

Noble Energy

Weld County, CO (NAD 83)

Sec. 8-T5N-R62W (Wells Ranch 8 PAD)

Wells Ranch AF05-62-1HN

08-69-1HN

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

06 January, 2013

Well Coordinates: 1,397,925.11 N, 3,318,690.91 E (40° 25' 12.22" N, 104° 21' 19.30" W)

Ground Level: 4,664.00 ft

Local Coordinate Origin: Centered on Well Wells Ranch AF05-62-1HN - Slot A

Viewing Datum: KB @ 4688.00ft (H&P 343)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Design Report for Wells Ranch AF05-62-1HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 577.00 | 0.00 | 0.00 | 577.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Surface Casing Assumed Vertical at 577.00ft | | | | | | | |
| 629.00 | 0.25 | 162.67 | 629.00 | -0.11 | 0.03 | 0.03 | 0.48 |
| First MWD Survey | | | | | | | |
| 724.00 | 0.26 | 269.97 | 724.00 | -0.31 | -0.12 | -0.13 | 0.43 |
| 819.00 | 0.37 | 205.99 | 819.00 | -0.58 | -0.47 | -0.49 | 0.36 |
| 913.00 | 0.42 | 208.49 | 913.00 | -1.16 | -0.77 | -0.82 | 0.06 |
| 1,103.00 | 0.43 | 207.65 | 1,102.99 | -2.40 | -1.43 | -1.53 | 0.01 |
| 1,195.00 | 0.36 | 248.08 | 1,194.99 | -2.81 | -1.86 | -1.98 | 0.31 |
| 1,287.00 | 0.22 | 286.71 | 1,286.99 | -2.87 | -2.30 | -2.42 | 0.25 |
| 1,471.00 | 0.22 | 26.42 | 1,470.99 | -2.45 | -2.48 | -2.58 | 0.18 |
| 1,564.00 | 0.11 | 311.91 | 1,563.99 | -2.23 | -2.46 | -2.56 | 0.23 |
| 1,656.00 | 0.15 | 341.75 | 1,655.99 | -2.06 | -2.57 | -2.66 | 0.08 |
| 1,748.00 | 0.16 | 339.28 | 1,747.99 | -1.83 | -2.65 | -2.73 | 0.01 |
| 1,840.00 | 0.14 | 301.08 | 1,839.99 | -1.65 | -2.79 | -2.86 | 0.11 |
| 2,024.00 | 0.63 | 308.59 | 2,023.98 | -0.90 | -3.78 | -3.81 | 0.27 |
| 2,116.00 | 0.87 | 282.83 | 2,115.97 | -0.43 | -4.85 | -4.87 | 0.44 |
| 2,215.00 | 0.93 | 269.34 | 2,214.96 | -0.27 | -6.39 | -6.39 | 0.22 |
| 2,311.00 | 1.86 | 285.56 | 2,310.93 | 0.14 | -8.67 | -8.65 | 1.04 |
| 2,406.00 | 0.99 | 231.04 | 2,405.91 | 0.03 | -10.79 | -10.78 | 1.60 |
| 2,693.00 | 1.21 | 213.61 | 2,692.85 | -4.05 | -14.40 | -14.56 | 0.14 |
| 2,788.00 | 0.64 | 75.74 | 2,787.85 | -4.75 | -14.44 | -14.63 | 1.83 |
| 2,979.00 | 0.81 | 105.63 | 2,978.83 | -4.86 | -12.10 | -12.30 | 0.21 |
| 3,170.00 | 0.57 | 81.83 | 3,169.82 | -5.08 | -9.86 | -10.08 | 0.19 |
| 3,457.00 | 0.56 | 32.94 | 3,456.81 | -3.70 | -7.69 | -7.84 | 0.16 |
| 3,552.00 | 0.47 | 31.84 | 3,551.80 | -2.98 | -7.23 | -7.35 | 0.10 |
| 3,647.00 | 0.60 | 15.40 | 3,646.80 | -2.17 | -6.89 | -6.98 | 0.21 |
| 3,742.00 | 3.02 | 21.63 | 3,741.74 | 0.63 | -5.84 | -5.80 | 2.55 |
| 3,838.00 | 5.38 | 17.15 | 3,837.48 | 7.29 | -3.58 | -3.26 | 2.48 |
| 3,934.00 | 6.46 | 26.29 | 3,932.97 | 16.43 | 0.14 | 0.86 | 1.49 |
| 4,029.00 | 9.06 | 23.25 | 4,027.09 | 28.09 | 5.46 | 6.68 | 2.77 |
| 4,125.00 | 11.02 | 24.08 | 4,121.62 | 43.42 | 12.19 | 14.07 | 2.05 |
| 4,220.00 | 11.29 | 13.07 | 4,214.83 | 60.77 | 18.00 | 20.63 | 2.26 |
| 4,317.00 | 11.47 | 1.28 | 4,309.94 | 79.66 | 20.36 | 23.82 | 2.40 |
| 4,412.00 | 8.69 | 354.91 | 4,403.46 | 96.26 | 19.94 | 24.12 | 3.15 |
| 4,508.00 | 6.83 | 343.12 | 4,498.59 | 108.94 | 17.63 | 22.37 | 2.54 |
| 4,604.00 | 4.31 | 324.29 | 4,594.13 | 117.34 | 13.87 | 18.98 | 3.21 |
| 4,698.00 | 3.78 | 284.40 | 4,687.92 | 120.98 | 8.81 | 14.08 | 2.98 |
| 4,794.00 | 1.46 | 272.75 | 4,783.81 | 121.82 | 4.52 | 9.83 | 2.47 |
| 4,889.00 | 1.04 | 185.30 | 4,878.80 | 121.02 | 3.23 | 8.51 | 1.85 |
| 4,985.00 | 1.06 | 186.54 | 4,974.78 | 119.27 | 3.05 | 8.25 | 0.03 |
| 5,079.00 | 0.99 | 187.30 | 5,068.76 | 117.60 | 2.85 | 7.98 | 0.08 |
| 5,175.00 | 0.85 | 168.61 | 5,164.75 | 116.08 | 2.88 | 7.95 | 0.34 |
| 5,271.00 | 0.71 | 171.40 | 5,260.74 | 114.80 | 3.11 | 8.12 | 0.15 |
| 5,367.00 | 0.61 | 159.39 | 5,356.74 | 113.73 | 3.38 | 8.34 | 0.18 |
| 5,462.00 | 0.60 | 128.53 | 5,451.73 | 112.95 | 3.95 | 8.88 | 0.34 |
| 5,558.00 | 0.67 | 132.35 | 5,547.73 | 112.26 | 4.76 | 9.65 | 0.09 |
| 5,654.00 | 0.56 | 59.67 | 5,643.72 | 112.11 | 5.58 | 10.47 | 0.76 |
| 5,750.00 | 3.12 | 90.59 | 5,739.67 | 112.32 | 8.59 | 13.49 | 2.77 |

