

ANADARKO PETROLEUM CORP

WELD COUNTY (NAD 83)

SE SW 13 T1N R67W 6th P.M.

QUARTER CIRCLE 24-7HZ

JOB # 2018-307-461

03 June, 2018

Survey: FINAL SURVEYS





Project: WELD COUNTY (NAD 83)
Site: SE SW 13 T1N R67W 6th P.M.
Well: QUARTER CIRCLE 24-7HZ
Wellbore: JOB # 2018-307-461
Design: FINAL SURVEYS

ANNOTATIONS

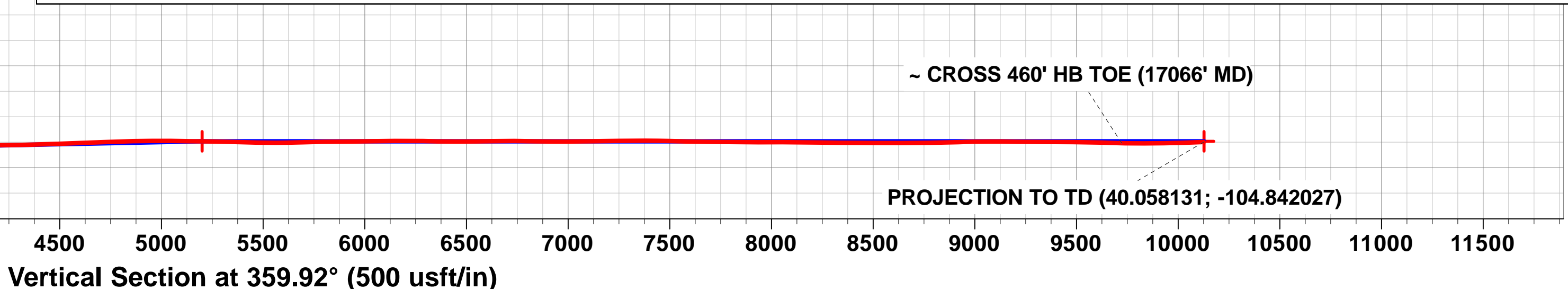
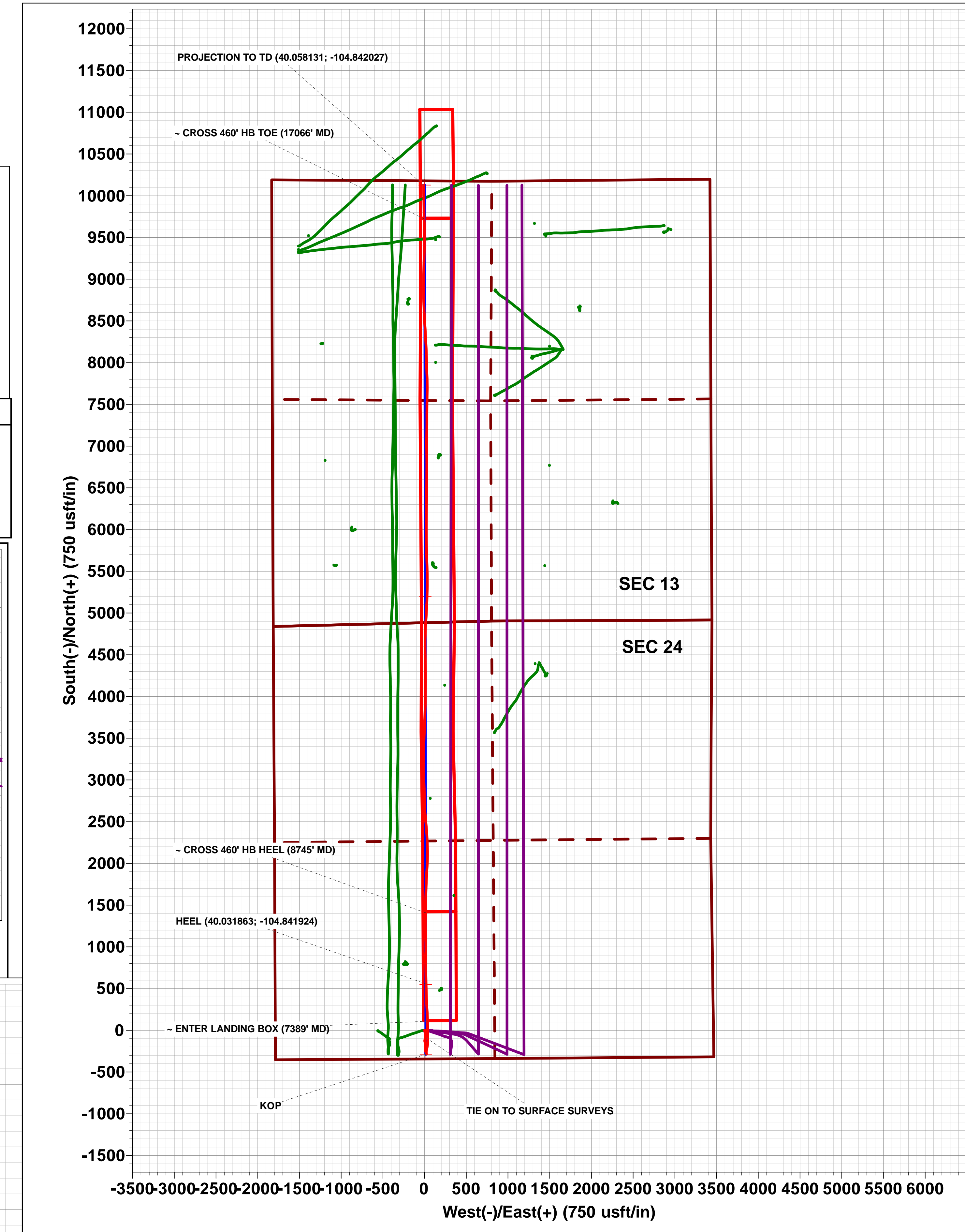
