



Project: WELD COUNTY (NAD 83)  
Site: SW SW SEC. 13 T1N R67W 6th P.M.  
Well: QUARTER CIRCLE 24-4HZ  
Wellbore: JOB # 2018-204-461  
Design: FINAL SURVEYS

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
1852.0	1868.0	1.05	232.53	-99.3	-166.4	-99.3	0.0	TIE ON TO SURFACE SURVEYS
6560.3	6580.0	1.37	339.21	-262.9	-170.6	-262.9	177.1	KOP
7331.1	7482.7	62.49	1.83	121.7	-157.2	121.7	563.3	~ ENTER LANDING BOX (7482.7' MD)
7466.7	7967.4	84.45	358.13	584.5	-155.0	584.5	1025.5	~ ENTER RADIUS HEEL (7967.4' MD)
7472.4	8083.0	89.60	359.00	699.9	-158.2	699.9	1140.8	HEEL (40.032247, -104.844651)
7454.4	8701.1	90.56	1.28	1317.5	-153.4	1317.5	1758.5	~ EXIT RADIUS HEEL (8701.1' MD)
7397.8	17188.6	91.02	357.22	9801.2	-168.6	9801.2	10244.7	~ ENTER RADIUS TOE (17188.6' MD)
7387.3	17463.0	93.00	357.20	10075.1	-181.5	10075.1	10518.9	LAST SURVEY MAY 16, 2018
7384.3	17520.0	93.00	357.20	10131.9	-184.2	10131.9	10575.8	PROJECTION TO TD (40.058139, -104.844745)

AS DRILLED LOCAL COORDINATES:

