



Weatherford®

SURVEY REPORT

9-00097

Report Date: 12/25/2011
 Customer: Chesapeake
 Job Name: 4024941
 Well Name: Linda Greathouse BRK 3H

Field: Brooke County
 Rig: Nomac 241
 Rig Loc: Brooke County

| | | | | | | |
|---|------------------|----------------------|--------------------|----------------------|------------------|------------------|
| Survey Calculation Method: Minimum Curvature | | | | | | |
| Magnetic Reference | Target Direction | Total Magnetic Field | Magnetic Dip Angle | Magnetic Declination | Grid Convergence | Total Correction |
| Grid North | 338.00 deg | 53046 nT | 67.74 deg | -8.72 deg | -0.71 deg | -8.01 deg |
| Survey Tie-On | Depth | INC | AZ | TVD | NS | EW |
| | 5290.00 ft | 0.31 deg | 226.84 deg | 5289.76 ft | 10.76 ft | -31.27 ft |

| Depth (ft) | Inc (deg) | Azm (deg) | TVD (ft) | Well Head | | | Vsect (ft) | Dogleg (deg/100ft) |
|------------|-----------|-----------|----------|-----------|---------|---------|------------|--------------------|
| | | | | NS (ft) | EW (ft) | | | |
| 5346.00 | 0.92 | 275.51 | 5345.76 | 10.70 | -31.83 | 21.84 | 1.34 | |
| 5389.00 | 2.33 | 301.69 | 5388.74 | 11.19 | -32.92 | 22.71 | 3.62 | |
| 5431.00 | 7.83 | 337.80 | 5430.57 | 14.29 | -34.72 | 26.26 | 14.53 | |
| 5474.00 | 13.58 | 342.74 | 5472.80 | 21.83 | -37.33 | 34.23 | 13.53 | |
| 5517.00 | 18.93 | 346.27 | 5514.07 | 33.44 | -40.49 | 46.17 | 12.65 | |
| 5559.00 | 24.40 | 349.78 | 5553.09 | 48.60 | -43.65 | 61.42 | 13.38 | |
| 5602.00 | 29.71 | 344.64 | 5591.37 | 67.64 | -48.05 | 80.71 | 13.48 | |
| 5644.00 | 35.59 | 341.50 | 5626.72 | 89.28 | -54.69 | 103.27 | 14.57 | |
| 5687.00 | 41.63 | 341.68 | 5660.31 | 114.73 | -63.16 | 130.04 | 14.05 | |
| 5730.00 | 44.79 | 342.50 | 5691.65 | 142.74 | -72.20 | 159.40 | 7.46 | |
| 5772.00 | 50.74 | 339.53 | 5719.87 | 172.12 | -82.35 | 190.43 | 15.10 | |
| 5815.00 | 57.66 | 337.70 | 5745.01 | 204.56 | -95.08 | 225.28 | 16.46 | |
| 5858.00 | 62.21 | 336.68 | 5766.54 | 238.85 | -109.51 | 262.48 | 10.78 | |
| 5900.00 | 64.39 | 335.68 | 5785.41 | 273.17 | -124.67 | 299.98 | 5.61 | |
| 5943.00 | 68.74 | 336.43 | 5802.51 | 309.22 | -140.67 | 339.40 | 10.24 | |
| 5986.00 | 73.81 | 338.78 | 5816.31 | 346.87 | -156.17 | 380.11 | 12.88 | |
| 6028.00 | 77.99 | 339.18 | 5826.54 | 384.88 | -170.77 | 420.83 | 10.00 | |
| 6071.00 | 81.52 | 336.79 | 5834.19 | 424.10 | -186.64 | 463.13 | 9.86 | |
| 6114.00 | 85.77 | 333.78 | 5838.95 | 462.91 | -204.50 | 505.81 | 12.09 | |
| 6156.00 | 86.52 | 333.87 | 5841.77 | 500.51 | -222.99 | 547.60 | 1.80 | |
| 6200.00 | 89.83 | 333.24 | 5843.17 | 539.88 | -242.57 | 591.44 | 7.66 | |
| 6285.00 | 90.74 | 333.07 | 5842.75 | 615.72 | -280.95 | 676.13 | 1.09 | |
| 6370.00 | 91.77 | 332.64 | 5840.89 | 691.34 | -319.72 | 760.77 | 1.31 | |
| 6456.00 | 90.17 | 332.35 | 5839.43 | 767.61 | -359.43 | 846.36 | 1.89 | |
| 6541.00 | 90.06 | 335.57 | 5839.26 | 843.97 | -396.74 | 931.13 | 3.79 | |
| 6626.00 | 90.29 | 336.54 | 5839.00 | 921.65 | -431.24 | 1016.08 | 1.17 | |
| 6711.00 | 90.80 | 337.54 | 5838.20 | 999.91 | -464.40 | 1101.07 | 1.32 | |
| 6797.00 | 91.08 | 338.20 | 5836.78 | 1079.56 | -496.79 | 1187.05 | 0.83 | |
| 6882.00 | 90.69 | 338.32 | 5835.47 | 1158.51 | -528.27 | 1272.04 | 0.48 | |
| 6967.00 | 90.57 | 338.16 | 5834.54 | 1237.45 | -559.78 | 1357.04 | 0.24 | |
| 7053.00 | 89.60 | 337.95 | 5834.41 | 1317.22 | -591.92 | 1443.04 | 1.15 | |
| 7138.00 | 89.77 | 338.02 | 5834.88 | 1396.02 | -623.78 | 1528.04 | 0.22 | |
| 7223.00 | 90.11 | 335.91 | 5834.97 | 1474.23 | -657.04 | 1613.02 | 2.51 | |
| 7308.00 | 90.68 | 335.51 | 5834.38 | 1551.71 | -692.00 | 1697.95 | 0.82 | |
| 7393.00 | 90.86 | 335.14 | 5833.24 | 1628.94 | -727.48 | 1782.85 | 0.48 | |

