

# Bit Run Summary

Type		KCI/PHPA/GLYC.	KCI/PHPA/GLYC.	KCI/PHPA/GLYC.							
Mud weight	ppg	9.55	9.70	9.8							
Solids	%	4.7	6.1	6.5							
Chlorides	ppm	33,500	37,000	37,500							
Rm											
Rmf											
Rmc											
Potassium	ppm	37,441	41,353	41,912							
<b>Environmental data</b>											
<b>GR</b>											
Mud weight	ppg	9.55	9.70	9.8							
Bit size	in	8.5	8.5	8.5							
<b>Resistivity</b>											
<b>Neutron porosity</b>											
Hole Size											
Mud weight											
Temperature											
Mud salinity											
Formation salinity											
Recording rate 1	SEC										
Recording rate 2	SEC										
Filtering GR		3 pt	3 pt	3 pt							
Filtering density											
Filtering Neutron											
Company representative		R. Morris	B. Davis	G. Campbell	B. Steel						
Anadrill personnel		K. Handley	C. Tue	C. Soper	C. Cocks	D. Hastie					

#### DISCLAIMER

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OTHER SERVICES FOR RUN1 Gamma Ray Directional Drilling Directional Surveys	OTHER SERVICES FOR RUN2 Gamma Ray Directional Drilling Directional Surveys	OTHER SERVICES FOR RUN3 Gamma Ray Directional Drilling Directional Surveys
REMARKS: RUN NUMBER 1 8-1/2 in. hole was drilled from 616.0 m to 2527.0 m.  Depth is referenced to the Driller's Depth.  Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight.  Mud type is KCL/PHPA/Glycol.  POOH due to bit change.	REMARKS: RUN NUMBER 2 8-1/2 in. hole was drilled from 2527.0 m to 2781.0 m.  Depth is referenced to the Driller's Depth.  Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight.  Mud type is KCL/PHPA/Glycol.  POOH due to bit change.	REMARKS: RUN NUMBER 3 8-1/2 in. hole was drilled from 2781.0 m to 2952.0 m.  Depth is referenced to the Driller's Depth.  Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight.  Mud type is KCL/PHPA/Glycol.  POOH due to TD of HLA A1A

EQUIPMENT DESCRIPTION

RUN1







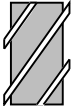
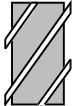
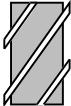






RUN2


RUN3

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT


6-3/4 in. PowerPulse*		22.20	6-3/4 in. PowerPulse*		22.21	6-3/4 in. PowerPulse*		21.94
MDC: Z408-AC MEC: 108-BA MDI: 108-BC MGR: 146-AA  DH Software v7.0c00			MDC: Z408-AC MEC: 108-BA MDI: 108-BC MGR: 146-AA  DH Software v7.0c00			MDC: 066-AB MEC: 612-BB MDI: 626-BC MGR: 295-AA  DH Software v6.1c00		
	D&I	17.90		D&I	17.91		D&I	17.63
	GR	17.25		GR	17.26		GR	16.98
6-1/2 in. PMDC S/N: ASS15700		13.75	6-1/2 in. PMDC S/N: ASS15700		13.76	6-1/2 in. PMDC S/N: ASS15700		13.72
6-1/8 in. NM Stab. S/N: DOTS4058 Stab. OD: 8-1/4 in.		12.06	6-1/8 in. NM Stab. S/N: DOTS4058 Stab. OD: 8-1/4 in.		12.07	6-1/8 in. NM Stab. S/N: DOTS4058 Stab. OD: 8-1/4 in.		12.03
6-1/2 in. PMDC S/N: 9612058		10.61	6-1/2 in. PMDC S/N: 9612058		10.62	6-1/2 in. PMDC S/N: 9612058		10.58
6-3/4 in. PowerPak* Motor A675XP7850 S/N: 3604 1.50 deg. bend 8-3/8 in. Motor Sleeve		7.92	6 3/4 in. PowerPak* Motor A675XP7850 S/N: 3604 1.50 deg. bend 8-3/8 in. Motor Sleeve		7.93	6-3/4 in. PowerPak* Motor A675XP7850 S/N: 2307 0 deg. bend 8-3/8 in. Motor Sleeve		7.89



Smith PDC Bit

8-1/2 in. OD

S75HPX S/N: JS6695A




0.00

0.24

Maximum string diameter 8.50 in.


All lengths in Meters



REED TCI BIT

8-1/2 in. OD

TD53AKPRDH S/N: T96931




0.00

0.25

Maximum string diameter 8.50 in.

All lengths in Meters



Smith PDC Bit

8-1/2 in. OD

S75HPX S/N: JS6695A



0.00

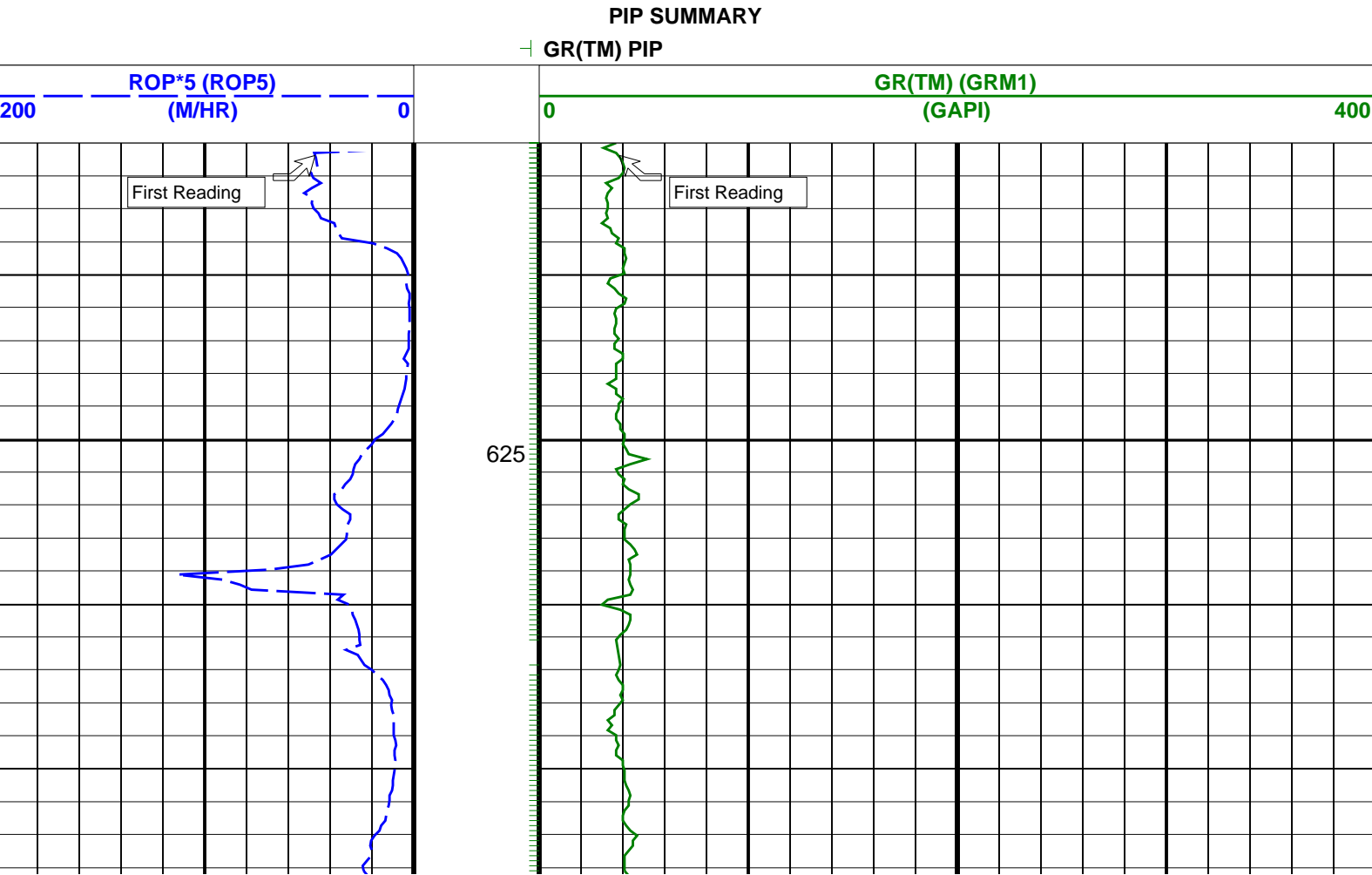
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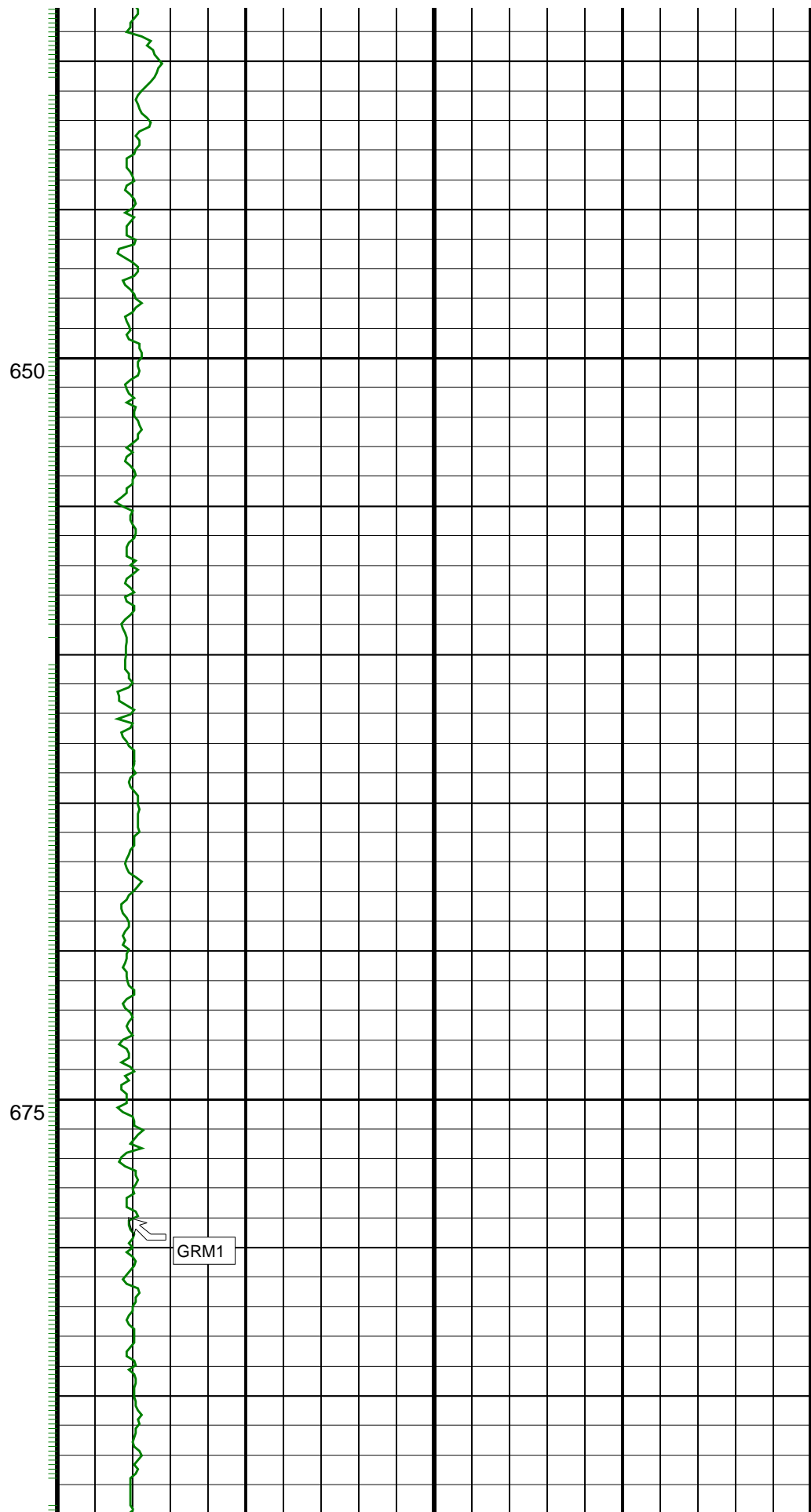
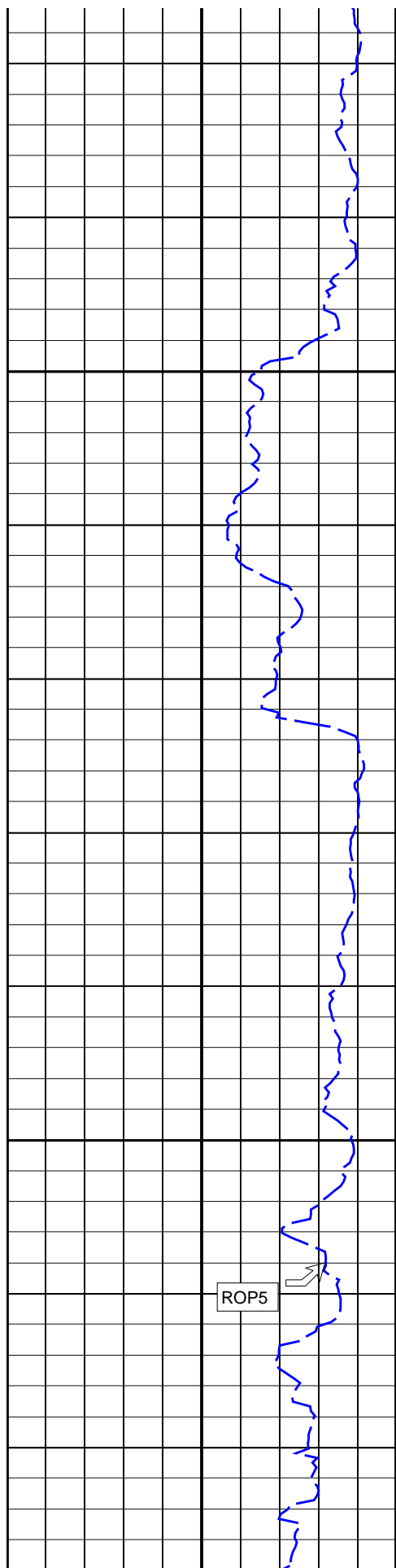
Maximum string diameter 8.50 in.

