

ANADARKO PETROLEUM CORP

WELD COUNTY (NAD 83)

SE SW SEC. 13 T1N R67W 6th P.M.

QUARTER CIRCLE 24-11HZ

JOB # 2018-211-461

25 June, 2018

Survey: FINAL SURVEYS



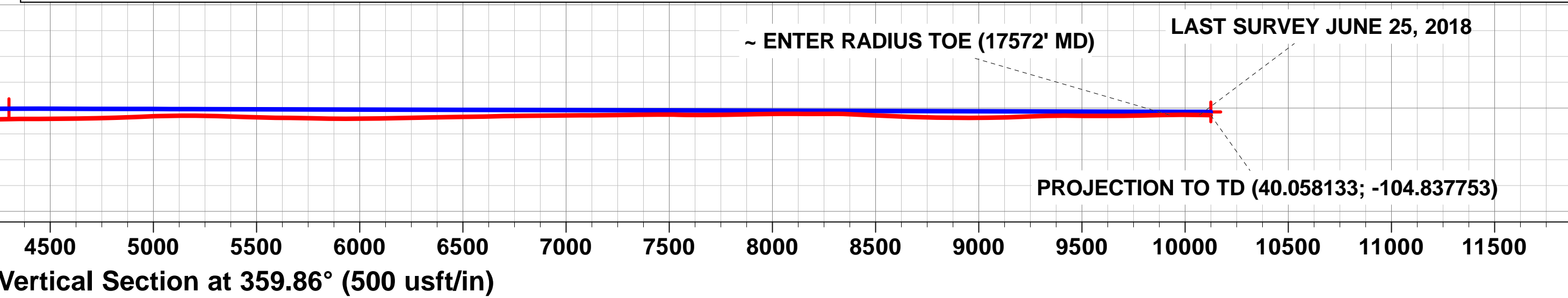
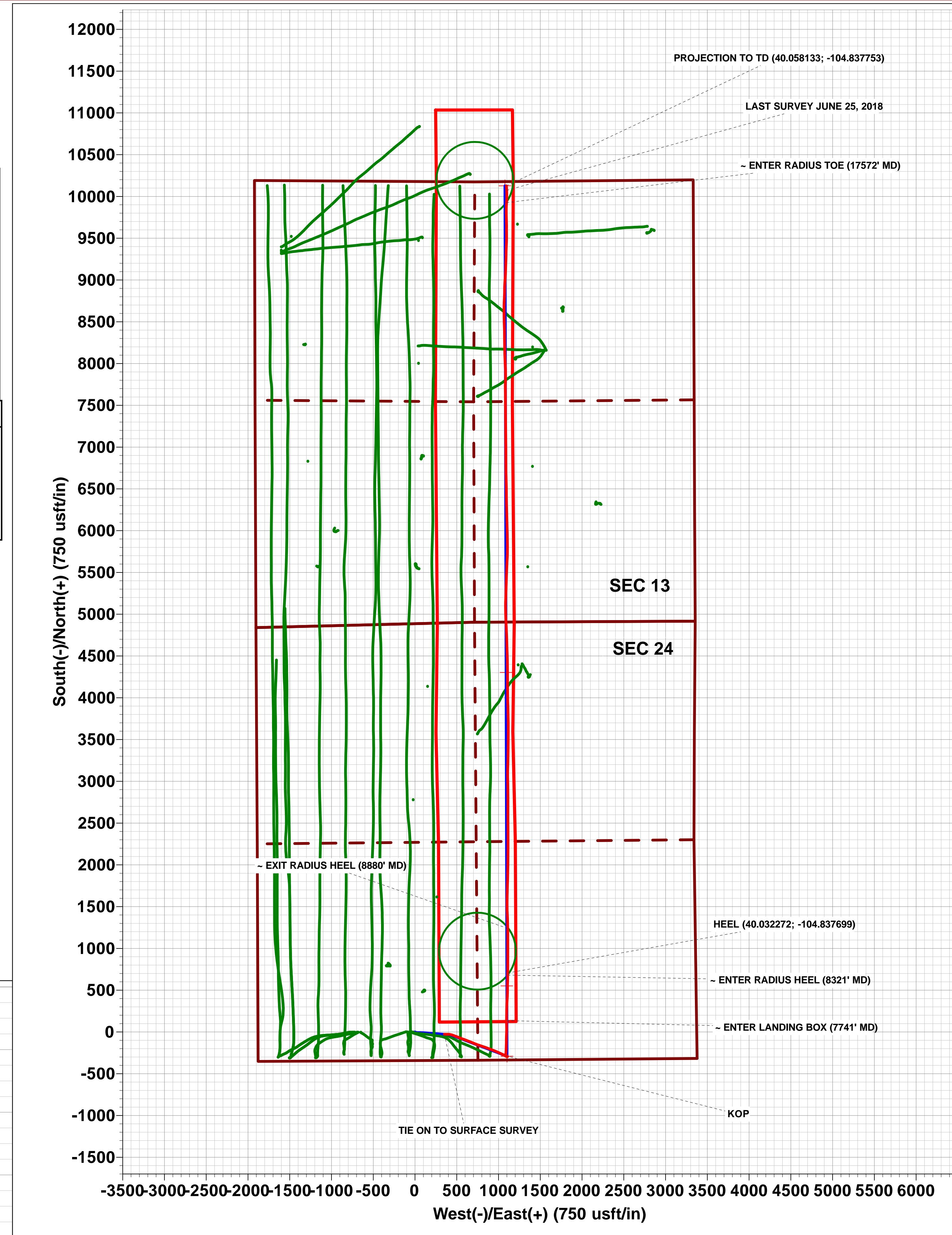
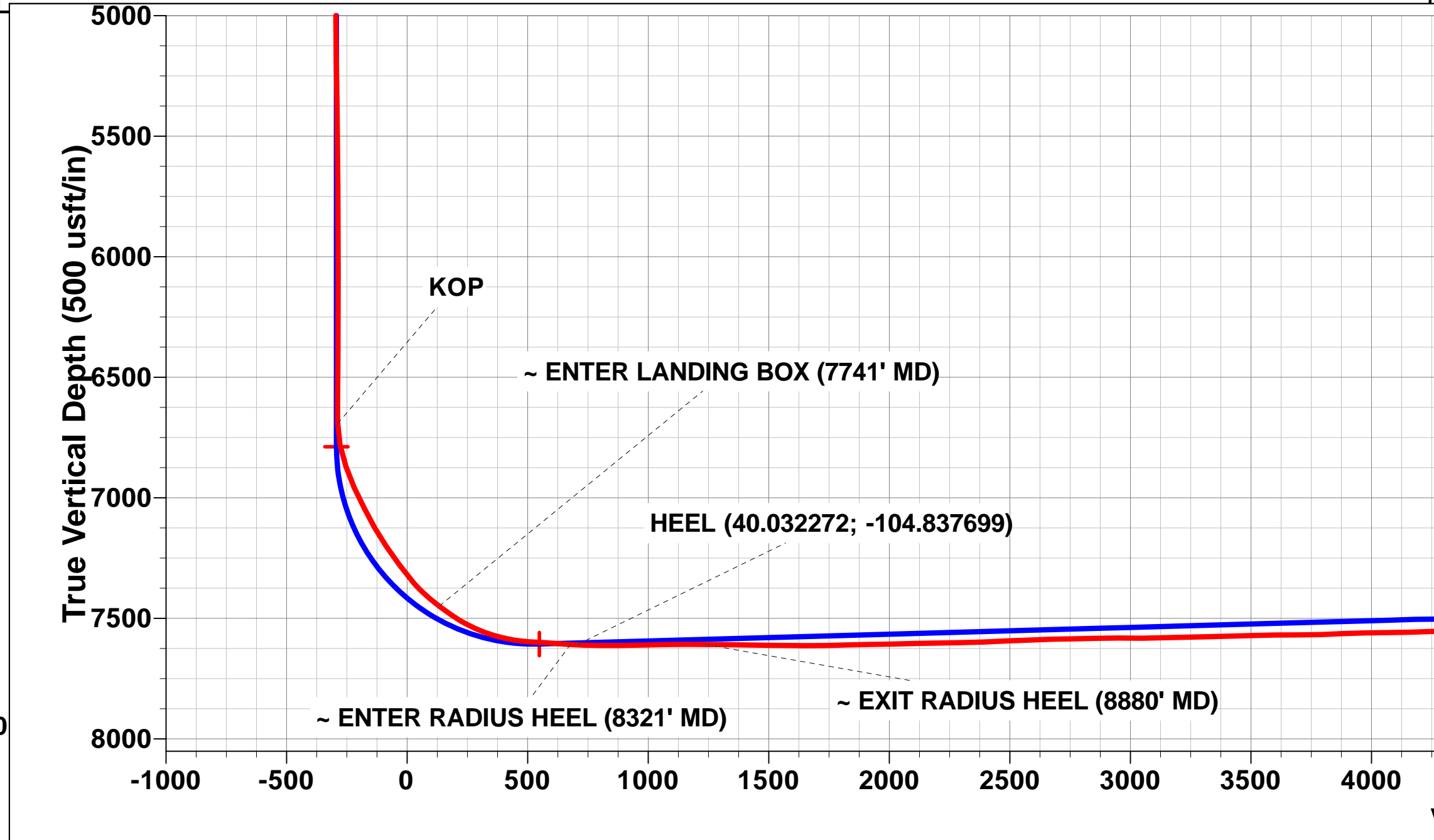
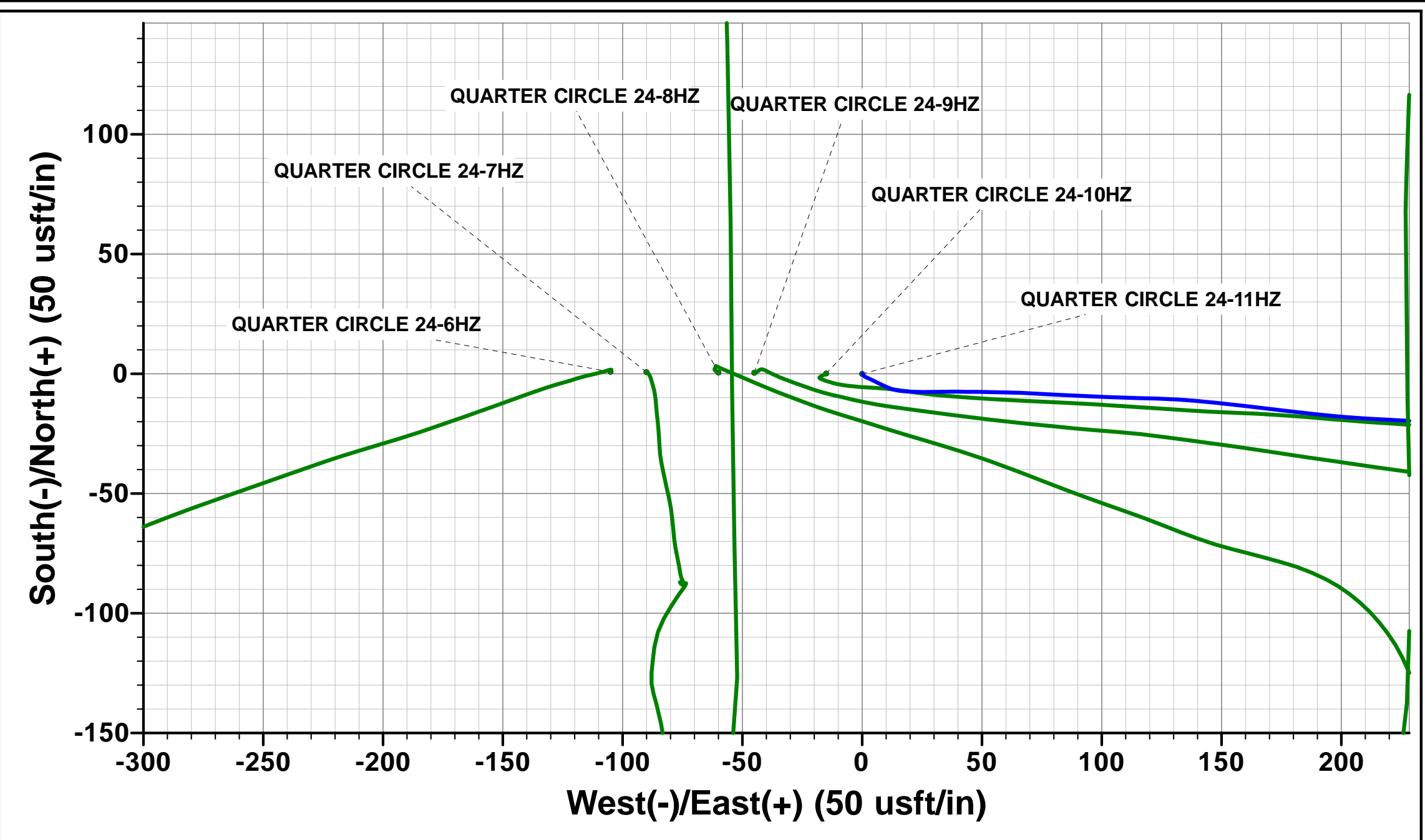
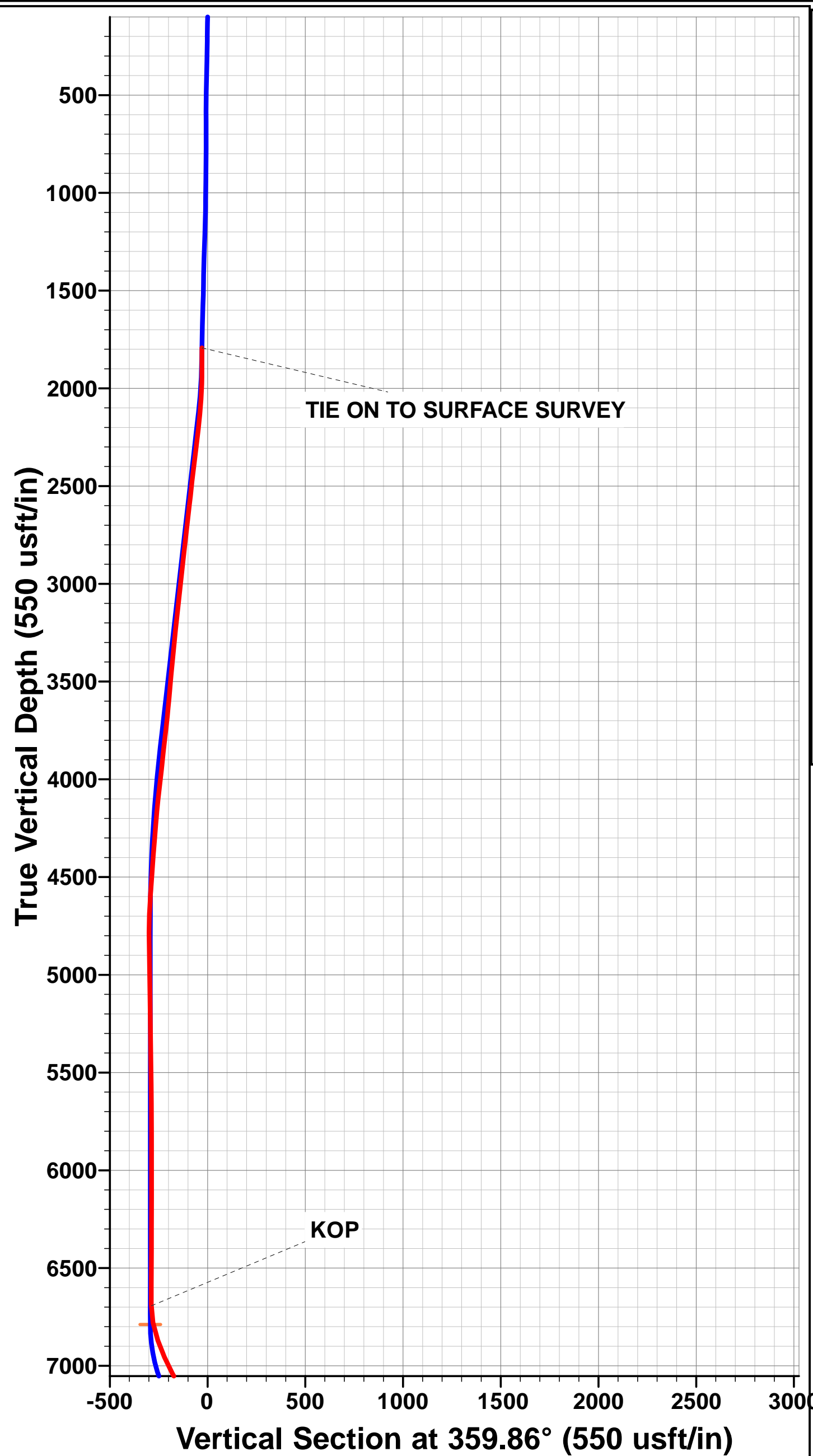


