



Company Name: Apache Corporation
West Blinebry Drinkard Unit #221
Lea County, NM
Rig: Sendero #19
Created By: Shelly Peterkin
Date: 05/04/2017

West Blinebry Drinkard Unit #221
Lea County, NM
Q170546 & WT-170452
Design #1



Vertical Section at 206.03° (200 usf/in)

WELL DETAILS: West Blinebry Drinkard Unit #221

+N-S	+E-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.0	0.0	539499.20	3464.0	856365.00	32° 28' 40.313 N	103° 10' 39.887 W	

ANNOTATIONS

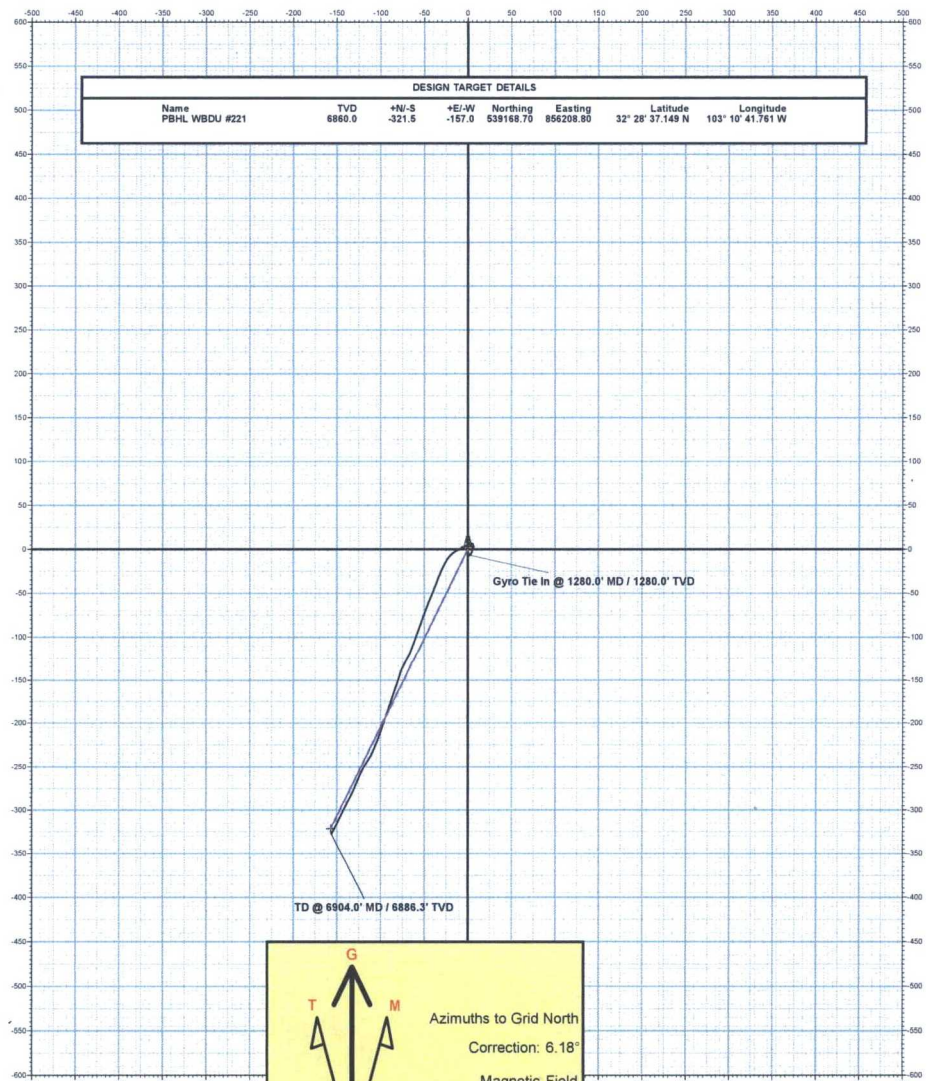
MD	Inc	Azi	TVD	+N-S	+E-W	Vsect	Departure	Annotation
1280.0	0.25	166.08	1280.0	-6.5	1.5	5.2	7.1	Gyro Tie In @ 1280.0' MD / 1280.0' TVD
6904.0	4.20	206.40	6886.3	-327.8	-156.2	363.1	403.2	TD @ 6904.0' MD / 6886.3' TVD

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 WBDU #221	6860.0	-321.5	-157.0	539168.70	856208.80	32° 28' 37.149 N	103° 10' 41.761 W



TD @ 6904.0' MD / 6886.3' TVD



Azimuths to Grid North
Correction: 6.18°
Magnetic Field
Strength: 48145.2snT
Dip Angle: 60.36°
Date: 4/24/2017
Model: IGRF2015



