



DIRECTIONAL TECHNOLOGIES INC.

Mostar Directional Technologies Inc.  
610, 736 - 8 Ave. S.W.  
Calgary, AB T2P 1H4  
Tel: 403.279.5577  
[www.mostardirectional.com](http://www.mostardirectional.com)

# **WPX Energy Rocky Mountain, LLC**

**RU 07-07S-093W**

**RU 42-7 Pad**

**RU 431-7 - Slot A06**

**14-08-127**

**Final Surveys - Jan.2,2015**

**License:**

**UWI:**

## **Survey Report**

**02 January, 2015**





# Mostar Directional Technologies

## Survey Report



<b>Company:</b>	WPX Energy Rocky Mountain, LLC	<b>Local Co-ordinate Reference:</b>	Well RU 431-7 - Slot A06
<b>Project:</b>	RU 07-07S-093W	<b>TVD Reference:</b>	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
<b>Site:</b>	RU 42-7 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
<b>Well:</b>	RU 431-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	14-08-127	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys - Jan.2,2015	<b>Database:</b>	SRV_EDM_2011

<b>Project</b>	RU 07-07S-093W, Garfield County, CO		
<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>	RU 42-7 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,600,591.20 usft
<b>From:</b>	Map	<b>Easting:</b>	2,348,404.40 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 27' 34.807 N
		<b>Longitude:</b>	107° 48' 28.938 W
		<b>Grid Convergence:</b>	-1.46 °

<b>Well</b>	RU 431-7 - Slot A06		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 1,600,628.70 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 2,348,404.36 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	39° 27' 35.177 N
		<b>Longitude:</b>	107° 48' 28.951 W
		<b>Ground Level:</b>	7,737.00 usft

<b>Wellbore</b>	14-08-127	<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	8/11/2014	9.85	65.66	51,922

<b>Design</b>	Final Surveys - Jan.2,2015		
<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>
	0.00	0.00	0.00
		<b>Direction (°)</b>	319.56

<b>Survey Program</b>	<b>Date</b>	1/2/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
70.00	10,097.00	Surveys To TD (14-08-127)	MWD+tag	MWD v3:standard declina	

<b>Survey</b>										
<b>Measured</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	7,763.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	1.41	313.86	69.99	7,693.01	0.60	-0.62	0.86	2.01	2.01	0.00
100.00	1.58	311.40	99.98	7,663.02	1.13	-1.20	1.63	0.61	0.57	-8.20
<b>Actual KOP</b>										
105.00	1.70	306.17	104.98	7,658.02	1.22	-1.31	1.77	3.80	2.35	-104.52
131.00	2.46	288.46	130.96	7,632.04	1.62	-2.15	2.63	3.80	2.93	-68.13
162.00	2.38	295.49	161.94	7,601.06	2.11	-3.36	3.78	0.99	-0.26	22.68
192.00	1.94	304.45	191.91	7,571.09	2.66	-4.34	4.84	1.84	-1.47	29.87
222.00	2.11	323.70	221.90	7,541.10	3.39	-5.09	5.88	2.32	0.57	64.17



