



# **Laramie Energy, LLC**

**Mesa County, CO**

**Nichols 24-07 Pad**

**Nichols 0994-24-13E**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**25 March, 2018**





## Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Nichols 0994-24-13E     |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7236.0usft (H&P #290) |
| <b>Site:</b>     | Nichols 24-07 Pad   | <b>MD Reference:</b>                | well @ 7236.0usft (H&P #290) |
| <b>Well:</b>     | Nichols 0994-24-13E | <b>North Reference:</b>             | True                         |
| <b>Wellbore:</b> | Wellbore #1         | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Design:</b>   | Wellbore #1         | <b>Database:</b>                    | EDM 5000.1 Single User Db    |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Mesa County, CO           |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | Colorado Central Zone     |                      |                |

|                       |          |                   |              |              |            |             |                   |       |   |
|-----------------------|----------|-------------------|--------------|--------------|------------|-------------|-------------------|-------|---|
| Site                  |          | Nichols 24-07 Pad |              |              |            |             |                   |       |   |
| Site Position:        |          | Northing:         | 1,529,213.07 | usft         | Latitude:  | 39.263181   |                   |       |   |
| From:                 | Lat/Long | Easting:          | 2,340,128.94 | usft         | Longitude: | -107.830853 |                   |       |   |
| Position Uncertainty: |          | 0.0               | usft         | Slot Radius: | 13-3/16    | "           | Grid Convergence: | -1.47 | ° |

|                      |                     |          |                     |                   |               |              |
|----------------------|---------------------|----------|---------------------|-------------------|---------------|--------------|
| Well                 | Nichols 0994-24-13E |          |                     |                   |               |              |
| Well Position        | +N/-S               | 0.0 usft | Northing:           | 1,529,265.50 usft | Latitude:     | 39.263325    |
|                      | +E/-W               | 0.0 usft | Easting:            | 2,340,135.89 usft | Longitude:    | -107.830833  |
| Position Uncertainty |                     | 0.0 usft | Wellhead Elevation: | 0.0 usft          | Ground Level: | 7,212.0 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | User Defined      | 3/14/2018          | 9.45                   | 65.40                | 51,314.50000000            |

|                          |                                |                     |                     |                      |     |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|-----|
| <b>Design</b>            | Wellbore #1                    |                     |                     |                      |     |
| <b>Audit Notes:</b>      |                                |                     |                     |                      |     |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>       | ACTUAL              | <b>Tie On Depth:</b> | 0.0 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Direction (°)</b> |     |
|                          | 0.0                            | 0.0                 | 0.0                 | 115.54               |     |

|                       |                  |                               |                  |                    |  |
|-----------------------|------------------|-------------------------------|------------------|--------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 3/25/2018                     |                  |                    |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>      | <b>Tool Name</b> | <b>Description</b> |  |
| 200.0                 | 7,655.0          | QES MWD Surveys (Wellbore #1) | MWD default      | MWD - Standard     |  |

