



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-03 Pad**

**Bruton 30-05W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**15 September, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-05W
<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 30-05W	<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 30-05W					
Well Position	+N/-S	0.0 usft	Northing:	1,525,267.11 usft	Latitude:	39.252672
	+E/-W	0.0 usft	Easting:	2,344,715.72 usft	Longitude:	-107.814303
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	9/9/2017	9.56	65.42	51,383.02787765

<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	257.83	

<b>Survey Program</b>	<b>Date</b>	9/15/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
202.0	7,762.0	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	1,525,267.11	2,344,715.72	39.252672	-107.814303
202.0	1.10	229.80	202.0	-1.3	-1.5	1,525,265.89	2,344,714.21	39.252669	-107.814309
<b>First MWD Survey @ 202.0' MD / 202.0' TVD</b>									
293.0	1.30	257.90	293.0	-2.0	-3.2	1,525,265.16	2,344,712.52	39.252666	-107.814314
385.0	1.60	256.90	384.9	-2.5	-5.4	1,525,264.70	2,344,710.23	39.252665	-107.814322
476.0	1.80	247.80	475.9	-3.4	-8.0	1,525,263.94	2,344,707.65	39.252663	-107.814331
568.0	4.10	262.30	567.8	-4.4	-12.6	1,525,263.07	2,344,703.03	39.252660	-107.814348
660.0	4.60	261.50	659.5	-5.3	-19.5	1,525,262.26	2,344,696.10	39.252657	-107.814372
752.0	4.20	262.20	751.2	-6.3	-26.5	1,525,261.44	2,344,689.09	39.252655	-107.814397
842.0	6.30	260.60	840.9	-7.6	-34.6	1,525,260.39	2,344,680.92	39.252651	-107.814426
934.0	7.60	259.90	932.2	-9.5	-45.6	1,525,258.78	2,344,669.91	39.252646	-107.814464
1,026.0	7.60	260.90	1,023.4	-11.5	-57.6	1,525,257.06	2,344,657.86	39.252640	-107.814507



