

30-015-40568

RKI Exploration & Production

Eddy County (NM83E)

Sec 22-T26S-R29E

East Pecos Fed 22-1H

Wellbore #1

Survey: MWD Surveys

Standard Survey Report

11 September, 2012

Wolverine Directional, LLC

Survey Report

Company:	RKI Exploration & Production	Local Co-ordinate Reference:	Well East Pecos Fed 22-1H
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 22-T26S-R29E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	East Pecos Fed 22-1H	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) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	359.60

Survey Program	Date 2012/09/11			
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
100.0	11,543.0	MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.23	242.78	100.0	-0.1	-0.2	-0.1	0.23	0.23	0.00
First GYRO Survey									
200.0	0.50	265.03	200.0	-0.2	-0.8	-0.2	0.30	0.27	22.25
300.0	0.24	225.77	300.0	-0.4	-1.4	-0.4	0.35	-0.26	-39.26
400.0	0.51	220.30	400.0	-0.9	-1.8	-0.9	0.27	0.27	-5.47
500.0	0.43	120.77	500.0	-1.4	-1.8	-1.4	0.72	-0.08	-99.53
600.0	0.30	100.24	600.0	-1.7	-1.2	-1.7	0.18	-0.13	-20.53
700.0	0.53	112.93	700.0	-1.9	-0.5	-1.9	0.25	0.23	12.69
800.0	1.22	120.68	800.0	-2.6	0.8	-2.6	0.70	0.69	7.75
900.0	0.82	121.26	900.0	-3.5	2.4	-3.5	0.40	-0.40	0.58
1,000.0	1.16	123.10	999.9	-4.4	3.8	-4.5	0.34	0.34	1.84
1,100.0	1.43	148.00	1,099.9	-6.1	5.3	-6.1	0.62	0.27	24.90
1,200.0	1.41	153.69	1,199.9	-8.2	6.5	-8.3	0.14	-0.02	5.69
1,300.0	1.32	153.90	1,299.9	-10.4	7.6	-10.4	0.09	-0.09	0.21
1,400.0	1.31	153.01	1,399.8	-12.4	8.6	-12.5	0.02	-0.01	-0.89
1,500.0	1.09	173.80	1,499.8	-14.4	9.2	-14.4	0.48	-0.22	20.79
1,600.0	0.81	174.08	1,599.8	-16.0	9.4	-16.1	0.28	-0.28	0.28
1,700.0	0.82	184.00	1,699.8	-17.4	9.4	-17.5	0.14	0.01	9.92
1,800.0	0.83	211.56	1,799.8	-18.8	9.0	-18.8	0.39	0.01	27.56
1,900.0	0.67	204.08	1,899.8	-19.9	8.4	-20.0	0.19	-0.16	-7.48
2,000.0	0.72	196.61	1,999.8	-21.1	8.0	-21.1	0.10	0.05	-7.47
2,100.0	0.48	104.87	2,099.8	-21.8	8.2	-21.8	0.88	-0.24	-91.74
2,200.0	0.96	87.09	2,199.7	-21.8	9.4	-21.9	0.52	0.48	-17.78
2,300.0	1.94	90.03	2,299.7	-21.8	12.0	-21.9	0.98	0.98	2.94
2,400.0	2.23	95.51	2,399.7	-22.0	15.6	-22.1	0.35	0.29	5.48
2,500.0	2.35	96.30	2,499.6	-22.4	19.6	-22.5	0.12	0.12	0.79
2,600.0	3.63	98.30	2,599.4	-23.1	24.7	-23.2	1.28	1.28	2.00
2,700.0	3.20	110.76	2,699.3	-24.5	30.5	-24.7	0.86	-0.43	12.46
2,800.0	2.88	114.54	2,799.1	-26.6	35.4	-26.8	0.38	-0.32	3.78
2,900.0	1.89	113.26	2,899.0	-28.2	39.2	-28.5	0.99	-0.99	-1.28
3,000.0	1.85	113.76	2,999.0	-29.5	42.2	-29.8	0.04	-0.04	0.50
3,100.0	1.93	112.95	3,098.9	-30.9	45.2	-31.2	0.08	0.08	-0.81
3,200.0	1.84	111.91	3,198.9	-32.1	48.2	-32.4	0.10	-0.09	-1.04
3,300.0	1.50	109.66	3,298.8	-33.2	51.0	-33.5	0.35	-0.34	-2.25
3,400.0	1.63	106.07	3,398.8	-34.0	53.6	-34.4	0.16	0.13	-3.59
3,500.0	1.50	105.00	3,498.7	-34.7	56.2	-35.1	0.13	-0.13	-1.07
3,600.0	1.47	102.53	3,598.7	-35.3	58.7	-35.7	0.07	-0.03	-2.47
3,700.0	1.30	96.96	3,698.7	-35.8	61.1	-36.2	0.22	-0.17	-5.57

