

Noble Energy

Weld County, CO (NAD 83)
Sec. 4-T6N-R63W (Mahalo State PAD)
Mahalo State AA09-76-1AHNB
05-123-39125
Plan B

Design: Actual Surveys

Sperry Drilling Services

Final Survey Report

04 February, 2015

Surface UWI : 05-123-39125

Well Coordinates: 1,429,914.76 N, 3,292,638.36 E (40° 30' 31.50" N, 104° 26' 51.22" W)
Ground Level: 4,697.00 usft

Local Coordinate Origin:

Centered on Well Mahalo State AA09-76-1AHNB

Viewing Datum:

KB=24 @ 4721.00usft (H&P 322)

TVDs to System:

N

North Reference:

Grid

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 4-T6N-R63W (Mahalo State PAD)
 Well: Mahalo State AA09-76-1AHNB
 Wellbore: Plan B
 Design: Actual Surveys



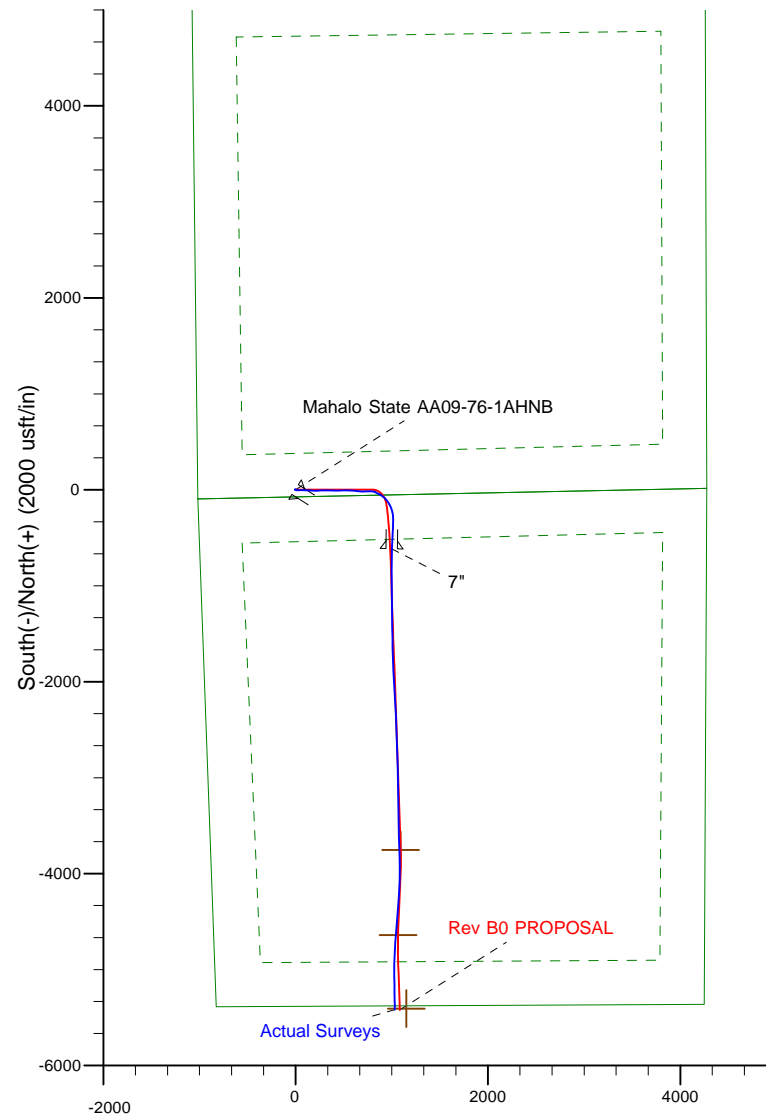
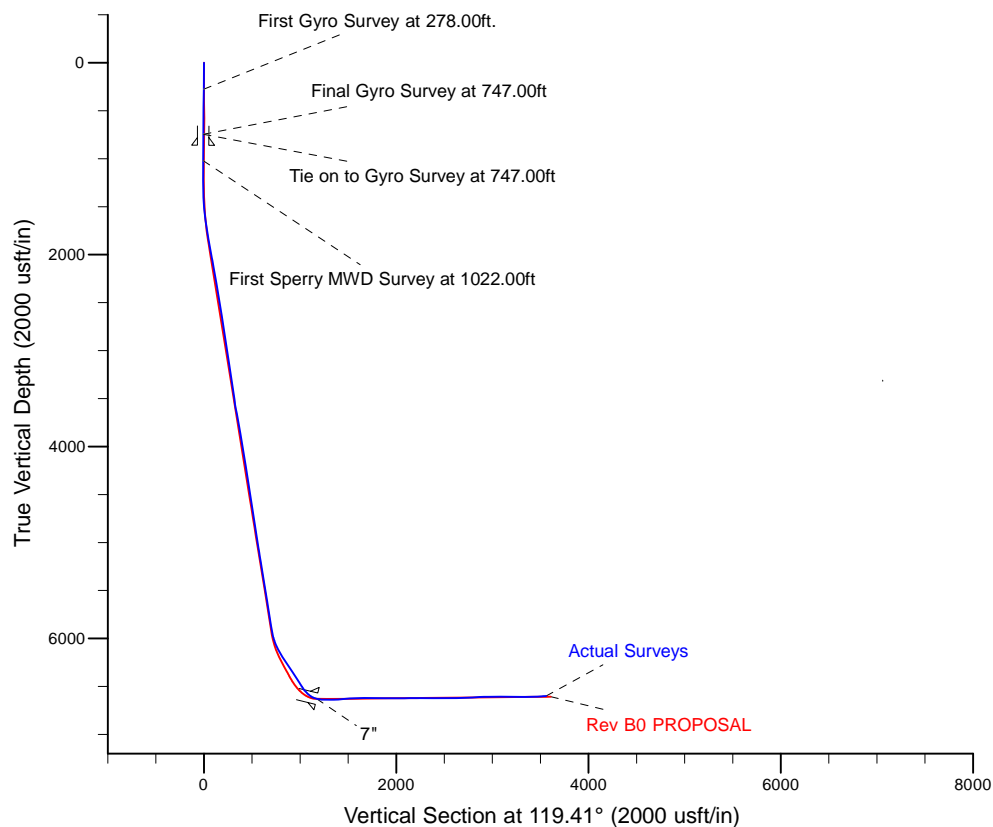
Platted SHL: 75' FSL, 1020' FWL
 Platted Lat/Long: 40.508750 N, 104.447560 W
 Location: Sec. 4-T6N-R63W

