



GAMMA RAY

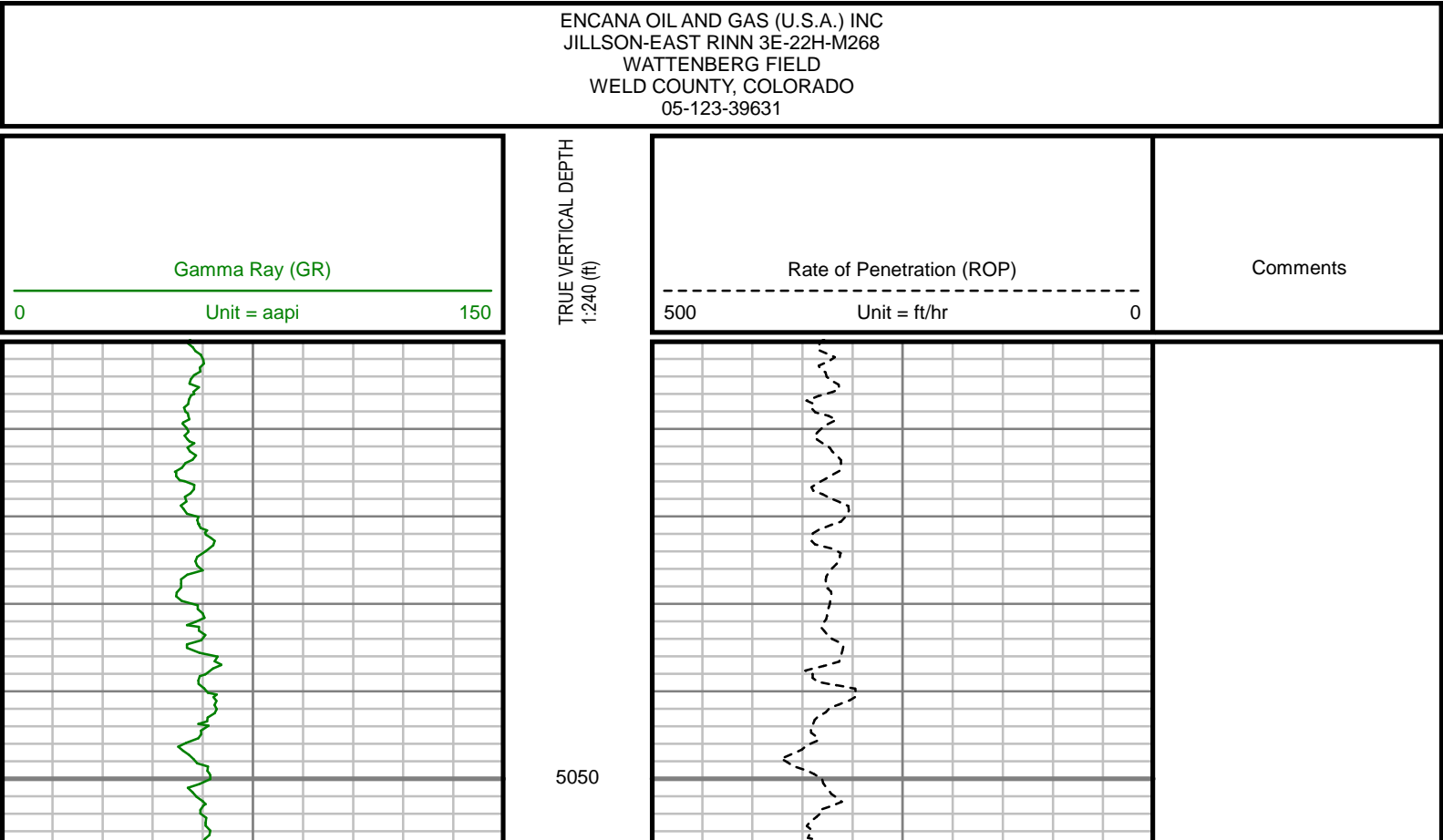
5" = 100' FEET TVD

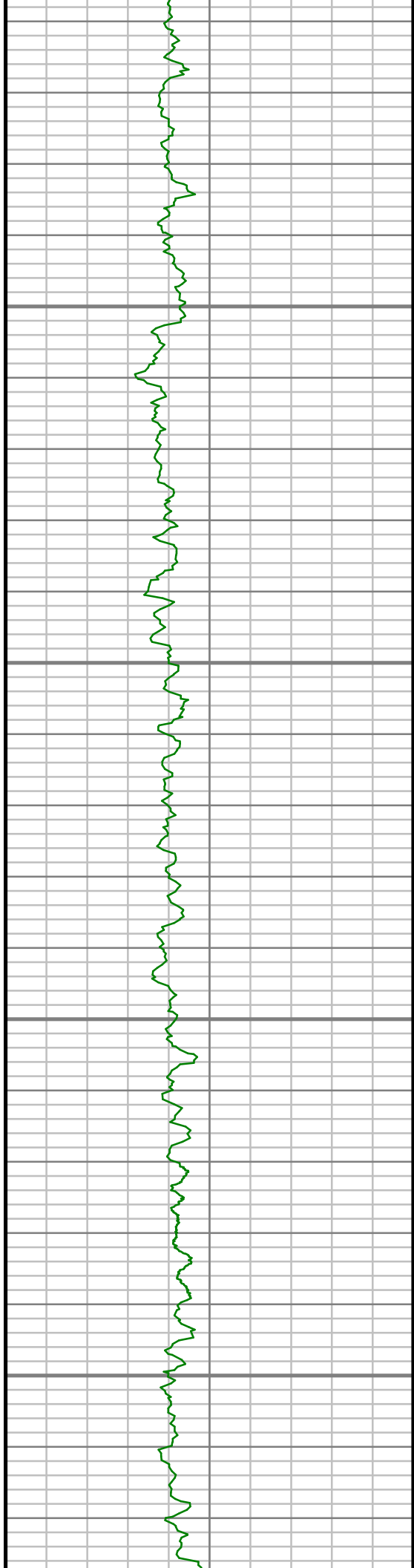
COMPANY : ENCANA OIL AND GAS ( U.S.A. ) INC WELL : JILLSON-EAST RINN 3E-22H-M268 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39631												COMPANY : ENCANA OIL AND GAS ( U.S.A. ) INC WELL : JILLSON-EAST RINN 3E-22H-M268 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39631											
DEPTH REF. : R.K.B. REF. HEIGHT : 13.000 ft GROUND LEVEL : 4953.000 ft						R.K.B. to Ground Level G.L. to MEAN SEA LEVEL						DIRECTIONAL ROP											
BOREHOLE RECORD						DEVIATION RECORD																	
HOLE SIZE	in	FROM	ft	TO	ft	INCLINATION	deg	FROM	ft	TO	ft												
12.25		96		902		0 - 1		0		902													
8.75		902		8005		1 - 85		902		8005													
6.125		8005		15167		85 - 92		8005		15167													
CASING RECORD																							
CASING SIZE	in	FROM	ft	TO	ft																		
9.625		0		889																			
7		0		7993																			
DRILLING CO. : ENSIGN RIG : 124 LMD UNIT NO. : C70-EM4#8DISTRICT : CASPER SPUD DATE : 07/30/2014 LMD START DATE : 08/02/2014 LMD END DATE : 08/09/2014												DEPTH : 5000 ft DEPTH : 15167 ft TOTAL DEPTH : 15167 ft											

Run Data						
RUN NUMBER	1	2	3			
START DATE	07/30/2014	07/31/2014	08/05/2014			
START TIME	1510	2010	0830			
END DATE	07/31/2014	08/04/2014	08/09/2014			
END TIME	0105	0130	2300			
DEPTH IN (ft)	96	902	8005			
DEPTH OUT (ft)	902	8005	15167			
LOG TOP (ft)	-	5000	7952			
LOG BOTTOM (ft)	-	7952	15114			
HOLE SIZE (in)	12.25	8.75	6.125			
MUD DATA @ (ft)	902	8005	14850			
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED			
DENSITY (lb / gal)	8.35	10.40	10.70			
VISCOSITY (s / qt)	26	40	42			
pH	-	-	-			
FLUID LOSS (cm3 / 30)	-	-	-			
SALINITY (ppm)	-	-	-			
Rm (ohmm @ deg F)	-	-	-			
Rmf (ohmm @ deg F)	-	-	-			
MAX TEMP (deg F)	98	179	237			
Rm @ MAX TEMP (ohmm)	-	-	-			
LWD ENGINEER #1	J. SMITH	M. SMITH	M. SMITH			
LWD ENGINEER #2	M. SMITH	J. SMITH	T. WHEELER			
LWD ENGINEER #3	T. WHEELER	T. WHEELER	-			
LOG WITNESS #1	M. ROANE	M. ROANE	M. ROANE			
LOG WITNESS #2	-	-	-			