Design Report for Wells Ranch AF05-62-1HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 5,798.00 | 5.51 | 88.59 | 5,787.53 | 112.37 | 12.20 | 17.10 | 4.99 |
| 5,845.00 | 8.29 | 92.63 | 5,834.18 | 112.27 | 17.85 | 22.73 | 6.00 |
| 5,893.00 | 11.67 | 92.39 | 5,881.45 | 111.91 | 26.15 | 31.02 | 7.04 |
| 5,940.00 | 14.12 | 90.38 | 5,927.26 | 111.67 | 36.64 | 41.48 | 5.30 |
| 5,988.00 | 17.09 | 86.91 | 5,973.49 | 112.01 | 49.54 | 54.38 | 6.48 |
| 6,036.00 | 19.87 | 88.70 | 6,019.01 | 112.58 | 64.74 | 69.59 | 5.91 |
| 6,084.00 | 23.33 | 91.09 | 6,063.63 | 112.58 | 82.40 | 87.24 | 7.44 |
| 6,131.00 | 26.80 | 91.61 | 6,106.20 | 112.11 | 102.31 | 107.10 | 7.40 |
| 6,179.00 | 30.75 | 90.55 | 6,148.26 | 111.68 | 125.40 | 130.16 | 8.30 |
| 6,226.00 | 34.36 | 88.94 | 6,187.87 | 111.81 | 150.69 | 155.43 | 7.90 |
| 6,274.00 | 39.10 | 87.91 | 6,226.33 | 112.62 | 179.37 | 184.12 | 9.96 |
| 6,322.00 | 42.68 | 88.67 | 6,262.61 | 113.55 | 210.78 | 215.53 | 7.53 |
| 6,370.00 | 47.16 | 86.06 | 6,296.59 | 115.14 | 244.62 | 249.41 | 10.09 |
| 6,417.00 | 51.59 | 85.07 | 6,327.19 | 117.90 | 280.17 | 285.05 | 9.56 |
| 6,465.00 | 56.15 | 85.95 | 6,355.48 | 120.93 | 318.81 | 323.79 | 9.61 |
| 6,513.00 | 60.97 | 86.10 | 6,380.51 | 123.77 | 359.65 | 364.72 | 10.05 |
| 6,561.00 | 66.77 | 85.90 | 6,401.64 | 126.77 | 402.63 | 407.78 | 12.09 |
| 6,609.00 | 70.57 | 87.29 | 6,419.10 | 129.42 | 447.25 | 452.47 | 8.36 |
| 6,657.00 | 76.71 | 87.77 | 6,432.62 | 131.40 | 493.24 | 498.51 | 12.83 |
| 6,704.00 | 82.75 | 88.12 | 6,440.99 | 133.06 | 539.44 | 544.73 | 12.87 |
| 6,722.00 | 85.31 | 88.15 | 6,442.86 | 133.64 | 557.33 | 562.63 | 14.22 |
| 6,813.00 | 90.49 | 88.47 | 6,446.20 | 136.32 | 648.20 | 653.53 | 5.70 |
| 6,908.00 | 91.32 | 87.54 | 6,444.70 | 139.63 | 743.12 | 748.51 | 1.31 |
| 7,004.00 | 88.46 | 86.35 | 6,444.88 | 144.74 | 838.98 | 844.50 | 3.23 |
| 7,099.00 | 90.43 | 87.82 | 6,445.80 | 149.57 | 933.84 | 939.48 | 2.59 |
| 7,195.00 | 91.45 | 85.56 | 6,444.23 | 155.11 | 1,029.66 | 1,035.45 | 2.58 |
| 7,290.00 | 89.48 | 85.82 | 6,443.45 | 162.25 | 1,124.39 | 1,130.40 | 2.09 |
| 7,385.00 | 89.07 | 87.78 | 6,444.66 | 167.56 | 1,219.22 | 1,225.38 | 2.11 |
| 7,481.00 | 88.24 | 88.92 | 6,446.91 | 170.32 | 1,315.16 | 1,321.34 | 1.47 |
| 7,576.00 | 88.06 | 90.21 | 6,449.98 | 171.04 | 1,410.10 | 1,416.23 | 1.37 |
| 7,672.00 | 89.17 | 90.31 | 6,452.30 | 170.60 | 1,506.07 | 1,512.08 | 1.16 |
| 7,767.00 | 90.80 | 90.57 | 6,452.32 | 169.88 | 1,601.06 | 1,606.96 | 1.74 |
| 7,863.00 | 89.75 | 87.19 | 6,451.86 | 171.75 | 1,697.03 | 1,702.91 | 3.69 |
| 7,958.00 | 91.79 | 86.20 | 6,450.58 | 177.23 | 1,791.86 | 1,797.89 | 2.39 |
| 8,054.00 | 88.86 | 84.81 | 6,450.04 | 184.75 | 1,887.55 | 1,893.82 | 3.38 |
| 8,149.00 | 90.74 | 87.55 | 6,450.37 | 191.08 | 1,982.32 | 1,988.78 | 3.50 |
| 8,246.00 | 91.20 | 87.02 | 6,448.73 | 195.67 | 2,079.20 | 2,085.76 | 0.72 |
| 8,341.00 | 89.63 | 85.55 | 6,448.04 | 201.83 | 2,173.99 | 2,180.73 | 2.26 |
| 8,437.00 | 91.91 | 88.16 | 6,446.75 | 207.09 | 2,269.82 | 2,276.70 | 3.61 |
| 8,532.00 | 89.41 | 86.63 | 6,445.66 | 211.41 | 2,364.71 | 2,371.69 | 3.09 |
| 8,628.00 | 91.42 | 89.53 | 6,444.96 | 214.63 | 2,460.64 | 2,467.66 | 3.68 |
| 8,723.00 | 89.85 | 90.25 | 6,443.91 | 214.81 | 2,555.63 | 2,562.57 | 1.82 |
| 8,819.00 | 89.54 | 89.71 | 6,444.42 | 214.84 | 2,651.63 | 2,658.48 | 0.65 |
| 8,914.00 | 90.55 | 90.42 | 6,444.35 | 214.73 | 2,746.62 | 2,753.38 | 1.30 |
| 9,010.00 | 90.12 | 89.68 | 6,443.78 | 214.65 | 2,842.62 | 2,849.28 | 0.89 |
| 9,105.00 | 89.57 | 89.18 | 6,444.04 | 215.60 | 2,937.62 | 2,944.23 | 0.78 |
| 9,201.00 | 90.28 | 90.21 | 6,444.17 | 216.11 | 3,033.61 | 3,040.16 | 1.30 |
| 9,296.00 | 90.03 | 89.18 | 6,443.91 | 216.61 | 3,128.61 | 3,135.08 | 1.12 |
| 9,391.00 | 88.86 | 88.51 | 6,444.83 | 218.53 | 3,223.58 | 3,230.05 | 1.42 |
| 9,487.00 | 88.33 | 87.51 | 6,447.18 | 221.86 | 3,319.50 | 3,326.02 | 1.18 |
| 9,582.00 | 89.57 | 87.24 | 6,448.92 | 226.21 | 3,414.38 | 3,421.00 | 1.34 |