~7" Casing: 560' FNL, 1995' FWL
 Lat/Long: 40.507027 N, 104.443992 W
 State Planes - CO Northern: 1,429,298.88 N, 3,293,638.10 E
 Location: Sec. 9-T6N-R63W

Platted BHL: 30' FNL, 1980' FWL
 Lat/Long: 40.493868 N, 104.444084 W
 State Planes - CO Northern: 1,424,504.92 N, 3,293,669.60 E
 Location: Sec. 9-T6N-R63W

LEGEND

- △ Mahalo State AA09-76-1AHNB, Plan B, Rev B0 PROPOSAL V0
- Actual Surveys



WELL DETAILS: Mahalo State AA09-76-1AHNB

Ground Level: 4697.00
 KB=24 @ 4721.00usft (H&P 322)

Created By: Tatiana Gomez
 Created On: 2/4/2015

Design Report for Mahalo State AA09-76-1AHNB - 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 |
| 278.00 | 0.50 | 287.11 | 278.00 | 0.36 | -1.16 | -1.19 | 0.18 |
| First Gyro Survey at 278.00ft. | | | | | | | |
| 469.00 | 0.20 | 219.81 | 468.99 | 0.35 | -2.17 | -2.06 | 0.24 |
| 747.00 | 1.00 | 298.41 | 746.98 | 1.13 | -4.61 | -4.57 | 0.35 |
| Final Gyro Survey at 747.00ft - Tie on to Gyro Survey at 747.00ft | | | | | | | |
| 861.00 | 0.56 | 302.65 | 860.97 | 1.90 | -5.96 | -6.12 | 0.39 |
| 9 5/8" | | | | | | | |
| 1,022.00 | 0.12 | 62.22 | 1,021.96 | 2.40 | -6.47 | -6.82 | 0.39 |
| First Sperry MWD Survey at 1022.00ft | | | | | | | |
| 1,115.00 | 0.14 | 81.67 | 1,114.96 | 2.47 | -6.27 | -6.67 | 0.05 |
| 1,208.00 | 0.03 | 89.62 | 1,207.96 | 2.48 | -6.13 | -6.56 | 0.12 |
| 1,301.00 | 0.15 | 213.16 | 1,300.96 | 2.38 | -6.18 | -6.55 | 0.18 |
| 1,394.00 | 1.88 | 131.02 | 1,393.95 | 1.28 | -5.09 | -5.06 | 2.01 |
| 1,486.00 | 4.64 | 104.42 | 1,485.79 | -0.64 | -0.35 | 0.01 | 3.34 |
| 1,579.00 | 7.14 | 105.47 | 1,578.30 | -3.12 | 8.87 | 9.26 | 2.69 |
| 1,672.00 | 9.04 | 96.45 | 1,670.37 | -5.48 | 21.70 | 21.59 | 2.45 |
| 1,766.00 | 10.30 | 87.46 | 1,763.04 | -5.94 | 37.43 | 35.53 | 2.09 |
| 1,861.00 | 12.05 | 88.52 | 1,856.23 | -5.31 | 55.83 | 51.24 | 1.85 |
| 1,950.00 | 12.29 | 86.72 | 1,943.23 | -4.52 | 74.58 | 67.19 | 0.50 |
| 2,043.00 | 12.04 | 85.88 | 2,034.14 | -3.26 | 94.13 | 83.60 | 0.33 |
| 2,136.00 | 10.75 | 97.23 | 2,125.32 | -3.66 | 112.42 | 99.72 | 2.78 |
