

# Minimum Radius of Curvature

**API: 05-123-52332**      **Well: Schmerge 4-13HZ**      **Wellhead Location**    **Lat : 40.426331**  
**Operator: Occidental**      **Area: DJ**      **Long : -104.890081**  
**Rig:**      **Type: U-Lateral**      **Magnetic Declination: 7.60**  
**TD: 19,164'**      **Plane of Proposal: 87.55**

| Measured Depth Ft | Drift Angle Deg | Azimuth Direction Deg | Course Length Ft | TVD Ft | Vertical Section Ft | COORDINATES |        | CLOSURE     |               | Dog Leg Severity Deg/100' | Build / Drop Deg/100' | Left / Right Deg/100' |
|-------------------|-----------------|-----------------------|------------------|--------|---------------------|-------------|--------|-------------|---------------|---------------------------|-----------------------|-----------------------|
|                   |                 |                       |                  |        |                     | N-S Ft      | E-W Ft | Distance FT | Direction Deg |                           |                       |                       |
| 0.00              | 0.00            | 0.00                  |                  | 0.0    | 0.00                | 0.00        | 0.00   | 0.00        | 0.00          |                           |                       |                       |
| 100               | 0.00            | 0.00                  | 100              | 100.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 200               | 0.00            | 0.00                  | 100              | 200.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 300               | 0.00            | 0.00                  | 100              | 300.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 400               | 0.00            | 0.00                  | 100              | 400.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 500               | 0.00            | 0.00                  | 100              | 500.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 600               | 0.00            | 0.00                  | 100              | 600.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 700               | 0.00            | 0.00                  | 100              | 700.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 800               | 0.00            | 0.00                  | 100              | 800.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 900               | 0.00            | 0.00                  | 100              | 900.0  | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1000              | 0.00            | 0.00                  | 100              | 1000.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1100              | 0.00            | 0.00                  | 100              | 1100.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1200              | 0.00            | 0.00                  | 100              | 1200.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1300              | 0.00            | 0.00                  | 100              | 1300.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1400              | 0.00            | 0.00                  | 100              | 1400.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1500              | 0.00            | 0.00                  | 100              | 1500.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1600              | 0.00            | 0.00                  | 100              | 1600.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1700              | 0.00            | 0.00                  | 100              | 1700.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1800              | 0.00            | 0.00                  | 100              | 1800.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 1900              | 0.00            | 0.00                  | 100              | 1900.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2000              | 0.00            | 0.00                  | 100              | 2000.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2100              | 0.00            | 0.00                  | 100              | 2100.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2200              | 0.00            | 0.00                  | 100              | 2200.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2300              | 0.00            | 0.00                  | 100              | 2300.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2400              | 0.00            | 0.00                  | 100              | 2400.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2500              | 0.00            | 0.00                  | 100              | 2500.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2600              | 0.00            | 0.00                  | 100              | 2600.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2652              | 0.00            | 0.00                  | 52               | 2652.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2700              | 0.00            | 0.00                  | 48               | 2700.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2800              | 0.00            | 0.00                  | 100              | 2800.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 2900              | 0.00            | 0.00                  | 100              | 2900.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3000              | 0.00            | 0.00                  | 100              | 3000.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3100              | 0.00            | 0.00                  | 100              | 3100.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3200              | 0.00            | 0.00                  | 100              | 3200.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3300              | 0.00            | 0.00                  | 100              | 3300.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3400              | 0.00            | 0.00                  | 100              | 3400.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3500              | 0.00            | 0.00                  | 100              | 3500.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3600              | 0.00            | 0.00                  | 100              | 3600.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3700              | 0.00            | 0.00                  | 100              | 3700.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3800              | 0.00            | 0.00                  | 100              | 3800.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 3900              | 0.00            | 0.00                  | 100              | 3900.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4000              | 0.00            | 0.00                  | 100              | 4000.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4100              | 0.00            | 0.00                  | 100              | 4100.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4200              | 0.00            | 0.00                  | 100              | 4200.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4300              | 0.00            | 0.00                  | 100              | 4300.