Design Report for Wells Ranch AF05-62-1HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 9,678.00 | 90.52 | 88.14 | 6,448.85 | 230.08 | 3,510.30 | 3,517.00 | 1.36 |
| 9,773.00 | 89.01 | 88.29 | 6,449.24 | 233.04 | 3,605.25 | 3,611.99 | 1.60 |
| 9,868.00 | 88.77 | 89.14 | 6,451.08 | 235.17 | 3,700.21 | 3,706.95 | 0.93 |
| 9,964.00 | 90.52 | 89.66 | 6,451.67 | 236.17 | 3,796.19 | 3,802.89 | 1.90 |
| 10,059.00 | 90.31 | 89.94 | 6,450.99 | 236.51 | 3,891.19 | 3,897.81 | 0.37 |
| 10,155.00 | 90.28 | 87.56 | 6,450.49 | 238.60 | 3,987.16 | 3,993.78 | 2.48 |
| 10,250.00 | 92.63 | 86.96 | 6,448.08 | 243.14 | 4,082.01 | 4,088.74 | 2.55 |
| 10,345.00 | 89.45 | 86.43 | 6,446.36 | 248.61 | 4,176.83 | 4,183.70 | 3.39 |
| 10,441.00 | 87.17 | 85.90 | 6,449.19 | 255.03 | 4,272.56 | 4,279.63 | 2.44 |
| 10,536.00 | 84.37 | 88.21 | 6,456.19 | 259.90 | 4,367.16 | 4,374.35 | 3.82 |
| 10,627.00 | 85.92 | 88.73 | 6,463.90 | 262.32 | 4,457.80 | 4,465.01 | 1.80 |
| 10,718.00 | 88.21 | 88.54 | 6,468.55 | 264.49 | 4,548.65 | 4,555.86 | 2.53 |
| 10,809.00 | 91.42 | 88.37 | 6,468.85 | 266.94 | 4,639.61 | 4,646.84 | 3.53 |
| 10,901.00 | 93.52 | 88.42 | 6,464.88 | 269.51 | 4,731.48 | 4,738.73 | 2.28 |
| 10,992.00 | 93.57 | 89.31 | 6,459.26 | 271.31 | 4,822.29 | 4,829.53 | 0.98 |
| 11,084.00 | 93.39 | 87.50 | 6,453.67 | 273.87 | 4,914.08 | 4,921.35 | 1.97 |
| 11,176.00 | 91.94 | 88.05 | 6,449.39 | 277.44 | 5,005.91 | 5,013.25 | 1.69 |
| 11,268.00 | 91.27 | 88.33 | 6,446.82 | 280.34 | 5,097.82 | 5,105.20 | 0.79 |
| 11,359.00 | 89.60 | 88.63 | 6,446.13 | 282.76 | 5,188.78 | 5,196.18 | 1.86 |
| 11,451.00 | 88.73 | 88.26 | 6,447.47 | 285.25 | 5,280.74 | 5,288.16 | 1.03 |
| 11,543.00 | 87.75 | 87.96 | 6,450.29 | 288.28 | 5,372.65 | 5,380.11 | 1.11 |
| 11,635.00 | 86.79 | 88.44 | 6,454.67 | 291.17 | 5,464.49 | 5,472.00 | 1.17 |
| 11,727.00 | 87.03 | 88.14 | 6,459.63 | 293.91 | 5,556.32 | 5,563.85 | 0.42 |
| 11,819.00 | 88.61 | 89.16 | 6,463.13 | 296.08 | 5,648.22 | 5,655.76 | 2.04 |
| 11,911.00 | 89.29 | 89.20 | 6,464.82 | 297.39 | 5,740.20 | 5,747.71 | 0.74 |
