

RKI Exploration & Production

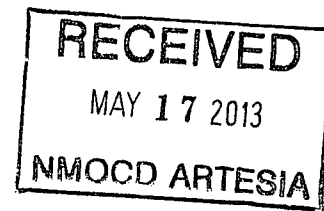
Eddy County (NM83E)

Sec 21-T26S-R30E

RDX Fed #21-11

Wellbore #1

Survey: MWD Surveys



Standard Survey Report

16 September, 2012

Wolverine Directional, LLC

Survey Report

Company:	RKL Exploration & Production	Local Co-ordinate Reference:	Well: RDX Fed #21-11
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 21-T26S-R30E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	RDX Fed #21-11	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003.21-Single-User-Db

Design:	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(^)	
	0.0	0.0	0.0	264.47	

Survey Program		Date: 2012/09/16			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
100.0	7,463.0	MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.13	3.23	100.0	0.1	0.0	0.0	0.13	0.13	0.00	
First GYRO Survey										
200.0	0.19	337.98	200.0	0.4	0.0	0.0	0.09	0.06	-25.25	
300.0	0.13	104.03	300.0	0.5	0.0	0.0	0.29	-0.06	126.05	
400.0	0.06	17.42	400.0	0.5	0.1	-0.2	0.14	-0.07	-86.61	
500.0	0.29	282.96	500.0	0.6	-0.1	0.0	0.30	0.23	-94.46	
600.0	0.57	297.55	600.0	0.9	-0.8	0.7	0.30	0.28	14.59	
700.0	0.66	22.72	700.0	1.7	-1.0	0.8	0.83	0.09	85.17	
800.0	1.23	50.15	800.0	2.9	0.0	-0.3	0.71	0.57	27.43	
860.0	0.76	251.18	860.0	3.2	0.2	-0.5	3.26	-0.78	-264.95	
Last GYRO Survey										
947.0	1.10	258.30	947.0	2.8	-1.2	0.9	0.41	0.39	8.18	
First MWD Survey										
977.0	1.20	250.10	977.0	2.7	-1.8	1.5	0.64	0.33	-27.33	
1,008.0	1.40	257.00	1,007.9	2.5	-2.5	2.2	0.82	0.65	22.26	
1,038.0	1.80	257.50	1,037.9	2.3	-3.3	3.0	1.33	1.33	1.67	
1,069.0	2.80	255.00	1,068.9	2.0	-4.5	4.3	3.24	3.23	-8.06	
1,100.0	3.20	260.30	1,099.9	1.6	-6.1	5.9	1.57	1.29	17.10	
1,130.0	3.80	259.30	1,129.8	1.3	-7.9	7.7	2.01	2.00	-3.33	
1,161.0	4.70	263.50	1,160.7	1.0	-10.1	10.0	3.07	2.90	13.55	
1,191.0	5.50	260.30	1,190.6	0.6	-12.8	12.7	2.83	2.67	-10.67	
1,222.0	6.20	260.30	1,221.4	0.1	-15.9	15.8	2.26	2.26	0.00	
1,252.0	7.10	261.60	1,251.2	-0.5	-19.3	19.3	3.04	3.00	4.33	
1,282.0	8.20	262.70	1,281.0	-1.0	-23.3	23.3	3.70	3.67	3.67	
1,313.0	9.10	264.40	1,311.6	-1.5	-27.9	27.9	3.02	2.90	5.48	
1,343.0	9.50	265.30	1,341.2	-2.0	-32.7	32.8	1.42	1.33	3.00	
1,375.0	9.90	265.40	1,372.8	-2.4	-38.1	38.2	1.25	1.25	0.31	
1,406.0	10.20	264.40	1,403.3	-2.9	-43.5	43.6	1.12	0.97	-3.23	
1,437.0	10.30	263.50	1,433.8	-3.5	-49.0	49.1	0.61	0.32	-2.90	
1,468.0	10.50	263.30	1,464.3	-4.1	-54.6	54.7	0.66	0.65	-0.65	
1,530.0	10.50	263.10	1,525.3	-5.5	-65.8	66.0	0.06	0.00	-0.32	
1,592.0	9.90	261.90	1,586.3	-6.9	-76.7	77.0	1.03	-0.97	-1.94	
1,686.0	9.40	272.30	1,679.0	-7.7	-92.3	92.6	1.93	-0.53	11.06	
1,780.0	10.40	270.00	1,771.6	-7.4	-108.5	108.7	1.14	1.06	-2.45	
1,873.0	10.80	265.40	1,863.0	-8.1	-125.6	125.8	1.01	0.43	-4.95	
1,967.0	9.90	263.00	1,955.4	-9.8	-142.4	142.6	1.06	-0.96	-2.55	
2,060.0	10.30	260.80	2,047.0	-12.1	-158.5	158.9	0.60	0.43	-2.37	

