



Laramie Energy, LLC

Mesa County, CO

Nichols 24-07 Pad

Nichols 0994-24-15E

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

04 April, 2018





Survey Report - Geographic



Company:	Laramie Energy, LLC	Local Co-ordinate Reference:	Well Nichols 0994-24-15E
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 0994-24-15E	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 0994-24-15E				
Well Position	+N/-S	0.0 usft	Northing:	1,529,258.60 usft	Latitude:	39.263306
	+E/-W	0.0 usft	Easting:	2,340,134.87 usft	Longitude:	-107.830836
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	3/28/2017	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	129.34	

Survey Program	Date	4/4/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
330.0	7,759.0	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	1,529,258.60	2,340,134.87	39.263306	-107.830836
330.0	2.20	108.10	329.9	-2.0	6.0	1,529,256.48	2,340,140.83	39.263301	-107.830815
First MWD Survey @ 330.0' MD / 329.9' TVD									
471.0	2.50	106.90	470.8	-3.7	11.5	1,529,254.60	2,340,146.30	39.263296	-107.830796
561.0	4.00	118.70	560.7	-5.8	16.2	1,529,252.41	2,340,150.88	39.263290	-107.830779
650.0	5.80	127.20	649.3	-10.0	22.5	1,529,248.04	2,340,157.07	39.263279	-107.830757
740.0	8.40	132.00	738.6	-17.1	31.0	1,529,240.67	2,340,165.40	39.263259	-107.830727
835.0	11.10	132.00	832.2	-27.9	42.9	1,529,229.60	2,340,177.07	39.263229	-107.830685
929.0	14.40	129.50	923.9	-41.4	58.7	1,529,215.71	2,340,192.47	39.263192	-107.830629
1,024.0	16.80	130.20	1,015.4	-57.8	78.3	1,529,198.84	2,340,211.65	39.263147	-107.830560
1,118.0	19.90	130.20	1,104.6	-76.9	100.9	1,529,179.16	2,340,233.75	39.263095	-107.830480
1,213.0	23.20	128.30	1,193.0	-98.9	127.9	1,529,156.44	2,340,260.22	39.263034	-107.830384



