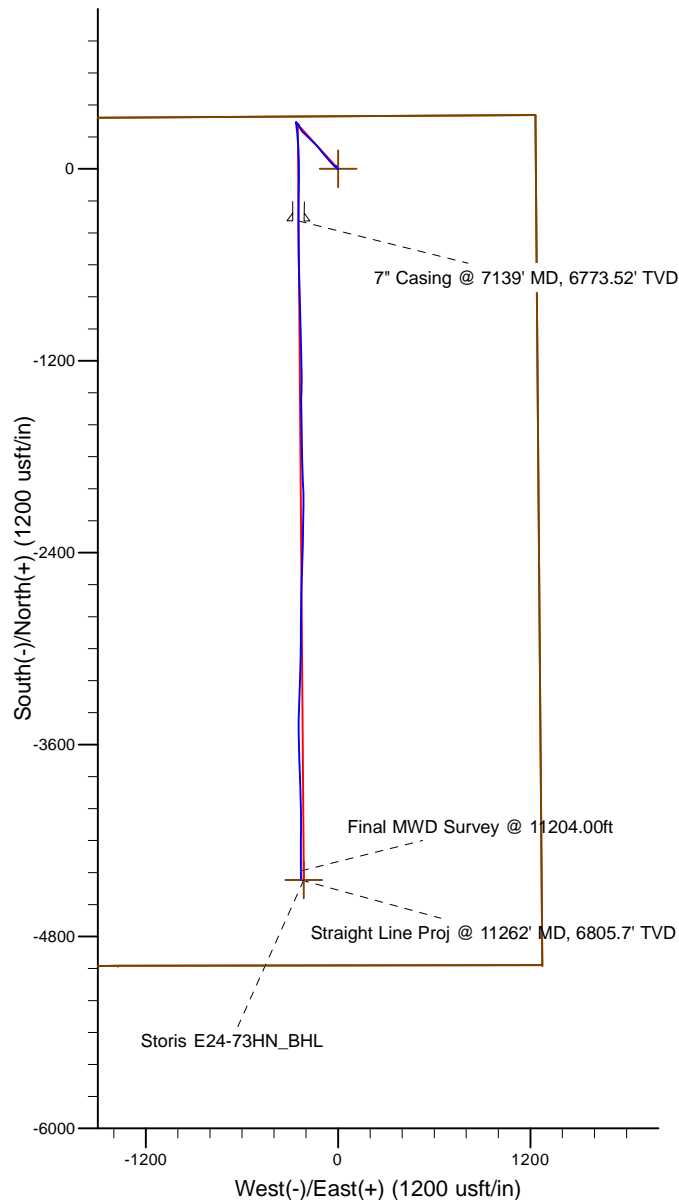


Project: Weld County, CO (NAD 83)  
 Site: Sec. 24-T6N-R65W (Storis/Mackinaw Pad)  
 Well: Storis E24-73HN  
 Wellbore: Plan A  
 Design: Final Surveys

