



PHOENIX
TECHNOLOGY SERVICES

Apache Corporation

**Lea County, NM (NAD83 NME)
Black & Tan 27 Federal Com
308H**

OH / Job# 62300

Design: Surveys (H&P 482)

Standard Survey Report

23 February, 2018

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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	308H					
Well Position	+N/-S	0.00 usft	Northing:	560,156.20 usft	Latitude:	32° 32' 14.77232 N
	+E/-W	0.00 usft	Easting:	785,232.00 usft	Longitude:	103° 32' 30.86169 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,716.00 usft

Wellbore	OH / Job# 62300				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/12/2018	6.77	60.50	48,274.70000000

Design	Surveys (H&P 482)				
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	3.88	

Survey Program	Date	2/23/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
64.50	10,465.00	VES Gyro Surveys (OH / Job# 62300)	NS-GYRO-MS	North sensing gyrocompassing m/s	
10,465.00	15,698.00	Phoenix MWD Surveys (OH / Job# 62300)	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	
64.50	0.28	353.70	64.50	0.16	-0.02	0.16	0.43	0.43	0.00	
159.05	0.41	12.32	159.05	0.72	0.03	0.72	0.18	0.14	19.69	
253.60	0.39	355.42	253.60	1.37	0.08	1.37	0.13	-0.02	-17.87	
348.15	0.24	337.81	348.14	1.87	-0.02	1.87	0.19	-0.16	-18.63	
442.70	0.20	140.17	442.69	1.93	0.01	1.92	0.46	-0.04	171.72	
537.25	0.25	141.19	537.24	1.64	0.24	1.65	0.05	0.05	1.08	
631.80	0.30	146.41	631.79	1.27	0.51	1.31	0.06	0.05	5.52	
726.35	0.31	150.16	726.34	0.85	0.77	0.90	0.02	0.01	3.97	
820.90	0.27	149.09	820.89	0.43	1.01	0.50	0.04	-0.04	-1.13	

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MD Reference: GL + KB @ 3742.00usft (H&P 482)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
915.45	0.25	161.39	915.44	0.05	1.19	0.13	0.06	-0.02	13.01
1,010.00	0.23	179.38	1,009.99	-0.34	1.26	-0.25	0.08	-0.02	19.03
1,104.55	0.23	175.23	1,104.54	-0.72	1.28	-0.63	0.02	0.00	-4.39
1,199.10	0.26	177.14	1,199.09	-1.12	1.31	-1.03	0.03	0.03	2.02
1,293.65	0.31	221.99	1,293.64	-1.53	1.15	-1.44	0.24	0.05	47.44
1,388.20	0.29	191.45	1,388.18	-1.95	0.93	-1.88	0.17	-0.02	-32.30
1,482.75	0.32	174.19	1,482.73	-2.45	0.91	-2.38	0.10	0.03	-18.25
1,577.30	0.21	178.43	1,577.28	-2.88	0.94	-2.81	0.12	-0.12	4.48
