

ANADARKO PETROLEUM CORP

WELD COUNTY (NAD 83)

SE SW SEC 24 T2N R66W 6th P.M.

GRACIE 24-7HZ

JOB #2018-424-461

15 August, 2018

Survey: FINAL SURVEYS





Project: WELD COUNTY (NAD 83)
 Site: SE SW SEC 24 T2N R66W 6th P.M.
 Well: GRACIE 24-7HZ
 Wellbore: JOB #2018-424-461
 Design: FINAL SURVEYS

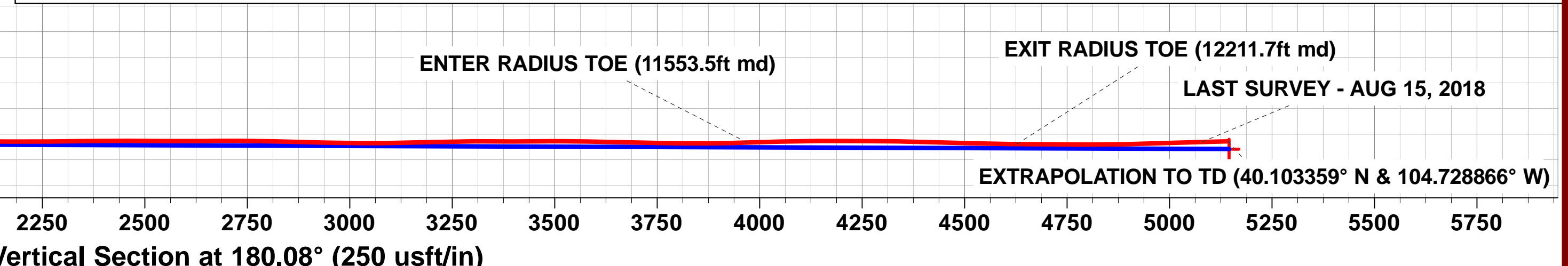
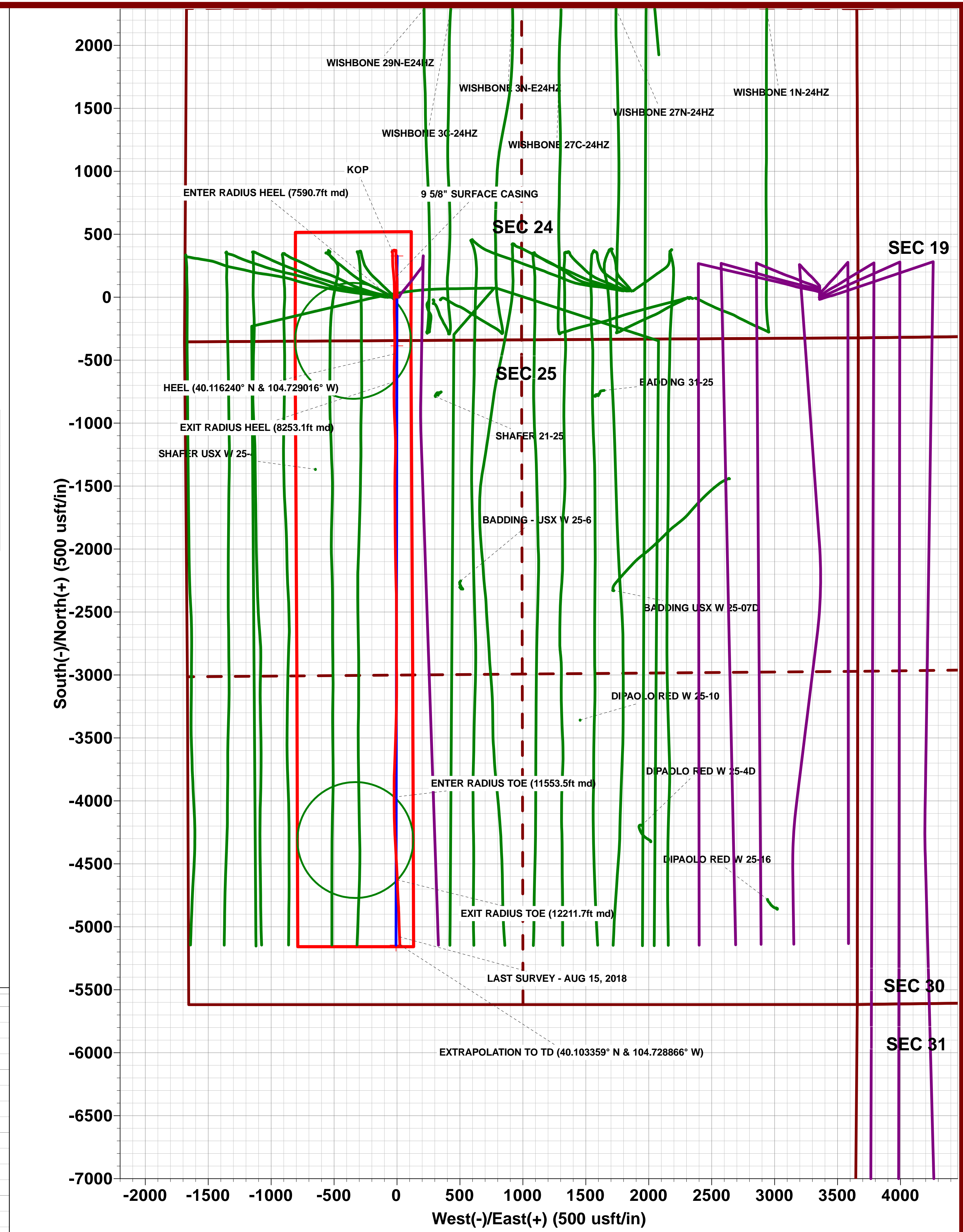
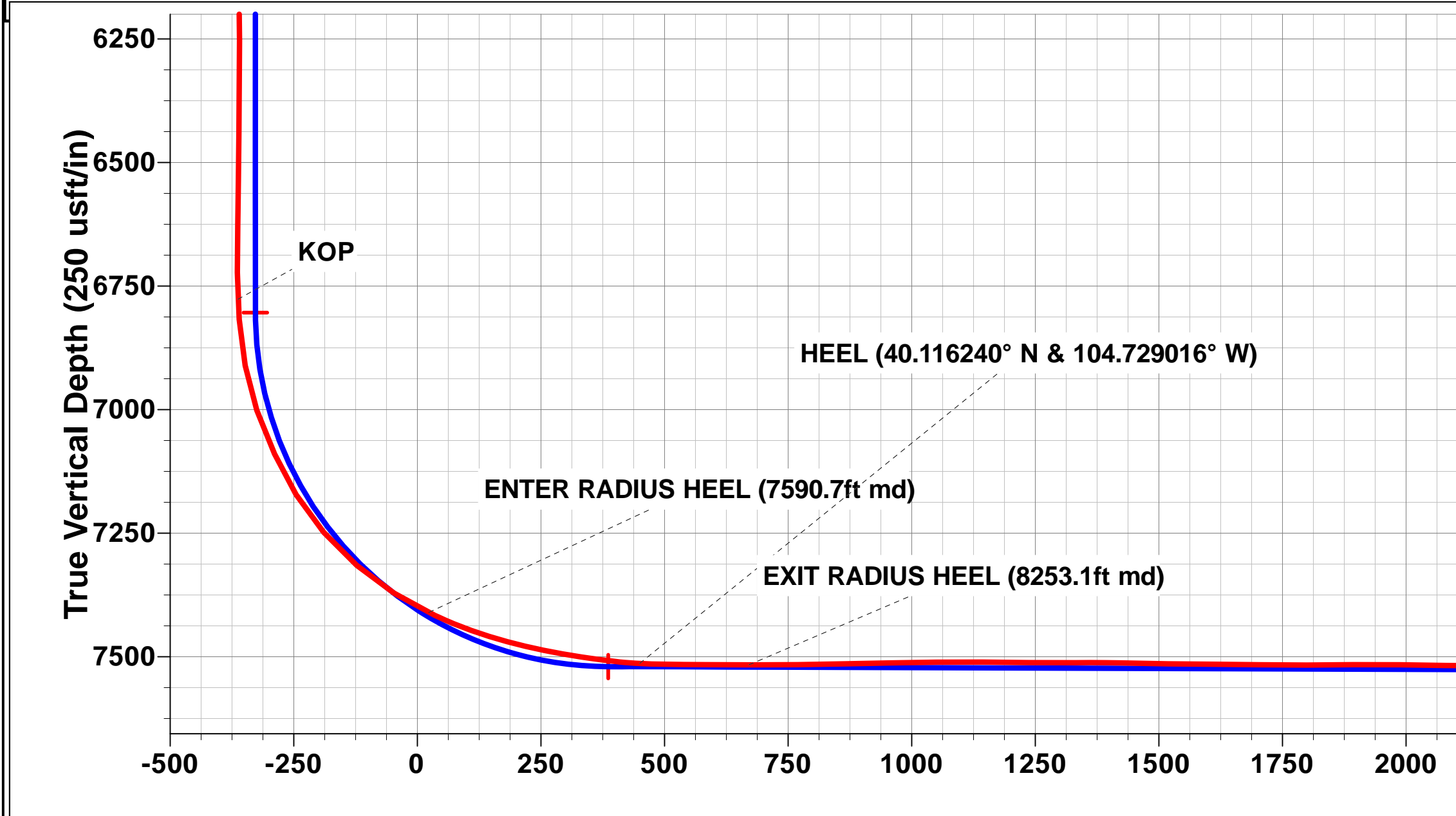
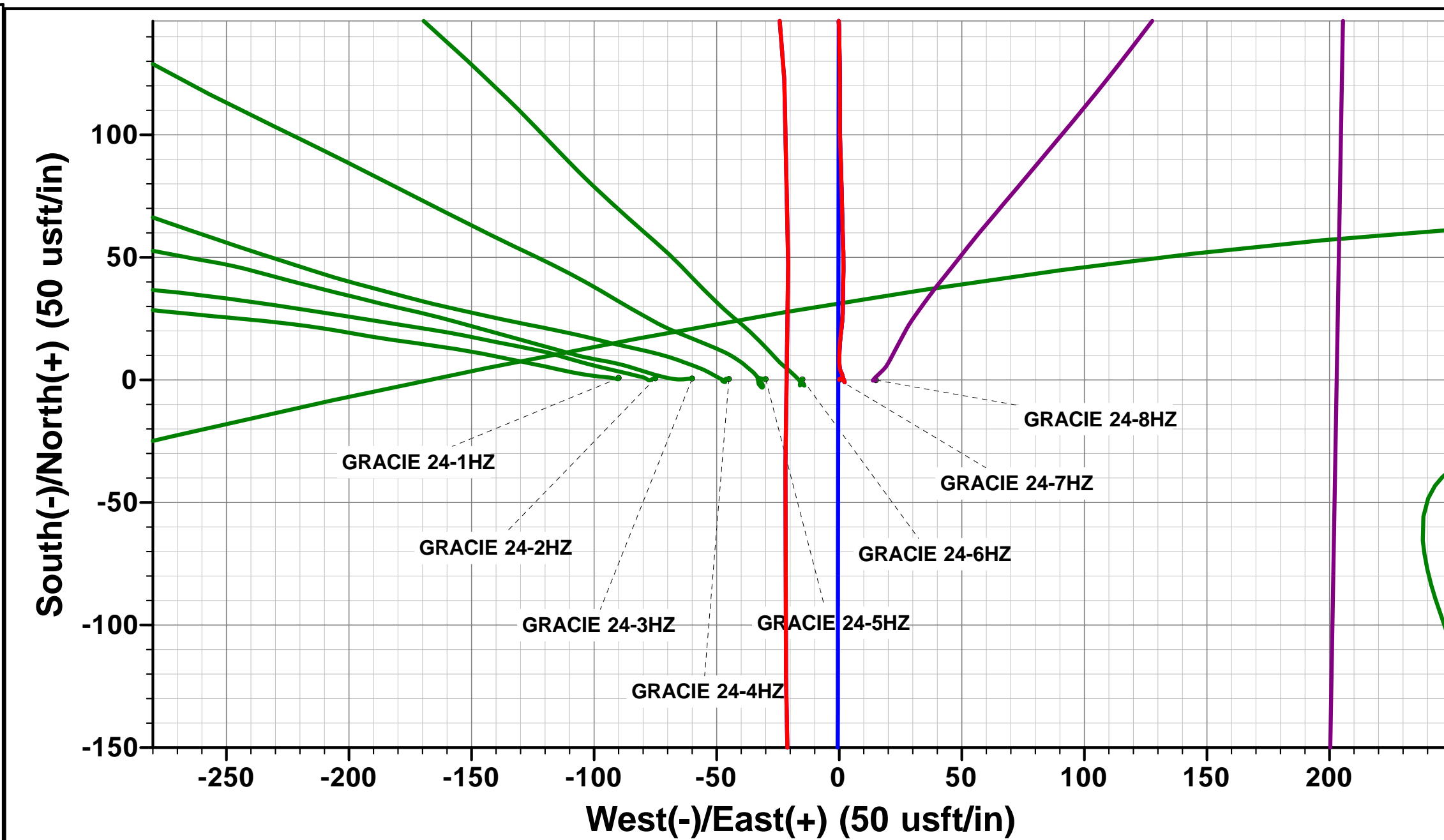
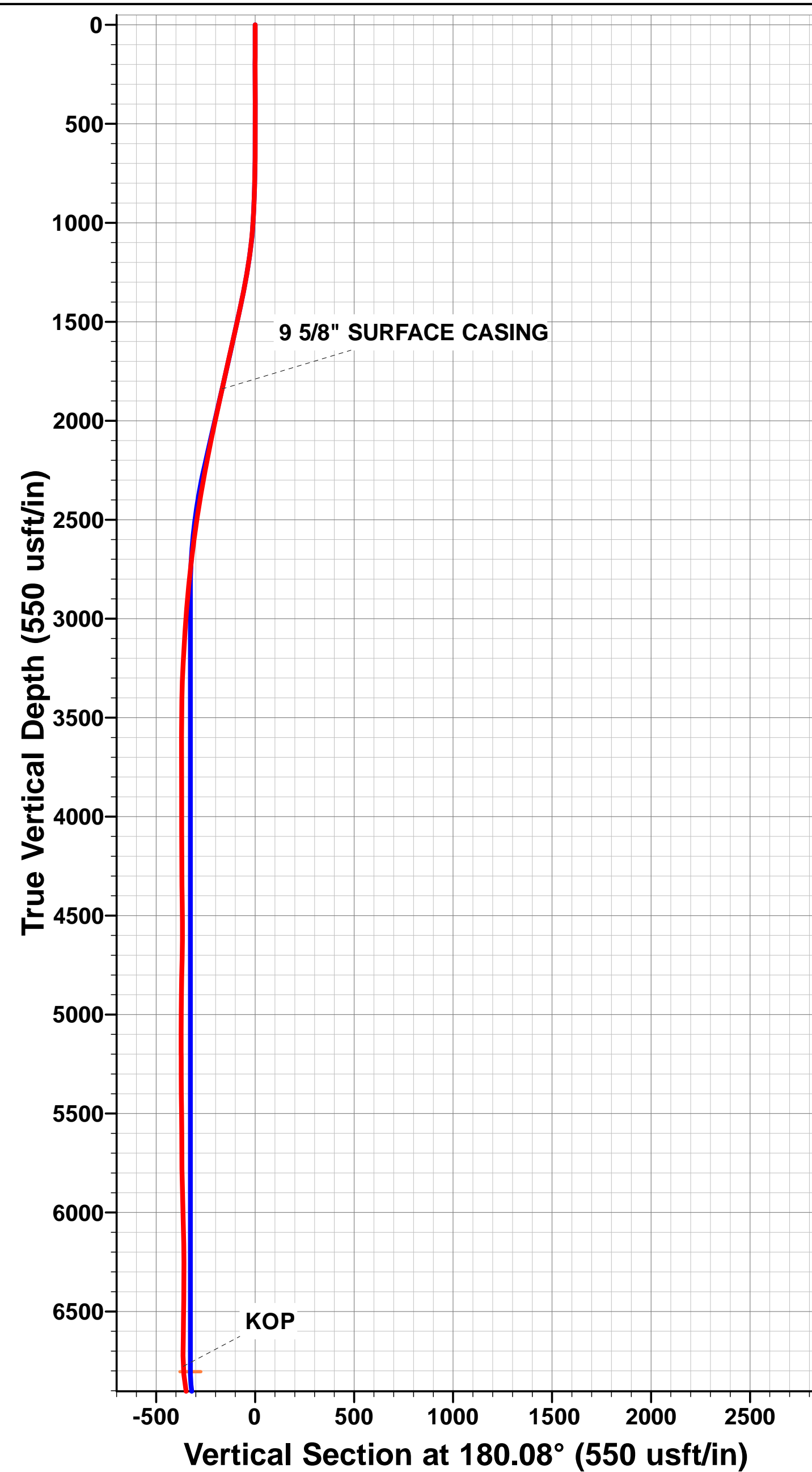
ANNOTATIONS

