

## Cimarex Cotton Draw 9L Federal #4H 0ft-Update Survey Report

(Def Survey)

Report Date: October 03, 2017 - 09:31 AM  
 Client: Cimarex  
 Field: NM Lea County (NAD 83)  
 Structure / Slot: Cimarex Cotton Draw 9L Federal #4H / Cotton Draw 9L Federal #4H  
 Well: Cotton Draw 9L Federal #4H  
 Borehole: Original Borehole  
 UWI / API#: Unknown / Unknown  
 Survey Name: Cimarex Cotton Draw 9L Federal #4H MWD 0ft-Update  
 Survey Date: September 11, 2017  
 Tort / AHD / DDI / ERD Ratio: 188.923 ° / 4670.347 ft / 6.092 / 0.441  
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet  
 Location Lat / Long: N 32° 8' 20.07576", W 103° 41' 9.95613"  
 Location Grid N/E Y/X: N 414873.040 ftUS, E 741671.230 ftUS  
 CRS Grid Convergence Angle: 0.3443 °  
 Grid Scale Factor: 0.99995506  
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski  
 Vertical Section Azimuth: 359.480 ° (Grid North)  
 Vertical Section Origin: 0.000 ft, 0.000 ft  
 TVD Reference Datum: RKB  
 TVD Reference Elevation: 3455.500 ft above MSL  
 Seabed / Ground Elevation: 3431.500 ft above MSL  
 Magnetic Declination: 6.848 °  
 Total Gravity Field Strength: 998.4304mgn (9.80665 Based)  
 Gravity Model: GARM  
 Total Magnetic Field Strength: 48007.373 nT  
 Magnetic Dip Angle: 59.839 °  
 Declination Date: September 11, 2017  
 Magnetic Declination Model: HDGM 2017  
 North Reference: Grid North  
 Grid Convergence Used: 0.3443 °  
 Total Corr Mag North->Grid North: 6.5036 °  
 Local Coord Referenced To: Well Head

| Comments                                                    | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(N/S ft) | EW<br>(E/W ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|-------------------------------------------------------------|------------|-------------|------------------|-------------|--------------|----------------|----------------|-----------------|---------------------------|------------------|-----------|
| Cotton Draw 9L<br>Federal #4H<br>SHL [776 FWL,<br>459' FSL] | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | N 0.00         | E 0.00         | 0.00            | 0.00                      | N/A              | 37.7M     |
|                                                             | 121.00     | 0.49        | 37.70            | 121.00      | 0.41         | N 0.41         | E 0.32         | 0.52            | 37.70                     | 0.40             | 136.98M   |
|                                                             | 219.00     | 0.80        | 136.98           | 218.99      | 0.23         | N 0.24         | E 1.04         | 1.07            | 76.96                     | 1.02             | 138.79M   |
|                                                             | 310.00     | 0.88        | 138.79           | 309.98      | -0.77        | S 0.75         | E 1.93         | 2.07            | 111.19                    | 0.09             | 126.41M   |
|                                                             | 401.00     | 0.71        | 126.41           | 400.98      | -1.64        | S 1.61         | E 2.85         | 3.27            | 119.48                    | 0.26             | 142.89M   |
|                                                             | 491.00     | 0.49        | 142.89           | 490.97      | -2.28        | S 2.25         | E 3.53         | 4.18            | 122.50                    | 0.31             | 136.1M    |
|                                                             | 582.00     | 0.40        | 136.10           | 581.97      | -2.82        | S 2.79         | E 3.98         | 4.86            | 124.98                    | 0.11             | 163.6M    |
|                                                             | 673.00     | 0.49        | 163.60           | 672.97      | -3.43        | S 3.39         | E 4.31         | 5.49            | 128.16                    | 0.25             | 214.19M   |
|                                                             | 854.00     | 0.22        | 214.19           | 853.96      | -4.46        | S 4.42         | E 4.34         | 6.19            | 135.54                    | 0.22             | 185.41M   |
|                                                             | 945.00     | 0.40        | 185.41           | 944.96      | -4.92        | S 4.88         | E 4.21         | 6.44            | 139.22                    | 0.26             | 211.02M   |
|                                                             | 1039.00    | 0.49        | 211.02           | 1038.96     | -5.59        | S 5.55         | E 3.97         | 6.82            | 144.42                    | 0.23             | 237.81M   |
|                                                             | 1134.00    | 0.49        | 237.81           | 1133.95     | -6.15        | S 6.12         | E 3.42         | 7.01            | 150.80                    | 0.24             | 239.09M   |
|                                                             | 1228.00    | 0.49        | 239.09           | 1227.95     | -6.56        | S 6.54         | E 2.73         | 7.08            | 157.31                    | 0.01             | 214.59M   |
|                                                             | 1323.00    | 0.49        | 214.59           | 1322.95     | -7.10        | S 7.08         | E 2.15         | 7.40            | 163.08                    | 0.22             | 221.99M   |
|                                                             | 1417.00    | 0.62        | 221.99           | 1416.94     | -7.80        | S 7.79         | E 1.58         | 7.95            | 168.50                    | 0.16             | 213.7M    |
|                                                             | 1511.00    | 0.49        | 213.70           | 1510.94     | -8.51        | S 8.50         | E 1.02         | 8.56            | 173.15                    | 0.16             | 229M      |
|                                                             | 1605.00    | 0.31        | 229.00           | 1604.94     | -9.01        | S 9.00         | E 0.61         | 9.02            | 176.14                    | 0.22             | 225.51M   |
|                                                             | 1700.00    | 0.31        | 225.51           | 1699.94     | -9.35        | S 9.35         | E 0.23         | 9.35            | 178.59                    | 0.02             | 202.82M   |