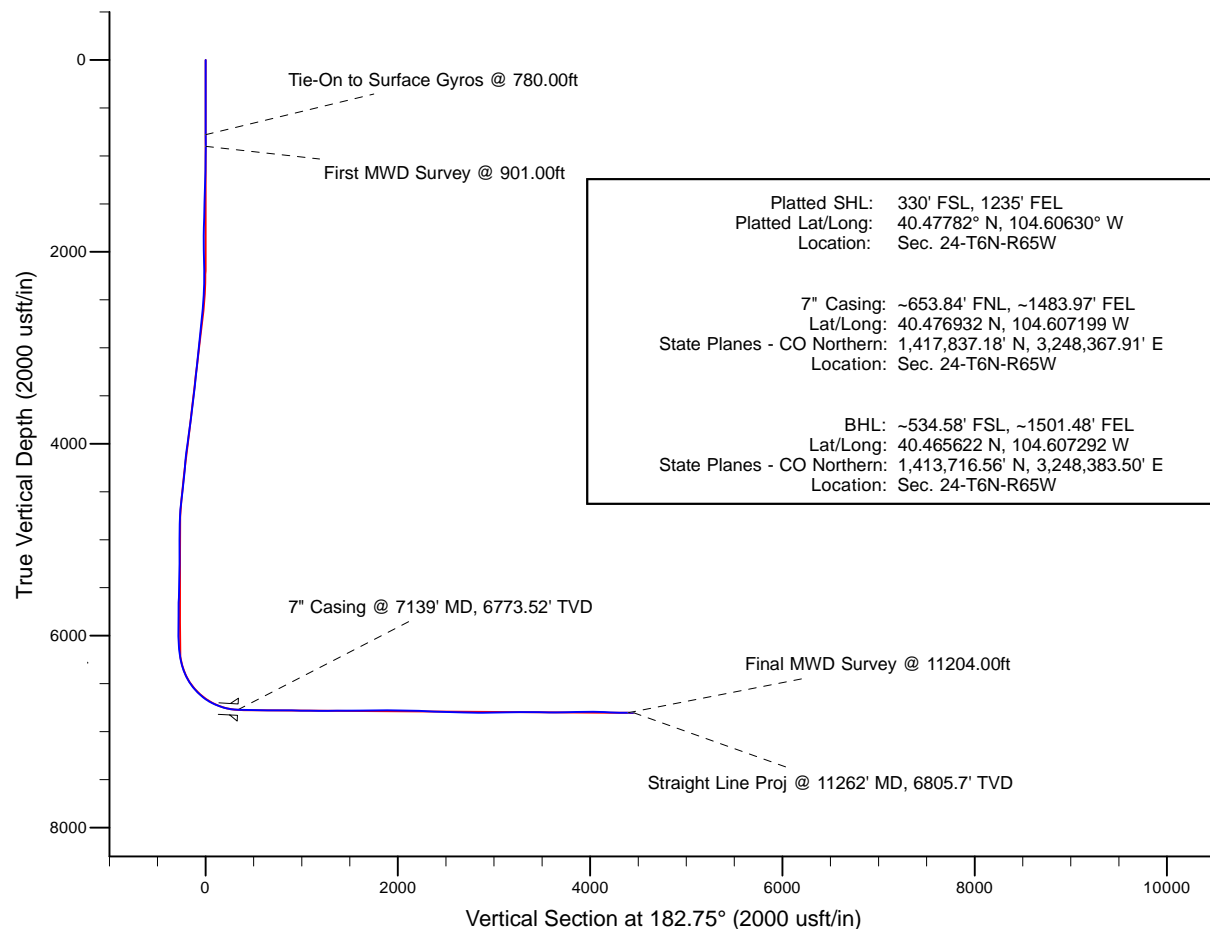
# Noble Energy

**HALLIBURTON**  
 Sperry Drilling



**LEGEND**

△ Storis E24-73HN, Plan A, Rev A0 - PROPOSAL V0  
 □ Final Surveys



Platted SHL: 330' FSL, 1235' FEL  
 Platted Lat/Long: 40.47782° N, 104.60630° W  
 Location: Sec. 24-T6N-R65W

7" Casing: ~653.84' FNL, ~1483.97' FEL  
 Lat/Long: 40.476932 N, 104.607199 W  
 State Planes - CO Northern: 1,417,837.18' N, 3,248,367.91' E  
 Location: Sec. 24-T6N-R65W

BHL: ~534.58' FSL, ~1501.48' FEL  
 Lat/Long: 40.465622 N, 104.607292 W  
 State Planes - CO Northern: 1,413,716.56' N, 3,248,383.50' E  
 Location: Sec. 24-T6N-R65W

|                                  |               |
|----------------------------------|---------------|
| WELL DETAILS: Storis E24-73HN    |               |
| Ground Level:                    | 4684.00       |
| RKB=24ft @ 4708.00usft (H&P 315) |               |
| Created By:                      | Fred Hartmann |
| Created On:                      | 05/14/2014    |

# Noble Energy

Weld County, CO (NAD 83)

Sec. 24-T6N-R65W (Storis/Mackinaw Pad)

Storis E24-73HN

Design: Final Surveys

## Sperry Drilling Services

### Final Survey Report

14 May, 2014

Well Coordinates: 1,418,163.05 N, 3,248,614.78 E (40° 28' 40.15" N, 104° 36' 22.68" W)

Ground Level: 4,684.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Storis E24-73HN

RKB=24ft @ 4708.00usft (H&P 315)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

