

# Noble Energy

Weld County, CO (NAD 83)

Sec. 32-T6N-R62W (Wells Ranch AE32)

Wells Ranch AE32-675

05-123-41732

Plan A

Design: Actual Surveys

## Sperry Drilling Services

### Final Survey Report

20 October, 2015

Surface UWI : 05-123-41732

Well Coordinates: 1,408,380.04 N, 3,318,870.47 E (40° 26' 55.50" N, 104° 21' 15.23" W)

Ground Level: 4,747.00 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 Wells Ranch AE32-675

KB = 24' @ 4771.00usft (H&P 343)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

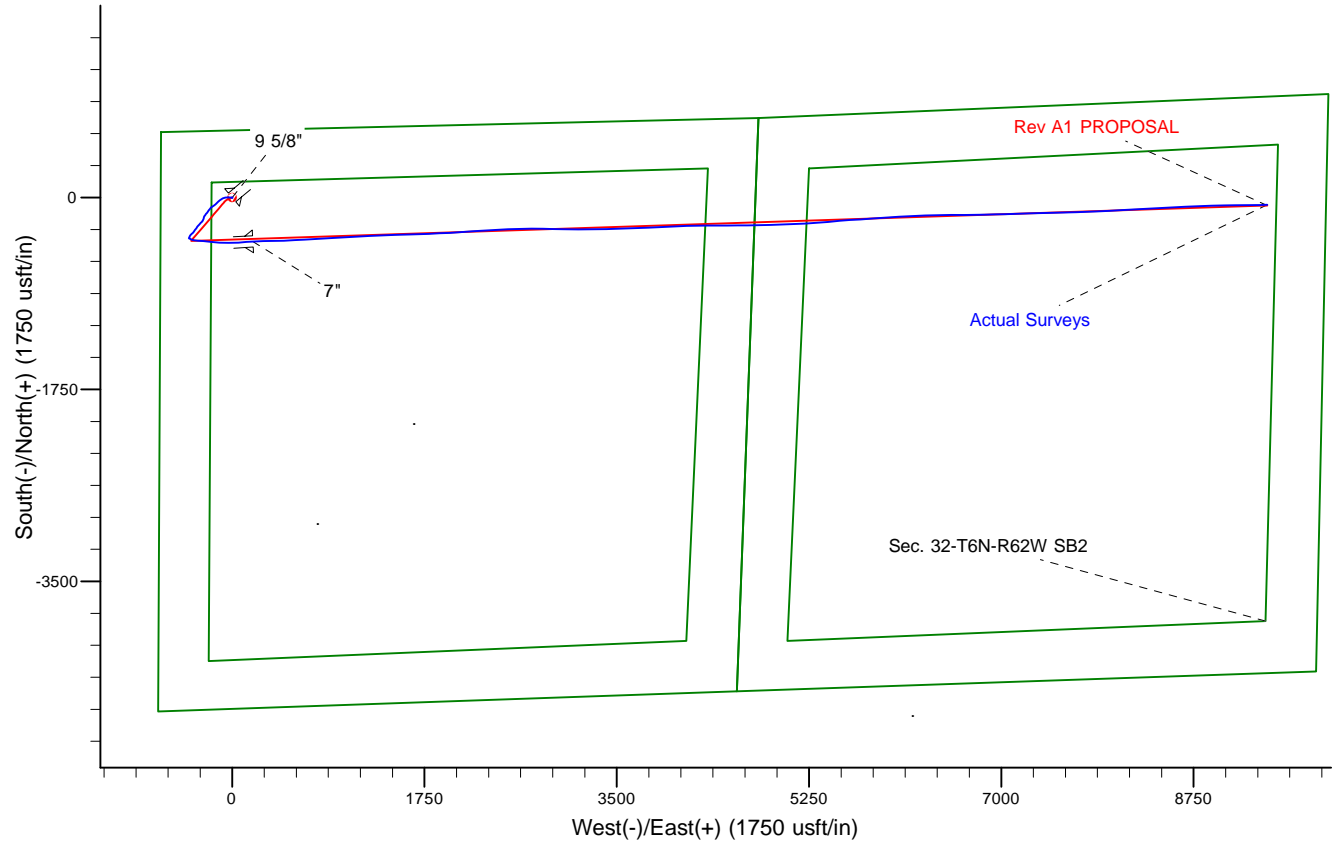
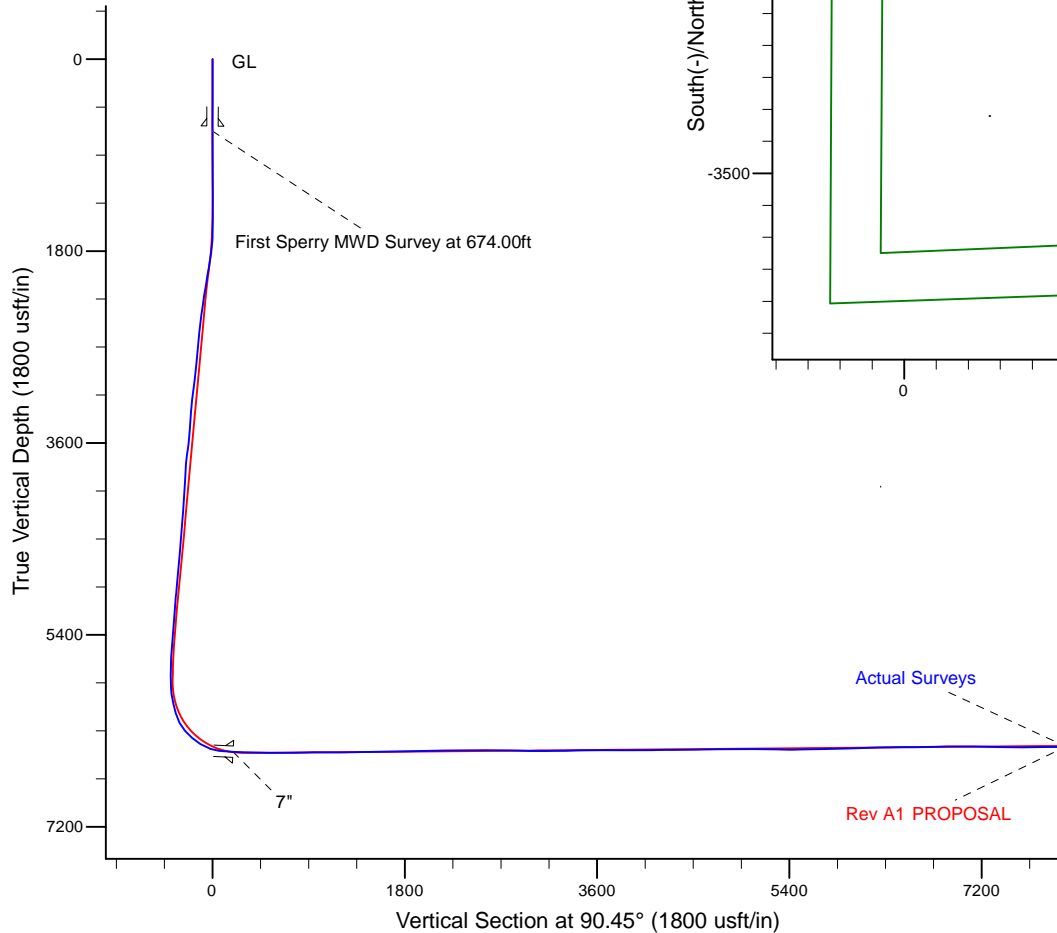
Project: Weld County, CO (NAD 83)  
 Site: Sec. 32-T6N-R62W (Wells Ranch AE32)  
 Well: Wells Ranch AE32-675  
 Wellbore: Plan A  
 Design: Actual Surveys



