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MS Energy Services Survey Data Certification

MS Energy Job Number: DDMO-170830
Survey Type: MWD
Operating Company: RKI Exploration & Production LLC
Well Name & Number: RDX Federal COM 17 46H
Location: Eddy County, NM
API Number: 30-015-44410
Tie In Depth: Surface
Surveyed Depths: 153' – 15,669' MD
Projected TD Survey: 15,724' MD
Dates Performed: 09/24/2017 – 10/12/2017

NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 13 2018
RECEIVED

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Energy Services; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Energy Services.

Digitally signed by:

MWD Surveyor Name:

Daniel Cantu

Date:

01-23-2018

Email:

dcantu@msenergyservices.com



SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company: RKI Expl & Prod LLC
Well Name: RDX Federal COM 17-46H
Location: Eddy County, NM
Rig: Orion Phoenix
Job Number: DDMO-170830
API #: 33-015-44410

Magnetic Declination: 6.92 REFERENCED TO GRID NORTH

Vertical Section Azimuth: 174.33
Proposed Direction: 174.33

Survey Calculation Method: Minimum Curvature

PTB:	MD	INC	AZM	TVD	N/S	E/W	VS			
	15,724	89.7	178.5	10887.16	-5002.69	523.65	5029.95			
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	DLS/ 100'	BUR/ 100'

