



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 ORIGINAL HOLE  
Design: FINAL SURVEYS OH

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
1804.1	1852.0	18.59	263.65	-39.3	-339.3	-37.9	346.9	SURFACE CASING
1842.9	1893.0	18.86	262.48	-40.9	-352.3	-39.4	360.0	TIE ON TO SURFACE SURVEYS
6771.1	6890.0	2.54	10.47	-289.7	-762.5	-286.5	920.2	KOP
7619.1	8077.0	87.60	357.60	341.6	-739.8	344.7	1554.8	HEEL
7537.1	12705.0	96.20	358.90	4964.3	-832.3	4967.8	6179.1	LAST SURVEY APR 25, 2018
7525.4	12814.0	96.20	358.90	5072.7	-834.4	5076.1	6287.5	PROJECTION TO TD - OH

#### ACTUAL LOCAL COORDINATES:

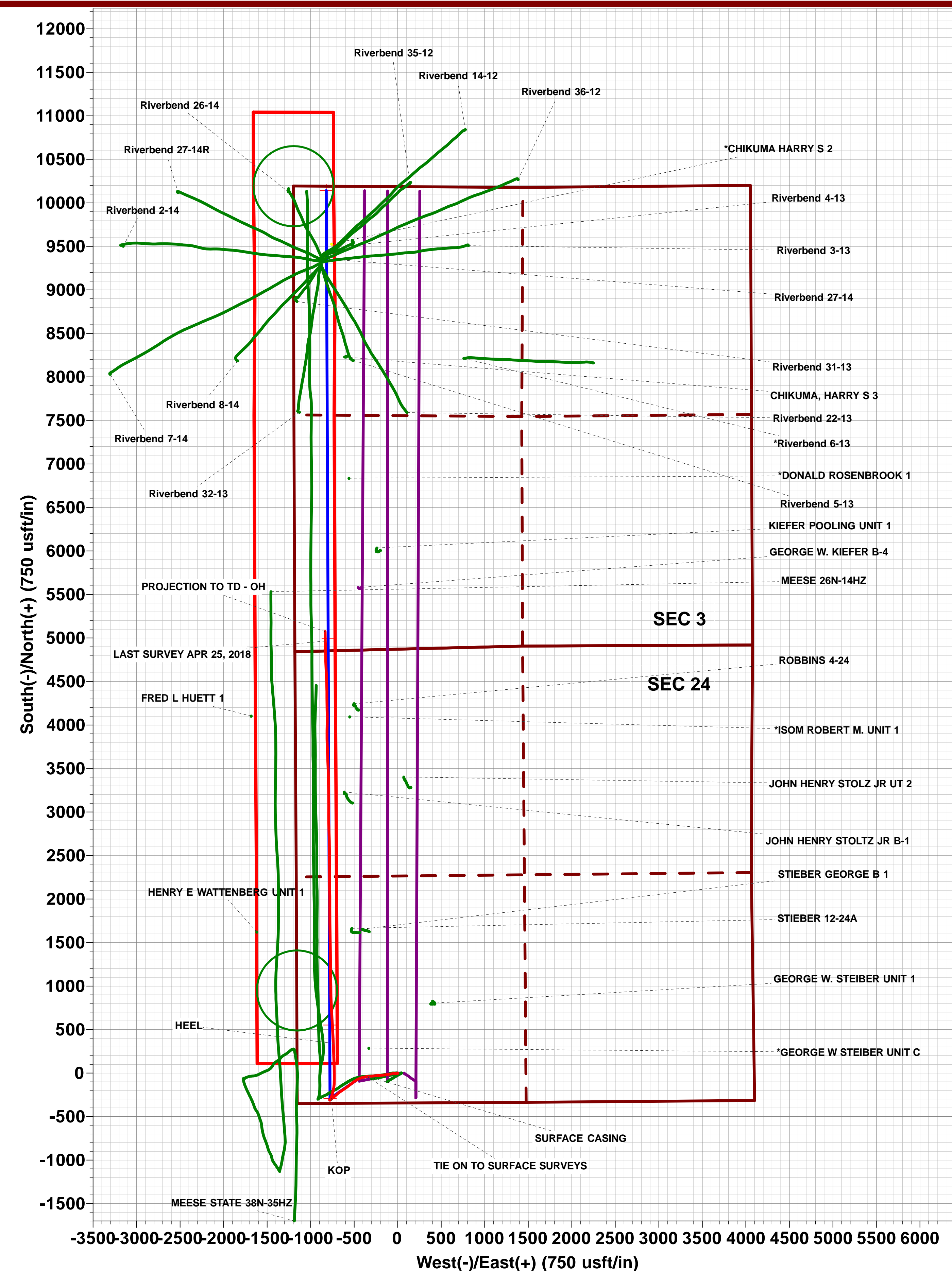
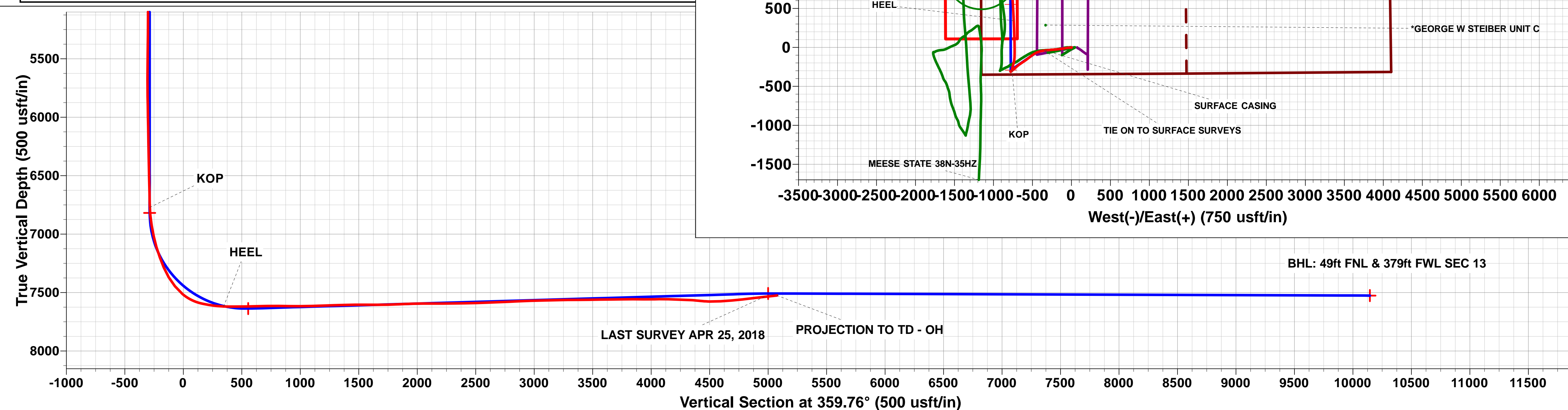
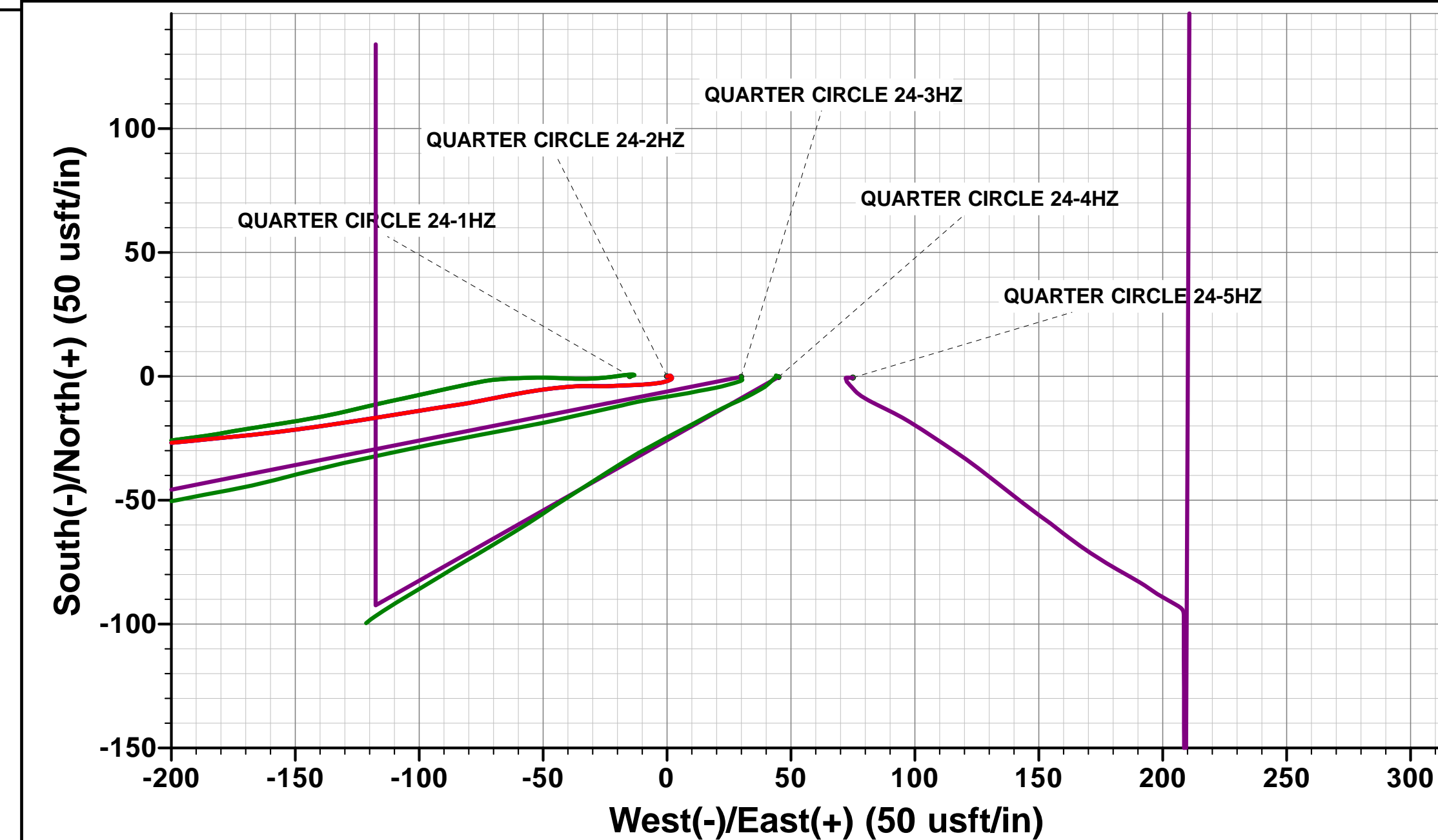
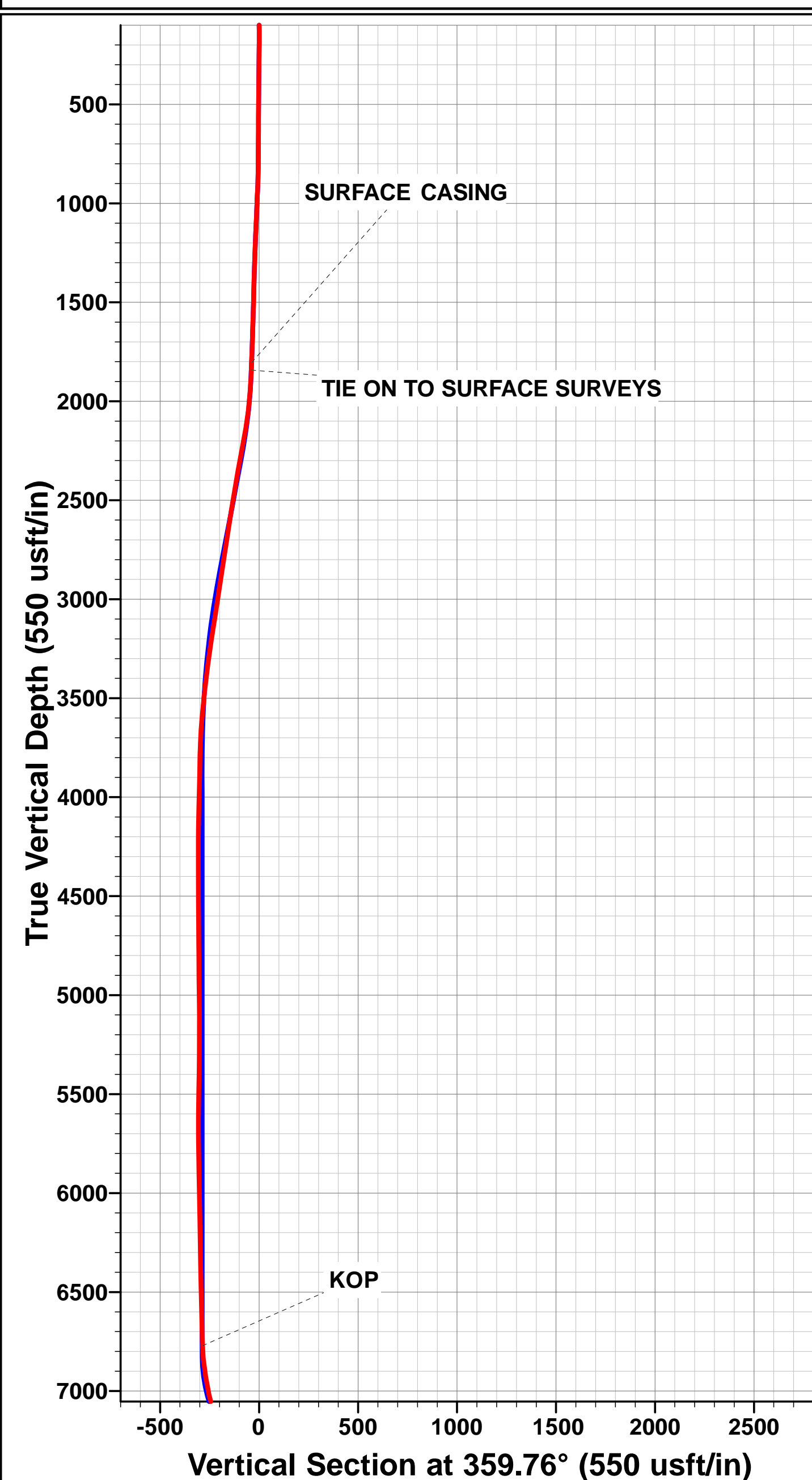
SHL: 344ft FSL & 1156ft FWL Sec 24

