



Laramie Energy, LLC

Mesa County, CO

Bruton 30-10 Pad

Bruton 30-20E

B-3

Design: B-3

Survey Report - Geographic

22 January, 2018





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Bruton 30-20E
Project:	Mesa County, CO	TVD Reference:	well @ 7673.0usft (H&P #522)
Site:	Bruton 30-10 Pad	MD Reference:	well @ 7673.0usft (H&P #522)
Well:	Bruton 30-20E	North Reference:	True
Wellbore:	B-3	Survey Calculation Method:	Minimum Curvature
Design:	B-3	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 30-10 Pad			
Site Position:		Northing:	1,523,424.58 usft	Latitude:	39.247725
From:	Map	Easting:	2,346,291.81 usft	Longitude:	-107.808574
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 °

Well	Bruton 30-20E					
Well Position	+N/-S	0.0 usft	Northing:	1,523,552.74 usft	Latitude:	39.248072
	+E/-W	0.0 usft	Easting:	2,346,225.58 usft	Longitude:	-107.808819
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,643.0 usft

Wellbore	B-3				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/6/2018	9.53	65.41	51,344.00929948

Design	B-3				
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	155.32	

Survey Program	Date	1/22/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
111.0	8,350.0	QES MWD Surveys (B-3)	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	1,523,552.74	2,346,225.58	39.248072	-107.808819
111.0	0.50	90.40	111.0	0.0	0.5	1,523,552.73	2,346,226.07	39.248072	-107.808818
First MWD Survey @ 111.0' MD / 111.0' TVD									
202.0	0.10	140.90	202.0	-0.1	0.9	1,523,552.65	2,346,226.51	39.248072	-107.808816
293.0	0.50	255.00	293.0	-0.2	0.6	1,523,552.49	2,346,226.18	39.248071	-107.808817
384.0	0.80	83.30	384.0	-0.3	0.8	1,523,552.46	2,346,226.42	39.248071	-107.808816
475.0	1.00	94.30	475.0	-0.2	2.3	1,523,552.44	2,346,227.85	39.248071	-107.808811
567.0	1.20	72.10	567.0	0.0	4.0	1,523,552.63	2,346,229.57	39.248072	-107.808805
658.0	1.30	78.60	657.9	0.5	5.9	1,523,553.08	2,346,231.50	39.248073	-107.808798
749.0	1.10	84.90	748.9	0.8	7.8	1,523,553.31	2,346,233.39	39.248074	-107.808792
840.0	2.70	141.80	839.9	-0.8	10.0	1,523,551.65	2,346,235.54	39.248070	-107.808784
931.0	4.50	151.80	930.7	-5.7	13.0	1,523,546.74	2,346,238.43	39.248056	-107.808773



