



Project: WELD COUNTY (NAD 83)  
 Site: SW SW SEC. 3 T1N R68W 6TH P.M.  
 Well: HAMMER 3-3HZ  
 Wellbore: JOB # 2018-84-461  
 Design: FINAL SURVEYS

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
1841.6	1883.0	9.19	45.32	219.4	247.5	219.4	332.0	SURFACE CASING
6936.1	7002.0	1.73	351.94	-42.9	280.1	-42.9	723.1	KOP
7742.4	8038.0	67.85	359.16	486.8	265.3	486.8	1253.7	~ ENTER LANDING BOX (8038' MD)
7827.0	8470.0	86.31	358.62	908.8	272.7	908.8	1675.4	HEEL (40.079111, -104.996392)
7831.0	9375.0	90.74	0.61	1813.4	276.1	1813.4	2580.1	~ CROSS 460' HARDLINE (9375' MD)
7779.9	16457.0	89.43	358.78	8891.5	307.0	8891.5	9660.8	~ CROSS 460' HARDLINE (16457' MD)
7776.4	16798.0	90.84	358.72	9232.4	302.8	9232.4	10001.7	LAST SURVEY MAR 22, 2018
7775.5	16858.0	90.84	358.72	9292.4	301.5	9292.4	10061.7	PROJECTION TO TD (40.102124, -104.996288)

AS DRILLED LOCAL COORDINATES:

