30-015-40341

# Chesapeake Operating Inc.

**Eddy County, New Mexico (NAD 1983)**
**PLU Remuda Basin 32 23 30 State 1H**
**Job # 1210498**
**Rig: Cactus 120**

**Survey: Phoenix MWD Surveys**

# Survey Report

**08 July, 2012**



Chesapeake

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Chesapeake Operating Inc. | **Local Co-ordinate Reference:** | Well Job # 1210498 |
| **Project:** | Eddy County, New Mexico (NAD 1983) | **TVD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Site:** | PLU Remuda Basin 32 23 30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig Cactus 120 | **Database:** | GCR DB v5000 |

**Project** Eddy County, New Mexico (NAD 1983)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Eastern Zone | | |

**Site** PLU Remuda Basin 32 23 30 State 1H

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 456,541.00 usft | **Latitude:** | 32° 15' 15.8304 N |
| **From:** | Map | **Easting:** | 672,194.00 usft | **Longitude:** | 103° 54' 36.1010 W |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.23 ° |

**Well** Job # 1210498

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 456,541.00 usft | **Latitude:** | 32° 15' 15.8304 N |
| | **+E/-W** | 0.00 usft | **Easting:** | 672,194.00 usft | **Longitude:** | 103° 54' 36.1010 W |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | 23.00 usft | **Ground Level:** | 3,241.00 usft |

**Wellbore** Rig: Cactus 120

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010_14 | 05/31/12 | 7.63 | 60.13 | 48,502 |

**Design** Rig Cactus 120

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | 1.0 | **Phase:** | ACTUAL | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 359.61 |

**Survey Program** **Date** 07/08/12

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 226.00 | 12,950.00 | Phoenix MWD Surveys (Rig: Cactus 120) | MWD | MWD - Standard |

# Survey Report

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| **Project:** | Eddy County, New Mexico (NAD 1983) | **TVD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Site:** | PLU Remuda Basin 32 23 30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig: Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig: Cactus 120 | **Database:** | GCR DB v5000 |

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVDSS (usft) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | -3,264.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 456,541.00 | 672,194.00 |
| 226.00 | 0.40 | 28.80 | -3,038.00 | 226.00 | 0.69 | 0.38 | 0.69 | 0.18 | 456,541.69 | 672,194.38 |
| **First Phoenix MWD Surveys @ 226' MD** | | | | | | | | | | |
| 441.00 | 0.40 | 20.00 | -2,823.01 | 440.99 | 2.05 | 1.00 | 2.05 | 0.03 | 456,543.05 | 672,195.00 |
| 725.00 | 0.40 | 38.50 | -2,539.01 | 724.99 | 3.76 | 1.95 | 3.75 | 0.05 | 456,544.76 | 672,195.95 |
| 916.00 | 0.20 | 65.20 | -2,348.02 | 915.98 | 4.42 | 2.67 | 4.40 | 0.13 | 456,545.42 | 672,196.67 |
| 1,106.00 | 0.00 | 125.90 | -2,158.02 | 1,105.98 | 4.56 | 2.97 | 4.54 | 0.11 | 456,545.56 | 672,196.97 |
| 1,297.00 | 0.30 | 82.40 | -1,967.02 | 1,296.98 | 4.63 | 3.47 | 4.60 | 0.16 | 456,545.63 | 672,197.47 |
| 1,488.00 | 0.40 | 152.80 | -1,776.02 | 1,487.98 | 4.10 | 4.27 | 4.07 | 0.22 | 456,545.10 | 672,198.27 |
| 1,679.00 | 0.30 | 102.70 | -1,585.02 | 1,678.98 | 3.40 | 5.06 | 3.36 | 0.16 | 456,544.40 | 672,199.06 |
| 1,870.00 | 0.50 | 48.90 | -1,394.03 | 1,869.97 | 3.84 | 6.18 | 3.79 | 0.21 | 456,544.84 | 672,200.18 |
| 2,061.00 | 0.50 | 32.30 | -1,203.04 | 2,060.96 | 5.09 | 7.25 | 5.04 | 0.08 | 456,546.09 | 672,201.25 |
| 2,251.00 | 0.90 | 33.90 | -1,013.05 | 2,250.95 | 7.03 | 8.53 | 6.97 | 0.21 | 456,548.03 | 672,202.53 |
| 2,440.00 | 0.70 | 48.90 | -824.07 | 2,439.93 | 9.02 | 10.22 | 8.95 | 0.15 | 456,550.02 | 672,204.22 |
| 2,630.00 | 0.90 | 33.60 | -634.09 | 2,629.91 | 11.02 | 11.92 | 10.94 | 0.15 | 456,552.02 | 672,205.92 |
| 2,821.00 | 0.90 | 1.50 | -443.11 | 2,820.89 | 13.77 | 12.79 | 13.69 | 0.26 | 456,554.77 | 672,206.79 |
| 3,012.00 | 0.90 | 81.10 | -252.13 | 3,011.87 | 15.51 | 14.32 | 15.41 | 0.60 | 456,556.51 | 672,208.32 |
| 3,202.00 | 1.30 | 132.70 | -62.16 | 3,201.84 | 14.27 | 17.37 | 14.16 | 0.54 | 456,555.27 | 672,211.37 |
| 3,393.00 | 1.40 | 149.90 | 128.79 | 3,392.79 | 10.79 | 20.14 | 10.65 | 0.22 | 456,551.79 | 672,214.14 |
| 3,475.00 | 1.20 | 156.40 | 210.77 | 3,474.77 | 9.13 | 20.98 | 8.99 | 0.30 | 456,550.13 | 672,214.98 |
| 3,644.00 | 0.70 | 147.50 | 379.75 | 3,643.75 | 6.64 | 22.25 | 6.49 | 0.31 | 456,547.64 | 672,216.25 |
| 3,835.00 | 0.80 | 140.00 | 570.73 | 3,834.73 | 4.64 | 23.73 | 4.47 | 0.07 | 456,545.64 | 672,217.73 |
| 4,027.00 | 0.70 | 150.00 | 762.71 | 4,026.71 | 2.59 | 25.18 | 2.42 | 0.09 | 456,543.59 | 672,219.18 |
| 4,217.00 | 0.70 | 146.50 | 952.70 | 4,216.70 | 0.62 | 26.40 | 0.44 | 0.02 | 456,541.62 | 672,220.40 |
| 4,408.00 | 0.70 | 141.90 | 1,143.68 | 4,407.68 | -1.27 | 27.76 | -1.46 | 0.03 | 456,539.73 | 672,221.76 |
| 4,599.00 | 0.60 | 157.60 | 1,334.67 | 4,598.67 | -3.11 | 28.86 | -3.31 | 0.11 | 456,537.89 | 672,222.86 |
| 4,791.00 | 0.70 | 151.30 | 1,526.66 | 4,790.66 | -5.07 | 29.81 | -5.27 | 0.06 | 456,535.93 | 672,223.81 |

