

PDC ENERGY

**WELD COUNTY, COLORADO
SE SE SEC. 18 T4N R64W 6th P.M.
COLLINS 18T-321
JOB #2015-120-123**

01 November, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: SE SE SEC. 18 T4N R64W 6th P.M.
Well: COLLINS 18T-321
Wellbore: JOB #2015-120-123
Design: FINAL SURVEYS

ANNOTATIONS

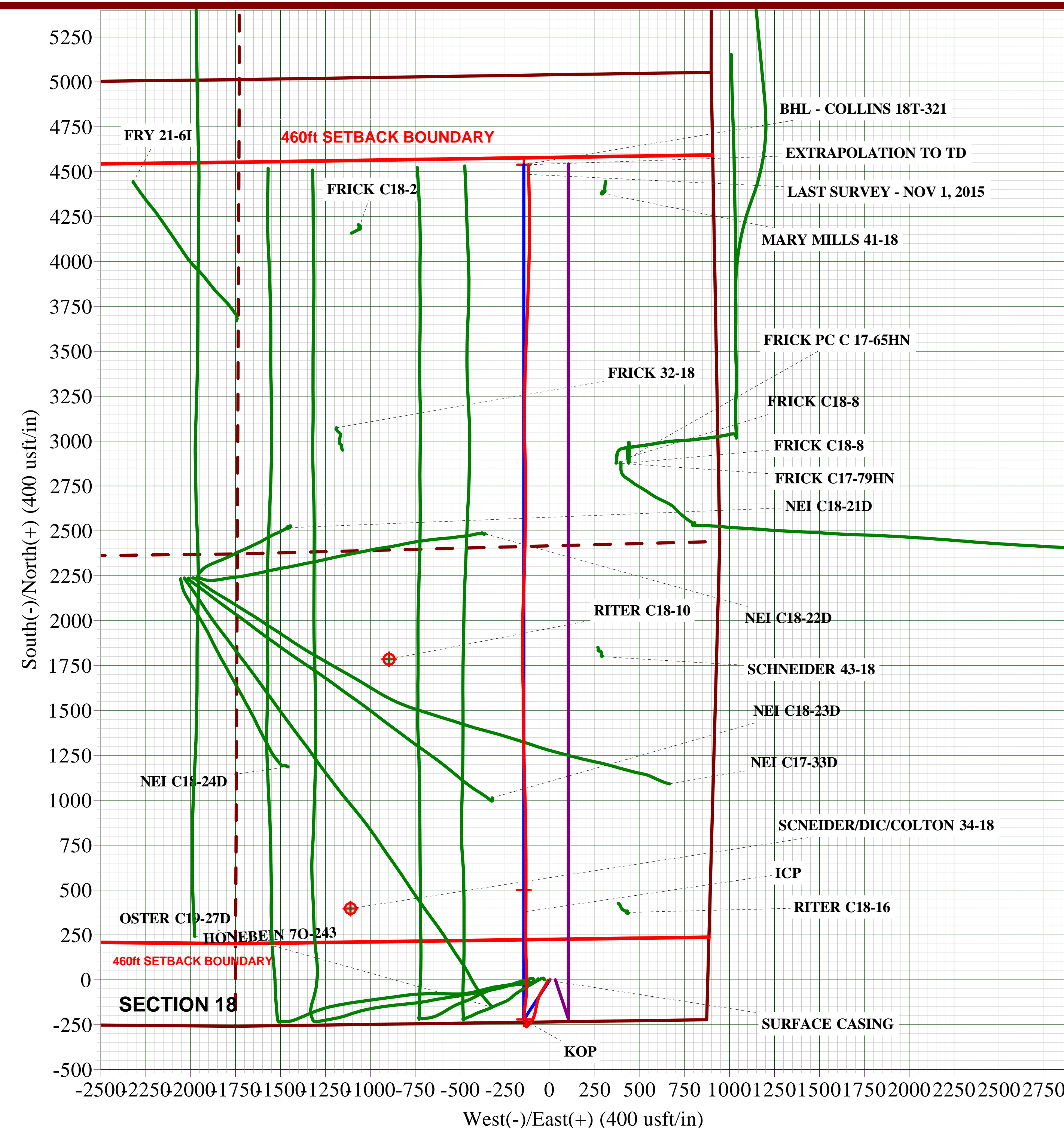
