



DIRECTIONAL TECHNOLOGIES INC.

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WPX Energy Rocky Mountain, LLC

RU 07-07S-093W

RU 42-7 Pad

RU 331-7 - Slot B06

14-08-122

Final Surveys - Dec.17,2014

License:

UWI:

Survey Report

17 December, 2014





Company:	WPX Energy Rocky Mountain, LLC	Local Co-ordinate Reference:	Well RU 331-7 - Slot B06
Project:	RU 07-07S-093W	TVD Reference:	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
Site:	RU 42-7 Pad	MD Reference:	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
Well:	RU 331-7	North Reference:	True
Wellbore:	14-08-122	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys - Dec.17,2014	Database:	EDM_2011

Project	RU 07-07S-093W, Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	RU 42-7 Pad						
Site Position:		Northing:	1,600,591.20	usft	Latitude:	39° 27' 34.807 N	
From:	Map	Easting:	2,348,404.40	usft	Longitude:	107° 48' 28.938 W	
Position Uncertainty:	0.00	usft	Slot Radius:	13.200	in	Grid Convergence:	-1.46 °

Well	RU 331-7 - Slot B06					
Well Position	+N/-S	0.00 usft	Northing:	1,600,628.70 usft	Latitude:	39° 27' 35.175 N
	+E/-W	0.00 usft	Easting:	2,348,394.40 usft	Longitude:	107° 48' 29.078 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,737.00 usft

Wellbore	14-08-122	Well UWI		License	
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/11/2014	9.85	65.66	51,922

Design	Final Surveys - Dec.17,2014				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	317.78	

Survey Program	Date	12/17/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
111.00	10,264.00	Final Surveys (14-08-122)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	7,763.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP										
96.00	1.25	328.33	95.99	7,667.01	0.89	-0.55	1.03	1.31	1.31	0.00
111.00	1.45	328.33	110.99	7,652.01	1.20	-0.74	1.38	1.31	1.31	0.00
142.00	2.42	337.47	141.97	7,621.03	2.13	-1.19	2.38	3.27	3.13	29.48
172.00	3.30	337.11	171.93	7,591.07	3.51	-1.77	3.79	2.93	2.93	-1.20
202.00	4.17	336.59	201.87	7,561.13	5.31	-2.54	5.64	2.90	2.90	-1.73
232.00	5.27	330.52	231.77	7,531.23	7.51	-3.65	8.02	4.02	3.67	-20.23
263.00	6.02	321.91	262.62	7,500.38	10.03	-5.36	11.03	3.64	2.42	-27.77



