



State of New Mexico

County of Eddy

I, Damian Dalfrey, certify that; I am employed by DrilTech MWD Rentals LLC. I did on the day(s) of 09/01/14 through 09/26/14 conduct or supervise the taking of the 112 survey(s) from a measured depth of 4,118 feet to a measured depth of 12,333 feet. The data is true, correct, complete and within the limitations of the tool as set forth by DrilTech MWD Rentals, LLC I am authorized and qualified to make this report, and this survey(s) was/were conducted at the request of RKI Exploration & Production, LLC. for the Longview 31 Federal No. 003H, API No. 30-015-42050 in Eddy County, New Mexico. I have reviewed this report, and find that it conforms to the principles and procedures as set forth by DrilTech MWD Rentals LLC.


Operations Coordinator

DRILTECH MWD SURVEY REPORT



Company: RKI
 Well: Longview Fed 31-3H+E4
 Location: Eddy County NM
 Rig: Silver Oak 9

Job Number: 2014-333-WDDT-NM Calculation Method: Minimum Curvature
 Magnetic Decl.: 7.41 Proposed Azimuth: 355.79
 Grid Corr.: WELL API #: 30-015-42050
 Total Grid Corr.: Tie Into: Terra Pilot Survey's
 North Reference: TRUE NORTH

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)		
Tie In	Terra	4043	3.40	231.00		4004.68	-271.97	299.66 S	366.17 W			2.4	
1	MWD	4118	3.30	233.80	75	4079.55	-274.38	302.33 S	369.64 W	477.54	230.72	0.26	-0.13
2	MWD	4181	1.90	240.10	63	4142.49	-275.80	303.93 S	372.01 W	480.38	230.75	2.26	-2.22
3	MWD	4275	0.70	288.50	94	4236.46	-276.25	304.52 S	373.90 W	482.22	230.84	1.63	-1.28
4	MWD	4370	0.70	310.30	95	4331.45	-275.62	303.96 S	374.90 W	482.64	230.97	0.28	0.00
5	MWD	4464	0.90	288.70	94	4425.45	-274.93	303.35 S	376.03 W	483.14	231.11	0.38	0.21
6	MWD	4559	1.20	275.70	95	4520.43	-274.47	303.02 S	377.73 W	484.25	231.26	0.40	0.32
7	MWD	4654	1.20	276.90	95	4615.41	-274.10	302.80 S	379.71 W	485.66	231.43	0.03	0.00
8	MWD	4749	1.10	324.20	95	4710.39	-273.14	301.94 S	381.23 W	486.32	231.62	0.98	-0.11