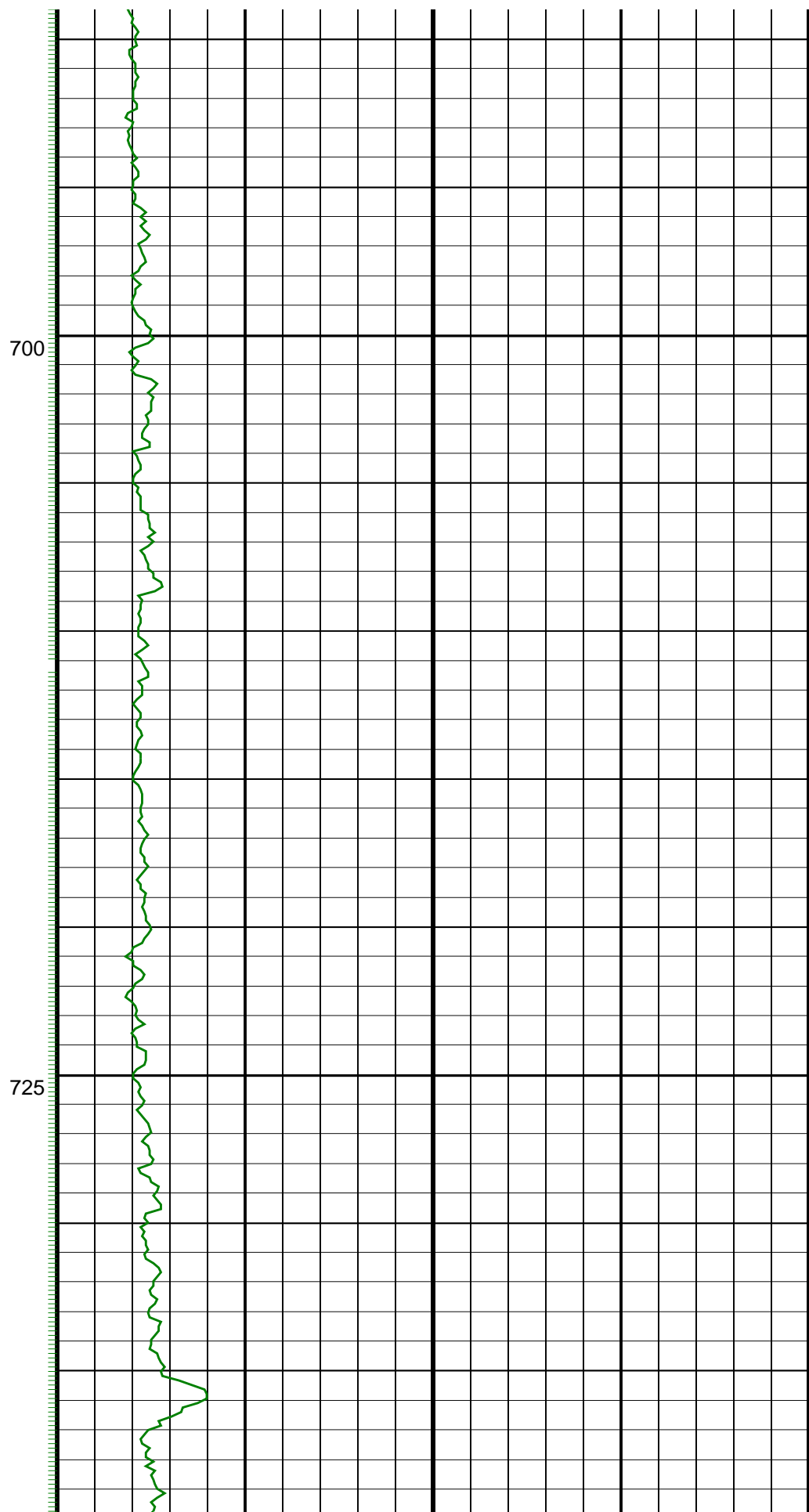
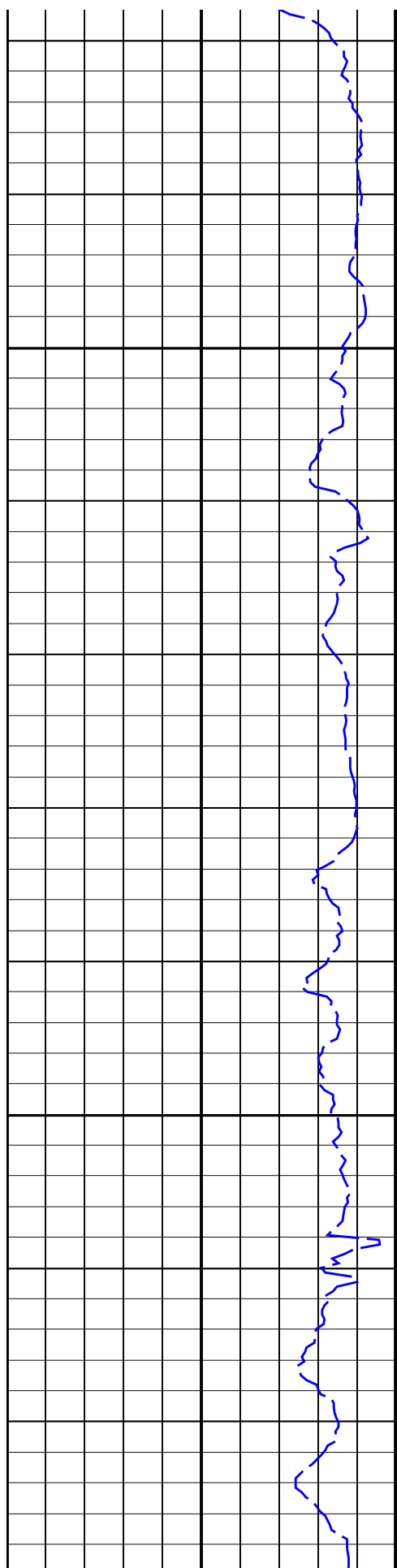
All lengths in Meters