Remarks
ENCANA OIL AND GAS (U.S.A.) INC PRODUCTION AFE# 14181166
SCIENTIFIC DRILLING INTERNATIONAL JOB# 179887
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO RATE OF PENETRATION CURVE
RUN # 1: MWD / DIRECTIONAL RUN
SENSORS S/N: CONT = 1011 / MWD EYE = 429
BIT TO SENSOR OFFSET: SURVEY = 54.33 FT.
RUN # 2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-115 / CONT = 882 / MWD EYE = 0349 / GAMMA RAY = 1074
BIT TO SENSOR OFFSETS: SURVEY = 67.61 FT. / GAMMMA RAY = 53.60 FT.
RUN # 3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-207 / CONT = 831 / MWD EYE = 0429 / GAMMA RAY = 1194
BIT TO SENSOR OFFSETS: SURVEY = 65.35 FT. / GAMMMA RAY = 52.10 FT.
MNEMONICS LIST:
GR = GAMMA RAY
ROP = RATE OF PENETRATION

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions as set out in our current price schedule.



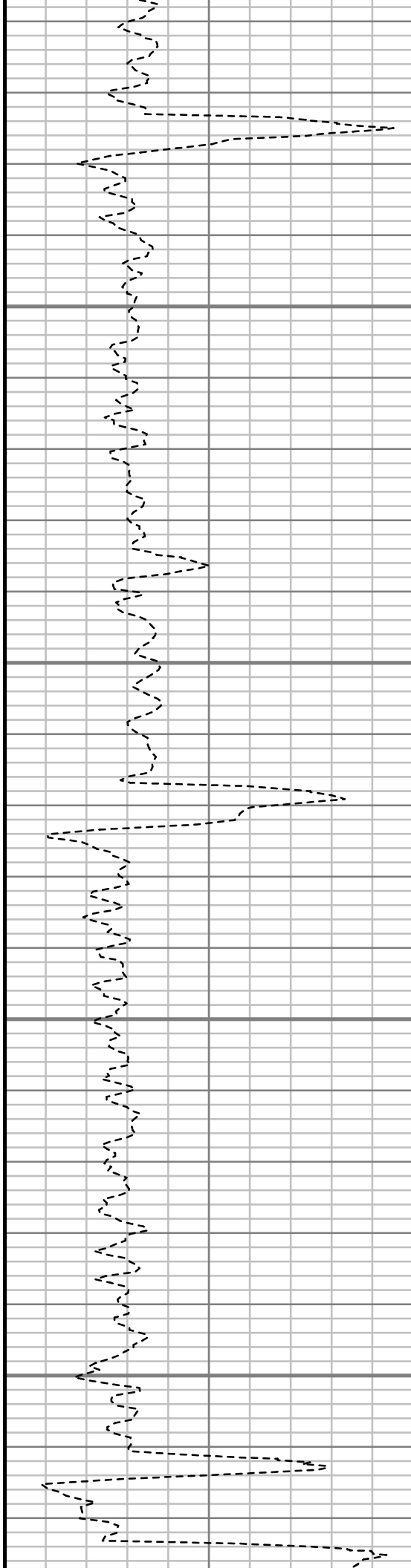


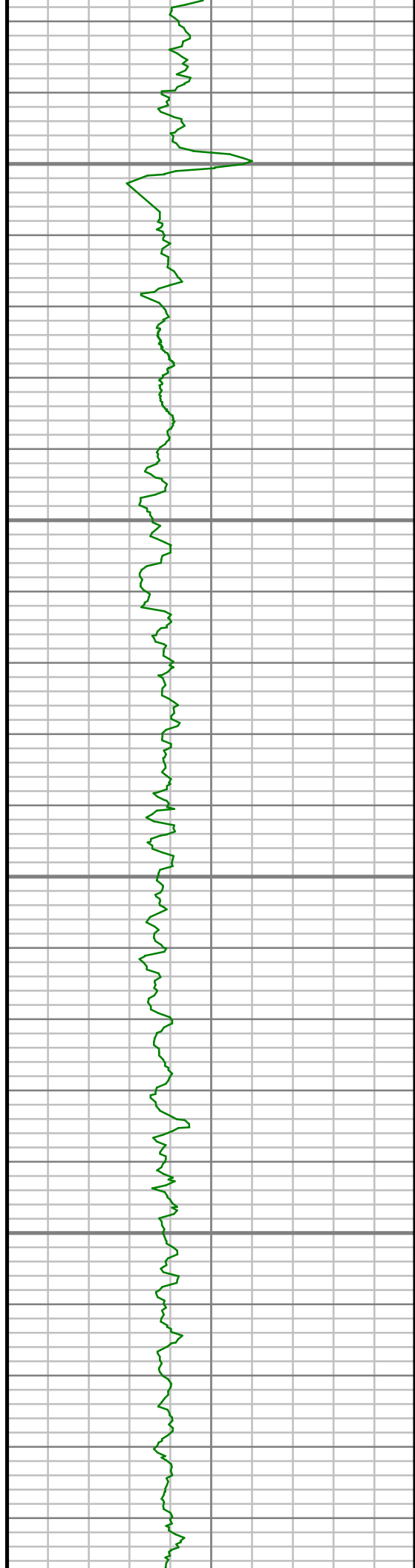
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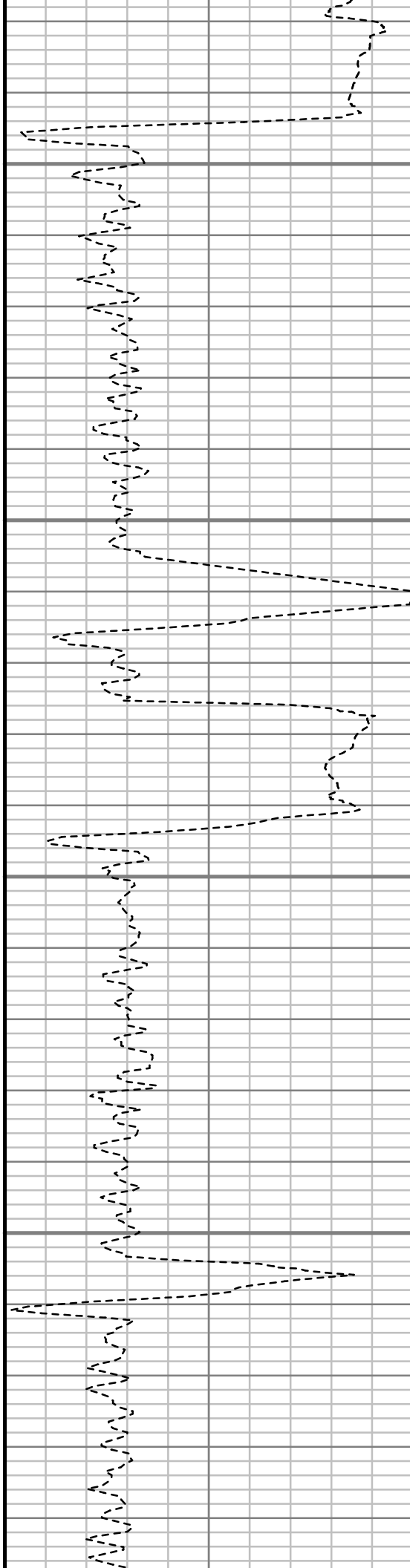


