

ANADARKO PETROLEUM CORP

WELD COUNTY (NAD 83)

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

QUARTER CIRCLE 24-2HZ

JOB # 2018-202-461 SIDETRACK

02 May, 2018

Survey: FINAL SURVEYS SIDETRACK





Project: WELD COUNTY (NAD 83)
 Site: SW SW SEC. 13 T1N R67W 6th P.M.
 Well: QUARTER CIRCLE 24-2HZ
 Wellbore: JOB # 2018-202-461 SIDETRACK
 Design: FINAL SURVEYS SIDETRACK

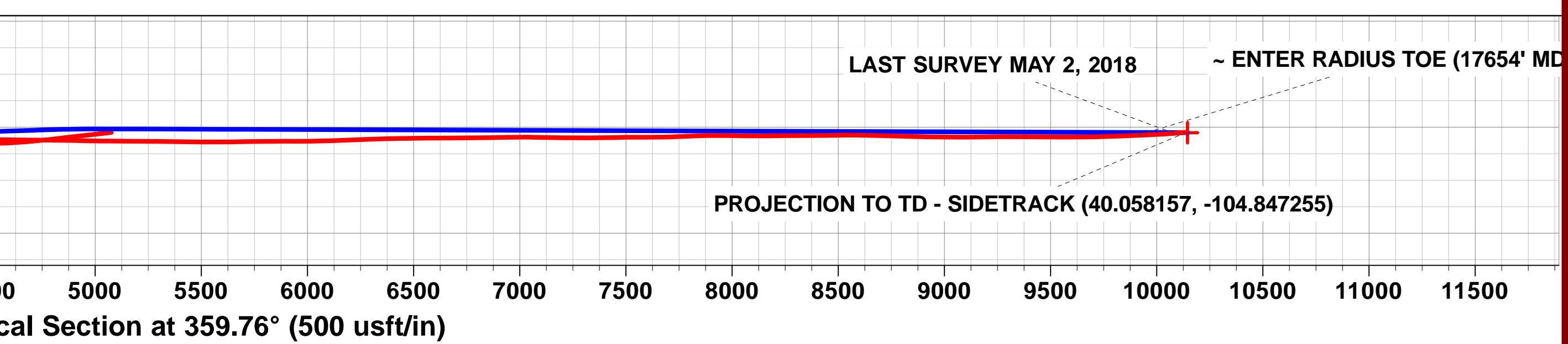
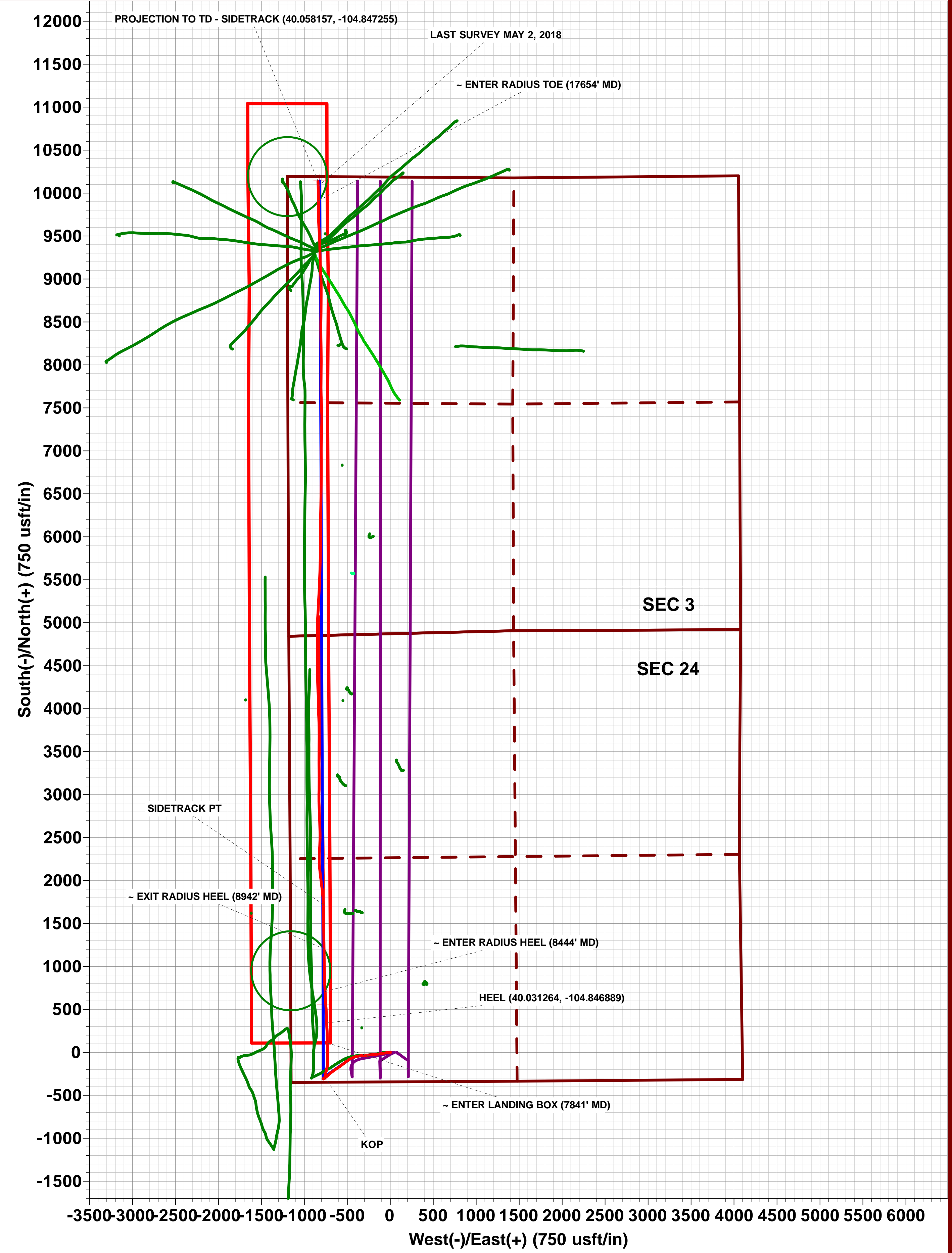
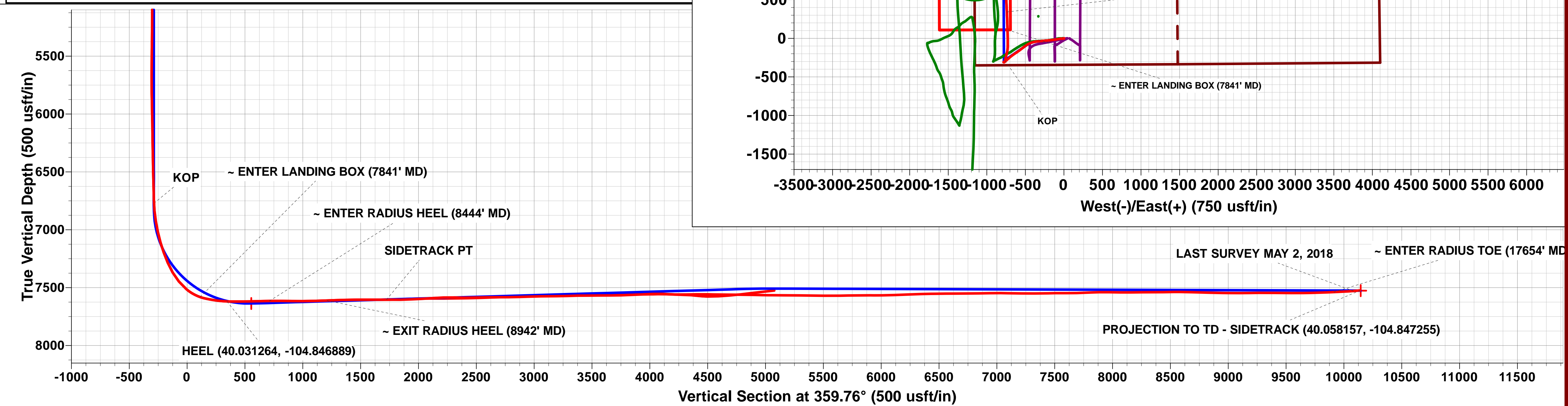
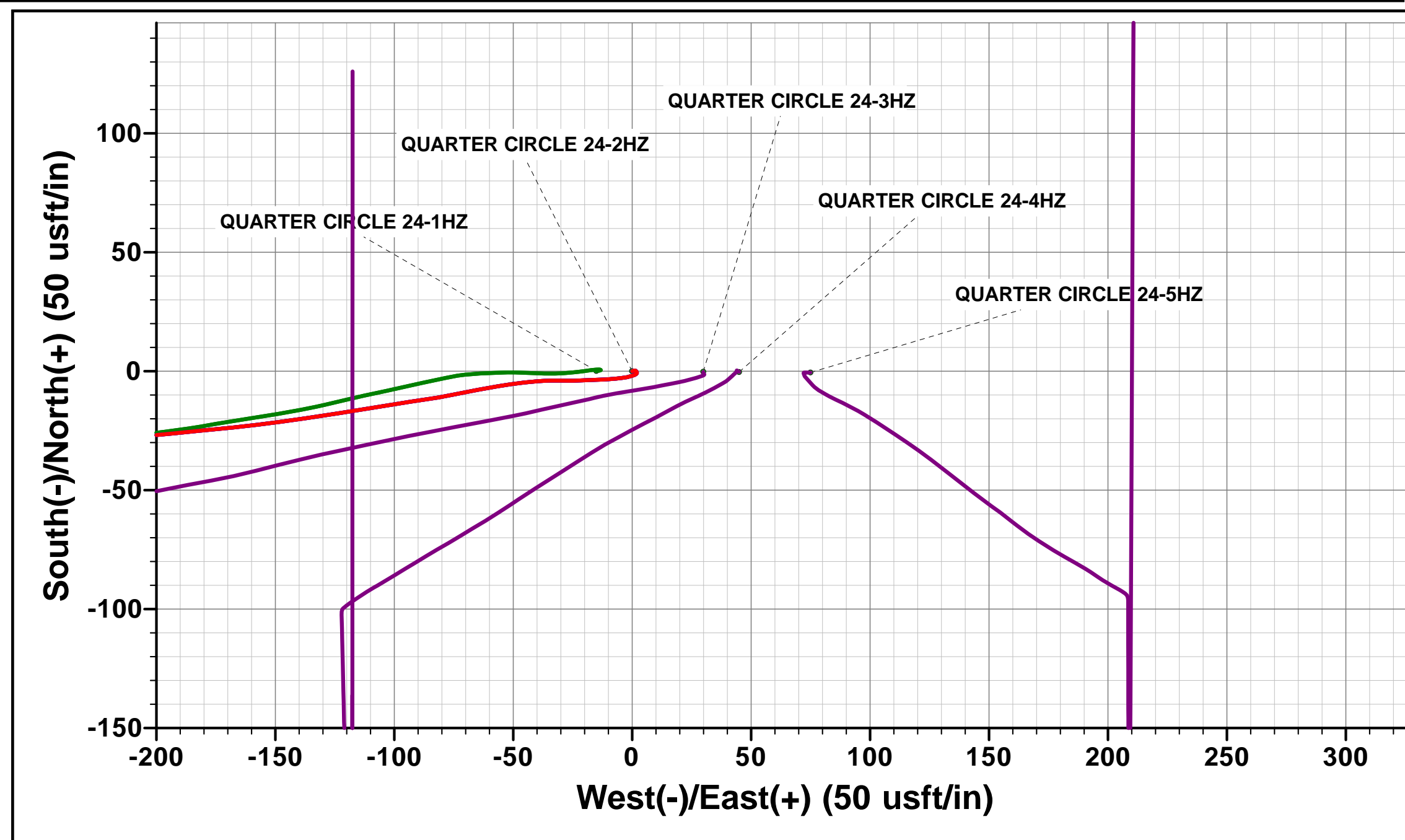
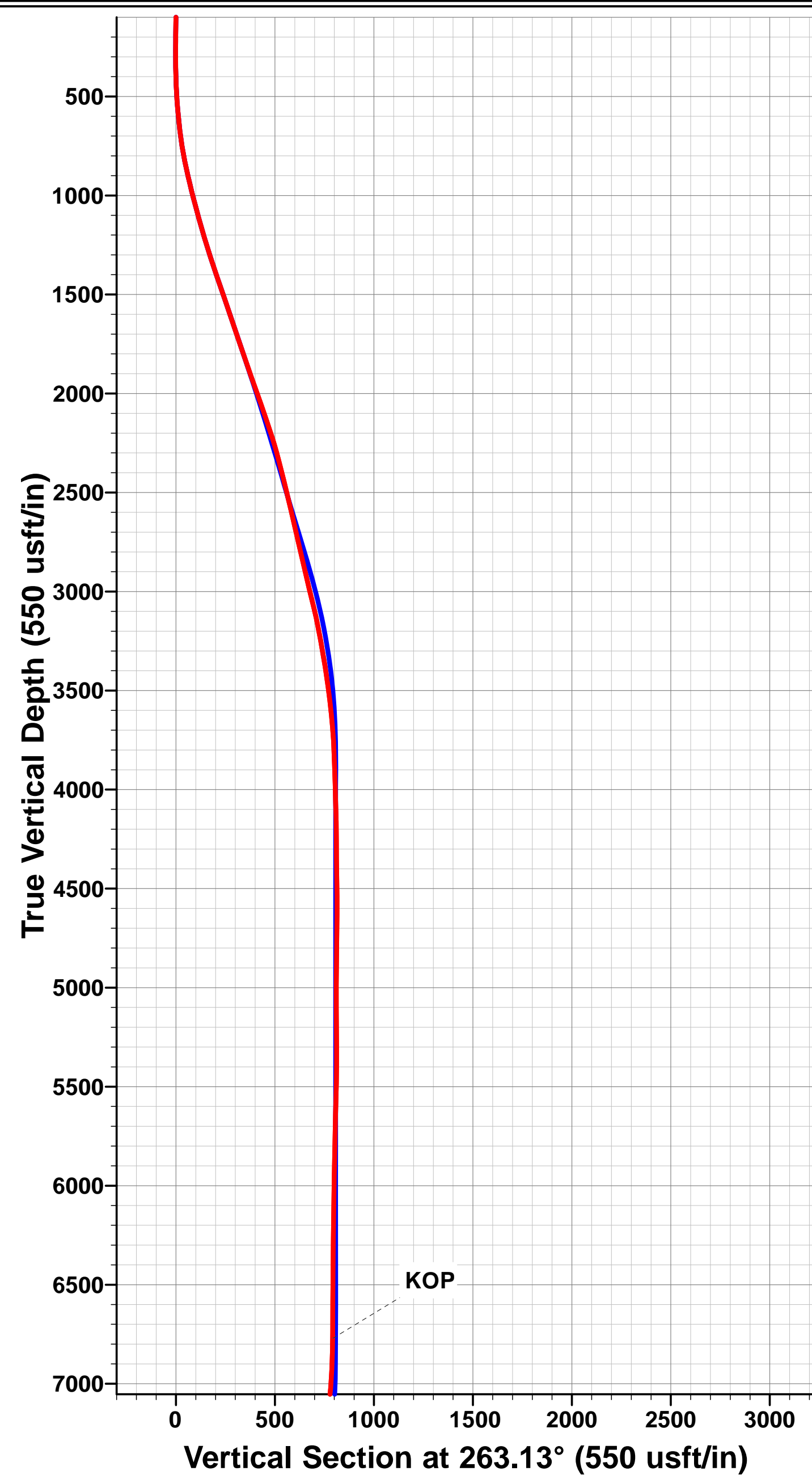
ANNOTATIONS

