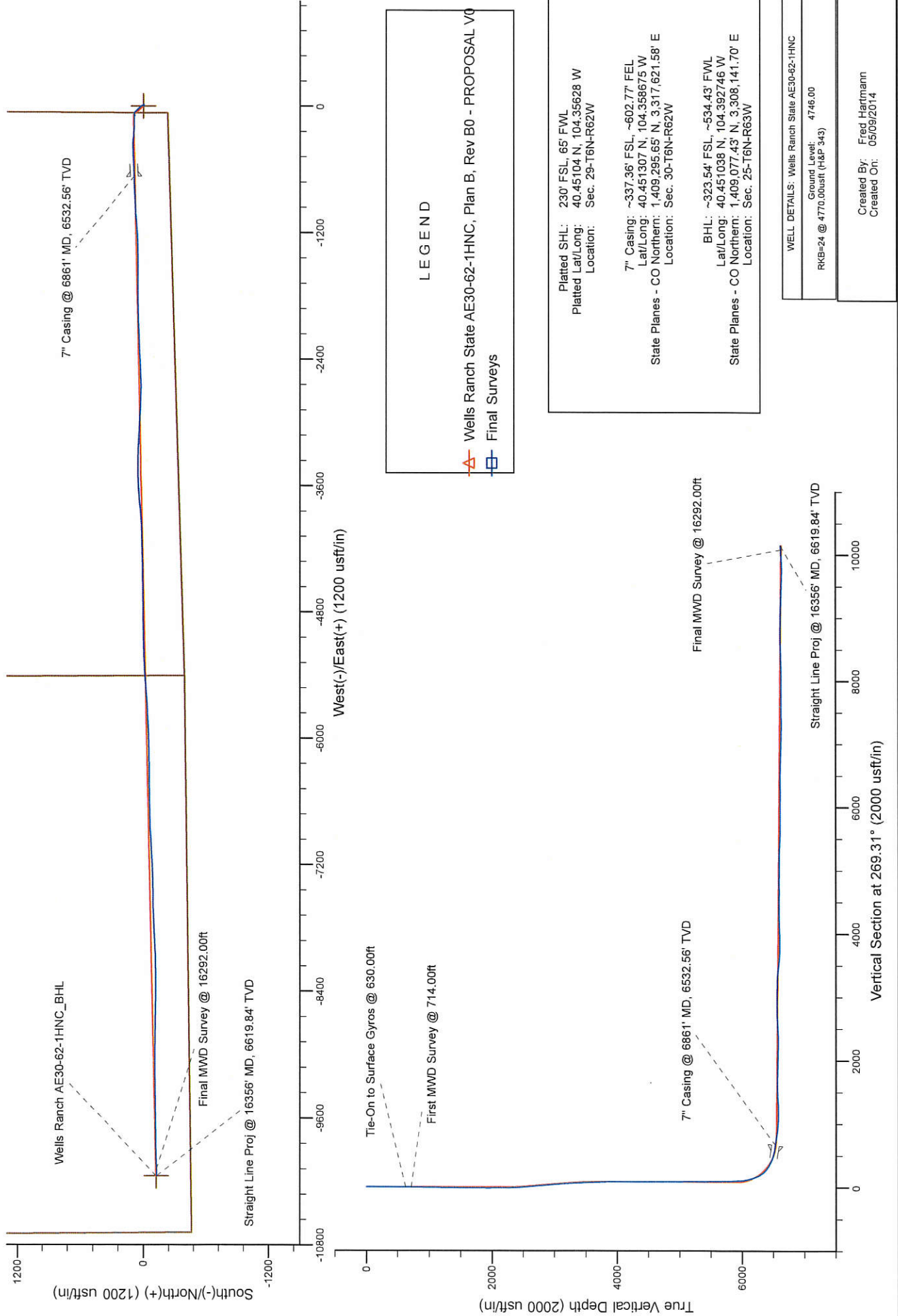


Noble Energy

Project: Weld County, CO (NAD 83)
Site: Sec. 29-T6N-R62W (Wells Ranch AE32-30-A Pad)
Well: Wells Ranch State AE30-62-1HNC
Wellbore: Plan B
Design: Final Surveys



Noble Energy

Weld County, CO (NAD 83)

Sec. 29-T6N-R62W (Wells Ranch AE32-30-A Pad)