Platted SHL: 614' FNL, 650' FWL  
 Platted Lat/Long: 40.44875, -104.35423  
 Location: Sec. 32-T6N-R62W

~7" Casing: 1025' FNL, 840' FWL  
 Lat/Long: 40.447645 N, -104.353568 W  
 State Planes - CO Northern: 1,407,979.71 N, 3,319,059.86 E  
 Location: Sec. 32-T6N-R62W

Platted BHL: 990' FNL, 535' FEL  
 Platted Lat/Long: 40.448229, -104.320632  
 State Planes - CO Northern: 1,408,312.67 N, 3,328,222.81 E  
 Location: Sec. 33-T6N-R62W



# LEGEND

- Wells Ranch AE32-675, Plan A, Rev A1 PROPOSAL V0
- Actual Surveys

WELL DETAILS: Wells Ranch AE32-675

Ground Level: 4747.00

KB = 24' @ 4771.00usft (H&P 343)

Created By: Tatiana Gomez

Created On: 10/20/2015

**Design Report for Wells Ranch AE32-675 - 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                    |
| 628.00                                     | 0.15            | 229.95      | 628.00                | -0.53        | -0.63        | -0.62                   | 0.02                    |
| <b>9 5/8"</b>                              |                 |             |                       |              |              |                         |                         |
| 674.00                                     | 0.16            | 229.95      | 674.00                | -0.61        | -0.72        | -0.72                   | 0.02                    |
| <b>First Sperry MWD Survey at 674.00ft</b> |                 |             |                       |              |              |                         |                         |
| 738.00                                     | 0.13            | 234.17      | 738.00                | -0.71        | -0.85        | -0.84                   | 0.05                    |
| 832.00                                     | 0.17            | 150.58      | 832.00                | -0.89        | -0.87        | -0.86                   | 0.22                    |
| 926.00                                     | 0.28            | 146.48      | 926.00                | -1.20        | -0.67        | -0.66                   | 0.12                    |
| 1,021.00                                   | 0.30            | 97.79       | 1,021.00              | -1.43        | -0.30        | -0.28                   | 0.25                    |
| 1,115.00                                   | 0.39            | 116.86      | 1,115.00              | -1.61        | 0.23         | 0.25                    | 0.15                    |
| 1,206.00                                   | 0.43            | 121.08      | 1,205.99              | -1.92        | 0.80         | 0.82                    | 0.06                    |
| 1,298.00                                   | 0.47            | 113.49      | 1,297.99              | -2.25        | 1.44         | 1.46                    | 0.08                    |
| 1,482.00                                   | 0.28            | 140.34      | 1,481.99              | -2.90        | 2.42         | 2.45                    | 0.14                    |
| 1,575.00                                   | 0.68            | 348.86      | 1,574.98              | -2.53        | 2.46         | 2.48                    | 1.01                    |
| 1,668.00                                   | 3.33            | 287.51      | 1,667.92              | -1.18        | -0.22        | -0.21                   | 3.29                    |
| 1,761.00                                   | 5.74            | 272.13      | 1,760.63              | -0.19        | -7.45        | -7.44                   | 2.88                    |
| 1,853.00                                   | 7.78            | 274.19      | 1,851.99              | 0.43         | -18.26       | -18.26                  | 2.23                    |
| 1,946.00                                   | 9.70            | 275.40      | 1,943.90              | 1.63         | -32.33       | -32.35                  | 2.07                    |
| 2,039.00                                   | 10.09           | 263.58      | 2,035.53              | 1.46         | -48.23       | -48.24                  | 2.22                    |
| 2,132.00                                   | 9.57            | 258.13      | 2,127.16              | -1.04        | -63.89       | -63.88                  | 1.15                    |
| 2,223.00                                   | 10.12           | 245.72      | 2,216.83              | -5.89        | -78.59       | -78.54                  | 2.40                    |
| 2,316.00                                   | 9.17            | 244.52      | 2,308.52              | -12.44       | -92.72       | -92.62                  | 1.04                    |
| 2,408.00                                   | 9.00            | 230.50      | 2,399.38              | -20.17       | -104.89      | -104.73                 | 2.41                    |
