

30-025-44017



HOBBS OCD

JUN 14 2018

RECEIVED

Apache Corporation

**Lea County, NM (NAD83 NME)
Black & Tan 27 Federal Com
301H**

OH/Job# 62014

Design: Surveys (H&P 488)

Standard Survey Report

09 December, 2017



Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

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		Black & Tan 27 Federal Com			
Site Position:		Northing:	560,131.70 usft	Latitude:	32° 32' 14.81280 N
From:	Map	Easting:	781,352.90 usft	Longitude:	103° 33' 16.17520 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.42 °

Well	301H				
Well Position	+N/-S	0.00 usft	Northing:	560,131.70 usft	Latitude: 32° 32' 14.81280 N
	+E/-W	0.00 usft	Easting:	781,352.90 usft	Longitude: 103° 33' 16.17520 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 3,728.00 usft

Wellbore	OH/Job# 62014				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	12/14/2017	6.73	60.52	48,276

Design	Surveys (H&P 488)				
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	356.13	

Survey Program	Date 12/9/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	10,750.00	VES Gyro Surveys (OH/Job# 62014)	ISCWSA-GYRO-3	VES Gyro
10,765.00	15,914.00	Phoenix MWD Surveys (OH/Job# 62014)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.05	11.55	100.00	0.04	0.01	0.04	0.05	0.05	0.00
200.00	0.03	134.36	200.00	0.07	0.04	0.06	0.07	-0.02	122.81
300.00	0.07	105.96	300.00	0.03	0.11	0.02	0.05	0.04	-28.40
400.00	0.09	24.04	400.00	0.09	0.20	0.07	0.11	0.02	-81.92
500.00	0.02	331.79	500.00	0.17	0.23	0.16	0.08	-0.07	-52.25
600.00	0.07	91.41	600.00	0.19	0.28	0.17	0.08	0.05	119.62
700.00	0.06	359.82	700.00	0.24	0.34	0.22	0.09	-0.01	-91.59
800.00	0.07	328.46	800.00	0.34	0.31	0.32	0.04	0.01	-31.36
900.00	0.03	306.05	900.00	0.41	0.26	0.39	0.04	-0.04	-22.41