Wells Ranch State AE30-62-1HNC

Design: Final Surveys

Sperry Drilling Services

Final Survey Report

09 May, 2014

Well Coordinates: 1,409,206.86 N, 3,318,289.22 E (40° 27' 03.74" N, 104° 21' 22.61" W)

Ground Level: 4,746.00 usft

Local Coordinate Origin:

Centered on Well Wells Ranch State AE30-62-1HNC

Viewing Datum:

RKB=24 @ 4770.00usft (H&P 343)

TVDs to System:

N

North Reference:

Grid

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for Wells Ranch State AE30-62-1HNC - 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 |
| 360.00 | 0.40 | 66.84 | 360.00 | 0.49 | 1.16 | -1.16 | 0.11 |
| 630.00 | 0.60 | 217.44 | 629.99 | -0.26 | 1.16 | -1.16 | 0.36 |
| Tie-On to Surface Gyros @ 630.00ft | | | | | | | |
| 714.00 | 0.57 | 92.22 | 713.99 | -0.62 | 1.31 | -1.31 | 1.24 |
| First MWD Survey @ 714.00ft | | | | | | | |
| 807.00 | 0.89 | 125.40 | 806.98 | -1.06 | 2.36 | -2.35 | 0.56 |
| 899.00 | 0.66 | 139.48 | 898.98 | -1.88 | 3.29 | -3.27 | 0.32 |
| 991.00 | 0.70 | 115.91 | 990.97 | -2.52 | 4.14 | -4.11 | 0.30 |
| 1,084.00 | 0.74 | 106.55 | 1,083.96 | -2.94 | 5.23 | -5.19 | 0.13 |
| 1,177.00 | 0.71 | 116.81 | 1,176.95 | -3.37 | 6.32 | -6.28 | 0.14 |
| 1,269.00 | 0.76 | 121.53 | 1,268.95 | -3.95 | 7.35 | -7.30 | 0.09 |
| 1,363.00 | 0.50 | 73.68 | 1,362.94 | -4.16 | 8.27 | -8.22 | 0.60 |
| 1,456.00 | 0.62 | 109.21 | 1,455.94 | -4.21 | 9.14 | -9.08 | 0.39 |
| 1,643.00 | 0.68 | 94.34 | 1,642.93 | -4.63 | 11.20 | -11.14 | 0.10 |
| 1,737.00 | 0.68 | 47.98 | 1,736.92 | -4.30 | 12.17 | -12.12 | 0.57 |
| 1,832.00 | 0.65 | 35.91 | 1,831.91 | -3.48 | 12.90 | -12.86 | 0.15 |
| 1,927.00 | 0.39 | 48.49 | 1,926.91 | -2.83 | 13.46 | -13.43 | 0.30 |
| 2,022.00 | 0.59 | 15.85 | 2,021.91 | -2.15 | 13.84 | -13.81 | 0.35 |
| 2,117.00 | 0.71 | 343.96 | 2,116.90 | -1.11 | 13.81 | -13.79 | 0.40 |
| 2,212.00 | 2.41 | 342.81 | 2,211.86 | 1.36 | 13.05 | -13.07 | 1.79 |
| 2,307.00 | 5.28 | 333.00 | 2,306.64 | 7.16 | 10.48 | -10.56 | 3.09 |
| 2,402.00 | 6.16 | 326.58 | 2,401.17 | 15.31 | 5.69 | -5.87 | 1.14 |
| 2,497.00 | 7.29 | 320.78 | 2,495.51 | 24.24 | -0.93 | 0.64 | 1.39 |
| 2,592.00 | 6.80 | 314.96 | 2,589.79 | 32.88 | -8.72 | 8.33 | 0.91 |
| 2,687.00 | 7.85 | 314.05 | 2,684.02 | 41.37 | -17.37 | 16.87 | 1.11 |
| 2,782.00 | 6.63 | 312.13 | 2,778.26 | 49.56 | -26.10 | 25.50 | 1.31 |
| 2,877.00 | 7.68 | 317.33 | 2,872.52 | 57.90 | -34.47 | 33.77 | 1.30 |
| 2,971.00 | 7.13 | 315.44 | 2,965.73 | 66.68 | -42.82 | 42.01 | 0.64 |
| 3,161.00 | 5.15 | 314.94 | 3,154.64 | 81.11 | -57.13 | 56.15 | 1.04 |
| 3,256.00 | 3.25 | 318.12 | 3,249.38 | 86.12 | -61.94 | 60.91 | 2.01 |
| 3,351.00 | 2.99 | 288.10 | 3,344.24 | 88.90 | -66.10 | 65.03 | 1.72 |
| 3,445.00 | 2.84 | 256.98 | 3,438.13 | 89.13 | -70.70 | 69.62 | 1.67 |
| 3,540.00 | 2.33 | 251.25 | 3,533.03 | 87.98 | -74.82 | 73.76 | 0.60 |
| 3,635.00 | 1.72 | 279.38 | 3,627.97 | 87.60 | -78.05 | 77.00 | 1.21 |
| 3,730.00 | 2.13 | 277.96 | 3,722.92 | 88.07 | -81.21 | 80.15 | 0.43 |
| 3,824.00 | 2.13 | 265.44 | 3,816.85 | 88.17 | -84.68 | 83.62 | 0.49 |
| 3,919.00 | 0.22 | 279.35 | 3,911.83 | 88.06 | -86.62 | 85.56 | 2.02 |
| 4,014.00 | 0.54 | 236.29 | 4,006.83 | 87.85 | -87.17 | 86.11 | 0.43 |
| 4,109.00 | 0.51 | 207.71 | 4,101.82 | 87.22 | -87.74 | 86.69 | 0.27 |
| 4,204.00 | 0.68 | 164.96 | 4,196.82 | 86.30 | -87.79 | 86.75 | 0.49 |
| 4,299.00 | 0.61 | 171.23 | 4,291.81 | 85.26 | -87.57 | 86.54 | 0.10 |
| 4,393.00 | 0.84 | 199.13 | 4,385.81 | 84.11 | -87.72 | 86.70 | 0.44 |
| 4,488.00 | 1.04 | 206.83 | 4,480.79 | 82.69 | -88.33 | 87.34 | 0.25 |
| 4,583.00 | 1.12 | 23.44 | 4,575.79 | 82.77 | -88.35 | 87.36 | 2.27 |
| 4,677.00 | 0.87 | 37.30 | 4,669.77 | 84.18 | -87.56 | 86.54 | 0.37 |
| 4,772.00 | 0.61 | 19.37 | 4,764.76 | 85.23 | -86.95 | 85.93 | 0.36 |
| 4,867.00 | 0.31 | 335.52 | 4,859.76 | 85.94 | -86.89 | 85.86 | 0.47 |
| 4,961.00 | 0.34 | 316.58 | 4,953.76 | 86.38 | -87.19 | 86.15 | 0.12 |
| 5,056.00 | 0.50 | 270.53 | 5,048.76 | 86.58 | -87.80 | 86.75 | 0.38 |

