



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-01 Pad**

**Bruton 19-21E**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**13 June, 2017**





## Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Bruton 19-21E           |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7449.0usft (H&P #290) |
| <b>Site:</b>     | Bruton 30-01 Pad    | <b>MD Reference:</b>                | well @ 7449.0usft (H&P #290) |
| <b>Well:</b>     | Bruton 19-21E       | <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>                    | EDM5002                      |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <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                  |          | Bruton 30-01 Pad |              |         |            |                   |       |   |
|-----------------------|----------|------------------|--------------|---------|------------|-------------------|-------|---|
| Site Position:        |          | Northing:        | 1,526,078.02 | usft    | Latitude:  | 39.255061         |       |   |
| From:                 | Lat/Long | Easting:         | 2,347,056.81 | usft    | Longitude: | -107.806111       |       |   |
| Position Uncertainty: | 0.0      | usft             | Slot Radius: | 13-3/16 | "          | Grid Convergence: | -1.45 | ° |

| Well                 | Bruton 19-21E |          |                     |                   |               |              |
|----------------------|---------------|----------|---------------------|-------------------|---------------|--------------|
| Well Position        | +N/-S         | 0.0 usft | Northing:           | 1,526,118.71 usft | Latitude:     | 39.255172    |
|                      | +E/-W         | 0.0 usft | Easting:            | 2,347,048.40 usft | Longitude:    | -107.806145  |
| Position Uncertainty |               | 0.0 usft | Wellhead Elevation: | 0.0 usft          | Ground Level: | 7,425.0 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> |
|                  | IGRF2015          | 5/16/2017          | 9.59                   | 65.43                | 51,421                     |

|                          |                                |                     |                     |                      |     |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|-----|
| <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                 | 311.95               |     |

|                       |                  |                          |                  |                    |  |
|-----------------------|------------------|--------------------------|------------------|--------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 6/13/2017                |                  |                    |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |  |
| 203.0                 | 7,708.0          | MWD Survey (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                 | 1,526,118.71               | 2,347,048.40              | 39.255172       | -107.806145      |
| 203.0                                     | 0.70                   | 166.50             | 203.0                        | -1.2                | 0.3                 | 1,526,117.49               | 2,347,048.66              | 39.255169       | -107.806144      |
| <b>First MWD Survey @ 203.0' MD / TVD</b> |                        |                    |                              |                     |                     |                            |                           |                 |                  |
| 295.0                                     | 1.30                   | 297.80             | 295.0                        | -1.3                | -0.5                | 1,526,117.45               | 2,347,047.87              | 39.255169       | -107.806146      |
| 386.0                                     | 1.50                   | 306.20             | 386.0                        | -0.1                | -2.4                | 1,526,118.69               | 2,347,046.02              | 39.255172       | -107.806153      |
| 477.0                                     | 3.20                   | 317.50             | 476.9                        | 2.5                 | -5.1                | 1,526,121.33               | 2,347,043.41              | 39.255179       | -107.806163      |
| 567.0                                     | 5.20                   | 305.00             | 566.6                        | 6.7                 | -10.1               | 1,526,125.65               | 2,347,038.48              | 39.255191       | -107.806180      |
| 657.0                                     | 5.80                   | 305.00             | 656.2                        | 11.6                | -17.2               | 1,526,130.77               | 2,347,031.54              | 39.255204       | -107.806205      |
| 748.0                                     | 4.60                   | 293.40             | 746.8                        | 15.7                | -24.3               | 1,526,135.04               | 2,347,024.53              | 39.255215       | -107.806230      |
| 839.0                                     | 4.50                   | 291.40             | 837.6                        | 18.5                | -30.9               | 1,526,137.96               | 2,347,017.93              | 39.255223       | -107.806254      |
| 929.0                                     | 4.40                   | 292.60             | 927.3                        | 21.1                | -37.4               | 1,526,140.74               | 2,347,011.53              | 39.255230       | -107.806277      |
| 1,024.0                                   | 4.60                   | 289.40             | 1,022.0                      | 23.8                | -44.4               | 1,526,143.58               | 2,347,004.64              | 39.255238       | -107.806301      |



# Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Bruton 19-21E           |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7449.0usft (H&P #290) |
| <b>Site:</b>     | Bruton 30-01 Pad    | <b>MD Reference:</b>                | well @ 7449.0usft (H&P #290) |
| <b>Well:</b>     | Bruton 19-21E       | <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>                    | EDM5002                      |

| Survey                |                 |             |                       |              |              |                     |                    |           |             |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 1,118.0               | 4.60            | 289.90      | 1,115.7               | 26.3         | -51.5        | 1,526,146.29        | 2,346,997.61       | 39.255244 | -107.806327 |
| 1,213.0               | 4.70            | 292.90      | 1,210.4               | 29.1         | -58.6        | 1,526,149.29        | 2,346,990.51       | 39.255252 | -107.806352 |
| 1,307.0               | 4.80            | 294.60      | 1,304.1               | 32.2         | -65.8        | 1,526,152.60        | 2,346,983.47       | 39.255261 | -107.806377 |
| 1,402.0               | 4.70            | 294.80      | 1,398.7               | 35.5         | -72.9        | 1,526,156.07        | 2,346,976.41       | 39.255270 | -107.806402 |
| 1,498.0               | 4.30            | 298.70      | 1,494.4               | 38.9         | -79.6        | 1,526,159.62        | 2,346,969.77       | 39.255279 | -107.806426 |
| 1,588.0               | 3.70            | 292.20      | 1,584.2               | 41.6         | -85.3        | 1,526,162.48        | 2,346,964.19       | 39.255287 | -107.806446 |
| 1,683.0               | 4.10            | 314.30      | 1,679.0               | 45.1         | -90.6        | 1,526,166.14        | 2,346,959.01       | 39.255296 | -107.806465 |
| 1,777.0               | 4.10            | 312.10      | 1,772.8               | 49.7         | -95.5        | 1,526,170.86        | 2,346,954.23       | 39.255309 | -107.806482 |
| 1,871.0               | 4.10            | 324.90      | 1,866.5               | 54.8         | -99.9        | 1,526,175.97        | 2,346,949.94       | 39.255323 | -107.806497 |
| 1,966.0               | 4.00            | 322.70      | 1,961.3               | 60.2         | -103.8       | 1,526,181.49        | 2,346,946.11       | 39.255337 | -107.806511 |
| 2,061.0               | 3.70            | 322.80      | 2,056.1               | 65.2         | -107.7       | 1,526,186.66        | 2,346,942.38       | 39.255351 | -107.806525 |
| 2,155.0               | 3.70            | 318.50      | 2,149.9               | 69.9         | -111.6       | 1,526,191.45        | 2,346,938.66       | 39.255364 | -107.806539 |
| 2,249.0               | 3.60            | 316.90      | 2,243.7               | 74.4         | -115.6       | 1,526,195.97        | 2,346,934.75       | 39.255376 | -107.806553 |
| 2,344.0               | 3.30            | 318.40      | 2,338.5               | 78.6         | -119.4       | 1,526,200.29        | 2,346,931.00       | 39.255388 | -107.806566 |
| 2,438.0               | 3.30            | 315.30      | 2,432.4               | 82.5         | -123.1       | 1,526,204.33        | 2,346,927.41       | 39.255399 | -107.806580 |
| 2,533.0               | 3.90            | 334.30      | 2,527.2               | 87.4         | -126.5       | 1,526,209.27        | 2,346,924.20       | 39.255412 | -107.806591 |