**Design Report for Storis E24-73HN - Final Surveys**

| Measured Depth (usft)                     | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|---|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 0.00                                      | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    |
| 267.00                                    | 0.40            | 182.26      | 267.00                | -0.93        | -0.04        | 0.93                    | 0.15                    |
| 513.00                                    | 0.40            | 56.06       | 513.00                | -1.31        | 0.64         | 1.28                    | 0.29                    |
| 780.00                                    | 0.90            | 248.56      | 779.99                | -1.56        | -0.54        | 1.58                    | 0.48                    |
| <b>Tie-On to Surface Gyros @ 780.00ft</b> |                 |             |                       |              |              |                         |                         |
| 901.00                                    | 0.66            | 246.09      | 900.98                | -2.19        | -2.06        | 2.28                    | 0.20                    |
| <b>First MWD Survey @ 901.00ft</b>        |                 |             |                       |              |              |                         |                         |
| 993.00                                    | 1.49            | 309.03      | 992.96                | -1.65        | -3.47        | 1.81                    | 1.44                    |
| 1,086.00                                  | 1.62            | 311.90      | 1,085.93              | -0.01        | -5.39        | 0.27                    | 0.16                    |
| 1,179.00                                  | 1.39            | 338.15      | 1,178.90              | 1.92         | -6.79        | -1.59                   | 0.77                    |
| 1,273.00                                  | 1.60            | 344.27      | 1,272.86              | 4.24         | -7.57        | -3.87                   | 0.28                    |
| 1,365.00                                  | 1.54            | 346.73      | 1,364.83              | 6.68         | -8.20        | -6.28                   | 0.10                    |
| 1,457.00                                  | 1.60            | 344.53      | 1,456.79              | 9.12         | -8.83        | -8.68                   | 0.09                    |
| 1,552.00                                  | 1.58            | 342.69      | 1,551.76              | 11.65        | -9.57        | -11.17                  | 0.06                    |
| 1,647.00                                  | 1.52            | 357.25      | 1,646.72              | 14.16        | -10.02       | -13.66                  | 0.42                    |
| 1,742.00                                  | 1.41            | 358.39      | 1,741.69              | 16.58        | -10.11       | -16.08                  | 0.12                    |
| 1,837.00                                  | 1.17            | 341.64      | 1,836.67              | 18.67        | -10.45       | -18.15                  | 0.47                    |
| 1,932.00                                  | 1.37            | 217.64      | 1,931.66              | 18.69        | -11.45       | -18.12                  | 2.36                    |
| 2,027.00                                  | 1.58            | 219.42      | 2,026.63              | 16.78        | -12.98       | -16.14                  | 0.23                    |
| 2,122.00                                  | 1.70            | 220.45      | 2,121.59              | 14.70        | -14.72       | -13.97                  | 0.13                    |
| 2,217.00                                  | 1.69            | 264.69      | 2,216.55              | 13.50        | -17.03       | -12.66                  | 1.34                    |
| 2,312.00                                  | 2.28            | 299.87      | 2,311.50              | 14.31        | -20.06       | -13.33                  | 1.39                    |
| 2,407.00                                  | 3.73            | 313.69      | 2,406.36              | 17.38        | -23.94       | -16.21                  | 1.70                    |
| 2,501.00                                  | 5.46            | 318.94      | 2,500.06              | 22.87        | -29.09       | -21.44                  | 1.89                    |
| 2,596.00                                  | 5.98            | 320.93      | 2,594.58              | 30.12        | -35.17       | -28.39                  | 0.59                    |
| 2,691.00                                  | 7.11            | 314.08      | 2,688.97              | 38.05        | -42.52       | -35.96                  | 1.44                    |
| 2,786.00                                  | 7.98            | 321.96      | 2,783.14              | 47.33        | -50.80       | -44.84                  | 1.42                    |
| 2,881.00                                  | 8.96            | 318.38      | 2,877.11              | 58.06        | -59.78       | -55.12                  | 1.17                    |
| 2,976.00                                  | 9.09            | 319.88      | 2,970.93              | 69.33        | -69.53       | -65.91                  | 0.28                    |
| 3,071.00                                  | 9.94            | 320.36      | 3,064.62              | 81.38        | -79.60       | -77.46                  | 0.90                    |
| 3,166.00                                  | 7.12            | 320.68      | 3,158.56              | 92.25        | -88.56       | -87.89                  | 2.97                    |
| 3,261.00                                  | 8.04            | 313.87      | 3,252.73              | 101.41       | -97.08       | -96.63                  | 1.35                    |
| 3,356.00                                  | 7.29            | 322.48      | 3,346.89              | 110.80       | -105.54      | -105.60                 | 1.44                    |
| 3,451.00                                  | 8.02            | 324.88      | 3,441.04              | 121.00       | -113.03      | -115.43                 | 0.84                    |
| 3,546.00                                  | 8.53            | 319.87      | 3,535.05              | 131.80       | -121.38      | -125.82                 | 0.93                    |
| 3,641.00                                  | 10.01           | 315.66      | 3,628.81              | 143.10       | -131.69      | -136.60                 | 1.71                    |
| 3,736.00                                  | 11.06           | 314.93      | 3,722.21              | 155.44       | -143.91      | -148.34                 | 1.11                    |
| 3,831.00                                  | 11.69           | 315.66      | 3,815.34              | 168.76       | -157.09      | -161.01                 | 0.68                    |
| 3,926.00                                  | 11.92           | 315.15      | 3,908.33              | 182.60       | -170.74      | -174.18                 | 0.27                    |
| 4,020.00                                  | 11.34           | 314.87      | 4,000.40              | 196.00       | -184.13      | -186.92                 | 0.62                    |
| 4,115.00                                  | 9.78            | 312.54      | 4,093.79              | 208.04       | -196.70      | -198.35                 | 1.70                    |
| 4,210.00                                  | 8.97            | 311.17      | 4,187.52              | 218.37       | -208.22      | -208.12                 | 0.88                    |
| 4,305.00                                  | 8.29            | 316.70      | 4,281.45              | 228.23       | -218.49      | -217.47                 | 1.13                    |
| 4,400.00                                  | 7.75            | 324.23      | 4,375.52              | 238.42       | -226.93      | -227.24                 | 1.24                    |
| 4,495.00                                  | 7.51            | 329.46      | 4,469.68              | 248.96       | -233.83      | -237.44                 | 0.77                    |
| 4,590.00                                  | 7.34            | 331.26      | 4,563.88              | 259.63       | -239.90      | -247.80                 | 0.30                    |
| 4,685.00                                  | 5.60            | 342.11      | 4,658.28              | 269.36       | -244.25      | -257.31                 | 2.23                    |
| 4,780.00                                  | 3.54            | 339.88      | 4,752.97              | 276.53       | -246.68      | -264.35                 | 2.18                    |
| 4,875.00                                  | 1.30            | 336.70      | 4,847.88              | 280.27       | -248.12      | -268.02                 | 2.36                    |
| 4,970.00                                  | 1.32            | 269.66      | 4,942.86              | 281.26       | -249.64      | -268.93                 | 1.52                    |