9	MWD	4844	1.20	329.10	95	4805.37	-271.47	300.34 S	382.27 W	486.15	231.84	0.15	0.11
10	MWD	4939	1.10	318.40	95	4900.35	-269.86	298.81 S	383.39 W	486.08	232.07	0.25	-0.11
11	MWD	5034	0.90	327.30	95	4995.34	-268.48	297.50 S	384.40 W	486.07	232.26	0.27	-0.21
12	MWD	5129	1.10	321.00	95	5090.32	-267.07	296.16 S	385.38 W	486.03	232.46	0.24	0.21
13	MWD	5224	0.90	329.10	95	5185.31	-265.66	294.81 S	386.33 W	485.97	232.65	0.26	-0.21
14	MWD	5318	0.70	316.40	94	5279.30	-264.55	293.76 S	387.11 W	485.95	232.81	0.28	-0.21
15	MWD	5413	0.90	306.60	95	5374.29	-263.62	292.90 S	388.11 W	486.23	232.96	0.25	0.21
16	MWD	5508	0.70	302.70	95	5469.28	-262.78	292.14 S	389.19 W	486.64	233.11	0.22	-0.21
17	MWD	5603	0.70	312.90	95	5564.27	-262.01	291.43 S	390.11 W	486.95	233.24	0.13	0.00
18	MWD	5697	0.70	310.60	94	5658.27	-261.18	290.67 S	390.96 W	487.18	233.37	0.03	0.00
19	MWD	5792	0.90	288.80	95	5753.26	-260.48	290.05 S	392.11 W	487.73	233.51	0.38	0.21
20	MWD	5887	0.90	354.90	95	5848.25	-259.44	289.07 S	392.88 W	487.77	233.66	1.03	0.00
21	MWD	5982	0.70	9.30	95	5943.24	-258.13	287.75 S	392.86 W	486.97	233.78	0.30	-0.21
22	MWD	6077	0.50	357.90	95	6038.23	-257.16	286.76 S	392.78 W	486.32	233.87	0.24	-0.21
23	MWD	6172	0.50	1.80	95	6133.23	-256.33	285.94 S	392.78 W	485.83	233.95	0.04	0.00
24	MWD	6267	0.40	19.20	95	6228.23	-255.61	285.21 S	392.66 W	485.31	234.01	0.18	-0.11
25	MWD	6361	0.00	25.90	94	6322.23	-255.31	284.90 S	392.55 W	485.04	234.03	0.43	-0.43
26	MWD	6456	0.20	272.30	95	6417.23	-255.29	284.89 S	392.72 W	485.17	234.04	0.21	0.21
27	MWD	6551	0.50	259.70	95	6512.23	-255.32	284.96 S	393.29 W	485.67	234.07	0.32	0.32
28	MWD	6646	0.50	237.00	95	6607.22	-255.56	285.26 S	394.04 W	486.46	234.10	0.21	0.00
29	MWD	6741	0.70	188.10	95	6702.22	-256.33	286.06 S	394.47 W	487.28	234.05	0.56	0.21
30	MWD	6836	1.60	176.00	95	6797.20	-258.22	287.96 S	394.46 W	488.39	233.87	0.98	0.95
31	MWD	6931	1.90	196.60	95	6892.15	-261.02	290.79 S	394.82 W	490.35	233.63	0.73	0.32