# HLA A1A GR 1:200 MD

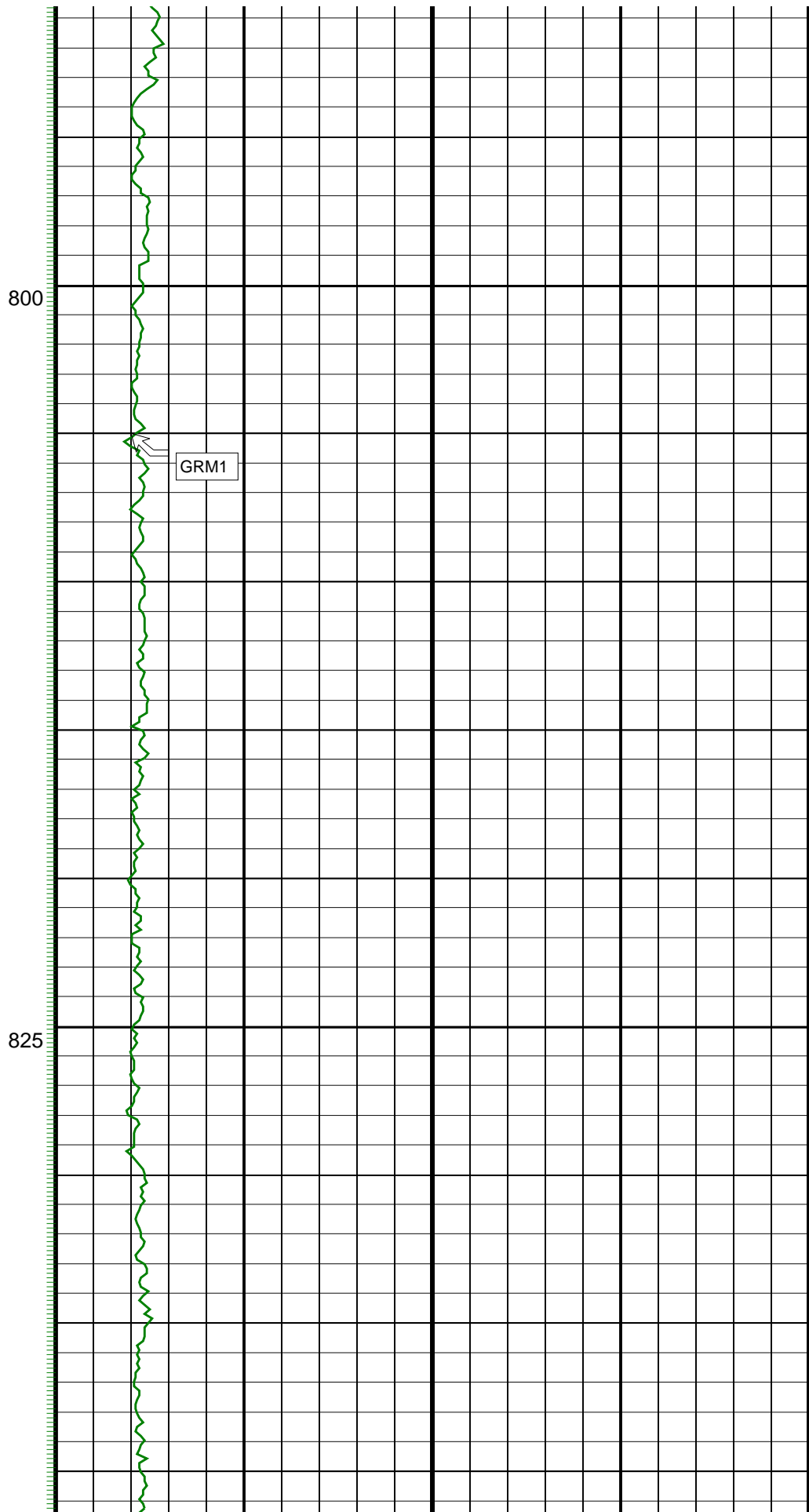
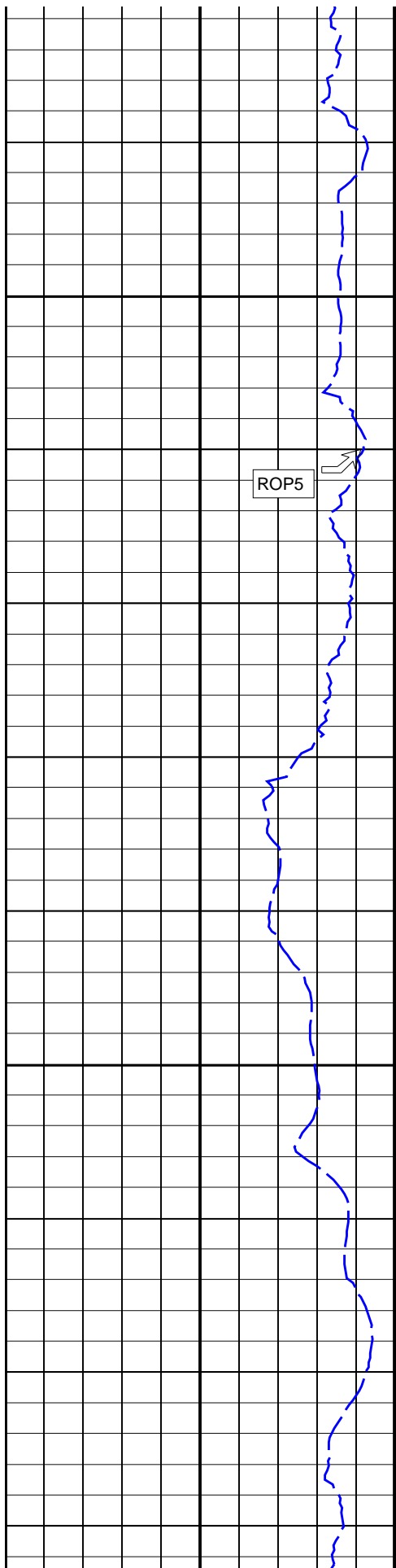
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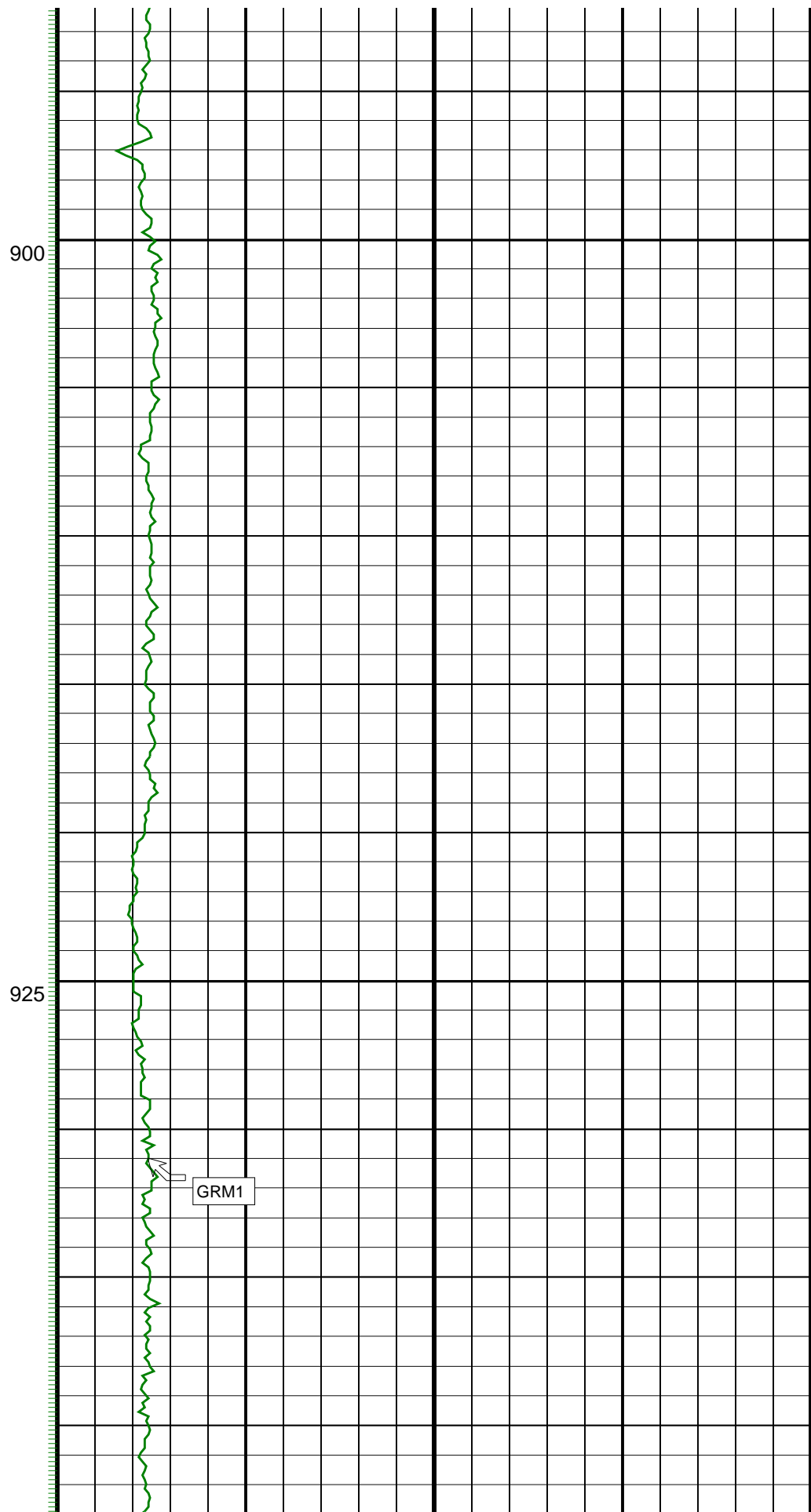
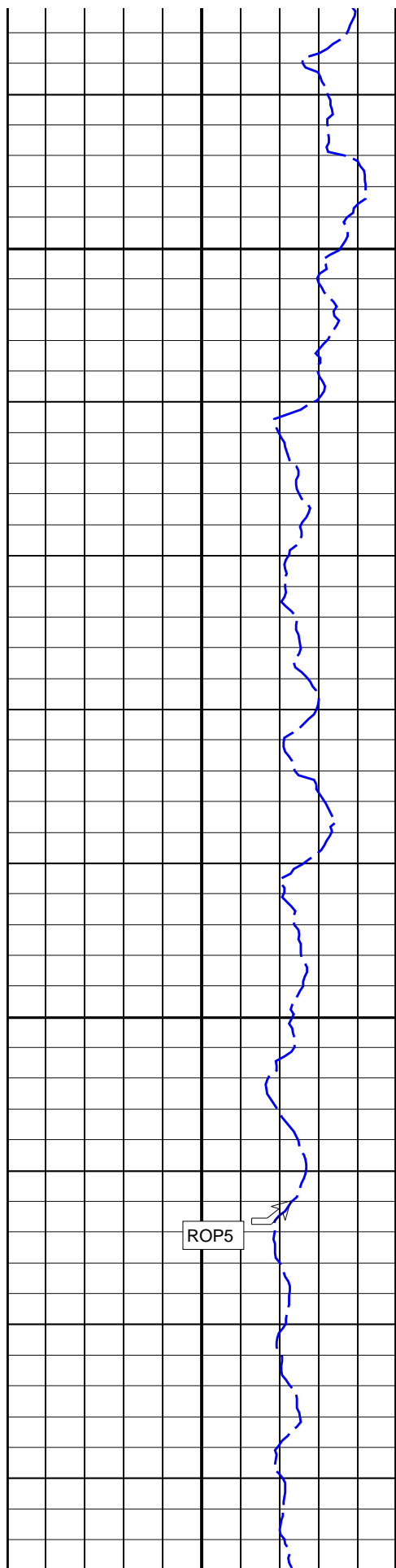