TIE IN	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.53	0.00	0.00	0.26	0.26	0.26
1	153	0.40	231.40	231.40	153.00	-0.33	-0.42	-0.33	-0.42	-0.33	-0.42	0.67	1.24	231.40	231.40	0.11	0.11	0.11
2	243	0.50	231.70	231.70	243.00	-0.77	-0.97	-0.77	-0.97	-0.77	-0.97	1.21	2.10	229.14	229.14	0.16	0.16	0.16
3	333	0.60	220.80	220.80	332.99	-1.37	-1.59	-1.37	-1.59	-1.37	-1.59	1.94	3.21	227.15	227.15	0.23	0.23	0.22
4	424	0.80	225.30	225.30	423.99	-2.18	-2.35	-2.18	-2.35	-2.18	-2.35	2.40	3.98	227.23	227.23	0.68	0.68	-0.67
5	513	0.20	236.60	236.60	512.98	-2.70	-2.92	-2.70	-2.92	-2.70	-2.92	2.34	4.12	229.75	229.75	0.30	0.30	0.00
6	603	0.20	323.10	323.10	602.98	-2.66	-3.15	-2.66	-3.15	-2.66	-3.15	2.04	4.17	235.11	235.11	0.13	0.13	0.11
7	693	0.30	310.10	310.10	692.98	-2.39	-3.42	-2.39	-3.42	-2.39	-3.42	1.63	4.43	242.71	242.71	0.23	0.23	0.22
8	783	0.50	301.10	301.10	782.98	-2.03	-4.55	-2.03	-4.55	-2.03	-4.55	1.22	4.85	249.77	249.77	0.11	0.11	-0.11
9	873	0.40	299.10	299.10	872.97	-1.68	-4.82	-1.68	-4.82	-1.68	-4.82	0.80	4.98	255.08	255.08	0.41	0.41	-0.11
10	964	0.30	240	240	963.97	-1.28	-4.77	-1.28	-4.77	-1.28	-4.77	0.43	4.86	259.22	259.22	0.13	0.13	-0.11
11	1,051	0.20	13.70	13.70	1050.97	-0.91	-4.61	-0.91	-4.61	-0.91	-4.61	0.19	4.66	261.97	261.97	0.14	0.14	0.00
12	1,142	0.20	49.50	49.50	1141.97	-0.65	-4.42	-0.65	-4.42	-0.65	-4.42	0.14	4.46	262.53	262.53	0.20	0.20	-0.11
13	1,232	0.10	113.20	113.20	1231.97	-0.58	-4.58	-0.58	-4.58	-0.58	-4.58	0.10	4.61	263.04	263.04	0.44	0.44	0.22
14	1,322	0.30	282.80	282.80	1321.97	-0.56	-4.49	-0.56	-4.49	-0.56	-4.49	0.07	4.52	263.40	263.40	0.77	0.77	0.11
15	1,412	0.40	92.50	92.50	1411.97	-0.52	-2.14	-0.52	-2.14	-0.52	-2.14	-0.13	2.14	267.89	267.89	2.23	2.23	2.21
16	1,507	2.50	77.30	77.30	1506.94	-0.08	2.36	-0.08	2.36	-0.08	2.36	-0.80	2.58	66.20	66.20	0.64	0.64	0.63
17	1,602	3.10	75.00	75.00	1601.82	1.04	6.92	1.04	6.92	1.04	6.92	-1.57	7.28	71.92	71.92	0.53	0.53	-0.53
