

Noble Energy

Weld County, CO

Sec. 19-T11N-R61W

Shable PC GK19-99HZ

Sperry Drilling Services

Standard Report

24 June, 2010

Well Coordinates: 1,574,528.92 N, 3,347,767.67 E (40° 54' 13.25" N, 104° 14' 30.98" W)

Ground Level: 5,126.00 ft

Local Coordinate Origin:

Centered on Well Shable PC GK19-99HZ

Viewing Datum:

RKB 16' @ 5142.00ft (Original Well Elev)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Design Report for Shable PC GK19-99HZ - 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 |
| 1,458.00 | 0.00 | 0.00 | 1,458.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Surface Casing Assumed Vertical at 1458.00ft | | | | | | | |
| 1,564.00 | 0.60 | 205.02 | 1,564.00 | -0.50 | -0.23 | -0.19 | 0.57 |
| First MWD Survey | | | | | | | |
| 1,659.00 | 0.43 | 203.03 | 1,658.99 | -1.28 | -0.58 | -0.51 | 0.18 |
| 1,753.00 | 0.51 | 194.35 | 1,752.99 | -2.01 | -0.83 | -0.86 | 0.11 |
| 1,848.00 | 0.41 | 195.21 | 1,847.99 | -2.75 | -1.02 | -1.25 | 0.11 |
| 1,943.00 | 0.41 | 201.34 | 1,942.99 | -3.39 | -1.23 | -1.56 | 0.05 |
| 2,037.00 | 0.28 | 175.81 | 2,036.98 | -3.94 | -1.34 | -1.87 | 0.21 |
| 2,132.00 | 0.27 | 136.25 | 2,131.98 | -4.33 | -1.17 | -2.27 | 0.20 |
| 2,321.00 | 0.56 | 84.62 | 2,320.98 | -4.56 | 0.06 | -3.30 | 0.24 |
| 2,415.00 | 0.34 | 53.67 | 2,414.98 | -4.36 | 0.74 | -3.63 | 0.34 |
| 2,510.00 | 0.26 | 32.22 | 2,509.97 | -4.01 | 1.08 | -3.62 | 0.14 |
| 2,604.00 | 0.21 | 16.28 | 2,603.97 | -3.66 | 1.25 | -3.49 | 0.09 |
| 2,699.00 | 0.18 | 325.14 | 2,698.97 | -3.37 | 1.21 | -3.25 | 0.18 |
| 2,794.00 | 0.05 | 10.51 | 2,793.97 | -3.21 | 1.13 | -3.08 | 0.16 |
| 2,888.00 | 0.30 | 336.60 | 2,887.97 | -2.94 | 1.04 | -2.83 | 0.28 |
| 2,983.00 | 0.31 | 354.60 | 2,982.97 | -2.46 | 0.92 | -2.40 | 0.10 |
| 3,077.00 | 0.60 | 350.72 | 3,076.97 | -1.72 | 0.82 | -1.80 | 0.31 |
| 3,172.00 | 0.36 | 3.55 | 3,171.96 | -0.93 | 0.75 | -1.19 | 0.28 |
| 3,266.00 | 0.27 | 345.96 | 3,265.96 | -0.42 | 0.72 | -0.80 | 0.14 |
| 3,455.00 | 0.43 | 331.59 | 3,454.96 | 0.64 | 0.27 | 0.26 | 0.10 |
| 3,550.00 | 0.62 | 323.40 | 3,549.96 | 1.36 | -0.20 | 1.11 | 0.21 |
| 3,644.00 | 0.43 | 331.34 | 3,643.95 | 2.08 | -0.68 | 1.96 | 0.22 |
| 3,928.00 | 0.89 | 232.23 | 3,927.94 | 1.66 | -2.93 | 3.24 | 0.37 |
| 4,022.00 | 1.06 | 239.40 | 4,021.92 | 0.77 | -4.26 | 3.53 | 0.22 |
| 4,212.00 | 1.15 | 258.42 | 4,211.89 | -0.50 | -7.64 | 4.99 | 0.20 |
| 4,495.00 | 1.14 | 276.63 | 4,494.83 | -0.75 | -13.21 | 8.72 | 0.13 |
| 4,779.00 | 0.91 | 317.65 | 4,778.79 | 1.24 | -17.54 | 13.17 | 0.26 |
| 4,969.00 | 0.78 | 308.13 | 4,968.77 | 3.16 | -19.57 | 15.96 | 0.10 |
| 5,158.00 | 0.66 | 323.02 | 5,157.76 | 4.82 | -21.24 | 18.32 | 0.12 |
| 5,347.00 | 0.56 | 10.10 | 5,346.75 | 6.60 | -21.73 | 19.93 | 0.26 |
| 5,535.00 | 0.60 | 92.05 | 5,534.74 | 7.47 | -20.59 | 19.75 | 0.40 |
| 5,725.00 | 0.36 | 129.40 | 5,724.73 | 7.06 | -19.13 | 18.44 | 0.20 |
| 5,913.00 | 0.34 | 338.76 | 5,912.73 | 7.20 | -18.88 | 18.36 | 0.36 |
| 6,140.00 | 0.62 | 335.42 | 6,139.72 | 8.94 | -19.63 | 20.14 | 0.12 |
| 6,202.00 | 1.76 | 307.98 | 6,201.71 | 9.84 | -20.52 | 21.39 | 2.00 |
| 6,234.00 | 4.51 | 320.62 | 6,233.66 | 11.11 | -21.71 | 23.14 | 8.81 |
| 6,265.00 | 8.39 | 318.96 | 6,264.46 | 13.76 | -23.97 | 26.61 | 12.53 |
| 6,297.00 | 11.75 | 318.35 | 6,295.96 | 17.96 | -27.67 | 32.19 | 10.51 |
| 6,328.00 | 13.61 | 318.71 | 6,326.20 | 23.06 | -32.17 | 38.99 | 6.01 |
| 6,360.00 | 15.76 | 315.75 | 6,357.16 | 29.00 | -37.69 | 47.10 | 7.11 |
| 6,391.00 | 18.24 | 314.14 | 6,386.80 | 35.39 | -44.11 | 56.16 | 8.14 |
| 6,423.00 | 20.90 | 314.47 | 6,416.95 | 42.88 | -51.78 | 66.87 | 8.32 |
| 6,454.00 | 22.12 | 314.32 | 6,445.79 | 50.83 | -59.90 | 78.24 | 3.94 |
| 6,486.00 | 23.47 | 314.88 | 6,475.29 | 59.54 | -68.73 | 90.63 | 4.27 |
| 6,517.00 | 25.47 | 316.66 | 6,503.50 | 68.74 | -77.68 | 103.47 | 6.88 |
| 6,549.00 | 27.77 | 318.85 | 6,532.11 | 79.36 | -87.31 | 117.79 | 7.81 |
| 6,580.00 | 29.09 | 318.96 | 6,559.37 | 90.49 | -97.01 | 132.53 | 4.26 |

