



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-11W

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

12 November, 2017





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Bruton 30-11W
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 30-11W	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 30-11W					
Well Position	+N/-S	0.0 usft	Northing:	1,525,230.91 usft	Latitude:	39.252572
	+E/-W	0.0 usft	Easting:	2,344,706.30 usft	Longitude:	-107.814333
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	51,371.40905655

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	198.91	

Survey Program	Date	11/12/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,450.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro	
1,626.0	7,937.0	QES 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	1,525,230.91	2,344,706.30	39.252572	-107.814333
100.0	0.51	203.45	100.0	-0.4	-0.2	1,525,230.51	2,344,706.12	39.252571	-107.814334
120.0	0.44	196.41	120.0	-0.6	-0.2	1,525,230.36	2,344,706.06	39.252570	-107.814334
140.0	0.60	199.67	140.0	-0.7	-0.3	1,525,230.19	2,344,705.99	39.252570	-107.814334
160.0	0.77	201.63	160.0	-1.0	-0.4	1,525,229.96	2,344,705.90	39.252569	-107.814335
180.0	1.06	199.72	180.0	-1.3	-0.5	1,525,229.67	2,344,705.78	39.252569	-107.814335
200.0	1.23	202.16	200.0	-1.6	-0.6	1,525,229.30	2,344,705.63	39.252568	-107.814336
220.0	1.38	199.86	220.0	-2.1	-0.8	1,525,228.88	2,344,705.46	39.252566	-107.814336
240.0	1.48	197.35	240.0	-2.5	-1.0	1,525,228.41	2,344,705.29	39.252565	-107.814337
260.0	1.55	198.60	260.0	-3.0	-1.1	1,525,227.91	2,344,705.11	39.252564	-107.814337
280.0	1.56	200.09	280.0	-3.5	-1.3	1,525,227.40	2,344,704.92	39.252562	-107.814338