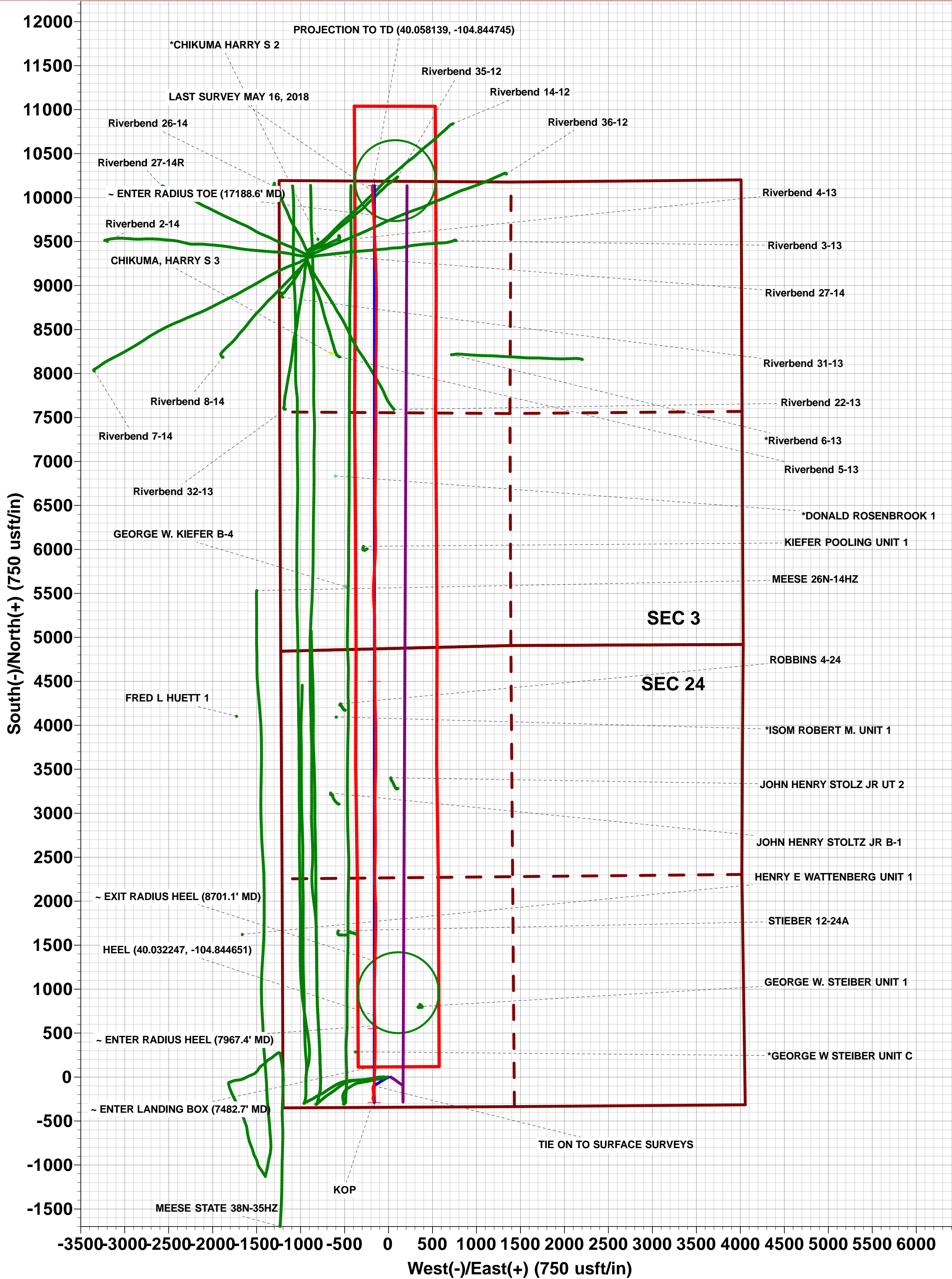
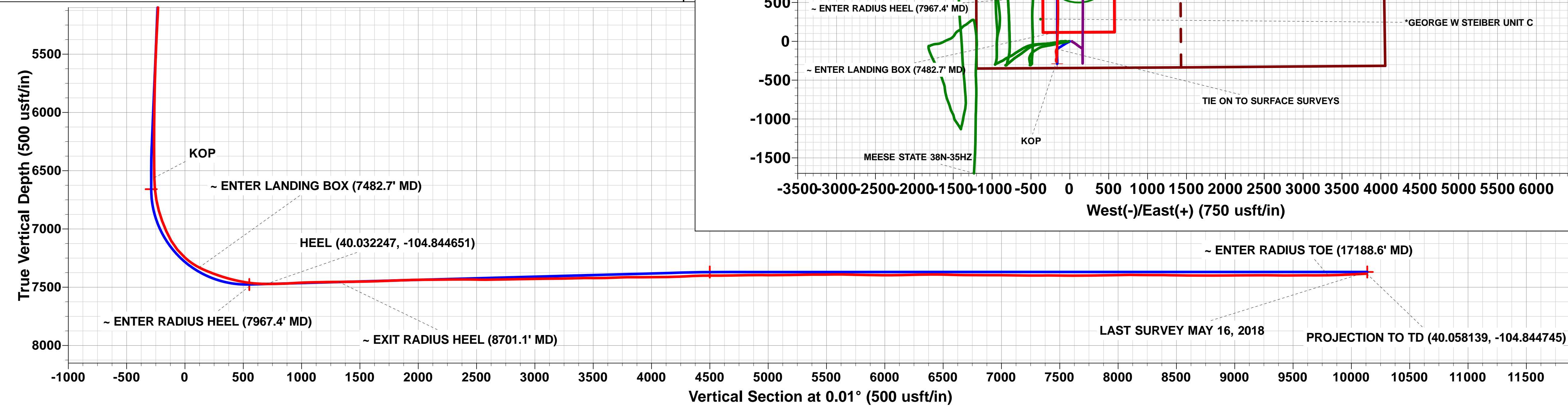
