



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 19-06 Pad**

**Bruton 19-08W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**06 October, 2017**





Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-08W
<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 19-08W	<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		

<b>Site</b>	Bruton 19-06 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,528,940.55 usft	<b>Latitude:</b>	39.262756
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,344,737.10 usft	<b>Longitude:</b>	-107.814558
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-1.46 °

<b>Well</b>	Bruton 19-08W					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,528,986.40 usft	<b>Latitude:</b>	39.262872
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,344,595.81 usft	<b>Longitude:</b>	-107.815061
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	0.0 usft	<b>Ground Level:</b>	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	10/3/2017	9.56	65.42	51,383.14623725

<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	324.18	

<b>Survey Program</b>	<b>Date</b>	10/6/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
203.0	7,643.0	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	1,528,986.40	2,344,595.81	39.262872	-107.815061	
203.0	2.90	264.80	202.9	-0.5	-5.1	1,528,986.07	2,344,590.68	39.262871	-107.815079	
<b>First MWD Survey @ 203.0' MD / 202.9' TVD</b>										
294.0	4.00	284.60	293.8	0.1	-10.5	1,528,986.79	2,344,585.33	39.262872	-107.815098	
385.0	4.10	305.70	384.5	2.8	-16.2	1,528,989.64	2,344,579.69	39.262880	-107.815118	
475.0	5.60	326.70	474.2	8.4	-21.2	1,528,995.31	2,344,574.81	39.262895	-107.815136	
566.0	8.60	332.70	564.5	18.1	-26.8	1,529,005.21	2,344,569.50	39.262922	-107.815156	
656.0	10.90	336.40	653.2	31.9	-33.3	1,529,019.15	2,344,563.36	39.262960	-107.815179	
748.0	11.30	338.90	743.5	48.3	-40.0	1,529,035.70	2,344,557.05	39.263005	-107.815203	
838.0	10.20	331.20	831.9	63.5	-47.0	1,529,051.08	2,344,550.43	39.263046	-107.815227	
929.0	9.10	325.10	921.6	76.5	-55.0	1,529,064.24	2,344,542.76	39.263082	-107.815256	
1,024.0	9.00	324.50	1,015.4	88.7	-63.6	1,529,076.67	2,344,534.46	39.263116	-107.815286	