| TVD | MD | Inc | Azi | +N/-S | +E/-W | Vsect | Departure | Annotation |
|--------|---------|-------|--------|---------|-------|--------|-----------|--|
| 1839.4 | 1855.0 | 12.65 | 355.32 | 167.1 | -1.5 | -167.1 | 171.8 | 9 5/8" SURFACE CASING |
| 6776.8 | 6809.0 | 2.65 | 167.05 | 363.2 | -37.3 | -363.1 | 433.2 | KOP |
| 7410.5 | 7590.7 | 63.62 | 180.67 | -23.3 | -21.8 | 23.3 | 820.1 | ENTER RADIUS HEEL (7590.7ft md) |
| 7513.7 | 8032.0 | 86.84 | 181.57 | -449.6 | -19.2 | 449.6 | 1246.2 | HEEL (40.116240° N & 104.729016° W) |
| 7516.6 | 8253.1 | 89.92 | 180.60 | -670.6 | -22.8 | 670.6 | 1467.2 | EXIT RADIUS HEEL (8253.1ft md) |
| 7520.8 | 11553.5 | 91.44 | 180.05 | -3969.9 | -22.7 | 3970.0 | 4767.3 | ENTER RADIUS TOE (11553.5ft md) |
| 7524.5 | 12211.7 | 89.39 | 178.26 | -4627.4 | 2.2 | 4627.4 | 5425.4 | EXIT RADIUS TOE (12211.7ft md) |
| 7519.4 | 12664.0 | 91.40 | 177.52 | -5079.2 | 20.2 | 5079.2 | 5877.6 | LAST SURVEY - AUG 15, 2018 |
| 7517.8 | 12728.0 | 91.40 | 177.52 | -5143.1 | 23.0 | 5143.1 | 5941.6 | EXTRAPOLATION TO TD (40.103359° N & 104.728866° W) |

AS DRILLED LOCAL COORDINATES:
 SHL: 345ft FSL & 1685ft FWL Sec 24
 HEEL: 104.5ft FNL & 1667.7ft FWL Sec 25
 BHL: 475.3ft FSL & 1679.7ft FWL Sec 25

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude |
|---------------------------|--------|---------|-------|-----------------|-------------------|
| BHL - GRACIE 24-7HZ (P2) | 7537.0 | -5145.4 | -7.7 | 40° 6' 12.058 N | 104° 43' 44.311 W |
| HEEL - GRACIE 24-7HZ (P2) | 7520.0 | -386.1 | -0.9 | 40° 6' 59.090 N | 104° 43' 44.224 W |
| KOP - GRACIE 24-7HZ (P2) | 6803.8 | 327.6 | 0.1 | 40° 7' 6.143 N | 104° 43' 44.211 W |



Survey Report



| | |
|---|--|
| Company: ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: Well GRACIE 24-7HZ |
| Project: WELD COUNTY (NAD 83) | TVD Reference: KB 20' @ 5103.0usft (PD 461) |
| Site: SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: KB 20' @ 5103.0usft (PD 461) |
| Well: GRACIE 24-7HZ | North Reference: True |
| Wellbore: JOB #2018-424-461 | Survey Calculation Method: Minimum Curvature |
| Design: FINAL SURVEYS | Database: EOG RESOURCES |

| | |
|---|-------------------------------------|
| Project WELD COUNTY (NAD 83) | |
| Map System: Universal Transverse Mercator (US Survey Fee | 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 24 T2N R66W 6th P.M. | |
| Site Position: | Northing: 14,569,626.93 usft |
| From: Lat/Long | Easting: 1,716,104.98 usft |
| Position Uncertainty: 0.0 usft | Slot Radius: 13-3/16" |
| | Latitude: 40° 7' 2.914 N |
| | Longitude: 104° 43' 45.370 W |
| | Grid Convergence: 0.17 ° |

| | |
|--------------------------------------|-------------------------------------|
| Well GRACIE 24-7HZ | |
| Well Position | +N/-S 0.0 usft |
| | +E/-W 0.0 usft |
| Position Uncertainty 0.0 usft | Wellhead Elevation: usft |
| | Northing: 14,569,626.40 usft |
| | Easting: 1,716,194.91 usft |
| | Latitude: 40° 7' 2.906 N |
| | Longitude: 104° 43' 44.212 W |
| | Ground Level: 5,083.0 usft |

| Wellbore JOB #2018-424-461 | | | | | |
|-----------------------------------|------------|-------------|-----------------|---------------|---------------------|
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 18/07/2018 | 8.05 | 66.61 | 52,123 |

| Design FINAL SURVEYS | | | | |
|-----------------------------|--------------------------|--------------|--------------|---------------|
| 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 | 180.08 |

