

Noble Energy

Weld County, CO (NAD 83)

Sec. 17-T8N-R59W

Castor Federal LG17-62HN

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

13 March, 2013

Well Coordinates: 1,485,617.95 N, 3,413,548.87 E (40° 39' 24.75" N, 104° 00' 33.92" W)

Ground Level: 4,845.00 ft

Local Coordinate Origin:

Centered on Well Castor Federal LG17-62HN

Viewing Datum:

KB=24' @ 4869.00ft (H&P 322)

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Design Report for Castor Federal LG17-62HN - 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 |
| 890.00 | 0.00 | 0.00 | 890.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Surface Casing Assumed Vertical at 890.00ft | | | | | | | |
| 1,011.00 | 0.40 | 214.01 | 1,011.00 | -0.35 | -0.24 | -0.24 | 0.33 |
| First MWD Survey | | | | | | | |
| 1,290.00 | 0.44 | 153.96 | 1,289.99 | -2.12 | -0.31 | -0.31 | 0.15 |
| 1,573.00 | 0.53 | 149.27 | 1,572.98 | -4.22 | 0.84 | 0.83 | 0.03 |
| 1,855.00 | 0.35 | 158.80 | 1,854.97 | -6.15 | 1.81 | 1.80 | 0.07 |
| 2,140.00 | 0.43 | 347.88 | 2,139.97 | -5.91 | 1.90 | 1.89 | 0.27 |
| 2,235.00 | 2.10 | 267.08 | 2,234.95 | -5.65 | 0.09 | 0.08 | 2.18 |
| 2,330.00 | 4.22 | 268.26 | 2,329.80 | -5.85 | -5.14 | -5.15 | 2.23 |
| 2,425.00 | 6.01 | 277.61 | 2,424.42 | -5.29 | -13.57 | -13.58 | 2.07 |
| 2,520.00 | 7.48 | 269.65 | 2,518.76 | -4.67 | -24.68 | -24.69 | 1.83 |
| 2,615.00 | 8.89 | 269.68 | 2,612.79 | -4.75 | -38.21 | -38.21 | 1.48 |
| 2,709.00 | 10.72 | 271.75 | 2,705.41 | -4.53 | -54.21 | -54.22 | 1.98 |
| 2,804.00 | 12.30 | 270.55 | 2,798.50 | -4.16 | -73.16 | -73.17 | 1.68 |
| 2,899.00 | 13.64 | 271.91 | 2,891.07 | -3.69 | -94.47 | -94.48 | 1.45 |
| 2,994.00 | 12.51 | 270.15 | 2,983.61 | -3.29 | -115.96 | -115.96 | 1.26 |
| 3,089.00 | 10.06 | 270.20 | 3,076.77 | -3.23 | -134.55 | -134.55 | 2.58 |
| 3,184.00 | 7.86 | 267.61 | 3,170.60 | -3.47 | -149.34 | -149.34 | 2.35 |
| 3,279.00 | 7.66 | 269.44 | 3,264.73 | -3.81 | -162.16 | -162.16 | 0.33 |
| 3,374.00 | 6.79 | 268.23 | 3,358.98 | -4.04 | -174.10 | -174.11 | 0.93 |
| 3,469.00 | 5.16 | 277.40 | 3,453.46 | -3.66 | -183.95 | -183.96 | 1.98 |
| 3,564.00 | 4.23 | 271.11 | 3,548.14 | -3.05 | -191.69 | -191.70 | 1.12 |
| 3,659.00 | 1.57 | 270.59 | 3,643.01 | -2.97 | -196.50 | -196.50 | 2.80 |
| 3,754.00 | 1.15 | 87.40 | 3,738.00 | -2.91 | -196.85 | -196.85 | 2.86 |
| 3,849.00 | 0.89 | 90.01 | 3,832.99 | -2.87 | -195.16 | -195.16 | 0.28 |
| 4,039.00 | 0.85 | 62.38 | 4,022.97 | -2.21 | -192.43 | -192.44 | 0.22 |
| 4,229.00 | 1.00 | 171.48 | 4,212.95 | -3.20 | -190.94 | -190.94 | 0.79 |
| 4,419.00 | 2.09 | 149.84 | 4,402.88 | -7.83 | -188.95 | -188.97 | 0.64 |
| 4,514.00 | 1.51 | 112.01 | 4,497.84 | -9.80 | -186.92 | -186.94 | 1.36 |
| 4,609.00 | 1.77 | 130.11 | 4,592.80 | -11.22 | -184.64 | -184.66 | 0.61 |
| 4,704.00 | 2.30 | 119.42 | 4,687.74 | -13.10 | -181.86 | -181.88 | 0.68 |
| 4,799.00 | 1.46 | 74.09 | 4,782.69 | -13.70 | -179.03 | -179.06 | 1.73 |
| 4,894.00 | 1.03 | 96.45 | 4,877.67 | -13.47 | -177.02 | -177.04 | 0.67 |
| 4,989.00 | 1.03 | 72.70 | 4,972.65 | -13.31 | -175.36 | -175.38 | 0.45 |
| 5,178.00 | 1.20 | 49.66 | 5,161.62 | -11.52 | -172.23 | -172.25 | 0.25 |
| 5,273.00 | 0.92 | 42.54 | 5,256.60 | -10.32 | -170.95 | -170.97 | 0.33 |
| 5,409.00 | 3.49 | 79.55 | 5,392.50 | -8.76 | -166.14 | -166.16 | 2.07 |
| 5,456.00 | 8.59 | 89.52 | 5,439.22 | -8.47 | -161.22 | -161.24 | 11.04 |
| 5,503.00 | 12.70 | 91.23 | 5,485.40 | -8.55 | -152.54 | -152.56 | 8.77 |
| 5,551.00 | 15.69 | 90.83 | 5,531.93 | -8.76 | -140.78 | -140.79 | 6.23 |
| 5,598.00 | 19.21 | 87.41 | 5,576.76 | -8.50 | -126.69 | -126.71 | 7.80 |
| 5,646.00 | 22.32 | 86.28 | 5,621.64 | -7.55 | -109.70 | -109.72 | 6.53 |
| 5,693.00 | 25.07 | 85.40 | 5,664.67 | -6.18 | -90.87 | -90.88 | 5.90 |
| 5,741.00 | 28.43 | 87.08 | 5,707.53 | -4.78 | -69.31 | -69.32 | 7.17 |
| 5,788.00 | 32.21 | 88.83 | 5,748.09 | -3.95 | -45.61 | -45.61 | 8.26 |
| 5,836.00 | 35.88 | 88.54 | 5,787.86 | -3.33 | -18.75 | -18.75 | 7.65 |
| 5,883.00 | 39.87 | 88.19 | 5,824.95 | -2.51 | 10.09 | 10.09 | 8.50 |
| 5,930.00 | 44.68 | 86.88 | 5,859.72 | -1.13 | 41.67 | 41.66 | 10.40 |

