

PDC ENERGY

WELD COUNTY, COLORADO

SW SW SEC. 29 T5N R63W 6th P.M.

R&R FARMS 29I-321

JOB # 2015-077-135

18 August, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: SW SW SEC. 29 T5N R63W 6th P.M.
Well: R&R FARMS 29I-321
Wellbore: JOB # 2015-077-135
Design: FINAL SURVEYS

ANNOTATIONS

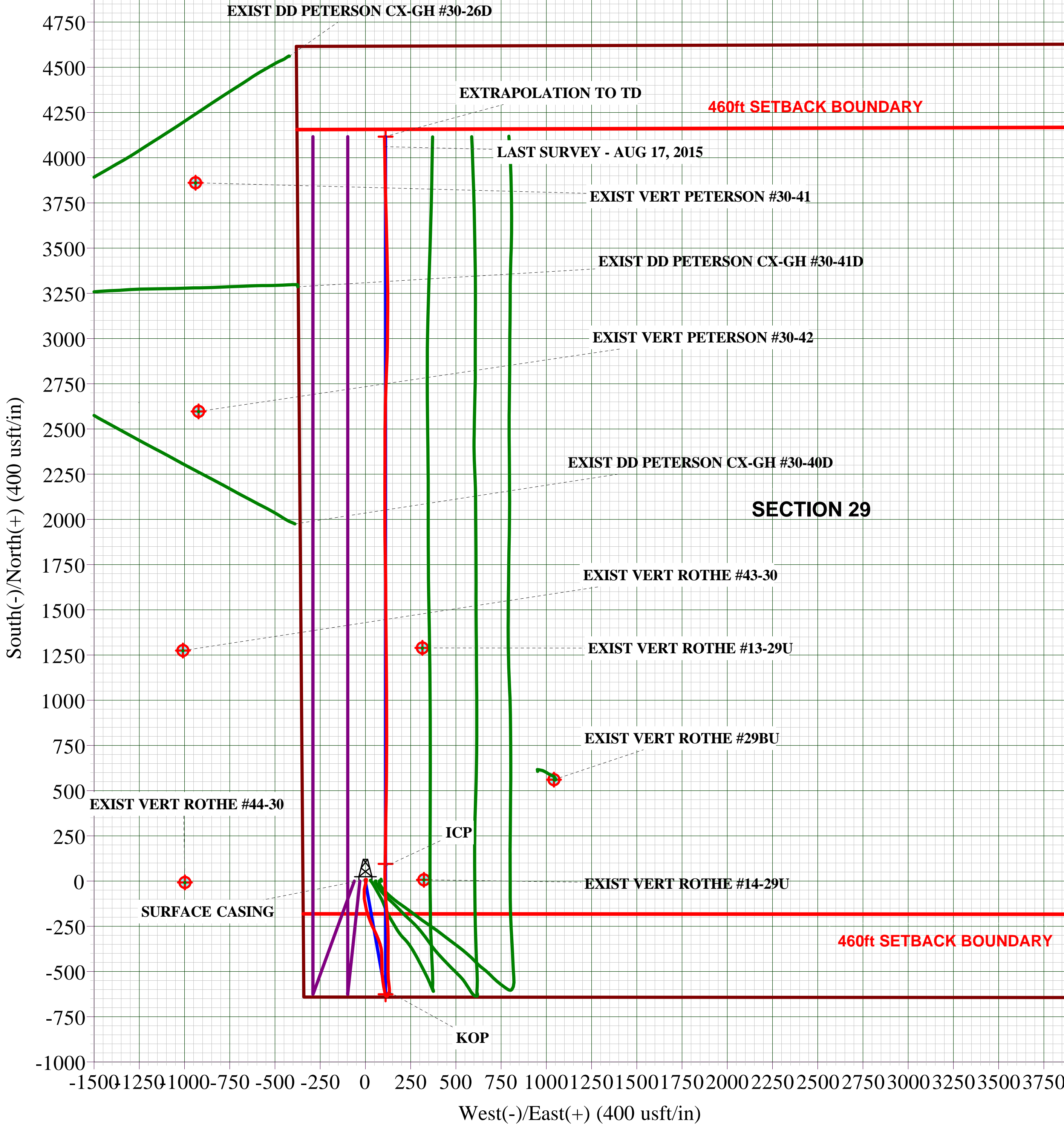
