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MS Directional Survey Data Certification

**NM OIL CONSERVATION
ARTESIA DISTRICT**

APR 27 2018

MS Directional Job Number: DDMO-171106

Survey Type: MWD

RECEIVED

Operating Company: RKI Exploration & Production LLC

Well Name & Number: Tucker Draw 9-4 Federal COM 7H - 30-015-44480

Location: Eddy County, NM

API Number: 30-015-44480

Original Wellbore

Tie In Depth: Surface

Surveyed Depths: 157' – 10,519' MD

Projected TD Survey: 10,566' MD

Sidetrack #1

Tie In Depth: 10,132' MD

Surveyed Depths: 10,227' – 18,684' MD

Projected TD Survey: 18,740' MD

Dates Performed: 12/08/2017 – 01/12/2018

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Directional; 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 Directional.

Digitally signed by: Paul Royar

MWD Surveyor Name: Paul Royar

Date: 02-26-2018

Email: proyar@msdir.com

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SURVEY CALCULATION PROGRAM

2/26/18 14:40

V09.04.02

009.04.02

Company:		RKI Exploration & Production LLC												
Well Name:		Tucker Draw 9-4 Federal COM 7H - Original Wellbore												
Location:		Eddy County, NM												
Rig:		Orion Phoenix #10				Magnetic Declination:		6.88		REFERENCED TO GRID NORTH				
Job Number:		DDMO-171106												
API #:		30-015-44480												
Vertical Section Azimuth:				359.68		Proposed Direction:		359.68						
Survey Calculation Method:				Minimum Curvature										
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	10,566		12.56		352		10562.96		12.43		-71.2		12.82	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance		Azm	DLS/ 100	BUR/ 100'		
TIE IN	0	0.00	0.00	0.00	0.00	0.00		0.00						
1	157	0.30	46.30	157.00	0.28	0.30	0.28	0.41	46.30	0.19	0.19			
2	247	0.70	358.70	247.00	1.00	0.46	0.99	1.10	24.55	0.61	0.44			
3	338	0.90	28.20	337.99	2.18	0.78	2.18	2.32	19.67	0.50	0.22			
4	428	1.30	30.00	427.97	3.69	1.62	3.68	4.03	23.77	0.45	0.44			
