



State of New Mexico
County of Eddy

I, Donnie Leone, certify that; I am employed by Accel Directional; that I did on the day(s) of March 31, 2017 through April 4, 2017 conduct or supervise the taking of MWD survey(s) from a depth of 431' feet to a depth of 4625' 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 Malco B 6 J, Well No. Fed 10, API No. 30-015-43875 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.

Donnie Leone

Donnie Leone

Donnie Leone
MWD Technician

SURVEY CALCULATION PROGRAM

OPERATOR: Limerock Resources						Minimum Curvature					Target Information				File			
WELL: Malco B 6 1/2 Fed Well No. 10											TARGET KBTVD:		4599.00		NORTH/SOUTH:		185.00	
LOCATION: Eddy County											TARGET INCL:		5.83		EAST/WEST:		32.18	
RIG: United 33											TARGET AZM:		170.13		(Enter 0° N and 0° E for Surface)			
JOB NUMBER: 1X 17015																		
SURVEY COMPANY						DIRECTIONAL COMPANY					PROPOSED DIRECTION:		170.13		Dec / Total Corr. (+/-):			
Accel Directional						Accel Directional					COMMENTS:							
Directional Drillers						COORDINATORS					AP# 30-015-43875							
Allen Hightower						Chris Shipp												
Limerock Resources						Malco B 6 1/2 Fed Well No. 10									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 (-)	
File In	0	0.0	0.0			N/A	0.00	0.00	0.00		0.00	0.00	N/A	N/A				
1	431	0.1	76.0			31	431.00	0.09	0.36	-0.03	0.38	76.00	0.02	0.02	431.27	4167.73	-0.38	
2	461	0.2	80.6			30	461.00	0.11	0.44	-0.03	0.45	76.53	0.34	0.33	461.28	4137.72	-0.46	
3	491	0.2	80.5			30	491.00	0.12	0.55	-0.03	0.56	77.28	0.00	0.00	491.27	4107.73	-0.57	
4	522	0.2	111.0			31	522.00	0.11	0.65	0.00	0.66	80.16	0.34	0.00	522.00	4077.00	-0.67	
5	551	0.2	76.8			29	551.00	0.11	0.75	0.02	0.75	81.91	0.41	0.00	550.77	4048.23	-0.76	
6	583	0.3	174.1			32	583.00	0.04	0.81	0.10	0.81	87.49	1.19	0.31	581.98	4017.02	-0.81	
7	615	1.6	167.1			32	614.99	-0.48	0.92	0.63	1.04	117.79	4.07	4.06	608.79	3990.21	-0.83	
8	647	3.4	162.8			32	646.96	-1.83	1.30	2.02	2.24	144.60	5.65	5.63	627.17	3971.83	-0.97	
9	680	4.8	163.3			33	679.88	-4.08	1.98	4.36	4.54	154.09	4.24	4.24	637.15	3961.85	-1.26	
10	711	6.5	163.1			31	710.73	-7.00	2.87	7.39	7.57	157.74	5.48	5.48	638.33	3960.67	-1.63	
11	743	6.8	166.0			32	742.51	-10.58	3.85	11.08	11.25	159.99	1.41	0.94	634.00	3965.00	-1.99	
12	775	6.2	175.9			32	774.31	-14.14	4.43	14.69	14.82	162.59	3.97	-1.88	630.45	3968.55	-1.95	
13	808	6.3	177.8			33	807.11	-17.72	4.63	18.26	18.32	165.36	0.70	0.30	628.32	3970.68	-1.53	
14	840	6.2	177.2			32	838.92	-21.20	4.78	21.71	21.74	167.29	0.37	-0.31	626.29	3972.71	-1.08	
15	872	5.8	170.9			32	870.74	-24.53	5.12	25.04	25.06	168.20	2.41	-1.25	625.49	3973.51	-0.85	
16	968	5.7	163.7			96	966.26	-33.89	7.23	34.63	34.65	167.96	0.76	-0.10	627.11	3971.89	-1.32	
17	1,064	5.9	176.6			96	1061.77	-43.39	8.86	44.27	44.29	168.46	1.37	0.21	628.20	3970.80	-1.30	
18	1,159	5.7	162.5			95	1156.29	-52.77	10.57	53.80	53.82	168.68	1.51	-0.21	629.41	3969.59	-1.37	
19	1,256	5.8	171.8			97	1252.81	-62.21	12.71	63.47	63.50	168.45	0.97	0.10	631.18	3967.82	-1.87	
20	1,352	5.9	174.2			96	1348.31	-71.92	13.90	73.24	73.25	169.06	0.28	0.10	630.99	3968.01	-1.38	
21	1,447	5.6	175.9			95	1442.83	-81.40	14.73	82.72	82.73	169.74	0.36	-0.32	632.65	3966.35	-0.57	
22	1,542	5.6	173.2			95	1537.38	-90.63	15.61	91.96	91.96	170.23	0.28	0.00	636.70	3962.30	0.15	
23	1,638	5.8	173.9			96	1632.90	-100.10	16.68	101.48	101.48	170.54	0.22	0.21	639.01	3959.99	0.72	
24	1,734	5.7	175.5			96	1728.42	-109.68	17.57	111.07	111.08	170.90	0.20	-0.10	640.64	3958.36	1.48	
25	1,830	5.8	163.1			96	1823.94	-119.07	19.35	120.63	120.64	170.77	1.30	0.10	642.52	3956.48	1.34	
26	1,926	5.8	163.3			96	1919.45	-128.36	22.16	130.26	130.26	170.21	0.02	0.00	643.71	3955.29	0.17	
27	2,027	5.3	172.7			101	2019.98	-137.88	24.22	139.99	139.99	170.04	1.03	-0.50	648.97	3950.03	-0.23	
28	2,123	5.1	172.1			96	2115.58	-146.50	25.37	148.68	148.68	170.18	0.22	-0.21	659.43	3939.57	0.11	
29	2,218	4.9	171.1			95	2210.22	-154.69	26.57	156.96	156.96	170.25	0.23	-0.21	673.00	3926.00	0.33	
30	2,314	4.9	170.7			96	2305.87	-162.79	27.87	165.16	165.16	170.28	0.04	0.00	688.35	3910.65	0.44	
31	2,410	4.9	170.6			96	2401.52	-170.88	29.20	173.36	173.36	170.30	0.01	0.00	703.69	3895.31	0.51	
32	2,506	4.5	174.6			96	2497.19	-178.67	30.23	181.21	181.21	170.40	0.54	-0.42	722.45	3876.55	0.84	
33	2,602	2.9	189.7			96	2592.99	-184.82	30.17	187.25	187.26	170.73	1.94	-1.67	759.06	3839.94	1.95	
34	2,697	0.9	253.0			95	2687.94	-187.41	29.05	189.61	189.64	171.19	2.76	-2.11	830.92	3768.08	3.49	
35	2,793	1.3	318.3			96	2783.93	-186.81	27.61	188.78	188.84	171.59	1.29	0.42	935.05	3663.95	4.81	
36	2,889	4.4	11.0			96	2879.81	-182.38	27.59	184.41	184.46	171.40	3.91	3.23	1073.71	3525.29	4.08	
37	2,986	2.9	22.0			97	2976.61	-176.46	29.22	178.85	178.86	170.60	1.70	-1.55	1224.97	3374.03	1.46	
38	3,082	1.2	53.8			96	3072.55	-173.61	30.94	176.34	176.34	169.90	2.07	-1.77	1345.48	3253.52	-0.73	
39	3,178	0.8	25.7			96	3168.53	-172.41	32.04	175.35	175.36	169.47	0.65	-0.42	1451.17	3147.83	-2.02	
40	3,274	1.0	27.0			96	3264.52	-171.06	32.71	174.14	174.16	169.17	0.21	0.21	1559.06	3039.94	-2.91	
41	3,369	1.1	20.2			95	3359.51	-169.47	33.40	172.68	172.73	168.85	0.17	0.11	1668.27	2930.73	-3.87	
42	3,466	1.8	81.5			97	3456.48	-168.37	35.23	171.92	172.01	168.18	1.65	0.72	1772.78	2826.22	-5.86	
43	3,561	0.1	210.0			95	3551.46	-168.22	36.66	172.01	172.17	167.70	1.96	-1.79	1866.79	2732.21	-7.29	
44	3,657	0.3	249.5			96	3647.46	-168.38	36.39	172.13	172.27	167.81	0.24	0.21	1961.71	2637.29	-6.99	
45	3,752	0.3	270.1			95	3742.46	-168.47	35.90	172.13	172.25	167.97	0.11	0.00	2056.68	2542.32	-6.50	
46	3,848	0.4	229.3			96	3838.46	-168.68	35.40	172.26	172.36	168.15	0.27	0.10	2151.42	2447.58	-5.97	
47	3,944	0.3	256.5			96	3934.46	-168.96	34.90	172.44	172.53	168.33	0.20	-0.10	2245.58	2353.42	-5.43	
48	4,040	0.3	249.6			96	4030.46	-169.11	34.42	172.51	172.58	168.49	0.04	0.00	2340.97	2258.03	-4.93	
49	4,136	0.5	246.3			96	4126.46	-169.36	33.80	172.65	172.70	168.71	0.21	0.21	2435.54	2163.46	-4.28	
50	4,232	0.5	212.2			96	4222.45	-169.89	33.20	173.06	173.10	168.94	0.31	0.00	2527.51	2071.49	-3.59	
51	4,328	0.4	212.4			96	4318.45	-170.52	32.79	173.62	173.65	169.11	0.10	-0.10	2618.03	1980.97	-3.08	
52	4,424	0.5	225.2			96	4414.45	-171.10	32.32	174.11	174.13	169.30	0.15	0.10	2709.25	1889.75	-2.52	
53	4,520	0.8	231.1			96	4510.44	-171.82	31.50	174.67	174.68	169.61	0.32	0.31	2799.71	1799.29	-1.59	