| 12,003.00 | 89.26 | 89.08 | 6,465.98 | 298.77 | 5,832.18 | 5,839.66 | 0.13 |
| 12,098.00 | 89.94 | 89.68 | 6,466.65 | 299.80 | 5,927.17 | 5,934.61 | 0.95 |
| 12,194.00 | 91.17 | 89.59 | 6,465.72 | 300.41 | 6,023.16 | 6,030.54 | 1.28 |
| 12,289.00 | 91.54 | 88.40 | 6,463.47 | 302.08 | 6,118.12 | 6,125.48 | 1.31 |
| 12,385.00 | 89.14 | 85.54 | 6,462.90 | 307.15 | 6,213.97 | 6,221.45 | 3.89 |
| 12,480.00 | 90.40 | 85.99 | 6,463.28 | 314.17 | 6,308.70 | 6,316.41 | 1.41 |
| 12,576.00 | 89.11 | 87.46 | 6,463.69 | 319.65 | 6,404.54 | 6,412.39 | 2.04 |
| 12,671.00 | 89.54 | 87.50 | 6,464.81 | 323.83 | 6,499.44 | 6,507.38 | 0.45 |
| 12,767.00 | 90.55 | 87.58 | 6,464.74 | 327.95 | 6,595.35 | 6,603.38 | 1.06 |
| 12,862.00 | 89.14 | 87.19 | 6,464.99 | 332.28 | 6,690.25 | 6,698.38 | 1.54 |
| 12,957.00 | 91.23 | 90.79 | 6,464.69 | 333.96 | 6,785.22 | 6,793.33 | 4.38 |
| 13,053.00 | 89.63 | 91.05 | 6,463.97 | 332.42 | 6,881.20 | 6,889.15 | 1.69 |
| 13,148.00 | 90.34 | 88.35 | 6,463.99 | 332.91 | 6,976.19 | 6,984.07 | 2.94 |
| 13,244.00 | 92.47 | 85.20 | 6,461.64 | 338.31 | 7,071.99 | 7,080.02 | 3.96 |
| 13,339.00 | 91.30 | 84.36 | 6,458.51 | 346.95 | 7,166.54 | 7,174.86 | 1.52 |
| 13,435.00 | 89.51 | 84.03 | 6,457.83 | 356.66 | 7,262.04 | 7,270.69 | 1.90 |
| 13,530.00 | 90.03 | 86.39 | 6,458.21 | 364.59 | 7,356.70 | 7,365.61 | 2.54 |
| 13,625.00 | 93.09 | 89.86 | 6,455.63 | 367.70 | 7,451.59 | 7,460.54 | 4.87 |
| 13,721.00 | 90.22 | 89.33 | 6,452.86 | 368.38 | 7,547.54 | 7,556.42 | 3.04 |
| 13,816.00 | 89.04 | 87.87 | 6,453.47 | 370.70 | 7,642.50 | 7,651.40 | 1.98 |
| 13,911.00 | 90.03 | 87.43 | 6,454.24 | 374.59 | 7,737.42 | 7,746.40 | 1.14 |
| 14,007.00 | 90.43 | 87.94 | 6,453.85 | 378.47 | 7,833.34 | 7,842.39 | 0.68 |
| 14,102.00 | 89.41 | 88.25 | 6,453.99 | 381.63 | 7,928.29 | 7,937.39 | 1.12 |
| 14,198.00 | 89.54 | 87.16 | 6,454.87 | 385.47 | 8,024.20 | 8,033.38 | 1.14 |
| 14,293.00 | 89.88 | 85.40 | 6,455.35 | 391.64 | 8,119.00 | 8,128.35 | 1.89 |
| 14,389.00 | 90.19 | 84.93 | 6,455.29 | 399.73 | 8,214.66 | 8,224.27 | 0.59 |