18	1,697	2.60	75.10	75.10	1696.70	2.26	10.81	2.26	10.81	2.26	10.81	-2.33	11.34	72.46	72.46	0.35	0.35	-0.32
19	1,792	2.30	71.50	71.50	1791.62	3.42	15.39	3.42	15.39	3.42	15.39	-3.02	16.05	73.47	73.47	1.22	1.22	1.16
20	1,887	3.40	78.90	78.90	1886.50	4.57	22.43	4.57	22.43	4.57	22.43	-3.39	23.13	75.91	75.91	2.05	2.05	2.02
21	1,981	5.30	83.00	83.00	1980.22	5.63	31.65	5.63	31.65	5.63	31.65	-3.56	32.36	78.01	78.01	0.52	0.52	0.52
22	2,077	5.80	83.50	83.50	2075.77	6.72	41.94	6.72	41.94	6.72	41.94	-3.64	42.66	79.43	79.43	0.95	0.95	0.95
23	2,172	6.70	84.20	84.20	2170.21	7.83	52.87	7.83	52.87	7.83	52.87	-3.76	53.64	80.31	80.31	0.16	0.16	-0.11
24	2,267	6.60	83.20	83.20	2264.57	9.03	62.69	9.03	62.69	9.03	62.69	-4.09	63.54	80.64	80.64	1.19	1.19	-1.17
25	2,361	5.50	81.50	81.50	2358.04	10.34	72.63	10.34	72.63	10.34	72.63	-4.30	73.54	80.98	80.98	1.20	1.20	1.16
26	2,456	6.60	84.50	84.50	2452.51	11.53	83.93	11.53	83.93	11.53	83.93	-3.89	84.82	81.70	81.70	0.70	0.70	0.53
27	2,551	7.10	88.20	88.20	2546.84	12.24	95.01	12.24	95.01	12.24	95.01	-3.15	95.84	82.45	82.45	0.84	0.84	-0.84
28	2,646	6.30	88.10	88.10	2641.19	12.60	104.66	12.60	104.66	12.60	104.66	-2.55	105.46	82.94	82.94	0.85	0.85	-0.85
29	2,740	5.50	87.60	87.60	2734.69	12.96	115.08	12.96	115.08	12.96	115.08	-1.43	115.79	83.62	83.62	1.79	1.79	1.68
30	2,835	7.10	92.80	92.80	2829.11	12.86	127.66	12.86	127.66	12.86	127.66	0.96	128.20	84.76	84.76	1.32	1.32	1.16
31	2,930	8.20	97.30	97.30	2923.26	11.71	140.84	11.71	140.84	11.71	140.84	4.04	141.19	85.97	85.97	0.34	0.34	-0.32
32	3,025	7.90	98.20	98.20	3017.33	9.92	153.80	9.92	153.80	9.92	153.80	7.45	154.00	87.10	87.10	0.35	0.35	0.11
33	3,120	8.00	100.50	100.50	3111.42	7.79		7.79		7.79								



SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company:	RKI Expl & Prod LLC
Well Name:	RDX Federal COM 17-46H
Location:	Eddy County, NM
Rig:	Orion Phoenix
Job Number:	DDMO-170830
API #:	33-015-44410