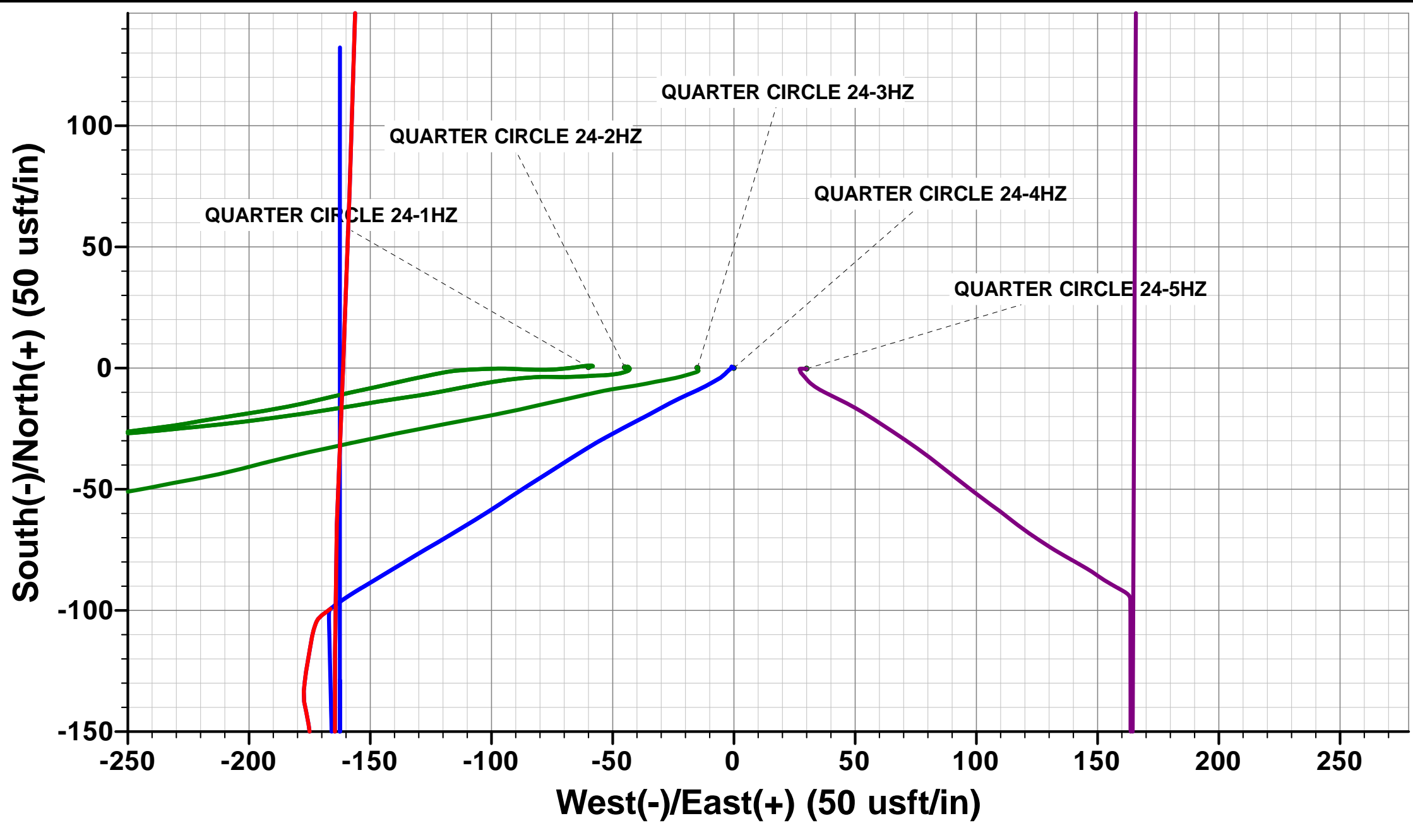
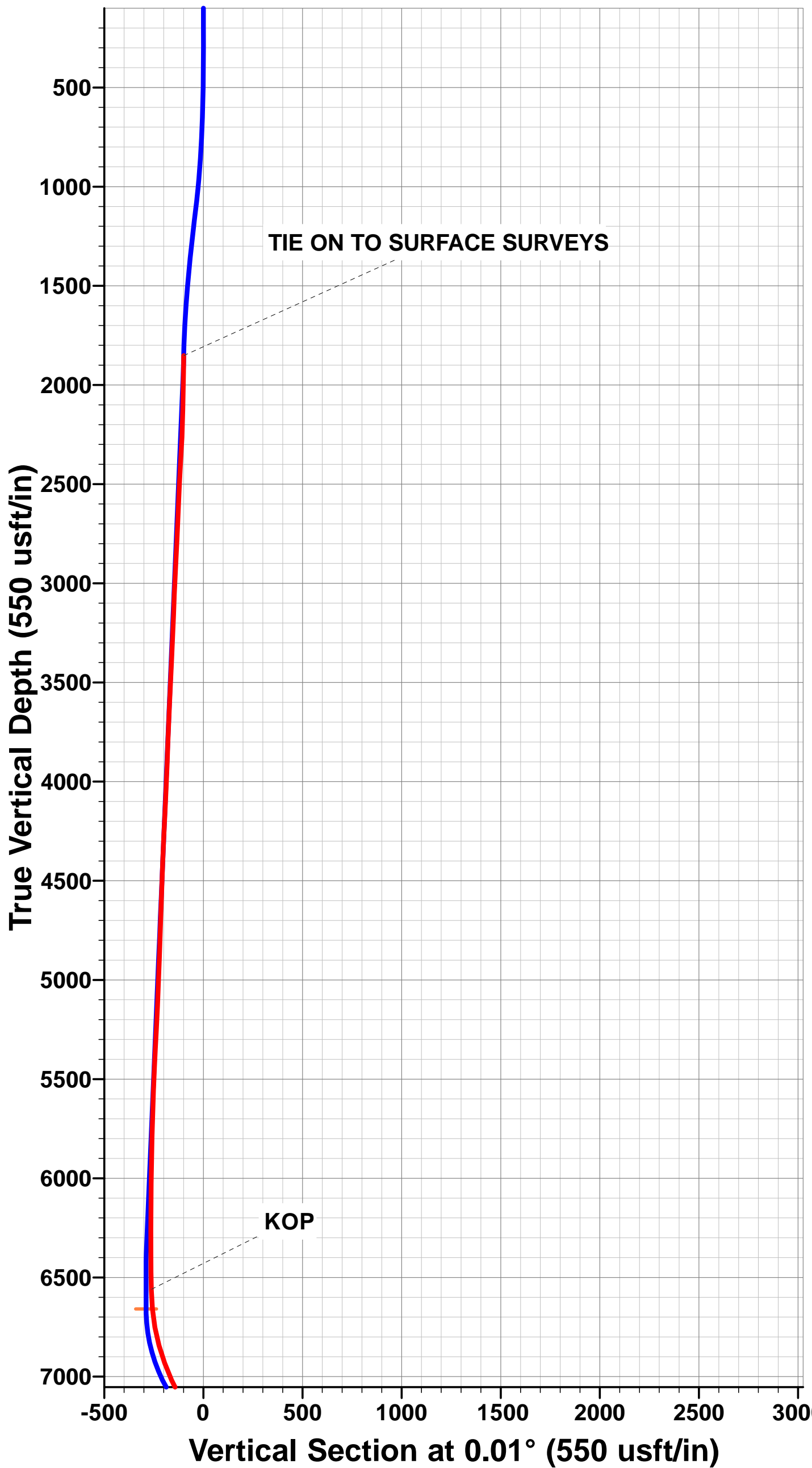
SHL: 344ft FSL & 1201ft FWL Sec 24