DRILTECH MWD SURVEY REPORT



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 Grid Corr.: WELL API #: 30-015-42050
 Total Grid Corr.: Tie Into: Terra Pilot Survey's
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Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)		
32	MWD	7006	1.10	216.10	75	6967.13	-262.73	292.56 S	395.60 W	492.03	233.52	1.25	-1.07
33	MWD	7047	0.50	276.70	41	7008.12	-263.00	292.86 S	396.01 W	492.53	233.52	2.34	-1.46
34	MWD	7079	3.30	340.30	32	7040.10	-262.08	291.98 S	396.46 W	492.37	233.63	9.72	8.75
35	MWD	7110	6.70	344.00	31	7070.98	-259.45	289.40 S	397.26 W	491.49	233.93	11.01	10.97
36	MWD	7142	9.50	345.30	32	7102.66	-255.03	285.05 S	398.44 W	489.91	234.42	8.77	8.75
37	MWD	7173	11.40	348.10	31	7133.14	-249.47	279.57 S	399.72 W	487.79	235.03	6.34	6.13
38	MWD	7205	12.70	352.10	32	7164.44	-242.83	272.99 S	400.86 W	484.99	235.74	4.83	4.06
39	MWD	7237	15.00	350.40	32	7195.51	-235.20	265.43 S	402.03 W	481.75	236.57	7.30	7.19
40	MWD	7268	17.40	352.50	31	7225.27	-226.57	256.87 S	403.31 W	478.17	237.51	7.97	7.74
41	MWD	7300	19.40	357.40	32	7255.64	-216.48	246.82 S	404.17 W	473.58	238.59	7.90	6.25
42	MWD	7332	20.80	2.30	32	7285.69	-205.52	235.83 S	404.19 W	467.96	239.74	6.84	4.38
43	MWD	7364	24.80	3.20	32	7315.18	-193.22	223.45 S	403.58 W	461.31	241.03	12.55	12.50
44	MWD	7396	29.70	2.30	32	7343.62	-178.68	208.82 S	402.89 W	453.79	242.60	15.37	15.31
45	MWD	7427	34.70	2.00	31	7369.85	-162.27	192.32 S	402.27 W	445.88	244.45	16.14	16.13
46	MWD	7459	38.70	2.50	32	7395.50	-143.27	173.21 S	401.52 W	437.29	246.67	12.53	12.50
47	MWD	7490	42.40	2.80	31	7419.05	-123.26	153.08 S	400.59 W	428.84	249.09	11.95	11.94
48	MWD	7522	43.50	3.40	32	7442.47	-101.64	131.31 S	399.41 W	420.44	251.80	3.67	3.44
49	MWD	7554	43.10	3.40	32	7465.76	-79.88	109.40 S	398.10 W	412.86	254.63	1.25	-1.25
50	MWD	7586	41.90	3.00	32	7489.35	-58.45	87.82 S	396.90 W	406.50	257.52	3.84	-3.75
51	MWD	7617	43.30	2.50	31	7512.17	-37.62	66.86 S	395.89 W	401.50	260.41	4.65	4.52
52	MWD	7648	46.60	1.40	31	7534.11	-15.85	44.98 S	395.15 W	397.70	263.51	10.94	10.65
53	MWD	7680	51.20	0.70	32	7555.14	8.16	20.87 S	394.72 W	395.27	266.97	14.47	14.38
54	MWD	7712	56.30	0.20	32	7574.06	33.87	4.92 N	394.52 W	394.55	270.72	15.99	15.94
55	MWD	7743	60.20	0.40	31	7590.37	60.15	31.28 N	394.38 W	395.62	274.53	12.59	12.58
56	MWD	7775	63.30	0.70	32	7605.51	88.23	59.46 N	394.11 W	398.57	278.58	9.72	9.69
57	MWD	7807	66.00	0.60	32	7619.21	117.05	88.38 N	393.78 W	403.57	282.65	8.44	8.44
58	MWD	7838	69.10	0.40	31	7631.05	145.60	117.02 N	393.53 W	410.56	286.56	10.02	10.00
59	MWD	7870	73.00	0.90	32	7641.44	175.75	147.28 N	393.18 W	419.86	290.54	12.28	12.19
60	MWD	7902	76.50	1.60	32	7649.85	206.48	178.14 N	392.51 W	431.04	294.41	11.14	10.94
61	MWD	7934	79.20	1.60	32	7656.59	237.60	209.41 N	391.64 W	444.11	298.13	8.44	8.44
62	MWD	7965	81.10	1.30	31	7661.89	267.99	239.94 N	390.86 W	458.64	301.54	6.20	6.13
63	MWD	7996	82.30	1.10	31	7666.36	298.53	270.61 N	390.22 W	474.87	304.74	3.92	3.87
64	MWD	8028	84.50	1.30	32	7670.04	330.17	302.39 N	389.56 W	493.15	307.82	6.90	6.88
65	MWD	8059	87.30	2.00	31	7672.26	360.93	333.29 N	388.66 W	512.00	310.61	9.31	9.03
66	MWD	8090	88.90	2.00	31	7673.29	391.73	364.26 N	387.58 W	531.89	313.22	5.16	5.16