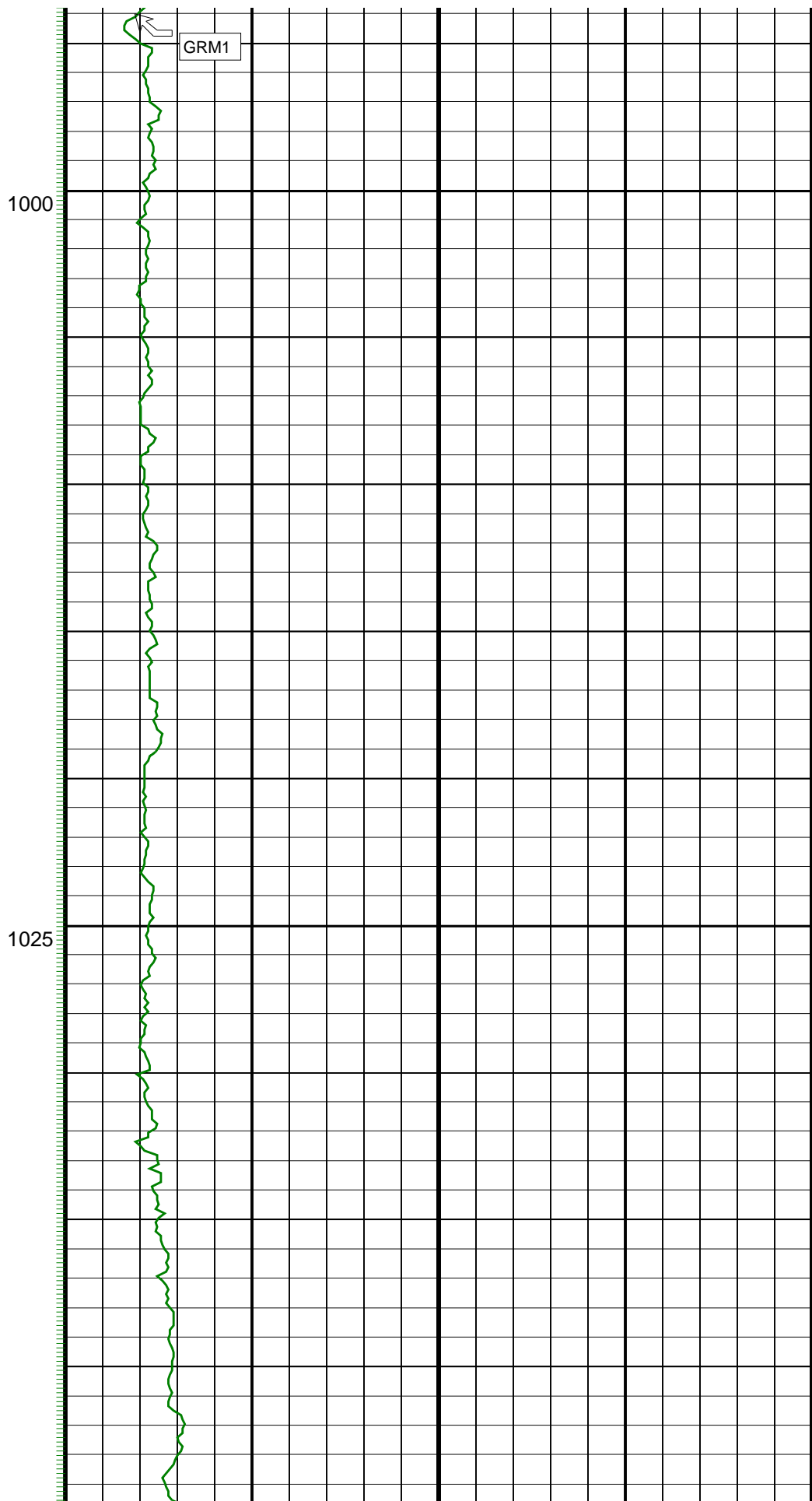
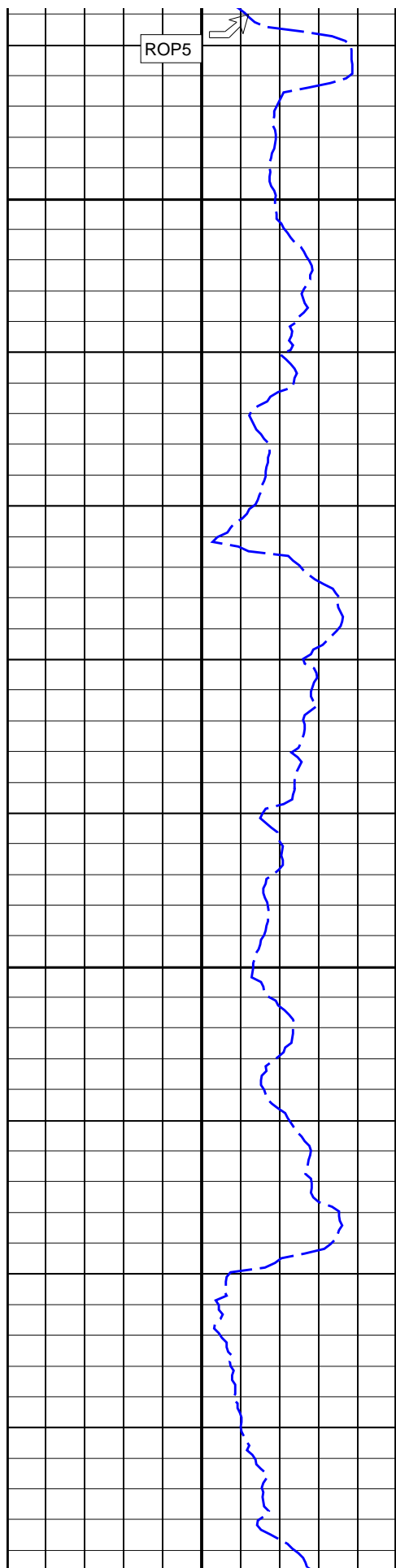




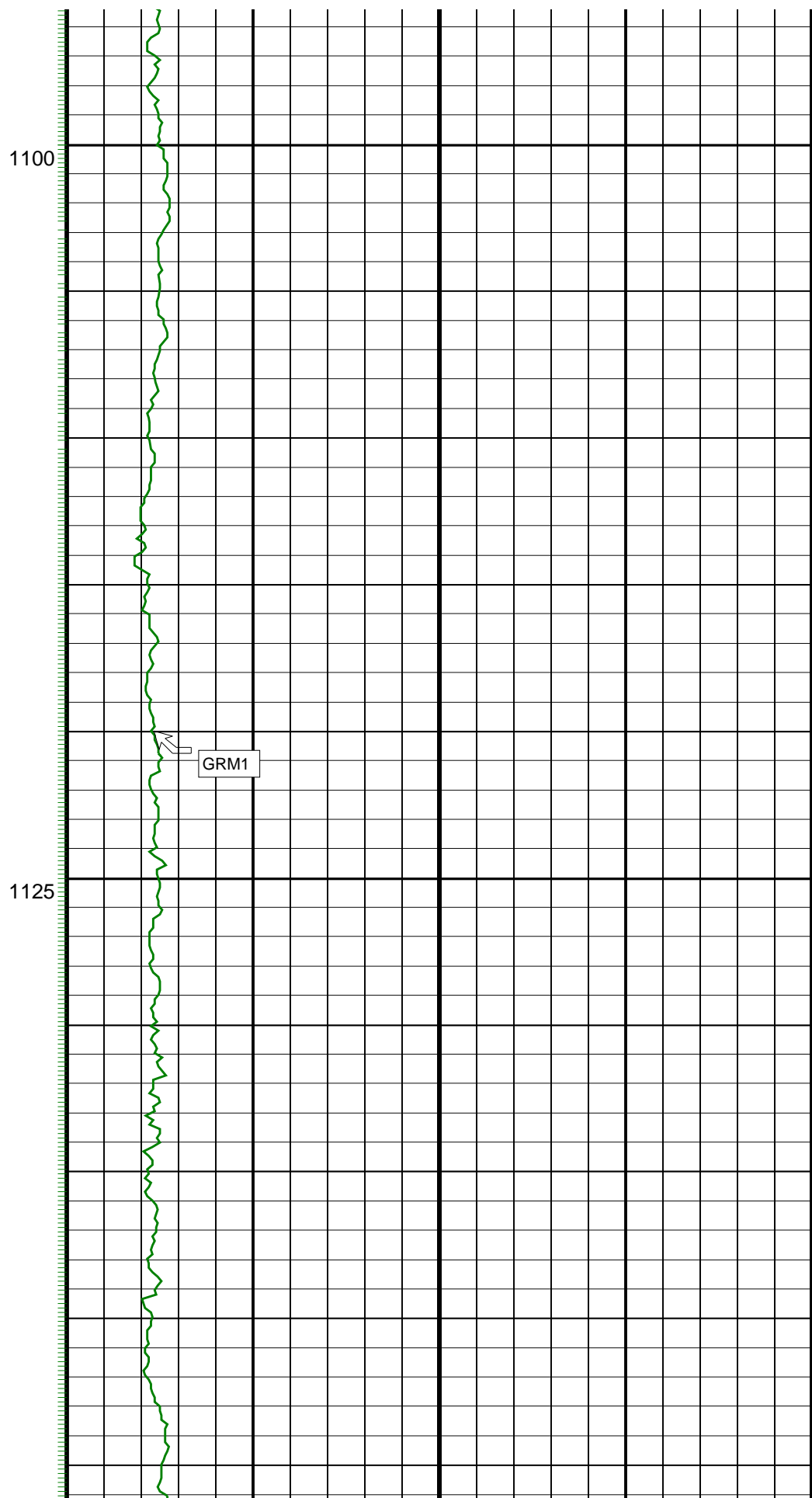
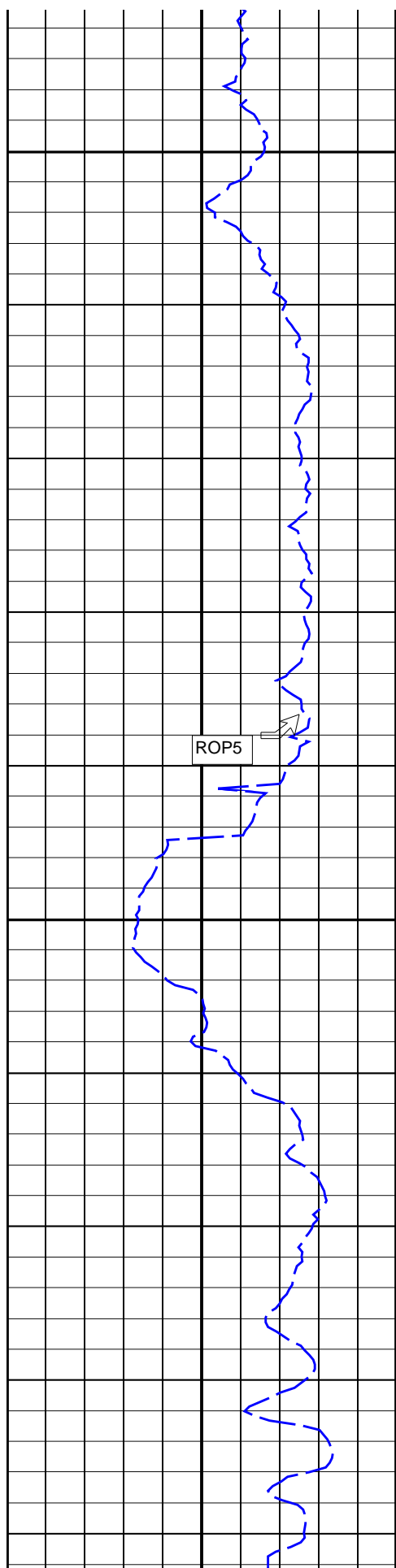


