



Apache Corporation

Field Name: *Apache NM (Nad 83 NMEZ)*
Site Name: *Black & Tan 27 Fed Com Pad 4*
Well Name: *Black and Tan 27 Fed Com 406H*
File number: *13841057*
Survey: *Definitive survey*

21 October 2019



Apache



Black and Tan 27 Fed Com 406H

Field Name: Apache NM (Nad 83 NMEZ)	Map Units: US ft	Company Name: Apache Corporation	
	Vertical Reference Datum (VRD): Mean Sea Level		
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)		
	Comment:		
Site: Black & Tan 27 Fed Com Pad 4	Units: US ft	North Reference: Grid	Convergence Angle: 0.43
	Position:	Northing: 560155.80 US ft	Latitude: 32.537436469
		Easting: 785192.00 US ft	Longitude: -103.542035828
	Elevation above MSL: 3715.00 US ft	Comment: Lea Co., NM	
Slot: Black & Tan 27 Fed Com 406H	Position (Relative to Site Centre)		
	+N/-S: 0.20 US ft	Northing: 560156.00 US ft	Latitude: 32.537436610
	+E/-W: 20.00 US ft	Easting: 785212.00 US ft	Longitude: -103.541970929
	Slot TVD Reference: Ground Elevation		
	Elevation above MSL: 3716.00 US ft		
	Comment:		
Well: Black and Tan 27 Fed Com 406H	Type: Main well	UWI:	
	File Number: 13841057	Comment:	
	Closure Distance: 5015.04 US ft	Closure Azimuth: 0.34°	
	Vertical Section: Position of Origin (Relative to Slot centre)		
	+N/-S: -0.00 US ft	+E/-W: -0.00 US ft	Az: 2.77°

Drill floor: Survey Name: Definitive Survey
Rig Height (Drill Floor): 26.00 US ft **Elevation above MSL:** 3742.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00°

Survey Name: Definitive Survey

Date: 22/Aug/2018 **Survey Tool:** See Survey **Comment:** **Company:**
 Tool Ranges below.

Magnetic Model:

Model Name: IFR **Date:** 02/Oct/2019 **Field Strength:** 48145.0nT **Declination:** 6.58° **Dip:** 60.47°

Tie Point:

MD: 0.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00° **TVD:** -0.00 US ft **North Offset:** -0.00 US ft **East Offset:** -0.00 US ft

Survey Tool Ranges:			
Name	Start MD(USft)	End MD(USft)	Source Survey
GYRO_GC_WIR+DPIPE_GYD	0.00	6606.59	GyroData Gyro 02-1
MWD+IFR1+SAG+FDIR	6606.59	6723.00	WFT MWD 03
GYRO_GC_WIR+DPIPE_GYD	6723.00	10715.03	GyroData Gyro 02-2
MWD+IFR1+SAG+FDIR	10715.03	11541.00	WFT MWD 05
MWD+IFR1+SAG+FDIR	11541.00	16269.00	WFT MWD 06

Casing Points: (Relative to Slot centre)(TVD relative to Drill Floor)								
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	H. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)
9 5/8 In	5680.00	0.40	73.66	5672.31	-153.25	42.92	560002.75	785254.92
7 5/8 In	10728.00	1.29	232.34	10720.04	-172.38	31.89	559983.62	785243.89