|  |                        |                    |                              |                     |                     |                            |                           |                 |                  |
|--|------------------------|--------------------|------------------------------|---------------------|---------------------|----------------------------|---------------------------|-----------------|------------------|
| <b>Survey</b>                                    |                        |                    |                              |                     |                     |                            |                           |                 |                  |
| <b>Measured Depth (usft)</b>                     | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Map Northing (usft)</b> | <b>Map Easting (usft)</b> | <b>Latitude</b> | <b>Longitude</b> |
| 0.0  | 0.00                   | 0.00               | 0.0                          | 0.0                 | 0.0                 | 1,529,265.50               | 2,340,135.89              | 39.263325       | -107.830833      |
| 200.0  | 3.40                   | 77.50              | 199.9                        | 1.3                 | 5.8                 | 1,529,266.64               | 2,340,141.71              | 39.263329       | -107.830813      |
| <b>First MWD Survey @ 200.0' MD / 199.9' TVD</b> |                        |                    |                              |                     |                     |                            |                           |                 |                  |
| 380.0  | 6.20                   | 105.50             | 379.3                        | -0.2                | 20.4                | 1,529,264.82               | 2,340,156.26              | 39.263325       | -107.830761      |
| 470.0  | 7.80                   | 116.70             | 468.6                        | -4.2                | 30.5                | 1,529,260.52               | 2,340,166.29              | 39.263314       | -107.830725      |
| 560.0  | 9.90                   | 113.60             | 557.5                        | -10.0               | 43.1                | 1,529,254.36               | 2,340,178.68              | 39.263297       | -107.830681      |
| 650.0  | 12.10                  | 117.60             | 645.9                        | -17.5               | 58.5                | 1,529,246.49               | 2,340,193.94              | 39.263277       | -107.830627      |
| 740.0  | 13.80                  | 115.80             | 733.6                        | -26.6               | 76.5                | 1,529,236.99               | 2,340,211.72              | 39.263252       | -107.830563      |
| 834.0  | 15.10                  | 115.00             | 824.6                        | -36.6               | 97.7                | 1,529,226.40               | 2,340,232.65              | 39.263225       | -107.830488      |
| 929.0  | 16.30                  | 112.60             | 916.0                        | -47.0               | 121.3               | 1,529,215.44               | 2,340,255.90              | 39.263196       | -107.830405      |
| 1,023.0  | 16.80                  | 113.80             | 1,006.1                      | -57.5               | 145.9               | 1,529,204.26               | 2,340,280.23              | 39.263167       | -107.830318      |
| 1,118.0  | 17.30                  | 112.70             | 1,097.0                      | -68.5               | 171.5               | 1,529,192.62               | 2,340,305.53              | 39.263137       | -107.830228      |



## Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Nichols 0994-24-13E     |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7236.0usft (H&P #290) |
| <b>Site:</b>     | Nichols 24-07 Pad   | <b>MD Reference:</b>                | well @ 7236.0usft (H&P #290) |
| <b>Well:</b>     | Nichols 0994-24-13E | <b>North Reference:</b>             | True                         |
| <b>Wellbore:</b> | Wellbore #1         | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Design:</b>   | Wellbore #1         | <b>Database:</b>                    | EDM 5000.1 Single User Db    |