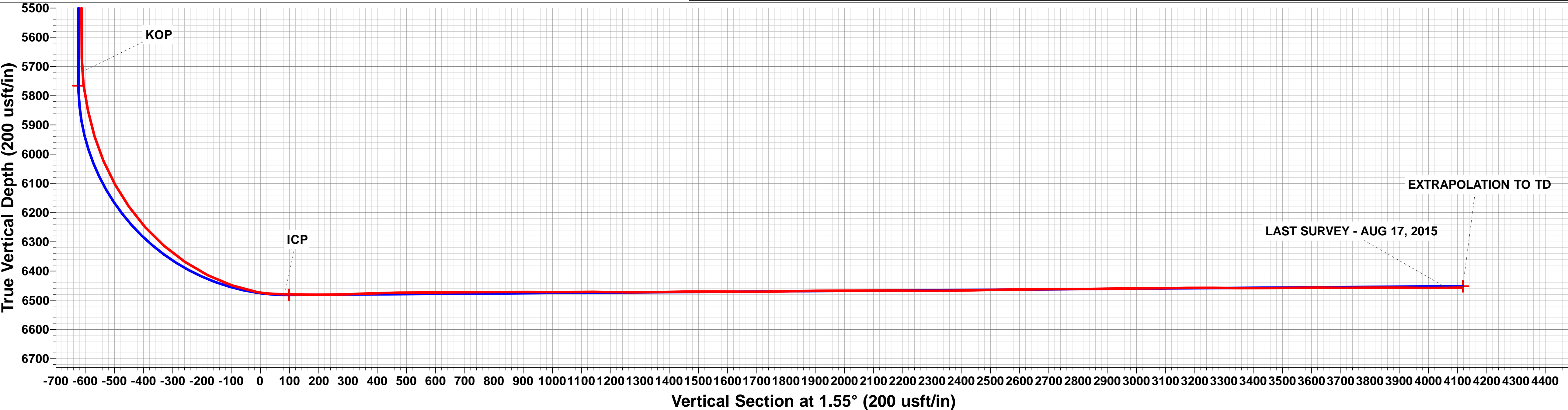
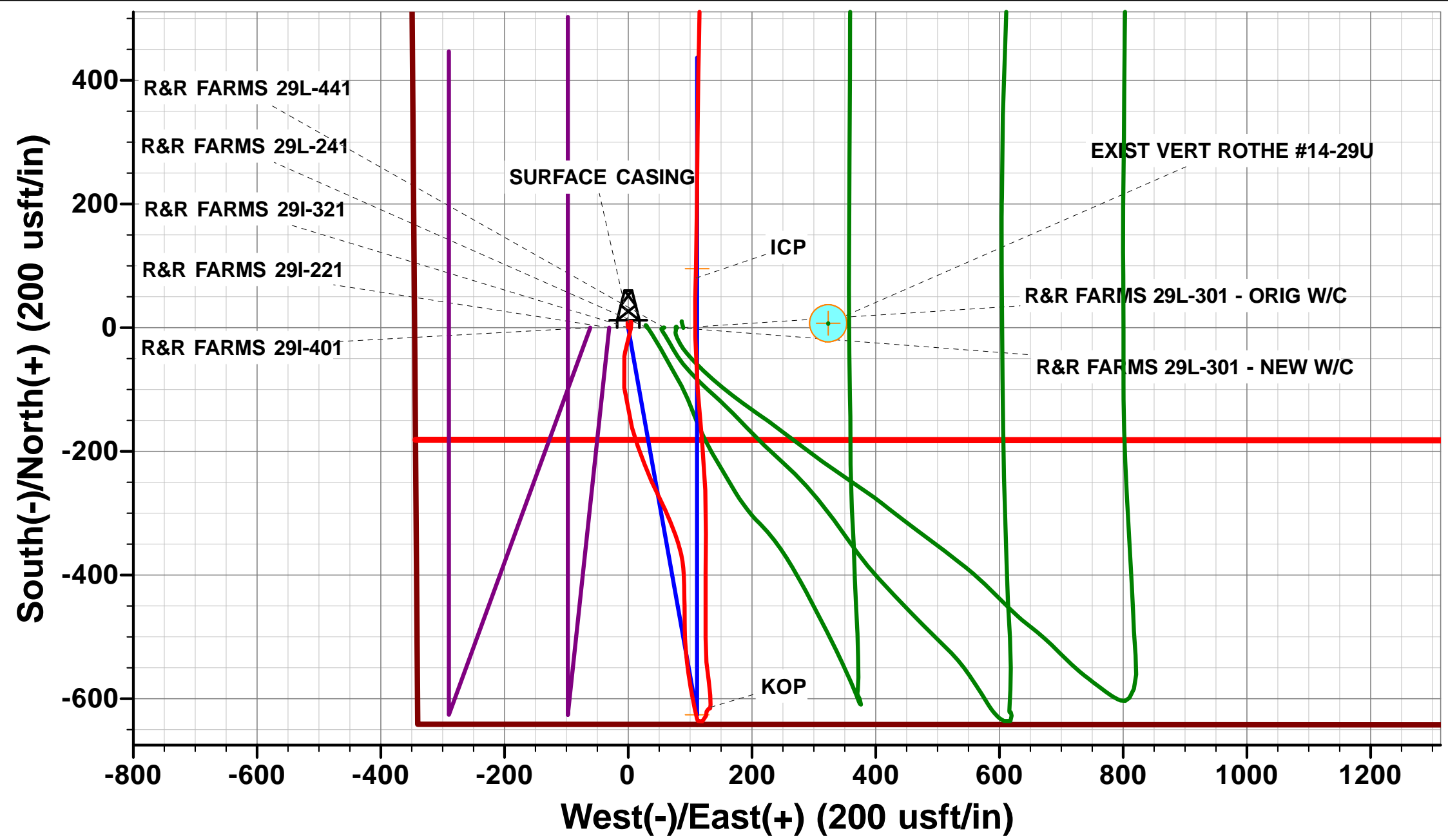
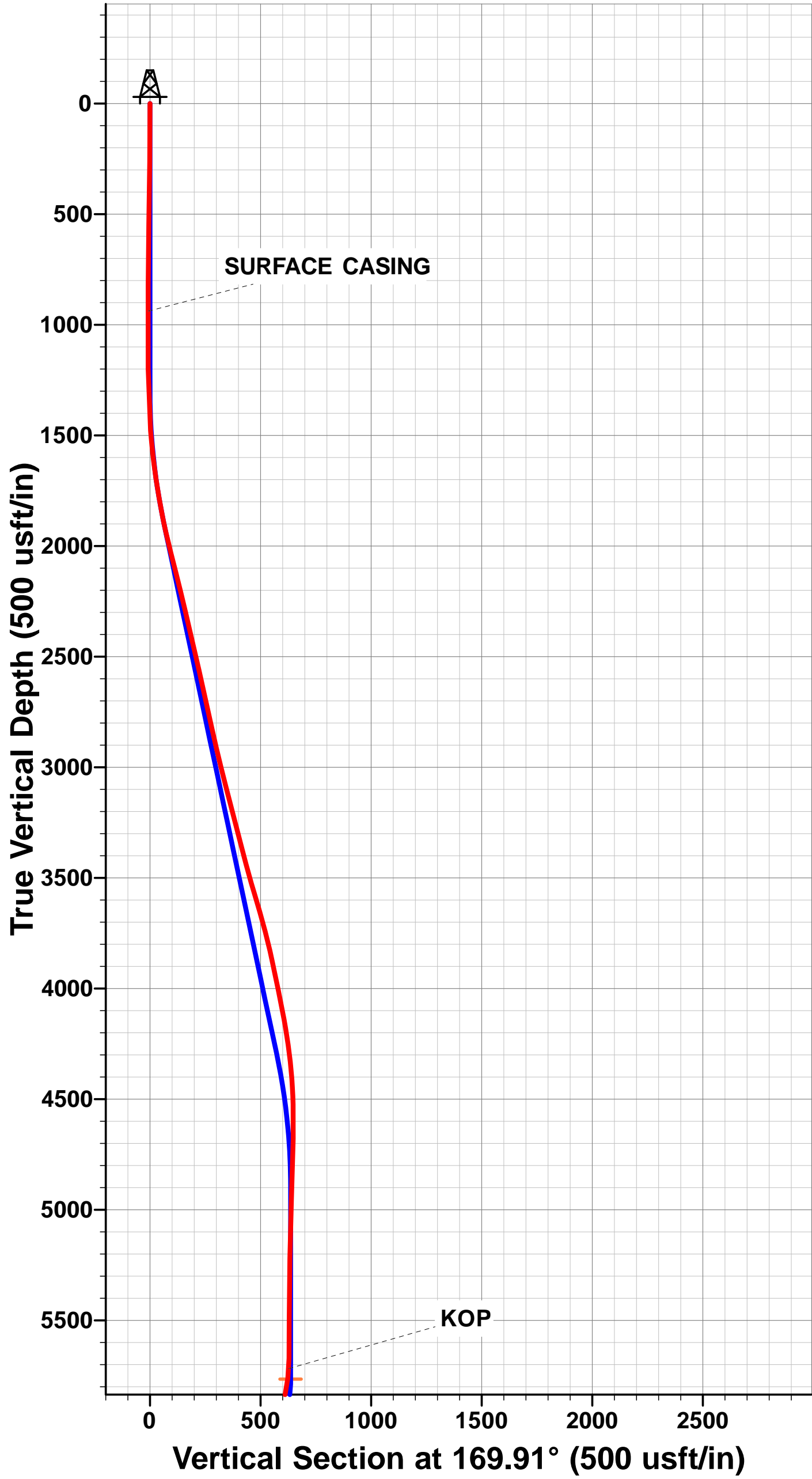
| TVD | MD | Inc | Azi | +N/-S | +E/-W | VSec | Dep | Annotation |
|--------|---------|-------|--------|--------|-------|--------|--------|----------------------------|
| 938.9 | 939.0 | 0.86 | 78.90 | 8.7 | 0.4 | 8.7 | 10.2 | SURFACE CASING |
| 5718.1 | 5794.0 | 3.80 | 4.78 | -613.7 | 133.0 | -609.9 | 729.3 | KOP |
| 6479.5 | 6925.0 | 88.59 | 1.22 | 80.2 | 109.1 | 83.1 | 1423.1 | ICP |
| 6457.5 | 10907.0 | 90.80 | 358.90 | 4061.3 | 106.4 | 4062.7 | 5404.8 | LAST SURVEY - AUG 17, 2015 |
| 6456.7 | 10962.0 | 90.80 | 358.90 | 4116.3 | 105.4 | 4117.6 | 5459.8 | EXTRAPOLATION TO TD |