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293.00	6.64	319.98	292.43	7,470.57	12.60	-7.44	14.33	2.18	2.07	-6.43
323.00	7.29	320.06	322.21	7,440.79	15.38	-9.78	17.96	2.17	2.17	0.27
353.00	8.22	316.28	351.94	7,411.06	18.39	-12.48	22.01	3.53	3.10	-12.60
382.00	9.40	314.61	380.59	7,382.41	21.55	-15.60	26.45	4.16	4.07	-5.76
413.00	10.42	315.05	411.13	7,351.87	25.32	-19.39	31.78	3.30	3.29	1.42
503.00	13.54	318.13	499.16	7,263.84	38.93	-32.17	50.45	3.54	3.47	3.42
594.00	15.38	320.68	587.28	7,175.72	56.20	-46.93	73.15	2.14	2.02	2.80
685.00	19.73	319.45	674.02	7,088.98	77.21	-64.57	100.57	4.80	4.78	-1.35
775.00	19.73	315.32	758.74	7,004.26	99.56	-85.13	130.94	1.55	0.00	-4.59
866.00	20.17	314.61	844.28	6,918.72	121.50	-107.10	161.95	0.55	0.48	-0.78
958.00	20.92	315.05	930.43	6,832.57	144.26	-129.99	194.19	0.83	0.82	0.48
1,053.00	22.19	315.67	1,018.78	6,744.22	169.10	-154.51	229.06	1.36	1.34	0.65
1,142.00	21.75	316.28	1,101.32	6,661.68	193.04	-177.66	262.34	0.56	-0.49	0.69
Interpolated Casing Point - Surface Casing										
1,187.00	21.81	315.46	1,143.10	6,619.90	205.02	-189.28	279.03	0.69	0.12	-1.83
1,243.00	21.88	314.44	1,195.08	6,567.92	219.74	-204.03	299.83	0.69	0.13	-1.82
1,338.00	22.28	313.91	1,283.12	6,479.88	244.62	-229.64	335.47	0.47	0.42	-0.56
1,434.00	20.39	315.76	1,372.54	6,390.46	269.23	-254.42	370.35	2.09	-1.97	1.93
1,529.00	19.64	317.69	1,461.80	6,301.20	292.89	-276.71	402.85	1.05	-0.79	2.03
1,624.00	19.56	320.33	1,551.30	6,211.70	316.94	-297.61	434.71	0.94	-0.08	2.78
1,720.00	19.03	317.69	1,641.90	6,121.10	340.89	-318.41	466.41	1.06	-0.55	-2.75
1,815.00	18.85	322.44	1,731.77	6,031.23	364.51	-338.19	497.20	1.63	-0.19	5.00
1,911.00	20.17	324.28	1,822.25	5,940.75	390.24	-357.31	529.10	1.52	1.38	1.92
2,006.00	21.05	322.70	1,911.17	5,851.83	417.11	-377.21	562.37	1.10	0.93	-1.66
2,101.00	22.02	320.33	1,999.54	5,763.46	444.39	-398.92	597.16	1.37	1.02	-2.49
2,197.00	21.75	319.54	2,088.62	5,674.38	471.78	-421.95	632.92	0.42	-0.28	-0.82
2,292.00	21.31	319.80	2,176.99	5,586.01	498.35	-444.51	667.77	0.47	-0.46	0.27
2,386.00	21.09	317.78	2,264.63	5,498.37	523.92	-466.90	701.75	0.81	-0.23	-2.15
2,481.00	20.57	317.16	2,353.43	5,409.58	548.82	-489.73	735.53	0.59	-0.55	-0.65
2,576.00	20.87	316.55	2,442.28	5,320.72	573.34	-512.72	769.14	0.39	0.32	-0.64
2,671.00	20.87	315.93	2,531.05	5,231.95	597.78	-536.13	802.97	0.23	0.00	-0.65
2,766.00	21.36	315.85	2,619.67	5,143.33	622.36	-559.95	837.17	0.52	0.52	-0.08
2,861.00	21.18	315.23	2,708.20	5,054.80	646.95	-584.08	871.61	0.30	-0.19	-0.65
2,956.00	20.96	314.70	2,796.85	4,966.15	671.09	-608.25	905.72	0.31	-0.23	-0.56
3,052.00	20.96	314.79	2,886.49	4,876.51	695.26	-632.64	940.01	0.03	0.00	0.09
3,147.00	20.52	314.61	2,975.34	4,787.66	718.93	-656.55	973.60	0.47	-0.46	-0.19
3,242.00	19.69	318.13	3,064.55	4,698.45	742.54	-679.09	1,006.24	1.54	-0.87	3.71
3,338.00	19.86	317.60	3,154.89	4,608.11	766.62	-700.88	1,038.71	0.26	0.18	-0.55
3,433.00	19.56	317.95	3,244.32	4,518.68	790.35	-722.41	1,070.75	0.34	-0.32	0.37
3,527.00	19.07	317.69	3,333.03	4,429.97	813.39	-743.29	1,101.85	0.53	-0.52	-0.28
3,622.00	20.43	318.13	3,422.44	4,340.56	837.22	-764.80	1,133.95	1.44	1.43	0.46