Design Report for Wells Ranch AF05-62-1HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 14,484.00 | 89.11 | 84.20 | 6,455.87 | 408.73 | 8,309.22 | 8,319.15 | 1.37 |
| 14,580.00 | 89.63 | 83.64 | 6,456.93 | 418.89 | 8,404.68 | 8,414.95 | 0.80 |
| 14,675.00 | 89.75 | 84.76 | 6,457.44 | 428.49 | 8,499.19 | 8,509.79 | 1.19 |
| 14,770.00 | 89.97 | 85.84 | 6,457.67 | 436.28 | 8,593.87 | 8,604.72 | 1.16 |
| 14,866.00 | 90.89 | 86.98 | 6,456.95 | 442.29 | 8,689.67 | 8,700.70 | 1.53 |
| 14,961.00 | 91.20 | 88.77 | 6,455.22 | 445.81 | 8,784.59 | 8,795.68 | 1.91 |
| 15,057.00 | 90.77 | 90.99 | 6,453.57 | 446.01 | 8,880.57 | 8,891.57 | 2.36 |
| 15,152.00 | 89.66 | 90.99 | 6,453.21 | 444.37 | 8,975.55 | 8,986.39 | 1.17 |
| 15,248.00 | 88.12 | 90.59 | 6,455.07 | 443.05 | 9,071.52 | 9,082.22 | 1.66 |
| 15,343.00 | 89.35 | 90.53 | 6,457.17 | 442.12 | 9,166.49 | 9,177.05 | 1.30 |
| 15,439.00 | 90.49 | 90.09 | 6,457.30 | 441.60 | 9,262.49 | 9,272.94 | 1.27 |
| 15,534.00 | 90.43 | 90.40 | 6,456.54 | 441.19 | 9,357.48 | 9,367.82 | 0.33 |
| 15,630.00 | 88.40 | 89.33 | 6,457.52 | 441.42 | 9,453.47 | 9,463.73 | 2.39 |
| 15,725.00 | 90.83 | 88.97 | 6,458.16 | 442.83 | 9,548.45 | 9,558.68 | 2.59 |
| 15,820.00 | 90.15 | 90.04 | 6,457.35 | 443.65 | 9,643.44 | 9,653.62 | 1.33 |
| 15,916.00 | 89.51 | 90.05 | 6,457.63 | 443.57 | 9,739.44 | 9,749.52 | 0.67 |
| 16,011.00 | 91.26 | 90.05 | 6,456.99 | 443.49 | 9,834.44 | 9,844.42 | 1.84 |
| 16,107.00 | 89.45 | 88.74 | 6,456.40 | 444.50 | 9,930.42 | 9,940.36 | 2.33 |
| 16,202.00 | 89.44 | 87.65 | 6,457.32 | 447.50 | 10,025.37 | 10,035.35 | 1.15 |
| 16,298.00 | 89.48 | 87.44 | 6,458.22 | 451.61 | 10,121.28 | 10,131.34 | 0.22 |
| 16,358.00 | 90.74 | 88.08 | 6,458.11 | 453.95 | 10,181.23 | 10,191.34 | 2.36 |
| Final MWD Survey | | | | | | | |
| 16,418.00 | 90.74 | 88.08 | 6,457.33 | 455.96 | 10,241.19 | 10,251.33 | 0.00 |
| Estimated BHL: 322' FNL, 99' FWL - Survey Projection to TD | | | | | | | |