# Survey Report

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| **Project:** | Eddy County, New Mexico (NAD 1983) | **TVD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Site:** | PLU Remuda Basin 32 23 30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig, Cactus 120 | **Database:** | GCR DB v5000 |

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVDSS (usft) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,982.00 | 0.60 | 158.00 | 1,717.65 | 4,981.65 | -7.02 | 30.74 | -7.23 | 0.07 | 456,533.98 | 672,224.74 |
| 5,175.00 | 0.70 | 158.90 | 1,910.64 | 5,174.64 | -9.06 | 31.55 | -9.27 | 0.05 | 456,531.94 | 672,225.55 |
| 5,368.00 | 0.70 | 155.10 | 2,103.62 | 5,367.62 | -11.23 | 32.47 | -11.45 | 0.02 | 456,529.77 | 672,226.47 |
| 5,560.00 | 0.90 | 151.80 | 2,295.60 | 5,559.60 | -13.62 | 33 67 | -13.85 | 0.11 | 456,527.38 | 672,227.67 |
| 5,751.00 | 0.70 | 152.60 | 2,486.58 | 5,750.58 | -15.98 | 34.92 | -16.22 | 0.10 | 456,525.02 | 672,228.92 |
| 5,943.00 | 0.80 | 166.20 | 2,678.57 | 5,942.57 | -18.32 | 35.78 | -18.57 | 0.11 | 456,522.68 | 672,229.78 |
| 6,134.00 | 0.60 | 185.70 | 2,869.55 | 6,133.55 | -20.61 | 36.00 | -20.86 | 0.16 | 456,520.39 | 672,230.00 |
| 6,326.00 | 0.40 | 188.40 | 3,061.55 | 6,325.55 | -22.28 | 35.80 | -22.52 | 0.10 | 456,518.72 | 672,229.80 |
| 6,518.00 | 0.60 | 183.10 | 3,253.54 | 6,517.54 | -23.94 | 35.65 | -24.18 | 0.11 | 456,517.06 | 672,229.65 |
| 6,710.00 | 0.60 | 192.00 | 3,445.53 | 6,709.53 | -25.93 | 35.38 | -26.17 | 0.05 | 456,515.07 | 672,229.38 |
| 6,902.00 | 0.70 | 184.90 | 3,637.52 | 6,901.52 | -28.08 | 35.08 | -28.32 | 0.07 | 456,512.92 | 672,229.08 |
| 7,093.00 | 0.90 | 179.20 | 3,828.50 | 7,092.50 | -30.74 | 35.00 | -30.98 | 0.11 | 456,510.26 | 672,229.00 |
| 7,285.00 | 0.90 | 196.50 | 4,020.47 | 7,284.47 | -33.70 | 34.59 | -33.93 | 0.14 | 456,507.30 | 672,228.59 |
| 7,477.00 | 2.40 | 212.80 | 4,212.39 | 7,476.39 | -38.52 | 31.98 | -38.74 | 0.81 | 456,502.48 | 672,225.98 |
| 7,660.00 | 2.00 | 202.60 | 4,395.25 | 7,659.25 | -44.69 | 28.68 | -44.89 | 0.31 | 456,496.31 | 672,222.68 |
| 7,692.00 | 1.80 | 244.20 | 4,427.24 | 7,691.24 | -45.43 | 28.01 | -45.62 | 4.26 | 456,495.57 | 672,222.01 |
| 7,724.00 | 4.40 | 308.10 | 4,459.20 | 7,723.20 | -44.89 | 26.59 | -45.07 | 12.35 | 456,496.11 | 672,220.59 |
| 7,756.00 | 7.90 | 323.50 | 4,491.01 | 7,755.01 | -42.36 | 24.32 | -42.53 | 12.00 | 456,498.64 | 672,218.32 |
| 7,788.00 | 11.30 | 329.60 | 4,522.56 | 7,786.56 | -37.89 | 21.42 | -38.03 | 11.08 | 456,503.11 | 672,215.42 |
| 7,819.00 | 14.70 | 331.60 | 4,552.76 | 7,816.76 | -31.81 | 18.02 | -31.93 | 11.06 | 456,509.19 | 672,212.02 |
| 7,851.00 | 18.10 | 333.20 | 4,583.45 | 7,847.45 | -23.80 | 13.84 | -23.89 | 10.72 | 456,517.20 | 672,207.84 |
| 7,883.00 | 21.20 | 335.40 | 4,613.59 | 7,877.59 | -14.09 | 9.19 | -14.16 | 9.96 | 456,526.91 | 672,203.19 |
| 7,914.00 | 25.00 | 334.80 | 4,642.09 | 7,906.09 | -3.07 | 4.07 | -3.09 | 12.28 | 456,537.93 | 672,198.07 |
| 7,946.00 | 28.50 | 335 80 | 4,670.67 | 7,934.67 | 10.02 | -1.94 | 10.03 | 11.03 | 456,551.02 | 672,192.06 |
| 7,978.00 | 32.30 | 337.50 | 4,698.26 | 7,962.26 | 24.89 | -8.35 | 24.94 | 12.17 | 456,565.89 | 672,185.65 |
| 8,010.00 | 36.20 | 339.00 | 4,724.71 | 7,988.71 | 41.61 | -15.01 | 41.72 | 12.47 | 456,582.61 | 672,178.99 |
| 8,041.00 | 39.40 | 340.80 | 4,749.20 | 8,013.20 | 59.46 | -21.53 | 59.60 | 10.92 | 456,600.46 | 672,172.47 |

