



**Caza**  
**Oil & Gas, Inc.**

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

JUN 19 2017

RECEIVED

## **Caza Operating, LLC**

30-015-43555

Eddy County, NM (NAD 27 NME)

Forehand Ranch 22 State

#8H

ST 1

Design: ST 1

## **Standard Survey Report**

22 May, 2017



**Scientific Drilling**

[www.scientificdrilling.com](http://www.scientificdrilling.com)

**Company:** Caza Operating, LLC  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Forehand Ranch 22 State  
**Well:** #8H  
**Wellbore:** ST 1  
**Design:** ST 1

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** KB=27' @ 3176.00usft  
**MD Reference:** KB=27' @ 3176.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Midland District

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy County, NM (NAD 27 NME)         |                      |                |
| <b>Map System:</b> | US State Plane 1927 (Exact solution) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD 1927 (NADCON CONUS)              |                      |                |
| <b>Map Zone:</b>   | New Mexico East 3001                 |                      |                |

**Site** Forehand Ranch 22 State

**Site Position:** **Northing:** 468,975.80 usft **Latitude:** 32° 17' 21.211 N  
**From:** Map **Easting:** 550,495.80 usft **Longitude:** 104° 10' 11.733 W  
**Position Uncertainty:** 0.00 usft **Slot Radius:** 13-3/16 " **Grid Convergence:** 0.09 °

**Well** #8H  
**Well Position** **+N/-S** 0.00 usft **Northing:** 469,054.70 usft **Latitude:** 32° 17' 22.034 N  
**+E/-W** 0.00 usft **Easting:** 547,610.60 usft **Longitude:** 104° 10' 45.344 W  
**Position Uncertainty** 0.00 usft **Wellhead Elevation:** 0.00 usft **Ground Level:** 3,149.00 usft

**Wellbore** ST 1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | HDGM       | 5/12/2017   | 7.42            | 60.10         | 48,111              |

**Design** ST 1

**Audit Notes:**

**Version:** 1.0 **Phase:** ACTUAL **Tie On Depth:** 8,362.00

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (bearing) |
|-------------------|-------------------------|--------------|--------------|---------------------|
|                   | 0.00                    | 0.00         | 0.00         | 180.27              |

**Survey Program** Date 5/22/2017

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description     |
|-------------|-----------|-------------------|-----------|-----------------|
| 299.00      | 8,362.00  | SDI MWD (OH)      | MWD+HDGM  | OWSG MWD + HDGM |
| 8,394.00    | 16,456.00 | SDI MWD #2 (ST 1) | MWD+HDGM  | OWSG MWD + HDGM |

**Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (bearing) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.00                  | 0.00            | 0.00              | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 299.00                | 0.65            | 70.81             | 298.99                | 0.56         | 1.60         | -0.56                   | 0.22                    | 0.22                   | 0.00                  |
| 452.00                | 1.18            | 63.35             | 451.97                | 1.55         | 3.83         | -1.57                   | 0.35                    | 0.35                   | -4.88                 |
| 573.00                | 1.92            | 64.17             | 572.93                | 2.99         | 6.77         | -3.02                   | 0.61                    | 0.61                   | 0.68                  |
| 707.00                | 1.99            | 60.27             | 706.85                | 5.12         | 10.81        | -5.17                   | 0.11                    | 0.05                   | -2.91                 |
| 805.00                | 1.44            | 65.52             | 804.81                | 6.48         | 13.41        | -6.54                   | 0.58                    | -0.56                  | 5.36                  |
| 988.00                | 2.40            | 17.83             | 987.71                | 11.08        | 16.67        | -11.16                  | 0.97                    | 0.52                   | -26.06                |
| 1,177.00              | 3.30            | 0.12              | 1,176.48              | 20.29        | 17.90        | -20.37                  | 0.66                    | 0.48                   | -9.37                 |
| 1,366.00              | 3.44            | 15.68             | 1,365.16              | 31.18        | 19.44        | -31.27                  | 0.49                    | 0.07                   | 8.23                  |
| 1,556.00              | 3.12            | 24.26             | 1,554.85              | 41.39        | 23.10        | -41.49                  | 0.31                    | -0.17                  | 4.52                  |

**Company:** Caza Operating, LLC  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Forehand Ranch 22 State  
**Well:** #8H  
**Wellbore:** ST 1  
**Design:** ST 1

