



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 19-06 Pad**

**Bruton 19-03W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**04 September, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-03W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Site:</b>	Bruton 19-06 Pad	<b>MD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Well:</b>	Bruton 19-03W	<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 19-06 Pad			
Site Position:		Northing:	1,528,940.55 usft	Latitude:	39.262756
From:	Lat/Long	Easting:	2,344,737.10 usft	Longitude:	-107.814558
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 °

Well	Bruton 19-03W					
Well Position	+N/-S	0.0 usft	Northing:	1,529,024.02 usft	Latitude:	39.262975
	+E/-W	0.0 usft	Easting:	2,344,591.95 usft	Longitude:	-107.815078
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,262.0 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	8/30/2017	9.57	65.42	51,393.54753455

<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	350.60	

<b>Survey Program</b>	<b>Date</b>	9/4/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
295.0	7,957.0	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	1,529,024.02	2,344,591.95	39.262975	-107.815078
295.0	4.70	319.10	294.7	9.1	-7.9	1,529,033.36	2,344,584.27	39.263000	-107.815106
<b>First MWD Survey @ 295.0' MD / TVD</b>									
386.0	6.60	335.20	385.2	16.7	-12.6	1,529,041.04	2,344,579.83	39.263021	-107.815123
476.0	10.30	351.10	474.2	29.4	-16.0	1,529,053.77	2,344,576.74	39.263056	-107.815135
567.0	12.90	356.10	563.4	47.5	-17.9	1,529,071.99	2,344,575.25	39.263106	-107.815142
657.0	15.40	359.80	650.6	69.5	-18.6	1,529,093.98	2,344,575.08	39.263166	-107.815144
749.0	16.30	4.00	739.2	94.6	-17.8	1,529,119.05	2,344,576.58	39.263235	-107.815141
839.0	15.80	358.60	825.6	119.5	-17.2	1,529,143.87	2,344,577.80	39.263303	-107.815139
930.0	16.60	350.20	913.0	144.7	-19.7	1,529,169.13	2,344,575.92	39.263372	-107.815148
1,025.0	18.00	345.90	1,003.8	172.3	-25.6	1,529,196.88	2,344,570.74	39.263448	-107.815169
1,119.0	20.40	348.70	1,092.5	202.4	-32.4	1,529,227.20	2,344,564.76	39.263531	-107.815193