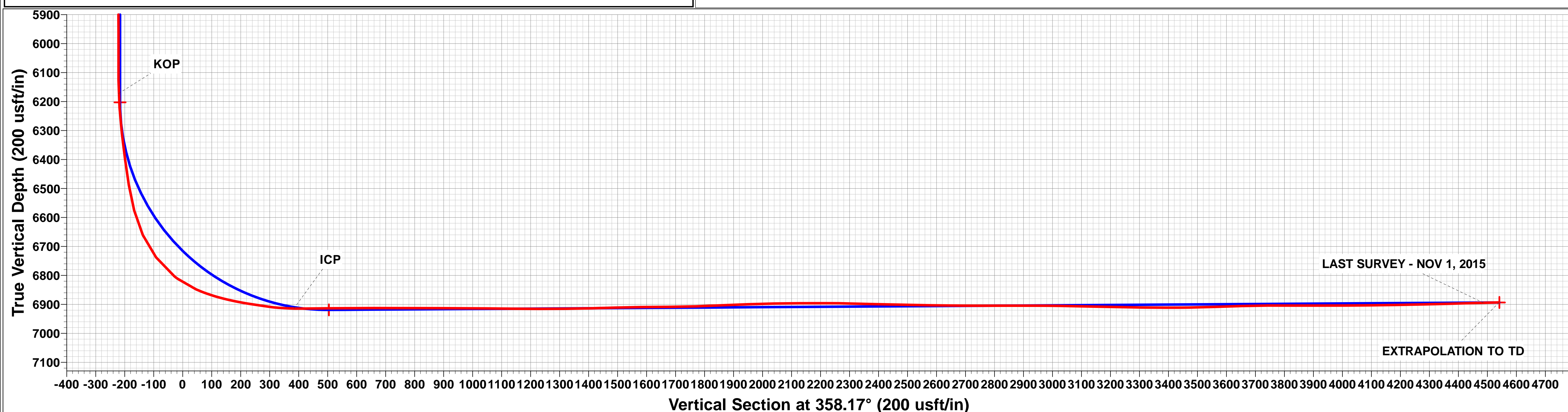
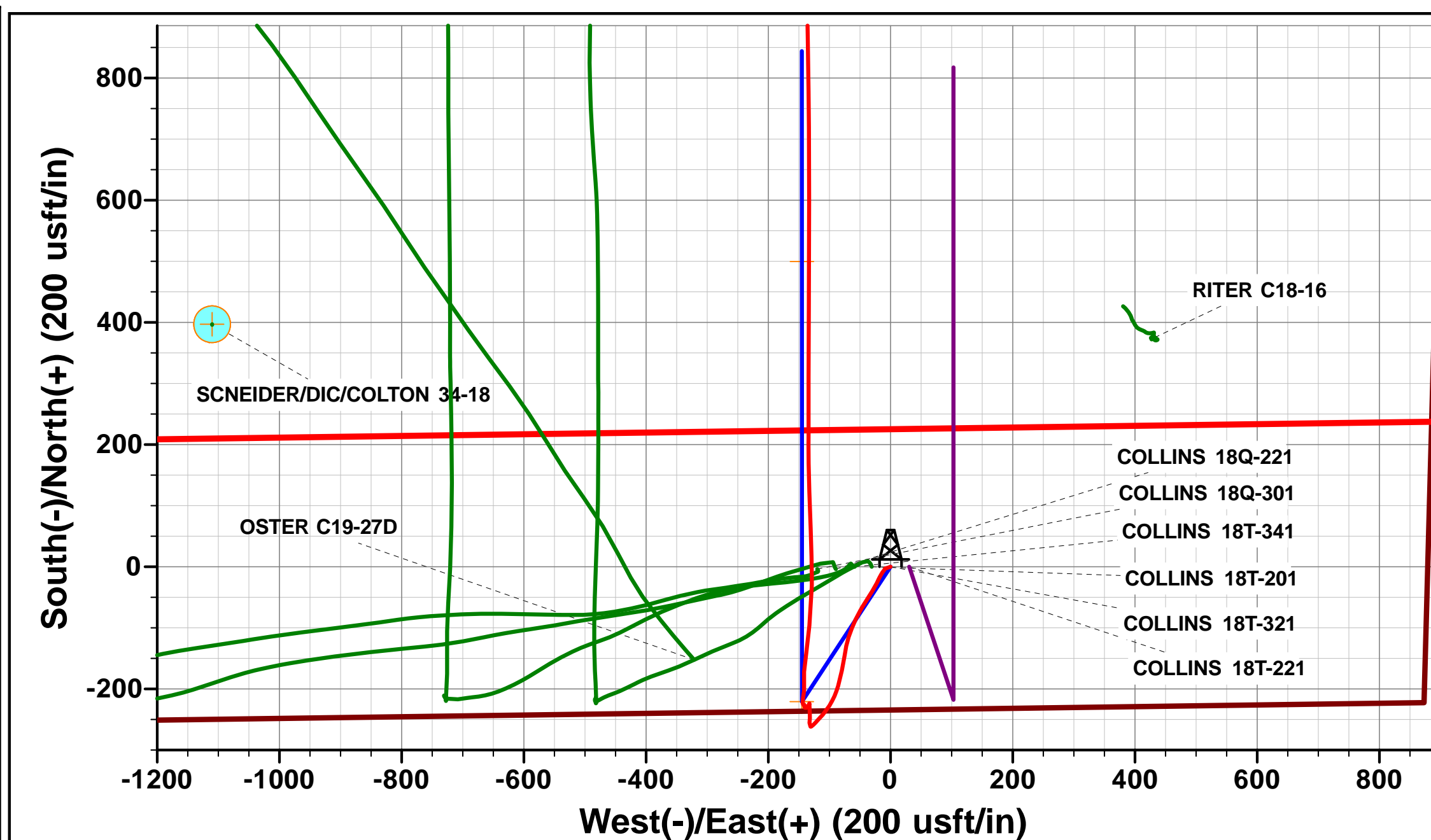
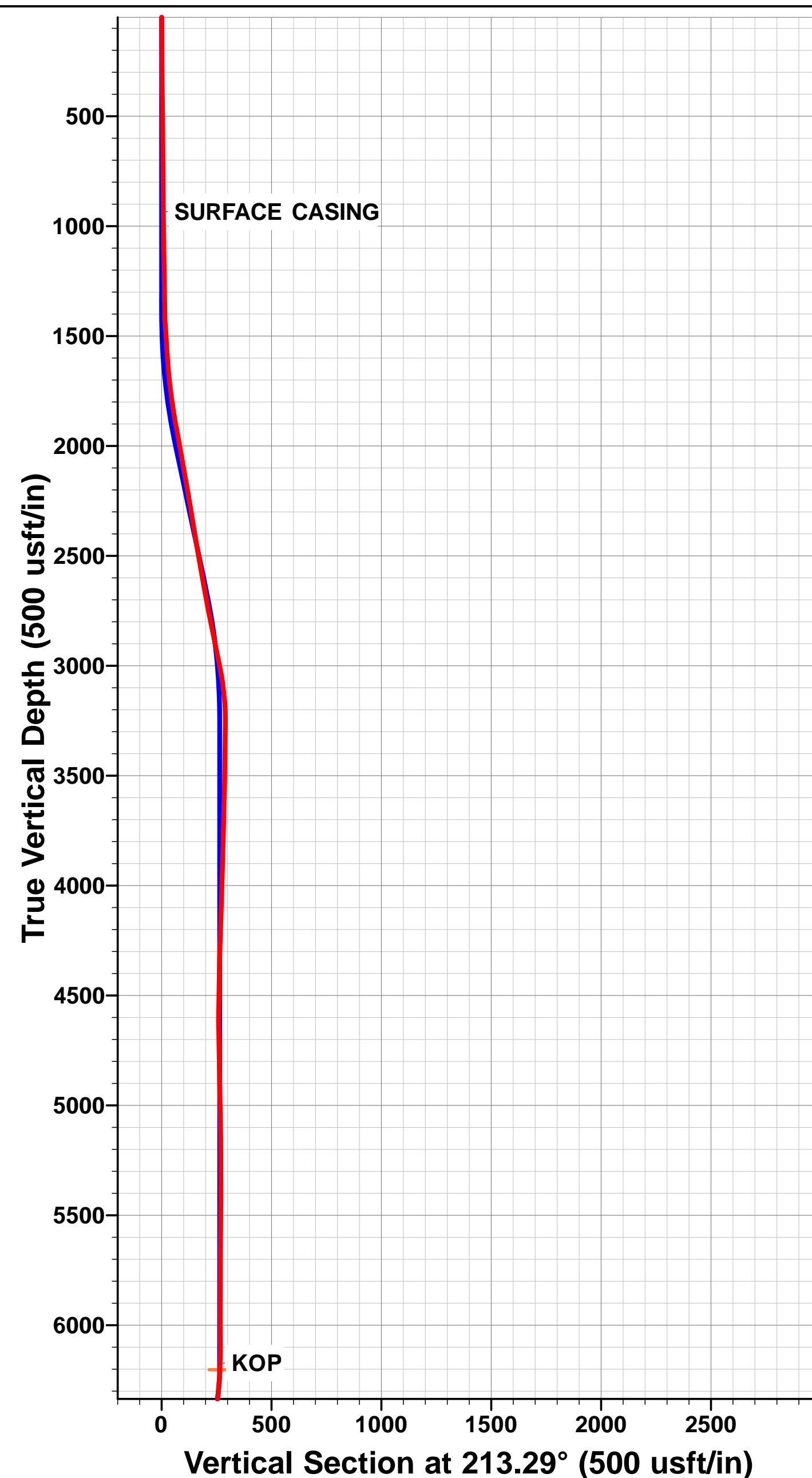
| TVD | MD | Inc | Azi | +N/-S | +E/-W | VSect | Dep | Annotation |
|--------|---------|-------|--------|--------|--------|--------|--------|---------------------------|
| 934.9 | 935.0 | 0.56 | 219.52 | -3.1 | -9.1 | -2.8 | 9.9 | SURFACE CASING |
| 6172.0 | 6197.0 | 2.06 | 344.46 | -225.2 | -143.3 | -220.5 | 369.5 | KOP |
| 6914.4 | 7310.0 | 88.72 | 0.27 | 379.7 | -134.3 | 383.7 | 975.0 | ICP |
| 6894.6 | 11417.0 | 91.50 | 358.40 | 4484.9 | -118.1 | 4486.4 | 5081.3 | LAST SURVEY - NOV 1, 2015 |
| 6893.2 | 11471.0 | 91.50 | 358.40 | 4538.9 | -119.6 | 4540.4 | 5135.3 | EXTRAPOLATION TO TD |