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	H. Offset (US ft)	E. Offset (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment	
0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00	0.00	560156.00	785212.00		
92.04	0.11	192.61	92.04	-0.09	-0.09	-0.02	0.12	560155.91	785211.98		
186.85	0.26	161.11	186.85	-0.38	-0.38	0.03	0.19	560155.62	785212.03		
281.67	0.38	160.53	281.67	-0.87	-0.88	0.20	0.13	560155.12	785212.20		
376.50	0.40	158.69	376.50	-1.46	-1.48	0.43	0.02	560154.52	785212.43		
470.54	0.32	174.64	470.53	-2.02	-2.05	0.57	0.14	560153.95	785212.57		
565.02	0.30	191.72	565.01	-2.53	-2.56	0.55	0.10	560153.44	785212.55		
659.90	0.38	192.96	659.89	-3.08	-3.11	0.43	0.08	560152.89	785212.43		
754.29	0.34	190.88	754.28	-3.67	-3.69	0.30	0.04	560152.31	785212.30		
848.66	0.34	190.84	848.65	-4.22	-4.24	0.20	0.00	560151.76	785212.20		
943.02	0.34	195.94	943.01	-4.77	-4.78	0.07	0.03	560151.22	785212.07		
1037.37	0.29	203.56	1037.35	-5.27	-5.27	-0.10	0.07	560150.73	785211.90		
1131.59	0.27	219.56	1131.57	-5.67	-5.66	-0.34	0.09	560150.34	785211.66		
1226.13	0.24	242.17	1226.11	-5.95	-5.92	-0.66	0.11	560150.08	785211.34		
1320.59	0.23	257.56	1320.57	-6.10	-6.05	-1.02	0.07	560149.95	785210.98		
1415.32	0.23	265.56	1415.30	-6.17	-6.11	-1.39	0.03	560149.89	785210.61		
1510.03	0.22	270.99	1510.01	-6.20	-6.12	-1.76	0.02	560149.88	785210.24		
1604.43	0.21	281.65	1604.41	-6.18	-6.08	-2.11	0.04	560149.92	785209.89		
1698.72	0.18	298.62	1698.70	-6.09	-5.98	-2.41	0.07	560150.02	785209.59		
1792.83	0.03	116.13	1792.81	-6.03	-5.92	-2.52	0.22	560150.08	785209.48		
1887.34	1.05	146.25	1887.31	-6.74	-6.65	-2.02	1.08	560149.35	785209.98		
1982.07	2.37	160.38	1982.00	-9.25	-9.22	-0.88	1.45	560146.78	785211.12		
2077.06	3.30	168.94	2076.87	-13.72	-13.75	0.31	1.07	560142.25	785212.31		
2172.14	4.52	172.50	2171.73	-20.06	-20.15	1.32	1.31	560135.85	785213.32		
2266.92	5.50	170.35	2266.15	-28.17	-28.33	2.57	1.05	560127.67	785214.57		
2361.15	6.62	167.52	2359.85	-37.82	-38.09	4.50	1.23	560117.91	785216.50		
2455.70	7.38	165.06	2453.69	-48.87	-49.27	7.24	0.86	560106.73	785219.24		
2550.11	7.53	163.81	2547.31	-60.49	-61.07	10.53	0.23	560094.93	785222.53		
2645.26	7.57	161.82	2641.63	-72.24	-73.02	14.23	0.28	560082.98	785226.23		
2740.08	7.36	158.30	2735.65	-83.60	-84.59	18.42	0.53	560071.41	785230.42		
2835.08	7.06	153.30	2829.90	-94.22	-95.46	23.29	0.73	560060.54	785235.29		
2929.86	6.98	158.08	2923.97	-104.53	-106.01	28.06	0.62	560049.99	785240.06		
3024.87	6.63	158.61	3018.31	-114.78	-116.47	32.22	0.37	560039.53	785244.22		
3119.01	5.13	167.00	3111.95	-123.79	-125.63	35.14	1.83	560030.37	785247.14		
3213.13	3.63	171.19	3205.79	-130.76	-132.68	36.55	1.63	560023.32	785248.55		
3307.30	2.26	173.34	3299.84	-135.51	-137.47	37.22	1.46	560018.53	785249.22		
3401.40	2.12	171.97	3393.87	-139.05	-141.03	37.68	0.16	560014.97	785249.68		
3495.54	0.73	140.70	3487.98	-141.20	-143.22	38.30	1.64	560012.78	785250.30		
3589.81	0.35	266.39	3582.25	-141.68	-143.71	38.39	1.04	560012.29	785250.39		
3684.02	0.47	256.38	3676.45	-141.82	-143.81	37.73	0.15	560012.19	785249.73		
3778.16	0.85	258.31	3770.59	-142.11	-144.05	36.67	0.40	560011.95	785248.67		
3872.42	0.83	264.22	3864.84	-142.38	-144.26	35.31	0.09	560011.74	785247.31		
3966.59	0.68	247.33	3959.00	-142.72	-144.54	34.11	0.28	560011.46	785246.11		