Design Report for Shable PC GK19-99HZ - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 6,612.00 | 31.63 | 319.12 | 6,586.98 | 102.70 | -107.61 | 148.67 | 7.94 |
| 6,644.00 | 34.45 | 318.08 | 6,613.80 | 115.78 | -119.15 | 166.09 | 8.99 |
| 6,675.00 | 36.47 | 317.64 | 6,639.05 | 129.11 | -131.22 | 184.06 | 6.57 |
| 6,707.00 | 38.45 | 317.50 | 6,664.45 | 143.48 | -144.35 | 203.51 | 6.19 |
| 6,738.00 | 41.78 | 317.32 | 6,688.16 | 158.18 | -157.86 | 223.47 | 10.75 |
| 6,770.00 | 45.08 | 317.21 | 6,711.39 | 174.34 | -172.79 | 245.46 | 10.32 |
| 6,801.00 | 47.78 | 317.80 | 6,732.76 | 190.90 | -187.96 | 267.90 | 8.82 |
| 6,833.00 | 50.06 | 318.36 | 6,753.78 | 208.85 | -204.07 | 292.00 | 7.25 |
| 6,864.00 | 51.87 | 318.73 | 6,773.31 | 226.89 | -220.01 | 316.04 | 5.91 |
| 6,896.00 | 54.40 | 318.63 | 6,792.50 | 246.12 | -236.91 | 341.60 | 7.91 |
| 6,927.00 | 57.28 | 318.15 | 6,809.91 | 265.29 | -253.95 | 367.22 | 9.38 |
| 6,959.00 | 59.87 | 317.60 | 6,826.59 | 285.54 | -272.26 | 394.50 | 8.23 |
| 6,990.00 | 61.82 | 317.42 | 6,841.69 | 305.51 | -290.55 | 421.56 | 6.31 |
| 7,022.00 | 65.35 | 317.35 | 6,855.92 | 326.59 | -309.95 | 450.20 | 11.03 |
| 7,053.00 | 68.85 | 317.28 | 6,867.99 | 347.58 | -329.31 | 478.73 | 11.29 |
| 7,085.00 | 70.39 | 317.29 | 6,879.13 | 369.62 | -349.66 | 508.72 | 4.81 |
| 7,116.00 | 73.49 | 317.54 | 6,888.74 | 391.32 | -369.60 | 538.17 | 10.03 |
| 7,148.00 | 77.96 | 318.31 | 6,896.63 | 414.33 | -390.37 | 569.15 | 14.16 |
| 7,179.00 | 81.98 | 317.43 | 6,902.02 | 436.97 | -410.85 | 599.64 | 13.27 |
| 7,206.00 | 85.33 | 318.47 | 6,905.01 | 456.89 | -428.82 | 626.45 | 12.98 |
| 7,251.00 | 86.85 | 318.95 | 6,908.08 | 490.62 | -458.44 | 671.27 | 3.54 |
| 7,283.00 | 86.91 | 319.72 | 6,909.82 | 514.86 | -479.26 | 703.16 | 2.41 |
| 7,314.00 | 90.19 | 319.70 | 6,910.60 | 538.49 | -499.30 | 734.06 | 10.58 |
| 7,343.00 | 91.05 | 319.60 | 6,910.29 | 560.59 | -518.07 | 762.98 | 2.99 |
| 7,375.00 | 91.17 | 319.51 | 6,909.67 | 584.94 | -538.83 | 794.90 | 0.47 |