| 2,501.00                                   | 8.25            | 230.91      | 2,491.32              | -29.00       | -115.69      | -115.46                 | 0.81                    |
| 2,594.00                                   | 7.59            | 231.47      | 2,583.44              | -37.04       | -125.67      | -125.38                 | 0.71                    |
| 2,686.00                                   | 8.31            | 226.54      | 2,674.55              | -45.39       | -135.25      | -134.89                 | 1.08                    |
| 2,778.00                                   | 7.53            | 224.93      | 2,765.67              | -54.23       | -144.33      | -143.91                 | 0.88                    |
| 2,870.00                                   | 6.77            | 224.66      | 2,856.96              | -62.36       | -152.40      | -151.91                 | 0.83                    |
| 2,965.00                                   | 7.42            | 237.61      | 2,951.24              | -69.63       | -161.52      | -160.97                 | 1.81                    |
| 3,060.00                                   | 9.11            | 238.01      | 3,045.25              | -76.90       | -173.08      | -172.47                 | 1.78                    |
| 3,154.00                                   | 8.92            | 233.18      | 3,138.09              | -85.21       | -185.22      | -184.56                 | 0.83                    |
| 3,249.00                                   | 8.48            | 220.96      | 3,232.00              | -94.91       | -195.71      | -194.97                 | 2.00                    |
| 3,343.00                                   | 6.23            | 220.05      | 3,325.22              | -104.05      | -203.54      | -202.72                 | 2.40                    |
| 3,438.00                                   | 6.78            | 213.34      | 3,419.61              | -112.68      | -209.94      | -209.05                 | 0.99                    |
| 3,533.00                                   | 7.63            | 216.94      | 3,513.86              | -122.41      | -216.81      | -215.85                 | 1.01                    |
| 3,627.00                                   | 10.41           | 220.56      | 3,606.69              | -133.85      | -226.08      | -225.04                 | 3.02                    |
| 3,722.00                                   | 11.90           | 220.37      | 3,699.89              | -147.84      | -238.01      | -236.85                 | 1.57                    |
| 3,817.00                                   | 12.13           | 211.82      | 3,792.82              | -163.78      | -249.62      | -248.34                 | 1.89                    |
| 3,911.00                                   | 9.66            | 197.75      | 3,885.13              | -179.69      | -257.23      | -255.83                 | 3.84                    |
| 4,006.00                                   | 8.81            | 196.87      | 3,978.90              | -194.24      | -261.77      | -260.26                 | 0.91                    |
| 4,100.00                                   | 7.08            | 204.98      | 4,072.00              | -206.38      | -266.31      | -264.70                 | 2.19                    |
| 4,195.00                                   | 5.15            | 216.00      | 4,166.46              | -215.14      | -271.29      | -269.61                 | 2.37                    |
| 4,289.00                                   | 5.68            | 230.50      | 4,260.04              | -221.51      | -277.36      | -275.63                 | 1.56                    |
| 4,384.00                                   | 7.19            | 220.67      | 4,354.44              | -229.01      | -284.86      | -283.07                 | 1.96                    |
| 4,478.00                                   | 7.69            | 221.92      | 4,447.65              | -238.15      | -292.90      | -291.04                 | 0.56                    |
| 4,573.00                                   | 7.69            | 219.51      | 4,541.80              | -247.79      | -301.19      | -299.25                 | 0.34                    |
| 4,668.00                                   | 8.16            | 221.36      | 4,635.89              | -257.75      | -309.68      | -307.67                 | 0.56                    |
| 4,762.00                                   | 8.46            | 217.99      | 4,728.90              | -268.21      | -318.35      | -316.26                 | 0.61                    |
| 4,857.00                                   | 8.00            | 215.38      | 4,822.92              | -279.11      | -326.48      | -324.30                 | 0.62                    |
| 4,952.00                                   | 8.88            | 215.04      | 4,916.89              | -290.50      | -334.52      | -332.25                 | 0.93                    |