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| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(N/S ft) | EW<br>(E/W ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|----------|------------|-------------|------------------|-------------|--------------|----------------|----------------|-----------------|---------------------------|------------------|-----------|
|          | 1794.00    | 0.40        | 202.82           | 1793.93     | -9.83        | S 9.83         | W 0.08         | 9.83            | 180.46                    | 0.18             | 179.91M   |
|          | 1889.00    | 0.31        | 179.91           | 1888.93     | -10.39       | S 10.39        | W 0.21         | 10.40           | 181.14                    | 0.18             | 140.82M   |
|          | 1983.00    | 0.09        | 140.82           | 1982.93     | -10.70       | S 10.71        | W 0.16         | 10.71           | 180.86                    | 0.26             | 140.51M   |
|          | 2077.00    | 0.31        | 140.51           | 2076.93     | -10.96       | S 10.96        | E 0.05         | 10.96           | 179.75                    | 0.23             | 93.31M    |
|          | 2172.00    | 0.31        | 93.31            | 2171.93     | -11.18       | S 11.17        | E 0.47         | 11.18           | 177.60                    | 0.26             | 90.32M    |
|          | 2266.00    | 0.49        | 90.32            | 2265.93     | -11.20       | S 11.19        | E 1.12         | 11.24           | 174.26                    | 0.19             | 70.79M    |
|          | 2360.00    | 1.02        | 70.79            | 2359.92     | -10.94       | S 10.92        | E 2.32         | 11.16           | 168.02                    | 0.62             | 61.5M     |
|          | 2455.00    | 1.19        | 61.50            | 2454.90     | -10.20       | S 10.17        | E 3.98         | 10.92           | 158.62                    | 0.26             | 60.06M    |
|          | 2549.00    | 1.50        | 60.06            | 2548.88     | -9.14        | S 9.09         | E 5.91         | 10.84           | 146.98                    | 0.33             | 57.88M    |
|          | 2644.00    | 1.81        | 57.88            | 2643.84     | -7.74        | S 7.67         | E 8.25         | 11.27           | 132.90                    | 0.33             | 63.61M    |
|          | 2738.00    | 1.41        | 63.61            | 2737.80     | -6.46        | S 6.37         | E 10.55        | 12.32           | 121.11                    | 0.46             | 67.71M    |
|          | 2832.00    | 1.10        | 67.71            | 2831.78     | -5.62        | S 5.51         | E 12.42        | 13.58           | 113.92                    | 0.34             | 74.41M    |
|          | 2927.00    | 1.19        | 74.41            | 2926.76     | -5.03        | S 4.90         | E 14.21        | 15.03           | 109.02                    | 0.17             | 67.89M    |
|          | 3021.00    | 1.19        | 67.89            | 3020.74     | -4.41        | S 4.27         | E 16.06        | 16.61           | 104.89                    | 0.14             | 67.8M     |
|          | 3115.00    | 1.41        | 67.80            | 3114.71     | -3.63        | S 3.46         | E 18.03        | 18.36           | 100.87                    | 0.23             | 73.22M    |
|          | 3209.00    | 0.62        | 73.22            | 3208.70     | -3.06        | S 2.88         | E 19.59        | 19.80           | 98.36                     | 0.85             | 323.7M    |
|          | 3304.00    | 0.09        | 323.70           | 3303.69     | -2.85        | S 2.67         | E 20.04        | 20.21           | 97.59                     | 0.69             | 53.39M    |
|          | 3398.00    | 0.31        | 53.39            | 3397.69     | -2.64        | S 2.46         | E 20.20        | 20.35           | 96.95                     | 0.34             | 118.39M   |
|          | 3492.00    | 0.09        | 118.39           | 3491.69     | -2.53        | S 2.34         | E 20.47        | 20.60           | 96.53                     | 0.30             | 206.21M   |
|          | 3587.00    | 0.71        | 206.21           | 3586.69     | -3.09        | S 2.91         | E 20.27        | 20.48           | 98.16                     | 0.75             | 200M      |
|          | 3681.00    | 0.88        | 200.00           | 3680.68     | -4.29        | S 4.11         | E 19.77        | 20.19           | 101.74                    | 0.20             | 176.38M   |
|          | 3775.00    | 1.10        | 176.38           | 3774.67     | -5.86        | S 5.69         | E 19.58        | 20.39           | 106.20                    | 0.49             | 165.19M   |
|          | 3870.00    | 1.59        | 165.19           | 3869.64     | -8.05        | S 7.87         | E 19.97        | 21.47           | 111.51                    | 0.58             | 181.71M   |
|          | 3964.00    | 1.41        | 181.71           | 3963.61     | -10.47       | S 10.29        | E 20.27        | 22.73           | 116.91                    | 0.50             | 216.79M   |
|          | 4059.00    | 1.10        | 216.79           | 4058.59     | -12.36       | S 12.19        | E 19.69        | 23.16           | 121.75                    | 0.85             | 191.58M   |
|          | 4153.00    | 1.19        | 191.58           | 4152.57     | -14.04       | S 13.87        | E 18.95        | 23.48           | 126.19                    | 0.54             | 180.21M   |