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
ID (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	H. Offset (US ft)	E. Offset (US ft)	DLS (%/100US ft)	Flotthing (US ft)	Fasting (US ft)	Comment
4060.74	0.62	234.16	4053.14	-143.28	-145.06	33.19	0.17	560010.94	785245.19	
4154.99	0.61	223.20	4147.39	-143.98	-145.72	32.43	0.13	560010.28	785244.43	
4249.18	0.47	206.32	4241.57	-144.72	-146.43	31.91	0.22	560009.57	785243.91	
4343.41	0.40	194.51	4335.80	-145.39	-147.10	31.66	0.12	560008.90	785243.66	
4437.65	0.37	172.51	4430.04	-146.02	-147.72	31.62	0.16	560008.28	785243.62	
4531.72	0.38	135.75	4524.11	-146.53	-148.24	31.87	0.25	560007.76	785243.87	
4625.90	0.53	120.40	4618.28	-146.94	-148.68	32.47	0.20	560007.32	785244.47	
4720.03	0.77	124.24	4712.41	-147.47	-149.26	33.37	0.26	560006.74	785245.37	
4814.20	0.83	133.25	4806.57	-148.25	-150.08	34.39	0.15	560005.92	785246.39	
4908.37	0.92	135.38	4900.73	-149.20	-151.09	35.41	0.10	560004.91	785247.41	
5002.56	0.69	129.55	4994.91	-150.05	-151.99	36.38	0.26	560004.01	785248.38	
5097.01	0.57	114.82	5089.35	-150.57	-152.55	37.25	0.21	560003.45	785249.25	
5191.23	0.62	102.30	5183.57	-150.83	-152.85	38.17	0.15	560003.15	785250.17	
5285.42	0.70	100.77	5277.75	-150.99	-153.07	39.23	0.09	560002.93	785251.23	
5379.47	0.55	97.46	5371.80	-151.11	-153.24	40.25	0.16	560002.76	785252.25	
5473.61	0.56	96.31	5465.93	-151.18	-153.35	41.15	0.02	560002.65	785253.15	
5567.72	0.52	88.11	5560.04	-151.17	-153.38	42.04	0.09	560002.62	785254.04	
5662.00	0.42	75.68	5654.31	-151.03	-153.28	42.80	0.15	560002.72	785254.80	
5756.30	0.30	61.59	5748.61	-150.81	-153.08	43.35	0.16	560002.92	785255.35	
5851.09	0.24	101.33	5843.40	-150.71	-153.00	43.76	0.20	560003.00	785255.76	
5945.58	0.15	93.88	5937.89	-150.74	-153.05	44.08	0.10	560002.95	785256.08	
6040.05	0.12	62.75	6032.36	-150.69	-153.01	44.29	0.08	560002.99	785256.29	
6134.57	0.12	30.38	6126.88	-150.55	-152.88	44.43	0.07	560003.12	785256.43	
6229.39	0.15	25.62	6221.70	-150.35	-152.68	44.53	0.03	560003.32	785256.53	
6323.51	0.21	25.90	6315.82	-150.08	-152.42	44.66	0.06	560003.58	785256.66	
6417.93	0.30	21.04	6410.24	-149.69	-152.03	44.83	0.10	560003.97	785256.83	
6512.31	0.32	21.16	6504.62	-149.20	-151.55	45.01	0.02	560004.45	785257.01	
6606.59	0.23	5.66	6598.90	-148.76	-151.12	45.12	0.12	560004.88	785257.12	
6723.00	0.34	26.29	6715.30	-148.21	-150.58	45.30	0.13	560005.42	785257.30	
6888.78	0.23	301.71	6881.08	-147.60	-149.96	45.23	0.24	560006.04	785257.23	
6982.76	0.54	251.96	6975.06	-147.67	-150.00	44.65	0.46	560006.00	785256.65	
7076.63	0.56	257.46	7068.93	-147.94	-150.24	43.78	0.06	560005.76	785255.78	
7170.52	0.60	260.43	7162.81	-148.17	-150.42	42.85	0.05	560005.58	785254.85	
7264.39	0.67	268.07	7256.68	-148.32	-150.52	41.82	0.12	560005.48	785253.82	
7358.25	0.72	266.34	7350.53	-148.43	-150.57	40.68	0.06	560005.43	785252.68	
7452.21	0.93	261.98	7444.48	-148.64	-150.72	39.34	0.23	560005.28	785251.34	
7546.17	1.05	260.86	7538.43	-148.96	-150.96	37.73	0.13	560005.04	785249.73	
7640.37	1.13	260.28	7632.61	-149.34	-151.25	35.97	0.09	560004.75	785247.97	
7734.67	0.90	250.50	7726.89	-149.82	-151.66	34.35	0.30	560004.34	785246.35	
7828.72	0.61	200.49	7820.94	-150.58	-152.37	33.48	0.73	560003.63	785245.48	
7922.73	0.67	197.67	7914.94	-151.59	-153.37	33.14	0.07	560002.63	785245.14	
8016.96	0.66	192.95	8009.16	-152.65	-154.42	32.85	0.06	560001.58	785244.85	
8111.04	0.70	184.52	8103.24	-153.76	-155.52	32.68	0.11	560000.48	785244.68	
8205.28	0.80	178.44	8197.47	-154.99	-156.75	32.65	0.14	559999.25	785244.65	
8299.15	0.80	170.60	8291.33	-156.29	-158.05	32.78	0.12	559997.95	785244.78	
8393.35	0.78	167.00	8385.52	-157.55	-159.33	33.03	0.06	559996.67	785245.03	
8487.50	0.78	163.63	8479.66	-158.77	-160.57	33.36	0.05	559995.43	785245.36	
8581.40	0.50	162.40	8573.56	-159.76	-161.57	33.66	0.30	559994.43	785245.66	
8675.03	0.15	126.87	8667.18	-160.21	-162.03	33.88	0.41	559993.97	785245.88	
8769.29	0.23	97.28	8761.44	-160.29	-162.13	34.17	0.13	559993.87	785246.17	
8863.24	0.36	80.79	8855.39	-160.25	-162.11	34.65	0.16	559993.89	785246.65	
8957.22	0.32	78.86	8949.37	-160.12	-162.01	35.19	0.04	559993.99	785247.19	
9051.31	0.31	80.31	9043.46	-160.00	-161.92	35.70	0.01	559994.08	785247.70	
9145.14	0.19	72.27	9137.29	-159.89	-161.83	36.10	0.13	559994.17	785248.10	
9239.45	0.06	323.53	9231.60	-159.80	-161.74	36.22	0.23	559994.26	785248.22	
9332.95	0.20	350.90	9325.10	-159.60	-161.54	36.17	0.16	559994.46	785248.17	
9427.17	0.16	333.07	9419.32	-159.33	-161.26	36.08	0.07	559994.74	785248.08	
9521.11	0.11	288.39	9513.26	-159.19	-161.11	35.94	0.12	559994.89	785247.94	
9615.13	0.11	292.85	9607.28	-159.13	-161.05	35.77	0.01	559994.95	785247.77	