Project: WELD COUNTY (NAD 83)
Site: SE SW SEC. 13 T1N R67W 6th P.M.
Well: QUARTER CIRCLE 24-11HZ
Wellbore: JOB # 2018-211-461
Design: FINAL SURVEYS

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation	
1792.4	1841.0	17.75	91.02	-28.1	351.5	-28.9	0.0	TIE ON TO SURFACE SURVEY	
6692.9	6854.0	0.83	346.72	-285.4	1083.7	-288.1	842.1	KOP	
7449.7	7741.0	52.45	0.23	135.8	1096.3	133.1	1264.1	~ ENTER LANDING BOX (7741' MD)	
7608.9	8321.0	86.76	0.61	680.4	1110.4	677.7	1808.5	~ ENTER RADIUS HEEL (8321' MD)	
7610.3	8347.0	87.27	0.37	706.4	1110.6	703.7	1834.5	HEEL (40.032272; -104.837699)	
7608.8	8880.0	89.25	358.63	1239.2	1110.2	1236.5	2367.4	~ EXIT RADIUS HEEL (8880' MD)	
7533.1	17572.0	91.08	2.98	9926.2	1096.4	9923.5	11057.1	~ ENTER RADIUS TOE (17572' MD)	
7533.8	17719.0	88.91	356.65	10073.1	1098.1	10070.3	11204.1	LAST SURVEY JUNE 25, 2018	
7534.8	17773.0	88.91	356.65	10127.0	1094.9	10124.2	11258.1	PROJECTION TO TD (40.058133; -104.837753)	