HEEL: 1044.3ft FSL & 1045.2ft FWL Sec 24

BHL: 55.2ft FNL & 1060.1ft FWL Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
QUARTER CIRCLE 24-4HZ BHL (P2)	7370.0	10136.1	-160.3	40° 3' 29.340 N	104° 50' 40.772 W
QUARTER CIRCLE 24-4HZ HEEL (P3)	7477.0	551.6	-162.4	40° 1' 54.623 N	104° 50' 40.799 W
QUARTER CIRCLE 24-4HZ INTERMED TGT	7370.0	4500.0	-161.6	40° 2' 33.643 N	104° 50' 40.789 W
QUARTER CIRCLE 24-4HZ KOP (P3)	6659.1	-289.1	-162.6	40° 1' 46.315 N	104° 50' 40.801 W



## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

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

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 24-4HZ					
Well Position	+N/-S	0.0 usft	Northing:	14,537,814.46 usft	Latitude:	40° 1' 49.172 N
	+E/-W	0.0 usft	Easting:	1,684,061.11 usft	Longitude:	104° 50' 38.711 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,941.0 usft

<b>Wellbore</b>	JOB # 2018-204-461				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	26/04/2018	8.13	66.52	52,093

<b>Design</b>	FINAL SURVEYS				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	1,868.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	0.01	