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<b>Site:</b>	RU 42-7 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 7763.00usft (Nabors 574 (26' RKB) kjs)
<b>Well:</b>	RU 431-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	14-08-127	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys - Jan.2,2015	<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)
252.00	2.73	331.08	251.87	7,511.13	4.47	-5.76	7.13	2.31	2.07	24.60
283.00	3.87	342.77	282.82	7,480.18	6.11	-6.43	8.82	4.25	3.68	37.71
313.00	5.37	338.91	312.72	7,450.28	8.39	-7.23	11.07	5.10	5.00	-12.87
343.00	6.07	337.06	342.57	7,420.43	11.16	-8.36	13.91	2.41	2.33	-6.17
373.00	7.30	330.12	372.37	7,390.63	14.27	-9.92	17.30	4.90	4.10	-23.13
402.00	8.36	327.04	401.10	7,361.90	17.64	-11.99	21.20	3.93	3.66	-10.62
433.00	8.71	324.93	431.75	7,331.25	21.45	-14.56	25.77	1.51	1.13	-6.81
463.00	9.94	320.19	461.36	7,301.64	25.30	-17.53	30.62	4.83	4.10	-15.80
493.00	10.82	320.63	490.86	7,272.14	29.46	-20.97	36.03	2.95	2.93	1.47
523.00	11.61	318.52	520.29	7,242.71	33.90	-24.76	41.86	2.97	2.63	-7.03
594.00	12.91	316.52	589.67	7,173.33	45.01	-34.95	56.93	1.93	1.83	-2.82
685.00	13.69	316.68	678.23	7,084.77	60.22	-49.33	77.83	0.86	0.86	0.18
775.00	14.75	318.74	765.47	6,997.53	76.58	-64.19	99.92	1.30	1.18	2.29
867.00	13.56	319.60	854.68	6,908.32	93.60	-78.91	122.42	1.31	-1.29	0.93
958.00	14.51	320.24	942.96	6,820.04	110.49	-93.11	144.49	1.06	1.04	0.70
1,053.00	14.77	314.88	1,034.88	6,728.12	128.18	-109.31	168.46	1.45	0.27	-5.64
1,133.00	13.31	313.12	1,112.49	6,650.51	141.67	-123.25	187.78	1.90	-1.83	-2.20
Actual SFC										
1,188.00	13.22	313.08	1,166.02	6,596.98	150.30	-132.47	200.32	0.16	-0.15	-0.08
1,243.00	13.14	313.03	1,219.57	6,543.43	158.86	-141.64	212.78	0.16	-0.15	-0.08
1,338.00	12.79	316.28	1,312.15	6,450.85	173.83	-156.80	234.01	0.85	-0.37	3.42
1,434.00	12.96	319.36	1,405.74	6,357.26	189.68	-171.15	255.38	0.74	0.18	3.21
1,529.00	12.30	318.39	1,498.44	6,264.56	205.33	-184.81	276.15	0.73	-0.69	-1.02
1,624.00	12.39	321.39	1,591.24	6,171.76	220.86	-197.89	296.45	0.68	0.09	3.16
1,720.00	13.05	321.47	1,684.89	6,078.11	237.38	-211.07	317.58	0.69	0.69	0.08
1,816.00	12.13	319.71	1,778.58	5,984.42	253.56	-224.34	338.50	1.04	-0.96	-1.83
1,911.00	13.05	323.14	1,871.29	5,891.71	269.75	-237.23	359.19	1.25	0.97	3.61
2,006.00	13.97	323.58	1,963.66	5,799.34	287.56	-250.47	381.33	0.97	0.97	0.46
2,102.00	13.18	322.96	2,056.98	5,706.02	305.62	-263.95	403.82	0.84	-0.82	-0.65
2,197.00	12.88	321.56	2,149.53	5,613.47	322.56	-277.05	425.21	0.46	-0.32	-1.47
2,292.00	12.70	321.29	2,242.18	5,520.82	339.00	-290.17	446.23	0.20	-0.19	-0.28
2,387.00	12.79	320.59	2,334.84	5,428.16	355.28	-303.37	467.18	0.19	0.09	-0.74
2,482.00	12.96	321.21	2,427.45	5,335.55	371.71	-316.72	488.34	0.23	0.18	0.65
2,577.00	12.61	320.24	2,520.09	5,242.91	387.98	-330.03	509.36	0.43	-0.37	-1.02
2,671.00	12.66	320.06	2,611.82	5,151.18	403.77	-343.20	529.92	0.07	0.05	-0.19
2,766.00	12.70	319.71	2,704.50	5,058.50	419.71	-356.64	550.77	0.09	0.04	-0.37
2,861.00	13.80	319.98	2,796.97	4,966.03	436.36	-370.68	572.55	1.16	1.16	0.28
2,957.00	13.89	318.83	2,890.18	4,872.82	453.80	-385.63	595.52	0.30	0.09	-1.20
3,052.00	13.58	318.31	2,982.46	4,780.54	470.71	-400.55	618.07	0.35	-0.33	-0.55
3,147.00	13.40	317.43	3,074.84	4,688.16	487.15	-415.42	640.22	0.29	-0.19	-0.93
3,243.00	14.02	321.21	3,168.11	4,594.89	504.40	-430.23	662.96	1.13	0.65	3.94