1,671.85	0.04	28.66	1,671.83	-3.03	0.96	-2.96	0.26	-0.18	-158.40
1,766.40	0.43	85.06	1,766.38	-2.97	1.33	-2.87	0.43	0.41	59.65
1,860.95	0.37	66.18	1,860.93	-2.81	1.96	-2.67	0.15	-0.06	-19.97
1,955.50	0.42	76.38	1,955.48	-2.61	2.58	-2.43	0.09	0.05	10.79
2,050.05	0.39	67.83	2,050.02	-2.41	3.21	-2.18	0.07	-0.03	-9.04
2,144.60	0.33	50.67	2,144.57	-2.11	3.72	-1.86	0.13	-0.06	-18.15
2,239.15	0.34	32.74	2,239.12	-1.70	4.08	-1.42	0.11	0.01	-18.96
2,333.70	0.39	49.38	2,333.67	-1.26	4.48	-0.95	0.12	0.05	17.60
2,428.25	0.40	27.12	2,428.22	-0.75	4.87	-0.42	0.16	0.01	-23.54
2,522.80	0.47	8.53	2,522.76	-0.08	5.08	0.27	0.17	0.07	-19.66
2,617.35	0.71	52.43	2,617.31	0.66	5.60	1.04	0.52	0.25	46.43
2,711.90	0.95	54.85	2,711.85	1.47	6.71	1.92	0.26	0.25	2.56
2,806.45	1.92	59.64	2,806.37	2.72	8.72	3.31	1.03	1.03	5.07
2,901.00	3.03	61.74	2,900.83	4.71	12.28	5.53	1.18	1.17	2.22
2,995.55	4.17	54.87	2,995.19	7.87	17.30	9.02	1.29	1.21	-7.27
3,090.10	2.71	58.12	3,089.57	11.03	22.01	12.49	1.56	-1.54	3.44
3,184.65	2.34	99.52	3,184.03	11.89	25.81	13.61	1.92	-0.39	43.79
3,279.20	2.27	126.55	3,278.51	10.45	29.22	12.41	1.14	-0.07	28.59
3,373.75	1.71	164.36	3,373.01	7.98	31.10	10.07	1.47	-0.59	39.99
3,468.30	1.82	174.22	3,467.51	5.13	31.63	7.26	0.34	0.12	10.43
3,562.85	1.83	166.25	3,562.01	2.17	32.14	4.34	0.27	0.01	-8.43
3,657.40	2.10	167.10	3,656.51	-0.99	32.89	1.24	0.29	0.29	0.90
3,751.95	2.17	170.50	3,750.99	-4.44	33.57	-2.16	0.15	0.07	3.60
3,846.50	2.07	166.27	3,845.48	-7.87	34.27	-5.53	0.20	-0.11	-4.47
3,941.05	0.93	166.78	3,939.99	-10.27	34.85	-7.89	1.21	-1.21	0.54
4,035.60	1.13	159.31	4,034.53	-11.89	35.36	-9.47	0.25	0.21	-7.90
4,130.15	1.19	146.57	4,129.06	-13.58	36.23	-11.10	0.28	0.06	-13.47
4,224.70	1.19	161.43	4,223.59	-15.33	37.08	-12.79	0.33	0.00	15.72
4,319.25	1.22	144.32	4,318.12	-17.08	37.98	-14.47	0.38	0.03	-18.10
4,413.80	1.20	133.98	4,412.65	-18.59	39.28	-15.88	0.23	-0.02	-10.94
4,508.35	1.22	133.37	4,507.18	-19.96	40.72	-17.16	0.03	0.02	-0.65
4,602.90	0.51	170.10	4,601.72	-21.07	41.53	-18.21	0.92	-0.75	38.85
4,697.45	0.08	80.20	4,696.26	-21.47	41.66	-18.60	0.55	-0.45	-95.08
4,792.00	0.26	111.40	4,790.81	-21.54	41.93	-18.65	0.21	0.19	33.00
4,886.55	0.34	78.02	4,885.36	-21.56	42.40	-18.64	0.20	0.08	-35.30

