



Scientific Drilling

## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	WPX Energy Rocky Mountain, LLC.
<b>Well Name &amp; No.</b>	PA 31-27
<b>County &amp; State</b>	Garfield, CO
<b>SDI Job No.</b>	421114DEFK220145
<b>Rig</b>	Nabors 576

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 8,849 feet is true and correct as determined from all available records.

  
Signature

26-Nov-14  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

<b>Company:</b>	WPX Energy Rocky Mountain, LLC	<b>Local Co-ordinate Reference:</b>	Well PA 31-27 - Slot B03
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Site:</b>	DOE 2-W-27 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Well:</b>	PA 31-27	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Grand Junction District

<b>Project</b>	Garfield County, CO NAD83		
<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		

Site	DOE 2-W-27 Pad						
Site Position:		Northing:	1,615,065.30	usft	Latitude:	39° 29' 45.439 N	
From:	Map	Easting:	2,300,864.40	usft	Longitude:	107° 58' 39.895 W	
Position Uncertainty:	0.00	ft	Slot Radius:	13.200	in	Grid Convergence:	-1.56 °

Well	PA 31-27 - Slot B03					
Well Position	+N/-S	0.00 ft	Northing:	1,615,095.80 usft	Latitude:	39° 29' 45.738 N
	+E/-W	0.00 ft	Easting:	2,300,855.80 usft	Longitude:	107° 58' 40.016 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,856.01 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	11/26/2014	9.90	65.65	51,905

<b>Design</b>	Wellbore #1				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	318.17	

<b>Survey Program</b>	<b>Date</b>	11/24/2014		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
83.00	721.00	Survey #1 - Gyro MWD (Wellbore #1)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4
793.00	2,875.00	Survey #2 - Surface MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1
2,972.00	8,849.00	Survey #3 - Production MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
83.00	0.88	282.74	83.00	0.14	-0.62	0.52	1.06	1.06	0.00	
<b>First SDI Gyro MWD Survey</b>										
173.00	1.50	312.01	172.98	1.08	-2.17	2.25	0.94	0.69	32.52	
266.00	2.11	313.77	265.93	3.08	-4.31	5.17	0.66	0.66	1.89	
357.00	4.84	317.20	356.76	7.06	-8.13	10.68	3.01	3.00	3.77	
448.00	9.59	312.89	447.01	15.04	-16.30	22.07	5.25	5.22	-4.74	

<b>Company:</b>	WPX Energy Rocky Mountain, LLC	<b>Local Co-ordinate Reference:</b>	Well PA 31-27 - Slot B03
<b>Project:</b>	Garfield County, CO NAD83	<b>TVD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Site:</b>	DOE 2-W-27 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Well:</b>	PA 31-27	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
539.00	11.26	311.92	536.50	26.13	-28.46	38.45	1.85	1.84	-1.07
630.00	13.11	319.04	625.46	39.86	-41.84	57.61	2.62	2.03	7.82
721.00	16.28	321.33	713.47	57.62	-56.58	80.67	3.54	3.48	2.52
Last SDI Gyro MWD Survey									
793.00	18.01	321.69	782.27	74.24	-69.79	101.86	2.41	2.40	0.50
First SDI Surface MWD Survey									
885.00	19.66	320.43	869.34	97.33	-88.46	131.52	1.85	1.79	-1.37
976.00	20.66	318.57	954.76	121.16	-108.84	162.87	1.31	1.10	-2.04
1,067.00	22.06	316.92	1,039.51	145.68	-131.13	196.01	1.67	1.54	-1.81
1,164.00	20.90	320.73	1,129.78	172.38	-154.53	231.51	1.87	-1.20	3.93
1,258.00	21.82	320.49	1,217.32	198.84	-176.26	265.71	0.98	0.98	-0.26
1,353.00	19.87	321.21	1,306.10	225.05	-197.61	299.48	2.07	-2.05	0.76
1,448.00	19.08	317.67	1,395.66	249.12	-218.18	331.13	1.49	-0.83	-3.73
1,544.00	19.79	317.52	1,486.19	272.70	-239.72	363.07	0.74	0.74	-0.16
1,639.00	20.75	316.99	1,575.31	296.87	-262.06	395.98	1.03	1.01	-0.56
1,735.00	21.65	315.94	1,664.81	322.03	-285.97	430.68	1.02	0.94	-1.09
1,829.00	19.69	316.80	1,752.76	346.04	-308.88	463.84	2.11	-2.09	0.91
1,925.00	20.17	316.60	1,843.01	369.85	-331.32	496.55	0.51	0.50	-0.21
2,020.00	19.08	317.04	1,932.49	393.12	-353.15	528.45	1.16	-1.15	0.46
2,114.00	19.81	316.82	2,021.12	415.97	-374.52	559.73	0.78	0.78	-0.23
2,209.00	21.32	315.36	2,110.07	440.00	-397.68	593.08	1.68	1.59	-1.54
2,305.00	21.94	314.49	2,199.31	464.99	-422.73	628.41	0.73	0.65	-0.91
2,400.00	22.14	316.04	2,287.37	490.31	-447.82	664.01	0.65	0.21	1.63
2,494.00	21.73	318.80	2,374.56	516.16	-471.58	699.11	1.18	-0.44	2.94
2,589.00	22.34	319.19	2,462.62	543.05	-494.96	734.75	0.66	0.64	0.41
2,684.00	23.34	318.57	2,550.17	570.83	-519.22	771.62	1.08	1.05	-0.65
2,779.00	24.62	318.25	2,636.97	599.70	-544.85	810.23	1.35	1.35	-0.34
2,875.00	25.10	317.75	2,724.08	629.69	-571.85	850.58	0.55	0.50	-0.52
Last SDI Surface MWD Survey									
2,972.00	25.46	316.57	2,811.79	660.07	-600.02	892.00	0.64	0.37	-1.22
First SDI Production MWD Survey									
3,066.00	24.55	318.00	2,896.98	689.25	-626.98	931.72	1.16	-0.97	1.52
3,161.00	22.26	320.40	2,984.16	717.79	-651.65	969.44	2.61	-2.41	2.53
3,257.00	21.22	320.23	3,073.33	745.15	-674.36	1,004.98	1.09	-1.08	-0.18
3,352.00	20.10	319.74	3,162.22	770.82	-695.91	1,038.48	1.19	-1.18	-0.52
3,447.00	19.17	319.48	3,251.69	795.14	-716.59	1,070.39	0.98	-0.98	-0.27
3,543.00	19.50	320.27	3,342.28	819.44	-737.07	1,102.16	0.44	0.34	0.82
3,638.00	21.12	318.31	3,431.37	844.42	-758.59	1,135.12	1.85	1.71	-2.06
3,733.00	20.63	317.61	3,520.13	869.56	-781.26	1,168.97	0.58	-0.52	-0.74
3,828.00	21.01	320.11	3,608.93	894.99	-803.46	1,202.73	1.02	0.40	2.63
3,924.00	22.51	320.30	3,698.09	922.33	-826.24	1,238.29	1.56	1.56	0.20
4,019.00	22.16	320.28	3,785.96	950.11	-849.31	1,274.37	0.37	-0.37	-0.02
4,115.00	21.35	320.42	3,875.12	977.50	-872.01	1,309.93	0.85	-0.84	0.15