AS DRILLED LOCAL COORDINATES:

SHL: 234ft FSL & 880t FEL Sec 18
7" ICP: 613.7ft FSL & 1014.3ft FEL Sec 18
BHL: 500.4ft FNL & 1028.6ft FEL Sec 18

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude |
|--------------------------------|--------|--------|--------|-----------|-------------|
| 7" ICP *NEW* - COLLINS 18T-321 | 6919.1 | 499.9 | -145.0 | 40.307122 | -104.587750 |
| BHL - COLLINS 18T-321 | 6893.5 | 4539.3 | -145.0 | 40.318210 | -104.587750 |
| KOP - COLLINS 18T-321 | 6202.9 | -220.8 | -145.0 | 40.305144 | -104.587750 |



Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well COLLINS 18T-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4795.5usft (ENS 123) |
| Site: | SE SE SEC. 18 T4N R64W 6th P.M. | MD Reference: | KB @ 4795.5usft (ENS 123) |
| Well: | COLLINS 18T-321 | North Reference: | True |
| Wellbore: | JOB #2015-120-123 | 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 | SE SE SEC. 18 T4N R64W 6th P.M. | | | | |
| Site Position: | | Northing: | 1,355,536.25 usft | Latitude: | 40.305750 |
| From: | Lat/Long | Easting: | 3,254,595.50 usft | Longitude: | -104.587120 |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 1.10000ft | Grid Convergence: | 0.59 ° |

| Well | COLLINS 18T-321 | | | | | |
|----------------------|-----------------|----------|---------------------|-------------------|---------------|--------------|
| Well Position | +N-S | 0.0 usft | Northing: | 1,355,535.92 usft | Latitude: | 40.305750 |
| | +E-W | 0.0 usft | Easting: | 3,254,564.82 usft | Longitude: | -104.587230 |
| Position Uncertainty | | 0.0 usft | Wellhead Elevation: | usft | Ground Level: | 4,782.0 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | JOB #2015-120-123 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 02/07/2015 | 8.32 | 66.86 | 52,586 |

| | | | | | |
|--------------------------|--------------------------------|--------------------|--------------------|----------------------|-----|
| 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 | 358.17 | |

| | | | | | |
|-----------------------|------------------|-----------------------------------|------------------|--------------------|--|
| Survey Program | Date | 01/11/2015 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 265.0 | 11,471.0 | FINAL SURVEYS (JOB #2015-120-123) | 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 | 4,795.5 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 265.0 | 0.70 | 252.70 | 265.0 | 4,530.5 | -0.5 | -1.5 | -0.4 | 0.26 | 0.26 | 0.00 |
| 544.0 | 1.00 | 249.00 | 544.0 | 4,251.5 | -1.9 | -5.4 | -1.7 | 0.11 | 0.11 | -1.33 |
| 824.0 | 0.30 | 278.60 | 823.9 | 3,971.6 | -2.6 | -8.5 | -2.4 | 0.27 | -0.25 | 10.57 |
| 898.0 | 0.50 | 222.90 | 897.9 | 3,897.6 | -2.8 | -8.9 | -2.5 | 0.56 | 0.27 | -75.27 |
| SURFACE CASING | | | | | | | | | | |
| 935.0 | 0.56 | 219.52 | 934.9 | 3,860.6 | -3.1 | -9.1 | -2.8 | 0.18 | 0.16 | -9.15 |
| 1,196.0 | 1.00 | 207.50 | 1,195.9 | 3,599.6 | -6.1 | -10.9 | -5.7 | 0.18 | 0.17 | -4.60 |
| 1,383.0 | 0.90 | 226.40 | 1,382.9 | 3,412.6 | -8.6 | -12.8 | -8.1 | 0.17 | -0.05 | 10.11 |
| 1,475.0 | 4.00 | 208.80 | 1,474.8 | 3,320.7 | -11.9 | -14.8 | -11.4 | 3.43 | 3.37 | -19.13 |
| 1,569.0 | 3.60 | 209.10 | 1,568.6 | 3,226.9 | -17.3 | -17.9 | -16.7 | 0.43 | -0.43 | 0.32 |
| 1,662.0 | 5.30 | 203.70 | 1,661.3 | 3,134.2 | -23.8 | -21.0 | -23.1 | 1.88 | 1.83 | -5.81 |
| 1,755.0 | 7.20 | 210.20 | 1,753.7 | 3,041.8 | -32.8 | -25.7 | -31.9 | 2.18 | 2.04 | 6.99 |

Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
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| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4795.5usft (ENS 123) |
| Site: | SE SE SEC. 18 T4N R64W 6th P.M. | MD Reference: | KB @ 4795.5usft (ENS 123) |
| Well: | COLLINS 18T-321 | North Reference: | True |
| Wellbore: | JOB #2015-120-123 | 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) |
| 1,849.0 | 9.10 | 211.80 | 1,846.8 | 2,948.7 | -44.2 | -32.5 | -43.1 | 2.04 | 2.02 | 1.70 |
| 1,942.0 | 10.70 | 212.60 | 1,938.4 | 2,857.1 | -57.7 | -41.1 | -56.4 | 1.73 | 1.72 | 0.86 |
| 2,212.0 | 9.80 | 202.00 | 2,204.1 | 2,591.4 | -100.1 | -63.2 | -98.1 | 0.77 | -0.33 | -3.93 |
| 2,482.0 | 10.30 | 188.10 | 2,470.0 | 2,325.5 | -145.3 | -75.2 | -142.9 | 0.91 | 0.19 | -5.15 |
| 2,752.0 | 11.50 | 195.40 | 2,735.2 | 2,060.3 | -195.2 | -85.7 | -192.4 | 0.68 | 0.44 | 2.70 |
| 3,021.0 | 11.90 | 220.80 | 2,998.7 | 1,796.8 | -242.1 | -111.0 | -238.4 | 1.91 | 0.15 | 9.44 |
| 3,291.0 | 1.00 | 316.30 | 3,266.8 | 1,528.7 | -261.5 | -130.9 | -257.2 | 4.46 | -4.04 | 35.37 |
| 3,561.0 | 1.90 | 1.00 | 3,536.7 | 1,258.8 | -255.3 | -132.4 | -251.0 | 0.51 | 0.33 | 16.56 |
| 3,830.0 | 1.30 | 7.50 | 3,805.6 | 989.9 | -247.8 | -132.0 | -243.5 | 0.23 | -0.22 | 2.42 |
| 4,099.0 | 2.40 | 355.30 | 4,074.5 | 721.0 | -239.2 | -132.0 | -234.9 | 0.43 | 0.41 | -4.54 |
| 4,368.0 | 2.50 | 359.10 | 4,343.2 | 452.3 | -227.7 | -132.6 | -223.4 | 0.07 | 0.04 | 1.41 |
| 4,638.0 | 0.60 | 178.00 | 4,613.2 | 182.3 | -223.3 | -132.6 | -218.9 | 1.15 | -0.70 | 66.26 |
| 4,907.0 | 1.40 | 216.60 | 4,882.1 | -86.6 | -227.3 | -134.5 | -222.9 | 0.37 | 0.30 | 14.35 |
| 5,178.0 | 0.80 | 240.20 | 5,153.1 | -357.6 | -230.9 | -138.1 | -226.4 | 0.27 | -0.22 | 8.71 |
| 5,447.0 | 0.60 | 336.90 | 5,422.1 | -626.6 | -230.5 | -140.3 | -225.9 | 0.39 | -0.07 | 35.95 |
| 5,716.0 | 0.80 | 17.70 | 5,691.0 | -895.5 | -227.5 | -140.3 | -222.9 | 0.19 | 0.07 | 15.17 |
| 5,985.0 | 0.50 | 255.30 | 5,960.0 | -1,164.5 | -226.0 | -140.9 | -221.3 | 0.43 | -0.11 | -45.50 |
| 6,151.0 | 0.80 | 277.20 | 6,126.0 | -1,330.5 | -226.0 | -142.7 | -221.3 | 0.23 | 0.18 | 13.19 |
| KOP | | | | | | | | | | |
| 6,197.0 | 2.06 | 344.46 | 6,172.0 | -1,376.5 | -225.2 | -143.3 | -220.5 | 4.13 | 2.74 | 146.22 |
| 6,246.0 | 4.00 | 355.80 | 6,220.9 | -1,425.4 | -222.6 | -143.6 | -217.9 | 4.13 | 3.96 | 23.14 |
| 6,336.0 | 6.60 | 8.70 | 6,310.5 | -1,515.0 | -214.4 | -143.1 | -209.7 | 3.16 | 2.89 | 14.33 |
| 6,426.0 | 7.80 | 8.90 | 6,399.8 | -1,604.3 | -203.2 | -141.3 | -198.6 | 1.33 | 1.33 | 0.22 |
| 6,515.0 | 8.80 | 351.90 | 6,487.9 | -1,692.4 | -190.5 | -141.4 | -185.9 | 2.96 | 1.12 | -19.10 |
| 6,605.0 | 15.10 | 5.20 | 6,575.9 | -1,780.4 | -172.0 | -141.3 | -167.4 | 7.59 | 7.00 | 14.78 |