AS DRILLED LOCAL COORDINATES:
SHL: 343ft FSL & 1879ft FWL Sec 24
HEEL: 1042.3ft FSL & 2254ft FEL Sec 24
BHL: 50ft FNL & 2236ft FEL Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
QUARTER CIRCLE 24-11HZ BHL (P4)	7519.0	10127.5	1076.5	40° 3' 29.282 N	104° 50' 16.148 W
QUARTER CIRCLE 24-11HZ HEEL (P4)	7607.0	551.1	1099.5	40° 1' 54.646 N	104° 50' 15.858 W
QUARTER CIRCLE 24-11HZ INT PT (P4)	7503.0	4302.7	1090.4	40° 2' 31.720 N	104° 50' 15.974 W
QUARTER CIRCLE 24-11HZ KOP (P4)	6788.8	-290.4	1101.6	40° 1' 46.330 N	104° 50' 15.832 W



Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-11HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20' @ 4961.0usft (PD461)
Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	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 SEC. 13 T1N R67W 6th P.M.				
Site Position:		Northing:	14,537,819.11 usft	Latitude:	40° 1' 49.208 N
From:	Lat/Long	Easting:	1,684,634.02 usft	Longitude:	104° 50' 31.343 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.10 °

Well	QUARTER CIRCLE 24-11HZ					
Well Position	+N/-S	0.0 usft	Northing:	14,537,818.49 usft	Latitude:	40° 1' 49.200 N
	+E/-W	0.0 usft	Easting:	1,684,738.99 usft	Longitude:	104° 50' 29.993 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,941.0 usft

Wellbore	JOB # 2018-211-461				
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:	1,841.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	359.86	

Survey Program	Date	25/06/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
129.0	1,841.0	FINAL SURVEYS - SURFACE (JOB #201	APC_ISCWSA REV 2 MWD+	Fixed.v2:crustal field declination	
1,936.0	17,773.0	FINAL SURVEYS (JOB # 2018-211-461)	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)
TIE ON TO SURFACE SURVEY										
1,841.0	17.75	91.02	1,792.4	3,168.6	-28.1	351.5	-28.9	0.00	0.00	0.00
1,936.0	17.53	88.31	1,883.0	3,078.0	-27.9	380.2	-28.9	0.89	-0.23	-2.85
2,029.0	16.48	94.61	1,971.9	2,989.1	-28.6	407.4	-29.6	2.28	-1.13	6.77
2,123.0	15.47	103.17	2,062.3	2,898.7	-32.5	432.9	-33.6	2.72	-1.07	9.11
2,216.0	17.71	111.74	2,151.4	2,809.6	-40.6	458.1	-41.7	3.56	2.41	9.22
2,308.0	16.57	111.21	2,239.3	2,721.7	-50.5	483.3	-51.7	1.25	-1.24	-0.58
2,402.0	17.10	111.42	2,329.3	2,631.7	-60.4	508.7	-61.6	0.57	0.56	0.22
2,495.0	18.86	111.78	2,417.8	2,543.2	-71.0	535.4	-72.3	1.90	1.89	0.39
2,590.0	17.52	109.72	2,508.0	2,453.0	-81.5	563.1	-82.9	1.56	-1.41	-2.17
2,684.0	19.13	110.26	2,597.2	2,363.8	-91.6	590.9	-93.0	1.72	1.71	0.57