# Survey Report

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|---|---|---|---|
| **Company:** | Chesapeake Operating Inc. | **Local Co-ordinate Reference:** | Well Job # 1210498 |
| **Project:** | Eddy County, New Mexico (NAD 1983) | **TVD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Site:** | PLU Remuda Basin 32 23.30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig: Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig: Cactus 120 | **Database:** | GCR DB v5000 |

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVDSS (usft) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8,073.00 | 41.70 | 343.40 | 4,773.52 | 8,037.52 | 79.25 | -27.91 | 79.44 | 8.92 | 456,620.25 | 672,166.09 |
| 8,105.00 | 43.30 | 345.10 | 4,797.11 | 8,061.11 | 100.06 | -33.77 | 100.29 | 6.15 | 456,641.06 | 672,160.23 |
| 8,137.00 | 46.20 | 346.60 | 4,819.83 | 8,083.83 | 121.90 | -39.27 | 122.17 | 9.64 | 456,662.90 | 672,154.73 |
| 8,168.00 | 49.80 | 347.60 | 4,840.57 | 8,104.57 | 144.35 | -44.41 | 144.65 | 11.86 | 456,685.35 | 672,149.59 |
| 8,200.00 | 54.10 | 348.90 | 4,860.29 | 8,124.29 | 169.02 | -49.53 | 169.35 | 13.81 | 456,710.02 | 672,144.47 |
| 8,232.00 | 58.40 | 350.30 | 4,878.07 | 8,142.07 | 195.19 | -54.32 | 195.55 | 13.92 | 456,736.19 | 672,139.68 |
| 8,264.00 | 62.50 | 351.80 | 4,893.85 | 8,157.85 | 222.68 | -58.65 | 223.07 | 13.45 | 456,763.68 | 672,135.35 |
| 8,296.00 | 67.20 | 353.30 | 4,907.44 | 8,171.44 | 251.39 | -62.39 | 251.81 | 15.29 | 456,792.39 | 672,131.61 |
| 8,328.00 | 71.80 | 354.00 | 4,918.65 | 8,182.65 | 281.17 | -65.70 | 281.61 | 14.52 | 456,822.17 | 672,128.30 |
| 8,360.00 | 77.30 | 355.00 | 4,927.17 | 8,191.17 | 311.86 | -68.66 | 312.32 | 17.45 | 456,852.86 | 672,125.34 |
| 8,392.00 | 83.50 | 355.40 | 4,932.50 | 8,196.50 | 343.29 | -71.29 | 343.77 | 19.41 | 456,884.29 | 672,122.71 |
| 8,455.00 | 92.40 | 358.80 | 4,934.75 | 8,198.75 | 406.10 | -74.47 | 406.59 | 15.12 | 456,947.10 | 672,119.53 |
| 8,550.00 | 92.80 | 359.90 | 4,930.44 | 8,194.44 | 500.99 | -75.55 | 501.49 | 1.23 | 457,041.99 | 672,118.45 |
| 8,646.00 | 89 80 | 0.90 | 4,928.27 | 8,192.27 | 596.95 | -74.88 | 597.45 | 3.29 | 457,137.95 | 672,119.12 |
| 8,742.00 | 89.20 | 359.90 | 4,929.10 | 8,193.10 | 692.94 | -74.21 | 693.43 | 1.21 | 457,233.94 | 672,119.79 |
| 8,837.00 | 89.70 | 2.00 | 4,930.02 | 8,194.02 | 787.92 | -72.63 | 788.40 | 2.27 | 457,328.92 | 672,121.37 |
| 8,933.00 | 88.50 | 1.40 | 4,931.52 | 8,195.52 | 883.86 | -69.78 | 884.32 | 1.40 | 457,424.86 | 672,124.22 |
| 9,028.00 | 92.00 | 2.10 | 4,931.11 | 8,195.11 | 978.80 | -66.88 | 979.24 | 3.76 | 457,519.80 | 672,127.12 |
| 9,123.00 | 92.40 | 1.20 | 4,927.46 | 8,191.46 | 1,073.69 | -64.15 | 1,074.10 | 1.04 | 457,614.69 | 672,129.85 |
| 9,219.00 | 89.80 | 2.40 | 4,925.62 | 8,189.62 | 1,169.62 | -61.13 | 1,170.01 | 2.98 | 457,710.62 | 672,132.87 |
| 9,314.00 | 89.80 | 2.70 | 4,925.95 | 8,189.95 | 1,264.52 | -56.91 | 1,264.88 | 0.32 | 457,805.52 | 672,137.09 |
| 9,409.00 | 88.80 | 2.60 | 4,927.11 | 8,191.11 | 1,359.41 | -52.52 | 1,359.74 | 1.06 | 457,900.41 | 672,141.48 |
| 9,505.00 | 90.80 | 2.30 | 4,927.45 | 8,191.45 | 1,455.32 | -48 41 | 1,455.62 | 2.11 | 457,996.32 | 672,145.59 |
| 9,601 00 | 89.80 | 2.00 | 4,926.94 | 8,190.94 | 1,551.25 | -44.81 | 1,551.52 | 1.09 | 458,092.25 | 672,149.19 |
| 9,696.00 | 90 60 | 2.40 | 4,926.61 | 8,190.61 | 1,646.18 | -41.16 | 1,646.42 | 0.94 | 458,187.18 | 672,152.84 |
| 9,792.00 | 91.30 | 2.50 | 4,925.02 | 8,189.02 | 1,742.08 | -37.06 | 1,742.29 | 0.74 | 458,283.08 | 672,156.94 |
| 9,886.00 | 90.90 | 3.00 | 4,923.22 | 8,187.22 | 1,835.95 | -32.55 | 1,836.13 | 0.68 | 458,376.95 | 672,161.45 |