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** KB=27' @ 3176.00usft  
**MD Reference:** KB=27' @ 3176.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Midland District

**Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (bearing) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,746.00              | 4.08            | 34.69             | 1,744.47              | 51.66        | 29.08        | -51.79                  | 0.61                    | 0.51                   | 5.49                  |
| 1,935.00              | 4.22            | 29.85             | 1,932.98              | 63.22        | 36.36        | -63.39                  | 0.20                    | 0.07                   | -2.56                 |
| 2,126.00              | 4.34            | 342.79            | 2,123.50              | 76.22        | 37.72        | -76.40                  | 1.79                    | 0.06                   | -24.64                |
| 2,315.00              | 3.53            | 336.62            | 2,312.05              | 88.39        | 33.30        | -88.55                  | 0.48                    | -0.43                  | -3.26                 |
| 2,504.00              | 3.18            | 335.97            | 2,500.73              | 98.52        | 28.86        | -98.66                  | 0.19                    | -0.19                  | -0.34                 |
| 2,694.00              | 2.95            | 337.94            | 2,690.46              | 107.87       | 24.87        | -107.98                 | 0.13                    | -0.12                  | 1.04                  |
| 2,884.00              | 2.86            | 331.81            | 2,880.21              | 116.58       | 20.80        | -116.67                 | 0.17                    | -0.05                  | -3.23                 |
| 3,073.00              | 2.27            | 333.76            | 3,069.02              | 124.09       | 16.92        | -124.17                 | 0.32                    | -0.31                  | 1.03                  |
| 3,262.00              | 3.20            | 339.39            | 3,257.81              | 132.38       | 13.40        | -132.44                 | 0.51                    | 0.49                   | 2.98                  |
| 3,452.00              | 3.48            | 340.11            | 3,447.48              | 142.77       | 9.58         | -142.81                 | 0.15                    | 0.15                   | 0.38                  |
| 3,641.00              | 3.40            | 346.19            | 3,636.14              | 153.61       | 6.29         | -153.63                 | 0.20                    | -0.04                  | 3.22                  |
| 3,830.00              | 3.37            | 343.81            | 3,824.81              | 164.38       | 3.40         | -164.40                 | 0.08                    | -0.02                  | -1.26                 |
| 4,020.00              | 2.86            | 344.85            | 4,014.53              | 174.32       | 0.60         | -174.32                 | 0.27                    | -0.27                  | 0.55                  |
| 4,210.00              | 2.42            | 340.57            | 4,204.33              | 182.68       | -1.97        | -182.67                 | 0.25                    | -0.23                  | -2.25                 |
| 4,399.00              | 2.78            | 348.68            | 4,393.14              | 190.94       | -4.20        | -190.92                 | 0.27                    | 0.19                   | 4.29                  |
| 4,588.00              | 2.55            | 345.23            | 4,581.93              | 199.50       | -6.17        | -199.47                 | 0.15                    | -0.12                  | -1.83                 |
| 4,778.00              | 3.13            | 0.50              | 4,771.70              | 208.77       | -7.20        | -208.74                 | 0.50                    | 0.31                   | 8.04                  |
| 4,967.00              | 3.34            | 4.74              | 4,960.40              | 219.42       | -6.70        | -219.38                 | 0.17                    | 0.11                   | 2.24                  |
| 5,157.00              | 2.98            | 4.03              | 5,150.11              | 229.86       | -5.90        | -229.83                 | 0.19                    | -0.19                  | -0.37                 |
| 5,347.00              | 2.46            | 7.32              | 5,339.90              | 238.83       | -5.03        | -238.81                 | 0.29                    | -0.27                  | 1.73                  |
| 5,537.00              | 3.04            | 348.42            | 5,529.68              | 247.81       | -5.52        | -247.78                 | 0.56                    | 0.31                   | -9.95                 |
| 5,727.00              | 2.73            | 343.86            | 5,719.44              | 257.09       | -7.79        | -257.05                 | 0.20                    | -0.16                  | -2.40                 |
| 5,917.00              | 2.62            | 335.58            | 5,909.23              | 265.39       | -10.84       | -265.34                 | 0.21                    | -0.06                  | -4.36                 |
| 6,106.00              | 1.68            | 327.24            | 6,098.10              | 271.66       | -14.13       | -271.59                 | 0.52                    | -0.50                  | -4.41                 |
| 6,295.00              | 1.48            | 333.72            | 6,287.03              | 276.18       | -16.71       | -276.10                 | 0.14                    | -0.11                  | 3.43                  |
| 6,483.00              | 1.43            | 336.35            | 6,474.97              | 280.50       | -18.72       | -280.41                 | 0.04                    | -0.03                  | 1.40                  |
| 6,673.00              | 1.13            | 337.30            | 6,664.92              | 284.40       | -20.40       | -284.30                 | 0.16                    | -0.16                  | 0.50                  |
| 6,853.00              | 1.12            | 338.12            | 6,844.88              | 287.67       | -21.74       | -287.57                 | 0.01                    | -0.01                  | 0.46                  |
| 7,043.00              | 1.03            | 16.13             | 7,034.85              | 291.04       | -21.96       | -290.93                 | 0.37                    | -0.05                  | 20.01                 |
| 7,234.00              | 0.70            | 308.01            | 7,225.84              | 293.40       | -22.40       | -293.30                 | 0.53                    | -0.17                  | -35.66                |
| 7,423.00              | 0.78            | 304.09            | 7,414.82              | 294.83       | -24.37       | -294.72                 | 0.05                    | 0.04                   | -2.07                 |
| 7,605.00              | 1.14            | 284.69            | 7,596.79              | 295.99       | -27.15       | -295.86                 | 0.26                    | 0.20                   | -10.66                |
| 7,794.00              | 2.15            | 265.93            | 7,785.72              | 296.21       | -32.51       | -296.06                 | 0.60                    | 0.53                   | -9.93                 |
| 7,983.00              | 1.60            | 149.74            | 7,974.66              | 293.68       | -34.71       | -293.52                 | 1.69                    | -0.29                  | -61.48                |
| 8,173.00              | 0.66            | 132.86            | 8,164.62              | 290.65       | -32.58       | -290.49                 | 0.52                    | -0.49                  | -8.88                 |
| 8,362.00              | 0.48            | 126.00            | 8,353.61              | 289.44       | -31.14       | -289.29                 | 0.10                    | -0.10                  | -3.63                 |
| 8,394.00              | 0.15            | 210.29            | 8,385.61              | 289.33       | -31.05       | -289.18                 | 1.53                    | -1.03                  | 263.41                |
| 8,504.00              | 6.82            | 187.56            | 8,495.35              | 282.72       | -31.98       | -282.57                 | 6.07                    | 6.06                   | -20.66                |
| 8,552.00              | 8.71            | 188.13            | 8,542.91              | 276.30       | -32.87       | -276.14                 | 3.94                    | 3.94                   | 1.19                  |
| 8,599.00              | 14.31           | 186.15            | 8,588.94              | 266.99       | -34.00       | -266.83                 | 11.94                   | 11.91                  | -4.21                 |
| 8,647.00              | 18.77           | 185.97            | 8,634.94              | 253.40       | -35.44       | -253.24                 | 9.29                    | 9.29                   | -0.38                 |
| 8,694.00              | 22.97           | 181.55            | 8,678.85              | 236.71       | -36.47       | -236.54                 | 9.54                    | 8.94                   | -9.40                 |
| 8,742.00              | 25.45           | 180.39            | 8,722.63              | 217.03       | -36.80       | -216.86                 | 5.26                    | 5.17                   | -2.42                 |