Survey Report



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Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	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)
2,778.0	17.38	108.49	2,686.5	2,274.5	-101.4	618.6	-102.9	1.95	-1.86	-1.88
2,870.0	16.98	112.19	2,774.4	2,186.6	-110.8	644.1	-112.4	1.26	-0.43	4.02
2,964.0	16.60	112.34	2,864.4	2,096.6	-121.1	669.2	-122.7	0.41	-0.40	0.16
3,059.0	17.66	112.82	2,955.2	2,005.8	-131.8	695.1	-133.5	1.13	1.12	0.51
3,153.0	16.29	111.71	3,045.1	1,915.9	-142.3	720.5	-144.0	1.50	-1.46	-1.18
3,248.0	17.52	110.04	3,136.0	1,825.0	-152.1	746.3	-153.9	1.39	1.29	-1.76
3,342.0	16.65	108.42	3,225.8	1,735.2	-161.2	772.4	-163.1	1.05	-0.93	-1.72
3,437.0	16.04	108.86	3,317.0	1,644.0	-169.7	797.7	-171.7	0.66	-0.64	0.46
3,532.0	17.31	109.18	3,408.0	1,553.0	-178.6	823.5	-180.6	1.34	1.34	0.34
3,625.0	14.85	109.22	3,497.3	1,463.7	-187.1	847.8	-189.2	2.65	-2.65	0.04
3,719.0	15.19	108.65	3,588.1	1,372.9	-195.0	870.8	-197.1	0.39	0.36	-0.61
3,814.0	16.58	111.34	3,679.5	1,281.5	-203.9	895.2	-206.1	1.66	1.46	2.83
3,908.0	16.62	112.50	3,769.6	1,191.4	-213.9	920.2	-216.2	0.36	0.04	1.23
4,003.0	16.76	110.47	3,860.6	1,100.4	-223.9	945.5	-226.2	0.63	0.15	-2.14
4,097.0	16.04	111.97	3,950.8	1,010.2	-233.5	970.3	-235.9	0.89	-0.77	1.60
4,192.0	15.54	115.27	4,042.2	918.8	-243.9	994.0	-246.3	1.08	-0.53	3.47
4,286.0	13.24	114.48	4,133.2	827.8	-253.7	1,015.2	-256.2	2.46	-2.45	-0.84
4,380.0	10.88	113.63	4,225.1	735.9	-261.7	1,033.1	-264.2	2.52	-2.51	-0.90
4,475.0	10.74	116.40	4,318.5	642.5	-269.2	1,049.2	-271.8	0.57	-0.15	2.92
4,569.0	9.30	117.68	4,411.0	550.0	-276.7	1,063.8	-279.3	1.55	-1.53	1.36
4,662.0	8.02	119.85	4,503.0	458.0	-283.4	1,076.1	-286.0	1.42	-1.38	2.33
4,756.0	6.70	121.28	4,596.2	364.8	-289.5	1,086.4	-292.2	1.42	-1.40	1.52
4,851.0	4.67	122.09	4,690.7	270.3	-294.4	1,094.5	-297.1	2.14	-2.14	0.85
4,945.0	4.36	96.01	4,784.4	176.6	-296.8	1,101.3	-299.5	2.19	-0.33	-27.74
5,062.0	2.55	44.71	4,901.2	59.8	-295.5	1,107.5	-298.2	2.91	-1.55	-43.85
5,157.0	1.46	307.73	4,996.2	-35.2	-293.2	1,108.0	-295.9	3.25	-1.15	-102.08
5,347.0	2.34	282.90	5,186.1	-225.1	-290.9	1,102.3	-293.6	0.62	0.46	-13.07
5,441.0	1.01	325.93	5,280.0	-319.0	-289.7	1,100.0	-292.4	1.85	-1.41	45.78
5,534.0	0.95	356.05	5,373.0	-412.0	-288.3	1,099.5	-291.0	0.55	-0.06	32.39
5,629.0	0.67	341.76	5,468.0	-507.0	-287.0	1,099.3	-289.7	0.36	-0.29	-15.04
5,724.0	0.87	318.08	5,563.0	-602.0	-285.9	1,098.6	-288.6	0.39	0.21	-24.93
5,819.0	0.92	311.32	5,658.0	-697.0	-284.9	1,097.6	-287.6	0.12	0.05	-7.12
5,913.0	0.77	299.18	5,752.0	-791.0	-284.1	1,096.4	-286.8	0.25	-0.16	-12.91
6,006.0	0.85	272.27	5,845.0	-884.0	-283.7	1,095.2	-286.4	0.41	0.09	-28.94
6,100.0	1.04	276.98	5,939.0	-978.0	-283.6	1,093.7	-286.3	0.22	0.20	5.01
6,193.0	1.11	275.50	6,032.0	-1,071.0	-283.4	1,091.9	-286.1	0.08	0.08	-1.59
6,286.0	0.86	264.01	6,124.9	-1,163.9	-283.4	1,090.3	-286.1	0.34	-0.27	-12.35
6,379.0	0.68	255.08	6,217.9	-1,256.9	-283.6	1,089.1	-286.3	0.23	-0.19	-9.60
6,474.0	0.81	249.72	6,312.9	-1,351.9	-284.0	1,087.9	-286.7	0.16	0.14	-5.64
6,567.0	0.86	252.17	6,405.9	-1,444.9	-284.4	1,086.7	-287.1	0.07	0.05	2.63
6,661.0	0.71	242.77	6,499.9	-1,538.9	-284.9	1,085.5	-287.6	0.21	-0.16	-10.00
6,755.0	0.61	250.58	6,593.9	-1,632.9	-285.4	1,084.5	-288.0	0.14	-0.11	8.31
6,848.0	0.36	284.56	6,686.9	-1,725.9	-285.5	1,083.7	-288.1	0.40	-0.27	36.54
KOP										
6,854.0	0.83	346.72	6,692.9	-1,731.9	-285.4	1,083.7	-288.1	12.29	7.89	1,035.92
6,941.0	11.45	10.51	6,779.3	-1,818.3	-276.3	1,085.1	-278.9	12.29	12.20	27.35
7,035.0	19.04	6.68	6,869.9	-1,908.9	-251.8	1,088.6	-254.5	8.14	8.07	-4.07
7,128.0	24.43	2.95	6,956.3	-1,995.3	-217.5	1,091.4	-220.2	5.98	5.80	-4.01
7,222.0	27.39	0.81	7,040.8	-2,079.8	-176.5	1,092.7	-179.2	3.30	3.15	-2.28
7,315.0	28.61	0.20	7,122.9	-2,161.9	-132.8	1,093.1	-135.5	1.35	1.31	-0.66
7,408.0	35.01	1.23	7,201.9	-2,240.9	-83.8	1,093.7	-86.5	6.91	6.88	1.11
7,503.0	35.72	3.25	7,279.4	-2,318.4	-28.9	1,095.9	-31.6	1.44	0.75	2.13
7,597.0	41.27	358.86	7,352.9	-2,391.9	29.5	1,096.8	26.9	6.58	5.90	-4.67