Design Report for Castor Federal LG17-62HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 5,977.00 | 48.60 | 87.11 | 5,891.98 | 0.66 | 75.78 | 75.79 | 8.35 |
| 6,025.00 | 51.30 | 87.63 | 5,922.87 | 2.34 | 112.49 | 112.49 | 5.69 |
| 6,072.00 | 54.60 | 90.54 | 5,951.18 | 2.92 | 149.98 | 149.98 | 8.58 |
| 6,121.00 | 59.46 | 90.10 | 5,977.84 | 2.69 | 191.08 | 191.08 | 9.95 |
| 6,168.00 | 64.20 | 88.49 | 6,000.02 | 3.22 | 232.49 | 232.50 | 10.53 |
| 6,215.00 | 66.49 | 89.86 | 6,019.63 | 3.83 | 275.20 | 275.20 | 5.55 |
| 6,262.00 | 68.61 | 90.05 | 6,037.58 | 3.86 | 318.63 | 318.64 | 4.53 |
| 6,310.00 | 72.48 | 90.05 | 6,053.56 | 3.82 | 363.88 | 363.89 | 8.06 |
| 6,357.00 | 75.62 | 89.04 | 6,066.48 | 4.18 | 409.07 | 409.07 | 6.99 |
| 6,405.00 | 79.13 | 87.70 | 6,076.97 | 5.52 | 455.88 | 455.89 | 7.80 |
| 6,418.00 | 80.09 | 87.45 | 6,079.31 | 6.06 | 468.65 | 468.66 | 7.62 |
| 6,475.00 | 81.95 | 87.13 | 6,088.21 | 8.72 | 524.89 | 524.90 | 3.31 |
| Estimated 7" Casing Point: 668' FSL, 774' FWL (Not a Survey Point) | | | | | | | |
| 6,519.00 | 83.39 | 86.89 | 6,093.82 | 11.00 | 568.47 | 568.49 | 3.31 |
| 6,566.00 | 83.23 | 86.27 | 6,099.29 | 13.78 | 615.07 | 615.09 | 1.35 |
| 6,661.00 | 86.39 | 87.41 | 6,107.89 | 18.99 | 709.52 | 709.55 | 3.53 |
| 6,756.00 | 88.80 | 88.61 | 6,111.87 | 22.29 | 804.37 | 804.41 | 2.83 |
| 6,851.00 | 90.18 | 90.13 | 6,112.72 | 23.33 | 899.36 | 899.40 | 2.16 |
| 6,946.00 | 91.02 | 91.77 | 6,111.72 | 21.76 | 994.33 | 994.37 | 1.94 |
| 7,041.00 | 91.02 | 92.58 | 6,110.03 | 18.15 | 1,089.25 | 1,089.28 | 0.85 |
| 7,136.00 | 90.83 | 91.94 | 6,108.50 | 14.41 | 1,184.16 | 1,184.19 | 0.70 |
| 7,231.00 | 89.01 | 90.58 | 6,108.63 | 12.32 | 1,279.13 | 1,279.15 | 2.39 |
| 7,326.00 | 90.89 | 90.10 | 6,108.71 | 11.75 | 1,374.13 | 1,374.15 | 2.04 |
| 7,421.00 | 89.48 | 88.32 | 6,108.41 | 13.06 | 1,469.11 | 1,469.13 | 2.39 |
| 7,516.00 | 89.94 | 95.04 | 6,108.89 | 10.28 | 1,564.01 | 1,564.03 | 7.09 |