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<b>Site:</b>	DOE 2-W-27 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Well:</b>	PA 31-27	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,210.00	20.59	319.76	3,963.83	1,003.58	-893.82	1,343.91	0.84	-0.80	-0.69
4,306.00	21.48	320.61	4,053.43	1,030.05	-915.88	1,378.34	0.98	0.93	0.89
4,401.00	22.62	319.23	4,141.48	1,057.33	-938.85	1,413.99	1.32	1.20	-1.45
4,496.00	22.23	318.36	4,229.30	1,084.60	-962.72	1,450.22	0.54	-0.41	-0.92
4,591.00	21.81	318.75	4,317.37	1,111.30	-986.30	1,485.84	0.47	-0.44	0.41
4,685.00	21.12	319.32	4,404.85	1,137.27	-1,008.85	1,520.23	0.77	-0.73	0.61
4,781.00	20.34	319.01	4,494.63	1,162.98	-1,031.07	1,554.21	0.82	-0.81	-0.32
4,876.00	19.36	319.25	4,583.99	1,187.37	-1,052.18	1,586.46	1.04	-1.03	0.25
4,971.00	18.74	319.21	4,673.78	1,210.85	-1,072.42	1,617.46	0.65	-0.65	-0.04
5,067.00	17.94	319.28	4,764.91	1,233.74	-1,092.14	1,647.67	0.83	-0.83	0.07
5,162.00	16.54	316.98	4,855.64	1,254.71	-1,110.92	1,675.81	1.64	-1.47	-2.42
5,257.00	17.01	321.21	4,946.60	1,275.43	-1,128.85	1,703.21	1.38	0.49	4.45
5,352.00	16.71	321.91	5,037.51	1,297.01	-1,145.98	1,730.72	0.38	-0.32	0.74
5,447.00	13.91	321.14	5,129.13	1,316.66	-1,161.57	1,755.75	2.96	-2.95	-0.81
5,542.00	13.40	320.25	5,221.45	1,334.01	-1,175.77	1,778.16	0.58	-0.54	-0.94
5,637.00	11.90	322.61	5,314.14	1,350.26	-1,188.76	1,798.93	1.67	-1.58	2.48
5,732.00	10.64	323.71	5,407.31	1,365.11	-1,199.90	1,817.42	1.35	-1.33	1.16
5,828.00	9.92	322.08	5,501.77	1,378.78	-1,210.23	1,834.49	0.81	-0.75	-1.70
5,924.00	8.74	319.43	5,596.49	1,390.84	-1,220.05	1,850.03	1.31	-1.23	-2.76
6,019.00	7.85	317.97	5,690.50	1,401.14	-1,229.09	1,863.74	0.96	-0.94	-1.54
6,114.00	6.94	319.69	5,784.71	1,410.34	-1,237.15	1,875.96	0.99	-0.96	1.81
6,210.00	6.61	319.52	5,880.04	1,418.96	-1,244.49	1,887.28	0.34	-0.34	-0.18
6,305.00	5.98	315.69	5,974.47	1,426.66	-1,251.49	1,897.70	0.80	-0.66	-4.03
6,400.00	5.68	317.81	6,068.97	1,433.69	-1,258.11	1,907.34	0.39	-0.32	2.23
6,495.00	3.67	326.57	6,163.65	1,439.71	-1,262.94	1,915.05	2.24	-2.12	9.22
6,591.00	1.40	310.52	6,259.55	1,443.04	-1,265.53	1,919.25	2.45	-2.36	-16.72
6,686.00	1.25	294.46	6,354.53	1,444.22	-1,267.35	1,921.35	0.42	-0.16	-16.91
6,781.00	2.37	309.17	6,449.48	1,445.89	-1,269.82	1,924.24	1.27	1.18	15.48
6,876.00	2.81	343.80	6,544.39	1,449.36	-1,271.99	1,928.28	1.68	0.46	36.45
6,971.00	2.48	343.55	6,639.29	1,453.57	-1,273.22	1,932.24	0.35	-0.35	-0.26
7,066.00	3.74	327.84	6,734.15	1,458.17	-1,275.45	1,937.15	1.59	1.33	-16.54
7,161.00	3.33	320.38	6,828.97	1,462.92	-1,278.86	1,942.96	0.65	-0.43	-7.85
7,257.00	2.89	319.98	6,924.83	1,466.92	-1,282.20	1,948.17	0.46	-0.46	-0.42
7,352.00	1.61	336.11	7,019.75	1,469.97	-1,284.28	1,951.83	1.49	-1.35	16.98
7,447.00	0.35	319.28	7,114.74	1,471.41	-1,285.01	1,953.39	1.35	-1.33	-17.72
7,542.00	0.44	235.02	7,209.73	1,471.42	-1,285.49	1,953.72	0.56	0.09	-88.69
7,638.00	0.57	354.37	7,305.73	1,471.69	-1,285.84	1,954.15	0.91	0.14	124.32
7,734.00	1.57	43.65	7,401.72	1,473.11	-1,284.98	1,954.64	1.33	1.04	51.33
7,829.00	0.90	57.25	7,496.69	1,474.46	-1,283.46	1,954.63	0.76	-0.71	14.32
7,924.00	0.70	40.45	7,591.68	1,475.30	-1,282.45	1,954.59	0.32	-0.21	-17.68
8,019.00	0.10	151.66	7,686.68	1,475.67	-1,282.04	1,954.58	0.78	-0.63	117.06
8,114.00	0.68	155.22	7,781.68	1,475.09	-1,281.76	1,953.96	0.61	0.61	3.75