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-11HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20' @ 4961.0usft (PD461)
Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	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)
7,690.0	50.11	0.02	7,417.8	-2,456.8	96.0	1,096.2	93.3	9.55	9.51	1.25
~ ENTER LANDING BOX (7741' MD)										
7,741.0	52.45	0.23	7,449.7	-2,488.7	135.8	1,096.3	133.1	4.60	4.59	0.41
7,782.0	54.33	0.39	7,474.2	-2,513.2	168.7	1,096.5	166.0	4.60	4.59	0.39
7,876.0	61.59	0.49	7,524.0	-2,563.0	248.3	1,097.1	245.7	7.72	7.72	0.11
7,970.0	70.70	3.60	7,562.0	-2,601.0	334.1	1,100.2	331.5	10.15	9.69	3.31
8,065.0	78.96	2.83	7,586.9	-2,625.9	425.6	1,105.4	422.9	8.73	8.69	-0.81
8,159.0	87.15	0.37	7,598.2	-2,637.2	518.8	1,108.0	516.1	9.09	8.71	-2.62
8,252.0	85.42	1.26	7,604.2	-2,643.2	611.6	1,109.3	608.9	2.09	-1.86	0.96
~ ENTER RADIUS HEEL (8321' MD)										
8,321.0	86.76	0.61	7,608.9	-2,647.9	680.4	1,110.4	677.7	2.16	1.95	-0.94
HEEL (40.032272; -104.837699)										
8,347.0	87.27	0.37	7,610.3	-2,649.3	706.4	1,110.6	703.7	2.16	1.95	-0.94
8,439.0	89.45	359.41	7,612.9	-2,651.9	798.3	1,110.4	795.6	2.59	2.37	-1.04
8,532.0	90.51	0.11	7,613.0	-2,652.0	891.3	1,110.1	888.6	1.37	1.14	0.75
8,626.0	91.35	1.13	7,611.4	-2,650.4	985.3	1,111.1	982.6	1.41	0.89	1.09
8,718.0	91.58	0.26	7,609.1	-2,648.1	1,077.3	1,112.2	1,074.6	0.98	0.25	-0.95
8,812.0	89.59	359.02	7,608.1	-2,647.1	1,171.3	1,111.6	1,168.5	2.49	-2.12	-1.32
~ EXIT RADIUS HEEL (8880' MD)										
8,880.0	89.25	358.63	7,608.8	-2,647.8	1,239.2	1,110.2	1,236.5	0.76	-0.51	-0.57
8,907.0	89.11	358.48	7,609.2	-2,648.2	1,266.2	1,109.5	1,263.5	0.76	-0.51	-0.57
9,001.0	89.40	358.25	7,610.4	-2,649.4	1,360.2	1,106.8	1,357.5	0.39	0.31	-0.24
9,096.0	89.61	357.63	7,611.2	-2,650.2	1,455.1	1,103.4	1,452.4	0.69	0.22	-0.65
9,190.0	88.83	0.66	7,612.5	-2,651.5	1,549.1	1,102.0	1,546.4	3.33	-0.83	3.22
9,282.0	89.74	1.74	7,613.7	-2,652.7	1,641.1	1,104.0	1,638.4	1.53	0.99	1.17
9,376.0	91.07	1.17	7,613.0	-2,652.0	1,735.0	1,106.3	1,732.3	1.54	1.41	-0.61
9,469.0	92.01	2.23	7,610.5	-2,649.5	1,828.0	1,109.1	1,825.2	1.52	1.01	1.14
9,564.0	90.21	359.94	7,608.7	-2,647.7	1,922.9	1,110.9	1,920.2	3.07	-1.89	-2.41
9,659.0	91.20	1.17	7,607.5	-2,646.5	2,017.9	1,111.8	2,015.2	1.66	1.04	1.29
9,754.0	91.97	0.44	7,604.9	-2,643.9	2,112.8	1,113.2	2,110.1	1.12	0.81	-0.77
9,847.0	90.54	0.38	7,602.8	-2,641.8	2,205.8	1,113.8	2,203.1	1.54	-1.54	-0.06
9,940.0	91.32	359.70	7,601.3	-2,640.3	2,298.8	1,113.9	2,296.1	1.11	0.84	-0.73
10,035.0	91.90	359.61	7,598.7	-2,637.7	2,393.8	1,113.3	2,391.0	0.62	0.61	-0.09
10,129.0	93.29	359.28	7,594.4	-2,633.4	2,487.7	1,112.4	2,484.9	1.52	1.48	-0.35
10,222.0	91.47	0.48	7,590.5	-2,629.5	2,580.6	1,112.2	2,577.8	2.34	-1.96	1.29
10,315.0	92.36	0.19	7,587.4	-2,626.4	2,673.5	1,112.7	2,670.8	1.01	0.96	-0.31
10,409.0	90.40	359.84	7,585.2	-2,624.2	2,767.5	1,112.8	2,764.8	2.12	-2.09	-0.37
10,503.0	91.68	359.30	7,583.5	-2,622.5	2,861.5	1,112.1	2,858.7	1.48	1.36	-0.57
10,597.0	89.63	359.09	7,582.4	-2,621.4	2,955.4	1,110.7	2,952.7	2.19	-2.18	-0.22
10,690.0	90.20	359.14	7,582.5	-2,621.5	3,048.4	1,109.3	3,045.7	0.62	0.61	0.05
10,782.0	91.83	1.49	7,580.9	-2,619.9	3,140.4	1,109.8	3,137.7	3.11	1.77	2.55
10,876.0	90.69	1.61	7,578.8	-2,617.8	3,234.4	1,112.4	3,231.6	1.22	-1.21	0.13
10,969.0	91.87	1.05	7,576.7	-2,615.7	3,327.3	1,114.5	3,324.6	1.40	1.27	-0.60
11,062.0	90.93	359.75	7,574.5	-2,613.5	3,420.3	1,115.2	3,417.5	1.72	-1.01	-1.40
11,155.0	92.19	0.87	7,571.9	-2,610.9	3,513.2	1,115.7	3,510.5	1.81	1.35	1.20
11,247.0	90.37	0.28	7,569.9	-2,608.9	3,605.2	1,116.6	3,602.5	2.08	-1.98	-0.64
11,340.0	90.33	359.04	7,569.3	-2,608.3	3,698.2	1,116.0	3,695.5	1.33	-0.04	-1.33
11,434.0	91.68	358.85	7,567.7	-2,606.7	3,792.2	1,114.3	3,789.4	1.45	1.44	-0.20
11,526.0	93.29	358.88	7,563.7	-2,602.7	3,884.1	1,112.5	3,881.3	1.75	1.75	0.03
11,620.0	90.36	358.42	7,560.7	-2,599.7	3,978.0	1,110.3	3,975.2	3.16	-3.12	-0.49
11,714.0	90.90	359.27	7,559.7	-2,598.7	4,071.9	1,108.4	4,069.2	1.07	0.57	0.90
11,808.0	91.38	359.74	7,557.8	-2,596.8	4,165.9	1,107.6	4,163.2	0.71	0.51	0.50
11,901.0	92.25	0.37	7,554.8	-2,593.8	4,258.9	1,107.7	4,256.2	1.15	0.94	0.68