SD Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
RD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N. Offset (US ft)	E. Offset (US ft)	DLS (%/100US ft)	Flotthing (US ft)	Easting (US ft)	Comment
9709.20	0.08	219.95	9701.35	-159.16	-161.07	35.64	0.12	559994.93	785247.64	
9803.09	0.15	173.78	9795.24	-159.33	-161.24	35.61	0.12	559994.76	785247.61	
9897.07	0.45	159.37	9889.22	-159.79	-161.71	35.76	0.33	559994.29	785247.76	
9991.03	0.65	149.28	9983.17	-160.57	-162.51	36.16	0.24	559993.49	785248.16	
10085.03	0.82	148.45	10077.16	-161.57	-163.54	36.78	0.18	559992.46	785248.78	
10179.03	1.05	187.49	10171.15	-162.99	-164.97	37.02	0.70	559991.03	785249.02	
10273.33	1.29	210.29	10265.43	-164.79	-166.74	36.37	0.55	559989.26	785248.37	
10367.43	0.69	221.76	10359.52	-166.17	-168.08	35.46	0.67	559987.92	785247.46	
10465.83	0.89	211.41	10457.91	-167.30	-169.17	34.67	0.25	559986.83	785246.67	
10559.63	1.02	215.51	10551.70	-168.64	-170.47	33.81	0.16	559985.53	785245.81	
10653.53	0.70	226.20	10645.59	-169.76	-171.55	32.91	0.38	559984.45	785244.91	
10715.03	1.21	232.90	10707.08	-170.45	-172.20	32.12	0.85	559983.80	785244.12	
10788.00	1.66	230.45	10780.02	-171.66	-173.34	30.69	0.62	559982.66	785242.69	Tieon GyroData Gyro First WFT MWD Svy
10835.00	2.42	314.68	10827.00	-171.45	-173.08	29.46	5.94	559982.92	785241.46	
10882.00	10.88	357.62	10873.66	-166.36	-167.94	28.56	19.69	559988.06	785240.56	
10929.00	19.77	0.68	10918.94	-153.97	-155.53	28.47	18.99	560000.47	785240.47	
10976.00	26.44	0.38	10962.15	-135.55	-137.10	28.64	14.19	560018.90	785240.64	
11023.00	28.48	358.10	11003.85	-113.93	-115.43	28.34	4.88	560040.57	785240.34	
11070.00	29.83	358.22	11044.90	-91.11	-92.55	27.60	2.88	560063.45	785239.60	
11117.00	33.47	359.26	11084.90	-66.51	-67.90	27.07	7.83	560088.10	785239.07	
11164.00	40.49	0.45	11122.42	-38.29	-39.64	27.02	15.01	560116.36	785239.02	
11212.00	47.70	1.75	11156.88	-4.93	-6.27	27.69	15.14	560149.73	785239.69	
11259.00	53.93	3.00	11186.56	31.48	30.11	29.22	13.41	560186.11	785241.22	
11306.00	58.90	3.14	11212.55	70.62	69.19	31.31	10.58	560225.19	785243.31	
11353.00	64.18	3.21	11234.94	111.93	110.43	33.60	11.23	560266.43	785245.60	
11400.00	69.50	2.88	11253.42	155.13	153.57	35.89	11.34	560309.57	785247.89	
11447.00	73.49	2.72	11268.33	199.69	198.08	38.07	8.50	560354.08	785250.07	
11494.00	76.96	2.53	11280.31	245.13	243.47	40.15	7.39	560399.47	785252.15	
11541.00	81.34	2.48	11289.16	291.27	289.57	42.17	9.32	560445.57	785254.17	
11615.00	87.69	2.20	11296.23	364.89	363.14	45.17	8.59	560519.14	785257.17	
11662.00	88.11	1.91	11297.95	411.86	410.07	46.86	1.09	560566.07	785258.86	
11709.00	88.39	1.95	11299.39	458.83	457.03	48.44	0.60	560613.03	785260.44	
11803.00	89.37	1.72	11301.22	552.80	550.96	51.45	1.07	560706.96	785263.45	
11897.00	90.21	1.44	11301.57	646.78	644.92	54.04	0.94	560800.92	785266.04	
11991.00	91.12	1.54	11300.48	740.75	738.88	56.48	0.97	560894.88	785268.48	
12085.00	90.70	2.00	11298.99	834.72	832.82	59.39	0.66	560988.82	785271.39	
12179.00	91.75	2.53	11296.98	928.69	926.73	63.10	1.25	561082.73	785275.10	
12273.00	91.40	1.29	11294.39	1022.65	1020.64	66.23	1.37	561176.64	785278.23	
12367.00	90.00	0.80	11293.24	1116.59	1114.61	67.95	1.58	561270.61	785279.95	
12461.00	90.21	1.34	11293.07	1210.55	1208.60	69.70	0.62	561364.60	785281.70	
12556.00	89.44	359.61	11293.36	1305.47	1303.59	70.49	1.99	561459.59	785282.49	
12650.00	90.00	0.43	11293.82	1399.36	1397.59	70.52	1.06	561553.59	785282.52	
12745.00	89.86	359.93	11293.94	1494.26	1492.58	70.82	0.55	561648.58	785282.82	
12839.00	88.74	359.04	11295.09	1588.10	1586.57	69.98	1.52	561742.57	785281.98	
12934.00	88.25	359.19	11297.58	1682.87	1681.53	68.51	0.54	561837.53	785280.51	
13028.00	87.97	358.74	11300.68	1776.61	1775.46	66.81	0.56	561931.46	785278.81	
13122.00	90.42	358.43	11302.00	1870.35	1869.42	64.49	2.63	562025.42	785276.49	
13216.00	91.26	358.46	11300.62	1964.07	1963.37	61.94	0.89	562119.37	785273.94	
13310.00	89.16	359.13	11300.28	2057.84	2057.34	59.96	2.34	562213.34	785271.96	
13404.00	89.44	358.70	11301.43	2151.62	2151.32	58.18	0.55	562307.32	785270.18	
13498.00	91.33	0.42	11300.80	2245.46	2245.31	57.46	2.72	562401.31	785269.46	
13592.00	92.80	0.79	11297.41	2339.33	2339.24	58.45	1.61	562495.24	785270.45	
13686.00	92.24	359.52	11293.28	2433.14	2433.14	58.71	1.48	562589.14	785270.71	
13780.00	91.40	359.04	11290.29	2526.91	2527.09	57.53	1.03	562683.09	785269.53	
13874.00	91.96	359.77	11287.53	2620.71	2621.04	56.55	0.98	562777.04	785268.55	
13968.00	90.14	1.28	11285.81	2714.62	2715.01	57.41	2.52	562871.01	785269.41	
14063.00	89.93	359.72	11285.75	2809.54	2810.01	58.24	1.66	562966.01	785270.24	

