



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-03 Pad**

**Bruton 30-04W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**09 September, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-04W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Site:</b>	Bruton 30-03 Pad	<b>MD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Well:</b>	Bruton 30-04W	<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		Bruton 30-03 Pad			
Site Position:		Northing:	1,525,281.27 usft	Latitude:	39.252711
From:	Lat/Long	Easting:	2,344,720.08 usft	Longitude:	-107.814289
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 °

Well	Bruton 30-04W					
Well Position	+N/-S	0.0 usft	Northing:	1,525,274.33 usft	Latitude:	39.252692
	+E/-W	0.0 usft	Easting:	2,344,718.46 usft	Longitude:	-107.814294
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,512.0 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	8/17/2017	9.57	65.42	51,390.03604334

<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	279.32	

<b>Survey Program</b>	<b>Date</b>	9/9/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
202.0	8,396.0	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	1,525,274.33	2,344,718.46	39.252692	-107.814294
202.0	1.70	317.70	202.0	2.2	-2.0	1,525,276.60	2,344,716.50	39.252698	-107.814301
<b>First MWD Survey @ 202.0' MD / 202.0' TVD</b>									
292.0	2.20	318.30	291.9	4.5	-4.1	1,525,278.92	2,344,714.51	39.252704	-107.814309
384.0	3.20	283.00	383.8	6.4	-7.7	1,525,280.91	2,344,710.88	39.252710	-107.814322
476.0	3.60	284.80	475.7	7.7	-13.0	1,525,282.36	2,344,705.62	39.252713	-107.814340
568.0	4.30	277.80	567.4	8.9	-19.2	1,525,283.73	2,344,699.45	39.252717	-107.814362
659.0	4.50	281.40	658.2	10.1	-26.1	1,525,285.07	2,344,692.60	39.252720	-107.814387
751.0	4.40	272.70	749.9	11.0	-33.2	1,525,286.13	2,344,685.56	39.252722	-107.814411
842.0	4.20	273.60	840.6	11.3	-40.0	1,525,286.68	2,344,678.76	39.252723	-107.814436
933.0	6.00	275.50	931.3	12.0	-48.1	1,525,287.55	2,344,670.72	39.252725	-107.814464
1,025.0	6.40	277.50	1,022.7	13.1	-57.9	1,525,288.93	2,344,660.88	39.252728	-107.814499



