



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-03 Pad**

**Bruton 30-09W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**17 October, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-09W
<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 30-09W	<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 30-09W					
Well Position	+N/-S	0.0 usft	Northing:	1,525,245.04 usft	Latitude:	39.252611
	+E/-W	0.0 usft	Easting:	2,344,709.78 usft	Longitude:	-107.814322
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	9/25/2017	9.56	65.42	51,378.12506137

<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	206.04	

<b>Survey Program</b>	<b>Date</b>	10/16/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
124.0	7,815.0	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	1,525,245.04	2,344,709.78	39.252611	-107.814322
124.0	2.20	235.60	124.0	-1.3	-2.0	1,525,243.74	2,344,707.78	39.252607	-107.814329
<b>First MWD Survey @ 124.0' MD / TVD</b>									
215.0	2.90	245.00	214.9	-3.3	-5.5	1,525,241.88	2,344,704.21	39.252602	-107.814342
306.0	3.00	233.20	305.8	-5.7	-9.5	1,525,239.58	2,344,700.15	39.252595	-107.814356
398.0	4.40	226.10	397.6	-9.6	-14.0	1,525,235.80	2,344,695.58	39.252585	-107.814372
489.0	5.40	211.40	488.2	-15.7	-18.7	1,525,229.85	2,344,690.68	39.252568	-107.814388
581.0	6.80	201.60	579.7	-24.4	-23.0	1,525,221.20	2,344,686.20	39.252544	-107.814403
673.0	7.20	194.40	671.0	-35.1	-26.4	1,525,210.65	2,344,682.49	39.252515	-107.814416
765.0	7.50	194.00	762.3	-46.5	-29.3	1,525,199.31	2,344,679.32	39.252483	-107.814426
859.0	8.70	206.80	855.3	-58.8	-34.0	1,525,187.14	2,344,674.32	39.252450	-107.814442
953.0	11.60	214.90	947.9	-72.9	-42.6	1,525,173.26	2,344,665.34	39.252411	-107.814473