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.07	309.51	1,000.00	0.47	0.19	0.45	0.04	0.04	3.46
1,100.00	0.08	187.20	1,100.00	0.43	0.13	0.42	0.13	0.01	-122.31
1,200.00	0.09	167.08	1,200.00	0.29	0.14	0.28	0.03	0.01	-20.12
1,300.00	0.13	136.43	1,300.00	0.13	0.24	0.11	0.07	0.04	-30.65
1,400.00	0.23	87.14	1,400.00	0.06	0.52	0.02	0.18	0.10	-49.29
1,500.00	0.13	47.69	1,500.00	0.14	0.80	0.09	0.15	-0.10	-39.45
1,600.00	0.18	93.78	1,600.00	0.21	1.04	0.14	0.13	0.05	46.09
1,700.00	0.19	53.04	1,700.00	0.30	1.33	0.21	0.13	0.01	-40.74
1,800.00	0.15	174.87	1,800.00	0.27	1.47	0.17	0.30	-0.04	121.83
1,900.00	0.21	137.35	1,900.00	0.00	1.61	-0.10	0.13	0.06	-37.52
2,000.00	0.24	105.81	2,000.00	-0.19	1.94	-0.32	0.13	0.03	-31.54
2,100.00	0.38	130.20	2,099.99	-0.46	2.39	-0.62	0.19	0.14	24.39
2,200.00	0.38	102.16	2,199.99	-0.74	2.97	-0.94	0.18	0.00	-28.04
2,300.00	0.48	103.11	2,299.99	-0.91	3.70	-1.16	0.10	0.10	0.95
2,400.00	0.35	139.91	2,399.99	-1.24	4.30	-1.52	0.29	-0.13	36.80
2,500.00	0.62	68.71	2,499.98	-1.27	5.01	-1.61	0.61	0.27	-71.20
2,600.00	0.83	42.70	2,599.98	-0.55	6.00	-0.95	0.39	0.21	-26.01
2,700.00	1.01	75.20	2,699.96	0.21	7.34	-0.28	0.54	0.18	32.50
2,800.00	1.18	68.26	2,799.95	0.82	9.15	0.20	0.22	0.17	-6.94
2,900.00	0.77	98.76	2,899.93	1.10	10.77	0.37	0.65	-0.41	30.50
3,000.00	0.57	143.98	2,999.93	0.59	11.73	-0.20	0.55	-0.20	45.22
3,100.00	0.55	139.96	3,099.92	-0.18	12.33	-1.01	0.04	-0.02	-4.02
3,200.00	0.18	323.32	3,199.92	-0.42	12.55	-1.26	0.73	-0.37	-176.64
3,300.00	0.30	279.52	3,299.92	-0.25	12.19	-1.07	0.21	0.12	-43.80
3,400.00	0.33	332.15	3,399.92	0.05	11.80	-0.75	0.28	0.03	52.63
3,500.00	0.28	316.66	3,499.92	0.48	11.50	-0.30	0.10	-0.05	-15.49
3,600.00	0.41	330.44	3,599.91	0.97	11.15	0.21	0.15	0.13	13.78
3,700.00	0.54	307.83	3,699.91	1.57	10.61	0.85	0.23	0.13	-22.61
3,800.00	0.68	328.47	3,799.91	2.37	9.92	1.69	0.26	0.14	20.64
3,900.00	0.61	316.15	3,899.90	3.26	9.24	2.62	0.15	-0.07	-12.32
4,000.00	0.65	323.15	3,999.89	4.09	8.54	3.51	0.09	0.04	7.00
4,100.00	0.68	319.74	4,099.89	5.00	7.81	4.46	0.05	0.03	-3.41
4,200.00	0.70	322.71	4,199.88	5.94	7.06	5.45	0.04	0.02	2.97
4,300.00	0.69	343.34	4,299.87	7.00	6.52	6.55	0.25	-0.01	20.63
4,400.00	0.68	346.62	4,399.86	8.16	6.21	7.72	0.04	-0.01	3.28
4,500.00	0.44	341.91	4,499.86	9.10	5.95	8.68	0.24	-0.24	-4.71
4,600.00	0.21	309.57	4,599.86	9.58	5.69	9.17	0.29	-0.23	-32.34
4,700.00	0.09	339.96	4,699.86	9.77	5.52	9.37	0.14	-0.12	30.39
4,800.00	0.10	324.72	4,799.86	9.92	5.44	9.52	0.03	0.01	-15.24
4,900.00	0.29	249.99	4,899.86	9.90	5.15	9.53	0.28	0.19	-74.73
5,000.00	0.77	224.82	4,999.85	9.34	4.44	9.02	0.52	0.48	-25.17
5,100.00	0.68	228.91	5,099.85	8.47	3.52	8.21	0.10	-0.09	4.09
5,200.00	0.60	211.06	5,199.84	7.63	2.81	7.42	0.21	-0.08	-17.85