<b>Survey Program</b>	<b>Date</b>	16/05/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.0	1,868.0	FINAL SURVEYS - SURFACE (JOB # 201	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,954.0	17,520.0	FINAL SURVEYS (JOB # 2018-204-461)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>Subsea Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>
<b>TIE ON TO SURFACE SURVEYS</b>										
1,868.0	1.05	232.53	1,852.0	3,109.0	-99.3	-166.4	-99.3	0.00	0.00	0.00
1,954.0	1.60	232.90	1,938.0	3,023.0	-100.5	-168.0	-100.5	0.64	0.64	0.43
2,047.0	1.40	235.20	2,031.0	2,930.0	-101.9	-169.9	-102.0	0.22	-0.22	2.47
2,141.0	1.40	214.30	2,124.9	2,836.1	-103.5	-171.5	-103.6	0.54	0.00	-22.23
2,234.0	2.30	199.30	2,217.9	2,743.1	-106.2	-172.8	-106.3	1.09	0.97	-16.13
2,326.0	3.30	191.20	2,309.8	2,651.2	-110.6	-173.9	-110.6	1.17	1.09	-8.80
2,420.0	3.30	189.80	2,403.6	2,557.4	-115.9	-174.9	-115.9	0.09	0.00	-1.49
2,513.0	2.90	188.90	2,496.5	2,464.5	-120.9	-175.7	-120.9	0.43	-0.43	-0.97
2,608.0	2.50	191.10	2,591.4	2,369.6	-125.3	-176.5	-125.3	0.43	-0.42	2.32
2,702.0	2.40	183.10	2,685.3	2,275.7	-129.2	-177.0	-129.3	0.38	-0.11	-8.51

## Survey Report



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<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,796.0	2.50	188.20	2,779.2	2,181.8	-133.2	-177.4	-133.3	0.26	0.11	5.43
2,888.0	3.00	170.80	2,871.1	2,089.9	-137.6	-177.3	-137.6	1.05	0.54	-18.91
2,982.0	2.90	166.80	2,965.0	1,996.0	-142.3	-176.3	-142.4	0.24	-0.11	-4.26
3,077.0	2.80	170.60	3,059.9	1,901.1	-147.0	-175.4	-147.0	0.22	-0.11	4.00
3,171.0	2.40	174.50	3,153.8	1,807.2	-151.2	-174.9	-151.2	0.47	-0.43	4.15
3,266.0	1.90	186.70	3,248.7	1,712.3	-154.7	-174.8	-154.8	0.71	-0.53	12.84
3,360.0	2.20	161.00	3,342.6	1,618.4	-158.0	-174.4	-158.0	1.02	0.32	-27.34
3,455.0	3.40	164.90	3,437.5	1,523.5	-162.4	-173.1	-162.5	1.28	1.26	4.11
3,550.0	3.00	172.90	3,532.4	1,428.6	-167.6	-172.1	-167.7	0.63	-0.42	8.42
3,643.0	2.20	177.80	3,625.3	1,335.7	-171.8	-171.7	-171.9	0.89	-0.86	5.27
3,737.0	2.40	172.80	3,719.2	1,241.8	-175.6	-171.4	-175.6	0.30	0.21	-5.32
3,832.0	2.40	180.20	3,814.1	1,146.9	-179.5	-171.1	-179.6	0.33	0.00	7.79
3,926.0	1.80	180.80	3,908.1	1,052.9	-183.0	-171.2	-183.0	0.64	-0.64	0.64
4,021.0	2.60	175.60	4,003.0	958.0	-186.6	-171.0	-186.7	0.87	0.84	-5.47
4,115.0	3.00	167.30	4,096.9	864.1	-191.2	-170.3	-191.2	0.60	0.43	-8.83
4,210.0	2.50	177.40	4,191.8	769.2	-195.6	-169.7	-195.7	0.73	-0.53	10.63
4,304.0	2.70	167.90	4,285.7	675.3	-199.9	-169.1	-199.9	0.50	0.21	-10.11
4,398.0	2.50	169.20	4,379.6	581.4	-204.0	-168.3	-204.1	0.22	-0.21	1.38
4,493.0	2.20	175.60	4,474.5	486.5	-207.9	-167.7	-207.9	0.42	-0.32	6.74
4,587.0	2.10	189.60	4,568.4	392.6	-211.4	-167.9	-211.4	0.57	-0.11	14.89
4,680.0	1.80	194.10	4,661.4	299.6	-214.5	-168.5	-214.5	0.36	-0.32	4.84
4,774.0	2.10	214.30	4,755.3	205.7	-217.3	-169.9	-217.4	0.79	0.32	21.49
4,869.0	2.20	208.60	4,850.2	110.8	-220.4	-171.7	-220.4	0.25	0.11	-6.00
4,963.0	2.50	192.60	4,944.2	16.8	-224.0	-173.0	-224.0	0.76	0.32	-17.02
5,080.0	2.40	196.50	5,061.1	-100.1	-228.8	-174.3	-228.8	0.17	-0.09	3.33
5,175.0	2.50	180.90	5,156.0	-195.0	-232.8	-174.9	-232.8	0.71	0.11	-16.42
5,270.0	3.30	193.30	5,250.9	-289.9	-237.5	-175.5	-237.5	1.07	0.84	13.05
5,365.0	2.60	181.10	5,345.7	-384.7	-242.3	-176.2	-242.4	0.99	-0.74	-12.84
5,459.0	2.80	170.40	5,439.6	-478.6	-246.7	-175.9	-246.8	0.58	0.21	-11.38
5,552.0	2.50	172.00	5,532.5	-571.5	-251.0	-175.2	-251.0	0.33	-0.32	1.72
5,647.0	1.90	171.60	5,627.5	-666.5	-254.6	-174.7	-254.6	0.63	-0.63	-0.42
5,742.0	1.50	177.70	5,722.4	-761.4	-257.4	-174.4	-257.4	0.46	-0.42	6.42
5,837.0	1.70	146.20	5,817.4	-856.4	-259.8	-173.6	-259.8	0.94	0.21	-33.16
5,931.0	1.20	148.40	5,911.3	-950.3	-261.8	-172.3	-261.8	0.54	-0.53	2.34
6,024.0	0.80	142.70	6,004.3	-1,043.3	-263.1	-171.4	-263.2	0.44	-0.43	-6.13
6,118.0	0.60	134.50	6,098.3	-1,137.3	-264.0	-170.6	-264.0	0.24	-0.21	-8.72
6,211.0	0.60	132.00	6,191.3	-1,230.3	-264.7	-169.9	-264.7	0.03	0.00	-2.69
6,304.0	0.40	113.80	6,284.3	-1,323.3	-265.1	-169.3	-265.2	0.27	-0.22	-19.57
6,398.0	0.30	330.20	6,378.3	-1,417.3	-265.1	-169.1	-265.1	0.71	-0.11	-152.77
6,492.0	0.90	314.10	6,472.3	-1,511.3	-264.3	-169.7	-264.4	0.66	0.64	-17.13
<b>KOP</b>										
<b>6,580.0</b>	<b>1.37</b>	<b>339.21</b>	<b>6,560.3</b>	<b>-1,599.3</b>	<b>-262.9</b>	<b>-170.6</b>	<b>-262.9</b>	<b>0.76</b>	<b>0.53</b>	<b>28.54</b>
6,585.0	1.40	340.10	6,565.3	-1,604.3	-262.7	-170.7	-262.8	0.76	0.63	17.77
6,679.0	5.30	353.30	6,659.1	-1,698.1	-257.4	-171.5	-257.4	4.20	4.15	14.04
6,773.0	10.40	357.90	6,752.2	-1,791.2	-244.6	-172.4	-244.6	5.46	5.43	4.89
6,866.0	15.20	6.40	6,842.9	-1,881.9	-224.0	-171.3	-224.1	5.53	5.16	9.14
6,959.0	20.70	9.00	6,931.3	-1,970.3	-195.7	-167.4	-195.7	5.97	5.91	2.80
7,053.0	23.80	0.60	7,018.3	-2,057.3	-160.3	-164.6	-160.3	4.72	3.30	-8.94
7,147.0	29.90	359.70	7,102.2	-2,141.2	-117.8	-164.5	-117.9	6.50	6.49	-0.96
7,240.0	40.10	1.60	7,178.2	-2,217.2	-64.6	-163.8	-64.6	11.03	10.97	2.04
7,333.0	47.20	2.90	7,245.5	-2,284.5	-0.5	-161.2	-0.5	7.69	7.63	1.40
7,426.0	57.00	1.40	7,302.5	-2,341.5	72.8	-158.5	72.7	10.61	10.54	-1.61