Wolverine Directional, LLC

Survey Report

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Site:	Sec 22-T26S-R29E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	East Pecos Fed 22-1H	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)
3,800.0	0.97	96.42	3,798.7	-36.0	63.0	-36.4	0.33	-0.33	-0.54
3,900.0	0.97	95.88	3,898.7	-36.2	64.7	-36.6	0.01	0.00	-0.54
4,000.0	0.91	98.08	3,998.6	-36.4	66.4	-36.8	0.07	-0.06	2.20
4,100.0	0.69	128.86	4,098.6	-36.9	67.6	-37.3	0.47	-0.22	30.78
4,200.0	0.91	136.64	4,198.6	-37.8	68.6	-38.3	0.24	0.22	7.78
4,300.0	0.82	129.66	4,298.6	-38.8	69.7	-39.3	0.14	-0.09	-6.98
4,400.0	1.09	122.39	4,398.6	-39.8	71.1	-40.3	0.30	0.27	-7.27
4,500.0	0.55	121.96	4,498.6	-40.6	72.3	-41.1	0.54	-0.54	-0.43
4,600.0	0.65	117.03	4,598.6	-41.1	73.2	-41.6	0.11	0.10	-4.93
4,700.0	0.84	114.32	4,698.6	-41.6	74.4	-42.2	0.19	0.19	-2.71
4,800.0	0.61	110.82	4,798.6	-42.1	75.5	-42.7	0.23	-0.23	-3.50
4,900.0	0.66	105.35	4,898.6	-42.5	76.6	-43.0	0.08	0.05	-5.47
5,000.0	0.96	92.59	4,998.5	-42.7	78.0	-43.2	0.35	0.30	-12.76
5,100.0	0.77	90.90	5,098.5	-42.7	79.5	-43.3	0.19	-0.19	-1.69
5,200.0	0.88	93.15	5,198.5	-42.8	80.9	-43.3	0.11	0.11	2.25
5,300.0	1.08	105.37	5,298.5	-43.1	82.6	-43.6	0.29	0.20	12.22
5,400.0	1.08	109.19	5,398.5	-43.6	84.4	-44.2	0.07	0.00	3.82
5,500.0	0.88	126.51	5,498.5	-44.4	85.9	-45.0	0.36	-0.20	17.32
5,600.0	0.86	136.89	5,598.5	-45.4	87.0	-46.0	0.16	-0.02	10.38
5,700.0	0.69	138.49	5,698.5	-46.4	88.0	-47.0	0.17	-0.17	1.60
5,800.0	0.80	144.76	5,798.4	-47.4	88.8	-48.0	0.14	0.11	6.27
5,900.0	0.96	143.03	5,898.4	-48.6	89.7	-49.3	0.16	0.16	-1.73
6,000.0	1.07	137.82	5,998.4	-50.0	90.8	-50.6	0.14	0.11	-5.21
6,100.0	1.24	139.71	6,098.4	-51.5	92.1	-52.2	0.17	0.17	1.89
6,200.0	1.54	150.05	6,198.4	-53.5	93.5	-54.2	0.39	0.30	10.34
6,300.0	1.34	158.80	6,298.3	-55.8	94.6	-56.4	0.30	-0.20	8.75
Last GYRO Survey									
6,342.0	1.40	154.70	6,340.3	-56.7	95.0	-57.4	0.27	0.14	-9.76
First MWD Survey									
6,371.0	1.40	158.90	6,369.3	-57.3	95.3	-58.0	0.35	0.00	14.48
6,404.0	1.40	158.00	6,402.3	-58.1	95.6	-58.8	0.07	0.00	-2.73
6,434.0	1.30	160.50	6,432.3	-58.8	95.8	-59.4	0.39	-0.33	8.33
6,468.0	1.00	154.20	6,466.3	-59.4	96.1	-60.1	0.96	-0.88	-18.53
6,499.0	0.20	202.30	6,497.3	-59.7	96.2	-60.3	2.84	-2.58	155.16
6,530.0	2.70	1.40	6,528.3	-59.0	96.2	-59.7	9.32	8.06	513.23
6,562.0	7.10	2.50	6,560.2	-56.3	96.3	-56.9	13.75	13.75	3.44
6,594.0	11.40	0.50	6,591.7	-51.1	96.4	-51.8	13.47	13.44	-6.25
6,626.0	14.00	358.10	6,622.9	-44.1	96.3	-44.8	8.29	8.13	-7.50
6,659.0	17.10	1.60	6,654.7	-35.3	96.3	-35.9	9.81	9.39	10.61
6,691.0	20.40	2.00	6,685.0	-25.0	96.6	-25.6	10.32	10.31	1.25
6,723.0	25.90	4.10	6,714.4	-12.4	97.3	-13.1	17.38	17.19	6.56
6,755.0	27.70	3.70	6,743.0	2.0	98.3	1.3	5.65	5.63	-1.25
6,788.0	30.20	3.20	6,771.9	17.9	99.2	17.2	7.61	7.58	-1.52
6,820.0	33.20	3.20	6,799.1	34.7	100.2	34.0	9.38	9.38	0.00
6,849.0	36.20	3.00	6,822.9	51.2	101.1	50.5	10.35	10.34	-0.69
6,868.0	37.50	2.70	6,838.1	62.6	101.6	61.9	6.91	6.84	-1.58
6,899.0	41.60	3.90	6,862.0	82.3	102.8	81.6	13.45	13.23	3.87
6,931.0	44.20	5.50	6,885.5	104.0	104.6	103.2	8.81	8.13	5.00
6,963.0	48.10	5.50	6,907.7	126.9	106.8	126.2	12.19	12.19	0.00
6,994.0	52.10	5.10	6,927.5	150.6	109.0	149.9	12.94	12.90	-1.29
7,025.0	54.90	5.80	6,946.0	175.4	111.3	174.6	9.21	9.03	2.26
7,057.0	57.50	5.60	6,963.8	201.9	114.0	201.1	8.14	8.13	-0.63
7,089.0	60.60	6.20	6,980.2	229.2	116.8	228.4	9.82	9.69	1.88
7,120.0	63.10	3.00	6,994.9	256.4	119.0	255.6	12.16	8.06	-10.32