| Survey Program Date 15/08/2018 | | | | |
|---------------------------------------|-----------|-----------------------------------|---------------------|------------------------------------|
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
| 132.0 | 12,728.0 | FINAL SURVEYS (JOB #2018-424-461) | APC_ISCWSA REV 2 MM | 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) | |
| 0.0 | 0.00 | 0.00 | 0.0 | 5,103.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | |
| 132.0 | 0.22 | 358.85 | 132.0 | 4,971.0 | 0.3 | 0.0 | -0.3 | 0.17 | 0.17 | 0.00 | |
| 164.0 | 0.35 | 51.67 | 164.0 | 4,939.0 | 0.4 | 0.1 | -0.4 | 0.87 | 0.41 | 165.06 | |
| 196.0 | 0.13 | 22.67 | 196.0 | 4,907.0 | 0.5 | 0.2 | -0.5 | 0.76 | -0.69 | -90.62 | |
| 227.0 | 0.40 | 106.34 | 227.0 | 4,876.0 | 0.5 | 0.3 | -0.5 | 1.31 | 0.87 | 269.90 | |
| 259.0 | 0.48 | 107.04 | 259.0 | 4,844.0 | 0.4 | 0.5 | -0.4 | 0.25 | 0.25 | 2.19 | |
| 291.0 | 0.53 | 74.09 | 291.0 | 4,812.0 | 0.4 | 0.8 | -0.4 | 0.91 | 0.16 | -102.97 | |
| 322.0 | 0.53 | 123.57 | 322.0 | 4,781.0 | 0.4 | 1.0 | -0.4 | 1.43 | 0.00 | 159.61 | |
| 354.0 | 0.31 | 92.10 | 354.0 | 4,749.0 | 0.3 | 1.3 | -0.3 | 0.97 | -0.69 | -98.34 | |
| 386.0 | 0.66 | 143.96 | 386.0 | 4,717.0 | 0.1 | 1.4 | -0.1 | 1.65 | 1.09 | 162.06 | |
| 417.0 | 0.42 | 142.55 | 417.0 | 4,686.0 | -0.1 | 1.6 | 0.1 | 0.78 | -0.77 | -4.55 | |
| 449.0 | 0.92 | 139.65 | 449.0 | 4,654.0 | -0.4 | 1.9 | 0.4 | 1.57 | 1.56 | -9.06 | |
| 481.0 | 0.62 | 146.33 | 481.0 | 4,622.0 | -0.7 | 2.1 | 0.7 | 0.98 | -0.94 | 20.87 | |

Survey Report



| | | | |
|------------------|--------------------------------|-------------------------------------|------------------------------|
| Company: | ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: | Well GRACIE 24-7HZ |
| Project: | WELD COUNTY (NAD 83) | TVD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Site: | SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Well: | GRACIE 24-7HZ | North Reference: | True |
| Wellbore: | JOB #2018-424-461 | 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) |
|------------------------------|-----------------|---------------|-----------------------|---------------------|--------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| 512.0 | 0.09 | 185.18 | 512.0 | 4,591.0 | -0.9 | 2.2 | 0.9 | 1.78 | -1.71 | 125.32 |
| 544.0 | 0.31 | 343.91 | 544.0 | 4,559.0 | -0.8 | 2.2 | 0.8 | 1.24 | 0.69 | 496.03 |
| 575.0 | 0.66 | 346.28 | 575.0 | 4,528.0 | -0.6 | 2.1 | 0.6 | 1.13 | 1.13 | 7.65 |
| 607.0 | 0.48 | 350.06 | 607.0 | 4,496.0 | -0.3 | 2.1 | 0.3 | 0.57 | -0.56 | 11.81 |
| 639.0 | 0.53 | 332.40 | 639.0 | 4,464.0 | 0.0 | 2.0 | 0.0 | 0.51 | 0.16 | -55.19 |
| 671.0 | 0.83 | 327.83 | 671.0 | 4,432.0 | 0.3 | 1.8 | -0.3 | 0.95 | 0.94 | -14.28 |
| 702.0 | 1.10 | 353.23 | 702.0 | 4,401.0 | 0.8 | 1.6 | -0.8 | 1.61 | 0.87 | 81.94 |
| 734.0 | 1.32 | 340.66 | 734.0 | 4,369.0 | 1.4 | 1.5 | -1.5 | 1.07 | 0.69 | -39.28 |
| 766.0 | 1.45 | 336.70 | 766.0 | 4,337.0 | 2.2 | 1.2 | -2.2 | 0.50 | 0.41 | -12.37 |
| 798.0 | 1.19 | 344.88 | 798.0 | 4,305.0 | 2.9 | 0.9 | -2.9 | 1.00 | -0.81 | 25.56 |
| 829.0 | 1.67 | 332.84 | 829.0 | 4,274.1 | 3.6 | 0.6 | -3.6 | 1.82 | 1.55 | -38.84 |
| 861.0 | 1.45 | 346.99 | 860.9 | 4,242.1 | 4.4 | 0.3 | -4.4 | 1.38 | -0.69 | 44.22 |
| 893.0 | 1.93 | 351.47 | 892.9 | 4,210.1 | 5.3 | 0.2 | -5.3 | 1.55 | 1.50 | 14.00 |
| 925.0 | 2.77 | 357.53 | 924.9 | 4,178.1 | 6.6 | 0.0 | -6.6 | 2.73 | 2.62 | 18.94 |
| 956.0 | 3.21 | 1.14 | 955.8 | 4,147.2 | 8.2 | 0.0 | -8.2 | 1.54 | 1.42 | 11.65 |