| 2,627.0               | 3.80            | 329.60      | 2,621.0               | 92.9         | -129.4       | 1,526,214.91        | 2,346,921.38       | 39.255427 | -107.806602 |
| 2,722.0               | 3.50            | 331.00      | 2,715.8               | 98.2         | -132.4       | 1,526,220.23        | 2,346,918.52       | 39.255442 | -107.806612 |
| 2,816.0               | 3.40            | 329.30      | 2,809.6               | 103.1        | -135.2       | 1,526,225.21        | 2,346,915.83       | 39.255455 | -107.806622 |
| 2,910.0               | 3.50            | 328.50      | 2,903.4               | 107.9        | -138.2       | 1,526,230.13        | 2,346,913.03       | 39.255469 | -107.806633 |
| 3,005.0               | 3.30            | 330.90      | 2,998.3               | 112.8        | -141.0       | 1,526,235.06        | 2,346,910.31       | 39.255482 | -107.806643 |
| 3,100.0               | 4.50            | 338.30      | 3,093.0               | 118.7        | -143.7       | 1,526,240.98        | 2,346,907.75       | 39.255498 | -107.806652 |
| 3,194.0               | 4.20            | 336.40      | 3,186.8               | 125.2        | -146.4       | 1,526,247.63        | 2,346,905.18       | 39.255516 | -107.806662 |
| 3,289.0               | 3.90            | 335.70      | 3,281.5               | 131.4        | -149.2       | 1,526,253.82        | 2,346,902.61       | 39.255533 | -107.806672 |
| 3,384.0               | 5.40            | 333.10      | 3,376.2               | 138.3        | -152.5       | 1,526,260.84        | 2,346,899.44       | 39.255552 | -107.806683 |
| 3,478.0               | 5.50            | 325.20      | 3,469.8               | 146.0        | -157.1       | 1,526,268.60        | 2,346,895.06       | 39.255573 | -107.806699 |
| 3,573.0               | 5.10            | 324.00      | 3,564.4               | 153.1        | -162.2       | 1,526,275.88        | 2,346,890.17       | 39.255593 | -107.806717 |
| 3,667.0               | 5.10            | 323.40      | 3,658.0               | 159.8        | -167.1       | 1,526,282.74        | 2,346,885.39       | 39.255611 | -107.806735 |
| 3,762.0               | 5.10            | 322.90      | 3,752.6               | 166.6        | -172.2       | 1,526,289.62        | 2,346,880.50       | 39.255630 | -107.806753 |
| 3,857.0               | 5.10            | 320.50      | 3,847.3               | 173.2        | -177.4       | 1,526,296.38        | 2,346,875.44       | 39.255648 | -107.806771 |
| 3,951.0               | 4.70            | 321.30      | 3,940.9               | 179.5        | -182.5       | 1,526,302.73        | 2,346,870.53       | 39.255665 | -107.806789 |
| 4,046.0               | 4.40            | 320.30      | 4,035.6               | 185.3        | -187.2       | 1,526,308.69        | 2,346,865.92       | 39.255681 | -107.806806 |
| 4,141.0               | 4.30            | 320.30      | 4,130.3               | 190.8        | -191.8       | 1,526,314.35        | 2,346,861.46       | 39.255696 | -107.806822 |
| 4,235.0               | 4.10            | 317.30      | 4,224.1               | 196.0        | -196.4       | 1,526,319.65        | 2,346,857.06       | 39.255710 | -107.806838 |
| 4,330.0               | 4.20            | 334.30      | 4,318.8               | 201.6        | -200.2       | 1,526,325.37        | 2,346,853.39       | 39.255726 | -107.806852 |