Wolverine Directional, LLC

Survey Report

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Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
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Survey									
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7,152.0	65.00	0.70	7,008.9	285.2	119.9	284.3	8.78	5.94	-7.19
7,183.0	66.40	358.10	7,021.6	313.4	119.6	312.6	8.88	4.52	-8.39
7,215.0	69.20	357.00	7,033.7	343.0	118.3	342.2	9.31	8.75	-3.44
7,246.0	72.40	356.90	7,043.9	372.2	116.8	371.4	10.33	10.32	-0.32
7,279.0	75.40	355.60	7,053.0	403.9	114.7	403.1	9.85	9.09	-3.94
7,310.0	76.90	356.30	7,060.5	433.9	112.6	433.1	5.31	4.84	2.26
7,342.0	79.80	356.70	7,066.9	465.2	110.7	464.4	9.14	9.06	1.25
7,373.0	84.00	357.20	7,071.3	495.8	109.0	495.0	13.64	13.55	1.61
7,405.0	87.80	359.00	7,073.6	527.7	108.0	526.9	13.13	11.88	5.63
7,436.0	89.20	359.10	7,074.4	558.7	107.5	557.9	4.53	4.52	0.32
7,468.0	89.50	358.10	7,074.8	590.7	106.7	589.9	3.26	0.94	-3.13
7,500.0	92.10	358.10	7,074.3	622.7	105.6	621.9	8.13	8.13	0.00
7,532.0	93.60	358.80	7,072.7	654.6	104.8	653.9	5.17	4.69	2.19
7,561.0	92.80	357.40	7,071.1	683.5	103.8	682.8	5.55	-2.76	-4.83
7,594.0	92.90	357.60	7,069.5	716.5	102.4	715.7	0.68	0.30	0.61
7,626.0	93.10	355.30	7,067.8	748.4	100.4	747.7	7.20	0.63	-7.19
7,657.0	93.00	355.80	7,066.1	779.2	98.0	778.5	1.64	-0.32	1.61
7,689.0	91.40	356.20	7,064.9	811.1	95.8	810.4	5.15	-5.00	1.25
7,720.0	90.80	353.20	7,064.3	842.0	92.9	841.3	9.87	-1.94	-9.68
7,751.0	90.70	350.40	7,063.9	872.7	88.5	872.0	9.04	-0.32	-9.03
7,783.0	91.60	353.30	7,063.3	904.3	83.9	903.7	9.49	2.81	9.06
7,815.0	92.40	352.30	7,062.1	936.1	79.9	935.5	4.00	2.50	-3.13
7,848.0	92.90	351.80	7,060.6	968.7	75.4	968.2	2.14	1.52	-1.52
7,880.0	92.20	354.20	7,059.2	1,000.4	71.5	999.9	7.81	-2.19	7.50
7,912.0	91.50	357.00	7,058.2	1,032.3	69.0	1,031.8	9.01	-2.19	8.75