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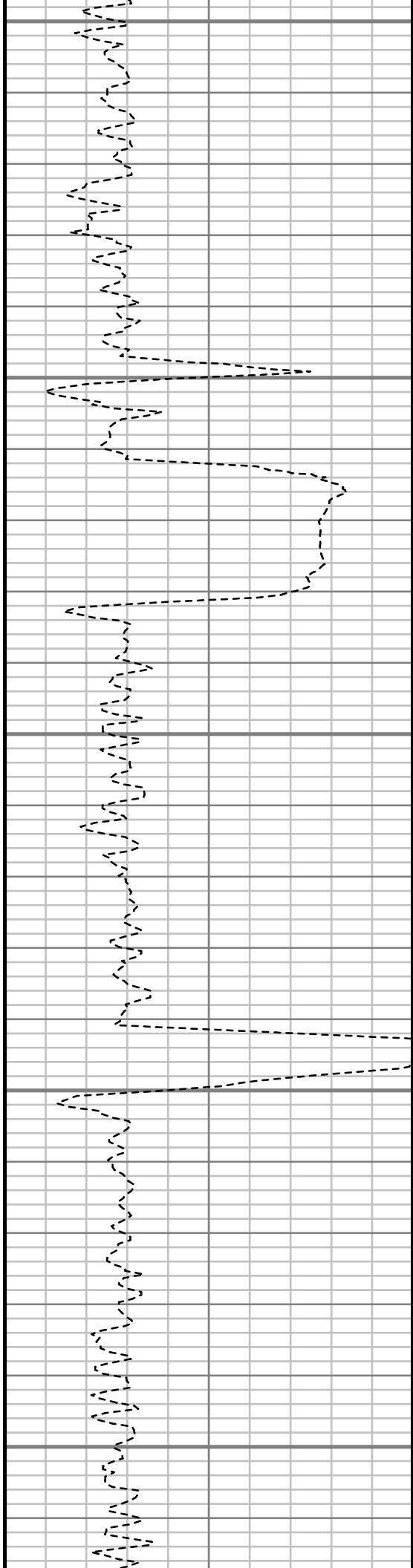
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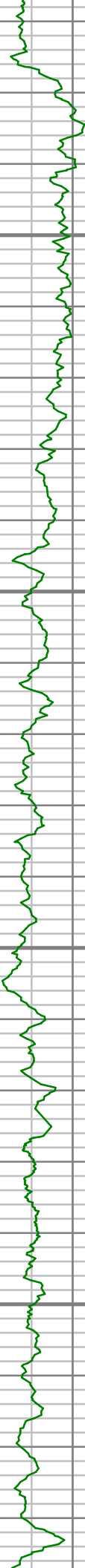
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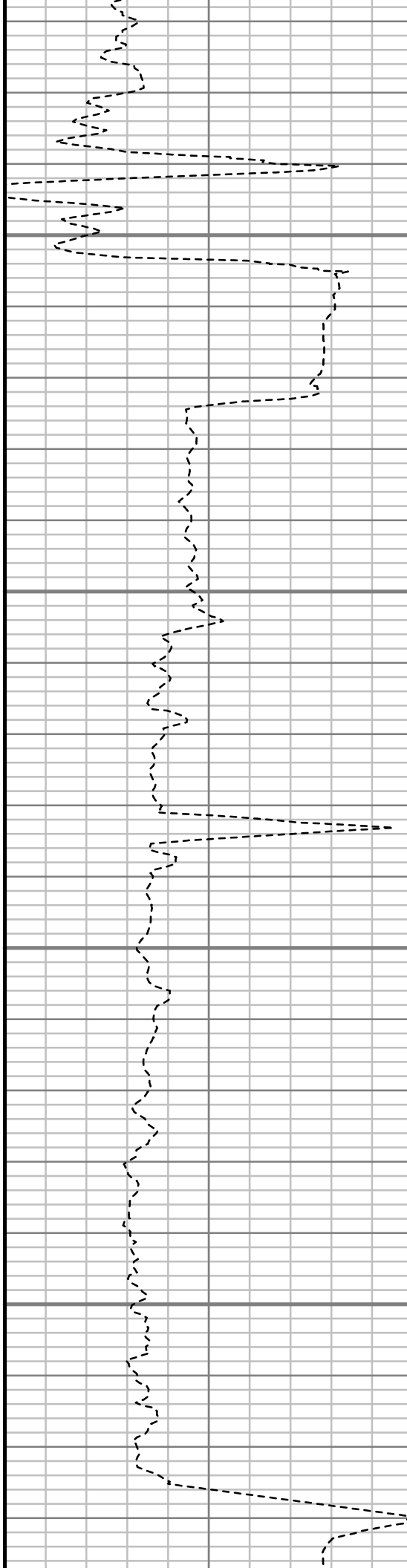


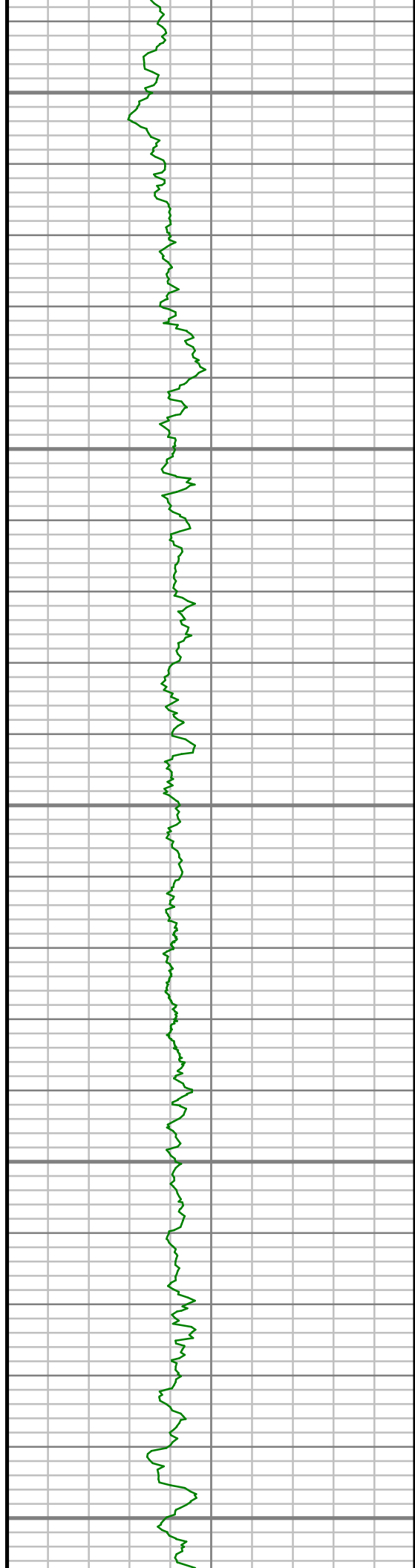
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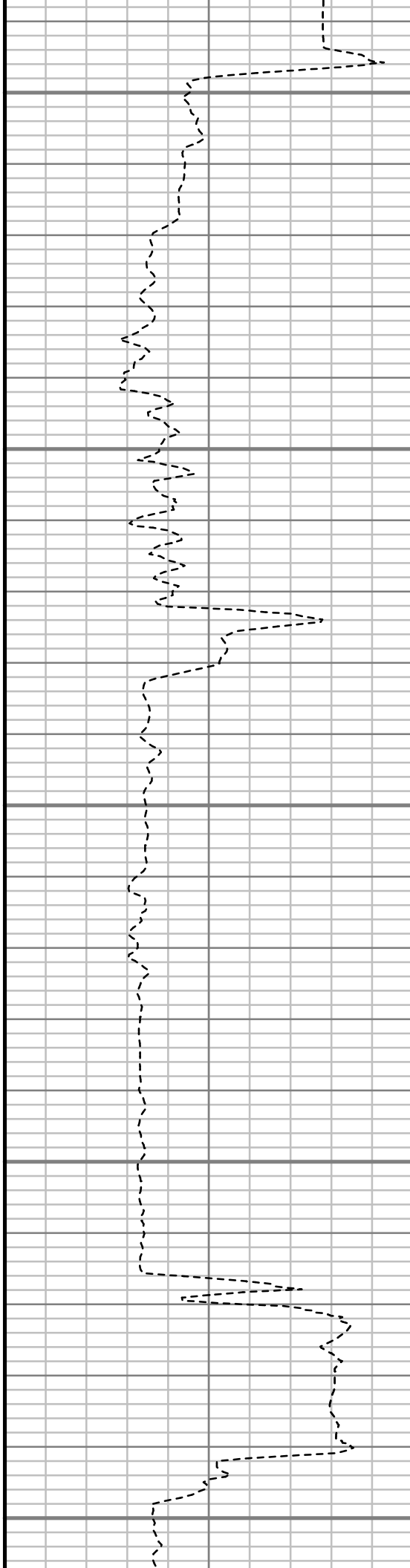
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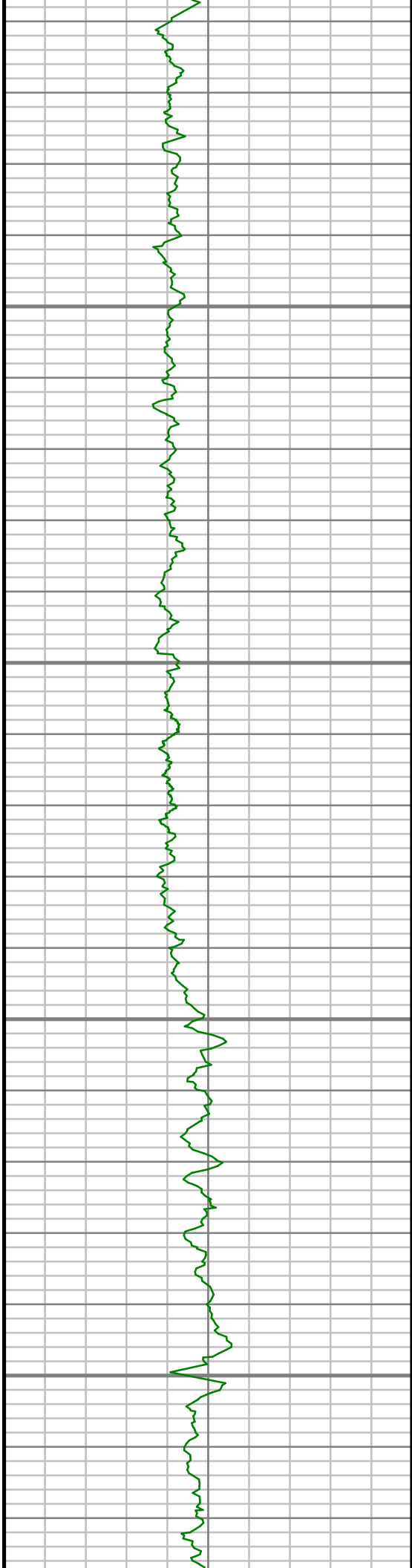
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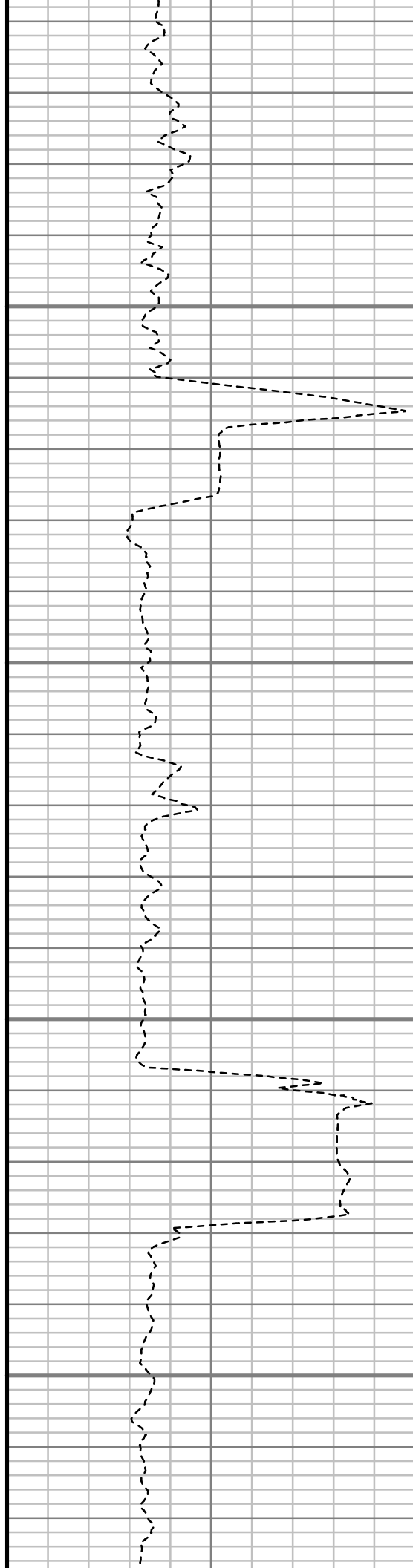