| 2,229.00 | 10.66 | 101.60 | 2,216.70 | -6.48 | 129.45 | 115.94 | 0.88 |
| 2,322.00 | 9.97 | 93.95 | 2,308.20 | -8.76 | 145.90 | 131.40 | 1.65 |
| 2,415.00 | 9.96 | 89.71 | 2,399.80 | -9.28 | 161.98 | 145.66 | 0.79 |
| 2,508.00 | 11.51 | 94.31 | 2,491.17 | -9.93 | 179.27 | 161.05 | 1.90 |
| 2,600.00 | 11.65 | 93.04 | 2,581.30 | -11.11 | 197.70 | 177.68 | 0.32 |
| 2,695.00 | 11.51 | 84.36 | 2,674.38 | -10.69 | 216.72 | 194.03 | 1.84 |
| 2,790.00 | 9.68 | 84.48 | 2,767.75 | -8.99 | 234.10 | 208.34 | 1.93 |
| 2,885.00 | 9.79 | 83.92 | 2,861.38 | -7.37 | 250.08 | 221.47 | 0.15 |
| 2,980.00 | 9.53 | 91.46 | 2,955.04 | -6.71 | 265.97 | 234.99 | 1.36 |
| 3,074.00 | 9.67 | 90.68 | 3,047.72 | -7.01 | 281.65 | 248.79 | 0.20 |
| 3,169.00 | 9.63 | 87.46 | 3,141.38 | -6.75 | 297.56 | 262.53 | 0.57 |
| 3,264.00 | 9.52 | 86.54 | 3,235.06 | -5.92 | 313.34 | 275.87 | 0.20 |
| 3,359.00 | 10.38 | 93.04 | 3,328.63 | -5.90 | 329.73 | 290.13 | 1.49 |
| 3,453.00 | 9.25 | 91.69 | 3,421.25 | -6.57 | 345.74 | 304.41 | 1.23 |
| 3,548.00 | 9.97 | 90.95 | 3,514.92 | -6.93 | 361.60 | 318.40 | 0.77 |
| 3,644.00 | 11.13 | 92.88 | 3,609.30 | -7.54 | 379.16 | 333.99 | 1.26 |
| 3,738.00 | 12.24 | 93.56 | 3,701.35 | -8.61 | 398.17 | 351.08 | 1.19 |
| 3,833.00 | 11.30 | 89.93 | 3,794.35 | -9.23 | 417.53 | 368.24 | 1.26 |
| 3,928.00 | 11.72 | 88.37 | 3,887.44 | -8.94 | 436.48 | 384.61 | 0.55 |
| 4,023.00 | 10.26 | 87.54 | 3,980.69 | -8.30 | 454.58 | 400.07 | 1.55 |
| 4,118.00 | 9.70 | 87.63 | 4,074.26 | -7.61 | 471.03 | 414.05 | 0.59 |
| 4,213.00 | 10.68 | 90.93 | 4,167.76 | -7.42 | 487.82 | 428.59 | 1.20 |
| 4,307.00 | 10.47 | 87.38 | 4,260.16 | -7.17 | 505.07 | 443.49 | 0.73 |
| 4,402.00 | 9.63 | 85.05 | 4,353.70 | -6.09 | 521.60 | 457.37 | 0.98 |
| 4,497.00 | 10.40 | 92.35 | 4,447.26 | -5.76 | 538.09 | 471.57 | 1.56 |
| 4,592.00 | 10.62 | 93.16 | 4,540.66 | -6.59 | 555.40 | 487.05 | 0.28 |
| 4,687.00 | 10.28 | 95.06 | 4,634.09 | -7.82 | 572.58 | 502.63 | 0.51 |
| 4,782.00 | 10.28 | 95.00 | 4,727.56 | -9.31 | 589.47 | 518.07 | 0.01 |