Apache Corporation

Lea County, NM

Sec 17, T21S, 37E

West Blinebry Drinkard Unit #221

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 #221
Project:	Lea County, NM	TVD Reference:	KB @ 3478.0usft (Sendero #19)
Site:	Sec 17, T21S, 37E	MD Reference:	KB @ 3478.0usft (Sendero #19)
Well:	West Blinebry Drinkard Unit #221	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 17, T21S, 37E		
Site Position:		Northing:	541,661.76 usft
From:	Map	Easting:	854,741.12 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 29' 1.972 N
		Longitude:	103° 10' 58.577 W
		Grid Convergence:	0.62 °

Well	West Blinebry Drinkard Unit #221		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 28' 40.313 N
		Longitude:	103° 10' 39.887 W
		Ground Level:	3,464.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	4/24/2017	6.80
			Dip Angle (°)
			60.36
			Field Strength (nT)
			48,145

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 (°)
			206.03

Survey Program	Date 5/4/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
101.0	1,280.0	Gyros (Wellbore #1)	GYRO-NS
1,460.0	6,904.0	MWD Surveys (Wellbore #1)	MWD default
			Description
			OWSG Gyrocompass Gyro
			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	539,490.20	856,365.80	32° 28' 40.313 N	103° 10' 39.887 W
101.0	0.14	132.71	101.0	-0.1	0.1	539,490.12	856,365.89	32° 28' 40.312 N	103° 10' 39.886 W
131.0	0.11	46.00	131.0	-0.1	0.1	539,490.11	856,365.94	32° 28' 40.312 N	103° 10' 39.886 W
161.0	0.06	293.19	161.0	-0.1	0.1	539,490.14	856,365.94	32° 28' 40.312 N	103° 10' 39.886 W
191.0	0.11	202.66	191.0	-0.1	0.1	539,490.12	856,365.92	32° 28' 40.312 N	103° 10' 39.886 W
221.0	0.14	191.97	221.0	-0.1	0.1	539,490.06	856,365.90	32° 28' 40.312 N	103° 10' 39.886 W
250.0	0.26	194.54	250.0	-0.2	0.1	539,489.96	856,365.88	32° 28' 40.311 N	103° 10' 39.887 W
280.0	0.44	190.72	280.0	-0.4	0.0	539,489.78	856,365.84	32° 28' 40.309 N	103° 10' 39.887 W
310.0	0.42	186.78	310.0	-0.6	0.0	539,489.56	856,365.80	32° 28' 40.307 N	103° 10' 39.887 W
340.0	0.42	182.46	340.0	-0.9	0.0	539,489.34	856,365.79	32° 28' 40.305 N	103° 10' 39.888 W
370.0	0.37	188.07	370.0	-1.1	0.0	539,489.13	856,365.77	32° 28' 40.303 N	103° 10' 39.888 W



Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well West Blinbery Drinkard Unit #221
Project:	Lea County, NM	TVD Reference:	KB @ 3478.0usft (Sendero #19)
Site:	Sec 17, T21S, 37E	MD Reference:	KB @ 3478.0usft (Sendero #19)
Well:	West Blinbery Drinkard Unit #221	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
399.0	0.28	186.93	399.0	-1.2	-0.1	539,488.97	856,365.75	32° 28' 40.301 N	103° 10' 39.888 W
429.0	0.29	189.44	429.0	-1.4	-0.1	539,488.82	856,365.72	32° 28' 40.299 N	103° 10' 39.888 W
459.0	0.36	176.04	459.0	-1.5	-0.1	539,488.65	856,365.72	32° 28' 40.298 N	103° 10' 39.889 W
489.0	0.46	174.70	489.0	-1.8	-0.1	539,488.44	856,365.74	32° 28' 40.296 N	103° 10' 39.888 W
519.0	0.47	172.32	519.0	-2.0	0.0	539,488.20	856,365.76	32° 28' 40.293 N	103° 10' 39.888 W
548.0	0.47	168.33	548.0	-2.2	0.0	539,487.96	856,365.80	32° 28' 40.291 N	103° 10' 39.888 W
578.0	0.46	168.77	578.0	-2.5	0.1	539,487.72	856,365.85	32° 28' 40.289 N	103° 10' 39.887 W
608.0	0.42	168.02	608.0	-2.7	0.1	539,487.50	856,365.90	32° 28' 40.286 N	103° 10' 39.887 W
650.0	0.43	175.64	650.0	-3.0	0.1	539,487.19	856,365.94	32° 28' 40.283 N	103° 10' 39.886 W
692.0	0.36	172.56	692.0	-3.3	0.2	539,486.90	856,365.97	32° 28' 40.280 N	103° 10' 39.886 W
734.0	0.35	171.42	734.0	-3.6	0.2	539,486.64	856,366.01	32° 28' 40.278 N	103° 10' 39.885 W
776.0	0.34	162.79	776.0	-3.8	0.3	539,486.40	856,366.06	32° 28' 40.275 N	103° 10' 39.885 W
818.0	0.36	153.30	818.0	-4.0	0.4	539,486.16	856,366.16	32° 28' 40.273 N	103° 10' 39.884 W
860.0	0.43	153.96	860.0	-4.3	0.5	539,485.90	856,366.29	32° 28' 40.271 N	103° 10' 39.882 W
902.0	0.42	151.16	902.0	-4.6	0.6	539,485.63	856,366.43	32° 28' 40.268 N	103° 10' 39.881 W
944.0	0.45	148.00	944.0	-4.9	0.8	539,485.35	856,366.59	32° 28' 40.265 N	103° 10' 39.879 W
986.0	0.44	148.72	986.0	-5.1	1.0	539,485.07	856,366.76	32° 28' 40.262 N	103° 10' 39.877 W
1,028.0	0.36	136.94	1,028.0	-5.4	1.1	539,484.84	856,366.94	32° 28' 40.260 N	103° 10' 39.875 W
1,070.0	0.37	151.78	1,070.0	-5.6	1.3	539,484.62	856,367.09	32° 28' 40.258 N	103° 10' 39.873 W
1,112.0	0.29	157.44	1,112.0	-5.8	1.4	539,484.41	856,367.20	32° 28' 40.256 N	103° 10' 39.872 W
1,154.0	0.25	176.84	1,154.0	-6.0	1.4	539,484.22	856,367.24	32° 28' 40.254 N	103° 10' 39.871 W
1,196.0	0.23	176.02	1,196.0	-6.2	1.5	539,484.04	856,367.25	32° 28' 40.252 N	103° 10' 39.871 W
1,238.0	0.23	175.84	1,238.0	-6.3	1.5	539,483.87	856,367.27	32° 28' 40.250 N	103° 10' 39.871 W
1,280.0	0.25	166.08	1,280.0	-6.5	1.5	539,483.70	856,367.29	32° 28' 40.249 N	103° 10' 39.871 W
Gyro Tie In @ 1280.0' MD / 1280.0' TVD									
1,460.0	0.20	95.70	1,460.0	-6.9	1.9	539,483.29	856,367.70	32° 28' 40.244 N	103° 10' 39.866 W
1,628.0	0.50	44.20	1,628.0	-6.4	2.7	539,483.78	856,368.50	32° 28' 40.249 N	103° 10' 39.857 W
1,799.0	0.70	23.30	1,799.0	-4.9	3.6	539,485.28	856,369.44	32° 28' 40.264 N	103° 10' 39.846 W
1,968.0	1.10	27.20	1,967.9	-2.5	4.8	539,487.67	856,370.59	32° 28' 40.288 N	103° 10' 39.832 W
2,136.0	2.00	12.40	2,135.9	1.8	6.2	539,491.97	856,371.95	32° 28' 40.330 N	103° 10' 39.815 W
2,304.0	0.40	316.30	2,303.8	5.1	6.4	539,495.25	856,372.18	32° 28' 40.362 N	103° 10' 39.812 W
2,472.0	0.40	346.00	2,471.8	6.0	5.8	539,496.25	856,371.63	32° 28' 40.372 N	103° 10' 39.819 W
2,599.0	0.30	340.50	2,598.8	6.8	5.6	539,496.99	856,371.41	32° 28' 40.380 N	103° 10' 39.821 W
2,683.0	1.50	254.70	2,682.8	6.7	4.5	539,496.91	856,370.28	32° 28' 40.379 N	103° 10' 39.834 W
2,768.0	2.70	246.80	2,767.8	5.6	1.6	539,495.83	856,367.36	32° 28' 40.369 N	103° 10' 39.868 W
2,852.0	3.40	242.70	2,851.6	3.7	-2.5	539,493.90	856,363.33	32° 28' 40.350 N	103° 10' 39.916 W
2,936.0	5.30	246.20	2,935.4	1.0	-8.2	539,491.19	856,357.57	32° 28' 40.324 N	103° 10' 39.983 W
3,020.0	5.40	237.20	3,019.0	-2.7	-15.1	539,487.49	856,350.70	32° 28' 40.288 N	103° 10' 40.064 W
3,188.0	7.20	207.10	3,186.1	-16.4	-26.5	539,473.83	856,339.25	32° 28' 40.154 N	103° 10' 40.199 W
3,356.0	5.70	200.30	3,353.0	-33.6	-34.2	539,456.63	856,331.56	32° 28' 39.985 N	103° 10' 40.291 W
3,525.0	5.30	201.80	3,521.2	-48.7	-40.0	539,441.51	856,325.75	32° 28' 39.836 N	103° 10' 40.361 W
3,692.0	4.60	202.80	3,687.6	-62.0	-45.5	539,428.18	856,320.29	32° 28' 39.704 N	103° 10' 40.426 W
3,861.0	5.40	199.40	3,855.9	-75.8	-50.8	539,414.43	856,315.02	32° 28' 39.569 N	103° 10' 40.490 W
4,029.0	5.40	199.70	4,023.2	-90.7	-56.1	539,399.53	856,309.73	32° 28' 39.422 N	103° 10' 40.553 W
4,196.0	5.30	200.00	4,189.5	-105.3	-61.4	539,384.88	856,304.45	32° 28' 39.278 N	103° 10' 40.617 W
4,364.0	4.80	202.10	4,356.8	-119.1	-66.7	539,371.08	856,299.15	32° 28' 39.142 N	103° 10' 40.680 W
4,532.0	5.00	208.90	4,524.2	-132.0	-72.8	539,358.16	856,292.97	32° 28' 39.014 N	103° 10' 40.754 W
4,700.0	6.90	196.60	4,691.3	-148.1	-79.3	539,342.08	856,286.54	32° 28' 38.856 N	103° 10' 40.831 W
4,868.0	6.40	199.90	4,858.2	-166.6	-85.3	539,323.60	856,280.47	32° 28' 38.674 N	103° 10' 40.904 W
5,037.0	6.20	198.00	5,026.2	-184.1	-91.4	539,306.07	856,274.45	32° 28' 38.501 N	103° 10' 40.977 W
5,205.0	5.80	197.90	5,193.2	-200.8	-96.8	539,289.36	856,269.03	32° 28' 38.336 N	103° 10' 41.042 W
5,374.0	5.50	202.10	5,361.4	-216.5	-102.4	539,273.73	856,263.36	32° 28' 38.182 N	103° 10' 41.110 W
5,543.0	4.90	200.20	5,529.7	-230.8	-108.0	539,259.45	856,257.82	32° 28' 38.042 N	103° 10' 41.177 W
5,712.0	5.10	216.30	5,698.1	-243.6	-114.9	539,246.62	856,250.88	32° 28' 37.915 N	103° 10' 41.259 W
5,881.0	4.90	203.10	5,866.4	-256.3	-122.2	539,233.93	856,243.61	32° 28' 37.791 N	103° 10' 41.346 W