AS DRILLED LOCAL COORDINATES:

SHL: 641ft FSL & 344ft FWL Sec 29
7" ICP: 721.2ft FSL & 453.1ft FWL Sec 29
BHL: 500.4ft FNL & 484ft FWL Sec 29

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude |
|----------------------------------|--------|--------|-------|-----------|-------------|
| 7" ICP *NEW* - R&R FARMS 29I-321 | 6482.0 | 95.4 | 111.4 | 40.365302 | -104.467980 |
| BHL - R&R FARMS 29I-321 | 6452.0 | 4116.7 | 111.4 | 40.376340 | -104.467980 |
| KOP - R&R FARMS 29I-321 | 5765.8 | -626.0 | 111.4 | 40.363322 | -104.467980 |



Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well R&R FARMS 29I-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4587.0usft (ENS 135) |
| Site: | SW SW SEC. 29 T5N R63W 6th P.M. | MD Reference: | KB @ 4587.0usft (ENS 135) |
| Well: | R&R FARMS 29I-321 | North Reference: | True |
| Wellbore: | JOB # 2015-077-135 | Survey Calculation Method: | Minimum Curvature |
| Design: | FINAL SURVEYS | Database: | EDM 5000.1 Single User Db |

| | | | |
|--------------------|---------------------------|----------------------|-----------------------------|
| Project | WELD COUNTY, COLORADO | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Northern Zone | | Using geodetic scale factor |

| | | | | | |
|-----------------------|---------------------------------|--------------|-------------------|-------------------|-------------|
| Site | SW SW SEC. 29 T5N R63W 6th P.M. | | | | |
| Site Position: | | Northing: | 1,377,496.04 usft | Latitude: | 40.365040 |
| From: | Lat/Long | Easting: | 3,287,397.23 usft | Longitude: | -104.468600 |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 1.10000 ft | Grid Convergence: | 0.67 ° |

| Well | R&R FARMS 29I-321 | | | | | |
|----------------------|-------------------|----------|---------------------|-------------------|---------------|--------------|
| Well Position | +N/-S | 0.0 usft | Northing: | 1,377,496.74 usft | Latitude: | 40.365040 |
| | +E/-W | 0.0 usft | Easting: | 3,287,458.53 usft | Longitude: | -104.468380 |
| Position Uncertainty | | 0.0 usft | Wellhead Elevation: | usft | Ground Level: | 4,574.0 usft |

| | | | | | |
|------------------|--------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | JOB # 2015-077-135 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 15/07/2015 | 8.25 | 66.92 | 52,627 |

| 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 | 1.55 | |

| | | | | | |
|-----------------------|------------------|------------------------------------|------------------|--------------------|--|
| Survey Program | Date | 18/08/2015 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 265.0 | 10,106.0 | FINAL SURVEYS (JOB # 2015-077-135) | MWD | MWD - Standard | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|----------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|
| 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 | -4,587.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 265.0 | 0.50 | 353.00 | 265.0 | -4,322.0 | 1.1 | -0.1 | 1.1 | 0.19 | 0.19 | 0.00 |
| 546.0 | 1.10 | 346.60 | 546.0 | -4,041.0 | 5.0 | -0.9 | 5.0 | 0.22 | 0.21 | -2.28 |
| 825.0 | 0.40 | 44.60 | 824.9 | -3,762.1 | 8.3 | -0.9 | 8.3 | 0.34 | -0.25 | 20.79 |
| 897.0 | 0.80 | 78.30 | 896.9 | -3,690.1 | 8.6 | -0.2 | 8.6 | 0.72 | 0.56 | 46.81 |
| SURFACE CASING | | | | | | | | | | |
| 939.0 | 0.86 | 78.90 | 938.9 | -3,648.1 | 8.7 | 0.4 | 8.7 | 0.13 | 0.13 | 1.44 |
| 1,199.0 | 1.20 | 81.40 | 1,198.9 | -3,388.1 | 9.5 | 5.0 | 9.6 | 0.13 | 0.13 | 0.96 |
| 1,479.0 | 5.10 | 197.60 | 1,478.5 | -3,108.5 | -2.0 | 4.1 | -1.9 | 2.05 | 1.39 | 41.50 |
| 1,760.0 | 10.10 | 191.80 | 1,757.0 | -2,830.0 | -38.0 | -4.7 | -38.1 | 1.80 | 1.78 | -2.06 |
| 2,040.0 | 14.50 | 174.40 | 2,030.6 | -2,556.4 | -97.0 | -6.3 | -97.1 | 2.04 | 1.57 | -6.21 |
| 2,314.0 | 13.40 | 163.50 | 2,296.5 | -2,290.5 | -161.6 | 6.1 | -161.3 | 1.04 | -0.40 | -3.98 |
| 2,585.0 | 13.10 | 158.60 | 2,560.3 | -2,026.7 | -220.3 | 26.2 | -219.5 | 0.43 | -0.11 | -1.81 |

