



State of New Mexico
County of Eddy

I, Matt Waldrop, certify that; I am employed by Accel Directional; that I did on the day(s) of March 21, 2017 through March 26, 2017 conduct or supervise the taking of MWD survey(s) from a depth of 450' feet to a depth of 4920' feet; that the data is true, correct, complete and within the limitations of the tool set forth by Accel Directional; that I am authorized and qualified to make this report; that this report was conducted at the request of Lime Rock Resources for the Eagle 34G, Well No. Fed 88, API No. 30-015-44021 in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Accel Directional.

Matt Waldrop

A handwritten signature in black ink, appearing to read "Matt Waldrop", written over a horizontal line.

Matt Waldrop

MWD Technician

30-015-44021

APR 03 2017



SURVEY CALCULATION PROGRAM

RECEIVED

v07.00.01

Minimum Curvature

File:

OPERATOR: Lime Rock Resources										Target Information					VS Referenced to Offset from Surface					
WELL: Eagle 34G Federal Well #88										TARGET KRTVD:		5100.00 <th colspan="2">NORTH/SOUTH:</th> <td colspan="2">-169.94</td>		NORTH/SOUTH:		-169.94				
LOCATION: Eddy Co, NM										TARGET INCL:		0.00		EAST/WEST:		53.00				
RIG: United Drilling #33										TARGET AZM:		0.00		(Enter 0° N and 0° E for Surface)						
JOB NUMBER: TX-17-011										PROPOSED DIRECTION:		162.68		Dec / Total Corr.(+/-): 7.28						
SURVEY COMPANY					DIRECTIONAL COMPANY					COMMENTS:										
Accel Guidance					Accel Directional															
Directional Drillers					COORDINATORS					API # 30-015-44021										
Allen Hightower					C. Shipp															
Matt Waldrop																				
Lime Rock Resources					Eagle 34G Federal Well #88															
SVY	MD	INC	TRUE AZM	TEMP °F	API Gamma	Course Length	TVD	N-S	E-W	Surface				CLOSURE		DLS/ 100'	BUR/ 100'	Target Calculations		
										Vert Sect	DIST	DIR	100'	TVD AT 0' V. SEC.	ABOVE (+) BELOW (-)			RIGHT (+) LEFT (-)		
0	0	0.0	0.0			N/A	0.00	0.00	0.00		0.00	0.00	N/A	N/A						
1	490	0.7	130.2			490	489.99	-1.93	2.29	2.53	2.99	130.20	0.14	0.14	#DIV/0!	#DIV/0!	-50.71			
2	519	1.1	146.1			29	518.98	-2.28	2.58	2.94	3.44	131.47	1.61	1.38	#DIV/0!	#DIV/0!	-50.42			
3	549	1.9	152.1			30	548.97	-2.96	2.97	3.71	4.19	134.86	2.71	2.67	#DIV/0!	#DIV/0!	-50.03			
4	587	2.7	158.5			38	586.94	-4.35	3.59	5.22	5.64	140.42	2.21	2.11	#DIV/0!	#DIV/0!	-49.41			
5	619	3.6	160.3			32	618.89	-5.99	4.21	6.97	7.32	144.92	2.83	2.81	#DIV/0!	#DIV/0!	-48.79			
6	651	4.4	159.6			32	650.82	-8.09	4.97	9.20	9.50	148.41	2.50	2.50	#DIV/0!	#DIV/0!	-48.03			
7	683	5.2	160.9			32	682.70	-10.61	5.88	11.88	12.13	151.02	2.52	2.50	#DIV/0!	#DIV/0!	-47.12			
8	715	6.2	164.5			32	714.54	-13.65	6.81	15.05	15.25	153.47	3.32	3.13	#DIV/0!	#DIV/0!	-46.19			
9	747	7.5	163.9			32	746.32	-17.32	7.85	18.87	19.01	155.60	4.07	4.06	#DIV/0!	#DIV/0!	-45.15			
10	779	9.0	161.4			32	777.98	-21.70	9.23	23.46	23.58	156.95	4.82	4.69	#DIV/0!	#DIV/0!	-43.77			
11	811	10.1	164.0			32	809.54	-26.77	10.80	28.77	28.86	158.02	3.69	3.44	#DIV/0!	#DIV/0!	-42.20			
12	842	11.6	164.3			31	839.99	-32.38	12.40	34.60	34.67	159.05	4.84	4.84	#DIV/0!	#DIV/0!	-40.60			
13	874	13.2	164.1			32	871.24	-38.99	14.27	41.47	41.52	159.90	5.00	5.00	#DIV/0!	#DIV/0!	-38.73			
14	906	14.7	162.6			32	902.29	-46.38	16.48	49.18	49.22	160.44	4.82	4.69	#DIV/0!	#DIV/0!	-36.52			
15	938	16.2	163.4			32	933.14	-54.53	18.97	57.71	57.74	160.82	4.73	4.69	#DIV/0!	#DIV/0!	-34.03			
16	970	16.5	163.5			32	963.84	-63.17	21.54	66.71	66.74	161.17	0.94	0.94	#DIV/0!	#DIV/0!	-31.46			
17	1,003	16.0	164.0			33	995.52	-72.03	24.12	75.95	75.96	161.48	1.57	-1.52	#DIV/0!	#DIV/0!	-28.88			
18	1,035	16.1	163.7			32	1026.28	-80.53	26.58	84.79	84.80	161.73	0.41	0.31	#DIV/0!	#DIV/0!	-26.42			
19	1,067	16.2	164.7			32	1057.01	-89.09	29.01	93.69	93.70	161.97	0.92	0.31	#DIV/0!	#DIV/0!	-23.99			
20	1,099	16.6	165.4			32	1087.71	-97.82	31.34	102.72	102.72	162.24	1.39	1.25	#DIV/0!	#DIV/0!	-21.66			
