



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-01 Pad**

**Bruton 19-19W**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**27 June, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-19W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Site:</b>	Bruton 30-01 Pad	<b>MD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Well:</b>	Bruton 19-19W	<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>	EDM5002

<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 30-01 Pad						
Site Position:		Northing:	1,526,078.02	usft	Latitude:	39.255061		
From:	Lat/Long	Easting:	2,347,056.81	usft	Longitude:	-107.806111		
Position Uncertainty:	0.0	usft	Slot Radius:	13-3/16	"	Grid Convergence:	-1.45	°

Well	Bruton 19-19W					
Well Position	+N/-S	0.0 usft	Northing:	1,526,132.29 usft	Latitude:	39.255208
	+E/-W	0.0 usft	Easting:	2,347,031.43 usft	Longitude:	-107.806206
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,425.0 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	6/14/2017	9.59	65.42	51,413

<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	284.16	

<b>Survey Program</b>	<b>Date</b>	6/27/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
204.0	8,518.0	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	1,526,132.29	2,347,031.43	39.255208	-107.806206
204.0	1.00	317.50	204.0	1.3	-1.2	1,526,133.64	2,347,030.26	39.255212	-107.806210
<b>First MWD Survey @ 204.0' MD / TVD</b>									
295.0	3.80	285.70	294.9	2.7	-4.6	1,526,135.12	2,347,026.86	39.255216	-107.806222
387.0	7.40	283.60	386.4	4.9	-13.3	1,526,137.56	2,347,018.22	39.255222	-107.806253
477.0	10.50	285.70	475.3	8.5	-26.9	1,526,141.49	2,347,004.79	39.255232	-107.806301
567.0	13.10	281.60	563.4	12.8	-44.8	1,526,146.21	2,346,987.01	39.255243	-107.806364
658.0	15.80	282.10	651.5	17.5	-67.0	1,526,151.45	2,346,964.92	39.255256	-107.806442
749.0	18.60	281.20	738.5	22.9	-93.3	1,526,157.53	2,346,938.71	39.255271	-107.806535
840.0	21.00	282.70	824.1	29.3	-123.5	1,526,164.70	2,346,908.73	39.255289	-107.806642
930.0	22.90	284.40	907.6	37.2	-156.2	1,526,173.43	2,346,876.25	39.255310	-107.806757
1,024.0	25.70	285.00	993.2	47.0	-193.6	1,526,184.20	2,346,839.10	39.255337	-107.806889



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-19W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Site:</b>	Bruton 30-01 Pad	<b>MD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Well:</b>	Bruton 19-19W	<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>	EDM5002