Design Annotations

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | Comment |
|---------------------|---------------------|-------------------|------------|---|
| | | +N/-S (ft) | +E/-W (ft) | |
| 577.00 | 577.00 | 0.00 | 0.00 | Surface Casing Assumed Vertical at 577.00ft |
| 629.00 | 629.00 | -0.11 | 0.03 | First MWD Survey |
| 16,358.00 | 6,458.11 | 453.95 | 10,181.23 | Final MWD Survey |
| 16,418.00 | 6,457.33 | 455.96 | 10,241.19 | Estimated BHL: 322' FNL, 99' FWL |
| 16,418.00 | 6,457.33 | 455.96 | 10,241.19 | Survey Projection to TD |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin | | Start TVD (ft) |
|------------|---|-------------|-------------|------------|------------|----------------|
| | | | | +N/-S (ft) | +E/-W (ft) | |
| Target | Wells Ranch AF05-62-1HN_PlanB - Rev0_B HL Tgt | 87.50 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (ft) | To (ft) | Survey/Plan | Survey Tool |
|-----------|-----------|--------------------|-------------|
| 577.00 | 16,418.00 | Sperry MWD Surveys | MWD |

Design Report for Wells Ranch AF05-62-1HN - MWD Survey

Targets

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|--|---------------------|--------------------|-------------|---------------|---------------|------------------|-----------------|------------------|-------------------|
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 10,137.00 | 774.00 | | 1,398,699.08 | 3,328,827.52 | | |
| Point 2 | | | 15,398.00 | 896.00 | | 1,398,821.07 | 3,334,088.32 | | |
| Point 3 | | | 15,476.00 | -4,444.00 | | 1,393,481.28 | 3,334,166.31 | | |
| Point 4 | | | 10,230.00 | -4,555.00 | | 1,393,370.28 | 3,328,920.52 | | |
| Point 5 | | | 10,137.00 | 774.00 | | 1,398,699.08 | 3,328,827.52 | | |
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 98.00 | -27.00 | | 1,397,898.11 | 3,318,788.91 | | |
| Point 2 | | | 4,416.00 | 135.00 | | 1,398,060.10 | 3,323,106.74 | | |
| Point 3 | | | 4,539.00 | -4,284.00 | | 1,393,641.27 | 3,323,229.74 | | |
| Point 4 | | | 220.00 | -4,436.00 | | 1,393,489.28 | 3,318,910.90 | | |
| Point 5 | | | 98.00 | -27.00 | | 1,397,898.11 | 3,318,788.91 | | |
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 5,336.00 | 135.00 | | 1,398,060.10 | 3,324,026.71 | | |
| Point 2 | | | 9,677.00 | 314.00 | | 1,398,239.10 | 3,328,367.54 | | |
| Point 3 | | | 9,770.00 | -4,095.00 | | 1,393,830.27 | 3,328,460.53 | | |
