



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-10W

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

21 October, 2017





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Bruton 30-10W
Project:	Mesa County, CO	TVD Reference:	well @ 7542.0usft (H&P #522)
Site:	Bruton 30-03 Pad	MD Reference:	well @ 7542.0usft (H&P #522)
Well:	Bruton 30-10W	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Mesa County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Bruton 30-03 Pad			
Site Position:		Northing:	1,525,281.27 usft	Latitude:	39.252711
From:	Lat/Long	Easting:	2,344,720.08 usft	Longitude:	-107.814289
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 °

Well	Bruton 30-10W					
Well Position	+N/-S	0.0 usft	Northing:	1,525,238.16 usft	Latitude:	39.252592
	+E/-W	0.0 usft	Easting:	2,344,707.91 usft	Longitude:	-107.814328
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,512.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/17/2017	9.55	65.41	51,371.42049080

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	201.92	

Survey Program	Date	10/21/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
112.0	7,860.0	MWD Surveys (Wellbore #1)	MWD default	MWD - Standard	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,525,238.16	2,344,707.91	39.252592	-107.814328
112.0	0.80	227.10	112.0	-0.5	-0.6	1,525,237.65	2,344,707.32	39.252591	-107.814330
First MWD Survey @ 112.0' MD / 112.0' TVD									
203.0	0.70	229.20	203.0	-1.3	-1.5	1,525,236.87	2,344,706.41	39.252588	-107.814333
294.0	0.70	228.30	294.0	-2.1	-2.3	1,525,236.16	2,344,705.56	39.252586	-107.814336
386.0	2.50	224.70	385.9	-3.9	-4.1	1,525,234.41	2,344,703.68	39.252581	-107.814343
477.0	4.70	208.60	476.8	-8.5	-7.3	1,525,229.81	2,344,700.38	39.252569	-107.814354
569.0	5.40	217.70	568.4	-15.3	-11.8	1,525,223.19	2,344,695.76	39.252550	-107.814370
661.0	7.60	197.40	659.8	-24.5	-16.2	1,525,214.07	2,344,691.06	39.252525	-107.814386
753.0	7.80	192.50	751.0	-36.4	-19.4	1,525,202.26	2,344,687.59	39.252492	-107.814397
844.0	8.10	195.00	841.1	-48.6	-22.4	1,525,190.12	2,344,684.28	39.252459	-107.814407
936.0	10.20	196.10	931.9	-62.7	-26.3	1,525,176.13	2,344,679.99	39.252420	-107.814421