# Survey Report

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| **Site:** | PLU Remuda Basin 32 23 30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig Cactus 120 | **Database:** | GCR DB v5000 |

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVDSS (usft) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9,982.00 | 88.90 | 2.90 | 4,923.38 | 8,187.38 | 1,931.82 | -27.61 | 1,931.96 | 2.09 | 458,472.82 | 672,166.39 |
| 10,078.00 | 88.00 | 2.00 | 4,925.98 | 8,189.98 | 2,027.69 | -23.51 | 2,027.81 | 1.33 | 458,568.69 | 672,170.49 |
| 10,174.00 | 90.00 | 1.30 | 4,927.66 | 8,191.66 | 2,123.63 | -20.75 | 2,123.73 | 2.21 | 458,664.63 | 672,173.25 |
| 10,269.00 | 91.70 | 1.50 | 4,926.25 | 8,190.25 | 2,218.59 | -18.43 | 2,218.67 | 1.80 | 458,759.59 | 672,175 57 |
| 10,364.00 | 91.20 | 1.80 | 4,923.84 | 8,187.84 | 2,313.52 | -15.69 | 2,313.57 | 0.61 | 458,854.52 | 672,178.31 |
| 10,460.00 | 91.90 | 2.70 | 4,921.25 | 8,185.25 | 2,409.41 | -11.92 | 2,409.44 | 1.19 | 458,950.41 | 672,182.08 |
| 10,555.00 | 90.80 | 1.70 | 4,919.01 | 8,183.01 | 2,504.31 | -8.28 | 2,504.31 | 1.56 | 459,045.31 | 672,185.72 |
| 10,651.00 | 89.40 | 2.00 | 4,918.84 | 8,182.84 | 2,600.26 | -5.18 | 2,600.23 | 1.49 | 459,141.26 | 672,188.82 |
| 10,746.00 | 88.70 | 1.00 | 4,920.41 | 8,184.41 | 2,695.21 | -2.69 | 2,695.17 | 1.28 | 459,236.21 | 672,191.31 |
| 10,842.00 | 87.90 | 0.80 | 4,923.26 | 8,187.26 | 2,791.16 | -1.18 | 2,791.10 | 0.86 | 459,332.16 | 672,192.82 |
| 10,937.00 | 90.00 | 0.00 | 4,925.00 | 8,189.00 | 2,886.13 | -0.52 | 2,886.07 | 2.37 | 459,427.13 | 672,193.48 |
| 11,033.00 | 89.70 | 359.20 | 4,925.26 | 8,189.26 | 2,982.13 | -1.19 | 2,982.07 | 0.89 | 459,523.13 | 672,192 81 |
| 11,128.00 | 89.20 | 358.90 | 4,926.17 | 8,190.17 | 3,077.11 | -2.77 | 3,077.06 | 0.61 | 459,618.11 | 672,191.23 |
| 11,224.00 | 88.40 | 358.30 | 4,928.18 | 8,192.18 | 3,173.06 | -5.11 | 3,173.02 | 1.04 | 459,714.06 | 672,188.89 |
| 11,320.00 | 90.10 | 357.90 | 4,929.43 | 8,193.43 | 3,268.99 | -8.29 | 3,268.98 | 1.82 | 459,809.99 | 672,185.71 |
| 11,415.00 | 89.80 | 357.40 | 4,929.52 | 8,193.52 | 3,363.91 | -12.19 | 3,363.92 | 0.61 | 459,904.91 | 672,181.81 |
| 11,511.00 | 89.60 | 357.10 | 4,930.02 | 8,194.02 | 3,459.80 | -16.80 | 3,459.84 | 0.38 | 460,000.80 | 672,177.20 |
| 11,606.00 | 88.60 | 357.10 | 4,931.51 | 8,195.51 | 3,554.67 | -21.60 | 3,554.73 | 1.05 | 460,095.67 | 672,172.40 |
| 11,702.00 | 89.80 | 357.20 | 4,932.85 | 8,196.85 | 3,650.54 | -26.37 | 3,650.63 | 1.25 | 460,191.54 | 672,167.63 |
| 11,798.00 | 92.70 | 358.30 | 4,930.76 | 8,194.76 | 3,746 43 | -30.14 | 3,746.55 | 3.23 | 460,287.43 | 672,163.86 |
| 11,893.00 | 93 50 | 359.00 | 4,925.62 | 8,189.62 | 3,841.26 | -32.38 | 3,841.39 | 1.12 | 460,382.26 | 672,161 62 |
| 11,988.00 | 93.50 | 357.30 | 4,919.82 | 8,183.82 | 3,936.03 | -35.44 | 3,936.18 | 1.79 | 460,477.03 | 672,158.56 |
| 12,084.00 | 94.60 | 356.50 | 4,913.04 | 8,177.04 | 4,031.65 | -40.62 | 4,031.83 | 1.42 | 460,572.65 | 672,153.38 |
| 12,179.00 | 92.80 | 357.40 | 4,906.91 | 8,170.91 | 4,126.31 | -45.66 | 4,126.53 | 2.12 | 460,667.31 | 672,148.34 |
| 12,275.00 | 90.10 | 359.10 | 4,904.48 | 8,168.48 | 4,222.23 | -48.59 | 4,222.46 | 3.32 | 460,763.23 | 672,145.41 |
| 12,370.00 | 89.20 | 359.80 | 4,905.06 | 8,169.06 | 4,317.22 | -49.50 | 4,317.45 | 1.20 | 460,858.22 | 672,144.50 |
| 12,466.00 | 88.10 | 359.30 | 4,907.32 | 8,171.32 | 4,413.19 | -50.25 | 4,413.43 | 1.26 | 460,954.19 | 672,143.75 |

# Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Chesapeake Operating Inc. | **Local Co-ordinate Reference:** | Well Job # 1210498 |
| **Project:** | Eddy County, New Mexico (NAD 1983) | **TVD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Site:** | PLU Remuda Basin 32 23 30 State 1H | **MD Reference:** | WELL @ 3264.00usft (Cactus 120) |
| **Well:** | Job # 1210498 | **North Reference:** | Grid |
| **Wellbore:** | Rig Cactus 120 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Rig: Cactus 120 | **Database:** | GCR DB v5000 |

**Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVDSS (usft) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 12,561.00 | 88.00 | 358.50 | 4,910.56 | 8,174.56 | 4,508.11 | -52.08 | 4,508.36 | 0.85 | 461,049.11 | 672,141.92 |
| 12,657.00 | 86.50 | 357.60 | 4,915.16 | 8,179.16 | 4,603.94 | -55.34 | 4,604.21 | 1.82 | 461,144.94 | 672,138.66 |
| 12,752.00 | 86.10 | 357.10 | 4,921.29 | 8,185.29 | 4,698.64 | -59.72 | 4,698.94 | 0.67 | 461,239.64 | 672,134.28 |
| 12,858.00 | 85.10 | 356.70 | 4,929.42 | 8,193.42 | 4,804.17 | -65.44 | 4,804.51 | 1.02 | 461,345.17 | 672,128.56 |
| 12,897.00 | 84.50 | 356.80 | 4,932.96 | 8,196.96 | 4,842.95 | -67.64 | 4,843.30 | 1.56 | 461,383.95 | 672,126.36 |
| 12,950.00 | 84.50 | 356.80 | 4,938.04 | 8,202.04 | 4,895.63 | -70.58 | 4,895.99 | 0.00 | 461,436.63 | 672,123.42 |
| **Projection to TD, 12950'** | | | | | | | | | | |

**Survey Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 226.00 | 226.00 | 0.69 | 0.38 | First Phoenix MWD Surveys @ 226' MD |
| 12,950.00 | 8,202.04 | 4,895.63 | -70.58 | Projection to TD, 12950' |