TVD	MD	Inc	Azi	+N-S	+E-W	VSec	Departure	Annotation
6771.1	6890.0	2.54	10.47	-289.7	-762.5	-286.5	920.2	KOP
7581.2	7841.1	70.64	358.19	109.7	-731.1	112.7	1323.6	~ ENTER LANDING BOX (7841' MD)
7619.1	8077.0	87.60	357.60	341.6	-739.8	344.7	1554.8	HEEL (40.031264, -104.846889)
7615.7	8444.1	91.37	356.84	708.2	-758.8	711.4	1921.8	~ ENTER RADIUS HEEL (8444' MD)
7611.5	8941.7	92.08	358.98	1205.5	-772.5	1208.7	2419.3	~ EXIT RADIUS HEEL (8942' MD)
7604.3	9457.0	90.90	358.90	1720.6	-778.3	1723.8	2934.5	SIDETRACK PT
7538.4	17653.9	92.42	359.69	9910.0	-836.6	9913.5	11129.2	~ ENTER RADIUS TOE (17654' MD)
7529.1	17824.0	94.90	357.90	10079.9	-839.3	10083.3	11299.0	LAST SURVEY MAY 2, 2018
7523.5	17883.0	96.00	357.00	10138.5	-841.9	10142.0	11357.8	PROJECTION TO TD - SIDETRACK (40.058157, -104.847255)

ACTUAL LOCAL COORDINATES:
 SHL: 344ft FSL & 1156ft FWL Sec 24
 HEEL: 690ft FSL & 419ft FWL Sec 24
 BHL: 52ft FNL & 358ft FWL Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N-S	+E-W	Latitude	Longitude
QUARTER CIRCLE 24-2HZ BHL (P2)	7526.0	10141.7	-820.5	40° 3' 29.398 N	104° 50' 49.841 W
QUARTER CIRCLE 24-2HZ HEEL (P2)	7637.0	551.7	-780.5	40° 1' 54.627 N	104° 50' 49.323 W



Survey Report



Company: ANADARKO PETROLEUM CORP	Local Co-ordinate Reference: Well QUARTER CIRCLE 24-2HZ
Project: WELD COUNTY (NAD 83)	TVD Reference: KB 20 @ 4961.0usft (PD461)
Site: SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference: KB 20 @ 4961.0usft (PD461)
Well: QUARTER CIRCLE 24-2HZ	North Reference: True
Wellbore: JOB # 2018-202-461 SIDETRACK	Survey Calculation Method: Minimum Curvature
Design: FINAL SURVEYS SIDETRACK	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 SW SW SEC. 13 T1N R67W 6th P.M.		
Site Position:	Northing: 14,537,814.76 usft	Latitude: 40° 1' 49.176 N
From: Lat/Long	Easting: 1,684,001.16 usft	Longitude: 104° 50' 39.482 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.10 °

Well QUARTER CIRCLE 24-2HZ			
Well Position	+N/-S 0.0 usft	Northing: 14,537,814.68 usft	Latitude: 40° 1' 49.175 N
	+E/-W 0.0 usft	Easting: 1,684,016.16 usft	Longitude: 104° 50' 39.289 W
Position Uncertainty	0.0 usft	Wellhead Elevation: usft	Ground Level: 4,941.0 usft

Wellbore JOB # 2018-202-461 SIDETRACK					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	27/04/2018	8.13	66.52	52,092

Design FINAL SURVEYS SIDETRACK					
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	359.76	

Survey Program		Date 02/05/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
126.0	17,883.0	FINAL SURVEYS SIDETRACK (JOB # 20	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination

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
126.0	0.66	72.84	126.0	4,835.0	0.2	0.7	0.2	0.52	0.52	0.00
158.0	0.57	75.21	158.0	4,803.0	0.3	1.0	0.3	0.29	-0.28	7.41
190.0	0.79	109.40	190.0	4,771.0	0.3	1.4	0.3	1.41	0.69	106.84
222.0	0.92	153.52	222.0	4,739.0	0.0	1.7	0.0	2.04	0.41	137.87
253.0	0.53	133.92	253.0	4,708.0	-0.3	1.9	-0.4	1.47	-1.26	-63.23
285.0	0.66	182.70	285.0	4,676.0	-0.6	2.0	-0.6	1.58	0.41	152.44
316.0	0.66	220.32	316.0	4,645.0	-1.0	1.9	-1.0	1.37	0.00	121.35
348.0	0.79	224.10	348.0	4,613.0	-1.2	1.6	-1.3	0.43	0.41	11.81
379.0	1.05	253.01	379.0	4,582.0	-1.5	1.2	-1.5	1.69	0.84	93.26
411.0	1.63	250.02	411.0	4,550.0	-1.7	0.5	-1.7	1.83	1.81	-9.34
442.0	2.55	252.66	441.9	4,519.1	-2.1	-0.6	-2.1	2.98	2.97	8.52
474.0	2.90	257.06	473.9	4,487.1	-2.5	-2.0	-2.5	1.27	1.09	13.75

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Project:	WELD COUNTY (NAD 83)	TDV Reference:	KB 20 @ 4961.0usft (PD461)
Site:	SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20 @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-2HZ	North Reference:	True
Wellbore:	JOB # 2018-202-461 SIDETRACK	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS SIDETRACK	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)	
505.0	4.17	262.94	504.9	4,456.1	-2.8	-3.9	-2.8	4.26	4.10	18.97	
537.0	4.00	263.12	536.8	4,424.2	-3.1	-6.2	-3.0	0.53	-0.53	0.56	
569.0	4.97	266.90	568.7	4,392.3	-3.3	-8.7	-3.2	3.17	3.03	11.81	
601.0	5.89	268.22	600.5	4,360.5	-3.4	-11.7	-3.4	2.90	2.87	4.12	
633.0	6.24	265.76	632.3	4,328.7	-3.6	-15.1	-3.5	1.36	1.09	-7.69	
664.0	6.90	268.31	663.1	4,297.9	-3.8	-18.6	-3.7	2.33	2.13	8.23	
696.0	7.12	267.16	694.9	4,266.1	-3.9	-22.5	-3.8	0.82	0.69	-3.59	
728.0	8.09	270.59	726.6	4,234.4	-4.0	-26.8	-3.9	3.35	3.03	10.72	
760.0	9.27	270.77	758.3	4,202.7	-3.9	-31.6	-3.8	3.69	3.69	0.56	
791.0	10.46	267.25	788.8	4,172.2	-4.0	-36.9	-3.9	4.30	3.84	-11.35	
823.0	11.34	264.61	820.2	4,140.8	-4.5	-42.9	-4.3	3.16	2.75	-8.25	
855.0	12.35	261.45	851.5	4,109.5	-5.3	-49.4	-5.1	3.75	3.16	-9.87	
887.0	12.70	260.75	882.8	4,078.2	-6.3	-56.3	-6.1	1.19	1.09	-2.19	
918.0	13.14	260.31	913.0	4,048.0	-7.5	-63.1	-7.2	1.45	1.42	-1.42	
950.0	13.36	257.67	944.1	4,016.9	-8.9	-70.3	-8.6	2.01	0.69	-8.25	
982.0	13.49	259.17	975.3	3,985.7	-10.4	-77.6	-10.1	1.16	0.41	4.69	
1,014.0	14.46	261.89	1,006.3	3,954.7	-11.6	-85.2	-11.3	3.66	3.03	8.50	
1,045.0	14.99	261.80	1,036.3	3,924.7	-12.8	-93.0	-12.4	1.71	1.71	-0.29	
1,077.0	15.03	260.92	1,067.2	3,893.8	-14.0	-101.2	-13.6	0.72	0.12	-2.75	
1,109.0	15.25	260.04	1,098.1	3,862.9	-15.4	-109.5	-14.9	0.99	0.69	-2.75	
1,140.0	15.82	260.92	1,128.0	3,833.0	-16.8	-117.7	-16.3	1.99	1.84	2.84	
1,172.0	16.17	260.84	1,158.7	3,802.3	-18.2	-126.4	-17.6	1.10	1.09	-0.25	
1,204.0	16.57	262.07	1,189.4	3,771.6	-19.5	-135.3	-18.9	1.65	1.25	3.84	
1,236.0	16.66	262.07	1,220.1	3,740.9	-20.8	-144.3	-20.2	0.28	0.28	0.00	
1,268.0	16.79	263.30	1,250.7	3,710.3	-21.9	-153.5	-21.3	1.18	0.41	3.84	
1,299.0	17.71	262.86	1,280.3	3,680.7	-23.0	-162.6	-22.4	3.00	2.97	-1.42	
1,331.0	18.15	264.70	1,310.8	3,650.2	-24.1	-172.4	-23.4	2.24	1.37	5.75	
1,363.0	18.15	264.35	1,341.2	3,619.8	-25.1	-182.3	-24.3	0.34	0.00	-1.09	
1,394.0	18.68	264.00	1,370.6	3,590.4	-26.1	-192.1	-25.2	1.75	1.71	-1.13	
1,426.0	18.63	265.58	1,400.9	3,560.1	-27.0	-202.3	-26.1	1.59	-0.16	4.94	
1,458.0	18.98	267.25	1,431.2	3,529.8	-27.6	-212.6	-26.7	2.01	1.09	5.22	
1,490.0	19.12	265.05	1,461.5	3,499.5	-28.3	-223.0	-27.4	2.29	0.44	-6.87	
1,521.0	18.98	264.88	1,490.8	3,470.2	-29.2	-233.0	-28.2	0.49	-0.45	-0.55	
1,553.0	18.94	264.53	1,521.0	3,440.0	-30.2	-243.4	-29.2	0.38	-0.12	-1.09	
1,584.0	19.20	266.02	1,550.3	3,410.7	-31.0	-253.5	-29.9	1.78	0.84	4.81	
1,616.0	19.07	265.85	1,580.6	3,380.4	-31.8	-264.0	-30.6	0.44	-0.41	-0.53	
1,648.0	18.24	263.74	1,610.9	3,350.1	-32.7	-274.1	-31.5	3.34	-2.59	-6.59	
1,680.0	18.02	263.82	1,641.3	3,319.7	-33.8	-284.0	-32.6	0.69	-0.69	0.25	
1,711.0	18.68	263.12	1,670.7	3,290.3	-34.9	-293.7	-33.6	2.24	2.13	-2.26	
1,743.0	19.12	265.32	1,701.0	3,260.0	-35.9	-304.1	-34.6	2.62	1.37	6.87	
1,775.0	19.51	265.32	1,731.2	3,229.8	-36.8	-314.6	-35.5	1.22	1.22	0.00	
1,807.0	18.90	264.18	1,761.4	3,199.6	-37.7	-325.1	-36.4	2.24	-1.91	-3.56	
1,838.0	18.19	263.12	1,790.8	3,170.2	-38.8	-334.9	-37.4	2.54	-2.29	-3.42	
1,852.0	18.59	263.65	1,804.1	3,156.9	-39.3	-339.3	-37.9	3.10	2.86	3.79	
1,893.0	18.86	262.48	1,842.9	3,118.1	-40.9	-352.3	-39.4	1.13	0.66	-2.85	
1,928.0	19.10	261.50	1,876.0	3,085.0	-42.5	-363.6	-41.0	1.14	0.69	-2.80	
2,022.0	20.10	257.40	1,964.6	2,996.4	-48.3	-394.6	-46.7	1.81	1.06	-4.36	
2,114.0	19.70	249.70	2,051.1	2,909.9	-57.1	-424.6	-55.4	2.88	-0.43	-8.37	
2,208.0	20.00	243.60	2,139.5	2,821.5	-69.8	-453.8	-67.9	2.23	0.32	-6.49	
2,301.0	19.30	235.80	2,227.1	2,733.9	-85.5	-480.8	-83.5	2.92	-0.75	-8.39	
2,396.0	17.10	234.20	2,317.4	2,643.6	-102.5	-505.1	-100.4	2.37	-2.32	-1.68	
2,489.0	16.20	233.10	2,406.5	2,554.5	-118.3	-526.6	-116.1	1.03	-0.97	-1.18	
2,584.0	14.90	230.40	2,498.0	2,463.0	-134.0	-546.6	-131.7	1.57	-1.37	-2.84	