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Well:	Bruton 30-10W	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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
1,030.0	13.10	208.20	1,024.0	-80.1	-33.7	1,525,158.93	2,344,672.20	39.252372	-107.814447
1,124.0	15.40	204.90	1,115.1	-100.8	-44.0	1,525,138.49	2,344,661.39	39.252315	-107.814484
1,219.0	17.10	204.20	1,206.3	-125.0	-55.0	1,525,114.60	2,344,649.74	39.252249	-107.814523
1,313.0	18.90	201.90	1,295.7	-151.7	-66.3	1,525,088.16	2,344,637.71	39.252175	-107.814563
1,407.0	18.90	202.00	1,384.6	-180.0	-77.7	1,525,060.22	2,344,625.62	39.252098	-107.814603
1,501.0	19.00	199.80	1,473.5	-208.5	-88.6	1,525,031.99	2,344,614.01	39.252020	-107.814641
1,587.0	18.80	200.80	1,554.9	-234.6	-98.3	1,525,006.12	2,344,603.68	39.251948	-107.814675
1,681.0	20.80	200.90	1,643.3	-264.4	-109.6	1,524,976.66	2,344,591.59	39.251866	-107.814715
1,775.0	19.90	198.50	1,731.5	-295.1	-120.6	1,524,946.19	2,344,579.78	39.251782	-107.814754
1,869.0	20.70	200.60	1,819.6	-325.9	-131.6	1,524,915.76	2,344,568.08	39.251697	-107.814793
1,964.0	20.30	200.00	1,908.6	-357.1	-143.1	1,524,884.86	2,344,555.75	39.251612	-107.814834
2,058.0	19.50	200.40	1,997.0	-387.1	-154.2	1,524,855.12	2,344,543.94	39.251529	-107.814873
2,152.0	19.20	203.80	2,085.7	-415.9	-165.9	1,524,826.58	2,344,531.50	39.251450	-107.814914
2,246.0	18.40	202.20	2,174.7	-443.8	-177.7	1,524,799.01	2,344,518.95	39.251373	-107.814956
2,341.0	18.30	204.40	2,264.9	-471.3	-189.5	1,524,771.86	2,344,506.43	39.251298	-107.814998
2,435.0	18.80	206.30	2,354.0	-498.3	-202.3	1,524,745.17	2,344,492.94	39.251224	-107.815043
2,529.0	17.90	209.00	2,443.2	-524.5	-216.1	1,524,719.32	2,344,478.56	39.251152	-107.815091
2,623.0	16.90	206.30	2,532.9	-549.4	-229.1	1,524,694.77	2,344,464.87	39.251084	-107.815137
2,717.0	16.00	208.10	2,623.1	-573.1	-241.3	1,524,671.41	2,344,452.12	39.251019	-107.815180
2,812.0	17.10	204.80	2,714.1	-597.3	-253.3	1,524,647.50	2,344,439.48	39.250952	-107.815223
2,906.0	17.60	201.70	2,803.8	-623.1	-264.3	1,524,622.04	2,344,427.78	39.250881	-107.815262
3,000.0	18.90	201.00	2,893.1	-650.5	-275.1	1,524,594.90	2,344,416.37	39.250806	-107.815300
3,094.0	18.30	200.90	2,982.2	-678.5	-285.8	1,524,567.18	2,344,404.94	39.250729	-107.815337
3,188.0	17.80	201.90	3,071.6	-705.6	-296.4	1,524,540.35	2,344,393.63	39.250655	-107.815375
3,283.0	18.80	204.10	3,161.8	-733.0	-308.1	1,524,513.21	2,344,381.27	39.250579	-107.815416
3,377.0	18.00	202.00	3,251.0	-760.3	-319.7	1,524,486.22	2,344,368.95	39.250504	-107.815457
3,471.0	17.60	201.40	3,340.5	-787.0	-330.3	1,524,459.80	2,344,357.65	39.250431	-107.815495
3,565.0	18.20	199.10	3,429.9	-814.1	-340.3	1,524,432.96	2,344,346.97	39.250357	-107.815530
3,659.0	17.50	198.90	3,519.4	-841.4	-349.7	1,524,405.96	2,344,336.90	39.250282	-107.815563
3,754.0	18.40	201.20	3,609.8	-868.9	-359.7	1,524,378.73	2,344,326.15	39.250206	-107.815599
3,848.0	17.50	200.40	3,699.2	-896.0	-370.0	1,524,351.93	2,344,315.17	39.250132	-107.815635
3,942.0	18.40	197.50	3,788.6	-923.4	-379.4	1,524,324.78	2,344,305.09	39.250057	-107.815668
4,036.0	17.20	197.30	3,878.1	-950.8	-388.0	1,524,297.59	2,344,295.80	39.249982	-107.815698
4,131.0	18.10	198.90	3,968.6	-978.1	-397.0	1,524,270.45	2,344,286.15	39.249906	-107.815730
4,225.0	18.60	200.30	4,057.9	-1,006.0	-406.9	1,524,242.84	2,344,275.51	39.249830	-107.815765
4,319.0	17.70	198.90	4,147.2	-1,033.6	-416.7	1,524,215.52	2,344,264.98	39.249754	-107.815800
4,414.0	16.80	197.10	4,237.9	-1,060.4	-425.4	1,524,188.96	2,344,255.59	39.249681	-107.815831
4,508.0	17.40	202.40	4,327.8	-1,086.4	-434.8	1,524,163.23	2,344,245.58	39.249609	-107.815864
4,602.0	18.30	200.80	4,417.2	-1,113.2	-445.4	1,524,136.72	2,344,234.30	39.249536	-107.815901
4,696.0	17.30	199.70	4,506.7	-1,140.1	-455.3	1,524,110.02	2,344,223.67	39.249462	-107.815936
4,790.0	17.70	202.60	4,596.4	-1,166.5	-465.5	1,524,083.94	2,344,212.80	39.249389	-107.815972
4,884.0	17.20	202.10	4,686.1	-1,192.5	-476.3	1,524,058.15	2,344,201.42	39.249318	-107.816010
4,979.0	16.30	201.70	4,777.0	-1,217.9	-486.5	1,524,033.02	2,344,190.56	39.249248	-107.816046
5,073.0	15.40	201.20	4,867.5	-1,241.8	-495.9	1,524,009.37	2,344,180.56	39.249182	-107.816079
5,167.0	14.30	201.40	4,958.3	-1,264.3	-504.6	1,523,987.16	2,344,171.24	39.249121	-107.816110
5,261.0	13.20	200.80	5,049.6	-1,285.1	-512.7	1,523,966.53	2,344,162.67	39.249064	-107.816139
5,355.0	11.90	203.90	5,141.4	-1,304.0	-520.4	1,523,947.83	2,344,154.45	39.249012	-107.816166
5,450.0	9.70	201.40	5,234.7	-1,320.4	-527.3	1,523,931.61	2,344,147.14	39.248967	-107.816190
5,544.0	7.30	198.40	5,327.6	-1,333.5	-532.1	1,523,918.69	2,344,142.04	39.248931	-107.816207
5,638.0	5.60	200.10	5,421.0	-1,343.4	-535.5	1,523,908.81	2,344,138.32	39.248903	-107.816219
5,732.0	3.20	189.30	5,514.8	-1,350.3	-537.5	1,523,901.96	2,344,136.15	39.248885	-107.816226
5,826.0	0.90	202.70	5,608.7	-1,353.6	-538.2	1,523,898.71	2,344,135.36	39.248876	-107.816229
5,921.0	0.90	5.90	5,703.7	-1,353.5	-538.5	1,523,898.77	2,344,135.15	39.248876	-107.816230
6,015.0	0.70	350.80	5,797.7	-1,352.2	-538.5	1,523,900.07	2,344,135.16	39.248879	-107.816230
6,109.0	0.70	325.60	5,891.7	-1,351.2	-538.9	1,523,901.12	2,344,134.77	39.248882	-107.816231