| MD | INC | AZM | TVDSS | TVD | Northing | Easting |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | -3264 | 0 | 0 N | 0 E |
| 226 | 0.4 | 28.8 | -3038 | 226 | 0.69 N | 0.38 E |
| 441 | 0.4 | 20 | -2823.01 | 440.99 | 2.05 N | 1 E |
| 725 | 0.4 | 38.5 | -2539.01 | 724.99 | 3.76 N | 1.95 E |
| 916 | 0.2 | 65.2 | -2348.02 | 915.98 | 4.42 N | 2.67 E |
| 1106 | 0 | 125.9 | -2158.02 | 1105.98 | 4.56 N | 2.97 E |
| 1297 | 0.3 | 82.4 | -1967.02 | 1296.98 | 4.63 N | 3.47 E |
| 1488 | 0.4 | 152.8 | -1776.02 | 1487.98 | 4.1 N | 4.27 E |
| 1679 | 0.3 | 102.7 | -1585.02 | 1678.98 | 3.4 N | 5.06 E |
| 1870 | 0.5 | 48.9 | -1394.03 | 1869.97 | 3.84 N | 6.18 E |
| 2061 | 0.5 | 32.3 | -1203.04 | 2060.96 | 5.09 N | 7.25 E |
| 2251 | 0.9 | 33.9 | -1013.05 | 2250.95 | 7.03 N | 8.53 E |
| 2440 | 0.7 | 48.9 | -824.07 | 2439.93 | 9.02 N | 10.22 E |
| 2630 | 0.9 | 33.6 | -634.09 | 2629.91 | 11.02 N | 11.92 E |
| 2821 | 0.9 | 1.5 | -443.11 | 2820.89 | 13.77 N | 12.79 E |
| 3012 | 0.9 | 81.1 | -252.13 | 3011.87 | 15.51 N | 14.32 E |
| 3202 | 1.3 | 132.7 | -62.16 | 3201.84 | 14.27 N | 17.37 E |
| 3393 | 1.4 | 149.9 | 128.79 | 3392.79 | 10.79 N | 20.14 E |
| 3475 | 1.2 | 156.4 | 210.77 | 3474.77 | 9.13 N | 20.98 E |
| 3644 | 0.7 | 147.5 | 379.75 | 3643.75 | 6.64 N | 22.25 E |
| 3835 | 0.8 | 140 | 570.73 | 3834.73 | 4.64 N | 23.73 E |
| 4027 | 0.7 | 150 | 762.71 | 4026.71 | 2.59 N | 25.18 E |
| 4217 | 0.7 | 146.5 | 952.7 | 4216.7 | 0.62 N | 26.4 E |
| 4408 | 0.7 | 141.9 | 1143.68 | 4407.68 | 1.27 S | 27.76 E |
| 4599 | 0.6 | 157.6 | 1334.67 | 4598.67 | 3.11 S | 28.86 E |
| 4791 | 0.7 | 151.3 | 1526.66 | 4790.66 | 5.07 S | 29.81 E |
| 4982 | 0.6 | 158 | 1717.65 | 4981.65 | 7.02 S | 30.74 E |
| 5175 | 0.7 | 158.9 | 1910.64 | 5174.64 | 9.06 S | 31.55 E |
| 5368 | 0.7 | 155.1 | 2103.62 | 5367.62 | 11.23 S | 32.47 E |
| 5560 | 0.9 | 151.8 | 2295.6 | 5559.6 | 13.62 S | 33.67 E |
| 5751 | 0.7 | 152.6 | 2486.58 | 5750.58 | 15.98 S | 34.92 E |
| 5943 | 0.8 | 166.2 | 2678.57 | 5942.57 | 18.32 S | 35.78 E |
| 6134 | 0.6 | 185.7 | 2869.55 | 6133.55 | 20.61 S | 36 E |
| 6326 | 0.4 | 188.4 | 3061.55 | 6325.55 | 22.28 S | 35.8 E |
| 6518 | 0.6 | 183.1 | 3253.54 | 6517.54 | 23.94 S | 35.65 E |
| 6710 | 0.6 | 192 | 3445.53 | 6709.53 | 25.93 S | 35.38 E |
| 6902 | 0.7 | 184.9 | 3637.52 | 6901.52 | 28.08 S | 35.08 E |
| 7093 | 0.9 | 179.2 | 3828.5 | 7092.5 | 30.74 S | 35 E |
| 7285 | 0.9 | 196.5 | 4020.47 | 7284.47 | 33.7 S | 34.59 E |
| 7477 | 2.4 | 212.8 | 4212.39 | 7476.39 | 38.52 S | 31.98 E |
| 7660 | 2 | 202.6 | 4395.25 | 7659.25 | 44.69 S | 28.68 E |
| 7692 | 1.8 | 244.2 | 4427.24 | 7691.24 | 45.43 S | 28.01 E |
| 7724 | 4.4 | 308.1 | 4459.2 | 7723.2 | 44.89 S | 26.59 E |
| 7756 | 7.9 | 323.5 | 4491.01 | 7755.01 | 42.36 S | 24.32 E |
| 7788 | 11.3 | 329.6 | 4522.56 | 7786.56 | 37.89 S | 21.42 E |
| 7819 | 14.7 | 331.6 | 4552.76 | 7816.76 | 31.81 S | 18.02 E |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7851 | 18.1 | 333.2 | 4583.45 | 7847.45 | 23.8 S | 13.84 E |
| 7883 | 21.2 | 335.4 | 4613.59 | 7877.59 | 14.09 S | 9.19 E |
| 7914 | 25 | 334.8 | 4642.09 | 7906.09 | 3.07 S | 4.07 E |
| 7946 | 28.5 | 335.8 | 4670.67 | 7934.67 | 10.02 N | 1.94 W |
| 7978 | 32.3 | 337.5 | 4698.26 | 7962.26 | 24.89 N | 8.35 W |
| 8010 | 36.2 | 339 | 4724.71 | 7988.71 | 41.61 N | 15.01 W |
| 8041 | 39.4 | 340.8 | 4749.2 | 8013.2 | 59.46 N | 21.53 W |
| 8073 | 41.7 | 343.4 | 4773.52 | 8037.52 | 79.25 N | 27.91 W |
| 8105 | 43.3 | 345.1 | 4797.11 | 8061.11 | 100.06 N | 33.77 W |
| 8137 | 46.2 | 346.6 | 4819.83 | 8083.83 | 121.9 N | 39.27 W |
| 8168 | 49.8 | 347.6 | 4840.57 | 8104.57 | 144.35 N | 44.41 W |
| 8200 | 54.1 | 348.9 | 4860.29 | 8124.29 | 169.02 N | 49.53 W |
| 8232 | 58.4 | 350.3 | 4878.07 | 8142.07 | 195.19 N | 54.32 W |
| 8264 | 62.5 | 351.8 | 4893.85 | 8157.85 | 222.68 N | 58.65 W |
| 8296 | 67.2 | 353.3 | 4907.44 | 8171.44 | 251.39 N | 62.39 W |
| 8328 | 71.8 | 354 | 4918.65 | 8182.65 | 281.17 N | 65.7 W |
| 8360 | 77.3 | 355 | 4927.17 | 8191.17 | 311.86 N | 68.66 W |
| 8392 | 83.5 | 355.4 | 4932.5 | 8196.5 | 343.29 N | 71.29 W |
| 8455 | 92.4 | 358.8 | 4934.75 | 8198.75 | 406.1 N | 74.47 W |
| 8550 | 92.8 | 359.9 | 4930.44 | 8194.44 | 500.99 N | 75.55 W |
| 8646 | 89.8 | 0.9 | 4928.27 | 8192.27 | 596.95 N | 74.88 W |
| 8742 | 89.2 | 359.9 | 4929.1 | 8193.1 | 692.94 N | 74.21 W |
| 8837 | 89.7 | 2 | 4930.02 | 8194.02 | 787.92 N | 72.63 W |
| 8933 | 88.5 | 1.4 | 4931.52 | 8195.52 | 883.86 N | 69.78 W |
| 9028 | 92 | 2.1 | 4931.11 | 8195.11 | 978.8 N | 66.88 W |
| 9123 | 92.4 | 1.2 | 4927.46 | 8191.46 | 1073.69 N | 64.15 W |
| 9219 | 89.8 | 2.4 | 4925.62 | 8189.62 | 1169.62 N | 61.13 W |
| 9314 | 89.8 | 2.7 | 4925.95 | 8189.95 | 1264.52 N | 56.91 W |
| 9409 | 88.8 | 2.6 | 4927.11 | 8191.11 | 1359.41 N | 52.52 W |
| 9505 | 90.8 | 2.3 | 4927.45 | 8191.45 | 1455.32 N | 48.41 W |
| 9601 | 89.8 | 2 | 4926.94 | 8190.94 | 1551.25 N | 44.81 W |
| 9696 | 90.6 | 2.4 | 4926.61 | 8190.61 | 1646.18 N | 41.16 W |
| 9792 | 91.3 | 2.5 | 4925.02 | 8189.02 | 1742.08 N | 37.06 W |
| 9886 | 90.9 | 3 | 4923.22 | 8187.22 | 1835.95 N | 32.55 W |
| 9982 | 88.9 | 2.9 | 4923.38 | 8187.38 | 1931.82 N | 27.61 W |
| 10078 | 88 | 2 | 4925.98 | 8189.98 | 2027.69 N | 23.51 W |
| 10174 | 90 | 1.3 | 4927.66 | 8191.66 | 2123.63 N | 20.75 W |
| 10269 | 91.7 | 1.5 | 4926.25 | 8190.25 | 2218.59 N | 18.43 W |
| 10364 | 91.2 | 1.8 | 4923.84 | 8187.84 | 2313.52 N | 15.69 W |
| 10460 | 91.9 | 2.7 | 4921.25 | 8185.25 | 2409.41 N | 11.92 W |
| 10555 | 90.8 | 1.7 | 4919.01 | 8183.01 | 2504.31 N | 8.28 W |
| 10651 | 89.4 | 2 | 4918.84 | 8182.84 | 2600.26 N | 5.18 W |
| 10746 | 88.7 | 1 | 4920.41 | 8184.41 | 2695.21 N | 2.69 W |
| 10842 | 87.9 | 0.8 | 4923.26 | 8187.26 | 2791.16 N | 1.18 W |
| 10937 | 90 | 0 | 4925 | 8189 | 2886.13 N | 0.52 W |
| 11033 | 89.7 | 359.2 | 4925.26 | 8189.26 | 2982.13 N | 1.19 W |
| 11128 | 89.2 | 358.9 | 4926.17 | 8190.17 | 3077.11 N | 2.77 W |