| 7,611.00 | 90.65 | 100.51 | 6,108.40 | -2.57 | 1,658.10 | 1,658.10 | 5.81 |
| 7,706.00 | 90.83 | 100.78 | 6,107.17 | -20.11 | 1,751.46 | 1,751.42 | 0.34 |
| 7,801.00 | 90.92 | 94.90 | 6,105.72 | -33.06 | 1,845.52 | 1,845.46 | 6.19 |
| 7,896.00 | 90.53 | 83.78 | 6,104.51 | -31.97 | 1,940.36 | 1,940.30 | 11.71 |
| 7,991.00 | 90.77 | 86.20 | 6,103.44 | -23.68 | 2,034.98 | 2,034.94 | 2.56 |
| 8,086.00 | 90.65 | 88.45 | 6,102.26 | -19.24 | 2,129.86 | 2,129.83 | 2.37 |
| 8,181.00 | 89.57 | 86.82 | 6,102.08 | -15.32 | 2,224.78 | 2,224.75 | 2.06 |
| 8,276.00 | 91.08 | 86.94 | 6,101.54 | -10.15 | 2,319.63 | 2,319.61 | 1.59 |
| 8,371.00 | 92.52 | 87.38 | 6,098.55 | -5.45 | 2,414.47 | 2,414.45 | 1.58 |
| 8,465.00 | 91.11 | 86.28 | 6,095.58 | -0.25 | 2,508.27 | 2,508.27 | 1.90 |
| 8,560.00 | 90.59 | 86.95 | 6,094.17 | 5.36 | 2,603.10 | 2,603.10 | 0.89 |
| 8,655.00 | 89.54 | 87.87 | 6,094.06 | 9.65 | 2,698.00 | 2,698.01 | 1.47 |
| 8,750.00 | 88.86 | 88.59 | 6,095.39 | 12.58 | 2,792.94 | 2,792.96 | 1.04 |
| 8,845.00 | 92.13 | 88.68 | 6,094.57 | 14.85 | 2,887.90 | 2,887.92 | 3.44 |
| 8,940.00 | 88.70 | 89.40 | 6,093.88 | 16.44 | 2,982.87 | 2,982.89 | 3.69 |
| 9,035.00 | 86.73 | 88.66 | 6,097.67 | 18.04 | 3,077.77 | 3,077.80 | 2.21 |
| 9,129.00 | 86.73 | 88.37 | 6,103.03 | 20.48 | 3,171.59 | 3,171.62 | 0.31 |
| 9,224.00 | 88.03 | 88.33 | 6,107.37 | 23.21 | 3,266.45 | 3,266.48 | 1.37 |
| 9,319.00 | 90.15 | 89.73 | 6,108.88 | 24.82 | 3,361.41 | 3,361.45 | 2.67 |
| 9,414.00 | 90.22 | 89.04 | 6,108.57 | 25.84 | 3,456.41 | 3,456.45 | 0.73 |
| 9,509.00 | 90.52 | 89.33 | 6,107.96 | 27.19 | 3,551.39 | 3,551.44 | 0.44 |
| 9,604.00 | 90.61 | 89.02 | 6,107.02 | 28.55 | 3,646.38 | 3,646.42 | 0.34 |
| 9,699.00 | 91.20 | 90.96 | 6,105.52 | 28.57 | 3,741.36 | 3,741.41 | 2.13 |
| 9,794.00 | 92.22 | 91.44 | 6,102.69 | 26.58 | 3,836.30 | 3,836.34 | 1.19 |
| 9,889.00 | 88.83 | 89.34 | 6,101.82 | 25.94 | 3,931.27 | 3,931.31 | 4.20 |
| 9,984.00 | 90.28 | 89.59 | 6,102.55 | 26.82 | 4,026.26 | 4,026.30 | 1.55 |