Design Report for Wells Ranch State AE30-62-1HNC - Final Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|---|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|
| 5,151.00 | 0.74 | 281.34 | 5,143.75 | 86.71 | -88.81 | 87.77 | 0.28 |
| 5,246.00 | 0.80 | 284.35 | 5,238.74 | 86.99 | -90.06 | 89.01 | 0.08 |
| 5,341.00 | 0.89 | 306.47 | 5,333.73 | 87.60 | -91.29 | 90.24 | 0.35 |
| 5,435.00 | 0.88 | 294.09 | 5,427.72 | 88.33 | -92.54 | 91.47 | 0.20 |
| 5,530.00 | 0.83 | 300.68 | 5,522.71 | 88.97 | -93.80 | 92.72 | 0.12 |
| 5,625.00 | 0.87 | 253.43 | 5,617.70 | 89.12 | -95.08 | 94.00 | 0.72 |
| 5,720.00 | 0.99 | 262.90 | 5,712.69 | 88.81 | -96.58 | 95.51 | 0.20 |
| 5,797.00 | 0.47 | 259.16 | 5,789.68 | 88.67 | -97.55 | 96.49 | 0.68 |
| 5,815.00 | 0.49 | 253.18 | 5,807.68 | 88.63 | -97.70 | 96.63 | 0.30 |
| 5,910.00 | 1.58 | 275.34 | 5,902.67 | 88.64 | -99.39 | 98.33 | 1.20 |
| 6,005.00 | 8.24 | 273.60 | 5,997.26 | 89.19 | -107.50 | 106.43 | 7.01 |
| 6,100.00 | 12.41 | 266.53 | 6,090.71 | 89.00 | -124.49 | 123.42 | 4.58 |
| 6,195.00 | 17.73 | 267.80 | 6,182.41 | 87.82 | -149.15 | 148.09 | 5.61 |
| 6,290.00 | 27.79 | 271.65 | 6,269.90 | 87.91 | -185.84 | 184.78 | 10.70 |
| 6,384.00 | 41.80 | 275.21 | 6,346.91 | 91.40 | -239.22 | 238.10 | 15.05 |
| 6,479.00 | 56.05 | 273.91 | 6,409.17 | 96.99 | -310.42 | 309.24 | 15.03 |
| 6,574.00 | 63.59 | 269.47 | 6,456.91 | 99.29 | -392.43 | 391.21 | 8.90 |
| 6,669.00 | 71.98 | 266.86 | 6,492.81 | 96.42 | -480.24 | 479.05 | 9.19 |
| 6,763.00 | 78.95 | 267.77 | 6,516.38 | 92.17 | -571.07 | 569.93 | 7.47 |
| 6,816.00 | 80.90 | 268.10 | 6,525.65 | 90.29 | -623.22 | 622.09 | 3.73 |
| 6,861.00 | 81.44 | 268.06 | 6,532.56 | 88.80 | -667.66 | 666.55 | 1.21 |
| 7" Casing @ 6861' MD, 6532.56' TVD | | | | | | | |
| 6,937.00 | 82.36 | 267.99 | 6,543.27 | 86.20 | -742.86 | 741.77 | 1.21 |
| 7,032.00 | 82.42 | 267.53 | 6,555.85 | 82.52 | -836.95 | 835.90 | 0.48 |
| 7,127.00 | 82.68 | 267.02 | 6,568.17 | 78.04 | -931.04 | 930.04 | 0.60 |
| 7,222.00 | 86.64 | 267.26 | 6,577.01 | 73.33 | -1,025.49 | 1,024.54 | 4.18 |
| 7,316.00 | 90.49 | 264.85 | 6,579.36 | 66.86 | -1,119.21 | 1,118.33 | 4.83 |
| 7,411.00 | 91.48 | 266.23 | 6,577.73 | 59.48 | -1,213.91 | 1,213.11 | 1.79 |
| 7,506.00 | 92.52 | 267.86 | 6,574.41 | 54.58 | -1,308.72 | 1,307.97 | 2.03 |
| 7,601.00 | 92.65 | 269.47 | 6,570.13 | 52.37 | -1,403.59 | 1,402.87 | 1.70 |
| 7,696.00 | 92.40 | 269.99 | 6,565.94 | 51.92 | -1,498.50 | 1,497.77 | 0.61 |
| 7,791.00 | 89.26 | 270.97 | 6,564.56 | 52.72 | -1,593.47 | 1,592.73 | 3.46 |
| 7,886.00 | 89.97 | 269.22 | 6,565.20 | 52.88 | -1,688.47 | 1,687.71 | 1.99 |
| 7,980.00 | 88.77 | 269.60 | 6,566.24 | 51.91 | -1,782.46 | 1,781.71 | 1.34 |
| 8,075.00 | 88.39 | 267.82 | 6,568.59 | 49.77 | -1,877.40 | 1,876.67 | 1.92 |
| 8,170.00 | 87.87 | 268.74 | 6,571.69 | 46.92 | -1,972.30 | 1,971.60 | 1.11 |
| 8,264.00 | 87.51 | 268.77 | 6,575.48 | 44.88 | -2,066.20 | 2,065.52 | 0.38 |
| 8,359.00 | 90.15 | 269.37 | 6,577.42 | 43.34 | -2,161.16 | 2,160.49 | 2.85 |
| 8,453.00 | 89.35 | 266.51 | 6,577.83 | 39.96 | -2,255.09 | 2,254.45 | 3.16 |
| 8,548.00 | 91.05 | 267.09 | 6,577.50 | 34.66 | -2,349.94 | 2,349.36 | 1.89 |
| 8,643.00 | 92.84 | 266.75 | 6,574.27 | 29.56 | -2,444.74 | 2,444.21 | 1.92 |
| 8,738.00 | 92.77 | 267.54 | 6,569.62 | 24.83 | -2,539.51 | 2,539.03 | 0.83 |
| 8,832.00 | 93.33 | 269.79 | 6,564.62 | 22.64 | -2,633.35 | 2,632.89 | 2.46 |
| 8,927.00 | 92.28 | 270.96 | 6,559.97 | 23.26 | -2,728.23 | 2,727.75 | 1.65 |
| 9,022.00 | 88.55 | 272.35 | 6,559.28 | 26.01 | -2,823.17 | 2,822.65 | 4.19 |
| 9,117.00 | 90.49 | 273.51 | 6,560.08 | 30.86 | -2,918.03 | 2,917.45 | 2.38 |
| 9,212.00 | 87.81 | 271.96 | 6,561.49 | 35.40 | -3,012.90 | 3,012.26 | 3.26 |
| 9,307.00 | 91.08 | 273.56 | 6,562.41 | 39.97 | -3,107.77 | 3,107.07 | 3.83 |
| 9,402.00 | 88.95 | 272.88 | 6,562.39 | 45.30 | -3,202.62 | 3,201.84 | 2.35 |
| 9,496.00 | 86.35 | 271.59 | 6,566.24 | 48.97 | -3,296.45 | 3,295.63 | 3.09 |
| 9,590.00 | 84.98 | 270.54 | 6,573.34 | 50.71 | -3,390.17 | 3,389.32 | 1.83 |