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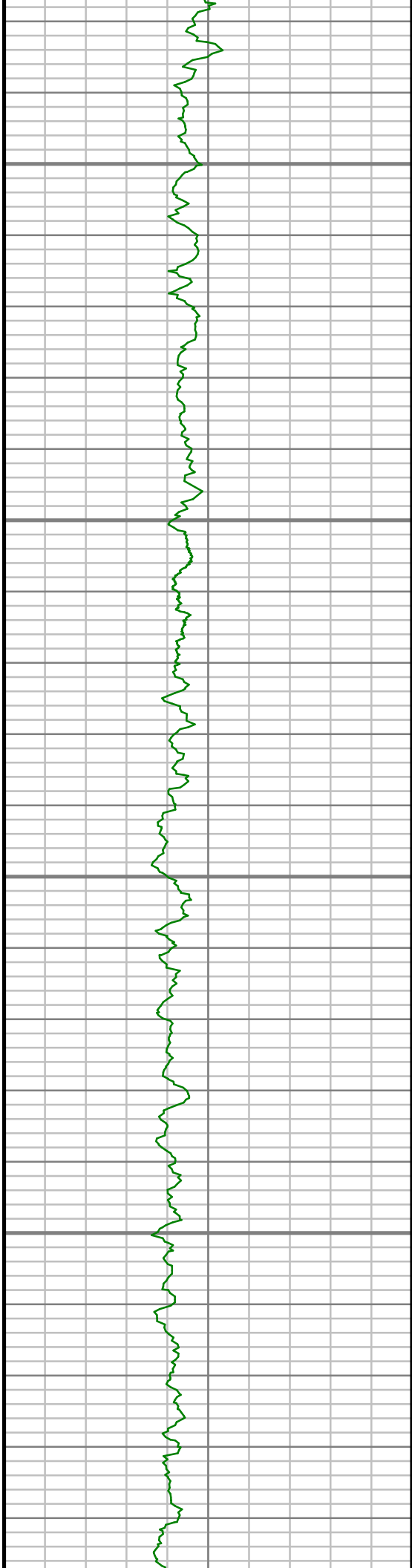
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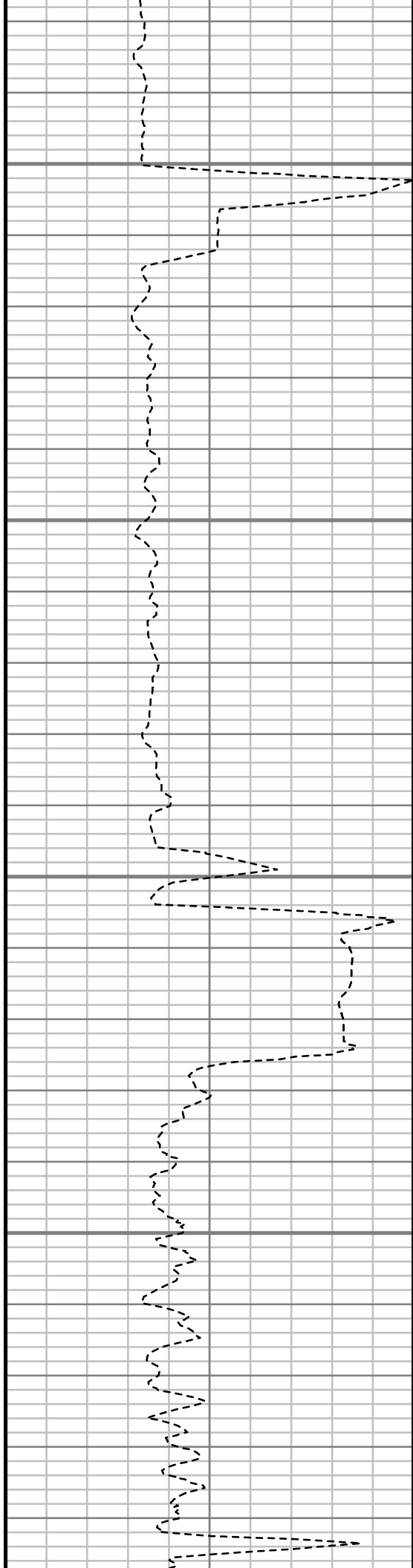