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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)	
4,981.10	0.35	93.64	4,979.91	-21.52	42.97	-18.56	0.10	0.01	16.52	
5,075.65	0.44	125.75	5,074.46	-21.75	43.55	-18.75	0.25	0.10	33.96	
5,170.20	0.61	141.94	5,169.01	-22.36	44.15	-19.32	0.24	0.18	17.12	
5,264.75	0.76	144.28	5,263.55	-23.26	44.83	-20.18	0.16	0.16	2.47	
5,359.30	0.75	131.89	5,358.09	-24.19	45.66	-21.04	0.17	-0.01	-13.10	
5,453.85	0.78	131.44	5,452.63	-25.03	46.60	-21.82	0.03	0.03	-0.48	
5,548.40	0.81	133.76	5,547.17	-25.91	47.57	-22.64	0.05	0.03	2.45	
5,642.95	0.74	135.10	5,641.71	-26.81	48.48	-23.47	0.08	-0.07	1.42	
5,737.50	0.75	133.76	5,736.26	-27.67	49.36	-24.27	0.02	0.01	-1.42	
5,832.05	0.66	129.55	5,830.80	-28.44	50.22	-24.98	0.11	-0.10	-4.45	
5,926.60	1.54	111.07	5,925.33	-29.25	51.83	-25.67	0.99	0.93	-19.55	
6,021.15	1.39	104.51	6,019.85	-29.99	54.13	-26.26	0.24	-0.16	-6.94	
6,115.70	1.32	100.26	6,114.37	-30.47	56.31	-26.59	0.13	-0.07	-4.49	
6,210.25	1.27	104.87	6,208.90	-30.94	58.39	-26.91	0.12	-0.05	4.88	
6,304.80	1.31	102.25	6,303.43	-31.43	60.46	-27.27	0.08	0.04	-2.77	
6,399.35	2.56	79.65	6,397.92	-31.28	63.59	-26.91	1.52	1.32	-23.90	
6,493.90	3.81	89.00	6,492.32	-30.85	68.81	-26.12	1.43	1.32	9.89	
6,588.45	3.39	82.34	6,586.69	-30.42	74.72	-25.30	0.63	-0.44	-7.04	
6,683.00	3.27	96.53	6,681.08	-30.36	80.17	-24.86	0.88	-0.13	15.01	
6,777.55	4.10	90.66	6,775.43	-30.70	86.23	-24.80	0.96	0.88	-6.21	
6,872.10	3.77	90.23	6,869.76	-30.75	92.72	-24.41	0.35	-0.35	-0.45	
6,966.65	3.84	80.03	6,964.10	-30.22	98.95	-23.45	0.72	0.07	-10.79	
7,061.20	4.80	92.31	7,058.39	-29.83	106.02	-22.59	1.40	1.02	12.99	
7,155.75	4.29	83.92	7,152.64	-29.61	113.49	-21.87	0.88	-0.54	-8.87	
7,250.30	3.86	89.00	7,246.95	-29.18	120.19	-20.98	0.59	-0.45	5.37	
7,344.85	3.56	88.00	7,341.30	-29.03	126.30	-20.41	0.32	-0.32	-1.06	
7,439.40	3.54	80.02	7,435.67	-28.42	132.11	-19.41	0.52	-0.02	-8.44	
7,533.95	4.41	84.20	7,529.99	-27.54	138.60	-18.10	0.97	0.92	4.42	
7,628.50	4.06	82.39	7,624.28	-26.73	145.54	-16.82	0.40	-0.37	-1.91	
7,723.05	4.02	92.44	7,718.60	-26.43	152.17	-16.07	0.75	-0.04	10.63	
7,817.60	3.68	84.94	7,812.94	-26.30	158.50	-15.52	0.64	-0.36	-7.93	
7,912.15	3.52	87.99	7,907.30	-25.94	164.42	-14.75	0.26	-0.17	3.23	
8,006.70	3.82	97.66	8,001.66	-26.25	170.44	-14.66	0.73	0.32	10.23	
8,101.25	3.85	95.21	8,096.00	-26.96	176.73	-14.94	0.18	0.03	-2.59	
8,195.80	3.80	98.23	8,190.34	-27.70	182.99	-15.25	0.22	-0.05	3.19	
8,290.35	3.72	94.39	8,284.68	-28.38	189.15	-15.52	0.28	-0.08	-4.06	
8,384.90	3.82	99.81	8,379.03	-29.15	195.31	-15.87	0.39	0.11	5.73	
8,479.45	3.69	99.71	8,473.38	-30.20	201.41	-16.50	0.14	-0.14	-0.11	
8,574.00	3.61	96.38	8,567.73	-31.05	207.37	-16.94	0.24	-0.08	-3.52	
8,668.55	3.56	94.26	8,662.10	-31.60	213.26	-17.09	0.15	-0.05	-2.24	
8,763.10	3.45	90.78	8,756.47	-31.85	219.03	-16.96	0.25	-0.12	-3.68	
8,857.65	4.07	84.98	8,850.82	-31.60	225.21	-16.29	0.77	0.66	-6.13	
8,952.20	3.56	83.93	8,945.16	-30.99	231.48	-15.26	0.54	-0.54	-1.11	

