

# **ANADARKO PETROLEUM CORP**

**WELD COUNTY (NAD 83)**

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

**QUARTER CIRCLE 24-1HZ**

**JOB # 2018-201-461 OH**

**13 April, 2018**

**Survey: FINAL SURVEYS - OH**



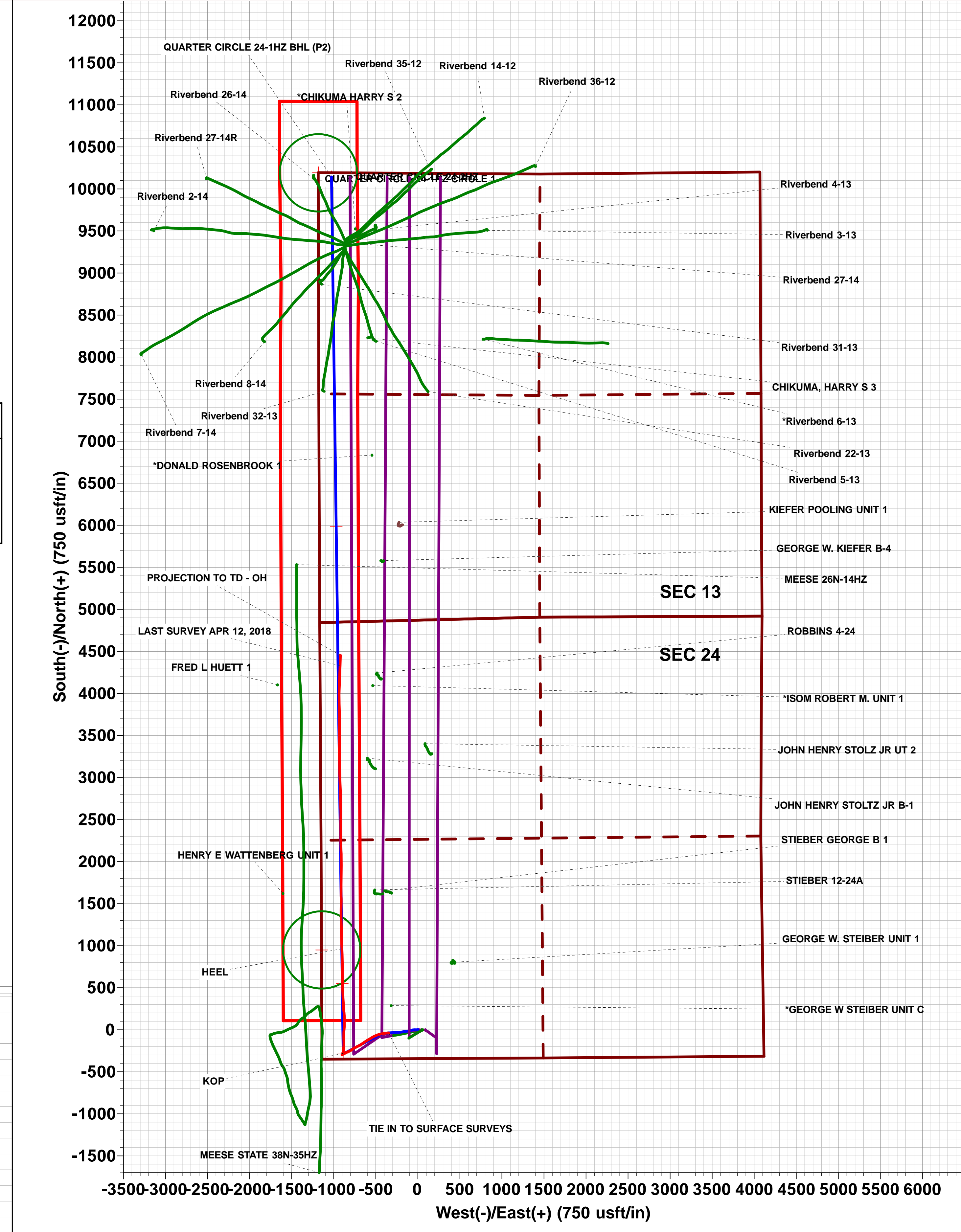