# Survey Report



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<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
~ ENTER LANDING BOX (7482.7' MD)										
7,482.7	62.49	1.83	7,331.1	-2,370.1	121.7	-157.2	121.7	9.71	9.68	0.76
7,521.0	66.20	2.10	7,347.7	-2,386.7	156.2	-156.0	156.2	9.71	9.69	0.70
7,615.0	69.20	0.80	7,383.3	-2,422.3	243.1	-153.8	243.1	3.44	3.19	-1.38
7,708.0	72.90	0.60	7,413.5	-2,452.5	331.1	-152.7	331.0	3.98	3.98	-0.22
7,800.0	76.60	0.30	7,437.7	-2,476.7	419.8	-152.0	419.8	4.03	4.02	-0.33
7,894.0	80.00	358.60	7,456.8	-2,495.8	511.8	-152.9	511.8	4.03	3.62	-1.81
~ ENTER RADIUS HEEL (7967.4' MD)										
7,967.4	84.45	358.13	7,466.7	-2,505.7	584.5	-155.0	584.5	6.10	6.06	-0.64
7,988.0	85.70	358.00	7,468.5	-2,507.5	605.0	-155.7	605.0	6.10	6.06	-0.63
HEEL (40.032247, -104.844651)										
8,083.0	89.60	359.00	7,472.4	-2,511.4	699.9	-158.2	699.9	4.24	4.11	1.05
8,177.0	91.50	359.50	7,471.5	-2,510.5	793.9	-159.4	793.8	2.09	2.02	0.53
8,270.0	93.30	359.20	7,467.6	-2,506.6	886.8	-160.4	886.8	1.96	1.94	-0.32
8,365.0	92.90	0.20	7,462.5	-2,501.5	981.6	-160.9	981.6	1.13	-0.42	1.05
8,457.0	91.70	1.40	7,458.8	-2,497.8	1,073.6	-159.6	1,073.5	1.84	-1.30	1.30
8,550.0	90.20	1.20	7,457.2	-2,496.2	1,166.5	-157.5	1,166.5	1.63	-1.61	-0.22
8,644.0	91.80	1.90	7,455.6	-2,494.6	1,260.5	-155.0	1,260.4	1.86	1.70	0.74
~ EXIT RADIUS HEEL (8701.1' MD)										
8,701.1	90.56	1.28	7,454.4	-2,493.4	1,317.5	-153.4	1,317.5	2.43	-2.17	-1.09
8,736.0	89.80	0.90	7,454.3	-2,493.3	1,352.4	-152.8	1,352.4	2.43	-2.17	-1.09
8,830.0	90.60	1.10	7,454.0	-2,493.0	1,446.4	-151.1	1,446.4	0.88	0.85	0.21
8,925.0	91.90	1.60	7,451.9	-2,490.9	1,541.4	-148.9	1,541.3	1.47	1.37	0.53
9,019.0	91.20	0.70	7,449.4	-2,488.4	1,635.3	-147.0	1,635.3	1.21	-0.74	-0.96
9,114.0	93.10	0.80	7,445.8	-2,484.8	1,730.2	-145.7	1,730.2	2.00	2.00	0.11
9,208.0	91.50	359.70	7,442.0	-2,481.0	1,824.1	-145.3	1,824.1	2.07	-1.70	-1.17
9,300.0	92.10	359.50	7,439.1	-2,478.1	1,916.1	-146.0	1,916.1	0.69	0.65	-0.22
9,394.0	90.80	357.50	7,436.7	-2,475.7	2,010.0	-148.4	2,010.0	2.54	-1.38	-2.13
9,487.0	90.50	357.60	7,435.7	-2,474.7	2,102.9	-152.4	2,102.9	0.34	-0.32	0.11
9,582.0	90.00	358.70	7,435.3	-2,474.3	2,197.9	-155.5	2,197.9	1.27	-0.53	1.16
9,677.0	91.00	0.50	7,434.5	-2,473.5	2,292.9	-156.1	2,292.8	2.17	1.05	1.89
9,772.0	90.00	1.70	7,433.6	-2,472.6	2,387.8	-154.3	2,387.8	1.64	-1.05	1.26
9,865.0	88.50	0.90	7,434.8	-2,473.8	2,480.8	-152.2	2,480.8	1.83	-1.61	-0.86
9,958.0	89.80	0.30	7,436.2	-2,475.2	2,573.8	-151.2	2,573.8	1.54	1.40	-0.65
10,053.0	91.60	0.70	7,435.1	-2,474.1	2,668.8	-150.4	2,668.7	1.94	1.89	0.42
10,147.0	91.00	0.10	7,432.9	-2,471.9	2,762.7	-149.8	2,762.7	0.90	-0.64	-0.64
10,240.0	91.60	359.70	7,430.8	-2,469.8	2,855.7	-149.9	2,855.7	0.78	0.65	-0.43
10,333.0	90.00	359.00	7,429.5	-2,468.5	2,948.7	-151.0	2,948.7	1.88	-1.72	-0.75
10,427.0	91.00	358.80	7,428.7	-2,467.7	3,042.7	-152.8	3,042.7	1.08	1.06	-0.21
10,521.0	91.00	0.30	7,427.1	-2,466.1	3,136.7	-153.5	3,136.6	1.60	0.00	1.60
10,615.0	90.20	0.80	7,426.1	-2,465.1	3,230.7	-152.6	3,230.6	1.00	-0.85	0.53
10,708.0	92.30	1.40	7,424.0	-2,463.0	3,323.6	-150.8	3,323.6	2.35	2.26	0.65
10,801.0	90.40	2.30	7,421.9	-2,460.9	3,416.5	-147.8	3,416.5	2.26	-2.04	0.97
10,894.0	89.30	0.50	7,422.1	-2,461.1	3,509.5	-145.5	3,509.5	2.27	-1.18	-1.94
10,987.0	91.80	0.60	7,421.2	-2,460.2	3,602.5	-144.7	3,602.5	2.69	2.69	0.11
11,079.0	92.40	359.40	7,417.8	-2,456.8	3,694.4	-144.7	3,694.4	1.46	0.65	-1.30
11,172.0	91.10	0.30	7,415.0	-2,454.0	3,787.4	-144.9	3,787.3	1.70	-1.40	0.97
11,264.0	88.90	359.40	7,415.0	-2,454.0	3,879.4	-145.1	3,879.3	2.58	-2.39	-0.98
11,358.0	91.20	359.50	7,414.9	-2,453.9	3,973.4	-146.0	3,973.3	2.45	2.45	0.11
11,452.0	90.50	358.80	7,413.5	-2,452.5	4,067.3	-147.4	4,067.3	1.05	-0.74	-0.74
11,545.0	91.10	358.00	7,412.2	-2,451.2	4,160.3	-150.0	4,160.3	1.08	0.65	-0.86
11,638.0	92.80	358.20	7,409.1	-2,448.1	4,253.2	-153.1	4,253.1	1.84	1.83	0.22
11,732.0	92.80	359.60	7,404.5	-2,443.5	4,347.0	-154.9	4,347.0	1.49	0.00	1.49