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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)
9,046.75	3.52	86.97	9,039.53	-30.53	237.29	-14.40	0.20	-0.04	3.22
9,141.30	3.26	96.65	9,133.91	-30.69	242.86	-14.18	0.66	-0.27	10.24
9,235.85	3.63	83.53	9,228.29	-30.66	248.51	-13.78	0.92	0.39	-13.88
9,330.40	4.19	93.71	9,322.62	-30.55	254.93	-13.23	0.94	0.59	10.77
9,424.95	3.55	92.95	9,416.96	-30.92	261.30	-13.17	0.68	-0.68	-0.80
9,519.50	3.37	95.42	9,511.34	-31.33	266.99	-13.20	0.25	-0.19	2.61
9,614.05	3.73	81.44	9,605.71	-31.14	272.80	-12.61	0.99	0.38	-14.79
9,708.60	3.64	75.89	9,700.06	-29.95	278.75	-11.02	0.39	-0.10	-5.87
9,803.15	4.09	87.86	9,794.40	-29.09	285.03	-9.74	0.97	0.48	12.66
9,897.70	4.22	86.09	9,888.70	-28.73	291.87	-8.91	0.19	0.14	-1.87
9,992.25	3.03	88.37	9,983.06	-28.42	297.84	-8.20	1.27	-1.26	2.41
10,086.80	3.03	92.53	10,077.48	-28.46	302.83	-7.90	0.23	0.00	4.40
10,181.35	2.62	55.08	10,171.92	-27.33	307.10	-6.49	1.96	-0.43	-39.61
10,275.90	2.75	28.32	10,266.37	-24.10	309.95	-3.07	1.32	0.14	-28.30
10,370.45	3.17	17.62	10,360.79	-19.61	311.82	1.53	0.73	0.44	-11.32
10,465.00	3.29	13.19	10,455.19	-14.48	313.23	6.75	0.29	0.13	-4.69
Tie In									
10,580.00	3.08	6.46	10,570.02	-8.20	314.33	13.09	0.37	-0.18	-5.85
First Phoenix MWD Survey									
10,627.00	4.08	1.49	10,616.92	-5.27	314.51	16.03	2.23	2.13	-10.57
10,674.00	8.38	3.80	10,663.63	-0.18	314.78	21.12	9.16	9.15	4.91
10,721.00	13.48	351.92	10,709.77	8.67	314.24	29.91	11.81	10.85	-25.28
10,768.00	18.53	353.71	10,754.94	21.53	312.65	42.63	10.79	10.74	3.81
10,816.00	23.42	350.93	10,799.74	38.54	310.31	59.45	10.39	10.19	-5.79
10,863.00	28.02	348.85	10,842.08	58.60	306.70	79.22	9.97	9.79	-4.43
10,911.00	31.00	347.48	10,883.84	81.74	301.84	101.98	6.37	6.21	-2.85
10,958.00	35.00	349.20	10,923.26	106.80	296.69	126.64	8.74	8.51	3.66
10,968.50	36.27	349.79	10,931.79	112.82	295.57	132.56	12.54	12.10	5.63
HL: 10968' MD, Inc 36.27°, Azm 349.79°									
11,006.00	40.83	351.64	10,961.11	135.88	291.82	155.31	12.54	12.16	4.93
11,052.00	46.79	356.45	10,994.30	167.52	288.59	186.67	14.83	12.96	10.46
11,100.00	51.60	2.74	11,025.68	203.81	288.41	222.86	14.09	10.02	13.10
11,147.00	58.44	5.05	11,052.61	242.20	291.06	261.34	15.10	14.55	4.91
11,195.00	65.34	6.55	11,075.21	284.30	295.35	303.63	14.64	14.38	3.13
11,242.00	72.05	6.70	11,092.28	327.77	300.40	347.34	14.28	14.28	0.32
11,289.00	77.42	6.67	11,104.65	372.78	305.68	392.61	11.43	11.43	-0.06
11,336.00	82.93	6.75	11,112.66	418.76	311.09	438.85	11.72	11.72	0.17
11,364.00	85.70	6.21	11,115.44	446.44	314.23	466.68	10.08	9.89	-1.93
11,411.00	88.52	5.86	11,117.81	493.12	319.16	513.58	6.05	6.00	-0.74
11,506.00	88.59	6.01	11,120.20	587.58	328.98	608.49	0.17	0.07	0.16
11,601.00	88.10	5.99	11,122.95	682.02	338.91	703.39	0.52	-0.52	-0.02
11,695.00	87.13	4.15	11,126.86	775.56	347.21	797.28	2.21	-1.03	-1.96
11,790.00	85.57	1.61	11,132.91	870.24	351.97	892.06	3.13	-1.64	-2.67
11,885.00	84.87	1.11	11,140.82	964.88	354.22	986.64	0.90	-0.74	-0.53