M.D. Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
HD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	H.Offset (US ft)	E.Offset (US ft)	DLS (%/100US ft)	Horthing (US ft)	Easting (US ft)	Comment
14157.00	89.16	358.50	11286.50	2903.34	2903.99	56.78	1.53	563059.99	785268.78	
14251.00	90.14	359.22	11287.07	2997.12	2997.97	54.91	1.29	563153.97	785266.91	
14345.00	91.05	359.78	11286.10	3090.96	3091.96	54.09	1.14	563247.96	785266.09	
14439.00	90.28	358.38	11285.01	3184.76	3185.94	52.58	1.70	563341.94	785264.58	
14533.00	91.12	359.94	11283.86	3278.56	3279.92	51.20	1.88	563435.92	785263.20	
14628.00	91.89	0.62	11281.36	3373.43	3374.88	51.67	1.08	563530.88	785263.67	
14722.00	89.30	359.74	11280.39	3467.32	3468.87	51.96	2.91	563624.87	785263.96	
14816.00	90.56	359.62	11280.50	3561.19	3562.86	51.44	1.35	563718.86	785263.44	
14910.00	90.98	358.85	11279.24	3655.00	3656.85	50.18	0.93	563812.85	785262.18	
15004.00	91.54	358.48	11277.17	3748.73	3750.80	47.99	0.71	563906.80	785259.99	
15099.00	91.75	358.14	11274.44	3843.41	3845.72	45.19	0.42	564001.72	785257.19	
15193.00	92.10	358.99	11271.29	3937.10	3939.63	42.84	0.98	564095.63	785254.84	
15287.00	93.15	359.47	11266.98	4030.82	4033.52	41.58	1.23	564189.52	785253.58	
15382.00	91.96	359.60	11262.75	4125.57	4128.42	40.81	1.26	564284.42	785252.81	
15476.00	90.91	359.52	11260.39	4219.39	4222.39	40.09	1.12	564378.39	785252.09	
15570.00	91.05	358.91	11258.79	4313.20	4316.37	38.80	0.67	564472.37	785250.80	
15665.00	91.47	358.22	11256.70	4407.92	4411.31	36.42	0.85	564567.31	785248.42	
15759.00	91.33	359.21	11254.40	4501.66	4505.26	34.31	1.06	564661.26	785246.31	
15853.00	92.31	359.26	11251.41	4595.43	4599.20	33.06	1.04	564755.20	785245.06	
15948.00	91.96	359.49	11247.88	4690.20	4694.13	32.02	0.44	564850.13	785244.02	
16042.00	91.40	359.11	11245.12	4783.98	4788.08	30.88	0.72	564944.08	785242.88	
16136.00	92.38	359.18	11242.02	4877.74	4882.02	29.47	1.05	565038.02	785241.47	
16204.00	91.54	0.43	11239.69	4945.61	4949.98	29.24	2.21	565105.98	785241.24	Last WFT MWD Svy
16269.00	91.54	0.43	11237.95	5010.53	5014.95	29.73	0.00	565170.95	785241.73	TD@16269' MD / PTB