| 4,425.0               | 3.80            | 329.10      | 4,413.6               | 207.5        | -203.3       | 1,526,331.28        | 2,346,850.42       | 39.255742 | -107.806863 |
| 4,519.0               | 3.10            | 323.00      | 4,507.4               | 212.2        | -206.4       | 1,526,336.07        | 2,346,847.41       | 39.255755 | -107.806874 |
| 4,614.0               | 2.60            | 326.10      | 4,602.3               | 216.0        | -209.2       | 1,526,339.97        | 2,346,844.76       | 39.255765 | -107.806883 |
| 4,708.0               | 3.80            | 335.90      | 4,696.2               | 220.6        | -211.7       | 1,526,344.65        | 2,346,842.42       | 39.255778 | -107.806892 |
| 4,803.0               | 3.50            | 328.20      | 4,791.0               | 226.0        | -214.5       | 1,526,350.06        | 2,346,839.74       | 39.255793 | -107.806902 |
| 4,897.0               | 3.10            | 314.30      | 4,884.8               | 230.2        | -217.8       | 1,526,354.35        | 2,346,836.52       | 39.255804 | -107.806914 |
| 4,992.0               | 2.90            | 330.50      | 4,979.7               | 234.1        | -220.8       | 1,526,358.31        | 2,346,833.59       | 39.255815 | -107.806925 |
| 5,086.0               | 2.40            | 330.00      | 5,073.6               | 237.9        | -223.0       | 1,526,362.14        | 2,346,831.54       | 39.255825 | -107.806932 |
| 5,181.0               | 3.00            | 332.90      | 5,168.5               | 241.8        | -225.1       | 1,526,366.13        | 2,346,829.51       | 39.255836 | -107.806940 |
| 5,276.0               | 2.80            | 332.10      | 5,263.4               | 246.1        | -227.3       | 1,526,370.45        | 2,346,827.40       | 39.255848 | -107.806947 |
| 5,370.0               | 2.90            | 321.90      | 5,357.3               | 250.0        | -229.9       | 1,526,374.41        | 2,346,824.96       | 39.255859 | -107.806956 |
| 5,465.0               | 2.40            | 315.00      | 5,452.2               | 253.3        | -232.7       | 1,526,377.78        | 2,346,822.15       | 39.255868 | -107.806967 |
| 5,560.0               | 2.20            | 312.60      | 5,547.1               | 255.9        | -235.5       | 1,526,380.49        | 2,346,819.47       | 39.255875 | -107.806976 |
| 5,654.0               | 2.10            | 306.30      | 5,641.0               | 258.1        | -238.2       | 1,526,382.80        | 2,346,816.81       | 39.255881 | -107.806986 |
| 5,749.0               | 1.80            | 301.40      | 5,736.0               | 259.9        | -240.9       | 1,526,384.68        | 2,346,814.19       | 39.255886 | -107.806995 |
| 5,843.0               | 1.50            | 319.80      | 5,829.9               | 261.6        | -242.9       | 1,526,386.44        | 2,346,812.17       | 39.255891 | -107.807003 |
| 5,938.0               | 1.40            | 310.00      | 5,924.9               | 263.3        | -244.6       | 1,526,388.17        | 2,346,810.53       | 39.255895 | -107.807009 |
| 6,032.0               | 1.50            | 290.60      | 6,018.9               | 264.5        | -246.7       | 1,526,389.40        | 2,346,808.53       | 39.255899 | -107.807016 |
| 6,127.0               | 1.40            | 320.70      | 6,113.8               | 265.9        | -248.6       | 1,526,390.78        | 2,346,806.66       | 39.255902 | -107.807023 |
| 6,222.0               | 1.20            | 317.60      | 6,208.8               | 267.5        | -250.0       | 1,526,392.45        | 2,346,805.30       | 39.255907 | -107.807027 |