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4400              | 0.00            | 0.00                  | 100              | 4400.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4500              | 0.00            | 0.00                  | 100              | 4500.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4600              | 0.00            | 0.00                  | 100              | 4600.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4700              | 0.00            | 0.00                  | 100              | 4700.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4800              | 0.00            | 0.00                  | 100              | 4800.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 4900              | 0.00            | 0.00                  | 100              | 4900.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5000              | 0.00            | 0.00                  | 100              | 5000.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5100              | 0.00            | 0.00                  | 100              | 5100.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5200              | 0.00            | 0.00                  | 100              | 5200.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5300              | 0.00            | 0.00                  | 100              | 5300.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5400              | 0.00            | 0.00                  | 100              | 5400.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5500              | 0.00            | 0.00                  | 100              | 5500.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |
| 5520              | 0.00            | 0.00                  | 20               | 5520.0 | 0.00                | 0.00        | 0.00   | 0.00        | #DIV/0!       | 0.00                      |                       |                       |

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|-------------------|-----------------|-----------------------|------------------|--------|---------------------|-------------|---------|-------------|---------------|---------------------------|-----------------------|-----------------------|
|                   |                 |                       |                  |        |                     | N-S Ft      | E-W Ft  | Distance FT | Direction Deg |                           |                       |                       |
| 5600              | 1.20            | 315.00                | 80               | 5600.0 | -0.57               | 0.59        | -0.59   | 0.84        | 315.00        | 1.50                      | 1.50                  | 393.75                |
| 5700              | 2.70            | 315.00                | 100              | 5699.9 | -2.87               | 3.00        | -3.00   | 4.24        | 315.00        | 1.50                      | 1.50                  | 0.00                  |
| 5800              | 4.20            | 315.00                | 100              | 5799.7 | -6.94               | 7.25        | -7.25   | 10.26       | 315.00        | 1.50                      | 1.50                  | 0.00                  |
| 5900              | 5.70            | 315.00                | 100              | 5899.4 | -12.77              | 13.35       | -13.35  | 18.89       | 315.00        | 1.50                      | 1.50                  | 0.00                  |
| 6000              | 7.20            | 315.00                | 100              | 5998.7 | -20.37              | 21.30       | -21.30  | 30.12       | 315.00        | 1.50                      | 1.50                  | 0.00                  |
| 6053              | 8.00            | 315.00                | 53               | 6051.6 | -25.14              | 26.29       | -26.29  | 37.17       | 315.00        | 1.50                      | 1.50                  | 0.00                  |
| 6100              | 8.00            | 315.00                | 47               | 6097.8 | -29.53              | 30.88       | -30.88  | 43.67       | 315.00        | #NUM!                     | 0.00                  | 0.00                  |
| 6200              | 8.00            | 315.00                | 100              | 6196.8 | -38.94              | 40.72       | -40.72  | 57.59       | 315.00        | #NUM!                     | 0.00                  | 0.00                  |
| 6300              | 8.00            | 315.00                | 100              | 6295.9 | -48.35              | 50.56       | -50.56  | 71.50       | 315.00        | #NUM!                     | 0.00                  | 0.00                  |
| 6318              | 8.00            | 315.00                | 18               | 6313.7 | -50.04              | 52.33       | -52.33  | 74.00       | 315.00        | #NUM!                     | 0.00                  | 0.00                  |
| 6350              | 6.56            | 331.86                | 32               | 6345.4 | -52.34              | 55.52       | -54.77  | 77.99       | 315.39        | 7.99                      | -4.49                 | 52.62                 |
| 6400              | 6.03            | 8.69                  | 50               | 6395.2 | -53.08              | 60.64       | -55.72  | 82.35       | 317.42        | 8.00                      | -1.06                 | -646.34               |
| 6450              | 7.85            | 38.77                 | 50               | 6444.8 | -50.32              | 65.90       | -53.18  | 84.68       | 321.09        | 8.00                      | 3.64                  | 60.16                 |
| 6500              | 10.90           | 54.94                 | 50               | 6494.1 | -44.08              | 71.28       | -47.17  | 85.47       | 326.50        | 8.00                      | 6.10                  | 32.34                 |
| 6550              | 14.41           | 63.73                 | 50               | 6542.9 | -34.40              | 76.75       | -37.72  | 85.52       | 333.83        | 7.99                      | 7.02                  | 17.58                 |
| 6600              | 18.13           | 69.05                 | 50               | 6590.9 | -21.33              | 82.28       | -24.87  | 85.96       | 343.18        | 8.01                      | 7.44                  | 10.64                 |
| 6650              | 21.94           | 72.60                 | 50               | 6637.9 | -4.92               | 87.86       | -8.69   | 88.29       | 354.35        | 8.00                      | 7.62                  | 7.10                  |
| 6700              | 25.81           | 75.13                 | 50               | 6683.6 | 14.74               | 93.45       | 10.76   | 94.07       | 6.57          | 8.00                      | 7.74                  | 5.06                  |
| 6750              | 29.71           | 77.04                 | 50               | 6727.8 | 37.56               | 99.02       | 33.36   | 104.49      | 18.62         | 8.00                      | 7.80                  | 3.82                  |
| 6800              | 33.63           | 78.54                 | 50               | 6770.4 | 63.43               | 104.56      | 59.01   | 120.06      | 29.44         | 8.00                      | 7.84                  | 3.00                  |