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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 30-11W	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
300.0	1.68	200.97	300.0	-4.1	-1.5	1,525,226.88	2,344,704.71	39.252561	-107.814339
320.0	1.70	200.42	319.9	-4.6	-1.7	1,525,226.33	2,344,704.48	39.252559	-107.814339
340.0	1.78	199.68	339.9	-5.2	-1.9	1,525,225.77	2,344,704.26	39.252558	-107.814340
360.0	1.96	201.90	359.9	-5.8	-2.1	1,525,225.16	2,344,704.01	39.252556	-107.814341
380.0	1.96	201.33	379.9	-6.4	-2.4	1,525,224.53	2,344,703.75	39.252554	-107.814342
400.0	2.02	199.57	399.9	-7.1	-2.6	1,525,223.89	2,344,703.49	39.252553	-107.814343
420.0	2.10	200.43	419.9	-7.8	-2.9	1,525,223.22	2,344,703.22	39.252551	-107.814343
440.0	2.14	197.22	439.9	-8.5	-3.1	1,525,222.53	2,344,702.97	39.252549	-107.814344
460.0	2.20	195.83	459.9	-9.2	-3.3	1,525,221.81	2,344,702.73	39.252547	-107.814345
480.0	2.25	194.83	479.8	-9.9	-3.5	1,525,221.06	2,344,702.51	39.252545	-107.814346
500.0	2.39	196.98	499.8	-10.7	-3.8	1,525,220.29	2,344,702.27	39.252543	-107.814347
520.0	2.54	202.85	519.8	-11.5	-4.1	1,525,219.49	2,344,701.95	39.252540	-107.814348
540.0	2.81	218.01	539.8	-12.3	-4.5	1,525,218.71	2,344,701.46	39.252538	-107.814349
560.0	3.09	224.65	559.8	-13.1	-5.2	1,525,217.96	2,344,700.76	39.252536	-107.814352
580.0	3.18	227.14	579.7	-13.9	-6.0	1,525,217.22	2,344,699.95	39.252534	-107.814354
600.0	3.35	228.07	599.7	-14.6	-6.8	1,525,216.47	2,344,699.09	39.252532	-107.814357
620.0	3.88	227.17	619.7	-15.5	-7.8	1,525,215.64	2,344,698.14	39.252530	-107.814361
640.0	4.47	227.22	639.6	-16.5	-8.8	1,525,214.68	2,344,697.05	39.252527	-107.814364
660.0	4.74	227.32	659.5	-17.6	-10.0	1,525,213.62	2,344,695.84	39.252524	-107.814369
680.0	4.97	226.53	679.5	-18.7	-11.3	1,525,212.50	2,344,694.58	39.252521	-107.814373
700.0	5.32	225.95	699.4	-19.9	-12.6	1,525,211.29	2,344,693.25	39.252517	-107.814378
720.0	6.18	226.14	719.3	-21.3	-14.0	1,525,209.94	2,344,691.77	39.252513	-107.814383
740.0	6.72	226.33	739.2	-22.9	-15.6	1,525,208.43	2,344,690.11	39.252509	-107.814388
760.0	6.83	226.23	759.0	-24.5	-17.3	1,525,206.84	2,344,688.36	39.252505	-107.814394
780.0	7.10	226.19	778.9	-26.2	-19.1	1,525,205.21	2,344,686.57	39.252500	-107.814401
800.0	7.73	224.60	798.7	-28.0	-20.9	1,525,203.44	2,344,684.69	39.252495	-107.814407
820.0	8.60	223.38	818.5	-30.1	-22.9	1,525,201.45	2,344,682.67	39.252489	-107.814414
840.0	9.02	223.50	838.3	-32.3	-25.0	1,525,199.28	2,344,680.50	39.252483	-107.814422
860.0	9.14	223.15	858.0	-34.6	-27.2	1,525,197.04	2,344,678.28	39.252477	-107.814429
880.0	9.46	222.09	877.8	-37.0	-29.3	1,525,194.71	2,344,676.03	39.252471	-107.814437
900.0	10.51	218.56	897.5	-39.6	-31.6	1,525,192.13	2,344,673.73	39.252463	-107.814445
920.0	11.02	216.96	917.1	-42.6	-33.9	1,525,189.23	2,344,671.37	39.252455	-107.814453
940.0	11.35	215.96	936.7	-45.7	-36.2	1,525,186.17	2,344,668.98	39.252447	-107.814461
960.0	11.54	215.16	956.3	-48.9	-38.5	1,525,183.00	2,344,666.59	39.252438	-107.814469
980.0	12.07	213.17	975.9	-52.3	-40.8	1,525,179.68	2,344,664.21	39.252428	-107.814477
1,000.0	12.83	211.04	995.4	-55.9	-43.1	1,525,176.08	2,344,661.83	39.252418	-107.814485
1,020.0	13.84	208.75	1,014.9	-59.9	-45.4	1,525,172.14	2,344,659.43	39.252407	-107.814493
1,040.0	14.05	208.43	1,034.3	-64.2	-47.7	1,525,167.97	2,344,657.02	39.252396	-107.814502
1,060.0	14.30	207.56	1,053.7	-68.5	-50.0	1,525,163.71	2,344,654.61	39.252384	-107.814510
1,080.0	14.60	206.15	1,073.1	-73.0	-52.2	1,525,159.31	2,344,652.25	39.252372	-107.814518
1,100.0	15.53	202.21	1,092.4	-77.7	-54.3	1,525,154.63	2,344,650.00	39.252359	-107.814525
1,120.0	16.12	199.95	1,111.6	-82.8	-56.3	1,525,149.59	2,344,647.91	39.252345	-107.814532
1,140.0	16.36	199.37	1,130.8	-88.1	-58.2	1,525,144.37	2,344,645.90	39.252330	-107.814539
1,160.0	16.61	199.20	1,150.0	-93.4	-60.1	1,525,139.06	2,344,643.89	39.252316	-107.814545
1,180.0	17.33	199.44	1,169.1	-98.9	-62.0	1,525,133.61	2,344,641.82	39.252300	-107.814552
1,200.0	18.52	200.09	1,188.2	-104.7	-64.1	1,525,127.87	2,344,639.59	39.252285	-107.814560
1,220.0	18.92	200.24	1,207.1	-110.7	-66.3	1,525,121.90	2,344,637.22	39.252268	-107.814567
1,240.0	19.22	200.14	1,226.0	-116.9	-68.5	1,525,115.83	2,344,634.81	39.252251	-107.814575
1,260.0	19.42	199.78	1,244.9	-123.1	-70.8	1,525,109.67	2,344,632.40	39.252234	-107.814583
1,280.0	19.73	196.84	1,263.7	-129.4	-72.9	1,525,103.36	2,344,630.13	39.252217	-107.814591
1,300.0	19.93	194.73	1,282.5	-136.0	-74.7	1,525,096.89	2,344,628.12	39.252199	-107.814597
1,320.0	20.02	193.45	1,301.3	-142.6	-76.4	1,525,090.30	2,344,626.29	39.252180	-107.814603
1,340.0	20.10	192.70	1,320.1	-149.3	-78.0	1,525,083.66	2,344,624.57	39.252162	-107.814609
1,360.0	20.41	191.17	1,338.9	-156.1	-79.4	1,525,076.93	2,344,622.96	39.252144	-107.814614
1,380.0	20.95	188.88	1,357.6	-163.0	-80.6	1,525,070.01	2,344,621.56	39.252124	-107.814618