5	518	0.90	19.00	517.95	5.24	2.37	5.23	5.75	24.29	0.50	-0.44			
6	609	0.80	29.10	608.94	6.47	2.91	6.46	7.10	24.19	0.20	-0.11			
7	699	0.80	32.10	698.94	7.55	3.55	7.53	8.34	25.15	0.05	0.00			
8	789	1.20	43.40	788.92	8.77	4.53	8.75	9.87	27.30	0.49	0.44			
9	879	1.10	40.90	878.90	10.11	5.74	10.08	11.62	29.59	0.12	-0.11			
10	921	1.70	71.00	920.89	10.62	6.59	10.58	12.50	31.85	2.21	1.43			
11	969	2.40	85.40	968.86	10.93	8.27	10.88	13.70	37.11	1.80	1.46			
12	1,060	1.60	100.20	1059.80	10.86	11.42	10.79	15.76	46.45	1.04	-0.88			
13	1,149	1.80	118.90	1148.77	9.96	13.87	9.88	17.07	54.31	0.66	0.22			
14	1,240	0.40	113.90	1239.75	9.14	15.41	9.05	17.91	59.32	1.54	-1.54			
15	1,329	0.00	326.00	1328.75	9.02	15.69	8.93	18.10	60.12	0.45	-0.45			
16	1,420	0.40	83.50	1419.75	9.05	16.01	8.96	18.39	60.51	0.44	0.44			
17	1,509	0.50	126.00	1508.74	8.86	16.63	8.77	18.84	61.96	0.38	0.11			
18	1,598	0.70	120.80	1597.74	8.35	17.41	8.25	19.31	64.37	0.23	0.22			
19	1,688	0.80	125.30	1687.73	7.71	18.40	7.60	19.94	67.27	0.13	0.11			
20	1,783	0.80	137.20	1782.72	6.84	19.39	6.73	20.56	70.57	0.17	0.00			
21	1,878	0.80	147.70	1877.71	5.79	20.19	5.68	21.01	74.00	0.15	0.00			
22	1,973	0.50	325.30	1972.71	5.57	20.31	5.46	21.06	74.66	1.37	-0.32			
23	2,067	0.90	322.20	2066.70	6.49	19.62	6.38	20.67	71.70	0.43	0.43			
24	2,162	0.80	320.10	2161.69	7.59	18.74	7.48	20.22	67.96	0.11	-0.11			
25	2,257	0.80	302.70	2256.68	8.46	17.76	8.36	19.67	64.54	0.25	0.00			
26	2,352	0.80	293.80	2351.67	9.08	16.59	8.99	18.92	61.31	0.13	0.00			
27	2,447	1.00	273.30	2446.66	9.40	15.16	9.31	17.84	58.21	0.40	0.21			
28	2,542	1.20	269.10	2541.64	9.43	13.34	9.35	16.33	54.74	0.23	0.21			
29	2,637	0.20	197.60	2636.64	9.26	12.29	9.19	15.39	53.02	1.21	-1.05			
30	2,731	0.40	145.50	2730.64	8.83	12.43	8.76	15.25	54.61	0.34	0.21			
31	2,826	0.60	114.00	2825.63	8.35	13.07	8.28	15.51	57.42	0.35	0.21			
32	2,921	0.50	109.40	2920.63	8.01	13.92	7.94	16.06	60.07	0.11	-0.11			
33	3,016	1.00	124.50	3015.62	7.41	14.99	7.32	16.72	63.71	0.56	0.53			

