

Noble Energy

Weld County, CO (NAD 83)

Sec. 17-T6N-R63W

Colt A13-655

05-123-40908

Original Wellbore

Design: Actual Surveys

Sperry Drilling Services

Final Survey Report

15 April, 2015

Surface UWI : 05-123-40908

Well Coordinates: 1,422,220.97 N, 3,286,818.59 E (40° 29' 16.15" N, 104° 28' 07.72" W)

Ground Level: 4,661.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

Centered on Well Colt A13-655

KB @ 4685.00usft (HP 343)

N

Grid

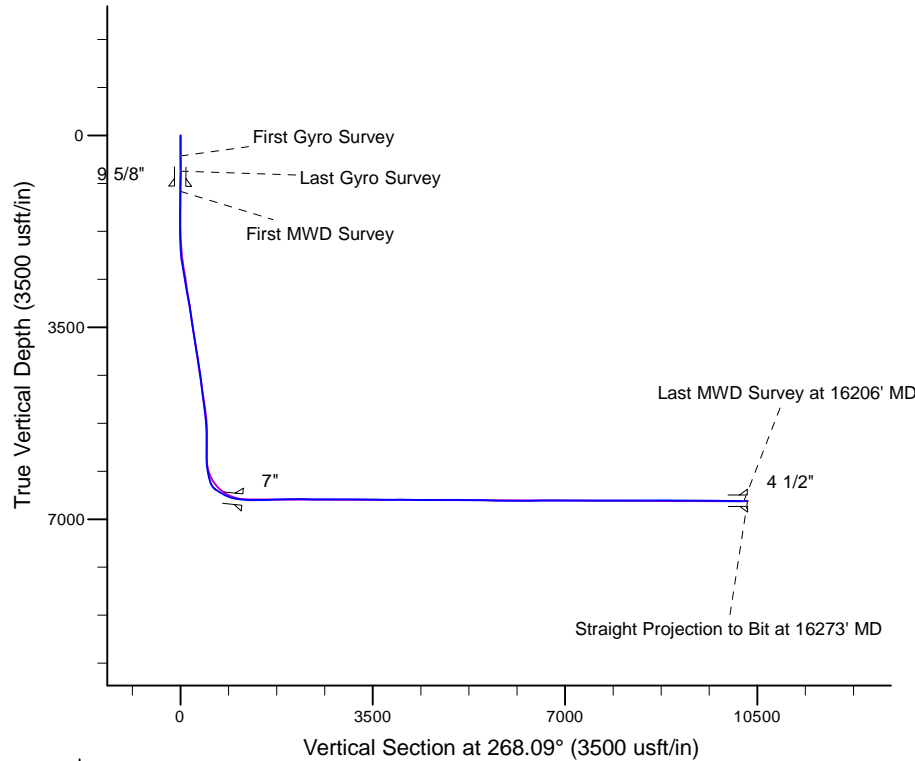
Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 17-T6N-R63W
Well: Colt A13-655
Wellbore: Original Wellbore
Design: Actual Surveys