Design Report for Mahalo State AA09-76-1AHNB - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 4,877.00 | 10.07 | 93.13 | 4,821.07 | -10.50 | 606.21 | 533.23 | 0.41 |
| 4,972.00 | 8.29 | 94.76 | 4,914.85 | -11.52 | 621.33 | 546.91 | 1.89 |
| 5,066.00 | 9.41 | 96.10 | 5,007.73 | -12.90 | 635.72 | 560.12 | 1.21 |
| 5,161.00 | 10.63 | 97.69 | 5,101.28 | -14.90 | 652.13 | 575.40 | 1.32 |
| 5,256.00 | 9.17 | 95.78 | 5,194.86 | -16.83 | 668.34 | 590.47 | 1.58 |
| 5,351.00 | 10.47 | 94.30 | 5,288.47 | -18.24 | 684.48 | 605.22 | 1.39 |
| 5,446.00 | 10.58 | 85.61 | 5,381.88 | -18.22 | 701.79 | 620.29 | 1.67 |
| 5,540.00 | 10.06 | 89.26 | 5,474.36 | -17.46 | 718.60 | 634.56 | 0.89 |
| 5,635.00 | 11.96 | 88.33 | 5,567.60 | -17.06 | 736.74 | 650.16 | 2.01 |
| 5,730.00 | 10.26 | 85.46 | 5,660.82 | -16.11 | 755.01 | 665.61 | 1.88 |
| 5,824.00 | 10.56 | 91.33 | 5,753.28 | -15.64 | 771.97 | 680.16 | 1.17 |
| 5,919.00 | 10.53 | 92.25 | 5,846.67 | -16.19 | 789.35 | 695.56 | 0.18 |
| 6,014.00 | 11.33 | 96.21 | 5,939.95 | -17.54 | 807.30 | 711.86 | 1.15 |
| 6,061.00 | 14.67 | 109.78 | 5,985.75 | -20.05 | 817.49 | 721.98 | 9.58 |
| 6,109.00 | 18.61 | 116.82 | 6,031.73 | -25.57 | 830.05 | 735.63 | 9.21 |
| 6,156.00 | 23.04 | 118.16 | 6,075.65 | -33.29 | 844.86 | 752.32 | 9.48 |
| 6,204.00 | 28.16 | 117.93 | 6,118.93 | -43.04 | 863.16 | 773.05 | 10.67 |
| 6,251.00 | 31.22 | 122.03 | 6,159.75 | -54.70 | 883.30 | 796.31 | 7.81 |
| 6,298.00 | 33.73 | 126.70 | 6,199.41 | -68.96 | 904.09 | 821.43 | 7.55 |
| 6,345.00 | 35.01 | 132.81 | 6,238.21 | -85.93 | 924.45 | 847.50 | 7.82 |
| 6,393.00 | 34.88 | 140.96 | 6,277.58 | -105.96 | 943.21 | 873.67 | 9.72 |
| 6,440.00 | 35.52 | 145.78 | 6,315.99 | -127.69 | 959.35 | 898.41 | 6.06 |
| 6,489.00 | 38.09 | 150.44 | 6,355.23 | -152.61 | 974.82 | 924.13 | 7.74 |
| 6,536.00 | 39.84 | 156.44 | 6,391.79 | -179.04 | 988.00 | 948.58 | 8.85 |
| 6,584.00 | 41.29 | 162.22 | 6,428.26 | -208.22 | 998.98 | 972.48 | 8.39 |