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<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-08W
<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 19-08W	<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	
1,118.0	9.10	322.60	1,108.3	100.6	-72.4	1,529,088.78	2,344,525.98	39.263148	-107.815317	
1,213.0	8.90	323.30	1,202.1	112.4	-81.4	1,529,100.87	2,344,517.33	39.263181	-107.815349	
1,308.0	8.70	320.30	1,296.0	123.8	-90.3	1,529,112.51	2,344,508.65	39.263212	-107.815380	
1,403.0	10.70	324.90	1,389.6	136.6	-100.0	1,529,125.50	2,344,499.31	39.263247	-107.815414	
1,498.0	11.00	324.90	1,482.9	151.2	-110.3	1,529,140.39	2,344,489.41	39.263287	-107.815451	
1,589.0	10.50	322.50	1,572.3	164.9	-120.3	1,529,154.32	2,344,479.72	39.263325	-107.815486	
1,684.0	10.40	320.90	1,665.7	178.4	-131.0	1,529,168.11	2,344,469.39	39.263362	-107.815524	
1,779.0	9.80	333.80	1,759.3	192.3	-140.0	1,529,182.24	2,344,460.77	39.263400	-107.815556	
1,873.0	9.40	332.70	1,852.0	206.3	-147.0	1,529,196.42	2,344,454.07	39.263439	-107.815581	
1,968.0	8.90	331.90	1,945.8	219.7	-154.1	1,529,209.97	2,344,447.40	39.263475	-107.815605	
2,062.0	8.30	331.80	2,038.7	232.1	-160.7	1,529,222.53	2,344,441.08	39.263509	-107.815629	
2,157.0	8.10	325.40	2,132.7	243.7	-167.7	1,529,234.26	2,344,434.34	39.263541	-107.815654	
2,251.0	7.50	324.50	2,225.9	254.1	-175.1	1,529,244.88	2,344,427.29	39.263570	-107.815680	
2,346.0	6.90	323.50	2,320.1	263.7	-182.0	1,529,254.69	2,344,420.54	39.263596	-107.815704	
2,440.0	8.80	329.00	2,413.2	274.4	-189.1	1,529,265.57	2,344,413.75	39.263626	-107.815729	
2,535.0	8.30	327.40	2,507.2	286.4	-196.5	1,529,277.77	2,344,406.62	39.263659	-107.815755	
2,629.0	7.90	326.90	2,600.2	297.6	-203.7	1,529,289.07	2,344,399.73	39.263689	-107.815781	
2,724.0	7.60	326.00	2,694.4	308.3	-210.8	1,529,299.93	2,344,392.92	39.263718	-107.815806	
2,818.0	7.30	324.60	2,787.6	318.3	-217.7	1,529,310.12	2,344,386.24	39.263746	-107.815830	
2,913.0	6.90	323.90	2,881.8	327.8	-224.6	1,529,319.82	2,344,379.63	39.263772	-107.815855	
3,008.0	9.60	331.40	2,975.9	339.4	-231.8	1,529,331.57	2,344,372.77	39.263804	-107.815880	
3,102.0	9.30	329.90	3,068.6	352.8	-239.3	1,529,345.21	2,344,365.56	39.263841	-107.815907	
3,197.0	10.20	323.70	3,162.2	366.2	-248.1	1,529,358.85	2,344,357.07	39.263878	-107.815938	
3,291.0	9.80	323.30	3,254.8	379.4	-257.9	1,529,372.22	2,344,347.70	39.263914	-107.815972	
3,386.0	9.80	323.00	3,348.4	392.3	-267.6	1,529,385.40	2,344,338.34	39.263949	-107.816006	
3,481.0	9.60	323.30	3,442.0	405.1	-277.2	1,529,398.45	2,344,329.06	39.263984	-107.816040	
3,575.0	9.30	321.70	3,534.8	417.4	-286.5	1,529,410.93	2,344,319.99	39.264018	-107.816073	
3,670.0	9.20	321.80	3,628.5	429.4	-296.0	1,529,423.16	2,344,310.84	39.264051	-107.816107	
3,765.0	8.50	319.70	3,722.4	440.7	-305.2	1,529,434.71	2,344,301.90	39.264082	-107.816139	
3,859.0	9.20	328.10	3,815.3	452.4	-313.7	1,529,446.60	2,344,293.73	39.264114	-107.816169	
3,954.0	9.10	326.60	3,909.1	465.1	-321.9	1,529,459.53	2,344,285.91	39.264149	-107.816198	
4,048.0	8.80	325.90	4,001.9	477.2	-330.0	1,529,471.89	2,344,278.10	39.264182	-107.816227	
4,143.0	8.30	323.00	4,095.9	488.7	-338.2	1,529,483.59	2,344,270.19	39.264214	-107.816256	
4,237.0	8.20	320.50	4,188.9	499.3	-346.5	1,529,494.39	2,344,262.12	39.264243	-107.816285	
4,332.0	7.50	320.10	4,283.0	509.3	-354.8	1,529,504.58	2,344,254.09	39.264270	-107.816314	
4,426.0	7.80	327.80	4,376.2	519.4	-362.1	1,529,514.87	2,344,247.02	39.264298	-107.816340	
4,521.0	7.70	325.80	4,470.3	530.1	-369.2	1,529,525.76	2,344,240.28	39.264328	-107.816365	
4,616.0	7.10	324.00	4,564.5	540.1	-376.2	1,529,535.95	2,344,233.51	39.264355	-107.816390	
4,710.0	8.70	327.20	4,657.6	550.8	-383.5	1,529,546.81	2,344,226.52	39.264384	-107.816416	
4,805.0	8.10	326.10	4,751.6	562.4	-391.1	1,529,558.59	2,344,219.19	39.264416	-107.816443	
4,900.0	7.60	326.40	4,845.7	573.2	-398.3	1,529,569.56	2,344,212.26	39.264446	-107.816468	
4,995.0	10.00	329.60	4,939.6	585.5	-405.9	1,529,582.10	2,344,204.92	39.264480	-107.816495	
5,089.0	10.00	329.60	5,032.2	599.6	-414.2	1,529,596.39	2,344,197.02	39.264518	-107.816524	
5,184.0	9.40	330.40	5,125.8	613.5	-422.2	1,529,610.45	2,344,189.37	39.264556	-107.816552	
5,278.0	8.70	329.70	5,218.6	626.3	-429.6	1,529,623.44	2,344,182.32	39.264592	-107.816579	
5,373.0	7.20	330.50	5,312.7	637.7	-436.1	1,529,634.99	2,344,176.06	39.264623	-107.816602	
5,467.0	4.60	331.40	5,406.2	646.1	-440.8	1,529,643.55	2,344,171.57	39.264646	-107.816618	
5,561.0	2.20	320.40	5,500.0	650.8	-443.8	1,529,648.32	2,344,168.74	39.264659	-107.816629	
5,656.0	1.10	283.40	5,595.0	652.4	-445.8	1,529,649.99	2,344,166.73	39.264663	-107.816636	
5,751.0	0.80	270.50	5,690.0	652.7	-447.4	1,529,650.25	2,344,165.18	39.264664	-107.816641	
5,845.0	1.10	284.50	5,784.0	652.9	-448.9	1,529,650.52	2,344,163.66	39.264665	-107.816647	
5,940.0	0.60	258.40	5,879.0	653.0	-450.3	1,529,650.68	2,344,162.29	39.264665	-107.816652	
6,034.0	0.70	266.40	5,972.9	652.9	-451.4	1,529,650.57	2,344,161.24	39.264665	-107.816655	
6,129.0	1.20	269.00	6,067.9	652.8	-452.9	1,529,650.56	2,344,159.66	39.264664	-107.816661	
6,224.0	0.50	203.40	6,162.9	652.4	-454.1	1,529,650.19	2,344,158.49	39.264663	-107.816665	