Noble Energy

HALLIBURTON
Sperry Drilling



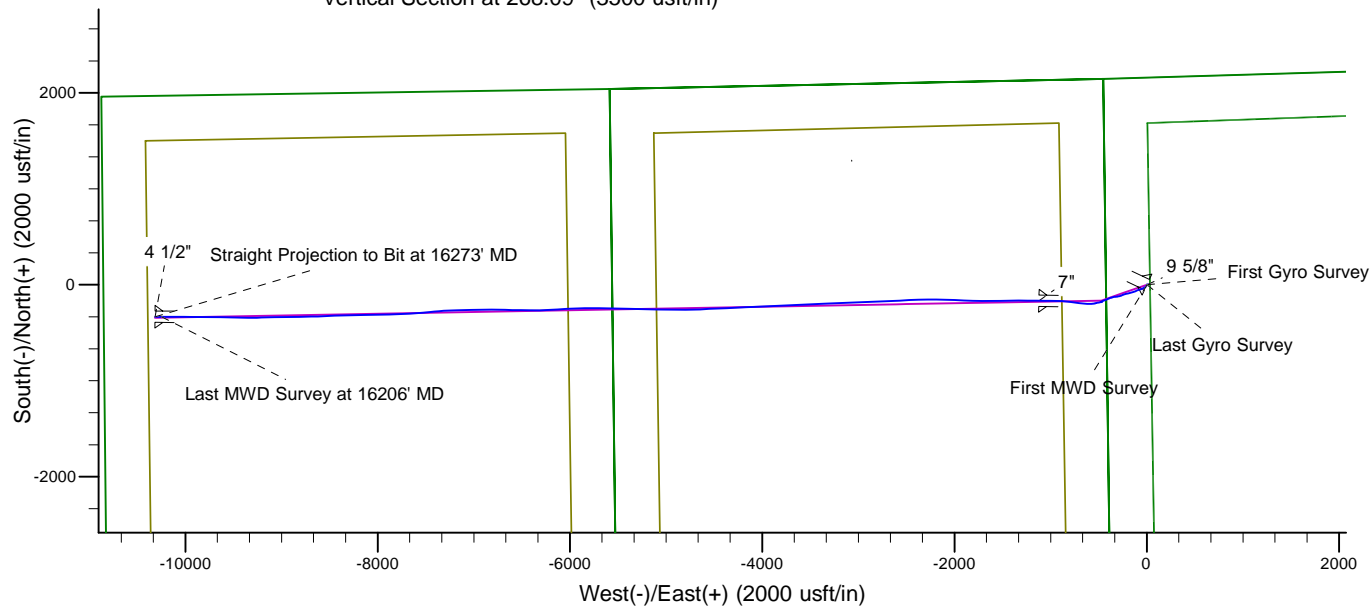
Platted SHL: 2157' FNL, 424' FWL
Platted Lat/Long: 40.487820 N, 104.468810 W
Location: Sec. 17-T6N-R63W

~7" Casing: 2307' FNL, 626' FEL
Lat/Long: 40.487398 N, 104.472848 W
State Planes - CO Northern: 1422054.36 N, 3285697.31 E
Location: Sec. 18-T6N-R63W

Platted BHL: 2310' FNL, 535' FWL
Lat/Long: 40.48720 N, 104.505910 W
State Planes - CO Northern: 1421877.28 N, 3286365.31 E
Location: Sec. Sec. 13-T6N-R64W

LEGEND

Colt A13-655, Original Wellbore, Rev A0 V0
Actual Surveys



WELL DETAILS: Colt A13-655

Ground Level: 4661.00
KB @ 4685.00usft (HP 343)