| Point 4 | | | 5,459.00 | -4,284.00 | | 1,393,641.27 | 3,324,149.70 | | |
| Point 5 | | | 5,336.00 | 135.00 | | 1,398,060.10 | 3,324,026.71 | | |
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 4,876.00 | 595.00 | | 1,398,520.09 | 3,323,566.72 | | |
| Point 2 | | | 10,137.00 | 774.00 | | 1,398,699.08 | 3,328,827.52 | | |
| Point 3 | | | 10,230.00 | -4,555.00 | | 1,393,370.28 | 3,328,920.52 | | |
| Point 4 | | | 4,999.00 | -4,744.00 | | 1,393,181.29 | 3,323,689.72 | | |
| Point 5 | | | 4,876.00 | 595.00 | | 1,398,520.09 | 3,323,566.72 | | |
| Wells Ranch | 0.00 | 0.00 | 6,488.00 | 447.67 | 10,241.49 | 1,398,372.76 | 3,328,932.01 | 40° 25' 15.312 N | 104° 19' 6.816 W |
| - actual wellpath misses target center by 31.77ft at 16417.62ft MD (6457.34 TVD, 455.95 N, 10240.82 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -362.00 | 433.00 | | 1,398,358.09 | 3,318,328.93 | | |
| Point 2 | | | 4,876.00 | 595.00 | | 1,398,520.09 | 3,323,566.72 | | |
| Point 3 | | | 4,999.00 | -4,744.00 | | 1,393,181.29 | 3,323,689.72 | | |
| Point 4 | | | -240.00 | -4,896.00 | | 1,393,029.30 | 3,318,450.92 | | |
| Point 5 | | | -362.00 | 433.00 | | 1,398,358.09 | 3,318,328.93 | | |
| Wells Ranch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,397,925.11 | 3,318,690.91 | 40° 25' 12.216 N | 104° 21' 19.296 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 10,597.00 | 314.00 | | 1,398,239.10 | 3,329,287.50 | | |
| Point 2 | | | 14,938.00 | 436.00 | | 1,398,361.09 | 3,333,628.33 | | |
| Point 3 | | | 15,016.00 | -3,984.00 | | 1,393,941.26 | 3,333,706.33 | | |
| Point 4 | | | 10,690.00 | -4,095.00 | | 1,393,830.27 | 3,329,380.50 | | |
| Point 5 | | | 10,597.00 | 314.00 | | 1,398,239.10 | 3,329,287.50 | | |

**North Reference Sheet for Sec. 8-T5N-R62W (Wells Ranch 8 PAD) - Wells Ranch
AF05-62-1HN**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to KB @ 4688.00ft (H&P 343). Northing and Easting are relative to Wells Ranch AF05-62-1HN - Slot A1

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996120

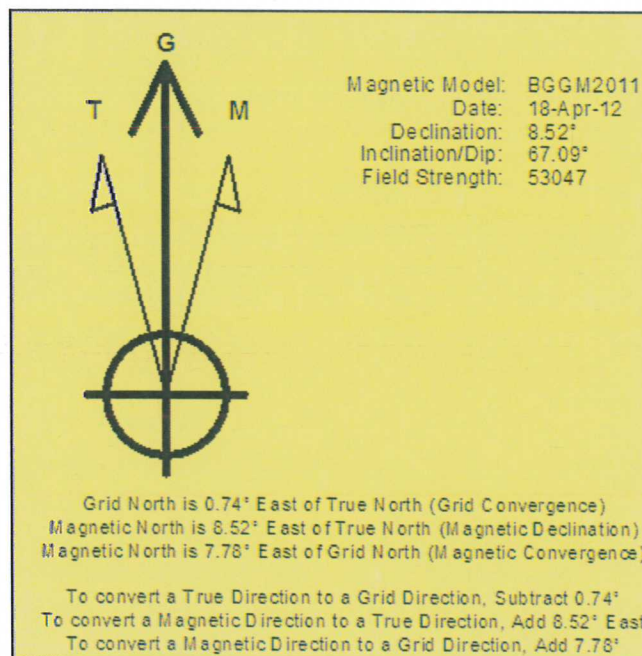
Grid Coordinates of Well: 1,397,925.11 ft N, 3,318,690.91 ft E

Geographical Coordinates of Well: 40° 25' 12.22" N, 104° 21' 19.30" W

Grid Convergence at Surface is: 0.74°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,418.00ft
the Bottom Hole Displacement is 10,251.34ft in the Direction of 87.45° (Grid).