Survey Report



| | | | |
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| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4587.0usft (ENS 135) |
| Site: | SW SW SEC. 29 T5N R63W 6th P.M. | MD Reference: | KB @ 4587.0usft (ENS 135) |
| Well: | R&R FARMS 29I-321 | North Reference: | True |
| Wellbore: | JOB # 2015-077-135 | Survey Calculation Method: | Minimum Curvature |
| Design: | FINAL SURVEYS | Database: | EDM 5000.1 Single User Db |

| 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) |
| 2,857.0 | 12.70 | 153.40 | 2,825.5 | -1,761.5 | -275.7 | 50.8 | -274.2 | 0.45 | -0.15 | -1.91 |
| 3,128.0 | 15.00 | 159.50 | 3,088.6 | -1,498.4 | -335.2 | 76.5 | -333.0 | 1.00 | 0.85 | 2.25 |
| 3,399.0 | 14.40 | 178.00 | 3,350.9 | -1,236.1 | -401.8 | 89.9 | -399.2 | 1.74 | -0.22 | 6.83 |
| 3,670.0 | 17.10 | 179.60 | 3,611.7 | -975.3 | -475.3 | 91.4 | -472.7 | 1.01 | 1.00 | 0.59 |
| 3,942.0 | 12.30 | 172.50 | 3,874.7 | -712.3 | -544.1 | 95.5 | -541.3 | 1.88 | -1.76 | -2.61 |
| 4,213.0 | 10.60 | 169.40 | 4,140.3 | -446.7 | -597.2 | 103.8 | -594.2 | 0.67 | -0.63 | -1.14 |
| 4,484.0 | 4.30 | 164.30 | 4,408.9 | -178.1 | -631.5 | 111.2 | -628.3 | 2.34 | -2.32 | -1.88 |
| 4,754.0 | 3.20 | 51.70 | 4,678.6 | 91.6 | -636.6 | 119.8 | -633.1 | 2.32 | -0.41 | -41.70 |
| 5,025.0 | 1.90 | 1.70 | 4,949.3 | 362.3 | -627.4 | 125.9 | -623.8 | 0.91 | -0.48 | -18.45 |
| 5,296.0 | 1.20 | 20.20 | 5,220.2 | 633.2 | -620.2 | 127.0 | -616.6 | 0.31 | -0.26 | 6.83 |
| 5,567.0 | 1.00 | 56.80 | 5,491.2 | 904.2 | -616.3 | 130.0 | -612.5 | 0.26 | -0.07 | 13.51 |
| 5,748.0 | 0.80 | 82.00 | 5,672.2 | 1,085.2 | -615.2 | 132.5 | -611.4 | 0.24 | -0.11 | 13.92 |
| KOP | | | | | | | | | | |
| 5,794.0 | 3.80 | 4.78 | 5,718.1 | 1,131.1 | -613.7 | 133.0 | -609.9 | 8.05 | 6.52 | -167.86 |
| 5,838.0 | 7.30 | 358.90 | 5,761.9 | 1,174.9 | -609.4 | 133.0 | -605.6 | 8.05 | 7.96 | -13.37 |
| 5,928.0 | 12.20 | 359.10 | 5,850.6 | 1,263.6 | -594.2 | 132.8 | -590.4 | 5.44 | 5.44 | 0.22 |
| 6,019.0 | 16.50 | 349.90 | 5,938.7 | 1,351.7 | -571.9 | 130.4 | -568.1 | 5.33 | 4.73 | -10.11 |
| 6,109.0 | 24.10 | 354.70 | 6,023.1 | 1,436.1 | -540.9 | 126.4 | -537.3 | 8.64 | 8.44 | 5.33 |
| 6,199.0 | 28.30 | 0.90 | 6,103.8 | 1,516.8 | -501.3 | 125.1 | -497.7 | 5.56 | 4.67 | 6.89 |
| 6,289.0 | 35.80 | 359.50 | 6,180.1 | 1,593.1 | -453.6 | 125.2 | -450.0 | 8.37 | 8.33 | -1.56 |
| 6,379.0 | 41.20 | 0.30 | 6,250.5 | 1,663.5 | -397.5 | 125.1 | -394.0 | 6.03 | 6.00 | 0.89 |
| 6,469.0 | 49.40 | 0.60 | 6,313.7 | 1,726.7 | -333.6 | 125.6 | -330.1 | 9.11 | 9.11 | 0.33 |
| 6,559.0 | 55.70 | 358.10 | 6,368.4 | 1,781.4 | -262.2 | 124.7 | -258.8 | 7.34 | 7.00 | -2.78 |
| 6,650.0 | 63.80 | 354.40 | 6,414.3 | 1,827.3 | -183.9 | 119.5 | -180.6 | 9.57 | 8.90 | -4.07 |