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<b>Wellbore:</b>	14-08-127	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)
3,338.00	14.15	320.15	3,260.25	4,502.75	522.29	-444.88	686.08	0.30	0.14	-1.12
3,433.00	14.11	319.80	3,352.38	4,410.62	540.05	-459.79	709.27	0.10	-0.04	-0.37
3,528.00	13.62	319.27	3,444.61	4,318.39	557.37	-474.56	732.03	0.53	-0.52	-0.56
3,623.00	13.40	320.24	3,536.98	4,226.02	574.31	-488.90	754.22	0.33	-0.23	1.02
3,718.00	13.27	321.56	3,629.42	4,133.58	591.31	-502.72	776.13	0.35	-0.14	1.39
3,813.00	13.10	321.65	3,721.92	4,041.08	608.29	-516.18	797.78	0.18	-0.18	0.09
3,908.00	12.96	320.68	3,814.47	3,948.53	624.98	-529.61	819.19	0.27	-0.15	-1.02
4,004.00	12.61	320.59	3,908.09	3,854.91	641.40	-543.09	840.43	0.37	-0.36	-0.09
4,099.00	12.44	320.24	4,000.83	3,762.17	657.28	-556.21	861.03	0.20	-0.18	-0.37
4,195.00	13.67	319.54	4,094.35	3,668.65	673.86	-570.19	882.72	1.29	1.28	-0.73
4,290.00	13.58	318.22	4,186.67	3,576.33	690.72	-584.90	905.09	0.34	-0.09	-1.39
4,386.00	13.80	321.21	4,279.95	3,483.05	708.05	-599.59	927.81	0.77	0.23	3.11
4,480.00	13.27	320.68	4,371.34	3,391.66	725.13	-613.45	949.80	0.58	-0.56	-0.56
4,576.00	12.92	319.62	4,464.84	3,298.16	741.83	-627.38	971.55	0.44	-0.36	-1.10
4,671.00	12.83	319.71	4,557.45	3,205.55	757.97	-641.08	992.71	0.10	-0.09	0.09
4,766.00	12.39	319.54	4,650.16	3,112.84	773.77	-654.52	1,013.45	0.46	-0.46	-0.18
4,862.00	13.32	319.62	4,743.75	3,019.25	790.03	-668.36	1,034.81	0.97	0.97	0.08
4,956.00	13.01	319.27	4,835.28	2,927.72	806.29	-682.28	1,056.22	0.34	-0.33	-0.37
5,051.00	12.48	319.10	4,927.94	2,835.06	822.15	-695.98	1,077.18	0.56	-0.56	-0.18
5,147.00	12.52	319.71	5,021.66	2,741.34	837.93	-709.50	1,097.96	0.14	0.04	0.64
5,241.00	12.26	319.98	5,113.48	2,649.52	853.35	-722.51	1,118.13	0.28	-0.28	0.29
5,336.00	12.74	319.71	5,206.22	2,556.78	869.06	-735.77	1,138.69	0.51	0.51	-0.28
5,431.00	12.35	319.27	5,298.95	2,464.05	884.75	-749.17	1,159.32	0.42	-0.41	-0.46
5,526.00	13.01	318.04	5,391.64	2,371.36	900.40	-762.95	1,180.17	0.75	0.69	-1.29
5,621.00	14.37	321.12	5,483.94	2,279.06	917.53	-777.50	1,202.65	1.62	1.43	3.24
5,717.00	14.02	320.00	5,577.01	2,185.99	935.71	-792.45	1,226.18	0.46	-0.36	-1.17
5,812.00	13.40	319.10	5,669.30	2,093.70	952.85	-807.06	1,248.70	0.69	-0.65	-0.95
5,908.00	13.45	318.39	5,762.68	2,000.32	969.60	-821.75	1,270.98	0.18	0.05	-0.74
6,003.00	13.14	318.83	5,855.13	1,907.87	985.99	-836.20	1,292.83	0.34	-0.33	0.46
6,099.00	12.66	321.47	5,948.71	1,814.29	1,002.44	-849.94	1,314.25	0.79	-0.50	2.75
6,194.00	11.07	324.11	6,041.68	1,721.32	1,017.97	-861.77	1,333.75	1.77	-1.67	2.78
6,290.00	9.49	322.61	6,136.13	1,626.87	1,031.73	-871.98	1,350.84	1.67	-1.65	-1.56
6,385.00	9.23	320.50	6,229.87	1,533.13	1,043.83	-881.58	1,366.28	0.45	-0.27	-2.22
6,480.00	7.91	319.10	6,323.80	1,439.20	1,054.65	-890.71	1,380.43	1.41	-1.39	-1.47
6,574.00	6.68	321.82	6,417.04	1,345.96	1,063.83	-898.32	1,392.37	1.36	-1.31	2.89
6,670.00	6.28	321.12	6,512.43	1,250.57	1,072.31	-905.07	1,403.19	0.42	-0.42	-0.73
6,764.00	6.06	318.05	6,605.88	1,157.12	1,080.00	-911.61	1,413.29	0.42	-0.23	-3.27
6,860.00	4.75	325.16	6,701.46	1,061.54	1,087.04	-917.27	1,422.32	1.53	-1.36	7.41
6,955.00	3.82	328.41	6,796.19	966.81	1,092.96	-921.17	1,429.36	1.01	-0.98	3.42
7,050.00	3.38	332.90	6,891.00	872.00	1,098.15	-924.11	1,435.21	0.55	-0.46	4.73
7,145.00	2.99	286.85	6,985.87	777.13	1,101.36	-927.76	1,440.02	2.65	-0.41	-48.47