21	1,131	16.5	165.0			32	1118.39	-106.64	33.67	111.82	111.82	162.48	0.47	-0.31	#DIV/0!	#DIV/0!	-19.33			
22	1,163	16.6	165.2			32	1149.06	-115.45	36.01	120.93	120.93	162.68	0.36	0.31	#DIV/0!	#DIV/0!	-16.99			
23	1,195	17.2	166.4			32	1179.68	-124.46	38.29	130.22	130.22	162.90	2.17	1.87	#DIV/0!	#DIV/0!	-14.71			
24	1,227	16.3	165.0			32	1210.32	-133.40	40.56	139.43	139.43	163.09	3.08	-2.81	#DIV/0!	#DIV/0!	-12.44			
25	1,324	11.4	169.0			97	1304.47	-155.97	45.92	162.57	162.59	163.59	5.14	-5.05	#DIV/0!	#DIV/0!	-7.08			
26	1,420	6.8	170.0			96	1399.24	-170.89	48.72	177.65	177.70	164.09	4.79	-4.79	#DIV/0!	#DIV/0!	-4.28			
27	1,516	2.8	168.3			96	1494.88	-178.79	50.18	185.62	185.70	164.32	4.17	-4.17	#DIV/0!	#DIV/0!	-2.82			
28	1,612	0.9	172.1			96	1590.83	-181.83	50.76	188.70	188.78	164.40	1.98	-1.98	#DIV/0!	#DIV/0!	-2.24			
29	1,707	0.7	347.6			95	1685.83	-182.00	50.74	188.86	188.94	164.42	1.68	-0.21	#DIV/0!	#DIV/0!	-2.26			
30	1,802	0.5	3.6			95	1780.82	-181.02	50.64	187.89	187.97	164.37	0.27	-0.21	#DIV/0!	#DIV/0!	-2.36			
31	1,898	0.7	5.4			96	1876.82	-180.02	50.72	186.96	187.03	164.26	0.21	0.21	#DIV/0!	#DIV/0!	-2.28			
32	1,998	0.5	3.2			100	1976.81	-178.98	50.80	185.99	186.05	164.15	0.20	-0.20	#DIV/0!	#DIV/0!	-2.20			
33	2,095	0.7	347.4			97	2073.80	-177.98	50.70	185.00	185.06	164.10	0.27	0.21	#DIV/0!	#DIV/0!	-2.30			
34	2,189	0.5	341.3			94	2167.80	-177.03	50.44	184.02	184.07	164.10	0.22	-0.21	#DIV/0!	#DIV/0!	-2.56			
35	2,285	0.4	14.5			96	2263.80	-176.31	50.39	183.31	183.37	164.05	0.29	-0.10	#DIV/0!	#DIV/0!	-2.61			
36	2,380	0.4	60.6			95	2358.79	-175.82	50.76	182.96	183.00	163.90	0.33	0.00	#DIV/0!	#DIV/0!	-2.24			
37	2,476	0.5	64.9			96	2454.79	-175.48	51.43	182.84	182.86	163.66	0.11	0.10	#DIV/0!	#DIV/0!	-1.57			
38	2,572	0.5	60.5			96	2550.79	-175.10	52.18	182.69	182.71	163.41	0.04	0.00	#DIV/0!	#DIV/0!	-0.82			
39	2,668	0.3	63.5			96	2646.79	-174.78	52.77	182.56	182.57	163.20	0.21	-0.21	#DIV/0!	#DIV/0!	-0.23			
40	2,764	0.2	68.5			96	2742.78	-174.60	53.15	182.51	182.51	163.07	0.11	-0.10	#DIV/0!	#DIV/0!	0.15			
41	2,860	0.4	36.6			96	2838.78	-174.27	53.50	182.30	182.30	162.93	0.26	0.21	#DIV/0!	#DIV/0!	0.50			
42	2,956	0.6	127.3			96	2934.78	-174.31	54.10	182.51	182.51	162.76	0.76	0.21	#DIV/0!	#DIV/0!	1.10			
43	3,051	0.7	119.6			95	3029.77	-174.90	55.00	183.34	183.34	162.54	0.14	0.11	#DIV/0!	#DIV/0!	2.00			
44	3,148	0.7	131.3			97	3126.77	-175.58	55.96	184.28	184.28	162.32	0.15	0.00	#DIV/0!	#DIV/0!	2.96			
45	3,244	0.7	136.7			96	3222.76	-176.39	56.81	185.31	185.32	162.15	0.07	0.00	#DIV/0!	#DIV/0!	3.81			
46	3,340	0.5	131.1			96	3318.75	-177.10	57.52	186.19	186.21	162.01	0.22	-0.21	#DIV/0!	#DIV/0!	4.52			
47	3,435	0.7	141.4			95	3413.75	-177.82	58.20	187.09	187.10	161.88	0.24	0.21	#DIV/0!	#DIV/0!	5.20			
48	3,531	0.7	123.7			96	3509.74	-178.61	59.05	188.09	188.12	161.70	0.22	0.00	#DIV/0!	#DIV/0!	6.05			
49	3,626	0.7	146.9			95	3604.74	-179.41	59.85	189.10	189.13	161.55	0.30	0.00	#DIV/0!	#DIV/0!	6.85			
50	3,723	0.4	144.6			97	3701.73	-180.19	60.37	189.99	190.03	161.48	0.31	-0.31	#DIV/0!	#DIV/0!	7.37			
51	3,818	0.7	137.5			95	3796.73	-180.89	60.96	190.83	190.88	161.38	0.32	0.32	#DIV/0!	#DIV/0!	7.96			
52	3,914	0.7	138.6			96	3892.72	-181.76	61.74	191.90	191.96	161.24	0.01	0.00	#DIV/0!	#DIV/0!	8.74			
53	4,010	0.5	128.0			96	3988.71	-182.46	62.46	192.78	192.85	161.10	0.24	-0.21	#DIV/0!	#DIV/0!	9.46			
54	4,106	0.7	122.5			96	4084.71	-183.03	63.28	193.57	193.66	160.93	0.22	0.21	#DIV/0!	#DIV/0!	10.28			
55	4,202	0.6	100.7			96	4180.70	-183.44	64.27	194.25	194.37	160.69	0.28	-0.10	#DIV/0!	#DIV/0!	11.27			
56	4,299	0.7	100.9			97	4277.70	-183.64	65.35	194.77	194.92	160.41	0.10	0.10	#DIV/0!	#DIV/0!	12.35			
57	4,395	0.4	108.3			96	4373.69	-183.86	66.25	195.24	195.43	160.19	0.32	-0.31	#DIV/0!	#DIV/0!	13.25			
58	4,491	0.3	109.3			96	4469.69	-184.05	66.80	195.59	195.80	160.05	0.10	-0.10	#DIV/0!	#DIV/0!	13.80			
59	4,587	0.2	109.7			96	4565.69	-184.19	67.20	195.84	196.06	159.96	0.10	-0.10	#DIV/0!	#DIV/0!	14.20			