## Design Report for Storis E24-73HN - Final Surveys

| Measured Depth (usft)                     | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|---|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 5,064.00                                  | 1.22            | 279.71      | 5,036.84              | 281.42       | -251.71      | -269.00                 | 0.26                    |
| 5,159.00                                  | 1.15            | 305.90      | 5,131.82              | 282.15       | -253.47      | -269.64                 | 0.57                    |
| 5,349.00                                  | 1.20            | 311.82      | 5,321.78              | 284.59       | -256.50      | -271.94                 | 0.07                    |
| 5,444.00                                  | 1.26            | 310.01      | 5,416.76              | 285.93       | -258.04      | -273.19                 | 0.08                    |
| 5,539.00                                  | 1.45            | 318.60      | 5,511.73              | 287.50       | -259.64      | -274.69                 | 0.29                    |
| 5,634.00                                  | 2.16            | 332.27      | 5,606.68              | 289.99       | -261.27      | -277.09                 | 0.87                    |
| 5,729.00                                  | 0.92            | 318.43      | 5,701.65              | 292.14       | -262.60      | -279.18                 | 1.35                    |
| 5,824.00                                  | 0.70            | 128.53      | 5,796.64              | 292.35       | -262.66      | -279.39                 | 1.70                    |
| 5,919.00                                  | 0.44            | 156.77      | 5,891.64              | 291.65       | -262.06      | -278.72                 | 0.40                    |
| 6,078.00                                  | 0.34            | 273.46      | 6,050.64              | 291.12       | -262.29      | -278.18                 | 0.42                    |
| 6,113.00                                  | 0.36            | 269.79      | 6,085.64              | 291.13       | -262.50      | -278.18                 | 0.09                    |
| 6,246.00                                  | 10.35           | 170.60      | 6,217.92              | 279.31       | -260.96      | -266.44                 | 7.83                    |
| 6,293.00                                  | 13.68           | 173.07      | 6,263.88              | 269.62       | -259.60      | -256.83                 | 7.17                    |
| 6,341.00                                  | 15.26           | 172.34      | 6,310.36              | 257.73       | -258.08      | -245.02                 | 3.31                    |
| 6,388.00                                  | 20.05           | 173.57      | 6,355.13              | 243.58       | -256.35      | -230.98                 | 10.22                   |
| 6,436.00                                  | 24.98           | 175.29      | 6,399.46              | 225.29       | -254.59      | -212.80                 | 10.36                   |
| 6,483.00                                  | 29.12           | 175.63      | 6,441.31              | 203.99       | -252.91      | -191.60                 | 8.81                    |
| 6,531.00                                  | 33.00           | 175.35      | 6,482.42              | 179.31       | -250.96      | -167.04                 | 8.09                    |
| 6,578.00                                  | 35.42           | 178.17      | 6,521.29              | 152.93       | -249.48      | -140.76                 | 6.15                    |
| 6,626.00                                  | 38.66           | 177.90      | 6,559.60              | 124.04       | -248.49      | -111.95                 | 6.76                    |
| 6,673.00                                  | 44.06           | 176.72      | 6,594.86              | 93.03        | -247.02      | -81.05                  | 11.61                   |
| 6,721.00                                  | 50.43           | 178.30      | 6,627.43              | 57.84        | -245.51      | -45.97                  | 13.49                   |
| 6,768.00                                  | 54.47           | 178.97      | 6,656.07              | 20.59        | -244.63      | -8.81                   | 8.67                    |
| 6,816.00                                  | 59.66           | 178.74      | 6,682.16              | -19.67       | -243.82      | 31.37                   | 10.82                   |
| 6,863.00                                  | 63.43           | 181.25      | 6,704.55              | -60.98       | -243.84      | 72.63                   | 9.29                    |
