



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-01 Pad**

**Bruton 19-16E**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**05 August, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-16E
<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 19-16E	<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 30-01 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 19-16E					
Well Position	+N/-S	0.0 usft	Northing:	1,526,168.13 usft	Latitude:	39.255306
	+E/-W	0.0 usft	Easting:	2,347,015.03 usft	Longitude:	-107.806267
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	7/20/2017	9.58	65.42	51,401.71495958

<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	355.32	

<b>Survey Program</b>	<b>Date</b>	8/5/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
199.0	7,928.0	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	1,526,168.13	2,347,015.03	39.255306	-107.806267
199.0	3.20	317.70	198.9	4.1	-3.7	1,526,172.34	2,347,011.40	39.255317	-107.806280
<b>First MWD Survey @ 199.0' MD / 198.9' TVD</b>									
289.0	3.60	317.70	288.7	8.1	-7.3	1,526,176.37	2,347,007.91	39.255328	-107.806293
381.0	3.70	317.10	380.6	12.4	-11.3	1,526,180.78	2,347,004.05	39.255340	-107.806307
471.0	3.90	334.60	470.4	17.3	-14.6	1,526,185.76	2,347,000.89	39.255353	-107.806318
563.0	4.60	353.80	562.1	23.8	-16.3	1,526,192.29	2,346,999.31	39.255371	-107.806325
654.0	5.90	353.30	652.7	32.0	-17.3	1,526,200.59	2,346,998.59	39.255394	-107.806328
745.0	7.40	347.60	743.1	42.4	-19.1	1,526,211.00	2,346,997.04	39.255422	-107.806334
836.0	9.40	348.00	833.1	55.4	-21.9	1,526,224.06	2,346,994.57	39.255458	-107.806344
927.0	12.00	351.70	922.5	72.0	-24.8	1,526,240.76	2,346,992.08	39.255503	-107.806354
1,021.0	15.20	352.10	1,013.9	93.9	-27.9	1,526,262.72	2,346,989.54	39.255563	-107.806365



# Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-16E
<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 19-16E	<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
1,116.0	17.70	351.30	1,105.0	120.5	-31.8	1,526,289.42	2,346,986.32	39.255637	-107.806379
1,210.0	18.00	351.00	1,194.5	149.0	-36.2	1,526,317.99	2,346,982.61	39.255715	-107.806395
1,305.0	18.40	351.10	1,284.7	178.3	-40.8	1,526,347.41	2,346,978.74	39.255795	-107.806411
1,399.0	17.50	350.20	1,374.1	206.9	-45.5	1,526,376.11	2,346,974.76	39.255874	-107.806428
1,494.0	17.40	350.60	1,464.8	235.0	-50.3	1,526,404.31	2,346,970.72	39.255951	-107.806445
1,590.0	17.10	349.20	1,556.5	263.0	-55.3	1,526,432.45	2,346,966.45	39.256028	-107.806462
1,684.0	16.50	347.10	1,646.4	289.6	-60.8	1,526,459.17	2,346,961.56	39.256101	-107.806482
1,779.0	18.00	351.40	1,737.2	317.3	-66.1	1,526,486.96	2,346,957.05	39.256177	-107.806500
1,873.0	17.60	350.20	1,826.7	345.6	-70.6	1,526,515.43	2,346,953.18	39.256255	-107.806516
1,968.0	17.20	348.90	1,917.3	373.6	-75.8	1,526,543.49	2,346,948.75	39.256331	-107.806535
2,062.0	17.80	355.30	2,007.0	401.5	-79.6	1,526,571.54	2,346,945.60	39.256408	-107.806548
2,157.0	16.70	355.20	2,097.7	429.6	-82.0	1,526,599.66	2,346,943.98	39.256485	-107.806556
2,251.0	16.20	354.60	2,187.9	456.1	-84.3	1,526,626.23	2,346,942.29	39.256558	-107.806565
2,346.0	14.60	354.40	2,279.4	481.2	-86.8	1,526,651.39	2,346,940.52	39.256627	-107.806573
2,440.0	15.70	352.70	2,370.2	505.6	-89.5	1,526,675.86	2,346,938.36	39.256694	-107.806583
2,535.0	17.10	357.10	2,461.3	532.3	-91.9	1,526,702.61	2,346,936.70	39.256767	-107.806591
2,629.0	16.00	356.10	2,551.4	559.0	-93.5	1,526,729.37	2,346,935.80	39.256841	-107.806597
2,724.0	14.70	354.80	2,643.0	584.1	-95.4	1,526,754.48	2,346,934.46	39.256909	-107.806604
2,818.0	17.30	353.50	2,733.4	609.9	-98.1	1,526,780.31	2,346,932.45	39.256980	-107.806613
2,912.0	17.10	352.50	2,823.2	637.5	-101.5	1,526,807.98	2,346,929.76	39.257056	-107.806625
3,007.0	16.70	351.00	2,914.1	664.8	-105.4	1,526,835.40	2,346,926.50	39.257131	-107.806639
3,101.0	16.30	351.30	3,004.2	691.2	-109.6	1,526,861.87	2,346,923.06	39.257203	-107.806654
3,196.0	18.10	352.40	3,094.9	719.0	-113.5	1,526,889.77	2,346,919.80	39.257280	-107.806668
3,291.0	17.50	351.70	3,185.4	747.8	-117.5	1,526,918.63	2,346,916.52	39.257359	-107.806682
3,386.0	17.20	351.00	3,276.1	775.8	-121.8	1,526,946.73	2,346,912.97	39.257436	-107.806697
3,480.0	16.70	350.00	3,366.0	802.8	-126.3	1,526,973.87	2,346,909.14	39.257510	-107.806713
3,575.0	16.00	350.20	3,457.2	829.1	-130.9	1,527,000.32	2,346,905.21	39.257582	-107.806729
3,669.0	15.80	348.20	3,547.6	854.4	-135.7	1,527,025.73	2,346,901.03	39.257652	-107.806746
3,764.0	16.70	351.00	3,638.8	880.6	-140.5	1,527,051.98	2,346,896.92	39.257723	-107.806763
3,858.0	17.50	355.10	3,728.6	908.0	-143.8	1,527,079.48	2,346,894.29	39.257799	-107.806775
3,953.0	17.40	354.40	3,819.2	936.4	-146.4	1,527,107.91	2,346,892.41	39.257876	-107.806784
4,048.0	17.60	354.00	3,909.8	964.8	-149.3	1,527,136.39	2,346,890.24	39.257955	-107.806794
4,143.0	16.80	353.70	4,000.6	992.7	-152.3	1,527,164.39	2,346,887.95	39.258031	-107.806805
4,237.0	16.10	354.00	4,090.7	1,019.2	-155.2	1,527,190.92	2,346,885.76	39.258104	-107.806815
4,332.0	15.90	353.50	4,182.1	1,045.2	-158.0	1,527,217.01	2,346,883.58	39.258175	-107.806825
4,426.0	15.30	352.50	4,272.6	1,070.3	-161.1	1,527,242.17	2,346,881.14	39.258244	-107.806836
4,521.0	17.00	355.30	4,363.8	1,096.6	-163.9	1,527,268.50	2,346,879.03	39.258316	-107.806846
4,615.0	15.50	355.40	4,454.1	1,122.8	-166.0	1,527,294.77	2,346,877.56	39.258388	-107.806853
4,710.0	18.10	355.70	4,545.0	1,150.2	-168.1	1,527,322.18	2,346,876.13	39.258463	-107.806861
4,805.0	18.10	355.80	4,635.3	1,179.6	-170.3	1,527,351.66	2,346,874.70	39.258544	-107.806869
4,899.0	17.00	354.90	4,725.0	1,207.8	-172.6	1,527,379.96	2,346,873.12	39.258622	-107.806877
4,994.0	15.70	354.00	4,816.1	1,234.5	-175.2	1,527,406.64	2,346,871.22	39.258695	-107.806886
5,088.0	14.00	353.50	4,907.0	1,258.4	-177.8	1,527,430.64	2,346,869.21	39.258761	-107.806895
5,183.0	15.20	352.30	4,998.9	1,282.2	-180.8	1,527,454.47	2,346,866.85	39.258826	-107.806905
5,277.0	14.40	350.60	5,089.8	1,305.9	-184.4	1,527,478.30	2,346,863.89	39.258891	-107.806918
5,372.0	13.10	353.40	5,182.1	1,328.3	-187.5	1,527,500.72	2,346,861.29	39.258952	-107.806929
5,467.0	10.80	357.10	5,275.0	1,347.8	-189.2	1,527,520.34	2,346,860.10	39.259006	-107.806935
5,561.0	9.90	356.00	5,367.5	1,364.7	-190.2	1,527,537.22	2,346,859.52	39.259053	-107.806939
5,656.0	9.10	355.10	5,461.2	1,380.3	-191.4	1,527,552.88	2,346,858.71	39.259095	-107.806943
5,751.0	7.60	353.60	5,555.1	1,394.1	-192.8	1,527,566.64	2,346,857.71	39.259133	-107.806948
5,845.0	6.90	348.80	5,648.4	1,405.8	-194.6	1,527,578.39	2,346,856.22	39.259165	-107.806954
5,940.0	5.30	356.30	5,742.9	1,415.8	-195.9	1,527,588.40	2,346,855.08	39.259193	-107.806959
6,034.0	2.60	340.60	5,836.6	1,422.1	-196.9	1,527,594.77	2,346,854.26	39.259210	-107.806962
6,129.0	2.00	343.90	5,931.5	1,425.7	-198.1	1,527,598.43	2,346,853.17	39.259220	-107.806967
6,223.0	1.90	11.40	6,025.5	1,428.8	-198.3	1,527,601.53	2,346,853.11	39.259229	-107.806967



