**Schlumberger**

# Cimarex Energy

Final PvA

CIMAREX

| Borehole: | Well: | Field: | Structure: |
|---|---|---|---|
| Vaca Draw 20-17 Federal #45H | Vaca Draw 20-17 Federal #45H | NM Lea County (NAD 83) | Cimarex Vaca Draw 20-17 Federal #45H |

| Gravity & Magnetic Parameters | | | | | | Surface Location | NAD83 New Mexico State Plane, Eastern Zone, US Feet | | | | | Miscellaneous | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model: | HDGM 2019 | Dip: | 59.71° | Date: | 10-Sep-2019 | Lat: | N 32 6 38.68 | Northing: | 404507.31RUS | Grid Conv: | 0.3838° | Slot: | New Slot | TVD Ref: | RKB(3432.7ft above MSL) |
| MagDec: | 6.618° | FS: | 47748.38nT | Gravity FS: | 998.432mgs (9.80665 Based) | Lon: | W 103 36 33.18 | Easting: | 770698.88RUS | Scale Fact: | 0.99988834 | Plan: | Final Surveys - Cimarex Vaca Draw 20-17 Federal #45H Ofh-192228h (Surcon Corrected) | | |

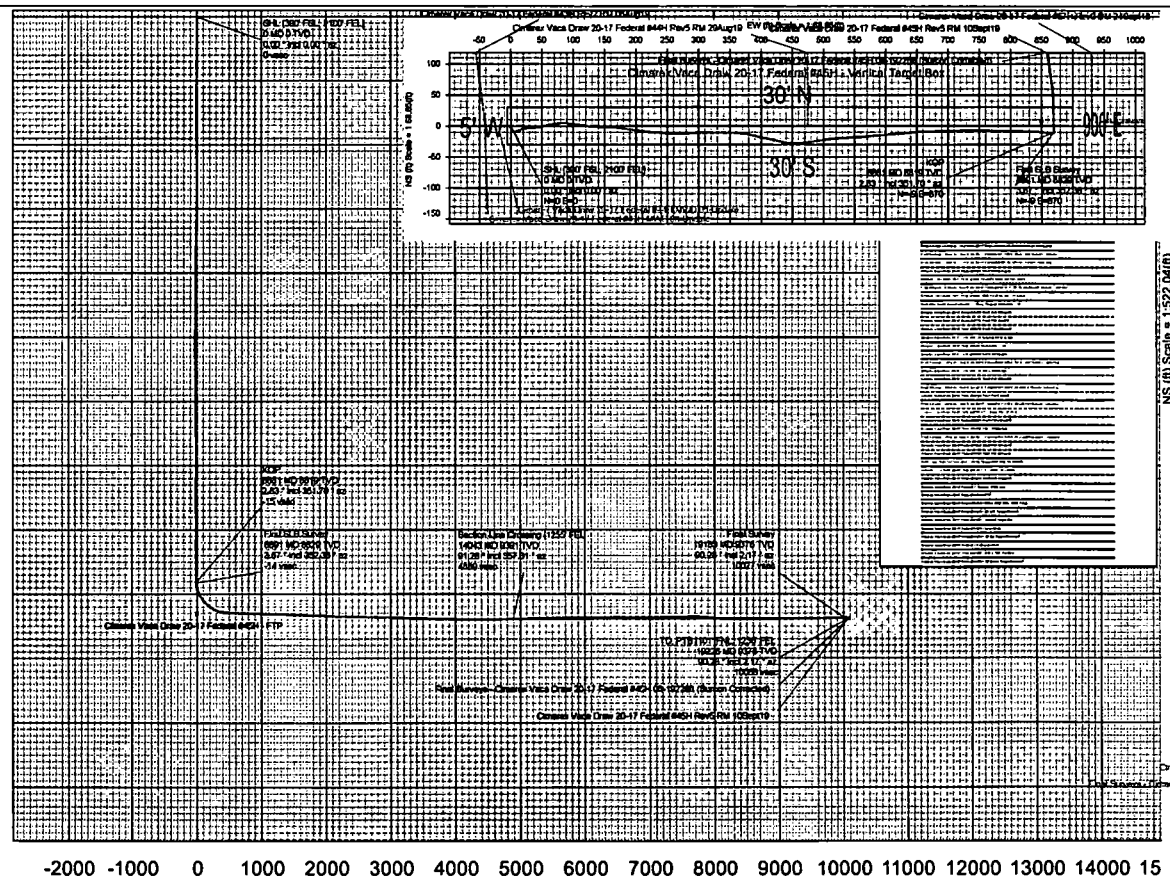
## Critical Points

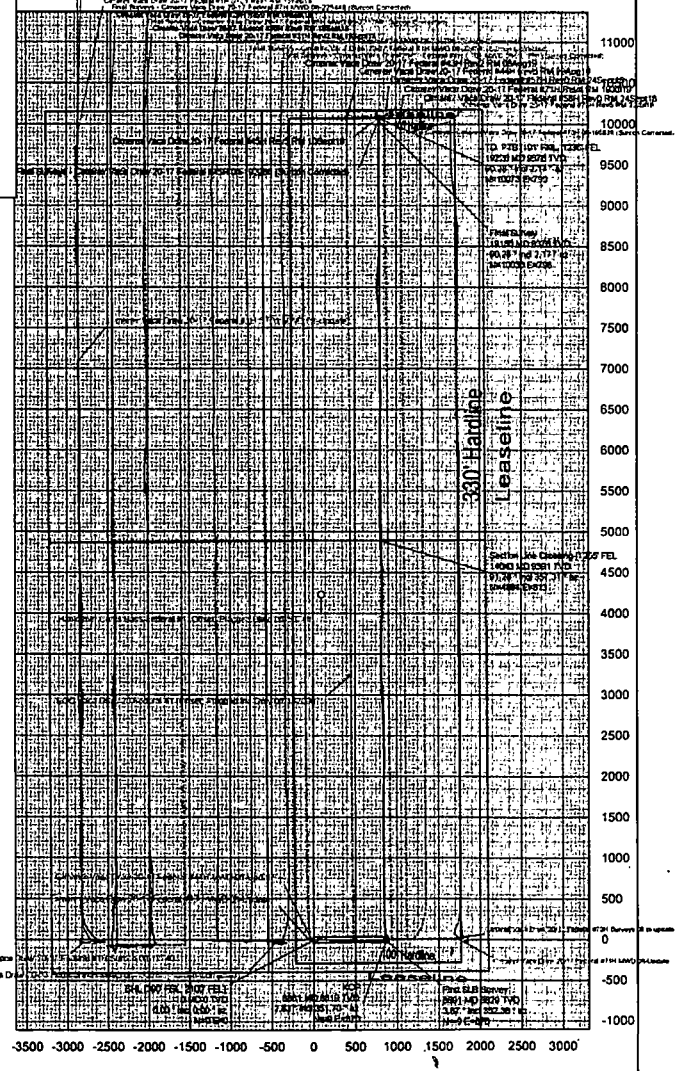
| Critical Point | MD | INCL | AZIM | TVD | VSEC | N(+)/S(-) | E(+)/W(-) | DLS |
|---|---|---|---|---|---|---|---|---|
| SHL [390' FSL, 2100' FEL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| KOP | 8881.31 | 2.63 | 351.70 | 8819.15 | -14.87 | -9.22 | 869.93 | 10.78 |
| First SLB Survey | 8891.00 | 3.87 | 352.38 | 8828.83 | -14.31 | -8.66 | 869.86 | 10.78 |
| Section Line Crossing [1255' FEL | 14042.50 | 91.28 | 357.31 | 9360.81 | 4888.51 | 4893.90 | 813.09 | 0.64 |
| Final Survey | 19185.00 | 90.28 | 2.17 | 9376.34 | 10027.11 | 10032.50 | 797.80 | 0.43 |
| TD, PTB [101' FNL, 1236' FEL | 19228.00 | 90.28 | 2.17 | 9376.14 | 10068.07 | 10073.47 | 799.35 | 0.00 |

Grid
True
Mag

Grid North
Tot Corr (M->G 6.224°)
Mag Dec (6.618°)
Grid Conv (0.394°)