| 6,911.00                                  | 66.75           | 182.50      | 6,724.76              | -104.49      | -245.27      | 116.15                  | 7.31                    |
| 6,958.00                                  | 71.05           | 180.66      | 6,741.68              | -148.31      | -246.46      | 159.98                  | 9.85                    |
| 7,006.00                                  | 76.19           | 178.98      | 6,755.21              | -194.34      | -246.31      | 205.95                  | 11.22                   |
| 7,053.00                                  | 80.78           | 180.54      | 6,764.59              | -240.38      | -246.12      | 251.93                  | 10.29                   |
| 7,092.00                                  | 84.10           | 180.51      | 6,769.72              | -279.03      | -246.48      | 290.56                  | 8.51                    |
| 7,139.00                                  | 86.65           | 180.47      | 6,773.52              | -325.87      | -246.88      | 337.36                  | 5.42                    |
| <b>7" Casing @ 7139' MD, 6773.52' TVD</b> |                 |             |                       |              |              |                         |                         |
| 7,194.00                                  | 89.63           | 180.43      | 6,775.30              | -380.84      | -247.31      | 392.28                  | 5.42                    |
| 7,321.00                                  | 89.72           | 178.92      | 6,776.02              | -507.83      | -246.59      | 519.09                  | 1.19                    |
| 7,416.00                                  | 89.51           | 179.36      | 6,776.66              | -602.82      | -245.17      | 613.90                  | 0.51                    |
| 7,510.00                                  | 88.67           | 178.78      | 6,778.15              | -696.79      | -243.64      | 707.69                  | 1.09                    |
| 7,605.00                                  | 90.59           | 177.83      | 6,778.77              | -791.74      | -240.83      | 802.40                  | 2.25                    |
| 7,700.00                                  | 88.09           | 178.55      | 6,779.86              | -886.68      | -237.83      | 897.09                  | 2.74                    |
| 7,795.00                                  | 89.01           | 177.71      | 6,782.26              | -981.60      | -234.73      | 991.74                  | 1.31                    |
| 7,890.00                                  | 89.04           | 178.16      | 6,783.88              | -1,076.52    | -231.31      | 1,086.39                | 0.47                    |
| 7,985.00                                  | 90.68           | 179.02      | 6,784.11              | -1,171.49    | -228.97      | 1,181.14                | 1.95                    |
| 8,079.00                                  | 89.45           | 179.55      | 6,784.01              | -1,265.48    | -227.80      | 1,274.96                | 1.42                    |
| 8,174.00                                  | 91.11           | 181.26      | 6,783.54              | -1,360.47    | -228.47      | 1,369.88                | 2.51                    |
| 8,269.00                                  | 88.74           | 179.87      | 6,783.67              | -1,455.45    | -229.41      | 1,464.80                | 2.89                    |
| 8,364.00                                  | 90.86           | 179.52      | 6,784.00              | -1,550.45    | -228.90      | 1,559.66                | 2.26                    |
| 8,458.00                                  | 92.19           | 179.32      | 6,781.50              | -1,644.41    | -227.95      | 1,653.46                | 1.43                    |
| 8,553.00                                  | 90.65           | 178.60      | 6,779.14              | -1,739.36    | -226.23      | 1,748.22                | 1.79                    |
| 8,648.00                                  | 90.52           | 177.98      | 6,778.17              | -1,834.31    | -223.39      | 1,842.93                | 0.67                    |
| 8,743.00                                  | 89.23           | 177.78      | 6,778.38              | -1,929.24    | -219.88      | 1,937.58                | 1.37                    |
| 8,838.00                                  | 88.67           | 178.97      | 6,780.12              | -2,024.19    | -217.18      | 2,032.29                | 1.38                    |
| 8,933.00                                  | 88.12           | 180.48      | 6,782.78              | -2,119.15    | -216.73      | 2,127.11                | 1.69                    |