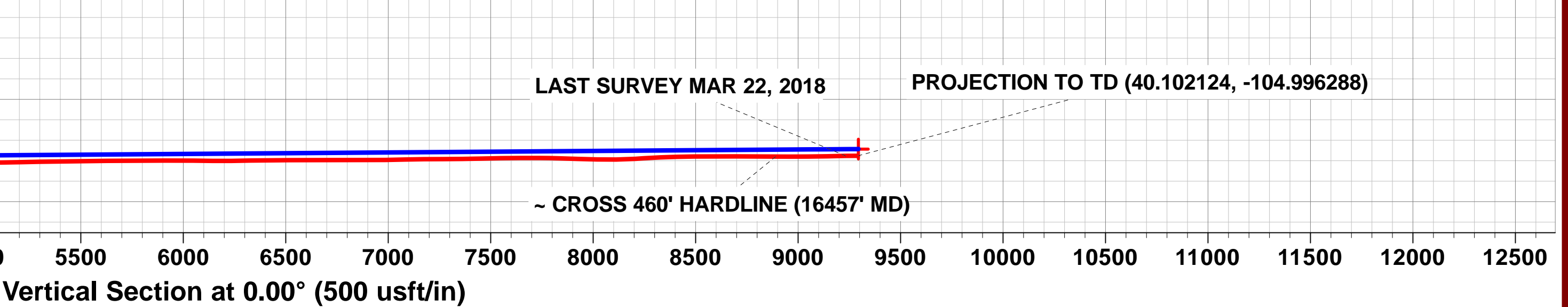
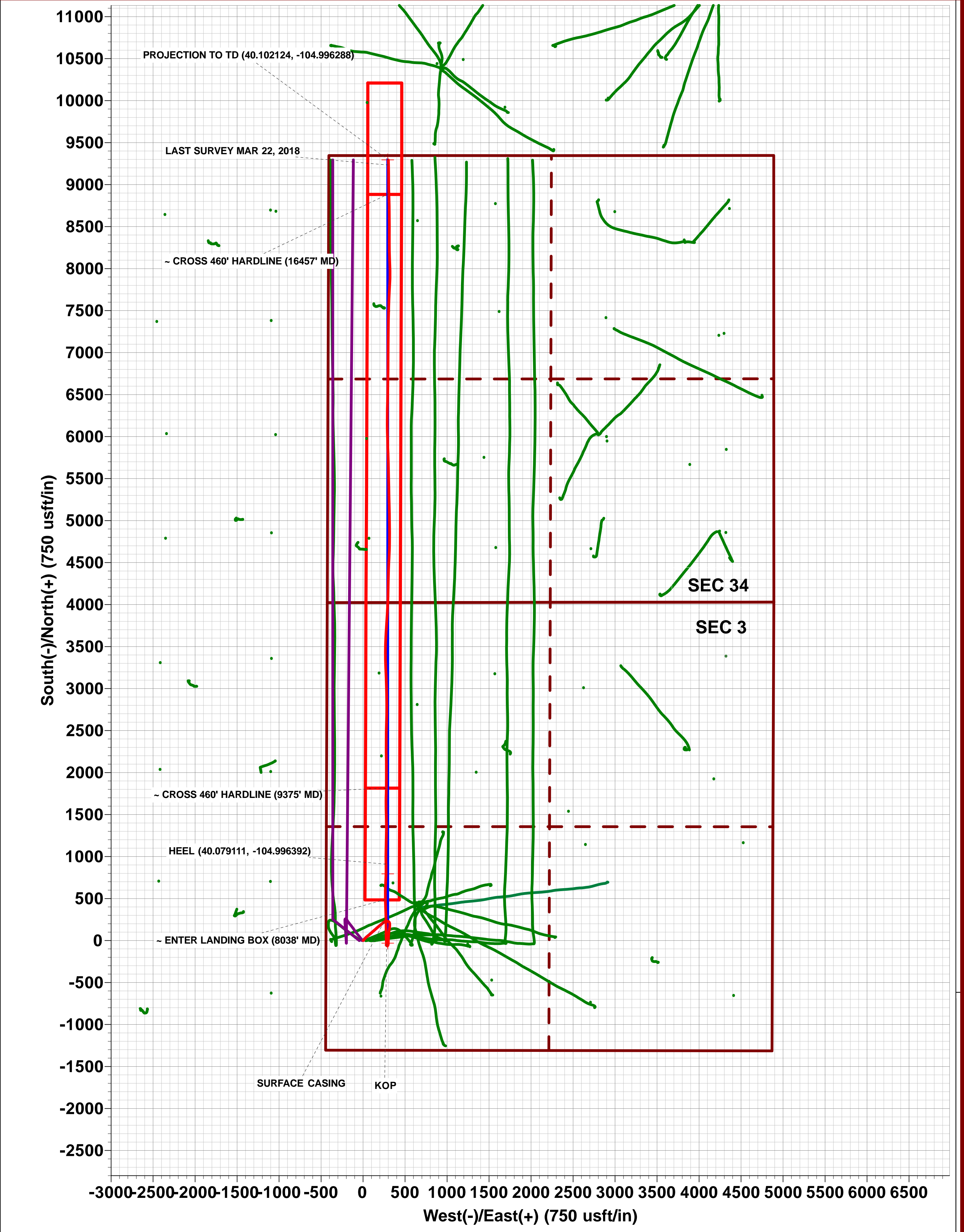
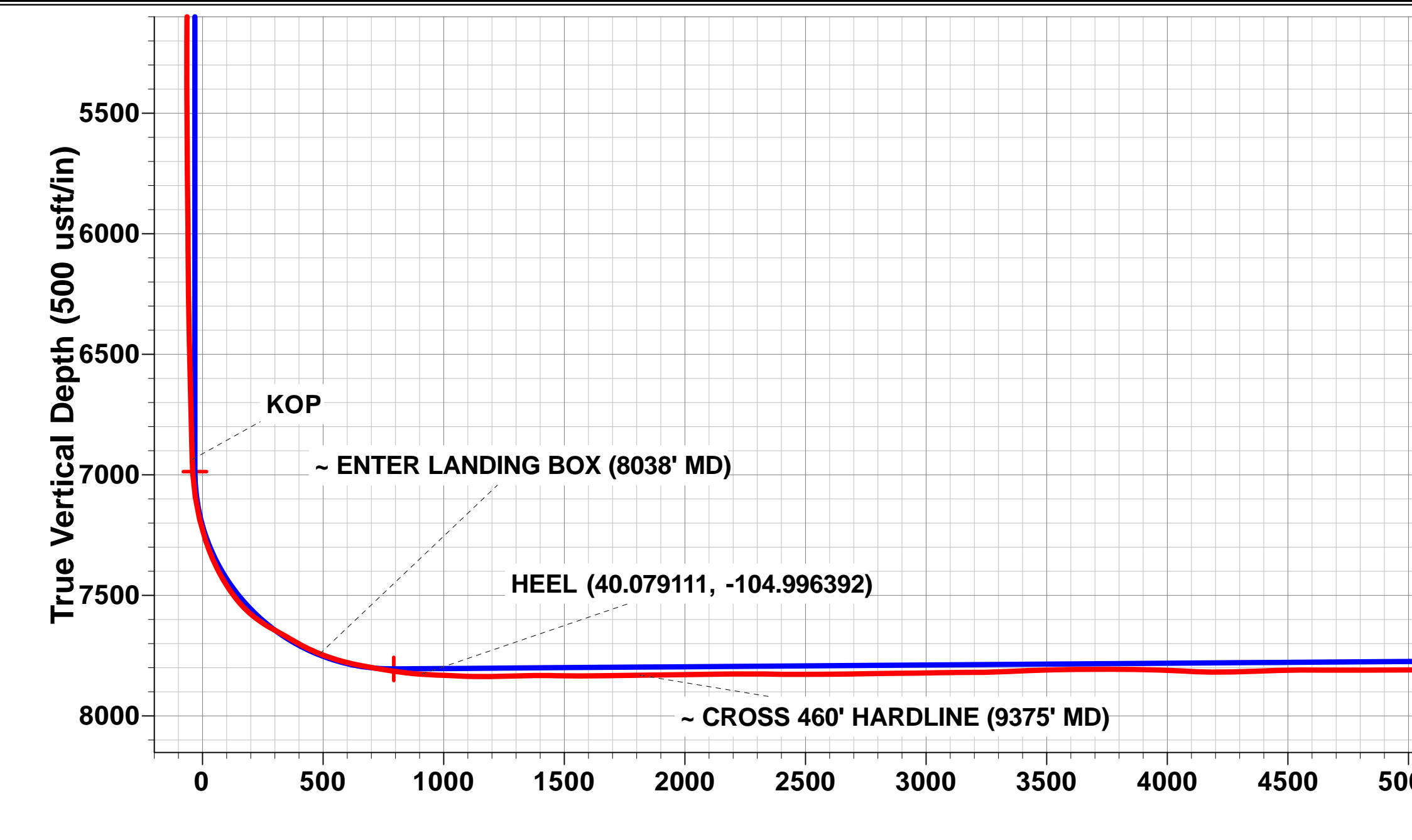
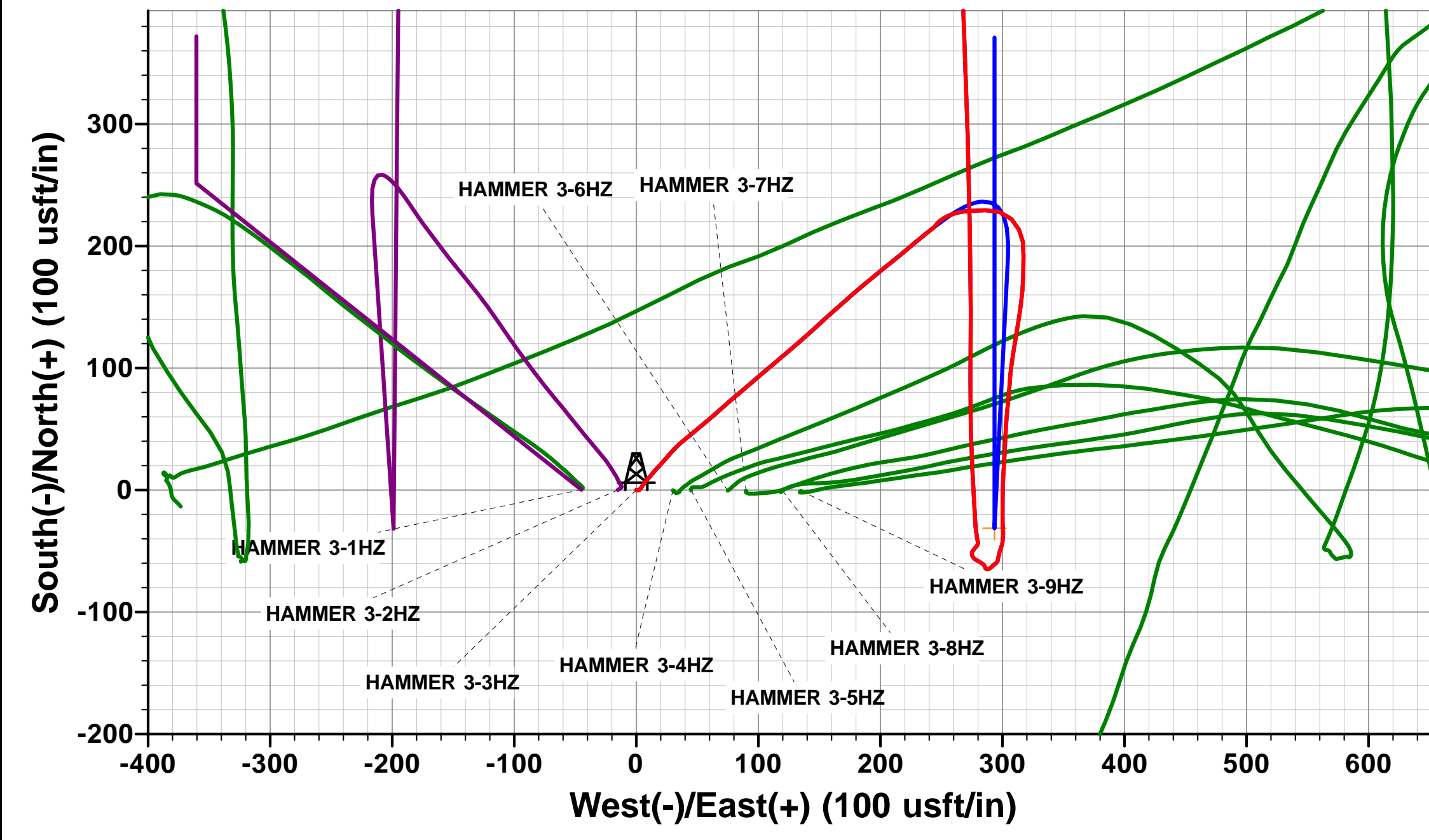
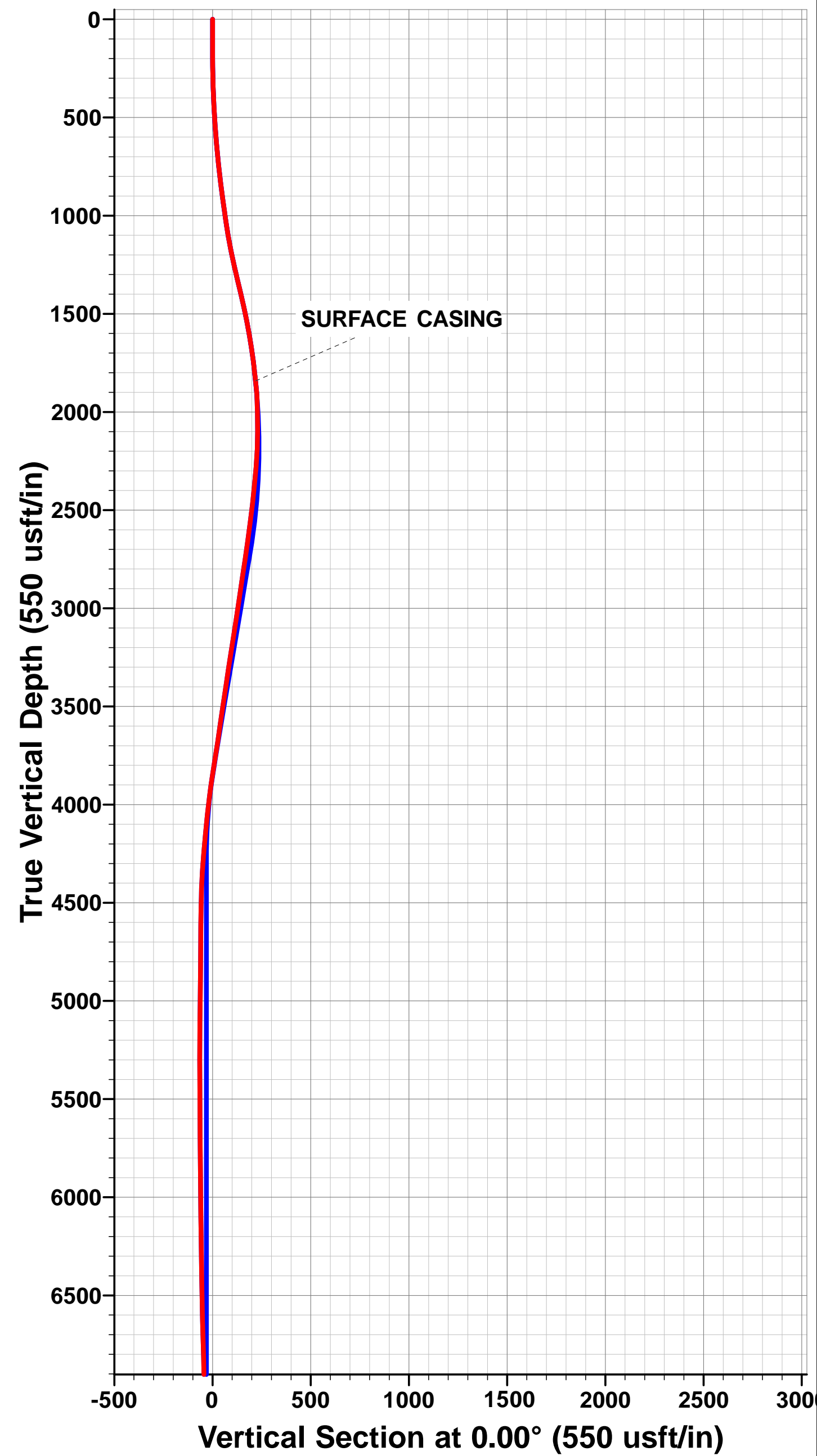
SHL: 1306ft FSL & 441ft FWL Sec 3