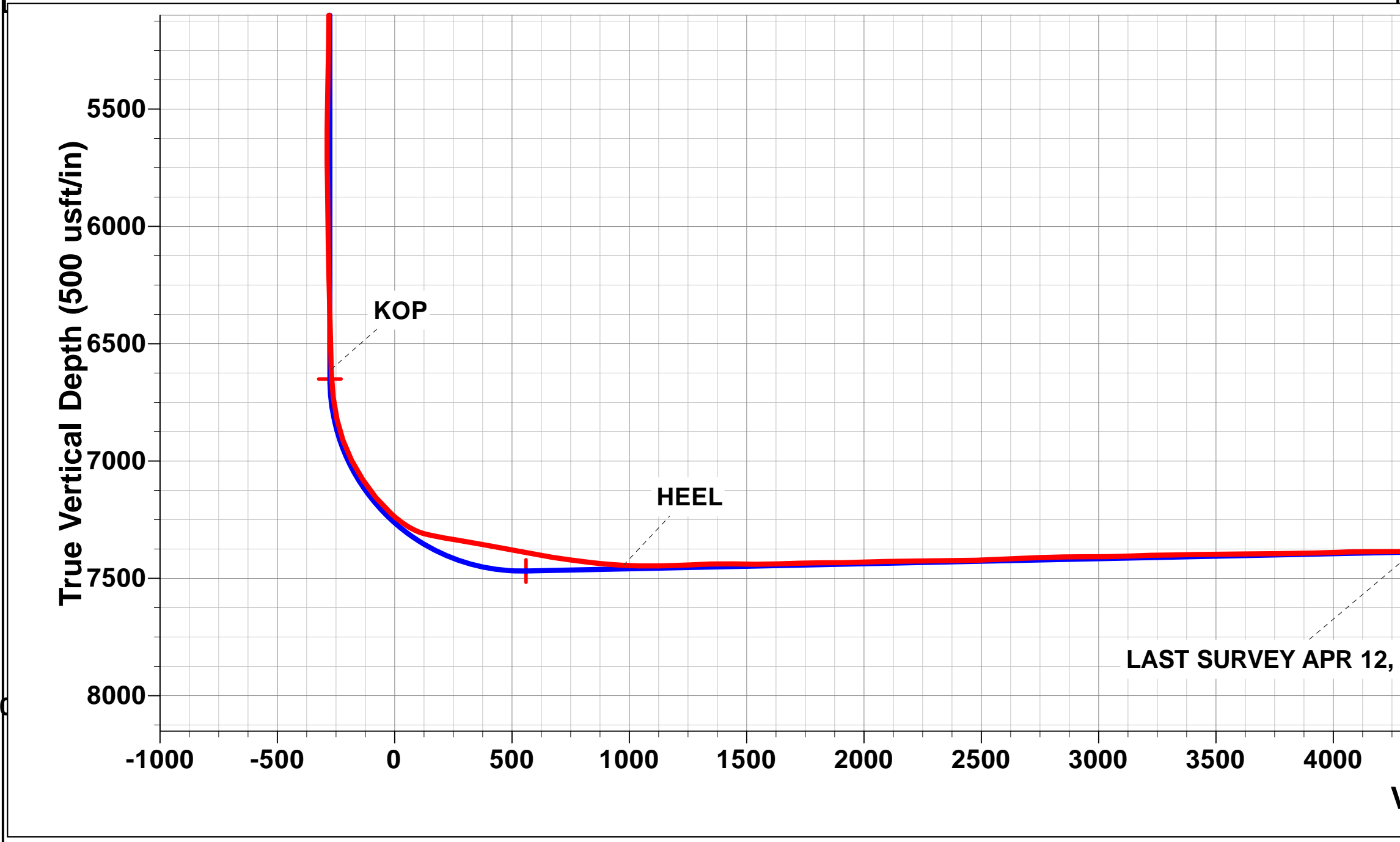
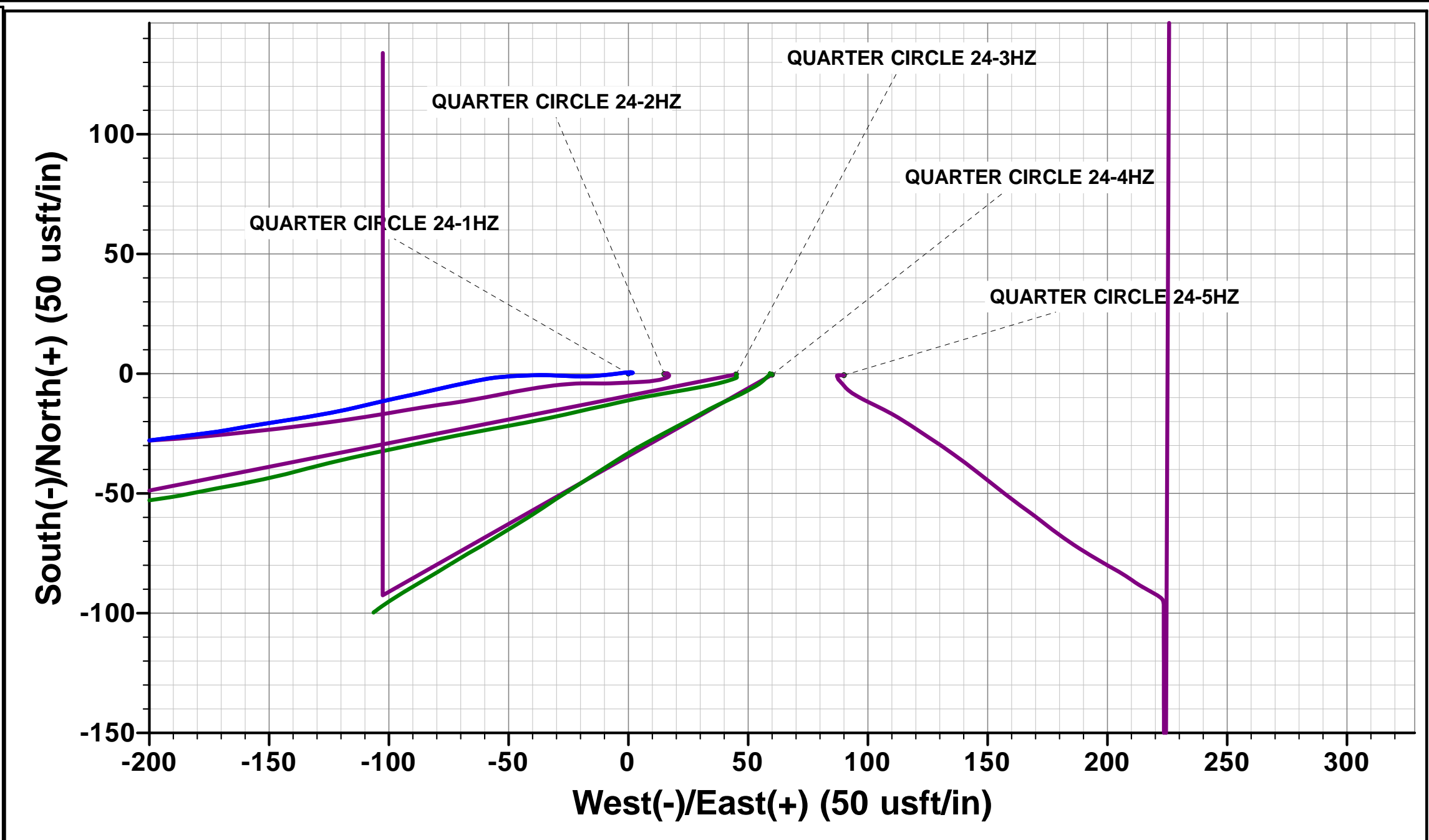
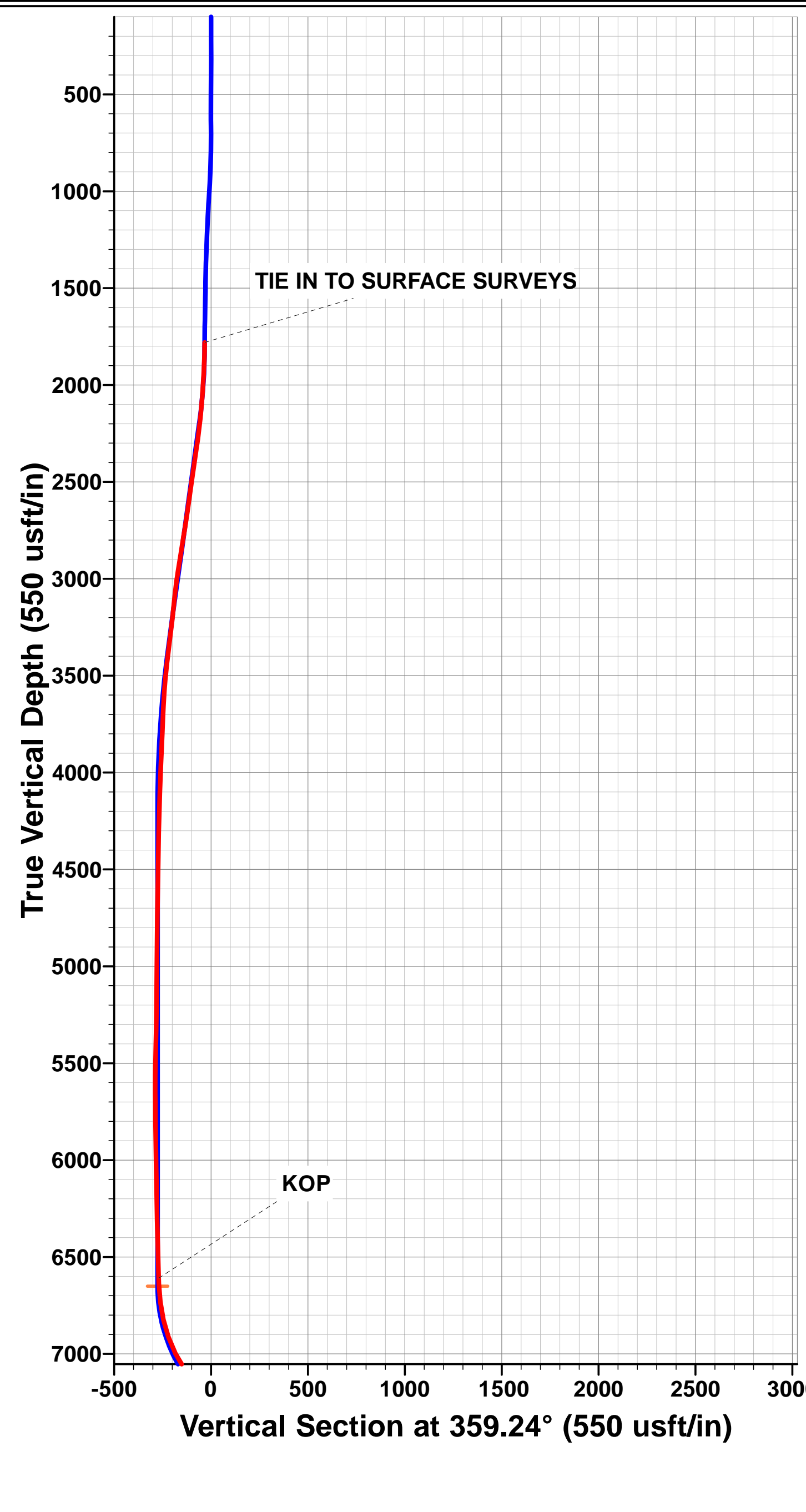