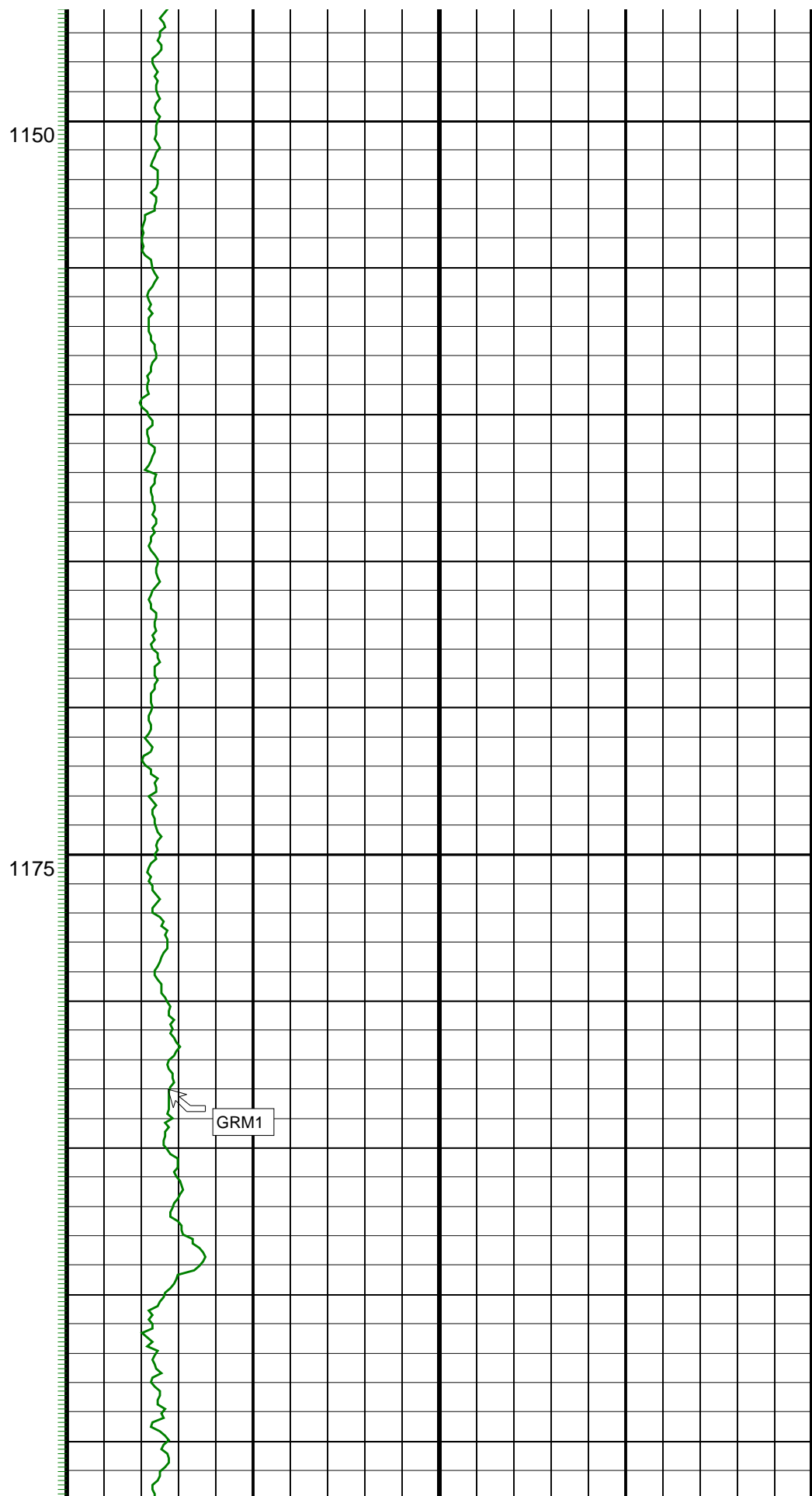
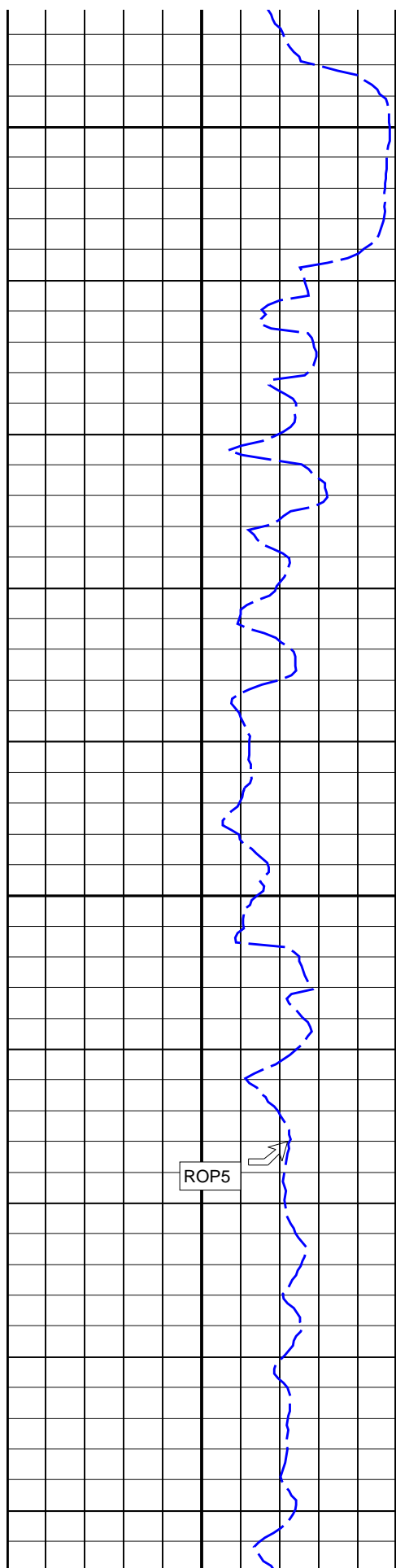


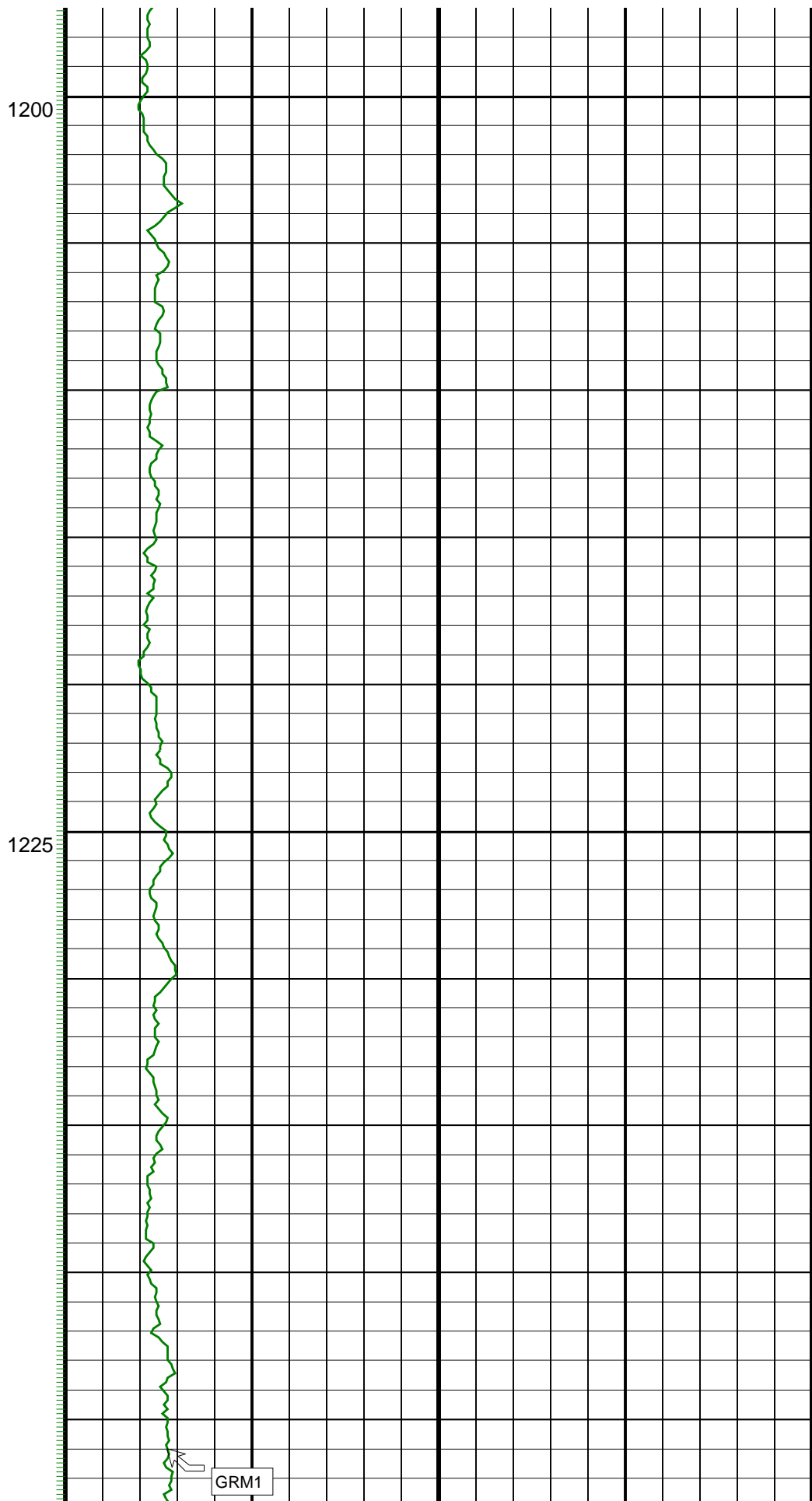
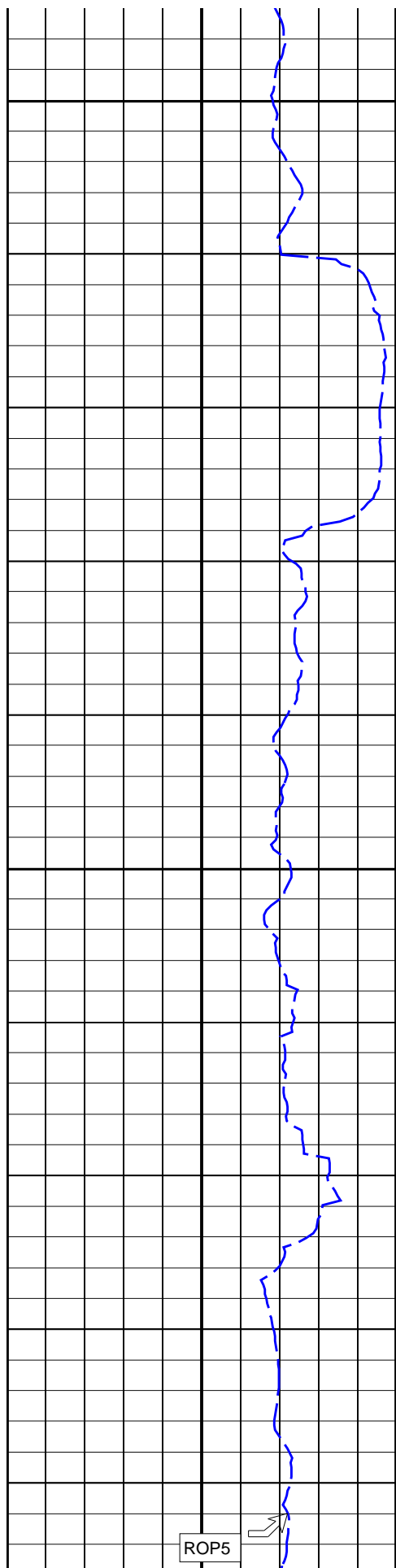