## Design Report for Storis E24-73HN - Final Surveys

| Measured Depth (usft)                              | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 9,028.00   | 88.18           | 180.29      | 6,785.85              | -2,214.09    | -217.36      | 2,221.98                | 0.21                    |
| 9,122.00   | 87.78           | 181.90      | 6,789.16              | -2,308.02    | -219.16      | 2,315.88                | 1.76                    |
| 9,217.00   | 87.23           | 182.05      | 6,793.30              | -2,402.87    | -222.43      | 2,410.78                | 0.60                    |
| 9,312.00   | 88.37           | 181.19      | 6,796.94              | -2,497.76    | -225.11      | 2,505.69                | 1.50                    |
| 9,407.00   | 89.23           | 181.59      | 6,798.93              | -2,592.71    | -227.42      | 2,600.64                | 1.00                    |
| 9,502.00   | 88.34           | 181.28      | 6,800.95              | -2,687.66    | -229.80      | 2,695.59                | 0.99                    |
| 9,597.00   | 88.67           | 180.33      | 6,803.43              | -2,782.61    | -231.13      | 2,790.51                | 1.06                    |
| 9,692.00   | 89.97           | 180.58      | 6,804.55              | -2,877.60    | -231.89      | 2,885.42                | 1.39                    |
| 9,786.00   | 91.02           | 180.27      | 6,803.74              | -2,971.59    | -232.58      | 2,979.34                | 1.16                    |
| 9,881.00   | 92.59           | 181.85      | 6,800.75              | -3,066.52    | -234.34      | 3,074.24                | 2.34                    |
| 9,976.00   | 90.46           | 181.04      | 6,798.22              | -3,161.45    | -236.73      | 3,169.18                | 2.40                    |
| 10,071.00  | 90.46           | 182.28      | 6,797.46              | -3,256.41    | -239.48      | 3,264.16                | 1.31                    |
| 10,166.00  | 90.65           | 182.49      | 6,796.54              | -3,351.32    | -243.44      | 3,359.15                | 0.30                    |
| 10,261.00  | 88.46           | 181.35      | 6,797.28              | -3,446.26    | -246.62      | 3,454.13                | 2.60                    |
| 10,356.00  | 87.60           | 178.88      | 6,800.54              | -3,541.19    | -246.81      | 3,548.96                | 2.75                    |
| 10,451.00  | 90.96           | 177.66      | 6,801.74              | -3,636.13    | -243.94      | 3,643.65                | 3.76                    |
| 10,546.00  | 91.63           | 177.54      | 6,799.59              | -3,731.02    | -239.97      | 3,738.24                | 0.72                    |
| 10,640.00  | 90.86           | 178.58      | 6,797.55              | -3,824.94    | -236.79      | 3,831.90                | 1.38                    |
| 10,735.00  | 91.23           | 178.72      | 6,795.81              | -3,919.90    | -234.55      | 3,926.64                | 0.42                    |
| 10,830.00  | 90.34           | 178.62      | 6,794.51              | -4,014.86    | -232.34      | 4,021.39                | 0.94                    |
| 10,925.00  | 87.19           | 180.02      | 6,796.56              | -4,109.82    | -231.22      | 4,116.18                | 3.63                    |
| 11,020.00  | 87.53           | 180.55      | 6,800.94              | -4,204.72    | -231.69      | 4,210.99                | 0.66                    |
| 11,115.00  | 88.55           | 179.83      | 6,804.18              | -4,299.66    | -232.00      | 4,305.84                | 1.31                    |
| 11,204.00  | 89.78           | 179.67      | 6,805.48              | -4,388.65    | -231.61      | 4,394.71                | 1.39                    |
| <b>Final MWD Survey @ 11204.00ft</b>               |                 |             |                       |              |              |                         |                         |
| 11,262.00  | 89.78           | 179.67      | 6,805.70              | -4,446.65    | -231.28      | 4,452.62                | 0.00                    |
| <b>Straight Line Proj @ 11262' MD, 6805.7' TVD</b> |                 |             |                       |              |              |                         |                         |

### Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                     |
|-----------------------|-----------------------|-------------------|--------------|---|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |   |
| 780.00                | 779.99                | -1.56             | -0.54        | Tie-On to Surface Gyros @ 780.00ft          |
| 901.00                | 900.98                | -2.19             | -2.06        | First MWD Survey @ 901.00ft                 |
| 11,204.00             | 6,805.48              | -4,388.65         | -231.61      | Final MWD Survey @ 11204.00ft               |
| 11,262.00             | 6,805.70              | -4,446.65         | -231.28      | Straight Line Proj @ 11262' MD, 6805.7' TVD |

### Vertical Section Information

| Angle Type | Target              | Azimuth (°) | Origin Type | Origin       |              | Start TVD (usft) |
|------------|---------------------|-------------|-------------|--------------|--------------|------------------|
|            |                     |             |             | +N/_S (usft) | +E/-W (usft) |                  |
| Target     | Storis E24-73HN_BHL | 182.75      | Slot        | 0.00         | 0.00         | 0.00             |

### Survey tool program

| From (usft) | To (usft) | Survey/Plan                | Survey Tool |
|-------------|-----------|----------------------------|-------------|
| 267.00      | 780.00    | Surface Gyros              | Flexi-Shot  |
| 901.00      | 7,092.00  | MWD Surveys - Intermediate | MWD+SC      |
| 7,194.00    | 11,204.00 | MWD Surveys - Production   | MWD+SC      |

## Design Report for Storis E24-73HN - Final Surveys

**Casing Details**

| Measured Depth (usft) | Vertical Depth (usft) | Name                               | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|------------------------------------|---------------------|-------------------|
| 7,139.00              | 6,773.52              | 7" Casing @ 7139' MD, 6773.52' TVD | 7                   | 8-3/4             |