CONTROLLED



Schlumberger

# Final Surveys - Cimarex Vaca Draw 20-17 Federal #45H 0ft-19226ft (Surcon Corrected) Survey Geodetic Report

**(Def Survey)**

CIMAREX

| | | | |
|---|---|---|---|
| **Report Date:** | September 17, 2019 - 10:18 AM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex Energy | **Vertical Section Azimuth:** | 359.628 ° (Grid North) |
| **Field:** | NM Lea County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Vaca Draw 20-17 Federal #45H / New Slot | **TVD Reference Datum:** | RKB |
| **Well:** | Vaca Draw 20-17 Federal #45H | **TVD Reference Elevation:** | 3432.700 ft above MSL |
| **Borehole:** | Vaca Draw 20-17 Federal #45H | **Seabed / Ground Elevation:** | 3406.700 ft above MSL |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 6.618 ° |
| **Survey Name:** | Final Surveys - Cimarex Vaca Draw 20-17 Federal #45H 0ft-19226ft (Surcon Corrected) | **Total Gravity Field Strength:** | 998.4316mgn (9.80665 Based) |
| **Survey Date:** | September 06, 2019 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 234.413 ° / 10972.236 ft / 6.721 / 1.167 | **Total Magnetic Field Strength:** | 47746.380 nT |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 59.710 ° |
| **Location Lat / Long:** | N 32° 6' 35.65147", W 103° 35' 33.18091" | **Declination Date:** | September 10, 2019 |
| **Location Grid N/E Y/X:** | N 404507.310 ftUS, E 770699.880 ftUS | **Magnetic Declination Model:** | HDGM 2019 |
| **CRS Grid Convergence Angle:** | 0.3938 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0.99996934 | **Grid Convergence Used:** | 0.3938 ° |
| **Version / Patch:** | 2.10.782.0 | **Total Corr Mag North->Grid North:** | 6.2241 ° |
| | | **Local Coord Referenced To:** | Well Head |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure Azimuth (°) | Closure (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL [390' FSL, 2100' FEL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | N/A | 404507.31 | 770699.88 | N 32 6 35.65 | W 103 35 33.18 | 0.00 | 0.00 |
| | 199.00 | 0.43 | 238.36 | 199.00 | -0.39 | -0.39 | -0.64 | 0.22 | 404506.92 | 770699.24 | N 32 6 35.65 | W 103 35 33.19 | 238.36 | 0.75 |
| | 299.00 | 0.47 | 228.41 | 299.00 | -0.85 | -0.86 | -1.26 | 0.09 | 404506.45 | 770698.62 | N 32 6 35.64 | W 103 35 33.20 | 235.70 | 1.53 |
| | 390.00 | 0.78 | 139.18 | 389.99 | -1.57 | -1.58 | -1.14 | 0.99 | 404505.73 | 770698.74 | N 32 6 35.64 | W 103 35 33.19 | 215.77 | 1.94 |
| | 572.00 | 0.81 | 138.47 | 571.97 | -3.48 | -3.48 | 0.53 | 0.02 | 404503.83 | 770700.41 | N 32 6 35.62 | W 103 35 33.18 | 171.39 | 3.52 |
| | 662.00 | 0.80 | 144.57 | 661.96 | -4.47 | -4.47 | 1.31 | 0.10 | 404502.84 | 770701.19 | N 32 6 35.61 | W 103 35 33.17 | 163.62 | 4.65 |
| | 754.00 | 0.73 | 141.93 | 753.96 | -5.46 | -5.45 | 2.05 | 0.09 | 404501.86 | 770701.93 | N 32 6 35.60 | W 103 35 33.16 | 159.42 | 5.82 |
| | 844.00 | 0.64 | 141.15 | 843.95 | -6.31 | -6.29 | 2.72 | 0.10 | 404501.02 | 770702.59 | N 32 6 35.59 | W 103 35 33.15 | 156.66 | 6.85 |
| | 939.00 | 0.64 | 140.33 | 938.94 | -7.14 | -7.12 | 3.39 | 0.01 | 404500.20 | 770703.27 | N 32 6 35.58 | W 103 35 33.14 | 154.55 | 7.88 |
| | 999.00 | 0.60 | 135.84 | 998.94 | -7.62 | -7.60 | 3.82 | 0.10 | 404499.71 | 770703.70 | N 32 6 35.58 | W 103 35 33.14 | 153.31 | 8.50 |
| | 1128.00 | 0.56 | 167.06 | 1127.93 | -8.73 | -8.70 | 4.43 | 0.24 | 404498.61 | 770704.31 | N 32 6 35.57 | W 103 35 33.13 | 153.00 | 9.76 |
| | 1222.00 | 0.78 | 91.16 | 1221.93 | -9.19 | -9.16 | 5.17 | 0.90 | 404498.15 | 770705.05 | N 32 6 35.56 | W 103 35 33.12 | 150.54 | 10.52 |
| | 1411.00 | 0.89 | 73.89 | 1410.91 | -8.83 | -8.78 | 7.87 | 0.14 | 404498.53 | 770707.75 | N 32 6 35.56 | W 103 35 33.09 | 138.12 | 11.79 |
| | 1600.00 | 0.88 | 79.46 | 1599.89 | -8.17 | -8.10 | 10.71 | 0.05 | 404499.21 | 770710.59 | N 32 6 35.57 | W 103 35 33.06 | 127.12 | 13.43 |
| | 1695.00 | 1.07 | 70.16 | 1694.87 | -7.75 | -7.67 | 12.26 | 0.26 | 404499.64 | 770712.14 | N 32 6 35.57 | W 103 35 33.04 | 122.03 | 14.46 |
| | 1789.00 | 1.14 | 68.39 | 1788.86 | -7.12 | -7.03 | 13.95 | 0.08 | 404500.28 | 770713.83 | N 32 6 35.58 | W 103 35 33.02 | 116.73 | 15.62 |
| | 1884.00 | 1.03 | 64.86 | 1883.84 | -6.42 | -6.32 | 15.61 | 0.14 | 404500.99 | 770715.48 | N 32 6 35.59 | W 103 35 33.00 | 112.04 | 16.84 |
| | 1978.00 | 1.29 | 67.80 | 1977.82 | -5.67 | -5.56 | 17.35 | 0.28 | 404501.75 | 770717.23 | N 32 6 35.60 | W 103 35 32.98 | 107.76 | 18.22 |
| | 2073.00 | 2.57 | 74.67 | 2072.76 | -4.72 | -4.59 | 20.39 | 1.37 | 404502.72 | 770720.27 | N 32 6 35.60 | W 103 35 32.94 | 102.69 | 20.90 |
| | 2167.00 | 4.50 | 82.29 | 2166.58 | -3.71 | -3.54 | 26.08 | 2.11 | 404503.77 | 770725.96 | N 32 6 35.61 | W 103 35 32.88 | 97.73 | 26.32 |
| | 2262.00 | 6.79 | 85.29 | 2261.11 | -2.81 | -2.58 | 35.37 | 2.43 | 404504.73 | 770735.25 | N 32 6 35.62 | W 103 35 32.77 | 94.17 | 35.47 |
| | 2356.00 | 8.72 | 80.97 | 2354.25 | -1.31 | -1.00 | 47.95 | 2.14 | 404506.31 | 770747.83 | N 32 6 35.64 | W 103 35 32.62 | 91.20 | 47.96 |
| | 2450.00 | 9.56 | 78.62 | 2447.06 | 1.25 | 1.66 | 62.64 | 0.98 | 404508.97 | 770762.52 | N 32 6 35.66 | W 103 35 32.45 | 88.49 | 62.66 |
| | 2545.00 | 9.43 | 84.39 | 2540.76 | 3.47 | 3.97 | 78.12 | 1.01 | 404511.28 | 770778.00 | N 32 6 35.69 | W 103 35 32.27 | 87.09 | 78.22 |
| | 2639.00 | 9.01 | 95.23 | 2633.55 | 3.45 | 4.06 | 93.11 | 1.90 | 404511.37 | 770792.99 | N 32 6 35.69 | W 103 35 32.10 | 87.51 | 93.20 |
| | 2733.00 | 9.03 | 98.95 | 2726.39 | 1.54 | 2.24 | 107.73 | 0.62 | 404509.55 | 770807.61 | N 32 6 35.67 | W 103 35 31.93 | 88.81 | 107.75 |