|          | 4247.00    | 1.50        | 180.21           | 4246.54     | -16.22       | S 16.05        | E 18.75        | 24.69           | 130.56                    | 0.43             | 178.41M   |
|          | 4342.00    | 1.81        | 178.41           | 4341.51     | -18.96       | S 18.80        | E 18.79        | 26.58           | 135.01                    | 0.33             | 182.99M   |
|          | 4418.00    | 1.68        | 182.99           | 4417.47     | -21.28       | S 21.11        | E 18.77        | 28.24           | 138.36                    | 0.25             | 180.79M   |
|          | 4519.00    | 1.59        | 180.79           | 4518.43     | -24.16       | S 23.99        | E 18.67        | 30.40           | 142.11                    | 0.11             | 194.4M    |
|          | 4614.00    | 1.02        | 194.40           | 4613.40     | -26.29       | S 26.12        | E 18.44        | 31.98           | 144.78                    | 0.68             | 234.9M    |
|          | 4708.00    | 0.80        | 234.90           | 4707.39     | -27.47       | S 27.31        | E 17.70        | 32.54           | 147.06                    | 0.71             | 281M      |
|          | 4803.00    | 1.10        | 281.00           | 4802.38     | -27.67       | S 27.52        | E 16.26        | 31.96           | 149.43                    | 0.84             | 294.3M    |
|          | 4897.00    | 1.19        | 294.30           | 4896.36     | -27.08       | S 26.95        | E 14.48        | 30.59           | 151.74                    | 0.30             | 302.59M   |
|          | 4992.00    | 1.10        | 302.59           | 4991.34     | -26.16       | S 26.05        | E 12.82        | 29.03           | 153.80                    | 0.20             | 292.1M    |
|          | 5086.00    | 0.80        | 292.10           | 5085.33     | -25.42       | S 25.32        | E 11.45        | 27.78           | 155.67                    | 0.37             | 297.61M   |
|          | 5180.00    | 0.80        | 297.61           | 5179.32     | -24.86       | S 24.76        | E 10.26        | 26.80           | 157.50                    | 0.08             | 305.5M    |
|          | 5275.00    | 0.80        | 305.50           | 5274.31     | -24.15       | S 24.07        | E 9.13         | 25.74           | 159.23                    | 0.12             | 288.09M   |
|          | 5369.00    | 0.71        | 288.09           | 5368.30     | -23.58       | S 23.51        | E 8.04         | 24.85           | 161.12                    | 0.26             | 293.11M   |
|          | 5464.00    | 0.71        | 293.11           | 5463.30     | -23.16       | S 23.10        | E 6.94         | 24.12           | 163.27                    | 0.07             | 295.58M   |
|          | 5558.00    | 0.80        | 295.58           | 5557.29     | -22.64       | S 22.58        | E 5.81         | 23.32           | 165.56                    | 0.10             | 292.41M   |
|          | 5653.00    | 0.88        | 292.41           | 5652.28     | -22.06       | S 22.02        | E 4.54         | 22.48           | 168.35                    | 0.10             | 293.91M   |
|          | 5747.00    | 0.71        | 293.91           | 5746.27     | -21.54       | S 21.51        | E 3.34         | 21.77           | 171.17                    | 0.18             | 280.11M   |
|          | 5841.00    | 0.80        | 280.11           | 5840.26     | -21.18       | S 21.16        | E 2.16         | 21.27           | 174.16                    | 0.22             | 286.42M   |
|          | 5936.00    | 0.88        | 286.42           | 5935.25     | -20.84       | S 20.83        | E 0.81         | 20.85           | 177.77                    | 0.13             | 289.59M   |
|          | 6030.00    | 0.71        | 289.59           | 6029.24     | -20.43       | S 20.44        | W 0.43         | 20.44           | 181.21                    | 0.19             | 293.11M   |
|          | 6125.00    | 0.88        | 293.11           | 6124.23     | -19.94       | S 19.95        | W 1.66         | 20.02           | 184.75                    | 0.19             | 286.42M   |
|          | 6219.00    | 0.88        | 286.42           | 6218.22     | -19.44       | S 19.46        | W 3.01         | 19.70           | 188.80                    | 0.11             | 290.69M   |
|          | 6313.00    | 0.88        | 290.69           | 6312.21     | -18.96       | S 19.01        | W 4.38         | 19.50           | 192.98                    | 0.07             | 277.12M   |
|          | 6408.00    | 0.80        | 277.12           | 6407.20     | -18.61       | S 18.67        | W 5.72         | 19.52           | 197.04                    | 0.23             | 320.48M   |
|          | 6502.00    | 0.80        | 320.48           | 6501.19     | -18.02       | S 18.08        | W 6.79         | 19.31           | 200.59                    | 0.63             | 339.69M   |
|          | 6597.00    | 1.02        | 339.69           | 6596.18     | -16.70       | S 16.77        | W 7.51         | 18.38           | 204.11                    | 0.39             | 354.98M   |
|          | 6691.00    | 0.80        | 354.98           | 6690.17     | -15.26       | S 15.33        | W 7.85         | 17.23           | 207.12                    | 0.35             | 357.1M    |

