



DIRECTIONAL TECHNOLOGIES INC.

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# **WPX Energy Rocky Mountain, LLC**

**GV 28-06S-096W**

**GM 323-28 Pad**

**GM 322-28 - Slot 2A11**

**14-10-155**

**Final Surveys - Feb.10, 2015**

**License:**

**UWI:**

## **Survey Report**

**10 February, 2015**





<b>Company:</b>	WPX Energy Rocky Mountain, LLC	<b>Local Co-ordinate Reference:</b>	Well GM 322-28 - Slot 2A11
<b>Project:</b>	GV 28-06S-096W	<b>TVD Reference:</b>	KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
<b>Site:</b>	GM 323-28 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
<b>Well:</b>	GM 322-28	<b>North Reference:</b>	True
<b>Wellbore:</b>	14-10-155	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys - Feb.10, 2015	<b>Database:</b>	SRV-EDM_2011

<b>Project</b>	GV 28-06S-096W, 28-06S-096W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		Using geodetic scale factor

<b>Site</b>	GM 323-28 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,614,757.30 usft	<b>Latitude:</b> 39° 29' 31.675 N
<b>From:</b> Map		<b>Easting:</b>	2,262,158.50 usft	<b>Longitude:</b> 108° 6' 53.344 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.65 °

<b>Well</b>	GM 322-28 - Slot 2A11			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,614,784.80 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,262,141.80 usft
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft
			<b>Ground Level:</b>	5,476.00 usft

<b>Wellbore</b>	14-10-155	<b>Well UWI</b>		<b>License</b>	
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/29/2014	9.97	65.62	51,897

<b>Design</b>	Final Surveys - Feb.10, 2015				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	3.82	

<b>Survey Program</b>	<b>Date</b>	2/10/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
148.00	7,490.00	Final Surveys - Feb 10 2015 (14-10-155)	MWD+sag	/D v3:standard declination + s	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>SS (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>
0.00	0.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
148.00	1.58	5.11	147.98	5,352.02	2.03	0.18	2.04	1.07	1.07	0.00
179.00	2.77	6.07	178.96	5,321.04	3.20	0.30	3.22	3.84	3.84	3.10
210.00	4.00	2.12	209.90	5,290.10	5.03	0.42	5.05	4.04	3.97	-12.74
239.00	4.97	6.07	238.81	5,261.19	7.29	0.59	7.31	3.51	3.34	13.62
270.00	5.93	6.95	269.67	5,230.33	10.21	0.92	10.25	3.11	3.10	2.84
299.00	6.77	8.09	298.50	5,201.50	13.39	1.35	13.45	2.93	2.90	3.93
329.00	7.82	6.34	328.25	5,171.75	17.17	1.82	17.26	3.58	3.50	-5.83
359.00	8.70	2.73	357.94	5,142.06	21.47	2.15	21.56	3.40	2.93	-12.03



<b>Company:</b>	WPX Energy Rocky Mountain, LLC	<b>Local Co-ordinate Reference:</b>	Well GM 322-28 - Slot 2A11
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<b>Site:</b>	GM 323-28 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5500.00usft (H&P 318 (24' RKB) mab)
<b>Well:</b>	GM 322-28	<b>North Reference:</b>	True
<b>Wellbore:</b>	14-10-155	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys - Feb.10, 2015	<b>Database:</b>	SRV-EDM_2011