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-03W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Site:</b>	Bruton 19-06 Pad	<b>MD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Well:</b>	Bruton 19-03W	<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
1,214.0	20.00	349.40	1,181.7	234.6	-38.6	1,529,259.55	2,344,559.35	39.263619	-107.815215
1,309.0	21.80	346.50	1,270.4	267.8	-45.7	1,529,292.85	2,344,553.09	39.263710	-107.815240
1,404.0	24.40	349.40	1,357.8	304.2	-53.4	1,529,329.48	2,344,546.30	39.263810	-107.815267
1,498.0	24.40	349.60	1,443.4	342.4	-60.5	1,529,367.83	2,344,540.19	39.263915	-107.815292
1,589.0	24.70	349.10	1,526.2	379.5	-67.5	1,529,405.15	2,344,534.15	39.264017	-107.815317
1,684.0	23.80	349.40	1,612.8	417.9	-74.8	1,529,443.66	2,344,527.85	39.264122	-107.815342
1,778.0	23.60	349.20	1,698.9	455.0	-81.8	1,529,480.95	2,344,521.79	39.264224	-107.815367
1,873.0	23.10	347.20	1,786.1	491.8	-89.5	1,529,517.99	2,344,515.04	39.264325	-107.815394
1,967.0	20.40	351.00	1,873.4	526.0	-96.1	1,529,552.32	2,344,509.26	39.264419	-107.815418
2,062.0	19.90	350.20	1,962.6	558.3	-101.5	1,529,584.73	2,344,504.74	39.264508	-107.815437
2,157.0	19.00	350.50	2,052.2	589.5	-106.8	1,529,616.04	2,344,500.23	39.264594	-107.815455
2,251.0	20.00	349.00	2,140.8	620.4	-112.4	1,529,647.04	2,344,495.43	39.264678	-107.815475
2,346.0	21.70	350.00	2,229.5	653.6	-118.5	1,529,680.44	2,344,490.13	39.264770	-107.815497
2,440.0	20.90	350.30	2,317.1	687.3	-124.4	1,529,714.21	2,344,485.15	39.264862	-107.815518
2,535.0	20.00	349.40	2,406.1	719.9	-130.2	1,529,747.03	2,344,480.14	39.264952	-107.815538
2,630.0	21.00	354.20	2,495.1	752.8	-134.9	1,529,780.04	2,344,476.27	39.265042	-107.815555
2,725.0	20.00	353.20	2,584.1	785.9	-138.6	1,529,813.19	2,344,473.47	39.265133	-107.815568
2,819.0	19.60	351.90	2,672.5	817.5	-142.7	1,529,844.86	2,344,470.15	39.265219	-107.815582
2,914.0	22.80	352.20	2,761.1	851.5	-147.4	1,529,878.99	2,344,466.27	39.265313	-107.815599
3,008.0	22.20	351.60	2,847.9	887.1	-152.5	1,529,914.72	2,344,462.11	39.265411	-107.815617
3,103.0	21.60	352.20	2,936.1	922.2	-157.5	1,529,949.91	2,344,458.02	39.265507	-107.815635
3,198.0	20.80	351.70	3,024.7	956.2	-162.3	1,529,984.04	2,344,454.08	39.265600	-107.815651
3,292.0	20.00	351.30	3,112.8	988.6	-167.1	1,530,016.56	2,344,450.06	39.265689	-107.815669
3,387.0	22.30	349.30	3,201.4	1,022.4	-172.9	1,530,050.47	2,344,445.12	39.265782	-107.815689
3,481.0	21.60	348.70	3,288.5	1,056.9	-179.6	1,530,085.12	2,344,439.30	39.265877	-107.815713
3,576.0	21.20	347.30	3,377.0	1,090.8	-186.8	1,530,119.20	2,344,432.96	39.265970	-107.815738
3,671.0	20.40	346.40	3,465.8	1,123.6	-194.5	1,530,152.23	2,344,426.13	39.266060	-107.815765
3,765.0	23.00	352.70	3,553.1	1,157.8	-200.7	1,530,186.53	2,344,420.82	39.266154	-107.815787
3,860.0	22.30	352.30	3,640.8	1,194.0	-205.5	1,530,222.91	2,344,416.97	39.266253	-107.815804
3,954.0	21.80	351.60	3,727.9	1,229.0	-210.4	1,530,257.97	2,344,412.92	39.266349	-107.815821
4,049.0	21.00	350.80	3,816.4	1,263.2	-215.7	1,530,292.35	2,344,408.50	39.266443	-107.815840
4,143.0	20.00	350.70	3,904.4	1,295.7	-221.0	1,530,324.96	2,344,404.04	39.266533	-107.815859
4,238.0	19.20	349.20	3,993.9	1,327.1	-226.6	1,530,356.47	2,344,399.29	39.266619	-107.815878
4,333.0	22.10	352.10	4,082.8	1,360.2	-231.9	1,530,389.65	2,344,394.74	39.266710	-107.815898
4,427.0	21.40	351.30	4,170.1	1,394.6	-237.0	1,530,424.23	2,344,390.60	39.266804	-107.815915
4,522.0	20.60	350.80	4,258.8	1,428.3	-242.3	1,530,457.99	2,344,386.16	39.266896	-107.815934
4,616.0	19.70	350.70	4,347.1	1,460.2	-247.5	1,530,490.07	2,344,381.78	39.266984	-107.815952
4,711.0	18.60	348.80	4,436.8	1,490.9	-253.0	1,530,520.87	2,344,377.03	39.267068	-107.815972
4,806.0	20.60	355.30	4,526.3	1,522.4	-257.3	1,530,552.49	2,344,373.52	39.267155	-107.815987
4,901.0	19.80	355.40	4,615.5	1,555.1	-260.0	1,530,585.24	2,344,371.69	39.267245	-107.815996
4,995.0	17.50	355.20	4,704.5	1,585.1	-262.4	1,530,615.25	2,344,370.00	39.267327	-107.816005
5,090.0	19.70	353.70	4,794.6	1,615.2	-265.4	1,530,645.47	2,344,367.82	39.267410	-107.816016
5,184.0	17.90	351.40	4,883.5	1,645.3	-269.3	1,530,675.59	2,344,364.68	39.267492	-107.816029
5,279.0	17.30	354.40	4,974.1	1,673.7	-272.8	1,530,704.17	2,344,361.85	39.267570	-107.816042
5,373.0	15.90	352.70	5,064.2	1,700.4	-275.8	1,530,730.92	2,344,359.53	39.267644	-107.816053
5,468.0	14.50	352.30	5,155.9	1,725.1	-279.1	1,530,755.69	2,344,356.91	39.267712	-107.816064
5,562.0	15.30	0.00	5,246.7	1,749.2	-280.7	1,530,779.79	2,344,355.95	39.267778	-107.816070
5,657.0	11.80	359.50	5,339.0	1,771.4	-280.7	1,530,802.04	2,344,356.43	39.267839	-107.816070
5,751.0	8.70	359.10	5,431.5	1,788.2	-280.9	1,530,818.76	2,344,356.66	39.267885	-107.816071
5,846.0	7.90	354.30	5,525.5	1,801.8	-281.7	1,530,832.46	2,344,356.25	39.267922	-107.816073
5,941.0	6.70	3.70	5,619.8	1,813.9	-282.0	1,530,844.49	2,344,356.27	39.267955	-107.816074
6,035.0	4.20	1.40	5,713.3	1,822.8	-281.6	1,530,853.39	2,344,356.93	39.267980	-107.816073
6,129.0	4.00	352.90	5,807.1	1,829.5	-281.9	1,530,860.09	2,344,356.78	39.267998	-107.816074
6,224.0	2.80	15.00	5,901.9	1,835.0	-281.7	1,530,865.61	2,344,357.11	39.268013	-107.816073
6,319.0	2.40	9.60	5,996.8	1,839.2	-280.8	1,530,869.79	2,344,358.15	39.268025	-107.816070