Magnetic Declination: 6.92

REFERENCED TO GRID NORTH

Proposed Direction: 174.33

Vertical Section Azimuth: 174.33

Survey Calculation Method: Minimum Curvature

PTB:	MD		INC		AZM		TVD		N/S		E/W		Closure		DLS/		BUR/	
	15,724		89.7		178.5		10887.16		-5002.69		523.65				100		100'	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Distance	Azm									
34	3,215	8.00	97.90	3205.49	5.67	166.85	10.84	166.95	88.05						0.38		0.00	
35	3,309	7.90	97.70	3298.59	3.91	179.73	13.87	179.78	88.75						0.11		-0.11	
36	3,404	7.10	88.60	3392.78	3.18	192.07	15.82	192.10	89.05						1.50		-0.84	
37	3,458	6.60	86.00	3446.39	3.47	198.51	16.15	198.54	89.00						1.09		-0.93	
38	3,639	5.61	79.41	3626.37	5.83	217.58	15.70	217.66	88.47						0.67		-0.55	
39	3,734	6.81	86.51	3720.81	7.02	227.77	15.51	227.87	88.23						1.50		1.26	
40	3,829	8.79	88.62	3814.92	7.54	240.65	16.27	240.76	88.21						2.11		2.08	
41	3,924	8.88	88.40	3908.80	7.92	255.23	17.34	255.35	88.22						0.10		0.09	
42	4,019	8.88	87.52	4002.66	8.44	269.89	18.26	270.02	88.21						0.14		0.00	
43	4,114	8.71	87.52	4096.54	9.07	284.40	19.07	284.54	88.17						0.18		-0.18	
44	4,208	8.79	86.73	4189.45	9.79	298.68	19.77	298.84	88.12						0.15		0.09	
45	4,303	9.01	86.51	4283.30	10.66	313.35	20.36	313.53	88.05						0.23		0.23	
46	4,397	8.48	84.83	4376.21	11.73	327.80	20.70	327.81	87.95						0.63		-0.56	
47	4,491	8.22	85.14	4469.21	12.92	341.20	20.85	341.44	87.83						0.28		-0.28	
48	4,586	8.31	84.70	4563.23	14.13	354.80	20.99	355.08	87.72						0.12		0.09	
49	4,681	8.22	83.42	4657.24	15.54	368.38	20.93	368.71	87.58						0.22		-0.09	
50	4,776	8.40	83.02	4751.24	17.16	382.02	20.66	382.40	87.43						0.20		0.19	
51	4,871	8.00	90.91	4845.28	17.90	395.52	21.26	395.92	87.41						1.26		-0.42	
52	4,966	7.91	91.13	4939.36	17.67	408.66	22.79	409.04	87.52						0.10		-0.09	
53	5,061	7.69	90.43	5033.48	17.49	421.55	24.24	421.92	87.62						0.25		-0.23	
54	5,156	7.20	90.74	5127.68	17.37	433.86	25.58	434.21	87.71						0.52		-0.52	
55	5,250	6.98	89.90	5220.96	17.30	445.46	26.79	445.80	87.78						0.26		-0.23	
56	5,345	6.98	89.72	5315.26	17.34	457.01	27.90	457.34	87.83						0.02		0.00	
57	5,440	6.98	90.34	5409.55	17.33	468.55	29.04	468.87	87.88						0.08		0.00	
58	5,535	5.61	83.91	5503.98	17.79	478.94	29.61	479.27	87.87						1.62		-1.44	
59	5,630	5.48	79.72	5598.54	19.09	488.02	29.21	488.40	87.76						0.45		-0.14	
60	5,724	3.71	86.73	5692.23	20.07	495.48	28.98	495.88	87.68						1.97		-1.88	
61	5,818	2.21	104.62	5786.10	19.79	500.27	29.74	500.66	87.74						1.86		-1.60	
62	5,913	0.31	201.04	5881.08	19.08	501.95	30.60	502.31	87.82						2.38		-2.00	
63	6,008	0.71	257.71	5976.08	18.72	501.28	30.90	501.63	87.86						0.63		0.42	
64	6,102	0.71	245.10	6070.07	18.35	500.18	31.16	500.52	87.90						0.17		0.00	
65	6,197	0.71	230.21	6165.06	17.72	499.20	31.68	499.51	87.97						0.19		0.00	
66	6,292	0.80	220.60	6260.05	16.84	498.31	32.47	498.60	88.06						0.16		0.09	
67	6,388	0.80	210.20	6356.05	15.76	497.54	33.48	497.79	88.19						0.15		0.00	



SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company: RKI Expl & Prod LLC
Well Name: RDX Federal COM 17-46H
Location: Eddy County, NM
Rig: Orion Phoenix
Job Number: DDMO-170830
API #: 33-015-44410