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Project:	WELD COUNTY (NAD 83)	TD Reference:	KB 20 @ 4961.0usft (PD461)
Site:	SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20 @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-2HZ	North Reference:	True
Wellbore:	JOB # 2018-202-461 SIDETRACK	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS SIDETRACK	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)
2,676.0	15.80	234.90	2,586.7	2,374.3	-148.8	-565.9	-146.4	1.62	0.98	4.89
2,769.0	14.60	233.70	2,676.4	2,284.6	-163.0	-585.7	-160.5	1.33	-1.29	-1.29
2,864.0	14.80	235.10	2,768.3	2,192.7	-177.0	-605.3	-174.5	0.43	0.21	1.47
2,959.0	14.60	236.80	2,860.2	2,100.8	-190.5	-625.3	-187.9	0.50	-0.21	1.79
3,054.0	15.20	236.60	2,952.0	2,009.0	-203.9	-645.7	-201.2	0.63	0.63	-0.21
3,148.0	15.60	233.30	3,042.7	1,918.3	-218.3	-666.2	-215.5	1.02	0.43	-3.51
3,242.0	14.20	231.20	3,133.5	1,827.5	-233.0	-685.3	-230.2	1.60	-1.49	-2.23
3,337.0	12.80	229.40	3,225.9	1,735.1	-247.2	-702.3	-244.2	1.54	-1.47	-1.89
3,431.0	11.60	227.30	3,317.7	1,643.3	-260.4	-717.2	-257.4	1.36	-1.28	-2.23
3,525.0	10.20	230.90	3,410.1	1,550.9	-272.0	-730.6	-269.0	1.66	-1.49	3.83
3,619.0	9.00	229.40	3,502.7	1,458.3	-282.1	-742.6	-279.0	1.30	-1.28	-1.60
3,714.0	7.80	227.10	3,596.7	1,364.3	-291.3	-753.0	-288.1	1.31	-1.26	-2.42
3,809.0	5.30	234.20	3,691.1	1,269.9	-298.3	-761.3	-295.1	2.76	-2.63	7.47
3,903.0	2.60	243.50	3,784.9	1,176.1	-301.7	-766.7	-298.5	2.94	-2.87	9.89
3,998.0	2.20	240.10	3,879.8	1,081.2	-303.6	-770.2	-300.4	0.45	-0.42	-3.58
4,092.0	2.10	225.30	3,973.7	987.3	-305.7	-773.0	-302.5	0.60	-0.11	-15.74
4,185.0	1.90	221.30	4,066.7	894.3	-308.1	-775.2	-304.8	0.26	-0.22	-4.30
4,280.0	1.50	235.20	4,161.6	799.4	-310.0	-777.3	-306.7	0.60	-0.42	14.63
4,374.0	0.40	314.70	4,255.6	705.4	-310.4	-778.6	-307.2	1.57	-1.17	84.57
4,467.0	0.60	287.20	4,348.6	612.4	-310.1	-779.2	-306.8	0.33	0.22	-29.57
4,656.0	1.00	274.60	4,537.6	423.4	-309.6	-781.8	-306.4	0.23	0.21	-6.67
4,750.0	0.70	45.30	4,631.6	329.4	-309.2	-782.2	-305.9	1.65	-0.32	139.04
4,844.0	0.80	60.80	4,725.6	235.4	-308.5	-781.3	-305.2	0.24	0.11	16.49
4,939.0	0.90	51.80	4,820.6	140.4	-307.7	-780.1	-304.4	0.18	0.11	-9.47
5,034.0	0.80	43.50	4,915.5	45.5	-306.7	-779.1	-303.5	0.17	-0.11	-8.74
5,129.0	0.70	10.20	5,010.5	-49.5	-305.7	-778.5	-302.4	0.46	-0.11	-35.05
5,223.0	0.30	316.60	5,104.5	-143.5	-304.9	-778.6	-301.7	0.61	-0.43	-57.02
5,411.0	1.00	238.30	5,292.5	-331.5	-305.4	-780.3	-302.2	0.52	0.37	-41.65
5,506.0	1.00	134.50	5,387.5	-426.5	-306.5	-780.4	-303.2	1.66	0.00	-109.26
5,600.0	1.60	150.20	5,481.5	-520.5	-308.2	-779.2	-304.9	0.74	0.64	16.70
5,736.0	1.90	89.90	5,617.4	-656.4	-309.8	-776.0	-306.6	1.31	0.22	-44.34
5,831.0	1.60	74.80	5,712.4	-751.4	-309.5	-773.1	-306.2	0.58	-0.32	-15.89
5,926.0	1.20	60.60	5,807.4	-846.4	-308.6	-771.0	-305.4	0.55	-0.42	-14.95
6,019.0	1.50	40.90	5,900.3	-939.3	-307.2	-769.3	-304.0	0.59	0.32	-21.18
6,112.0	1.60	41.50	5,993.3	-1,032.3	-305.3	-767.7	-302.1	0.11	0.11	0.65
6,205.0	1.40	41.50	6,086.3	-1,125.3	-303.5	-766.1	-300.3	0.22	-0.22	0.00
6,299.0	1.00	25.20	6,180.2	-1,219.2	-301.9	-764.9	-298.7	0.56	-0.43	-17.34
6,392.0	1.00	18.30	6,273.2	-1,312.2	-300.4	-764.3	-297.2	0.13	0.00	-7.42
6,487.0	1.10	4.40	6,368.2	-1,407.2	-298.7	-764.0	-295.5	0.29	0.11	-14.63
6,579.0	1.30	4.40	6,460.2	-1,499.2	-296.8	-763.9	-293.6	0.22	0.22	0.00
6,673.0	1.30	9.80	6,554.2	-1,593.2	-294.7	-763.6	-291.5	0.13	0.00	5.74
6,767.0	1.30	14.60	6,648.2	-1,687.2	-292.6	-763.2	-289.4	0.12	0.00	5.11
6,860.0	1.20	14.20	6,741.1	-1,780.1	-290.6	-762.7	-287.4	0.11	-0.11	-0.43
6,954.0	5.40	8.70	6,835.0	-1,874.0	-285.3	-761.7	-282.1	4.48	4.47	-5.85
7,048.0	9.10	8.40	6,928.2	-1,967.2	-273.6	-760.0	-270.4	3.94	3.94	-0.32
7,141.0	13.10	14.50	7,019.4	-2,058.4	-256.1	-756.3	-252.9	4.48	4.30	6.56
7,234.0	16.00	15.10	7,109.4	-2,148.4	-233.5	-750.3	-230.3	3.12	3.12	0.65
7,328.0	21.30	14.80	7,198.5	-2,237.5	-204.5	-742.6	-201.3	5.64	5.64	-0.32
7,421.0	23.30	12.00	7,284.5	-2,323.5	-170.1	-734.4	-167.1	2.43	2.15	-3.01
7,516.0	30.10	1.80	7,369.4	-2,408.4	-127.9	-729.7	-124.8	8.61	7.16	-10.74
7,610.0	39.50	1.00	7,446.5	-2,485.5	-74.3	-728.5	-71.2	10.01	10.00	-0.85
7,702.0	49.00	359.30	7,512.3	-2,551.3	-10.2	-728.4	-7.1	10.41	10.33	-1.85
7,794.0	63.90	358.60	7,563.0	-2,602.0	66.3	-729.8	69.3	16.21	16.20	-0.76

