



Scientific Drilling

Directional Survey Certification

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

Operator	WPX Energy Rocky Mountain, LLC.
Well Name & No.	PA 541-27
County & State	Garfield, Co
SDI Job No.	421114DEFK216739
Rig	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 8,781 feet is true and correct as determined from all available records.

Signature

17-Nov-14

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District



WPX Energy Rocky Mountain, LLC

Garfield County, CO NAD83

DOE 2-W-27 Pad

PA 541-27 - Slot B04

Wellbore #1

Design: Wellbore #1

Standard Survey Report

17 November, 2014



Company:	WPX Energy Rocky Mountain, LLC	Local Co-ordinate Reference:	Well PA 541-27 - Slot B04
Project:	Garfield County, CO NAD83	TVD Reference:	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
Site:	DOE 2-W-27 Pad	MD Reference:	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
Well:	PA 541-27	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Grand Junction District

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 541-27 - Slot B04					
Well Position	+N/-S	0.00 ft	Northing:	1,615,088.30 usft	Latitude:	39° 29' 45.664 N
	+E/-W	0.00 ft	Easting:	2,300,855.48 usft	Longitude:	107° 58' 40.017 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,856.01 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2014	9.90	65.65	51,907

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	303.89	

Survey Program	Date	11/17/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
82.00	631.00	Survey #1 - Gyro Survey (Wellbore #1)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
703.00	2,892.00	Survey #2 - Surface MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	
2,973.00	8,781.00	Survey #3 - Production MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
82.00	0.53	257.87	82.00	-0.08	-0.37	0.26	0.65	0.65	0.00	
First SDI Gyro MWD Survey										
175.00	2.11	314.65	174.97	1.03	-2.01	2.24	2.01	1.70	61.05	
268.00	3.43	298.92	267.86	3.58	-5.66	6.70	1.63	1.42	-16.91	
359.00	4.22	303.05	358.66	6.72	-10.85	12.76	0.92	0.87	4.54	
450.00	7.39	306.47	449.18	12.03	-18.37	21.95	3.50	3.48	3.76	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
541.00	8.80	303.05	539.27	19.31	-28.91	34.76	1.64	1.55	-3.76
631.00	10.47	303.75	628.00	27.60	-41.48	49.82	1.86	1.86	0.78
Last SDI Gyro MWD Survey									
703.00	11.84	303.50	698.64	35.32	-53.08	63.75	1.90	1.90	-0.35
First SDI Surface MWD Survey									
795.00	13.55	305.27	788.39	46.75	-69.75	83.97	1.91	1.86	1.92
886.00	15.54	304.85	876.47	59.87	-88.46	106.81	2.19	2.19	-0.46
978.00	16.53	303.45	964.89	74.13	-109.49	132.22	1.16	1.08	-1.52
1,069.00	17.68	302.04	1,051.86	88.60	-132.01	158.98	1.34	1.26	-1.55
1,165.00	18.03	305.34	1,143.24	104.92	-156.49	188.40	1.12	0.36	3.44
1,260.00	18.84	304.30	1,233.36	122.07	-181.15	218.44	0.92	0.85	-1.09
1,355.00	20.14	302.79	1,322.92	139.57	-207.57	250.13	1.47	1.37	-1.59
1,450.00	21.01	305.30	1,411.86	158.27	-235.22	283.51	1.30	0.92	2.64
1,546.00	21.47	304.79	1,501.34	178.24	-263.69	318.28	0.52	0.48	-0.53
1,641.00	21.72	304.25	1,589.67	198.05	-292.50	353.24	0.34	0.26	-0.57
1,737.00	22.45	303.91	1,678.63	218.28	-322.40	389.34	0.77	0.76	-0.35
1,831.00	20.54	307.04	1,766.09	238.23	-350.46	423.76	2.37	-2.03	3.33
1,926.00	20.84	308.20	1,854.96	258.72	-377.04	457.25	0.53	0.32	1.22
2,021.00	21.63	307.41	1,943.51	279.80	-404.23	491.58	0.88	0.83	-0.83
2,116.00	22.07	304.33	2,031.69	300.51	-432.88	526.90	1.29	0.46	-3.24
2,211.00	22.28	302.10	2,119.66	320.14	-462.87	562.75	0.91	0.22	-2.35
2,306.00	22.88	300.54	2,207.38	339.10	-494.04	599.19	0.89	0.63	-1.64
2,401.00	22.54	301.00	2,295.02	357.86	-525.55	635.81	0.40	-0.36	0.48
2,496.00	21.11	303.42	2,383.21	376.66	-555.44	671.10	1.78	-1.51	2.55
2,591.00	21.46	303.59	2,471.73	395.70	-584.19	705.59	0.37	0.37	0.18
2,686.00	21.89	302.14	2,560.01	414.73	-613.67	740.67	0.72	0.45	-1.53
2,781.00	20.55	304.21	2,648.57	433.53	-642.45	775.04	1.62	-1.41	2.18
2,876.00	20.50	303.62	2,737.54	452.12	-670.09	808.35	0.22	-0.05	-0.62
2,892.00	20.40	303.61	2,752.53	455.21	-674.75	813.94	0.63	-0.63	-0.06
Last SDI Surface MWD Survey									
2,973.00	20.84	304.16	2,828.34	471.11	-698.43	842.47	0.59	0.54	0.68
First SDI Production MWD Survey									
3,067.00	20.47	302.68	2,916.30	489.38	-726.10	875.62	0.68	-0.39	-1.57
3,162.00	20.77	304.64	3,005.21	507.92	-753.94	909.07	0.79	0.32	2.06
3,258.00	21.63	305.21	3,094.71	527.80	-782.40	943.78	0.92	0.90	0.59
3,353.00	21.98	305.38	3,182.92	548.19	-811.20	979.06	0.37	0.37	0.18
3,448.00	21.60	305.06	3,271.13	568.53	-840.01	1,014.31	0.42	-0.40	-0.34
3,544.00	21.44	304.20	3,360.44	588.54	-868.99	1,049.52	0.37	-0.17	-0.90
3,640.00	20.43	303.15	3,450.10	607.56	-897.53	1,083.82	1.12	-1.05	-1.09
3,734.00	21.61	303.64	3,537.84	626.13	-925.67	1,117.54	1.27	1.26	0.52
3,829.00	22.00	308.05	3,626.05	646.79	-954.25	1,152.78	1.77	0.41	4.64
3,925.00	22.03	307.96	3,715.05	668.94	-982.61	1,188.67	0.05	0.03	-0.09
4,021.00	21.12	307.67	3,804.32	690.59	-1,010.49	1,223.89	0.95	-0.95	-0.30