| 6850              | 37.57           | 79.76                 | 50               | 6811.0 | 92.22               | 110.02      | 87.60   | 140.63      | 38.53         | 8.01                      | 7.88                  | 2.44                  |
| 6883              | 40.20           | 80.46                 | 33               | 6837.0 | 112.99              | 113.61      | 108.23  | 156.91      | 43.61         | 7.99                      | 7.88                  | 2.10                  |
| 6900              | 41.52           | 80.78                 | 17               | 6849.6 | 123.79              | 115.39      | 118.97  | 165.73      | 45.88         | 8.04                      | 7.94                  | 1.92                  |
| 6933              | 44.15           | 81.37                 | 33               | 6874.0 | 146.29              | 118.90      | 141.34  | 184.70      | 49.93         | 7.99                      | 7.90                  | 1.77                  |
| 6950              | 45.47           | 81.65                 | 17               | 6885.8 | 157.99              | 120.63      | 152.97  | 194.81      | 51.74         | 8.00                      | 7.91                  | 1.68                  |
| 7000              | 49.43           | 82.41                 | 50               | 6919.6 | 194.64              | 125.73      | 189.44  | 227.37      | 56.43         | 8.00                      | 7.92                  | 1.52                  |
| 7050              | 53.40           | 83.09                 | 50               | 6950.8 | 233.58              | 130.66      | 228.21  | 262.96      | 60.21         | 8.01                      | 7.94                  | 1.36                  |
| 7100              | 57.36           | 83.70                 | 50               | 6979.2 | 274.61              | 135.38      | 269.07  | 301.21      | 63.29         | 7.98                      | 7.92                  | 1.22                  |
| 7136              | 60.24           | 84.11                 | 36               | 6998.0 | 305.56              | 138.67      | 299.90  | 330.41      | 65.18         | 8.00                      | 7.94                  | 1.13                  |
| 7150              | 61.34           | 84.25                 | 14               | 7004.7 | 317.54              | 139.89      | 311.84  | 341.78      | 65.84         | 8.05                      | 8.00                  | 1.02                  |
| 7200              | 65.31           | 84.77                 | 50               | 7027.2 | 362.14              | 144.16      | 356.31  | 384.36      | 67.97         | 7.99                      | 7.94                  | 1.04                  |
| 7250              | 69.28           | 85.26                 | 50               | 7046.4 | 408.21              | 148.16      | 402.25  | 428.67      | 69.78         | 7.99                      | 7.94                  | 0.98                  |
| 7300              | 73.26           | 85.72                 | 50               | 7062.5 | 455.52              | 151.88      | 449.44  | 474.41      | 71.33         | 8.01                      | 7.96                  | 0.92                  |
| 7313              | 74.26           | 85.83                 | 13               | 7066.0 | 467.54              | 152.77      | 461.43  | 486.06      | 71.68         | 8.03                      | 7.99                  | 0.88                  |
| 7350              | 77.24           | 86.16                 | 37               | 7075.2 | 503.85              | 155.31      | 497.66  | 521.34      | 72.67         | 8.00                      | 7.95                  | 0.88                  |
| 7400              | 81.22           | 86.58                 | 50               | 7084.6 | 552.95              | 158.41      | 546.68  | 569.17      | 73.84         | 8.00                      | 7.96                  | 0.84                  |
| 7450              | 85.19           | 87.00                 | 50               | 7090.5 | 602.58              | 161.19      | 596.24  | 617.64      | 74.87         | 7.98                      | 7.94                  | 0.84                  |
| 7500              | 89.14           | 87.42                 | 50               | 7093.0 | 652.51              | 163.62      | 646.11  | 666.50      | 75.79         | 7.94                      | 7.90                  | 0.84                  |
| 7516              | 90.47           | 87.55                 | 16               | 7093.0 | 668.82              | 164.34      | 662.40  | 682.48      | 76.07         | 8.19                      | 8.15                  | 0.80                  |
| 7600              | 90.47           | 87.55                 | 84               | 7092.3 | 752.51              | 167.92      | 746.01  | 764.67      | 77.31         | 0.00                      | 0.00                  | 0.00                  |
| 7700              | 90.47           | 87.55                 | 100              | 7091.5 | 852.50              | 172.19      | 845.92  | 863.26      | 78.49         | 0.00                      | 0.00                  | 0.00                  |
| 7800              | 90.47           | 87.55                 | 100              | 7090.7 | 952.50              | 176.47      | 945.82  | 962.14      | 79.43         | 0.00                      | 0.00                  | 0.00                  |
| 7900              | 90.47           | 87.55                 | 100              | 7089.9 | 1052.50             | 180.74      | 1045.73 | 1061.23     | 80.19         | 0.00                      | 0.00                  | 0.00                  |
| 8000              | 90.47           | 87.55                 | 100              | 7089.0 | 1152.49             | 185.02      | 1145.63 | 1160.47     | 80.83         | 0.00                      | 0.00                  | 0.00                  |
| 8100              | 90.47           | 87.55                 | 100              | 7088.2 | 1252.49             | 189.29      | 1245.54 | 1259.84     | 81.36         | 0.00                      | 0.00                  | 0.00                  |
| 8200              | 90.47           | 87.55                 | 100              | 7087.4 | 1352.49             | 193.56      | 1345.44 | 1359.29     | 81.81         | 0.00                      | 0.00                  | 0.00                  |
| 8300              | 90.47           | 87.55                 | 100              | 7086.6 | 1452.48             | 197.84      | 1445.35 | 1458.82     | 82.21         | 0.00                      | 0.00                  | 0.00                  |
| 8400              | 90.47           | 87.55                 | 100              | 7085.8 | 1552.48             | 202.11      | 1545.25 | 1558.41     | 82.55         | 0.00                      | 0.00                  | 0.00                  |
| 8500              | 90.47           | 87.55                 | 100              | 7084.9 | 1652.48             | 206.39      | 1645.16 | 1658.05     | 82.85         | 0.00                      | 0.00                  | 0.00                  |
| 8600              | 90.47           | 87.55                 | 100              | 7084.1 | 1752.47             | 210.66      | 1745.06 | 1757.73     | 83.12         | 0.00                      | 0.00                  | 0.00                  |
| 8700              | 90.47           | 87.55                 | 100              | 7083.3 | 1852.47             | 214.94      | 1844.97 | 1857.45     | 83.36         | 0.00                      | 0.00                  | 0.00                  |