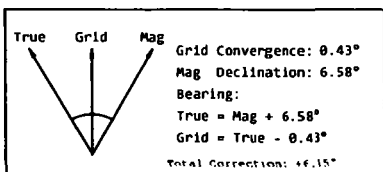


Black & Tan 27 Fed Com 406H
Lea Co, New Mexico



Plan vs Actual

KB:3742'
GL:3716'



Plan Data for Black and Tan 27 Fed Com 406H

Plan Point Information:
Dogleg Severity Unit: */100.00ft
Position offsets from Slot centre

MD Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS	Comments
(USft)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
10715.03	1.21	232.90	10707.08	-172.20	32.12	559983.80	785244.12	-170.45	0.85 Tleon Svy
10740.00	1.21	232.90	10732.04	-172.52	31.70	559983.48	785243.70	-170.79	0.00 PTB/Hold
10821.20	1.21	232.90	10813.22	-173.56	30.33	559982.44	785242.33	-171.89	0.00 KOP
11203.68	45.00	10.40	11158.30	-35.52	52.73	560120.48	785264.73	-32.93	12.00 Build/Turn
11577.58	88.85	359.66	11301.64	298.66	76.74	560454.66	785288.74	302.02	12.00 LP
12977.89	88.85	359.66	11329.64	1698.67	68.54	561854.67	785280.54	1700.00	0.00 T1/Build
13060.31	90.50	359.56	11330.11	1781.08	67.98	561937.08	785279.98	1782.28	2.00 Hold
14683.04	90.50	359.56	11315.98	3403.70	55.38	563559.70	785267.38	3402.40	0.00 Build
14780.83	92.45	359.56	11313.46	3501.45	54.62	563657.45	785266.62	3500.00	2.00 T2
16380.22	92.45	359.56	11248.39	5019.40	42.90	565175.40	785254.90	5015.61	0.00 PBHL 406H