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	0.63	201.81	5,299.83	6.67	2.33	6.50	0.10	0.03	-9.25
5,400.00	0.63	205.75	5,399.83	5.67	1.89	5.53	0.04	0.00	3.94
5,500.00	0.70	193.34	5,499.82	4.58	1.51	4.46	0.16	0.07	-12.41
5,600.00	0.77	191.78	5,599.81	3.33	1.23	3.23	0.07	0.07	-1.56
5,700.00	0.85	204.68	5,699.80	1.99	0.78	1.94	0.20	0.08	12.90
5,800.00	0.68	180.33	5,799.79	0.73	0.47	0.69	0.36	-0.17	-24.35
5,900.00	0.62	170.43	5,899.79	-0.40	0.56	-0.44	0.13	-0.06	-9.90
6,000.00	0.80	185.84	5,999.78	-1.63	0.58	-1.66	0.26	0.18	15.41
6,100.00	0.67	184.06	6,099.77	-2.91	0.46	-2.93	0.13	-0.13	-1.78
6,200.00	0.90	182.25	6,199.76	-4.27	0.39	-4.29	0.23	0.23	-1.81
6,300.00	1.05	193.68	6,299.75	-5.95	0.14	-5.95	0.24	0.15	11.43
6,400.00	1.68	218.83	6,399.72	-7.98	-0.99	-7.90	0.86	0.63	25.15
6,500.00	2.83	239.45	6,499.64	-10.38	-4.04	-10.08	1.39	1.15	20.62
6,600.00	3.96	249.97	6,599.47	-12.82	-9.41	-12.15	1.29	1.13	10.52
6,700.00	3.88	252.59	6,699.23	-15.01	-15.88	-13.90	0.20	-0.08	2.62
6,800.00	3.83	261.12	6,799.01	-16.54	-22.41	-14.99	0.58	-0.05	8.53
6,900.00	4.10	265.24	6,898.77	-17.35	-29.27	-15.33	0.39	0.27	4.12
7,000.00	4.14	263.64	6,998.51	-18.05	-36.42	-15.55	0.12	0.04	-1.60
7,100.00	4.22	262.33	7,098.24	-18.94	-43.66	-15.95	0.12	0.08	-1.31
7,200.00	3.57	252.99	7,198.01	-20.34	-50.28	-16.90	0.91	-0.65	-9.34
7,300.00	3.45	248.65	7,297.82	-22.35	-56.06	-18.51	0.29	-0.12	-4.34
7,400.00	3.47	250.05	7,397.64	-24.47	-61.71	-20.25	0.09	0.02	1.40
7,500.00	3.64	257.14	7,497.45	-26.21	-67.65	-21.58	0.47	0.17	7.09
7,600.00	3.46	260.26	7,597.26	-27.43	-73.71	-22.39	0.26	-0.18	3.12
7,700.00	3.29	263.19	7,697.09	-28.28	-79.54	-22.84	0.24	-0.17	2.93
7,800.00	3.21	263.65	7,796.92	-28.93	-85.17	-23.11	0.08	-0.08	0.46
7,900.00	3.05	265.35	7,896.78	-29.46	-90.60	-23.27	0.18	-0.16	1.70
8,000.00	2.87	265.22	7,996.64	-29.88	-95.75	-23.35	0.18	-0.18	-0.13
8,100.00	1.74	271.94	8,096.56	-30.04	-99.76	-23.23	1.16	-1.13	6.72
8,200.00	1.74	278.17	8,196.51	-29.77	-102.78	-22.76	0.19	0.00	6.23
8,300.00	1.72	277.11	8,296.47	-29.37	-105.77	-22.16	0.04	-0.02	-1.06
8,400.00	1.77	271.19	8,396.42	-29.15	-108.81	-21.74	0.19	0.05	-5.92
8,500.00	1.74	264.34	8,496.37	-29.27	-111.86	-21.65	0.21	-0.03	-6.85
8,600.00	1.87	274.74	8,596.33	-29.28	-115.00	-21.45	0.35	0.13	10.40
8,700.00	2.67	293.56	8,696.25	-28.22	-118.76	-20.13	1.08	0.80	18.82
8,800.00	3.02	278.40	8,796.13	-26.90	-123.50	-18.50	0.83	0.35	-15.16
8,900.00	2.91	273.78	8,895.99	-26.35	-128.64	-17.60	0.26	-0.11	-4.62
9,000.00	3.31	265.62	8,995.84	-26.40	-134.05	-17.29	0.60	0.40	-8.16
9,100.00	3.10	262.51	9,095.69	-26.98	-139.61	-17.49	0.27	-0.21	-3.11
9,200.00	3.20	256.71	9,195.54	-27.97	-145.01	-18.11	0.33	0.10	-5.80
9,300.00	3.89	270.24	9,295.35	-28.60	-151.12	-18.33	1.08	0.69	13.53
9,400.00	3.72	275.49	9,395.13	-28.27	-157.74	-17.55	0.39	-0.17	5.25
9,500.00	3.21	272.62	9,494.94	-27.84	-163.76	-16.71	0.54	-0.51	-2.87