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Site:	Bruton 30-10 Pad	MD Reference:	well @ 7673.0usft (H&P #522)
Well:	Bruton 30-20E	North Reference:	True
Wellbore:	B-3	Survey Calculation Method:	Minimum Curvature
Design:	B-3	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
1,022.0	6.40	160.70	1,021.3	-13.6	16.4	1,523,538.73	2,346,241.59	39.248035	-107.808762
1,116.0	9.40	161.40	1,114.4	-25.8	20.5	1,523,526.40	2,346,245.46	39.248001	-107.808747
1,210.0	12.30	162.80	1,206.7	-42.7	25.9	1,523,509.43	2,346,250.44	39.247955	-107.808728
1,305.0	14.30	158.20	1,299.1	-63.2	33.3	1,523,488.68	2,346,257.27	39.247898	-107.808702
1,399.0	17.10	157.40	1,389.6	-86.8	42.9	1,523,464.90	2,346,266.29	39.247834	-107.808668
1,502.0	20.30	158.50	1,487.2	-117.4	55.3	1,523,433.99	2,346,277.88	39.247750	-107.808624
1,609.0	20.30	159.80	1,587.5	-152.1	68.5	1,523,398.97	2,346,290.20	39.247654	-107.808577
1,703.0	22.90	157.20	1,674.9	-184.2	81.2	1,523,366.49	2,346,302.10	39.247566	-107.808532
1,797.0	24.60	158.60	1,761.0	-219.3	95.5	1,523,331.06	2,346,315.43	39.247470	-107.808482
1,891.0	28.00	155.30	1,845.2	-257.6	111.8	1,523,292.38	2,346,330.82	39.247365	-107.808424
1,985.0	31.40	154.60	1,926.9	-299.8	131.5	1,523,249.72	2,346,349.47	39.247249	-107.808355
2,080.0	34.50	153.40	2,006.6	-346.2	154.2	1,523,202.73	2,346,370.95	39.247121	-107.808275
2,174.0	35.50	153.50	2,083.6	-394.4	178.3	1,523,153.90	2,346,393.82	39.246989	-107.808190
2,268.0	34.50	153.10	2,160.6	-442.6	202.5	1,523,105.14	2,346,416.81	39.246857	-107.808104
2,362.0	35.50	153.60	2,237.6	-490.8	226.7	1,523,056.35	2,346,439.76	39.246725	-107.808019
2,456.0	35.30	152.40	2,314.2	-539.3	251.4	1,523,007.22	2,346,463.23	39.246591	-107.807931
2,551.0	34.10	153.40	2,392.3	-587.4	276.1	1,522,958.47	2,346,486.65	39.246459	-107.807844
2,645.0	34.80	153.60	2,469.8	-635.0	299.8	1,522,910.30	2,346,509.15	39.246328	-107.807761
2,739.0	34.40	155.20	2,547.2	-683.2	322.9	1,522,861.59	2,346,530.99	39.246196	-107.807679
2,833.0	33.50	155.80	2,625.2	-730.9	344.6	1,522,813.29	2,346,551.54	39.246065	-107.807602
2,927.0	33.70	157.40	2,703.5	-778.7	365.3	1,522,765.04	2,346,570.98	39.245934	-107.807529
3,022.0	34.20	155.70	2,782.3	-827.3	386.4	1,522,715.85	2,346,590.85	39.245800	-107.807455
3,116.0	36.20	155.50	2,859.1	-876.7	408.8	1,522,665.96	2,346,611.97	39.245665	-107.807376
3,210.0	36.30	154.50	2,934.9	-927.0	432.3	1,522,615.01	2,346,634.17	39.245527	-107.807293
3,304.0	35.40	154.00	3,011.1	-976.6	456.2	1,522,564.83	2,346,656.82	39.245391	-107.807208
3,398.0	34.90	154.60	3,087.9	-1,025.4	479.7	1,522,515.48	2,346,679.04	39.245257	-107.807126
3,493.0	34.50	153.90	3,166.0	-1,074.1	503.2	1,522,466.19	2,346,701.29	39.245123	-107.807043
3,587.0	34.80	155.80	3,243.4	-1,122.5	525.9	1,522,417.26	2,346,722.76	39.244990	-107.806962
3,681.0	33.80	155.10	3,321.0	-1,170.7	547.9	1,522,368.53	2,346,743.54	39.244858	-107.806885
3,775.0	34.50	156.00	3,398.8	-1,218.7	569.7	1,522,319.95	2,346,764.15	39.244726	-107.806808
3,869.0	35.60	155.90	3,475.8	-1,268.0	591.7	1,522,270.11	2,346,784.89	39.244591	-107.806730
3,963.0	34.10	156.20	3,552.9	-1,317.1	613.5	1,522,220.49	2,346,805.44	39.244456	-107.806653
4,057.0	35.70	156.50	3,630.0	-1,366.4	635.1	1,522,170.69	2,346,825.75	39.244321	-107.806577
4,152.0	34.20	156.80	3,707.9	-1,416.3	656.7	1,522,120.20	2,346,846.05	39.244183	-107.806501
4,246.0	35.40	155.60	3,785.0	-1,465.4	678.3	1,522,070.59	2,346,866.45	39.244049	-107.806424
4,340.0	34.30	155.60	3,862.2	-1,514.3	700.5	1,522,021.12	2,346,887.39	39.243914	-107.806346
4,434.0	35.00	156.00	3,939.5	-1,563.1	722.4	1,521,971.83	2,346,908.05	39.243780	-107.806268
4,529.0	34.70	156.70	4,017.5	-1,612.8	744.2	1,521,921.57	2,346,928.55	39.243644	-107.806192
4,623.0	34.20	156.90	4,095.0	-1,661.7	765.1	1,521,872.18	2,346,948.25	39.243510	-107.806118
4,717.0	34.50	154.10	4,172.6	-1,709.9	787.1	1,521,823.39	2,346,969.01	39.243377	-107.806040
4,812.0	34.50	154.30	4,250.9	-1,758.3	810.6	1,521,774.36	2,346,991.19	39.243244	-107.805957
4,906.0	33.90	154.00	4,328.6	-1,805.9	833.6	1,521,726.24	2,347,013.02	39.243114	-107.805876
5,000.0	31.70	153.00	4,407.6	-1,851.5	856.3	1,521,680.11	2,347,034.56	39.242989	-107.805796
5,094.0	28.90	152.40	4,488.8	-1,893.6	878.0	1,521,637.43	2,347,055.22	39.242873	-107.805719
5,188.0	27.40	152.90	4,571.7	-1,933.0	898.4	1,521,597.53	2,347,074.59	39.242765	-107.805647
5,283.0	26.10	152.80	4,656.5	-1,971.0	917.9	1,521,559.00	2,347,093.13	39.242660	-107.805578
5,377.0	24.10	151.70	4,741.6	-2,006.3	936.5	1,521,523.25	2,347,110.78	39.242563	-107.805513
5,471.0	21.00	152.50	4,828.4	-2,038.2	953.4	1,521,490.99	2,347,126.84	39.242476	-107.805453
5,565.0	20.30	153.00	4,916.4	-2,067.7	968.5	1,521,461.14	2,347,141.27	39.242395	-107.805399
5,660.0	19.50	152.10	5,005.7	-2,096.4	983.4	1,521,432.07	2,347,155.43	39.242316	-107.805347
5,754.0	16.20	153.80	5,095.2	-2,122.0	996.6	1,521,406.11	2,347,167.91	39.242246	-107.805301
5,848.0	15.10	154.70	5,185.7	-2,144.8	1,007.6	1,521,383.00	2,347,178.35	39.242183	-107.805262
5,942.0	13.10	152.00	5,276.9	-2,165.3	1,017.8	1,521,362.27	2,347,188.06	39.242127	-107.805225
6,036.0	11.20	148.90	5,368.7	-2,182.5	1,027.5	1,521,344.81	2,347,197.34	39.242080	-107.805191
6,131.0	7.40	149.50	5,462.5	-2,195.7	1,035.4	1,521,331.43	2,347,204.88	39.242043	-107.805163