HEEL: 2215.5ft FSL & 711.2ft FWL Sec 3

BHL: 53.7ft FNL & 708.5ft FWL Sec 34

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL - HAMMER 3-3HZ (P2)	7743.0	9294.1	294.0	40° 6' 7.664 N	104° 59' 46.734 W
HEEL - HAMMER 3-3HZ (P2)	7805.0	793.3	293.5	40° 4' 43.658 N	104° 59' 46.741 W
KOP - HAMMER 3-3HZ (P2)	6986.5	-31.2	293.5	40° 4' 35.510 N	104° 59' 46.741 W



# Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well HAMMER 3-3HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

<b>Project</b>	WELD COUNTY (NAD 83)		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)	Using geodetic scale factor	

<b>Site</b>	SW SW SEC. 3 T1N R68W 6TH P.M.				
<b>Site Position:</b>		<b>Northing:</b>	14,554,632.99 usft	<b>Latitude:</b>	40° 4' 35.821 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,641,108.55 usft	<b>Longitude:</b>	104° 59' 51.096 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	0.00 °

<b>Well</b>	HAMMER 3-3HZ					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,554,632.69 usft	<b>Latitude:</b>	40° 4' 35.818 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,641,153.54 usft	<b>Longitude:</b>	104° 59' 50.517 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	5,045.0 usft

<b>Wellbore</b>	JOB # 2018-84-461				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	06/03/2018	8.23	66.54	52,116

<b>Design</b>	FINAL SURVEYS				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	0.00	