| Survey                |                 |             |                       |              |              |                     |                    |           |             |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 1,212.0               | 16.50           | 112.40      | 1,186.9               | -79.0        | 196.7        | 1,529,181.50        | 2,340,330.49       | 39.263108 | -107.830139 |
| 1,307.0               | 18.00           | 114.70      | 1,277.6               | -90.3        | 222.5        | 1,529,169.56        | 2,340,356.00       | 39.263077 | -107.830047 |
| 1,402.0               | 18.90           | 118.30      | 1,367.8               | -103.7       | 249.4        | 1,529,155.45        | 2,340,382.53       | 39.263040 | -107.829952 |
| 1,496.0               | 18.50           | 118.80      | 1,456.8               | -118.1       | 275.9        | 1,529,140.37        | 2,340,408.63       | 39.263001 | -107.829859 |
| 1,586.0               | 17.80           | 116.90      | 1,542.3               | -131.2       | 300.6        | 1,529,126.64        | 2,340,433.06       | 39.262965 | -107.829771 |
| 1,681.0               | 17.10           | 116.30      | 1,632.9               | -144.0       | 326.1        | 1,529,113.23        | 2,340,458.20       | 39.262930 | -107.829681 |
| 1,775.0               | 16.20           | 115.20      | 1,723.0               | -155.7       | 350.4        | 1,529,100.90        | 2,340,482.15       | 39.262898 | -107.829596 |
| 1,870.0               | 17.00           | 118.70      | 1,814.0               | -168.0       | 374.5        | 1,529,087.98        | 2,340,506.00       | 39.262864 | -107.829510 |
| 1,965.0               | 16.00           | 118.50      | 1,905.1               | -180.9       | 398.2        | 1,529,074.46        | 2,340,529.34       | 39.262828 | -107.829427 |
| 2,060.0               | 18.10           | 117.00      | 1,995.9               | -193.8       | 422.9        | 1,529,060.88        | 2,340,553.66       | 39.262793 | -107.829340 |
| 2,154.0               | 16.70           | 116.20      | 2,085.6               | -206.4       | 448.0        | 1,529,047.65        | 2,340,578.46       | 39.262758 | -107.829251 |
| 2,249.0               | 18.50           | 115.70      | 2,176.2               | -219.0       | 473.8        | 1,529,034.42        | 2,340,603.96       | 39.262724 | -107.829160 |
| 2,343.0               | 17.00           | 114.40      | 2,265.7               | -231.1       | 499.8        | 1,529,021.62        | 2,340,629.59       | 39.262690 | -107.829068 |
| 2,438.0               | 18.30           | 116.00      | 2,356.2               | -243.4       | 525.8        | 1,529,008.68        | 2,340,655.32       | 39.262657 | -107.828976 |
| 2,532.0               | 18.70           | 114.90      | 2,445.4               | -256.2       | 552.8        | 1,528,995.18        | 2,340,681.92       | 39.262622 | -107.828881 |
| 2,627.0               | 17.60           | 114.60      | 2,535.7               | -268.6       | 579.7        | 1,528,982.10        | 2,340,708.47       | 39.262587 | -107.828786 |
| 2,721.0               | 19.90           | 115.90      | 2,624.7               | -281.5       | 607.0        | 1,528,968.50        | 2,340,735.44       | 39.262552 | -107.828690 |
| 2,816.0               | 19.00           | 114.70      | 2,714.2               | -295.0       | 635.6        | 1,528,954.24        | 2,340,763.68       | 39.262515 | -107.828589 |
| 2,910.0               | 18.30           | 115.00      | 2,803.3               | -307.7       | 662.8        | 1,528,940.92        | 2,340,790.62       | 39.262480 | -107.828492 |
| 3,005.0               | 17.10           | 114.50      | 2,893.8               | -319.8       | 689.1        | 1,528,928.15        | 2,340,816.53       | 39.262447 | -107.828400 |
| 3,099.0               | 19.00           | 114.50      | 2,983.2               | -331.9       | 715.6        | 1,528,915.40        | 2,340,842.72       | 39.262414 | -107.828306 |
| 3,194.0               | 18.40           | 112.70      | 3,073.2               | -344.1       | 743.5        | 1,528,902.49        | 2,340,870.30       | 39.262380 | -107.828207 |
| 3,288.0               | 17.40           | 112.50      | 3,162.6               | -355.2       | 770.1        | 1,528,890.70        | 2,340,896.68       | 39.262350 | -107.828113 |
| 3,383.0               | 19.40           | 116.00      | 3,252.8               | -367.5       | 797.5        | 1,528,877.65        | 2,340,923.66       | 39.262316 | -107.828017 |
| 3,478.0               | 19.00           | 116.90      | 3,342.5               | -381.4       | 825.4        | 1,528,863.03        | 2,340,951.26       | 39.262278 | -107.827918 |
| 3,572.0               | 18.30           | 116.70      | 3,431.5               | -395.0       | 852.3        | 1,528,848.79        | 2,340,977.74       | 39.262241 | -107.827823 |
| 3,667.0               | 17.20           | 116.60      | 3,522.0               | -408.0       | 878.1        | 1,528,835.14        | 2,341,003.28       | 39.262205 | -107.827732 |