| 987.0 | 3.47 | 1.14 | 986.8 | 4,116.2 | 10.0 | 0.1 | -10.0 | 0.84 | 0.84 | 0.00 |
| 1,019.0 | 4.04 | 1.84 | 1,018.7 | 4,084.3 | 12.1 | 0.1 | -12.1 | 1.79 | 1.78 | 2.19 |
| 1,051.0 | 5.14 | 4.83 | 1,050.6 | 4,052.4 | 14.7 | 0.3 | -14.7 | 3.52 | 3.44 | 9.34 |
| 1,082.0 | 5.71 | 5.62 | 1,081.5 | 4,021.5 | 17.6 | 0.5 | -17.6 | 1.85 | 1.84 | 2.55 |
| 1,114.0 | 6.86 | 6.59 | 1,113.3 | 3,989.7 | 21.1 | 0.9 | -21.1 | 3.61 | 3.59 | 3.03 |
| 1,146.0 | 7.38 | 4.56 | 1,145.0 | 3,958.0 | 25.0 | 1.3 | -25.0 | 1.80 | 1.62 | -6.34 |
| 1,178.0 | 8.26 | 0.70 | 1,176.7 | 3,926.3 | 29.4 | 1.5 | -29.4 | 3.20 | 2.75 | -12.06 |
| 1,210.0 | 9.10 | 0.43 | 1,208.4 | 3,894.6 | 34.2 | 1.5 | -34.2 | 2.63 | 2.62 | -0.84 |
| 1,241.0 | 9.45 | 1.75 | 1,239.0 | 3,864.0 | 39.2 | 1.6 | -39.2 | 1.32 | 1.13 | 4.26 |
| 1,272.0 | 9.76 | 0.08 | 1,269.5 | 3,833.5 | 44.4 | 1.7 | -44.4 | 1.34 | 1.00 | -5.39 |
| 1,304.0 | 10.63 | 359.20 | 1,301.0 | 3,802.0 | 50.0 | 1.7 | -50.0 | 2.76 | 2.72 | -2.75 |
| 1,336.0 | 10.94 | 357.62 | 1,332.5 | 3,770.5 | 56.0 | 1.5 | -56.0 | 1.34 | 0.97 | -4.94 |
| 1,399.0 | 11.65 | 359.12 | 1,394.2 | 3,708.8 | 68.4 | 1.2 | -68.4 | 1.22 | 1.13 | 2.38 |
| 1,430.0 | 12.00 | 358.68 | 1,424.6 | 3,678.4 | 74.7 | 1.1 | -74.7 | 1.17 | 1.13 | -1.42 |
| 1,462.0 | 12.26 | 358.59 | 1,455.9 | 3,647.1 | 81.4 | 0.9 | -81.4 | 0.81 | 0.81 | -0.28 |
| 1,494.0 | 12.00 | 357.71 | 1,487.2 | 3,615.8 | 88.2 | 0.7 | -88.2 | 1.00 | -0.81 | -2.75 |
| 1,525.0 | 12.44 | 358.06 | 1,517.5 | 3,585.5 | 94.7 | 0.4 | -94.7 | 1.44 | 1.42 | 1.13 |
| 1,557.0 | 12.61 | 359.55 | 1,548.7 | 3,554.3 | 101.7 | 0.3 | -101.7 | 1.14 | 0.53 | 4.66 |
| 1,589.0 | 12.92 | 0.79 | 1,579.9 | 3,523.1 | 108.7 | 0.3 | -108.7 | 1.29 | 0.97 | 3.87 |
| 1,652.0 | 12.52 | 359.03 | 1,641.4 | 3,461.6 | 122.6 | 0.3 | -122.6 | 0.88 | -0.63 | -2.79 |
| 1,684.0 | 12.44 | 359.12 | 1,672.6 | 3,430.4 | 129.5 | 0.2 | -129.5 | 0.26 | -0.25 | 0.28 |
| 1,716.0 | 12.57 | 359.38 | 1,703.8 | 3,399.2 | 136.4 | 0.1 | -136.4 | 0.44 | 0.41 | 0.81 |
| 1,747.0 | 12.92 | 358.85 | 1,734.1 | 3,368.9 | 143.3 | 0.0 | -143.3 | 1.19 | 1.13 | -1.71 |
| 1,779.0 | 12.70 | 356.74 | 1,765.3 | 3,337.7 | 150.4 | -0.3 | -150.4 | 1.62 | -0.69 | -6.59 |
| 1,806.0 | 12.83 | 356.13 | 1,791.6 | 3,311.4 | 156.3 | -0.7 | -156.3 | 0.69 | 0.48 | -2.26 |
| 9 5/8" SURFACE CASING | | | | | | | | | | |
| 1,855.0 | 12.65 | 355.32 | 1,839.4 | 3,263.6 | 167.1 | -1.5 | -167.1 | 0.51 | -0.37 | -1.64 |
| 1,939.0 | 12.35 | 353.89 | 1,921.4 | 3,181.6 | 185.2 | -3.2 | -185.2 | 0.51 | -0.36 | -1.71 |
| 2,033.0 | 11.96 | 359.12 | 2,013.3 | 3,089.7 | 204.9 | -4.4 | -204.9 | 1.24 | -0.41 | 5.56 |
| 2,127.0 | 11.43 | 357.40 | 2,105.4 | 2,997.6 | 224.0 | -5.0 | -224.0 | 0.67 | -0.56 | -1.83 |
| 2,220.0 | 11.10 | 357.32 | 2,196.6 | 2,906.4 | 242.1 | -5.8 | -242.1 | 0.36 | -0.35 | -0.09 |
| 2,314.0 | 10.28 | 356.59 | 2,288.9 | 2,814.1 | 259.5 | -6.7 | -259.5 | 0.88 | -0.87 | -0.78 |
| 2,409.0 | 9.58 | 358.54 | 2,382.5 | 2,720.5 | 275.9 | -7.4 | -275.9 | 0.82 | -0.74 | 2.05 |
| 2,504.0 | 8.73 | 358.78 | 2,476.3 | 2,626.7 | 291.0 | -7.8 | -291.0 | 0.90 | -0.89 | 0.25 |
| 2,598.0 | 7.95 | 358.21 | 2,569.3 | 2,533.7 | 304.6 | -8.1 | -304.6 | 0.83 | -0.83 | -0.61 |
| 2,691.0 | 7.16 | 358.78 | 2,661.5 | 2,441.5 | 316.9 | -8.5 | -316.8 | 0.85 | -0.85 | 0.61 |
| 2,784.0 | 6.21 | 359.93 | 2,753.9 | 2,349.1 | 327.7 | -8.6 | -327.7 | 1.03 | -1.02 | 1.24 |
| 2,877.0 | 5.24 | 1.85 | 2,846.4 | 2,256.6 | 337.0 | -8.5 | -336.9 | 1.06 | -1.04 | 2.06 |