| 7,407.00 | 91.30 | 319.09 | 6,908.98 | 609.20 | -559.69 | 826.82 | 1.37 |
| 7,439.00 | 92.23 | 319.15 | 6,907.99 | 633.38 | -580.62 | 858.75 | 2.91 |
| 7,471.00 | 92.59 | 319.37 | 6,906.65 | 657.60 | -601.49 | 890.65 | 1.32 |
| 7,503.00 | 92.84 | 319.12 | 6,905.13 | 681.82 | -622.36 | 922.55 | 1.10 |
| 7,535.00 | 92.97 | 319.01 | 6,903.51 | 705.96 | -643.30 | 954.45 | 0.53 |
| 7,566.00 | 92.97 | 317.96 | 6,901.90 | 729.14 | -663.81 | 985.36 | 3.38 |
| 7,598.00 | 93.34 | 317.91 | 6,900.14 | 752.86 | -685.22 | 1,017.29 | 1.17 |
| 7,630.00 | 93.65 | 318.05 | 6,898.19 | 776.59 | -706.60 | 1,049.20 | 1.06 |
| 7,662.00 | 93.95 | 317.58 | 6,896.07 | 800.25 | -728.04 | 1,081.10 | 1.74 |
| 7,693.00 | 94.21 | 316.88 | 6,893.87 | 822.95 | -749.04 | 1,112.01 | 2.40 |
| 7,725.00 | 93.59 | 315.46 | 6,891.69 | 845.98 | -771.15 | 1,143.93 | 4.83 |
| 7,757.00 | 93.52 | 314.51 | 6,889.71 | 868.56 | -793.74 | 1,175.87 | 2.97 |
| 7,821.00 | 92.41 | 313.49 | 6,886.39 | 912.95 | -839.71 | 1,239.76 | 2.35 |
| 7,853.00 | 92.72 | 313.41 | 6,884.96 | 934.94 | -862.92 | 1,271.71 | 1.00 |
| 7,885.00 | 93.15 | 313.56 | 6,883.32 | 956.93 | -886.11 | 1,303.64 | 1.42 |
| 7,917.00 | 93.52 | 313.21 | 6,881.46 | 978.87 | -909.33 | 1,335.57 | 1.59 |
| 7,981.00 | 93.40 | 313.38 | 6,877.60 | 1,022.68 | -955.82 | 1,399.40 | 0.32 |
| 8,013.00 | 93.65 | 313.83 | 6,875.63 | 1,044.71 | -978.95 | 1,431.32 | 1.61 |
| 8,044.00 | 93.03 | 313.93 | 6,873.83 | 1,066.16 | -1,001.26 | 1,462.26 | 2.03 |
| 8,108.00 | 92.66 | 313.81 | 6,870.65 | 1,110.46 | -1,047.34 | 1,526.15 | 0.61 |
| 8,139.00 | 92.10 | 314.45 | 6,869.36 | 1,132.03 | -1,069.57 | 1,557.11 | 2.74 |
| 8,202.00 | 92.04 | 313.49 | 6,867.09 | 1,175.74 | -1,114.88 | 1,620.05 | 1.53 |
| 8,267.00 | 93.40 | 314.43 | 6,864.00 | 1,220.81 | -1,161.61 | 1,684.95 | 2.54 |
| 8,331.00 | 92.91 | 313.87 | 6,860.48 | 1,265.32 | -1,207.47 | 1,748.83 | 1.16 |
| 8,395.00 | 92.29 | 313.15 | 6,857.58 | 1,309.33 | -1,253.83 | 1,812.72 | 1.48 |
| 8,427.00 | 91.05 | 312.65 | 6,856.64 | 1,331.11 | -1,277.26 | 1,844.67 | 4.18 |