Survey Report - Geographic



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<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 19-08W	<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	
6,318.0	0.50	240.80	6,256.9	651.9	-454.6	1,529,649.63	2,344,157.96	39.264662	-107.816667	
6,413.0	0.80	244.70	6,351.9	651.4	-455.6	1,529,649.17	2,344,156.98	39.264660	-107.816670	
6,507.0	0.60	235.80	6,445.9	650.8	-456.6	1,529,648.63	2,344,155.97	39.264659	-107.816674	
6,602.0	0.80	92.79	6,540.9	650.5	-456.3	1,529,648.32	2,344,156.21	39.264658	-107.816673	
6,697.0	1.10	94.00	6,635.9	650.4	-454.7	1,529,648.18	2,344,157.78	39.264658	-107.816667	
6,791.0	0.20	34.90	6,729.9	650.5	-453.8	1,529,648.23	2,344,158.78	39.264658	-107.816664	
6,886.0	0.10	99.60	6,824.9	650.6	-453.6	1,529,648.34	2,344,158.96	39.264658	-107.816663	
6,980.0	0.50	206.70	6,918.9	650.2	-453.7	1,529,647.97	2,344,158.84	39.264657	-107.816664	
7,075.0	0.90	220.60	7,013.9	649.3	-454.4	1,529,647.05	2,344,158.15	39.264655	-107.816666	
7,169.0	1.60	223.40	7,107.9	647.8	-455.7	1,529,645.57	2,344,156.73	39.264651	-107.816671	
7,264.0	2.30	236.70	7,202.8	645.8	-458.2	1,529,643.62	2,344,154.17	39.264645	-107.816680	
7,359.0	2.80	248.60	7,297.7	643.9	-462.0	1,529,641.83	2,344,150.37	39.264640	-107.816693	
7,453.0	2.70	253.80	7,391.6	642.4	-466.3	1,529,640.48	2,344,146.07	39.264636	-107.816708	
7,548.0	2.60	250.00	7,486.5	641.0	-470.4	1,529,639.23	2,344,141.87	39.264632	-107.816723	
7,583.0	2.90	254.10	7,521.5	640.5	-472.0	1,529,638.75	2,344,140.26	39.264631	-107.816728	
7,643.0	2.90	254.10	7,581.4	639.7	-474.9	1,529,638.00	2,344,137.32	39.264628	-107.816739	
Projection to TD @ 7643.0' MD / 7581.4' TVD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
203.0	202.9	-0.5	-5.1	First MWD Survey @ 203.0' MD / 202.9' TVD	
7,643.0	7,581.4	639.7	-474.9	Projection to TD @ 7643.0' MD / 7581.4' TVD	