| | 2827.00 | 9.26 | 96.83 | 2819.19 | -0.61 | 0.19 | 122.53 | 0.43 | 404507.50 | 770822.40 | N 32 6 35.65 | W 103 35 31.76 | 89.91 | 122.53 |
| | 3016.00 | 9.65 | 91.07 | 3005.63 | -2.91 | -1.91 | 153.46 | 0.54 | 404505.40 | 770853.34 | N 32 6 35.62 | W 103 35 31.40 | 90.71 | 153.48 |
| | 3111.00 | 9.30 | 93.31 | 3099.33 | -3.60 | -2.51 | 169.09 | 0.54 | 404504.80 | 770868.96 | N 32 6 35.62 | W 103 35 31.22 | 90.85 | 169.11 |
| | 3205.00 | 8.39 | 100.02 | 3192.22 | -5.33 | -4.14 | 183.42 | 1.46 | 404503.17 | 770883.30 | N 32 6 35.60 | W 103 35 31.05 | 91.29 | 183.47 |
| | 3300.00 | 8.37 | 97.51 | 3286.20 | -7.53 | -6.25 | 197.11 | 0.39 | 404501.06 | 770896.98 | N 32 6 35.58 | W 103 35 30.89 | 91.82 | 197.20 |
| | 3394.00 | 8.64 | 96.71 | 3379.17 | -9.34 | -7.97 | 210.90 | 0.31 | 404499.34 | 770910.77 | N 32 6 35.56 | W 103 35 30.73 | 92.16 | 211.05 |
| | 3489.00 | 7.78 | 96.38 | 3473.20 | -10.97 | -9.52 | 224.38 | 0.91 | 404497.79 | 770924.25 | N 32 6 35.54 | W 103 35 30.57 | 92.43 | 224.58 |
| | 3584.00 | 7.56 | 94.88 | 3567.35 | -12.30 | -10.76 | 236.99 | 0.31 | 404496.55 | 770936.87 | N 32 6 35.53 | W 103 35 30.43 | 92.60 | 237.24 |
| | 3678.00 | 8.33 | 92.53 | 3660.44 | -13.21 | -11.59 | 249.96 | 0.89 | 404495.72 | 770949.83 | N 32 6 35.52 | W 103 35 30.28 | 92.65 | 250.23 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure Azimuth (°) | Closure (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3773.00 | 7.74 | 92.21 | 3754.51 | -13.85 | -12.14 | 263.23 | 0.62 | 404495.17 | 770963.10 | N 32 6 35.51 | W 103 35 30.12 | 92.64 | 263.51 |
| | 3867.00 | 7.27 | 87.79 | 3847.71 | -13.94 | -12.15 | 275.49 | 0.79 | 404495.16 | 770975.37 | N 32 6 35.51 | W 103 35 29.98 | 92.53 | 275.76 |
| | 3961.00 | 7.42 | 87.37 | 3940.93 | -13.51 | -11.65 | 287.50 | 0.17 | 404495.66 | 770987.37 | N 32 6 35.52 | W 103 35 29.84 | 92.32 | 287.74 |
| | 4056.00 | 8.58 | 89.21 | 4035.01 | -13.22 | -11.27 | 300.71 | 1.25 | 404496.04 | 771000.58 | N 32 6 35.52 | W 103 35 29.69 | 92.15 | 300.93 |
| | 4150.00 | 7.78 | 90.42 | 4128.05 | -13.26 | -11.22 | 314.09 | 0.87 | 404496.09 | 771013.96 | N 32 6 35.52 | W 103 35 29.53 | 92.05 | 314.29 |
| | 4245.00 | 8.02 | 88.10 | 4222.15 | -13.17 | -11.04 | 327.14 | 0.42 | 404496.27 | 771027.01 | N 32 6 35.52 | W 103 35 29.38 | 91.93 | 327.33 |
| | 4339.00 | 9.65 | 90.88 | 4315.03 | -13.16 | -10.95 | 341.57 | 1.79 | 404496.36 | 771041.44 | N 32 6 35.52 | W 103 35 29.21 | 91.84 | 341.75 |
| | 4433.00 | 8.98 | 91.55 | 4407.79 | -13.58 | -11.27 | 356.79 | 0.72 | 404496.04 | 771056.65 | N 32 6 35.52 | W 103 35 29.03 | 91.81 | 356.96 |
| | 4528.00 | 8.03 | 93.54 | 4501.75 | -14.28 | -11.88 | 370.82 | 1.05 | 404495.43 | 771070.69 | N 32 6 35.51 | W 103 35 28.87 | 91.83 | 371.01 |
| | 4622.00 | 9.09 | 104.36 | 4594.70 | -16.62 | -14.12 | 384.57 | 2.05 | 404493.19 | 771084.44 | N 32 6 35.49 | W 103 35 28.71 | 92.10 | 384.83 |
| | 4716.00 | 8.84 | 102.46 | 4687.56 | -20.11 | -17.52 | 398.81 | 0.41 | 404489.79 | 771098.68 | N 32 6 35.45 | W 103 35 28.55 | 92.52 | 399.20 |
| | 4811.00 | 8.67 | 102.58 | 4781.45 | -23.34 | -20.66 | 412.93 | 0.18 | 404486.65 | 771112.80 | N 32 6 35.42 | W 103 35 28.38 | 92.86 | 413.45 |
| | 4880.00 | 8.61 | 102.56 | 4849.67 | -25.66 | -22.91 | 423.05 | 0.09 | 404484.40 | 771122.91 | N 32 6 35.40 | W 103 35 28.26 | 93.10 | 423.67 |
| | 4981.00 | 7.97 | 103.02 | 4949.61 | -28.97 | -26.14 | 437.25 | 0.64 | 404481.17 | 771137.11 | N 32 6 35.36 | W 103 35 28.10 | 93.42 | 438.03 |
| | 5076.00 | 7.82 | 93.47 | 5043.71 | -30.93 | -28.01 | 450.12 | 1.39 | 404479.30 | 771149.98 | N 32 6 35.34 | W 103 35 27.95 | 93.56 | 450.99 |
| | 5170.00 | 8.52 | 83.53 | 5136.76 | -30.62 | -27.61 | 463.42 | 1.67 | 404479.70 | 771163.28 | N 32 6 35.35 | W 103 35 27.80 | 93.41 | 464.24 |
| | 5265.00 | 8.68 | 82.92 | 5230.69 | -29.04 | -25.94 | 477.53 | 0.19 | 404481.37 | 771177.39 | N 32 6 35.36 | W 103 35 27.63 | 93.11 | 478.23 |
| | 5359.00 | 8.87 | 81.37 | 5323.59 | -27.17 | -23.98 | 491.73 | 0.32 | 404483.34 | 771191.59 | N 32 6 35.38 | W 103 35 27.47 | 92.79 | 492.31 |
| | 5454.00 | 8.98 | 80.88 | 5417.44 | -24.99 | -21.70 | 506.29 | 0.14 | 404485.61 | 771206.16 | N 32 6 35.40 | W 103 35 27.30 | 92.45 | 506.76 |
| | 5548.00 | 8.81 | 86.89 | 5510.32 | -23.53 | -20.15 | 520.72 | 1.00 | 404487.16 | 771220.59 | N 32 6 35.42 | W 103 35 27.13 | 92.22 | 521.11 |
| | 5643.00 | 8.70 | 88.71 | 5604.21 | -22.81 | -19.34 | 535.16 | 0.12 | 404487.97 | 771235.02 | N 32 6 35.42 | W 103 35 26.96 | 92.07 | 535.51 |
| | 5738.00 | 8.80 | 86.28 | 5698.10 | -22.02 | -18.46 | 549.59 | 0.13 | 404488.85 | 771249.45 | N 32 6 35.43 | W 103 35 26.79 | 91.92 | 549.90 |
| | 5832.00 | 8.85 | 85.29 | 5790.99 | -21.06 | -17.40 | 563.97 | 0.17 | 404489.91 | 771263.83 | N 32 6 35.44 | W 103 35 26.63 | 91.77 | 564.24 |
| | 5927.00 | 8.92 | 85.14 | 5884.85 | -19.93 | -16.17 | 578.59 | 0.08 | 404491.14 | 771278.45 | N 32 6 35.45 | W 103 35 26.46 | 91.60 | 578.82 |
| | 6021.00 | 8.51 | 85.06 | 5977.77 | -18.80 | -14.96 | 592.78 | 0.44 | 404492.35 | 771292.64 | N 32 6 35.46 | W 103 35 26.29 | 91.45 | 592.97 |
| | 6116.00 | 8.05 | 85.63 | 6071.77 | -17.78 | -13.84 | 606.42 | 0.49 | 404493.47 | 771306.28 | N 32 6 35.47 | W 103 35 26.13 | 91.31 | 606.57 |
| | 6210.00 | 8.13 | 85.16 | 6164.84 | -16.80 | -12.78 | 619.60 | 0.11 | 404494.53 | 771319.46 | N 32 6 35.48 | W 103 35 25.98 | 91.18 | 619.73 |
| | 6305.00 | 7.99 | 84.06 | 6258.90 | -15.64 | -11.53 | 632.86 | 0.22 | 404495.78 | 771332.72 | N 32 6 35.49 | W 103 35 25.82 | 91.04 | 632.97 |