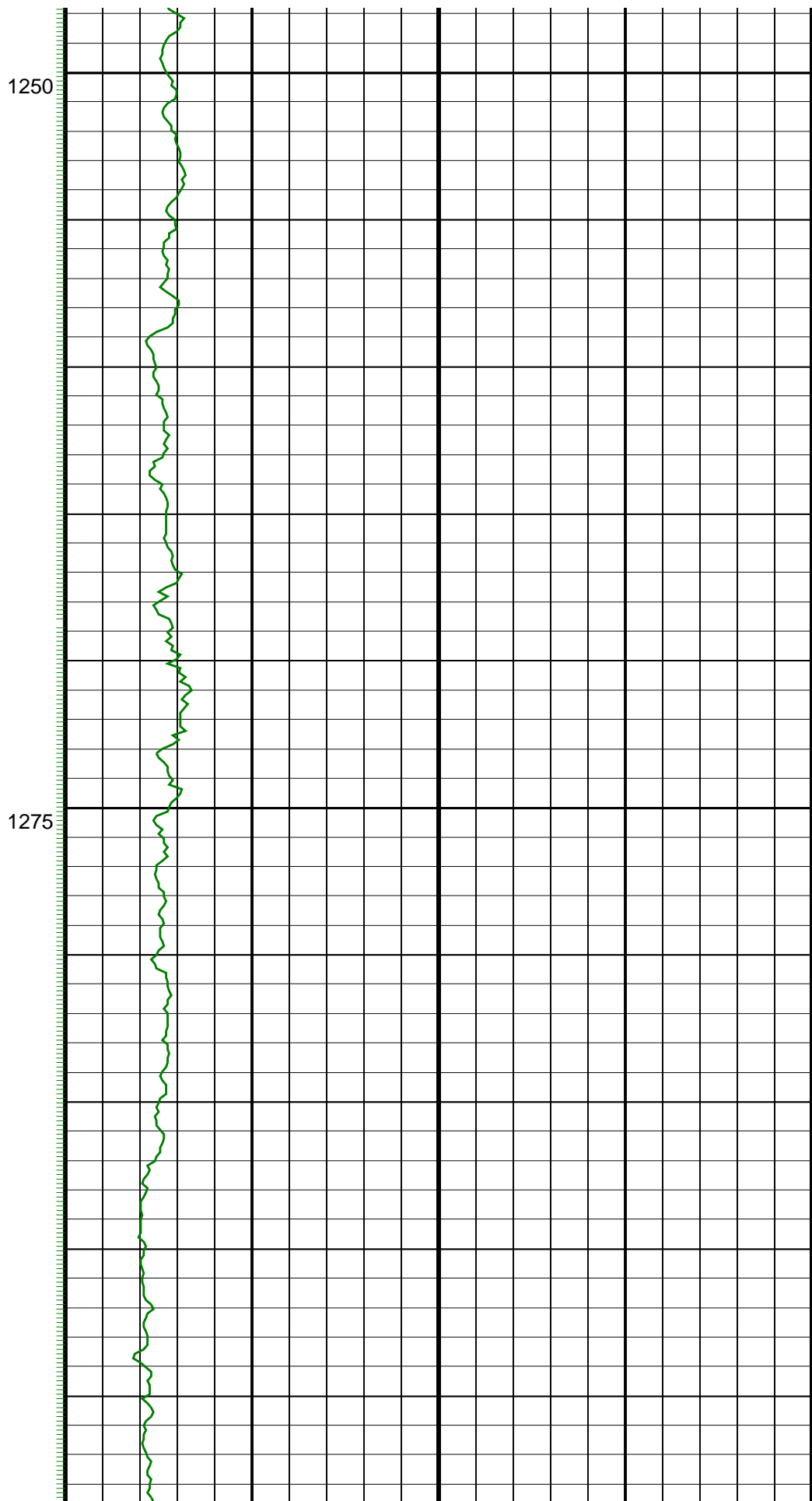
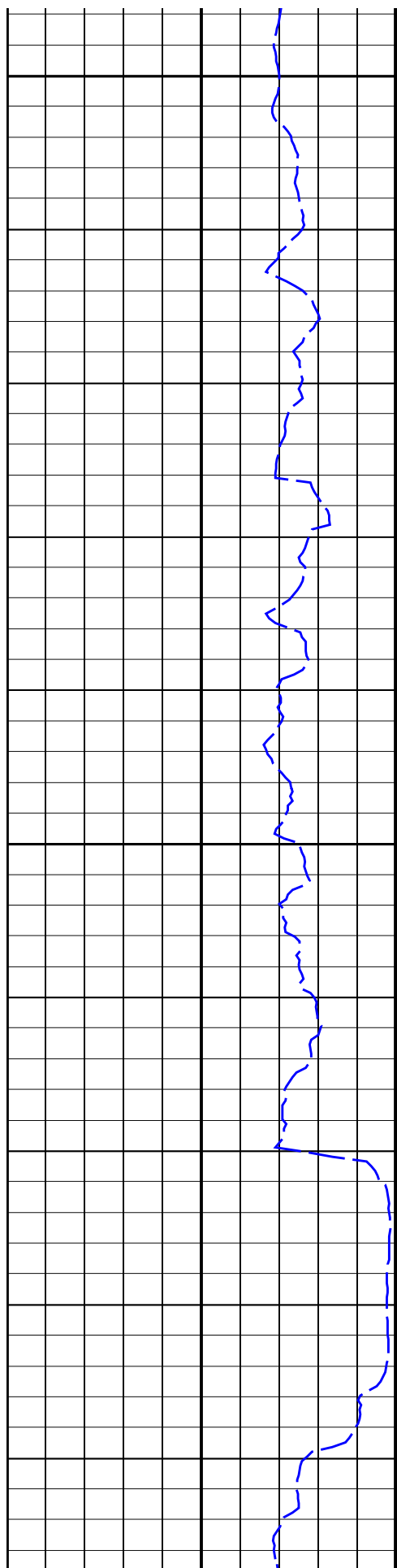




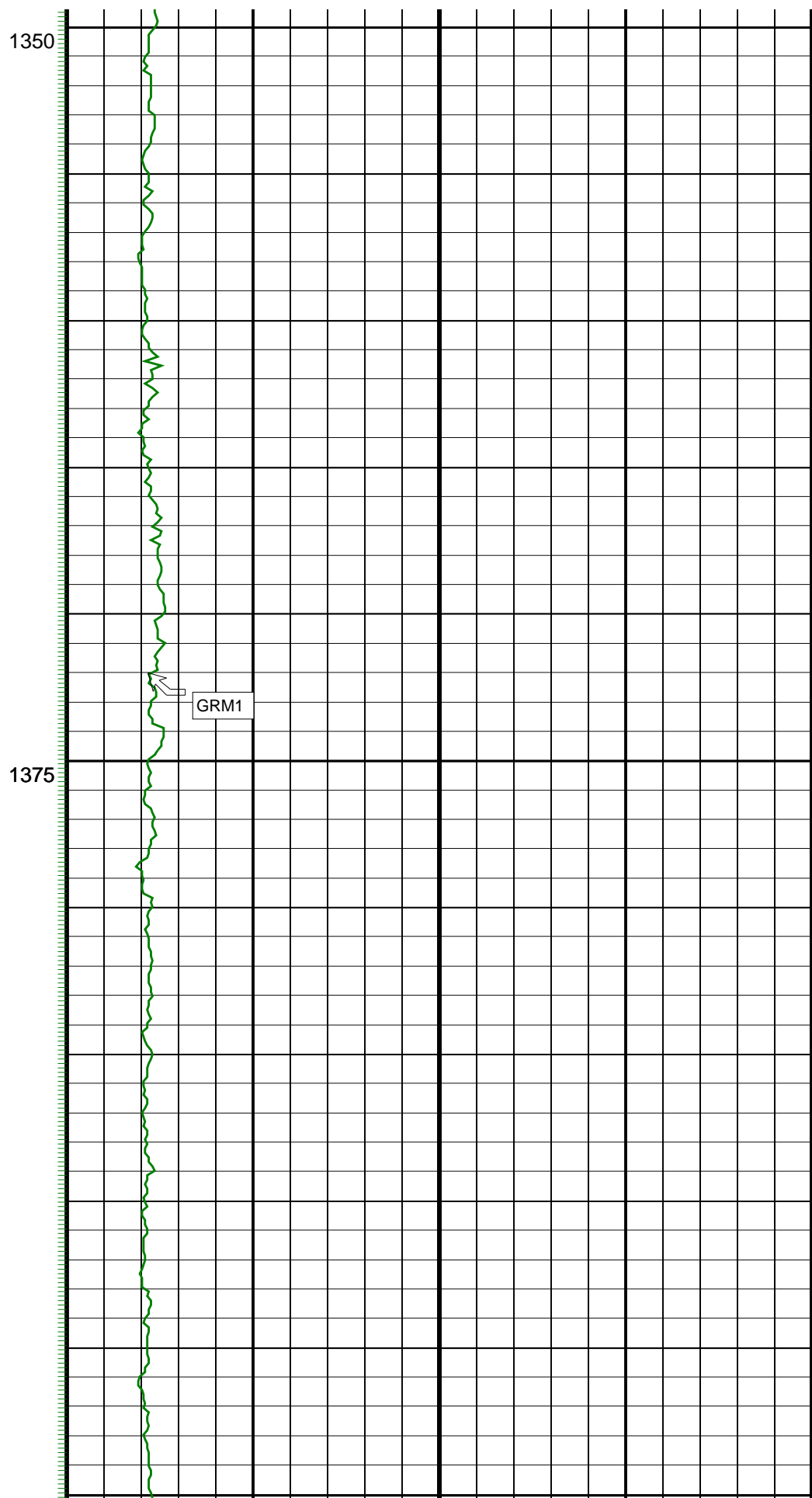
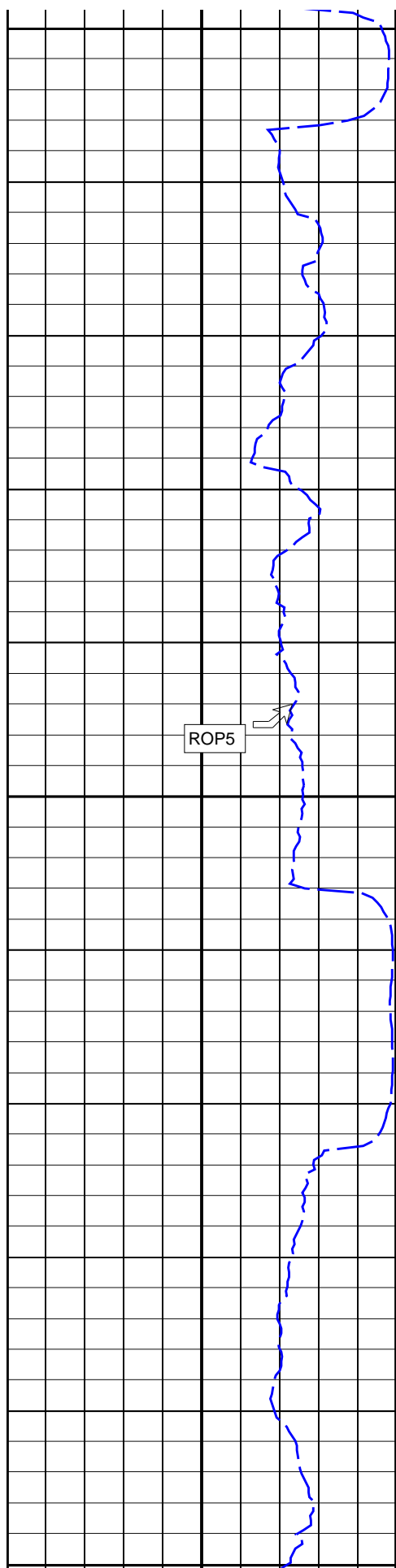