Design Report for Shable PC GK19-99HZ - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 8,490.00 | 89.81 | 312.62 | 6,856.17 | 1,373.78 | -1,323.61 | 1,907.59 | 1.97 |
| 8,554.00 | 90.12 | 310.81 | 6,856.21 | 1,416.36 | -1,371.38 | 1,971.45 | 2.87 |
| 8,618.00 | 91.17 | 311.18 | 6,855.49 | 1,458.34 | -1,419.68 | 2,035.24 | 1.74 |
| 8,682.00 | 92.04 | 311.15 | 6,853.70 | 1,500.45 | -1,467.84 | 2,099.03 | 1.36 |
| 8,746.00 | 91.73 | 311.28 | 6,851.59 | 1,542.60 | -1,515.96 | 2,162.81 | 0.53 |
| 8,778.00 | 91.91 | 311.08 | 6,850.58 | 1,563.66 | -1,540.03 | 2,194.70 | 0.84 |
| 8,810.00 | 92.41 | 311.48 | 6,849.37 | 1,584.75 | -1,564.07 | 2,226.59 | 2.00 |
| 8,874.00 | 87.96 | 310.33 | 6,849.16 | 1,626.65 | -1,612.42 | 2,290.36 | 7.18 |
| 8,938.00 | 88.45 | 310.66 | 6,851.17 | 1,668.19 | -1,661.07 | 2,354.08 | 0.92 |
| 9,002.00 | 90.12 | 312.45 | 6,851.97 | 1,710.64 | -1,708.95 | 2,417.92 | 3.82 |
| 9,066.00 | 91.17 | 312.79 | 6,851.25 | 1,753.97 | -1,756.04 | 2,481.83 | 1.72 |
| 9,130.00 | 92.22 | 312.77 | 6,849.35 | 1,797.42 | -1,803.00 | 2,545.73 | 1.64 |
| 9,194.00 | 91.05 | 311.75 | 6,847.53 | 1,840.44 | -1,850.34 | 2,609.59 | 2.42 |
| 9,258.00 | 90.00 | 310.89 | 6,846.94 | 1,882.69 | -1,898.41 | 2,673.41 | 2.12 |
| 9,321.00 | 89.01 | 310.04 | 6,847.48 | 1,923.58 | -1,946.33 | 2,736.16 | 2.07 |
| 9,385.00 | 89.63 | 311.52 | 6,848.24 | 1,965.37 | -1,994.79 | 2,799.94 | 2.51 |
| 9,449.00 | 90.06 | 312.05 | 6,848.42 | 2,008.02 | -2,042.51 | 2,863.80 | 1.07 |
| 9,513.00 | 90.00 | 312.88 | 6,848.38 | 2,051.23 | -2,089.72 | 2,927.70 | 1.30 |
| 9,577.00 | 88.15 | 313.20 | 6,849.42 | 2,094.90 | -2,136.49 | 2,991.63 | 2.93 |
| 9,640.00 | 88.95 | 313.53 | 6,851.01 | 2,138.14 | -2,182.28 | 3,054.57 | 1.37 |
| 9,704.00 | 88.70 | 315.65 | 6,852.32 | 2,183.06 | -2,227.84 | 3,118.54 | 3.33 |
| 9,768.00 | 88.89 | 315.33 | 6,853.67 | 2,228.69 | -2,272.70 | 3,182.53 | 0.58 |
| 9,831.00 | 88.33 | 316.54 | 6,855.20 | 2,273.95 | -2,316.50 | 3,245.50 | 2.12 |