| | 6399.00 | 8.16 | 83.07 | 6351.97 | -14.24 | -10.05 | 645.98 | 0.23 | 404497.26 | 771345.84 | N 32 6 35.51 | W 103 35 25.67 | 90.89 | 646.06 |
| | 6494.00 | 8.96 | 88.69 | 6445.91 | -13.35 | -9.07 | 660.07 | 1.22 | 404498.24 | 771359.93 | N 32 6 35.52 | W 103 35 25.51 | 90.79 | 660.13 |
| | 6588.00 | 9.23 | 89.35 | 6538.73 | -13.20 | -8.82 | 674.93 | 0.31 | 404498.50 | 771374.79 | N 32 6 35.52 | W 103 35 25.33 | 90.75 | 674.99 |
| | 6682.00 | 9.32 | 88.55 | 6631.50 | -13.02 | -8.54 | 690.07 | 0.17 | 404498.77 | 771389.93 | N 32 6 35.52 | W 103 35 25.16 | 90.71 | 690.13 |
| | 6777.00 | 9.01 | 88.64 | 6725.29 | -12.74 | -8.17 | 705.20 | 0.33 | 404499.14 | 771405.06 | N 32 6 35.52 | W 103 35 24.98 | 90.66 | 705.25 |
| | 6871.00 | 8.73 | 88.56 | 6818.16 | -12.48 | -7.81 | 719.69 | 0.30 | 404499.50 | 771419.55 | N 32 6 35.53 | W 103 35 24.81 | 90.62 | 719.73 |
| | 6965.00 | 8.48 | 90.05 | 6911.11 | -12.40 | -7.64 | 733.75 | 0.36 | 404499.67 | 771433.61 | N 32 6 35.53 | W 103 35 24.65 | 90.60 | 733.79 |
| | 7059.00 | 8.14 | 89.57 | 7004.12 | -12.45 | -7.59 | 747.34 | 0.37 | 404499.72 | 771447.19 | N 32 6 35.53 | W 103 35 24.49 | 90.58 | 747.38 |
| | 7154.00 | 8.09 | 89.84 | 7098.17 | -12.46 | -7.53 | 760.75 | 0.07 | 404499.78 | 771460.60 | N 32 6 35.53 | W 103 35 24.34 | 90.57 | 760.79 |
| | 7248.00 | 7.87 | 90.68 | 7191.26 | -12.61 | -7.58 | 773.80 | 0.26 | 404499.73 | 771473.65 | N 32 6 35.52 | W 103 35 24.19 | 90.56 | 773.84 |
| | 7342.00 | 7.76 | 91.28 | 7284.38 | -12.91 | -7.80 | 786.58 | 0.15 | 404499.51 | 771486.43 | N 32 6 35.52 | W 103 35 24.04 | 90.57 | 786.62 |
| | 7436.00 | 7.41 | 91.40 | 7377.56 | -13.28 | -8.09 | 798.98 | 0.37 | 404499.22 | 771498.84 | N 32 6 35.52 | W 103 35 23.89 | 90.58 | 799.02 |
| | 7625.00 | 7.23 | 90.89 | 7565.02 | -13.92 | -8.57 | 823.06 | 0.10 | 404498.74 | 771522.91 | N 32 6 35.51 | W 103 35 23.61 | 90.60 | 823.10 |
| | 7719.00 | 6.97 | 91.11 | 7658.30 | -14.20 | -8.78 | 834.67 | 0.28 | 404498.53 | 771534.53 | N 32 6 35.51 | W 103 35 23.48 | 90.60 | 834.72 |
| | 7908.00 | 5.14 | 99.96 | 7846.24 | -16.01 | -10.46 | 854.48 | 1.08 | 404496.85 | 771554.33 | N 32 6 35.49 | W 103 35 23.25 | 90.70 | 854.54 |
| | 8002.00 | 3.33 | 100.73 | 7939.98 | -17.29 | -11.70 | 861.31 | 1.93 | 404495.61 | 771561.16 | N 32 6 35.48 | W 103 35 23.17 | 90.78 | 861.39 |
| | 8097.00 | 1.53 | 90.77 | 8034.89 | -17.85 | -12.23 | 865.29 | 1.94 | 404495.08 | 771565.14 | N 32 6 35.47 | W 103 35 23.12 | 90.81 | 865.38 |
| | 8191.00 | 0.86 | 39.96 | 8128.87 | -17.34 | -11.71 | 867.00 | 1.27 | 404495.60 | 771566.85 | N 32 6 35.48 | W 103 35 23.10 | 90.77 | 867.08 |
| | 8285.00 | 0.66 | 23.02 | 8222.87 | -16.30 | -10.67 | 867.66 | 0.32 | 404496.64 | 771567.51 | N 32 6 35.49 | W 103 35 23.09 | 90.70 | 867.73 |
| | 8379.00 | 0.43 | 44.80 | 8316.86 | -15.56 | -9.92 | 868.12 | 0.33 | 404497.39 | 771567.97 | N 32 6 35.49 | W 103 35 23.09 | 90.65 | 868.18 |
| | 8474.00 | 0.43 | 59.70 | 8411.86 | -15.13 | -9.49 | 868.68 | 0.12 | 404497.82 | 771568.53 | N 32 6 35.50 | W 103 35 23.08 | 90.63 | 868.73 |
| | 8568.00 | 0.21 | 116.02 | 8505.86 | -15.03 | -9.38 | 869.14 | 0.38 | 404497.93 | 771568.99 | N 32 6 35.50 | W 103 35 23.08 | 90.62 | 869.19 |
| | 8662.00 | 0.28 | 135.11 | 8599.86 | -15.27 | -9.62 | 869.46 | 0.11 | 404497.69 | 771569.31 | N 32 6 35.50 | W 103 35 23.07 | 90.63 | 869.51 |
| | 8756.00 | 0.45 | 131.71 | 8693.85 | -15.68 | -10.03 | 869.90 | 0.18 | 404497.28 | 771569.75 | N 32 6 35.49 | W 103 35 23.07 | 90.66 | 869.95 |
| | 8860.00 | 0.54 | 341.01 | 8797.85 | -15.49 | -9.84 | 870.04 | 0.92 | 404497.47 | 771569.89 | N 32 6 35.49 | W 103 35 23.07 | 90.65 | 870.10 |
| *KOP* | *8881.31* | *2.83* | *351.70* | *8819.15* | *-14.87* | *-9.22* | *869.93* | *10.78* | *404498.09* | *771569.78* | *N 32 6 35.50* | *W 103 35 23.07* | *90.61* | *869.98* |
| First SLB Survey | 8891.00 | 3.87 | 352.38 | 8828.83 | -14.31 | -8.66 | 869.86 | 10.78 | 404498.65 | 771569.71 | N 32 6 35.51 | W 103 35 23.07 | 90.57 | 869.90 |
| | 8923.00 | 7.95 | 354.60 | 8860.65 | -11.03 | -5.39 | 869.50 | 12.77 | 404501.92 | 771569.36 | N 32 6 35.54 | W 103 35 23.07 | 90.36 | 869.52 |
| | 8955.00 | 12.78 | 356.56 | 8892.12 | -5.29 | 0.35 | 869.08 | 15.13 | 404507.66 | 771568.93 | N 32 6 35.60 | W 103 35 23.08 | 89.98 | 869.08 |
| | 8986.00 | 16.87 | 359.50 | 8922.08 | 2.63 | 8.27 | 868.84 | 13.41 | 404515.58 | 771568.69 | N 32 6 35.67 | W 103 35 23.08 | 89.45 | 868.88 |
| | 9033.00 | 23.13 | 0.35 | 8966.22 | 18.70 | 24.34 | 868.83 | 13.33 | 404531.65 | 771568.69 | N 32 6 35.83 | W 103 35 23.08 | 88.40 | 869.18 |
| | 9081.00 | 27.83 | 356.95 | 9009.54 | 39.33 | 44.97 | 868.30 | 10.25 | 404552.28 | 771568.15 | N 32 6 36.04 | W 103 35 23.08 | 87.04 | 869.46 |
| | 9128.00 | 32.79 | 352.91 | 9050.11 | 62.95 | 68.57 | 866.14 | 11.40 | 404575.88 | 771565.99 | N 32 6 36.27 | W 103 35 23.11 | 85.47 | 868.85 |
| | 9175.00 | 37.79 | 351.80 | 9088.46 | 89.87 | 95.47 | 862.51 | 10.73 | 404602.78 | 771562.36 | N 32 6 36.54 | W 103 35 23.15 | 83.68 | 867.78 |
| | 9222.00 | 43.20 | 351.62 | 9124.19 | 120.09 | 125.66 | 858.11 | 11.51 | 404632.97 | 771557.96 | N 32 6 36.84 | W 103 35 23.19 | 81.67 | 867.26 |
| | 9270.00 | 47.61 | 353.03 | 9157.88 | 153.98 | 159.53 | 853.56 | 9.42 | 404666.83 | 771553.42 | N 32 6 37.17 | W 103 35 23.24 | 79.41 | 868.34 |
| | 9317.00 | 52.01 | 354.78 | 9188.21 | 189.70 | 195.22 | 849.77 | 9.78 | 404702.52 | 771549.62 | N 32 6 37.53 | W 103 35 23.29 | 77.06 | 871.91 |
| | 9365.00 | 55.98 | 356.72 | 9216.42 | 228.43 | 233.93 | 846.91 | 8.89 | 404741.24 | 771546.76 | N 32 6 37.91 | W 103 35 23.32 | 74.56 | 878.62 |