**Company:** Caza Operating, LLC  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Forehand Ranch 22 State  
**Well:** #8H  
**Wellbore:** ST 1  
**Design:** ST 1

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** KB=27' @ 3176.00usft  
**MD Reference:** KB=27' @ 3176.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Midland District

**Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (bearing) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,789.00              | 30.25           | 179.48            | 8,764.17              | 195.08       | -36.76       | -194.91                 | 10.25                   | 10.21                  | -1.94                 |
| 8,837.00              | 33.16           | 176.90            | 8,805.01              | 169.88       | -35.94       | -169.71                 | 6.69                    | 6.06                   | -5.38                 |
| 8,884.00              | 36.73           | 175.71            | 8,843.53              | 143.02       | -34.19       | -142.86                 | 7.73                    | 7.60                   | -2.53                 |
| 8,932.00              | 40.28           | 177.99            | 8,881.09              | 113.19       | -32.57       | -113.03                 | 7.96                    | 7.40                   | 4.75                  |
| 8,979.00              | 43.74           | 178.62            | 8,916.00              | 81.75        | -31.65       | -81.60                  | 7.42                    | 7.36                   | 1.34                  |
| 9,026.00              | 45.91           | 178.30            | 8,949.34              | 48.63        | -30.76       | -48.49                  | 4.64                    | 4.62                   | -0.68                 |
| 9,071.00              | 48.86           | 176.94            | 8,979.80              | 15.55        | -29.37       | -15.41                  | 6.92                    | 6.56                   | -3.02                 |
| 9,121.00              | 52.77           | 176.24            | 9,011.39              | -23.13       | -27.06       | 23.26                   | 7.89                    | 7.82                   | -1.40                 |
| 9,168.00              | 56.36           | 176.29            | 9,038.63              | -61.34       | -24.57       | 61.45                   | 7.64                    | 7.64                   | 0.11                  |
| 9,216.00              | 59.63           | 176.25            | 9,064.07              | -101.95      | -21.92       | 102.05                  | 6.81                    | 6.81                   | -0.08                 |
| 9,263.00              | 62.93           | 177.12            | 9,086.65              | -143.09      | -19.54       | 143.18                  | 7.21                    | 7.02                   | 1.85                  |
| 9,311.00              | 66.42           | 175.10            | 9,107.18              | -186.37      | -16.59       | 186.44                  | 8.21                    | 7.27                   | -4.21                 |
| 9,358.00              | 69.13           | 175.88            | 9,124.96              | -229.74      | -13.17       | 229.80                  | 5.97                    | 5.77                   | 1.66                  |
| 9,407.00              | 69.73           | 175.29            | 9,142.17              | -275.48      | -9.64        | 275.52                  | 1.66                    | 1.22                   | -1.20                 |
| 9,454.00              | 73.33           | 176.92            | 9,157.06              | -319.94      | -6.62        | 319.97                  | 8.34                    | 7.66                   | 3.47                  |
| 9,501.00              | 74.07           | 178.17            | 9,170.25              | -365.01      | -4.68        | 365.03                  | 3.00                    | 1.57                   | 2.66                  |
| 9,548.00              | 78.00           | 179.56            | 9,181.59              | -410.60      | -3.79        | 410.62                  | 8.84                    | 8.36                   | 2.96                  |
| 9,596.00              | 82.90           | 180.13            | 9,189.56              | -457.92      | -3.66        | 457.94                  | 10.28                   | 10.21                  | 1.19                  |
| 9,666.00              | 89.63           | 184.05            | 9,194.11              | -527.68      | -6.21        | 527.70                  | 11.12                   | 9.61                   | 5.60                  |
| 9,787.00              | 90.44           | 184.54            | 9,194.04              | -648.33      | -15.28       | 648.40                  | 0.78                    | 0.67                   | 0.40                  |