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3,718.00	21.05	318.13	3,512.22	4,250.78	862.53	-787.49	1,167.94	0.65	0.65	0.00
3,813.00	21.40	318.22	3,600.78	4,162.22	888.16	-810.43	1,202.33	0.37	0.37	0.09
3,908.00	20.70	316.99	3,689.44	4,073.56	913.36	-833.43	1,236.45	0.87	-0.74	-1.29
4,003.00	19.91	316.99	3,778.53	3,984.47	937.47	-855.91	1,269.42	0.83	-0.83	0.00
4,098.00	20.13	315.05	3,867.79	3,895.21	960.87	-878.50	1,301.92	0.74	0.23	-2.04
4,194.00	19.95	318.04	3,957.98	3,805.02	984.74	-901.12	1,334.80	1.08	-0.19	3.11
4,290.00	19.95	318.22	4,048.22	3,714.78	1,009.13	-922.98	1,367.55	0.06	0.00	0.19
4,385.00	19.60	318.31	4,137.62	3,625.38	1,033.11	-944.38	1,399.69	0.37	-0.37	0.09
4,480.00	19.47	317.69	4,227.15	3,535.85	1,056.72	-965.63	1,431.46	0.26	-0.14	-0.65
4,575.00	20.79	320.50	4,316.35	3,446.65	1,081.44	-987.02	1,464.14	1.72	1.39	2.96
4,670.00	20.39	319.45	4,405.28	3,357.72	1,107.02	-1,008.50	1,497.52	0.57	-0.42	-1.11
4,766.00	19.95	319.27	4,495.39	3,267.61	1,132.14	-1,030.06	1,530.61	0.46	-0.46	-0.19
4,861.00	19.64	319.45	4,584.78	3,178.22	1,156.55	-1,051.01	1,562.77	0.33	-0.33	0.19
4,955.00	19.12	318.48	4,673.45	3,089.55	1,180.08	-1,071.49	1,593.95	0.65	-0.55	-1.03
5,051.00	20.21	319.54	4,763.85	2,999.15	1,204.47	-1,092.67	1,626.25	1.19	1.14	1.10
5,146.00	20.17	317.60	4,853.02	2,909.98	1,229.05	-1,114.36	1,659.03	0.71	-0.04	-2.04
5,241.00	19.82	317.78	4,942.29	2,820.71	1,253.08	-1,136.23	1,691.51	0.37	-0.37	0.19
5,335.00	19.12	317.78	5,030.91	2,732.09	1,276.28	-1,157.28	1,722.84	0.74	-0.74	0.00
5,430.00	20.57	318.39	5,120.27	2,642.73	1,300.28	-1,178.82	1,755.09	1.54	1.53	0.64
5,526.00	20.70	318.39	5,210.11	2,552.89	1,325.58	-1,201.29	1,788.92	0.14	0.14	0.00
5,621.00	20.00	317.78	5,299.18	2,463.82	1,350.16	-1,223.35	1,821.96	0.77	-0.74	-0.64
5,716.00	19.12	318.04	5,388.70	2,374.30	1,373.76	-1,244.67	1,853.76	0.93	-0.93	0.27
5,812.00	17.93	318.22	5,479.72	2,283.28	1,396.47	-1,265.03	1,884.26	1.24	-1.24	0.19
5,908.00	16.52	318.22	5,571.41	2,191.59	1,417.67	-1,283.97	1,912.69	1.47	-1.47	0.00
6,003.00	14.85	314.61	5,662.88	2,100.12	1,436.30	-1,301.64	1,938.35	2.04	-1.76	-3.80
6,098.00	14.11	316.99	5,754.86	2,008.14	1,453.31	-1,318.21	1,962.09	1.00	-0.78	2.51
6,194.00	13.67	316.99	5,848.05	1,914.95	1,470.16	-1,333.93	1,985.13	0.46	-0.46	0.00
6,289.00	12.26	314.61	5,940.63	1,822.37	1,485.46	-1,348.76	2,006.43	1.59	-1.48	-2.51
6,385.00	10.59	314.09	6,034.72	1,728.28	1,498.75	-1,362.36	2,025.41	1.74	-1.74	-0.54
6,480.00	10.15	313.47	6,128.17	1,634.83	1,510.59	-1,374.70	2,042.47	0.48	-0.46	-0.65
6,574.00	9.71	320.59	6,220.76	1,542.24	1,522.41	-1,385.75	2,058.64	1.39	-0.47	7.57
6,669.00	7.87	319.45	6,314.65	1,448.35	1,533.54	-1,395.06	2,073.15	1.95	-1.94	-1.20
6,764.00	7.60	318.75	6,408.78	1,354.22	1,543.21	-1,403.43	2,085.93	0.30	-0.28	-0.74
6,859.00	6.28	319.01	6,503.08	1,259.92	1,551.85	-1,410.98	2,097.41	1.39	-1.39	0.27
6,955.00	6.37	319.71	6,598.50	1,164.50	1,559.88	-1,417.87	2,107.98	0.12	0.09	0.73
7,050.00	5.71	318.66	6,692.97	1,070.03	1,567.45	-1,424.40	2,117.97	0.70	-0.69	-1.11
7,145.00	5.14	314.53	6,787.54	975.46	1,573.98	-1,430.56	2,126.95	0.73	-0.60	-4.35
7,240.00	4.88	311.89	6,882.18	880.82	1,579.66	-1,436.60	2,135.21	0.37	-0.27	-2.78
7,335.00	4.53	307.94	6,976.86	786.14	1,584.67	-1,442.56	2,142.93	0.50	-0.37	-4.16
7,430.00	4.04	313.56	7,071.60	691.40	1,589.28	-1,447.95	2,149.96	0.68	-0.52	5.92
7,525.00	3.25	311.10	7,166.40	596.60	1,593.36	-1,452.40	2,155.98	0.85	-0.83	-2.59