Magnetic Declination: 6.92

REFERENCED TO GRID NORTH

Vertical Section Azimuth: 174.33
Survey Calculation Method: Minimum Curvature

Proposed Direction: 174.33

#	Depth Feet	Inc		Azimuth Degrees	TVD		N/S	Feet		E/W	Surface		Distance	Closure		DLS/ 100	BUR/ 100'
		MD	MD		INC	INC		AZM	AZM		TVD	Vert Sec		Distance	Azm		
68	6,482	0.88	0.88	202.40	6450.04	6450.04	14.52	178.5	10887.16	496.93	34.65	-5002.69	497.15	88.33	88.33	0.15	0.09
69	6,577	0.88	0.88	192.93	6545.02	6545.02	13.14			496.49	35.98		496.67	88.48	88.48	0.15	0.00
70	6,672	1.19	1.19	182.53	6640.01	6640.01	11.44			496.29	37.65		496.42	88.68	88.68	0.38	0.33
71	6,767	0.31	0.31	204.74	6735.00	6735.00	10.22			496.14	38.85		496.24	88.82	88.82	0.96	-0.93
72	6,862	0.40	0.40	209.41	6830.00	6830.00	9.70			495.87	39.34		495.96	88.88	88.88	0.10	0.09
73	6,957	0.49	0.49	198.30	6925.00	6925.00	9.02			495.57	39.98		495.66	88.96	88.96	0.13	0.09
74	7,052	0.71	0.71	176.32	7019.99	7019.99	8.05			495.48	40.94		495.55	89.07	89.07	0.33	0.23
75	7,147	1.02	1.02	174.11	7114.98	7114.98	6.62			495.61	42.38		495.65	89.23	89.23	0.33	0.33
76	7,242	0.80	0.80	337.34	7209.97	7209.97	6.39			495.44	42.59		495.48	89.26	89.26	1.90	-0.23
77	7,336	0.80	0.80	339.54	7303.97	7303.97	7.61			494.96	41.33		495.02	89.12	89.12	0.03	0.00
78	7,432	0.88	0.88	320.64	7399.96	7399.96	8.81			494.26	40.06		494.34	88.98	88.98	0.30	0.08
79	7,526	1.02	1.02	316.54	7493.94	7493.94	9.98			493.22	38.80		493.32	88.84	88.84	0.17	0.15
80	7,621	1.10	1.10	317.82	7588.93	7588.93	11.27			492.03	37.40		492.16	88.69	88.69	0.09	0.08
81	7,716	1.10	1.10	318.30	7683.91	7683.91	12.62			490.81	35.93		490.97	88.53	88.53	0.01	0.00
82	7,810	0.62	0.62	333.33	7777.90	7777.90	13.75			489.98	34.73		490.18	88.39	88.39	0.56	-0.51
83	7,905	1.02	1.02	277.01	7872.89	7872.89	14.31			488.91	34.06		489.12	88.32	88.32	0.90	0.42
84	8,001	1.68	1.68	254.71	7968.86	7968.86	14.05			486.71	34.11		486.91	88.35	88.35	0.87	0.69
85	8,095	0.49	0.49	253.83	8062.84	8062.84	13.57			484.99	34.41		485.18	88.40	88.40	1.27	-1.27
86	8,190	0.62	0.62	339.23	8157.84	8157.84	13.94			484.42	33.99		484.62	88.35	88.35	0.80	0.14
87	8,285	0.71	0.71	336.72	8252.83	8252.83	14.96			484.00	32.93		484.24	88.23	88.23	0.10	0.09
88	8,380	0.62	0.62	332.62	8347.83	8347.83	15.96			483.54	31.89		483.80	88.11	88.11	0.11	-0.09
89	8,475	0.40	0.40	316.80	8442.82	8442.82	16.66			483.07	31.15		483.36	88.03	88.03	0.27	-0.23
90	8,570	0.40	0.40	308.21	8537.82	8537.82	17.10			482.58	30.66		482.89	87.97	87.97	0.06	0.00
91	8,664	0.62	0.62	325.44	8631.82	8631.82	17.72			482.04	29.99		482.36	87.89	87.89	0.28	0.23
92	8,759	0.49	0.49	0.74	8726.81	8726.81	18.55			481.75	29.13		482.11	87.79	87.79	0.38	-0.14
93	8,853	0.62	0.62	31.64	8820.81	8820.81	19.39			482.02	28.33		482.41	87.70	87.70	0.34	0.14
94	8,948	0.40	0.40	222.54	8915.81	8915.81	19.58			482.07	28.14		482.47	87.67	87.67	1.07	-0.23
95	9,043	0.88	0.88	181.21	9010.80	9010.80	18.61			481.83	29.09		482.19	87.79	87.79	0.67	0.51
96	9,138	1.68	1.68	173.54	9105.78	9105.78	16.49			481.97	31.20		482.25	88.04	88.04	0.86	0.84
97	9,233	0.71	0.71	182.44	9200.76	9200.76	14.52			482.10	33.18		482.32	88.27	88.27	1.04	-1.02
98	9,327	0.62	0.62	194.51	9294.75	9294.75	13.45			481.95	34.23		482.14	88.40	88.40	0.18	-0.10
99	9,422	0.80	0.80	188.13	9389.74	9389.74	12.29			481.73	35.36		481.88	88.54	88.54	0.21	0.19
100	9,517	1.81	1.81	178.83	9484.72	9484.72	10.14			481.66	37.50		481.77	88.79	88.79	1.08	1.06
101		0.74	0.74	204.91	9580.69	9580.69	8.08			481.44	39.52		481.51	89.04	89.04	1.26	-1.15