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(N/S ft) | EW<br>(E/W ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|----------|------------|-------------|------------------|-------------|--------------|----------------|----------------|-----------------|---------------------------|------------------|-----------|
|          | 6786.00    | 0.71        | 357.10           | 6785.16     | -14.01       | S 14.09        | W 7.94         | 16.17           | 209.41                    | 0.10             | 3.18M     |
|          | 6880.00    | 0.80        | 3.18             | 6879.15     | -12.78       | S 12.85        | W 7.93         | 15.10           | 211.69                    | 0.13             | 16.81M    |
|          | 6975.00    | 0.71        | 16.81            | 6974.14     | -11.55       | S 11.62        | W 7.73         | 13.96           | 213.61                    | 0.21             | 31.71M    |
|          | 7069.00    | 0.40        | 31.71            | 7068.14     | -10.72       | S 10.79        | W 7.39         | 13.07           | 214.40                    | 0.36             | 74.98M    |
|          | 7163.00    | 0.40        | 74.98            | 7162.14     | -10.36       | S 10.42        | W 6.90         | 12.50           | 213.49                    | 0.31             | 163.82M   |
|          | 7258.00    | 0.40        | 163.82           | 7257.14     | -10.60       | S 10.66        | W 6.48         | 12.47           | 211.32                    | 0.59             | 162.59M   |
|          | 7352.00    | 0.62        | 162.59           | 7351.13     | -11.40       | S 11.46        | W 6.24         | 13.05           | 208.58                    | 0.23             | 181.49M   |
|          | 7446.00    | 0.62        | 181.49           | 7445.13     | -12.39       | S 12.45        | W 6.10         | 13.86           | 206.11                    | 0.22             | 174.22M   |
|          | 7541.00    | 0.80        | 174.22           | 7540.12     | -13.57       | S 13.62        | W 6.05         | 14.91           | 203.94                    | 0.21             | 152.79M   |
|          | 7635.00    | 0.62        | 152.79           | 7634.11     | -14.68       | S 14.73        | W 5.75         | 15.81           | 201.32                    | 0.34             | 143.29M   |
|          | 7729.00    | 0.62        | 143.29           | 7728.11     | -15.54       | S 15.59        | W 5.21         | 16.44           | 198.49                    | 0.11             | 155.01M   |
|          | 7824.00    | 0.88        | 155.01           | 7823.10     | -16.62       | S 16.66        | W 4.60         | 17.28           | 195.43                    | 0.32             | 147.52M   |
|          | 7918.00    | 0.62        | 147.52           | 7917.09     | -17.71       | S 17.74        | W 4.02         | 18.19           | 192.76                    | 0.30             | 157.78M   |
|          | 8013.00    | 0.80        | 157.78           | 8012.08     | -18.76       | S 18.79        | W 3.49         | 19.11           | 190.53                    | 0.23             | 158M      |
|          | 8107.00    | 0.70        | 158.00           | 8106.08     | -19.90       | S 19.93        | W 3.03         | 20.16           | 188.64                    | 0.11             | 158.4M    |
|          | 8202.00    | 0.80        | 158.40           | 8201.07     | -21.06       | S 21.09        | W 2.57         | 21.24           | 186.94                    | 0.11             | 167.21M   |
|          | 8296.00    | 0.80        | 167.21           | 8295.06     | -22.32       | S 22.34        | W 2.18         | 22.44           | 185.58                    | 0.13             | 190.7M    |
|          | 8391.00    | 0.80        | 190.70           | 8390.05     | -23.61       | S 23.64        | W 2.16         | 23.73           | 185.22                    | 0.34             | 204.41M   |
|          | 8485.00    | 1.28        | 204.41           | 8484.03     | -25.21       | S 25.24        | W 2.71         | 25.38           | 186.14                    | 0.57             | 213.88M   |
|          | 8579.00    | 1.41        | 213.88           | 8578.01     | -27.12       | S 27.15        | W 3.79         | 27.42           | 187.95                    | 0.27             | 220.58M   |
|          | 8674.00    | 1.59        | 220.58           | 8672.98     | -29.07       | S 29.12        | W 5.30         | 29.60           | 190.32                    | 0.26             | 281.08M   |
|          | 8768.00    | 1.02        | 281.08           | 8766.95     | -29.89       | S 29.95        | W 6.97         | 30.75           | 193.10                    | 1.49             | 276.68M   |
|          | 8863.00    | 0.88        | 276.68           | 8861.94     | -29.63       | S 29.71        | W 8.52         | 30.91           | 196.01                    | 0.17             | 275.09M   |
|          | 8957.00    | 1.41        | 275.09           | 8955.92     | -29.42       | S 29.52        | W 10.39        | 31.30           | 199.40                    | 0.56             | 271.7M    |
|          | 9050.00    | 1.68        | 271.70           | 9048.89     | -29.26       | S 29.38        | W 12.90        | 32.08           | 203.70                    | 0.31             | 244.51M   |
|          | 9146.00    | 1.99        | 244.51           | 9144.84     | -29.91       | S 30.05        | W 15.81        | 33.96           | 207.74                    | 0.95             | 221.2M    |