Page 1

Company:		RKI Exploration & Production LLC												
Well Name:		Tucker Draw 9-4 Federal COM 7H - Original Wellbore												
Location:		Eddy County, NM												
Rig:		Orion Phoenix #10					Magnetic Declination:		6.88		REFERENCED TO GRID NORTH			
Job Number:		DDMO-171106												
API #:		30-015-44480												
Vertical Section Azimuth:			359.68			Proposed Direction:		359.68						
Survey Calculation Method:			Minimum Curvature											
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	10,566		12.56		352		10562.96		12.43		-71.2		12.82	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance		Azm	DLS/ 100	BUR/ 100'		
34	3,111	0.40	196.70	3110.61	6.62	15.58	6.53	16.93		66.98	1.01	-0.63		
35	3,206	0.40	230.70	3205.61	6.09	15.23	6.01	16.40		68.20	0.25	0.00		
36	3,301	0.70	163.40	3300.61	5.33	15.14	5.24	16.04		70.62	0.69	0.32		
37	3,395	0.90	150.10	3394.60	4.13	15.67	4.05	16.20		75.22	0.29	0.21		
38	3,490	0.90	140.70	3489.59	2.91	16.51	2.82	16.77		80.00	0.16	0.00		
39	3,585	0.90	137.50	3584.58	1.78	17.49	1.69	17.58		84.18	0.05	0.00		
40	3,630	0.80	139.00	3629.57	1.29	17.93	1.19	17.98		85.90	0.23	-0.22		
41	3,701	0.63	106.27	3700.57	0.80	18.63	0.70	18.65		87.54	0.61	-0.24		
42	3,795	0.60	122.77	3794.56	0.39	19.54	0.28	19.55		88.85	0.19	-0.03		
43	3,890	0.61	92.63	3889.55	0.10	20.47	-0.02	20.47		89.72	0.33	0.01		
44	3,985	1.34	295.93	3984.55	0.56	19.97	0.45	19.98		88.39	2.02	0.77		
45	4,080	1.81	293.66	4079.51	1.65	17.60	1.55	17.68		84.65	0.50	0.49		
46	4,174	1.63	283.86	4173.47	2.56	14.94	2.48	15.16		80.26	0.37	-0.19		
47	4,269	1.27	286.20	4268.44	3.18	12.62	3.11	13.01		75.85	0.38	-0.38		
48	4,364	1.49	288.50	4363.41	3.87	10.44	3.81	11.13		69.67	0.24	0.23		
49	4,459	1.40	285.36	4458.38	4.57	8.15	4.52	9.34		60.72	0.13	-0.09		
50	4,554	1.30	282.88	4553.35	5.11	5.98	5.08	7.87		49.44	0.12	-0.11		
51	4,649	1.32	272.43	4648.33	5.40	3.83	5.38	6.62		35.36	0.25	0.02		
52	4,744	1.30	288.84	4743.31	5.80	1.72	5.79	6.05		16.53	0.39	-0.02		
53	4,839	1.22	276.22	4838.28	6.25	-0.31	6.25	6.26		357.20	0.30	-0.08		
54	4,934	1.16	281.45	4933.26	6.55	-2.25	6.57	6.93		341.03	0.13	-0.06		
55	5,029	1.06	263.04	5028.24	6.64	-4.07	6.66	7.79		328.50	0.39	-0.11		
56	5,124	2.47	288.82	5123.20	7.19	-6.88	7.23	9.95		316.28	1.67	1.48		
57	5,219	2.37	288.81	5218.11	8.49	-10.68	8.55	13.64		308.48	0.11	-0.11		
58	5,314	2.25	289.11	5313.04	9.73	-14.30	9.81	17.29		304.24	0.13	-0.13		
59	5,409	2.21	281.70	5407.96	10.71	-17.85	10.81	20.82		300.96	0.31	-0.04		
60	5,503	2.31	280.37	5501.89	11.42	-21.49	11.54	24.34		297.99	0.12	0.11		
61	5,598	2.22	284.10	5596.82	12.21	-25.16	12.35	27.97		295.89	0.18	-0.09		
62	5,693	2.29	277.47	5691.74	12.91	-28.82	13.07	31.58		294.12	0.28	0.07		
63	5,788	2.52	280.92	5786.66	13.55	-32.76	13.73	35.45		292.47	0.29	0.24		
64	5,883	2.47	273.45	5881.57	14.07	-36.85	14.27	39.45		290.90	0.35	-0.05		
65	5,977	2.70	269.94	5975.48	14.19	-41.09	14.42	43.47		289.05	0.30	0.24		
66	6,072	2.73	270.59	6070.37	14.21	-45.59	14.46	47.75		287.31	0.05	0.03		
67	6,167	2.33	275.57	6165.28	14.42	-49.77	14.70	51.82		286.16	0.48	-0.42		