Design Report for Wells Ranch State AE30-62-1HNC - Final Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 9,685.00 | 83.73 | 268.81 | 6,582.69 | 50.18 | -3,484.70 | 3,483.85 | 2.24 |
| 9,779.00 | 84.23 | 267.65 | 6,592.55 | 47.29 | -3,578.13 | 3,577.31 | 1.34 |
| 9,873.00 | 85.50 | 265.37 | 6,600.96 | 41.59 | -3,671.57 | 3,670.81 | 2.77 |
| 9,968.00 | 88.83 | 263.52 | 6,605.66 | 32.40 | -3,765.99 | 3,765.34 | 4.01 |
| 10,062.00 | 91.72 | 265.32 | 6,605.21 | 23.26 | -3,859.53 | 3,858.98 | 3.62 |
| 10,157.00 | 91.97 | 267.78 | 6,602.15 | 17.55 | -3,954.31 | 3,953.81 | 2.60 |
| 10,257.00 | 91.39 | 268.76 | 6,599.22 | 14.53 | -4,054.22 | 4,053.75 | 1.14 |
| 10,351.00 | 92.00 | 267.70 | 6,596.44 | 11.63 | -4,148.13 | 4,147.69 | 1.30 |
| 10,444.00 | 92.06 | 268.64 | 6,593.14 | 8.66 | -4,241.02 | 4,240.61 | 1.01 |
| 10,537.00 | 90.98 | 269.23 | 6,590.68 | 6.94 | -4,333.97 | 4,333.58 | 1.32 |
| 10,628.00 | 89.20 | 269.41 | 6,590.53 | 5.86 | -4,424.96 | 4,424.57 | 1.97 |
| 10,721.00 | 89.17 | 269.52 | 6,591.86 | 4.99 | -4,517.95 | 4,517.56 | 0.12 |
| 10,813.00 | 89.26 | 268.68 | 6,593.12 | 3.54 | -4,609.93 | 4,609.55 | 0.92 |
| 10,906.00 | 91.45 | 269.92 | 6,592.54 | 2.41 | -4,702.91 | 4,702.54 | 2.71 |
| 10,998.00 | 89.44 | 269.24 | 6,591.83 | 1.73 | -4,794.90 | 4,794.53 | 2.31 |
| 11,091.00 | 89.60 | 268.97 | 6,592.61 | 0.28 | -4,887.88 | 4,887.53 | 0.34 |
| 11,183.00 | 89.85 | 268.47 | 6,593.05 | -1.78 | -4,979.86 | 4,979.52 | 0.61 |
| 11,275.00 | 90.06 | 269.15 | 6,593.12 | -3.69 | -5,071.84 | 5,071.52 | 0.77 |
| 11,368.00 | 88.71 | 268.27 | 6,594.12 | -5.78 | -5,164.81 | 5,164.51 | 1.73 |
| 11,460.00 | 88.12 | 267.63 | 6,596.66 | -9.07 | -5,256.71 | 5,256.44 | 0.95 |
| 11,553.00 | 87.91 | 267.28 | 6,599.88 | -13.20 | -5,349.56 | 5,349.34 | 0.44 |
| 11,647.00 | 87.81 | 266.19 | 6,603.39 | -18.55 | -5,443.35 | 5,443.18 | 1.16 |
| 11,740.00 | 87.66 | 266.44 | 6,607.07 | -24.52 | -5,536.08 | 5,535.98 | 0.31 |
| 11,833.00 | 88.00 | 265.95 | 6,610.59 | -30.69 | -5,628.81 | 5,628.77 | 0.64 |
| 11,927.00 | 88.98 | 265.89 | 6,613.07 | -37.37 | -5,722.54 | 5,722.57 | 1.04 |