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| Depth (ft) | Inc (deg) | Azm (deg) | TVD (ft) | Well Head | | VSect (ft) | Dogleg (deg/100ft) |
|---------------|--------------|--------------|-------------|------------|------------|---------------|-----------------------|
| | | | | NS (ft) | EW (ft) | | |
| 7479.00 | 91.26 | 335.54 | 5831.65 | 1707.08 | -763.36 | 1868.74 | 0.66 |
| 7564.00 | 91.83 | 335.82 | 5829.36 | 1784.51 | -798.35 | 1953.64 | 0.75 |
| 7692.00 | 90.68 | 337.31 | 5826.55 | 1901.92 | -849.24 | 2081.56 | 1.47 |
| 7820.00 | 91.20 | 336.87 | 5824.45 | 2019.80 | -899.06 | 2209.53 | 0.53 |
| 7948.00 | 88.86 | 334.83 | 5824.38 | 2136.59 | -951.43 | 2337.42 | 2.43 |
| 8076.00 | 89.43 | 335.97 | 5826.29 | 2252.95 | -1004.70 | 2465.27 | 1.00 |
| 8203.00 | 90.51 | 338.21 | 5826.36 | 2369.93 | -1054.14 | 2592.25 | 1.96 |
| 8331.00 | 91.43 | 337.96 | 5824.19 | 2488.66 | -1101.90 | 2720.23 | 0.74 |
| 8459.00 | 90.11 | 335.66 | 5822.47 | 2606.30 | -1152.30 | 2848.18 | 2.07 |
| 8587.00 | 90.86 | 336.32 | 5821.39 | 2723.22 | -1204.38 | 2976.09 | 0.78 |
| 8714.00 | 91.14 | 338.45 | 5819.17 | 2840.43 | -1253.21 | 3103.06 | 1.69 |
| 8842.00 | 90.23 | 337.99 | 5817.64 | 2959.28 | -1300.70 | 3231.04 | 0.80 |
| 8970.00 | 90.17 | 337.11 | 5817.20 | 3077.58 | -1349.58 | 3359.04 | 0.69 |
| 9098.00 | 88.46 | 335.03 | 5818.73 | 3194.55 | -1401.49 | 3486.94 | 2.10 |
| 9226.00 | 88.63 | 335.20 | 5821.98 | 3310.63 | -1455.33 | 3614.74 | 0.19 |
| 9353.00 | 88.75 | 334.91 | 5824.88 | 3425.75 | -1508.88 | 3741.54 | 0.25 |
| 9439.00 | 90.11 | 335.97 | 5825.74 | 3503.97 | -1544.62 | 3827.45 | 2.00 |
| 9567.00 | 91.94 | 338.55 | 5823.45 | 3621.98 | -1594.09 | 3955.40 | 2.47 |
| 9695.00 | 92.91 | 338.52 | 5818.03 | 3741.00 | -1640.88 | 4083.28 | 0.76 |
| 9823.00 | 91.48 | 339.99 | 5813.13 | 3860.60 | -1686.18 | 4211.15 | 1.60 |
| 9951.00 | 90.40 | 338.71 | 5811.03 | 3980.36 | -1731.32 | 4339.09 | 1.31 |
| 10079.00 | 90.85 | 340.85 | 5809.63 | 4100.46 | -1775.55 | 4467.01 | 1.71 |
| 10206.00 | 90.57 | 339.12 | 5808.06 | 4219.77 | -1819.02 | 4593.92 | 1.38 |