| 9,882.00              | 91.18           | 184.59            | 9,192.70              | -743.02      | -22.84       | 743.12                  | 0.78                    | 0.78                   | 0.05                  |
| 9,977.00              | 90.50           | 184.00            | 9,191.31              | -837.74      | -29.95       | 837.88                  | 0.95                    | -0.72                  | -0.62                 |
| 10,072.00             | 89.97           | 182.35            | 9,190.92              | -932.59      | -35.21       | 932.75                  | 1.82                    | -0.56                  | -1.74                 |
| 10,167.00             | 90.34           | 181.78            | 9,190.66              | -1,027.53    | -38.63       | 1,027.70                | 0.72                    | 0.39                   | -0.60                 |
| 10,261.00             | 89.90           | 180.68            | 9,190.46              | -1,121.51    | -40.65       | 1,121.69                | 1.26                    | -0.47                  | -1.17                 |
| 10,356.00             | 89.33           | 179.16            | 9,191.10              | -1,216.50    | -40.52       | 1,216.68                | 1.71                    | -0.60                  | -1.60                 |
| 10,451.00             | 88.42           | 177.71            | 9,192.97              | -1,311.45    | -37.93       | 1,311.61                | 1.80                    | -0.96                  | -1.53                 |
| 10,545.00             | 89.76           | 178.20            | 9,194.46              | -1,405.37    | -34.57       | 1,405.52                | 1.52                    | 1.43                   | 0.52                  |
| 10,639.00             | 90.81           | 178.09            | 9,193.99              | -1,499.32    | -31.53       | 1,499.45                | 1.12                    | 1.12                   | -0.12                 |
| 10,734.00             | 90.81           | 178.41            | 9,192.65              | -1,594.27    | -28.63       | 1,594.38                | 0.34                    | 0.00                   | 0.34                  |
| 10,829.00             | 90.84           | 178.85            | 9,191.28              | -1,689.23    | -26.36       | 1,689.33                | 0.46                    | 0.03                   | 0.46                  |
| 10,924.00             | 91.21           | 178.30            | 9,189.58              | -1,784.18    | -23.99       | 1,784.28                | 0.70                    | 0.39                   | -0.58                 |
| 11,019.00             | 91.38           | 178.34            | 9,187.43              | -1,879.12    | -21.21       | 1,879.20                | 0.18                    | 0.18                   | 0.04                  |
| 11,113.00             | 91.04           | 177.53            | 9,185.45              | -1,973.04    | -17.82       | 1,973.10                | 0.93                    | -0.36                  | -0.86                 |
| 11,219.00             | 90.24           | 179.19            | 9,184.26              | -2,078.98    | -14.79       | 2,079.03                | 1.74                    | -0.75                  | 1.57                  |
| 11,313.00             | 90.54           | 180.26            | 9,183.62              | -2,172.98    | -14.34       | 2,173.02                | 1.18                    | 0.32                   | 1.14                  |
| 11,408.00             | 90.64           | 180.68            | 9,182.65              | -2,267.97    | -15.12       | 2,268.01                | 0.45                    | 0.11                   | 0.44                  |
| 11,504.00             | 90.20           | 181.05            | 9,181.94              | -2,363.95    | -16.57       | 2,364.01                | 0.60                    | -0.46                  | 0.39                  |
| 11,599.00             | 90.24           | 180.90            | 9,181.58              | -2,458.94    | -18.18       | 2,459.00                | 0.16                    | 0.04                   | -0.16                 |
| 11,694.00             | 90.50           | 180.69            | 9,180.96              | -2,553.93    | -19.50       | 2,553.99                | 0.35                    | 0.27                   | -0.22                 |
| 11,789.00             | 90.87           | 181.18            | 9,179.83              | -2,648.91    | -21.05       | 2,648.98                | 0.65                    | 0.39                   | 0.52                  |
| 11,883.00             | 89.63           | 181.06            | 9,179.42              | -2,742.89    | -22.89       | 2,742.96                | 1.33                    | -1.32                  | -0.13                 |
| 11,978.00             | 89.29           | 181.08            | 9,180.31              | -2,837.87    | -24.66       | 2,837.95                | 0.36                    | -0.36                  | 0.02                  |