Design Report for Castor Federal LG17-62HN - MWD Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|
| 10,079.00 | 90.83 | 89.01 | 6,101.63 | 27.98 | 4,121.25 | 4,121.29 | 0.84 |
| 10,173.00 | 91.05 | 88.04 | 6,100.09 | 30.40 | 4,215.21 | 4,215.25 | 1.06 |
| 10,269.00 | 91.36 | 89.28 | 6,098.07 | 32.65 | 4,311.16 | 4,311.21 | 1.33 |
| 10,287.00 | 90.96 | 88.39 | 6,097.71 | 33.01 | 4,329.15 | 4,329.20 | 5.42 |
| Final MWD Survey | | | | | | | |
| 10,357.00 | 90.96 | 88.39 | 6,096.54 | 34.98 | 4,399.11 | 4,399.17 | 0.00 |
| Survey Projection to TD - Estimated BHL: 688' FSL, 660' FEL | | | | | | | |

Design Annotations

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | Comment |
|---------------------|---------------------|-------------------|------------|--|
| | | +N/-S (ft) | +E/-W (ft) | |
| 890.00 | 890.00 | 0.00 | 0.00 | Surface Casing Assumed Vertical at 890.00ft |
| 1,011.00 | 1,011.00 | -0.35 | -0.24 | First MWD Survey |
| 6,475.00 | 6,088.21 | 8.72 | 524.89 | Estimated 7" Casing Point: 668' FSL, 774' FWL (Not a Survey Point) |
| 10,287.00 | 6,097.71 | 33.01 | 4,329.15 | Final MWD Survey |
| 10,357.00 | 6,096.54 | 34.98 | 4,399.11 | Survey Projection to TD |
| 10,357.00 | 6,096.54 | 34.98 | 4,399.11 | Estimated BHL: 688' FSL, 660' FEL |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin +N/-S (ft) | Origin +E/-W (ft) | Start TVD (ft) |
|------------|--|-------------|-------------|-------------------|-------------------|----------------|
| Target | Castor Federal LG17-62HN_PlanA - Rev0_BH L Tgt | 89.90 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (ft) | To (ft) | Survey/Plan | Survey Tool |
|-----------|-----------|--------------------|-------------|
| 890.00 | 10,357.00 | Sperry MWD Surveys | MWD |

Casing Details

| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (") | Hole Diameter (") |
|---------------------|---------------------|--------|---------------------|-------------------|
| 6,475.00 | 6,088.21 | 7" Csg | 7 | 8-3/4 |