| 10334.00 | 90.74 | 341.65 | 5806.59 | 4340.33 | -1861.98 | 4721.79 | 1.98 |
| 10462.00 | 91.08 | 341.45 | 5804.56 | 4461.73 | -1902.48 | 4849.53 | 0.31 |
| 10590.00 | 90.17 | 339.59 | 5803.17 | 4582.39 | -1945.16 | 4977.39 | 1.62 |
| 10718.00 | 90.46 | 342.73 | 5802.46 | 4703.52 | -1986.49 | 5105.18 | 2.46 |
| 10845.00 | 90.97 | 342.52 | 5800.88 | 4824.71 | -2024.41 | 5231.75 | 0.43 |
| 10973.00 | 90.34 | 340.86 | 5799.41 | 4946.22 | -2064.62 | 5359.48 | 1.39 |
| 11101.00 | 90.51 | 341.04 | 5798.46 | 5067.21 | -2106.40 | 5487.30 | 0.19 |
| 11229.00 | 91.14 | 341.92 | 5796.62 | 5188.56 | -2147.05 | 5615.05 | 0.85 |
| 11357.00 | 90.40 | 339.44 | 5794.90 | 5309.33 | -2189.39 | 5742.89 | 2.02 |
| 11484.00 | 90.17 | 338.40 | 5794.27 | 5427.83 | -2235.07 | 5869.87 | 0.84 |
| 11612.00 | 90.28 | 337.10 | 5793.77 | 5546.30 | -2283.53 | 5997.86 | 1.02 |
| 11740.00 | 90.74 | 338.14 | 5792.63 | 5664.65 | -2332.27 | 6125.85 | 0.89 |
| 11868.00 | 91.31 | 339.63 | 5790.34 | 5784.03 | -2378.37 | 6253.81 | 1.25 |
| 11996.00 | 91.76 | 339.46 | 5786.91 | 5903.92 | -2423.09 | 6381.72 | 0.38 |
| 12124.00 | 89.09 | 338.40 | 5785.96 | 6023.34 | -2469.10 | 6509.69 | 2.24 |
| 12251.00 | 89.32 | 338.60 | 5787.72 | 6141.50 | -2515.64 | 6636.67 | 0.24 |
| 12379.00 | 90.46 | 342.86 | 5787.97 | 6262.29 | -2557.87 | 6764.49 | 3.45 |
| 12507.00 | 91.59 | 345.43 | 5785.68 | 6385.39 | -2592.83 | 6891.72 | 2.19 |
| 12635.00 | 92.73 | 344.72 | 5780.85 | 6508.98 | -2625.77 | 7018.66 | 1.05 |
| 12689.00 | 92.85 | 344.19 | 5778.22 | 6560.95 | -2640.23 | 7072.25 | 1.01 |

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| Depth (ft) | Inc (deg) | Azm (deg) | TVD (ft) | Well Head | | VSect (ft) | Dogleg (deg/100ft) |
|---------------|--------------|--------------|-------------|------------|------------|---------------|-----------------------|
| | | | | NS (ft) | EW (ft) | | |

Vertical Section is 7131.81 ft along the target direction of 338.00 deg at a measured depth of 12748.98 ft.
Horizontal Displacement is 7131.83 ft along the well bore azimuth of 338.13 deg.
The total correction is -8.01 deg relative to Grid North.