Created By: Amanda Marchand
Created On: 4/15/2015

Design Report for Colt A13-655 - Actual 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 |
| 374.00 | 0.40 | 6.30 | 374.00 | 1.30 | 0.14 | -0.19 | 0.11 |
| First Gyro Survey | | | | | | | |
| 652.00 | 0.40 | 159.93 | 651.99 | 1.35 | 0.58 | -0.63 | 0.28 |
| Last Gyro Survey | | | | | | | |
| 1,020.00 | 0.50 | 104.44 | 1,019.98 | -0.26 | 2.58 | -2.57 | 0.12 |
| First MWD Survey | | | | | | | |
| 1,208.00 | 0.41 | 108.45 | 1,207.98 | -0.67 | 4.01 | -3.99 | 0.05 |
| 1,300.00 | 0.53 | 65.03 | 1,299.98 | -0.60 | 4.71 | -4.69 | 0.40 |
| 1,393.00 | 0.72 | 40.34 | 1,392.97 | 0.03 | 5.48 | -5.48 | 0.35 |
| 1,486.00 | 0.85 | 31.85 | 1,485.96 | 1.06 | 6.22 | -6.25 | 0.19 |
| 1,579.00 | 0.74 | 17.22 | 1,578.95 | 2.22 | 6.76 | -6.83 | 0.25 |
| 1,764.00 | 0.58 | 23.73 | 1,763.94 | 4.22 | 7.49 | -7.63 | 0.10 |
| 1,857.00 | 2.27 | 232.46 | 1,856.92 | 3.53 | 6.22 | -6.33 | 3.00 |
| 1,950.00 | 4.60 | 217.37 | 1,949.75 | -0.56 | 2.50 | -2.48 | 2.67 |
| 2,043.00 | 6.00 | 213.11 | 2,042.35 | -7.60 | -2.42 | 2.67 | 1.56 |
| 2,136.00 | 5.78 | 213.45 | 2,134.86 | -15.57 | -7.66 | 8.17 | 0.24 |
| 2,227.00 | 7.65 | 232.71 | 2,225.24 | -23.07 | -15.01 | 15.77 | 3.19 |
| 2,320.00 | 9.54 | 243.39 | 2,317.20 | -30.27 | -26.82 | 27.82 | 2.65 |
| 2,412.00 | 9.45 | 239.38 | 2,407.94 | -37.53 | -40.14 | 41.37 | 0.73 |
| 2,504.00 | 10.39 | 253.35 | 2,498.58 | -43.76 | -54.59 | 56.02 | 2.80 |
| 2,689.00 | 10.58 | 251.05 | 2,680.49 | -54.05 | -86.63 | 88.39 | 0.25 |
| 2,783.00 | 10.23 | 247.44 | 2,772.94 | -60.06 | -102.51 | 104.45 | 0.79 |
| 2,875.00 | 10.61 | 247.11 | 2,863.42 | -66.49 | -117.85 | 120.00 | 0.42 |
| 2,970.00 | 10.80 | 253.33 | 2,956.77 | -72.44 | -134.44 | 136.77 | 1.23 |
| 3,065.00 | 11.00 | 252.21 | 3,050.06 | -77.77 | -151.59 | 154.10 | 0.31 |
| 3,160.00 | 10.74 | 249.40 | 3,143.36 | -83.65 | -168.51 | 171.20 | 0.62 |
| 3,255.00 | 9.12 | 259.07 | 3,236.94 | -88.19 | -184.19 | 187.02 | 2.44 |
| 3,351.00 | 7.85 | 260.35 | 3,331.88 | -90.73 | -198.12 | 201.03 | 1.34 |
| 3,446.00 | 6.87 | 259.09 | 3,426.10 | -92.90 | -210.10 | 213.08 | 1.05 |
| 3,541.00 | 7.65 | 254.11 | 3,520.34 | -95.70 | -221.76 | 224.82 | 1.05 |
| 3,636.00 | 9.57 | 249.63 | 3,614.27 | -100.18 | -235.25 | 238.45 | 2.14 |
| 3,731.00 | 10.66 | 248.55 | 3,707.79 | -106.15 | -250.83 | 254.22 | 1.16 |
| 3,825.00 | 11.27 | 248.72 | 3,800.07 | -112.66 | -267.48 | 271.08 | 0.65 |
| 3,920.00 | 10.65 | 254.80 | 3,893.34 | -118.33 | -284.60 | 288.38 | 1.38 |
| 4,015.00 | 8.43 | 261.39 | 3,987.02 | -121.67 | -299.96 | 303.84 | 2.60 |
| 4,110.00 | 7.42 | 263.39 | 4,081.12 | -123.42 | -312.94 | 316.87 | 1.10 |
| 4,205.00 | 7.86 | 265.39 | 4,175.27 | -124.65 | -325.51 | 329.48 | 0.54 |
| 4,300.00 | 7.95 | 261.68 | 4,269.37 | -126.12 | -338.48 | 342.49 | 0.55 |
| 4,395.00 | 9.21 | 254.93 | 4,363.31 | -129.05 | -352.32 | 356.43 | 1.70 |
| 4,489.00 | 8.44 | 254.47 | 4,456.19 | -132.85 | -366.23 | 370.46 | 0.82 |
| 4,584.00 | 6.45 | 255.84 | 4,550.39 | -136.03 | -378.13 | 382.45 | 2.10 |
| 4,679.00 | 6.92 | 245.08 | 4,644.75 | -139.74 | -388.49 | 392.93 | 1.41 |
| 4,774.00 | 8.02 | 242.04 | 4,738.94 | -145.26 | -399.54 | 404.15 | 1.23 |
| 4,869.00 | 7.64 | 246.37 | 4,833.05 | -150.90 | -411.18 | 415.97 | 0.74 |
| 4,965.00 | 8.67 | 248.22 | 4,928.08 | -156.14 | -423.74 | 428.71 | 1.11 |
| 5,060.00 | 8.22 | 249.93 | 5,022.05 | -161.13 | -436.77 | 441.89 | 0.54 |
| 5,155.00 | 6.93 | 250.11 | 5,116.22 | -165.41 | -448.54 | 453.80 | 1.36 |
| 5,250.00 | 5.31 | 246.06 | 5,210.68 | -169.14 | -457.95 | 463.32 | 1.76 |
| 5,345.00 | 4.20 | 242.11 | 5,305.35 | -172.56 | -465.04 | 470.53 | 1.22 |