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Well:	Nichols 0994-24-15E	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
1,308.0	23.60	127.70	1,280.2	-122.1	157.7	1,529,132.46	2,340,289.34	39.262971	-107.830279
1,402.0	23.10	127.60	1,366.5	-144.9	187.2	1,529,108.95	2,340,318.25	39.262908	-107.830175
1,497.0	23.60	127.30	1,453.7	-167.8	217.1	1,529,085.30	2,340,347.54	39.262845	-107.830070
1,589.0	23.00	125.70	1,538.2	-189.4	246.3	1,529,062.90	2,340,376.22	39.262786	-107.829966
1,683.0	22.80	124.50	1,624.8	-210.5	276.2	1,529,041.11	2,340,405.60	39.262728	-107.829861
1,778.0	21.80	124.30	1,712.7	-230.8	306.0	1,529,019.99	2,340,434.81	39.262672	-107.829756
1,872.0	23.60	126.90	1,799.4	-252.0	335.4	1,528,998.10	2,340,463.73	39.262614	-107.829652
1,967.0	23.50	131.30	1,886.5	-275.9	364.9	1,528,973.43	2,340,492.54	39.262549	-107.829548
2,061.0	22.60	129.60	1,973.0	-299.8	392.9	1,528,948.84	2,340,519.92	39.262483	-107.829449
2,156.0	21.90	129.10	2,060.9	-322.6	420.7	1,528,925.32	2,340,547.14	39.262420	-107.829350
2,251.0	20.80	127.30	2,149.4	-344.0	447.9	1,528,903.24	2,340,573.75	39.262362	-107.829255
2,345.0	22.40	131.40	2,236.8	-365.9	474.6	1,528,880.60	2,340,599.89	39.262301	-107.829160
2,439.0	21.50	130.60	2,324.0	-389.0	501.1	1,528,856.87	2,340,625.80	39.262238	-107.829067
2,534.0	20.70	127.30	2,412.6	-410.5	527.7	1,528,834.69	2,340,651.82	39.262179	-107.828973
2,628.0	23.10	129.20	2,499.8	-432.2	555.2	1,528,812.27	2,340,678.76	39.262119	-107.828876
2,723.0	22.50	130.40	2,587.4	-455.8	583.5	1,528,787.99	2,340,706.43	39.262055	-107.828776
2,818.0	21.60	127.70	2,675.4	-478.3	611.1	1,528,764.81	2,340,733.53	39.261993	-107.828678
2,912.0	23.70	131.30	2,762.2	-501.3	639.0	1,528,741.05	2,340,760.81	39.261930	-107.828579
3,007.0	23.50	129.50	2,849.2	-526.0	668.0	1,528,715.67	2,340,789.13	39.261862	-107.828477
3,101.0	22.70	128.90	2,935.7	-549.3	696.6	1,528,691.63	2,340,817.10	39.261798	-107.828376
3,195.0	22.60	128.70	3,022.5	-572.0	724.8	1,528,668.23	2,340,844.72	39.261736	-107.828277
3,290.0	21.70	130.10	3,110.4	-594.7	752.4	1,528,644.80	2,340,871.81	39.261673	-107.828179
3,385.0	22.90	128.40	3,198.3	-617.5	780.4	1,528,621.30	2,340,899.14	39.261611	-107.828080
3,479.0	22.10	126.40	3,285.2	-639.3	808.9	1,528,598.72	2,340,927.13	39.261551	-107.827979
3,574.0	23.60	130.60	3,372.7	-662.3	837.8	1,528,575.01	2,340,955.36	39.261488	-107.827877
3,669.0	23.20	128.30	3,459.9	-686.3	866.9	1,528,550.29	2,340,983.86	39.261422	-107.827775
3,763.0	22.40	127.30	3,546.6	-708.6	895.7	1,528,527.23	2,341,012.05	39.261360	-107.827673
3,858.0	22.20	129.90	3,634.5	-731.1	923.8	1,528,504.04	2,341,039.64	39.261299	-107.827573
3,953.0	20.70	128.40	3,722.9	-753.0	950.8	1,528,481.41	2,341,065.99	39.261238	-107.827478
4,047.0	21.20	131.30	3,810.7	-774.6	976.5	1,528,459.22	2,341,091.22	39.261179	-107.827387
4,142.0	23.00	128.20	3,898.7	-797.4	1,004.0	1,528,435.70	2,341,118.12	39.261117	-107.827290
4,236.0	22.70	128.90	3,985.3	-820.2	1,032.6	1,528,412.23	2,341,146.08	39.261054	-107.827189
4,331.0	22.30	127.70	4,073.1	-842.7	1,061.1	1,528,388.97	2,341,174.01	39.260992	-107.827089
4,426.0	21.10	126.50	4,161.4	-863.9	1,089.1	1,528,367.07	2,341,201.47	39.260934	-107.826990
4,520.0	19.60	127.30	4,249.5	-883.5	1,115.3	1,528,346.78	2,341,227.10	39.260880	-107.826897
4,615.0	18.90	127.60	4,339.2	-902.5	1,140.1	1,528,327.11	2,341,251.47	39.260828	-107.826810
4,709.0	18.00	127.40	4,428.3	-920.7	1,163.7	1,528,308.40	2,341,274.60	39.260778	-107.826726
4,804.0	17.80	127.60	4,518.7	-938.4	1,186.9	1,528,290.03	2,341,297.30	39.260729	-107.826644
4,898.0	16.90	128.00	4,608.5	-955.6	1,209.1	1,528,272.29	2,341,319.00	39.260682	-107.826566
4,993.0	14.90	126.20	4,699.8	-971.3	1,229.8	1,528,256.05	2,341,339.33	39.260639	-107.826493
5,087.0	14.90	131.60	4,790.7	-986.5	1,248.6	1,528,240.41	2,341,357.73	39.260597	-107.826427
5,182.0	13.30	129.90	4,882.8	-1,001.6	1,266.1	1,528,224.85	2,341,374.85	39.260556	-107.826365
5,277.0	13.80	134.10	4,975.2	-1,016.5	1,282.6	1,528,209.53	2,341,390.98	39.260515	-107.826306
5,371.0	12.80	137.50	5,066.6	-1,032.0	1,297.7	1,528,193.67	2,341,405.67	39.260473	-107.826253
5,466.0	11.90	135.10	5,159.4	-1,046.7	1,311.7	1,528,178.62	2,341,419.31	39.260432	-107.826204
5,560.0	13.10	137.20	5,251.2	-1,061.4	1,325.8	1,528,163.58	2,341,433.01	39.260392	-107.826154
5,655.0	11.80	135.60	5,344.0	-1,076.2	1,339.9	1,528,148.38	2,341,446.74	39.260351	-107.826104
5,750.0	10.60	136.50	5,437.2	-1,089.5	1,352.7	1,528,134.78	2,341,459.20	39.260315	-107.826059
5,844.0	9.80	137.40	5,529.7	-1,101.6	1,364.1	1,528,122.33	2,341,470.25	39.260281	-107.826019
5,939.0	7.80	140.70	5,623.6	-1,112.6	1,373.7	1,528,111.15	2,341,479.53	39.260251	-107.825985
6,034.0	5.20	141.90	5,717.9	-1,121.0	1,380.4	1,528,102.60	2,341,486.05	39.260228	-107.825961
6,128.0	4.60	118.40	5,811.6	-1,126.1	1,386.3	1,528,097.31	2,341,491.86	39.260214	-107.825940
6,223.0	3.70	83.60	5,906.4	-1,127.6	1,392.7	1,528,095.67	2,341,498.22	39.260210	-107.825917
6,318.0	3.30	81.00	6,001.2	-1,126.8	1,398.5	1,528,096.29	2,341,503.98	39.260212	-107.825897
6,413.0	2.50	74.60	6,096.1	-1,125.8	1,403.2	1,528,097.15	2,341,508.70	39.260215	-107.825881