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Site:	Bruton 30-03 Pad	MD Reference:	well @ 7542.0usft (H&P #522)
Well:	Bruton 30-10W	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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
6,203.0	0.60	299.30	5,985.7	-1,350.5	-539.6	1,523,901.86	2,344,134.04	39.248884	-107.816234
6,298.0	0.50	269.50	6,080.7	-1,350.3	-540.5	1,523,902.12	2,344,133.20	39.248885	-107.816237
6,392.0	0.40	293.80	6,174.7	-1,350.1	-541.2	1,523,902.27	2,344,132.49	39.248885	-107.816239
6,486.0	0.40	250.40	6,268.7	-1,350.1	-541.8	1,523,902.30	2,344,131.88	39.248885	-107.816241
6,580.0	0.80	234.80	6,362.7	-1,350.6	-542.7	1,523,901.84	2,344,131.02	39.248884	-107.816244
6,674.0	0.80	115.70	6,456.7	-1,351.3	-542.6	1,523,901.17	2,344,131.06	39.248882	-107.816244
6,769.0	1.10	226.00	6,551.6	-1,352.2	-542.7	1,523,900.25	2,344,130.98	39.248879	-107.816244
6,863.0	2.10	231.90	6,645.6	-1,353.9	-544.7	1,523,898.62	2,344,128.93	39.248875	-107.816252
6,957.0	2.10	225.80	6,739.5	-1,356.1	-547.3	1,523,896.42	2,344,126.29	39.248869	-107.816261
7,051.0	2.50	229.20	6,833.5	-1,358.7	-550.0	1,523,893.95	2,344,123.44	39.248862	-107.816271
7,146.0	2.90	227.90	6,928.4	-1,361.6	-553.4	1,523,891.07	2,344,120.01	39.248854	-107.816282
7,240.0	2.40	223.00	7,022.3	-1,364.7	-556.5	1,523,888.12	2,344,116.83	39.248845	-107.816293
7,334.0	2.20	217.90	7,116.2	-1,367.5	-558.9	1,523,885.32	2,344,114.31	39.248837	-107.816302
7,429.0	2.30	206.30	7,211.1	-1,370.7	-560.9	1,523,882.22	2,344,112.26	39.248829	-107.816309
7,523.0	2.20	221.60	7,305.0	-1,373.7	-562.9	1,523,879.23	2,344,110.15	39.248820	-107.816316
7,617.0	2.70	213.50	7,399.0	-1,376.9	-565.4	1,523,876.10	2,344,107.65	39.248812	-107.816325
7,712.0	2.50	215.40	7,493.9	-1,380.5	-567.8	1,523,872.61	2,344,105.13	39.248802	-107.816333
7,800.0	2.80	215.20	7,581.8	-1,383.8	-570.2	1,523,869.35	2,344,102.69	39.248793	-107.816342
7,860.0	2.80	215.20	7,641.7	-1,386.2	-571.8	1,523,867.00	2,344,100.94	39.248786	-107.816348

Projection to TD @ 7860.0' MD / 7641.7' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
112.0	112.0	-0.5	-0.6	First MWD Survey @ 112.0' MD / 112.0' TVD
7,860.0	7,641.7	-1,386.2	-571.8	Projection to TD @ 7860.0' MD / 7641.7' TVD