| 6,631.00 | 43.27 | 168.02 | 6,463.05 | -238.76 | 1,007.07 | 994.52 | 9.31 |
| 6,678.00 | 48.13 | 174.36 | 6,495.88 | -271.97 | 1,012.13 | 1,015.24 | 14.14 |
| 6,725.00 | 54.22 | 179.29 | 6,525.35 | -308.50 | 1,014.09 | 1,034.89 | 15.31 |
| 6,773.00 | 62.05 | 181.76 | 6,550.67 | -349.22 | 1,013.68 | 1,054.53 | 16.89 |
| 6,820.00 | 66.67 | 182.60 | 6,571.00 | -391.55 | 1,012.07 | 1,073.91 | 9.96 |
| 6,868.00 | 70.49 | 184.02 | 6,588.53 | -436.15 | 1,009.48 | 1,093.56 | 8.42 |
| 6,915.00 | 73.68 | 184.44 | 6,602.98 | -480.75 | 1,006.18 | 1,112.58 | 6.84 |
| 6,962.00 | 76.92 | 183.73 | 6,614.91 | -526.09 | 1,002.94 | 1,132.03 | 7.05 |
| 7,001.00 | 81.71 | 181.84 | 6,622.14 | -564.35 | 1,001.09 | 1,149.20 | 13.17 |
| 7,053.00 | 83.51 | 181.08 | 6,628.83 | -615.90 | 999.77 | 1,173.37 | 3.75 |
| 7" | | | | | | | |
| 7,139.00 | 86.49 | 179.84 | 6,636.32 | -701.56 | 999.08 | 1,214.84 | 3.75 |
| 7,232.00 | 89.41 | 180.21 | 6,639.65 | -794.49 | 999.04 | 1,260.44 | 3.16 |
| 7,325.00 | 90.43 | 179.89 | 6,639.78 | -887.49 | 998.96 | 1,306.04 | 1.15 |
| 7,418.00 | 90.99 | 179.89 | 6,638.62 | -980.48 | 999.14 | 1,351.86 | 0.60 |
| 7,511.00 | 92.13 | 179.51 | 6,636.09 | -1,073.44 | 999.63 | 1,397.94 | 1.29 |
| 7,604.00 | 92.87 | 179.71 | 6,632.04 | -1,166.35 | 1,000.26 | 1,444.11 | 0.82 |
| 7,699.00 | 92.19 | 178.23 | 6,627.84 | -1,261.24 | 1,001.97 | 1,492.20 | 1.71 |
| 7,794.00 | 91.39 | 178.91 | 6,624.88 | -1,356.16 | 1,004.34 | 1,540.88 | 1.10 |
| 7,889.00 | 90.40 | 179.29 | 6,623.39 | -1,451.14 | 1,005.83 | 1,588.82 | 1.12 |
| 7,983.00 | 90.58 | 179.49 | 6,622.59 | -1,545.13 | 1,006.83 | 1,635.85 | 0.29 |
| 8,079.00 | 90.06 | 179.77 | 6,622.05 | -1,641.12 | 1,007.45 | 1,683.53 | 0.62 |
| 8,173.00 | 90.09 | 177.82 | 6,621.93 | -1,735.10 | 1,009.43 | 1,731.40 | 2.07 |
| 8,268.00 | 89.08 | 177.03 | 6,622.62 | -1,830.00 | 1,013.69 | 1,781.72 | 1.35 |
| 8,363.00 | 90.06 | 176.20 | 6,623.33 | -1,924.83 | 1,019.30 | 1,833.17 | 1.35 |
| 8,458.00 | 89.45 | 176.57 | 6,623.74 | -2,019.64 | 1,025.29 | 1,884.95 | 0.75 |