Magnetic Convergence at surface is: -7.78° (18 April 2012, , BGGM2011)



Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T5N-R62W (Wells Ranch 8 PAD)
 Well: Wells Ranch AF05-62-1HN

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
 True North: -0.74°
 Magnetic North: 7.78°

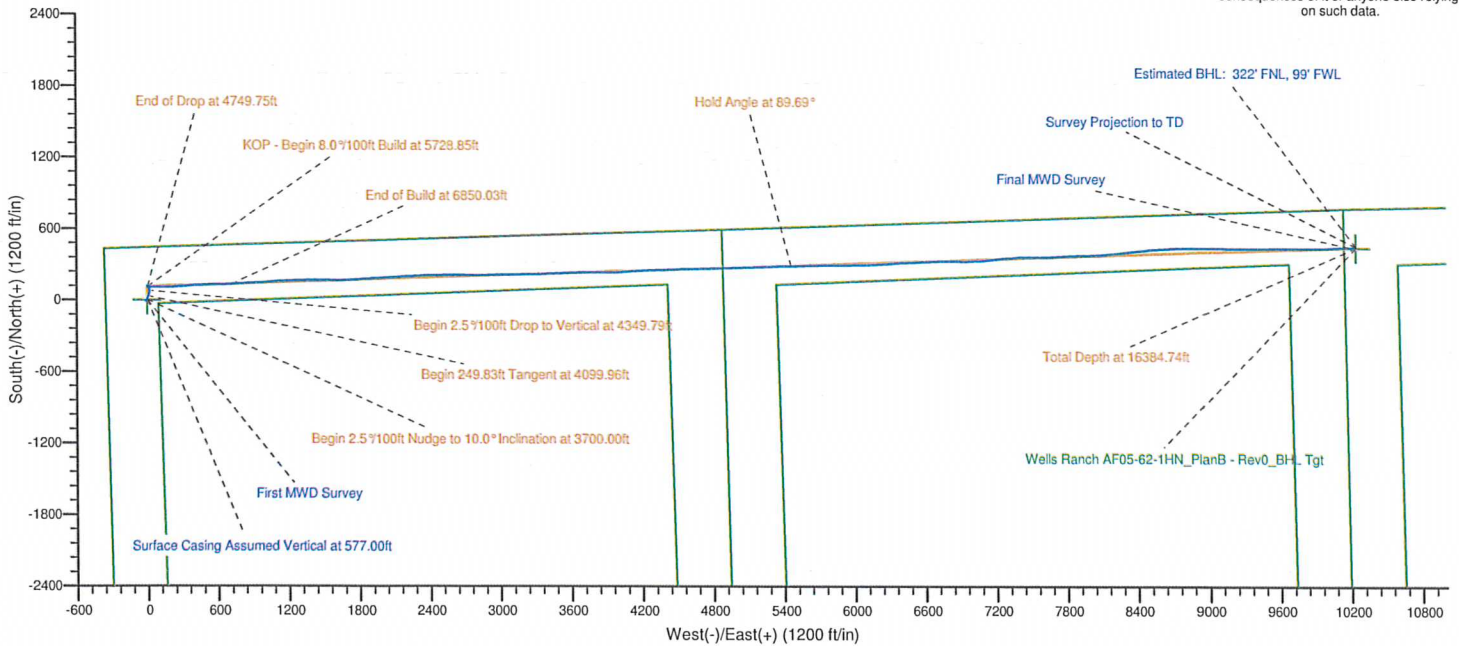
Magnetic Field
 Strength: 53047.3nT
 Dip Angle: 67.09°
 Date: 4/18/2012
 Model: BGGM2011

LEGEND

- Wells Ranch AF05-62-1HN, Plan B, Plan B - Rev 0 Proposal V0
- MWD Survey

Permitted BHL: 330' FNL, 100' FWL

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Battlement Mesa 26-22C well located at Garfield County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.



Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T5N-R62W (Wells Ranch 8 PAD)
 Well: Wells Ranch AF05-62-1HN

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
 True North: -0.74°
 Magnetic North: 7.78°

Magnetic Field
 Strength: 53047.3snT
 Dip Angle: 67.09°
 Date: 4/18/2012
 Model: BGGM2011

LEGEND

- Wells Ranch AF05-62-1HN, Plan B, Plan B - Rev 0 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Wells Ranch AF05-62-1HN well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.