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<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-09W
<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 30-09W	<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
1,047.0	15.00	211.60	1,039.3	-91.0	-54.4	1,525,155.45	2,344,653.10	39.252361	-107.814514
1,141.0	15.40	211.50	1,130.0	-112.0	-67.3	1,525,134.78	2,344,639.68	39.252304	-107.814560
1,236.0	16.50	212.20	1,221.4	-134.2	-81.1	1,525,112.97	2,344,625.33	39.252243	-107.814608
1,330.0	16.50	208.90	1,311.5	-157.2	-94.6	1,525,090.34	2,344,611.19	39.252180	-107.814656
1,424.0	17.20	211.00	1,401.5	-180.8	-108.2	1,525,067.09	2,344,596.98	39.252115	-107.814704
1,504.0	17.40	209.50	1,477.9	-201.3	-120.2	1,525,046.85	2,344,584.48	39.252058	-107.814747
1,591.0	17.20	211.20	1,560.9	-223.6	-133.3	1,525,024.87	2,344,570.85	39.251997	-107.814793
1,685.0	16.40	210.30	1,650.9	-247.0	-147.2	1,525,001.89	2,344,556.36	39.251933	-107.814842
1,779.0	15.50	209.90	1,741.3	-269.3	-160.1	1,524,979.88	2,344,542.84	39.251872	-107.814888
1,873.0	14.60	208.10	1,832.1	-290.7	-172.0	1,524,958.85	2,344,530.46	39.251813	-107.814930
1,968.0	14.00	207.20	1,924.1	-311.5	-182.9	1,524,938.35	2,344,519.04	39.251756	-107.814968
2,062.0	14.40	204.20	2,015.3	-332.2	-192.9	1,524,917.83	2,344,508.53	39.251699	-107.815003
2,156.0	14.60	205.50	2,106.3	-353.6	-202.7	1,524,896.74	2,344,498.09	39.251640	-107.815038
2,250.0	14.00	203.00	2,197.3	-374.7	-212.3	1,524,875.83	2,344,488.01	39.251582	-107.815072
2,345.0	14.30	201.60	2,289.5	-396.2	-221.1	1,524,854.57	2,344,478.66	39.251523	-107.815103
2,439.0	14.90	200.50	2,380.4	-418.3	-229.6	1,524,832.68	2,344,469.59	39.251462	-107.815133
2,533.0	16.10	199.60	2,471.0	-441.9	-238.2	1,524,809.31	2,344,460.39	39.251398	-107.815163
2,627.0	14.90	199.10	2,561.6	-465.6	-246.5	1,524,785.83	2,344,451.46	39.251333	-107.815193
2,721.0	13.70	200.30	2,652.7	-487.5	-254.4	1,524,764.18	2,344,443.09	39.251273	-107.815220
2,816.0	14.90	197.20	2,744.7	-509.7	-261.9	1,524,742.16	2,344,435.01	39.251212	-107.815247
2,910.0	14.60	198.90	2,835.6	-532.5	-269.3	1,524,719.60	2,344,427.03	39.251149	-107.815273
3,004.0	14.20	198.10	2,926.7	-554.6	-276.7	1,524,697.63	2,344,419.04	39.251088	-107.815299
3,098.0	15.30	200.90	3,017.6	-577.2	-284.7	1,524,675.29	2,344,410.47	39.251026	-107.815328
3,192.0	14.80	199.80	3,108.4	-600.1	-293.2	1,524,652.63	2,344,401.39	39.250963	-107.815358
3,287.0	15.50	206.10	3,200.1	-622.9	-302.9	1,524,630.07	2,344,391.12	39.250901	-107.815392
3,381.0	14.50	203.90	3,290.9	-644.9	-313.2	1,524,608.30	2,344,380.27	39.250840	-107.815428
3,475.0	13.60	204.90	3,382.0	-665.7	-322.6	1,524,587.76	2,344,370.32	39.250783	-107.815461
3,569.0	14.40	206.50	3,473.3	-686.2	-332.5	1,524,567.54	2,344,359.93	39.250727	-107.815496
3,663.0	13.70	206.70	3,564.4	-706.6	-342.7	1,524,547.40	2,344,349.20	39.250671	-107.815532
3,758.0	15.40	208.90	3,656.4	-727.7	-353.8	1,524,526.59	2,344,337.52	39.250613	-107.815572
3,852.0	14.80	207.60	3,747.1	-749.3	-365.4	1,524,505.33	2,344,325.38	39.250554	-107.815613
3,946.0	16.60	209.00	3,837.6	-771.6	-377.5	1,524,483.26	2,344,312.74	39.250492	-107.815655
4,040.0	16.20	207.80	3,927.8	-795.0	-390.1	1,524,460.24	2,344,299.52	39.250428	-107.815700
4,135.0	15.50	208.50	4,019.2	-817.9	-402.4	1,524,437.69	2,344,286.70	39.250365	-107.815743
4,229.0	14.80	206.50	4,109.9	-839.7	-413.7	1,524,416.20	2,344,274.80	39.250306	-107.815783
4,323.0	16.60	209.00	4,200.4	-862.1	-425.6	1,524,394.02	2,344,262.36	39.250244	-107.815825
4,418.0	16.00	209.30	4,291.6	-885.4	-438.6	1,524,371.07	2,344,248.79	39.250180	-107.815871
4,512.0	15.00	208.70	4,382.2	-907.4	-450.8	1,524,349.42	2,344,236.05	39.250120	-107.815914
4,606.0	13.70	210.10	4,473.3	-927.7	-462.2	1,524,329.42	2,344,224.11	39.250064	-107.815954
4,700.0	14.70	206.70	4,564.4	-948.0	-473.1	1,524,309.41	2,344,212.66	39.250008	-107.815993
4,794.0	14.20	205.40	4,655.4	-969.1	-483.4	1,524,288.61	2,344,201.82	39.249950	-107.816029
4,888.0	13.20	207.70	4,746.7	-989.0	-493.4	1,524,268.95	2,344,191.38	39.249896	-107.816064
4,983.0	12.60	210.10	4,839.3	-1,007.5	-503.6	1,524,250.65	2,344,180.67	39.249845	-107.816101
5,077.0	11.80	210.10	4,931.2	-1,024.7	-513.6	1,524,233.73	2,344,170.28	39.249798	-107.816136
5,171.0	10.40	210.40	5,023.4	-1,040.4	-522.7	1,524,218.33	2,344,160.77	39.249755	-107.816168
5,265.0	9.80	210.30	5,116.0	-1,054.6	-531.0	1,524,204.32	2,344,152.08	39.249716	-107.816197
5,359.0	7.40	213.10	5,208.9	-1,066.6	-538.4	1,524,192.53	2,344,144.43	39.249683	-107.816223
5,454.0	6.80	210.80	5,303.2	-1,076.5	-544.6	1,524,182.74	2,344,137.96	39.249655	-107.816245
5,548.0	4.90	206.40	5,396.7	-1,084.9	-549.2	1,524,174.48	2,344,133.11	39.249632	-107.816262
5,642.0	2.90	199.10	5,490.5	-1,090.7	-551.8	1,524,168.71	2,344,130.40	39.249616	-107.816271
5,736.0	2.80	200.70	5,584.4	-1,095.1	-553.4	1,524,164.35	2,344,128.70	39.249604	-107.816276
5,831.0	1.70	183.20	5,679.3	-1,098.7	-554.3	1,524,160.80	2,344,127.71	39.249594	-107.816279
5,925.0	1.80	166.50	5,773.3	-1,101.5	-554.0	1,524,157.97	2,344,127.91	39.249587	-107.816279
6,019.0	0.80	163.40	5,867.2	-1,103.6	-553.5	1,524,155.89	2,344,128.39	39.249581	-107.816277
6,113.0	0.70	174.30	5,961.2	-1,104.8	-553.2	1,524,154.68	2,344,128.60	39.249578	-107.816276



# Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-09W
<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 30-09W	<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
6,207.0	0.90	181.70	6,055.2	-1,106.1	-553.2	1,524,153.37	2,344,128.60	39.249574	-107.816276
6,302.0	1.30	203.50	6,150.2	-1,107.8	-553.6	1,524,151.65	2,344,128.11	39.249569	-107.816277
6,396.0	1.20	199.30	6,244.2	-1,109.8	-554.4	1,524,149.76	2,344,127.31	39.249564	-107.816280
6,490.0	1.50	204.60	6,338.1	-1,111.8	-555.2	1,524,147.74	2,344,126.42	39.249558	-107.816283
6,584.0	1.40	201.20	6,432.1	-1,114.0	-556.2	1,524,145.57	2,344,125.43	39.249552	-107.816286
6,679.0	1.40	193.40	6,527.1	-1,116.2	-556.8	1,524,143.38	2,344,124.69	39.249546	-107.816289
6,773.0	1.60	187.80	6,621.1	-1,118.6	-557.3	1,524,140.98	2,344,124.18	39.249540	-107.816290
6,867.0	1.70	203.10	6,715.0	-1,121.2	-558.0	1,524,138.41	2,344,123.39	39.249533	-107.816293
6,961.0	1.80	202.70	6,809.0	-1,123.8	-559.1	1,524,135.80	2,344,122.21	39.249525	-107.816297
7,055.0	1.90	200.80	6,902.9	-1,126.7	-560.2	1,524,133.01	2,344,121.01	39.249518	-107.816301
7,150.0	1.90	204.00	6,997.9	-1,129.6	-561.4	1,524,130.13	2,344,119.74	39.249510	-107.816305
7,244.0	1.40	198.30	7,091.8	-1,132.1	-562.4	1,524,127.64	2,344,118.68	39.249503	-107.816308
7,338.0	1.30	210.70	7,185.8	-1,134.1	-563.3	1,524,125.66	2,344,117.73	39.249497	-107.816312
7,433.0	1.50	217.00	7,280.8	-1,136.0	-564.6	1,524,123.77	2,344,116.38	39.249492	-107.816316
7,527.0	1.90	216.50	7,374.7	-1,138.3	-566.3	1,524,121.58	2,344,114.66	39.249486	-107.816322
7,621.0	1.50	209.20	7,468.7	-1,140.6	-567.8	1,524,119.29	2,344,113.07	39.249479	-107.816327
7,716.0	2.00	217.20	7,563.6	-1,143.0	-569.4	1,524,116.93	2,344,111.40	39.249473	-107.816333
7,755.0	1.80	217.30	7,602.6	-1,144.0	-570.2	1,524,115.92	2,344,110.59	39.249470	-107.816336
7,815.0	1.80	217.30	7,662.6	-1,145.5	-571.4	1,524,114.45	2,344,109.41	39.249466	-107.816340
Projection to TD @ 7815.0' MD / 7662.6' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
124.0	124.0	-1.3	-2.0	First MWD Survey @ 124.0' MD / TVD
7,815.0	7,662.6	-1,145.5	-571.4	Projection to TD @ 7815.0' MD / 7662.6' TVD