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Project:	WELD COUNTY (NAD 83)	TDV Reference:	KB 20 @ 4961.0usft (PD461)
Site:	SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20 @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-2HZ	North Reference:	True
Wellbore:	JOB # 2018-202-461 SIDETRACK	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS SIDETRACK	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)
7,889.0	77.50	357.80	7,594.3	-2,633.3	155.7	-732.7	158.7	14.34	14.32	-0.84
7,983.0	82.30	357.90	7,610.8	-2,649.8	248.1	-736.1	251.2	5.11	5.11	0.11
8,077.0	87.60	357.60	7,619.1	-2,658.1	341.6	-739.8	344.7	5.65	5.64	-0.32
8,171.0	90.80	357.10	7,620.4	-2,659.4	435.5	-744.2	438.6	3.45	3.40	-0.53
8,265.0	90.90	356.50	7,619.0	-2,658.0	529.4	-749.4	532.5	0.65	0.11	-0.64
8,359.0	91.00	357.30	7,617.4	-2,656.4	623.2	-754.5	626.4	0.86	0.11	0.85
8,452.0	91.40	356.80	7,615.5	-2,654.5	716.1	-759.3	719.2	0.69	0.43	-0.54
8,545.0	89.40	357.20	7,614.8	-2,653.8	808.9	-764.1	812.1	2.19	-2.15	0.43
8,638.0	89.00	359.10	7,616.1	-2,655.1	901.9	-767.1	905.1	2.09	-0.43	2.04
8,731.0	90.50	359.30	7,616.6	-2,655.6	994.9	-768.4	998.1	1.63	1.61	0.22
8,825.0	91.30	358.90	7,615.1	-2,654.1	1,088.8	-769.9	1,092.1	0.95	0.85	-0.43
8,919.0	92.10	358.60	7,612.3	-2,651.3	1,182.8	-772.0	1,186.0	0.91	0.85	-0.32
9,014.0	92.00	0.20	7,608.9	-2,647.9	1,277.7	-773.0	1,280.9	1.69	-0.11	1.68
9,108.0	91.40	359.10	7,606.1	-2,645.1	1,371.7	-773.5	1,374.9	1.33	-0.64	-1.17
9,202.0	90.60	359.40	7,604.5	-2,643.5	1,465.6	-774.8	1,468.9	0.91	-0.85	0.32
9,294.0	89.80	358.60	7,604.1	-2,643.1	1,557.6	-776.4	1,560.9	1.23	-0.87	-0.87
9,388.0	89.60	359.90	7,604.6	-2,643.6	1,651.6	-777.6	1,654.8	1.40	-0.21	1.38
SIDETRACK PT										
9,457.0	90.90	358.90	7,604.3	-2,643.3	1,720.6	-778.3	1,723.8	2.38	1.88	-1.45
9,483.0	88.80	357.10	7,604.4	-2,643.4	1,746.6	-779.2	1,749.8	10.64	-8.08	-6.92
9,577.0	90.90	353.90	7,604.6	-2,643.6	1,840.3	-786.6	1,843.6	4.07	2.23	-3.40
9,672.0	92.90	352.60	7,601.5	-2,640.5	1,934.6	-797.8	1,937.9	2.51	2.11	-1.37
9,767.0	93.10	353.00	7,596.5	-2,635.5	2,028.7	-809.7	2,032.1	0.47	0.21	0.42
9,860.0	93.80	354.10	7,590.9	-2,629.9	2,120.9	-820.1	2,124.3	1.40	0.75	1.18
9,953.0	92.60	357.80	7,585.7	-2,624.7	2,213.5	-826.6	2,217.0	4.18	-1.29	3.98
10,048.0	87.80	3.00	7,585.4	-2,624.4	2,308.5	-826.0	2,311.9	7.45	-5.05	5.47
10,142.0	89.80	3.30	7,587.4	-2,626.4	2,402.3	-820.8	2,405.7	2.15	2.13	0.32
10,235.0	91.90	0.30	7,586.0	-2,625.0	2,495.2	-817.9	2,498.6	3.94	2.26	-3.23
10,329.0	90.90	359.00	7,583.7	-2,622.7	2,589.2	-818.5	2,592.6	1.74	-1.06	-1.38
10,422.0	89.70	357.80	7,583.2	-2,622.2	2,682.1	-821.1	2,685.6	1.82	-1.29	-1.29
10,516.0	90.80	357.10	7,582.8	-2,621.8	2,776.1	-825.2	2,779.5	1.39	1.17	-0.74
10,610.0	91.90	358.20	7,580.6	-2,619.6	2,869.9	-829.1	2,873.4	1.65	1.17	1.17
10,703.0	91.70	0.20	7,577.7	-2,616.7	2,962.9	-830.4	2,966.3	2.16	-0.22	2.15
10,796.0	91.40	1.40	7,575.1	-2,614.1	3,055.8	-829.1	3,059.3	1.33	-0.32	1.29
10,889.0	89.70	359.40	7,573.9	-2,612.9	3,148.8	-828.2	3,152.3	1.97	-1.28	-1.50
10,982.0	92.50	359.40	7,572.1	-2,611.1	3,241.8	-829.1	3,245.2	3.04	3.04	0.00
11,075.0	90.90	359.50	7,569.3	-2,608.3	3,334.7	-830.0	3,338.1	1.72	-1.72	0.11
11,168.0	90.00	1.00	7,568.6	-2,607.6	3,427.6	-829.6	3,431.0	1.90	-0.98	1.63
11,261.0	90.20	0.70	7,568.5	-2,607.5	3,520.5	-828.2	3,523.9	0.39	0.22	-0.32
11,354.0	90.60	0.10	7,567.8	-2,606.8	3,613.4	-827.6	3,616.8	0.78	0.43	-0.65
11,447.0	91.50	358.80	7,566.1	-2,605.1	3,706.3	-828.5	3,709.7	1.66	0.95	-1.37
11,540.0	92.60	358.70	7,562.8	-2,601.8	3,799.2	-830.5	3,802.6	1.20	1.20	-0.11
11,633.0	92.20	358.00	7,558.9	-2,597.9	3,891.7	-833.2	3,895.1	0.87	-0.43	-0.75
11,726.0	93.60	0.10	7,554.2	-2,593.2	3,984.2	-834.7	3,987.6	2.71	1.51	2.26
11,819.0	86.00	356.80	7,554.5	-2,593.5	4,076.7	-837.3	4,080.1	8.81	-8.09	-3.51
11,912.0	88.50	358.10	7,559.0	-2,598.0	4,169.2	-841.4	4,172.6	3.00	2.66	1.38
12,005.0	91.00	358.40	7,559.4	-2,598.4	4,261.7	-844.3	4,265.1	2.68	2.66	0.32
12,098.0	91.10	359.60	7,557.7	-2,596.7	4,354.2	-846.0	4,357.6	1.28	0.11	1.28
12,191.0	89.00	0.30	7,557.6	-2,596.6	4,446.7	-846.0	4,450.1	2.35	-2.23	0.74
12,284.0	88.50	0.30	7,559.7	-2,598.7	4,539.2	-845.5	4,542.6	0.53	-0.53	0.00
12,377.0	89.90	359.60	7,561.0	-2,600.0	4,631.7	-845.6	4,635.1	1.67	1.49	-0.74
12,470.0	89.60	359.30	7,561.4	-2,600.4	4,724.2	-846.5	4,727.6	0.46	-0.32	-0.32
12,563.0	89.00	358.90	7,562.5	-2,601.5	4,816.7	-848.0	4,820.1	0.76	-0.63	-0.42