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)
389.00	9.80	1.68	387.55	5,112.45	26.29	2.34	26.38	3.71	3.67	-3.50
420.00	11.03	2.47	418.04	5,081.96	31.89	2.54	31.98	3.99	3.97	2.55
450.00	12.26	2.73	447.42	5,052.58	37.93	2.82	38.04	4.10	4.10	0.87
481.00	13.58	2.82	477.64	5,022.36	44.86	3.15	44.97	4.26	4.26	0.29
510.00	14.55	2.91	505.77	4,994.23	51.90	3.51	52.01	3.35	3.34	0.31
601.00	17.41	3.79	593.24	4,906.76	76.90	4.99	77.06	3.15	3.14	0.97
691.00	20.75	4.75	678.28	4,821.72	106.23	7.20	106.48	3.73	3.71	1.07
781.00	24.04	4.32	761.49	4,738.51	140.41	9.90	140.76	3.66	3.66	-0.48
873.00	26.64	4.75	844.63	4,655.37	179.66	13.02	180.13	2.83	2.83	0.47
964.00	29.54	4.05	924.90	4,575.10	222.38	16.29	222.97	3.21	3.19	-0.77
1,058.00	32.97	4.14	1,005.24	4,494.76	271.02	19.78	271.73	3.65	3.65	0.10
1,153.00	36.00	4.23	1,083.54	4,416.46	324.65	23.70	325.51	3.19	3.19	0.09
1,247.00	39.16	3.61	1,158.03	4,341.97	381.84	27.61	382.83	3.39	3.36	-0.66
1,312.00	40.57	3.96	1,207.92	4,292.08	423.41	30.36	424.49	2.20	2.17	0.54
Actual Casing										
1,362.00	41.00	3.58	1,245.78	4,254.22	456.00	32.51	457.15	0.99	0.86	-0.76
1,440.00	41.67	3.00	1,304.34	4,195.66	507.43	35.47	508.67	0.99	0.86	-0.74
1,535.00	42.55	3.00	1,374.82	4,125.18	571.05	38.80	572.36	0.93	0.93	0.00
1,629.00	41.06	1.94	1,444.89	4,055.11	633.64	41.51	635.00	1.75	-1.59	-1.13
1,723.00	39.65	2.91	1,516.52	3,983.48	694.45	44.08	695.85	1.64	-1.50	1.03
1,817.00	39.78	2.03	1,588.83	3,911.17	754.46	46.66	755.89	0.61	0.14	-0.94
1,912.00	40.04	3.88	1,661.70	3,838.30	815.32	49.81	816.83	1.28	0.27	1.95
2,006.00	40.53	3.08	1,733.41	3,766.59	875.99	53.49	877.61	0.76	0.52	-0.85
2,100.00	40.70	5.55	1,804.77	3,695.23	937.00	58.10	938.79	1.72	0.18	2.63
2,194.00	40.53	4.58	1,876.12	3,623.88	997.95	63.50	999.96	0.70	-0.18	-1.03
2,288.00	41.49	3.79	1,947.06	3,552.94	1,059.46	68.00	1,061.64	1.16	1.02	-0.84
2,383.00	42.07	3.44	2,017.90	3,482.10	1,122.63	71.99	1,124.94	0.66	0.61	-0.37
2,477.00	40.53	3.08	2,088.51	3,411.49	1,184.57	75.52	1,186.97	1.66	-1.64	-0.38
2,571.00	38.46	4.05	2,161.05	3,338.95	1,244.24	79.23	1,246.75	2.30	-2.20	1.03
2,665.00	36.92	4.23	2,235.43	3,264.57	1,301.56	83.37	1,304.22	1.64	-1.64	0.19
2,759.00	36.70	3.70	2,310.69	3,189.31	1,357.74	87.27	1,360.54	0.41	-0.23	-0.56
2,853.00	34.77	2.38	2,386.99	3,113.01	1,412.56	90.20	1,415.43	2.21	-2.05	-1.40
2,947.00	32.22	2.29	2,465.37	3,034.63	1,464.39	92.31	1,467.28	2.71	-2.71	-0.10
3,042.00	31.39	4.40	2,546.11	2,953.89	1,514.36	95.22	1,517.34	1.46	-0.87	2.22
3,134.00	31.21	4.31	2,624.72	2,875.28	1,562.02	98.85	1,565.13	0.20	-0.20	-0.10
3,228.00	30.64	4.75	2,705.36	2,794.64	1,610.18	102.66	1,613.44	0.65	-0.61	0.47
3,323.00	29.19	3.52	2,787.70	2,712.30	1,657.43	106.09	1,660.81	1.66	-1.53	-1.29
3,417.00	28.26	5.02	2,870.13	2,629.87	1,702.47	109.45	1,705.98	1.25	-0.99	1.60
3,511.00	26.50	4.31	2,953.60	2,546.40	1,745.56	112.97	1,749.21	1.90	-1.87	-0.76
3,606.00	25.01	3.70	3,039.16	2,460.84	1,786.73	115.86	1,790.48	1.59	-1.57	-0.64
3,700.00	23.69	3.96	3,124.80	2,375.20	1,825.40	118.45	1,829.24	1.41	-1.40	0.28