| 8800              | 90.47           | 87.55                 | 100              | 7082.5 | 1952.47             | 219.21      | 1944.87 | 1957.19     | 83.57         | 0.00                      | 0.00                  | 0.00                  |
| 8900              | 90.47           | 87.55                 | 100              | 7081.7 | 2052.46             | 223.49      | 2044.78 | 2056.96     | 83.76         | 0.00                      | 0.00                  | 0.00                  |
| 9000              | 90.47           | 87.55                 | 100              | 7080.8 | 2152.46             | 227.76      | 2144.68 | 2156.74     | 83.94         | 0.00                      | 0.00                  | 0.00                  |
| 9100              | 90.47           | 87.55                 | 100              | 7080.0 | 2252.46             | 232.04      | 2244.59 | 2256.55     | 84.10         | 0.00                      | 0.00                  | 0.00                  |
| 9200              | 90.47           | 87.55                 | 100              | 7079.2 | 2352.45             | 236.31      | 2344.49 | 2356.37     | 84.24         | 0.00                      | 0.00                  | 0.00                  |
| 9300              | 90.47           | 87.55                 | 100              | 7078.4 | 2452.45             | 240.58      | 2444.40 | 2456.21     | 84.38         | 0.00                      | 0.00                  | 0.00                  |
| 9400              | 90.47           | 87.55                 | 100              | 7077.6 | 2552.45             | 244.86      | 2544.30 | 2556.06     | 84.50         | 0.00                      | 0.00                  | 0.00                  |

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|-------------------|-----------------|-----------------------|------------------|--------|---------------------|-------------|---------|-------------|---------------|---------------------------|-----------------------|-----------------------|
|                   |                 |                       |                  |        |                     | N-S Ft      | E-W Ft  | Distance FT | Direction Deg |                           |                       |                       |
| 9500              | 90.47           | 87.55                 | 100              | 7076.7 | 2652.44             | 249.13      | 2644.21 | 2655.92     | 84.62         | 0.00                      | 0.00                  | 0.00                  |
| 9600              | 90.47           | 87.55                 | 100              | 7075.9 | 2752.44             | 253.41      | 2744.12 | 2755.79     | 84.72         | 0.00                      | 0.00                  | 0.00                  |
| 9700              | 90.47           | 87.55                 | 100              | 7075.1 | 2852.44             | 257.68      | 2844.02 | 2855.67     | 84.82         | 0.00                      | 0.00                  | 0.00                  |
| 9800              | 90.47           | 87.55                 | 100              | 7074.3 | 2952.43             | 261.96      | 2943.93 | 2955.56     | 84.92         | 0.00                      | 0.00                  | 0.00                  |
| 9900              | 90.47           | 87.55                 | 100              | 7073.5 | 3052.43             | 266.23      | 3043.83 | 3055.45     | 85.00         | 0.00                      | 0.00                  | 0.00                  |
| 10000             | 90.47           | 87.55                 | 100              | 7072.6 | 3152.43             | 270.51      | 3143.74 | 3155.35     | 85.08         | 0.00                      | 0.00                  | 0.00                  |
| 10100             | 90.47           | 87.55                 | 100              | 7071.8 | 3252.42             | 274.78      | 3243.64 | 3255.26     | 85.16         | 0.00                      | 0.00                  | 0.00                  |
| 10200             | 90.47           | 87.55                 | 100              | 7071.0 | 3352.42             | 279.06      | 3343.55 | 3355.17     | 85.23         | 0.00                      | 0.00                  | 0.00                  |
| 10300             | 90.47           | 87.55                 | 100              | 7070.2 | 3452.42             | 283.33      | 3443.45 | 3455.09     | 85.30         | 0.00                      | 0.00                  | 0.00                  |
| 10400             | 90.47           | 87.55                 | 100              | 7069.4 | 3552.41             | 287.61      | 3543.36 | 3555.01     | 85.36         | 0.00                      | 0.00                  | 0.00                  |
| 10500             | 90.47           | 87.55                 | 100              | 7068.5 | 3652.41             | 291.88      | 3643.26 | 3654.94     | 85.42         | 0.00                      | 0.00                  | 0.00                  |
| 10600             | 90.47           | 87.55                 | 100              | 7067.7 | 3752.41             | 296.15      | 3743.17 | 3754.86     | 85.48         | 0.00                      | 0.00                  | 0.00                  |
| 10700             | 90.47           | 87.55                 | 100              | 7066.9 | 3852.40             | 300.43      | 3843.07 | 3854.80     | 85.53         | 0.00                      | 0.00                  | 0.00                  |
| 10800             | 90.47           | 87.55                 | 100              | 7066.1 | 3952.40             | 304.70      | 3942.98 | 3954.73     | 85.58         | 0.00                      | 0.00                  | 0.00                  |
| 10900             | 90.47           | 87.55                 | 100              | 7065.3 | 4052.40             | 308.98      | 4042.88 | 4054.67     | 85.63         | 0.00                      | 0.00                  | 0.00                  |
| 11000             | 90.47           | 87.55                 | 100              | 7064.4 | 4152.39             | 313.25      | 4142.79 | 4154.61     | 85.68         | 0.00                      | 0.00                  | 0.00                  |
| 11100             | 90.47           | 87.55                 | 100              | 7063.6 | 4252.39             | 317.53      | 4242.69 | 4254.56     | 85.72         | 0.00                      | 0.00                  | 0.00                  |
| 11200             | 90.47           | 87.55                 | 100              | 7062.8 | 4352.39             | 321.80      | 4342.60 | 4354.51     | 85.76         | 0.00                      | 0.00                  | 0.00                  |
| 11300             | 90.47           | 87.55                 | 100              | 7062.0 | 4452.38             | 326.08      | 4442.50 | 4454.45     | 85.80         | 0.00                      | 0.00                  | 0.00                  |
| 11400             | 90.47           | 87.55                 | 100              | 7061.2 | 4552.38             | 330.35      | 4542.41 | 4554.41     | 85.84         | 0.00                      | 0.00                  | 0.00                  |
| 11500             | 90.47           | 87.55                 | 100              | 7060.3 | 4652.38             | 334.63      | 4642.31 | 4654.36     | 85.88         | 0.00                      | 0.00                  | 0.00                  |