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Site:	DOE 2-W-27 Pad	MD Reference:	KELLY BUSHING @ 5882.01ft (Nabors 576 (26' RKB) mab)
Well:	PA 541-27	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
4,116.00	22.87	310.09	3,892.41	712.94	-1,038.17	1,259.33	2.07	1.84	2.55
4,211.00	22.46	310.01	3,980.07	736.49	-1,066.19	1,295.72	0.43	-0.43	-0.08
4,307.00	22.47	307.16	4,068.79	759.36	-1,094.85	1,332.27	1.13	0.01	-2.97
4,402.00	22.48	307.67	4,156.57	781.43	-1,123.70	1,368.52	0.21	0.01	0.54
4,497.00	21.82	305.99	4,244.56	802.90	-1,152.36	1,404.29	0.96	-0.69	-1.77
4,592.00	21.49	305.85	4,332.86	823.47	-1,180.75	1,439.32	0.35	-0.35	-0.15
4,686.00	21.93	306.01	4,420.19	843.87	-1,208.91	1,474.07	0.47	0.47	0.17
4,782.00	21.33	304.21	4,509.43	864.23	-1,237.85	1,509.45	0.93	-0.63	-1.88
4,877.00	20.53	302.56	4,598.16	882.91	-1,266.18	1,543.38	1.05	-0.84	-1.74
4,972.00	19.00	307.60	4,687.57	901.31	-1,292.47	1,575.47	2.41	-1.61	5.31
5,068.00	17.77	305.13	4,778.67	919.28	-1,316.84	1,605.71	1.52	-1.28	-2.57
5,163.00	16.93	308.64	4,869.35	936.26	-1,339.50	1,633.99	1.41	-0.88	3.69
5,258.00	16.71	309.08	4,960.28	953.51	-1,360.90	1,661.38	0.27	-0.23	0.46
5,353.00	15.05	307.50	5,051.66	969.63	-1,381.29	1,687.29	1.81	-1.75	-1.66
5,448.00	14.05	305.05	5,143.61	983.76	-1,400.52	1,711.13	1.24	-1.05	-2.58
5,543.00	13.54	303.98	5,235.87	996.60	-1,419.18	1,733.78	0.60	-0.54	-1.13
5,639.00	11.88	306.15	5,329.51	1,008.71	-1,436.48	1,754.89	1.80	-1.73	2.26
5,733.00	10.83	303.45	5,421.67	1,019.28	-1,451.66	1,773.39	1.25	-1.12	-2.87
5,829.00	9.27	296.13	5,516.20	1,027.66	-1,466.13	1,790.07	2.10	-1.63	-7.63
5,925.00	8.84	298.78	5,611.00	1,034.62	-1,479.54	1,805.08	0.62	-0.45	2.76
6,020.00	8.27	295.77	5,704.95	1,041.10	-1,492.09	1,819.12	0.76	-0.60	-3.17
6,115.00	7.07	303.03	5,799.10	1,047.26	-1,503.14	1,831.73	1.62	-1.26	7.64
6,211.00	6.19	312.74	5,894.46	1,053.99	-1,511.90	1,842.75	1.48	-0.92	10.11
6,306.00	5.33	322.24	5,988.98	1,060.96	-1,518.36	1,852.00	1.35	-0.91	10.00
6,401.00	4.84	323.24	6,083.61	1,067.66	-1,523.46	1,859.97	0.52	-0.52	1.05
6,496.00	3.90	321.54	6,178.33	1,073.40	-1,527.87	1,866.83	1.00	-0.99	-1.79
6,592.00	1.87	352.39	6,274.21	1,077.51	-1,530.11	1,870.98	2.59	-2.11	32.14
6,687.00	1.76	48.40	6,369.17	1,080.01	-1,529.22	1,871.64	1.80	-0.12	58.96
6,782.00	1.37	45.92	6,464.13	1,081.77	-1,527.31	1,871.04	0.42	-0.41	-2.61
6,877.00	0.88	59.56	6,559.11	1,082.93	-1,525.87	1,870.48	0.58	-0.52	14.36
6,973.00	0.51	68.68	6,655.11	1,083.46	-1,524.84	1,869.92	0.40	-0.39	9.50
7,067.00	0.41	75.95	6,749.10	1,083.69	-1,524.12	1,869.46	0.12	-0.11	7.73
7,162.00	0.75	152.83	6,844.10	1,083.22	-1,523.51	1,868.68	0.81	0.36	80.93
7,258.00	0.39	244.16	6,940.09	1,082.52	-1,523.51	1,868.30	0.89	-0.38	95.14
7,353.00	1.03	243.12	7,035.09	1,081.99	-1,524.57	1,868.88	0.67	0.67	-1.09
7,448.00	1.24	225.28	7,130.07	1,080.88	-1,526.06	1,869.50	0.43	0.22	-18.78
7,543.00	1.14	230.59	7,225.05	1,079.56	-1,527.52	1,869.97	0.16	-0.11	5.59
7,639.00	0.24	155.23	7,321.04	1,078.77	-1,528.17	1,870.08	1.15	-0.94	-78.50
7,735.00	0.50	43.44	7,417.04	1,078.89	-1,527.80	1,869.84	0.66	0.27	-116.45
7,830.00	0.09	350.65	7,512.04	1,079.27	-1,527.53	1,869.82	0.48	-0.43	-55.57
7,925.00	0.53	237.36	7,607.04	1,079.10	-1,527.91	1,870.04	0.60	0.46	-119.25
8,020.00	1.25	228.72	7,702.03	1,078.18	-1,529.06	1,870.48	0.77	0.76	-9.09