Project: WELD COUNTY (NAD 83)  
Site: SW SW SEC. 13 T1N R67W 6th P.M.  
Well: QUARTER CIRCLE 24-1HZ  
Wellbore: JOB # 2018-201-461 OH  
Design: FINAL SURVEYS - OH

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation	
1780.6	1829.0	16.96	268.04	-37.6	-346.2	-33.0	0.0	TIE IN TO SURFACE SURVEYS	
6609.7	6737.0	2.13	10.34	-282.0	-893.6	-270.1	643.6	KOP	
7444.7	8450.0	86.80	358.40	963.1	-901.8	975.0	1891.6	HEEL	
7386.4	11819.0	89.80	1.50	4330.4	-924.1	4342.3	5259.6	LAST SURVEY APR 12, 2018	
7386.9	11943.0	89.80	1.50	4454.4	-920.9	4466.2	5383.6	PROJECTION TO TD - OH	

PROPOSED LOCAL COORDINATES:  
SHL: 344ft FSL & 1141ft FWL Sec 24  
HEEL: 1312.2ft FSL & 241.7ft FWL Sec 24  
BHL: 380ft FNL & 227ft FWL Sec 24

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
QUARTER CIRCLE 24-1HZ BHL (P2)	7396.0	10143.0	-1025.5	40° 3' 29.412 N	104° 50' 52.670 W
QUARTER CIRCLE 24-1HZ HEEL (P2)	7469.0	547.9	-898.5	40° 1' 54.590 N	104° 50' 51.033 W
QUARTER CIRCLE 24-1HZ KOP (P2)	6650.9	-287.9	-887.4	40° 1' 46.331 N	104° 50' 50.890 W



## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-1HZ
<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 24-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-201-461 OH	<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 24-1HZ					
Well Position	+N/-S	0.0 usft	Northing:	14,537,814.76 usft	Latitude:	40° 1' 49.176 N
	+E/-W	0.0 usft	Easting:	1,684,001.16 usft	Longitude:	104° 50' 39.482 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,941.0 usft

<b>Wellbore</b>	JOB # 2018-201-461 OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	21/03/2018	8.14	66.53	52,104

<b>Design</b>	FINAL SURVEYS - OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	1,829.0
<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	359.24	

<b>Survey Program</b>	<b>Date</b>	13/04/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.0	1,829.0	FINAL SURVEYS - SURFACE (JOB # 201	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,878.0	11,943.0	FINAL SURVEYS - OH (JOB # 2018-201-4	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>
<b>TIE IN TO SURFACE SURVEYS</b>										
1,829.0	16.96	268.04	1,780.6	3,180.4	-37.6	-346.2	-33.0	0.00	0.00	0.00
1,878.0	18.09	265.61	1,827.3	3,133.7	-38.4	-360.9	-33.6	2.75	2.31	-4.96
1,946.0	19.70	262.70	1,891.7	3,069.3	-40.6	-382.8	-35.6	2.74	2.37	-4.28
2,039.0	19.60	259.50	1,979.3	2,981.7	-45.5	-413.7	-40.0	1.16	-0.11	-3.44
2,132.0	19.30	257.50	2,067.0	2,894.0	-51.7	-444.0	-45.8	0.79	-0.32	-2.15
2,226.0	18.70	251.10	2,155.8	2,805.2	-59.9	-473.5	-53.6	2.31	-0.64	-6.81
2,318.0	18.10	246.90	2,243.1	2,717.9	-70.3	-500.6	-63.6	1.58	-0.65	-4.57
2,414.0	17.60	241.20	2,334.5	2,626.5	-83.1	-527.0	-76.1	1.89	-0.52	-5.94
2,507.0	16.20	239.10	2,423.5	2,537.5	-96.6	-550.5	-89.3	1.64	-1.51	-2.26
2,601.0	15.00	238.30	2,514.0	2,447.0	-109.7	-572.1	-102.1	1.30	-1.28	-0.85

## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-1HZ
<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 24-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-201-461 OH	<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)
2,694.0	15.90	239.80	2,603.7	2,357.3	-122.4	-593.3	-114.5	1.06	0.97	1.61
2,787.0	16.90	238.00	2,692.9	2,268.1	-136.0	-615.8	-127.8	1.21	1.08	-1.94
2,882.0	16.00	236.10	2,784.0	2,177.0	-150.6	-638.4	-142.1	1.10	-0.95	-2.00
2,976.0	16.10	234.50	2,874.3	2,086.7	-165.4	-659.7	-156.6	0.48	0.11	-1.70
3,071.0	16.50	236.70	2,965.5	1,995.5	-180.5	-681.7	-171.4	0.77	0.42	2.32
3,165.0	15.00	246.60	3,056.0	1,905.0	-192.6	-704.1	-183.3	3.27	-1.60	10.53
3,260.0	15.20	244.50	3,147.7	1,813.3	-202.9	-726.6	-193.2	0.61	0.21	-2.21
3,355.0	14.60	241.30	3,239.5	1,721.5	-214.0	-748.3	-204.0	1.07	-0.63	-3.37
3,449.0	12.90	237.70	3,330.8	1,630.2	-225.3	-767.6	-215.1	2.02	-1.81	-3.83
3,543.0	11.20	233.10	3,422.8	1,538.2	-236.4	-783.8	-226.0	2.08	-1.81	-4.89
3,637.0	10.20	238.30	3,515.1	1,445.9	-246.2	-798.1	-235.6	1.48	-1.06	5.53
3,732.0	8.60	245.90	3,608.9	1,352.1	-253.5	-811.8	-242.8	2.13	-1.68	8.00
3,827.0	7.40	249.50	3,702.9	1,258.1	-258.6	-824.0	-247.6	1.37	-1.26	3.79
3,921.0	6.00	246.20	3,796.3	1,164.7	-262.7	-834.2	-251.6	1.54	-1.49	-3.51
4,015.0	5.40	240.50	3,889.8	1,071.2	-266.8	-842.5	-255.7	0.88	-0.64	-6.06
4,110.0	4.50	237.30	3,984.5	976.5	-271.1	-849.5	-259.8	0.99	-0.95	-3.37
4,203.0	4.30	241.20	4,077.2	883.8	-274.7	-855.7	-263.3	0.39	-0.22	4.19
4,298.0	4.20	247.20	4,171.9	789.1	-277.8	-862.0	-266.3	0.48	-0.11	6.32
4,392.0	3.70	246.30	4,265.7	695.3	-280.3	-867.9	-268.8	0.54	-0.53	-0.96
4,485.0	3.70	247.80	4,358.5	602.5	-282.7	-873.5	-271.1	0.10	0.00	1.61
4,579.0	2.70	254.70	4,452.4	508.6	-284.4	-878.4	-272.7	1.14	-1.06	7.34
4,674.0	2.80	252.40	4,547.3	413.7	-285.7	-882.8	-274.0	0.16	0.11	-2.42
4,768.0	1.60	231.00	4,641.2	319.8	-287.2	-886.0	-275.4	1.53	-1.28	-22.77
4,862.0	1.40	220.70	4,735.2	225.8	-288.9	-887.8	-277.1	0.36	-0.21	-10.96