V09.04.02

SURVEY CALCULATION PROGRAM

2/26/18 14:40

Company:	RKI Exploration & Production LLC											
Well Name:	Tucker Draw 9-4 Federal COM 7H - Original Wellbore											
Location:	Eddy County, NM											
Rig:	Orion Phoenix #10					Magnetic Declination:	6.88	REFERENCED TO GRID NORTH				
Job Number:	DDMO-171106											
API #:	30-015-44480											
Vertical Section Azimuth:	359.68					Proposed Direction:	359.68					
Survey Calculation Method:	Minimum Curvature											
PTB:	MD	INC	AZM	TVD	N/S	E/W	VS					
	10,566	12.56	352	10562.96	12.43	-71.2	12.82					
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'	
68	6,262	2.49	269.94	6260.19	14.61	-53.76	14.91	55.71	285.20	0.30	0.17	
69	6,357	0.42	212.42	6355.16	14.31	-56.01	14.62	57.81	284.33	2.41	-2.18	
70	6,451	0.51	208.72	6449.16	13.65	-56.39	13.97	58.02	283.61	0.10	0.10	
71	6,546	0.50	181.42	6544.15	12.87	-56.61	13.18	58.05	282.81	0.25	-0.01	
72	6,641	0.49	222.80	6639.15	12.15	-56.89	12.47	58.18	282.06	0.37	-0.01	
73	6,735	0.51	222.62	6733.14	11.55	-57.45	11.87	58.60	281.37	0.02	0.02	
74	6,830	0.58	219.10	6828.14	10.87	-58.04	11.19	59.05	280.61	0.08	0.07	
75	6,925	0.82	207.12	6923.13	9.89	-58.65	10.22	59.48	279.57	0.29	0.25	
76	7,019	1.19	202.00	7017.12	8.39	-59.32	8.72	59.91	278.05	0.40	0.39	
77	7,114	0.30	26.18	7112.11	7.69	-59.58	8.03	60.08	277.36	1.57	-0.94	
78	7,209	0.31	6.82	7207.11	8.17	-59.44	8.50	60.00	277.83	0.11	0.01	
79	7,304	0.17	221.25	7302.11	8.32	-59.51	8.65	60.09	277.96	0.48	-0.15	
80	7,399	0.52	230.47	7397.11	7.94	-59.93	8.28	60.46	277.55	0.37	0.37	
81	7,494	0.37	237.87	7492.11	7.50	-60.52	7.84	60.99	277.07	0.17	-0.16	
82	7,590	0.68	236.09	7588.10	7.02	-61.26	7.36	61.66	276.54	0.32	0.32	
83	7,684	0.47	253.99	7682.10	6.60	-62.09	6.95	62.44	276.07	0.29	-0.22	
84	7,779	0.40	221.78	7777.10	6.25	-62.69	6.60	63.00	275.69	0.26	-0.07	
85	7,874	0.40	207.85	7872.09	5.71	-63.06	6.06	63.32	275.17	0.10	0.00	
86	7,969	0.57	151.95	7967.09	5.00	-63.00	5.35	63.19	274.54	0.50	0.18	
87	8,063	0.62	138.47	8061.09	4.20	-62.44	4.55	62.58	273.85	0.16	0.05	
88	8,158	1.02	116.98	8156.08	3.44	-61.35	3.78	61.44	273.21	0.52	0.42	
89	8,253	0.60	9.41	8251.07	3.54	-60.51	3.88	60.61	273.35	1.40	-0.44	
90	8,347	1.66	8.26	8345.05	5.38	-60.23	5.71	60.47	275.10	1.13	1.13	
91	8,441	1.36	12.04	8439.02	7.81	-59.81	8.15	60.31	277.44	0.34	-0.32	
92	8,537	1.29	6.93	8534.99	10.00	-59.44	10.33	60.27	279.55	0.14	-0.07	
93	8,631	0.94	348.15	8628.97	11.81	-59.47	12.14	60.63	281.23	0.53	-0.37	
94	8,726	0.64	304.04	8723.97	12.87	-60.07	13.20	61.43	282.09	0.69	-0.32	
95	8,821	1.49	283.03	8818.95	13.44	-61.71	13.79	63.16	282.29	0.97	0.89	
96	8,916	2.28	282.60	8913.90	14.13	-64.76	14.49	66.28	282.31	0.83	0.83	
97	9,011	0.88	101.97	9008.88	14.39	-65.89	14.76	67.44	282.32	3.33	-1.47	
98	9,106	0.66	120.44	9103.87	13.97	-64.70	14.33	66.19	282.18	0.35	-0.23	
99	9,201	0.82	190.16	9198.86	13.02	-64.35	13.38	65.66	281.44	0.90	0.17	
100	9,296	1.51	186.47	9293.84	11.11	-64.61	11.47	65.56	279.75	0.73	0.73	
101	9,391	0.24	157.32	9388.83	9.68	-64.68	10.04	65.40	278.51	1.37	-1.34	