| 12,022.00 | 90.86 | 267.25 | 6,613.20 | -43.06 | -5,817.36 | 5,817.46 | 2.44 |
| 12,117.00 | 90.71 | 267.64 | 6,611.90 | -47.29 | -5,912.26 | 5,912.40 | 0.44 |
| 12,212.00 | 90.68 | 268.20 | 6,610.75 | -50.74 | -6,007.19 | 6,007.36 | 0.59 |
| 12,306.00 | 89.51 | 268.06 | 6,610.59 | -53.81 | -6,101.13 | 6,101.34 | 1.25 |
| 12,401.00 | 90.40 | 269.44 | 6,610.67 | -55.88 | -6,196.11 | 6,196.33 | 1.73 |
| 12,496.00 | 89.88 | 269.59 | 6,610.43 | -56.68 | -6,291.10 | 6,291.33 | 0.57 |
| 12,591.00 | 90.80 | 269.50 | 6,609.87 | -57.44 | -6,386.10 | 6,386.33 | 0.97 |
| 12,686.00 | 90.06 | 269.79 | 6,609.16 | -58.02 | -6,481.09 | 6,481.32 | 0.84 |
| 12,781.00 | 89.44 | 269.39 | 6,609.57 | -58.70 | -6,576.09 | 6,576.32 | 0.78 |
| 12,876.00 | 87.59 | 268.89 | 6,612.03 | -60.13 | -6,671.04 | 6,671.28 | 2.02 |
| 12,971.00 | 87.50 | 268.05 | 6,616.10 | -62.66 | -6,765.92 | 6,766.19 | 0.89 |
| 13,066.00 | 87.38 | 266.68 | 6,620.35 | -67.03 | -6,860.72 | 6,861.03 | 1.45 |
| 13,160.00 | 88.12 | 266.89 | 6,624.04 | -72.29 | -6,954.50 | 6,954.87 | 0.82 |
| 13,255.00 | 89.44 | 267.06 | 6,626.06 | -77.31 | -7,049.35 | 7,049.77 | 1.40 |
| 13,350.00 | 89.51 | 267.04 | 6,626.93 | -82.20 | -7,144.22 | 7,144.69 | 0.08 |
| 13,445.00 | 89.60 | 267.24 | 6,627.67 | -86.94 | -7,239.09 | 7,239.62 | 0.23 |
| 13,540.00 | 89.04 | 267.63 | 6,628.80 | -91.19 | -7,333.99 | 7,334.56 | 0.72 |
| 13,635.00 | 91.14 | 269.96 | 6,628.65 | -93.18 | -7,428.96 | 7,429.54 | 3.30 |
| 13,730.00 | 91.45 | 269.08 | 6,626.50 | -93.98 | -7,523.93 | 7,524.52 | 0.98 |
| 13,824.00 | 90.80 | 269.15 | 6,624.65 | -95.43 | -7,617.90 | 7,618.50 | 0.70 |
| 13,919.00 | 88.89 | 267.11 | 6,624.91 | -98.53 | -7,712.84 | 7,713.47 | 2.94 |
| 14,014.00 | 88.86 | 267.61 | 6,626.78 | -102.91 | -7,807.72 | 7,808.39 | 0.53 |
| 14,109.00 | 88.27 | 266.12 | 6,629.15 | -108.10 | -7,902.55 | 7,903.27 | 1.69 |
| 14,204.00 | 89.66 | 268.23 | 6,630.87 | -112.78 | -7,997.41 | 7,998.18 | 2.66 |
| 14,299.00 | 91.33 | 269.31 | 6,630.05 | -114.82 | -8,092.38 | 8,093.17 | 2.09 |
| 14,394.00 | 91.91 | 268.71 | 6,627.36 | -116.46 | -8,187.32 | 8,188.13 | 0.88 |