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 19-16E
<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 19-16E	<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	1.70	15.60	6,120.4	1,431.7	-197.6	1,527,604.41	2,346,853.87	39.259237	-107.806965
6,412.0	1.90	11.20	6,214.4	1,434.6	-196.9	1,527,607.27	2,346,854.62	39.259244	-107.806962
6,507.0	1.10	312.30	6,309.4	1,436.8	-197.3	1,527,609.44	2,346,854.31	39.259250	-107.806964
6,601.0	1.50	305.50	6,403.3	1,438.1	-198.9	1,527,610.80	2,346,852.67	39.259254	-107.806970
6,696.0	0.50	351.00	6,498.3	1,439.2	-200.0	1,527,611.96	2,346,851.62	39.259257	-107.806973
6,791.0	0.50	316.00	6,593.3	1,439.9	-200.4	1,527,612.67	2,346,851.29	39.259259	-107.806975
6,886.0	0.40	270.80	6,688.3	1,440.2	-201.0	1,527,612.99	2,346,850.68	39.259260	-107.806977
6,980.0	0.80	274.20	6,782.3	1,440.3	-202.0	1,527,613.07	2,346,849.70	39.259260	-107.806980
7,075.0	1.00	291.30	6,877.3	1,440.6	-203.4	1,527,613.46	2,346,848.27	39.259261	-107.806985
7,170.0	0.70	240.00	6,972.3	1,440.6	-204.7	1,527,613.50	2,346,847.00	39.259261	-107.806990
7,264.0	0.50	232.70	7,066.3	1,440.1	-205.5	1,527,612.98	2,346,846.16	39.259260	-107.806993
7,359.0	1.00	187.00	7,161.3	1,439.0	-205.9	1,527,611.92	2,346,845.70	39.259257	-107.806994
7,454.0	1.60	231.00	7,256.3	1,437.4	-207.1	1,527,610.29	2,346,844.53	39.259252	-107.806998
7,548.0	2.10	232.60	7,350.2	1,435.5	-209.4	1,527,608.48	2,346,842.09	39.259247	-107.807007
7,643.0	2.30	231.20	7,445.1	1,433.2	-212.3	1,527,606.30	2,346,839.17	39.259241	-107.807017
7,738.0	2.30	228.10	7,540.1	1,430.8	-215.2	1,527,603.91	2,346,836.20	39.259234	-107.807027
7,833.0	2.40	232.00	7,635.0	1,428.3	-218.2	1,527,601.49	2,346,833.15	39.259227	-107.807038
7,872.0	2.40	233.70	7,674.0	1,427.3	-219.5	1,527,600.54	2,346,831.83	39.259224	-107.807042
7,928.0	2.40	233.70	7,729.9	1,425.9	-221.4	1,527,599.20	2,346,829.90	39.259221	-107.807049

Projection to TD @ 7928.0' MD / 7729.9' TVD

## Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
199.0	198.9	4.1	-3.7	First MWD Survey @ 199.0' MD / 198.9' TVD
7,928.0	7,729.9	1,425.9	-221.4	Projection to TD @ 7928.0' MD / 7729.9' TVD