Company:		RKI Exploration & Production LLC									
Well Name:		Tucker Draw 9-4 Federal COM 7H - Original Wellbore									
Location:		Eddy County, NM									
Rig:		Orion Phoenix #10		Magnetic Declination:				6.88	REFERENCED TO GRID NORTH		
Job Number:		DDMO-171106									
API #:		30-015-44480									
Vertical Section Azimuth:		359.68		Proposed Direction:		359.68					
Survey Calculation Method:		Minimum Curvature									
PTB:	MD		INC		AZM	TVD	N/S	E/W		VS	
	10,566		12.56		352	10562.96	12.43	-71.2		12.82	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
102	9,486	0.37	106.84	9483.83	9.41	-64.31	9.77	64.99	278.32	0.30	0.14
103	9,581	0.75	135.77	9578.82	8.87	-63.58	9.23	64.20	277.94	0.49	0.40
104	9,676	1.52	171.45	9673.81	7.18	-62.96	7.53	63.37	276.51	1.06	0.81
105	9,771	0.85	112.51	9768.79	5.66	-62.12	6.01	62.38	275.21	1.37	-0.71
106	9,866	0.81	125.89	9863.78	5.00	-60.93	5.34	61.13	274.69	0.21	-0.04
107	9,960	0.86	266.90	9957.77	4.57	-61.09	4.91	61.26	274.28	1.67	0.05
108	10,056	0.81	253.06	10053.76	4.34	-62.46	4.69	62.61	273.97	0.22	-0.05
109	10,151	0.95	238.65	10148.75	3.73	-63.78	4.09	63.88	273.35	0.27	0.15
110	10,246	1.32	248.91	10243.73	2.93	-65.47	3.29	65.53	272.56	0.44	0.39
111	10,340	1.02	243.47	10337.71	2.16	-67.23	2.54	67.26	271.84	0.34	-0.32
112	10,425	0.98	229.99	10422.70	1.36	-68.46	1.74	68.47	271.14	0.28	-0.05
113	10,519	5.42	347.83	10516.57	5.19	-70.01	5.58	70.21	274.24	6.32	4.72
PTB:	10,566	12.56	352.00	10562.96	12.43	-71.20	12.82	72.27	279.90	15.24	15.19



SURVEY CALCULATION PROGRAM

2/26/18 14:43

V09.04.02

Company:	RKI Exploration & Production LLC		
Well Name:	Tucker Draw 9-4 Federal COM 7H - Sidetrack		
Location:	Eddy County, NM		
Rig:	Orion Phoenix #10	Magnetic Declination:	6.88
Job Number:	DDMO-171106		
API #:	30-015-44480		
Vertical Section Azimuth:	359.68	Proposed Direction:	359.68

Survey Calculation Method:		Minimum Curvature									
PTB:	MD	INC	AZM	TVD	N/S	E/W	VS				
	18,740	90.32	356.75	11114.36	8000.14	-145.8	8000.82				