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,826.0	91.10	0.20	7,401.3	-2,440.3	4,441.0	-155.1	4,441.0	1.92	-1.81	0.64
11,919.0	89.40	0.20	7,400.9	-2,439.9	4,534.0	-154.8	4,534.0	1.83	-1.83	0.00
12,013.0	90.60	0.20	7,400.9	-2,439.9	4,628.0	-154.4	4,627.9	1.28	1.28	0.00
12,108.0	92.10	359.60	7,398.6	-2,437.6	4,722.9	-154.6	4,722.9	1.70	1.58	-0.63
12,202.0	90.40	359.70	7,396.6	-2,435.6	4,816.9	-155.2	4,816.9	1.81	-1.81	0.11
12,295.0	89.10	359.30	7,397.0	-2,436.0	4,909.9	-156.0	4,909.9	1.46	-1.40	-0.43
12,389.0	90.60	359.50	7,397.2	-2,436.2	5,003.9	-157.0	5,003.9	1.61	1.60	0.21
12,482.0	90.30	359.10	7,396.5	-2,435.5	5,096.9	-158.1	5,096.9	0.54	-0.32	-0.43
12,577.0	91.00	1.00	7,395.4	-2,434.4	5,191.9	-158.0	5,191.9	2.13	0.74	2.00
12,671.0	91.20	355.60	7,393.6	-2,432.6	5,285.8	-160.8	5,285.8	5.75	0.21	-5.74
12,764.0	90.20	356.40	7,392.5	-2,431.5	5,378.6	-167.3	5,378.5	1.38	-1.08	0.86
12,857.0	90.30	358.40	7,392.1	-2,431.1	5,471.5	-171.5	5,471.4	2.15	0.11	2.15
12,951.0	91.20	1.50	7,390.8	-2,429.8	5,565.4	-171.6	5,565.4	3.43	0.96	3.30
13,043.0	88.50	3.20	7,391.1	-2,430.1	5,657.3	-167.8	5,657.3	3.47	-2.93	1.85
13,137.0	88.40	3.50	7,393.6	-2,432.6	5,751.1	-162.3	5,751.1	0.34	-0.11	0.32
13,232.0	89.40	4.20	7,395.4	-2,434.4	5,845.9	-156.0	5,845.9	1.28	1.05	0.74
13,327.0	89.00	1.70	7,396.8	-2,435.8	5,940.8	-151.1	5,940.7	2.66	-0.42	-2.63
13,419.0	90.50	0.90	7,397.2	-2,436.2	6,032.7	-149.0	6,032.7	1.85	1.63	-0.87
13,514.0	90.20	0.00	7,396.6	-2,435.6	6,127.7	-148.2	6,127.7	1.00	-0.32	-0.95
13,607.0	91.90	359.70	7,394.9	-2,433.9	6,220.7	-148.5	6,220.7	1.86	1.83	-0.32
13,701.0	91.30	358.70	7,392.3	-2,431.3	6,314.7	-149.8	6,314.6	1.24	-0.64	-1.06
13,795.0	90.20	359.20	7,391.0	-2,430.0	6,408.6	-151.5	6,408.6	1.29	-1.17	0.53
13,889.0	88.50	0.20	7,392.1	-2,431.1	6,502.6	-152.0	6,502.6	2.10	-1.81	1.06
13,984.0	88.30	0.60	7,394.7	-2,433.7	6,597.6	-151.3	6,597.6	0.47	-0.21	0.42
14,078.0	89.90	0.30	7,396.2	-2,435.2	6,691.6	-150.6	6,691.5	1.73	1.70	-0.32
14,172.0	89.30	0.90	7,396.9	-2,435.9	6,785.6	-149.6	6,785.5	0.90	-0.64	0.64
14,267.0	90.10	0.80	7,397.4	-2,436.4	6,880.6	-148.2	6,880.5	0.85	0.84	-0.11
14,362.0	90.20	0.10	7,397.1	-2,436.1	6,975.6	-147.5	6,975.5	0.74	0.11	-0.74
14,457.0	88.60	0.20	7,398.1	-2,437.1	7,070.5	-147.2	7,070.5	1.69	-1.68	0.11
14,551.0	89.30	359.90	7,399.8	-2,438.8	7,164.5	-147.1	7,164.5	0.81	0.74	-0.32
14,645.0	90.50	0.20	7,400.0	-2,439.0	7,258.5	-147.0	7,258.5	1.32	1.28	0.32
14,739.0	90.30	1.40	7,399.4	-2,438.4	7,352.5	-145.7	7,352.5	1.29	-0.21	1.28
14,834.0	89.20	0.70	7,399.8	-2,438.8	7,447.5	-144.0	7,447.5	1.37	-1.16	-0.74
14,927.0	89.70	0.60	7,400.7	-2,439.7	7,540.5	-142.9	7,540.5	0.55	0.54	-0.11
15,020.0	90.10	0.10	7,400.8	-2,439.8	7,633.5	-142.4	7,633.5	0.69	0.43	-0.54
15,115.0	90.20	359.00	7,400.6	-2,439.6	7,728.5	-143.1	7,728.4	1.16	0.11	-1.16
15,209.0	91.70	359.30	7,399.0	-2,438.0	7,822.4	-144.5	7,822.4	1.63	1.60	0.32
15,303.0	90.00	0.00	7,397.6	-2,436.6	7,916.4	-145.1	7,916.4	1.96	-1.81	0.74
15,396.0	91.60	359.80	7,396.3	-2,435.3	8,009.4	-145.2	8,009.4	1.73	1.72	-0.22
15,491.0	90.10	1.60	7,394.9	-2,433.9	8,104.4	-144.1	8,104.4	2.47	-1.58	1.89
15,587.0	88.90	1.00	7,395.8	-2,434.8	8,200.4	-141.9	8,200.3	1.40	-1.25	-0.62
15,680.0	90.50	1.10	7,396.2	-2,435.2	8,293.3	-140.2	8,293.3	1.72	1.72	0.11
15,774.0	89.40	0.60	7,396.3	-2,435.3	8,387.3	-138.8	8,387.3	1.29	-1.17	-0.53
15,867.0	89.00	359.60	7,397.6	-2,436.6	8,480.3	-138.6	8,480.3	1.16	-0.43	-1.08
15,961.0	89.10	359.60	7,399.2	-2,438.2	8,574.3	-139.3	8,574.3	0.11	0.11	0.00
16,054.0	89.40	359.70	7,400.4	-2,439.4	8,667.3	-139.9	8,667.3	0.34	0.32	0.11
16,146.0	90.80	1.80	7,400.2	-2,439.2	8,759.3	-138.7	8,759.3	2.74	1.52	2.28
16,241.0	90.00	0.20	7,399.6	-2,438.6	8,854.3	-137.0	8,854.2	1.88	-0.84	-1.68
16,334.0	89.90	358.80	7,399.7	-2,438.7	8,947.3	-137.8	8,947.2	1.51	-0.11	-1.51
16,429.0	90.90	358.80	7,399.0	-2,438.0	9,042.2	-139.8	9,042.2	1.05	1.05	0.00
16,524.0	90.00	358.50	7,398.2	-2,437.2	9,137.2	-142.0	9,137.2	1.00	-0.95	-0.32
16,618.0	90.50	358.30	7,397.8	-2,436.8	9,231.2	-144.7	9,231.1	0.57	0.53	-0.21
16,710.0	88.80	358.00	7,398.4	-2,437.4	9,323.1	-147.6	9,323.1	1.88	-1.85	-0.33