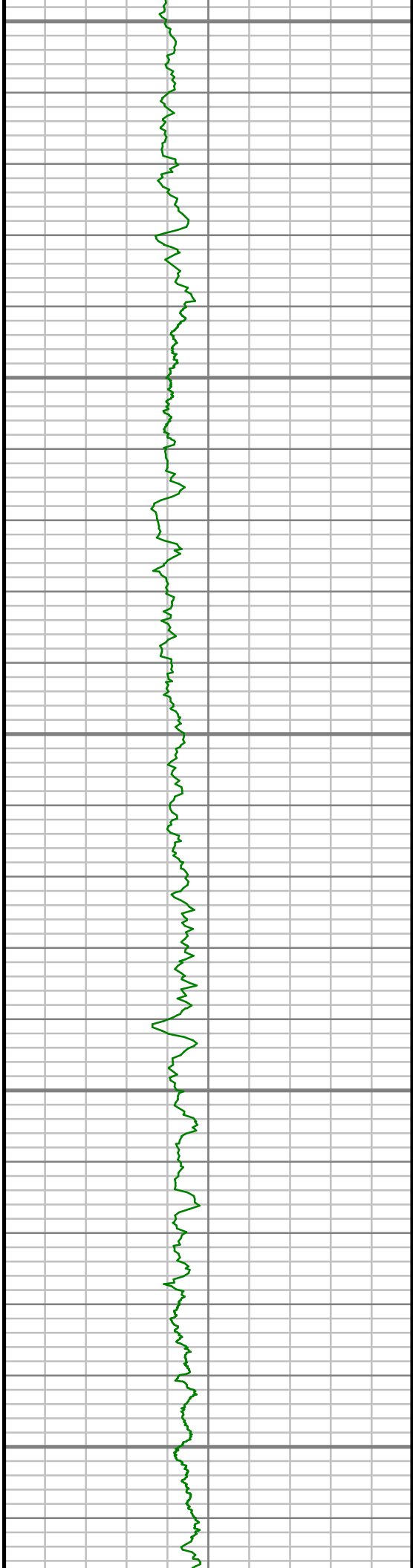
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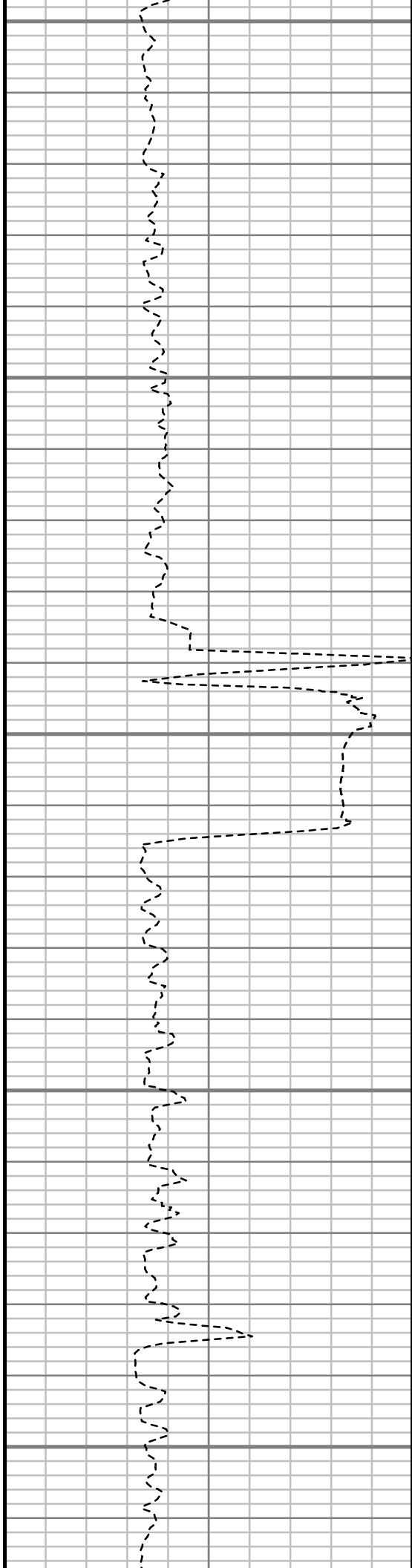
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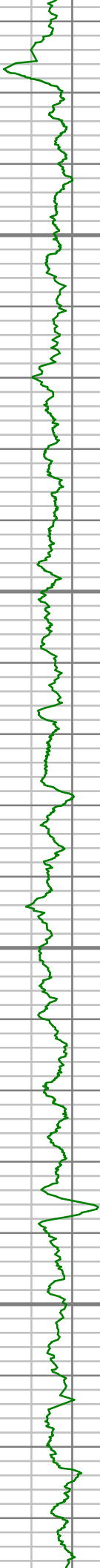
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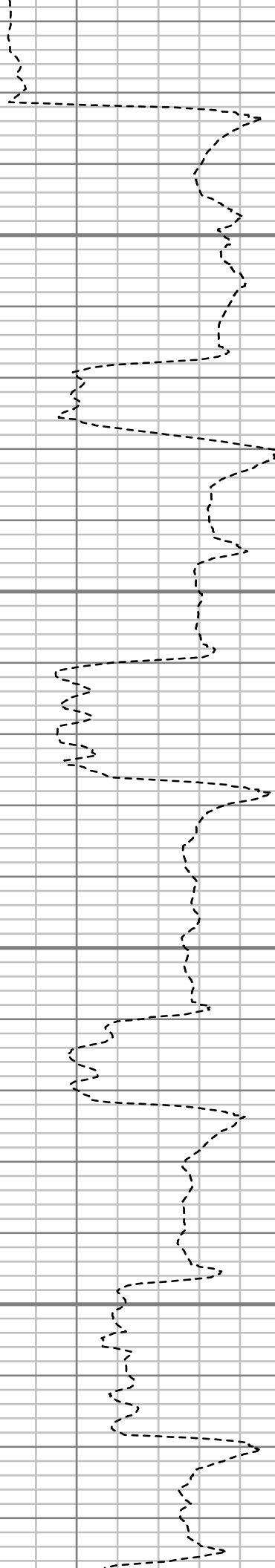