# Survey Report - Geographic



|                  |                     |                                     |                              |
|------------------|---------------------|-------------------------------------|------------------------------|
| <b>Company:</b>  | Laramie Energy, LLC | <b>Local Co-ordinate Reference:</b> | Well Bruton 19-21E           |
| <b>Project:</b>  | Mesa County, CO     | <b>TVD Reference:</b>               | well @ 7449.0usft (H&P #290) |
| <b>Site:</b>     | Bruton 30-01 Pad    | <b>MD Reference:</b>                | well @ 7449.0usft (H&P #290) |
| <b>Well:</b>     | Bruton 19-21E       | <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>                    | EDM5002                      |

| Survey                                      |                 |             |                       |              |              |                     |                    |           |             |
|---|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------|-------------|
| Measured Depth (usft)                       | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude  | Longitude   |
| 6,316.0                                     | 1.20            | 295.30      | 6,302.8               | 268.6        | -251.5       | 1,526,393.63        | 2,346,803.77       | 39.255910 | -107.807033 |
| 6,410.0                                     | 1.40            | 288.60      | 6,396.8               | 269.4        | -253.5       | 1,526,394.47        | 2,346,801.82       | 39.255912 | -107.807040 |
| 6,505.0                                     | 0.20            | 326.30      | 6,491.8               | 269.9        | -254.7       | 1,526,395.01        | 2,346,800.64       | 39.255913 | -107.807044 |
| 6,600.0                                     | 0.40            | 227.40      | 6,586.8               | 269.8        | -255.0       | 1,526,394.93        | 2,346,800.30       | 39.255913 | -107.807045 |
| 6,694.0                                     | 0.60            | 219.30      | 6,680.7               | 269.2        | -255.6       | 1,526,394.34        | 2,346,799.73       | 39.255911 | -107.807047 |
| 6,789.0                                     | 0.70            | 219.00      | 6,775.7               | 268.4        | -256.3       | 1,526,393.52        | 2,346,799.03       | 39.255909 | -107.807050 |
| 6,884.0                                     | 0.90            | 239.80      | 6,870.7               | 267.6        | -257.3       | 1,526,392.72        | 2,346,798.00       | 39.255907 | -107.807053 |
| 6,978.0                                     | 1.40            | 216.20      | 6,964.7               | 266.3        | -258.6       | 1,526,391.46        | 2,346,796.65       | 39.255903 | -107.807058 |
| 7,073.0                                     | 2.00            | 229.80      | 7,059.7               | 264.3        | -260.5       | 1,526,389.50        | 2,346,794.65       | 39.255898 | -107.807065 |
| 7,168.0                                     | 2.20            | 239.20      | 7,154.6               | 262.3        | -263.4       | 1,526,387.57        | 2,346,791.77       | 39.255892 | -107.807075 |
| 7,262.0                                     | 2.70            | 241.90      | 7,248.5               | 260.3        | -266.9       | 1,526,385.70        | 2,346,788.21       | 39.255887 | -107.807087 |
| 7,357.0                                     | 2.70            | 243.30      | 7,343.4               | 258.2        | -270.9       | 1,526,383.74        | 2,346,784.19       | 39.255881 | -107.807101 |
| 7,452.0                                     | 3.30            | 244.30      | 7,438.3               | 256.0        | -275.3       | 1,526,381.66        | 2,346,779.67       | 39.255875 | -107.807117 |
| 7,547.0                                     | 3.00            | 241.30      | 7,533.1               | 253.7        | -280.0       | 1,526,379.40        | 2,346,774.97       | 39.255869 | -107.807133 |
| 7,641.0                                     | 2.90            | 237.80      | 7,627.0               | 251.2        | -284.1       | 1,526,377.06        | 2,346,770.74       | 39.255862 | -107.807148 |
| 7,708.0                                     | 2.90            | 237.80      | 7,693.9               | 249.4        | -287.0       | 1,526,375.32        | 2,346,767.83       | 39.255857 | -107.807158 |
| Projection to TD @ 7708.0' MD / 7693.9' TVD |                 |             |                       |              |              |                     |                    |           |             |

| Design Annotations    |                       |                   |              |   |
|-----------------------|-----------------------|-------------------|--------------|---|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                     |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |   |
| 203.0                 | 203.0                 | -1.2              | 0.3          | First MWD Survey @ 203.0' MD / TVD          |
| 7,708.0               | 7,693.9               | 249.4             | -287.0       | Projection to TD @ 7708.0' MD / 7693.9' TVD |