Survey Report - Geographic



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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 0994-24-15E	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
6,507.0	2.30	84.30	6,190.0	-1,125.1	1,407.0	1,528,097.78	2,341,512.58	39.260217	-107.825867
6,602.0	2.10	69.60	6,284.9	-1,124.3	1,410.6	1,528,098.49	2,341,516.12	39.260219	-107.825855
6,696.0	0.40	112.18	6,378.9	-1,123.8	1,412.5	1,528,098.92	2,341,518.05	39.260220	-107.825848
6,791.0	0.18	99.44	6,473.9	-1,124.0	1,412.9	1,528,098.75	2,341,518.50	39.260220	-107.825846
6,886.0	0.13	225.21	6,568.9	-1,124.1	1,413.0	1,528,098.65	2,341,518.57	39.260220	-107.825846
6,981.0	1.01	216.51	6,663.9	-1,124.8	1,412.4	1,528,097.92	2,341,517.98	39.260218	-107.825848
7,075.0	2.02	198.76	6,757.9	-1,127.1	1,411.4	1,528,095.71	2,341,516.89	39.260211	-107.825852
7,170.0	2.77	198.76	6,852.8	-1,130.8	1,410.1	1,528,091.99	2,341,515.52	39.260201	-107.825856
7,264.0	2.77	205.70	6,946.7	-1,135.0	1,408.4	1,528,087.83	2,341,513.70	39.260190	-107.825862
7,359.0	2.99	200.60	7,041.5	-1,139.4	1,406.5	1,528,083.50	2,341,511.72	39.260178	-107.825869
7,453.0	2.64	202.60	7,135.4	-1,143.7	1,404.9	1,528,079.25	2,341,509.92	39.260166	-107.825875
7,548.0	2.42	204.91	7,230.3	-1,147.5	1,403.2	1,528,075.45	2,341,508.13	39.260155	-107.825881
7,643.0	2.33	206.58	7,325.3	-1,151.1	1,401.5	1,528,071.95	2,341,506.33	39.260146	-107.825887
7,703.0	2.29	212.20	7,385.2	-1,153.2	1,400.3	1,528,069.88	2,341,505.10	39.260140	-107.825891
7,759.0	2.29	212.20	7,441.2	-1,155.1	1,399.1	1,528,068.02	2,341,503.85	39.260135	-107.825895
Projection to TD @ 7759.0' MD / 7441.2' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
330.0	329.9	-2.0	6.0	First MWD Survey @ 330.0' MD / 329.9' TVD
7,759.0	7,441.2	-1,155.1	1,399.1	Projection to TD @ 7759.0' MD / 7441.2' TVD

Checked By: _____	Approved By: _____	Date: _____
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