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<b>Database:</b>	EOG RESOURCES

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,804.0	89.30	357.40	7,400.0	-2,439.0	9,417.0	-151.4	9,417.0	0.83	0.53	-0.64
16,896.0	91.40	356.80	7,399.4	-2,438.4	9,508.9	-156.1	9,508.9	2.37	2.28	-0.65
16,990.0	89.80	358.10	7,398.4	-2,437.4	9,602.8	-160.3	9,602.8	2.19	-1.70	1.38
17,084.0	89.90	357.60	7,398.7	-2,437.7	9,696.7	-163.8	9,696.7	0.54	0.11	-0.53
17,178.0	90.90	357.20	7,398.0	-2,437.0	9,790.6	-168.0	9,790.6	1.15	1.06	-0.43
~ ENTER RADIUS TOE (17188.6' MD)										
17,188.6	91.02	357.22	7,397.8	-2,436.8	9,801.2	-168.6	9,801.2	1.18	1.16	0.21
17,273.0	92.00	357.40	7,395.6	-2,434.6	9,885.5	-172.5	9,885.5	1.18	1.16	0.21
17,366.0	92.50	357.30	7,391.9	-2,430.9	9,978.3	-176.8	9,978.3	0.55	0.54	-0.11
LAST SURVEY MAY 16, 2018										
17,463.0	93.00	357.20	7,387.3	-2,426.3	10,075.1	-181.5	10,075.1	0.53	0.52	-0.10
PROJECTION TO TD (40.058139, -104.844745)										
17,520.0	93.00	357.20	7,384.3	-2,423.3	10,131.9	-184.2	10,131.9	0.00	0.00	0.00

# Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<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 24-4HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-204-461	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEYS	<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 24-4 - survey misses target center by 16.3usft at 7936.4usft MD (7463.2 TVD, 553.7 N, -154.0 E) - Point	0.00	0.00	7,477.0	551.6	-162.4	14,538,365.55	1,683,897.79	40° 1' 54.623 N	104° 50' 40.799 W
QUARTER CIRCLE 24-4 - survey misses target center by 47.3usft at 6717.6usft MD (6697.5 TVD, -253.1 N, -171.9 E) - Point	0.00	0.00	6,703.9	-299.1	-162.6	14,537,515.23	1,683,899.13	40° 1' 46.217 N	104° 50' 40.801 W
QUARTER CIRCLE 24-4 - survey misses target center by 32.8usft at 6677.1usft MD (6657.2 TVD, -257.5 N, -171.5 E) - Point	0.00	0.00	6,659.1	-289.1	-162.6	14,537,525.23	1,683,899.11	40° 1' 46.315 N	104° 50' 40.801 W
QUARTER CIRCLE 24-4 - survey misses target center by 59.2usft at 7942.5usft MD (7464.0 TVD, 559.8 N, -154.2 E) - Point	0.00	0.00	7,522.0	551.6	-162.4	14,538,365.55	1,683,897.79	40° 1' 54.623 N	104° 50' 40.799 W
QUARTER CIRCLE 24-4 - survey misses target center by 28.2usft at 17520.0usft MD (7384.3 TVD, 10131.9 N, -184.2 E) - Point	0.00	0.00	7,370.0	10,136.1	-160.3	14,547,946.27	1,683,883.18	40° 3' 29.340 N	104° 50' 40.772 W
QUARTER CIRCLE 24-4 - survey misses target center by 31.4usft at 11885.2usft MD (7400.7 TVD, 4500.1 N, -154.9 E) - Point	0.00	0.00	7,370.0	4,500.0	-161.6	14,542,312.41	1,683,891.67	40° 2' 33.643 N	104° 50' 40.789 W
QUARTER CIRCLE 24-4 - survey misses target center by 16.3usft at 7936.4usft MD (7463.2 TVD, 553.7 N, -154.0 E) - Point	0.00	0.00	7,477.0	551.6	-162.4	14,538,365.55	1,683,897.79	40° 1' 54.623 N	104° 50' 40.799 W
QUARTER CIRCLE 24-4 - survey misses target center by 28.2usft at 17520.0usft MD (7384.3 TVD, 10131.9 N, -184.2 E) - Point	0.00	0.00	7,370.0	10,136.1	-160.3	14,547,946.27	1,683,883.18	40° 3' 29.340 N	104° 50' 40.772 W

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,868.0	1,852.0	-99.3	-166.4	TIE ON TO SURFACE SURVEYS
6,580.0	6,560.3	-262.9	-170.6	KOP
7,482.7	7,331.1	121.7	-157.2	~ ENTER LANDING BOX (7482.7' MD)
7,967.4	7,466.7	584.5	-155.0	~ ENTER RADIUS HEEL (7967.4' MD)
8,083.0	7,472.4	699.9	-158.2	HEEL (40.032247, -104.844651)
8,701.1	7,454.4	1,317.5	-153.4	~ EXIT RADIUS HEEL (8701.1' MD)
17,188.6	7,397.8	9,801.2	-168.6	~ ENTER RADIUS TOE (17188.6' MD)
17,463.0	7,387.3	10,075.1	-181.5	LAST SURVEY MAY 16, 2018
17,520.0	7,384.3	10,131.9	-184.2	PROJECTION TO TD (40.058139, -104.844745)

Checked By: _____	Approved By: _____	Date: _____
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