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<b>Well:</b>	RU 431-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	14-08-127	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys - Jan.2,2015	<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)
7,240.00	2.72	325.34	7,080.76	682.24	1,103.93	-931.41	1,444.35	2.00	-0.28	40.52
7,335.00	1.98	321.65	7,175.68	587.32	1,107.07	-933.71	1,448.23	0.79	-0.78	-3.88
7,430.00	2.07	317.34	7,270.62	492.38	1,109.62	-935.89	1,451.58	0.19	0.09	-4.54
7,526.00	2.59	314.79	7,366.54	396.46	1,112.43	-938.60	1,455.48	0.55	0.54	-2.66
7,621.00	2.29	305.03	7,461.46	301.54	1,115.03	-941.68	1,459.45	0.54	-0.32	-10.27
7,717.00	1.58	307.14	7,557.40	205.60	1,116.93	-944.31	1,462.60	0.74	-0.74	2.20
7,812.00	0.83	334.13	7,652.38	110.62	1,118.34	-945.65	1,464.55	0.97	-0.79	28.41
7,907.00	0.88	313.21	7,747.37	15.63	1,119.46	-946.48	1,465.94	0.33	0.05	-22.02
8,002.00	0.70	291.85	7,842.36	-79.36	1,120.17	-947.55	1,467.18	0.36	-0.19	-22.48
8,097.00	0.53	30.82	7,937.36	-174.36	1,120.76	-947.87	1,467.83	0.99	-0.18	104.18
8,192.00	0.13	340.02	8,032.36	-269.35	1,121.24	-947.68	1,468.08	0.48	-0.42	-53.47
8,287.00	0.79	179.43	8,127.35	-364.35	1,120.69	-947.71	1,467.67	0.96	0.69	-169.04
8,382.00	1.54	183.48	8,222.33	-459.33	1,118.76	-947.78	1,466.25	0.79	0.79	4.26
8,476.00	1.23	151.58	8,316.31	-553.31	1,116.61	-947.38	1,464.36	0.87	-0.33	-33.94
8,570.00	1.36	118.97	8,410.28	-647.28	1,115.18	-945.92	1,462.32	0.78	0.14	-34.69
8,666.00	1.14	122.05	8,506.26	-743.26	1,114.13	-944.11	1,460.35	0.24	-0.23	3.21
8,760.00	0.97	136.60	8,600.24	-837.24	1,113.05	-942.78	1,458.66	0.34	-0.18	15.48
8,855.00	0.66	136.28	8,695.23	-932.23	1,112.07	-941.85	1,457.31	0.33	-0.33	-0.34
8,951.00	0.44	149.20	8,791.23	-1,028.23	1,111.36	-941.27	1,456.40	0.26	-0.23	13.46
9,045.00	0.97	183.75	8,885.22	-1,122.22	1,110.25	-941.14	1,455.47	0.70	0.56	36.76
9,139.00	0.97	191.39	8,979.21	-1,216.21	1,108.68	-941.35	1,454.41	0.14	0.00	8.13
9,234.00	1.32	187.00	9,074.19	-1,311.19	1,106.80	-941.64	1,453.17	0.38	0.37	-4.62
9,329.00	1.19	193.50	9,169.17	-1,406.17	1,104.76	-942.01	1,451.85	0.20	-0.14	6.84
9,424.00	1.32	195.26	9,264.15	-1,501.15	1,102.74	-942.52	1,450.65	0.14	0.14	1.85
9,520.00	1.54	202.73	9,360.12	-1,597.12	1,100.49	-943.31	1,449.45	0.30	0.23	7.78
9,614.00	1.80	205.81	9,454.08	-1,691.08	1,097.99	-944.44	1,448.28	0.29	0.28	3.28
9,708.00	2.04	206.60	9,548.02	-1,785.02	1,095.17	-945.84	1,447.03	0.26	0.26	0.84
9,805.00	2.29	214.68	9,644.95	-1,881.95	1,092.03	-947.71	1,445.86	0.41	0.26	8.33
9,899.00	1.93	211.96	9,738.89	-1,975.89	1,089.14	-949.62	1,444.90	0.40	-0.38	-2.89
9,994.00	2.20	213.45	9,833.83	-2,070.83	1,086.26	-951.47	1,443.91	0.29	0.28	1.57
10,052.00	2.15	212.75	9,891.79	-2,128.79	1,084.42	-952.67	1,443.29	0.10	-0.09	-1.21
Extrapolation To TD										
10,097.00	2.15	212.75	9,936.75	-2,173.75	1,083.00	-953.59	1,442.80	0.00	0.00	0.00

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,188.00	1,166.02	Actual SFC	0.000	0.000