7,945.0	91.40	356.90	7,057.3	1,065.3	67.3	1,064.8	0.43	-0.30	-0.30
7,976.0	92.20	354.90	7,056.4	1,096.2	65.1	1,095.7	6.95	2.58	-6.45
8,008.0	92.30	355.80	7,055.1	1,128.0	62.5	1,127.6	2.83	0.31	2.81
8,040.0	92.40	0.70	7,053.8	1,160.0	61.5	1,159.5	15.30	0.31	15.31
8,073.0	90.80	1.60	7,052.9	1,193.0	62.1	1,192.5	5.56	-4.85	2.73
8,105.0	90.70	0.20	7,052.4	1,225.0	62.6	1,224.5	4.39	-0.31	-4.38
8,137.0	90.70	2.70	7,052.1	1,256.9	63.5	1,256.5	7.81	0.00	7.81
8,170.0	90.90	1.60	7,051.6	1,289.9	64.7	1,289.4	3.39	0.61	-3.33
8,202.0	91.10	359.80	7,051.0	1,321.9	65.1	1,321.4	5.66	0.63	-5.63
8,234.0	91.50	1.80	7,050.3	1,353.9	65.5	1,353.4	6.37	1.25	6.25
8,266.0	91.70	0.50	7,049.4	1,385.9	66.2	1,385.4	4.11	0.63	-4.06
8,299.0	92.20	359.80	7,048.3	1,418.9	66.3	1,418.4	2.61	1.52	-2.12
8,331.0	93.00	0.20	7,046.8	1,450.8	66.3	1,450.3	2.79	2.50	1.25
8,363.0	92.70	0.20	7,045.3	1,482.8	66.4	1,482.3	0.94	-0.94	0.00
8,396.0	93.10	0.40	7,043.6	1,515.7	66.5	1,515.2	1.35	1.21	0.61
8,428.0	91.50	0.40	7,042.3	1,547.7	66.8	1,547.2	5.00	-5.00	0.00
8,460.0	91.70	0.90	7,041.4	1,579.7	67.1	1,579.2	1.68	0.63	1.56
8,492.0	89.50	2.10	7,041.1	1,611.7	68.0	1,611.2	7.83	-6.88	3.75
8,528.0	88.80	0.50	7,041.6	1,647.7	68.8	1,647.1	4.85	-1.94	-4.44
8,561.0	89.10	2.50	7,042.2	1,680.6	69.6	1,680.1	6.13	0.91	6.06
8,593.0	90.60	2.70	7,042.3	1,712.6	71.1	1,712.1	4.73	4.69	0.63
8,625.0	90.60	2.10	7,042.0	1,744.6	72.4	1,744.0	1.87	0.00	-1.88
8,657.0	88.60	359.10	7,042.2	1,776.6	72.8	1,776.0	11.27	-6.25	-9.38
8,689.0	87.90	359.70	7,043.2	1,808.6	72.4	1,808.0	2.88	-2.19	1.88
8,721.0	89.20	357.70	7,044.0	1,840.5	71.7	1,840.0	7.45	4.06	-6.25
8,752.0	90.10	359.00	7,044.2	1,871.5	70.8	1,871.0	5.10	2.90	4.19
8,783.0	91.20	1.40	7,043.8	1,902.5	70.9	1,902.0	8.52	3.55	7.74
8,816.0	91.60	358.80	7,043.0	1,935.5	71.0	1,935.0	7.97	1.21	-7.88
8,847.0	91.20	0.40	7,042.2	1,966.5	70.8	1,966.0	5.32	-1.29	5.16