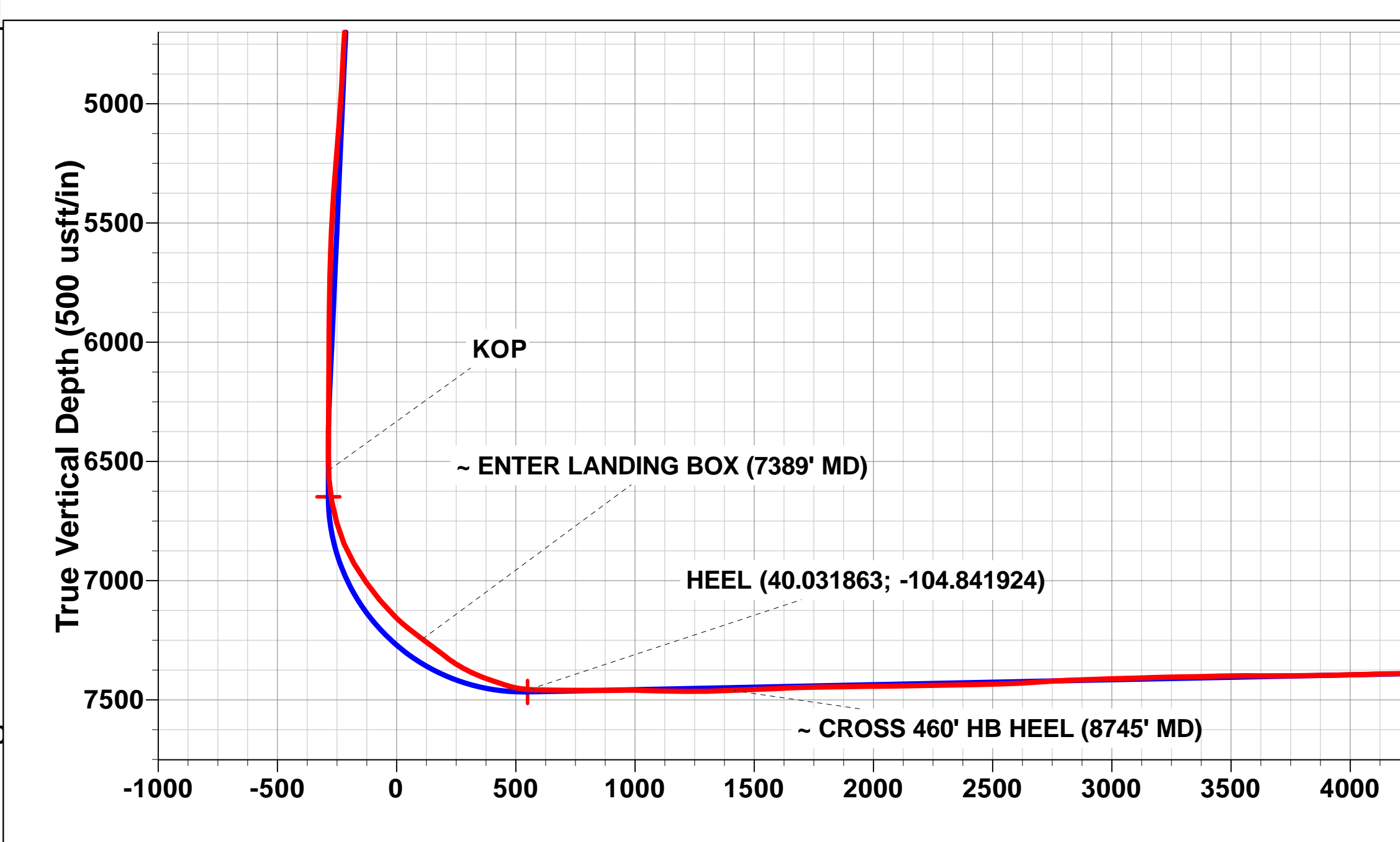
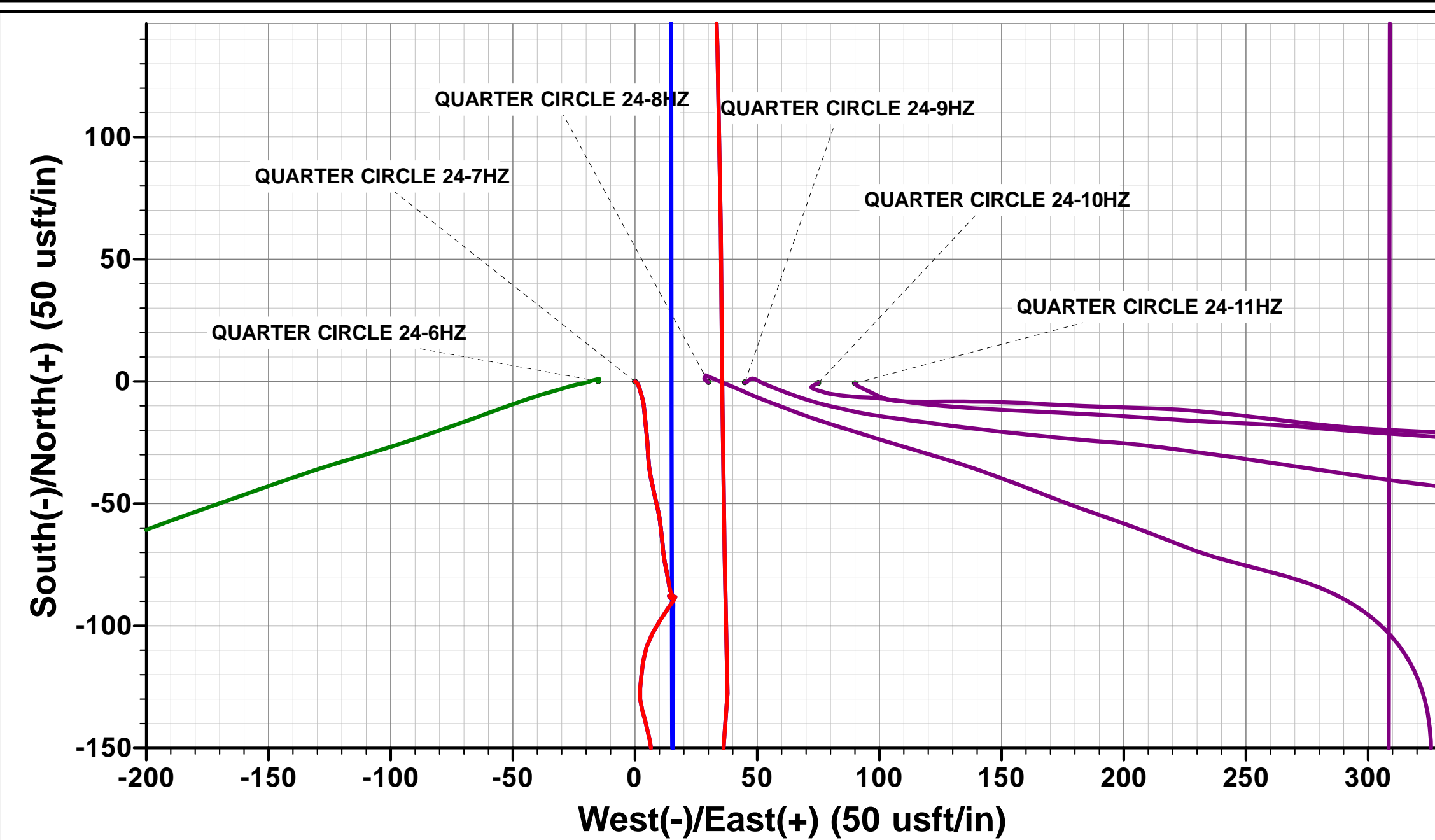
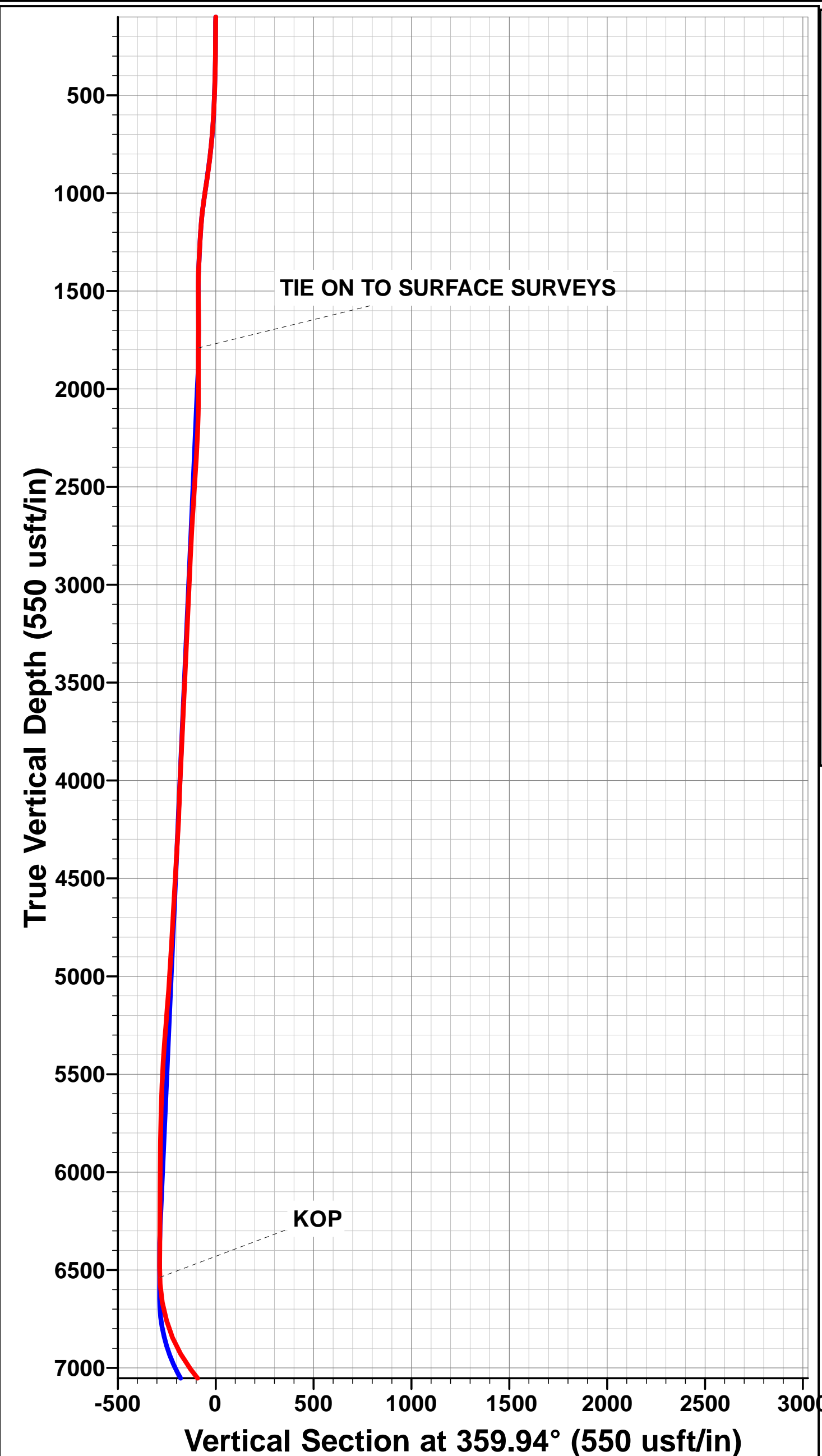
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
1790.5	1795.0	0.44	145.25	-88.4	15.2	-88.5	95.0	TIE ON TO SURFACE SURVEYS
6537.6	6548.0	1.84	356.69	-285.3	21.1	-285.3	305.9	KOP
7245.3	7389.0	52.71	358.92	108.4	34.3	108.3	700.6	~ ENTER LANDING BOX (7389' MD)
7457.0	7893.0	87.30	358.60	556.7	17.6	556.6	1149.4	HEEL (40.031863; -104.841924)
7460.5	8744.7	92.71	0.88	1408.0	11.3	1408.0	2000.9	~ CROSS 460' HB HEEL (8745' MD)
7380.5	17066.1	89.20	359.08	9723.0	-5.7	9723.0	10320.2	~ CROSS 460' HB TOE (17066' MD)
7374.8	17469.0	91.80	359.00	10125.7	-11.4	10125.8	10723.0	PROJECTION TO TD (40.058131; -104.842027)