| 9,895.00 | 88.46 | 316.67 | 6,856.99 | 2,320.43 | -2,360.45 | 3,309.47 | 0.29 |
| 9,959.00 | 86.73 | 316.64 | 6,859.68 | 2,366.93 | -2,404.34 | 3,373.40 | 2.70 |
| 10,022.00 | 86.78 | 316.69 | 6,863.24 | 2,412.68 | -2,447.51 | 3,436.28 | 0.11 |
| 10,086.00 | 87.77 | 317.36 | 6,866.29 | 2,459.45 | -2,491.08 | 3,500.19 | 1.87 |
| 10,150.00 | 88.08 | 317.80 | 6,868.60 | 2,506.67 | -2,534.23 | 3,564.11 | 0.84 |
| 10,213.00 | 87.90 | 318.65 | 6,870.81 | 2,553.62 | -2,576.17 | 3,627.00 | 1.38 |
| 10,276.00 | 88.33 | 318.72 | 6,872.88 | 2,600.92 | -2,617.74 | 3,689.87 | 0.69 |
| 10,340.00 | 90.19 | 318.92 | 6,873.71 | 2,649.08 | -2,659.88 | 3,753.76 | 2.92 |
| 10,404.00 | 88.46 | 319.08 | 6,874.46 | 2,697.38 | -2,701.86 | 3,817.63 | 2.71 |
| 10,467.00 | 86.72 | 318.17 | 6,877.11 | 2,744.61 | -2,743.46 | 3,880.48 | 3.12 |
| 10,530.00 | 85.06 | 318.49 | 6,881.63 | 2,791.54 | -2,785.24 | 3,943.24 | 2.68 |
| 10,595.00 | 85.42 | 319.37 | 6,887.02 | 2,840.38 | -2,827.79 | 4,007.91 | 1.46 |
| 10,658.00 | 86.10 | 319.90 | 6,891.68 | 2,888.25 | -2,868.48 | 4,070.57 | 1.37 |
| 10,722.00 | 87.71 | 320.44 | 6,895.14 | 2,937.32 | -2,909.41 | 4,134.27 | 2.65 |
| 10,785.00 | 88.21 | 320.37 | 6,897.38 | 2,985.84 | -2,949.54 | 4,197.00 | 0.80 |
| 10,849.00 | 88.64 | 321.18 | 6,899.14 | 3,035.40 | -2,990.00 | 4,260.71 | 1.43 |
| 10,912.00 | 89.44 | 321.57 | 6,900.19 | 3,084.61 | -3,029.32 | 4,323.38 | 1.41 |
| 10,976.00 | 90.37 | 320.56 | 6,900.30 | 3,134.39 | -3,069.54 | 4,387.08 | 2.15 |
| 11,072.00 | 88.70 | 318.48 | 6,901.08 | 3,207.40 | -3,131.85 | 4,482.83 | 2.78 |
| 11,167.00 | 88.58 | 318.56 | 6,903.33 | 3,278.56 | -3,194.76 | 4,577.68 | 0.15 |
| 11,262.00 | 87.90 | 317.95 | 6,906.25 | 3,349.40 | -3,257.98 | 4,672.53 | 0.96 |
| 11,358.00 | 88.95 | 316.95 | 6,908.89 | 3,420.10 | -3,322.87 | 4,768.44 | 1.51 |
| Final MWD Survey | | | | | | | |
| 11,400.00 | 88.95 | 316.95 | 6,909.66 | 3,450.78 | -3,351.54 | 4,810.42 | 0.00 |
| Survey Projection to TD - Estimated BHL: 654' FNL, 1320' FWL | | | | | | | |