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-04W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Site:</b>	Bruton 30-03 Pad	<b>MD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Well:</b>	Bruton 30-04W	<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
1,119.0	6.10	275.10	1,116.2	14.3	-68.1	1,525,290.32	2,344,650.74	39.252731	-107.814535
1,214.0	5.90	270.90	1,210.7	14.8	-78.0	1,525,291.09	2,344,640.85	39.252733	-107.814570
1,308.0	6.80	276.10	1,304.1	15.4	-88.4	1,525,292.02	2,344,630.51	39.252734	-107.814606
1,402.0	6.80	277.60	1,397.4	16.8	-99.4	1,525,293.63	2,344,619.49	39.252738	-107.814645
1,496.0	6.10	276.10	1,490.8	18.0	-109.9	1,525,295.17	2,344,609.05	39.252742	-107.814682
1,587.0	6.20	272.80	1,581.3	18.8	-119.6	1,525,296.17	2,344,599.35	39.252744	-107.814717
1,681.0	5.90	275.00	1,674.8	19.5	-129.5	1,525,297.09	2,344,589.49	39.252745	-107.814752
1,775.0	6.40	274.00	1,768.2	20.3	-139.5	1,525,298.13	2,344,579.47	39.252748	-107.814787
1,870.0	6.90	276.20	1,862.6	21.2	-150.5	1,525,299.39	2,344,568.55	39.252750	-107.814826
1,964.0	6.70	276.10	1,955.9	22.4	-161.6	1,525,300.87	2,344,557.52	39.252754	-107.814865
2,062.0	6.60	283.10	2,053.3	24.3	-172.7	1,525,303.04	2,344,546.40	39.252759	-107.814904
2,156.0	6.50	280.90	2,146.7	26.5	-183.2	1,525,305.53	2,344,535.97	39.252765	-107.814941
2,251.0	5.90	280.50	2,241.1	28.5	-193.3	1,525,307.70	2,344,525.94	39.252770	-107.814977
2,345.0	6.60	280.70	2,334.5	30.3	-203.4	1,525,309.83	2,344,515.94	39.252775	-107.815012
2,439.0	6.30	277.90	2,428.0	32.0	-213.8	1,525,311.81	2,344,505.57	39.252780	-107.815049
2,533.0	7.30	288.80	2,521.3	34.7	-224.5	1,525,314.72	2,344,494.87	39.252787	-107.815087
2,627.0	6.50	287.60	2,614.6	38.2	-235.3	1,525,318.52	2,344,484.24	39.252797	-107.815125
2,722.0	6.20	287.80	2,709.0	41.4	-245.3	1,525,321.97	2,344,474.32	39.252806	-107.815160
2,816.0	7.20	287.10	2,802.4	44.7	-255.7	1,525,325.52	2,344,463.94	39.252815	-107.815197
2,910.0	6.80	287.60	2,895.7	48.1	-266.7	1,525,329.21	2,344,453.10	39.252824	-107.815236
3,004.0	6.80	278.80	2,989.0	50.6	-277.5	1,525,332.02	2,344,442.36	39.252831	-107.815274
3,098.0	6.40	277.50	3,082.4	52.2	-288.2	1,525,333.83	2,344,431.71	39.252835	-107.815312
3,193.0	6.80	277.60	3,176.8	53.6	-299.0	1,525,335.54	2,344,420.92	39.252839	-107.815350
3,287.0	6.70	278.30	3,270.1	55.1	-309.9	1,525,337.34	2,344,410.02	39.252843	-107.815389
3,381.0	6.30	279.00	3,363.5	56.7	-320.5	1,525,339.21	2,344,399.55	39.252848	-107.815426
3,475.0	7.00	277.90	3,456.9	58.3	-331.2	1,525,341.08	2,344,388.83	39.252852	-107.815464
3,569.0	6.80	278.30	3,550.2	59.9	-342.4	1,525,342.95	2,344,377.69	39.252857	-107.815503
3,664.0	6.50	280.40	3,644.6	61.7	-353.3	1,525,345.01	2,344,366.88	39.252861	-107.815542
3,758.0	6.30	279.60	3,738.0	63.5	-363.6	1,525,347.09	2,344,356.62	39.252866	-107.815578
3,852.0	6.20	278.40	3,831.4	65.1	-373.7	1,525,348.95	2,344,346.55	39.252871	-107.815614
3,947.0	6.00	275.20	3,925.9	66.3	-383.7	1,525,350.41	2,344,336.57	39.252874	-107.815649
4,041.0	6.50	276.80	4,019.3	67.4	-393.9	1,525,351.74	2,344,326.42	39.252877	-107.815685
4,135.0	6.20	277.50	4,112.7	68.7	-404.2	1,525,353.30	2,344,316.14	39.252881	-107.815722
4,229.0	6.30	277.50	4,206.2	70.0	-414.3	1,525,354.89	2,344,306.03	39.252884	-107.815757
4,324.0	7.00	280.00	4,300.6	71.7	-425.2	1,525,356.85	2,344,295.21	39.252889	-107.815796
4,418.0	6.40	278.50	4,393.9	73.5	-436.0	1,525,358.90	2,344,284.44	39.252894	-107.815834
4,512.0	5.80	276.20	4,487.4	74.8	-445.9	1,525,360.43	2,344,274.57	39.252897	-107.815869
4,606.0	6.90	280.10	4,580.8	76.3	-456.2	1,525,362.20	2,344,264.33	39.252901	-107.815905
4,700.0	6.60	279.10	4,674.1	78.1	-467.1	1,525,364.32	2,344,253.49	39.252907	-107.815944
4,795.0	6.30	276.30	4,768.5	79.6	-477.7	1,525,366.03	2,344,242.96	39.252910	-107.815981
4,889.0	6.30	275.40	4,862.0	80.6	-487.9	1,525,367.34	2,344,232.72	39.252913	-107.816017
4,983.0	5.70	270.20	4,955.5	81.1	-497.7	1,525,368.09	2,344,222.94	39.252915	-107.816052
5,077.0	5.10	267.10	5,049.0	80.9	-506.6	1,525,368.12	2,344,214.10	39.252914	-107.816083
5,171.0	4.90	264.50	5,142.7	80.3	-514.8	1,525,367.73	2,344,205.91	39.252913	-107.816112
5,265.0	5.10	259.50	5,236.3	79.2	-522.9	1,525,366.79	2,344,197.78	39.252909	-107.816141
5,360.0	4.40	270.10	5,331.0	78.4	-530.7	1,525,366.23	2,344,189.97	39.252907	-107.816168
5,454.0	4.10	281.40	5,424.7	79.1	-537.6	1,525,367.07	2,344,183.09	39.252909	-107.816193
5,548.0	3.80	279.50	5,518.5	80.3	-543.9	1,525,368.41	2,344,176.76	39.252912	-107.816215
5,642.0	3.20	297.00	5,612.4	82.0	-549.3	1,525,370.26	2,344,171.39	39.252917	-107.816234
5,736.0	2.60	309.00	5,706.2	84.5	-553.3	1,525,372.89	2,344,167.46	39.252924	-107.816248
5,831.0	2.70	320.50	5,801.1	87.6	-556.4	1,525,376.05	2,344,164.44	39.252932	-107.816259
5,925.0	2.50	311.50	5,895.0	90.6	-559.4	1,525,379.19	2,344,161.58	39.252941	-107.816270
6,019.0	1.20	350.20	5,989.0	93.0	-561.1	1,525,381.56	2,344,159.94	39.252947	-107.816276
6,113.0	0.40	338.30	6,083.0	94.2	-561.4	1,525,382.84	2,344,159.68	39.252951	-107.816277
6,208.0	0.10	228.60	6,178.0	94.5	-561.5	1,525,383.10	2,344,159.50	39.252951	-107.816277



# Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-04W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Site:</b>	Bruton 30-03 Pad	<b>MD Reference:</b>	well @ 7542.0usft (H&P #522)
<b>Well:</b>	Bruton 30-04W	<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
6,302.0	0.80	209.40	6,272.0	93.9	-561.9	1,525,382.49	2,344,159.10	39.252950	-107.816279
6,396.0	0.80	191.00	6,366.0	92.7	-562.4	1,525,381.28	2,344,158.62	39.252946	-107.816280
6,490.0	0.70	321.20	6,460.0	92.5	-562.9	1,525,381.10	2,344,158.13	39.252946	-107.816282
6,584.0	0.90	302.30	6,554.0	93.3	-563.8	1,525,381.96	2,344,157.17	39.252948	-107.816285
6,679.0	0.90	268.10	6,648.9	93.7	-565.2	1,525,382.37	2,344,155.80	39.252949	-107.816290
6,773.0	1.70	243.90	6,742.9	93.0	-567.2	1,525,381.79	2,344,153.80	39.252947	-107.816297
6,867.0	1.40	235.20	6,836.9	91.8	-569.4	1,525,380.57	2,344,151.57	39.252944	-107.816305
6,961.0	1.50	227.20	6,930.9	90.3	-571.3	1,525,379.13	2,344,149.69	39.252940	-107.816312
7,056.0	1.20	242.20	7,025.8	89.0	-573.0	1,525,377.87	2,344,147.86	39.252936	-107.816318
7,150.0	0.70	262.80	7,119.8	88.4	-574.5	1,525,377.37	2,344,146.41	39.252935	-107.816323
7,244.0	1.10	227.90	7,213.8	87.8	-575.7	1,525,376.73	2,344,145.15	39.252933	-107.816327
7,339.0	1.40	207.40	7,308.8	86.1	-576.9	1,525,375.12	2,344,143.90	39.252928	-107.816332
7,433.0	0.70	185.20	7,402.8	84.5	-577.5	1,525,373.54	2,344,143.28	39.252924	-107.816334
7,527.0	0.80	195.80	7,496.8	83.3	-577.7	1,525,372.34	2,344,143.02	39.252921	-107.816335
7,622.0	0.70	216.20	7,591.7	82.2	-578.3	1,525,371.25	2,344,142.47	39.252918	-107.816336
7,716.0	1.20	222.20	7,685.7	81.0	-579.3	1,525,370.09	2,344,141.44	39.252914	-107.816340
7,810.0	0.80	266.70	7,779.7	80.3	-580.6	1,525,369.35	2,344,140.10	39.252912	-107.816345
7,905.0	1.20	255.90	7,874.7	80.0	-582.2	1,525,369.11	2,344,138.47	39.252912	-107.816350
7,999.0	1.60	251.80	7,968.7	79.3	-584.4	1,525,368.52	2,344,136.25	39.252910	-107.816358
8,094.0	1.50	250.80	8,063.6	78.5	-586.8	1,525,367.76	2,344,133.80	39.252908	-107.816367
8,188.0	2.00	241.90	8,157.6	77.3	-589.5	1,525,366.65	2,344,131.16	39.252904	-107.816376
8,282.0	2.30	240.20	8,251.5	75.6	-592.5	1,525,365.02	2,344,128.03	39.252900	-107.816387
8,342.0	2.60	236.80	8,311.5	74.3	-594.7	1,525,363.73	2,344,125.82	39.252896	-107.816394
8,396.0	2.60	236.80	8,365.4	72.9	-596.8	1,525,362.44	2,344,123.73	39.252892	-107.816402
Projection to TD @ 8396.0' MD / 8365.4' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
202.0	202.0	2.2	-2.0	First MWD Survey @ 202.0' MD / 202.0' TVD
8,396.0	8,365.4	72.9	-596.8	Projection to TD @ 8396.0' MD / 8365.4' TVD