Wolverine Directional, LLC

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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)
8,880.0	91.60	358.60	7,041.4	1,999.5	70.5	1,998.9	5.59	1.21	-5.45
8,911.0	92.20	0.50	7,040.4	2,030.5	70.2	2,029.9	6.42	1.94	6.13
8,942.0	92.60	358.80	7,039.1	2,061.4	70.1	2,060.9	5.63	1.29	-5.48
8,973.0	93.20	357.90	7,037.5	2,092.4	69.2	2,091.8	3.49	1.94	-2.90
9,004.0	94.00	357.40	7,035.6	2,123.3	67.9	2,122.8	3.04	2.58	-1.61
9,068.0	92.20	357.40	7,032.1	2,187.1	65.0	2,186.6	2.81	-2.81	0.00
9,100.0	90.00	358.60	7,031.5	2,219.1	63.9	2,218.6	7.83	-6.88	3.75
9,165.0	89.90	354.90	7,031.6	2,284.0	60.2	2,283.5	5.69	-0.15	-5.69
9,228.0	87.40	354.40	7,033.1	2,346.7	54.3	2,346.3	4.05	-3.97	-0.79
9,260.0	87.30	352.10	7,034.5	2,378.4	50.6	2,378.0	7.19	-0.31	-7.19
9,291.0	87.80	351.60	7,035.9	2,409.1	46.2	2,408.7	2.28	1.61	-1.61
9,323.0	87.70	352.30	7,037.1	2,440.7	41.7	2,440.4	2.21	-0.31	2.19
9,356.0	87.70	353.30	7,038.4	2,473.5	37.6	2,473.1	3.03	0.00	3.03
9,387.0	89.10	354.70	7,039.3	2,504.3	34.3	2,504.0	6.39	4.52	4.52
9,419.0	89.70	356.20	7,039.6	2,536.2	31.8	2,535.9	5.05	1.88	4.69
9,451.0	89.30	355.30	7,039.9	2,568.1	29.4	2,567.8	3.08	-1.25	-2.81
9,483.0	90.90	356.00	7,039.9	2,600.0	27.0	2,599.7	5.46	5.00	2.19
9,515.0	92.40	358.80	7,038.9	2,631.9	25.5	2,631.7	9.92	4.69	8.75
9,547.0	92.20	356.20	7,037.7	2,663.9	24.1	2,663.6	8.14	-0.63	-8.13
9,579.0	92.20	357.40	7,036.4	2,695.8	22.4	2,695.6	3.75	0.00	3.75
9,611.0	92.00	358.10	7,035.3	2,727.8	21.1	2,727.5	2.27	-0.63	2.19
9,644.0	91.50	354.70	7,034.3	2,760.7	19.0	2,760.5	10.41	-1.52	-10.30
9,676.0	91.70	356.90	7,033.4	2,792.6	16.7	2,792.4	6.90	0.63	6.88
9,708.0	92.20	356.00	7,032.3	2,824.5	14.7	2,824.3	3.22	1.56	-2.81
9,740.0	92.70	355.30	7,030.9	2,856.4	12.3	2,856.2	2.69	1.56	-2.19
9,773.0	93.00	354.60	7,029.3	2,889.2	9.4	2,889.1	2.31	0.91	-2.12