Design Report for Shable PC GK19-99HZ - MWD Survey

Design Annotations

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | Comment |
|------------------------|------------------------|-------------------|---------------|--|
| | | +N/-S (ft) | +E/-W (ft) | |
| 1,458.00 | 1,458.00 | 0.00 | 0.00 | Surface Casing Assumed Vertical at 1458.00ft |
| 1,564.00 | 1,564.00 | -0.50 | -0.23 | First MWD Survey |
| 11,358.00 | 6,908.89 | 3,420.10 | -3,322.87 | Final MWD Survey |
| 11,400.00 | 6,909.66 | 3,450.78 | -3,351.54 | Survey Projection to TD |
| 11,400.00 | 6,909.66 | 3,450.78 | -3,351.54 | Estimated BHL: 654' FNL, 1320' FWL |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin | | Start TVD (ft) |
|------------|---------------------------------------|----------------|-------------|---------------|---------------|-------------------|
| | | | | +N/_S (ft) | +E/-W (ft) | |
| Target | Shable PC GK19-99HZ Plan #2 BH Tgt | 315.54 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (ft) | To (ft) | Survey/Plan | Survey Tool |
|--------------|------------|--------------------|-------------|
| 1,458.00 | 11,400.00 | Sperry MWD Surveys | MWD |

Design Report for Shable PC GK19-99HZ - 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 |
|---|---------------------|--------------------|-------------|---------------|---------------|------------------|-----------------|------------------|-------------------|
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,071.00 | -518.00 | | 1,573,953.21 | 3,343,704.34 | | |
| Point 2 | | | 30.00 | -660.00 | | 1,573,869.40 | 3,347,807.03 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,671.00 | -1,118.00 | | 1,573,344.74 | 3,343,112.90 | | |
| Point 2 | | | 630.00 | -1,260.00 | | 1,573,277.96 | 3,348,415.50 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,071.00 | 3,540.00 | | 1,578,010.89 | 3,343,646.77 | | |
| Point 2 | | | -4,071.00 | -518.00 | | 1,573,953.21 | 3,343,704.34 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 30.00 | 3,400.00 | | 1,577,929.08 | 3,347,749.43 | | |
| Point 2 | | | 30.00 | -660.00 | | 1,573,869.40 | 3,347,807.03 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | 630.00 | 4,000.00 | | 1,578,537.54 | 3,348,340.88 | | |
| Point 2 | | | 630.00 | -1,260.00 | | 1,573,277.96 | 3,348,415.50 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,671.00 | 4,140.00 | | 1,578,602.33 | 3,343,038.31 | | |
| Point 2 | | | -4,671.00 | -1,118.00 | | 1,573,344.74 | 3,343,112.90 | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,071.00 | 3,540.00 | | 1,578,010.89 | 3,343,646.77 | | |
| Point 2 | | | 30.00 | 3,400.00 | | 1,577,929.08 | 3,347,749.43 | | |
| Shable PC | 0.00 | 0.00 | 6,934.55 | 3,476.08 | -3,410.72 | 1,577,956.34 | 3,344,307.90 | 40° 54' 47.592 N | 104° 15' 15.408 W |
| - actual wellpath misses target center by 69.01ft at 11400.00ft MD (6909.66 TVD, 3450.78 N, -3351.54 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Shable PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,574,528.92 | 3,347,767.67 | 40° 54' 13.248 N | 104° 14' 30.984 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | -4,671.00 | 4,140.00 | | 1,578,602.33 | 3,343,038.31 | | |
| Point 2 | | | 630.00 | 4,000.00 | | 1,578,537.54 | 3,348,340.88 | | |

