
3,480.0	5.10	285.10	3,478.8	9.9	-28.4	538,011.57	860,408.11	32° 28' 25.248 N	103° 9' 52.896 W
3,648.0	4.40	287.60	3,646.2	13.8	-41.7	538,015.47	860,394.76	32° 28' 25.288 N	103° 9' 53.051 W
3,816.0	6.00	285.10	3,813.5	18.0	-56.4	538,019.70	860,380.14	32° 28' 25.332 N	103° 9' 53.222 W
3,984.0	5.60	285.40	3,980.6	22.5	-72.7	538,024.17	860,363.76	32° 28' 25.377 N	103° 9' 53.412 W
4,152.0	5.30	286.90	4,147.9	26.9	-88.1	538,028.60	860,348.43	32° 28' 25.423 N	103° 9' 53.590 W
4,320.0	4.70	281.00	4,315.2	30.5	-102.2	538,032.17	860,334.25	32° 28' 25.460 N	103° 9' 53.755 W
4,489.0	5.70	296.40	4,483.5	35.5	-116.6	538,037.22	860,319.94	32° 28' 25.511 N	103° 9' 53.922 W
4,656.0	5.60	295.90	4,649.7	42.8	-131.3	538,044.47	860,305.18	32° 28' 25.585 N	103° 9' 54.093 W
4,747.0	5.00	273.30	4,740.4	44.9	-139.3	538,046.64	860,297.22	32° 28' 25.607 N	103° 9' 54.186 W
4,910.0	4.90	272.80	4,902.7	45.7	-153.3	538,047.39	860,283.18	32° 28' 25.616 N	103° 9' 54.350 W
5,078.0	4.90	280.80	5,070.1	47.4	-167.5	538,049.08	860,268.96	32° 28' 25.634 N	103° 9' 54.515 W
5,247.0	4.90	283.10	5,238.5	50.4	-181.7	538,052.07	860,254.84	32° 28' 25.665 N	103° 9' 54.680 W
5,416.0	5.10	287.40	5,406.9	54.2	-195.9	538,055.95	860,240.65	32° 28' 25.705 N	103° 9' 54.845 W
5,585.0	4.40	287.80	5,575.3	58.5	-209.2	538,060.18	860,227.31	32° 28' 25.749 N	103° 9' 55.000 W
5,754.0	4.70	293.80	5,743.8	63.3	-221.7	538,064.96	860,214.80	32° 28' 25.797 N	103° 9' 55.145 W
5,921.0	4.50	293.20	5,910.2	68.6	-234.0	538,070.30	860,202.52	32° 28' 25.851 N	103° 9' 55.288 W
6,089.0	5.80	290.90	6,077.5	74.2	-248.0	538,075.92	860,188.53	32° 28' 25.908 N	103° 9' 55.451 W
6,258.0	5.10	291.00	6,245.8	80.0	-263.0	538,081.66	860,173.54	32° 28' 25.967 N	103° 9' 55.625 W
6,426.0	4.90	292.00	6,413.1	85.3	-276.6	538,087.02	860,159.91	32° 28' 26.021 N	103° 9' 55.783 W
6,595.0	4.60	292.90	6,581.6	90.7	-289.5	538,092.36	860,146.98	32° 28' 26.076 N	103° 9' 55.933 W
6,762.0	4.20	291.60	6,748.1	95.5	-301.4	538,097.22	860,135.13	32° 28' 26.125 N	103° 9' 56.071 W
6,829.0	3.70	295.70	6,814.9	97.4	-305.6	538,099.06	860,130.90	32° 28' 26.144 N	103° 9' 56.120 W
6,876.0	3.70	295.70	6,861.8	98.7	-308.3	538,100.38	860,128.16	32° 28' 26.157 N	103° 9' 56.152 W

TD @ 6876.0' MD/6861.8' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,217.0	1,216.9	6.0	-8.5	Gyro Tie-In @ 1217' MD / 1216' TVD
6,876.0	6,861.8	98.7	-308.3	TD @ 6876.0' MD/6861.8' TVD



Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well West Blinebry Drinkard Unit #179
Project:	Lea County, NM	TVD Reference:	Well @ 3453.0usft
Site:	Sec 16, T21S, 37E	MD Reference:	Well @ 3453.0usft
Well:	West Blinebry Drinkard Unit #179	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM5002

Checked By: _____	Approved By: _____	Date: _____
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