AS DRILLED LOCAL COORDINATES:

SHL: 344ft FSL & 1789ft FWL Sec 24
HEEL: 900.5ft FSL & 1809.13ft FWL Sec 24
BHL: 52.4ft FNL & 1820.5ft FWL Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
QUARTER CIRCLE 24-7HZ BHL (P5)	7371.0	10127.1	1.2	40° 3' 29.286 N	104° 50' 31.135 W
QUARTER CIRCLE 24-7HZ HEEL (P5)	7467.0	549.2	14.2	40° 1' 54.634 N	104° 50' 30.967 W



Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EOG RESOURCES

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

Site	SE SW 13 T1N R67W 6th P.M.		
Site Position:		Northing:	14,537,819.11 usft
From:	Lat/Long	Easting:	1,684,634.02 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	40° 1' 49.208 N
		Longitude:	104° 50' 31.343 W
		Grid Convergence:	0.10 °

Well	QUARTER CIRCLE 24-7HZ		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	JOB # 2018-307-461				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	17/05/2018	8.12	66.52	52,086

Design	FINAL SURVEYS				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	359.92	

Survey Program	Date	03/06/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
128.0	17,469.0	FINAL SURVEYS (JOB # 2018-307-461)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

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)
0.0	0.00	0.00	0.0	4,961.0	0.0	0.0	0.0	0.00	0.00	0.00
128.0	0.18	106.23	128.0	4,833.0	-0.1	0.2	-0.1	0.14	0.14	0.00
160.0	0.53	139.01	160.0	4,801.0	-0.2	0.3	-0.2	1.22	1.09	102.44
224.0	0.70	136.37	224.0	4,737.0	-0.7	0.8	-0.7	0.27	0.27	-4.12
255.0	0.53	128.90	255.0	4,706.0	-0.9	1.0	-0.9	0.61	-0.55	-24.10
287.0	0.62	153.07	287.0	4,674.0	-1.2	1.2	-1.2	0.80	0.28	75.53
318.0	1.05	164.06	318.0	4,643.0	-1.6	1.4	-1.6	1.47	1.39	35.45
350.0	1.45	158.87	350.0	4,611.0	-2.2	1.6	-2.2	1.30	1.25	-16.22
381.0	1.32	164.23	381.0	4,580.0	-3.0	1.9	-3.0	0.59	-0.42	17.29
413.0	1.63	165.20	413.0	4,548.0	-3.7	2.1	-3.8	0.97	0.97	3.03
444.0	1.85	161.95	443.9	4,517.1	-4.7	2.3	-4.7	0.78	0.71	-10.48
476.0	1.98	160.45	475.9	4,485.1	-5.7	2.7	-5.7	0.44	0.41	-4.69
507.0	2.24	168.28	506.9	4,454.1	-6.8	3.0	-6.8	1.25	0.84	25.26

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	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)
539.0	2.24	163.09	538.9	4,422.1	-8.0	3.3	-8.0	0.63	0.00	-16.22
571.0	2.33	175.22	570.9	4,390.1	-9.2	3.5	-9.2	1.53	0.28	37.91
603.0	3.16	174.78	602.8	4,358.2	-10.7	3.7	-10.8	2.59	2.59	-1.37
635.0	3.87	173.46	634.8	4,326.2	-12.7	3.9	-12.7	2.23	2.22	-4.12
666.0	4.44	175.48	665.7	4,295.3	-14.9	4.1	-14.9	1.90	1.84	6.52
698.0	4.83	174.08	697.6	4,263.4	-17.5	4.3	-17.5	1.27	1.22	-4.37
730.0	5.27	173.99	729.5	4,231.5	-20.3	4.6	-20.3	1.38	1.37	-0.28
762.0	6.06	174.69	761.3	4,199.7	-23.5	4.9	-23.5	2.48	2.47	2.19
793.0	6.33	177.15	792.1	4,168.9	-26.8	5.2	-26.8	1.22	0.87	7.94
825.0	6.86	176.27	823.9	4,137.1	-30.5	5.4	-30.5	1.69	1.66	-2.75
857.0	7.38	174.43	855.7	4,105.3	-34.4	5.7	-34.4	1.77	1.62	-5.75
889.0	8.00	168.72	887.4	4,073.6	-38.6	6.3	-38.6	3.07	1.94	-17.84
920.0	8.57	167.22	918.0	4,043.0	-43.0	7.3	-43.0	1.97	1.84	-4.84
952.0	8.61	167.93	949.7	4,011.3	-47.7	8.3	-47.7	0.35	0.12	2.22
984.0	8.96	167.22	981.3	3,979.7	-52.4	9.3	-52.5	1.15	1.09	-2.22
1,016.0	8.26	172.32	1,012.9	3,948.1	-57.2	10.2	-57.2	3.23	-2.19	15.94
1,047.0	7.95	173.46	1,043.6	3,917.4	-61.5	10.7	-61.5	1.13	-1.00	3.68
1,079.0	7.03	174.43	1,075.4	3,885.6	-65.6	11.2	-65.7	2.90	-2.87	3.03
1,111.0	6.37	174.52	1,107.1	3,853.9	-69.4	11.5	-69.4	2.06	-2.06	0.28
1,142.0	5.27	170.83	1,138.0	3,823.0	-72.5	11.9	-72.5	3.75	-3.55	-11.90
1,174.0	4.61	168.63	1,169.9	3,791.1	-75.2	12.4	-75.2	2.15	-2.06	-6.87
1,206.0	3.56	169.24	1,201.8	3,759.2	-77.4	12.9	-77.4	3.28	-3.28	1.91
1,238.0	3.16	168.01	1,233.7	3,727.3	-79.3	13.2	-79.3	1.27	-1.25	-3.84
1,270.0	3.08	168.28	1,265.7	3,695.3	-81.0	13.6	-81.0	0.25	-0.25	0.84
1,301.0	3.16	174.69	1,296.6	3,664.4	-82.6	13.8	-82.7	1.15	0.26	20.68
1,333.0	3.21	168.19	1,328.6	3,632.4	-84.4	14.1	-84.4	1.14	0.16	-20.31
1,365.0	2.20	155.44	1,360.6	3,600.4	-85.8	14.5	-85.8	3.66	-3.16	-39.84
1,396.0	2.46	157.47	1,391.5	3,569.5	-87.0	15.0	-87.0	0.88	0.84	6.55
1,428.0	1.85	157.82	1,423.5	3,537.5	-88.1	15.5	-88.1	1.91	-1.91	1.09
1,460.0	0.66	189.63	1,455.5	3,505.5	-88.8	15.7	-88.8	4.17	-3.72	99.41
1,492.0	0.48	241.40	1,487.5	3,473.5	-89.0	15.5	-89.0	1.64	-0.56	161.78
1,523.0	0.57	296.07	1,518.5	3,442.5	-89.0	15.3	-89.0	1.58	0.29	176.35
1,555.0	1.05	294.58	1,550.5	3,410.5	-88.8	14.9	-88.8	1.50	1.50	-4.66
1,586.0	1.14	317.51	1,581.5	3,379.5	-88.5	14.4	-88.5	1.43	0.29	73.97
1,618.0	0.83	332.54	1,613.5	3,347.5	-88.0	14.1	-88.0	1.25	-0.97	46.97
1,650.0	0.26	340.01	1,645.5	3,315.5	-87.7	13.9	-87.8	1.79	-1.78	23.34
1,682.0	0.57	95.06	1,677.5	3,283.5	-87.7	14.1	-87.7	2.25	0.97	359.53
1,713.0	1.05	132.77	1,708.5	3,252.5	-87.9	14.4	-87.9	2.24	1.55	121.65
1,777.0	0.44	108.77	1,772.5	3,188.5	-88.4	15.1	-88.4	1.05	-0.95	-37.50
TIE ON TO SURFACE SURVEYS										
1,795.0	0.44	145.25	1,790.5	3,170.5	-88.4	15.2	-88.5	1.53	0.00	202.67
1,952.0	0.60	39.10	1,947.5	3,013.5	-88.3	16.1	-88.3	0.53	0.10	-67.61
2,046.0	0.30	146.60	2,041.5	2,919.5	-88.1	16.5	-88.2	0.79	-0.32	114.36
2,140.0	1.40	212.40	2,135.5	2,825.5	-89.3	16.0	-89.3	1.39	1.17	70.00
2,233.0	3.50	216.60	2,228.4	2,732.6	-92.5	13.7	-92.6	2.26	2.26	4.52
2,325.0	4.00	210.90	2,320.2	2,640.8	-97.5	10.4	-97.6	0.68	0.54	-6.20
2,419.0	3.60	210.50	2,414.0	2,547.0	-102.9	7.2	-102.9	0.43	-0.43	-0.43
2,512.0	4.00	197.50	2,506.8	2,454.2	-108.5	4.8	-108.5	1.02	0.43	-13.98
2,607.0	3.90	188.40	2,601.5	2,359.5	-114.9	3.3	-114.9	0.67	-0.11	-9.58
2,700.0	3.20	185.50	2,694.4	2,266.6	-120.6	2.6	-120.6	0.78	-0.75	-3.12
2,795.0	2.80	186.10	2,789.2	2,171.8	-125.5	2.1	-125.5	0.42	-0.42	0.63
2,887.0	2.90	174.40	2,881.1	2,079.9	-130.1	2.1	-130.1	0.64	0.11	-12.72
2,981.0	2.70	162.30	2,975.0	1,986.0	-134.6	3.0	-134.6	0.66	-0.21	-12.87