|          | 9240.00    | 0.62        | 221.20           | 9238.81     | -30.98       | S 31.14        | W 17.62        | 35.78           | 209.50                    | 1.53             | 180.92M   |
|          | 9334.00    | 0.40        | 180.92           | 9332.81     | -31.68       | S 31.85        | W 17.96        | 36.56           | 209.41                    | 0.43             | 205.6M    |
|          | 9429.00    | 0.71        | 205.60           | 9427.81     | -32.54       | S 32.71        | W 18.22        | 37.44           | 209.11                    | 0.40             | 244.6M    |
|          | 9523.00    | 0.71        | 244.60           | 9521.80     | -33.31       | S 33.49        | W 18.99        | 38.50           | 209.56                    | 0.50             | 228.29M   |
|          | 9618.00    | 1.41        | 228.29           | 9616.78     | -34.33       | S 34.52        | W 20.40        | 40.09           | 210.58                    | 0.80             | 264.51M   |
|          | 9712.00    | 0.80        | 264.51           | 9710.77     | -35.15       | S 35.35        | W 21.91        | 41.59           | 211.80                    | 0.96             | 355.91M   |
|          | 9806.00    | 0.80        | 355.91           | 9804.76     | -34.55       | S 34.76        | W 22.61        | 41.47           | 213.05                    | 1.22             | 304.7M    |
|          | 9901.00    | 0.71        | 304.70           | 9899.75     | -33.55       | S 33.76        | W 23.15        | 40.93           | 214.43                    | 0.69             | 261.1M    |
|          | 9966.00    | 0.62        | 261.10           | 9964.75     | -33.37       | S 33.59        | W 23.82        | 41.18           | 215.35                    | 0.77             | 317.6M    |
|          | 10049.00   | 1.13        | 317.60           | 10047.74    | -32.82       | S 33.05        | W 24.82        | 41.33           | 216.90                    | 1.14             | 358.1M    |
|          | 10080.00   | 4.59        | 358.10           | 10078.70    | -31.36       | S 31.58        | W 25.07        | 40.32           | 218.44                    | 12.26            | 2.15M     |
|          | 10112.00   | 8.04        | 2.15             | 10110.50    | -27.84       | S 28.07        | W 25.03        | 37.60           | 221.72                    | 10.86            | 11.2R     |
|          | 10143.00   | 12.31       | 6.09             | 10141.01    | -22.39       | S 22.61        | W 24.59        | 33.41           | 227.40                    | 13.95            | 9R        |
|          | 10174.00   | 16.06       | 8.23             | 10171.06    | -14.87       | S 15.08        | W 23.63        | 28.03           | 237.45                    | 12.21            | 6.31R     |
|          | 10206.00   | 19.88       | 9.47             | 10201.49    | -5.13        | S 5.33         | W 22.10        | 22.73           | 256.44                    | 12.00            | 1.18L     |
|          | 10238.00   | 24.27       | 9.25             | 10231.14    | 6.72         | N 6.53         | W 20.15        | 21.18           | 287.97                    | 13.72            | 0.48R     |
|          | 10269.00   | 28.24       | 9.32             | 10258.93    | 20.23        | N 20.06        | W 17.93        | 26.91           | 318.21                    | 12.81            | 8.41L     |
|          | 10301.00   | 31.81       | 8.32             | 10286.63    | 36.02        | N 35.89        | W 15.49        | 39.08           | 336.66                    | 11.26            | 21.54R    |
|          | 10332.00   | 34.78       | 10.35            | 10312.55    | 52.78        | N 52.67        | W 12.71        | 54.18           | 346.43                    | 10.17            | 19.69R    |
|          | 10363.00   | 38.22       | 12.34            | 10337.47    | 70.81        | N 70.74        | W 9.08         | 71.32           | 352.69                    | 11.79            | 3.56R     |
|          | 10395.00   | 40.74       | 12.58            | 10362.16    | 90.64        | N 90.60        | W 4.69         | 90.72           | 357.04                    | 7.89             | HS        |
|          | 10426.00   | 43.04       | 12.58            | 10385.24    | 110.80       | N 110.80       | W 0.18         | 110.80          | 359.91                    | 7.42             | 10.6R     |
|          | 10458.00   | 45.64       | 13.26            | 10408.12    | 132.55       | N 132.60       | E 4.83         | 132.68          | 2.08                      | 8.26             | 14.52R    |
|          | 10489.00   | 48.60       | 14.28            | 10429.22    | 154.56       | N 154.66       | E 10.24        | 154.99          | 3.79                      | 9.85             | 4.33L     |
|          | 10521.00   | 52.15       | 13.94            | 10449.62    | 178.40       | N 178.56       | E 16.24        | 179.29          | 5.20                      | 11.12            | 21.82L    |
|          | 10552.00   | 55.52       | 12.31            | 10467.91    | 202.72       | N 202.93       | E 21.92        | 204.11          | 6.16                      | 11.67            | 25.04L    |
|          | 10584.00   | 58.89       | 10.48            | 10485.24    | 229.04       | N 229.29       | E 27.22        | 230.90          | 6.77                      | 11.58            | 19.51L    |