## Design Report for Wells Ranch AE32-675 - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 5,046.00              | 9.17            | 216.85      | 5,009.73              | -302.43      | -343.17      | -340.81                 | 0.43                    |
| 5,141.00              | 6.39            | 211.26      | 5,103.85              | -313.01      | -350.46      | -348.01                 | 3.03                    |
| 5,235.00              | 6.35            | 224.07      | 5,197.27              | -321.22      | -356.79      | -354.28                 | 1.51                    |
| 5,330.00              | 7.51            | 232.63      | 5,291.58              | -328.76      | -365.38      | -362.81                 | 1.63                    |
| 5,424.00              | 8.25            | 225.12      | 5,384.69              | -337.25      | -375.04      | -372.41                 | 1.35                    |
| 5,519.00              | 7.67            | 211.36      | 5,478.79              | -347.47      | -383.17      | -380.46                 | 2.09                    |
| 5,614.00              | 5.85            | 201.88      | 5,573.13              | -357.38      | -388.27      | -385.48                 | 2.24                    |
| 5,708.00              | 4.41            | 202.79      | 5,666.75              | -365.16      | -391.46      | -388.61                 | 1.53                    |
| 5,803.00              | 2.22            | 199.18      | 5,761.58              | -370.26      | -393.48      | -390.59                 | 2.31                    |
| 5,898.00              | 0.83            | 267.23      | 5,856.55              | -372.04      | -394.77      | -391.87                 | 2.17                    |
| 5,992.00              | 9.96            | 108.76      | 5,950.11              | -374.69      | -387.73      | -384.81                 | 11.42                   |
| 6,087.00              | 13.13           | 117.26      | 6,043.18              | -382.28      | -370.35      | -367.37                 | 3.78                    |
| 6,181.00              | 16.96           | 104.96      | 6,133.97              | -390.71      | -347.60      | -344.56                 | 5.28                    |
| 6,276.00              | 27.52           | 89.75       | 6,221.85              | -394.21      | -312.14      | -309.07                 | 12.58                   |
| 6,370.00              | 39.80           | 96.28       | 6,299.96              | -397.42      | -260.30      | -257.21                 | 13.60                   |
| 6,465.00              | 50.67           | 96.04       | 6,366.76              | -404.63      | -193.34      | -190.19                 | 11.44                   |
| 6,559.00              | 57.28           | 93.21       | 6,422.02              | -410.68      | -117.62      | -114.42                 | 7.44                    |
| 6,654.00              | 69.54           | 90.97       | 6,464.47              | -413.68      | -32.89       | -29.67                  | 13.08                   |
| 6,748.00              | 83.33           | 85.20       | 6,486.48              | -410.50      | 58.17        | 61.36                   | 15.83                   |
| 6,822.00              | 86.64           | 85.27       | 6,492.95              | -404.38      | 131.62       | 134.76                  | 4.47                    |
| 6,880.00              | 87.13           | 86.74       | 6,496.10              | -400.34      | 189.40       | 192.50                  | 2.67                    |
| 7"                    |                 |             |                       |              |              |                         |                         |
| 6,972.00              | 87.90           | 89.07       | 6,500.10              | -396.98      | 281.24       | 284.32                  | 2.67                    |
| 7,066.00              | 88.61           | 89.33       | 6,502.96              | -395.67      | 375.19       | 378.25                  | 0.80                    |
| 7,161.00              | 89.82           | 87.55       | 6,504.26              | -393.09      | 470.14       | 473.18                  | 2.27                    |
| 7,255.00              | 89.66           | 86.73       | 6,504.69              | -388.40      | 564.02       | 567.02                  | 0.89                    |
| 7,350.00              | 89.57           | 86.84       | 6,505.32              | -383.07      | 658.87       | 661.82                  | 0.15                    |
| 7,445.00              | 90.86           | 86.88       | 6,504.97              | -377.87      | 753.72       | 756.64                  | 1.36                    |
| 7,539.00              | 91.36           | 86.70       | 6,503.15              | -372.60      | 847.56       | 850.43                  | 0.57                    |
| 7,633.00              | 90.28           | 87.53       | 6,501.80              | -367.87      | 941.43       | 944.26                  | 1.45                    |
| 7,728.00              | 89.97           | 86.24       | 6,501.59              | -362.71      | 1,036.28     | 1,039.07                | 1.40                    |
| 7,822.00              | 89.63           | 85.68       | 6,501.92              | -356.09      | 1,130.05     | 1,132.78                | 0.70                    |
| 7,917.00              | 91.02           | 87.52       | 6,501.38              | -350.45      | 1,224.87     | 1,227.56                | 2.43                    |
| 8,011.00              | 91.36           | 87.93       | 6,499.43              | -346.72      | 1,318.78     | 1,321.43                | 0.57                    |
| 8,105.00              | 90.25           | 87.92       | 6,498.11              | -343.32      | 1,412.71     | 1,415.33                | 1.18                    |
| 8,200.00              | 91.02           | 88.43       | 6,497.06              | -340.30      | 1,507.65     | 1,510.25                | 0.97                    |
| 8,295.00              | 91.11           | 88.24       | 6,495.29              | -337.54      | 1,602.59     | 1,605.17                | 0.22                    |
| 8,389.00              | 90.95           | 87.59       | 6,493.60              | -334.12      | 1,696.52     | 1,699.06                | 0.71                    |
| 8,484.00              | 91.29           | 87.33       | 6,491.75              | -329.91      | 1,791.41     | 1,793.91                | 0.45                    |
| 8,579.00              | 90.83           | 87.62       | 6,489.99              | -325.72      | 1,886.30     | 1,888.77                | 0.57                    |
| 8,673.00              | 91.05           | 86.90       | 6,488.45              | -321.23      | 1,980.18     | 1,982.61                | 0.80                    |
| 8,768.00              | 91.29           | 86.41       | 6,486.51              | -315.69      | 2,074.99     | 2,077.38                | 0.57                    |
| 8,863.00              | 91.17           | 86.06       | 6,484.47              | -309.45      | 2,169.77     | 2,172.11                | 0.39                    |
| 8,957.00              | 91.20           | 85.93       | 6,482.52              | -302.89      | 2,263.52     | 2,265.80                | 0.14                    |
| 9,052.00              | 90.06           | 86.51       | 6,481.48              | -296.62      | 2,358.30     | 2,360.54                | 1.35                    |
| 9,146.00              | 89.75           | 87.60       | 6,481.63              | -291.80      | 2,452.18     | 2,454.37                | 1.21                    |
| 9,241.00              | 90.28           | 87.23       | 6,481.61              | -287.51      | 2,547.08     | 2,549.24                | 0.68                    |
| 9,335.00              | 89.11           | 89.98       | 6,482.11              | -285.22      | 2,641.04     | 2,643.18                | 3.18                    |
| 9,429.00              | 88.86           | 89.84       | 6,483.77              | -285.07      | 2,735.02     | 2,737.16                | 0.30                    |
| 9,524.00              | 88.92           | 90.79       | 6,485.62              | -285.60      | 2,830.00     | 2,832.14                | 1.00                    |
| 9,619.00              | 88.71           | 90.75       | 6,487.58              | -286.87      | 2,924.98     | 2,927.12                | 0.23                    |