Design Report for Wells Ranch State AE30-62-1HNC - Final Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 14,488.00 | 91.79 | 268.99 | 6,624.33 | -118.35 | -8,281.26 | 8,282.08 | 0.32 |
| 14,583.00 | 92.28 | 269.81 | 6,620.96 | -119.34 | -8,376.19 | 8,377.02 | 1.01 |
| 14,678.00 | 92.19 | 270.93 | 6,617.25 | -118.73 | -8,471.11 | 8,471.93 | 1.18 |
| 14,774.00 | 91.70 | 272.36 | 6,613.99 | -115.97 | -8,567.02 | 8,567.79 | 1.57 |
| 14,869.00 | 89.35 | 270.26 | 6,613.12 | -113.80 | -8,661.98 | 8,662.72 | 3.32 |
| 14,963.00 | 90.83 | 270.19 | 6,612.97 | -113.43 | -8,755.97 | 8,756.70 | 1.58 |
| 15,058.00 | 88.58 | 271.82 | 6,613.46 | -111.77 | -8,850.95 | 8,851.65 | 2.92 |
| 15,153.00 | 90.03 | 271.33 | 6,614.62 | -109.16 | -8,945.90 | 8,946.57 | 1.61 |
| 15,248.00 | 87.16 | 269.09 | 6,616.95 | -108.81 | -9,040.86 | 9,041.51 | 3.83 |
| 15,343.00 | 87.93 | 269.42 | 6,621.01 | -110.04 | -9,135.76 | 9,136.42 | 0.88 |
| 15,438.00 | 88.67 | 269.03 | 6,623.83 | -111.32 | -9,230.71 | 9,231.38 | 0.88 |
| 15,532.00 | 90.40 | 269.55 | 6,624.60 | -112.49 | -9,324.69 | 9,325.37 | 1.92 |
| 15,627.00 | 88.00 | 268.54 | 6,625.92 | -114.07 | -9,419.66 | 9,420.35 | 2.74 |
| 15,675.00 | 87.47 | 269.71 | 6,627.82 | -114.80 | -9,467.62 | 9,468.32 | 2.67 |
| 15,722.00 | 87.72 | 269.94 | 6,629.79 | -114.95 | -9,514.58 | 9,515.27 | 0.72 |
| 15,817.00 | 88.55 | 269.23 | 6,632.88 | -115.64 | -9,609.52 | 9,610.22 | 1.15 |
| 15,912.00 | 89.23 | 269.08 | 6,634.72 | -117.04 | -9,704.50 | 9,705.20 | 0.73 |
| 16,007.00 | 91.17 | 269.31 | 6,634.39 | -118.37 | -9,799.48 | 9,800.20 | 2.06 |
| 16,102.00 | 91.11 | 268.98 | 6,632.50 | -119.79 | -9,894.45 | 9,895.18 | 0.35 |
| 16,197.00 | 92.31 | 268.05 | 6,629.67 | -122.25 | -9,989.37 | 9,990.12 | 1.60 |
| 16,292.00 | 94.07 | 267.13 | 6,624.38 | -126.24 | -10,084.14 | 10,084.93 | 2.09 |
| Final MWD Survey @ 16292.00ft | | | | | | | |
| 16,356.00 | 94.07 | 267.13 | 6,619.84 | -129.43 | -10,147.90 | 10,148.72 | 0.00 |
| Straight Line Proj @ 16356' MD, 6619.84' TVD | | | | | | | |