HEEL: 690ft FSL & 419ft FWL Sec 24

BHL: 178ft FSL & 320ft 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



BHL: 49ft FNL & 379ft FWL SEC 13

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>MD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<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	

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

<b>Wellbore</b>	JOB # 2018-202-461 ORIGINAL HOLE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	06/04/2018	8.14	66.53	52,099

Design	FINAL SURVEYS OH				
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

<b>Survey Program</b>	<b>Date</b>	27/04/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.0	12,814.0	FINAL SURVEYS - OH (JOB # 2018-202-4	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	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



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>KB Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<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)
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
<b>SURFACE CASING</b>										
<b>1,852.0</b>	<b>18.59</b>	<b>263.65</b>	<b>1,804.1</b>	<b>3,156.9</b>	<b>-39.3</b>	<b>-339.3</b>	<b>-37.9</b>	<b>3.10</b>	<b>2.86</b>	<b>3.79</b>
<b>TIE ON TO SURFACE SURVEYS</b>										
<b>1,893.0</b>	<b>18.86</b>	<b>262.48</b>	<b>1,842.9</b>	<b>3,118.1</b>	<b>-40.9</b>	<b>-352.3</b>	<b>-39.4</b>	<b>1.13</b>	<b>0.66</b>	<b>-2.85</b>
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

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>MD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<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)
2,489.0	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
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
4,566.0	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
<b>KOP</b>										
<b>6,890.0</b>	<b>2.54</b>	<b>10.47</b>	<b>6,771.1</b>	<b>-1,810.1</b>	<b>-289.7</b>	<b>-762.5</b>	<b>-286.5</b>	<b>4.48</b>	<b>4.46</b>	<b>-12.44</b>
<b>QUARTER CIRCLE 24-2HZ KOP (P2)</b>										
<b>6,937.4</b>	<b>4.66</b>	<b>8.95</b>	<b>6,818.4</b>	<b>-1,857.4</b>	<b>-286.7</b>	<b>-762.0</b>	<b>-283.5</b>	<b>4.48</b>	<b>4.47</b>	<b>-3.21</b>
6,954.0	5.40	8.70	6,835.0	-1,874.0	-285.3	-761.7	-282.1	4.48	4.47	-1.51
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



# Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>MD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<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)
<b>QUARTER CIRCLE 24-2HZ KOP</b>										
7,161.8	13.75	14.66	7,039.7	-2,078.7	-251.4	-755.1	-248.2	3.12	3.12	0.75
7,234.0	16.00	15.10	7,109.4	-2,148.4	-233.5	-750.3	-230.3	3.12	3.12	0.62
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
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
<b>HEEL</b>										
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
<b>QUARTER CIRCLE 24-2HZ HEEL (P2) - QUARTER CIRCLE 24-2HZ HEEL</b>										
8,288.7	90.93	356.70	7,618.6	-2,657.6	553.0	-750.8	556.1	0.86	0.11	0.85
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
9,482.0	91.50	359.10	7,603.7	-2,642.7	1,745.6	-778.4	1,748.8	2.19	2.02	-0.85
9,577.0	92.60	359.10	7,600.3	-2,639.3	1,840.5	-779.9	1,843.8	1.16	1.16	0.00
9,672.0	92.30	0.20	7,596.3	-2,635.3	1,935.4	-780.5	1,938.7	1.20	-0.32	1.16
9,766.0	90.30	359.90	7,594.1	-2,633.1	2,029.4	-780.4	2,032.7	2.15	-2.13	-0.32
9,859.0	89.80	358.40	7,594.1	-2,633.1	2,122.4	-781.8	2,125.6	1.70	-0.54	-1.61
9,953.0	90.20	0.60	7,594.1	-2,633.1	2,216.4	-782.6	2,219.6	2.38	0.43	2.34
10,047.0	90.90	0.30	7,593.2	-2,632.2	2,310.4	-781.9	2,313.6	0.81	0.74	-0.32
10,142.0	90.90	358.60	7,591.7	-2,630.7	2,405.4	-782.8	2,408.6	1.79	0.00	-1.79
10,235.0	91.60	359.90	7,589.6	-2,628.6	2,498.3	-784.0	2,501.6	1.59	0.75	1.40
10,328.0	92.40	359.20	7,586.4	-2,625.4	2,591.3	-784.7	2,594.5	1.14	0.86	-0.75
10,421.0	92.10	358.70	7,582.7	-2,621.7	2,684.2	-786.4	2,687.4	0.63	-0.32	-0.54
10,515.0	92.90	357.80	7,578.6	-2,617.6	2,778.0	-789.3	2,781.3	1.28	0.85	-0.96
10,609.0	92.50	359.00	7,574.2	-2,613.2	2,871.9	-791.9	2,875.2	1.34	-0.43	1.28
10,703.0	92.00	359.70	7,570.5	-2,609.5	2,965.8	-793.0	2,969.1	0.91	-0.53	0.74
10,835.0	91.00	0.60	7,567.1	-2,606.1	3,097.8	-792.6	3,101.1	1.02	-0.76	0.68
10,928.0	91.50	359.50	7,565.0	-2,604.0	3,190.7	-792.6	3,194.0	1.30	0.54	-1.18
11,020.0	90.60	359.50	7,563.3	-2,602.3	3,282.7	-793.4	3,286.0	0.98	-0.98	0.00
11,113.0	90.30	358.70	7,562.6	-2,601.6	3,375.7	-794.8	3,379.0	0.92	-0.32	-0.86
11,206.0	90.90	358.00	7,561.6	-2,600.6	3,468.7	-797.5	3,472.0	0.99	0.65	-0.75
11,298.0	91.10	356.70	7,560.0	-2,599.0	3,560.5	-801.8	3,563.9	1.43	0.22	-1.41
11,392.0	90.00	357.70	7,559.1	-2,598.1	3,654.4	-806.4	3,657.8	1.58	-1.17	1.06
11,486.0	91.20	358.30	7,558.1	-2,597.1	3,748.4	-809.6	3,751.7	1.43	1.28	0.64
11,578.0	89.80	359.00	7,557.3	-2,596.3	3,840.3	-811.8	3,843.7	1.70	-1.52	0.76
11,672.0	89.30	1.00	7,558.1	-2,597.1	3,934.3	-811.8	3,937.7	2.19	-0.53	2.13