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	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)
3,076.0	2.20	167.40	3,069.9	1,891.1	-138.5	4.1	-138.5	0.57	-0.53	5.37
3,170.0	2.60	165.20	3,163.8	1,797.2	-142.3	5.0	-142.3	0.44	0.43	-2.34
3,265.0	3.30	169.00	3,258.7	1,702.3	-147.1	6.1	-147.1	0.76	0.74	4.00
3,359.0	2.80	173.60	3,352.6	1,608.4	-152.0	6.8	-152.0	0.59	-0.53	4.89
3,454.0	2.90	163.30	3,447.5	1,513.5	-156.6	7.8	-156.6	0.55	0.11	-10.84
3,549.0	2.50	168.70	3,542.3	1,418.7	-160.9	8.9	-160.9	0.50	-0.42	5.68
3,642.0	2.60	157.40	3,635.3	1,325.7	-164.9	10.1	-164.9	0.55	0.11	-12.15
3,736.0	3.00	169.00	3,729.1	1,231.9	-169.3	11.4	-169.3	0.74	0.43	12.34
3,831.0	2.30	175.10	3,824.0	1,137.0	-173.6	12.0	-173.6	0.79	-0.74	6.42
3,925.0	2.80	166.60	3,917.9	1,043.1	-177.7	12.7	-177.7	0.67	0.53	-9.04
4,020.0	2.80	187.20	4,012.8	948.2	-182.3	13.0	-182.3	1.05	0.00	21.68
4,114.0	1.80	199.80	4,106.8	854.2	-185.9	12.2	-186.0	1.19	-1.06	13.40
4,209.0	2.90	181.60	4,201.7	759.3	-189.7	11.6	-189.8	1.39	1.16	-19.16
4,303.0	3.40	176.50	4,295.5	665.5	-194.9	11.7	-194.9	0.61	0.53	-5.43
4,397.0	3.00	180.70	4,389.4	571.6	-200.1	11.8	-200.2	0.49	-0.43	4.47
4,586.0	3.70	181.70	4,578.1	382.9	-211.2	11.6	-211.2	0.37	0.37	0.53
4,679.0	3.40	189.30	4,670.9	290.1	-216.9	11.1	-216.9	0.60	-0.32	8.17
4,773.0	3.30	198.60	4,764.7	196.3	-222.2	9.8	-222.2	0.59	-0.11	9.89
4,868.0	3.20	203.20	4,859.6	101.4	-227.2	7.8	-227.3	0.29	-0.11	4.84
4,962.0	3.20	192.80	4,953.4	7.6	-232.2	6.2	-232.2	0.62	0.00	-11.06
5,079.0	4.90	158.50	5,070.2	-109.2	-240.1	7.3	-240.1	2.47	1.45	-29.32
5,174.0	5.10	157.50	5,164.8	-203.8	-247.7	10.4	-247.7	0.23	0.21	-1.05
5,268.0	4.80	155.30	5,258.4	-297.4	-255.2	13.7	-255.2	0.38	-0.32	-2.34
5,364.0	4.30	164.80	5,354.1	-393.1	-262.3	16.3	-262.3	0.94	-0.52	9.90
5,457.0	3.60	168.60	5,446.9	-485.9	-268.5	17.8	-268.5	0.80	-0.75	4.09
5,550.0	2.70	167.00	5,539.8	-578.8	-273.5	18.9	-273.5	0.97	-0.97	-1.72
5,646.0	2.00	162.60	5,635.7	-674.7	-277.3	19.9	-277.3	0.75	-0.73	-4.58
5,740.0	1.60	161.90	5,729.6	-768.6	-280.1	20.8	-280.2	0.43	-0.43	-0.74
5,835.0	0.60	188.50	5,824.6	-863.6	-281.9	21.1	-281.9	1.15	-1.05	28.00
5,930.0	0.40	182.80	5,919.6	-958.6	-282.7	21.0	-282.7	0.22	-0.21	-6.00
6,023.0	0.60	162.50	6,012.6	-1,051.6	-283.5	21.1	-283.5	0.28	0.22	-21.83
6,116.0	0.40	162.50	6,105.6	-1,144.6	-284.3	21.4	-284.3	0.22	-0.22	0.00
6,209.0	0.30	199.80	6,198.6	-1,237.6	-284.8	21.4	-284.8	0.26	-0.11	40.11
6,303.0	0.40	189.60	6,292.6	-1,331.6	-285.4	21.3	-285.4	0.12	0.11	-10.85
6,396.0	0.30	198.30	6,385.6	-1,424.6	-285.9	21.1	-285.9	0.12	-0.11	9.35
6,491.0	0.10	119.00	6,480.6	-1,519.6	-286.2	21.1	-286.2	0.31	-0.21	-83.47
KOP										
6,548.0	1.84	356.69	6,537.6	-1,576.6	-285.3	21.1	-285.3	3.32	3.05	-214.58
6,583.0	3.00	355.70	6,572.6	-1,611.6	-283.8	21.0	-283.8	3.32	3.32	-2.83
6,677.0	11.10	355.90	6,665.8	-1,704.8	-272.3	20.2	-272.3	8.62	8.62	0.21
6,771.0	15.30	7.40	6,757.3	-1,796.3	-251.0	21.1	-251.0	5.25	4.47	12.23
6,864.0	23.20	12.10	6,845.0	-1,884.0	-220.9	26.6	-220.9	8.65	8.49	5.05
6,958.0	31.00	9.00	6,928.6	-1,967.6	-178.8	34.2	-178.8	8.43	8.30	-3.30
7,052.0	35.30	359.50	7,007.4	-2,046.4	-127.6	37.8	-127.7	7.16	4.57	-10.11
7,145.0	39.60	358.30	7,081.2	-2,120.2	-71.1	36.7	-71.2	4.69	4.62	-1.29
7,238.0	45.40	359.90	7,149.7	-2,188.7	-8.3	35.8	-8.4	6.34	6.24	1.72
7,332.0	53.20	359.10	7,211.0	-2,250.0	62.9	35.1	62.8	8.32	8.30	-0.85
~ ENTER LANDING BOX (7389' MD)										
7,389.0	52.71	358.92	7,245.3	-2,284.3	108.4	34.3	108.3	0.90	-0.86	-0.32
7,425.0	52.40	358.80	7,267.2	-2,306.2	136.9	33.7	136.9	0.90	-0.86	-0.32
7,520.0	53.30	357.40	7,324.6	-2,363.6	212.6	31.2	212.6	1.51	0.95	-1.47
7,614.0	62.60	355.90	7,374.4	-2,413.4	292.1	26.5	292.0	9.99	9.89	-1.60
7,706.0	70.50	357.40	7,411.0	-2,450.0	376.2	21.6	376.2	8.72	8.59	1.63