Design Report for Mahalo State AA09-76-1AHNB - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|---|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 8,553.00 | 89.91 | 177.16 | 6,624.27 | -2,114.49 | 1,030.49 | 1,936.06 | 0.79 |
| 8,647.00 | 89.88 | 176.80 | 6,624.44 | -2,208.36 | 1,035.44 | 1,986.47 | 0.38 |
| 8,742.00 | 89.94 | 178.37 | 6,624.59 | -2,303.28 | 1,039.44 | 2,036.57 | 1.65 |
| 8,837.00 | 90.06 | 177.56 | 6,624.59 | -2,398.21 | 1,042.82 | 2,086.13 | 0.86 |
| 8,932.00 | 90.74 | 177.16 | 6,623.92 | -2,493.11 | 1,047.19 | 2,136.54 | 0.83 |
| 9,027.00 | 90.18 | 178.03 | 6,623.16 | -2,588.02 | 1,051.18 | 2,186.62 | 1.09 |
| 9,122.00 | 89.26 | 178.40 | 6,623.63 | -2,682.97 | 1,054.14 | 2,235.83 | 1.04 |
| 9,217.00 | 89.32 | 178.02 | 6,624.80 | -2,777.92 | 1,057.10 | 2,285.04 | 0.40 |
| 9,311.00 | 89.38 | 178.01 | 6,625.87 | -2,871.86 | 1,060.36 | 2,334.01 | 0.06 |
| 9,406.00 | 90.95 | 177.97 | 6,625.60 | -2,966.80 | 1,063.69 | 2,383.53 | 1.65 |
| 9,501.00 | 90.65 | 179.50 | 6,624.27 | -3,061.76 | 1,065.79 | 2,432.00 | 1.64 |
| 9,596.00 | 90.86 | 179.18 | 6,623.02 | -3,156.75 | 1,066.88 | 2,479.59 | 0.40 |
| 9,691.00 | 90.71 | 180.36 | 6,621.72 | -3,251.73 | 1,067.26 | 2,526.57 | 1.25 |
| 9,785.00 | 89.54 | 179.01 | 6,621.51 | -3,345.73 | 1,067.78 | 2,573.18 | 1.90 |
| 9,881.00 | 89.69 | 178.74 | 6,622.16 | -3,441.71 | 1,069.67 | 2,621.96 | 0.32 |
| 9,976.00 | 90.19 | 178.35 | 6,622.26 | -3,536.68 | 1,072.08 | 2,670.70 | 0.67 |
| 10,070.00 | 90.83 | 178.29 | 6,621.42 | -3,630.63 | 1,074.83 | 2,719.24 | 0.68 |
| 10,165.00 | 92.07 | 177.79 | 6,619.02 | -3,725.54 | 1,078.08 | 2,768.68 | 1.41 |
| 10,192.92 | 92.28 | 178.11 | 6,617.96 | -3,753.42 | 1,079.08 | 2,783.23 | 1.37 |
| Mahalo St AA09-76-1AHNB_T1 | | | | | | | |
| 10,260.00 | 92.77 | 178.89 | 6,615.00 | -3,820.42 | 1,080.83 | 2,817.66 | 1.37 |
| 10,355.00 | 91.91 | 178.48 | 6,611.12 | -3,915.31 | 1,083.01 | 2,866.16 | 1.00 |
| 10,449.00 | 91.20 | 180.83 | 6,608.57 | -4,009.27 | 1,083.58 | 2,912.79 | 2.61 |
| 10,544.00 | 89.29 | 183.55 | 6,608.17 | -4,104.19 | 1,079.95 | 2,956.24 | 3.50 |
| 10,639.00 | 89.72 | 183.57 | 6,608.99 | -4,199.00 | 1,074.05 | 2,997.66 | 0.45 |
| 10,734.00 | 90.65 | 183.28 | 6,608.68 | -4,293.83 | 1,068.37 | 3,039.29 | 1.03 |
| 10,828.00 | 91.02 | 183.57 | 6,607.31 | -4,387.65 | 1,062.76 | 3,080.47 | 0.50 |
| 10,923.00 | 89.14 | 184.78 | 6,607.18 | -4,482.39 | 1,055.84 | 3,120.97 | 2.35 |
| 11,018.00 | 89.14 | 184.62 | 6,608.60 | -4,577.06 | 1,048.06 | 3,160.68 | 0.17 |
| 11,080.35 | 90.05 | 184.68 | 6,609.05 | -4,639.21 | 1,043.00 | 3,186.80 | 1.46 |
| Mahalo St AA09-76-1AHNB_T2 | | | | | | | |
| 11,113.00 | 90.52 | 184.71 | 6,608.89 | -4,671.74 | 1,040.33 | 3,200.45 | 1.46 |
| 11,208.00 | 89.72 | 185.17 | 6,608.69 | -4,766.39 | 1,032.15 | 3,239.80 | 0.97 |
| 11,303.00 | 90.49 | 182.05 | 6,608.51 | -4,861.19 | 1,026.17 | 3,281.15 | 3.38 |
| 11,398.00 | 88.98 | 179.95 | 6,608.95 | -4,956.16 | 1,024.51 | 3,326.34 | 2.72 |
| 11,492.00 | 89.45 | 178.91 | 6,610.24 | -5,050.15 | 1,025.45 | 3,373.31 | 1.21 |
| 11,587.00 | 90.74 | 179.44 | 6,610.08 | -5,145.14 | 1,026.81 | 3,421.15 | 1.47 |
| 11,682.00 | 91.82 | 179.16 | 6,607.96 | -5,240.11 | 1,027.98 | 3,468.80 | 1.17 |
| 11,777.00 | 92.72 | 178.86 | 6,604.20 | -5,335.02 | 1,029.62 | 3,516.84 | 1.00 |
| 11,797.00 | 92.87 | 178.72 | 6,603.22 | -5,354.99 | 1,030.04 | 3,527.01 | 1.03 |
| Final Sperry MWD Survey at 11797.00ft | | | | | | | |
| 11,852.11 | 92.87 | 178.72 | 6,600.46 | -5,410.02 | 1,031.27 | 3,555.11 | 0.00 |
| Mahalo St AA09-76-1AHNB_BHL | | | | | | | |
| 11,860.00 | 92.87 | 178.72 | 6,600.07 | -5,417.89 | 1,031.44 | 3,559.13 | 0.00 |
| Straight Line Projection to TD at 11860.00ft | | | | | | | |