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,600.00	4.16	269.87	9,594.74	-27.72	-170.19	-16.16	0.97	0.95	-2.75
9,700.00	3.85	270.10	9,694.49	-27.72	-177.17	-15.69	0.31	-0.31	0.23
9,800.00	4.17	264.88	9,794.25	-28.04	-184.15	-15.53	0.49	0.32	-5.22
9,900.00	4.27	261.55	9,893.98	-28.91	-191.45	-15.91	0.26	0.10	-3.33
10,000.00	4.28	263.70	9,993.70	-29.86	-198.85	-16.37	0.16	0.01	2.15
10,100.00	3.14	277.88	10,093.49	-29.90	-205.27	-15.97	1.46	-1.14	14.18
10,200.00	3.42	287.58	10,193.33	-28.62	-210.82	-14.32	0.62	0.28	9.70
10,300.00	3.82	291.07	10,293.13	-26.52	-216.78	-11.82	0.46	0.40	3.49
10,400.00	3.74	289.04	10,392.91	-24.26	-222.97	-9.15	0.16	-0.08	-2.03
10,500.00	4.10	263.51	10,492.68	-23.60	-229.60	-8.04	1.77	0.36	-25.53
10,600.00	5.79	243.85	10,592.31	-26.23	-237.68	-10.12	2.37	1.69	-19.66
10,700.00	6.30	236.08	10,691.76	-31.51	-246.77	-14.77	0.96	0.51	-7.77
10,750.00	8.42	222.84	10,741.35	-35.73	-251.53	-18.66	5.40	4.24	-26.48
Tie In									
10,765.00	9.12	229.54	10,756.17	-37.31	-253.18	-20.12	8.25	4.67	44.67
First Phoenix MWD Survey									
10,812.00	13.41	240.84	10,802.26	-42.38	-260.78	-24.67	10.22	9.13	24.04
10,860.00	15.74	267.33	10,848.77	-45.40	-272.16	-26.92	14.56	4.85	55.19
10,907.00	20.20	286.51	10,893.50	-43.39	-286.33	-23.95	15.65	9.49	40.81
10,954.00	25.89	302.89	10,936.78	-35.50	-302.75	-14.97	18.14	12.11	34.85
11,002.00	29.21	319.42	10,979.39	-20.89	-319.20	0.72	17.30	6.92	34.44
11,049.00	31.69	335.37	11,019.97	-0.92	-331.83	21.50	17.94	5.28	33.94
11,097.00	34.99	348.67	11,060.12	24.08	-339.80	46.97	16.67	6.88	27.71
11,144.00	40.38	358.93	11,097.34	52.56	-342.74	75.59	17.56	11.47	21.83
11,191.00	47.88	1.93	11,131.05	85.26	-342.43	108.19	16.56	15.96	6.38
11,220.00	53.23	3.98	11,149.47	107.61	-341.26	130.41	19.24	18.46	7.06
HL: 11220'MD, 53.23° Inc, 3.98° Azm									
11,238.00	56.57	5.11	11,159.82	122.29	-340.09	144.98	19.24	18.54	6.28
11,286.00	63.59	8.83	11,183.75	163.54	-335.00	185.79	16.09	14.63	7.75
11,333.00	72.56	10.23	11,201.29	206.49	-327.78	228.16	19.28	19.09	2.98
11,358.00	75.96	9.67	11,208.07	230.19	-323.62	251.52	13.77	13.60	-2.24
11,406.00	78.81	7.13	11,218.55	276.52	-316.78	297.28	7.87	5.94	-5.29
11,453.00	81.65	1.99	11,226.53	322.67	-313.11	343.08	12.35	6.04	-10.94
11,501.00	84.04	357.18	11,232.51	370.28	-313.46	390.60	11.12	4.98	-10.02
11,548.00	89.15	353.81	11,235.30	417.03	-317.15	437.50	13.02	10.87	-7.17
11,595.00	90.87	353.54	11,235.29	463.74	-322.33	484.45	3.70	3.66	-0.57
11,690.00	94.17	357.93	11,231.12	558.35	-329.39	579.32	5.78	3.47	4.62
11,785.00	94.96	6.96	11,223.54	652.86	-325.36	673.35	9.51	0.83	9.51
11,879.00	88.95	7.97	11,220.33	745.97	-313.15	765.41	6.48	-6.39	1.07
11,974.00	87.68	6.53	11,223.13	840.16	-301.17	858.58	2.02	-1.34	-1.52
12,068.00	88.56	2.82	11,226.21	933.78	-293.52	951.47	4.05	0.94	-3.95
12,163.00	89.73	1.66	11,227.63	1,028.69	-289.80	1,045.92	1.73	1.23	-1.22
12,258.00	91.01	1.89	11,227.02	1,123.64	-286.86	1,140.45	1.37	1.35	0.24
12,352.00	89.87	0.68	11,226.30	1,217.61	-284.75	1,234.07	1.77	-1.21	-1.29