4,957.0	1.10	237.80	4,830.1	130.9	-290.3	-889.3	-278.5	0.50	-0.32	18.00
5,052.0	1.20	248.40	4,925.1	35.9	-291.1	-891.0	-279.3	0.25	0.11	11.16
5,147.0	1.00	248.40	5,020.1	-59.1	-291.8	-892.7	-279.9	0.21	-0.21	0.00
5,265.0	1.30	248.30	5,138.1	-177.1	-292.7	-894.9	-280.8	0.25	0.25	-0.08
5,358.0	1.40	240.10	5,231.1	-270.1	-293.6	-896.8	-281.7	0.23	0.11	-8.82
5,453.0	1.40	207.30	5,326.0	-365.0	-295.2	-898.4	-283.3	0.83	0.00	-34.53
5,548.0	1.30	214.20	5,421.0	-460.0	-297.2	-899.5	-285.2	0.20	-0.11	7.26
5,642.0	1.40	216.40	5,515.0	-554.0	-299.0	-900.8	-287.0	0.12	0.11	2.34
5,737.0	0.10	147.10	5,610.0	-649.0	-300.0	-901.4	-288.0	1.44	-1.37	-72.95
5,830.0	0.70	46.70	5,703.0	-742.0	-299.7	-901.0	-287.7	0.78	0.65	-107.96
5,924.0	1.00	40.70	5,797.0	-836.0	-298.6	-900.0	-286.7	0.33	0.32	-6.38
6,017.0	1.10	37.60	5,889.9	-928.9	-297.3	-899.0	-285.4	0.12	0.11	-3.33
6,110.0	1.00	37.20	5,982.9	-1,021.9	-296.0	-897.9	-284.0	0.11	-0.11	-0.43
6,203.0	1.00	34.20	6,075.9	-1,114.9	-294.6	-897.0	-282.7	0.06	0.00	-3.23
6,298.0	1.30	27.90	6,170.9	-1,209.9	-293.0	-896.0	-281.1	0.34	0.32	-6.63
6,390.0	1.50	20.80	6,262.9	-1,301.9	-291.0	-895.1	-279.1	0.29	0.22	-7.72
6,484.0	1.50	15.90	6,356.8	-1,395.8	-288.6	-894.3	-276.7	0.14	0.00	-5.21
6,578.0	1.50	3.90	6,450.8	-1,489.8	-286.2	-893.9	-274.3	0.33	0.00	-12.77
6,672.0	1.30	1.10	6,544.8	-1,583.8	-283.9	-893.8	-272.0	0.22	-0.21	-2.98
<b>KOP</b>										
6,737.0	2.13	10.34	6,609.7	-1,648.7	-282.0	-893.6	-270.1	1.34	1.28	14.22
6,765.0	2.50	12.40	6,637.7	-1,676.7	-280.9	-893.3	-269.0	1.35	1.32	7.36
6,859.0	7.00	21.20	6,731.4	-1,770.4	-273.5	-890.8	-261.7	4.84	4.79	9.36
6,952.0	13.30	10.30	6,822.9	-1,861.9	-257.7	-886.9	-245.9	7.05	6.77	-11.72
7,045.0	19.50	10.20	6,912.1	-1,951.1	-231.9	-882.2	-220.2	6.67	6.67	-0.11
7,139.0	27.10	1.40	6,998.3	-2,037.3	-195.0	-878.9	-183.3	8.87	8.09	-9.36
7,232.0	32.70	359.50	7,078.9	-2,117.9	-148.6	-878.6	-137.0	6.11	6.02	-2.04
7,327.0	39.90	358.20	7,155.5	-2,194.5	-92.5	-879.8	-80.8	7.62	7.58	-1.37
7,421.0	47.30	2.30	7,223.5	-2,262.5	-27.7	-879.3	-16.0	8.42	7.87	4.36



## Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-1HZ
<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 24-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-201-461 OH	<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)
7,513.0	57.90	5.60	7,279.3	-2,318.3	45.1	-874.2	56.7	11.87	11.52	3.59
7,606.0	77.80	357.10	7,314.2	-2,353.2	130.7	-872.6	142.2	22.99	21.40	-9.14
7,700.0	80.00	354.70	7,332.3	-2,371.3	222.7	-879.2	234.3	3.43	2.34	-2.55
7,794.0	80.40	356.90	7,348.3	-2,387.3	315.0	-886.0	326.8	2.35	0.43	2.34
7,889.0	80.20	357.80	7,364.4	-2,403.4	408.6	-890.3	420.3	0.96	-0.21	0.95
7,983.0	79.30	358.60	7,381.1	-2,420.1	501.0	-893.2	512.8	1.27	-0.96	0.85
8,076.0	78.90	358.00	7,398.7	-2,437.7	592.3	-895.9	604.1	0.77	-0.43	-0.65
8,171.0	81.40	0.10	7,414.9	-2,453.9	685.9	-897.5	697.7	3.42	2.63	2.21
8,263.0	83.00	359.50	7,427.4	-2,466.4	777.0	-897.8	788.9	1.86	1.74	-0.65
8,356.0	84.50	358.60	7,437.5	-2,476.5	869.5	-899.3	881.3	1.88	1.61	-0.97
<b>HEEL</b>										
8,450.0	86.80	358.40	7,444.7	-2,483.7	963.1	-901.8	975.0	2.46	2.45	-0.21
8,542.0	89.60	358.00	7,447.5	-2,486.5	1,055.0	-904.7	1,067.0	3.07	3.04	-0.43
8,636.0	91.80	357.80	7,446.4	-2,485.4	1,149.0	-908.1	1,160.9	2.35	2.34	-0.21
8,730.0	92.30	359.10	7,443.0	-2,482.0	1,242.9	-910.6	1,254.8	1.48	0.53	1.38
8,825.0	92.10	359.40	7,439.4	-2,478.4	1,337.8	-911.9	1,349.8	0.38	-0.21	0.32
8,920.0	88.60	0.40	7,438.8	-2,477.8	1,432.8	-912.1	1,444.8	3.83	-3.68	1.05
9,013.0	89.80	0.00	7,440.1	-2,479.1	1,525.8	-911.7	1,537.7	1.36	1.29	-0.43
9,106.0	91.80	359.80	7,438.8	-2,477.8	1,618.8	-911.9	1,630.7	2.16	2.15	-0.22
9,200.0	91.70	0.10	7,435.9	-2,474.9	1,712.7	-912.0	1,724.7	0.34	-0.11	0.32
9,293.0	90.30	0.20	7,434.3	-2,473.3	1,805.7	-911.7	1,817.6	1.51	-1.51	0.11
9,388.0	90.60	0.20	7,433.6	-2,472.6	1,900.7	-911.4	1,912.6	0.32	0.32	0.00
9,483.0	92.80	0.50	7,430.7	-2,469.7	1,995.6	-910.8	2,007.5	2.34	2.32	0.32
9,577.0	90.20	358.50	7,428.3	-2,467.3	2,089.6	-911.6	2,101.5	3.49	-2.77	-2.13
9,670.0	91.20	359.70	7,427.2	-2,466.2	2,182.6	-913.1	2,194.5	1.68	1.08	1.29
9,764.0	90.40	358.00	7,425.8	-2,464.8	2,276.5	-915.0	2,288.5	2.00	-0.85	-1.81
9,859.0	90.80	1.20	7,424.8	-2,463.8	2,371.5	-915.7	2,383.5	3.39	0.42	3.37
9,953.0	91.40	0.20	7,423.0	-2,462.0	2,465.5	-914.5	2,477.4	1.24	0.64	-1.06
10,046.0	92.80	0.20	7,419.6	-2,458.6	2,558.4	-914.2	2,570.3	1.51	1.51	0.00
10,139.0	92.70	358.00	7,415.2	-2,454.2	2,651.3	-915.6	2,663.2	2.37	-0.11	-2.37
10,232.0	91.70	358.60	7,411.6	-2,450.6	2,744.2	-918.4	2,756.1	1.25	-1.08	0.65
10,326.0	91.40	357.80	7,409.1	-2,448.1	2,838.1	-921.3	2,850.1	0.91	-0.32	-0.85
10,420.0	89.70	358.40	7,408.2	-2,447.2	2,932.1	-924.5	2,944.1	1.92	-1.81	0.64
10,514.0	90.70	358.40	7,407.8	-2,446.8	3,026.0	-927.1	3,038.0	1.06	1.06	0.00
10,606.0	92.40	358.60	7,405.3	-2,444.3	3,117.9	-929.5	3,130.0	1.86	1.85	0.22
10,700.0	91.40	359.70	7,402.2	-2,441.2	3,211.9	-930.9	3,223.9	1.58	-1.06	1.17
10,794.0	90.20	359.80	7,400.9	-2,439.9	3,305.9	-931.3	3,317.9	1.28	-1.28	0.11
10,887.0	91.80	359.70	7,399.3	-2,438.3	3,398.8	-931.7	3,410.9	1.72	1.72	-0.11
10,980.0	90.80	0.20	7,397.2	-2,436.2	3,491.8	-931.8	3,503.9	1.20	-1.08	0.54
11,073.0	89.70	359.50	7,396.8	-2,435.8	3,584.8	-932.0	3,596.9	1.40	-1.18	-0.75
11,165.0	90.70	0.90	7,396.4	-2,435.4	3,676.8	-931.7	3,688.9	1.87	1.09	1.52
11,258.0	90.70	358.70	7,395.3	-2,434.3	3,769.8	-932.0	3,781.8	2.37	0.00	-2.37
11,350.0	92.00	358.10	7,393.1	-2,432.1	3,861.7	-934.6	3,873.8	1.56	1.41	-0.65
11,444.0	91.80	0.00	7,390.0	-2,429.0	3,955.7	-936.2	3,967.7	2.03	-0.21	2.02
11,537.0	90.90	1.50	7,387.8	-2,426.8	4,048.6	-934.9	4,060.7	1.88	-0.97	1.61
11,631.0	89.90	2.70	7,387.2	-2,426.2	4,142.6	-931.5	4,154.6	1.66	-1.06	1.28
11,725.0	90.60	2.40	7,386.8	-2,425.8	4,236.5	-927.3	4,248.4	0.81	0.74	-0.32
<b>LAST SURVEY APR 12, 2018</b>										
11,819.0	89.80	1.50	7,386.4	-2,425.4	4,330.4	-924.1	4,342.3	1.28	-0.85	-0.96
<b>PROJECTION TO TD - OH</b>										
11,943.0	89.80	1.50	7,386.9	-2,425.9	4,454.4	-920.9	4,466.2	0.00	0.00	0.00