| | 9412.00 | 61.88 | 359.90 | 9240.67 | 268.65 | 274.15 | 845.76 | 13.82 | 404781.45 | 771545.61 | N 32 6 38.31 | W 103 35 23.33 | 72.04 | 889.08 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure Azimuth (°) | Closure (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9460.00 | 69.07 | 0.62 | 9260.58 | 312.29 | 317.79 | 845.96 | 15.04 | 404825.09 | 771545.82 | N 32 6 38.74 | W 103 35 23.32 | 69.41 | 903.68 |
| | 9507.00 | 76.43 | 0.74 | 9274.51 | 357.14 | 362.64 | 846.50 | 15.66 | 404869.94 | 771546.35 | N 32 6 39.18 | W 103 35 23.31 | 66.81 | 920.90 |
| | 9555.00 | 80.53 | 0.76 | 9284.09 | 404.15 | 409.66 | 847.11 | 8.54 | 404916.96 | 771546.96 | N 32 6 39.65 | W 103 35 23.30 | 64.19 | 940.97 |
| | 9649.00 | 87.97 | 358.83 | 9293.51 | 497.61 | 503.12 | 846.77 | 8.17 | 405010.41 | 771546.62 | N 32 6 40.57 | W 103 35 23.30 | 59.28 | 984.96 |
| | 9683.00 | 88.35 | 358.82 | 9294.60 | 531.59 | 537.09 | 846.07 | 1.12 | 405044.38 | 771545.92 | N 32 6 40.91 | W 103 35 23.30 | 57.59 | 1002.15 |
| | 9809.00 | 88.56 | 358.54 | 9298.00 | 657.52 | 663.01 | 843.17 | 0.28 | 405170.30 | 771543.02 | N 32 6 42.15 | W 103 35 23.33 | 51.82 | 1072.62 |
| | 9904.00 | 88.38 | 358.86 | 9300.53 | 752.48 | 757.95 | 841.01 | 0.39 | 405265.24 | 771540.87 | N 32 6 43.09 | W 103 35 23.34 | 47.97 | 1132.17 |
| | 9999.00 | 88.38 | 359.37 | 9303.22 | 847.43 | 852.90 | 839.55 | 0.54 | 405360.19 | 771539.40 | N 32 6 44.03 | W 103 35 23.35 | 44.55 | 1196.78 |
| | 10093.00 | 88.62 | 0.12 | 9305.68 | 941.40 | 946.87 | 839.13 | 0.84 | 405454.15 | 771538.98 | N 32 6 44.96 | W 103 35 23.35 | 41.55 | 1265.19 |
| | 10188.00 | 88.11 | 0.21 | 9308.39 | 1036.36 | 1041.83 | 839.40 | 0.55 | 405549.11 | 771539.26 | N 32 6 45.90 | W 103 35 23.34 | 38.86 | 1337.91 |
| | 10283.00 | 87.97 | 359.61 | 9311.64 | 1131.30 | 1136.77 | 839.25 | 0.65 | 405644.05 | 771539.11 | N 32 6 46.84 | W 103 35 23.33 | 36.44 | 1413.01 |
| | 10378.00 | 87.80 | 359.70 | 9315.14 | 1226.24 | 1231.71 | 838.68 | 0.20 | 405738.98 | 771538.54 | N 32 6 47.78 | W 103 35 23.33 | 34.25 | 1490.13 |
| | 10472.00 | 87.87 | 359.61 | 9318.70 | 1320.17 | 1325.64 | 838.12 | 0.12 | 405832.91 | 771537.97 | N 32 6 48.71 | W 103 35 23.33 | 32.30 | 1568.36 |
| | 10567.00 | 87.73 | 0.41 | 9322.34 | 1415.10 | 1420.57 | 838.13 | 0.85 | 405927.83 | 771537.99 | N 32 6 49.65 | W 103 35 23.32 | 30.54 | 1649.39 |
| | 10661.00 | 87.97 | 0.03 | 9325.87 | 1509.02 | 1514.50 | 838.49 | 0.48 | 406021.76 | 771538.35 | N 32 6 50.58 | W 103 35 23.31 | 28.97 | 1731.12 |
| | 10756.00 | 87.93 | 358.79 | 9329.27 | 1603.96 | 1609.43 | 837.52 | 1.31 | 406116.69 | 771537.37 | N 32 6 51.52 | W 103 35 23.31 | 27.49 | 1814.31 |
| | 10851.00 | 87.76 | 1.44 | 9332.84 | 1698.88 | 1704.36 | 837.71 | 2.79 | 406211.61 | 771537.56 | N 32 6 52.46 | W 103 35 23.31 | 26.17 | 1899.10 |
| | 10945.00 | 88.14 | 1.46 | 9336.20 | 1792.77 | 1798.27 | 840.08 | 0.40 | 406305.52 | 771539.94 | N 32 6 53.39 | W 103 35 23.27 | 25.04 | 1984.82 |
| | 11040.00 | 88.38 | 1.46 | 9339.09 | 1887.68 | 1893.19 | 842.50 | 0.25 | 406400.44 | 771542.36 | N 32 6 54.33 | W 103 35 23.23 | 23.99 | 2072.19 |
| | 11135.00 | 88.45 | 1.33 | 9341.72 | 1982.60 | 1988.13 | 844.82 | 0.16 | 406495.37 | 771544.67 | N 32 6 55.27 | W 103 35 23.20 | 23.02 | 2160.18 |
| | 11230.00 | 88.11 | 0.71 | 9344.57 | 2077.53 | 2083.07 | 846.51 | 0.74 | 406590.31 | 771546.36 | N 32 6 56.21 | W 103 35 23.17 | 22.12 | 2248.50 |
| | 11324.00 | 88.59 | 0.12 | 9347.27 | 2171.48 | 2177.03 | 847.19 | 0.81 | 406684.27 | 771547.04 | N 32 6 57.14 | W 103 35 23.16 | 21.26 | 2336.06 |
| | 11419.00 | 88.93 | 359.23 | 9349.33 | 2266.46 | 2272.00 | 846.65 | 1.00 | 406779.24 | 771546.50 | N 32 6 58.08 | W 103 35 23.16 | 20.44 | 2424.62 |
| | 11513.00 | 88.56 | 358.94 | 9351.39 | 2360.43 | 2365.97 | 845.15 | 0.50 | 406873.20 | 771545.00 | N 32 6 59.01 | W 103 35 23.17 | 19.66 | 2512.38 |
| | 11608.00 | 88.28 | 358.32 | 9354.01 | 2455.38 | 2460.90 | 842.88 | 0.72 | 406968.13 | 771542.73 | N 32 6 59.94 | W 103 35 23.18 | 18.91 | 2601.25 |
| | 11703.00 | 88.69 | 358.73 | 9356.52 | 2550.33 | 2555.84 | 840.43 | 0.61 | 407063.06 | 771540.28 | N 32 7 0.88 | W 103 35 23.21 | 18.20 | 2690.47 |
| | 11797.00 | 88.21 | 358.68 | 9359.06 | 2644.28 | 2649.78 | 838.31 | 0.51 | 407157.00 | 771538.16 | N 32 7 1.81 | W 103 35 23.22 | 17.56 | 2779.23 |
| | 11892.00 | 89.00 | 358.24 | 9361.37 | 2739.23 | 2744.72 | 835.76 | 0.95 | 407251.94 | 771535.61 | N 32 7 2.75 | W 103 35 23.24 | 16.94 | 2869.14 |
| | 11987.00 | 89.04 | 358.41 | 9363.00 | 2834.19 | 2839.66 | 832.98 | 0.18 | 407346.88 | 771532.83 | N 32 7 3.69 | W 103 35 23.27 | 16.35 | 2959.31 |
| | 12082.00 | 88.69 | 357.82 | 9364.88 | 2929.14 | 2934.59 | 829.86 | 0.72 | 407441.81 | 771529.71 | N 32 7 4.63 | W 103 35 23.30 | 15.79 | 3049.67 |
| | 12176.00 | 88.11 | 357.96 | 9367.51 | 3023.06 | 3028.49 | 826.40 | 0.63 | 407535.70 | 771526.25 | N 32 7 5.56 | W 103 35 23.33 | 15.26 | 3139.22 |
| | 12271.00 | 88.11 | 357.53 | 9370.64 | 3117.96 | 3123.36 | 822.66 | 0.45 | 407630.57 | 771522.51 | N 32 7 6.50 | W 103 35 23.37 | 14.76 | 3229.89 |
| | 12366.00 | 88.49 | 358.02 | 9373.46 | 3212.87 | 3218.25 | 818.97 | 0.65 | 407725.46 | 771518.83 | N 32 7 7.44 | W 103 35 23.40 | 14.28 | 3320.82 |
| | 12460.00 | 88.42 | 358.85 | 9375.99 | 3306.81 | 3312.18 | 816.41 | 0.89 | 407819.38 | 771516.26 | N 32 7 8.37 | W 103 35 23.42 | 13.85 | 3411.31 |
| | 12555.00 | 88.31 | 359.80 | 9378.70 | 3401.77 | 3407.13 | 815.29 | 1.01 | 407914.33 | 771515.14 | N 32 7 9.31 | W 103 35 23.43 | 13.46 | 3503.32 |