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(N/S ft) | EW<br>(E/W ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|----------|------------|-------------|------------------|-------------|--------------|----------------|----------------|-----------------|---------------------------|------------------|-----------|
|          | 10615.00   | 63.03       | 8.84             | 10500.29    | 255.71       | N 256.00       | E 31.76        | 257.97          | 7.07                      | 14.13            | 13.51L    |
|          | 10647.00   | 67.38       | 7.71             | 10513.71    | 284.41       | N 284.75       | E 35.94        | 287.00          | 7.19                      | 13.97            | 10.04L    |
|          | 10678.00   | 72.45       | 6.77             | 10524.35    | 313.25       | N 313.62       | E 39.60        | 316.11          | 7.20                      | 16.60            | 20.89L    |
|          | 10710.00   | 78.11       | 4.57             | 10532.48    | 344.00       | N 344.40       | E 42.65        | 347.03          | 7.06                      | 18.89            | 24.12L    |
|          | 10772.00   | 85.04       | 1.47             | 10541.56    | 405.17       | N 405.60       | E 45.86        | 408.19          | 6.45                      | 12.22            | 82.47L    |
|          | 10804.00   | 85.11       | 0.94             | 10544.31    | 437.04       | N 437.48       | E 46.53        | 439.95          | 6.07                      | 1.66             | 24.55L    |
|          | 10899.00   | 88.66       | 359.32           | 10549.47    | 531.87       | N 532.32       | E 46.75        | 534.37          | 5.02                      | 4.11             | 14.6L     |
|          | 10993.00   | 91.31       | 358.63           | 10549.49    | 625.86       | N 626.30       | E 45.06        | 627.92          | 4.12                      | 2.91             | 21.13L    |
|          | 11087.00   | 92.06       | 358.34           | 10546.73    | 719.81       | N 720.22       | E 42.58        | 721.48          | 3.38                      | 0.86             | 157.15R   |
|          | 11181.00   | 89.52       | 359.41           | 10545.43    | 813.78       | N 814.19       | E 40.74        | 815.20          | 2.86                      | 2.93             | 113.41L   |
|          | 11276.00   | 88.59       | 357.26           | 10547.00    | 908.74       | N 909.13       | E 37.98        | 909.92          | 2.39                      | 2.47             | 43.29L    |
|          | 11370.00   | 89.28       | 356.61           | 10548.75    | 1002.63      | N 1002.97      | E 32.95        | 1003.52         | 1.88                      | 1.01             | 84.98R    |
|          | 11465.00   | 89.48       | 358.88           | 10549.77    | 1097.58      | N 1097.89      | E 29.21        | 1098.28         | 1.52                      | 2.40             | 10.91L    |
|          | 11559.00   | 90.31       | 358.72           | 10549.95    | 1191.57      | N 1191.87      | E 27.24        | 1192.18         | 1.31                      | 0.90             | 152.49R   |
|          | 11653.00   | 89.83       | 358.97           | 10549.83    | 1285.56      | N 1285.85      | E 25.35        | 1286.10         | 1.13                      | 0.58             | 11.45L    |
|          | 11748.00   | 90.62       | 358.81           | 10549.46    | 1380.56      | N 1380.83      | E 23.51        | 1381.03         | 0.98                      | 0.85             | 145.55R   |
|          | 11842.00   | 89.76       | 359.40           | 10549.15    | 1474.55      | N 1474.81      | E 22.04        | 1474.98         | 0.86                      | 1.11             | 144.67L   |
|          | 11937.00   | 88.97       | 358.84           | 10550.20    | 1569.55      | N 1569.80      | E 20.58        | 1569.93         | 0.75                      | 1.02             | 9.96R     |
|          | 12031.00   | 90.28       | 359.07           | 10550.81    | 1663.54      | N 1663.78      | E 18.87        | 1663.88         | 0.65                      | 1.41             | 169.54R   |
|          | 12125.00   | 87.14       | 359.65           | 10552.93    | 1757.50      | N 1757.74      | E 17.82        | 1757.83         | 0.58                      | 3.40             | 37.34R    |
|          | 12219.00   | 87.90       | 0.23             | 10557.00    | 1851.41      | N 1851.65      | E 17.72        | 1851.73         | 0.55                      | 1.02             | 10.95R    |
|          | 12314.00   | 88.52       | 0.35             | 10559.97    | 1946.35      | N 1946.60      | E 18.20        | 1946.68         | 0.54                      | 0.66             | 31.51L    |
|          | 12408.00   | 89.45       | 359.78           | 10561.63    | 2040.33      | N 2040.58      | E 18.31        | 2040.66         | 0.51                      | 1.16             | 101.27L   |
|          | 12502.00   | 89.04       | 357.72           | 10562.87    | 2134.31      | N 2134.55      | E 16.26        | 2134.61         | 0.44                      | 2.23             | 29.33L    |
|          | 12597.00   | 89.93       | 357.22           | 10563.72    | 2229.25      | N 2229.45      | E 12.06        | 2229.48         | 0.31                      | 1.07             | 99.11R    |
|          | 12691.00   | 89.76       | 358.28           | 10563.98    | 2323.20      | N 2323.37      | E 8.37         | 2323.39         | 0.21                      | 1.14             | 169.2R    |
|          | 12785.00   | 87.56       | 358.70           | 10566.18    | 2417.16      | N 2417.31      | E 5.90         | 2417.32         | 0.14                      | 2.38             | 44.69R    |
|          | 12880.00   | 88.49       | 359.62           | 10569.45    | 2512.10      | N 2512.24      | E 4.51         | 2512.25         | 0.10                      | 1.38             | 9.01L     |
|          | 12974.00   | 89.31       | 359.49           | 10571.25    | 2606.08      | N 2606.22      | E 3.78         | 2606.22         | 0.08                      | 0.88             | 28.81L    |
|          | 13067.00   | 90.31       | 358.94           | 10571.56    | 2699.08      | N 2699.21      | E 2.50         | 2699.21         | 0.05                      | 1.23             | 100.3R    |
|          | 13162.00   | 90.17       | 359.71           | 10571.16    | 2794.07      | N 2794.20      | E 1.38         | 2794.20         | 0.03                      | 0.82             | 7.29R     |
|          | 13256.00   | 91.03       | 359.82           | 10570.18    | 2888.07      | N 2888.19      | E 1.00         | 2888.19         | 0.02                      | 0.92             | 178.32L   |
|          | 13350.00   | 88.31       | 359.74           | 10570.72    | 2982.05      | N 2982.18      | E 0.64         | 2982.18         | 0.01                      | 2.89             | 46.97L    |
|          | 13445.00   | 88.45       | 359.59           | 10573.41    | 3077.02      | N 3077.14      | E 0.08         | 3077.14         | 0.00                      | 0.22             | 9.34L     |
|          | 13540.00   | 89.24       | 359.46           | 10575.32    | 3172.00      | N 3172.12      | W 0.71         | 3172.12         | 359.99                    | 0.84             | 24.52L    |
|          | 13634.00   | 90.38       | 358.94           | 10575.63    | 3265.99      | N 3266.11      | W 2.02         | 3266.11         | 359.96                    | 1.33             | 46.17L    |
|          | 13728.00   | 90.86       | 358.44           | 10574.62    | 3359.98      | N 3360.08      | W 4.17         | 3360.08         | 359.93                    | 0.74             | 156.86R   |
|          | 13823.00   | 88.52       | 359.44           | 10575.13    | 3454.96      | N 3455.06      | W 5.93         | 3455.06         | 359.90                    | 2.68             | 108.12L   |
|          | 13917.00   | 88.35       | 358.92           | 10577.70    | 3548.93      | N 3549.01      | W 7.27         | 3549.01         | 359.88                    | 0.58             | 46.22R    |
|          | 14011.00   | 89.04       | 359.64           | 10579.84    | 3642.90      | N 3642.97      | W 8.45         | 3642.98         | 359.87                    | 1.06             | 45.36L    |
|          | 14106.00   | 89.83       | 358.84           | 10580.78    | 3737.89      | N 3737.96      | W 9.71         | 3737.97         | 359.85                    | 1.18             | 62.54R    |
|          | 14200.00   | 90.62       | 0.36             | 10580.41    | 3831.89      | N 3831.95      | W 10.37        | 3831.97         | 359.84                    | 1.82             | 102.96R   |
|          | 14294.00   | 90.24       | 2.01             | 10579.70    | 3925.84      | N 3925.93      | W 8.42         | 3925.94         | 359.88                    | 1.80             | 157.17R   |
|          | 14389.00   | 89.86       | 2.17             | 10579.62    | 4020.74      | N 4020.86      | W 4.96         | 4020.87         | 359.93                    | 0.43             | 150.58R   |
|          | 14483.00   | 87.45       | 3.53             | 10581.82    | 4114.55      | N 4114.71      | W 0.29         | 4114.71         | 360.00                    | 2.94             | 115.75L   |
|          | 14577.00   | 86.35       | 1.24             | 10586.91    | 4208.28      | N 4208.49      | E 3.62         | 4208.49         | 0.05                      | 2.70             | 67.32L    |
|          | 14672.00   | 87.25       | 359.09           | 10592.21    | 4303.12      | N 4303.33      | E 3.89         | 4303.33         | 0.05                      | 2.45             | 22.68L    |
|          | 14766.00   | 89.62       | 358.10           | 10594.78    | 4397.06      | N 4397.26      | E 1.59         | 4397.26         | 0.02                      | 2.73             | 23.96L    |
|          | 14805.00   | 90.34       | 357.78           | 10594.79    | 4436.05      | N 4436.23      | E 0.19         | 4436.23         | 0.00                      | 2.02             | HS        |
| PTB      | 14855.00   | 90.34       | 357.78           | 10594.50    | 4486.03      | N 4486.20      | W 1.75         | 4486.20         | 359.98                    | 0.00             |           |