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>MD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<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)
11,765.0	91.20	0.70	7,557.7	-2,596.7	4,027.3	-810.4	4,030.7	2.07	2.04	-0.32
11,859.0	89.50	359.60	7,557.1	-2,596.1	4,121.3	-810.2	4,124.7	2.15	-1.81	-1.17
11,953.0	87.20	358.30	7,559.8	-2,598.8	4,215.2	-811.9	4,218.6	2.81	-2.45	-1.38
12,047.0	88.30	0.50	7,563.5	-2,602.5	4,309.2	-812.9	4,312.5	2.62	1.17	2.34
12,141.0	83.40	358.60	7,570.3	-2,609.3	4,402.9	-813.6	4,406.2	5.59	-5.21	-2.02
12,236.0	89.10	358.20	7,576.5	-2,615.5	4,497.6	-816.3	4,501.0	6.01	6.00	-0.42
12,329.0	93.10	356.80	7,574.7	-2,613.7	4,590.5	-820.3	4,593.9	4.56	4.30	-1.51
12,423.0	95.10	358.40	7,568.0	-2,607.0	4,684.1	-824.2	4,687.5	2.72	2.13	1.70
12,517.0	96.40	358.60	7,558.6	-2,597.6	4,777.6	-826.7	4,781.0	1.40	1.38	0.21
12,611.0	96.80	357.80	7,547.8	-2,586.8	4,871.0	-829.6	4,874.4	0.95	0.43	-0.85
LAST SURVEY APR 25, 2018 - QUARTER CIRCLE 24-2HZ INT PT (P2)										
12,705.0	96.20	358.90	7,537.1	-2,576.1	4,964.3	-832.3	4,967.8	1.33	-0.64	1.17
PROJECTION TO TD - OH - QUARTER CIRCLE 24-2HZ BHL - QUARTER CIRCLE 24-2HZ BHL (P2)										
12,814.0	96.20	358.90	7,525.4	-2,564.4	5,072.7	-834.4	5,076.1	0.00	0.00	0.00

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-2HZ
<b>Project:</b>	WELD COUNTY (NAD 83)	<b>TVD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Site:</b>	SW SW SEC. 13 T1N R67W 6th P.M.	<b>MD Reference:</b>	KB 20 @ 4961.0usft (PD461)
<b>Well:</b>	QUARTER CIRCLE 24-2HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-202-461 ORIGINAL HOLE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS OH	<b>Database:</b>	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 24-1 - survey misses target center by 5069.1usft at 12814.0usft MD (7525.4 TVD, 5072.7 N, -834.4 E) - Point	0.00	0.00	7,506.0	10,141.7	-820.5	14,547,950.91	1,683,178.27	40° 3' 29.398 N	104° 50' 49.841 W
QUARTER CIRCLE 24-1 - survey misses target center by 163.8usft at 7158.9usft MD (7036.9 TVD, -252.1 N, -755.2 E) - Point	0.00	0.00	7,001.6	-93.7	-777.8	14,537,719.68	1,683,238.83	40° 1' 48.249 N	104° 50' 49.288 W
QUARTER CIRCLE 24-1 - survey misses target center by 15.6usft at 6937.4usft MD (6818.4 TVD, -286.7 N, -762.0 E) - Point	0.00	0.00	6,818.8	-290.8	-777.0	14,537,522.65	1,683,240.00	40° 1' 46.301 N	104° 50' 49.277 W
QUARTER CIRCLE 24-1 - 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 24-1 - survey misses target center by 54.8usft at 12705.0usft MD (7537.1 TVD, 4964.3 N, -832.3 E) - Point	0.00	0.00	7,508.0	4,996.7	-799.1	14,542,807.99	1,683,208.64	40° 2' 38.554 N	104° 50' 49.564 W
QUARTER CIRCLE 24-1 - survey misses target center by 35.6usft at 8288.7usft MD (7618.6 TVD, 553.0 N, -750.8 E) - Point	0.00	0.00	7,638.2	551.7	-780.5	14,538,364.81	1,683,235.00	40° 1' 54.627 N	104° 50' 49.323 W
QUARTER CIRCLE 24-1 - survey misses target center by 5069.1usft at 12814.0usft MD (7525.4 TVD, 5072.7 N, -834.4 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

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,852.0	1,804.1	-39.3	-339.3	SURFACE CASING
1,893.0	1,842.9	-40.9	-352.3	TIE ON TO SURFACE SURVEYS
6,890.0	6,771.1	-289.7	-762.5	KOP
8,077.0	7,619.1	341.6	-739.8	HEEL
12,705.0	7,537.1	4,964.3	-832.3	LAST SURVEY APR 25, 2018
12,814.0	7,525.4	5,072.7	-834.4	PROJECTION TO TD - OH

Checked By: _____	Approved By: _____	Date: _____
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