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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)	
8,115.00	2.02	234.90	7,796.99	1,076.54	-1,531.21	1,871.35	0.83	0.81	6.51	
8,211.00	2.64	223.38	7,892.91	1,073.96	-1,534.11	1,872.32	0.81	0.65	-12.00	
8,306.00	3.14	225.17	7,987.79	1,070.53	-1,537.46	1,873.19	0.53	0.53	1.88	
8,401.00	3.44	222.55	8,082.63	1,066.60	-1,541.23	1,874.13	0.35	0.32	-2.76	
8,497.00	3.63	225.76	8,178.45	1,062.36	-1,545.36	1,875.19	0.29	0.20	3.34	
8,592.00	4.04	224.00	8,273.23	1,057.85	-1,549.83	1,876.39	0.45	0.43	-1.85	
8,687.00	4.31	227.43	8,367.98	1,053.03	-1,554.79	1,877.81	0.39	0.28	3.61	
8,724.00	4.53	229.88	8,404.87	1,051.15	-1,556.93	1,878.54	0.78	0.59	6.62	
Last SDI Production MWD Survey										
8,781.00	4.53	229.88	8,461.69	1,048.25	-1,560.37	1,879.78	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
82.00	82.00	-0.08	-0.37	First SDI Gyro MWD Survey	
631.00	628.00	27.60	-41.48	Last SDI Gyro MWD Survey	
703.00	698.64	35.32	-53.08	First SDI Surface MWD Survey	
2,892.00	2,752.53	455.21	-674.75	Last SDI Surface MWD Survey	
2,973.00	2,828.34	471.11	-698.43	First SDI Production MWD Survey	
8,724.00	8,404.87	1,051.15	-1,556.93	Last SDI Production MWD Survey	
8,781.00	8,461.69	1,048.25	-1,560.37	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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