| 6,740.0 | 70.70 | 356.00 | 6,449.0 | 1,862.0 | -101.2 | 112.6 | -98.1 | 7.84 | 7.67 | 1.78 |
| 6,830.0 | 79.70 | 358.60 | 6,472.0 | 1,885.0 | -14.4 | 108.5 | -11.5 | 10.38 | 10.00 | 2.89 |
| 6,891.0 | 88.10 | 1.10 | 6,478.5 | 1,891.5 | 46.2 | 108.4 | 49.1 | 14.36 | 13.77 | 4.10 |
| ICP | | | | | | | | | | |
| 6,925.0 | 88.59 | 1.22 | 6,479.5 | 1,892.5 | 80.2 | 109.1 | 83.1 | 1.50 | 1.45 | 0.36 |
| 6,946.0 | 88.90 | 1.30 | 6,479.9 | 1,892.9 | 101.2 | 109.5 | 104.1 | 1.50 | 1.45 | 0.36 |
| 7,036.0 | 89.40 | 0.70 | 6,481.3 | 1,894.3 | 191.1 | 111.1 | 194.1 | 0.87 | 0.56 | -0.67 |
| 7,127.0 | 92.00 | 0.30 | 6,480.2 | 1,893.2 | 282.1 | 111.9 | 285.0 | 2.89 | 2.86 | -0.44 |
| 7,217.0 | 92.30 | 1.00 | 6,476.8 | 1,889.8 | 372.0 | 112.9 | 375.0 | 0.85 | 0.33 | 0.78 |
| 7,308.5 | 90.70 | 1.00 | 6,474.4 | 1,887.4 | 463.5 | 114.5 | 466.4 | 1.75 | -1.75 | 0.00 |
| 7,397.0 | 90.20 | 0.90 | 6,473.7 | 1,886.7 | 552.0 | 116.0 | 554.9 | 0.58 | -0.57 | -0.11 |
| 7,487.0 | 90.60 | 0.90 | 6,473.1 | 1,886.1 | 642.0 | 117.4 | 644.9 | 0.44 | 0.44 | 0.00 |
| 7,577.0 | 90.20 | 359.60 | 6,472.4 | 1,885.4 | 732.0 | 117.8 | 734.9 | 1.51 | -0.44 | -1.44 |
| 7,667.0 | 90.70 | 359.50 | 6,471.7 | 1,884.7 | 822.0 | 117.1 | 824.8 | 0.57 | 0.56 | -0.11 |
| 7,757.0 | 89.70 | 0.20 | 6,471.4 | 1,884.4 | 912.0 | 116.8 | 914.8 | 1.36 | -1.11 | 0.78 |
| 7,848.0 | 89.80 | 0.00 | 6,471.8 | 1,884.8 | 1,003.0 | 117.0 | 1,005.8 | 0.25 | 0.11 | -0.22 |
| 7,938.0 | 90.60 | 359.60 | 6,471.5 | 1,884.5 | 1,093.0 | 116.7 | 1,095.7 | 0.99 | 0.89 | -0.44 |
| 8,028.0 | 88.90 | 359.50 | 6,471.9 | 1,884.9 | 1,182.9 | 116.0 | 1,185.6 | 1.89 | -1.89 | -0.11 |
| 8,118.0 | 89.80 | 359.30 | 6,472.9 | 1,885.9 | 1,272.9 | 115.0 | 1,275.6 | 1.02 | 1.00 | -0.22 |
| 8,208.0 | 91.10 | 359.00 | 6,472.2 | 1,885.2 | 1,362.9 | 113.7 | 1,365.5 | 1.48 | 1.44 | -0.33 |
| 8,299.0 | 91.10 | 359.90 | 6,470.5 | 1,883.5 | 1,453.9 | 112.8 | 1,456.4 | 0.99 | 0.00 | 0.99 |
| 8,389.0 | 89.40 | 359.80 | 6,470.1 | 1,883.1 | 1,543.9 | 112.6 | 1,546.4 | 1.89 | -1.89 | -0.11 |
| 8,479.0 | 89.50 | 359.50 | 6,470.9 | 1,883.9 | 1,633.9 | 112.0 | 1,636.3 | 0.35 | 0.11 | -0.33 |
| 8,570.0 | 90.60 | 359.40 | 6,470.8 | 1,883.8 | 1,724.9 | 111.2 | 1,727.3 | 1.21 | 1.21 | -0.11 |
| 8,660.0 | 91.30 | 359.00 | 6,469.3 | 1,882.3 | 1,814.9 | 109.9 | 1,817.2 | 0.90 | 0.78 | -0.44 |
| 8,750.0 | 90.80 | 359.00 | 6,467.7 | 1,880.7 | 1,904.8 | 108.3 | 1,907.1 | 0.56 | -0.56 | 0.00 |
| 8,841.0 | 89.80 | 0.10 | 6,467.2 | 1,880.2 | 1,995.8 | 107.6 | 1,998.0 | 1.63 | -1.10 | 1.21 |
| 8,931.0 | 90.70 | 359.90 | 6,466.8 | 1,879.8 | 2,085.8 | 107.6 | 2,088.0 | 1.02 | 1.00 | -0.22 |
| 9,022.0 | 89.40 | 0.40 | 6,466.8 | 1,879.8 | 2,176.8 | 107.9 | 2,178.9 | 1.53 | -1.43 | 0.55 |

Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well R&R FARMS 29I-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4587.0usft (ENS 135) |
| Site: | SW SW SEC. 29 T5N R63W 6th P.M. | MD Reference: | KB @ 4587.0usft (ENS 135) |
| Well: | R&R FARMS 29I-321 | North Reference: | True |
| Wellbore: | JOB # 2015-077-135 | Survey Calculation Method: | Minimum Curvature |
| Design: | FINAL SURVEYS | Database: | EDM 5000.1 Single User Db |

| 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) |
| 9,112.0 | 89.50 | 0.20 | 6,467.6 | 1,880.6 | 2,266.8 | 108.3 | 2,268.9 | 0.25 | 0.11 | -0.22 |
| 9,202.0 | 90.60 | 0.20 | 6,467.5 | 1,880.5 | 2,356.8 | 108.6 | 2,358.9 | 1.22 | 1.22 | 0.00 |
| 9,293.0 | 91.80 | 359.80 | 6,465.6 | 1,878.6 | 2,447.8 | 108.6 | 2,449.8 | 1.39 | 1.32 | -0.44 |
| 9,383.0 | 90.40 | 1.00 | 6,463.9 | 1,876.9 | 2,537.8 | 109.3 | 2,539.8 | 2.05 | -1.56 | 1.33 |
| 9,474.0 | 91.00 | 0.70 | 6,462.8 | 1,875.8 | 2,628.7 | 110.6 | 2,630.8 | 0.74 | 0.66 | -0.33 |
| 9,564.0 | 90.00 | 2.10 | 6,462.0 | 1,875.0 | 2,718.7 | 112.8 | 2,720.8 | 1.91 | -1.11 | 1.56 |
| 9,655.0 | 90.40 | 2.30 | 6,461.7 | 1,874.7 | 2,809.6 | 116.3 | 2,811.8 | 0.49 | 0.44 | 0.22 |
| 9,745.0 | 91.00 | 2.00 | 6,460.6 | 1,873.6 | 2,899.6 | 119.7 | 2,901.8 | 0.75 | 0.67 | -0.33 |
| 9,835.0 | 90.30 | 0.70 | 6,459.6 | 1,872.6 | 2,989.5 | 121.8 | 2,991.7 | 1.64 | -0.78 | -1.44 |
| 9,925.0 | 90.30 | 0.30 | 6,459.1 | 1,872.1 | 3,079.5 | 122.6 | 3,081.7 | 0.44 | 0.00 | -0.44 |
| 10,016.0 | 91.50 | 0.70 | 6,457.7 | 1,870.7 | 3,170.5 | 123.4 | 3,172.7 | 1.39 | 1.32 | 0.44 |
| 10,106.0 | 88.80 | 359.20 | 6,457.4 | 1,870.4 | 3,260.5 | 123.3 | 3,262.7 | 3.43 | -3.00 | -1.67 |
| 10,197.0 | 89.90 | 359.00 | 6,458.5 | 1,871.5 | 3,351.5 | 121.9 | 3,353.6 | 1.23 | 1.21 | -0.22 |
| 10,287.0 | 90.20 | 358.90 | 6,458.4 | 1,871.4 | 3,441.5 | 120.2 | 3,443.5 | 0.35 | 0.33 | -0.11 |
| 10,378.0 | 91.00 | 358.30 | 6,457.4 | 1,870.4 | 3,532.4 | 118.0 | 3,534.3 | 1.10 | 0.88 | -0.66 |
| 10,468.0 | 89.40 | 359.00 | 6,457.1 | 1,870.1 | 3,622.4 | 115.9 | 3,624.2 | 1.94 | -1.78 | 0.78 |
| 10,558.0 | 89.90 | 358.40 | 6,457.7 | 1,870.7 | 3,712.4 | 113.8 | 3,714.1 | 0.87 | 0.56 | -0.67 |
| 10,648.0 | 91.00 | 358.20 | 6,457.0 | 1,870.0 | 3,802.3 | 111.2 | 3,804.0 | 1.24 | 1.22 | -0.22 |
| 10,739.0 | 89.10 | 359.20 | 6,456.9 | 1,869.9 | 3,893.3 | 109.1 | 3,894.8 | 2.36 | -2.09 | 1.10 |
| 10,829.0 | 89.70 | 359.10 | 6,457.8 | 1,870.8 | 3,983.3 | 107.8 | 3,984.8 | 0.68 | 0.67 | -0.11 |
| LAST SURVEY - AUG 17, 2015 | | | | | | | | | | |
| 10,907.0 | 90.80 | 358.90 | 6,457.5 | 1,870.5 | 4,061.3 | 106.4 | 4,062.7 | 1.43 | 1.41 | -0.26 |
| EXTRAPOLATION TO TD | | | | | | | | | | |
| 10,962.0 | 90.80 | 358.90 | 6,456.7 | 1,869.7 | 4,116.3 | 105.4 | 4,117.6 | 0.00 | 0.00 | 0.00 |

Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well R&R FARMS 29I-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4587.0usft (ENS 135) |
| Site: | SW SW SEC. 29 T5N R63W 6th P.M. | MD Reference: | KB @ 4587.0usft (ENS 135) |
| Well: | R&R FARMS 29I-321 | North Reference: | True |
| Wellbore: | JOB # 2015-077-135 | Survey Calculation Method: | Minimum Curvature |
| Design: | FINAL SURVEYS | Database: | EDM 5000.1 Single User Db |

| Targets | | | | | | | | | |
|---|-----------|----------|---------|---------|----------|--------------|--------------|-----------|-------------|
| Target Name | | | | | | | | | |
| - hit/miss target | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - Shape | (°) | (°) | (usft) | (usft) | (usft) | (usft) | (usft) | | |
| EXIST VERT ROTHE #2 | 0.00 | 0.00 | 6,722.0 | 561.1 | 1,042.2 | 1,378,069.86 | 3,288,494.08 | 40.366580 | -104.464640 |
| - survey misses target center by 958.7usft at 7418.9usft MD (6473.6 TVD, 573.9 N, 116.3 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| EXIST VERT ROTHE #4 | 0.00 | 0.00 | 6,764.0 | -7.3 | -997.6 | 1,377,477.87 | 3,286,461.10 | 40.365020 | -104.471960 |
| - survey misses target center by 1142.8usft at 6870.9usft MD (6477.3 TVD, 26.1 N, 108.1 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| 7" ICP *NEW* - R&R FA | 0.00 | 0.00 | 6,482.0 | 95.4 | 111.4 | 1,377,593.43 | 3,287,568.81 | 40.365302 | -104.467980 |
| - survey misses target center by 3.0usft at 6940.3usft MD (6479.8 TVD, 95.5 N, 109.4 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| EXIST VERT ROTHE #1 | 0.00 | 0.00 | 6,733.0 | 1,289.7 | 314.9 | 1,378,789.92 | 3,287,758.37 | 40.368580 | -104.467250 |
| - survey misses target center by 328.1usft at 8129.7usft MD (6472.9 TVD, 1284.7 N, 114.9 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| BHL - R&R FARMS 29I- | 0.00 | 0.00 | 6,452.0 | 4,116.7 | 111.4 | 1,381,614.30 | 3,287,522.08 | 40.376340 | -104.467980 |
| - survey misses target center by 7.7usft at 10962.0usft MD (6456.7 TVD, 4116.3 N, 105.4 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| EXIST VERT PETERSO | 0.00 | 0.00 | 6,741.0 | 3,861.7 | -939.0 | 1,381,347.10 | 3,286,474.76 | 40.375640 | -104.471750 |
| - survey misses target center by 1086.3usft at 10730.9usft MD (6456.8 TVD, 3885.2 N, 109.2 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| EXIST VERT ROTHE #4 | 0.00 | 0.00 | 6,747.0 | 1,275.1 | -1,008.7 | 1,378,759.97 | 3,286,435.09 | 40.368540 | -104.472000 |
| - survey misses target center by 1156.6usft at 8134.7usft MD (6472.9 TVD, 1289.6 N, 114.8 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| EXIST VERT PETERSO | 0.00 | 0.00 | 6,785.0 | 2,597.5 | -922.3 | 1,380,083.27 | 3,286,506.13 | 40.372170 | -104.471690 |
| - survey misses target center by 1081.3usft at 9423.5usft MD (6463.5 TVD, 2578.3 N, 109.9 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| KOP - R&R FARMS 29I- | 0.00 | 0.00 | 5,765.8 | -626.0 | 111.4 | 1,376,872.10 | 3,287,577.20 | 40.363322 | -104.467980 |
| - survey misses target center by 27.5usft at 5839.1usft MD (5763.0 TVD, -609.3 N, 133.0 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| EXIST VERT ROTHE #1 | 0.00 | 0.00 | 6,721.0 | 7.3 | 323.3 | 1,377,507.79 | 3,287,781.67 | 40.365060 | -104.467220 |
| - survey misses target center by 325.6usft at 6877.6usft MD (6477.8 TVD, 32.8 N, 108.2 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |

| Survey Annotations | | | | |
|--------------------|----------------|-------------------|--------------|----------------------------|
| Measured Depth | Vertical Depth | Local Coordinates | | Comment |
| (usft) | (usft) | +N/-S (usft) | +E/-W (usft) | |
| 939.0 | 938.9 | 8.7 | 0.4 | SURFACE CASING |
| 5,794.0 | 5,718.1 | -613.7 | 133.0 | KOP |
| 6,925.0 | 6,479.5 | 80.2 | 109.1 | ICP |
| 10,907.0 | 6,457.5 | 4,061.3 | 106.4 | LAST SURVEY - AUG 17, 2015 |
| 10,962.0 | 6,456.7 | 4,116.3 | 105.4 | EXTRAPOLATION TO TD |

Checked By: _____ Approved By: _____ Date: _____