**Company:** Caza Operating, LLC  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Forehand Ranch 22 State  
**Well:** #8H  
**Wellbore:** ST 1  
**Design:** ST 1

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** KB=27' @ 3176.00usft  
**MD Reference:** KB=27' @ 3176.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Midland District

**Survey**

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(bearing) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
|-----------------------------|--------------------|----------------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 12,073.00                   | 89.16              | 179.98               | 9,181.60                    | -2,932.85       | -25.54          | 2,932.94                      | 1.17                          | -0.14                        | -1.16                       |
| 12,167.00                   | 88.96              | 179.18               | 9,183.14                    | -3,026.84       | -24.85          | 3,026.92                      | 0.88                          | -0.21                        | -0.85                       |
| 12,262.00                   | 89.03              | 179.37               | 9,184.81                    | -3,121.81       | -23.65          | 3,121.89                      | 0.21                          | 0.07                         | 0.20                        |
| 12,357.00                   | 89.13              | 178.79               | 9,186.33                    | -3,216.79       | -22.13          | 3,216.86                      | 0.62                          | 0.11                         | -0.61                       |
| 12,453.00                   | 89.66              | 179.17               | 9,187.35                    | -3,312.77       | -20.42          | 3,312.83                      | 0.68                          | 0.55                         | 0.40                        |
| 12,547.00                   | 89.16              | 178.49               | 9,188.31                    | -3,406.74       | -18.50          | 3,406.79                      | 0.90                          | -0.53                        | -0.72                       |
| 12,641.00                   | 89.87              | 179.98               | 9,189.11                    | -3,500.73       | -17.24          | 3,500.77                      | 1.76                          | 0.76                         | 1.59                        |
| 12,736.00                   | 88.76              | 178.84               | 9,190.25                    | -3,595.71       | -16.27          | 3,595.75                      | 1.67                          | -1.17                        | -1.20                       |
| 12,831.00                   | 88.72              | 179.25               | 9,192.33                    | -3,690.68       | -14.68          | 3,690.71                      | 0.43                          | -0.04                        | 0.43                        |
| 12,926.00                   | 91.38              | 179.21               | 9,192.25                    | -3,785.66       | -13.41          | 3,785.68                      | 2.80                          | 2.80                         | -0.04                       |
| 13,020.00                   | 92.49              | 179.95               | 9,189.08                    | -3,879.60       | -12.72          | 3,879.62                      | 1.42                          | 1.18                         | 0.79                        |
| 13,114.00                   | 91.21              | 179.15               | 9,186.04                    | -3,973.55       | -11.98          | 3,973.56                      | 1.61                          | -1.36                        | -0.85                       |
| 13,210.00                   | 91.04              | 178.92               | 9,184.16                    | -4,069.51       | -10.36          | 4,069.52                      | 0.30                          | -0.18                        | -0.24                       |
| 13,305.00                   | 91.01              | 179.54               | 9,182.46                    | -4,164.49       | -9.09           | 4,164.49                      | 0.65                          | -0.03                        | 0.65                        |
| 13,400.00                   | 88.76              | 180.72               | 9,182.65                    | -4,259.48       | -9.30           | 4,259.48                      | 2.67                          | -2.37                        | 1.24                        |
| 13,495.00                   | 88.08              | 179.74               | 9,185.27                    | -4,354.44       | -9.68           | 4,354.44                      | 1.26                          | -0.72                        | -1.03                       |
| 13,590.00                   | 89.16              | 179.85               | 9,187.56                    | -4,449.41       | -9.34           | 4,449.41                      | 1.14                          | 1.14                         | 0.12                        |
| 13,685.00                   | 89.13              | 180.07               | 9,188.97                    | -4,544.40       | -9.28           | 4,544.40                      | 0.23                          | -0.03                        | 0.23                        |
| 13,780.00                   | 90.77              | 181.21               | 9,189.06                    | -4,639.39       | -10.34          | 4,639.39                      | 2.10                          | 1.73                         | 1.20                        |
| 13,875.00                   | 91.08              | 181.09               | 9,187.52                    | -4,734.36       | -12.24          | 4,734.37                      | 0.35                          | 0.33                         | -0.13                       |
| 13,970.00                   | 90.94              | 180.95               | 9,185.85                    | -4,829.33       | -13.94          | 4,829.34                      | 0.21                          | -0.15                        | -0.15                       |