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-05W
<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 30-05W	<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
1,120.0	7.70	260.20	1,116.5	-13.6	-69.9	1,525,255.32	2,344,645.47	39.252635	-107.814550
1,214.0	8.00	259.40	1,209.6	-15.8	-82.6	1,525,253.37	2,344,632.78	39.252629	-107.814595
1,308.0	8.40	261.50	1,302.7	-18.1	-95.8	1,525,251.49	2,344,619.51	39.252622	-107.814642
1,402.0	8.30	262.60	1,395.7	-20.0	-109.3	1,525,249.94	2,344,605.95	39.252617	-107.814689
1,497.0	8.50	261.70	1,489.7	-21.9	-123.1	1,525,248.40	2,344,592.16	39.252612	-107.814738
1,588.0	8.60	260.20	1,579.7	-24.0	-136.4	1,525,246.61	2,344,578.75	39.252606	-107.814785
1,682.0	8.20	258.80	1,672.7	-26.5	-149.9	1,525,244.45	2,344,565.19	39.252599	-107.814833
1,777.0	8.40	263.80	1,766.7	-28.5	-163.5	1,525,242.73	2,344,551.59	39.252594	-107.814880
1,871.0	8.10	263.80	1,859.7	-30.0	-176.9	1,525,241.62	2,344,538.15	39.252590	-107.814928
1,965.0	9.10	268.10	1,952.6	-31.0	-190.9	1,525,241.02	2,344,524.12	39.252587	-107.814977
2,059.0	8.50	267.80	2,045.5	-31.5	-205.3	1,525,240.87	2,344,509.74	39.252586	-107.815028
2,153.0	7.80	264.80	2,138.6	-32.3	-218.5	1,525,240.36	2,344,496.43	39.252583	-107.815075
2,248.0	8.80	262.80	2,232.6	-33.8	-232.2	1,525,239.22	2,344,482.76	39.252579	-107.815123
2,342.0	8.30	262.80	2,325.5	-35.6	-246.0	1,525,237.82	2,344,468.86	39.252574	-107.815172
2,436.0	7.60	259.30	2,418.6	-37.6	-258.9	1,525,236.14	2,344,455.97	39.252569	-107.815217
2,530.0	9.30	259.30	2,511.6	-40.1	-272.5	1,525,233.92	2,344,442.34	39.252562	-107.815265
2,625.0	8.50	259.30	2,605.5	-42.9	-286.9	1,525,231.56	2,344,427.83	39.252554	-107.815316
2,719.0	8.20	257.70	2,698.5	-45.6	-300.3	1,525,229.19	2,344,414.39	39.252547	-107.815364
2,813.0	8.00	257.90	2,791.5	-48.4	-313.2	1,525,226.72	2,344,401.38	39.252539	-107.815409
2,907.0	7.70	257.50	2,884.6	-51.1	-325.8	1,525,224.30	2,344,388.77	39.252532	-107.815454
3,001.0	7.30	253.60	2,977.8	-54.2	-337.6	1,525,221.56	2,344,376.82	39.252523	-107.815496
3,096.0	8.50	264.50	3,071.9	-56.5	-350.4	1,525,219.51	2,344,363.98	39.252517	-107.815541
3,190.0	8.30	263.80	3,164.9	-57.9	-364.1	1,525,218.46	2,344,350.29	39.252513	-107.815589
3,284.0	8.00	262.70	3,258.0	-59.5	-377.3	1,525,217.23	2,344,337.02	39.252509	-107.815636
3,378.0	7.70	261.90	3,351.1	-61.2	-390.0	1,525,215.84	2,344,324.26	39.252504	-107.815681
3,472.0	7.00	262.60	3,444.3	-62.8	-401.9	1,525,214.52	2,344,312.31	39.252499	-107.815723
3,566.0	8.00	260.50	3,537.5	-64.7	-414.1	1,525,213.01	2,344,300.13	39.252494	-107.815766
3,661.0	7.80	262.00	3,631.6	-66.7	-427.0	1,525,211.35	2,344,287.18	39.252489	-107.815811
3,755.0	7.50	261.70	3,724.8	-68.4	-439.4	1,525,209.89	2,344,274.75	39.252484	-107.815855
3,849.0	7.40	259.50	3,818.0	-70.4	-451.4	1,525,208.21	2,344,262.69	39.252479	-107.815897
3,944.0	8.60	263.10	3,912.1	-72.4	-464.5	1,525,206.58	2,344,249.57	39.252473	-107.815943
4,038.0	8.50	263.90	4,005.0	-74.0	-478.3	1,525,205.35	2,344,235.65	39.252469	-107.815992
4,132.0	8.10	261.80	4,098.0	-75.7	-491.8	1,525,204.01	2,344,222.15	39.252464	-107.816040
4,226.0	7.80	263.20	4,191.1	-77.4	-504.7	1,525,202.64	2,344,209.22	39.252460	-107.816086
4,321.0	7.30	261.30	4,285.3	-79.0	-517.1	1,525,201.28	2,344,196.82	39.252455	-107.816129
4,415.0	8.50	259.50	4,378.4	-81.2	-529.8	1,525,199.43	2,344,184.03	39.252449	-107.816174
4,509.0	7.60	254.90	4,471.5	-84.1	-542.6	1,525,196.87	2,344,171.13	39.252441	-107.816219
4,603.0	7.50	255.40	4,564.7	-87.2	-554.6	1,525,194.01	2,344,159.11	39.252432	-107.816262
4,698.0	7.20	255.30	4,658.9	-90.3	-566.3	1,525,191.24	2,344,147.28	39.252424	-107.816303
4,792.0	7.80	257.30	4,752.1	-93.2	-578.2	1,525,188.65	2,344,135.29	39.252416	-107.816345
4,886.0	7.30	254.40	4,845.3	-96.2	-590.2	1,525,185.95	2,344,123.24	39.252408	-107.816388
4,980.0	7.20	252.80	4,938.5	-99.6	-601.6	1,525,182.89	2,344,111.78	39.252399	-107.816428
5,074.0	6.60	248.30	5,031.8	-103.3	-612.2	1,525,179.42	2,344,101.04	39.252388	-107.816465
5,168.0	5.40	251.60	5,125.3	-106.7	-621.5	1,525,176.26	2,344,091.74	39.252379	-107.816498
5,263.0	5.10	250.20	5,219.9	-109.5	-629.7	1,525,173.63	2,344,083.46	39.252371	-107.816527
5,357.0	3.40	249.30	5,313.7	-111.9	-636.2	1,525,171.40	2,344,076.86	39.252365	-107.816550
5,451.0	3.50	241.10	5,407.5	-114.3	-641.3	1,525,169.16	2,344,071.68	39.252358	-107.816568
5,545.0	3.60	233.50	5,501.3	-117.5	-646.2	1,525,166.14	2,344,066.72	39.252349	-107.816585
5,639.0	1.40	265.00	5,595.2	-119.3	-649.7	1,525,164.38	2,344,063.16	39.252344	-107.816598
5,734.0	1.10	261.50	5,690.2	-119.6	-651.8	1,525,164.19	2,344,061.09	39.252344	-107.816605
5,828.0	1.50	252.00	5,784.2	-120.1	-653.9	1,525,163.73	2,344,059.02	39.252342	-107.816612
5,922.0	1.40	245.00	5,878.1	-120.9	-656.1	1,525,162.92	2,344,056.79	39.252340	-107.816620
6,016.0	1.30	37.30	5,972.1	-120.6	-656.5	1,525,163.30	2,344,056.40	39.252341	-107.816621
6,110.0	0.60	82.30	6,066.1	-119.7	-655.3	1,525,164.18	2,344,057.56	39.252343	-107.816617
6,205.0	1.10	123.90	6,161.1	-120.1	-654.1	1,525,163.71	2,344,058.80	39.252342	-107.816613



# Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-05W
<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 30-05W	<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
6,299.0	1.20	128.60	6,255.1	-121.2	-652.6	1,525,162.55	2,344,060.29	39.252339	-107.816608
6,393.0	1.20	160.90	6,349.1	-122.8	-651.5	1,525,160.98	2,344,061.34	39.252335	-107.816604
6,487.0	1.20	181.20	6,443.1	-124.7	-651.2	1,525,159.06	2,344,061.59	39.252330	-107.816603
6,581.0	1.50	175.40	6,537.0	-126.9	-651.1	1,525,156.85	2,344,061.61	39.252324	-107.816603
6,676.0	1.70	175.40	6,632.0	-129.5	-650.9	1,525,154.20	2,344,061.76	39.252316	-107.816602
6,770.0	1.80	189.40	6,726.0	-132.4	-651.0	1,525,151.36	2,344,061.56	39.252309	-107.816602
6,864.0	1.80	222.50	6,819.9	-134.9	-652.2	1,525,148.84	2,344,060.25	39.252302	-107.816607
6,958.0	1.90	212.30	6,913.9	-137.3	-654.1	1,525,146.49	2,344,058.36	39.252295	-107.816613
7,053.0	2.70	215.30	7,008.8	-140.5	-656.2	1,525,143.38	2,344,056.15	39.252286	-107.816621
7,147.0	3.20	206.90	7,102.7	-144.6	-658.7	1,525,139.30	2,344,053.58	39.252275	-107.816629
7,241.0	3.70	208.90	7,196.5	-149.6	-661.3	1,525,134.38	2,344,050.80	39.252261	-107.816639
7,336.0	4.60	205.40	7,291.2	-155.8	-664.4	1,525,128.33	2,344,047.53	39.252244	-107.816650
7,430.0	3.80	190.80	7,385.0	-162.2	-666.6	1,525,121.93	2,344,045.16	39.252227	-107.816657
7,524.0	1.90	156.60	7,478.9	-166.7	-666.6	1,525,117.44	2,344,045.08	39.252214	-107.816657
7,619.0	1.70	159.20	7,573.8	-169.5	-665.5	1,525,114.64	2,344,046.14	39.252207	-107.816653
7,702.0	1.40	174.90	7,656.8	-171.6	-665.0	1,525,112.47	2,344,046.61	39.252201	-107.816651
7,762.0	1.40	174.90	7,716.8	-173.1	-664.8	1,525,111.01	2,344,046.70	39.252197	-107.816651
Projection to TD @ 7762.0' MD / 7716.8' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
202.0	202.0	-1.3	-1.5	First MWD Survey @ 202.0' MD / 202.0' TVD
7,762.0	7,716.8	-173.1	-664.8	Projection to TD @ 7762.0' MD / 7716.8' TVD