Design Report for Colt A13-655 - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 5,440.00 | 1.96 | 249.66 | 5,400.21 | -174.75 | -469.64 | 475.20 | 2.39 |
| 5,630.00 | 0.38 | 117.98 | 5,590.17 | -176.17 | -472.13 | 477.73 | 1.17 |
| 5,725.00 | 0.37 | 141.23 | 5,685.17 | -176.56 | -471.66 | 477.27 | 0.16 |
| 5,915.00 | 1.39 | 132.91 | 5,875.14 | -178.61 | -469.58 | 475.27 | 0.54 |
| 6,010.00 | 3.64 | 252.11 | 5,970.08 | -180.32 | -471.61 | 477.35 | 4.72 |
| 6,105.00 | 7.71 | 266.02 | 6,064.60 | -181.69 | -480.84 | 486.63 | 4.49 |
| 6,199.00 | 10.57 | 260.92 | 6,157.40 | -183.49 | -495.65 | 501.49 | 3.16 |
| 6,294.00 | 14.45 | 256.72 | 6,250.13 | -187.59 | -515.80 | 521.76 | 4.19 |
| 6,325.00 | 15.47 | 257.36 | 6,280.08 | -189.38 | -523.60 | 529.61 | 3.33 |
| 6,357.00 | 17.26 | 255.68 | 6,310.78 | -191.49 | -532.36 | 538.44 | 5.79 |
| 6,388.00 | 21.58 | 257.12 | 6,340.01 | -193.90 | -542.38 | 548.54 | 14.02 |
| 6,420.00 | 27.70 | 261.37 | 6,369.08 | -196.33 | -555.48 | 561.71 | 19.90 |
| 6,452.00 | 33.91 | 264.12 | 6,396.56 | -198.36 | -571.73 | 578.02 | 19.89 |
| 6,483.00 | 40.85 | 266.68 | 6,421.18 | -199.84 | -590.48 | 596.81 | 22.94 |
| 6,515.00 | 48.59 | 270.99 | 6,443.90 | -200.24 | -612.97 | 619.29 | 25.97 |
| 6,547.00 | 55.59 | 275.81 | 6,463.56 | -198.69 | -638.14 | 644.40 | 24.88 |
| 6,578.00 | 59.09 | 277.26 | 6,480.29 | -195.71 | -664.06 | 670.21 | 11.96 |
| 6,610.00 | 59.48 | 277.91 | 6,496.63 | -192.08 | -691.33 | 697.34 | 2.13 |
| 6,642.00 | 59.09 | 277.74 | 6,512.98 | -188.34 | -718.58 | 724.46 | 1.30 |
| 6,673.00 | 58.73 | 277.82 | 6,528.98 | -184.74 | -744.89 | 750.63 | 1.18 |
| 6,768.00 | 64.83 | 274.75 | 6,573.89 | -175.65 | -828.05 | 833.43 | 7.02 |
| 6,863.00 | 74.08 | 272.46 | 6,607.20 | -170.11 | -916.73 | 921.88 | 9.99 |
| 6,958.00 | 80.34 | 270.52 | 6,628.22 | -167.73 | -1,009.29 | 1,014.31 | 6.88 |
| 7,017.00 | 82.93 | 270.32 | 6,636.81 | -167.30 | -1,067.65 | 1,072.63 | 4.40 |
| 7,094.00 | 84.91 | 271.50 | 6,644.96 | -166.08 | -1,144.21 | 1,149.10 | 2.99 |
| 7,189.00 | 88.37 | 270.57 | 6,650.53 | -164.37 | -1,239.01 | 1,243.80 | 3.77 |
| 7,284.00 | 90.18 | 269.87 | 6,651.73 | -164.01 | -1,334.00 | 1,338.72 | 2.04 |
| 7,379.00 | 89.72 | 268.67 | 6,651.81 | -165.22 | -1,428.99 | 1,433.70 | 1.35 |
| 7,474.00 | 92.25 | 268.97 | 6,650.18 | -167.17 | -1,523.95 | 1,528.67 | 2.68 |
| 7,569.00 | 92.96 | 268.84 | 6,645.86 | -168.99 | -1,618.83 | 1,623.56 | 0.76 |
| 7,664.00 | 93.02 | 270.79 | 6,640.91 | -169.29 | -1,713.70 | 1,718.38 | 2.05 |
| 7,760.00 | 91.69 | 272.39 | 6,636.96 | -166.63 | -1,809.57 | 1,814.12 | 2.17 |
| 7,854.00 | 91.82 | 272.24 | 6,634.08 | -162.83 | -1,903.45 | 1,907.82 | 0.21 |
| 7,949.00 | 89.97 | 272.21 | 6,632.60 | -159.15 | -1,998.36 | 2,002.56 | 1.95 |
| 8,044.00 | 90.89 | 272.45 | 6,631.89 | -155.28 | -2,093.28 | 2,097.29 | 1.00 |
| 8,139.00 | 88.18 | 270.90 | 6,632.66 | -152.51 | -2,188.23 | 2,192.09 | 3.29 |
| 8,234.00 | 87.41 | 268.51 | 6,636.31 | -153.00 | -2,283.15 | 2,286.98 | 2.64 |
| 8,329.00 | 89.63 | 267.91 | 6,638.77 | -155.96 | -2,378.06 | 2,381.94 | 2.42 |
| 8,424.00 | 90.09 | 267.39 | 6,639.00 | -159.86 | -2,472.98 | 2,476.93 | 0.73 |
| 8,518.00 | 91.05 | 267.26 | 6,638.06 | -164.25 | -2,566.87 | 2,570.92 | 1.03 |
| 8,613.00 | 90.49 | 267.79 | 6,636.79 | -168.35 | -2,661.78 | 2,665.91 | 0.81 |
| 8,708.00 | 89.48 | 267.70 | 6,636.81 | -172.09 | -2,756.70 | 2,760.90 | 1.07 |
| 8,804.00 | 89.57 | 267.11 | 6,637.61 | -176.43 | -2,852.60 | 2,856.89 | 0.62 |
| 8,899.00 | 89.05 | 267.18 | 6,638.75 | -181.16 | -2,947.47 | 2,951.87 | 0.55 |
| 8,993.00 | 90.12 | 267.70 | 6,639.43 | -185.36 | -3,041.38 | 3,045.86 | 1.27 |
| 9,088.00 | 88.74 | 267.99 | 6,640.38 | -188.93 | -3,136.30 | 3,140.85 | 1.48 |
| 9,183.00 | 90.12 | 267.98 | 6,641.32 | -192.27 | -3,231.24 | 3,235.85 | 1.45 |
| 9,278.00 | 88.89 | 267.73 | 6,642.14 | -195.83 | -3,326.16 | 3,330.84 | 1.32 |
| 9,373.00 | 89.04 | 267.48 | 6,643.86 | -199.80 | -3,421.07 | 3,425.82 | 0.31 |
| 9,468.00 | 90.06 | 267.75 | 6,644.60 | -203.75 | -3,515.98 | 3,520.81 | 1.11 |
| 9,563.00 | 88.98 | 267.14 | 6,645.40 | -207.99 | -3,610.88 | 3,615.80 | 1.31 |

