



Laramie Energy, LLC

Mesa County, CO

Nichols 24-07 Pad

Nichols 0994-24-18W

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

29 April, 2018





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Nichols 0994-24-18W
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 0994-24-18W	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 0994-24-18W					
Well Position	+N/-S	0.0 usft	Northing:	1,529,236.36 usft	Latitude:	39.263244
	+E/-W	0.0 usft	Easting:	2,340,121.55 usft	Longitude:	-107.830881
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	4/23/2018	9.44	65.40	51,303.80000000

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	212.03	

Survey Program	Date	4/29/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
293.0	7,875.0	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	1,529,236.36	2,340,121.55	39.263244	-107.830881
293.0	1.80	253.40	293.0	-1.3	-4.4	1,529,235.16	2,340,117.11	39.263240	-107.830897
First MWD Survey @ 293.0' MD / 293.0' TVD									
563.0	5.80	236.10	562.3	-10.1	-19.8	1,529,226.73	2,340,101.49	39.263216	-107.830951
658.0	7.70	228.80	656.6	-17.0	-28.6	1,529,220.09	2,340,092.54	39.263197	-107.830982
752.0	9.90	220.20	749.5	-27.3	-38.5	1,529,210.03	2,340,082.33	39.263169	-107.831017
847.0	13.60	214.30	842.5	-42.8	-50.1	1,529,194.86	2,340,070.36	39.263127	-107.831058
942.0	18.10	215.20	933.9	-64.1	-64.9	1,529,173.95	2,340,055.01	39.263068	-107.831111
1,036.0	21.40	209.00	1,022.4	-91.0	-81.6	1,529,147.44	2,340,037.59	39.262994	-107.831170
1,131.0	22.10	207.19	1,110.6	-122.1	-98.2	1,529,116.82	2,340,020.23	39.262909	-107.831228
1,225.0	21.75	207.11	1,197.8	-153.3	-114.2	1,529,086.01	2,340,003.42	39.262823	-107.831285
1,320.0	21.31	207.28	1,286.2	-184.3	-130.2	1,529,055.42	2,339,986.70	39.262738	-107.831341