Survey Report - Geographic



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Project:	Mesa County, CO	TVD Reference:	well @ 7673.0usft (H&P #522)
Site:	Bruton 30-10 Pad	MD Reference:	well @ 7673.0usft (H&P #522)
Well:	Bruton 30-20E	North Reference:	True
Wellbore:	B-3	Survey Calculation Method:	Minimum Curvature
Design:	B-3	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
6,226.0	3.90	130.70	5,557.0	-2,203.1	1,041.0	1,521,323.92	2,347,210.24	39.242023	-107.805144
6,320.0	2.60	99.50	5,650.9	-2,205.5	1,045.5	1,521,321.36	2,347,214.71	39.242016	-107.805128
6,414.0	2.40	101.40	5,744.8	-2,206.3	1,049.5	1,521,320.52	2,347,218.72	39.242014	-107.805114
6,508.0	2.00	114.30	5,838.7	-2,207.3	1,053.0	1,521,319.37	2,347,222.11	39.242011	-107.805101
6,603.0	1.60	118.90	5,933.7	-2,208.6	1,055.6	1,521,317.98	2,347,224.75	39.242008	-107.805092
6,697.0	1.40	124.80	6,027.6	-2,209.9	1,057.7	1,521,316.64	2,347,226.81	39.242004	-107.805085
6,791.0	1.60	146.50	6,121.6	-2,211.7	1,059.4	1,521,314.85	2,347,228.43	39.242000	-107.805079
6,885.0	1.50	173.40	6,215.6	-2,214.0	1,060.3	1,521,312.51	2,347,229.24	39.241993	-107.805076
6,979.0	1.80	181.40	6,309.5	-2,216.7	1,060.4	1,521,309.81	2,347,229.28	39.241986	-107.805075
7,073.0	1.90	181.70	6,403.5	-2,219.7	1,060.3	1,521,306.78	2,347,229.12	39.241977	-107.805076
7,167.0	2.10	191.80	6,497.4	-2,223.0	1,059.9	1,521,303.55	2,347,228.64	39.241969	-107.805077
7,262.0	2.00	196.90	6,592.4	-2,226.3	1,059.0	1,521,300.28	2,347,227.71	39.241959	-107.805080
7,356.0	2.10	200.90	6,686.3	-2,229.4	1,058.0	1,521,297.13	2,347,226.54	39.241951	-107.805084
7,450.0	2.30	195.60	6,780.2	-2,232.9	1,056.8	1,521,293.73	2,347,225.33	39.241941	-107.805088
7,544.0	2.70	197.70	6,874.1	-2,236.8	1,055.7	1,521,289.84	2,347,224.05	39.241931	-107.805092
7,639.0	3.30	197.30	6,969.0	-2,241.5	1,054.2	1,521,285.13	2,347,222.44	39.241918	-107.805097
7,733.0	3.10	195.20	7,062.9	-2,246.6	1,052.7	1,521,280.14	2,347,220.84	39.241904	-107.805102
7,827.0	2.60	202.60	7,156.7	-2,251.0	1,051.2	1,521,275.76	2,347,219.25	39.241892	-107.805108
7,921.0	2.60	199.00	7,250.6	-2,255.0	1,049.7	1,521,271.81	2,347,217.63	39.241881	-107.805113
8,015.0	3.00	193.50	7,344.5	-2,259.4	1,048.4	1,521,267.44	2,347,216.25	39.241869	-107.805117
8,109.0	3.20	206.30	7,438.4	-2,264.1	1,046.7	1,521,262.74	2,347,214.39	39.241856	-107.805124
8,204.0	3.70	208.00	7,533.2	-2,269.2	1,044.1	1,521,257.72	2,347,211.65	39.241842	-107.805133
8,290.0	3.70	212.20	7,619.0	-2,274.0	1,041.3	1,521,253.00	2,347,208.75	39.241828	-107.805143
8,350.0	3.70	212.20	7,678.9	-2,277.3	1,039.2	1,521,249.77	2,347,206.60	39.241819	-107.805150
Projection to TD @ 8350.0' MD / 7678.9' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
111.0	111.0	0.0	0.5	First MWD Survey @ 111.0' MD / 111.0' TVD
8,350.0	7,678.9	-2,277.3	1,039.2	Projection to TD @ 8350.0' MD / 7678.9' TVD

Checked By: _____ Approved By: _____ Date: _____