| 11600             | 90.47           | 87.55                 | 100              | 7059.5 | 4752.37             | 338.90      | 4742.22 | 4754.31     | 85.91         | 0.00                      | 0.00                  | 0.00                  |
| 11700             | 90.47           | 87.55                 | 100              | 7058.7 | 4852.37             | 343.18      | 4842.12 | 4854.27     | 85.95         | 0.00                      | 0.00                  | 0.00                  |
| 11800             | 90.47           | 87.55                 | 100              | 7057.9 | 4952.37             | 347.45      | 4942.03 | 4954.23     | 85.98         | 0.00                      | 0.00                  | 0.00                  |
| 11900             | 90.47           | 87.55                 | 100              | 7057.1 | 5052.36             | 351.72      | 5041.94 | 5054.19     | 86.01         | 0.00                      | 0.00                  | 0.00                  |
| 12000             | 90.47           | 87.55                 | 100              | 7056.2 | 5152.36             | 356.00      | 5141.84 | 5154.15     | 86.04         | 0.00                      | 0.00                  | 0.00                  |
| 12010             | 90.47           | 87.55                 | 10               | 7056.2 | 5162.36             | 356.43      | 5151.83 | 5164.15     | 86.04         | 0.00                      | 0.00                  | 0.00                  |
| 12050             | 90.44           | 84.95                 | 40               | 7055.8 | 5202.34             | 359.04      | 5191.74 | 5204.14     | 86.04         | 6.50                      | -0.08                 | -6.50                 |
| 12100             | 90.41           | 81.7                  | 50               | 7055.5 | 5252.20             | 364.85      | 5241.39 | 5254.08     | 86.02         | 6.50                      | -0.06                 | -6.50                 |
| 12150             | 90.37           | 78.45                 | 50               | 7055.1 | 5301.77             | 373.47      | 5290.64 | 5303.80     | 85.96         | 6.50                      | -0.08                 | -6.50                 |
| 12200             | 90.33           | 75.20                 | 50               | 7054.8 | 5350.89             | 384.86      | 5339.31 | 5353.17     | 85.88         | 6.50                      | -0.08                 | -6.50                 |
| 12250             | 90.29           | 71.95                 | 50               | 7054.5 | 5399.40             | 399.00      | 5387.27 | 5402.02     | 85.76         | 6.50                      | -0.08                 | -6.50                 |
| 12300             | 90.25           | 68.70                 | 50               | 7054.3 | 5447.15             | 415.83      | 5434.34 | 5450.23     | 85.62         | 6.50                      | -0.08                 | -6.50                 |
| 12350             | 90.21           | 65.45                 | 50               | 7054.1 | 5493.98             | 435.31      | 5480.38 | 5497.65     | 85.46         | 6.50                      | -0.08                 | -6.50                 |
| 12400             | 90.16           | 62.20                 | 50               | 7053.9 | 5539.75             | 457.36      | 5525.25 | 5544.15     | 85.27         | 6.50                      | -0.10                 | -6.50                 |
| 12450             | 90.12           | 58.95                 | 50               | 7053.8 | 5584.31             | 481.92      | 5568.80 | 5589.61     | 85.05         | 6.50                      | -0.08                 | -6.50                 |
| 12500             | 90.08           | 55.70                 | 50               | 7053.7 | 5627.50             | 508.91      | 5610.88 | 5633.91     | 84.82         | 6.50                      | -0.08                 | -6.50                 |
| 12550             | 90.04           | 52.45                 | 50               | 7053.7 | 5669.20             | 538.24      | 5651.36 | 5676.93     | 84.56         | 6.50                      | -0.08                 | -6.50                 |
| 12600             | 89.99           | 49.20                 | 50               | 7053.7 | 5709.27             | 569.82      | 5690.12 | 5718.58     | 84.28         | 6.50                      | -0.10                 | -6.50                 |
| 12650             | 89.95           | 45.95                 | 50               | 7053.7 | 5747.58             | 603.55      | 5727.02 | 5758.73     | 83.98         | 6.50                      | -0.07                 | -6.50                 |
| 12700             | 89.91           | 42.70                 | 50               | 7053.8 | 5784.01             | 639.31      | 5761.95 | 5797.31     | 83.67         | 6.50                      | -0.09                 | -6.50                 |
| 12750             | 89.86           | 39.45                 | 50               | 7053.9 | 5818.44             | 677.00      | 5794.80 | 5834.21     | 83.34         | 6.50                      | -0.10                 | -6.50                 |
| 12800             | 89.82           | 36.20                 | 50               | 7054.0 | 5850.76             | 716.49      | 5825.46 | 5869.35     | 82.99         | 6.50                      | -0.08                 | -6.50                 |
| 12850             | 89.78           | 32.95                 | 50               | 7054.2 | 5880.86             | 757.65      | 5853.83 | 5902.66     | 82.63         | 6.50                      | -0.08                 | -6.50                 |
| 12900             | 89.74           | 29.70                 | 50               | 7054.4 | 5908.66             | 800.36      | 5879.82 | 5934.04     | 82.25         | 6.50                      | -0.08                 | -6.50                 |
| 12950             | 89.70           | 26.45                 | 50               | 7054.6 | 5934.05             | 844.47      | 5903.35 | 5963.44     | 81.86         | 6.50                      | -0.08                 | -6.50                 |
| 13000             | 89.66           | 23.20                 | 50               | 7054.9 | 5956.96             | 889.84      | 5924.34 | 5990.79     | 81.46         | 6.50                      | -0.08                 | -6.50                 |
| 13050             | 89.62           | 19.95                 | 50               | 7055.2 | 5977.31             | 936.33      | 5942.72 | 6016.03     | 81.05         | 6.50                      | -0.08                 | -6.50                 |
| 13100             | 89.58           | 16.70                 | 50               | 7055.6 | 5995.04             | 983.79      | 5958.44 | 6039.11     | 80.62         | 6.50                      | -0.08                 | -6.50                 |
| 13150             | 89.54           | 13.45                 | 50               | 7056.0 | 6010.10             | 1032.06     | 5971.44 | 6059.97     | 80.19         | 6.50                      | -0.08                 | -6.50                 |
| 13200             | 89.51           | 10.21                 | 50               | 7056.4 | 6022.43             | 1080.99     | 5981.69 | 6078.58     | 79.76         | 6.48                      | -0.06                 | -6.48                 |