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,447.00	89.84	0.73	11,226.54	1,312.61	-283.58	1,328.76	0.06	-0.03	0.05
12,542.00	90.02	0.01	11,226.65	1,407.60	-282.97	1,423.50	0.78	0.19	-0.76
12,637.00	90.24	359.72	11,226.44	1,502.60	-283.19	1,518.30	0.38	0.23	-0.31
12,731.00	90.45	0.00	11,225.87	1,596.60	-283.42	1,612.10	0.37	0.22	0.30
12,826.00	90.84	359.29	11,224.80	1,691.59	-284.01	1,706.91	0.85	0.41	-0.75
12,920.00	91.21	358.46	11,223.12	1,785.56	-285.86	1,800.79	0.97	0.39	-0.88
13,015.00	91.49	358.07	11,220.88	1,880.49	-288.73	1,895.70	0.51	0.29	-0.41
13,109.00	92.06	358.46	11,217.97	1,974.40	-291.58	1,989.59	0.73	0.61	0.41
13,204.00	92.47	357.59	11,214.21	2,069.27	-294.85	2,084.46	1.01	0.43	-0.92
13,298.00	91.70	359.56	11,210.79	2,163.17	-297.19	2,178.30	2.25	-0.82	2.10
13,393.00	92.41	358.84	11,207.39	2,258.10	-298.51	2,273.11	1.06	0.75	-0.76
13,487.00	90.75	359.15	11,204.80	2,352.05	-300.16	2,366.95	1.80	-1.77	0.33
13,582.00	90.95	358.31	11,203.39	2,447.01	-302.26	2,461.84	0.91	0.21	-0.88
13,677.00	91.22	357.04	11,201.59	2,541.91	-306.12	2,556.79	1.37	0.28	-1.34
13,771.00	90.65	358.59	11,200.05	2,635.83	-309.70	2,650.73	1.76	-0.61	1.65
13,866.00	90.62	359.90	11,199.00	2,730.81	-310.95	2,745.58	1.38	-0.03	1.38
13,960.00	91.01	359.77	11,197.66	2,824.80	-311.22	2,839.37	0.44	0.41	-0.14
14,055.00	91.21	359.01	11,195.82	2,919.78	-312.23	2,934.20	0.83	0.21	-0.80
14,150.00	90.48	0.42	11,194.42	3,014.77	-312.71	3,029.00	1.67	-0.77	1.48
14,244.00	90.75	359.49	11,193.41	3,108.76	-312.78	3,122.79	1.03	0.29	-0.99
14,339.00	90.68	0.00	11,192.23	3,203.75	-313.20	3,217.59	0.54	-0.07	0.54
14,434.00	91.45	359.27	11,190.46	3,298.73	-313.81	3,312.39	1.12	0.81	-0.77
14,529.00	92.08	359.14	11,187.54	3,393.68	-315.12	3,407.21	0.68	0.66	-0.14
14,623.00	92.67	359.51	11,183.64	3,487.59	-316.23	3,500.98	0.74	0.63	0.39
14,718.00	91.87	0.24	11,179.88	3,582.51	-316.44	3,595.70	1.14	-0.84	0.77
14,813.00	92.46	359.80	11,176.29	3,677.44	-316.41	3,690.42	0.77	0.62	-0.46
14,907.00	93.30	0.18	11,171.57	3,771.32	-316.42	3,784.08	0.98	0.89	0.40
15,002.00	91.79	0.73	11,167.35	3,866.22	-315.67	3,878.72	1.69	-1.59	0.58
15,097.00	91.92	359.84	11,164.27	3,961.17	-315.20	3,973.42	0.95	0.14	-0.94
15,192.00	91.99	358.92	11,161.03	4,056.11	-316.22	4,068.21	0.97	0.07	-0.97
15,286.00	91.30	1.26	11,158.33	4,150.06	-316.07	4,161.94	2.59	-0.73	2.49
15,381.00	90.75	0.22	11,156.63	4,245.04	-314.85	4,256.61	1.24	-0.58	-1.09
15,475.00	90.52	0.01	11,155.59	4,339.03	-314.66	4,350.38	0.33	-0.24	-0.22
15,570.00	90.87	0.09	11,154.44	4,434.03	-314.58	4,445.15	0.38	0.37	0.08
15,665.00	90.81	358.62	11,153.05	4,529.01	-315.65	4,539.98	1.55	-0.06	-1.55
15,759.00	90.05	357.36	11,152.34	4,622.94	-318.94	4,633.93	1.57	-0.81	-1.34
15,857.00	90.05	357.36	11,152.26	4,720.84	-323.46	4,731.91	0.00	0.00	0.00
Final Phoenix MWD Survey									
15,863.00	90.05	357.36	11,152.25	4,726.83	-323.73	4,737.91	0.00	0.00	0.00
HL: 15863'MD, 90.05° Inc, 357.36° Azm									
15,914.00	90.05	357.36	11,152.21	4,777.78	-326.08	4,777.78	0.00	0.00	0.00
PTD: 15914'MD, 90.05° Inc, 357.36° Azm									

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 301H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3754.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3754.00usft (H&P 482)
Well:	301H	North Reference:	Grid
Wellbore:	OH/Job# 62014	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 488)	Database:	Compass 5000 GCR

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,750.00	10,741.35	-35.73	-251.53	Tie In
10,765.00	10,756.17	-37.31	-253.18	First Phoenix MWD Survey
11,220.00	11,149.47	107.61	-341.26	HL: 11220'MD, 53.23° Inc, 3.98° Azm
15,857.00	11,152.26	4,720.84	-323.46	Final Phoenix MWD Survey
15,863.00	11,152.25	4,726.83	-323.73	HL: 15863'MD, 90.05° Inc, 357.36° Azm
15,914.00	11,152.21	4,777.78	-326.08	PTD: 15914'MD, 90.05° Inc, 357.36° Azm