Survey Report - Geographic



Company:	Apache Corporation	Local Co-ordinate Reference:	Well West Blinebry Drinkard Unit #221
Project:	Lea County, NM	TVD Reference:	KB @ 3478.0usft (Sendero #19)
Site:	Sec 17, T21S, 37E	MD Reference:	KB @ 3478.0usft (Sendero #19)
Well:	West Blinebry Drinkard Unit #221	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
6,050.0	4.90	203.10	6,034.8	-269.5	-127.9	539,220.65	856,237.94	32° 28' 37.660 N	103° 10' 41.414 W
6,219.0	4.70	205.00	6,203.2	-282.5	-133.6	539,207.74	856,232.18	32° 28' 37.533 N	103° 10' 41.483 W
6,388.0	4.50	208.60	6,371.7	-294.6	-139.7	539,195.64	856,226.08	32° 28' 37.414 N	103° 10' 41.555 W
6,557.0	4.10	204.40	6,540.2	-305.9	-145.4	539,184.32	856,220.41	32° 28' 37.302 N	103° 10' 41.623 W
6,724.0	3.90	207.40	6,706.8	-316.4	-150.5	539,173.84	856,215.33	32° 28' 37.199 N	103° 10' 41.684 W
6,856.0	4.20	206.40	6,838.5	-324.7	-154.7	539,165.53	856,211.12	32° 28' 37.117 N	103° 10' 41.734 W
6,904.0	4.20	206.40	6,886.3	-327.8	-156.2	539,162.38	856,209.56	32° 28' 37.086 N	103° 10' 41.752 W
TD @ 6904.0' MD / 6886.3' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,280.0	1,280.0	-6.5	1.5	Gyro Tie In @ 1280.0' MD / 1280.0' TVD
6,904.0	6,886.3	-327.8	-156.2	TD @ 6904.0' MD / 6886.3' TVD

Checked By: _____	Approved By: _____	Date: _____
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