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	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)
7,798.0	72.40	359.40	7,440.3	-2,479.3	463.4	19.2	463.4	2.92	2.07	2.17
HEEL (40.031863; -104.841924)										
7,893.0	87.30	358.60	7,457.0	-2,496.0	556.7	17.6	556.6	15.71	15.68	-0.84
7,987.0	89.10	359.10	7,459.9	-2,498.9	650.6	15.7	650.6	1.99	1.91	0.53
8,081.0	90.80	358.90	7,460.0	-2,499.0	744.6	14.0	744.5	1.82	1.81	-0.21
8,175.0	89.00	0.00	7,460.2	-2,499.2	838.6	13.1	838.5	2.24	-1.91	1.17
8,269.0	91.10	1.60	7,460.1	-2,499.1	932.5	14.4	932.5	2.81	2.23	1.70
8,363.0	88.00	358.50	7,460.8	-2,499.8	1,026.5	14.5	1,026.5	4.66	-3.30	-3.30
8,456.0	88.80	358.90	7,463.4	-2,502.4	1,119.5	12.4	1,119.4	0.96	0.86	0.43
8,549.0	89.40	359.20	7,464.9	-2,503.9	1,212.4	10.9	1,212.4	0.72	0.65	0.32
8,642.0	91.30	0.10	7,464.3	-2,503.3	1,305.4	10.3	1,305.4	2.26	2.04	0.97
8,735.0	92.80	0.90	7,461.0	-2,500.0	1,398.4	11.1	1,398.3	1.83	1.61	0.86
~ CROSS 460' HB HEEL (8745' MD)										
8,744.7	92.71	0.88	7,460.5	-2,499.5	1,408.0	11.3	1,408.0	0.98	-0.96	-0.21
8,829.0	91.90	0.70	7,457.1	-2,496.1	1,492.3	12.4	1,492.2	0.98	-0.96	-0.21
8,923.0	93.10	1.10	7,453.0	-2,492.0	1,586.2	13.9	1,586.1	1.35	1.28	0.43
9,018.0	91.80	1.80	7,449.0	-2,488.0	1,681.0	16.3	1,681.0	1.55	-1.37	0.74
9,112.0	90.80	2.50	7,446.8	-2,485.8	1,774.9	19.8	1,774.9	1.30	-1.06	0.74
9,206.0	90.90	3.00	7,445.4	-2,484.4	1,868.8	24.3	1,868.8	0.54	0.11	0.53
9,298.0	91.00	3.80	7,443.9	-2,482.9	1,960.7	29.8	1,960.6	0.88	0.11	0.87
9,392.0	90.60	0.90	7,442.6	-2,481.6	2,054.6	33.7	2,054.5	3.11	-0.43	-3.09
9,486.0	91.10	359.70	7,441.2	-2,480.2	2,148.5	34.1	2,148.5	1.38	0.53	-1.28
9,581.0	90.90	358.00	7,439.6	-2,478.6	2,243.5	32.2	2,243.5	1.80	-0.21	-1.79
9,676.0	91.00	356.70	7,438.0	-2,477.0	2,338.4	27.8	2,338.3	1.37	0.11	-1.37
9,770.0	91.30	355.10	7,436.1	-2,475.1	2,432.1	21.1	2,432.1	1.73	0.32	-1.70
9,863.0	91.30	353.50	7,434.0	-2,473.0	2,524.6	11.9	2,524.6	1.72	0.00	-1.72
9,957.0	93.00	356.10	7,430.5	-2,469.5	2,618.2	3.4	2,618.2	3.30	1.81	2.77
10,051.0	94.30	358.70	7,424.5	-2,463.5	2,711.9	-0.9	2,711.9	3.09	1.38	2.77
10,146.0	92.50	358.90	7,418.8	-2,457.8	2,806.7	-2.9	2,806.7	1.91	-1.89	0.21
10,239.0	92.20	358.10	7,415.0	-2,454.0	2,899.6	-5.3	2,899.6	0.92	-0.32	-0.86
10,332.0	91.20	358.40	7,412.3	-2,451.3	2,992.5	-8.1	2,992.5	1.12	-1.08	0.32
10,425.0	91.80	357.90	7,409.8	-2,448.8	3,085.4	-11.1	3,085.4	0.84	0.65	-0.54
10,519.0	92.00	0.50	7,406.7	-2,445.7	3,179.3	-12.4	3,179.4	2.77	0.21	2.77
10,613.0	91.00	0.70	7,404.2	-2,443.2	3,273.3	-11.5	3,273.3	1.08	-1.06	0.21
10,707.0	91.00	1.40	7,402.6	-2,441.6	3,367.3	-9.7	3,367.3	0.74	0.00	0.74
10,800.0	91.80	1.30	7,400.3	-2,439.3	3,460.2	-7.6	3,460.2	0.87	0.86	-0.11
10,893.0	89.50	2.10	7,399.3	-2,438.3	3,553.2	-4.8	3,553.2	2.62	-2.47	0.86
10,985.0	89.70	2.40	7,399.9	-2,438.9	3,645.1	-1.2	3,645.1	0.39	0.22	0.33
11,078.0	90.50	1.90	7,399.8	-2,438.8	3,738.0	2.3	3,738.0	1.01	0.86	-0.54
11,170.0	91.50	2.20	7,398.2	-2,437.2	3,829.9	5.6	3,829.9	1.13	1.09	0.33
11,263.0	90.30	0.80	7,396.7	-2,435.7	3,922.9	8.0	3,922.9	1.98	-1.29	-1.51
11,357.0	91.50	0.50	7,395.2	-2,434.2	4,016.9	9.1	4,016.9	1.32	1.28	-0.32
11,451.0	92.30	0.40	7,392.1	-2,431.1	4,110.8	9.8	4,110.8	0.86	0.85	-0.11
11,543.0	90.30	0.00	7,390.0	-2,429.0	4,202.8	10.2	4,202.8	2.22	-2.17	-0.43
11,636.0	90.90	359.30	7,389.0	-2,428.0	4,295.8	9.6	4,295.8	0.99	0.65	-0.75
11,730.0	91.70	359.40	7,386.9	-2,425.9	4,389.8	8.5	4,389.7	0.86	0.85	0.11
11,824.0	92.50	358.60	7,383.5	-2,422.5	4,483.7	6.9	4,483.7	1.20	0.85	-0.85
11,918.0	91.10	0.10	7,380.5	-2,419.5	4,577.6	5.8	4,577.6	2.18	-1.49	1.60
12,012.0	92.90	0.30	7,377.2	-2,416.2	4,671.6	6.1	4,671.5	1.93	1.91	0.21
12,106.0	92.70	1.70	7,372.6	-2,411.6	4,765.4	7.8	4,765.4	1.50	-0.21	1.49
12,200.0	90.10	3.30	7,370.3	-2,409.3	4,859.3	11.9	4,859.3	3.25	-2.77	1.70
12,294.0	91.10	3.80	7,369.4	-2,408.4	4,953.1	17.7	4,953.1	1.19	1.06	0.53
12,387.0	89.20	3.40	7,369.1	-2,408.1	5,045.9	23.5	5,045.9	2.09	-2.04	-0.43