Survey Report



| | | | |
|------------------|--------------------------------|-------------------------------------|------------------------------|
| Company: | ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: | Well GRACIE 24-7HZ |
| Project: | WELD COUNTY (NAD 83) | TVD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Site: | SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Well: | GRACIE 24-7HZ | North Reference: | True |
| Wellbore: | JOB #2018-424-461 | 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) |
|-----------------------|-----------------|---------------|-----------------------|---------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 2,970.0 | 4.54 | 1.15 | 2,939.1 | 2,163.9 | 344.9 | -8.2 | -344.9 | 0.76 | -0.75 | -0.75 |
| 3,064.0 | 3.96 | 1.67 | 3,032.8 | 2,070.2 | 351.8 | -8.1 | -351.8 | 0.62 | -0.62 | 0.55 |
| 3,158.0 | 3.57 | 0.22 | 3,126.6 | 1,976.4 | 358.0 | -8.0 | -358.0 | 0.43 | -0.41 | -1.54 |
| 3,252.0 | 3.05 | 357.31 | 3,220.4 | 1,882.6 | 363.4 | -8.1 | -363.4 | 0.58 | -0.55 | -3.10 |
| 3,348.0 | 2.64 | 355.80 | 3,316.3 | 1,786.7 | 368.2 | -8.4 | -368.2 | 0.43 | -0.43 | -1.57 |
| 3,442.0 | 0.64 | 33.50 | 3,410.3 | 1,692.7 | 370.8 | -8.2 | -370.8 | 2.31 | -2.13 | 40.11 |
| 3,536.0 | 0.14 | 35.14 | 3,504.3 | 1,598.7 | 371.3 | -7.9 | -371.3 | 0.53 | -0.53 | 1.74 |
| 3,629.0 | 0.39 | 298.81 | 3,597.3 | 1,505.7 | 371.6 | -8.1 | -371.6 | 0.46 | 0.27 | -103.58 |
| 3,722.0 | 0.58 | 292.01 | 3,690.3 | 1,412.7 | 371.9 | -8.8 | -371.9 | 0.21 | 0.20 | -7.31 |
| 3,815.0 | 0.61 | 278.65 | 3,783.3 | 1,319.7 | 372.1 | -9.7 | -372.1 | 0.15 | 0.03 | -14.37 |
| 3,909.0 | 0.49 | 268.44 | 3,877.3 | 1,225.7 | 372.2 | -10.6 | -372.2 | 0.16 | -0.13 | -10.86 |
| 4,003.0 | 0.61 | 249.04 | 3,971.3 | 1,131.7 | 372.0 | -11.5 | -372.0 | 0.23 | 0.13 | -20.64 |
| 4,097.0 | 0.87 | 245.15 | 4,065.3 | 1,037.7 | 371.5 | -12.6 | -371.5 | 0.28 | 0.28 | -4.14 |
| 4,191.0 | 1.11 | 252.15 | 4,159.2 | 943.8 | 371.0 | -14.1 | -370.9 | 0.29 | 0.26 | 7.45 |
| 4,286.0 | 1.26 | 258.68 | 4,254.2 | 848.8 | 370.5 | -16.0 | -370.5 | 0.21 | 0.16 | 6.87 |
| 4,379.0 | 0.61 | 199.10 | 4,347.2 | 755.8 | 369.8 | -17.2 | -369.8 | 1.17 | -0.70 | -64.06 |
| 4,473.0 | 1.04 | 226.33 | 4,441.2 | 661.8 | 368.7 | -18.0 | -368.7 | 0.61 | 0.46 | 28.97 |
| 4,566.0 | 1.78 | 241.70 | 4,534.2 | 568.8 | 367.5 | -19.8 | -367.5 | 0.89 | 0.80 | 16.53 |
| 4,658.0 | 0.91 | 316.10 | 4,626.2 | 476.8 | 367.3 | -21.6 | -367.3 | 1.92 | -0.95 | 80.87 |
| 4,752.0 | 1.53 | 15.12 | 4,720.1 | 382.9 | 369.1 | -21.8 | -369.0 | 1.40 | 0.66 | 62.79 |
| 4,845.0 | 1.19 | 14.39 | 4,813.1 | 289.9 | 371.2 | -21.2 | -371.2 | 0.37 | -0.37 | -0.78 |
| 4,939.0 | 0.60 | 13.19 | 4,907.1 | 195.9 | 372.6 | -20.9 | -372.6 | 0.63 | -0.63 | -1.28 |
| 5,033.0 | 0.45 | 337.02 | 5,001.1 | 101.9 | 373.5 | -20.9 | -373.4 | 0.38 | -0.16 | -38.48 |
| 5,127.0 | 0.51 | 284.38 | 5,095.1 | 7.9 | 373.9 | -21.5 | -373.9 | 0.46 | 0.06 | -56.00 |
| 5,222.0 | 0.86 | 261.36 | 5,190.1 | -87.1 | 373.9 | -22.6 | -373.9 | 0.46 | 0.37 | -24.23 |
| 5,247.0 | 0.87 | 266.42 | 5,215.1 | -112.1 | 373.9 | -23.0 | -373.8 | 0.31 | 0.04 | 20.24 |
| 5,342.0 | 0.81 | 257.55 | 5,310.1 | -207.1 | 373.7 | -24.3 | -373.6 | 0.15 | -0.06 | -9.34 |
| 5,434.0 | 1.24 | 246.98 | 5,402.1 | -299.1 | 373.1 | -25.9 | -373.1 | 0.51 | 0.47 | -11.49 |
| 5,529.0 | 1.47 | 244.46 | 5,497.0 | -394.0 | 372.2 | -27.9 | -372.2 | 0.25 | 0.24 | -2.65 |
| 5,623.0 | 1.61 | 240.14 | 5,591.0 | -488.0 | 371.0 | -30.2 | -371.0 | 0.19 | 0.15 | -4.60 |
| 5,718.0 | 0.73 | 272.62 | 5,686.0 | -583.0 | 370.4 | -31.9 | -370.4 | 1.12 | -0.93 | 34.19 |
| 5,813.0 | 1.33 | 226.03 | 5,781.0 | -678.0 | 369.7 | -33.3 | -369.6 | 1.04 | 0.63 | -49.04 |
| 5,907.0 | 1.48 | 208.87 | 5,874.9 | -771.9 | 367.8 | -34.7 | -367.8 | 0.47 | 0.16 | -18.26 |
| 6,002.0 | 1.46 | 201.10 | 5,969.9 | -866.9 | 365.6 | -35.7 | -365.6 | 0.21 | -0.02 | -8.18 |
| 6,096.0 | 1.67 | 214.94 | 6,063.9 | -960.9 | 363.4 | -36.9 | -363.3 | 0.46 | 0.22 | 14.72 |
| 6,191.0 | 2.13 | 210.87 | 6,158.8 | -1,055.8 | 360.7 | -38.6 | -360.7 | 0.50 | 0.48 | -4.28 |
| 6,285.0 | 0.54 | 359.01 | 6,252.8 | -1,149.8 | 359.7 | -39.5 | -359.6 | 2.77 | -1.69 | 157.60 |
| 6,379.0 | 0.30 | 28.19 | 6,346.8 | -1,243.8 | 360.3 | -39.4 | -360.3 | 0.33 | -0.26 | 31.04 |
| 6,473.0 | 0.62 | 44.55 | 6,440.8 | -1,337.8 | 360.9 | -39.0 | -360.9 | 0.36 | 0.34 | 17.40 |
| 6,567.0 | 0.81 | 15.69 | 6,534.8 | -1,431.8 | 361.9 | -38.4 | -361.9 | 0.43 | 0.20 | -30.70 |
| 6,661.0 | 0.72 | 16.98 | 6,628.8 | -1,525.8 | 363.1 | -38.1 | -363.1 | 0.10 | -0.10 | 1.37 |
| 6,755.0 | 0.61 | 26.57 | 6,722.8 | -1,619.8 | 364.1 | -37.7 | -364.1 | 0.17 | -0.12 | 10.20 |
| KOP | | | | | | | | | | |
| 6,809.0 | 2.65 | 167.05 | 6,776.8 | -1,673.8 | 363.2 | -37.3 | -363.1 | 5.83 | 3.78 | 260.14 |
| 6,850.0 | 5.03 | 170.41 | 6,817.7 | -1,714.7 | 360.5 | -36.8 | -360.4 | 5.83 | 5.80 | 8.21 |
| 6,944.0 | 10.15 | 175.19 | 6,910.8 | -1,807.8 | 348.2 | -35.4 | -348.1 | 5.48 | 5.45 | 5.09 |
| 7,038.0 | 18.78 | 179.79 | 7,001.7 | -1,898.7 | 324.7 | -34.6 | -324.7 | 9.25 | 9.18 | 4.89 |
| 7,133.0 | 25.41 | 181.16 | 7,089.7 | -1,986.7 | 289.0 | -35.0 | -289.0 | 7.00 | 6.98 | 1.44 |
| 7,226.0 | 30.76 | 174.62 | 7,171.8 | -2,068.8 | 245.4 | -33.1 | -245.3 | 6.63 | 5.75 | -7.03 |
| 7,321.0 | 41.78 | 174.28 | 7,248.2 | -2,145.2 | 189.5 | -27.7 | -189.5 | 11.60 | 11.60 | -0.36 |
| 7,416.0 | 48.35 | 176.48 | 7,315.3 | -2,212.3 | 122.5 | -22.4 | -122.5 | 7.11 | 6.92 | 2.32 |
| 7,510.0 | 58.37 | 180.89 | 7,371.3 | -2,268.3 | 47.2 | -20.8 | -47.2 | 11.30 | 10.66 | 4.69 |