| | 12650.00 | 88.07 | 0.34 | 9381.70 | 3496.72 | 3502.09 | 815.40 | 0.62 | 408009.28 | 771515.26 | N 32 7 10.25 | W 103 35 23.42 | 13.11 | 3595.76 |
| | 12744.00 | 88.80 | 0.56 | 9384.27 | 3590.67 | 3596.05 | 816.14 | 0.81 | 408103.24 | 771516.00 | N 32 7 11.18 | W 103 35 23.40 | 12.79 | 3687.50 |
| | 12839.00 | 88.97 | 0.96 | 9386.12 | 3685.64 | 3691.02 | 817.40 | 0.46 | 408198.21 | 771517.26 | N 32 7 12.12 | W 103 35 23.38 | 12.49 | 3780.45 |
| | 12934.00 | 88.97 | 1.06 | 9387.83 | 3780.59 | 3785.99 | 819.08 | 0.11 | 408293.18 | 771518.93 | N 32 7 13.06 | W 103 35 23.35 | 12.21 | 3873.58 |
| | 13028.00 | 89.00 | 1.45 | 9389.49 | 3874.54 | 3879.95 | 821.13 | 0.42 | 408387.14 | 771520.99 | N 32 7 13.99 | W 103 35 23.32 | 11.95 | 3965.89 |
| | 13123.00 | 89.21 | 1.67 | 9390.98 | 3969.48 | 3974.91 | 823.72 | 0.32 | 408482.09 | 771523.57 | N 32 7 14.93 | W 103 35 23.29 | 11.71 | 4059.36 |
| | 13218.00 | 88.83 | 0.85 | 9392.60 | 4064.42 | 4069.87 | 825.81 | 0.95 | 408577.05 | 771525.66 | N 32 7 15.87 | W 103 35 23.25 | 11.47 | 4152.81 |
| | 13312.00 | 88.31 | 0.20 | 9394.95 | 4158.38 | 4163.84 | 826.67 | 0.89 | 408671.01 | 771526.52 | N 32 7 16.80 | W 103 35 23.24 | 11.23 | 4245.10 |
| | 13407.00 | 88.14 | 359.67 | 9397.89 | 4253.33 | 4258.79 | 826.56 | 0.59 | 408765.96 | 771526.42 | N 32 7 17.74 | W 103 35 23.23 | 10.98 | 4338.26 |
| | 13502.00 | 88.38 | 359.15 | 9400.77 | 4348.29 | 4353.74 | 825.59 | 0.60 | 408860.91 | 771525.44 | N 32 7 18.68 | W 103 35 23.23 | 10.74 | 4431.32 |
| | 13596.00 | 90.21 | 359.34 | 9401.93 | 4442.27 | 4447.72 | 824.35 | 1.96 | 408954.89 | 771524.20 | N 32 7 19.61 | W 103 35 23.24 | 10.50 | 4523.47 |
| | 13690.00 | 91.41 | 359.11 | 9400.60 | 4536.26 | 4541.70 | 823.08 | 1.30 | 409048.86 | 771522.93 | N 32 7 20.54 | W 103 35 23.25 | 10.27 | 4615.68 |
| | 13785.00 | 91.86 | 359.00 | 9397.89 | 4631.22 | 4636.65 | 821.51 | 0.49 | 409143.81 | 771521.36 | N 32 7 21.48 | W 103 35 23.26 | 10.05 | 4708.86 |
| | 13879.00 | 91.72 | 358.37 | 9394.95 | 4725.16 | 4730.58 | 819.35 | 0.69 | 409237.73 | 771519.21 | N 32 7 22.41 | W 103 35 23.28 | 9.83 | 4801.01 |
| | 13973.00 | 91.51 | 357.69 | 9392.31 | 4819.08 | 4824.48 | 816.12 | 0.76 | 409331.64 | 771515.98 | N 32 7 23.33 | W 103 35 23.31 | 9.60 | 4893.03 |
| *Section Line Crossing [1255' FEL* | *14042.50* | *91.28* | *357.31* | *9390.61* | *4888.51* | *4893.90* | *813.09* | *0.64* | *409401.05* | *771512.94* | *N 32 7 24.02* | *W 103 35 23.34* | *9.43* | *4960.98* |
| | 14067.00 | 91.20 | 357.17 | 9390.08 | 4912.99 | 4918.36 | 811.91 | 0.64 | 409425.51 | 771511.76 | N 32 7 24.26 | W 103 35 23.35 | 9.37 | 4984.93 |
| | 14162.00 | 90.93 | 357.61 | 9388.32 | 5007.90 | 5013.25 | 807.58 | 0.54 | 409520.39 | 771507.44 | N 32 7 25.20 | W 103 35 23.39 | 9.15 | 5077.88 |
| | 14256.00 | 91.48 | 356.58 | 9386.34 | 5101.78 | 5107.10 | 802.82 | 1.24 | 409614.25 | 771502.68 | N 32 7 26.13 | W 103 35 23.44 | 8.93 | 5169.82 |
| | 14350.00 | 91.75 | 358.25 | 9383.69 | 5195.67 | 5200.97 | 798.58 | 1.80 | 409708.11 | 771498.44 | N 32 7 27.06 | W 103 35 23.48 | 8.73 | 5261.92 |
| | 14445.00 | 91.99 | 359.79 | 9380.59 | 5290.61 | 5295.90 | 796.96 | 1.64 | 409803.04 | 771496.81 | N 32 7 28.00 | W 103 35 23.49 | 8.56 | 5355.53 |
| | 14540.00 | 91.69 | 0.14 | 9377.54 | 5385.56 | 5390.85 | 796.90 | 0.49 | 409897.99 | 771496.76 | N 32 7 28.94 | W 103 35 23.48 | 8.41 | 5449.43 |
| | 14635.00 | 90.65 | 0.28 | 9375.60 | 5480.54 | 5485.83 | 797.25 | 1.10 | 409992.96 | 771497.10 | N 32 7 29.88 | W 103 35 23.47 | 8.27 | 5543.46 |
| | 14730.00 | 90.21 | 0.64 | 9374.89 | 5575.52 | 5580.82 | 798.01 | 0.60 | 410087.95 | 771497.87 | N 32 7 30.82 | W 103 35 23.46 | 8.14 | 5637.59 |
| | 14825.00 | 90.45 | 1.35 | 9374.34 | 5670.50 | 5675.81 | 799.66 | 0.79 | 410182.93 | 771499.52 | N 32 7 31.76 | W 103 35 23.43 | 8.02 | 5731.86 |
| | 14919.00 | 90.86 | 0.89 | 9373.27 | 5764.46 | 5769.78 | 801.50 | 0.66 | 410276.90 | 771501.35 | N 32 7 32.69 | W 103 35 23.40 | 7.91 | 5825.19 |
| | 15014.00 | 90.83 | 0.14 | 9371.88 | 5859.43 | 5864.77 | 802.35 | 0.79 | 410371.89 | 771502.21 | N 32 7 33.63 | W 103 35 23.38 | 7.79 | 5919.40 |
| | 15109.00 | 90.41 | 359.56 | 9370.84 | 5954.43 | 5959.76 | 802.10 | 0.75 | 410466.88 | 771501.96 | N 32 7 34.57 | W 103 35 23.38 | 7.67 | 6013.50 |
| | 15203.00 | 90.41 | 0.27 | 9370.16 | 6048.42 | 6053.76 | 801.96 | 0.76 | 410560.87 | 771501.82 | N 32 7 35.50 | W 103 35 23.37 | 7.55 | 6106.65 |
| | 15298.00 | 90.76 | 1.01 | 9369.19 | 6143.40 | 6148.75 | 803.03 | 0.86 | 410655.86 | 771502.88 | N 32 7 36.44 | W 103 35 23.35 | 7.44 | 6200.96 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure Azimuth (°) | Closure (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15393.00 | 90.55 | 0.88 | 9368.11 | 6238.37 | 6243.73 | 804.59 | 0.26 | 410750.83 | 771504.45 | N 32 7 37.38 | W 103 35 23.33 | 7.34 | 6295.36 |
| | 15488.00 | 89.86 | 0.42 | 9367.77 | 6333.36 | 6338.72 | 805.67 | 0.87 | 410845.82 | 771505.52 | N 32 7 38.32 | W 103 35 23.31 | 7.24 | 6389.72 |
| | 15583.00 | 91.89 | 1.39 | 9366.32 | 6428.31 | 6433.69 | 807.17 | 2.37 | 410940.79 | 771507.02 | N 32 7 39.26 | W 103 35 23.28 | 7.15 | 6484.13 |
| | 15678.00 | 90.55 | 0.76 | 9364.29 | 6523.26 | 6528.65 | 808.95 | 1.56 | 411035.75 | 771508.81 | N 32 7 40.20 | W 103 35 23.25 | 7.06 | 6578.58 |
| | 15773.00 | 90.69 | 359.64 | 9363.27 | 6618.25 | 6623.64 | 809.28 | 1.19 | 411130.74 | 771509.14 | N 32 7 41.14 | W 103 35 23.24 | 6.97 | 6672.90 |
| | 15868.00 | 89.07 | 358.87 | 9363.47 | 6713.24 | 6718.63 | 808.05 | 1.89 | 411225.72 | 771507.90 | N 32 7 42.08 | W 103 35 23.25 | 6.86 | 6767.05 |