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Well:	Nichols 0994-24-18W	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
1,414.0	20.65	206.05	1,373.9	-214.4	-145.3	1,529,025.75	2,339,970.82	39.262655	-107.831394
1,496.0	20.04	206.67	1,450.8	-240.0	-157.9	1,529,000.54	2,339,957.51	39.262585	-107.831439
1,621.0	19.10	205.60	1,568.6	-277.5	-176.4	1,528,963.44	2,339,938.11	39.262482	-107.831504
1,715.0	21.30	213.20	1,656.8	-305.7	-192.4	1,528,935.69	2,339,921.39	39.262405	-107.831561
1,810.0	20.90	212.00	1,745.5	-334.5	-210.8	1,528,907.37	2,339,902.23	39.262326	-107.831626
1,905.0	20.40	210.40	1,834.4	-363.2	-228.2	1,528,879.17	2,339,884.14	39.262247	-107.831687
1,999.0	21.00	213.30	1,922.3	-391.4	-245.7	1,528,851.42	2,339,865.89	39.262169	-107.831749
2,094.0	20.80	213.00	2,011.0	-419.7	-264.2	1,528,823.53	2,339,846.63	39.262092	-107.831815
2,188.0	20.40	213.20	2,099.0	-447.4	-282.3	1,528,796.30	2,339,827.87	39.262016	-107.831878
2,282.0	19.80	212.60	2,187.3	-474.6	-299.8	1,528,769.64	2,339,809.63	39.261941	-107.831940
2,377.0	21.50	214.40	2,276.2	-502.5	-318.4	1,528,742.20	2,339,790.41	39.261864	-107.832006
2,471.0	20.80	214.10	2,363.9	-530.5	-337.4	1,528,714.66	2,339,770.61	39.261787	-107.832073
2,566.0	20.70	214.00	2,452.7	-558.4	-356.3	1,528,687.27	2,339,751.05	39.261711	-107.832140
2,660.0	20.50	213.60	2,540.7	-585.9	-374.7	1,528,660.27	2,339,731.96	39.261635	-107.832205
2,755.0	22.10	213.40	2,629.2	-614.7	-393.7	1,528,631.99	2,339,712.18	39.261556	-107.832272
2,850.0	24.00	214.00	2,716.6	-645.6	-414.4	1,528,601.59	2,339,690.75	39.261471	-107.832345
2,945.0	26.50	214.00	2,802.5	-679.2	-437.0	1,528,568.59	2,339,667.24	39.261379	-107.832425
3,039.0	28.70	213.70	2,885.8	-715.4	-461.3	1,528,533.06	2,339,642.06	39.261280	-107.832510
3,134.0	30.60	212.20	2,968.4	-754.8	-486.8	1,528,494.28	2,339,615.52	39.261172	-107.832601
3,228.0	33.00	211.90	3,048.3	-796.8	-513.1	1,528,452.99	2,339,588.17	39.261056	-107.832693
3,323.0	34.90	211.30	3,127.1	-842.0	-540.9	1,528,408.53	2,339,559.23	39.260932	-107.832792
3,418.0	34.20	210.60	3,205.3	-888.2	-568.6	1,528,363.05	2,339,530.34	39.260805	-107.832889
3,512.0	35.30	212.70	3,282.6	-933.8	-596.7	1,528,318.19	2,339,501.06	39.260680	-107.832989
3,607.0	34.80	212.20	3,360.3	-979.8	-626.0	1,528,272.92	2,339,470.61	39.260554	-107.833092
3,702.0	34.10	212.00	3,438.7	-1,025.3	-654.6	1,528,228.14	2,339,440.89	39.260429	-107.833193
3,796.0	35.80	212.00	3,515.7	-1,071.0	-683.1	1,528,183.22	2,339,411.20	39.260303	-107.833294
3,891.0	35.30	211.90	3,593.0	-1,117.9	-712.3	1,528,137.12	2,339,380.78	39.260175	-107.833397
3,985.0	34.50	211.20	3,670.1	-1,163.7	-740.5	1,528,092.03	2,339,351.47	39.260049	-107.833496
4,080.0	35.30	214.00	3,748.0	-1,209.5	-769.8	1,528,047.02	2,339,321.01	39.259923	-107.833600
4,174.0	35.50	214.50	3,824.6	-1,254.5	-800.4	1,528,002.81	2,339,289.22	39.259800	-107.833708
4,269.0	35.30	213.70	3,902.1	-1,300.1	-831.3	1,527,958.05	2,339,257.21	39.259675	-107.833817
4,363.0	34.50	214.40	3,979.2	-1,344.6	-861.4	1,527,914.28	2,339,225.97	39.259552	-107.833923
4,458.0	35.30	211.10	4,057.1	-1,390.3	-890.8	1,527,869.34	2,339,195.42	39.259427	-107.834027
4,553.0	33.80	211.80	4,135.3	-1,436.3	-918.9	1,527,824.11	2,339,166.15	39.259300	-107.834126
4,647.0	35.30	211.40	4,212.8	-1,481.7	-946.8	1,527,779.44	2,339,137.06	39.259176	-107.834225
4,742.0	34.30	210.80	4,290.8	-1,528.1	-974.8	1,527,733.75	2,339,107.87	39.259048	-107.834324
4,836.0	32.10	211.50	4,369.4	-1,572.2	-1,001.4	1,527,690.40	2,339,080.14	39.258927	-107.834418
4,931.0	30.60	210.80	4,450.5	-1,614.5	-1,027.0	1,527,648.77	2,339,053.49	39.258811	-107.834508
5,026.0	28.80	210.40	4,533.1	-1,655.0	-1,050.9	1,527,608.89	2,339,028.50	39.258700	-107.834593
5,120.0	26.60	210.30	4,616.3	-1,692.7	-1,073.0	1,527,571.77	2,339,005.46	39.258597	-107.834671
5,215.0	24.50	208.70	4,702.0	-1,728.3	-1,093.2	1,527,536.65	2,338,984.36	39.258499	-107.834742
5,309.0	22.80	208.70	4,788.1	-1,761.4	-1,111.3	1,527,504.05	2,338,965.41	39.258408	-107.834806
5,404.0	21.60	208.60	4,876.0	-1,792.9	-1,128.5	1,527,473.00	2,338,947.40	39.258321	-107.834867
5,499.0	18.90	207.90	4,965.2	-1,821.9	-1,144.1	1,527,444.46	2,338,931.08	39.258242	-107.834922
5,594.0	17.40	208.80	5,055.4	-1,847.9	-1,158.1	1,527,418.78	2,338,916.38	39.258170	-107.834971
5,688.0	14.80	207.90	5,145.7	-1,870.8	-1,170.5	1,527,396.18	2,338,903.40	39.258107	-107.835015
5,783.0	11.70	206.80	5,238.2	-1,890.2	-1,180.6	1,527,377.11	2,338,892.89	39.258054	-107.835051
5,878.0	10.00	207.60	5,331.5	-1,906.1	-1,188.7	1,527,361.42	2,338,884.32	39.258011	-107.835079
5,972.0	8.00	211.30	5,424.3	-1,918.9	-1,195.9	1,527,348.78	2,338,876.81	39.257975	-107.835105
6,067.0	5.20	205.90	5,518.7	-1,928.4	-1,201.2	1,527,339.40	2,338,871.25	39.257949	-107.835124
6,162.0	2.10	197.80	5,613.5	-1,933.9	-1,203.6	1,527,333.93	2,338,868.70	39.257934	-107.835132
6,256.0	1.71	203.68	5,707.4	-1,936.9	-1,204.7	1,527,331.04	2,338,867.53	39.257926	-107.835136
6,351.0	1.80	197.40	5,802.4	-1,939.6	-1,205.7	1,527,328.34	2,338,866.45	39.257919	-107.835140
6,446.0	0.75	136.97	5,897.4	-1,941.5	-1,205.8	1,527,326.47	2,338,866.38	39.257913	-107.835140
6,540.0	0.66	143.03	5,991.4	-1,942.3	-1,205.0	1,527,325.56	2,338,867.10	39.257911	-107.835137



Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Nichols 0994-24-18W
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 0994-24-18W	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
6,635.0	0.79	159.29	6,086.4	-1,943.4	-1,204.5	1,527,324.50	2,338,867.63	39.257908	-107.835135
6,729.0	1.05	182.94	6,180.4	-1,944.9	-1,204.3	1,527,323.03	2,338,867.78	39.257904	-107.835134
6,824.0	1.41	197.00	6,275.3	-1,946.9	-1,204.7	1,527,321.05	2,338,867.34	39.257899	-107.835136
6,918.0	1.71	214.58	6,369.3	-1,949.1	-1,205.8	1,527,318.82	2,338,866.15	39.257892	-107.835140
7,013.0	1.97	221.34	6,464.3	-1,951.5	-1,207.7	1,527,316.48	2,338,864.21	39.257886	-107.835146
7,108.0	2.68	218.18	6,559.2	-1,954.5	-1,210.1	1,527,313.57	2,338,861.68	39.257878	-107.835155
7,202.0	3.47	220.11	6,653.0	-1,958.4	-1,213.3	1,527,309.75	2,338,858.39	39.257867	-107.835166
7,297.0	2.07	218.09	6,747.9	-1,961.9	-1,216.2	1,527,306.28	2,338,855.39	39.257857	-107.835177
7,391.0	2.64	235.41	6,841.8	-1,964.5	-1,219.1	1,527,303.79	2,338,852.49	39.257850	-107.835187
7,486.0	3.74	241.47	6,936.7	-1,967.2	-1,223.6	1,527,301.18	2,338,847.90	39.257843	-107.835203
7,581.0	4.04	240.15	7,031.5	-1,970.4	-1,229.2	1,527,298.18	2,338,842.20	39.257834	-107.835222
7,675.0	3.69	237.69	7,125.3	-1,973.6	-1,234.6	1,527,295.06	2,338,836.69	39.257825	-107.835242
7,770.0	3.52	238.13	7,220.1	-1,976.8	-1,239.7	1,527,292.01	2,338,831.55	39.257816	-107.835259
7,817.0	3.30	237.78	7,267.0	-1,978.3	-1,242.1	1,527,290.59	2,338,829.14	39.257812	-107.835268
7,875.0	3.30	237.78	7,324.9	-1,980.1	-1,244.9	1,527,288.88	2,338,826.27	39.257807	-107.835278
Projection to TD @ 7875.0' MD / 7324.9' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
293.0	293.0	-1.3	-4.4	First MWD Survey @ 293.0' MD / 293.0' TVD
7,875.0	7,324.9	-1,980.1	-1,244.9	Projection to TD @ 7875.0' MD / 7324.9' TVD