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Site:	Bruton 30-03 Pad	MD Reference:	well @ 7542.0usft (H&P #522)
Well:	Bruton 30-11W	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
1,400.0	21.32	187.91	1,376.2	-170.1	-81.7	1,525,062.90	2,344,620.33	39.252105	-107.814622
1,420.0	21.63	187.29	1,394.9	-177.4	-82.6	1,525,055.67	2,344,619.17	39.252085	-107.814625
1,440.0	21.87	187.01	1,413.4	-184.8	-83.6	1,525,048.34	2,344,618.06	39.252065	-107.814628
1,450.0	22.00	187.35	1,422.7	-188.5	-84.0	1,525,044.65	2,344,617.50	39.252055	-107.814630
Gyro Tie-in @ 1450.0' MD / 1422.7' TVD									
1,626.0	22.50	193.50	1,585.6	-253.9	-96.1	1,524,979.53	2,344,603.76	39.251875	-107.814673
1,689.0	23.10	195.20	1,643.7	-277.6	-102.2	1,524,956.04	2,344,597.10	39.251810	-107.814694
1,783.0	22.70	202.20	1,730.3	-312.2	-113.9	1,524,921.76	2,344,584.54	39.251715	-107.814735
1,877.0	22.20	203.00	1,817.2	-345.3	-127.6	1,524,888.98	2,344,569.91	39.251624	-107.814784
1,972.0	22.30	199.70	1,905.1	-378.8	-140.7	1,524,855.83	2,344,555.97	39.251532	-107.814830
2,066.0	21.60	199.70	1,992.3	-411.9	-152.6	1,524,823.07	2,344,543.28	39.251441	-107.814872
2,160.0	21.00	198.70	2,079.9	-444.1	-163.8	1,524,791.12	2,344,531.23	39.251353	-107.814912
2,254.0	21.30	198.10	2,167.5	-476.3	-174.5	1,524,759.22	2,344,519.71	39.251264	-107.814950
2,349.0	22.60	197.50	2,255.7	-510.1	-185.4	1,524,725.70	2,344,508.01	39.251171	-107.814988
2,443.0	21.50	196.80	2,342.8	-543.8	-195.8	1,524,692.25	2,344,496.74	39.251079	-107.815025
2,537.0	22.70	197.60	2,429.9	-577.6	-206.2	1,524,658.75	2,344,485.42	39.250986	-107.815062
2,631.0	21.40	197.60	2,517.0	-611.2	-216.9	1,524,625.40	2,344,473.90	39.250894	-107.815099
2,725.0	20.20	196.10	2,604.9	-643.2	-226.6	1,524,593.72	2,344,463.40	39.250806	-107.815133
2,820.0	21.80	197.50	2,693.6	-675.8	-236.4	1,524,561.39	2,344,452.72	39.250717	-107.815168
2,914.0	21.00	197.30	2,781.1	-708.5	-246.7	1,524,528.94	2,344,441.63	39.250627	-107.815204
3,008.0	22.80	198.00	2,868.3	-741.9	-257.3	1,524,495.81	2,344,430.15	39.250535	-107.815242
3,102.0	22.40	198.10	2,955.1	-776.2	-268.5	1,524,461.76	2,344,418.08	39.250441	-107.815282
3,197.0	21.80	197.00	3,043.1	-810.3	-279.3	1,524,427.97	2,344,406.44	39.250347	-107.815320
3,291.0	21.30	196.80	3,130.5	-843.4	-289.4	1,524,395.20	2,344,395.56	39.250256	-107.815355
3,385.0	22.10	197.40	3,217.9	-876.6	-299.6	1,524,362.26	2,344,384.49	39.250165	-107.815391
3,479.0	21.70	196.30	3,305.1	-910.1	-309.7	1,524,328.97	2,344,373.48	39.250073	-107.815427
3,574.0	22.40	199.00	3,393.1	-944.1	-320.6	1,524,295.29	2,344,361.79	39.249980	-107.815465