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
TIE IN	10,132	11.30	4.10	10127.51	30.22	-59.92		67.11	296.76		
1	10,227	10.10	359.50	10220.86	47.83	-59.33	48.16	76.21	308.88	1.55	-1.26
2	10,322	9.90	2.70	10314.42	64.32	-59.02	64.65	87.29	317.46	0.62	-0.21
3	10,411	10.30	7.70	10402.04	79.85	-57.59	80.17	98.45	324.20	1.08	0.45
4	10,506	10.00	6.00	10495.55	96.47	-55.59	96.78	111.34	330.05	0.45	-0.32
5	10,601	9.90	1.00	10589.12	112.84	-54.58	113.14	125.35	334.19	0.92	-0.11
6	10,695	21.50	355.90	10679.47	138.19	-55.68	138.50	148.98	338.05	12.42	12.34
7	10,790	31.00	352.90	10764.58	179.92	-59.96	180.26	189.65	341.57	10.09	10.00
8	10,884	38.10	352.90	10841.95	232.79	-66.54	233.16	242.12	344.05	7.55	7.55
9	10,979	44.60	354.90	10913.23	295.17	-73.14	295.57	304.09	346.08	6.98	6.84
10	11,074	53.90	359.10	10975.19	366.94	-76.71	367.36	374.87	348.19	10.34	9.79
11	11,169	64.10	1.10	11024.06	448.25	-76.49	448.67	454.73	350.32	10.89	10.74
12	11,263	71.80	0.50	11059.32	535.30	-75.29	535.72	540.57	351.99	8.21	8.19
13	11,358	76.20	0.80	11085.50	626.60	-74.25	627.00	630.98	353.24	4.64	4.63
14	11,453	82.80	1.20	11102.80	719.94	-72.62	720.33	723.59	354.24	6.96	6.95
15	11,598	87.90	2.04	11114.55	864.35	-68.53	864.72	867.07	355.47	3.56	3.52
16	11,692	87.26	357.83	11118.52	958.25	-68.64	958.62	960.70	355.90	4.53	-0.68
17	11,786	89.43	357.97	11121.24	1052.14	-72.08	1052.53	1054.61	356.08	2.31	2.31
18	11,882	92.63	357.89	11119.51	1148.05	-75.55	1148.45	1150.53	356.24	3.33	3.33
19	11,977	90.82	358.02	11116.65	1242.94	-78.94	1243.36	1245.45	356.37	1.91	-1.91
20	12,071	90.72	355.43	11115.39	1336.77	-84.30	1337.22	1339.43	356.39	2.76	-0.11
21	12,166	91.29	355.49	11113.72	1431.46	-91.82	1431.95	1434.40	356.33	0.60	0.60
22	12,260	92.41	356.79	11110.69	1525.19	-98.15	1525.72	1528.35	356.32	1.82	1.19
23	12,355	92.01	359.89	11107.02	1620.07	-100.90	1620.61	1623.21	356.44	3.29	-0.42
24	12,449	90.79	2.24	11104.73	1714.02	-99.15	1714.55	1716.88	356.69	2.82	-1.30
25	12,544	91.48	1.57	11102.84	1808.95	-95.99	1809.45	1811.49	356.96	1.01	0.73
26	12,639	91.07	1.90	11100.73	1903.88	-93.12	1904.37	1906.16	357.20	0.55	-0.43
27	12,734	87.61	0.33	11101.82	1998.84	-91.27	1999.32	2000.92	357.39	4.00	-3.64
28	12,828	90.80	359.28	11103.13	2092.81	-91.59	2093.29	2094.82	357.49	3.57	3.39
29	12,923	89.25	0.03	11103.09	2187.81	-92.16	2188.29	2189.75	357.59	1.81	-1.63
30	13,018	89.71	0.47	11103.95	2282.80	-91.75	2283.28	2284.65	357.70	0.67	0.48
31	13,112	90.18	359.64	11104.04	2376.80	-91.66	2377.28	2378.57	357.79	1.01	0.50
32	13,208	91.99	359.93	11102.22	2472.78	-92.02	2473.26	2474.49	357.87	1.91	1.89
33	13,303	87.47	358.80	11102.67	2567.75	-93.07	2568.23	2569.43	357.92	4.90	-4.76