| 13250             | 89.48           | 6.96                  | 50               | 7056.8 | 6032.00             | 1130.42     | 5989.15 | 6094.90     | 79.31         | 6.50                      | -0.06                 | -6.50                 |
| 13300             | 89.45           | 3.71                  | 50               | 7057.3 | 6038.77             | 1180.20     | 5993.80 | 6108.89     | 78.86         | 6.50                      | -0.06                 | -6.50                 |
| 13350             | 89.42           | 0.46                  | 50               | 7057.8 | 6042.72             | 1230.15     | 5995.62 | 6120.51     | 78.41         | 6.50                      | -0.06                 | -6.50                 |
| 13400             | 89.39           | 357.20                | 50               | 7058.3 | 6043.84             | 1280.13     | 5994.60 | 6129.76     | 77.95         | 6.52                      | -0.06                 | 713.48                |
| 13450             | 89.36           | 353.95                | 50               | 7058.8 | 6042.12             | 1329.97     | 5990.74 | 6136.59     | 77.48         | 6.50                      | -0.06                 | -6.50                 |
| 13500             | 89.34           | 350.70                | 50               | 7059.4 | 6037.56             | 1379.52     | 5984.06 | 6141.02     | 77.02         | 6.50                      | -0.04                 | -6.50                 |
| 13550             | 89.32           | 347.45                | 50               | 7060.0 | 6030.20             | 1428.60     | 5974.59 | 6143.01     | 76.55         | 6.50                      | -0.04                 | -6.50                 |

# Minimum Radius of Curvature

**API: 05-123-52332**      **Well: Schmerge 4-13HZ**      **Wellhead Location**    **Lat : 40.426331**  
**Operator: Occidental**      **Area: DJ**      **Long : -104.890081**  
**Rig:**      **Type: U-Lateral**      **Magnetic Declination: 7.60**  
**TD: 19,164'**      **Plane of Proposal: 87.55**

| Measured Depth Ft | Drift Angle Deg | Azimuth Direction Deg | Course Length Ft | TVD Ft | Vertical Section Ft | COORDINATES |         | CLOSURE     |               | Dog Leg Severity Deg/100' | Build / Drop Deg/100' | Left / Right Deg/100' |
|-------------------|-----------------|-----------------------|------------------|--------|---------------------|-------------|---------|-------------|---------------|---------------------------|-----------------------|-----------------------|
|                   |                 |                       |                  |        |                     | N-S Ft      | E-W Ft  | Distance FT | Direction Deg |                           |                       |                       |
| 13600             | 89.30           | 344.20                | 50               | 7060.6 | 6020.04             | 1477.07     | 5962.35 | 6142.58     | 76.09         | 6.50                      | -0.04                 | -6.50                 |
| 13650             | 89.28           | 340.95                | 50               | 7061.2 | 6007.12             | 1524.76     | 5947.38 | 6139.72     | 75.62         | 6.50                      | -0.04                 | -6.50                 |
| 13700             | 89.27           | 337.70                | 50               | 7061.8 | 5991.49             | 1571.53     | 5929.73 | 6134.44     | 75.16         | 6.50                      | -0.02                 | -6.50                 |
| 13750             | 89.26           | 334.45                | 50               | 7062.5 | 5973.19             | 1617.23     | 5909.46 | 6126.75     | 74.69         | 6.50                      | -0.02                 | -6.50                 |
| 13800             | 89.25           | 331.20                | 50               | 7063.1 | 5952.28             | 1661.70     | 5886.62 | 6116.67     | 74.24         | 6.50                      | -0.02                 | -6.50                 |
| 13850             | 89.24           | 327.95                | 50               | 7063.8 | 5928.83             | 1704.80     | 5861.31 | 6104.20     | 73.78         | 6.50                      | -0.02                 | -6.50                 |
| 13900             | 89.24           | 324.70                | 50               | 7064.5 | 5902.91             | 1746.40     | 5833.59 | 6089.39     | 73.33         | 6.50                      | 0.00                  | -6.50                 |
| 13950             | 89.23           | 321.45                | 50               | 7065.1 | 5874.62             | 1786.37     | 5803.56 | 6072.27     | 72.89         | 6.50                      | -0.02                 | -6.50                 |
| 14000             | 89.23           | 318.20                | 50               | 7065.8 | 5844.03             | 1824.56     | 5771.31 | 6052.86     | 72.46         | 6.50                      | 0.00                  | -6.50                 |
| 14050             | 89.24           | 314.95                | 50               | 7066.5 | 5811.25             | 1860.87     | 5736.95 | 6031.20     | 72.03         | 6.50                      | 0.02                  | -6.50                 |
| 14100             | 89.24           | 311.70                | 50               | 7067.1 | 5776.39             | 1895.17     | 5700.58 | 6007.35     | 71.61         | 6.50                      | 0.00                  | -6.50                 |
| 14150             | 89.25           | 308.45                | 50               | 7067.8 | 5739.54             | 1927.35     | 5662.33 | 5981.36     | 71.20         | 6.50                      | 0.02                  | -6.50                 |
| 14200             | 89.26           | 305.20                | 50               | 7068.4 | 5700.85             | 1957.31     | 5622.32 | 5953.28     | 70.81         | 6.50                      | 0.02                  | -6.50                 |
| 14250             | 89.27           | 301.95                | 50               | 7069.1 | 5660.42             | 1984.96     | 5580.67 | 5923.17     | 70.42         | 6.50                      | 0.02                  | -6.50                 |
| 14300             | 89.28           | 298.70                | 50               | 7069.7 | 5618.39             | 2010.20     | 5537.52 | 5891.09     | 70.05         | 6.50                      | 0.02                  | -6.50                 |
| 14350             | 89.30           | 295.45                | 50               | 7070.3 | 5574.89             | 2032.95     | 5493.01 | 5857.13     | 69.69         | 6.50                      | 0.04                  | -6.50                 |
| 14400             | 89.32           | 292.20                | 50               | 7070.9 | 5530.06             | 2053.14     | 5447.28 | 5821.36     | 69.35         | 6.50                      | 0.04                  | -6.50                 |
| 14450             | 89.34           | 288.95                | 50               | 7071.5 | 5484.06             | 2070.71     | 5400.48 | 5783.86     | 69.02         | 6.50                      | 0.04                  | -6.50                 |
| 14500             | 89.36           | 285.70                | 50               | 7072.1 | 5437.01             | 2085.60     | 5352.75 | 5744.71     | 68.71         | 6.50                      | 0.04                  | -6.50                 |
| 14550             | 89.39           | 282.45                | 50               | 7072.6 | 5389.09             | 2097.75     | 5304.26 | 5704.02     | 68.42         | 6.50                      | 0.06                  | -6.50                 |