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7,621.00	3.08	332.54	7,262.26	500.74	1,597.43	-1,455.64	2,161.17	1.24	-0.18	22.33
7,716.00	1.85	338.96	7,357.17	405.83	1,601.13	-1,457.37	2,165.07	1.32	-1.29	6.76
7,812.00	1.71	338.26	7,453.12	309.88	1,603.91	-1,458.46	2,167.86	0.15	-0.15	-0.73
7,907.00	1.49	335.88	7,548.09	214.91	1,606.35	-1,459.49	2,170.36	0.24	-0.23	-2.51
8,001.00	0.97	347.75	7,642.07	120.93	1,608.24	-1,460.16	2,172.21	0.61	-0.55	12.63
8,096.00	0.79	336.85	7,737.05	25.95	1,609.63	-1,460.58	2,173.53	0.26	-0.19	-11.47
8,191.00	0.70	29.67	7,832.05	-69.05	1,610.74	-1,460.55	2,174.33	0.70	-0.09	55.60
8,286.00	0.57	35.12	7,927.04	-164.04	1,611.63	-1,459.99	2,174.61	0.15	-0.14	5.74
8,381.00	0.40	57.60	8,022.04	-259.04	1,612.19	-1,459.44	2,174.66	0.27	-0.18	23.66
8,475.00	0.40	22.03	8,116.04	-353.04	1,612.67	-1,459.04	2,174.74	0.26	0.00	-37.84
8,570.00	0.31	27.39	8,211.03	-448.03	1,613.21	-1,458.80	2,174.98	0.10	-0.09	5.64
8,665.00	0.09	153.60	8,306.03	-543.03	1,613.37	-1,458.65	2,174.99	0.39	-0.23	132.85
8,760.00	0.48	209.50	8,401.03	-638.03	1,612.96	-1,458.81	2,174.80	0.46	0.41	58.84
8,855.00	0.97	206.77	8,496.02	-733.02	1,611.89	-1,459.37	2,174.39	0.52	0.52	-2.87
8,950.00	1.32	209.59	8,591.01	-828.01	1,610.22	-1,460.27	2,173.76	0.37	0.37	2.97
9,045.00	1.23	152.72	8,685.99	-922.99	1,608.37	-1,460.35	2,172.43	1.28	-0.09	-59.86
9,139.00	1.01	140.68	8,779.97	-1,016.97	1,606.83	-1,459.36	2,170.63	0.34	-0.23	-12.81
9,234.00	1.41	143.32	8,874.95	-1,111.95	1,605.24	-1,458.13	2,168.63	0.43	0.42	2.78
9,329.00	1.36	151.40	8,969.92	-1,206.92	1,603.32	-1,456.89	2,166.37	0.21	-0.05	8.51
9,424.00	1.45	168.54	9,064.89	-1,301.89	1,601.15	-1,456.11	2,164.24	0.45	0.09	18.04
9,519.00	1.58	166.08	9,159.86	-1,396.86	1,598.70	-1,455.56	2,162.05	0.15	0.14	-2.59
9,613.00	1.67	167.49	9,253.82	-1,490.82	1,596.10	-1,454.95	2,159.72	0.10	0.10	1.50
9,708.00	1.89	178.82	9,348.77	-1,585.77	1,593.19	-1,454.62	2,157.34	0.44	0.23	11.93
9,804.00	2.11	207.99	9,444.72	-1,681.72	1,590.04	-1,455.42	2,155.55	1.07	0.23	30.39
9,898.00	3.16	223.03	9,538.62	-1,775.62	1,586.62	-1,458.00	2,154.75	1.33	1.12	16.00
9,993.00	3.74	227.34	9,633.45	-1,870.45	1,582.61	-1,462.06	2,154.51	0.67	0.61	4.54
10,088.00	3.60	232.00	9,728.25	-1,965.25	1,578.67	-1,466.69	2,154.70	0.35	-0.15	4.91
10,183.00	3.74	231.56	9,823.06	-2,060.06	1,574.91	-1,471.47	2,155.12	0.15	0.15	-0.46
Last Survey										
10,219.00	3.78	233.14	9,858.98	-2,095.98	1,573.47	-1,473.34	2,155.31	0.31	0.11	4.39
Extrapolation to TD										
10,264.00	3.78	233.14	9,903.88	-2,140.88	1,571.69	-1,475.71	2,155.59	0.00	0.00	0.00

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,187.00	1,143.10	Surface Casing		

Company:	WPX Energy Rocky Mountain, LLC	Local Co-ordinate Reference:	Well RU 331-7 - Slot B06
Project:	RU 07-07S-093W	TVD Reference:	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
Site:	RU 42-7 Pad	MD Reference:	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
Well:	RU 331-7	North Reference:	True
Wellbore:	14-08-122	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys - Dec.17,2014	Database:	EDM_2011

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
96.00	95.99	0.89	-0.55	KOP
1,187.00	1,143.10	205.02	-189.28	Interpolated Casing Point
10,219.00	9,858.98	1,573.47	-1,473.34	Last Survey
10,264.00	9,903.88	1,571.69	-1,475.71	Extrapolation to TD