V09.04.02

Company:	RKI Exploration & Production LLC										
Well Name:	Tucker Draw 9-4 Federal COM 7H - Sidetrack										
Location:	Eddy County, NM										
Rig:	Orion Phoenix #10					Magnetic Declination:	6.88	REFERENCED TO GRID NORTH			
Job Number:	DDMO-171106										
API #:	30-015-44480										
Vertical Section Azimuth:					359.68	Proposed Direction:		359.68			
Survey Calculation Method:					Minimum Curvature						
PTB:	MD		INC		AZM	TVD	N/S	E/W	VS		
	18,740		90.32		356.75	11114.36	8000.14	-145.8	8000.82		
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
34	13,397	86.39	357.61	11107.70	2661.56	-96.01	2662.06	2663.30	357.93	1.71	-1.15
35	13,492	89.32	357.12	11111.26	2756.39	-100.37	2756.90	2758.21	357.91	3.13	3.08
36	13,587	90.61	358.35	11111.32	2851.31	-104.13	2851.85	2853.21	357.91	1.88	1.36
37	13,682	91.78	359.08	11109.34	2946.26	-106.26	2946.81	2948.18	357.93	1.45	1.23
38	13,777	90.71	359.21	11107.27	3041.23	-107.67	3041.78	3043.13	357.97	1.13	-1.13
39	13,871	92.40	0.41	11104.72	3135.19	-107.99	3135.74	3137.05	358.03	2.20	1.80
40	13,966	91.08	0.43	11101.84	3230.14	-107.29	3230.69	3231.92	358.10	1.39	-1.39
41	14,061	90.58	0.68	11100.46	3325.12	-106.37	3325.67	3326.82	358.17	0.59	-0.53
42	14,155	92.63	1.05	11097.83	3419.07	-104.95	3419.60	3420.68	358.24	2.22	2.18
43	14,250	91.74	2.19	11094.21	3513.96	-102.27	3514.48	3515.45	358.33	1.52	-0.94
44	14,345	90.02	2.15	11092.75	3608.88	-98.67	3609.37	3610.23	358.43	1.81	-1.81
45	14,440	90.70	1.41	11092.15	3703.83	-95.72	3704.31	3705.07	358.52	1.06	0.72
46	14,534	90.07	3.29	11091.52	3797.74	-91.87	3798.20	3798.85	358.61	2.11	-0.67
47	14,628	87.91	1.71	11093.18	3891.63	-87.77	3892.06	3892.62	358.71	2.85	-2.30
48	14,723	87.05	0.80	11097.35	3986.51	-85.69	3986.93	3987.44	358.77	1.32	-0.91
49	14,817	89.75	2.68	11099.98	4080.42	-82.83	4080.82	4081.26	358.84	3.50	2.87
50	14,912	88.49	0.77	11101.44	4175.36	-79.97	4175.74	4176.13	358.90	2.41	-1.33
51	15,007	89.29	0.47	11103.28	4270.34	-78.95	4270.71	4271.07	358.94	0.90	0.84
52	15,101	88.46	359.66	11105.12	4364.32	-78.84	4364.69	4365.03	358.97	1.23	-0.88
53	15,195	88.99	359.13	11107.21	4458.29	-79.83	4458.66	4459.00	358.97	0.80	0.56
54	15,290	88.41	357.85	11109.37	4553.23	-82.34	4553.62	4553.97	358.96	1.48	-0.61
55	15,384	90.96	357.88	11109.89	4647.15	-85.84	4647.56	4647.95	358.94	2.71	2.71
56	15,478	90.57	357.35	11108.63	4741.06	-89.75	4741.49	4741.91	358.92	0.70	-0.41
57	15,573	90.68	356.94	11107.59	4835.94	-94.48	4836.39	4836.86	358.88	0.45	0.12
58	15,667	91.28	358.03	11105.99	4929.83	-98.60	4930.31	4930.82	358.85	1.32	0.64
59	15,762	90.66	359.50	11104.38	5024.79	-100.65	5025.28	5025.80	358.85	1.68	-0.65
60	15,856	89.67	0.54	11104.11	5118.79	-100.62	5119.27	5119.78	358.87	1.53	-1.05
61	15,951	89.66	0.49	11104.66	5213.79	-99.76	5214.26	5214.74	358.90	0.05	-0.01
62	16,046	88.79	359.39	11105.95	5308.78	-99.86	5309.25	5309.71	358.92	1.48	-0.92
63	16,140	89.98	358.88	11106.96	5402.76	-101.28	5403.24	5403.71	358.93	1.38	1.27
64	16,235	89.09	358.95	11107.73	5497.74	-103.08	5498.23	5498.70	358.93	0.94	-0.94
65	16,331	89.86	359.54	11108.61	5593.72	-104.35	5594.22	5594.70	358.93	1.01	0.80
66	16,425	89.05	358.45	11109.50	5687.70	-105.99	5688.20	5688.69	358.93	1.44	-0.86
67	16,520	88.70	358.94	11111.37	5782.66	-108.16	5783.17	5783.67	358.93	0.63	-0.37

