



Laramie Energy, LLC

**Mesa County, CO
Nichols 24-07 Pad
Nichols 0994-24-17W**

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

25 April, 2018





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Nichols 0994-24-17W
Project:	Mesa County, CO	TVD Reference:	well @ 7236.0usft (H&P #290)
Site:	Nichols 24-07 Pad	MD Reference:	well @ 7236.0usft (H&P #290)
Well:	Nichols 0994-24-17W	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	Nichols 24-07 Pad				
Site Position:		Northing:	1,529,213.07 usft	Latitude:	39.263181
From:	Lat/Long	Easting:	2,340,128.94 usft	Longitude:	-107.830853
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.47 °

Well	Nichols 0994-24-17W					
Well Position	+N/-S	0.0 usft	Northing:	1,529,244.71 usft	Latitude:	39.263267
	+E/-W	0.0 usft	Easting:	2,340,122.61 usft	Longitude:	-107.830878
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,212.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	3/28/2018	9.44	65.40	51,309.90000000

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	215.39	

Survey Program	Date	4/25/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
232.0	7,800.0	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	1,529,244.71	2,340,122.61	39.263267	-107.830878	
232.0	3.70	259.90	231.8	-1.3	-7.4	1,529,243.59	2,340,115.21	39.263263	-107.830904	
First MWD Survey @ 232.0' MD / 231.8' TVD										
323.0	5.20	255.80	322.6	-2.8	-14.3	1,529,242.24	2,340,108.28	39.263259	-107.830929	
383.0	6.40	251.70	382.3	-4.6	-20.1	1,529,240.67	2,340,102.43	39.263255	-107.830949	
473.0	8.00	241.00	471.5	-9.2	-30.3	1,529,236.32	2,340,092.07	39.263242	-107.830985	
563.0	10.00	236.20	560.4	-16.6	-42.3	1,529,229.25	2,340,079.92	39.263222	-107.831028	
658.0	12.20	226.70	653.7	-28.0	-56.4	1,529,218.14	2,340,065.46	39.263190	-107.831078	
752.0	13.80	218.20	745.3	-43.7	-70.6	1,529,202.88	2,340,050.90	39.263147	-107.831128	
847.0	15.50	214.80	837.2	-63.0	-84.9	1,529,183.93	2,340,036.16	39.263094	-107.831178	
942.0	15.90	213.00	928.6	-84.3	-99.2	1,529,162.96	2,340,021.29	39.263036	-107.831229	
1,036.0	17.00	212.90	1,018.8	-106.7	-113.7	1,529,141.01	2,340,006.24	39.262974	-107.831280	