Wolverine Directional, LLC

Survey Report

Company:	RKI Exploration & Production	Local Co-ordinate Reference:	Well RDX-Fed #21-11
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 21-T26S-R30E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	RDX Fed #21-11	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 2003.21 Single User Db

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)
2,154.0	9.70	262.60	2,139.6	-14.5	-174.7	175.2	0.72	-0.64	1.91
2,248.0	9.50	264.30	2,232.3	-16.3	-190.2	190.9	0.37	-0.21	1.81
2,341.0	9.10	263.30	2,324.0	-17.9	-205.2	205.9	0.46	-0.43	-1.08
2,434.0	10.10	264.60	2,415.7	-19.5	-220.6	221.4	1.10	1.08	1.40
2,531.0	10.70	265.60	2,511.1	-21.0	-238.0	239.0	0.65	0.62	1.03
2,625.0	10.10	262.90	2,603.6	-22.7	-254.9	255.9	0.82	-0.64	-2.87
2,718.0	10.20	259.90	2,695.1	-25.1	-271.1	272.3	0.58	0.11	-3.23
2,812.0	9.90	257.00	2,787.7	-28.4	-287.2	288.6	0.63	-0.32	-3.09
2,905.0	9.60	254.00	2,879.3	-32.3	-302.4	304.1	0.63	-0.32	-3.23
2,967.0	9.60	256.00	2,940.5	-35.0	-312.4	314.3	0.54	0.00	3.23
3,061.0	8.80	256.10	3,033.3	-38.6	-327.0	329.2	0.85	-0.85	0.11
3,154.0	8.90	253.50	3,125.2	-42.4	-340.8	343.3	0.44	0.11	-2.80
3,247.0	9.00	255.70	3,217.0	-46.2	-354.7	357.6	0.38	0.11	2.37
3,341.0	9.30	256.60	3,309.8	-49.8	-369.3	372.3	0.35	0.32	0.96
3,385.0	9.30	258.10	3,353.3	-51.4	-376.2	379.4	0.55	0.00	3.41
3,450.0	9.10	258.70	3,417.4	-53.5	-386.4	389.7	0.34	-0.31	0.92
3,481.0	10.00	261.30	3,448.0	-54.3	-391.4	394.9	3.22	2.90	8.39
3,543.0	11.10	267.80	3,508.9	-55.4	-402.7	406.2	2.61	1.77	10.48
3,606.0	10.50	270.00	3,570.8	-55.6	-414.5	418.0	1.16	-0.95	3.49
3,699.0	9.90	270.30	3,662.4	-55.6	-431.0	434.3	0.65	-0.65	0.32
3,793.0	10.90	267.60	3,754.8	-55.9	-448.0	451.3	1.18	1.06	-2.87
3,886.0	10.70	267.90	3,846.2	-56.6	-465.4	468.7	0.22	-0.22	0.32
3,980.0	10.30	267.10	3,938.6	-57.3	-482.5	485.8	0.45	-0.43	-0.85
4,073.0	10.10	268.10	4,030.1	-58.0	-498.9	502.2	0.29	-0.22	1.08
4,166.0	9.80	267.40	4,121.7	-58.7	-515.0	518.3	0.35	-0.32	-0.75
4,260.0	9.50	267.10	4,214.4	-59.4	-530.7	534.0	0.32	-0.32	-0.32
4,354.0	10.10	264.90	4,307.0	-60.5	-546.7	550.0	0.75	0.64	-2.34
4,447.0	9.50	264.50	4,398.7	-62.0	-562.5	565.8	0.65	-0.65	-0.43
4,540.0	10.20	269.60	4,490.3	-62.8	-578.3	581.7	1.20	0.75	5.48
4,633.0	10.10	270.00	4,581.8	-62.9	-594.7	598.0	0.13	-0.11	0.43
4,727.0	9.90	270.80	4,674.4	-62.7	-611.0	614.2	0.26	-0.21	0.85
4,820.0	10.70	268.30	4,765.9	-62.9	-627.7	630.8	0.99	0.86	-2.69
4,914.0	10.20	267.80	4,858.4	-63.5	-644.7	647.8	0.54	-0.53	-0.53
5,007.0	8.60	269.00	4,950.1	-63.9	-659.9	663.0	1.73	-1.72	1.29
5,101.0	5.10	265.50	5,043.4	-64.3	-671.1	674.2	3.75	-3.72	-3.72
5,194.0	3.50	250.90	5,136.2	-65.6	-677.9	681.1	2.07	-1.72	-15.70
5,288.0	1.80	258.20	5,230.0	-66.8	-682.0	685.3	1.84	-1.81	7.77
5,352.0	1.39	257.31	5,294.0	-67.2	-683.8	687.1	0.65	-0.65	-1.40
RDX/FED #21-11-TGT #1									
5,381.0	1.20	256.70	5,323.0	-67.4	-684.4	687.7	0.65	-0.64	-2.09
5,474.0	1.20	245.40	5,416.0	-68.0	-686.3	689.6	0.25	0.00	-12.15
5,567.0	0.50	303.60	5,509.0	-68.2	-687.5	690.8	1.11	-0.75	62.58
5,660.0	0.40	314.80	5,602.0	-67.7	-688.0	691.4	0.14	-0.11	12.04
5,754.0	0.30	274.30	5,696.0	-67.5	-688.5	691.8	0.28	-0.11	-43.09
5,847.0	0.50	248.70	5,789.0	-67.6	-689.1	692.4	0.28	0.22	-27.53
5,941.0	0.50	240.70	5,883.0	-68.0	-689.9	693.2	0.07	0.00	-8.51
6,034.0	0.30	221.90	5,976.0	-68.3	-690.4	693.8	0.25	-0.22	-20.22
6,127.0	0.40	229.40	6,069.0	-68.7	-690.8	694.2	0.12	0.11	8.06
6,220.0	0.30	235.70	6,162.0	-69.1	-691.3	694.7	0.12	-0.11	6.77
6,314.0	0.40	227.60	6,256.0	-69.4	-691.7	695.2	0.12	0.11	-8.62
6,407.0	0.30	192.40	6,349.0	-69.9	-692.0	695.5	0.25	-0.11	-37.85
6,501.0	0.40	193.20	6,443.0	-70.4	-692.1	695.7	0.11	0.11	0.85
6,594.0	0.50	181.10	6,536.0	-71.2	-692.2	695.8	0.15	0.11	-13.01
6,688.0	0.60	167.00	6,630.0	-72.1	-692.1	695.8	0.18	0.11	-15.00