| 6,695.0 | 24.20 | 7.00 | 6,660.6 | -1,865.1 | -141.9 | -138.0 | -137.5 | 10.13 | 10.11 | 2.00 |
| 6,785.0 | 37.40 | 6.30 | 6,737.7 | -1,942.2 | -96.3 | -132.7 | -92.0 | 14.67 | 14.67 | -0.78 |
| 6,875.0 | 50.90 | 1.30 | 6,802.2 | -2,006.7 | -33.9 | -128.9 | -29.8 | 15.48 | 15.00 | -5.56 |
| 6,964.0 | 66.60 | 357.50 | 6,848.2 | -2,052.7 | 41.9 | -129.9 | 46.1 | 18.01 | 17.64 | -4.27 |
| 7,054.0 | 75.20 | 358.30 | 6,877.6 | -2,082.1 | 126.8 | -133.0 | 131.0 | 9.59 | 9.56 | 0.89 |
| 7,144.0 | 80.60 | 0.10 | 6,896.5 | -2,101.0 | 214.8 | -134.2 | 219.0 | 6.31 | 6.00 | 2.00 |
| 7,233.0 | 82.60 | 0.10 | 6,909.5 | -2,114.0 | 302.8 | -134.0 | 307.0 | 2.25 | 2.25 | 0.00 |
| 7,258.0 | 86.00 | 359.40 | 6,912.0 | -2,116.5 | 327.7 | -134.2 | 331.8 | 13.88 | 13.60 | -2.80 |
| ICP | | | | | | | | | | |
| 7,310.0 | 88.72 | 0.27 | 6,914.4 | -2,118.9 | 379.7 | -134.3 | 383.7 | 5.48 | 5.22 | 1.67 |
| 7,348.0 | 90.70 | 0.90 | 6,914.6 | -2,119.1 | 417.6 | -133.9 | 421.7 | 5.48 | 5.22 | 1.66 |
| 7,438.0 | 90.60 | 0.20 | 6,913.6 | -2,118.1 | 507.6 | -133.1 | 511.6 | 0.79 | -0.11 | -0.78 |
| 7,528.0 | 90.20 | 359.80 | 6,912.9 | -2,117.4 | 597.6 | -133.1 | 601.6 | 0.63 | -0.44 | -0.44 |
| 7,618.0 | 89.90 | 359.60 | 6,912.9 | -2,117.4 | 687.6 | -133.5 | 691.5 | 0.40 | -0.33 | -0.22 |
| 7,708.0 | 89.90 | 359.60 | 6,913.0 | -2,117.5 | 777.6 | -134.2 | 781.5 | 0.00 | 0.00 | 0.00 |
| 7,798.0 | 89.90 | 359.00 | 6,913.2 | -2,117.7 | 867.6 | -135.3 | 871.5 | 0.67 | 0.00 | -0.67 |
| 7,888.0 | 89.60 | 358.60 | 6,913.6 | -2,118.1 | 957.6 | -137.1 | 961.5 | 0.56 | -0.33 | -0.44 |
| 7,977.0 | 89.60 | 358.60 | 6,914.2 | -2,118.7 | 1,046.6 | -139.3 | 1,050.5 | 0.00 | 0.00 | 0.00 |
| 8,067.0 | 89.30 | 358.20 | 6,915.0 | -2,119.5 | 1,136.5 | -141.8 | 1,140.5 | 0.56 | -0.33 | -0.44 |
| 8,157.0 | 90.20 | 359.40 | 6,915.4 | -2,119.9 | 1,226.5 | -143.7 | 1,230.5 | 1.67 | 1.00 | 1.33 |
| 8,247.0 | 90.20 | 358.90 | 6,915.1 | -2,119.6 | 1,316.5 | -145.0 | 1,320.5 | 0.56 | 0.00 | -0.56 |
| 8,337.0 | 91.90 | 358.10 | 6,913.5 | -2,118.0 | 1,406.5 | -147.4 | 1,410.4 | 2.09 | 1.89 | -0.89 |
| 8,427.0 | 91.20 | 0.50 | 6,911.0 | -2,115.5 | 1,496.4 | -148.5 | 1,500.4 | 2.78 | -0.78 | 2.67 |
| 8,517.0 | 91.10 | 359.60 | 6,909.2 | -2,113.7 | 1,586.4 | -148.4 | 1,590.3 | 1.01 | -0.11 | -1.00 |
| 8,607.0 | 89.80 | 358.00 | 6,908.5 | -2,113.0 | 1,676.4 | -150.3 | 1,680.3 | 2.29 | -1.44 | -1.78 |
| 8,696.0 | 92.20 | 0.00 | 6,907.0 | -2,111.5 | 1,765.3 | -151.9 | 1,769.3 | 3.51 | 2.70 | 2.25 |
| 8,786.0 | 92.50 | 359.40 | 6,903.3 | -2,107.8 | 1,855.2 | -152.3 | 1,859.2 | 0.74 | 0.33 | -0.67 |
| 8,876.0 | 92.10 | 0.50 | 6,899.7 | -2,104.2 | 1,945.2 | -152.4 | 1,949.0 | 1.30 | -0.44 | 1.22 |

Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well COLLINS 18T-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4795.5usft (ENS 123) |
| Site: | SE SE SEC. 18 T4N R64W 6th P.M. | MD Reference: | KB @ 4795.5usft (ENS 123) |
| Well: | COLLINS 18T-321 | North Reference: | True |
| Wellbore: | JOB #2015-120-123 | 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) |
| 8,966.0 | 91.00 | 2.00 | 6,897.2 | -2,101.7 | 2,035.1 | -150.4 | 2,038.9 | 2.07 | -1.22 | 1.67 |
| 9,055.0 | 90.10 | 2.10 | 6,896.4 | -2,100.9 | 2,124.0 | -147.3 | 2,127.7 | 1.02 | -1.01 | 0.11 |
| 9,145.0 | 90.20 | 1.70 | 6,896.1 | -2,100.6 | 2,214.0 | -144.3 | 2,217.5 | 0.46 | 0.11 | -0.44 |
| 9,235.0 | 88.50 | 1.80 | 6,897.2 | -2,101.7 | 2,303.9 | -141.5 | 2,307.3 | 1.89 | -1.89 | 0.11 |
| 9,325.0 | 88.50 | 1.00 | 6,899.5 | -2,104.0 | 2,393.9 | -139.3 | 2,397.1 | 0.89 | 0.00 | -0.89 |
| 9,415.0 | 88.90 | 1.20 | 6,901.6 | -2,106.1 | 2,483.8 | -137.6 | 2,487.0 | 0.50 | 0.44 | 0.22 |
| 9,505.0 | 89.10 | 0.50 | 6,903.1 | -2,107.6 | 2,573.8 | -136.3 | 2,576.9 | 0.81 | 0.22 | -0.78 |
| 9,594.0 | 89.40 | 0.20 | 6,904.3 | -2,108.8 | 2,662.8 | -135.7 | 2,665.8 | 0.48 | 0.34 | -0.34 |
| 9,684.0 | 90.20 | 0.20 | 6,904.6 | -2,109.1 | 2,752.8 | -135.4 | 2,755.7 | 0.89 | 0.89 | 0.00 |
| 9,774.0 | 89.90 | 359.00 | 6,904.5 | -2,109.0 | 2,842.8 | -136.0 | 2,845.7 | 1.37 | -0.33 | -1.33 |
| 9,864.0 | 90.10 | 357.90 | 6,904.5 | -2,109.0 | 2,932.8 | -138.5 | 2,935.7 | 1.24 | 0.22 | -1.22 |
| 9,953.0 | 88.90 | 358.60 | 6,905.3 | -2,109.8 | 3,021.7 | -141.2 | 3,024.7 | 1.56 | -1.35 | 0.79 |
| 10,043.0 | 89.00 | 0.70 | 6,907.0 | -2,111.5 | 3,111.7 | -141.7 | 3,114.6 | 2.34 | 0.11 | 2.33 |
| 10,134.0 | 88.30 | 0.10 | 6,909.1 | -2,113.6 | 3,202.7 | -141.1 | 3,205.6 | 1.01 | -0.77 | -0.66 |
| 10,223.0 | 89.80 | 1.40 | 6,910.6 | -2,115.1 | 3,291.7 | -139.9 | 3,294.4 | 2.23 | 1.69 | 1.46 |
| 10,313.0 | 89.20 | 0.90 | 6,911.4 | -2,115.9 | 3,381.6 | -138.1 | 3,384.3 | 0.87 | -0.67 | -0.56 |
| 10,403.0 | 91.40 | 2.90 | 6,910.9 | -2,115.4 | 3,471.6 | -135.2 | 3,474.1 | 3.30 | 2.44 | 2.22 |
| 10,493.0 | 91.60 | 2.30 | 6,908.5 | -2,113.0 | 3,561.4 | -131.1 | 3,563.8 | 0.70 | 0.22 | -0.67 |
| 10,582.0 | 92.10 | 1.60 | 6,905.7 | -2,110.2 | 3,650.3 | -128.0 | 3,652.6 | 0.97 | 0.56 | -0.79 |
| 10,672.0 | 89.80 | 2.30 | 6,904.2 | -2,108.7 | 3,740.3 | -125.0 | 3,742.4 | 2.67 | -2.56 | 0.78 |
| 10,762.0 | 90.00 | 2.20 | 6,904.3 | -2,108.8 | 3,830.2 | -121.4 | 3,832.1 | 0.25 | 0.22 | -0.11 |
| 10,852.0 | 90.10 | 1.90 | 6,904.3 | -2,108.8 | 3,920.2 | -118.2 | 3,921.9 | 0.35 | 0.11 | -0.33 |
| 10,942.0 | 90.20 | 1.10 | 6,904.0 | -2,108.5 | 4,010.1 | -115.9 | 4,011.8 | 0.90 | 0.11 | -0.89 |
| 11,031.0 | 90.70 | 1.30 | 6,903.3 | -2,107.8 | 4,099.1 | -114.0 | 4,100.6 | 0.61 | 0.56 | 0.22 |
| 11,121.0 | 91.10 | 359.40 | 6,901.9 | -2,106.4 | 4,189.1 | -113.5 | 4,190.6 | 2.16 | 0.44 | -2.11 |
| 11,211.0 | 91.20 | 359.50 | 6,900.1 | -2,104.6 | 4,279.1 | -114.3 | 4,280.5 | 0.16 | 0.11 | 0.11 |
| 11,301.0 | 91.70 | 358.90 | 6,897.8 | -2,102.3 | 4,369.0 | -115.6 | 4,370.5 | 0.87 | 0.56 | -0.67 |
| 11,391.0 | 91.50 | 358.70 | 6,895.3 | -2,099.8 | 4,459.0 | -117.5 | 4,460.4 | 0.31 | -0.22 | -0.22 |
| LAST SURVEY - NOV 1, 2015 | | | | | | | | | | |
| 11,417.0 | 91.50 | 358.40 | 6,894.6 | -2,099.1 | 4,484.9 | -118.1 | 4,486.4 | 1.15 | 0.00 | -1.15 |
| EXTRAPOLATION TO TD | | | | | | | | | | |
| 11,471.0 | 91.50 | 358.40 | 6,893.2 | -2,097.7 | 4,538.9 | -119.6 | 4,540.4 | 0.00 | 0.00 | 0.00 |