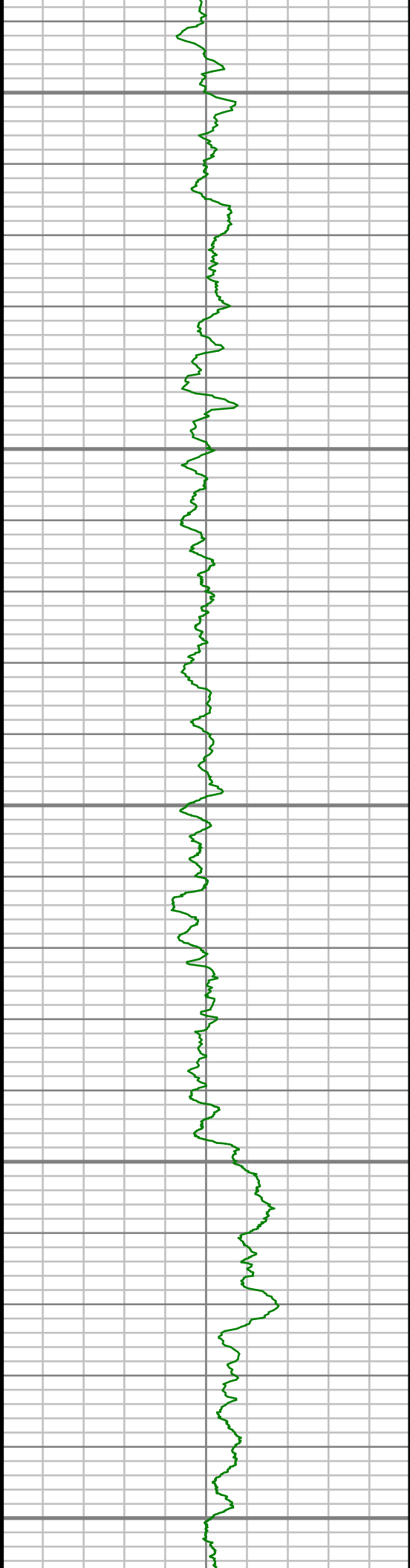
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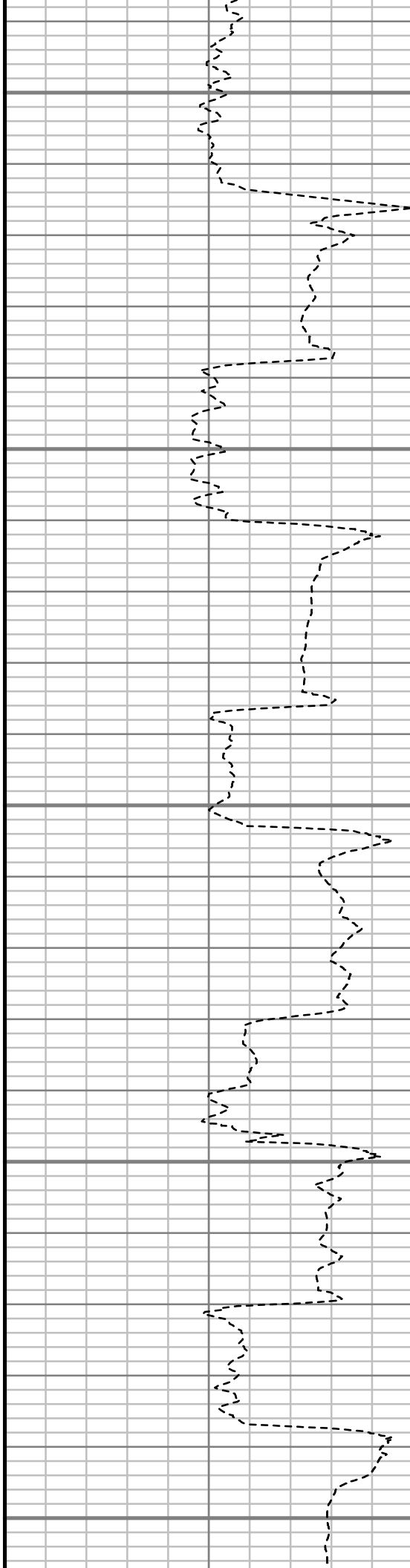
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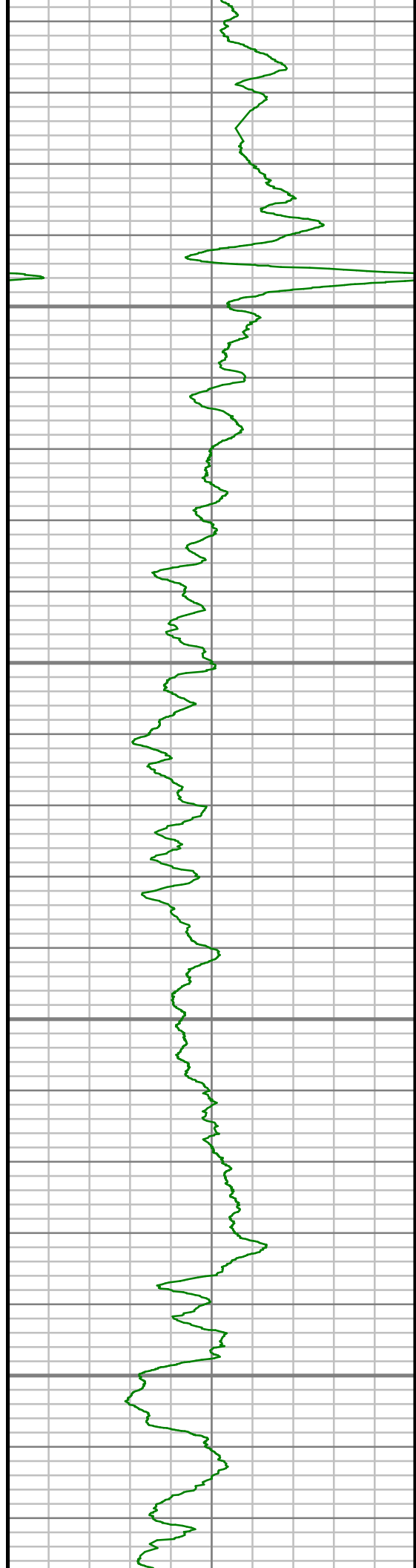
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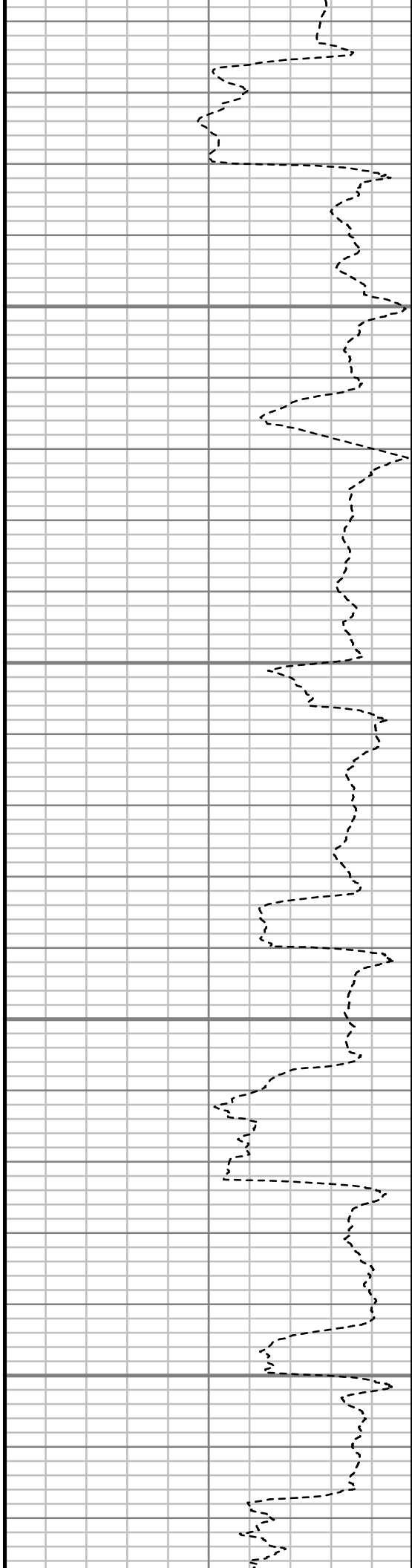


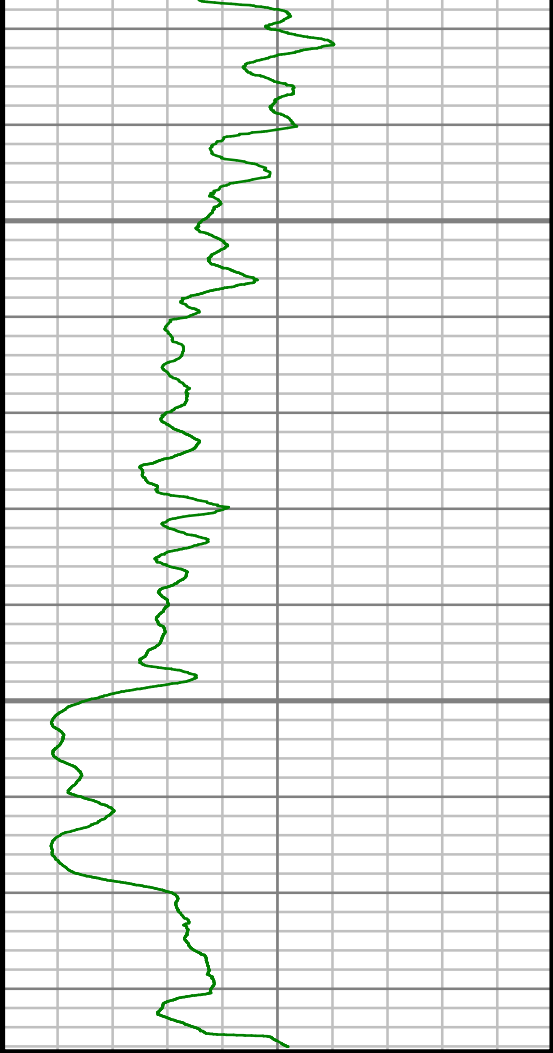
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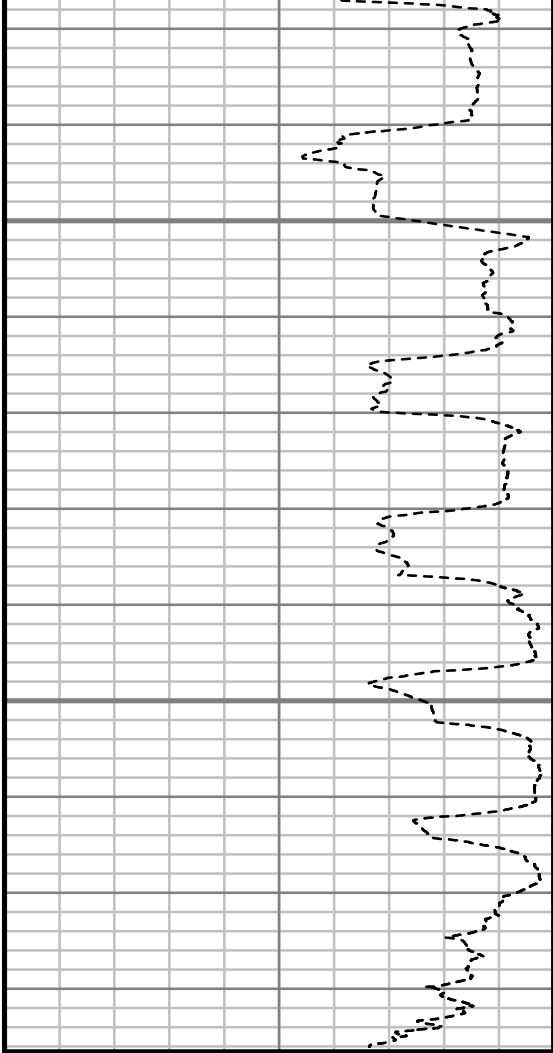
Gamma Ray (GR)