9,805.0	93.20	354.90	7,027.5	2,921.0	6.5	2,920.9	1.13	0.63	0.94
9,837.0	93.30	354.00	7,025.7	2,952.8	3.4	2,952.7	2.83	0.31	-2.81
9,869.0	93.40	355.80	7,023.8	2,984.6	0.5	2,984.6	5.62	0.31	5.63
9,902.0	93.60	354.40	7,021.8	3,017.5	-2.3	3,017.4	4.28	0.61	-4.24
9,934.0	94.10	355.50	7,019.7	3,049.3	-5.1	3,049.2	3.77	1.56	3.44
9,966.0	93.60	354.20	7,017.5	3,081.1	-8.0	3,081.0	4.34	-1.56	-4.06
9,998.0	92.40	355.30	7,015.9	3,112.9	-10.9	3,112.9	5.08	-3.75	3.44
10,031.0	92.30	355.10	7,014.5	3,145.7	-13.6	3,145.8	0.68	-0.30	-0.61
10,063.0	92.00	356.30	7,013.3	3,177.6	-16.0	3,177.7	3.86	-0.94	3.75
10,095.0	91.70	357.60	7,012.3	3,209.6	-17.7	3,209.6	4.17	-0.94	4.06
10,127.0	91.70	359.80	7,011.3	3,241.5	-18.5	3,241.6	6.87	0.00	6.88
10,158.0	90.70	0.50	7,010.7	3,272.5	-18.4	3,272.6	3.94	-3.23	2.26
10,191.0	90.00	358.10	7,010.5	3,305.5	-18.8	3,305.6	7.58	-2.12	-7.27
10,223.0	89.30	357.60	7,010.7	3,337.5	-20.0	3,337.6	2.69	-2.19	-1.56
10,254.0	88.80	357.70	7,011.2	3,368.5	-21.3	3,368.5	1.64	-1.61	0.32
10,286.0	88.50	358.10	7,011.9	3,400.4	-22.4	3,400.5	1.56	-0.94	1.25
10,318.0	88.90	358.30	7,012.7	3,432.4	-23.4	3,432.5	1.40	1.25	0.63
10,349.0	88.50	358.30	7,013.4	3,463.4	-24.4	3,463.5	1.29	-1.29	0.00
10,380.0	88.60	358.80	7,014.2	3,494.4	-25.1	3,494.5	1.64	0.32	1.61
10,412.0	89.50	0.50	7,014.7	3,526.4	-25.3	3,526.5	6.01	2.81	5.31
10,444.0	90.50	1.40	7,014.7	3,558.4	-24.8	3,558.4	4.20	3.13	2.81
10,476.0	92.10	3.90	7,014.0	3,590.3	-23.3	3,590.4	9.27	5.00	7.81
10,507.0	92.60	3.20	7,012.7	3,621.2	-21.4	3,621.3	2.77	1.61	-2.26
10,539.0	93.40	3.50	7,011.0	3,653.1	-19.5	3,653.2	2.67	2.50	0.94
10,571.0	93.90	4.60	7,009.0	3,685.0	-17.3	3,685.0	3.77	1.56	3.44
10,604.0	94.50	5.10	7,006.6	3,717.8	-14.5	3,717.8	2.36	1.82	1.52
10,636.0	93.40	2.50	7,004.4	3,749.6	-12.4	3,749.6	8.80	-3.44	-8.13
10,668.0	91.90	3.70	7,002.9	3,781.5	-10.7	3,781.5	6.00	-4.69	3.75