Design Report for Castor Federal LG17-62HN - 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 |
|--|---------------------|--------------------|-------------|---------------|---------------|------------------|-----------------|------------------|-------------------|
| Castor Federal | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,485,617.95 | 3,413,548.87 | 40° 39' 24.750 N | 104° 0' 33.919 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | | -249.00 | -661.00 | 1,484,956.96 | 3,413,299.88 | | |
| Point 2 | | | | -253.00 | 4,693.00 | 1,490,310.87 | 3,413,295.88 | | |
| Point 3 | | | | 5,038.00 | 4,753.00 | 1,490,370.87 | 3,418,586.78 | | |
| Point 4 | | | | 5,061.00 | -651.00 | 1,484,966.96 | 3,418,609.78 | | |
| Point 5 | | | | -249.00 | -661.00 | 1,484,956.96 | 3,413,299.88 | | |
| Castor Federal | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,485,617.95 | 3,413,548.87 | 40° 39' 24.750 N | 104° 0' 33.919 W |
| - actual wellpath hits target center | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | | 351.00 | -61.00 | 1,485,556.95 | 3,413,899.87 | | |
| Point 2 | | | | 347.00 | 4,093.00 | 1,489,710.88 | 3,413,895.87 | | |
| Point 3 | | | | 4,438.00 | 4,153.00 | 1,489,770.88 | 3,417,986.79 | | |
| Point 4 | | | | 4,461.00 | -51.00 | 1,485,566.95 | 3,418,009.79 | | |
| Point 5 | | | | 351.00 | -61.00 | 1,485,556.95 | 3,413,899.87 | | |
| Castor Federal | 0.00 | 0.00 | 6,070.29 | 7.67 | 4,399.08 | 1,485,625.62 | 3,417,947.87 | 40° 39' 24.091 N | 103° 59' 36.848 W |
| - actual wellpath misses target center by 37.88ft at 10356.64ft MD (6096.54 TVD, 34.97 N, 4398.75 E) | | | | | | | | | |
| - Point | | | | | | | | | |

North Reference Sheet for Sec. 17-T8N-R59W - Castor Federal LG17-62HN

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

Vertical Depths are relative to KB=24' @ 4869.00ft (H&P 322). Northing and Easting are relative to Castor Federal LG17-62HN

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: 0.99998192

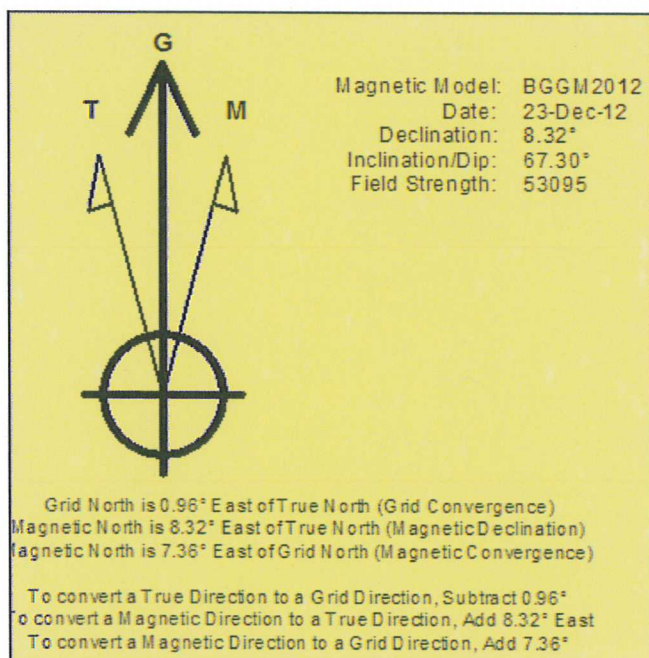
Grid Coordinates of Well: 1,485,617.95 ft N, 3,413,548.87 ft E

Geographical Coordinates of Well: 40° 39' 24.75" N, 104° 00' 33.92" W

Grid Convergence at Surface is: 0.96°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,357.00ft
the Bottom Hole Displacement is 4,399.25ft in the Direction of 89.54° (Grid).

Magnetic Convergence at surface is: -7.36° (23 December 2012, , BGGM2012)

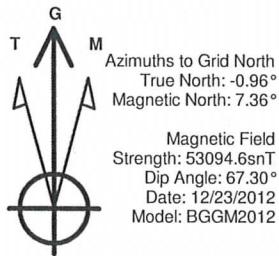


Project: Weld County, CO (NAD 83)
 Site: Sec. 17-T8N-R59W
 Well: Castor Federal LG17-62HN