Plan Data for Black and Tan 27 Fed Com 406H

Field: Apache NM (Mad 83 NMEZ)
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (FUS)

Site: Black & Tan 27 Fed Com Pad 4
Unit: USFeet TVD Reference:
Company Name: Apache Corporation

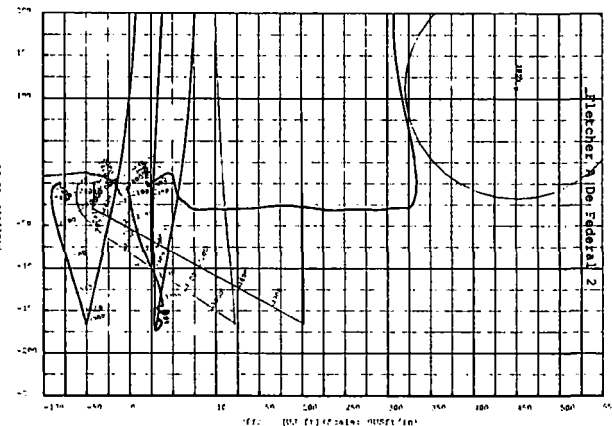
Position:
Northing: 560155.00USft Latitude: 32.537436°
Easting: 785192.00USft Longitude: -103.542036°
North Reference: Grid Grid Convergence: 0.43°
Elevation Above VRD: 3715.00USft
Comment: Lea Co., NM

Slot: Black & Tan 27 Fed Com 406H
Position:
Offset is from Site centre
+N/-S: 0.20USft Northing: 560156.00USft Latitude: 32.537437°
+E/-W: 20.00USft Easting: 785212.00USft Longitude: -103.541971°
Elevation Above VRD: 3716.00USft

Well: Black and Tan 27 Fed Com 406H
Type: Main-Well
File Number: 13841057

Plan Folder: P2 Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 2.77°
+E/-W: 0.00USft

Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
IFR 48145(nT) 6.58° 60.47° 2019-10-02



Plan Data for Black and Tan 27 Fed Com 406H

Casing Point Information:
Position offsets from Slot centre

Name	MD	TVD	+N/-S	+E/-W	Northing	Easting
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
9 5/8 in	5680.00	5672.31	-153.25	42.92	560002.75	785254.92
7 5/8 in	10720.00	10720.04	-172.37	31.90	559983.63	785243.90

Formation Point Information:

Name	TVD Elevation	MD	
(USft)	(USft)	(USft)	
WOLFCAMP A	11361.00	-7619.00	-1.00
WOLFCAMP B	11546.00	-7804.00	-1.00
RUSTLER	1636.00	2106.00	1636.02
SALADO	1966.00	1776.00	1966.06
TANSHILL	3376.00	366.00	3383.52
YATES	3536.00	206.00	3543.56
SEVEN RIVERS	3937.00	-195.00	3944.59
DELAWARE	5671.00	-1929.00	5678.69
AVALON	8591.00	-4849.00	8598.84
1 BSC	9306.00	-5564.00	9313.85
1 BSS	9691.00	-5949.00	9698.85
2 BSC	9961.00	-6219.00	9968.85
2 BSS	10249.00	-6507.00	10256.89
3 BSC	10781.00	-7039.00	10788.97
3 BSS	11066.00	-7324.00	11086.32