Survey Report



| | | | |
|------------------|--------------------------------|-------------------------------------|------------------------------|
| Company: | ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: | Well GRACIE 24-7HZ |
| Project: | WELD COUNTY (NAD 83) | TVD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Site: | SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Well: | GRACIE 24-7HZ | North Reference: | True |
| Wellbore: | JOB #2018-424-461 | 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) |
|--|-----------------|---------------|-----------------------|---------------------|-----------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| ENTER RADIUS HEEL (7590.7ft md) | | | | | | | | | | |
| 7,590.7 | 63.62 | 180.67 | 7,410.5 | -2,307.5 | -23.3 | -21.8 | 23.3 | 6.51 | 6.51 | -0.27 |
| 7,604.0 | 64.49 | 180.64 | 7,416.3 | -2,313.3 | -35.3 | -21.9 | 35.3 | 6.51 | 6.51 | -0.25 |
| 7,697.0 | 71.51 | 179.11 | 7,451.1 | -2,348.1 | -121.4 | -21.7 | 121.5 | 7.70 | 7.55 | -1.65 |
| 7,792.0 | 76.25 | 178.71 | 7,477.5 | -2,374.5 | -212.7 | -20.0 | 212.7 | 5.01 | 4.99 | -0.42 |
| 7,885.0 | 80.56 | 179.20 | 7,496.1 | -2,393.1 | -303.7 | -18.3 | 303.8 | 4.66 | 4.63 | 0.53 |
| 7,978.0 | 83.39 | 180.61 | 7,509.1 | -2,406.1 | -395.8 | -18.2 | 395.8 | 3.39 | 3.04 | 1.52 |
| HEEL (40.116240° N & 104.729016° W) | | | | | | | | | | |
| 8,032.0 | 86.84 | 181.57 | 7,513.7 | -2,410.7 | -449.6 | -19.2 | 449.6 | 6.62 | 6.38 | 1.78 |
| 8,072.0 | 89.39 | 182.28 | 7,515.0 | -2,412.0 | -489.5 | -20.5 | 489.6 | 6.62 | 6.38 | 1.77 |
| 8,165.0 | 89.38 | 179.96 | 7,516.0 | -2,413.0 | -582.5 | -22.3 | 582.5 | 2.49 | -0.01 | -2.49 |
| EXIT RADIUS HEEL (8253.1ft md) | | | | | | | | | | |
| 8,253.1 | 89.92 | 180.60 | 7,516.6 | -2,413.6 | -670.6 | -22.8 | 670.6 | 0.95 | 0.62 | 0.72 |
| 8,259.0 | 89.96 | 180.64 | 7,516.6 | -2,413.6 | -676.5 | -22.8 | 676.5 | 0.95 | 0.62 | 0.72 |
| 8,352.0 | 90.76 | 180.78 | 7,516.0 | -2,413.0 | -769.5 | -24.0 | 769.5 | 0.87 | 0.86 | 0.15 |
| 8,446.0 | 91.20 | 177.86 | 7,514.4 | -2,411.4 | -863.5 | -22.9 | 863.5 | 3.14 | 0.47 | -3.11 |
| 8,540.0 | 91.05 | 177.95 | 7,512.5 | -2,409.5 | -957.4 | -19.4 | 957.4 | 0.19 | -0.16 | 0.10 |
| 8,633.0 | 90.67 | 176.40 | 7,511.2 | -2,408.2 | -1,050.3 | -14.8 | 1,050.3 | 1.72 | -0.41 | -1.67 |
| 8,726.0 | 89.74 | 179.80 | 7,510.8 | -2,407.8 | -1,143.2 | -11.8 | 1,143.2 | 3.79 | -1.00 | 3.66 |
| 8,820.0 | 89.06 | 180.73 | 7,511.8 | -2,408.8 | -1,237.2 | -12.2 | 1,237.2 | 1.23 | -0.72 | 0.99 |
| 8,914.0 | 90.57 | 181.86 | 7,512.1 | -2,409.1 | -1,331.2 | -14.3 | 1,331.2 | 2.01 | 1.61 | 1.20 |
| 9,007.0 | 88.80 | 180.27 | 7,512.6 | -2,409.6 | -1,424.1 | -16.1 | 1,424.2 | 2.56 | -1.90 | -1.71 |
| 9,102.0 | 89.13 | 179.88 | 7,514.3 | -2,411.3 | -1,519.1 | -16.2 | 1,519.1 | 0.54 | 0.35 | -0.41 |
| 9,196.0 | 89.53 | 180.12 | 7,515.4 | -2,412.4 | -1,613.1 | -16.2 | 1,613.1 | 0.50 | 0.43 | 0.26 |
| 9,289.0 | 89.39 | 179.57 | 7,516.3 | -2,413.3 | -1,706.1 | -15.9 | 1,706.1 | 0.61 | -0.15 | -0.59 |
| 9,382.0 | 89.88 | 179.34 | 7,516.9 | -2,413.9 | -1,799.1 | -15.0 | 1,799.1 | 0.58 | 0.53 | -0.25 |
| 9,476.0 | 90.96 | 179.54 | 7,516.2 | -2,413.2 | -1,893.1 | -14.1 | 1,893.1 | 1.17 | 1.15 | 0.21 |
| 9,570.0 | 88.80 | 179.20 | 7,516.4 | -2,413.4 | -1,987.1 | -13.1 | 1,987.1 | 2.33 | -2.30 | -0.36 |
| 9,663.0 | 89.36 | 179.07 | 7,517.9 | -2,414.9 | -2,080.1 | -11.7 | 2,080.1 | 0.62 | 0.60 | -0.14 |
| 9,758.0 | 90.10 | 178.80 | 7,518.4 | -2,415.4 | -2,175.0 | -9.9 | 2,175.1 | 0.83 | 0.78 | -0.28 |
| 9,853.0 | 90.24 | 178.37 | 7,518.1 | -2,415.1 | -2,270.0 | -7.6 | 2,270.0 | 0.48 | 0.15 | -0.45 |
| 9,945.0 | 91.04 | 178.38 | 7,517.0 | -2,414.0 | -2,362.0 | -5.0 | 2,362.0 | 0.87 | 0.87 | 0.01 |
| 10,039.0 | 89.54 | 180.44 | 7,516.6 | -2,413.6 | -2,456.0 | -4.0 | 2,456.0 | 2.71 | -1.60 | 2.19 |
| 10,134.0 | 89.77 | 179.72 | 7,517.1 | -2,414.1 | -2,551.0 | -4.1 | 2,551.0 | 0.80 | 0.24 | -0.76 |
| 10,229.0 | 90.39 | 179.44 | 7,517.0 | -2,414.0 | -2,646.0 | -3.4 | 2,646.0 | 0.72 | 0.65 | -0.29 |
| 10,322.0 | 89.91 | 181.21 | 7,516.8 | -2,413.8 | -2,738.9 | -4.0 | 2,738.9 | 1.97 | -0.52 | 1.90 |
| 10,416.0 | 88.27 | 179.49 | 7,518.3 | -2,415.3 | -2,832.9 | -4.5 | 2,832.9 | 2.53 | -1.74 | -1.83 |
| 10,510.0 | 88.76 | 179.55 | 7,520.7 | -2,417.7 | -2,926.9 | -3.7 | 2,926.9 | 0.53 | 0.52 | 0.06 |
| 10,605.0 | 89.61 | 179.24 | 7,522.0 | -2,419.0 | -3,021.9 | -2.7 | 3,021.9 | 0.95 | 0.89 | -0.33 |
| 10,699.0 | 90.87 | 180.69 | 7,521.6 | -2,418.6 | -3,115.9 | -2.7 | 3,115.9 | 2.04 | 1.34 | 1.54 |
| 10,794.0 | 91.93 | 180.68 | 7,519.3 | -2,416.3 | -3,210.8 | -3.8 | 3,210.8 | 1.12 | 1.12 | -0.01 |
| 10,889.0 | 89.69 | 181.68 | 7,518.0 | -2,415.0 | -3,305.8 | -5.8 | 3,305.8 | 2.58 | -2.36 | 1.05 |
| 10,982.0 | 90.04 | 181.36 | 7,518.2 | -2,415.2 | -3,398.8 | -8.2 | 3,398.8 | 0.51 | 0.38 | -0.34 |
| 11,075.0 | 90.59 | 181.57 | 7,517.7 | -2,414.7 | -3,491.7 | -10.6 | 3,491.7 | 0.63 | 0.59 | 0.23 |
| 11,168.0 | 88.68 | 182.04 | 7,518.3 | -2,415.3 | -3,584.7 | -13.6 | 3,584.7 | 2.12 | -2.05 | 0.51 |
| 11,262.0 | 88.72 | 182.19 | 7,520.4 | -2,417.4 | -3,678.6 | -17.0 | 3,678.6 | 0.17 | 0.04 | 0.16 |
| 11,355.0 | 88.90 | 182.66 | 7,522.3 | -2,419.3 | -3,771.5 | -21.0 | 3,771.5 | 0.54 | 0.19 | 0.51 |
| 11,447.0 | 90.64 | 179.70 | 7,522.7 | -2,419.7 | -3,863.5 | -22.9 | 3,863.5 | 3.73 | 1.89 | -3.22 |
| 11,540.0 | 91.37 | 180.07 | 7,521.1 | -2,418.1 | -3,956.4 | -22.7 | 3,956.5 | 0.88 | 0.78 | 0.40 |
| ENTER RADIUS TOE (11553.5ft md) | | | | | | | | | | |
| 11,553.5 | 91.44 | 180.05 | 7,520.8 | -2,417.8 | -3,969.9 | -22.7 | 3,970.0 | 0.55 | 0.54 | -0.14 |
| 11,635.0 | 91.88 | 179.94 | 7,518.4 | -2,415.4 | -4,051.4 | -22.7 | 4,051.4 | 0.55 | 0.54 | -0.14 |
| 11,729.0 | 89.94 | 178.08 | 7,516.9 | -2,413.9 | -4,145.4 | -21.0 | 4,145.4 | 2.86 | -2.06 | -1.98 |