<b>Survey Program</b>	<b>Date</b>	17/05/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
128.0	16,858.0	FINAL SURVEYS (JOB # 2018-84-461)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<b>Survey</b>											
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>Subsea Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	5,065.0	0.0	0.0	0.0	0.00	0.00	0.00	
128.0	0.79	86.30	128.0	4,937.0	0.1	0.9	0.1	0.62	0.62	0.00	
159.0	1.45	101.33	159.0	4,906.0	0.0	1.5	0.0	2.31	2.13	48.48	
191.0	0.92	74.70	191.0	4,874.0	0.0	2.1	0.0	2.35	-1.66	-83.22	
223.0	1.01	50.44	223.0	4,842.0	0.2	2.6	0.2	1.30	0.28	-75.81	
254.0	1.54	43.23	254.0	4,811.0	0.7	3.1	0.7	1.78	1.71	-23.26	
286.0	1.98	38.48	286.0	4,779.0	1.5	3.7	1.5	1.45	1.37	-14.84	
317.0	2.59	33.12	316.9	4,748.1	2.5	4.4	2.5	2.08	1.97	-17.29	
349.0	2.77	34.62	348.9	4,716.1	3.7	5.3	3.7	0.60	0.56	4.69	
380.0	3.25	35.23	379.9	4,685.1	5.0	6.2	5.0	1.55	1.55	1.97	
412.0	3.38	36.46	411.8	4,653.2	6.5	7.3	6.5	0.46	0.41	3.84	
444.0	3.30	40.07	443.7	4,621.3	8.0	8.4	8.0	0.70	-0.25	11.28	
475.0	3.38	44.02	474.7	4,590.3	9.3	9.7	9.3	0.79	0.26	12.74	

# Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well HAMMER 3-3HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
507.0	3.69	41.30	506.6	4,558.4	10.8	11.0	10.8	1.10	0.97	-8.50	
538.0	4.44	39.36	537.6	4,527.4	12.5	12.4	12.5	2.46	2.42	-6.26	
602.0	6.46	41.91	601.3	4,463.7	17.1	16.4	17.1	3.18	3.16	3.98	
634.0	7.21	41.74	633.0	4,432.0	19.9	18.9	19.9	2.34	2.34	-0.53	
666.0	7.73	42.70	664.8	4,400.2	23.0	21.7	23.0	1.67	1.62	3.00	
697.0	8.13	41.74	695.5	4,369.5	26.1	24.6	26.1	1.36	1.29	-3.10	
729.0	8.57	40.07	727.1	4,337.9	29.7	27.6	29.7	1.57	1.37	-5.22	
761.0	8.61	43.67	758.8	4,306.2	33.2	30.8	33.2	1.68	0.12	11.25	
793.0	9.27	47.19	790.4	4,274.6	36.7	34.4	36.7	2.68	2.06	11.00	
824.0	9.58	49.82	821.0	4,244.0	40.1	38.2	40.1	1.71	1.00	8.48	
856.0	10.59	50.44	852.5	4,212.5	43.7	42.5	43.7	3.17	3.16	1.94	
888.0	11.47	50.17	883.9	4,181.1	47.6	47.2	47.6	2.75	2.75	-0.84	
920.0	12.35	50.61	915.2	4,149.8	51.8	52.3	51.8	2.76	2.75	1.37	
951.0	12.30	50.09	945.5	4,119.5	56.0	57.4	56.0	0.39	-0.16	-1.68	
983.0	12.44	48.50	976.7	4,088.3	60.5	62.6	60.5	1.15	0.44	-4.97	
1,015.0	12.35	48.59	1,008.0	4,057.0	65.0	67.7	65.0	0.29	-0.28	0.28	
1,047.0	12.84	48.24	1,039.2	4,025.8	69.6	72.9	69.6	1.55	1.53	-1.09	
1,078.0	14.15	49.73	1,069.4	3,995.6	74.4	78.4	74.4	4.37	4.23	4.81	
1,110.0	14.81	49.73	1,100.3	3,964.7	79.6	84.5	79.6	2.06	2.06	0.00	
1,142.0	15.73	49.29	1,131.2	3,933.8	85.0	90.9	85.0	2.90	2.87	-1.37	
1,173.0	16.48	49.56	1,161.0	3,904.0	90.6	97.4	90.6	2.43	2.42	0.87	
1,205.0	17.80	49.65	1,191.6	3,873.4	96.7	104.6	96.7	4.13	4.12	0.28	
1,237.0	18.37	49.91	1,222.0	3,843.0	103.2	112.2	103.2	1.80	1.78	0.81	
1,269.0	18.81	49.21	1,252.3	3,812.7	109.8	120.0	109.8	1.54	1.37	-2.19	
1,301.0	19.42	49.73	1,282.6	3,782.4	116.6	127.9	116.6	1.98	1.91	1.62	
1,332.0	19.69	49.38	1,311.8	3,753.2	123.3	135.8	123.3	0.95	0.87	-1.13	
1,364.0	19.69	47.98	1,341.9	3,723.1	130.4	143.9	130.4	1.47	0.00	-4.37	
1,396.0	19.47	46.39	1,372.0	3,693.0	137.7	151.8	137.7	1.80	-0.69	-4.97	
1,427.0	19.20	48.42	1,401.3	3,663.7	144.7	159.3	144.7	2.34	-0.87	6.55	
1,459.0	19.07	48.86	1,431.5	3,633.5	151.6	167.2	151.6	0.61	-0.41	1.37	
1,491.0	19.16	48.33	1,461.8	3,603.2	158.5	175.1	158.5	0.61	0.28	-1.66	
1,522.0	17.97	49.73	1,491.2	3,573.8	165.0	182.5	165.0	4.10	-3.84	4.52	
1,554.0	17.53	50.53	1,521.6	3,543.4	171.3	190.0	171.3	1.57	-1.37	2.50	
1,586.0	16.48	50.79	1,552.2	3,512.8	177.2	197.2	177.2	3.29	-3.28	0.81	
1,618.0	15.95	50.96	1,583.0	3,482.0	182.8	204.2	182.8	1.66	-1.66	0.53	
1,649.0	15.25	51.49	1,612.8	3,452.2	188.0	210.7	188.0	2.30	-2.26	1.71	
1,681.0	14.68	50.44	1,643.7	3,421.3	193.2	217.1	193.2	1.97	-1.78	-3.28	
1,713.0	13.32	49.91	1,674.8	3,390.2	198.2	223.0	198.2	4.27	-4.25	-1.66	
1,744.0	12.74	49.65	1,705.0	3,360.0	202.7	228.4	202.7	1.88	-1.87	-0.84	
1,776.0	11.43	50.53	1,736.3	3,328.7	207.0	233.5	207.0	4.13	-4.09	2.75	
1,808.0	10.63	51.76	1,767.7	3,297.3	210.9	238.3	210.9	2.61	-2.50	3.84	
1,840.0	9.62	52.55	1,799.2	3,265.8	214.3	242.7	214.3	3.19	-3.16	2.47	
1,861.0	9.30	37.40	1,819.9	3,245.1	216.7	245.2	216.7	11.92	-1.52	-72.14	
<b>SURFACE CASING</b>											
1,883.0	9.19	45.32	1,841.6	3,223.4	219.4	247.5	219.4	5.80	-0.50	36.00	
1,954.0	10.01	69.72	1,911.6	3,153.4	225.5	257.3	225.5	5.80	1.15	34.37	
2,048.0	9.15	87.09	2,004.4	3,060.6	228.7	272.4	228.7	3.19	-0.91	18.48	
2,142.0	7.39	87.17	2,097.4	2,967.6	229.4	285.9	229.4	1.87	-1.87	0.09	
2,236.0	7.39	106.82	2,190.6	2,874.4	227.9	297.8	227.9	2.68	0.00	20.90	
2,329.0	7.00	136.32	2,282.9	2,782.1	222.1	307.4	222.1	3.95	-0.42	31.72	
2,422.0	6.49	153.65	2,375.3	2,689.7	213.3	313.7	213.3	2.25	-0.55	18.63	
2,514.0	6.52	170.21	2,466.7	2,598.3	203.5	316.8	203.5	2.03	0.03	18.00	
2,609.0	7.47	183.92	2,561.0	2,504.0	192.0	317.3	192.0	2.02	1.00	14.43	