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-11HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20' @ 4961.0usft (PD461)
Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	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)
11,995.0	89.99	359.74	7,553.0	-2,592.0	4,352.8	1,107.7	4,350.1	2.50	-2.40	-0.67
12,090.0	90.08	358.04	7,552.9	-2,591.9	4,447.8	1,105.9	4,445.1	1.79	0.09	-1.79
12,184.0	90.60	358.55	7,552.4	-2,591.4	4,541.8	1,103.1	4,539.1	0.77	0.55	0.54
12,277.0	90.69	358.11	7,551.3	-2,590.3	4,634.7	1,100.4	4,632.0	0.48	0.10	-0.47
12,371.0	91.15	358.13	7,549.8	-2,588.8	4,728.7	1,097.3	4,726.0	0.49	0.49	0.02
12,464.0	91.93	356.88	7,547.3	-2,586.3	4,821.5	1,093.3	4,818.9	1.58	0.84	-1.34
12,559.0	92.64	357.79	7,543.5	-2,582.5	4,916.4	1,088.9	4,913.7	1.21	0.75	0.96
12,653.0	91.89	357.45	7,539.8	-2,578.8	5,010.2	1,085.0	5,007.5	0.88	-0.80	-0.36
12,746.0	90.44	0.82	7,537.9	-2,576.9	5,103.2	1,083.6	5,100.5	3.94	-1.56	3.62
12,839.0	90.19	2.52	7,537.4	-2,576.4	5,196.1	1,086.3	5,193.5	1.85	-0.27	1.83
12,933.0	88.39	1.83	7,538.6	-2,577.6	5,290.0	1,089.8	5,287.4	2.05	-1.91	-0.73
13,025.0	87.75	1.27	7,541.7	-2,580.7	5,382.0	1,092.3	5,379.3	0.92	-0.70	-0.61
13,119.0	88.50	2.36	7,544.8	-2,583.8	5,475.9	1,095.3	5,473.2	1.41	0.80	1.16
13,214.0	89.08	2.47	7,546.8	-2,585.8	5,570.8	1,099.3	5,568.0	0.62	0.61	0.12
13,308.0	89.44	3.12	7,548.0	-2,587.0	5,664.6	1,103.9	5,661.9	0.79	0.38	0.69
13,401.0	88.45	0.24	7,549.7	-2,588.7	5,757.6	1,106.6	5,754.8	3.27	-1.06	-3.10
13,496.0	89.23	358.89	7,551.6	-2,590.6	5,852.5	1,105.9	5,849.8	1.64	0.82	-1.42
13,589.0	89.82	359.59	7,552.4	-2,591.4	5,945.5	1,104.6	5,942.8	0.98	0.63	0.75
13,683.0	91.02	358.30	7,551.7	-2,590.7	6,039.5	1,102.9	6,036.8	1.87	1.28	-1.37
13,777.0	91.51	358.26	7,549.6	-2,588.6	6,133.4	1,100.1	6,130.7	0.52	0.52	-0.04
13,871.0	90.41	359.37	7,548.0	-2,587.0	6,227.4	1,098.2	6,224.7	1.66	-1.17	1.18
13,966.0	91.02	357.61	7,546.9	-2,585.9	6,322.4	1,095.7	6,319.7	1.96	0.64	-1.85
14,060.0	92.02	0.23	7,544.4	-2,583.4	6,416.3	1,093.9	6,413.6	2.98	1.06	2.79
14,154.0	90.09	358.78	7,542.6	-2,581.6	6,510.3	1,093.1	6,507.6	2.57	-2.05	-1.54
14,249.0	90.96	358.45	7,541.8	-2,580.8	6,605.2	1,090.8	6,602.6	0.98	0.92	-0.35
14,344.0	91.93	359.18	7,539.4	-2,578.4	6,700.2	1,088.8	6,697.5	1.28	1.02	0.77
14,439.0	90.02	1.09	7,537.8	-2,576.8	6,795.2	1,089.0	6,792.5	2.84	-2.01	2.01
14,533.0	90.40	358.33	7,537.4	-2,576.4	6,889.2	1,088.6	6,886.5	2.96	0.40	-2.94
14,627.0	91.22	358.87	7,536.1	-2,575.1	6,983.1	1,086.3	6,980.4	1.04	0.87	0.57
14,721.0	89.60	0.94	7,535.4	-2,574.4	7,077.1	1,086.1	7,074.4	2.80	-1.72	2.20
14,815.0	90.56	359.39	7,535.3	-2,574.3	7,171.1	1,086.4	7,168.4	1.94	1.02	-1.65
14,909.0	91.39	358.77	7,533.7	-2,572.7	7,265.1	1,084.9	7,262.4	1.10	0.88	-0.66
15,002.0	89.69	0.14	7,532.8	-2,571.8	7,358.1	1,084.0	7,355.4	2.35	-1.83	1.47
15,097.0	90.90	358.38	7,532.3	-2,571.3	7,453.0	1,082.8	7,450.4	2.25	1.27	-1.85
15,191.0	88.74	0.85	7,532.6	-2,571.6	7,547.0	1,082.1	7,544.4	3.49	-2.30	2.63
15,285.0	89.59	358.77	7,534.0	-2,573.0	7,641.0	1,081.8	7,638.3	2.39	0.90	-2.21
15,378.0	90.67	1.15	7,533.8	-2,572.8	7,734.0	1,081.7	7,731.3	2.81	1.16	2.56
15,473.0	91.91	1.67	7,531.6	-2,570.6	7,828.9	1,084.1	7,826.3	1.42	1.31	0.55
15,568.0	90.23	357.13	7,529.9	-2,568.9	7,923.9	1,083.1	7,921.2	5.09	-1.77	-4.78
15,662.0	91.25	356.80	7,528.6	-2,567.6	8,017.8	1,078.1	8,015.1	1.14	1.09	-0.35
15,755.0	89.10	359.30	7,528.4	-2,567.4	8,110.7	1,074.9	8,108.0	3.55	-2.31	2.69
15,849.0	90.25	358.15	7,528.9	-2,567.9	8,204.7	1,072.9	8,202.0	1.73	1.22	-1.22
15,943.0	90.43	359.99	7,528.3	-2,567.3	8,298.6	1,071.3	8,296.0	1.97	0.19	1.96
16,036.0	86.91	359.34	7,530.5	-2,569.5	8,391.6	1,070.8	8,389.0	3.85	-3.78	-0.70
16,128.0	87.00	357.22	7,535.4	-2,574.4	8,483.4	1,068.0	8,480.8	2.30	0.10	-2.30
16,223.0	87.66	0.64	7,539.8	-2,578.8	8,578.3	1,066.3	8,575.7	3.66	0.69	3.60
16,316.0	88.28	359.45	7,543.1	-2,582.1	8,671.2	1,066.3	8,668.6	1.44	0.67	-1.28
16,411.0	88.89	3.58	7,545.4	-2,584.4	8,766.1	1,068.8	8,763.5	4.39	0.64	4.35
16,506.0	89.08	0.50	7,547.1	-2,586.1	8,861.1	1,072.2	8,858.4	3.25	0.20	-3.24
16,600.0	89.97	2.51	7,547.9	-2,586.9	8,955.0	1,074.7	8,952.4	2.34	0.95	2.14
16,692.0	90.84	4.42	7,547.3	-2,586.3	9,046.8	1,080.3	9,044.2	2.28	0.95	2.08
16,786.0	91.60	1.51	7,545.3	-2,584.3	9,140.7	1,085.1	9,138.0	3.20	0.81	-3.10
16,878.0	92.60	2.12	7,541.9	-2,580.9	9,232.6	1,088.0	9,229.9	1.27	1.09	0.66