| 14,064.00                   | 91.44              | 180.52               | 9,183.90                    | -4,923.30       | -15.14          | 4,923.32                      | 0.70                          | 0.53                         | -0.46                       |
| 14,159.00                   | 89.90              | 181.29               | 9,182.79                    | -5,018.28       | -16.64          | 5,018.30                      | 1.81                          | -1.62                        | 0.81                        |
| 14,254.00                   | 90.94              | 181.01               | 9,182.09                    | -5,113.26       | -18.55          | 5,113.29                      | 1.13                          | 1.09                         | -0.29                       |
| 14,348.00                   | 90.10              | 181.93               | 9,181.24                    | -5,207.22       | -20.96          | 5,207.26                      | 1.33                          | -0.89                        | 0.98                        |
| 14,443.00                   | 89.19              | 182.15               | 9,181.83                    | -5,302.16       | -24.34          | 5,302.21                      | 0.99                          | -0.96                        | 0.23                        |
| 14,538.00                   | 89.90              | 182.20               | 9,182.58                    | -5,397.09       | -27.95          | 5,397.16                      | 0.75                          | 0.75                         | 0.05                        |
| 14,633.00                   | 89.83              | 181.67               | 9,182.80                    | -5,492.03       | -31.15          | 5,492.12                      | 0.56                          | -0.07                        | -0.56                       |
| 14,728.00                   | 90.00              | 181.69               | 9,182.94                    | -5,586.99       | -33.94          | 5,587.09                      | 0.18                          | 0.18                         | 0.02                        |
| 14,823.00                   | 90.24              | 181.48               | 9,182.75                    | -5,681.95       | -36.57          | 5,682.06                      | 0.34                          | 0.25                         | -0.22                       |
| 14,918.00                   | 90.34              | 181.41               | 9,182.26                    | -5,776.92       | -38.96          | 5,777.04                      | 0.13                          | 0.11                         | -0.07                       |
| 15,013.00                   | 88.66              | 180.99               | 9,183.09                    | -5,871.89       | -40.95          | 5,872.02                      | 1.82                          | -1.77                        | -0.44                       |
| 15,108.00                   | 88.49              | 180.75               | 9,185.46                    | -5,966.85       | -42.39          | 5,966.99                      | 0.31                          | -0.18                        | -0.25                       |
| 15,203.00                   | 87.75              | 180.23               | 9,188.57                    | -6,061.80       | -43.21          | 6,061.93                      | 0.95                          | -0.78                        | -0.55                       |
| 15,298.00                   | 89.23              | 179.03               | 9,191.08                    | -6,156.76       | -42.59          | 6,156.89                      | 2.01                          | 1.56                         | -1.26                       |
| 15,394.00                   | 89.09              | 179.17               | 9,192.48                    | -6,252.74       | -41.08          | 6,252.86                      | 0.21                          | -0.15                        | 0.15                        |
| 15,488.00                   | 89.16              | 179.33               | 9,193.92                    | -6,346.72       | -39.85          | 6,346.83                      | 0.19                          | 0.07                         | 0.17                        |
| 15,583.00                   | 89.03              | 179.44               | 9,195.42                    | -6,441.70       | -38.83          | 6,441.81                      | 0.18                          | -0.14                        | 0.12                        |
| 15,678.00                   | 89.13              | 179.55               | 9,196.94                    | -6,536.68       | -38.00          | 6,536.79                      | 0.16                          | 0.11                         | 0.12                        |
| 15,772.00                   | 88.96              | 178.31               | 9,198.51                    | -6,630.65       | -36.24          | 6,630.75                      | 1.33                          | -0.18                        | -1.32                       |
| 15,867.00                   | 90.40              | 177.92               | 9,199.04                    | -6,725.60       | -33.12          | 6,725.68                      | 1.57                          | 1.52                         | -0.41                       |
| 15,962.00                   | 90.34              | 177.03               | 9,198.43                    | -6,820.50       | -28.93          | 6,820.56                      | 0.94                          | -0.06                        | -0.94                       |
| 16,057.00                   | 90.40              | 177.28               | 9,197.82                    | -6,915.38       | -24.22          | 6,915.42                      | 0.27                          | 0.06                         | 0.26                        |
| 16,152.00                   | 91.38              | 178.57               | 9,196.34                    | -7,010.31       | -20.78          | 7,010.33                      | 1.71                          | 1.03                         | 1.36                        |