Design Report for Colt A13-655 - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 9,658.00 | 90.00 | 266.78 | 6,646.25 | -213.02 | -3,705.74 | 3,710.78 | 1.14 |
| 9,753.00 | 89.72 | 267.40 | 6,646.48 | -217.85 | -3,800.62 | 3,805.76 | 0.72 |
| 9,848.00 | 90.92 | 267.22 | 6,645.95 | -222.30 | -3,895.51 | 3,900.75 | 1.28 |
| 9,943.00 | 89.45 | 267.25 | 6,645.64 | -226.89 | -3,990.40 | 3,995.74 | 1.55 |
| 10,038.00 | 89.26 | 268.09 | 6,646.71 | -230.75 | -4,085.31 | 4,090.73 | 0.91 |
| 10,132.00 | 89.69 | 267.76 | 6,647.57 | -234.15 | -4,179.24 | 4,184.72 | 0.58 |
| 10,228.00 | 89.94 | 266.98 | 6,647.88 | -238.56 | -4,275.14 | 4,280.71 | 0.85 |
| 10,320.00 | 88.64 | 267.24 | 6,649.02 | -243.20 | -4,367.02 | 4,372.69 | 1.44 |
| 10,413.00 | 88.86 | 267.41 | 6,651.05 | -247.54 | -4,459.89 | 4,465.66 | 0.30 |
| 10,506.00 | 89.69 | 267.21 | 6,652.23 | -251.90 | -4,552.78 | 4,558.64 | 0.92 |
| 10,599.00 | 91.23 | 267.44 | 6,651.48 | -256.24 | -4,645.67 | 4,651.63 | 1.67 |
| 10,691.00 | 90.59 | 268.76 | 6,650.02 | -259.29 | -4,737.61 | 4,743.62 | 1.59 |
| 10,784.00 | 90.55 | 270.04 | 6,649.09 | -260.26 | -4,830.60 | 4,836.59 | 1.38 |
| 10,877.00 | 89.32 | 270.59 | 6,649.20 | -259.75 | -4,923.59 | 4,929.51 | 1.45 |
| 10,970.00 | 90.68 | 270.95 | 6,649.20 | -258.50 | -5,016.58 | 5,022.41 | 1.51 |
| 11,062.00 | 89.54 | 271.37 | 6,649.02 | -256.64 | -5,108.56 | 5,114.28 | 1.32 |
| 11,155.00 | 89.60 | 271.18 | 6,649.72 | -254.57 | -5,201.54 | 5,207.13 | 0.21 |
| 11,248.00 | 90.37 | 270.59 | 6,649.75 | -253.13 | -5,294.53 | 5,300.02 | 1.04 |
| 11,339.00 | 88.67 | 271.90 | 6,650.51 | -251.16 | -5,385.50 | 5,390.87 | 2.36 |
| 11,433.00 | 88.77 | 271.77 | 6,652.61 | -248.15 | -5,479.42 | 5,484.65 | 0.17 |
| 11,525.00 | 89.54 | 271.65 | 6,653.96 | -245.40 | -5,571.37 | 5,576.45 | 0.85 |
| 11,617.00 | 88.52 | 271.27 | 6,655.52 | -243.06 | -5,663.33 | 5,668.28 | 1.18 |
| 11,709.00 | 86.92 | 269.45 | 6,659.18 | -242.48 | -5,755.25 | 5,760.13 | 2.63 |
| 11,802.00 | 87.10 | 268.78 | 6,664.03 | -243.92 | -5,848.11 | 5,852.99 | 0.75 |
| 11,895.00 | 87.66 | 267.54 | 6,668.28 | -246.90 | -5,940.96 | 5,945.89 | 1.46 |