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Comment |
|-----------------------|-----------------------|--------------|--------------|--|
| 630.00 | 629.99 | -0.26 | 1.16 | Tie-On to Surface Gyros @ 630.00ft |
| 714.00 | 713.99 | -0.62 | 1.31 | First MWD Survey @ 714.00ft |
| 16,292.00 | 6,624.38 | -126.24 | -10,084.14 | Final MWD Survey @ 16292.00ft |
| 16,356.00 | 6,619.84 | -129.43 | -10,147.90 | Straight Line Proj @ 16356' MD, 6619.84' TVD |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | +N/-S (usft) | +E/-W (usft) | Start TVD (usft) |
|------------|------------------------------|-------------|-------------|--------------|--------------|------------------|
| Target | Wells Ranch AE30-62-1HNC_BHL | 269.31 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (usft) | To (usft) | Survey/Plan | Survey Tool |
|-------------|-----------|----------------------------|----------------|
| 360.00 | 630.00 | Surface Gyros | Flexi-Shot |
| 714.00 | 6,816.00 | MWD Surveys - Intermediate | MWD+IFR1+MS_WY |
| 6,937.00 | 16,292.00 | MWD Surveys - Production | MWD+IFR1+MS_WY |

Design Report for Wells Ranch State AE30-62-1HNC - Final Surveys

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|------------------------------------|---------------------|-------------------|
| 6,861.00 | 6,532.56 | 7" Casing @ 6861' MD, 6532.56' TVD | 7 | 8-3/4 |