## Design Report for Wells Ranch AE32-675 - Actual Surveys

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 9,713.00              | 90.40           | 90.64       | 6,488.31              | -288.01      | 3,018.96     | 3,021.11                | 1.80                    |
| 9,808.00              | 90.31           | 90.50       | 6,487.72              | -288.96      | 3,113.96     | 3,116.11                | 0.18                    |
| 9,903.00              | 90.15           | 90.01       | 6,487.34              | -289.38      | 3,208.95     | 3,211.11                | 0.54                    |
| 9,997.00              | 91.08           | 89.57       | 6,486.33              | -289.04      | 3,302.95     | 3,305.09                | 1.09                    |
| 10,185.00             | 91.36           | 88.80       | 6,482.33              | -286.36      | 3,490.88     | 3,493.00                | 0.44                    |
| 10,277.00             | 89.94           | 87.78       | 6,481.28              | -283.62      | 3,582.83     | 3,584.93                | 1.90                    |
| 10,369.00             | 90.06           | 87.28       | 6,481.28              | -279.65      | 3,674.75     | 3,676.81                | 0.56                    |
| 10,460.00             | 89.78           | 87.14       | 6,481.41              | -275.22      | 3,765.64     | 3,767.66                | 0.34                    |
| 10,553.00             | 89.57           | 86.57       | 6,481.94              | -270.12      | 3,858.50     | 3,860.48                | 0.65                    |
| 10,646.00             | 89.88           | 87.76       | 6,482.39              | -265.52      | 3,951.38     | 3,953.32                | 1.32                    |
| 10,739.00             | 90.92           | 88.03       | 6,481.74              | -262.11      | 4,044.31     | 4,046.23                | 1.16                    |
| 10,832.00             | 91.51           | 88.53       | 6,479.76              | -259.32      | 4,137.25     | 4,139.14                | 0.83                    |
| 10,924.00             | 90.34           | 88.74       | 6,478.28              | -257.12      | 4,229.21     | 4,231.08                | 1.29                    |
| 11,017.00             | 90.25           | 89.30       | 6,477.80              | -255.53      | 4,322.20     | 4,324.05                | 0.61                    |
| 11,202.00             | 90.80           | 90.14       | 6,476.10              | -254.63      | 4,507.18     | 4,509.03                | 0.54                    |
| 11,294.00             | 90.71           | 89.47       | 6,474.89              | -254.32      | 4,599.17     | 4,601.01                | 0.73                    |
| 11,386.00             | 90.68           | 89.26       | 6,473.78              | -253.30      | 4,691.16     | 4,692.99                | 0.23                    |
| 11,478.00             | 91.42           | 89.20       | 6,472.09              | -252.06      | 4,783.14     | 4,784.95                | 0.81                    |
| 11,572.00             | 90.09           | 88.22       | 6,470.85              | -249.94      | 4,877.10     | 4,878.90                | 1.76                    |
| 11,665.00             | 89.63           | 88.25       | 6,471.08              | -247.08      | 4,970.06     | 4,971.83                | 0.50                    |
| 11,757.00             | 89.48           | 87.97       | 6,471.79              | -244.05      | 5,062.00     | 5,063.75                | 0.35                    |
| 11,849.00             | 89.94           | 87.39       | 6,472.26              | -240.32      | 5,153.93     | 5,155.64                | 0.80                    |
| 11,941.00             | 89.20           | 86.67       | 6,472.95              | -235.56      | 5,245.80     | 5,247.47                | 1.12                    |
| 12,036.00             | 88.74           | 85.09       | 6,474.66              | -228.73      | 5,340.54     | 5,342.15                | 1.73                    |
| 12,131.00             | 90.37           | 84.69       | 6,475.40              | -220.27      | 5,435.15     | 5,436.70                | 1.77                    |