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-11HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20' @ 4961.0usft (PD461)
Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	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)
16,972.0	91.71	1.12	7,538.4	-2,577.4	9,326.5	1,090.7	9,323.8	1.42	-0.95	-1.06
17,066.0	89.38	3.01	7,537.5	-2,576.5	9,420.4	1,094.1	9,417.7	3.19	-2.48	2.01
17,160.0	89.73	359.92	7,538.2	-2,577.2	9,514.4	1,096.5	9,511.6	3.31	0.37	-3.29
17,255.0	89.92	359.44	7,538.5	-2,577.5	9,609.3	1,095.9	9,606.6	0.54	0.20	-0.51
17,348.0	90.96	359.19	7,537.8	-2,576.8	9,702.3	1,094.8	9,699.6	1.15	1.12	-0.27
17,444.0	90.85	358.43	7,536.2	-2,575.2	9,798.3	1,092.8	9,795.6	0.80	-0.11	-0.79
17,537.0	91.91	3.48	7,534.0	-2,573.0	9,891.2	1,094.4	9,888.5	5.55	1.14	5.43
~ ENTER RADIUS TOE (17572' MD)										
17,572.0	91.08	2.98	7,533.1	-2,572.1	9,926.2	1,096.4	9,923.5	2.75	-2.36	-1.42
17,632.0	89.67	2.13	7,532.7	-2,571.7	9,986.1	1,099.0	9,983.4	2.75	-2.36	-1.42
LAST SURVEY JUNE 25, 2018										
17,719.0	88.91	356.65	7,533.8	-2,572.8	10,073.1	1,098.1	10,070.3	6.36	-0.87	-6.30
PROJECTION TO TD (40.058133; -104.837753)										
17,773.0	88.91	356.65	7,534.8	-2,573.8	10,127.0	1,094.9	10,124.2	0.00	0.00	0.00

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-11HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20' @ 4961.0usft (PD461)
Site:	SE SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20' @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-11HZ	North Reference:	True
Wellbore:	JOB # 2018-211-461	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EOG RESOURCES

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
QUARTER CIRCLE 24-' - survey misses target center by 68.1usft at 11645.8usft MD (7560.5 TVD, 4003.8 N, 1109.6 E) - Point	0.00	0.00	7,495.0	4,002.7	1,091.1	14,541,821.51	1,685,822.52	40° 2' 28.755 N	104° 50' 15.965 W
QUARTER CIRCLE 24-' - survey misses target center by 11.2usft at 8191.7usft MD (7600.0 TVD, 551.4 N, 1108.3 E) - Point	0.00	0.00	7,607.0	551.1	1,099.5	14,538,371.32	1,685,837.09	40° 1' 54.646 N	104° 50' 15.858 W
QUARTER CIRCLE 24-' - survey misses target center by 11.2usft at 8191.7usft MD (7600.0 TVD, 551.4 N, 1108.3 E) - Point	0.00	0.00	7,607.0	551.1	1,099.5	14,538,371.32	1,685,837.09	40° 1' 54.646 N	104° 50' 15.858 W
QUARTER CIRCLE 24-' - survey misses target center by 11.6usft at 8191.7usft MD (7600.0 TVD, 551.5 N, 1108.3 E) - Point	0.00	0.00	7,607.7	551.1	1,099.5	14,538,371.32	1,685,837.09	40° 1' 54.646 N	104° 50' 15.858 W
QUARTER CIRCLE 24-' - survey misses target center by 24.3usft at 17773.0usft MD (7534.8 TVD, 10127.0 N, 1094.9 E) - Point	0.00	0.00	7,519.0	10,127.5	1,076.5	14,547,943.81	1,685,797.11	40° 3' 29.282 N	104° 50' 16.148 W
QUARTER CIRCLE 24-' - survey misses target center by 22.6usft at 6947.1usft MD (6785.3 TVD, -275.0 N, 1085.4 E) - Point	0.00	0.00	6,788.8	-290.4	1,101.6	14,537,530.15	1,685,840.65	40° 1' 46.330 N	104° 50' 15.832 W
QUARTER CIRCLE 24-' - survey misses target center by 25.2usft at 6946.3usft MD (6784.5 TVD, -275.2 N, 1085.3 E) - Point	0.00	0.00	6,788.9	-294.0	1,101.5	14,537,526.58	1,685,840.60	40° 1' 46.295 N	104° 50' 15.833 W
QUARTER CIRCLE 24-' - survey misses target center by 53.4usft at 11945.8usft MD (7553.5 TVD, 4303.7 N, 1107.8 E) - Point	0.00	0.00	7,503.0	4,302.7	1,090.4	14,542,121.39	1,685,821.27	40° 2' 31.720 N	104° 50' 15.974 W
QUARTER CIRCLE 24-' - survey misses target center by 24.3usft at 17773.0usft MD (7534.8 TVD, 10127.0 N, 1094.9 E) - Point	0.00	0.00	7,519.0	10,127.5	1,076.5	14,547,943.81	1,685,797.11	40° 3' 29.282 N	104° 50' 16.148 W
QUARTER CIRCLE 24-' - survey misses target center by 23.6usft at 17773.0usft MD (7534.8 TVD, 10127.0 N, 1094.9 E) - Point	0.00	0.00	7,520.0	10,127.5	1,076.5	14,547,943.81	1,685,797.11	40° 3' 29.282 N	104° 50' 16.148 W

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,841.0	1,792.4	-28.1	351.5	TIE ON TO SURFACE SURVEY
6,854.0	6,692.9	-285.4	1,083.7	KOP
7,741.0	7,449.7	135.8	1,096.3	~ ENTER LANDING BOX (7741' MD)
8,321.0	7,608.9	680.4	1,110.4	~ ENTER RADIUS HEEL (8321' MD)
8,347.0	7,610.3	706.4	1,110.6	HEEL (40.032272; -104.837699)
8,880.0	7,608.8	1,239.2	1,110.2	~ EXIT RADIUS HEEL (8880' MD)
17,572.0	7,533.1	9,926.2	1,096.4	~ ENTER RADIUS TOE (17572' MD)
17,719.0	7,533.8	10,073.1	1,098.1	LAST SURVEY JUNE 25, 2018
17,773.0	7,534.8	10,127.0	1,094.9	PROJECTION TO TD (40.058133; -104.837753)

Checked By: _____	Approved By: _____	Date: _____
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