| 11,988.00 | 90.15 | 266.67 | 6,670.06 | -251.59 | -6,033.82 | 6,038.85 | 2.84 |
| 12,083.00 | 91.17 | 266.14 | 6,668.97 | -257.55 | -6,128.62 | 6,133.80 | 1.21 |
| 12,178.00 | 92.28 | 267.93 | 6,666.11 | -262.46 | -6,223.45 | 6,228.73 | 2.22 |
| 12,273.00 | 92.40 | 268.89 | 6,662.23 | -265.10 | -6,318.33 | 6,323.65 | 1.02 |
| 12,368.00 | 91.60 | 271.12 | 6,658.91 | -265.09 | -6,413.26 | 6,418.53 | 2.49 |
| 12,462.00 | 89.51 | 270.32 | 6,658.00 | -263.91 | -6,507.25 | 6,512.43 | 2.38 |
| 12,557.00 | 90.22 | 270.40 | 6,658.23 | -263.31 | -6,602.24 | 6,607.35 | 0.75 |
| 12,653.00 | 90.59 | 272.70 | 6,657.55 | -260.71 | -6,698.20 | 6,703.17 | 2.43 |
| 12,748.00 | 89.01 | 269.69 | 6,657.88 | -258.73 | -6,793.16 | 6,798.01 | 3.58 |
| 12,843.00 | 89.32 | 269.25 | 6,659.26 | -259.61 | -6,888.15 | 6,892.97 | 0.57 |
| 12,938.00 | 90.71 | 269.05 | 6,659.24 | -261.02 | -6,983.14 | 6,987.96 | 1.48 |
| 13,032.00 | 89.26 | 268.54 | 6,659.26 | -263.00 | -7,077.11 | 7,081.95 | 1.64 |
| 13,127.00 | 89.48 | 268.09 | 6,660.31 | -265.79 | -7,172.07 | 7,176.94 | 0.53 |
| 13,222.00 | 89.63 | 267.55 | 6,661.05 | -269.40 | -7,266.99 | 7,271.94 | 0.59 |
| 13,317.00 | 89.17 | 266.03 | 6,662.04 | -274.72 | -7,361.84 | 7,366.90 | 1.67 |
| 13,412.00 | 88.74 | 264.53 | 6,663.77 | -282.54 | -7,456.50 | 7,461.77 | 1.64 |
| 13,506.00 | 91.66 | 264.52 | 6,663.44 | -291.51 | -7,550.06 | 7,555.58 | 3.11 |
| 13,601.00 | 92.31 | 265.92 | 6,660.15 | -299.42 | -7,644.67 | 7,650.40 | 1.62 |
| 13,696.00 | 92.28 | 266.85 | 6,656.35 | -305.40 | -7,739.40 | 7,745.28 | 0.98 |
| 13,791.00 | 91.11 | 268.33 | 6,653.54 | -309.40 | -7,834.27 | 7,840.23 | 1.99 |
| 13,886.00 | 89.63 | 269.37 | 6,652.93 | -311.30 | -7,929.25 | 7,935.21 | 1.90 |
| 13,980.00 | 88.61 | 269.81 | 6,654.37 | -311.97 | -8,023.23 | 8,029.17 | 1.18 |
| 14,075.00 | 88.77 | 268.98 | 6,656.54 | -312.98 | -8,118.20 | 8,124.12 | 0.89 |
| 14,170.00 | 88.77 | 268.65 | 6,658.58 | -314.94 | -8,213.16 | 8,219.09 | 0.35 |
| 14,264.00 | 88.83 | 268.22 | 6,660.55 | -317.51 | -8,307.10 | 8,313.07 | 0.46 |
| 14,359.00 | 89.23 | 267.84 | 6,662.16 | -320.77 | -8,402.03 | 8,408.05 | 0.58 |