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	27.90	285.30	1,078.0	58.2	-234.9	1,526,196.44	2,346,798.06	39.255368	-107.807035
1,213.0	30.10	286.30	1,160.2	70.6	-278.8	1,526,209.97	2,346,754.54	39.255402	-107.807190
1,308.0	32.00	285.40	1,241.6	84.0	-325.9	1,526,224.53	2,346,707.76	39.255439	-107.807357
1,402.0	34.10	284.80	1,320.4	97.3	-375.4	1,526,239.13	2,346,658.62	39.255476	-107.807532
1,492.0	33.80	283.50	1,395.1	109.6	-424.1	1,526,252.65	2,346,610.22	39.255509	-107.807704
1,560.0	34.00	282.80	1,451.5	118.3	-461.1	1,526,262.22	2,346,573.52	39.255533	-107.807834
1,655.0	33.30	282.50	1,530.6	129.8	-512.4	1,526,275.05	2,346,522.46	39.255565	-107.808015
1,749.0	35.40	283.60	1,608.2	141.8	-564.1	1,526,288.34	2,346,471.12	39.255598	-107.808198
1,843.0	34.80	282.60	1,685.1	154.0	-616.7	1,526,301.93	2,346,418.81	39.255631	-107.808384
1,938.0	34.90	285.70	1,763.1	167.3	-669.4	1,526,316.53	2,346,366.54	39.255668	-107.808570
2,032.0	34.90	285.30	1,840.1	181.7	-721.2	1,526,332.21	2,346,315.10	39.255707	-107.808753
2,127.0	34.10	284.20	1,918.4	195.4	-773.2	1,526,347.23	2,346,263.43	39.255745	-107.808936
2,221.0	33.20	284.30	1,996.7	208.2	-823.7	1,526,361.33	2,346,213.29	39.255780	-107.809115
2,316.0	34.80	283.50	2,075.4	220.9	-875.3	1,526,375.39	2,346,162.06	39.255815	-107.809297
2,411.0	33.80	282.70	2,153.9	233.1	-927.4	1,526,388.85	2,346,110.25	39.255848	-107.809481
2,506.0	36.40	286.10	2,231.6	246.7	-980.3	1,526,403.81	2,346,057.74	39.255886	-107.809668
2,600.0	35.60	285.80	2,307.7	261.9	-1,033.4	1,526,420.34	2,346,005.01	39.255927	-107.809855
2,695.0	34.40	285.10	2,385.5	276.4	-1,085.9	1,526,436.19	2,345,952.88	39.255967	-107.810041
2,789.0	33.00	284.70	2,463.7	289.8	-1,136.3	1,526,450.88	2,345,902.84	39.256004	-107.810219
2,884.0	33.80	285.50	2,543.0	303.5	-1,186.8	1,526,465.78	2,345,852.71	39.256042	-107.810397
2,978.0	33.20	284.90	2,621.4	317.1	-1,236.9	1,526,480.65	2,345,803.01	39.256079	-107.810574
3,073.0	33.10	285.40	2,700.9	330.6	-1,287.0	1,526,495.50	2,345,753.23	39.256116	-107.810751
3,168.0	32.40	285.20	2,780.8	344.2	-1,336.6	1,526,510.31	2,345,704.02	39.256153	-107.810926
3,262.0	34.50	284.40	2,859.3	357.4	-1,386.7	1,526,524.81	2,345,654.28	39.256190	-107.811103
3,357.0	33.60	284.10	2,938.0	370.5	-1,438.2	1,526,539.20	2,345,603.07	39.256226	-107.811285
3,452.0	35.50	284.60	3,016.2	383.9	-1,490.4	1,526,553.88	2,345,551.23	39.256262	-107.811469
3,546.0	34.50	283.90	3,093.2	397.2	-1,542.7	1,526,568.48	2,345,499.33	39.256299	-107.811654
3,641.0	33.50	283.50	3,172.0	409.7	-1,594.3	1,526,582.37	2,345,448.06	39.256333	-107.811836
3,735.0	35.80	284.40	3,249.3	422.6	-1,646.1	1,526,596.58	2,345,396.54	39.256369	-107.812019
3,830.0	34.70	283.70	3,326.9	436.0	-1,699.3	1,526,611.24	2,345,343.71	39.256405	-107.812207
3,924.0	33.50	282.80	3,404.7	448.0	-1,750.6	1,526,624.62	2,345,292.74	39.256438	-107.812388
4,019.0	35.60	285.30	3,483.0	461.1	-1,802.9	1,526,639.05	2,345,240.85	39.256474	-107.812573
4,113.0	35.50	285.70	3,559.4	475.7	-1,855.5	1,526,654.99	2,345,188.57	39.256514	-107.812759
4,208.0	34.20	285.60	3,637.4	490.4	-1,907.8	1,526,670.95	2,345,136.68	39.256555	-107.812943
4,303.0	33.30	285.30	3,716.4	504.5	-1,958.7	1,526,686.30	2,345,086.19	39.256593	-107.813123
4,397.0	36.30	284.30	3,793.6	518.1	-2,010.5	1,526,701.30	2,345,034.69	39.256631	-107.813306
4,492.0	36.30	284.00	3,870.1	531.9	-2,065.1	1,526,716.43	2,344,980.52	39.256669	-107.813499
4,587.0	35.70	284.40	3,947.0	545.6	-2,119.2	1,526,731.49	2,344,926.75	39.256706	-107.813690
4,681.0	34.80	283.30	4,023.8	558.6	-2,171.9	1,526,745.82	2,344,874.43	39.256742	-107.813876
4,776.0	34.40	283.50	4,102.0	571.1	-2,224.4	1,526,759.65	2,344,822.28	39.256776	-107.814061
4,871.0	36.00	284.40	4,179.6	584.3	-2,277.5	1,526,774.20	2,344,769.50	39.256812	-107.814249
4,965.0	36.30	287.30	4,255.5	599.4	-2,330.8	1,526,790.69	2,344,716.57	39.256854	-107.814437
5,060.0	33.40	287.10	4,333.4	615.5	-2,382.7	1,526,808.06	2,344,665.14	39.256898	-107.814620
5,154.0	30.50	285.30	4,413.2	629.4	-2,430.4	1,526,823.17	2,344,617.76	39.256936	-107.814789
5,249.0	29.40	285.00	4,495.5	641.8	-2,476.2	1,526,836.73	2,344,572.31	39.256970	-107.814951
5,343.0	28.90	284.30	4,577.6	653.4	-2,520.5	1,526,849.43	2,344,528.32	39.257002	-107.815107
5,437.0	26.50	284.20	4,660.8	664.1	-2,562.9	1,526,861.26	2,344,486.26	39.257031	-107.815257
5,532.0	25.40	286.60	4,746.2	675.1	-2,602.9	1,526,873.29	2,344,446.48	39.257062	-107.815398
5,627.0	23.40	290.00	4,832.8	687.4	-2,640.2	1,526,886.51	2,344,409.55	39.257095	-107.815530
5,721.0	22.60	288.40	4,919.3	699.5	-2,674.9	1,526,899.47	2,344,375.19	39.257129	-107.815652
5,816.0	20.70	290.70	5,007.6	711.2	-2,707.9	1,526,912.00	2,344,342.46	39.257161	-107.815769
5,911.0	17.20	291.50	5,097.4	722.3	-2,736.7	1,526,923.82	2,344,313.97	39.257191	-107.815871
6,005.0	15.60	292.20	5,187.6	732.2	-2,761.3	1,526,934.31	2,344,289.59	39.257218	-107.815958
6,100.0	11.90	290.80	5,279.9	740.5	-2,782.3	1,526,943.15	2,344,268.82	39.257241	-107.816032
6,195.0	9.30	290.70	5,373.2	746.7	-2,798.6	1,526,949.75	2,344,252.64	39.257258	-107.816090