Wolverine Directional, LLC

Survey Report

Company:	RKI Exploration & Production	Local Co-ordinate Reference:	Well East Pecos Fed 22-1H
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 22-T26S-R29E	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	East Pecos Fed 22-1H	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)	
10,700.0	91.90	2.30	7,001.8	3,813.5	-9.0	3,813.5	4.37	0.00	-4.38	
10,732.0	92.10	2.10	7,000.7	3,845.4	-7.8	3,845.4	0.88	0.63	-0.63	
10,764.0	92.60	3.00	6,999.4	3,877.4	-6.3	3,877.3	3.22	1.56	2.81	
10,795.0	93.10	0.70	6,997.8	3,908.3	-5.3	3,908.3	7.58	1.61	-7.42	
10,827.0	93.00	0.50	6,996.1	3,940.3	-5.0	3,940.2	0.70	-0.31	-0.63	
10,859.0	93.20	359.70	6,994.4	3,972.2	-4.9	3,972.2	2.57	0.63	-2.50	
10,890.0	93.70	0.40	6,992.5	4,003.2	-4.9	4,003.1	2.77	1.61	2.26	
10,922.0	92.40	359.70	6,990.8	4,035.1	-4.9	4,035.1	4.61	-4.06	-2.19	
10,953.0	92.10	1.10	6,989.6	4,066.1	-4.7	4,066.0	4.62	-0.97	4.52	
10,984.0	91.80	1.60	6,988.6	4,097.1	-3.9	4,097.0	1.88	-0.97	1.61	
11,015.0	92.10	359.70	6,987.5	4,128.1	-3.6	4,128.0	6.20	0.97	-6.13	
11,047.0	92.80	0.40	6,986.1	4,160.0	-3.6	4,159.9	3.09	2.19	2.19	
11,079.0	93.20	0.20	6,984.5	4,192.0	-3.4	4,191.9	1.40	1.25	-0.63	
11,111.0	93.20	358.80	6,982.7	4,223.9	-3.7	4,223.9	4.37	0.00	-4.38	
11,143.0	93.30	358.80	6,980.9	4,255.9	-4.3	4,255.8	0.31	0.31	0.00	
11,176.0	94.10	359.80	6,978.7	4,288.8	-4.8	4,288.7	3.88	2.42	3.03	
11,207.0	93.60	0.20	6,976.7	4,319.7	-4.8	4,319.7	2.06	-1.61	1.29	
11,239.0	93.40	0.50	6,974.7	4,351.7	-4.6	4,351.6	1.13	-0.63	0.94	
11,271.0	92.50	358.60	6,973.1	4,383.6	-4.8	4,383.5	6.56	-2.81	-5.94	
11,301.0	92.50	0.70	6,971.7	4,413.6	-5.0	4,413.5	6.99	0.00	7.00	
11,333.0	92.90	0.50	6,970.2	4,445.6	-4.7	4,445.5	1.40	1.25	-0.63	
11,365.0	93.40	0.00	6,968.5	4,477.5	-4.5	4,477.4	2.21	1.56	-1.56	
11,397.0	94.00	359.80	6,966.4	4,509.4	-4.6	4,509.4	1.98	1.88	-0.63	
11,429.0	94.70	359.70	6,964.0	4,541.3	-4.7	4,541.3	2.21	2.19	-0.31	
11,461.0	93.30	358.80	6,961.8	4,573.3	-5.1	4,573.2	5.20	-4.38	-2.81	
11,493.0	93.20	358.30	6,959.9	4,605.2	-5.9	4,605.1	1.59	-0.31	-1.56	
Last MWD Survey										
11,543.0	93.20	358.30	6,957.2	4,655.1	-7.4	4,655.0	0.00	0.00	0.00	
Proj to TD - EP Fed 22-1H PBHL										