0 Unit = aapi 150

7500

7550

TRUE VERTICAL DEPTH  
1:240 (ft)



Rate of Penetration (ROP)

500 Unit = ft/hr 0

Comments

## MWD Survey Report

<b>Well Location</b>	JILLSON-EAST RINN
<b>Well Name</b>	JILLSON-EAST RINN 3E-22H-M268
<b>Survey Date</b>	7/30/2014
<b>Latitude</b>	40°7'4.465"N
<b>Longitude</b>	104°59'46.471"W
<b>Btotal</b>	52528 nT
<b>Dip</b>	66.67 deg
<b>Magnetic Declination</b>	8.63 deg
<b>North Reference</b>	True North
<b>Grid Correction</b>	None
<b>Depth Reference</b>	R.K.B. (13.00 ft)
<b>Calculation Method</b>	Minimum Curvature
<b>Section (VS) Ref</b>	0.00N (ft), 0.00E (ft), 0.00Azim (deg)
<b>Operator(s)</b>	J. SMITH, M. SMITH, T. WHEELER

### Well Notes

SURVEYS FROM 100 FT. - 839 FT. WERE ACQUIRED BY VES SURVEYS INTERNATIONAL GYRO.

SURVEYS FROM 970 FT. - 15100 FT. WERE ACQUIRED BY SCIENTIFIC DRILLING INTERNATIONAL MWD.

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
100.00	0.39	50.13	100.00	0.22	0.22	0.26	50.13	0.34	0.39
200.00	0.23	56.31	200.00	0.55	0.55	0.69	51.54	0.88	0.16
300.00	0.05	329.10	300.00	0.70	0.70	0.83	50.14	1.09	0.23
400.00	0.23	297.28	400.00	0.83	0.83	0.63	37.48	1.04	0.19
500.00	0.42	292.63	500.00	1.06	1.06	0.12	6.28	1.07	0.19
600.00	0.57	266.93	599.99	1.17	1.17	-0.72	328.52	1.38	0.26
700.00	0.42	206.59	699.99	0.82	0.82	-1.38	300.70	1.60	0.51
800.00	0.42	248.02	799.99	0.35	0.35	-1.88	280.65	1.92	0.30
839.00	0.32	308.59	838.99	0.37	0.37	-2.10	279.95	2.13	0.98
970.00	0.30	115.12	969.98	0.45	0.45	-2.07	282.23	2.12	0.47
1155.00	3.06	141.92	1154.89	-3.65	-3.65	1.42	158.72	3.92	1.51
1341.00	2.66	143.86	1340.66	-11.05	-11.05	7.04	147.52	13.10	0.22
1527.00	6.83	144.26	1525.98	-23.53	-23.53	16.05	145.70	28.49	2.24
1713.00	6.14	138.55	1710.79	-39.97	-39.97	29.10	143.94	49.44	0.51
1898.00	5.03	134.50	1894.91	-53.07	-53.07	41.43	142.02	67.33	0.64
2084.00	4.75	126.10	2080.23	-63.32	-63.32	53.47	139.82	82.87	0.41
2270.00	4.82	147.30	2265.60	-74.43	-74.43	63.92	139.35	98.11	0.95
2456.00	3.60	155.00	2451.09	-86.32	-86.32	70.61	140.71	111.52	0.72

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
2641.00	2.49	172.57	2635.83	-95.56	-95.56	73.59	142.40	120.61	0.78
2827.00	4.41	145.13	2821.50	-105.43	-105.43	78.20	143.44	131.26	1.33
3018.00	2.79	133.55	3012.12	-114.65	-114.65	85.76	143.20	143.17	0.93
3208.00	3.88	123.47	3201.80	-121.37	-121.37	94.47	142.11	153.80	0.65
3399.00	5.49	127.93	3392.15	-130.56	-130.56	107.07	140.65	168.85	0.86
3589.00	5.04	138.18	3581.35	-142.37	-142.37	119.80	139.92	186.07	0.55
3780.00	5.50	147.84	3771.55	-156.37	-156.37	130.27	140.20	203.53	0.52
3970.00	4.03	158.89	3960.89	-170.30	-170.30	137.52	141.08	218.90	0.91
4160.00	4.64	157.58	4150.35	-183.63	-183.63	142.86	142.12	232.65	0.33
4351.00	2.99	158.91	4340.92	-195.43	-195.43	147.60	142.94	244.90	0.86
4542.00	4.83	132.52	4531.48	-205.51	-205.51	155.32	142.92	257.60	1.32
4733.00	4.31	130.77	4721.87	-215.63	-215.63	166.68	142.30	272.54	0.28
4923.00	5.27	130.39	4911.21	-225.95	-225.95	178.73	141.66	288.09	0.50
5113.00	4.83	131.89	5100.47	-236.93	-236.93	191.32	141.08	304.54	0.24
5304.00	3.50	135.73	5290.96	-246.48	-246.48	201.38	140.75	318.29	0.71
5494.00	5.03	127.90	5480.43	-255.75	-255.75	212.00	140.34	332.20	0.86
5685.00	5.04	141.73	5670.70	-267.48	-267.48	223.80	140.08	348.76	0.63
5875.00	4.79	136.93	5860.00	-279.83	-279.83	234.39	140.05	365.03	0.25

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
6066.00	5.35	138.78	6050.25	-292.36	-292.36	245.71	139.96	381.90	0.31
6256.00	4.09	126.41	6239.61	-303.05	-303.05	257.00	139.70	397.35	0.85
6447.00	4.23	120.69	6430.11	-310.69	-310.69	268.55	139.16	410.66	0.23
6637.00	4.45	112.36	6619.56	-317.07	-317.07	281.39	138.41	423.93	0.35
6780.00	1.18	69.93	6762.38	-318.68	-318.68	287.90	137.90	429.46	2.56
6828.00	1.00	64.39	6810.37	-318.33	-318.33	288.74	137.79	429.77	0.43
6875.00	2.96	20.43	6857.35	-317.01	-317.01	289.53	137.59	429.33	4.99
6923.00	7.19	16.51	6905.15	-312.97	-312.97	290.82	137.10	427.23	8.83
6970.00	12.09	9.15	6951.47	-305.29	-305.29	292.44	136.23	422.75	10.73
7019.00	15.31	11.68	6999.07	-293.89	-293.89	294.56	134.93	416.10	6.69
7066.00	16.60	11.19	7044.26	-281.22	-281.22	297.12	133.43	409.11	2.75
7114.00	18.69	10.19	7090.00	-266.92	-266.92	299.81	131.68	401.42	4.41
7161.00	21.98	10.20	7134.06	-250.85	-250.85	302.70	129.65	393.14	6.99
7209.00	25.00	9.43	7178.08	-232.00	-232.00	305.96	127.17	383.97	6.33
7256.00	27.78	8.35	7220.18	-211.36	-211.36	309.18	124.36	374.52	6.01
7304.00	30.63	6.18	7262.07	-188.13	-188.13	312.12	121.08	364.43	6.32
7351.00	34.02	3.54	7301.79	-163.10	-163.10	314.22	117.43	354.03	7.82
7400.00	39.84	1.07	7340.94	-133.70	-133.70	315.36	112.97	342.53	12.26



MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
7447.00	44.68	1.05	7375.71	-102.10	-102.10	315.95	107.91	332.03	10.30
7495.00	48.49	1.82	7408.70	-67.25	-67.25	316.83	101.98	323.89	8.02
7542.00	52.65	0.78	7438.54	-30.97	-30.97	317.64	95.57	319.15	9.00
7590.00	56.74	359.18	7466.28	8.19	8.19	317.61	88.52	317.72	8.95
7637.00	61.10	358.48	7490.54	48.43	48.43	316.79	81.31	320.47	9.38
7686.00	65.59	359.31	7512.51	92.20	92.20	315.95	73.73	329.13	9.29
7733.00	69.29	0.22	7530.54	135.60	135.60	315.77	66.76	343.66	8.07
7781.00	71.74	0.39	7546.55	180.85	180.85	316.01	60.22	364.10	5.12
7828.00	74.67	0.02	7560.12	225.84	225.84	316.17	54.46	388.54	6.28
7876.00	77.86	359.21	7571.52	272.46	272.46	315.86	49.22	417.13	6.84
7908.00	81.94	359.17	7577.13	303.95	303.95	315.41	46.06	438.03	12.74
7935.00	85.30	359.62	7580.13	330.78	330.78	315.13	43.61	456.86	12.55
8073.00	90.37	0.87	7585.35	468.63	468.63	315.72	33.97	565.06	3.79
8169.00	89.29	0.51	7585.63	564.62	564.62	316.88	29.30	647.47	1.18
8262.00	90.34	0.62	7585.93	657.61	657.61	317.80	25.79	730.38	1.13
8355.00	90.47	358.68	7585.27	750.61	750.61	317.24	22.91	814.89	2.10
8448.00	90.50	358.28	7584.48	843.57	843.57	314.77	20.46	900.38	0.42
8541.00	91.51	358.57	7582.85	936.52	936.52	312.22	18.44	987.19	1.13