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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)
3,794.00	22.37	5.19	3,211.30	2,288.70	1,862.06	121.37	1,866.01	1.49	-1.40	1.31
3,888.00	20.61	4.23	3,298.76	2,201.24	1,896.38	124.21	1,900.44	1.91	-1.87	-1.02
3,983.00	18.86	3.88	3,388.18	2,111.82	1,928.37	126.48	1,932.51	1.85	-1.84	-0.37
4,077.00	17.10	5.28	3,477.59	2,022.41	1,957.29	128.78	1,961.53	1.93	-1.87	1.49
4,171.00	15.74	4.84	3,567.75	1,932.25	1,983.76	131.13	1,988.09	1.45	-1.45	-0.47
4,264.00	15.96	3.88	3,657.22	1,842.78	2,009.09	133.06	2,013.49	0.37	0.24	-1.03
4,358.00	14.99	4.75	3,747.81	1,752.19	2,034.10	134.94	2,038.57	1.06	-1.03	0.93
4,452.00	13.32	5.28	3,838.95	1,661.05	2,056.99	136.94	2,061.55	1.78	-1.78	0.56
4,547.00	11.21	6.51	3,931.78	1,568.22	2,077.07	138.99	2,081.71	2.24	-2.22	1.29
4,641.00	10.86	6.51	4,024.04	1,475.96	2,094.95	141.03	2,099.69	0.37	-0.37	0.00
4,736.00	9.85	6.16	4,117.49	1,382.51	2,111.92	142.92	2,116.75	1.07	-1.06	-0.37
4,830.00	7.78	3.61	4,210.37	1,289.63	2,126.26	144.18	2,131.14	2.24	-2.20	-2.71
4,924.00	7.78	2.29	4,303.51	1,196.49	2,138.97	144.84	2,143.87	0.19	0.00	-1.40
5,018.00	7.91	3.08	4,396.63	1,103.37	2,151.78	145.44	2,156.69	0.18	0.14	0.84
5,113.00	6.64	1.68	4,490.86	1,009.14	2,163.80	145.95	2,168.72	1.35	-1.34	-1.47
5,207.00	4.88	2.38	4,584.38	915.62	2,173.23	146.28	2,178.15	1.87	-1.87	0.74
5,301.00	4.53	0.71	4,678.07	821.93	2,180.94	146.49	2,185.85	0.40	-0.37	-1.78
5,396.00	4.13	2.64	4,772.80	727.20	2,188.11	146.69	2,193.02	0.45	-0.42	2.03
5,490.00	3.96	2.47	4,866.56	633.44	2,194.73	146.99	2,199.65	0.18	-0.18	-0.18
5,584.00	3.87	6.95	4,960.34	539.66	2,201.12	147.51	2,206.06	0.34	-0.10	4.77
5,678.00	3.74	9.85	5,054.14	445.86	2,207.29	148.42	2,212.28	0.25	-0.14	3.09
5,772.00	3.65	13.54	5,147.94	352.06	2,213.22	149.65	2,218.27	0.27	-0.10	3.93
5,867.00	3.25	18.47	5,242.77	257.23	2,218.71	151.21	2,223.86	0.52	-0.42	5.19
5,961.00	2.94	18.38	5,336.63	163.37	2,223.53	152.81	2,228.77	0.33	-0.33	-0.10
6,055.00	2.73	18.91	5,430.52	69.48	2,227.94	154.30	2,233.26	0.23	-0.22	0.56
6,149.00	2.20	18.73	5,524.43	-24.43	2,231.76	155.60	2,237.17	0.56	-0.56	-0.19
6,243.00	2.15	28.66	5,618.36	-118.36	2,235.02	157.03	2,240.51	0.40	-0.05	10.56
6,338.00	2.11	37.45	5,713.30	-213.30	2,237.97	158.95	2,243.59	0.35	-0.04	9.25
6,432.00	1.89	42.81	5,807.24	-307.24	2,240.48	161.05	2,246.23	0.31	-0.23	5.70
6,526.00	1.71	45.01	5,901.19	-401.19	2,242.61	163.10	2,248.49	0.21	-0.19	2.34
6,621.00	1.32	50.11	5,996.16	-496.16	2,244.31	164.94	2,250.32	0.43	-0.41	5.37
6,715.00	0.97	60.21	6,090.14	-590.14	2,245.40	166.46	2,251.50	0.43	-0.37	10.74
6,809.00	0.66	75.95	6,184.13	-684.13	2,245.93	167.68	2,252.11	0.40	-0.33	16.74
6,903.00	0.26	59.69	6,278.13	-778.13	2,246.17	168.39	2,252.40	0.44	-0.43	-17.30
6,997.00	0.26	24.35	6,372.13	-872.13	2,246.47	168.66	2,252.72	0.17	0.00	-37.60
7,091.00	0.35	300.07	6,466.13	-966.13	2,246.81	168.50	2,253.04	0.44	0.10	-89.66
7,185.00	0.61	261.31	6,560.12	-1,060.12	2,246.88	167.75	2,253.06	0.43	0.28	-41.23
7,279.00	1.10	249.79	6,654.11	-1,154.11	2,246.49	166.41	2,252.58	0.55	0.52	-12.26
7,374.00	1.54	250.76	6,749.09	-1,249.09	2,245.75	164.35	2,251.71	0.46	0.46	1.02
Last Survey										
7,435.00	1.50	251.29	6,810.07	-1,310.07	2,245.23	162.82	2,251.09	0.07	-0.07	0.87



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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)
Extrapolation to TD										
7,490.00	1.50	251.29	6,865.05	-1,365.05	2,244.77	161.46	2,250.53	0.00	0.00	0.00

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,362.00	1,245.78	Actual Casing		

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,435.00	6,810.07	2,245.23	162.82	Last Survey
7,490.00	6,865.05	2,244.77	161.46	Extrapolation to TD