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<b>Site:</b>	DOE 2-W-27 Pad	<b>MD Reference:</b>	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
<b>Well:</b>	PA 31-27	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Grand Junction District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,209.00	1.21	197.24	7,876.67	1,473.62	-1,281.82	1,952.91	0.88	0.56	44.23	
8,305.00	2.02	205.04	7,972.63	1,471.12	-1,282.84	1,951.72	0.87	0.84	8.13	
8,400.00	2.10	215.35	8,067.57	1,468.18	-1,284.55	1,950.68	0.40	0.08	10.85	
8,495.00	3.09	229.96	8,162.47	1,465.11	-1,287.52	1,950.37	1.25	1.04	15.38	
8,590.00	2.90	232.85	8,257.34	1,462.01	-1,291.40	1,950.65	0.26	-0.20	3.04	
8,685.00	2.74	235.00	8,352.23	1,459.26	-1,295.17	1,951.11	0.20	-0.17	2.26	
8,789.00	2.89	230.80	8,456.10	1,456.18	-1,299.24	1,951.53	0.25	0.14	-4.04	
<b>Last SDI Production MWD Survey</b>										
8,849.00	2.89	230.80	8,516.02	1,454.27	-1,301.59	1,951.67	0.00	0.00	0.00	
<b>Projection to Bit</b>										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
83.00	83.00	0.14	-0.62	First SDI Gyro MWD Survey	
721.00	713.47	57.62	-56.58	Last SDI Gyro MWD Survey	
793.00	782.27	74.24	-69.79	First SDI Surface MWD Survey	
2,875.00	2,724.08	629.69	-571.85	Last SDI Surface MWD Survey	
2,972.00	2,811.79	660.07	-600.02	First SDI Production MWD Survey	
8,789.00	8,456.10	1,456.18	-1,299.24	Last SDI Production MWD Survey	
8,849.00	8,516.02	1,454.27	-1,301.59	Projection to Bit	

Checked By: _____	Approved By: _____	Date: _____
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