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Well:	Nichols 0994-24-17W	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	
1,131.0	19.60	215.90	1,109.0	-131.2	-130.6	1,529,116.88	2,339,988.73	39.262907	-107.831339	
1,225.0	20.60	216.60	1,197.2	-157.3	-149.7	1,529,091.33	2,339,968.96	39.262835	-107.831407	
1,320.0	20.00	212.90	1,286.3	-184.3	-168.5	1,529,064.76	2,339,949.48	39.262761	-107.831473	
1,414.0	19.90	213.00	1,374.7	-211.2	-185.9	1,529,038.30	2,339,931.35	39.262687	-107.831535	
1,488.0	19.70	212.20	1,444.3	-232.4	-199.4	1,529,017.54	2,339,917.31	39.262629	-107.831583	
1,623.0	19.70	210.80	1,571.4	-271.2	-223.2	1,528,979.36	2,339,892.55	39.262523	-107.831667	
1,717.0	18.90	216.50	1,660.1	-297.0	-240.4	1,528,953.96	2,339,874.72	39.262452	-107.831727	
1,811.0	19.90	215.60	1,748.8	-322.3	-258.7	1,528,929.19	2,339,855.71	39.262382	-107.831792	
1,906.0	18.50	217.80	1,838.5	-347.3	-277.4	1,528,904.62	2,339,836.42	39.262313	-107.831858	
2,000.0	20.60	216.90	1,927.1	-372.3	-296.4	1,528,880.11	2,339,816.71	39.262245	-107.831925	
2,095.0	19.90	213.60	2,016.2	-399.2	-315.4	1,528,853.77	2,339,797.05	39.262171	-107.831992	
2,190.0	18.90	216.30	2,105.8	-425.0	-333.5	1,528,828.38	2,339,778.33	39.262100	-107.832056	
2,284.0	20.60	212.80	2,194.3	-451.2	-351.5	1,528,802.67	2,339,759.70	39.262028	-107.832120	
2,378.0	22.70	216.10	2,281.7	-479.8	-371.1	1,528,774.63	2,339,739.32	39.261950	-107.832189	
2,473.0	21.10	216.90	2,369.8	-508.2	-392.2	1,528,746.69	2,339,717.53	39.261872	-107.832263	
2,567.0	18.90	216.70	2,458.1	-534.0	-411.4	1,528,721.45	2,339,697.62	39.261801	-107.832331	
2,662.0	21.00	215.80	2,547.4	-560.1	-430.6	1,528,695.81	2,339,677.80	39.261729	-107.832399	
2,757.0	21.80	214.80	2,635.9	-588.4	-450.6	1,528,668.04	2,339,657.05	39.261651	-107.832470	
2,851.0	23.30	217.70	2,722.7	-617.5	-471.9	1,528,639.55	2,339,634.98	39.261572	-107.832545	
2,946.0	25.30	214.60	2,809.3	-649.0	-495.0	1,528,608.57	2,339,611.16	39.261485	-107.832626	
3,041.0	27.20	211.70	2,894.5	-684.2	-517.9	1,528,573.99	2,339,587.32	39.261388	-107.832707	
3,135.0	28.70	213.30	2,977.5	-721.4	-541.6	1,528,537.46	2,339,562.70	39.261286	-107.832791	
3,230.0	27.10	212.30	3,061.5	-758.7	-565.7	1,528,500.73	2,339,537.66	39.261184	-107.832876	
3,325.0	28.30	210.50	3,145.6	-796.4	-588.7	1,528,463.64	2,339,513.71	39.261080	-107.832957	
3,419.0	27.80	209.00	3,228.5	-834.8	-610.6	1,528,425.84	2,339,490.79	39.260975	-107.833035	
3,514.0	28.30	211.70	3,312.4	-873.3	-633.2	1,528,387.90	2,339,467.24	39.260869	-107.833115	
3,608.0	28.20	212.20	3,395.2	-911.1	-656.7	1,528,350.76	2,339,442.73	39.260766	-107.833198	
3,703.0	28.00	215.50	3,479.0	-948.2	-681.6	1,528,314.26	2,339,416.88	39.260663	-107.833286	
3,798.0	29.80	218.50	3,562.2	-984.9	-709.3	1,528,278.35	2,339,388.30	39.260563	-107.833383	
3,892.0	31.70	217.80	3,643.0	-1,022.7	-739.0	1,528,241.33	2,339,357.66	39.260459	-107.833488	
3,987.0	30.30	219.70	3,724.4	-1,060.8	-769.6	1,528,203.96	2,339,326.08	39.260354	-107.833596	
4,081.0	31.90	217.10	3,804.9	-1,098.9	-799.7	1,528,166.69	2,339,294.98	39.260250	-107.833703	
4,176.0	32.20	214.00	3,885.4	-1,139.9	-829.0	1,528,126.45	2,339,264.64	39.260137	-107.833806	
4,270.0	31.50	213.60	3,965.2	-1,181.1	-856.6	1,528,085.95	2,339,236.00	39.260024	-107.833904	
4,365.0	30.40	213.00	4,046.7	-1,222.0	-883.4	1,528,045.82	2,339,208.13	39.259912	-107.833998	
4,459.0	30.00	216.20	4,128.0	-1,260.9	-910.3	1,528,007.61	2,339,180.31	39.259805	-107.834093	
4,554.0	29.30	215.10	4,210.5	-1,299.1	-937.7	1,527,970.14	2,339,151.94	39.259700	-107.834190	
4,649.0	30.20	215.80	4,293.0	-1,337.5	-965.0	1,527,932.45	2,339,123.62	39.259595	-107.834286	
4,743.0	28.70	216.50	4,374.9	-1,374.8	-992.3	1,527,895.84	2,339,095.42	39.259492	-107.834383	
4,838.0	28.10	218.00	4,458.4	-1,410.7	-1,019.6	1,527,860.59	2,339,067.16	39.259394	-107.834479	
4,932.0	27.60	215.70	4,541.5	-1,445.9	-1,045.9	1,527,826.15	2,339,039.93	39.259297	-107.834572	
5,027.0	24.70	214.40	4,626.8	-1,480.1	-1,070.0	1,527,792.52	2,339,015.00	39.259203	-107.834657	
5,122.0	23.60	213.30	4,713.5	-1,512.4	-1,091.6	1,527,760.81	2,338,992.52	39.259115	-107.834734	
5,216.0	21.10	211.20	4,800.4	-1,542.6	-1,110.7	1,527,731.11	2,338,972.66	39.259032	-107.834801	
5,311.0	21.40	213.30	4,889.0	-1,571.7	-1,129.1	1,527,702.48	2,338,953.54	39.258952	-107.834866	
5,406.0	20.40	213.40	4,977.7	-1,600.0	-1,147.8	1,527,674.66	2,338,934.19	39.258874	-107.834932	
5,500.0	17.60	210.40	5,066.6	-1,626.0	-1,164.0	1,527,649.14	2,338,917.32	39.258803	-107.834989	
5,595.0	14.60	213.60	5,157.9	-1,648.3	-1,177.9	1,527,627.14	2,338,902.85	39.258741	-107.835038	
5,690.0	11.60	208.40	5,250.4	-1,666.7	-1,189.0	1,527,609.05	2,338,891.21	39.258691	-107.835078	
5,784.0	9.10	209.70	5,342.8	-1,681.5	-1,197.2	1,527,594.49	2,338,882.66	39.258650	-107.835106	
5,879.0	6.90	202.90	5,436.9	-1,693.3	-1,203.2	1,527,582.86	2,338,876.41	39.258618	-107.835127	
5,974.0	3.10	182.10	5,531.5	-1,701.1	-1,205.5	1,527,575.10	2,338,873.90	39.258596	-107.835136	
6,068.0	1.50	295.50	5,625.5	-1,703.1	-1,206.7	1,527,573.12	2,338,872.64	39.258591	-107.835140	
6,163.0	2.11	281.46	5,720.4	-1,702.2	-1,209.5	1,527,574.07	2,338,869.83	39.258593	-107.835150	
6,258.0	1.63	265.64	5,815.4	-1,702.0	-1,212.6	1,527,574.40	2,338,866.77	39.258594	-107.835161	



Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Nichols 0994-24-17W
Project:	Mesa County, CO	TVD Reference:	well @ 7236.0usft (H&P #290)
Site:	Nichols 24-07 Pad	MD Reference:	well @ 7236.0usft (H&P #290)
Well:	Nichols 0994-24-17W	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	
6,352.0	1.93	263.10	5,909.3	-1,702.3	-1,215.5	1,527,574.18	2,338,863.86	39.258593	-107.835171	
6,447.0	2.20	279.44	6,004.3	-1,702.2	-1,218.9	1,527,574.37	2,338,860.48	39.258593	-107.835183	
6,542.0	2.24	266.17	6,099.2	-1,702.0	-1,222.5	1,527,574.64	2,338,856.83	39.258594	-107.835196	
6,636.0	2.59	250.70	6,193.1	-1,702.8	-1,226.4	1,527,573.92	2,338,852.98	39.258592	-107.835209	
6,731.0	2.46	261.86	6,288.0	-1,703.8	-1,230.4	1,527,573.02	2,338,848.91	39.258589	-107.835224	
6,825.0	2.76	239.80	6,381.9	-1,705.2	-1,234.4	1,527,571.70	2,338,844.92	39.258585	-107.835238	
6,920.0	3.51	242.97	6,476.8	-1,707.7	-1,238.9	1,527,569.35	2,338,840.29	39.258578	-107.835254	
7,015.0	3.69	249.82	6,571.6	-1,710.1	-1,244.4	1,527,567.11	2,338,834.77	39.258572	-107.835273	
7,109.0	2.63	256.94	6,665.5	-1,711.6	-1,249.3	1,527,565.71	2,338,829.79	39.258568	-107.835290	
7,204.0	3.60	257.29	6,760.3	-1,712.8	-1,254.4	1,527,564.69	2,338,824.73	39.258564	-107.835308	
7,298.0	3.21	210.27	6,854.2	-1,715.7	-1,258.6	1,527,561.87	2,338,820.45	39.258556	-107.835323	
7,393.0	3.80	191.00	6,949.0	-1,721.1	-1,260.5	1,527,556.54	2,338,818.38	39.258542	-107.835330	
7,487.0	2.60	140.00	7,042.9	-1,725.8	-1,259.7	1,527,551.83	2,338,819.03	39.258529	-107.835327	
7,582.0	2.07	126.77	7,137.8	-1,728.4	-1,257.0	1,527,549.08	2,338,821.72	39.258521	-107.835317	
7,677.0	1.54	130.47	7,232.7	-1,730.3	-1,254.6	1,527,547.17	2,338,824.02	39.258516	-107.835309	
7,743.0	2.07	142.86	7,298.7	-1,731.8	-1,253.2	1,527,545.60	2,338,825.37	39.258512	-107.835304	
7,800.0	2.07	142.86	7,355.7	-1,733.5	-1,252.0	1,527,543.93	2,338,826.57	39.258508	-107.835300	

Projection to TD @ 7800.0' MD / 7355.7' TVD

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
232.0	231.8	-1.3	-7.4	First MWD Survey @ 232.0' MD / 231.8' TVD	
7,800.0	7,355.7	-1,733.5	-1,252.0	Projection to TD @ 7800.0' MD / 7355.7' TVD	