V05.04.02

SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company: RKI Expl & Prod LLC
Well Name: RDX Federal COM 17-46H
Location: Eddy County, NM
Rig: Orion Phoenix
Job Number: DDMO-170830
API #: 33-015-44410

Magnetic Declination: 6.92

REFERENCED TO GRID NORTH

Vertical Section Azimuth: 174.33

Proposed Direction: 174.33

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#	Depth Feet	Inc		Azim Degrees	TVD		N/S	Feet	E/W		TVD Feet	Surface Vert Sec	Closure		Distance	Azim	DLS/ 100	BUR/ 100'
		MD	15,724		INC	89.7							N/S	-5002.69				

102	9,708	1.02	228.40	9675.68	6.99	480.56	40.53	480.62	89.17	0.49	0.33
103	9,803	0.40	245.50	9770.68	6.29	479.63	41.13	479.67	89.25	0.68	-0.65
104	9,898	0.80	227.92	9865.67	5.71	478.84	41.63	478.87	89.32	0.46	0.42
105	9,993	0.71	11.64	9960.67	5.84	478.46	41.46	478.50	89.30	1.51	-0.09
106	10,087	0.49	9.21	10054.66	6.81	478.64	40.52	478.69	89.19	0.24	-0.23
107	10,182	0.09	288.03	10149.66	7.23	478.64	40.09	478.69	89.13	0.51	-0.42
108	10,276	0.71	222.72	10243.66	6.82	478.17	40.45	478.22	89.18	0.72	0.66
109	10,371	5.08	189.93	10338.52	2.25	477.05	44.90	477.05	89.73	4.74	4.60
110	10,466	12.02	183.72	10432.40	-11.78	475.68	58.72	475.83	91.42	7.36	7.31
111	10,560	19.00	177.81	10522.93	-36.88	475.63	83.69	477.06	94.43	7.60	7.43
112	10,655	26.69	176.93	10610.41	-73.69	477.37	120.49	483.02	98.78	8.10	8.09
113	10,750	34.11	178.43	10692.30	-121.69	479.24	168.44	494.45	104.25	7.85	7.81
114	10,830	40.60	179.30	10755.85	-170.19	480.17	216.80	509.44	109.52	8.14	8.11
115	10,861	44.40	178.20	10778.71	-191.13	480.64	237.68	517.24	111.69	12.49	12.26
116	10,893	47.80	178.00	10800.89	-214.17	481.40	260.68	526.89	113.98	10.63	10.63
117	10,924	50.80	178.50	10821.10	-237.66	482.12	284.13	537.51	116.24	9.75	9.68
118	10,955	54.50	178.00	10839.91	-262.28	482.87	308.71	549.51	118.51	12.00	11.94
119	10,987	57.40	177.70	10857.82	-288.77	483.87	335.17	563.49	120.83	9.10	9.06
120	11,018	59.80	177.20	10873.97	-315.21	485.05	361.59	578.47	123.02	7.86	7.74
121	11,050	63.90	177.20	10889.07	-343.38	486.43	389.76	595.42	125.22	12.81	12.81
122	11,081	67.20	176.40	10901.90	-371.55	488.00	417.95	613.35	127.28	10.90	10.65
123	11,113	69.70	176.00	10913.65	-401.25	489.98	447.69	633.31	129.31	7.90	7.81
124	11,145	74.20	175.70	10923.56	-431.59	492.18	478.10	654.60	131.25	14.09	14.06
125	11,176	77.80	175.30	10931.06	-461.57	494.54	508.17	676.47	133.02	11.68	11.61
126	11,207	81.20	175.10	10936.71	-491.94	497.09	538.64	699.36	134.70	10.99	10.97
127	11,302	94.20	175.70	10940.51	-586.35	504.68	633.35	773.64	139.28	13.70	13.68
128	11,397	94.60	175.50	10933.23	-680.79	511.95	728.04	851.81	143.06	0.47	0.42
129	11,491	94.50	177.00	10925.77	-774.29	518.08	821.69	931.63	146.21	1.59	-0.11
130	11,586	92.40	178.70	10920.05	-869.05	521.64	916.33	1013.58	149.03	2.84	-2.21
131	11,681	91.10	181.60	10917.15	-963.99	521.39	1010.78	1095.95	151.59	3.34	-1.37
132	11,775	88.40	182.70	10917.56	-1057.91	517.86	1103.90	1177.86	153.92	3.10	-2.87
133	11,870	90.20	183.80	10918.72	-1152.75	512.47	1197.74	1261.53	156.03	2.22	1.89
	11,964	90.00	183.70	10918.56	-1246.54	506.33	1290.47	1345.45	157.89	0.24	-0.21
			185.00	10917.23	-1341.26	499.12	1384.01	1431.12	159.59	2.17	1.68



SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company:	RKI Expl & Prod LLC
Well Name:	RDX Federal COM 17-46H
Location:	Eddy County, NM
Rig:	Orion Phoenix
Job Number:	DDMO-170830
API #:	33-015-44410

REF: REFERENCE TO GRID NORTH

Proposed Direction:	174.33
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Survey Calculation Method:	Minimum Curvature
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TVD	N/S
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15,724		89.7		178.5		10887.16		-5002.69		523.65		5029.95	
#	Depth Feet	Inc Degrees	Azim Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure		DLS/ 100	BUR/ 100'		
								Distance	Azim				
136	12,154	90.30	181.70	10915.65	-1436.07	493.57	1477.80	1518.52	161.03	3.73	-1.37		
137	12,248	90.90	179.90	10914.67	-1530.05	492.26	1571.20	1607.29	162.17	2.02	0.64		
138	12,342	86.40	179.10	10916.88	-1623.99	493.08	1664.76	1697.20	163.11	4.86	-4.79		
139	12,437	87.80	180.20	10921.69	-1718.87	493.66	1759.23	1788.35	163.98	1.87	1.47		
140	12,531	89.50	180.90	10923.90	-1812.83	492.76	1852.65	1878.61	164.79	1.96	1.81		
141	12,626	90.50	181.60	10923.90	-1907.81	490.68	1946.95	1969.90	165.58	1.28	1.05		
142	12,721	92.10	182.40	10921.75	-2002.72	487.37	2041.07	2061.17	166.32	1.88	1.68		
143	12,816	90.30	182.70	10919.76	-2097.60	483.14	2135.07	2152.52	167.03	1.92	-1.89		
144	12,910	90.70	183.00	10918.94	-2191.48	478.47	2228.03	2243.11	167.68	0.53	0.43		
145	13,006	90.60	182.00	10917.85	-2287.38	474.28	2323.05	2336.04	168.29	1.05	-0.10		
146	13,101	89.10	180.00	10918.10	-2382.36	472.63	2417.40	2428.79	168.78	2.63	-1.58		
147	13,196	88.60	180.80	10920.01	-2477.34	471.96	2511.85	2521.89	169.21	0.99	-0.53		
148	13,290	87.50	180.10	10923.20	-2571.28	471.22	2605.25	2614.10	169.61	1.39	-1.17		
149	13,385	86.00	178.40	10928.59	-2666.11	472.47	2699.75	2707.65	169.95	2.38	-1.58		
150	13,480	89.30	178.70	10932.49	-2760.99	474.87	2794.40	2801.53	170.24	3.49	3.47		
151	13,574	86.40	177.30	10936.01	-2854.85	478.14	2888.12	2894.62	170.49	3.43	-3.09		
152	13,669	88.20	177.00	10940.49	-2949.63	482.86	2982.90	2988.89	170.70	1.92	1.89		
153	13,763	92.80	178.60	10939.67	-3043.52	486.47	3076.70	3082.16	170.92	5.18	4.89		
154	13,858	93.00	179.10	10934.86	-3138.38	488.37	3171.28	3176.15	171.15	0.57	0.21		
155	13,953	90.40	178.50	10932.04	-3233.31	490.36	3265.94	3270.28	171.38	2.81	-2.74		
156	14,047	92.90	179.40	10929.34	-3327.25	492.08	3359.59	3363.44	171.59	2.83	2.66		
157	14,142	94.50	179.70	10923.21	-3422.04	492.83	3453.99	3457.35	171.80	1.71	1.68		
158	14,236	92.00	178.30	10917.88	-3515.87	494.47	3547.52	3550.47	171.99	3.05	-2.66		
159	14,330	91.40	178.60	10915.09	-3609.79	497.01	3641.24	3643.85	172.16	0.71	-0.64		
160	14,426	93.20	178.00	10911.24	-3705.67	499.85	3736.92	3739.23	172.32	1.98	1.88		
161	14,520	93.20	177.30	10905.99	-3799.44	503.70	3830.62	3832.69	172.45	0.74	0.00		
162	14,615	91.30	178.00	10902.26	-3894.28	507.59	3925.38	3927.23	172.57	2.13	-2.00		
163	14,709	90.80	177.60	10900.54	-3988.20	511.20	4019.19	4020.83	172.70	0.68	-0.53		
164	14,803	89.20	177.20	10900.54	-4082.10	515.47	4113.05	4114.52	172.80	1.75	-1.70		
165	14,898	89.50	178.80	10901.61	-4177.03	518.78	4207.85	4209.12	172.92	1.71	0.32		
166	14,992	91.10	180.40	10901.12	-4271.02	519.44	4301.45	4302.49	173.07	2.41	1.70		
167	15,087	91.10	181.20	10899.30	-4365.99	518.11	4395.82	4396.63	173.23	0.84	0.00		
168	15,181	90.70	180.60	10897.82	-4459.97	516.64	4489.19	4489.79	173.39	0.77	-0.43		
169	15,275	89.90	179.00	10895.69	-4553.94	516.96	4582.74	4583.19	173.52	2.13	1.28		



V08.04.02

SURVEY CALCULATION PROGRAM

11/28/17 18:34

Company:	RKI Expl & Prod LLC
Well Name:	RDX Federal COM 17-46H
Location:	Eddy County, NM
Rig:	Orion Phoenix
Job Number:	DDMO-170830
API #:	33-015-44410

Magnetic Declination: 6.92 REFERENCED TO GRID NORTH ▼

Vertical Section Azimuth: 174.33 Proposed Direction: 174.33

Survey Calculation Method: Minimum Curvature

#	Depth		Inc		Azm		TVD		N/S		E/W		Surface		Closure		DLS/	
	Feet		Degrees		Degrees		Feet		Feet		Feet		Vert Sec		Distance		100	BUR/ 100'
PTB:		MD	15.724				INC	89.7	178.5		TVD		N/S		523.65			
170	15,370		93.20		179.50		10891.46		-4648.84		518.21		4677.29		4677.63		1.47	1.37
171	15,465		91.50		179.50		10887.57		-4743.75		519.03		4771.82		4772.06		1.79	-1.79
172	15,559		89.70		179.20		10886.58		-4837.73		520.10		4865.45		4865.61		1.94	-1.91
173	15,653		90.00		178.70		10886.83		-4931.72		521.82		4959.14		4959.25		0.62	0.32
174	15,669		89.70		178.50		10886.87		-4947.71		522.21		4975.10		4975.20		2.25	-1.87