| Comments     | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(N/S ft) | EW<br>(E/W ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|--------------|------------|-------------|------------------|-------------|--------------|----------------|----------------|-----------------|---------------------------|------------------|-----------|
| Survey Type: | Def Survey |             |                  |             |              |                |                |                 |                           |                  |           |

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma  
Survey Program:

| Description | Part | MD From<br>(ft) | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size<br>(in) | Casing Diameter<br>(in) | Survey Tool Type                    | Borehole / Survey                                                            |
|-------------|------|-----------------|---------------|------------------|-------------------|-------------------------|-------------------------------------|------------------------------------------------------------------------------|
|             | 1    | 0.000           | 24.000        | 1/98.425         | 30.000            | 30.000                  | NAL_MWD_PLUS_0.5_DEG-<br>Depth Only | Original Borehole / Cimarex Cotton<br>Draw 9L Federal #4H MWD 0ft-<br>Update |
|             | 1    | 24.000          | 24.000        | Act Stns         | 30.000            | 30.000                  | NAL_MWD_PLUS_0.5_DEG-<br>Depth Only | Original Borehole / Cimarex Cotton<br>Draw 9L Federal #4H MWD 0ft-<br>Update |
|             | 1    | 24.000          | 14855.000     | Act Stns         | 30.000            | 30.000                  | NAL_MWD_PLUS_0.5_DEG                | Original Borehole / Cimarex Cotton<br>Draw 9L Federal #4H MWD 0ft-           |