Design Report for Colt A13-655 - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 14,454.00 | 89.41 | 267.68 | 6,663.29 | -324.49 | -8,496.95 | 8,503.05 | 0.25 |
| 14,549.00 | 89.45 | 267.04 | 6,664.23 | -328.86 | -8,591.85 | 8,598.03 | 0.67 |
| 14,643.00 | 90.92 | 269.05 | 6,663.93 | -332.07 | -8,685.78 | 8,692.02 | 2.65 |
| 14,738.00 | 91.05 | 269.32 | 6,662.29 | -333.42 | -8,780.76 | 8,786.99 | 0.32 |
| 14,833.00 | 89.54 | 269.49 | 6,661.80 | -334.41 | -8,875.75 | 8,881.96 | 1.60 |
| 14,928.00 | 89.72 | 268.68 | 6,662.42 | -335.92 | -8,970.74 | 8,976.95 | 0.87 |
| 15,023.00 | 90.31 | 268.55 | 6,662.39 | -338.22 | -9,065.71 | 9,071.94 | 0.64 |
| 15,118.00 | 91.26 | 268.11 | 6,661.09 | -340.99 | -9,160.66 | 9,166.93 | 1.10 |
| 15,213.00 | 90.92 | 269.86 | 6,659.28 | -342.67 | -9,255.62 | 9,261.90 | 1.88 |
| 15,308.00 | 89.97 | 270.26 | 6,658.55 | -342.57 | -9,350.62 | 9,356.84 | 1.09 |
| 15,403.00 | 89.08 | 271.00 | 6,659.33 | -341.53 | -9,445.61 | 9,451.74 | 1.22 |
| 15,498.00 | 89.08 | 270.92 | 6,660.86 | -339.93 | -9,540.58 | 9,546.61 | 0.08 |
| 15,593.00 | 89.23 | 270.72 | 6,662.26 | -338.57 | -9,635.56 | 9,641.49 | 0.26 |
| 15,688.00 | 89.57 | 270.55 | 6,663.26 | -337.52 | -9,730.55 | 9,736.39 | 0.40 |
| 15,783.00 | 89.94 | 271.28 | 6,663.66 | -336.00 | -9,825.54 | 9,831.28 | 0.86 |
| 15,878.00 | 89.14 | 270.62 | 6,664.42 | -334.43 | -9,920.52 | 9,926.15 | 1.09 |
| 15,973.00 | 89.35 | 270.12 | 6,665.68 | -333.82 | -10,015.51 | 10,021.07 | 0.57 |
| 16,068.00 | 89.38 | 269.93 | 6,666.73 | -333.78 | -10,110.50 | 10,116.01 | 0.20 |
| 16,162.00 | 90.18 | 270.32 | 6,667.09 | -333.57 | -10,204.50 | 10,209.95 | 0.95 |
| 16,206.00 | 90.28 | 270.10 | 6,666.91 | -333.41 | -10,248.50 | 10,253.92 | 0.55 |
| Last MWD Survey at 16206' MD | | | | | | | |
| 16,273.00 | 90.28 | 270.10 | 6,666.59 | -333.29 | -10,315.50 | 10,320.88 | 0.00 |
| Straight Projection to Bit at 16273' MD | | | | | | | |