| 14600             | 89.42           | 279.20                | 50               | 7073.1 | 5340.43             | 2107.14     | 5255.16 | 5661.87     | 68.15         | 6.50                      | 0.06                  | -6.50                 |
| 14650             | 89.45           | 275.95                | 50               | 7073.6 | 5291.21             | 2113.73     | 5205.61 | 5618.38     | 67.90         | 6.50                      | 0.06                  | -6.50                 |
| 14700             | 89.48           | 272.70                | 50               | 7074.1 | 5241.56             | 2117.50     | 5155.76 | 5573.66     | 67.67         | 6.50                      | 0.06                  | -6.50                 |
| 14750             | 89.51           | 269.45                | 50               | 7074.5 | 5191.67             | 2118.44     | 5105.78 | 5527.82     | 67.47         | 6.50                      | 0.06                  | -6.50                 |
| 14765             | 89.52           | 268.50                | 15               | 7074.7 | 5177.05             | 2118.18     | 5091.16 | 5514.22     | 67.41         | 6.50                      | 0.07                  | -6.50                 |
| 14800             | 89.52           | 268.50                | 35               | 7075.0 | 5141.68             | 2117.25     | 5055.79 | 5481.22     | 67.28         | 0.00                      | 0.00                  | 0.00                  |
| 14900             | 89.52           | 268.50                | 100              | 7075.8 | 5041.70             | 2114.64     | 4955.83 | 5388.13     | 66.89         | 0.00                      | 0.00                  | 0.00                  |
| 14965             | 89.52           | 268.50                | 65               | 7076.3 | 4977.09             | 2112.94     | 4891.24 | 5328.11     | 66.64         | 0.00                      | 0.00                  | 0.00                  |
| 15000             | 89.56           | 267.97                | 35               | 7076.6 | 4941.71             | 2111.85     | 4855.87 | 5295.23     | 66.50         | 1.50                      | 0.11                  | -1.50                 |
| 15100             | 89.69           | 266.48                | 100              | 7077.3 | 4841.72             | 2107.01     | 4756.00 | 5201.83     | 66.11         | 1.50                      | 0.13                  | -1.49                 |
| 15181             | 89.79           | 265.27                | 81               | 7077.7 | 4760.99             | 2101.20     | 4675.44 | 5125.89     | 65.80         | 1.50                      | 0.12                  | -1.50                 |
| 15200             | 89.79           | 265.27                | 19               | 7077.7 | 4741.77             | 2099.62     | 4656.27 | 5107.77     | 65.73         | 0.00                      | 0.00                  | 0.00                  |
| 15300             | 89.79           | 265.27                | 100              | 7078.1 | 4641.85             | 2091.37     | 4556.61 | 5013.64     | 65.35         | 0.00                      | 0.00                  | 0.00                  |
| 15400             | 89.79           | 265.27                | 100              | 7078.5 | 4541.93             | 2083.13     | 4456.96 | 4919.74     | 64.95         | 0.00                      | 0.00                  | 0.00                  |
| 15500             | 89.79           | 265.27                | 100              | 7078.8 | 4442.01             | 2074.88     | 4357.30 | 4826.09     | 64.54         | 0.00                      | 0.00                  | 0.00                  |
| 15600             | 89.79           | 265.27                | 100              | 7079.2 | 4342.09             | 2066.63     | 4257.64 | 4732.70     | 64.11         | 0.00                      | 0.00                  | 0.00                  |
| 15700             | 89.79           | 265.27                | 100              | 7079.6 | 4242.17             | 2058.39     | 4157.98 | 4639.59     | 63.66         | 0.00                      | 0.00                  | 0.00                  |
| 15800             | 89.79           | 265.27                | 100              | 7079.9 | 4142.25             | 2050.14     | 4058.32 | 4546.76     | 63.20         | 0.00                      | 0.00                  | 0.00                  |
| 15900             | 89.79           | 265.27                | 100              | 7080.3 | 4042.33             | 2041.90     | 3958.66 | 4454.25     | 62.72         | 0.00                      | 0.00                  | 0.00                  |
| 16000             | 89.79           | 265.27                | 100              | 7080.7 | 3942.41             | 2033.65     | 3859.00 | 4362.07     | 62.21         | 0.00                      | 0.00                  | 0.00                  |
| 16100             | 89.79           | 265.27                | 100              | 7081.0 | 3842.49             | 2025.40     | 3759.34 | 4270.24     | 61.69         | 0.00                      | 0.00                  | 0.00                  |
| 16200             | 89.79           | 265.27                | 100              | 7081.4 | 3742.57             | 2017.16     | 3659.69 | 4178.78     | 61.14         | 0.00                      | 0.00                  | 0.00                  |
| 16300             | 89.79           | 265.27                | 100              | 7081.8 | 3642.65             | 2008.91     | 3560.03 | 4087.73     | 60.56         | 0.00                      | 0.00                  | 0.00                  |
| 16400             | 89.79           | 265.27                | 100              | 7082.1 | 3542.73             | 2000.67     | 3460.37 | 3997.10     | 59.96         | 0.00                      | 0.00                  | 0.00                  |
| 16500             | 89.79           | 265.27                | 100              | 7082.5 | 3442.81             | 1992.42     | 3360.71 | 3906.93     | 59.34         | 0.00                      | 0.00                  | 0.00                  |
| 16600             | 89.79           | 265.27                | 100              | 7082.9 | 3342.89             | 1984.17     | 3261.05 | 3817.25     | 58.68         | 0.00                      | 0.00                  | 0.00                  |
| 16700             | 89.79           | 265.27                | 100              | 7083.2 | 3242.97             | 1975.93     | 3161.39 | 3728.09     | 57.99         | 0.00                      | 0.00                  | 0.00                  |
| 16800             | 89.79           | 265.27                | 100              | 7083.6 | 3143.05             | 1967.68     | 3061.73 | 3639.50     | 57.27         | 0.00                      | 0.00                  | 0.00                  |
| 16900             | 89.79           | 265.27                | 100              | 7084.0 | 3043.13             | 1959.44     | 2962.07 | 3551.52     | 56.52         | 0.00                      | 0.00                  | 0.00                  |
| 17000             | 89.79           | 265.27                | 100              | 7084.3 | 2943.21             | 1951.19     | 2862.42 | 3464.18     | 55.72         | 0.00                      | 0.00                  | 0.00                  |