North Reference Sheet for Sec. 19-T11N-R61W - Shable PC GK19-99HZ - Plan #2

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

Vertical Depths are relative to RKB 16' @ 5142.00ft (Original Well Elev). Northing and Easting are relative to Shable PC GK19-99HZ

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: 1.00002175

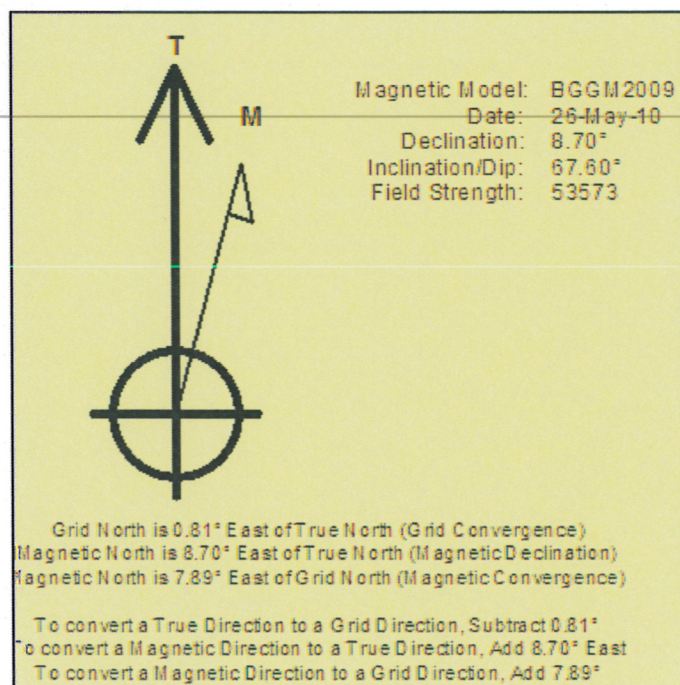
Grid Coordinates of Well: 1,574,528.92 ft N, 3,347,767.67 ft E

Geographical Coordinates of Well: 40° 54' 13.25" N, 104° 14' 30.98" W

Grid Convergence at Surface is: 0.81°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,400.00ft
the Bottom Hole Displacement is 4,810.48ft in the Direction of 315.84° (True).

Magnetic Convergence at surface is: -7.89° (26 May 2010, , BGGM2009)