| 12,225.00             | 90.62           | 85.20       | 6,474.58              | -211.99      | 5,528.78     | 5,530.26                | 0.60                    |
| 12,319.00             | 91.39           | 86.55       | 6,472.93              | -205.23      | 5,622.52     | 5,623.95                | 1.65                    |
| 12,414.00             | 91.23           | 85.99       | 6,470.76              | -199.05      | 5,717.29     | 5,718.67                | 0.61                    |
| 12,509.00             | 91.26           | 86.02       | 6,468.70              | -192.43      | 5,812.04     | 5,813.36                | 0.04                    |
| 12,603.00             | 91.64           | 86.19       | 6,466.32              | -186.05      | 5,905.79     | 5,907.06                | 0.44                    |
| 12,698.00             | 91.85           | 86.06       | 6,463.43              | -179.63      | 6,000.53     | 6,001.75                | 0.26                    |
| 12,793.00             | 92.28           | 86.10       | 6,460.00              | -173.14      | 6,095.25     | 6,096.41                | 0.45                    |
| 12,887.00             | 91.88           | 88.10       | 6,456.59              | -168.39      | 6,189.06     | 6,190.18                | 2.17                    |
| 12,982.00             | 90.80           | 88.16       | 6,454.37              | -165.29      | 6,283.98     | 6,285.08                | 1.14                    |
| 13,076.00             | 89.32           | 87.07       | 6,454.27              | -161.38      | 6,377.90     | 6,378.96                | 1.96                    |
| 13,171.00             | 91.23           | 90.55       | 6,453.82              | -159.41      | 6,472.86     | 6,473.90                | 4.18                    |
| 13,266.00             | 90.74           | 89.58       | 6,452.18              | -159.51      | 6,567.84     | 6,568.88                | 1.14                    |
| 13,360.00             | 91.11           | 89.59       | 6,450.67              | -158.83      | 6,661.83     | 6,662.86                | 0.39                    |
| 13,455.00             | 91.08           | 88.75       | 6,448.85              | -157.46      | 6,756.80     | 6,757.82                | 0.88                    |
| 13,550.00             | 91.69           | 88.82       | 6,446.55              | -155.44      | 6,851.75     | 6,852.75                | 0.65                    |
| 13,644.00             | 89.60           | 88.94       | 6,445.50              | -153.61      | 6,945.72     | 6,946.70                | 2.23                    |
| 13,739.00             | 89.26           | 88.50       | 6,446.44              | -151.48      | 7,040.69     | 7,041.66                | 0.59                    |
| 13,834.00             | 88.98           | 87.81       | 6,447.90              | -148.43      | 7,135.63     | 7,136.57                | 0.78                    |
| 13,928.00             | 89.04           | 88.58       | 6,449.52              | -145.47      | 7,229.57     | 7,230.48                | 0.82                    |
| 14,023.00             | 88.65           | 88.63       | 6,451.44              | -143.15      | 7,324.52     | 7,325.41                | 0.41                    |
| 14,118.00             | 89.54           | 88.01       | 6,452.94              | -140.37      | 7,419.47     | 7,420.33                | 1.14                    |
| 14,212.00             | 89.35           | 88.65       | 6,453.85              | -137.63      | 7,513.42     | 7,514.27                | 0.71                    |
| 14,307.00             | 90.56           | 88.46       | 6,453.92              | -135.23      | 7,608.39     | 7,609.21                | 1.29                    |
| 14,401.00             | 91.33           | 88.86       | 6,452.37              | -133.04      | 7,702.35     | 7,703.15                | 0.92                    |
| 14,496.00             | 90.00           | 87.51       | 6,451.27              | -130.03      | 7,797.29     | 7,798.07                | 1.99                    |
| 14,591.00             | 89.69           | 87.25       | 6,451.53              | -125.68      | 7,892.19     | 7,892.93                | 0.43                    |