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
8633.00	92.05	0.06	7579.99	1028.47	1028.47	311.13	16.83	1074.50	1.72
8726.00	90.97	1.97	7577.53	1121.41	1121.41	312.77	15.58	1164.21	2.35
8819.00	90.74	2.33	7576.14	1214.34	1214.34	316.26	14.60	1254.84	0.46
8912.00	90.47	2.36	7575.16	1307.25	1307.25	320.06	13.76	1345.86	0.29
9005.00	89.87	1.38	7574.88	1400.20	1400.20	323.09	12.99	1437.00	1.24
9098.00	90.44	1.41	7574.64	1493.17	1493.17	325.36	12.29	1528.21	0.61
9191.00	91.28	1.05	7573.25	1586.14	1586.14	327.36	11.66	1619.57	0.99
9284.00	92.05	0.27	7570.55	1679.09	1679.09	328.42	11.07	1710.91	1.18
9377.00	90.74	359.46	7568.29	1772.06	1772.06	328.20	10.49	1802.20	1.65
9470.00	91.88	0.50	7566.16	1865.04	1865.04	328.17	9.98	1893.69	1.66
9562.00	91.68	0.62	7563.30	1956.99	1956.99	329.06	9.54	1984.46	0.26
9655.00	90.70	0.20	7561.36	2049.96	2049.96	329.73	9.14	2076.31	1.14
9748.00	91.51	0.97	7559.57	2142.94	2142.94	330.69	8.77	2168.30	1.20
9841.00	90.13	359.96	7558.23	2235.92	2235.92	331.44	8.43	2260.36	1.84
9934.00	91.55	0.11	7556.87	2328.91	2328.91	331.50	8.10	2352.39	1.53
10027.00	90.37	358.44	7555.31	2421.89	2421.89	330.32	7.77	2444.31	2.20
10119.00	90.60	359.95	7554.53	2513.87	2513.87	329.03	7.46	2535.31	1.66
10212.00	90.94	0.12	7553.28	2606.86	2606.86	329.08	7.19	2627.55	0.40

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
10305.00	89.97	358.86	7552.54	2699.85	2699.85	328.24	6.93	2719.73	1.71
10398.00	90.40	0.00	7552.24	2792.85	2792.85	327.32	6.68	2811.96	1.32
10491.00	89.50	359.88	7552.32	2885.84	2885.84	327.22	6.47	2904.34	0.98
10584.00	90.34	359.58	7552.46	2978.84	2978.84	326.78	6.26	2996.71	0.96
10677.00	89.80	359.80	7552.35	3071.84	3071.84	326.28	6.06	3089.12	0.62
10770.00	90.17	1.58	7552.38	3164.83	3164.83	327.39	5.91	3181.72	1.95
10862.00	89.73	1.27	7552.46	3256.80	3256.80	329.68	5.78	3273.45	0.58
10955.00	88.99	1.27	7553.49	3349.77	3349.77	331.74	5.66	3366.16	0.79
11051.00	90.03	0.60	7554.31	3445.75	3445.75	333.30	5.52	3461.84	1.29
11146.00	91.21	0.65	7553.28	3540.74	3540.74	334.33	5.39	3556.49	1.24
11241.00	91.28	359.98	7551.22	3635.72	3635.72	334.85	5.26	3651.10	0.70
11336.00	90.00	359.51	7550.16	3730.71	3730.71	334.43	5.12	3745.67	1.43
11432.00	89.16	359.67	7550.87	3826.70	3826.70	333.74	4.98	3841.23	0.89
11527.00	89.30	359.55	7552.14	3921.69	3921.69	333.09	4.85	3935.81	0.19
11623.00	89.66	359.56	7553.02	4017.68	4017.68	332.35	4.73	4031.41	0.38
11718.00	88.69	359.00	7554.38	4112.67	4112.67	331.16	4.60	4125.98	1.18
11813.00	91.01	358.95	7554.63	4207.64	4207.64	329.46	4.48	4220.52	2.44
11909.00	89.03	357.62	7554.61	4303.59	4303.59	326.59	4.34	4315.97	2.48

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
12004.00	90.10	358.33	7555.33	4398.53	4398.53	323.23	4.20	4410.39	1.36
12099.00	90.94	359.99	7554.47	4493.51	4493.51	321.84	4.10	4505.02	1.96
12195.00	92.05	0.22	7551.97	4589.48	4589.48	322.02	4.01	4600.76	1.18
12290.00	92.05	359.51	7548.57	4684.42	4684.42	321.79	3.93	4695.45	0.75
12385.00	92.35	2.12	7544.92	4779.33	4779.33	323.14	3.87	4790.24	2.76
12480.00	91.95	2.03	7541.35	4874.20	4874.20	326.58	3.83	4885.13	0.44
12576.00	91.24	3.28	7538.68	4970.06	4970.06	331.02	3.81	4981.07	1.49
12671.00	90.57	2.20	7537.18	5064.93	5064.93	335.56	3.79	5076.04	1.33
12766.00	90.67	2.66	7536.15	5159.84	5159.84	339.59	3.77	5171.00	0.49
12862.00	89.23	1.62	7536.24	5255.77	5255.77	343.18	3.74	5266.96	1.85
12957.00	88.52	0.06	7538.10	5350.74	5350.74	344.57	3.68	5361.82	1.80
13052.00	90.40	358.97	7538.99	5445.73	5445.73	343.77	3.61	5456.56	2.29
13147.00	91.68	359.19	7537.27	5540.70	5540.70	342.24	3.53	5551.26	1.37
13243.00	92.48	359.25	7533.78	5636.62	5636.62	340.94	3.46	5646.92	0.84
13338.00	91.54	359.03	7530.44	5731.55	5731.55	339.52	3.39	5741.60	1.02
13433.00	89.70	0.15	7529.41	5826.54	5826.54	338.83	3.33	5836.38	2.27
13529.00	89.36	359.54	7530.20	5922.53	5922.53	338.57	3.27	5932.20	0.72
13624.00	90.30	358.28	7530.48	6017.51	6017.51	336.76	3.20	6026.93	1.65

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	"/100ft
13720.00	89.87	356.87	7530.34	6113.42	6113.42	332.71	3.12	6122.47	1.54
13815.00	90.91	356.71	7529.70	6208.27	6208.27	327.39	3.02	6216.90	1.11
13910.00	90.17	355.01	7528.81	6303.02	6303.02	320.53	2.91	6311.16	1.95
14006.00	91.24	355.32	7527.62	6398.67	6398.67	312.43	2.80	6406.29	1.16
14101.00	92.05	356.13	7524.89	6493.36	6493.36	305.35	2.69	6500.54	1.20
14196.00	90.54	357.78	7522.75	6588.20	6588.20	300.30	2.61	6595.04	2.36
14291.00	90.34	356.92	7522.02	6683.09	6683.09	295.91	2.54	6689.64	0.92
14386.00	90.40	357.11	7521.41	6777.96	6777.96	290.96	2.46	6784.20	0.20
14481.00	90.50	356.13	7520.66	6872.79	6872.79	285.36	2.38	6878.71	1.03
14577.00	90.81	357.60	7519.56	6968.64	6968.64	280.12	2.30	6974.26	1.56
14672.00	90.70	356.67	7518.31	7063.51	7063.51	275.36	2.23	7068.87	0.99
14767.00	91.28	357.73	7516.67	7158.38	7158.38	270.72	2.17	7163.50	1.27
14863.00	89.70	357.61	7515.85	7254.29	7254.29	266.82	2.11	7259.20	1.65
14958.00	89.87	357.71	7516.21	7349.21	7349.21	262.95	2.05	7353.92	0.21
15053.00	90.07	357.07	7516.27	7444.11	7444.11	258.62	1.99	7448.61	0.71
15100.00	89.60	356.67	7516.41	7491.04	7491.04	256.05	1.96	7495.42	1.31

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft

5" = 100' FEET TVD