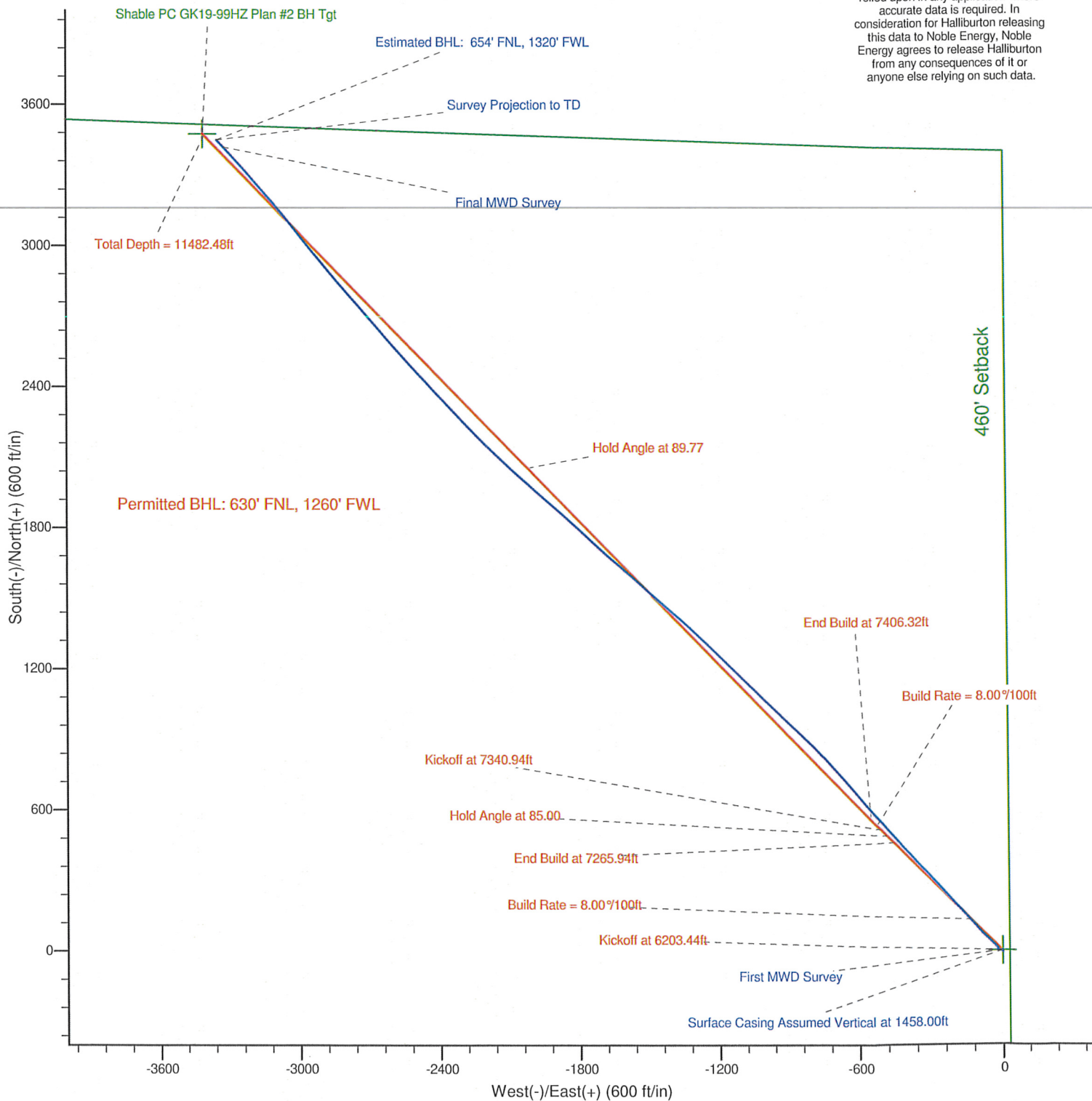
Azimuths to True North
 Magnetic North: 8.70°

Magnetic Field
 Strength: 53572.6snT
 Dip Angle: 67.60°
 Date: 5/26/2010
 Model: BGGM2009

LEGEND

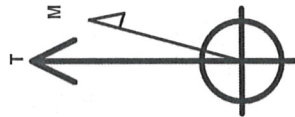
- Shable PC GK19-99HZ, Plan #2, Plan #2 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Shable PC GK19-99HZ 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.



Noble Energy

Project: Weld County, CO
Site: Sec. 19-T11N-R61W
Well: Shable PC GK19-99HZ



Azimuths to True North
Magnetic North: 8.70°
Magnetic Field
Strength: 53572.6snT
Dip Angle: 67.60°
Date: 5/26/2010
Model: BGGM2009

LEGEND

- Shable PC GK19-99HZ, Plan #2, Plan #2 Proposal V0
- MWD Survey

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