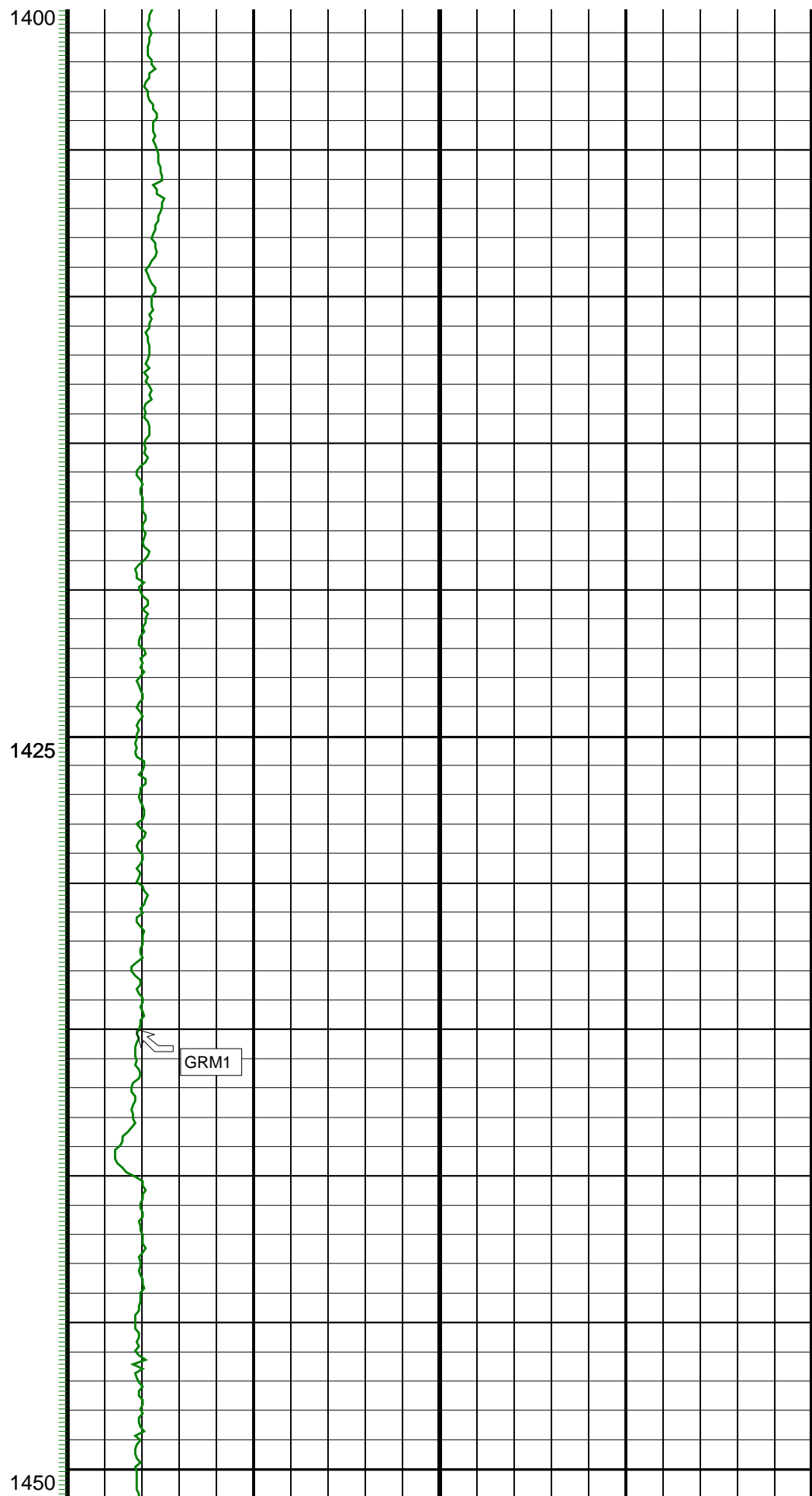
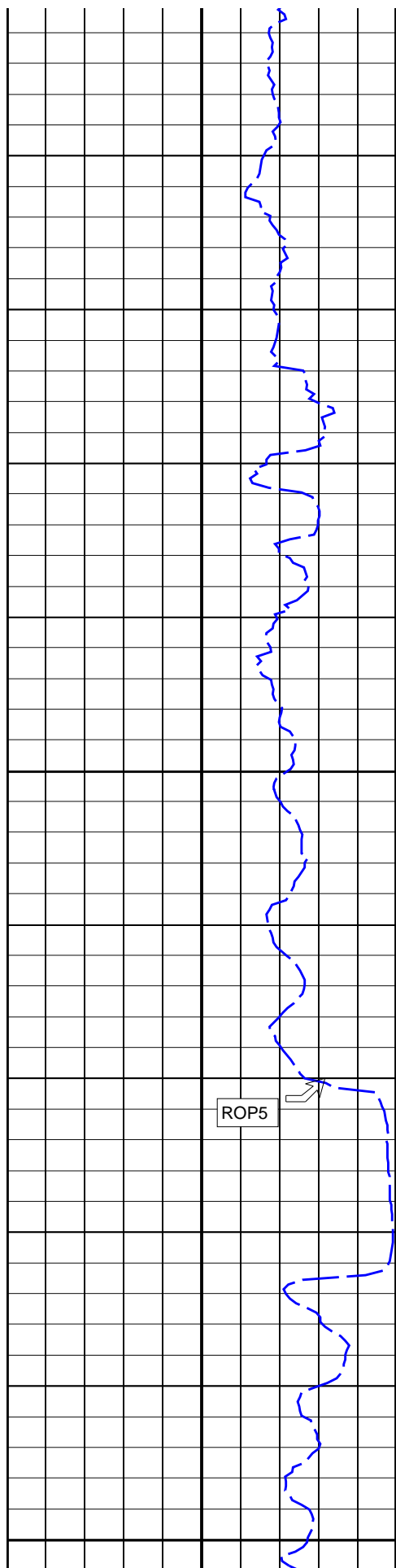