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
100.0	100.0	-0.1	-0.2	First GYRO Survey	
6,300.0	6,298.3	-55.8	94.6	Last GYRO Survey	
6,342.0	6,340.3	-56.7	95.0	First MWD Survey	
11,493.0	6,959.9	4,605.2	-5.9	Last MWD Survey	
11,543.0	6,957.2	4,655.1	-7.4	Proj to TD	

Checked By: _____	Approved By: _____	Date: _____
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INCLINATION REPORT

FIELD NAME

LEASE NAME

East Pecos 22-1H

OPERATOR

RKI Exploration

4. ADDRESS

Oklahoma Tower 210 Park Avenue, Suite 800 Oklahoma City, OK 73102

LOCATION (Section, Block, and Survey)

22-26S-29E

County

Eddy, NM

RECORD OF INCLINATION

Measured Depth (feet)	Course Length (Hundreds of feet)	Angle of Inclination (Degrees)	Displacement per 100 feet (Sine of Angle x 100)	Course Displacement (Feet)	Accumulative Displacement (Feet)
425	425	0.50	0.87	3.71	3.71
725	300	1.00	1.75	5.24	8.94
1,015	290	1.00	1.75	5.06	14.01
1,337	322	1.00	1.75	5.62	19.63
1,658	321	1.00	1.75	5.60	25.23
1,948	290	0.75	1.31	3.80	29.02
2,271	323	1.00	1.75	5.64	34.66
2,593	322	1.80	3.14	10.11	44.77
2,817	224	0.50	0.87	1.95	46.73
3,239	422	2.00	3.49	14.73	61.46
3,647	408	1.40	2.44	9.97	71.43
4,147	500	1.00	1.75	8.73	80.15
4,647	500	0.60	1.05	5.24	85.39
5,147	500	0.70	1.22	6.11	91.50
5,647	500	1.00	1.75	8.73	100.22
6,147	500	0.80	1.40	6.98	107.20
6,647	500	1.20	2.09	10.47	117.67
7,147	500	1.10	1.92	9.60	127.27
7,499	352	4.70	8.19	28.84	156.12
7,758	259	3.60	6.28	16.26	172.38
8,258	500	1.00	1.75	8.73	181.10
8,758	500	1.20	2.09	10.47	191.58
9,291	533	87.30	99.89	532.41	723.98
9,451	160	89.90	100.00	160.00	883.98
9,867	416	93.40	99.82	415.27	1,299.25
10,347	480	88.50	99.97	479.84	1,779.09
10,823	476	93.00	99.86	475.35	2,254.43
11,108	285	93.20	99.84	284.56	2,538.99
11,488	380	93.20	99.84	379.41	2,918.40

Accumulative total displacement of well bore at total depth of

11,488 feet = 2,918.40 feet

Inclination measurements were made in

☐ Tubing

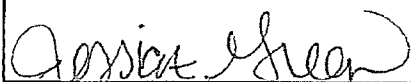
☐ Casing

☐ Open Hole

☒ Drill Pipe

Inclination Data Certification

I declare that I am authorized to make this certification, that I have personal knowledge of the inclination data and facts placed on both sides of this form and that such data and facts are true, correct, and complete to the best of my knowledge.



Date

1/21/13

Jessica Green, Operations Coordinator

Name of Person and Title

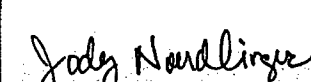
Latshaw Drilling Company, LLC

Name of Company

Telephone: 918-355-4380

Inclination Data Certification

I declare that I am authorized to make this certification, that I have personal knowledge of the inclination data and facts placed on both sides of this form and that such data and facts are true, correct, and complete to the best of my knowledge.



5/15/2013

Signature of Authorized Representative

Date

JODY NOERDLINGER, REGULATORY ANALYST

Name of Person and Title

RKI EXPLORATION AND PRODUCTION

Operator

Telephone: 405-996-5774