Noble Energy

HALLIBURTON

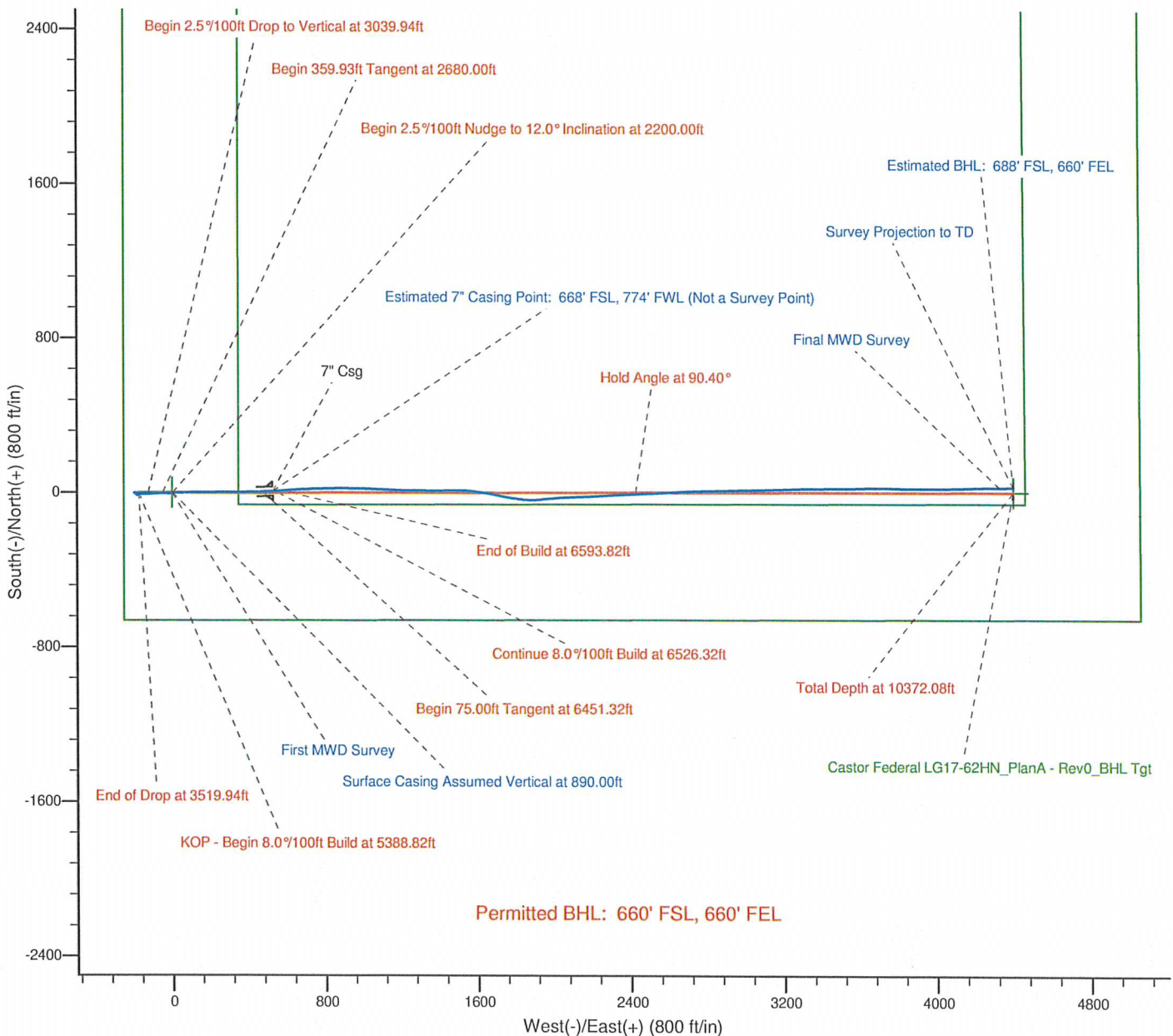
Sperry Drilling



LEGEND

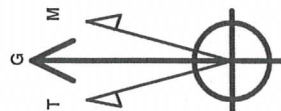
- Castor Federal LG17-62HN, Plan A, Plan A - Rev 0 Proposal \
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Castor Federal LG17-62HN 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 (NAD 83)
 Site: Sec. 17-T8N-R59W
 Well: Castor Federal LG17-62HN



Azimuths to Grid North
 True North: -0.96°
 Magnetic North: 7.36°
 Magnetic Field
 Strength: 53094.6snT
 Dip Angle: 67.30°
 Date: 12/23/2012
 Model: BGGM2012

LEGEND

— Castor Federal LG17-62HN, Plan A, Plan A - Rev 0 Proposal V0
 — MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Castor Federal LG17-62HN 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.