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|---|---|---|---|---|---|---|
| 11224 | 88.4 | 358.3 | 4928.18 | 8192.18 | 3173.06 N | 5.11 W |
| 11320 | 90.1 | 357.9 | 4929.43 | 8193.43 | 3268.99 N | 8.29 W |
| 11415 | 89.8 | 357.4 | 4929.52 | 8193.52 | 3363.91 N | 12.19 W |
| 11511 | 89.6 | 357.1 | 4930.02 | 8194.02 | 3459.8 N | 16.8 W |
| 11606 | 88.6 | 357.1 | 4931.51 | 8195.51 | 3554.67 N | 21.6 W |
| 11702 | 89.8 | 357.2 | 4932.85 | 8196.85 | 3650.54 N | 26.37 W |
| 11798 | 92.7 | 358.3 | 4930.76 | 8194.76 | 3746.43 N | 30.14 W |
| 11893 | 93.5 | 359 | 4925.62 | 8189.62 | 3841.26 N | 32.38 W |
| 11988 | 93.5 | 357.3 | 4919.82 | 8183.82 | 3936.03 N | 35.44 W |
| 12084 | 94.6 | 356.5 | 4913.04 | 8177.04 | 4031.65 N | 40.62 W |
| 12179 | 92.8 | 357.4 | 4906.91 | 8170.91 | 4126.31 N | 45.66 W |
| 12275 | 90.1 | 359.1 | 4904.48 | 8168.48 | 4222.23 N | 48.59 W |
| 12370 | 89.2 | 359.8 | 4905.06 | 8169.06 | 4317.22 N | 49.5 W |
| 12466 | 88.1 | 359.3 | 4907.32 | 8171.32 | 4413.19 N | 50.25 W |
| 12561 | 88 | 358.5 | 4910.56 | 8174.56 | 4508.11 N | 52.08 W |
| 12657 | 86.5 | 357.6 | 4915.16 | 8179.16 | 4603.94 N | 55.34 W |
| 12752 | 86.1 | 357.1 | 4921.29 | 8185.29 | 4698.64 N | 59.72 W |
| 12858 | 85.1 | 356.7 | 4929.42 | 8193.42 | 4804.17 N | 65.44 W |
| 12897 | 84.5 | 356.8 | 4932.96 | 8196.96 | 4842.95 N | 67.64 W |
| 12950 | 84.5 | 356.8 | 4938.04 | 8202.04 | 4895.63 N | 70.58 W |

| Northing | Easting | VS | DLS |
|---|---|---|---|
| 456541 N | 672194 E | 0 | 0 |
| 456541.7 N | 672194.4 E | 0.69 | 0.18 |
| 456543.1 N | 672195 E | 2.05 | 0.03 |
| 456544.8 N | 672196 E | 3.75 | 0.05 |
| 456545.4 N | 672196.7 E | 4.4 | 0.13 |
| 456545.6 N | 672197 E | 4.54 | 0.11 |
| 456545.6 N | 672197.5 E | 4.6 | 0.16 |
| 456545.1 N | 672198.3 E | 4.07 | 0.22 |
| 456544.4 N | 672199.1 E | 3.36 | 0.16 |
| 456544.8 N | 672200.2 E | 3.79 | 0.21 |
| 456546.1 N | 672201.3 E | 5.04 | 0.08 |
| 456548 N | 672202.5 E | 6.97 | 0.21 |
| 456550 N | 672204.2 E | 8.95 | 0.15 |
| 456552 N | 672205.9 E | 10.94 | 0.15 |
| 456554.8 N | 672206.8 E | 13.69 | 0.26 |
| 456556.5 N | 672208.3 E | 15.41 | 0.6 |
| 456555.3 N | 672211.4 E | 14.16 | 0.54 |
| 456551.8 N | 672214.1 E | 10.65 | 0.22 |
| 456550.1 N | 672215 E | 8.99 | 0.3 |
| 456547.6 N | 672216.2 E | 6.49 | 0.31 |
| 456545.6 N | 672217.7 E | 4.47 | 0.07 |
| 456543.6 N | 672219.2 E | 2.42 | 0.09 |
| 456541.6 N | 672220.4 E | 0.44 | 0.02 |
| 456539.7 N | 672221.8 E | -1.46 | 0.03 |
| 456537.9 N | 672222.9 E | -3.31 | 0.11 |
| 456535.9 N | 672223.8 E | -5.27 | 0.06 |
| 456534 N | 672224.7 E | -7.23 | 0.07 |
| 456531.9 N | 672225.5 E | -9.27 | 0.05 |
| 456529.8 N | 672226.5 E | -11.45 | 0.02 |
| 456527.4 N | 672227.7 E | -13.85 | 0.11 |
| 456525 N | 672228.9 E | -16.22 | 0.1 |
| 456522.7 N | 672229.8 E | -18.57 | 0.11 |
| 456520.4 N | 672230 E | -20.86 | 0.16 |
| 456518.7 N | 672229.8 E | -22.52 | 0.1 |
| 456517.1 N | 672229.6 E | -24.18 | 0.11 |
| 456515.1 N | 672229.4 E | -26.17 | 0.05 |
| 456512.9 N | 672229.1 E | -28.32 | 0.07 |
| 456510.3 N | 672229 E | -30.98 | 0.11 |
| 456507.3 N | 672228.6 E | -33.93 | 0.14 |
| 456502.5 N | 672226 E | -38.74 | 0.81 |
| 456496.3 N | 672222.7 E | -44.89 | 0.31 |
| 456495.6 N | 672222 E | -45.62 | 4.26 |
| 456496.1 N | 672220.6 E | -45.07 | 12.35 |
| 456498.6 N | 672218.3 E | -42.53 | 12 |
| 456503.1 N | 672215.4 E | -38.03 | 11.08 |
| 456509.2 N | 672212 E | -31.93 | 11.06 |