|                   |                            |                        |                                    |
|-------------------|----------------------------|------------------------|------------------------------------|
| Borehole:         | Well:                      | Field:                 | Structure:                         |
| Original Borehole | Cotton Draw 9L Federal #4H | NM Lea County (NAD 83) | Cimarex Cotton Draw 9L Federal #4H |

|                                       |                     |                                                    |                                                     |
|---------------------------------------|---------------------|----------------------------------------------------|-----------------------------------------------------|
| Gravity & Magnetic Parameters         | Surface Location    | NA83 New Mexico State Plane, Eastern Zone, US Feet | Miscellaneous                                       |
| Model: HDGM 2017                      | Lat: N 32 8 20.88   | Northings: 414873.041US                            | Slot: Cotton Draw 9L Federal #4H                    |
| MagDec: 6.848°                        | Long: W 103 41 9.96 | Eastings: 741571.231US                             | Plan: Cimarex Cotton Draw 9L Federal #4H, MWD Final |
| Dip: 59.839°                          |                     | Grid Conv: 0.3443°                                 | TVD Ref: RKB(D455.5H above MSL)                     |
| FB: 48087.373mT                       |                     | Scale Fact: 0.99995586                             |                                                     |
| Date: 11-Sep-2017                     |                     |                                                    |                                                     |
| Gravity FS: 998.428mg (9.80665 Based) |                     |                                                    |                                                     |

### Critical Points

| Critical Point                                     | MD       | INCL  | AZIM   | TVD      | VSEC    | N(+)/S(-) | E(+)/W(-) | DLS  |
|----------------------------------------------------|----------|-------|--------|----------|---------|-----------|-----------|------|
| Cotton Draw 9L Federal #4H SHL [776 FWL, 459° FSL] | 0.00     | 0.00  | 0.00   | 0.00     | 0.00    | 0.00      | 0.00      |      |
| Proj.@Bit                                          | 14855.00 | 90.34 | 357.78 | 10594.50 | 4486.03 | 4486.20   | -1.75     | 0.00 |



Grid  
True  
Mag

Grid North  
Tot Corr (M→G 6.504°)  
Mag Dec (6.848°)  
Grid Conv (0.344°)

| CONTROLLED  |            |
|-------------|------------|
| Drawn by    |            |
| Checked by  |            |
| Reviewed by |            |
| Copy number | 1 of 1     |
| Date        | 09/08/2017 |
| Sheet       |            |
| Drawn       |            |
| Checked     |            |
| Reviewed    |            |
| Copy number | for        |