Survey Report



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<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TDV Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,704.0	7.36	177.61	2,655.2	2,409.8	179.8	317.2	179.8	0.86	-0.12	-6.64
2,799.0	9.09	185.80	2,749.2	2,315.8	166.2	316.7	166.2	2.20	1.82	8.62
2,893.0	8.43	187.53	2,842.1	2,222.9	152.0	315.0	152.0	0.76	-0.70	1.84
2,988.0	8.05	187.91	2,936.1	2,128.9	138.5	313.2	138.5	0.40	-0.40	0.40
3,082.0	9.53	189.64	3,029.0	2,036.0	124.3	311.0	124.3	1.60	1.57	1.84
3,176.0	8.26	190.51	3,121.9	1,943.1	110.0	308.4	110.0	1.36	-1.35	0.93
3,270.0	9.22	184.62	3,214.8	1,850.2	95.9	306.6	95.9	1.40	1.02	-6.27
3,362.0	8.34	184.15	3,305.7	1,759.3	81.9	305.5	81.9	0.96	-0.96	-0.51
3,457.0	8.60	186.66	3,399.7	1,665.3	67.9	304.2	67.9	0.48	0.27	2.64
3,552.0	8.96	183.36	3,493.6	1,571.4	53.5	303.0	53.5	0.65	0.38	-3.47
3,646.0	7.73	181.64	3,586.6	1,478.4	39.9	302.3	39.9	1.34	-1.31	-1.83
3,740.0	8.63	183.75	3,679.6	1,385.4	26.5	301.7	26.5	1.01	0.96	2.24
3,834.0	9.61	183.63	3,772.4	1,292.6	11.7	300.7	11.7	1.04	1.04	-0.13
3,927.0	8.27	179.95	3,864.3	1,200.7	-2.8	300.3	-2.8	1.57	-1.44	-3.96
4,021.0	7.09	180.92	3,957.5	1,107.5	-15.3	300.2	-15.3	1.26	-1.26	1.03
4,115.0	6.14	179.23	4,050.8	1,014.2	-26.2	300.1	-26.2	1.03	-1.01	-1.80
4,209.0	5.59	175.02	4,144.3	920.7	-35.8	300.6	-35.8	0.74	-0.59	-4.48
4,301.0	4.70	196.74	4,236.0	829.0	-43.8	299.9	-43.8	2.31	-0.97	23.61
4,395.0	4.11	198.77	4,329.7	735.3	-50.7	297.7	-50.7	0.65	-0.63	2.16
4,489.0	2.13	183.02	4,423.6	641.4	-55.6	296.5	-55.6	2.28	-2.11	-16.76
4,584.0	1.12	207.63	4,518.5	546.5	-58.2	296.0	-58.2	1.27	-1.06	25.91
4,678.0	0.68	215.73	4,612.5	452.5	-59.5	295.3	-59.5	0.49	-0.47	8.62
4,771.0	0.51	235.45	4,705.5	359.5	-60.2	294.6	-60.2	0.28	-0.18	21.20
4,892.0	0.66	241.07	4,826.5	238.5	-60.8	293.5	-60.8	0.13	0.12	4.64
4,987.0	0.95	220.38	4,921.5	143.5	-61.7	292.6	-61.7	0.43	0.31	-21.78
5,081.0	1.31	231.39	5,015.5	49.5	-63.0	291.2	-63.0	0.45	0.38	11.71
5,175.0	0.82	230.02	5,109.5	-44.5	-64.1	289.9	-64.1	0.52	-0.52	-1.46
5,270.0	0.58	248.25	5,204.4	-139.4	-64.7	288.9	-64.7	0.34	-0.25	19.19
5,365.0	0.46	254.20	5,299.4	-234.4	-65.0	288.1	-65.0	0.14	-0.13	6.26
5,459.0	0.48	301.52	5,393.4	-328.4	-64.8	287.4	-64.8	0.40	0.02	50.34
5,552.0	0.62	294.58	5,486.4	-421.4	-64.4	286.6	-64.4	0.17	0.15	-7.46
5,646.0	0.29	335.00	5,580.4	-515.4	-64.0	286.0	-64.0	0.47	-0.35	43.00
5,741.0	0.57	350.76	5,675.4	-610.4	-63.3	285.9	-63.3	0.32	0.29	16.59
5,837.0	0.69	340.78	5,771.4	-706.4	-62.3	285.6	-62.3	0.17	0.12	-10.40
5,932.0	0.84	309.03	5,866.4	-801.4	-61.3	284.9	-61.3	0.47	0.16	-33.42
6,028.0	0.93	309.64	5,962.4	-897.4	-60.4	283.7	-60.4	0.09	0.09	0.64
6,123.0	1.00	297.40	6,057.4	-992.4	-59.5	282.4	-59.5	0.23	0.07	-12.88
6,218.0	0.78	302.38	6,152.4	-1,087.4	-58.8	281.1	-58.8	0.25	-0.23	5.24
6,313.0	1.52	299.17	6,247.4	-1,182.4	-57.8	279.5	-57.8	0.78	0.78	-3.38
6,408.0	1.62	306.52	6,342.3	-1,277.3	-56.4	277.3	-56.4	0.24	0.11	7.74
6,503.0	1.42	332.84	6,437.3	-1,372.3	-54.6	275.7	-54.6	0.76	-0.21	27.71
6,598.0	1.21	350.83	6,532.3	-1,467.3	-52.5	275.0	-52.5	0.48	-0.22	18.94
6,692.0	1.08	20.05	6,626.2	-1,561.2	-50.7	275.1	-50.7	0.63	-0.14	31.09
6,786.0	2.72	43.84	6,720.2	-1,655.2	-48.3	277.0	-48.3	1.90	1.74	25.31
6,880.0	1.81	31.36	6,814.1	-1,749.1	-45.4	279.3	-45.4	1.10	-0.97	-13.28
6,973.0	0.79	8.37	6,907.1	-1,842.1	-43.5	280.1	-43.5	1.21	-1.10	-24.72
<b>KOP</b>										
7,002.0	1.73	351.94	6,936.1	-1,871.1	-42.9	280.1	-42.9	3.44	3.24	-56.66
7,066.0	3.92	344.71	7,000.0	-1,935.0	-39.8	279.4	-39.8	3.46	3.42	-11.30
7,159.0	8.48	355.38	7,092.4	-2,027.4	-29.9	278.0	-29.9	5.04	4.90	11.47
7,253.0	13.57	357.38	7,184.7	-2,119.7	-12.0	276.9	-12.0	5.43	5.41	2.13
7,347.0	18.56	356.64	7,275.0	-2,210.0	14.0	275.5	14.0	5.31	5.31	-0.79
7,440.0	24.38	358.57	7,361.5	-2,296.5	48.0	274.2	48.0	6.30	6.26	2.08

Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well HAMMER 3-3HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TDV Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,534.0	30.92	0.43	7,444.7	-2,379.7	91.6	273.9	91.6	7.02	6.96	1.98
7,629.0	39.30	0.10	7,522.4	-2,457.4	146.2	274.1	146.2	8.82	8.82	-0.35
7,723.0	51.51	358.72	7,588.2	-2,523.2	213.0	273.4	213.0	13.03	12.99	-1.47
7,816.0	61.66	358.61	7,639.4	-2,574.4	290.5	271.5	290.5	10.91	10.91	-0.12
7,910.0	59.63	357.40	7,685.5	-2,620.5	372.4	268.7	372.4	2.43	-2.16	-1.29
8,005.0	65.41	358.69	7,729.3	-2,664.3	456.5	265.9	456.5	6.20	6.08	1.36
<b>~ ENTER LANDING BOX (8038' MD)</b>										
<b>8,038.0</b>	<b>67.85</b>	<b>359.16</b>	<b>7,742.4</b>	<b>-2,677.4</b>	<b>486.8</b>	<b>265.3</b>	<b>486.8</b>	<b>7.51</b>	<b>7.39</b>	<b>1.43</b>
8,098.0	72.29	359.98	7,762.8	-2,697.8	543.2	264.9	543.2	7.51	7.40	1.36
8,190.0	78.41	2.16	7,786.1	-2,721.1	632.2	266.6	632.2	7.04	6.65	2.37
8,283.0	80.16	2.69	7,803.4	-2,738.4	723.5	270.4	723.5	1.96	1.88	0.57
8,376.0	82.20	0.78	7,817.6	-2,752.6	815.3	273.2	815.3	2.99	2.19	-2.05
<b>HEEL (40.079111, -104.996392)</b>										
<b>8,470.0</b>	<b>86.31</b>	<b>358.62</b>	<b>7,827.0</b>	<b>-2,762.0</b>	<b>908.8</b>	<b>272.7</b>	<b>908.8</b>	<b>4.93</b>	<b>4.37</b>	<b>-2.30</b>
8,565.0	87.71	0.75	7,832.0	-2,767.0	1,003.7	272.2	1,003.7	2.68	1.47	2.24
8,657.0	87.80	1.17	7,835.6	-2,770.6	1,095.6	273.7	1,095.6	0.47	0.10	0.46
8,751.0	91.04	1.05	7,836.5	-2,771.5	1,189.6	275.5	1,189.6	3.45	3.45	-0.13
8,844.0	91.43	0.76	7,834.5	-2,769.5	1,282.5	277.0	1,282.5	0.52	0.42	-0.31
8,938.0	90.73	0.13	7,832.8	-2,767.8	1,376.5	277.7	1,376.5	1.00	-0.74	-0.67
9,032.0	88.80	357.90	7,833.2	-2,768.2	1,470.5	276.1	1,470.5	3.14	-2.05	-2.37
9,124.0	90.13	358.91	7,834.0	-2,769.0	1,562.4	273.6	1,562.4	1.82	1.45	1.10
9,217.0	90.56	1.21	7,833.4	-2,768.4	1,655.4	273.7	1,655.4	2.52	0.46	2.47
9,310.0	91.16	0.80	7,832.1	-2,767.1	1,748.4	275.3	1,748.4	0.78	0.65	-0.44
<b>~ CROSS 460' HARDLINE (9375' MD)</b>										
<b>9,375.0</b>	<b>90.74</b>	<b>0.61</b>	<b>7,831.0</b>	<b>-2,766.0</b>	<b>1,813.4</b>	<b>276.1</b>	<b>1,813.4</b>	<b>0.71</b>	<b>-0.65</b>	<b>-0.30</b>
9,404.0	90.55	0.52	7,830.7	-2,765.7	1,842.4	276.4	1,842.4	0.71	-0.65	-0.30
9,499.0	90.76	0.40	7,829.6	-2,764.6	1,937.4	277.1	1,937.4	0.25	0.22	-0.13
9,592.0	91.10	359.45	7,828.1	-2,763.1	2,030.4	277.0	2,030.4	1.08	0.37	-1.02
9,687.0	90.49	0.27	7,826.7	-2,761.7	2,125.3	276.8	2,125.3	1.08	-0.64	0.86
9,781.0	90.45	358.98	7,826.0	-2,761.0	2,219.3	276.2	2,219.3	1.37	-0.04	-1.37
9,873.0	89.00	358.90	7,826.4	-2,761.4	2,311.3	274.5	2,311.3	1.58	-1.58	-0.09
9,965.0	89.48	1.32	7,827.6	-2,762.6	2,403.3	274.6	2,403.3	2.68	0.52	2.63
10,056.0	90.22	1.36	7,827.9	-2,762.9	2,494.3	276.8	2,494.3	0.81	0.81	0.04
10,148.0	90.62	1.23	7,827.2	-2,762.2	2,586.3	278.9	2,586.3	0.46	0.43	-0.14
10,240.0	90.78	0.97	7,826.1	-2,761.1	2,678.2	280.6	2,678.2	0.33	0.17	-0.28
10,334.0	91.12	0.41	7,824.5	-2,759.5	2,772.2	281.8	2,772.2	0.70	0.36	-0.60
10,428.0	90.50	359.28	7,823.2	-2,758.2	2,866.2	281.5	2,866.2	1.37	-0.66	-1.20
10,522.0	90.24	358.07	7,822.6	-2,757.6	2,960.2	279.3	2,960.2	1.32	-0.28	-1.29
10,616.0	91.87	359.48	7,820.8	-2,755.8	3,054.1	277.3	3,054.1	2.29	1.73	1.50
10,711.0	89.64	356.99	7,819.6	-2,754.6	3,149.1	274.4	3,149.1	3.52	-2.35	-2.62
10,806.0	90.83	357.59	7,819.2	-2,754.2	3,243.9	269.9	3,243.9	1.40	1.25	0.63
10,900.0	93.08	358.24	7,816.0	-2,751.0	3,337.8	266.5	3,337.8	2.49	2.39	0.69
10,994.0	91.99	0.74	7,811.8	-2,746.8	3,431.7	265.6	3,431.7	2.90	-1.16	2.66
11,087.0	91.63	1.83	7,808.9	-2,743.9	3,524.7	267.7	3,524.7	1.23	-0.39	1.17
11,181.0	90.58	2.42	7,807.1	-2,742.1	3,618.6	271.2	3,618.6	1.28	-1.12	0.63
11,276.0	89.53	3.87	7,807.0	-2,742.0	3,713.4	276.4	3,713.4	1.88	-1.11	1.53
11,370.0	90.21	3.29	7,807.2	-2,742.2	3,807.2	282.3	3,807.2	0.95	0.72	-0.62
11,464.0	88.90	3.91	7,807.9	-2,742.9	3,901.0	288.2	3,901.0	1.54	-1.39	0.66
11,557.0	87.40	1.99	7,810.9	-2,745.9	3,993.9	293.0	3,993.9	2.62	-1.61	-2.06
11,650.0	87.18	1.43	7,815.3	-2,750.3	4,086.7	295.8	4,086.7	0.65	-0.24	-0.60
11,745.0	89.40	1.00	7,818.2	-2,753.2	4,181.6	297.8	4,181.6	2.38	2.34	-0.45
11,838.0	91.38	1.20	7,817.5	-2,752.5	4,274.6	299.6	4,274.6	2.14	2.13	0.22
11,930.0	92.35	1.30	7,814.5	-2,749.5	4,366.6	301.6	4,366.6	1.06	1.05	0.11

Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well HAMMER 3-3HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,024.0	91.67	2.59	7,811.2	-2,746.2	4,460.4	304.7	4,460.4	1.55	-0.72	1.37
12,117.0	90.07	2.83	7,809.8	-2,744.8	4,553.3	309.1	4,553.3	1.74	-1.72	0.26
12,210.0	89.67	1.66	7,810.0	-2,745.0	4,646.2	312.8	4,646.2	1.33	-0.43	-1.26
12,303.0	89.81	0.42	7,810.5	-2,745.5	4,739.2	314.5	4,739.2	1.34	0.15	-1.33
12,396.0	90.23	0.21	7,810.4	-2,745.4	4,832.2	315.0	4,832.2	0.50	0.45	-0.23
12,489.0	90.77	0.43	7,809.6	-2,744.6	4,925.2	315.5	4,925.2	0.63	0.58	0.24
12,582.0	89.88	358.13	7,809.1	-2,744.1	5,018.2	314.3	5,018.2	2.65	-0.96	-2.47
12,675.0	90.59	358.62	7,808.7	-2,743.7	5,111.2	311.7	5,111.2	0.93	0.76	0.53
12,768.0	90.97	359.09	7,807.5	-2,742.5	5,204.1	309.8	5,204.1	0.65	0.41	0.51
12,864.0	91.64	358.77	7,805.3	-2,740.3	5,300.1	308.0	5,300.1	0.77	0.70	-0.33
12,958.0	90.34	358.87	7,803.6	-2,738.6	5,394.1	306.1	5,394.1	1.39	-1.38	0.11
13,053.0	90.65	358.97	7,802.8	-2,737.8	5,489.0	304.3	5,489.0	0.34	0.33	0.11
13,147.0	91.05	358.68	7,801.4	-2,736.4	5,583.0	302.4	5,583.0	0.53	0.43	-0.31
13,241.0	90.16	358.72	7,800.4	-2,735.4	5,677.0	300.3	5,677.0	0.95	-0.95	0.04
13,334.0	90.17	358.21	7,800.2	-2,735.2	5,769.9	297.8	5,769.9	0.55	0.01	-0.55
13,427.0	90.31	357.68	7,799.8	-2,734.8	5,862.9	294.4	5,862.9	0.59	0.15	-0.57
13,520.0	90.23	359.13	7,799.3	-2,734.3	5,955.8	291.8	5,955.8	1.56	-0.09	1.56
13,613.0	89.15	357.96	7,799.8	-2,734.8	6,048.8	289.5	6,048.8	1.71	-1.16	-1.26
13,707.0	89.81	0.01	7,800.7	-2,735.7	6,142.8	287.8	6,142.8	2.29	0.70	2.18
13,799.0	90.12	0.41	7,800.7	-2,735.7	6,234.8	288.2	6,234.8	0.55	0.34	0.43
13,892.0	91.19	0.98	7,799.7	-2,734.7	6,327.8	289.3	6,327.8	1.30	1.15	0.61
13,987.0	90.52	1.18	7,798.3	-2,733.3	6,422.7	291.1	6,422.7	0.74	-0.71	0.21
14,081.0	91.00	1.20	7,797.0	-2,732.0	6,516.7	293.0	6,516.7	0.51	0.51	0.02
14,175.0	89.66	1.33	7,796.5	-2,731.5	6,610.7	295.1	6,610.7	1.43	-1.43	0.14
14,269.0	89.77	0.77	7,796.9	-2,731.9	6,704.7	296.8	6,704.7	0.61	0.12	-0.60
14,361.0	90.05	0.08	7,797.1	-2,732.1	6,796.7	297.5	6,796.7	0.81	0.30	-0.75
14,455.0	90.23	359.88	7,796.9	-2,731.9	6,890.7	297.5	6,890.7	0.29	0.19	-0.21
14,549.0	90.66	0.02	7,796.1	-2,731.1	6,984.7	297.4	6,984.7	0.48	0.46	0.15
14,644.0	91.56	0.32	7,794.3	-2,729.3	7,079.6	297.7	7,079.6	1.00	0.95	0.32
14,738.0	90.26	1.25	7,792.8	-2,727.8	7,173.6	299.0	7,173.6	1.70	-1.38	0.99
14,832.0	90.38	0.91	7,792.3	-2,727.3	7,267.6	300.7	7,267.6	0.38	0.13	-0.36
14,926.0	90.72	0.58	7,791.4	-2,726.4	7,361.6	302.0	7,361.6	0.50	0.36	-0.35
15,020.0	91.28	0.86	7,789.7	-2,724.7	7,455.6	303.1	7,455.6	0.67	0.60	0.30
15,114.0	90.91	1.79	7,787.9	-2,722.9	7,549.5	305.3	7,549.5	1.06	-0.39	0.99
15,208.0	90.34	2.50	7,786.9	-2,721.9	7,643.5	308.8	7,643.5	0.97	-0.61	0.76
15,303.0	89.80	2.76	7,786.8	-2,721.8	7,738.4	313.2	7,738.4	0.63	-0.57	0.27
15,398.0	88.48	2.70	7,788.2	-2,723.2	7,833.2	317.7	7,833.2	1.39	-1.39	-0.06
15,491.0	87.99	1.33	7,791.1	-2,726.1	7,926.1	321.0	7,926.1	1.56	-0.53	-1.47
15,585.0	88.85	357.61	7,793.7	-2,728.7	8,020.1	320.1	8,020.1	4.06	0.91	-3.96
15,678.0	90.40	356.92	7,794.3	-2,729.3	8,113.0	315.7	8,113.0	1.82	1.67	-0.74
15,771.0	93.75	359.79	7,790.9	-2,725.9	8,205.8	313.0	8,205.8	4.74	3.60	3.09
15,865.0	92.90	359.57	7,785.5	-2,720.5	8,299.7	312.5	8,299.7	0.93	-0.90	-0.23
15,959.0	91.78	0.57	7,781.6	-2,716.6	8,393.6	312.6	8,393.6	1.60	-1.19	1.06
16,054.0	90.86	0.06	7,779.4	-2,714.4	8,488.6	313.1	8,488.6	1.11	-0.97	-0.54
16,147.0	89.70	359.42	7,779.0	-2,714.0	8,581.6	312.7	8,581.6	1.42	-1.25	-0.69
16,241.0	89.68	359.16	7,779.5	-2,714.5	8,675.6	311.5	8,675.6	0.28	-0.02	-0.28
16,334.0	90.54	358.80	7,779.3	-2,714.3	8,768.5	309.9	8,768.5	1.00	0.92	-0.39
16,427.0	89.15	358.49	7,779.6	-2,714.6	8,861.5	307.7	8,861.5	1.53	-1.49	-0.33
<b>- CROSS 460' HARDLINE (16457' MD)</b>										
16,457.0	89.43	358.78	7,779.9	-2,714.9	8,891.5	307.0	8,891.5	1.34	0.94	0.96
16,521.0	90.03	359.39	7,780.2	-2,715.2	8,955.5	305.9	8,955.5	1.34	0.94	0.96
16,615.0	90.68	359.64	7,779.7	-2,714.7	9,049.5	305.1	9,049.5	0.74	0.69	0.27
16,709.0	91.28	359.34	7,778.0	-2,713.0	9,143.5	304.3	9,143.5	0.71	0.64	-0.32

Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well HAMMER 3-3HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Site:</b>	SW SW SEC. 3 T1N R68W 6TH P.M.	<b>MD Reference:</b>	KB 20' @ 5065.0usft (PD461)
<b>Well:</b>	HAMMER 3-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-84-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>LAST SURVEY MAR 22, 2018</b>										
16,798.0	90.84	358.72	7,776.4	-2,711.4	9,232.4	302.8	9,232.4	0.85	-0.49	-0.70
<b>PROJECTION TO TD (40.102124, -104.996288)</b>										
16,858.0	90.84	358.72	7,775.5	-2,710.5	9,292.4	301.5	9,292.4	0.00	0.00	0.00

Target Name	- hit/miss target	- Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL - HAMMER 3-3HZ			0.00	0.00	7,728.0	9,294.1	294.0	14,563,923.08	1,641,447.12	40° 6' 7.664 N	104° 59' 46.734 W
	- survey misses target center by 48.1usft at 16858.0usft MD (7775.5 TVD, 9292.4 N, 301.5 E)										
	- Point										
BHL - HAMMER 3-3HZ (			0.00	0.00	7,743.0	9,294.1	294.0	14,563,923.08	1,641,447.12	40° 6' 7.664 N	104° 59' 46.734 W
	- survey misses target center by 33.4usft at 16858.0usft MD (7775.5 TVD, 9292.4 N, 301.5 E)										
	- Point										
KOP - HAMMER 3-3HZ			0.00	0.00	7,163.2	251.3	293.5	14,554,883.86	1,641,446.94	40° 4' 38.301 N	104° 59' 46.741 W
	- survey misses target center by 260.5usft at 7304.9usft MD (7234.8 TVD, 1.4 N, 276.3 E)										
	- Point										
HEEL - HAMMER 3-3HZ			0.00	0.00	7,805.0	793.3	293.5	14,555,425.68	1,641,446.92	40° 4' 43.658 N	104° 59' 46.741 W
	- survey misses target center by 22.8usft at 8352.9usft MD (7814.4 TVD, 792.5 N, 272.8 E)										
	- Point										
HEEL - HAMMER 3-3HZ			0.00	0.00	7,799.8	893.3	293.5	14,555,525.67	1,641,446.92	40° 4' 44.646 N	104° 59' 46.741 W
	- survey misses target center by 33.1usft at 8451.8usft MD (7825.7 TVD, 890.6 N, 273.1 E)										
	- Point										
KOP - HAMMER 3-3HZ			0.00	0.00	6,986.5	-31.2	293.5	14,554,601.50	1,641,446.95	40° 4' 35.510 N	104° 59' 46.741 W
	- survey misses target center by 16.8usft at 7052.8usft MD (6986.8 TVD, -40.6 N, 279.6 E)										
	- Point										

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,883.0	1,841.6	219.4	247.5	SURFACE CASING
7,002.0	6,936.1	-42.9	280.1	KOP
8,038.0	7,742.4	486.8	265.3	~ ENTER LANDING BOX (8038' MD)
8,470.0	7,827.0	908.8	272.7	HEEL (40.079111, -104.996392)
9,375.0	7,831.0	1,813.4	276.1	~ CROSS 460' HARDLINE (9375' MD)
16,457.0	7,779.9	8,891.5	307.0	~ CROSS 460' HARDLINE (16457' MD)
16,798.0	7,776.4	9,232.4	302.8	LAST SURVEY MAR 22, 2018
16,858.0	7,775.5	9,292.4	301.5	PROJECTION TO TD (40.102124, -104.996288)

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_