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|---|---|---|---|
| 456517.2 N | 672207.8 E | -23.89 | 10.72 |
| 456526.9 N | 672203.2 E | -14.16 | 9.96 |
| 456537.9 N | 672198.1 E | -3.09 | 12.28 |
| 456551 N | 672192.1 E | 10.03 | 11.03 |
| 456565.9 N | 672185.7 E | 24.94 | 12.17 |
| 456582.6 N | 672179 E | 41.72 | 12.47 |
| 456600.5 N | 672172.5 E | 59.6 | 10.92 |
| 456620.3 N | 672166.1 E | 79.44 | 8.92 |
| 456641.1 N | 672160.2 E | 100.29 | 6.15 |
| 456662.9 N | 672154.7 E | 122.17 | 9.64 |
| 456685.4 N | 672149.6 E | 144.65 | 11.86 |
| 456710 N | 672144.5 E | 169.35 | 13.81 |
| 456736.2 N | 672139.7 E | 195.55 | 13.92 |
| 456763.7 N | 672135.4 E | 223.07 | 13.45 |
| 456792.4 N | 672131.6 E | 251.81 | 15.29 |
| 456822.2 N | 672128.3 E | 281.61 | 14.52 |
| 456852.9 N | 672125.3 E | 312.32 | 17.45 |
| 456884.3 N | 672122.7 E | 343.77 | 19.41 |
| 456947.1 N | 672119.5 E | 406.59 | 15.12 |
| 457042 N | 672118.5 E | 501.49 | 1.23 |
| 457138 N | 672119.1 E | 597.45 | 3.29 |
| 457233.9 N | 672119.8 E | 693.43 | 1.21 |
| 457328.9 N | 672121.4 E | 788.4 | 2.27 |
| 457424.9 N | 672124.2 E | 884.32 | 1.4 |
| 457519.8 N | 672127.1 E | 979.24 | 3.76 |
| 457614.7 N | 672129.9 E | 1074.1 | 1.04 |
| 457710.6 N | 672132.9 E | 1170.01 | 2.98 |
| 457805.5 N | 672137.1 E | 1264.88 | 0.32 |
| 457900.4 N | 672141.5 E | 1359.74 | 1.06 |
| 457996.3 N | 672145.6 E | 1455.62 | 2.11 |
| 458092.2 N | 672149.2 E | 1551.52 | 1.09 |
| 458187.2 N | 672152.8 E | 1646.42 | 0.94 |
| 458283.1 N | 672156.9 E | 1742.29 | 0.74 |
| 458377 N | 672161.4 E | 1836.13 | 0.68 |
| 458472.8 N | 672166.4 E | 1931.96 | 2.09 |
| 458568.7 N | 672170.5 E | 2027.81 | 1.33 |
| 458664.6 N | 672173.3 E | 2123.73 | 2.21 |
| 458759.6 N | 672175.6 E | 2218.67 | 1.8 |
| 458854.5 N | 672178.3 E | 2313.57 | 0.61 |
| 458950.4 N | 672182.1 E | 2409.44 | 1.19 |
| 459045.3 N | 672185.7 E | 2504.31 | 1.56 |
| 459141.3 N | 672188.8 E | 2600.23 | 1.49 |
| 459236.2 N | 672191.3 E | 2695.17 | 1.28 |
| 459332.2 N | 672192.8 E | 2791.1 | 0.86 |
| 459427.1 N | 672193.5 E | 2886.07 | 2.37 |
| 459523.1 N | 672192.8 E | 2982.07 | 0.89 |
| 459618.1 N | 672191.2 E | 3077.06 | 0.61 |

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|---|---|---|---|
| 459714.1 N | 672188.9 E | 3173.02 | 1.04 |
| 459810 N | 672185.7 E | 3268.98 | 1.82 |
| 459904.9 N | 672181.8 E | 3363.92 | 0.61 |
| 460000.8 N | 672177.2 E | 3459.84 | 0.38 |
| 460095.7 N | 672172.4 E | 3554.73 | 1.05 |
| 460191.5 N | 672167.6 E | 3650.63 | 1.25 |
| 460287.4 N | 672163.9 E | 3746.55 | 3.23 |
| 460382.3 N | 672161.6 E | 3841.39 | 1.12 |
| 460477 N | 672158.6 E | 3936.18 | 1.79 |
| 460572.7 N | 672153.4 E | 4031.83 | 1.42 |
| 460667.3 N | 672148.3 E | 4126.53 | 2.12 |
| 460763.2 N | 672145.4 E | 4222.46 | 3.32 |
| 460858.2 N | 672144.5 E | 4317.45 | 1.2 |
| 460954.2 N | 672143.7 E | 4413.43 | 1.26 |
| 461049.1 N | 672141.9 E | 4508.36 | 0.85 |
| 461144.9 N | 672138.7 E | 4604.21 | 1.82 |
| 461239.6 N | 672134.3 E | 4698.94 | 0.67 |
| 461345.2 N | 672128.6 E | 4804.51 | 1.02 |
| 461384 N | 672126.4 E | 4843.3 | 1.56 |
| 461436.6 N | 672123.4 E | 4895.99 | 0 |