SURVEY CALCULATION PROGRAM

4/27/02 01

Minimum Curvature

File:

OPERATOR: Lime Rock Resources										Target Information				VS Referenced to Offset from Surface					
WELL: Eagle 34G Federal Well #88										TARGET KRTVD:		5100.00		NORTH/SOUTH:		-168.94			
LOCATION: Eddy Co, NM										TARGET INCL:		0.00		EAST/WEST:		53.00			
RIG: United Drilling #33										TARGET AZM:		0.00		(Enter 0° N and 0° E for Surface)					
JOB NUMBER: TX-17-011																			
SURVEY COMPANY						DIRECTIONAL COMPANY				PROPOSED DIRECTION:		162.68		Dec / Total Corr.(+/-): 7.28					
Accel Guidance						Accel Directional				COMMENTS:									
Directional Drillers						COORDINATORS				API # 30-015-44021									
Allen Hightower						C. Shipp													
Matt Waldrop																			
Lime Rock Resources						Eagle 34G Federal Well #88													
														Target Calculations					
SVY	MD	INC	TRUE AZM	TEMP °F	API Gamma	Course Length	TVD	N-S	E-W	Surface Vert Sect	CLOSURE DIST	DIR	DLS/ 100	BUR/ 100'	TVD AT 0° V. SEC.	ABOVE (+) BELOW (-)	RIGHT(+) LEFT(-)		
60	4,682	0.2	63.4			95	4660.69	-184.17	67.50	195.91	196.15	159.87	0.17	0.00	#DIV/0!	#DIV/0!	14.50		
61	4,779	0.2	17.3			97	4757.69	-183.93	67.70	195.75	196.00	159.79	0.16	0.00	#DIV/0!	#DIV/0!	14.70		
62	4,875	0.4	353.1			96	4853.69	-183.44	67.71	195.28	195.54	159.74	0.24	0.21	#DIV/0!	#DIV/0!	14.71		
63	4,920	0.4	353.1			45	4898.69	-183.13	67.67	194.97	195.23	159.72	0.00	0.00	#DIV/0!	#DIV/0!	14.67		

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 03 2002

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