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-03W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Site:</b>	Bruton 19-06 Pad	<b>MD Reference:</b>	well @ 7286.0usft (H&P #290)
<b>Well:</b>	Bruton 19-03W	<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
6,414.0	2.00	15.30	6,091.8	1,842.8	-280.0	1,530,873.33	2,344,359.01	39.268035	-107.816067
6,508.0	1.50	15.50	6,185.7	1,845.5	-279.2	1,530,876.08	2,344,359.84	39.268042	-107.816065
6,603.0	0.80	191.20	6,280.7	1,846.1	-279.0	1,530,876.62	2,344,360.06	39.268044	-107.816064
6,697.0	0.90	202.30	6,374.7	1,844.8	-279.4	1,530,875.30	2,344,359.62	39.268040	-107.816065
6,792.0	0.90	216.00	6,469.7	1,843.5	-280.2	1,530,874.03	2,344,358.86	39.268036	-107.816068
6,887.0	1.50	216.30	6,564.7	1,841.9	-281.3	1,530,872.45	2,344,357.65	39.268032	-107.816072
6,981.0	0.50	242.90	6,658.7	1,840.7	-282.4	1,530,871.30	2,344,356.53	39.268029	-107.816076
7,076.0	0.70	252.10	6,753.6	1,840.3	-283.3	1,530,870.96	2,344,355.60	39.268028	-107.816079
7,170.0	0.70	232.30	6,847.6	1,839.8	-284.3	1,530,870.46	2,344,354.58	39.268026	-107.816083
7,265.0	0.90	209.90	6,942.6	1,838.8	-285.2	1,530,869.48	2,344,353.73	39.268024	-107.816086
7,359.0	1.20	188.30	7,036.6	1,837.2	-285.7	1,530,867.88	2,344,353.17	39.268019	-107.816087
7,454.0	1.20	181.90	7,131.6	1,835.2	-285.9	1,530,865.90	2,344,352.95	39.268014	-107.816088
7,548.0	1.00	183.20	7,225.6	1,833.4	-285.9	1,530,864.10	2,344,352.82	39.268009	-107.816088
7,643.0	1.10	178.30	7,320.6	1,831.7	-286.0	1,530,862.37	2,344,352.76	39.268004	-107.816088
7,738.0	1.10	188.30	7,415.5	1,829.8	-286.1	1,530,860.55	2,344,352.61	39.267999	-107.816089
7,832.0	1.10	195.80	7,509.5	1,828.1	-286.4	1,530,858.80	2,344,352.19	39.267994	-107.816090
7,901.0	1.20	198.80	7,578.5	1,826.8	-286.9	1,530,857.49	2,344,351.74	39.267991	-107.816091
7,957.0	1.20	198.80	7,634.5	1,825.6	-287.2	1,530,856.39	2,344,351.34	39.267988	-107.816093

Projection to TD @ 7957.0' MD / 7634.5' TVD

## Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
295.0	294.7	9.1	-7.9	First MWD Survey @ 295.0' MD / TVD
7,957.0	7,634.5	1,825.6	-287.2	Projection to TD @ 7957.0' MD / 7634.5' TVD