Wolverine Directional, LLC

Survey Report

Company: RKI Exploration & Production	Local Co-ordinate Reference: Well RDX Fed #21-11
Project: Eddy County (NM83E)	TVD Reference: WELL @ 0.0ft (Original Well Elev)
Site: Sec 21-T26S-R30E	MD Reference: WELL @ 0.0ft (Original Well Elev)
Well: RDX Fed #21-11	North Reference: True
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM 2003.21 Single User Db

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)
6,781.0	0.80	171.30	6,723.0	-73.2	-691.9	695.7	0.22	0.22	4.62
6,874.0	0.80	180.70	6,815.9	-74.5	-691.8	695.8	0.14	0.00	10.11
6,968.0	1.00	170.80	6,909.9	-75.9	-691.7	695.8	0.27	0.21	-10.53
7,062.0	1.20	161.60	7,003.9	-77.7	-691.2	695.5	0.28	0.21	-9.79
7,155.0	1.40	165.00	7,096.9	-79.7	-690.6	695.1	0.23	0.22	3.66
7,249.0	0.50	209.20	7,190.9	-81.2	-690.5	695.1	1.17	-0.96	47.02
7,342.0	0.60	226.80	7,283.9	-81.9	-691.1	695.8	0.21	0.11	18.92
7,407.0	0.69	232.17	7,348.8	-82.3	-691.6	696.4	0.17	0.14	8.27
RDX FED #21-11 PBHL									
7,413.0	0.70	232.60	7,354.9	-82.4	-691.7	696.4	0.17	0.14	7.08
Last MWD Survey									
7,463.0	0.70	232.60	7,404.9	-82.7	-692.2	696.9	0.00	0.00	0.00
Proj to TD									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
100.0	100.0	0.1	0.0	First GYRO Survey
860.0	860.0	3.2	0.2	Last GYRO Survey
947.0	947.0	2.8	-1.2	First MWD Survey
7,413.0	7,354.9	-82.4	-691.7	Last MWD Survey
7,463.0	7,404.9	-82.7	-692.2	Proj to TD

Checked By: _____ Approved By: _____ Date: _____