Design Report for Wells Ranch AE32-675 - Actual Surveys

| Measured Depth (usft)                        | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|
| 14,685.00                                    | 89.97           | 86.48       | 6,451.81              | -120.54      | 7,986.05     | 7,986.75                | 0.87                    |
| 14,780.00                                    | 89.82           | 86.25       | 6,451.98              | -114.52      | 8,080.86     | 8,081.51                | 0.29                    |
| 14,875.00                                    | 90.34           | 87.00       | 6,451.85              | -108.93      | 8,175.69     | 8,176.29                | 0.96                    |
| 14,969.00                                    | 90.06           | 87.94       | 6,451.52              | -104.78      | 8,269.60     | 8,270.17                | 1.04                    |
| 15,064.00                                    | 90.15           | 87.83       | 6,451.35              | -101.27      | 8,364.54     | 8,365.07                | 0.15                    |
| 15,159.00                                    | 89.81           | 86.71       | 6,451.38              | -96.75       | 8,459.43     | 8,459.92                | 1.23                    |
| 15,253.00                                    | 89.72           | 86.02       | 6,451.77              | -90.79       | 8,553.24     | 8,553.68                | 0.74                    |
| 15,348.00                                    | 90.09           | 86.67       | 6,451.92              | -84.73       | 8,648.04     | 8,648.44                | 0.79                    |
| 15,444.00                                    | 89.23           | 88.32       | 6,452.49              | -80.54       | 8,743.94     | 8,744.31                | 1.94                    |
| 15,540.00                                    | 89.20           | 88.30       | 6,453.81              | -77.71       | 8,839.89     | 8,840.23                | 0.04                    |
| 15,637.00                                    | 88.80           | 87.63       | 6,455.50              | -74.26       | 8,936.82     | 8,937.12                | 0.80                    |
| 15,734.00                                    | 89.20           | 89.02       | 6,457.19              | -71.43       | 9,033.76     | 9,034.04                | 1.49                    |
| 15,831.00                                    | 91.17           | 89.27       | 6,456.88              | -69.98       | 9,130.74     | 9,131.01                | 2.05                    |
| 16,026.00                                    | 90.89           | 89.48       | 6,453.38              | -67.85       | 9,325.70     | 9,325.94                | 0.18                    |
| 16,053.00                                    | 90.62           | 88.50       | 6,453.02              | -67.38       | 9,352.69     | 9,352.93                | 3.76                    |
| Final Sperry MWD Survey at 16053.00ft        |                 |             |                       |              |              |                         |                         |
| 16,120.00                                    | 90.62           | 88.50       | 6,452.29              | -65.62       | 9,419.66     | 9,419.89                | 0.00                    |
| Straight Line Projection to TD at 16120.00ft |                 |             |                       |              |              |                         |                         |

Design Annotations

| Measured Depth (usft) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Comment                                      |
|-----------------------|-----------------------|--------------|--------------|--|
| 674.00                | 674.00                | -0.61        | -0.72        | First Sperry MWD Survey at 674.00ft          |
| 16,053.00             | 6,453.02              | -67.38       | 9,352.69     | Final Sperry MWD Survey at 16053.00ft        |
| 16,120.00             | 6,452.29              | -65.62       | 9,419.66     | Straight Line Projection to TD at 16120.00ft |

Vertical Section Information

| Angle Type | Target                          | Azimuth (°) | Origin Type | +N/-S (usft) | +E/-W (usft) | Start TVD (usft) |
|------------|---------------------------------|-------------|-------------|--------------|--------------|------------------|
| Target     | Wells Ranch AE32-675_Rev A1_BHL | 90.45       | Slot        | 0.00         | 0.00         | 0.00             |

Survey tool program

| From (usft) | To (usft) | Survey/Plan          | Survey Tool    |
|-------------|-----------|----------------------|----------------|
| 674.00      | 6,822.00  | Intermediate Surveys | MWD            |
| 6,972.00    | 16,120.00 | Production Surveys   | MWD+IFR1+MS_WY |

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name   | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|--------|---------------------|-------------------|
| 628.00                | 628.00                | 9 5/8" | 9-5/8               | 13-3/4            |
| 6,880.00              | 6,496.10              | 7"     | 7                   | 8-3/4             |

## Design Report for Wells Ranch AE32-675 - Actual Surveys

### Wellbore Targets

| Target Name<br>- hit/miss target<br>- Shape  | Dip<br>Angle<br>(°) | Dip<br>Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude  | Longitude   |
|--|---------------------|--------------------|---------------|-----------------|-----------------|--------------------|-------------------|-----------|-------------|
| Wells Ranch AE32-675<br>- actual wellpath misses target center by 0.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)<br>- Point              | 0.00                | 0.00               | 0.00          | 0.02            | 0.00            | 1,408,380.06       | 3,318,870.47      | 40.448750 | -104.354230 |
| Wells Ranch AE32-675<br>- actual wellpath misses target center by 31.26usft at 5814.61usft MD (5773.19 TVD, -370.66 N, -393.63 E)<br>- Point | 0.00                | 0.00               | 5,773.00      | -395.00         | -374.00         | 1,407,985.06       | 3,318,496.48      | 40.447679 | -104.355592 |
| Wells Ranch AE32-675<br>- actual wellpath misses target center by 25.46usft at 16120.00usft MD (6452.29 TVD, -65.62 N, 9419.66 E)<br>- Point | 0.00                | 0.00               | 6,428.00      | -73.21          | 9,420.17        | 1,408,306.84       | 3,328,290.29      | 40.448210 | -104.320390 |

### Directional Difficulty Index

|                                     |                |                               |                                  |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey:         | 1.60 °/100usft | Maximum Dogleg over Survey:   | 15.83 °/100usft at 6,748.00 usft |
| Net Tortousity applicable to Plans: | 0.91 °/100usft | Directional Difficulty Index: | 6.822                            |

### Audit Info