# Survey Report



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-1HZ
<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 24-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	JOB # 2018-201-461 OH	<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-' - survey misses target center by 6.6usft at 6778.2usft MD (6650.9 TVD, -280.3 N, -893.2 E) - Point	0.00	0.00	6,650.5	-276.8	-887.6	14,537,536.47	1,683,114.42	40° 1' 46.440 N	104° 50' 50.892 W
QUARTER CIRCLE 24-' - survey misses target center by 1534.4usft at 11943.0usft MD (7386.9 TVD, 4454.4 N, -920.9 E) - Point	0.00	0.00	7,354.0	5,987.7	-970.6	14,543,798.33	1,683,020.52	40° 2' 48.348 N	104° 50' 51.962 W
QUARTER CIRCLE 24-' - survey misses target center by 13.7usft at 6777.3usft MD (6650.0 TVD, -280.3 N, -893.2 E) - Point	0.00	0.00	6,650.8	-292.7	-887.4	14,537,520.61	1,683,114.65	40° 1' 46.283 N	104° 50' 50.889 W
QUARTER CIRCLE 24-' - survey misses target center by 2177.7usft at 1829.0usft MD (1780.6 TVD, -37.6 N, -346.2 E) - Point	0.00	0.00	10.0	949.0	-1,142.4	14,538,761.34	1,682,857.56	40° 1' 58.554 N	104° 50' 54.168 W
QUARTER CIRCLE 24-' - survey misses target center by 9348.7usft at 11943.0usft MD (7386.9 TVD, 4454.4 N, -920.9 E) - Point	0.00	0.00	10.0	10,191.3	-1,181.7	14,547,999.92	1,682,802.11	40° 3' 29.889 N	104° 50' 54.679 W
QUARTER CIRCLE 24-' - survey misses target center by 156.3usft at 7006.6usft MD (6875.6 TVD, -243.7 N, -884.3 E) - Point	0.00	0.00	6,832.4	-93.6	-890.0	14,537,719.66	1,683,111.67	40° 1' 48.251 N	104° 50' 50.923 W
QUARTER CIRCLE 24-' - survey misses target center by 9.5usft at 6777.8usft MD (6650.5 TVD, -280.3 N, -893.2 E) - Point	0.00	0.00	6,650.9	-287.9	-887.4	14,537,525.47	1,683,114.58	40° 1' 46.331 N	104° 50' 50.890 W
QUARTER CIRCLE 24-' - survey misses target center by 5689.6usft at 11943.0usft MD (7386.9 TVD, 4454.4 N, -920.9 E) - Point	0.00	0.00	7,397.0	10,143.0	-1,025.5	14,547,951.95	1,682,958.38	40° 3' 29.412 N	104° 50' 52.670 W
QUARTER CIRCLE 24-' - survey misses target center by 5689.6usft at 11943.0usft MD (7386.9 TVD, 4454.4 N, -920.9 E) - Point	0.00	0.00	7,396.0	10,143.0	-1,025.5	14,547,951.95	1,682,958.38	40° 3' 29.412 N	104° 50' 52.670 W
QUARTER CIRCLE 24-' - survey misses target center by 77.6usft at 8045.8usft MD (7392.9 TVD, 562.6 N, -894.9 E) - Point	0.00	0.00	7,469.0	547.9	-898.5	14,538,360.83	1,683,102.04	40° 1' 54.590 N	104° 50' 51.033 W
QUARTER CIRCLE 24-' - survey misses target center by 147.3usft at 7030.3usft MD (6898.1 TVD, -236.6 N, -883.0 E) - Point	0.00	0.00	6,857.5	-95.1	-890.0	14,537,718.10	1,683,111.69	40° 1' 48.236 N	104° 50' 50.923 W

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
1,829.0	1,780.6	-37.6	-346.2	TIE IN TO SURFACE SURVEYS
6,737.0	6,609.7	-282.0	-893.6	KOP
8,450.0	7,444.7	963.1	-901.8	HEEL
11,819.0	7,386.4	4,330.4	-924.1	LAST SURVEY APR 12, 2018
11,943.0	7,386.9	4,454.4	-920.9	PROJECTION TO TD - OH

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_