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Project:	WELD COUNTY (NAD 83)	TD Reference:	KB 20 @ 4961.0usft (PD461)
Site:	SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20 @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-2HZ	North Reference:	True
Wellbore:	JOB # 2018-202-461 SIDETRACK	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS SIDETRACK	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)
12,704.0	88.50	1.20	7,564.6	-2,603.6	4,962.8	-847.9	4,966.4	2.53	-0.54	2.47
12,798.0	89.90	3.10	7,565.9	-2,604.9	5,056.8	-844.4	5,060.3	2.51	1.49	2.02
12,890.0	89.90	2.80	7,566.0	-2,605.0	5,148.6	-839.7	5,152.1	0.33	0.00	-0.33
12,984.0	89.40	3.10	7,566.6	-2,605.6	5,242.5	-834.8	5,246.0	0.62	-0.53	0.32
13,077.0	89.00	3.40	7,567.9	-2,606.9	5,335.4	-829.6	5,338.8	0.54	-0.43	0.32
13,171.0	89.00	2.50	7,569.6	-2,608.6	5,429.2	-824.7	5,432.6	0.96	0.00	-0.96
13,265.0	90.40	1.70	7,570.1	-2,609.1	5,523.1	-821.3	5,526.5	1.72	1.49	-0.85
13,360.0	90.60	1.30	7,569.2	-2,608.2	5,618.1	-818.8	5,621.5	0.47	0.21	-0.42
13,453.0	90.60	2.10	7,568.3	-2,607.3	5,711.1	-816.0	5,714.4	0.86	0.00	0.86
13,548.0	90.80	1.20	7,567.1	-2,606.1	5,806.0	-813.3	5,809.4	0.97	0.21	-0.95
13,641.0	90.10	0.20	7,566.4	-2,605.4	5,899.0	-812.2	5,902.4	1.31	-0.75	-1.08
13,735.0	90.10	0.30	7,566.2	-2,605.2	5,993.0	-811.8	5,996.4	0.11	0.00	0.11
13,829.0	91.50	0.00	7,564.9	-2,603.9	6,087.0	-811.5	6,090.3	1.52	1.49	-0.32
13,923.0	92.40	0.30	7,561.7	-2,600.7	6,180.9	-811.3	6,184.3	1.01	0.96	0.32
14,018.0	92.70	0.70	7,557.5	-2,596.5	6,275.8	-810.4	6,279.2	0.53	0.32	0.42
14,112.0	90.60	1.40	7,554.8	-2,593.8	6,369.8	-808.7	6,373.1	2.35	-2.23	0.74
14,206.0	91.10	1.40	7,553.4	-2,592.4	6,463.7	-806.4	6,467.1	0.53	0.53	0.00
14,300.0	90.60	1.00	7,552.0	-2,591.0	6,557.7	-804.4	6,561.0	0.68	-0.53	-0.43
14,395.0	90.40	0.00	7,551.1	-2,590.1	6,652.7	-803.6	6,656.0	1.07	-0.21	-1.05
14,490.0	89.90	0.30	7,550.9	-2,589.9	6,747.7	-803.4	6,751.0	0.61	-0.53	0.32
14,585.0	91.30	0.30	7,549.9	-2,588.9	6,842.7	-802.9	6,846.0	1.47	1.47	0.00
14,679.0	90.80	358.90	7,548.2	-2,587.2	6,936.7	-803.5	6,940.0	1.58	-0.53	-1.49
14,773.0	90.10	0.80	7,547.4	-2,586.4	7,030.7	-803.8	7,034.0	2.15	-0.74	2.02
14,867.0	88.30	1.40	7,548.7	-2,587.7	7,124.6	-802.0	7,127.9	2.02	-1.91	0.64
14,961.0	89.00	1.40	7,551.0	-2,590.0	7,218.6	-799.7	7,221.9	0.74	0.74	0.00
15,054.0	91.00	1.40	7,551.0	-2,590.0	7,311.5	-797.4	7,314.8	2.15	2.15	0.00
15,149.0	91.10	359.10	7,549.2	-2,588.2	7,406.5	-797.0	7,409.8	2.42	0.11	-2.42
15,242.0	90.40	357.40	7,548.0	-2,587.0	7,499.5	-799.8	7,502.7	1.98	-0.75	-1.83
15,336.0	90.10	357.90	7,547.6	-2,586.6	7,593.4	-803.7	7,596.7	0.62	-0.32	0.53
15,430.0	91.10	359.10	7,546.6	-2,585.6	7,687.3	-806.1	7,690.7	1.66	1.06	1.28
15,525.0	92.90	0.30	7,543.3	-2,582.3	7,782.3	-806.6	7,785.6	2.28	1.89	1.26
15,620.0	91.30	1.00	7,539.8	-2,578.8	7,877.2	-805.6	7,880.5	1.84	-1.68	0.74
15,713.0	88.90	0.30	7,539.6	-2,578.6	7,970.2	-804.5	7,973.5	2.69	-2.58	-0.75
15,807.0	89.00	359.60	7,541.4	-2,580.4	8,064.2	-804.6	8,067.5	0.75	0.11	-0.74
15,901.0	90.90	359.80	7,541.5	-2,580.5	8,158.2	-805.1	8,161.5	2.03	2.02	0.21
15,995.0	90.60	358.50	7,540.2	-2,579.2	8,252.1	-806.5	8,255.5	1.42	-0.32	-1.38
16,087.0	89.70	359.90	7,540.0	-2,579.0	8,344.1	-807.8	8,347.4	1.81	-0.98	1.52
16,180.0	91.50	0.10	7,539.0	-2,578.0	8,437.1	-807.8	8,440.4	1.95	1.94	0.22
16,275.0	90.00	0.60	7,537.8	-2,576.8	8,532.1	-807.2	8,535.4	1.66	-1.58	0.53
16,368.0	89.00	0.10	7,538.6	-2,577.6	8,625.1	-806.6	8,628.4	1.20	-1.08	-0.54
16,463.0	88.60	0.80	7,540.6	-2,579.6	8,720.1	-805.9	8,723.4	0.85	-0.42	0.74
16,558.0	87.90	0.30	7,543.5	-2,582.5	8,815.0	-805.0	8,818.3	0.91	-0.74	-0.53
16,652.0	89.40	0.00	7,545.7	-2,584.7	8,909.0	-804.7	8,912.3	1.63	1.60	-0.32
16,744.0	89.00	357.40	7,547.0	-2,586.0	9,001.0	-806.8	9,004.3	2.86	-0.43	-2.83
16,837.0	90.50	356.50	7,547.4	-2,586.4	9,093.8	-811.7	9,097.1	1.88	1.61	-0.97
16,930.0	90.90	358.70	7,546.2	-2,585.2	9,186.7	-815.6	9,190.1	2.40	0.43	2.37
17,024.0	90.30	359.00	7,545.2	-2,584.2	9,280.7	-817.5	9,284.1	0.71	-0.64	0.32
17,118.0	89.20	358.40	7,545.7	-2,584.7	9,374.7	-819.7	9,378.0	1.33	-1.17	-0.64
17,212.0	89.90	357.50	7,546.4	-2,585.4	9,468.6	-823.0	9,472.0	1.21	0.74	-0.96
17,307.0	89.80	355.90	7,546.6	-2,585.6	9,563.5	-828.5	9,566.8	1.69	-0.11	-1.68
17,400.0	90.90	358.00	7,546.1	-2,585.1	9,656.3	-833.4	9,659.7	2.55	1.18	2.26
17,495.0	91.10	359.30	7,544.4	-2,583.4	9,751.3	-835.7	9,754.7	1.38	0.21	1.37
17,589.0	92.70	359.90	7,541.3	-2,580.3	9,845.2	-836.3	9,848.6	1.82	1.70	0.64