Design Report for Mahalo State AA09-76-1AHNB - Actual Surveys

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|--|
| | | +N/-S (usft) | +E/-W (usft) | |
| 278.00 | 278.00 | 0.36 | -1.16 | First Gyro Survey at 278.00ft. |
| 747.00 | 746.98 | 1.13 | -4.61 | Final Gyro Survey at 747.00ft |
| 747.00 | 746.98 | 1.13 | -4.61 | Tie on to Gyro Survey at 747.00ft |
| 1,022.00 | 1,021.96 | 2.40 | -6.47 | First Sperry MWD Survey at 1022.00ft |
| 11,797.00 | 6,603.22 | -5,354.99 | 1,030.04 | Final Sperry MWD Survey at 11797.00ft |
| 11,860.00 | 6,600.07 | -5,417.89 | 1,031.44 | Straight Line Projection to TD at 11860.00ft |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin | | Start TVD (usft) |
|------------|----------------------|-------------|-------------|--------------|--------------|------------------|
| | | | | +N/_S (usft) | +E/-W (usft) | |
| User | No Target (Freehand) | 119.41 | Slot | 0.00 | 0.00 | 0.00 |

Survey tool program

| From (usft) | To (usft) | Survey/Plan | Survey Tool |
|-------------|-----------|----------------------|-------------|
| 278.00 | 747.00 | Surface Surveys | Flexi-Shot |
| 747.00 | 7,001.00 | Intermediate Surveys | MWD |
| 7,139.00 | 11,860.00 | Production Surveys | MWD |

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|--------|---------------------|-------------------|
| 861.00 | 860.97 | 9 5/8" | 9-5/8 | 13-3/4 |
| 7,053.00 | 6,628.83 | 7" | 7 | 8-3/4 |

Wellbore Targets

| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------|-------------|
| - hit/miss target | | | | | | | | | |
| - Shape | | | | | | | | | |
| Mahalo St AA09-76-1A | 0.00 | 0.00 | 6,608.06 | -5,407.70 | 1,151.76 | 1,424,507.23 | 3,293,790.09 | 40.493870 | -104.443650 |
| - actual wellpath misses target center by 120.76usft at 11852.11usft MD (6600.46 TVD, -5410.02 N, 1031.27 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Mahalo St AA09-76-1A | 0.00 | 0.00 | 6,611.70 | -4,640.99 | 1,065.00 | 1,425,273.92 | 3,293,703.33 | 40.495977 | -104.443929 |
| - actual wellpath misses target center by 22.23usft at 11080.35usft MD (6609.05 TVD, -4639.21 N, 1043.00 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Mahalo St AA09-76-1A | 0.00 | 0.00 | 6,616.61 | -3,752.99 | 1,092.00 | 1,426,161.89 | 3,293,730.33 | 40.498414 | -104.443794 |
| - actual wellpath misses target center by 13.00usft at 10192.92usft MD (6617.96 TVD, -3753.42 N, 1079.08 E) | | | | | | | | | |
| - Point | | | | | | | | | |

Directional Difficulty Index

| | | | |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey: | 1.85 °/100usft | Maximum Dogleg over Survey: | 16.89 °/100usft at 6,773.00 usft |
| Net Tortousity applicable to Plans: | 0.88 °/100usft | Directional Difficulty Index: | 6.395 |

Audit Info

North Reference Sheet for Sec. 4-T6N-R63W (Mahalo State PAD) - Mahalo State
AA09-76-1AHNB - Plan B

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 @ 4721.00usft (H&P 322). Northing and Easting are relative to Mahalo State AA09-76-1AHNB

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: 0.99996696

Grid Coordinates of Well: 1,429,914.76 usft N, 3,292,638.36 usft E

Geographical Coordinates of Well: 40° 30' 31.50" N, 104° 26' 51.22" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,860.00usft
the Bottom Hole Displacement is 5,515.20usft in the Direction of 169.22° (Grid).

Magnetic Convergence at surface is: -7.66° (13 November 2014, , BGGM2014)