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	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)
12,481.0	88.80	1.30	7,370.8	-2,409.8	5,139.8	27.4	5,139.8	2.27	-0.43	-2.23
12,575.0	89.70	2.30	7,372.0	-2,411.0	5,233.8	30.3	5,233.7	1.43	0.96	1.06
12,669.0	88.20	0.20	7,373.7	-2,412.7	5,327.7	32.4	5,327.7	2.75	-1.60	-2.23
12,763.0	88.80	359.60	7,376.2	-2,415.2	5,421.7	32.2	5,421.6	0.90	0.64	-0.64
12,855.0	89.40	358.50	7,377.6	-2,416.6	5,513.7	30.7	5,513.6	1.36	0.65	-1.20
12,949.0	90.50	358.00	7,377.7	-2,416.7	5,607.6	27.8	5,607.6	1.29	1.17	-0.53
13,041.0	92.00	357.80	7,375.7	-2,414.7	5,699.5	24.5	5,699.5	1.64	1.63	-0.22
13,136.0	90.80	359.40	7,373.4	-2,412.4	5,794.5	22.1	5,794.4	2.10	-1.26	1.68
13,230.0	90.20	359.50	7,372.5	-2,411.5	5,888.5	21.2	5,888.4	0.65	-0.64	0.11
13,325.0	90.70	359.90	7,371.8	-2,410.8	5,983.5	20.8	5,983.4	0.67	0.53	0.42
13,418.0	91.60	0.20	7,369.9	-2,408.9	6,076.4	20.8	6,076.4	1.02	0.97	0.32
13,513.0	89.40	0.60	7,369.1	-2,408.1	6,171.4	21.5	6,171.4	2.35	-2.32	0.42
13,606.0	89.00	0.50	7,370.4	-2,409.4	6,264.4	22.4	6,264.4	0.44	-0.43	-0.11
13,700.0	89.30	0.20	7,371.8	-2,410.8	6,358.4	23.0	6,358.4	0.45	0.32	-0.32
13,794.0	90.10	1.20	7,372.3	-2,411.3	6,452.4	24.1	6,452.4	1.36	0.85	1.06
13,888.0	90.60	1.00	7,371.7	-2,410.7	6,546.4	25.9	6,546.3	0.57	0.53	-0.21
13,983.0	91.20	0.50	7,370.2	-2,409.2	6,641.4	27.2	6,641.3	0.82	0.63	-0.53
14,077.0	89.30	359.20	7,369.8	-2,408.8	6,735.3	26.9	6,735.3	2.45	-2.02	-1.38
14,171.0	89.20	359.50	7,371.0	-2,410.0	6,829.3	25.8	6,829.3	0.34	-0.11	0.32
14,265.0	89.60	359.50	7,372.0	-2,411.0	6,923.3	25.0	6,923.3	0.43	0.43	0.00
14,360.0	90.00	0.00	7,372.4	-2,411.4	7,018.3	24.6	7,018.3	0.67	0.42	0.53
14,455.0	91.30	0.70	7,371.3	-2,410.3	7,113.3	25.2	7,113.3	1.55	1.37	0.74
14,550.0	90.90	1.10	7,369.5	-2,408.5	7,208.3	26.7	7,208.2	0.60	-0.42	0.42
14,644.0	90.20	359.90	7,368.6	-2,407.6	7,302.3	27.5	7,302.2	1.48	-0.74	-1.28
14,738.0	89.80	0.10	7,368.6	-2,407.6	7,396.3	27.5	7,396.2	0.48	-0.43	0.21
14,832.0	88.50	0.70	7,370.0	-2,409.0	7,490.3	28.2	7,490.2	1.52	-1.38	0.64
14,926.0	89.00	1.00	7,372.0	-2,411.0	7,584.2	29.6	7,584.2	0.62	0.53	0.32
15,019.0	89.70	1.20	7,373.1	-2,412.1	7,677.2	31.3	7,677.1	0.78	0.75	0.22
15,113.0	88.80	358.10	7,374.3	-2,413.3	7,771.2	30.8	7,771.1	3.43	-0.96	-3.30
15,207.0	89.90	358.20	7,375.4	-2,414.4	7,865.1	27.7	7,865.1	1.18	1.17	0.11
15,301.0	90.10	358.20	7,375.4	-2,414.4	7,959.1	24.8	7,959.0	0.21	0.21	0.00
15,395.0	89.80	359.00	7,375.4	-2,414.4	8,053.0	22.5	8,053.0	0.91	-0.32	0.85
15,490.0	89.40	357.50	7,376.1	-2,415.1	8,148.0	19.6	8,148.0	1.63	-0.42	-1.58
15,585.0	89.40	357.00	7,377.1	-2,416.1	8,242.9	15.0	8,242.8	0.53	0.00	-0.53
15,678.0	89.40	357.30	7,378.1	-2,417.1	8,335.8	10.4	8,335.7	0.32	0.00	0.32
15,772.0	89.50	355.20	7,379.0	-2,418.0	8,429.5	4.3	8,429.5	2.24	0.11	-2.23
15,866.0	89.80	357.30	7,379.5	-2,418.5	8,523.3	-1.9	8,523.3	2.26	0.32	2.23
15,959.0	90.30	358.70	7,379.5	-2,418.5	8,616.3	-5.1	8,616.3	1.60	0.54	1.51
16,052.0	90.00	357.20	7,379.2	-2,418.2	8,709.2	-8.5	8,709.2	1.64	-0.32	-1.61
16,145.0	91.30	359.50	7,378.2	-2,417.2	8,802.2	-11.1	8,802.2	2.84	1.40	2.47
16,240.0	92.20	359.90	7,375.3	-2,414.3	8,897.1	-11.6	8,897.1	1.04	0.95	0.42
16,332.0	90.80	1.50	7,372.9	-2,411.9	8,989.1	-10.5	8,989.1	2.31	-1.52	1.74
16,428.0	90.00	0.50	7,372.2	-2,411.2	9,085.1	-8.8	9,085.1	1.33	-0.83	-1.04
16,523.0	88.90	1.20	7,373.1	-2,412.1	9,180.0	-7.4	9,180.0	1.37	-1.16	0.74
16,617.0	89.60	1.40	7,374.3	-2,413.3	9,274.0	-5.3	9,274.0	0.77	0.74	0.21
16,709.0	90.80	1.00	7,374.0	-2,413.0	9,366.0	-3.4	9,366.0	1.37	1.30	-0.43
16,802.0	89.00	0.00	7,374.2	-2,413.2	9,459.0	-2.6	9,459.0	2.21	-1.94	-1.08
16,894.0	88.50	359.40	7,376.2	-2,415.2	9,550.9	-3.0	9,550.9	0.85	-0.54	-0.65
16,988.0	88.30	359.00	7,378.8	-2,417.8	9,644.9	-4.4	9,644.9	0.48	-0.21	-0.43
~ CROSS 460' HB TOE (17066' MD)										
17,066.1	89.20	359.08	7,380.5	-2,419.5	9,723.0	-5.7	9,723.0	1.16	1.16	0.11
17,083.0	89.40	359.10	7,380.7	-2,419.7	9,739.9	-5.9	9,739.9	1.16	1.16	0.11
17,177.0	90.20	359.30	7,381.0	-2,420.0	9,833.9	-7.2	9,833.9	0.88	0.85	0.21