**Wellbore Targets**

| Target Name<br>- hit/miss target<br>- Shape  | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude     | Longitude   |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|--------------|-------------|
| Storis E24-73HN_SL<br>- actual wellpath hits target center<br>- Polygon  | 0.00          | 0.00         | 0.00       | 0.00         | 0.00         | 1,418,163.05    | 3,248,614.78   | 40.477820    | -104.606300 |
| Point 1  |               |              |            | 0.00         | 305.46       | -4,067.74       | 1,418,468.50   | 3,244,547.18 |             |
| Point 2  |               |              |            | 0.00         | -4,998.41    | -3,984.55       | 1,413,164.81   | 3,244,630.37 |             |
| Point 3  |               |              |            | 0.00         | -4,983.32    | -1,374.52       | 1,413,179.90   | 3,247,240.30 |             |
| Point 4  |               |              |            | 0.00         | -4,978.49    | 1,274.57        | 1,413,184.73   | 3,249,889.30 |             |
| Point 5  |               |              |            | 0.00         | 336.72       | 1,231.87        | 1,418,499.75   | 3,249,846.60 |             |
| Point 6  |               |              |            | 0.00         | 305.46       | -4,067.74       | 1,418,468.50   | 3,244,547.18 |             |
| Storis E24-73HN_SHL<br>- actual wellpath hits target center<br>- Point   | 0.00          | 0.00         | 0.00       | 0.00         | 0.00         | 1,418,163.05    | 3,248,614.78   | 40.477820    | -104.606300 |
| Storis E24-73HN_460<br>- actual wellpath hits target center<br>- Polygon   | 0.00          | 0.00         | 0.00       | 0.00         | 0.00         | 1,418,163.05    | 3,248,614.78   | 40.477820    | -104.606300 |
| Point 1  |               |              |            | 0.00         | -154.55      | -3,607.72       | 1,418,008.50   | 3,245,007.18 |             |
| Point 2  |               |              |            | 0.00         | -4,538.40    | -3,524.53       | 1,413,624.81   | 3,245,090.37 |             |
| Point 3  |               |              |            | 0.00         | -4,523.31    | -1,374.52       | 1,413,639.90   | 3,247,240.30 |             |
| Point 4  |               |              |            | 0.00         | -4,518.48    | 814.55          | 1,413,644.73   | 3,249,429.30 |             |
| Point 5  |               |              |            | 0.00         | -123.30      | 771.85          | 1,418,039.75   | 3,249,386.60 |             |
| Point 6  |               |              |            | 0.00         | -154.55      | -3,607.72       | 1,418,008.50   | 3,245,007.18 |             |
| Storis E24-73HN_KOF<br>- actual wellpath misses target center by 16.26usft at 6167.81usft MD (6140.39 TVD, 289.11 N, -262.44 E)<br>- Circle (radius 35.00) | 0.00          | 0.00         | 6,139.25   | 277.65       | -250.96      | 1,418,440.69    | 3,248,363.82   | 40.478589    | -104.607192 |
| Storis E24-73HN_Late<br>- actual wellpath misses target center by 259.92usft at 6842.89usft MD (6695.30 TVD, -43.13 N, -243.61 E)<br>- Polygon             | -0.40         | 0.00         | 6,775.00   | 0.00         | 0.00         | 1,418,163.05    | 3,248,614.78   | 40.477820    | -104.606300 |
| Point 1  |               |              |            | 6,777.35     | -336.58      | -281.20         | 1,417,826.49   | 3,248,333.59 |             |
| Point 2  |               |              |            | 6,777.35     | -336.58      | -211.19         | 1,417,826.49   | 3,248,403.59 |             |
| Point 3  |               |              |            | 6,806.05     | -4,447.13    | -178.96         | 1,413,716.18   | 3,248,435.82 |             |
| Point 4  |               |              |            | 6,806.05     | -4,447.13    | -248.96         | 1,413,716.18   | 3,248,365.82 |             |
| Point 5  |               |              |            | 6,777.35     | -336.58      | -281.20         | 1,417,826.49   | 3,248,333.59 |             |
| Storis E24-73HN_BHL<br>- actual wellpath misses target center by 17.32usft at 11262.00usft MD (6805.70 TVD, -4446.65 N, -231.28 E)<br>- Point              | 0.00          | 0.00         | 6,806.08   | -4,447.03    | -213.97      | 1,413,716.18    | 3,248,400.82   | 40.465620    | -104.607230 |

**Directional Difficulty Index**

|                                     |                |                               |                                  |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey:         | 1.82 °/100usft | Maximum Dogleg over Survey:   | 13.49 °/100usft at 6,721.00 usft |
| Net Tortousity applicable to Plans: | 0.86 °/100usft | Directional Difficulty Index: | 6.243                            |

**Audit Info**

North Reference Sheet for Sec. 24-T6N-R65W (Storis/Mackinaw Pad) - Storis  
E24-73HN - Plan A

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

Vertical Depths are relative to RKB=24ft @ 4708.00usft (H&P 315). Northing and Easting are relative to Storis E24-73HN

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 -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996468

Grid Coordinates of Well: 1,418,163.05 usft N, 3,248,614.78 usft E

Geographical Coordinates of Well: 40° 28' 40.15" N, 104° 36' 22.68" W

Grid Convergence at Surface is: 0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,262.00usft  
the Bottom Hole Displacement is 4,452.66usft in the Direction of 182.98° (Grid).

Magnetic Convergence at surface is: -7.88° (19 March 2014, , BGGM2013)