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|---|
| | | +N/-S (usft) | +E/-W (usft) | |
| 374.00 | 374.00 | 1.30 | 0.14 | First Gyro Survey |
| 652.00 | 651.99 | 1.35 | 0.58 | Last Gyro Survey |
| 1,020.00 | 1,019.98 | -0.26 | 2.58 | First MWD Survey |
| 16,206.00 | 6,666.91 | -333.41 | -10,248.50 | Last MWD Survey at 16206' MD |
| 16,273.00 | 6,666.59 | -333.29 | -10,315.50 | Straight Projection to Bit at 16273' MD |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin | | Start TVD (usft) |
|------------|-------------------|-------------|-------------|--------------|--------------|------------------|
| | | | | +N/-S (usft) | +E/-W (usft) | |
| Target | Colt AA13-655_BHL | 268.09 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (usft) | To (usft) | Survey/Plan | Survey Tool |
|-------------|-----------|----------------------|----------------|
| 374.00 | 652.00 | Gyro Surveys | Flexi-Shot |
| 1,020.00 | 7,017.00 | Intermediate Surveys | MWD+IFR1+MS_WY |
| 7,094.00 | 16,273.00 | Production Surveys | MWD+IFR1+MS_WY |

Design Report for Colt A13-655 - Actual Surveys

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|--------|---------------------|-------------------|
| 927.00 | 9 5/8" | | 9-5/8 | 13-3/4 |
| 7,071.00 | 6,642.80 | 7" | 7 | 8-3/4 |
| 16,273.00 | 6,666.59 | 4 1/2" | 4-1/2 | 6-1/8 |

Wellbore Targets

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------|-------------|
| Colt AA13-655_BHL | 0.00 | 0.00 | 6,672.03 | -343.70 | -10,316.50 | 1,421,877.28 | 3,276,502.44 | 40.487200 | -104.505910 |
| - actual wellpath misses target center by 11.79usft at 16273.00usft MD (6666.59 TVD, -333.29 N, -10315.50 E) | | | | | | | | | |
| - Point | | | | | | | | | |

Directional Difficulty Index

| | | | |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey: | 1.64 °/100usft | Maximum Dogleg over Survey: | 25.97 °/100usft at 6,515.00 usft |
| Net Tortousity applicable to Plans: | 0.97 °/100usft | Directional Difficulty Index: | 6.831 |

Audit Info

North Reference Sheet for Sec. 17-T6N-R63W - Colt A13-655 - Original Wellbore

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

Vertical Depths are relative to KB @ 4685.00usft (HP 343). Northing and Easting are relative to Colt A13-655

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: 0.99996539

Grid Coordinates of Well: 1,422,220.97 usft N, 3,286,818.59 usft E

Geographical Coordinates of Well: 40° 29' 16.15" N, 104° 28' 07.72" W

Grid Convergence at Surface is: 0.67°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,273.00usft the Bottom Hole Displacement is 10,320.88usft in the Direction of 268.15° (Grid).

Magnetic Convergence at surface is: -7.65° (3 March 2015, , BGGM2014)