Survey Report



| | | | |
|------------------|--------------------------------|-------------------------------------|------------------------------|
| Company: | ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: | Well GRACIE 24-7HZ |
| Project: | WELD COUNTY (NAD 83) | TVD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Site: | SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Well: | GRACIE 24-7HZ | North Reference: | True |
| Wellbore: | JOB #2018-424-461 | 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) |
| 11,822.0 | 89.92 | 177.81 | 7,517.0 | -2,414.0 | -4,238.3 | -17.7 | 4,238.3 | 0.29 | -0.02 | -0.29 |
| 11,915.0 | 88.99 | 176.92 | 7,517.9 | -2,414.9 | -4,331.2 | -13.4 | 4,331.2 | 1.38 | -1.00 | -0.96 |
| 12,008.0 | 88.37 | 176.73 | 7,520.0 | -2,417.0 | -4,424.0 | -8.3 | 4,424.0 | 0.70 | -0.67 | -0.20 |
| 12,102.0 | 88.54 | 176.33 | 7,522.6 | -2,419.6 | -4,517.8 | -2.6 | 4,517.8 | 0.46 | 0.18 | -0.43 |
| 12,195.0 | 89.29 | 178.39 | 7,524.3 | -2,421.3 | -4,610.7 | 1.7 | 4,610.7 | 2.36 | 0.81 | 2.22 |
| EXIT RADIUS TOE (12211.7ft md) | | | | | | | | | | |
| 12,211.7 | 89.39 | 178.26 | 7,524.5 | -2,421.5 | -4,627.4 | 2.2 | 4,627.4 | 1.00 | 0.61 | -0.80 |
| 12,289.0 | 89.86 | 177.64 | 7,525.0 | -2,422.0 | -4,704.6 | 4.9 | 4,704.6 | 1.00 | 0.61 | -0.80 |
| 12,384.0 | 89.48 | 176.25 | 7,525.6 | -2,422.6 | -4,799.5 | 10.0 | 4,799.5 | 1.52 | -0.40 | -1.46 |
| 12,477.0 | 91.41 | 178.76 | 7,524.9 | -2,421.9 | -4,892.4 | 14.0 | 4,892.4 | 3.40 | 2.08 | 2.70 |
| 12,570.0 | 91.95 | 178.10 | 7,522.1 | -2,419.1 | -4,985.3 | 16.6 | 4,985.3 | 0.92 | 0.58 | -0.71 |
| LAST SURVEY - AUG 15, 2018 | | | | | | | | | | |
| 12,664.0 | 91.40 | 177.52 | 7,519.4 | -2,416.4 | -5,079.2 | 20.2 | 5,079.2 | 0.85 | -0.59 | -0.62 |
| EXTRAPOLATION TO TD (40.103359° N & 104.728866° W) | | | | | | | | | | |
| 12,728.0 | 91.40 | 177.52 | 7,517.8 | -2,414.8 | -5,143.1 | 23.0 | 5,143.1 | 0.00 | 0.00 | 0.00 |

Survey Report



| | | | |
|------------------|--------------------------------|-------------------------------------|------------------------------|
| Company: | ANADARKO PETROLEUM CORP | Local Co-ordinate Reference: | Well GRACIE 24-7HZ |
| Project: | WELD COUNTY (NAD 83) | TVD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Site: | SE SW SEC 24 T2N R66W 6th P.M. | MD Reference: | KB 20' @ 5103.0usft (PD 461) |
| Well: | GRACIE 24-7HZ | North Reference: | True |
| Wellbore: | JOB #2018-424-461 | Survey Calculation Method: | Minimum Curvature |
| Design: | FINAL SURVEYS | Database: | EOG RESOURCES |

| Targets | | | | | | | | | |
|--|-----------|----------|---------|----------|--------|---------------|--------------|-----------------|-------------------|
| Target Name | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - hit/miss target | (°) | (°) | (usft) | (usft) | (usft) | (usft) | (usft) | | |
| - Shape | | | | | | | | | |
| HEEL - GRACIE 24-7 - survey misses target center by 20.9usft at 7969.9usft MD (7508.2 TVD, -387.8 N, -18.1 E) - Point | 0.00 | 0.00 | 7,520.0 | -386.1 | -0.9 | 14,569,240.44 | 1,716,195.15 | 40° 6' 59.090 N | 104° 43' 44.224 W |
| BHL - GRACIE 24-7H - survey misses target center by 36.2usft at 12728.0usft MD (7517.8 TVD, -5143.1 N, 23.0 E) - Point | 0.00 | 0.00 | 7,537.0 | -5,145.4 | -7.7 | 14,564,482.98 | 1,716,202.87 | 40° 6' 12.058 N | 104° 43' 44.311 W |
| KOP - GRACIE 24-7H - survey misses target center by 50.2usft at 6838.8usft MD (6806.5 TVD, 361.4 N, -36.9 E) - Point | 0.00 | 0.00 | 6,803.8 | 327.6 | 0.1 | 14,569,953.86 | 1,716,193.98 | 40° 7' 6.143 N | 104° 43' 44.211 W |
| KOP - GRACIE 24-7H - survey misses target center by 109.1usft at 6930.4usft MD (6897.4 TVD, 350.5 N, -35.6 E) - Point | 0.00 | 0.00 | 6,883.4 | 248.3 | 0.0 | 14,569,874.59 | 1,716,194.11 | 40° 7' 5.360 N | 104° 43' 44.213 W |
| HEEL - GRACIE 24-7 - survey misses target center by 20.9usft at 7969.9usft MD (7508.2 TVD, -387.8 N, -18.1 E) - Point | 0.00 | 0.00 | 7,520.0 | -386.1 | -0.9 | 14,569,240.44 | 1,716,195.15 | 40° 6' 59.090 N | 104° 43' 44.224 W |
| BHL - GRACIE 24-7H - survey misses target center by 36.2usft at 12728.0usft MD (7517.8 TVD, -5143.1 N, 23.0 E) - Point | 0.00 | 0.00 | 7,537.0 | -5,145.4 | -7.7 | 14,564,482.98 | 1,716,202.87 | 40° 6' 12.058 N | 104° 43' 44.311 W |

| Survey Annotations | | | | |
|-----------------------|-----------------------|-------------------|--------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 1,855.0 | 1,839.4 | 167.1 | -1.5 | 9 5/8" SURFACE CASING |
| 6,809.0 | 6,776.8 | 363.2 | -37.3 | KOP |
| 7,590.7 | 7,410.5 | -23.3 | -21.8 | ENTER RADIUS HEEL (7590.7ft md) |
| 8,032.0 | 7,513.7 | -449.6 | -19.2 | HEEL (40.116240° N & 104.729016° W) |
| 8,253.1 | 7,516.6 | -670.6 | -22.8 | EXIT RADIUS HEEL (8253.1ft md) |
| 11,553.5 | 7,520.8 | -3,969.9 | -22.7 | ENTER RADIUS TOE (11553.5ft md) |
| 12,211.7 | 7,524.5 | -4,627.4 | 2.2 | EXIT RADIUS TOE (12211.7ft md) |
| 12,664.0 | 7,519.4 | -5,079.2 | 20.2 | LAST SURVEY - AUG 15, 2018 |
| 12,728.0 | 7,517.8 | -5,143.1 | 23.0 | EXTRAPOLATION TO TD (40.103359° N & 104.728866° W) |

| | | |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|