3,668.0	21.60	198.00	3,480.3	-977.5	-331.7	1,524,262.19	2,344,349.77	39.249888	-107.815505
3,762.0	20.70	197.50	3,568.0	-1,009.8	-342.1	1,524,230.17	2,344,338.61	39.249800	-107.815541
3,856.0	21.80	198.30	3,655.6	-1,042.2	-352.6	1,524,198.03	2,344,327.31	39.249711	-107.815578
3,950.0	21.00	198.70	3,743.1	-1,074.7	-363.4	1,524,165.79	2,344,315.60	39.249621	-107.815617
4,044.0	20.20	198.20	3,831.1	-1,106.1	-373.9	1,524,134.69	2,344,304.34	39.249535	-107.815654
4,138.0	20.20	198.00	3,919.3	-1,137.0	-384.0	1,524,104.11	2,344,293.47	39.249450	-107.815689
4,233.0	19.20	199.70	4,008.7	-1,167.3	-394.3	1,524,074.07	2,344,282.37	39.249367	-107.815726
4,327.0	20.70	198.50	4,097.1	-1,197.6	-404.8	1,524,044.04	2,344,271.12	39.249284	-107.815763
4,421.0	22.10	197.60	4,184.6	-1,230.2	-415.4	1,524,011.71	2,344,259.67	39.249194	-107.815800
4,544.0	23.30	197.90	4,298.1	-1,275.4	-429.9	1,523,966.89	2,344,244.05	39.249070	-107.815851
4,610.0	22.20	198.20	4,358.9	-1,299.7	-437.8	1,523,942.83	2,344,235.53	39.249004	-107.815879
4,704.0	21.70	197.80	4,446.1	-1,333.1	-448.7	1,523,909.70	2,344,223.82	39.248912	-107.815918
4,798.0	20.00	197.80	4,534.0	-1,364.9	-458.9	1,523,878.12	2,344,212.79	39.248824	-107.815954
4,893.0	19.50	198.80	4,623.4	-1,395.4	-469.0	1,523,847.91	2,344,201.94	39.248741	-107.815989
4,987.0	18.80	199.30	4,712.2	-1,424.6	-479.0	1,523,819.03	2,344,191.13	39.248661	-107.816025
5,081.0	17.70	199.50	4,801.4	-1,452.3	-488.8	1,523,791.52	2,344,180.65	39.248585	-107.816059
5,175.0	15.10	198.70	4,891.6	-1,477.4	-497.5	1,523,766.68	2,344,171.32	39.248516	-107.816090
5,270.0	14.20	200.20	4,983.5	-1,500.0	-505.5	1,523,744.23	2,344,162.76	39.248453	-107.816118
5,364.0	11.80	202.20	5,075.1	-1,519.8	-513.1	1,523,724.71	2,344,154.64	39.248399	-107.816145
5,458.0	9.70	205.50	5,167.4	-1,535.8	-520.2	1,523,708.85	2,344,147.19	39.248355	-107.816170
5,552.0	7.80	203.60	5,260.4	-1,548.8	-526.1	1,523,696.01	2,344,140.90	39.248320	-107.816191
5,646.0	6.60	203.50	5,353.6	-1,559.6	-530.8	1,523,685.33	2,344,135.92	39.248290	-107.816208
5,740.0	4.50	210.50	5,447.2	-1,567.7	-534.9	1,523,677.30	2,344,131.69	39.248268	-107.816222
5,835.0	3.00	204.70	5,542.0	-1,573.2	-537.8	1,523,671.91	2,344,128.62	39.248253	-107.816232
5,929.0	1.00	202.40	5,635.9	-1,576.2	-539.1	1,523,668.95	2,344,127.20	39.248244	-107.816237
6,023.0	1.00	232.90	5,729.9	-1,577.5	-540.1	1,523,667.72	2,344,126.20	39.248241	-107.816240
6,117.0	1.10	215.90	5,823.9	-1,578.7	-541.3	1,523,666.53	2,344,124.99	39.248238	-107.816245
6,211.0	1.00	225.80	5,917.8	-1,580.0	-542.4	1,523,665.26	2,344,123.84	39.248234	-107.816249



Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Bruton 30-11W
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 30-11W	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
6,306.0	1.40	225.20	6,012.8	-1,581.4	-543.8	1,523,663.90	2,344,122.39	39.248230	-107.816254
6,400.0	1.70	216.80	6,106.8	-1,583.3	-545.5	1,523,662.01	2,344,120.69	39.248225	-107.816259
6,494.0	1.60	213.60	6,200.8	-1,585.5	-547.0	1,523,659.84	2,344,119.07	39.248219	-107.816265
6,588.0	1.40	222.60	6,294.7	-1,587.5	-548.5	1,523,657.94	2,344,117.52	39.248213	-107.816270
6,682.0	2.10	231.00	6,388.7	-1,589.4	-550.6	1,523,656.07	2,344,115.36	39.248208	-107.816278
6,777.0	2.20	234.60	6,483.6	-1,591.5	-553.5	1,523,653.99	2,344,112.46	39.248202	-107.816288
6,871.0	2.50	232.10	6,577.5	-1,593.8	-556.6	1,523,651.77	2,344,109.32	39.248196	-107.816299
6,965.0	2.80	224.40	6,671.4	-1,596.7	-559.8	1,523,648.95	2,344,106.02	39.248188	-107.816310
7,059.0	2.90	230.90	6,765.3	-1,599.9	-563.2	1,523,645.90	2,344,102.49	39.248179	-107.816322
7,154.0	3.00	231.50	6,860.2	-1,602.9	-567.1	1,523,642.93	2,344,098.60	39.248171	-107.816336
7,248.0	3.30	232.60	6,954.0	-1,606.1	-571.1	1,523,639.86	2,344,094.45	39.248162	-107.816350
7,342.0	2.60	200.40	7,047.9	-1,609.8	-574.0	1,523,636.30	2,344,091.46	39.248152	-107.816360
7,436.0	2.40	201.90	7,141.8	-1,613.6	-575.5	1,523,632.51	2,344,089.89	39.248142	-107.816365
7,530.0	2.80	195.70	7,235.7	-1,617.6	-576.9	1,523,628.51	2,344,088.43	39.248131	-107.816370
7,625.0	2.60	197.90	7,330.6	-1,621.9	-578.1	1,523,624.26	2,344,087.03	39.248119	-107.816375
7,719.0	2.90	198.50	7,424.5	-1,626.2	-579.6	1,523,620.01	2,344,085.51	39.248107	-107.816380
7,813.0	2.60	207.70	7,518.4	-1,630.3	-581.3	1,523,615.92	2,344,083.66	39.248096	-107.816386
7,877.0	2.90	208.60	7,582.3	-1,633.0	-582.8	1,523,613.25	2,344,082.14	39.248088	-107.816391
7,937.0	2.90	208.60	7,642.3	-1,635.7	-584.2	1,523,610.62	2,344,080.62	39.248081	-107.816396
Projection to TD @ 7937.0' MD / 7642.3' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,450.0	1,422.7	-188.5	-84.0	Gyro Tie-in @ 1450.0' MD / 1422.7' TVD
7,937.0	7,642.3	-1,635.7	-584.2	Projection to TD @ 7937.0' MD / 7642.3' TVD