Survey Report



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 20 @ 4961.0usft (PD461)
Site:	SW SW SEC. 13 T1N R67W 6th P.M.	MD Reference:	KB 20 @ 4961.0usft (PD461)
Well:	QUARTER CIRCLE 24-2HZ	North Reference:	True
Wellbore:	JOB # 2018-202-461 SIDETRACK	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS SIDETRACK	Database:	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)
17,683.0	92.30	359.60	7,537.2	-2,576.2	9,939.1	-836.7	9,942.5	0.53	-0.43	-0.32
17,777.0	93.40	358.90	7,532.5	-2,571.5	10,033.0	-838.0	10,036.4	1.39	1.17	-0.74
LAST SURVEY MAY 2, 2018										
17,824.0	94.90	357.90	7,529.1	-2,568.1	10,079.9	-839.3	10,083.3	3.83	3.19	-2.13
PROJECTION TO TD - SIDETRACK										
17,883.0	96.00	357.00	7,523.5	-2,562.5	10,138.5	-841.9	10,142.0	2.40	1.86	-1.53

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 24-2 - survey misses target center by 34.9usft at 8288.7usft MD (7618.6 TVD, 553.0 N, -750.8 E) - Point	0.00	0.00	7,637.0	551.7	-780.5	14,538,364.81	1,683,235.00	40° 1' 54.627 N	104° 50' 49.323 W
QUARTER CIRCLE 24-2 - survey misses target center by 21.8usft at 17883.0usft MD (7523.5 TVD, 10138.5 N, -841.9 E) - Point	0.00	0.00	7,526.0	10,141.7	-820.5	14,547,950.91	1,683,178.27	40° 3' 29.398 N	104° 50' 49.841 W

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,457.0	7,604.3	1,720.6	-778.3	SIDETRACK PT
17,824.0	7,529.1	10,079.9	-839.3	LAST SURVEY MAY 2, 2018
17,883.0	7,523.5	10,138.5	-841.9	PROJECTION TO TD - SIDETRACK

Checked By: _____ Approved By: _____ Date: _____