| 17100             | 89.79           | 265.27                | 100              | 7084.7 | 2843.29             | 1942.94     | 2762.76 | 3377.55     | 54.88         | 0.00                      | 0.00                  | 0.00                  |
| 17200             | 89.79           | 265.27                | 100              | 7085.1 | 2743.37             | 1934.70     | 2663.10 | 3291.68     | 54.00         | 0.00                      | 0.00                  | 0.00                  |
| 17300             | 89.79           | 265.27                | 100              | 7085.4 | 2643.45             | 1926.45     | 2563.44 | 3206.62     | 53.07         | 0.00                      | 0.00                  | 0.00                  |
| 17400             | 89.79           | 265.27                | 100              | 7085.8 | 2543.53             | 1918.21     | 2463.78 | 3122.46     | 52.10         | 0.00                      | 0.00                  | 0.00                  |
| 17500             | 89.79           | 265.27                | 100              | 7086.2 | 2443.61             | 1909.96     | 2364.12 | 3039.25     | 51.07         | 0.00                      | 0.00                  | 0.00                  |
| 17600             | 89.79           | 265.27                | 100              | 7086.5 | 2343.69             | 1901.71     | 2264.46 | 2957.08     | 49.98         | 0.00                      | 0.00                  | 0.00                  |
| 17700             | 89.79           | 265.27                | 100              | 7086.9 | 2243.77             | 1893.47     | 2164.80 | 2876.04     | 48.83         | 0.00                      | 0.00                  | 0.00                  |
| 17800             | 89.79           | 265.27                | 100              | 7087.3 | 2143.85             | 1885.22     | 2065.15 | 2796.23     | 47.61         | 0.00                      | 0.00                  | 0.00                  |

## Minimum Radius of Curvature

API: **05-123-52332**      Well: **Schmerge 4-13HZ**      Wellhead Location    Lat : **40.426331**  
 Operator: **Occidental**      Area: **DJ**      Long : **-104.890081**  
 Rig:      Type: **U-Lateral**      Magnetic Declination: **7.60**  
 TD: **19,164'**      Plane of Proposal: **87.55**

| Measured<br>Depth<br>Ft | Drift<br>Angle<br>Deg | Azimuth<br>Direction<br>Deg | Course<br>Length<br>Ft | TVD<br>Ft | Vertical<br>Section<br>Ft | COORDINATES |           | CLOSURE        |                  | Dog Leg<br>Severity<br>Deg/100' | Build /<br>Drop<br>Deg/100' | Left /<br>Right<br>Deg/100' |
|-------------------------|-----------------------|-----------------------------|------------------------|-----------|---------------------------|-------------|-----------|----------------|------------------|---------------------------------|-----------------------------|-----------------------------|
|                         |                       |                             |                        |           |                           | N-S<br>Ft   | E-W<br>Ft | Distance<br>FT | Direction<br>Deg |                                 |                             |                             |
| 17900                   | 89.79                 | 265.27                      | 100                    | 7087.6    | 2043.93                   | 1876.98     | 1965.49   | 2717.75        | 46.32            | 0.00                            | 0.00                        | 0.00                        |
| 18000                   | 89.79                 | 265.27                      | 100                    | 7088.0    | 1944.01                   | 1868.73     | 1865.83   | 2640.73        | 44.96            | 0.00                            | 0.00                        | 0.00                        |
| 18100                   | 89.79                 | 265.27                      | 100                    | 7088.4    | 1844.09                   | 1860.48     | 1766.17   | 2565.30        | 43.51            | 0.00                            | 0.00                        | 0.00                        |
| 18200                   | 89.79                 | 265.27                      | 100                    | 7088.7    | 1744.17                   | 1852.24     | 1666.51   | 2491.59        | 41.98            | 0.00                            | 0.00                        | 0.00                        |
| 18300                   | 89.79                 | 265.27                      | 100                    | 7089.1    | 1644.25                   | 1843.99     | 1566.85   | 2419.78        | 40.35            | 0.00                            | 0.00                        | 0.00                        |
| 18400                   | 89.79                 | 265.27                      | 100                    | 7089.5    | 1544.33                   | 1835.75     | 1467.19   | 2350.03        | 38.63            | 0.00                            | 0.00                        | 0.00                        |
| 18500                   | 89.79                 | 265.27                      | 100                    | 7089.8    | 1444.41                   | 1827.50     | 1367.53   | 2282.52        | 36.81            | 0.00                            | 0.00                        | 0.00                        |
| 18600                   | 89.79                 | 265.27                      | 100                    | 7090.2    | 1344.48                   | 1819.25     | 1267.88   | 2217.47        | 34.87            | 0.00                            | 0.00                        | 0.00                        |
| 18700                   | 89.79                 | 265.27                      | 100                    | 7090.6    | 1244.56                   | 1811.01     | 1168.22   | 2155.11        | 32.82            | 0.00                            | 0.00                        | 0.00                        |
| 18800                   | 89.79                 | 265.27                      | 100                    | 7090.9    | 1144.64                   | 1802.76     | 1068.56   | 2095.65        | 30.66            | 0.00                            | 0.00                        | 0.00                        |
| 18900                   | 89.79                 | 265.27                      | 100                    | 7091.3    | 1044.72                   | 1794.52     | 968.90    | 2039.38        | 28.37            | 0.00                            | 0.00                        | 0.00                        |
| 19000                   | 89.79                 | 265.27                      | 100                    | 7091.7    | 944.80                    | 1786.27     | 869.24    | 1986.54        | 25.95            | 0.00                            | 0.00                        | 0.00                        |
| 19100                   | 89.79                 | 265.27                      | 100                    | 7092.0    | 844.88                    | 1778.02     | 769.58    | 1937.43        | 23.40            | 0.00                            | 0.00                        | 0.00                        |
| 19164                   | 89.79                 | 265.27                      | 64                     | 7092.3    | 781.02                    | 1772.75     | 705.88    | 1908.12        | 21.71            | 0.00                            | 0.00                        | 0.00                        |