Survey Report



| | | | |
|------------------|---------------------------------|-------------------------------------|---------------------------|
| Company: | PDC ENERGY | Local Co-ordinate Reference: | Well COLLINS 18T-321 |
| Project: | WELD COUNTY, COLORADO | TVD Reference: | KB @ 4795.5usft (ENS 123) |
| Site: | SE SE SEC. 18 T4N R64W 6th P.M. | MD Reference: | KB @ 4795.5usft (ENS 123) |
| Well: | COLLINS 18T-321 | North Reference: | True |
| Wellbore: | JOB #2015-120-123 | 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 | |
| - Shape | | (°) | (°) | (usft) | (usft) | (usft) | (usft) | (usft) | |
| BHL - COLLINS 18T-321 | | 0.00 | 0.00 | 6,893.5 | 4,539.3 | -145.0 | 1,360,073.26 | 3,254,373.11 | |
| - survey misses target center by 25.4usft at 11471.0usft MD (6893.2 TVD, 4538.9 N, -119.6 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| RITER C18-10 | | 0.00 | 0.00 | 7,183.5 | 1,785.1 | -895.2 | 1,357,311.66 | 3,253,651.30 | |
| - survey misses target center by 793.3usft at 8708.3usft MD (6906.5 TVD, 1777.6 N, -151.9 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| 7" ICP *NEW* - COLL | | 0.00 | 0.00 | 6,919.1 | 499.9 | -145.0 | 1,356,034.29 | 3,254,414.69 | |
| - survey misses target center by 13.1usft at 7430.1usft MD (6913.6 TVD, 499.7 N, -133.1 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| SCHNEIDER/DIC/CO | | 0.00 | 0.00 | 7,620.5 | 397.1 | -1,110.0 | 1,355,921.58 | 3,253,450.80 | |
| - survey misses target center by 1204.4usft at 7321.1usft MD (6914.6 TVD, 390.8 N, -134.2 E) | | | | | | | | | |
| - Circle (radius 30.0) | | | | | | | | | |
| KOP - COLLINS 18T-321 | | 0.00 | 0.00 | 6,202.9 | -220.8 | -145.0 | 1,355,313.66 | 3,254,422.11 | |
| - survey misses target center by 3.3usft at 6228.1usft MD (6203.1 TVD, -223.7 N, -143.5 E) | | | | | | | | | |
| - Point | | | | | | | | | |

| Survey Annotations | | | | |
|--------------------|----------------|-------------------|--------------|---------------------------|
| Measured Depth | Vertical Depth | Local Coordinates | | Comment |
| (usft) | (usft) | +N/-S (usft) | +E/-W (usft) | |
| 935.0 | 934.9 | -3.1 | -9.1 | SURFACE CASING |
| 6,197.0 | 6,172.0 | -225.2 | -143.3 | KOP |
| 7,310.0 | 6,914.4 | 379.7 | -134.3 | ICP |
| 11,417.0 | 6,894.6 | 4,484.9 | -118.1 | LAST SURVEY - NOV 1, 2015 |
| 11,471.0 | 6,893.2 | 4,538.9 | -119.6 | EXTRAPOLATION TO TD |

Checked By: _____ Approved By: _____ Date: _____