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 |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|--------------|-------------|
| Wells Ranch AE30-62- | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 1,409,206.87 | 3,318,289.22 | 40.451040 | -104.356280 |
| - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | | 0.00 | 4,855.49 | -10,726.24 | 1,414,062.18 | 3,307,563.38 | |
| Point 2 | | | | 0.00 | -459.71 | -10,679.45 | 1,408,747.18 | 3,307,610.16 | |
| Point 3 | | | | 0.00 | -393.39 | -5,405.81 | 1,408,813.49 | 3,312,883.61 | |
| Point 4 | | | | 0.00 | -230.40 | -66.61 | 1,408,976.48 | 3,318,222.61 | |
| Point 5 | | | | 0.00 | 5,071.21 | -37.58 | 1,414,277.89 | 3,318,251.64 | |
| Point 6 | | | | 0.00 | 4,911.09 | -5,434.11 | 1,414,117.78 | 3,312,855.31 | |
| Point 7 | | | | 0.00 | -393.39 | -5,405.81 | 1,408,813.49 | 3,312,883.61 | |
| Point 8 | | | | 0.00 | 4,911.09 | -5,434.11 | 1,414,117.78 | 3,312,855.31 | |
| Point 9 | | | | 0.00 | 4,855.49 | -10,726.24 | 1,414,062.18 | 3,307,563.38 | |
| Wells Ranch AE30-62- | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 1,409,206.87 | 3,318,289.22 | 40.451040 | -104.356280 |
| - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Wells Ranch AE30-62- | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 1,409,206.87 | 3,318,289.22 | 40.451040 | -104.356280 |
| - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | | 0.00 | 4,395.47 | -10,266.22 | 1,413,602.18 | 3,308,023.38 | |
| Point 2 | | | | 0.00 | 0.31 | -10,219.44 | 1,409,207.18 | 3,308,070.16 | |
| Point 3 | | | | 0.00 | 66.62 | -5,405.81 | 1,409,273.49 | 3,312,883.61 | |
| Point 4 | | | | 0.00 | 229.62 | -526.63 | 1,409,436.48 | 3,317,762.61 | |
| Point 5 | | | | 0.00 | 4,611.19 | -497.60 | 1,413,817.89 | 3,317,791.64 | |
| Point 6 | | | | 0.00 | 4,451.08 | -5,434.11 | 1,413,657.78 | 3,312,855.31 | |
| Point 7 | | | | 0.00 | 4,395.47 | -10,266.22 | 1,413,602.18 | 3,308,023.38 | |
| Wells Ranch AE30-62- | 0.00 | 0.00 | 6,633.58 | -121.53 | -10,149.28 | 1,409,085.34 | 3,308,140.32 | 40.451060 | -104.392750 |
| - actual wellpath misses target center by 15.91usft at 16356.00usft MD (6619.84 TVD, -129.43 N, -10147.90 E) | | | | | | | | | |
| - Point | | | | | | | | | |

Directional Difficulty Index

| | | | |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey: | 1.71 °/100usft | Maximum Dogleg over Survey: | 15.05 °/100usft at 6,384.00 usft |
| Net Tortousity applicable to Plans: | 1.07 °/100usft | Directional Difficulty Index: | 6.848 |

Audit Info

**North Reference Sheet for Sec. 29-T6N-R62W (Wells Ranch AE32-30-A Pad) -
Wells Ranch State AE30-62-1HNC**

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

Vertical Depths are relative to RKB=24 @ 4770.00usft (H&P 343). Northing and Easting are relative to Wells Ranch State AE30-62-1HNC

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: 0.99996294

Grid Coordinates of Well: 1,409,206.86 usft N, 3,318,289.22 usft E

Geographical Coordinates of Well: 40° 27' 03.74" N, 104° 21' 22.61" W

Grid Convergence at Surface is: 0.74°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,356.00usft
the Bottom Hole Displacement is 10,148.72usft in the Direction of 269.27° (Grid).

Magnetic Convergence at surface is: -7.58° (19 February 2014, , BGGM2013)

