



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-01 Pad**

**Bruton 30-02E**

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**29 May, 2017**





## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-02E
<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 30-02E	<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 30-02E					
Well Position	+N/-S	0.0 usft	Northing:	1,526,109.48 usft	Latitude:	39.255147
	+E/-W	0.0 usft	Easting:	2,347,052.89 usft	Longitude:	-107.806128
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	5/15/2017	9.59	65.43	51,422

<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	218.81	

<b>Survey Program</b>	<b>Date</b>	5/29/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
113.0	7,704.0	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	1,526,109.48	2,347,052.89	39.255147	-107.806128
113.0	1.50	147.00	113.0	-1.2	0.8	1,526,108.22	2,347,053.66	39.255144	-107.806125
<b>First MWD Survey @ 113.0' MD / TVD</b>									
204.0	2.00	126.60	203.9	-3.2	2.7	1,526,106.23	2,347,055.53	39.255139	-107.806118
295.0	1.10	132.20	294.9	-4.7	4.7	1,526,104.65	2,347,057.41	39.255134	-107.806112
387.0	0.00	206.90	386.9	-5.3	5.3	1,526,104.04	2,347,058.05	39.255133	-107.806109
477.0	0.20	279.60	476.9	-5.3	5.2	1,526,104.07	2,347,057.90	39.255133	-107.806110
567.0	0.10	279.60	566.9	-5.2	4.9	1,526,104.11	2,347,057.67	39.255133	-107.806111
658.0	0.20	264.60	657.9	-5.2	4.7	1,526,104.12	2,347,057.43	39.255133	-107.806112
749.0	0.20	271.00	748.9	-5.3	4.4	1,526,104.11	2,347,057.11	39.255133	-107.806113
840.0	0.20	301.00	839.9	-5.2	4.1	1,526,104.20	2,347,056.82	39.255133	-107.806114
930.0	0.10	308.00	929.9	-5.0	3.9	1,526,104.34	2,347,056.63	39.255133	-107.806114



## Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-02E
<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 30-02E	<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
1,024.0	2.20	218.20	1,023.9	-6.4	2.7	1,526,103.00	2,347,055.41	39.255130	-107.806119
1,119.0	4.70	213.80	1,118.7	-11.1	-0.6	1,526,098.42	2,347,052.00	39.255117	-107.806130
1,213.0	5.10	212.40	1,212.4	-17.8	-5.0	1,526,091.80	2,347,047.45	39.255098	-107.806146
1,308.0	5.30	211.70	1,307.0	-25.1	-9.5	1,526,084.62	2,347,042.70	39.255078	-107.806162
1,402.0	5.30	214.30	1,400.6	-32.4	-14.3	1,526,077.47	2,347,037.79	39.255058	-107.806178
1,492.0	5.50	213.20	1,490.2	-39.4	-19.0	1,526,070.55	2,347,032.91	39.255039	-107.806195
1,591.0	5.90	211.10	1,588.7	-47.8	-24.2	1,526,062.35	2,347,027.47	39.255016	-107.806214
1,685.0	4.70	226.80	1,682.3	-54.5	-29.5	1,526,055.72	2,347,022.00	39.254998	-107.806232
1,780.0	4.20	227.60	1,777.0	-59.5	-34.9	1,526,050.85	2,347,016.47	39.254984	-107.806251
1,874.0	4.50	229.70	1,870.7	-64.2	-40.3	1,526,046.28	2,347,011.00	39.254971	-107.806270
1,969.0	5.10	215.30	1,965.4	-70.1	-45.6	1,526,040.56	2,347,005.57	39.254955	-107.806289
2,064.0	4.60	216.60	2,060.0	-76.6	-50.3	1,526,034.17	2,347,000.69	39.254937	-107.806306
2,158.0	4.60	215.50	2,153.7	-82.7	-54.7	1,526,028.19	2,346,996.10	39.254920	-107.806321
2,252.0	4.30	214.60	2,247.5	-88.7	-58.9	1,526,022.33	2,346,991.76	39.254904	-107.806336
2,347.0	4.40	212.60	2,342.2	-94.7	-62.9	1,526,016.43	2,346,987.62	39.254887	-107.806350
2,441.0	4.00	225.40	2,435.9	-100.0	-67.2	1,526,011.20	2,346,983.21	39.254873	-107.806365
2,536.0	3.90	224.80	2,530.7	-104.6	-71.8	1,526,006.70	2,346,978.46	39.254860	-107.806382
2,630.0	3.80	224.00	2,624.5	-109.1	-76.2	1,526,002.31	2,346,973.93	39.254848	-107.806397
2,725.0	3.50	228.60	2,719.3	-113.3	-80.6	1,525,998.24	2,346,969.47	39.254836	-107.806413
2,819.0	3.50	228.20	2,813.1	-117.1	-84.9	1,525,994.54	2,346,965.08	39.254826	-107.806428
2,913.0	3.20	226.20	2,907.0	-120.9	-88.9	1,525,990.91	2,346,960.95	39.254815	-107.806442
3,008.0	3.10	223.20	3,001.8	-124.6	-92.6	1,525,987.30	2,346,957.19	39.254805	-107.806455
3,103.0	2.90	214.90	3,096.7	-128.4	-95.7	1,525,983.54	2,346,953.96	39.254795	-107.806466
3,197.0	5.00	232.20	3,190.5	-132.9	-100.3	1,525,979.19	2,346,949.25	39.254782	-107.806482
3,292.0	4.80	226.70	3,285.1	-138.1	-106.5	1,525,974.09	2,346,942.95	39.254768	-107.806504
3,387.0	5.00	230.50	3,379.8	-143.5	-112.5	1,525,968.89	2,346,936.73	39.254753	-107.806526
3,481.0	4.30	228.00	3,473.5	-148.5	-118.3	1,525,964.07	2,346,930.83	39.254740	-107.806546
3,576.0	4.00	231.20	3,568.2	-152.9	-123.6	1,525,959.75	2,346,925.49	39.254727	-107.806564
3,670.0	3.80	227.10	3,662.0	-157.1	-128.4	1,525,955.70	2,346,920.55	39.254716	-107.806581
3,765.0	5.80	224.30	3,756.7	-162.7	-134.1	1,525,950.26	2,346,914.75	39.254701	-107.806601
3,860.0	5.50	222.50	3,851.2	-169.5	-140.5	1,525,943.64	2,346,908.15	39.254682	-107.806624
3,954.0	5.10	221.60	3,944.8	-175.9	-146.3	1,525,937.34	2,346,902.17	39.254664	-107.806645
4,049.0	4.90	221.40	4,039.4	-182.1	-151.8	1,525,931.28	2,346,896.53	39.254647	-107.806664
4,144.0	4.80	217.40	4,134.1	-188.3	-156.9	1,525,925.21	2,346,891.27	39.254630	-107.806682
4,238.0	4.70	216.70	4,227.8	-194.5	-161.6	1,525,919.12	2,346,886.43	39.254613	-107.806699
4,333.0	4.70	215.60	4,322.5	-200.8	-166.2	1,525,912.95	2,346,881.68	39.254596	-107.806715
4,428.0	4.30	227.60	4,417.2	-206.4	-171.1	1,525,907.51	2,346,876.64	39.254581	-107.806732
4,522.0	4.20	226.30	4,510.9	-211.1	-176.1	1,525,902.89	2,346,871.43	39.254568	-107.806750
4,616.0	4.60	228.80	4,604.6	-216.0	-181.5	1,525,898.16	2,346,865.99	39.254554	-107.806769
4,711.0	4.00	229.80	4,699.4	-220.6	-186.9	1,525,893.65	2,346,860.47	39.254541	-107.806788
4,806.0	3.80	228.70	4,794.1	-224.9	-191.8	1,525,889.56	2,346,855.47	39.254530	-107.806805
4,900.0	4.10	226.40	4,887.9	-229.2	-196.5	1,525,885.31	2,346,850.59	39.254518	-107.806822
4,995.0	3.10	227.40	4,982.7	-233.3	-200.9	1,525,881.34	2,346,846.14	39.254507	-107.806837
5,089.0	1.00	227.82	5,076.7	-235.6	-203.4	1,525,879.14	2,346,843.60	39.254500	-107.806846
5,184.0	1.27	227.65	5,171.6	-236.9	-204.8	1,525,877.91	2,346,842.18	39.254497	-107.806851
5,279.0	2.70	110.60	5,266.6	-238.3	-203.4	1,525,876.38	2,346,843.45	39.254493	-107.806847
5,373.0	0.79	125.43	5,360.6	-239.5	-200.8	1,525,875.16	2,346,846.03	39.254490	-107.806837
5,468.0	0.57	143.62	5,455.6	-240.3	-200.0	1,525,874.38	2,346,846.82	39.254488	-107.806834
5,563.0	0.53	134.04	5,550.6	-240.9	-199.4	1,525,873.67	2,346,847.40	39.254486	-107.806832
5,657.0	0.53	179.22	5,644.5	-241.7	-199.1	1,525,872.93	2,346,847.70	39.254484	-107.806831
5,752.0	1.14	182.82	5,739.5	-243.1	-199.2	1,525,871.55	2,346,847.62	39.254480	-107.806831
5,846.0	1.05	200.31	5,833.5	-244.8	-199.5	1,525,869.82	2,346,847.23	39.254475	-107.806833
5,941.0	1.19	203.39	5,928.5	-246.5	-200.2	1,525,868.11	2,346,846.50	39.254470	-107.806835
6,035.0	1.14	215.52	6,022.5	-248.2	-201.1	1,525,866.48	2,346,845.52	39.254466	-107.806838
6,130.0	1.23	217.98	6,117.5	-249.8	-202.3	1,525,864.94	2,346,844.31	39.254462	-107.806842