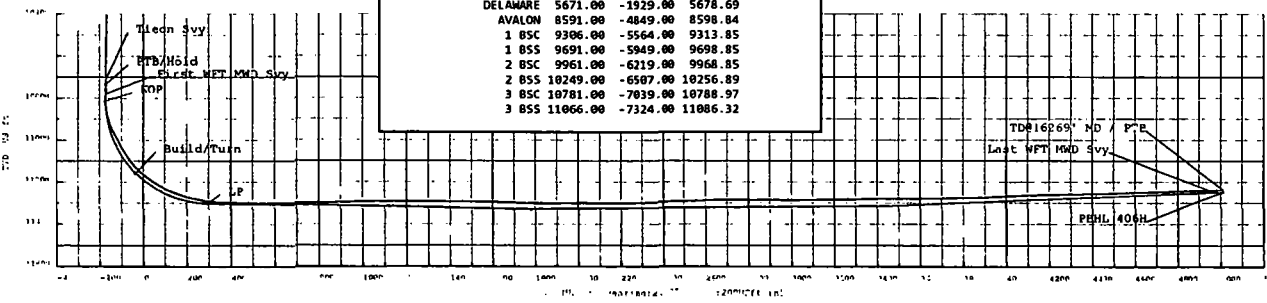
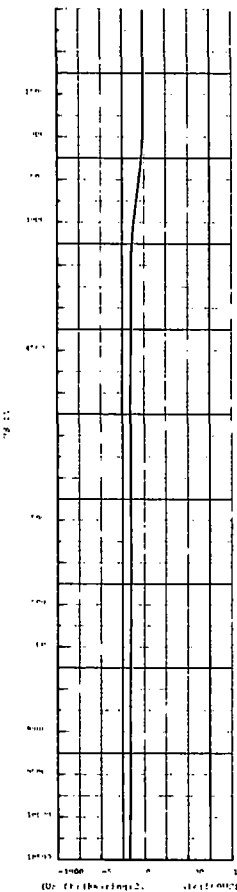
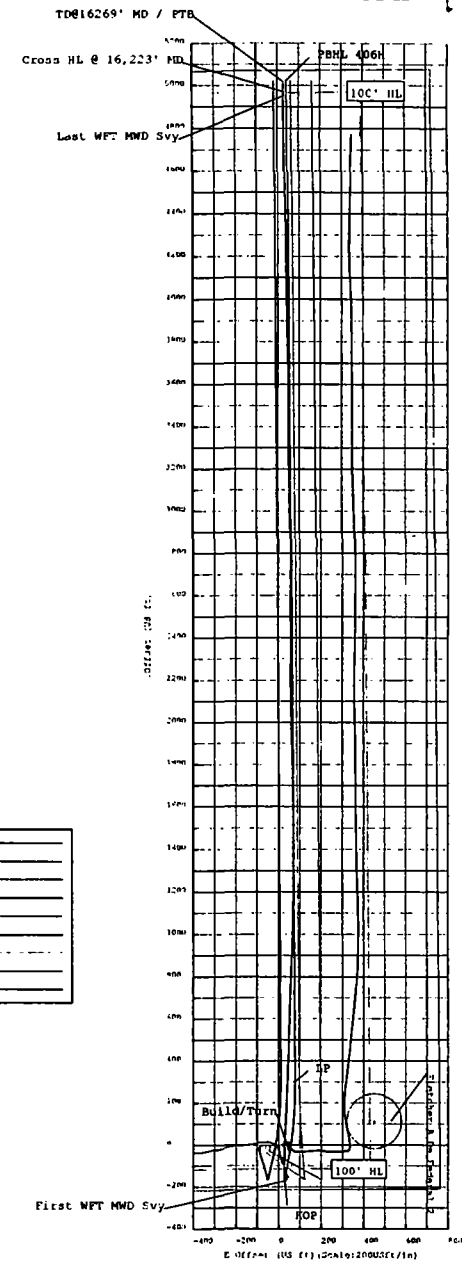
Plan Data for Black and Tan 27 Fed Com 406H

Target Set Information:
Name: 0AT27FC406H

Position offsets from Slot centre

Name	TVD Elevation	+N/-S	+E/-W	Northing	Easting	
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	
VP	10824.32	-7882.32	-164.30	42.90	559991.70	785254.90
T0	11302.53	-7560.53	284.61	76.85	560440.61	785288.85
T1	11329.64	-7587.64	1698.67	68.54	561854.67	785280.54
T2	11313.46	-7571.46	3501.45	54.62	563657.45	785266.62
LTP 406H	11250.53	-7508.53	4969.40	43.28	565125.40	785255.20
PBHL 406H	11248.39	-7506.39	5019.40	42.90	565175.40	785254.90

- Black and Tan 27 Fed Com 406H
- Black & Tan 27 Fed Com 405H
- Black & Tan 27 Fed Com 307H
- Black & Tan 27 Fed Com 308H
- Fletcher A De Federal 2
- Black and Tan 27 Fed Com 504H
- Black and Tan 27 Fed Com 204H
- Black and Tan 27 Fed Com 104H
- Black and Tan 27 Fed Com 406H



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