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67	MWD	8122	89.70	1.30	32	7673.68	423.56	396.24 N	386.66 W	553.64	315.70	3.32	2.50
68	MWD	8216	92.00	0.60	94	7672.28	517.16	490.21 N	385.10 W	623.39	321.85	2.56	2.45
69	MWD	8311	92.70	0.00	95	7668.39	611.78	585.13 N	384.61 W	700.21	326.68	0.97	0.74
70	MWD	8405	91.10	0.00	94	7665.27	705.48	679.07 N	384.61 W	780.42	330.47	1.70	-1.70
71	MWD	8500	91.30	359.90	95	7663.28	800.20	774.05 N	384.69 W	864.37	333.57	0.24	0.21
72	MWD	8595	92.60	359.10	95	7660.05	894.95	868.99 N	385.52 W	950.67	336.08	1.61	1.37
73	MWD	8689	90.30	358.60	94	7657.67	988.78	962.94 N	387.40 W	1037.94	338.08	2.50	-2.45
74	MWD	8783	91.80	0.60	94	7655.95	1082.55	1056.91 N	388.06 W	1125.90	339.84	2.66	1.60
75	MWD	8877	90.10	0.90	94	7654.39	1176.18	1150.88 N	386.83 W	1214.16	341.42	1.84	-1.81
76	MWD	8971	90.60	0.60	94	7653.81	1269.82	1244.87 N	385.60 W	1303.23	342.79	0.62	0.53
77	MWD	9065	91.10	0.40	94	7652.42	1363.50	1338.86 N	384.78 W	1393.06	343.97	0.57	0.53
78	MWD	9160	91.30	1.10	95	7650.43	1458.12	1433.83 N	383.54 W	1484.24	345.02	0.77	0.21
79	MWD	9254	87.40	2.00	94	7651.50	1551.62	1527.77 N	380.99 W	1574.56	346.00	4.26	-4.15
80	MWD	9348	88.00	1.80	94	7655.27	1645.01	1621.64 N	377.88 W	1665.09	346.88	0.67	0.64
81	MWD	9442	86.90	2.10	94	7659.45	1738.37	1715.49 N	374.69 W	1755.94	347.68	1.21	-1.17
82	MWD	9535	88.50	2.50	93	7663.18	1830.69	1808.34 N	370.96 W	1846.00	348.41	1.77	1.72
83	MWD	9630	90.80	2.70	95	7663.76	1925.02	1903.24 N	366.65 W	1938.23	349.10	2.43	2.42
84	MWD	9724	91.80	1.10	94	7661.63	2018.45	1997.16 N	363.53 W	2029.97	349.68	2.01	1.06
85	MWD	9818	92.40	0.40	94	7658.19	2112.04	2091.08 N	362.30 W	2122.24	350.17	0.98	0.64
86	MWD	9911	91.30	0.40	93	7655.18	2204.69	2184.03 N	361.65 W	2213.77	350.60	1.18	-1.18
87	MWD	10006	90.40	0.60	95	7653.77	2299.36	2279.02 N	360.82 W	2307.40	351.00	0.97	-0.95
88	MWD	10102	90.10	0.40	96	7653.36	2395.03	2375.01 N	359.99 W	2402.14	351.38	0.38	-0.31
89	MWD	10197	90.80	0.40	95	7652.61	2489.72	2470.01 N	359.32 W	2496.00	351.72	0.74	0.74
90	MWD	10290	91.00	0.60	93	7651.15	2582.39	2562.99 N	358.51 W	2587.94	352.04	0.30	0.22
91	MWD	10385	93.30	1.10	95	7647.59	2676.95	2657.91 N	357.10 W	2681.79	352.35	2.48	2.42
92	MWD	10480	93.80	1.10	95	7641.70	2771.36	2752.71 N	355.28 W	2775.54	352.65	0.53	0.53
93	MWD	10575	92.70	0.00	95	7636.32	2865.88	2847.55 N	354.37 W	2869.51	352.91	1.64	-1.16
94	MWD	10671	92.60	359.50	96	7631.88	2961.55	2943.44 N	354.79 W	2964.75	353.13	0.53	-0.10
95	MWD	10764	93.10	359.50	93	7627.25	3054.24	3036.32 N	355.60 W	3057.08	353.32	0.54	0.54
96	MWD	10859	91.70	358.40	95	7623.28	3149.00	3131.22 N	357.34 W	3151.54	353.49	1.87	-1.47
97	MWD	10953	91.80	356.70	94	7620.41	3242.91	3225.09 N	361.36 W	3245.27	353.61	1.81	0.11
98	MWD	11047	91.10	357.20	94	7618.03	3336.86	3318.92 N	366.36 W	3339.08	353.70	0.92	-0.74
99	MWD	11143	91.30	357.70	96	7616.02	3432.80	3414.81 N	370.63 W	3434.86	353.81	0.56	0.21
100	MWD	11238	91.70	358.80	95	7613.53	3527.68	3509.73 N	373.53 W	3529.55	353.93	1.23	0.42
101	MWD	11332	91.30	0.00	94	7611.07	3621.46	3603.69 N	374.51 W	3623.10	354.07	1.35	-0.43

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