| | 15962.00 | 90.62 | 0.22 | 9363.72 | 6807.24 | 6812.62 | 807.30 | 2.19 | 411319.71 | 771507.16 | N 32 7 43.01 | W 103 35 23.25 | 6.76 | 6860.29 |
| | 16057.00 | 88.28 | 358.50 | 9364.63 | 6902.22 | 6907.60 | 806.24 | 3.06 | 411414.69 | 771506.10 | N 32 7 43.95 | W 103 35 23.25 | 6.66 | 6954.49 |
| | 16152.00 | 90.65 | 359.88 | 9365.52 | 6997.20 | 7002.58 | 804.90 | 2.89 | 411509.66 | 771504.75 | N 32 7 44.89 | W 103 35 23.26 | 6.56 | 7048.69 |
| | 16246.00 | 91.07 | 359.65 | 9364.11 | 7091.19 | 7096.57 | 804.51 | 0.51 | 411603.64 | 771504.37 | N 32 7 45.82 | W 103 35 23.26 | 6.47 | 7142.02 |
| | 16341.00 | 91.17 | 359.40 | 9362.25 | 7186.18 | 7191.55 | 803.73 | 0.28 | 411698.62 | 771503.58 | N 32 7 46.76 | W 103 35 23.26 | 6.38 | 7236.32 |
| | 16436.00 | 91.41 | 359.43 | 9360.11 | 7281.15 | 7286.52 | 802.76 | 0.25 | 411793.59 | 771502.61 | N 32 7 47.70 | W 103 35 23.26 | 6.29 | 7330.60 |
| | 16531.00 | 90.21 | 359.05 | 9358.77 | 7376.14 | 7381.50 | 801.50 | 1.32 | 411888.57 | 771501.35 | N 32 7 48.64 | W 103 35 23.27 | 6.20 | 7424.88 |
| | 16625.00 | 91.13 | 358.95 | 9357.67 | 7470.12 | 7475.47 | 799.86 | 0.98 | 411982.54 | 771499.71 | N 32 7 49.57 | W 103 35 23.28 | 6.11 | 7518.14 |
| | 16720.00 | 92.55 | 358.44 | 9354.62 | 7565.06 | 7570.40 | 797.69 | 1.59 | 412077.46 | 771497.55 | N 32 7 50.51 | W 103 35 23.30 | 6.02 | 7612.31 |
| | 16815.00 | 89.90 | 356.11 | 9352.59 | 7659.94 | 7665.25 | 793.18 | 3.71 | 412172.31 | 771493.03 | N 32 7 51.45 | W 103 35 23.34 | 5.91 | 7706.18 |
| | 16910.00 | 88.45 | 355.42 | 9353.96 | 7754.71 | 7759.98 | 786.16 | 1.69 | 412267.04 | 771486.02 | N 32 7 52.38 | W 103 35 23.42 | 5.78 | 7799.70 |
| | 17004.00 | 86.49 | 356.50 | 9358.11 | 7848.42 | 7853.65 | 779.55 | 2.38 | 412360.70 | 771479.40 | N 32 7 53.31 | W 103 35 23.49 | 5.67 | 7892.24 |
| | 17099.00 | 84.80 | 358.45 | 9365.32 | 7943.07 | 7948.28 | 775.37 | 2.71 | 412455.33 | 771475.23 | N 32 7 54.25 | W 103 35 23.53 | 5.57 | 7986.01 |
| | 17166.00 | 83.69 | 0.58 | 9372.04 | 8009.73 | 8014.93 | 774.81 | 3.57 | 412521.98 | 771474.66 | N 32 7 54.91 | W 103 35 23.53 | 5.52 | 8052.29 |
| | 17194.00 | 83.66 | 1.24 | 9375.12 | 8037.55 | 8042.76 | 775.25 | 2.35 | 412549.80 | 771475.10 | N 32 7 55.18 | W 103 35 23.52 | 5.51 | 8080.03 |
| | 17287.00 | 87.25 | 3.18 | 9382.49 | 8130.15 | 8135.38 | 778.83 | 4.38 | 412642.42 | 771478.68 | N 32 7 56.10 | W 103 35 23.47 | 5.47 | 8172.57 |
| | 17382.00 | 89.28 | 3.48 | 9385.37 | 8224.90 | 8230.17 | 784.34 | 2.16 | 412737.21 | 771484.20 | N 32 7 57.04 | W 103 35 23.40 | 5.44 | 8267.46 |
| | 17477.00 | 89.11 | 2.63 | 9386.70 | 8319.72 | 8325.02 | 789.41 | 0.91 | 412832.06 | 771489.26 | N 32 7 57.97 | W 103 35 23.34 | 5.42 | 8362.36 |
| | 17571.00 | 89.24 | 1.45 | 9388.06 | 8413.63 | 8418.95 | 792.75 | 1.26 | 412925.99 | 771492.60 | N 32 7 58.90 | W 103 35 23.29 | 5.38 | 8456.19 |
| | 17666.00 | 89.31 | 0.61 | 9389.26 | 8508.59 | 8513.93 | 794.46 | 0.89 | 413020.96 | 771494.31 | N 32 7 59.84 | W 103 35 23.26 | 5.33 | 8550.91 |
| | 17761.00 | 89.07 | 359.65 | 9390.60 | 8603.58 | 8608.92 | 794.67 | 1.04 | 413115.94 | 771494.53 | N 32 8 0.78 | W 103 35 23.25 | 5.27 | 8645.52 |
| | 17856.00 | 90.28 | 359.26 | 9391.14 | 8698.57 | 8703.91 | 793.77 | 1.34 | 413210.93 | 771493.62 | N 32 8 1.72 | W 103 35 23.25 | 5.21 | 8740.03 |
| | 17951.00 | 91.17 | 359.16 | 9389.94 | 8793.56 | 8798.89 | 792.46 | 0.94 | 413305.91 | 771492.31 | N 32 8 2.66 | W 103 35 23.26 | 5.15 | 8834.50 |
| | 18046.00 | 91.31 | 358.80 | 9387.88 | 8888.53 | 8893.85 | 790.77 | 0.41 | 413400.87 | 771490.62 | N 32 8 3.60 | W 103 35 23.27 | 5.08 | 8928.94 |
| | 18141.00 | 91.41 | 358.57 | 9385.63 | 8983.49 | 8988.80 | 788.59 | 0.26 | 413495.82 | 771488.44 | N 32 8 4.54 | W 103 35 23.29 | 5.01 | 9023.33 |
| | 18235.00 | 91.03 | 358.61 | 9383.63 | 9077.46 | 9082.75 | 786.28 | 0.41 | 413589.76 | 771486.13 | N 32 8 5.47 | W 103 35 23.31 | 4.95 | 9116.72 |
| | 18330.00 | 91.10 | 359.40 | 9381.86 | 9172.43 | 9177.72 | 784.63 | 0.83 | 413684.73 | 771484.48 | N 32 8 6.41 | W 103 35 23.32 | 4.89 | 9211.20 |
| | 18425.00 | 91.03 | 359.89 | 9380.10 | 9267.42 | 9272.70 | 784.04 | 0.52 | 413779.71 | 771483.89 | N 32 8 7.35 | W 103 35 23.32 | 4.83 | 9305.79 |
| | 18519.00 | 90.69 | 0.11 | 9378.68 | 9361.40 | 9366.69 | 784.04 | 0.43 | 413873.69 | 771483.89 | N 32 8 8.28 | W 103 35 23.31 | 4.78 | 9399.45 |
| | 18614.00 | 90.17 | 0.26 | 9377.97 | 9456.40 | 9461.69 | 784.35 | 0.57 | 413968.69 | 771484.20 | N 32 8 9.22 | W 103 35 23.30 | 4.74 | 9494.14 |
| | 18709.00 | 90.03 | 0.70 | 9377.81 | 9551.38 | 9556.68 | 785.14 | 0.49 | 414063.68 | 771485.00 | N 32 8 10.16 | W 103 35 23.29 | 4.70 | 9588.88 |
| | 18804.00 | 90.24 | 1.10 | 9377.58 | 9646.36 | 9651.67 | 786.63 | 0.48 | 414158.67 | 771486.49 | N 32 8 11.10 | W 103 35 23.26 | 4.66 | 9683.67 |
| | 18898.00 | 90.21 | 1.48 | 9377.21 | 9740.32 | 9745.65 | 788.75 | 0.41 | 414252.64 | 771488.61 | N 32 8 12.03 | W 103 35 23.23 | 4.63 | 9777.51 |
| | 18993.00 | 90.31 | 1.71 | 9376.78 | 9835.26 | 9840.61 | 791.40 | 0.26 | 414347.60 | 771491.25 | N 32 8 12.97 | W 103 35 23.19 | 4.60 | 9872.38 |
| | 19087.00 | 89.97 | 1.88 | 9376.55 | 9929.20 | 9934.56 | 794.34 | 0.40 | 414441.55 | 771494.19 | N 32 8 13.90 | W 103 35 23.15 | 4.57 | 9966.27 |
| Final Survey | 19185.00 | 90.28 | 2.17 | 9376.34 | 10027.11 | 10032.50 | 797.80 | 0.43 | 414539.48 | 771497.66 | N 32 8 14.87 | W 103 35 23.10 | 4.55 | 10064.17 |
| TD, PTB [101' FNL, 1236' FEL | 19226.00 | 90.28 | 2.17 | 9376.14 | 10068.07 | 10073.47 | 799.35 | 0.00 | 414580.45 | 771499.21 | N 32 8 15.27 | W 103 35 23.08 | 4.54 | 10105.14 |