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)
11,979.00	85.02	359.23	11,149.11	1,058.51	354.50	1,080.07	2.00	0.16	-2.00
12,074.00	86.36	358.03	11,156.25	1,153.21	352.23	1,174.40	1.89	1.41	-1.26
12,168.00	88.16	358.15	11,160.74	1,247.05	349.10	1,267.81	1.92	1.91	0.13
12,263.00	90.84	359.22	11,161.57	1,342.01	346.92	1,362.41	3.04	2.82	1.13
12,358.00	91.39	359.09	11,159.72	1,436.98	345.52	1,457.07	0.59	0.58	-0.14
12,452.00	91.44	358.63	11,157.40	1,530.93	343.65	1,550.68	0.49	0.05	-0.49
12,547.00	90.53	359.76	11,155.76	1,625.91	342.32	1,645.34	1.53	-0.96	1.19
12,642.00	89.36	359.92	11,155.86	1,720.91	342.05	1,740.11	1.24	-1.23	0.17
12,736.00	90.56	359.44	11,155.92	1,814.90	341.53	1,833.85	1.37	1.28	-0.51
12,831.00	89.88	359.00	11,155.56	1,909.89	340.24	1,928.54	0.85	-0.72	-0.46
12,925.00	91.30	359.09	11,154.59	2,003.87	338.67	2,022.20	1.51	1.51	0.10
13,020.00	91.72	358.95	11,152.09	2,098.82	337.05	2,116.82	0.47	0.44	-0.15
13,115.00	90.02	0.13	11,150.64	2,193.81	336.28	2,211.53	2.18	-1.79	1.24
13,209.00	87.32	1.53	11,152.82	2,287.76	337.64	2,305.36	3.24	-2.87	1.49
13,304.00	86.70	0.96	11,157.78	2,382.61	339.70	2,400.13	0.89	-0.65	-0.60
13,398.00	87.61	0.61	11,162.45	2,476.48	340.99	2,493.88	1.04	0.97	-0.37
13,493.00	87.61	0.18	11,166.41	2,571.40	341.65	2,588.62	0.45	0.00	-0.45
13,588.00	86.93	359.70	11,170.93	2,666.29	341.55	2,683.29	0.88	-0.72	-0.51
13,682.00	88.22	359.63	11,174.91	2,760.20	341.00	2,776.95	1.37	1.37	-0.07
13,777.00	88.21	358.96	11,177.87	2,855.15	339.83	2,871.60	0.70	-0.01	-0.71
13,871.00	87.72	358.33	11,181.21	2,949.06	337.61	2,965.14	0.85	-0.52	-0.67
13,966.00	87.44	357.94	11,185.22	3,043.92	334.52	3,059.58	0.51	-0.29	-0.41
14,060.00	88.12	358.38	11,188.86	3,137.80	331.50	3,153.04	0.86	0.72	0.47
14,155.00	89.36	359.31	11,190.95	3,232.76	329.59	3,247.65	1.63	1.31	0.98
14,250.00	90.76	0.41	11,190.85	3,327.75	329.36	3,342.41	1.87	1.47	1.16
14,344.00	92.81	0.06	11,187.92	3,421.70	329.74	3,436.17	2.21	2.18	-0.37
14,439.00	92.80	359.70	11,183.27	3,516.59	329.54	3,530.83	0.38	-0.01	-0.38
14,534.00	92.51	359.57	11,178.87	3,611.48	328.94	3,625.47	0.33	-0.31	-0.14
14,628.00	92.37	359.57	11,174.87	3,705.40	328.23	3,719.11	0.15	-0.15	0.00
14,723.00	92.13	359.40	11,171.14	3,800.32	327.38	3,813.76	0.31	-0.25	-0.18
14,818.00	92.03	359.48	11,167.69	3,895.25	326.45	3,908.41	0.13	-0.11	0.08
14,912.00	91.45	357.99	11,164.84	3,989.18	324.38	4,001.99	1.70	-0.62	-1.59
15,007.00	91.33	356.79	11,162.53	4,084.06	320.05	4,096.35	1.27	-0.13	-1.26
15,101.00	91.41	358.43	11,160.29	4,177.94	316.13	4,189.76	1.75	0.09	1.74
15,196.00	93.18	0.74	11,156.48	4,272.85	315.45	4,284.41	3.06	1.86	2.43
15,291.00	93.79	1.32	11,150.71	4,367.66	317.15	4,379.11	0.89	0.64	0.61
15,385.00	93.84	1.49	11,144.45	4,461.43	319.45	4,472.82	0.19	0.05	0.18
15,480.00	93.67	1.69	11,138.23	4,556.19	322.08	4,567.54	0.28	-0.18	0.21
15,575.00	93.36	1.88	11,132.41	4,650.96	325.03	4,662.29	0.38	-0.33	0.20
15,634.00	93.42	1.98	11,128.92	4,709.82	327.02	4,721.16	0.20	0.10	0.17
Final Phoenix MWD Survey									
15,666.00	93.42	1.98	11,127.01	4,741.75	328.12	4,753.08	0.00	0.00	0.00
HL: 15666' MD, Inc 93.42°, Azm 1.98°									
15,698.00	93.42	1.98	11,125.09	4,773.67	329.22	4,785.01	0.00	0.00	0.00

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Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)
PTD, 15698' MD, Inc 93.42°, Azm 1.98°									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,465.00	10,455.19	-14.48	313.23	Tie In
10,580.00	10,570.02	-8.20	314.33	First Phoenix MWD Survey
10,968.50	10,931.79	112.82	295.57	HL: 10968' MD, Inc 36.27°, Azm 349.79°
15,634.00	11,128.92	4,709.82	327.02	Final Phoenix MWD Survey
15,666.00	11,127.01	4,741.75	328.12	HL: 15666' MD, Inc 93.42°, Azm 1.98°
15,698.00	11,125.10	4,773.67	329.22	PTD, 15698' MD, Inc 93.42°, Azm 1.98°