**Company:** Caza Operating, LLC  
**Project:** Eddy County, NM (NAD 27 NME)  
**Site:** Forehand Ranch 22 State  
**Well:** #8H  
**Wellbore:** ST 1  
**Design:** ST 1

**Local Co-ordinate Reference:** Well #8H  
**TVD Reference:** KB=27' @ 3176.00usft  
**MD Reference:** KB=27' @ 3176.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Midland District

**Survey**

| Measured Depth (usft)                  | Inclination (°) | Azimuth (bearing) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|----------------------------------------|-----------------|-------------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 16,248.00                              | 92.62           | 179.35            | 9,192.99              | -7,106.23    | -19.04       | 7,106.24                | 1.53                    | 1.29                   | 0.81                  |
| 16,342.00                              | 93.43           | 180.13            | 9,188.03              | -7,200.10    | -18.61       | 7,200.10                | 1.20                    | 0.86                   | 0.83                  |
| 16,397.00                              | 94.10           | 179.16            | 9,184.42              | -7,254.97    | -18.27       | 7,254.98                | 2.14                    | 1.22                   | -1.76                 |
| <b>Final MWD Survey (16397.00' MD)</b> |                 |                   |                       |              |              |                         |                         |                        |                       |
| 16,456.00                              | 94.10           | 179.16            | 9,180.20              | -7,313.82    | -17.41       | 7,313.82                | 0.00                    | 0.00                   | 0.00                  |
| <b>Final PTB (16456.00' MD)</b>        |                 |                   |                       |              |              |                         |                         |                        |                       |

**Design Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                         |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                 |
| 16,397.00             | 9,184.42              | -7,254.97         | -18.27       | Final MWD Survey (16397.00' MD) |
| 16,456.00             | 9,180.20              | -7,313.82         | -17.41       | Final PTB (16456.00' MD)        |

|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|

This survey is correct to the best of my knowledge and is supported by actual field data.  
 Steve Morris