**Survey Type:** Def Survey

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 26.000 | 1/98.425 | 17.500 | 13.375 | NAL_MWD_IFR1+MS-Depth Only | Vaca Draw 20-17 Federal #45H / Final Surveys - Cimarex Vaca Draw 20-17 Federal #45H 0ft-19226ft |
| | 1 | 26.000 | 26.000 | Act Stns | 17.500 | 13.375 | NAL_MWD_IFR1+MS-Depth Only | Vaca Draw 20-17 Federal #45H / Final Surveys - Cimarex Vaca Draw 20-17 Federal #45H 0ft-19226ft |
| | 1 | 26.000 | 1066.000 | Act Stns | 17.500 | 13.375 | NAL_MWD_IFR1+MS | Vaca Draw 20-17 Federal #45H / Final Surveys - Cimarex Vaca Draw |
| | 1 | 1066.000 | 4949.000 | Act Stns | 12.250 | 9.625 | NAL_MWD_IFR1+MS | Vaca Draw 20-17 Federal #45H / Final Surveys - Cimarex Vaca Draw |
| | 1 | 4949.000 | 19226.000 | Act Stns | 8.750 | 7.000 | NAL_MWD_IFR1+MS | Vaca Draw 20-17 Federal #45H / Final Surveys - Cimarex Vaca Draw |