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-19W
<b>Project:</b>	Mesa County, CO	<b>TVD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Site:</b>	Bruton 30-01 Pad	<b>MD Reference:</b>	well @ 7449.0usft (H&P #290)
<b>Well:</b>	Bruton 19-19W	<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>	EDM5002

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,289.0	8.30	287.10	5,466.1	751.3	-2,812.2	1,526,954.78	2,344,239.18	39.257271	-107.816138
6,384.0	7.70	284.00	5,560.2	754.9	-2,825.0	1,526,958.65	2,344,226.54	39.257281	-107.816182
6,479.0	6.70	277.50	5,654.4	757.2	-2,836.6	1,526,961.21	2,344,214.93	39.257287	-107.816224
6,573.0	6.20	272.20	5,747.9	758.1	-2,847.1	1,526,962.39	2,344,204.45	39.257289	-107.816261
6,668.0	4.20	280.90	5,842.5	758.9	-2,855.7	1,526,963.46	2,344,195.93	39.257292	-107.816291
6,763.0	2.30	310.80	5,937.3	760.8	-2,860.5	1,526,965.49	2,344,191.12	39.257297	-107.816308
6,858.0	0.80	332.10	6,032.3	762.7	-2,862.3	1,526,967.36	2,344,189.41	39.257302	-107.816314
6,952.0	0.50	317.80	6,126.3	763.5	-2,862.9	1,526,968.26	2,344,188.85	39.257304	-107.816316
7,047.0	0.40	279.60	6,221.3	763.9	-2,863.5	1,526,968.64	2,344,188.26	39.257305	-107.816319
7,142.0	0.50	315.60	6,316.3	764.3	-2,864.1	1,526,969.01	2,344,187.65	39.257306	-107.816321
7,236.0	0.60	291.70	6,410.3	764.7	-2,864.8	1,526,969.50	2,344,186.92	39.257308	-107.816323
7,331.0	0.70	276.40	6,505.3	765.0	-2,865.9	1,526,969.77	2,344,185.89	39.257308	-107.816327
7,426.0	0.20	139.60	6,600.2	764.9	-2,866.4	1,526,969.72	2,344,185.42	39.257308	-107.816329
7,520.0	0.30	213.10	6,694.2	764.6	-2,866.4	1,526,969.39	2,344,185.38	39.257307	-107.816329
7,615.0	0.30	252.90	6,789.2	764.3	-2,866.8	1,526,969.12	2,344,185.00	39.257306	-107.816330
7,710.0	0.20	303.70	6,884.2	764.3	-2,867.1	1,526,969.15	2,344,184.62	39.257307	-107.816331
7,804.0	0.40	271.00	6,978.2	764.4	-2,867.6	1,526,969.26	2,344,184.16	39.257307	-107.816333
7,899.0	0.60	279.60	7,073.2	764.5	-2,868.4	1,526,969.37	2,344,183.34	39.257307	-107.816336
7,993.0	1.10	290.50	7,167.2	764.9	-2,869.8	1,526,969.80	2,344,182.02	39.257308	-107.816341
8,088.0	0.90	271.20	7,262.2	765.2	-2,871.4	1,526,970.18	2,344,180.43	39.257309	-107.816346
8,182.0	1.10	261.50	7,356.2	765.1	-2,873.0	1,526,970.10	2,344,178.80	39.257309	-107.816352
8,277.0	1.40	263.60	7,451.2	764.9	-2,875.0	1,526,969.89	2,344,176.74	39.257308	-107.816359
8,371.0	1.80	258.00	7,545.1	764.4	-2,877.6	1,526,969.52	2,344,174.14	39.257307	-107.816368
8,463.0	2.10	251.10	7,637.1	763.6	-2,880.6	1,526,968.75	2,344,171.11	39.257304	-107.816379
8,518.0	2.10	251.10	7,692.1	762.9	-2,882.5	1,526,968.14	2,344,169.19	39.257303	-107.816386

Projection to TD @ 8518'MD / 7692.1'TVD

## Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
204.0	204.0	1.3	-1.2	First MWD Survey @ 204.0' MD / TVD
8,518.0	7,692.1	762.9	-2,882.5	Projection to TD @ 8518'MD / 7692.1'TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_