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	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)
17,272.0	90.80	359.40	7,380.2	-2,419.2	9,928.8	-8.3	9,928.9	0.64	0.63	0.11
17,365.0	91.80	359.00	7,378.1	-2,417.1	10,021.8	-9.6	10,021.8	1.16	1.08	-0.43
PROJECTION TO TD (40.058131; -104.842027)										
17,469.0	91.80	359.00	7,374.8	-2,413.8	10,125.7	-11.4	10,125.8	0.00	0.00	0.00

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-7HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB REV 20' @ 4961.0usft (PD461)
Site:	SE SW 13 T1N R67W 6th P.M.	MD Reference:	KB REV 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-7HZ	North Reference:	True
Wellbore:	JOB # 2018-307-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EOG RESOURCES

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
QUARTER CIRCLE 24- - survey misses target center by 188.7usft at 7852.1usft MD (7452.8 TVD, 516.0 N, 18.4 E) - Point	0.00	0.00	7,267.0	549.2	14.2	14,538,368.00	1,684,662.25	40° 1' 54.634 N	104° 50' 30.967 W
QUARTER CIRCLE 24- - survey misses target center by 26.6usft at 17469.0usft MD (7374.8 TVD, 10125.7 N, -11.4 E) - Point	0.00	0.00	7,354.0	10,127.1	5.1	14,547,942.13	1,684,636.12	40° 3' 29.286 N	104° 50' 31.085 W
QUARTER CIRCLE 24- - survey misses target center by 188.7usft at 7852.1usft MD (7452.8 TVD, 516.0 N, 18.4 E) - Point	0.00	0.00	7,267.0	549.2	14.5	14,538,368.01	1,684,662.52	40° 1' 54.634 N	104° 50' 30.964 W
QUARTER CIRCLE 24- - survey misses target center by 13.3usft at 17469.0usft MD (7374.8 TVD, 10125.7 N, -11.4 E) - Point	0.00	0.00	7,371.0	10,127.1	1.2	14,547,942.12	1,684,632.27	40° 3' 29.286 N	104° 50' 31.135 W
QUARTER CIRCLE 24- - survey misses target center by 21.5usft at 11040.4usft MD (7400.0 TVD, 3700.4 N, 1.0 E) - Point	0.00	0.00	7,381.0	3,700.0	11.1	14,541,517.59	1,684,653.61	40° 2' 25.772 N	104° 50' 31.007 W
QUARTER CIRCLE 24- - survey misses target center by 16.8usft at 17469.0usft MD (7374.8 TVD, 10125.7 N, -11.4 E) - Point	0.00	0.00	7,372.0	10,127.1	5.1	14,547,942.13	1,684,636.12	40° 3' 29.286 N	104° 50' 31.085 W
QUARTER CIRCLE 24- - survey misses target center by 21.2usft at 12540.6usft MD (7371.7 TVD, 5199.3 N, 29.1 E) - Point	0.00	0.00	7,371.0	5,200.0	7.9	14,543,016.99	1,684,647.72	40° 2' 40.595 N	104° 50' 31.048 W
QUARTER CIRCLE 24- - survey misses target center by 47.2usft at 6459.1usft MD (6448.7 TVD, -286.1 N, 21.1 E) - Point	0.00	0.00	6,448.9	-239.3	15.3	14,537,579.86	1,684,664.75	40° 1' 46.842 N	104° 50' 30.953 W
QUARTER CIRCLE 24- - survey misses target center by 11.9usft at 6658.3usft MD (6647.4 TVD, -275.7 N, 20.4 E) - Point	0.00	0.00	6,648.7	-286.3	15.4	14,537,532.83	1,684,664.90	40° 1' 46.377 N	104° 50' 30.952 W
QUARTER CIRCLE 24- - survey misses target center by 11.1usft at 7887.4usft MD (7456.7 TVD, 551.1 N, 17.7 E) - Point	0.00	0.00	7,467.0	549.2	14.2	14,538,368.00	1,684,662.25	40° 1' 54.634 N	104° 50' 30.967 W
QUARTER CIRCLE 24- - survey misses target center by 3.7usft at 7885.3usft MD (7456.5 TVD, 548.9 N, 17.7 E) - Point	0.00	0.00	7,454.7	549.2	14.5	14,538,368.01	1,684,662.52	40° 1' 54.634 N	104° 50' 30.964 W

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,795.0	1,790.5	-88.4	15.2	TIE ON TO SURFACE SURVEYS
6,548.0	6,537.6	-285.3	21.1	KOP
7,389.0	7,245.3	108.4	34.3	~ ENTER LANDING BOX (7389' MD)
7,893.0	7,457.0	556.7	17.6	HEEL (40.031863; -104.841924)
8,744.7	7,460.5	1,408.0	11.3	~ CROSS 460' HB HEEL (8745' MD)
17,066.1	7,380.5	9,723.0	-5.7	~ CROSS 460' HB TOE (17066' MD)
17,469.0	7,374.8	10,125.7	-11.4	PROJECTION TO TD (40.058131; -104.842027)

Checked By: _____	Approved By: _____	Date: _____
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