# Survey Report - Geographic



<b>Company:</b>	Laramie Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-02E
<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 30-02E	<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
6,224.0	1.32	217.36	6,211.4	-251.4	-203.6	1,525,863.31	2,346,842.99	39.254457	-107.806847
6,319.0	1.30	236.10	6,306.4	-252.9	-205.1	1,525,861.88	2,346,841.39	39.254453	-107.806852
6,413.0	1.40	229.60	6,400.4	-254.2	-206.9	1,525,860.59	2,346,839.60	39.254449	-107.806859
6,508.0	1.40	236.40	6,495.4	-255.6	-208.7	1,525,859.24	2,346,837.71	39.254445	-107.806865
6,603.0	1.50	232.00	6,590.3	-257.0	-210.7	1,525,857.88	2,346,835.73	39.254442	-107.806872
6,697.0	1.50	235.20	6,684.3	-258.5	-212.7	1,525,856.48	2,346,833.72	39.254438	-107.806879
6,792.0	1.70	231.20	6,779.3	-260.1	-214.8	1,525,854.94	2,346,831.56	39.254433	-107.806887
6,887.0	1.70	236.00	6,874.2	-261.8	-217.1	1,525,853.32	2,346,829.25	39.254429	-107.806895
6,981.0	2.00	238.70	6,968.2	-263.4	-219.6	1,525,851.76	2,346,826.65	39.254424	-107.806904
7,076.0	2.20	230.00	7,063.1	-265.4	-222.4	1,525,849.80	2,346,823.79	39.254419	-107.806914
7,171.0	2.20	233.90	7,158.0	-267.7	-225.3	1,525,847.62	2,346,820.86	39.254412	-107.806924
7,265.0	2.20	241.90	7,252.0	-269.6	-228.4	1,525,845.79	2,346,817.76	39.254407	-107.806934
7,360.0	2.30	232.00	7,346.9	-271.6	-231.5	1,525,843.84	2,346,814.60	39.254402	-107.806945
7,455.0	2.40	230.70	7,441.8	-274.0	-234.5	1,525,841.48	2,346,811.50	39.254395	-107.806956
7,550.0	2.10	227.10	7,536.7	-276.5	-237.3	1,525,839.11	2,346,808.63	39.254388	-107.806966
7,644.0	2.10	224.80	7,630.7	-278.9	-239.8	1,525,836.78	2,346,806.09	39.254382	-107.806975
7,659.0	2.10	225.00	7,645.7	-279.3	-240.2	1,525,836.40	2,346,805.69	39.254381	-107.806976
7,704.0	2.10	225.00	7,690.6	-280.4	-241.3	1,525,835.26	2,346,804.50	39.254377	-107.806980
Projecton to TD @ 7704.0' MD / 7690.6' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
113.0	113.0	-1.2	0.8	First MWD Survey @ 113.0' MD / TVD
7,704.0	7,690.6	-280.4	-241.3	Projecton to TD @ 7704.0' MD / 7690.6' TVD