SURVEY CALCULATION PROGRAM

Minimum Curvature

File:

OPERATOR: Limerock Resources		Target Information		VS Referenced to Offset from Surface	
WELL: Makin B 6.1 Fed Well No. 10		TARGET KBTVD: 4599.00	NORTH/SOUTH: 185.90		
LOCATION: Eddy County		TARGET INCL: 5.83	EAST/WEST: 32.18		
RIG: United 33		TARGET AZM: 170.13	(Enter 0° N and 0° E for Surface)		
JOB NUMBER: TX 17015					
SURVEY COMPANY		DIRECTIONAL COMPANY		PROPOSED DIRECTION: 170.13	
Accel Directional		Accel Directional		Dec / Total Corr. (+/-)	
Directional Drillers		COORDINATORS		COMMENTS	
Allen Hightower		Chris Shipp		API# 30 015 43871	

Limerock Resources			Makin B 6.1 Fed Well No. 10			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'	ABOVE (+) BELOW (-)	RIGHT(+) LEFT(-)
54	4.579	0.8	219.2			59	4569.43	-172.40	30.92	175.14	175.15	169.83	0.28	0.00	2854.11	1744.89	-0.92
PTB	4.625	0.8	219.2			46	4615.43	-172.89	30.51	175.56	175.57	169.99	0.00	0.00	2895.98	1703.02	-0.43

Allen Hightower