| 3,762.0               | 19.70           | 116.10      | 3,612.1               | -421.3       | 905.1        | 1,528,821.12        | 2,341,029.87       | 39.262168 | -107.827637 |
| 3,856.0               | 18.80           | 116.30      | 3,700.9               | -435.0       | 932.9        | 1,528,806.73        | 2,341,057.32       | 39.262131 | -107.827538 |
| 3,951.0               | 18.70           | 115.80      | 3,790.8               | -448.4       | 960.3        | 1,528,792.62        | 2,341,084.40       | 39.262094 | -107.827442 |
| 4,046.0               | 17.80           | 115.50      | 3,881.0               | -461.3       | 987.1        | 1,528,779.05        | 2,341,110.88       | 39.262058 | -107.827347 |
| 4,140.0               | 19.60           | 114.70      | 3,970.1               | -474.1       | 1,014.4      | 1,528,765.58        | 2,341,137.84       | 39.262023 | -107.827250 |
| 4,235.0               | 19.80           | 114.00      | 4,059.5               | -487.3       | 1,043.6      | 1,528,751.64        | 2,341,166.66       | 39.261987 | -107.827147 |
| 4,329.0               | 18.80           | 113.70      | 4,148.2               | -499.8       | 1,072.0      | 1,528,738.35        | 2,341,194.75       | 39.261953 | -107.827047 |
| 4,424.0               | 17.20           | 114.00      | 4,238.6               | -511.7       | 1,098.9      | 1,528,725.79        | 2,341,221.28       | 39.261920 | -107.826952 |
| 4,519.0               | 18.60           | 114.00      | 4,329.0               | -523.6       | 1,125.6      | 1,528,713.24        | 2,341,247.64       | 39.261887 | -107.826858 |
| 4,613.0               | 17.80           | 114.00      | 4,418.3               | -535.5       | 1,152.4      | 1,528,700.61        | 2,341,274.15       | 39.261855 | -107.826763 |
| 4,708.0               | 18.80           | 115.80      | 4,508.5               | -548.1       | 1,179.4      | 1,528,687.35        | 2,341,300.87       | 39.261820 | -107.826668 |
| 4,802.0               | 17.30           | 116.20      | 4,597.8               | -560.8       | 1,205.6      | 1,528,673.92        | 2,341,326.71       | 39.261785 | -107.826575 |
| 4,897.0               | 17.90           | 114.70      | 4,688.4               | -573.2       | 1,231.5      | 1,528,660.92        | 2,341,352.32       | 39.261751 | -107.826484 |
| 4,991.0               | 18.90           | 115.40      | 4,777.6               | -585.7       | 1,258.4      | 1,528,647.67        | 2,341,378.87       | 39.261717 | -107.826389 |
| 5,086.0               | 18.20           | 115.40      | 4,867.7               | -598.7       | 1,285.7      | 1,528,634.01        | 2,341,405.83       | 39.261681 | -107.826292 |
| 5,180.0               | 17.30           | 115.30      | 4,957.2               | -611.0       | 1,311.6      | 1,528,621.08        | 2,341,431.40       | 39.261647 | -107.826201 |
| 5,275.0               | 16.00           | 116.10      | 5,048.2               | -622.8       | 1,336.1      | 1,528,608.66        | 2,341,455.62       | 39.261615 | -107.826114 |
| 5,369.0               | 13.40           | 115.40      | 5,139.1               | -633.1       | 1,357.6      | 1,528,597.74        | 2,341,476.82       | 39.261587 | -107.826038 |
| 5,464.0               | 10.90           | 112.30      | 5,232.0               | -641.3       | 1,375.9      | 1,528,589.14        | 2,341,494.87       | 39.261564 | -107.825974 |
| 5,559.0               | 8.70            | 111.10      | 5,325.6               | -647.3       | 1,390.9      | 1,528,582.76        | 2,341,509.72       | 39.261548 | -107.825921 |
| 5,653.0               | 5.80            | 106.70      | 5,418.8               | -651.2       | 1,402.1      | 1,528,578.55        | 2,341,520.80       | 39.261537 | -107.825881 |
| 5,748.0               | 3.20            | 95.90       | 5,513.5               | -652.8       | 1,409.3      | 1,528,576.72        | 2,341,527.99       | 39.261532 | -107.825856 |
| 5,843.0               | 1.41            | 72.20       | 5,608.4               | -652.8       | 1,413.1      | 1,528,576.70        | 2,341,531.75       | 39.261533 | -107.825843 |
| 5,937.0               | 1.19            | 80.11       | 5,702.4               | -652.2       | 1,415.1      | 1,528,577.17        | 2,341,533.82       | 39.261534 | -107.825835 |
| 6,032.0               | 0.66            | 88.99       | 5,797.4               | -652.1       | 1,416.6      | 1,528,577.31        | 2,341,535.34       | 39.261535 | -107.825830 |
| 6,127.0               | 0.40            | 123.44      | 5,892.4               | -652.2       | 1,417.5      | 1,528,577.12        | 2,341,536.16       | 39.261534 | -107.825827 |
| 6,222.0               | 0.53            | 122.74      | 5,987.4               | -652.7       | 1,418.1      | 1,528,576.68        | 2,341,536.80       | 39.261533 | -107.825825 |
| 6,316.0               | 0.40            | 152.54      | 6,081.4               | -653.2       | 1,418.6      | 1,528,576.14        | 2,341,537.30       | 39.261532 | -107.825823 |



# Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Nichols 0994-24-13E     |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7236.0usft (H&P #290) |
| <b>Site:</b>     | Nichols 24-07 Pad   | <b>MD Reference:</b>                | well @ 7236.0usft (H&P #290) |
| <b>Well:</b>     | Nichols 0994-24-13E | <b>North Reference:</b>             | True                         |
| <b>Wellbore:</b> | Wellbore #1         | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Design:</b>   | Wellbore #1         | <b>Database:</b>                    | EDM 5000.1 Single User Db    |

| Survey                                      |                 |             |                       |              |              |                     |                    |           |             |
|---|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (usft)                       | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 6,411.0                                     | 0.35            | 149.99      | 6,176.4               | -653.7       | 1,418.9      | 1,528,575.59        | 2,341,537.59       | 39.261530 | -107.825822 |
| 6,506.0                                     | 0.35            | 208.96      | 6,271.4               | -654.2       | 1,418.9      | 1,528,575.08        | 2,341,537.58       | 39.261529 | -107.825822 |
| 6,600.0                                     | 0.70            | 216.70      | 6,365.4               | -654.9       | 1,418.5      | 1,528,574.38        | 2,341,537.08       | 39.261527 | -107.825824 |
| 6,695.0                                     | 1.10            | 216.78      | 6,460.4               | -656.1       | 1,417.6      | 1,528,573.21        | 2,341,536.15       | 39.261523 | -107.825827 |
| 6,790.0                                     | 1.32            | 238.05      | 6,555.4               | -657.4       | 1,416.1      | 1,528,571.94        | 2,341,534.65       | 39.261520 | -107.825832 |
| 6,884.0                                     | 0.92            | 236.56      | 6,649.3               | -658.4       | 1,414.5      | 1,528,570.99        | 2,341,533.07       | 39.261517 | -107.825837 |
| 6,979.0                                     | 0.92            | 232.25      | 6,744.3               | -659.3       | 1,413.3      | 1,528,570.14        | 2,341,531.81       | 39.261515 | -107.825842 |
| 7,073.0                                     | 0.88            | 228.91      | 6,838.3               | -660.3       | 1,412.2      | 1,528,569.23        | 2,341,530.65       | 39.261512 | -107.825846 |
| 7,168.0                                     | 1.27            | 229.09      | 6,933.3               | -661.4       | 1,410.8      | 1,528,568.10        | 2,341,529.27       | 39.261509 | -107.825851 |
| 7,263.0                                     | 1.27            | 240.16      | 7,028.3               | -662.6       | 1,409.1      | 1,528,566.93        | 2,341,527.53       | 39.261506 | -107.825857 |
| 7,357.0                                     | 1.76            | 252.38      | 7,122.2               | -663.6       | 1,406.8      | 1,528,566.03        | 2,341,525.23       | 39.261503 | -107.825865 |
| 7,452.0                                     | 1.98            | 254.23      | 7,217.2               | -664.5       | 1,403.9      | 1,528,565.22        | 2,341,522.24       | 39.261501 | -107.825875 |
| 7,546.0                                     | 2.07            | 250.97      | 7,311.1               | -665.5       | 1,400.7      | 1,528,564.31        | 2,341,519.05       | 39.261498 | -107.825886 |
| 7,600.0                                     | 2.11            | 252.12      | 7,365.1               | -666.1       | 1,398.8      | 1,528,563.73        | 2,341,517.16       | 39.261496 | -107.825893 |
| 7,655.0                                     | 2.11            | 252.12      | 7,420.1               | -666.7       | 1,396.9      | 1,528,563.16        | 2,341,515.22       | 39.261494 | -107.825900 |
| Projection to TD @ 7655.0' MD / 7420.1' TVD |                 |             |                       |              |              |                     |                    |           |             |

| Design Annotations    |                       |                   |              |   |
|-----------------------|-----------------------|-------------------|--------------|---|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                     |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |   |
| 200.0                 | 199.9                 | 1.3               | 5.8          | First MWD Survey @ 200.0' MD / 199.9' TVD   |
| 7,655.0               | 7,420.1               | -666.7            | 1,396.9      | Projection to TD @ 7655.0' MD / 7420.1' TVD |