Company:		RKI Exploration & Production LLC												
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Job Number:		DDMO-171106												
API #:		30-015-44480												
Vertical Section Azimuth:		359.68				Proposed Direction:		359.68						
Survey Calculation Method:		Minimum Curvature												
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	18,740		90.32		356.75		11114.36		8000.14		-145.8		8000.82	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'			
68	16,614	91.04	358.89	11111.58	5876.63	-109.94	5877.16	5877.66	358.93	2.49	2.49			
69	16,709	90.02	358.60	11110.70	5971.61	-112.02	5972.14	5972.66	358.93	1.12	-1.07			
70	16,803	89.75	359.04	11110.89	6065.59	-113.95	6066.13	6066.66	358.92	0.55	-0.29			
71	16,898	93.72	0.36	11108.01	6160.52	-114.45	6161.06	6161.58	358.94	4.40	4.18			
72	16,993	89.94	1.09	11104.98	6255.45	-113.25	6255.98	6256.47	358.96	4.05	-3.98			
73	17,088	88.93	1.45	11105.92	6350.42	-111.15	6350.94	6351.39	359.00	1.13	-1.06			
74	17,182	88.97	1.84	11107.64	6444.36	-108.45	6444.87	6445.27	359.04	0.42	0.04			
75	17,277	88.27	2.68	11109.93	6539.26	-104.70	6539.74	6540.10	359.08	1.15	-0.74			
76	17,371	85.72	1.86	11114.86	6633.05	-100.98	6633.51	6633.82	359.13	2.85	-2.71			
77	17,465	85.52	0.76	11122.03	6726.75	-98.84	6727.19	6727.47	359.16	1.19	-0.21			
78	17,560	88.38	359.47	11127.09	6821.60	-98.65	6822.04	6822.31	359.17	3.30	3.01			
79	17,655	90.62	359.60	11127.92	6916.59	-99.42	6917.03	6917.30	359.18	2.36	2.36			
80	17,750	92.34	0.19	11125.46	7011.55	-99.60	7012.00	7012.26	359.19	1.91	1.81			
81	17,845	91.66	359.57	11122.15	7106.49	-99.80	7106.94	7107.19	359.20	0.97	-0.72			
82	17,939	89.74	357.05	11121.00	7200.43	-102.57	7200.89	7201.16	359.18	3.37	-2.04			
83	18,034	91.56	358.01	11119.92	7295.33	-106.66	7295.82	7296.11	359.16	2.17	1.92			
84	18,129	89.04	356.79	11119.43	7390.22	-110.97	7390.73	7391.06	359.14	2.95	-2.65			
85	18,223	90.20	356.05	11120.05	7484.04	-116.84	7484.57	7484.95	359.11	1.46	1.23			
86	18,318	90.37	355.09	11119.58	7578.75	-124.18	7579.33	7579.77	359.06	1.03	0.18			
87	18,412	91.02	357.45	11118.44	7672.54	-130.29	7673.15	7673.64	359.03	2.60	0.69			
88	18,507	90.45	357.76	11117.22	7767.45	-134.26	7768.08	7768.61	359.01	0.68	-0.60			
89	18,602	91.26	357.29	11115.80	7862.35	-138.36	7863.00	7863.56	358.99	0.99	0.85			
90	18,684	90.32	356.75	11114.67	7944.23	-142.63	7944.90	7945.51	358.97	1.32	-1.15			
PTB:	18,740	90.32	356.75	11114.36	8000.14	-145.80	8000.82	8001.46	358.96	0.00	0.00			