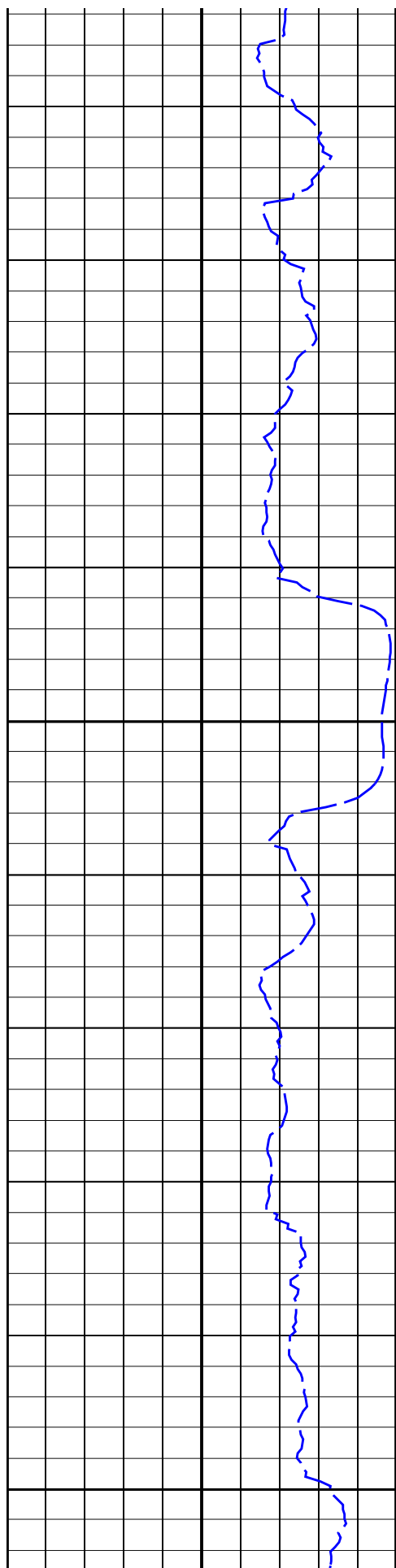






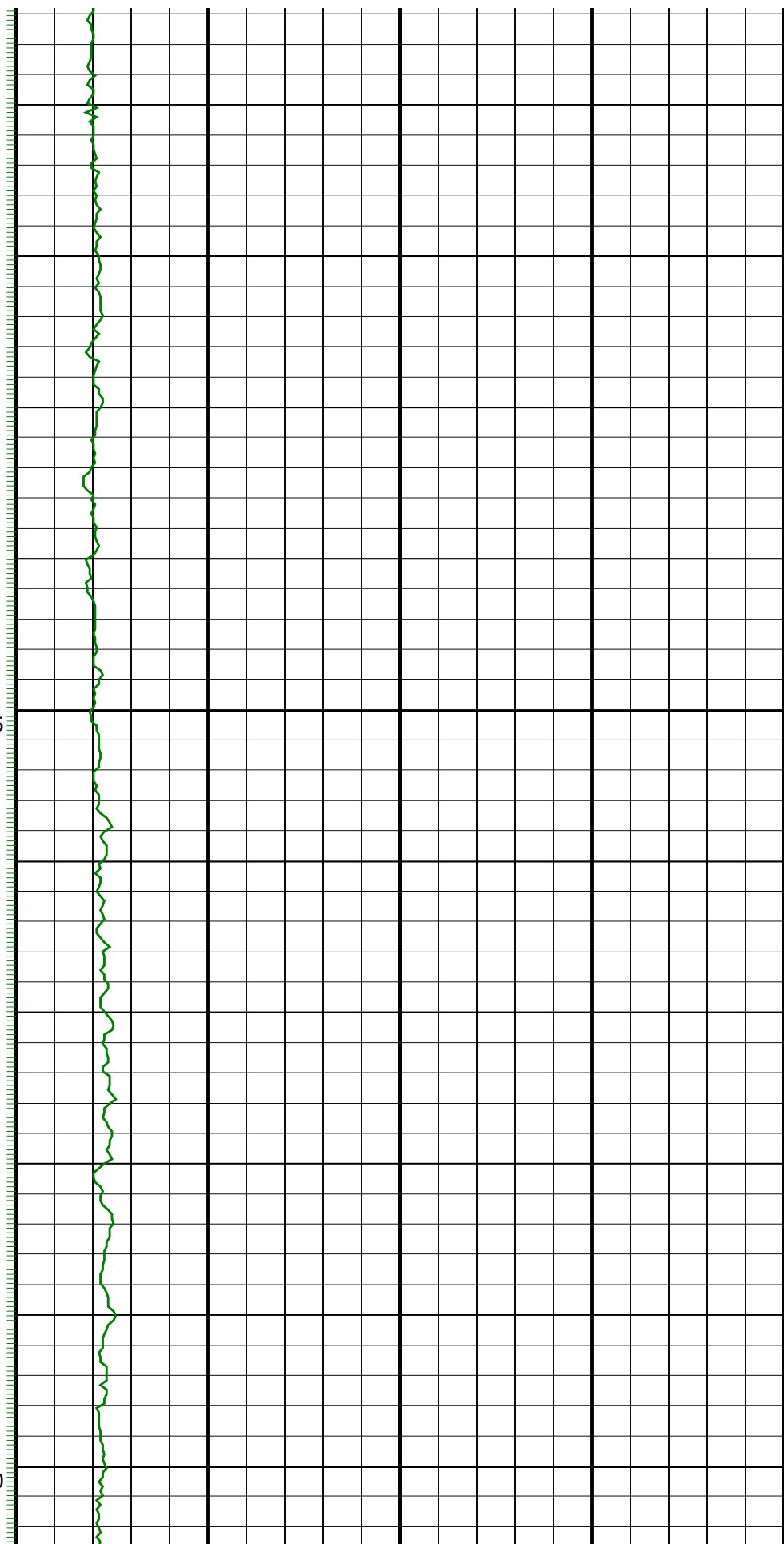


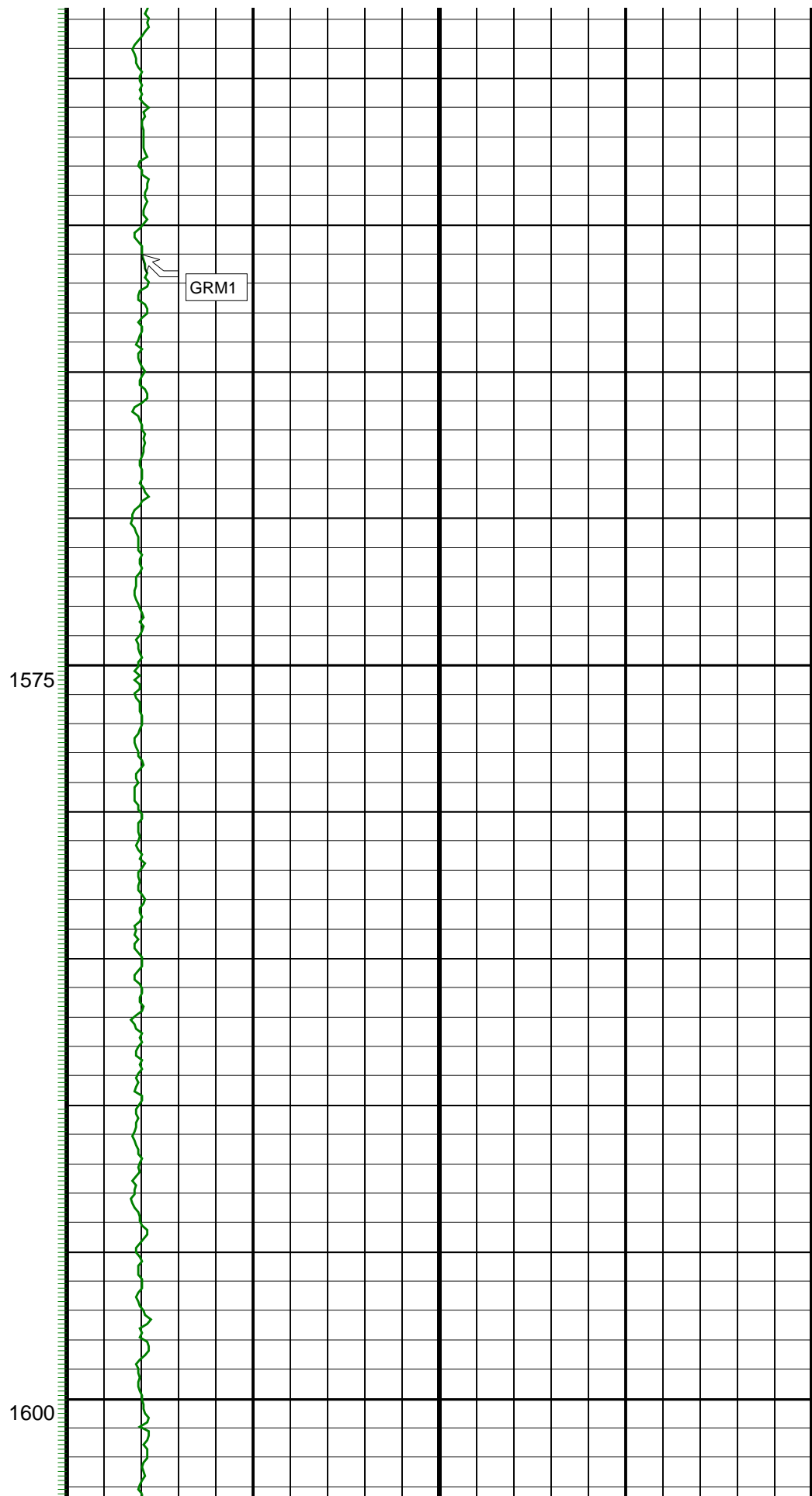
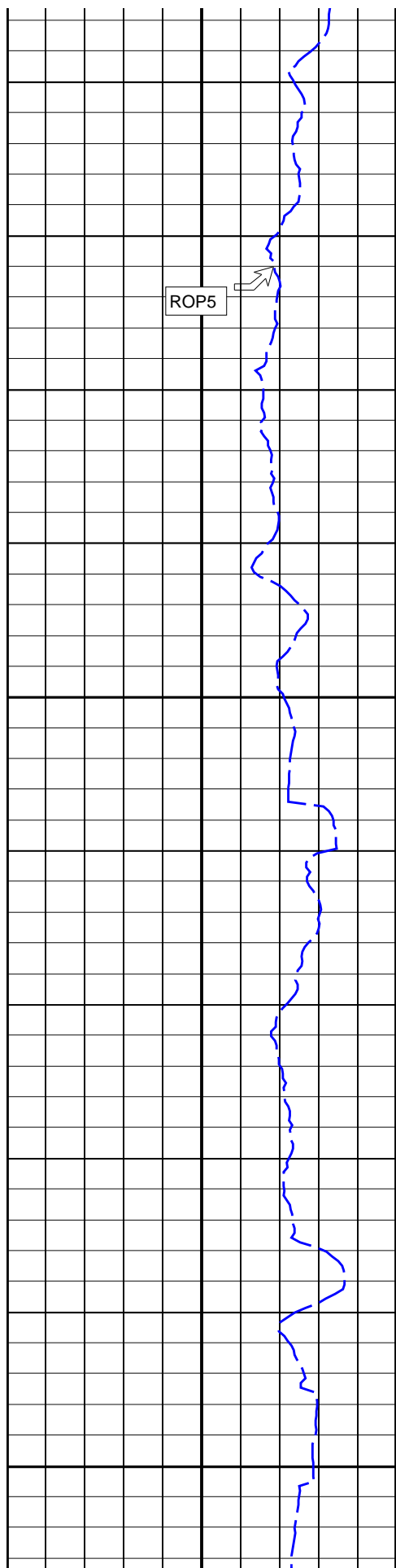


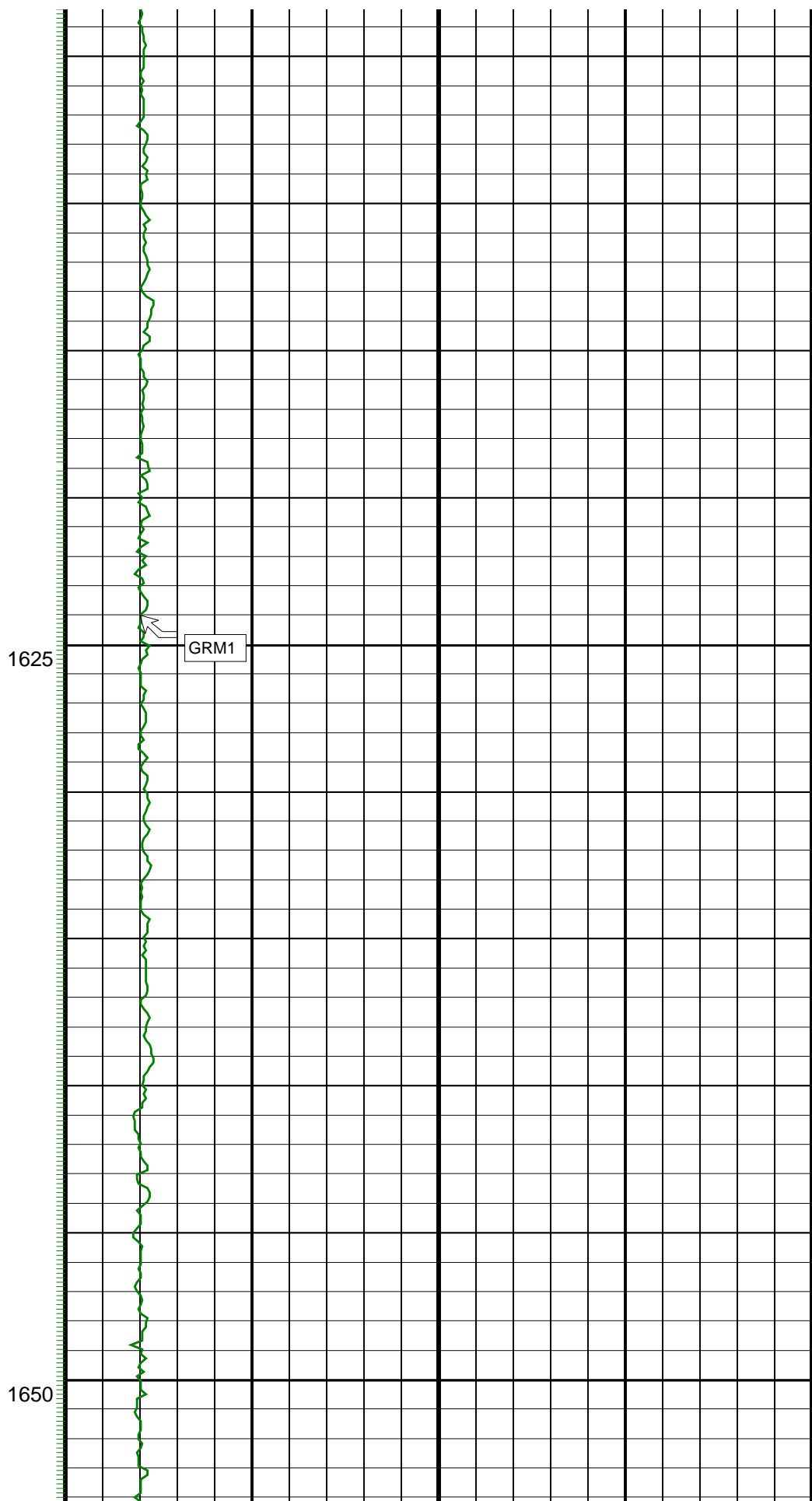
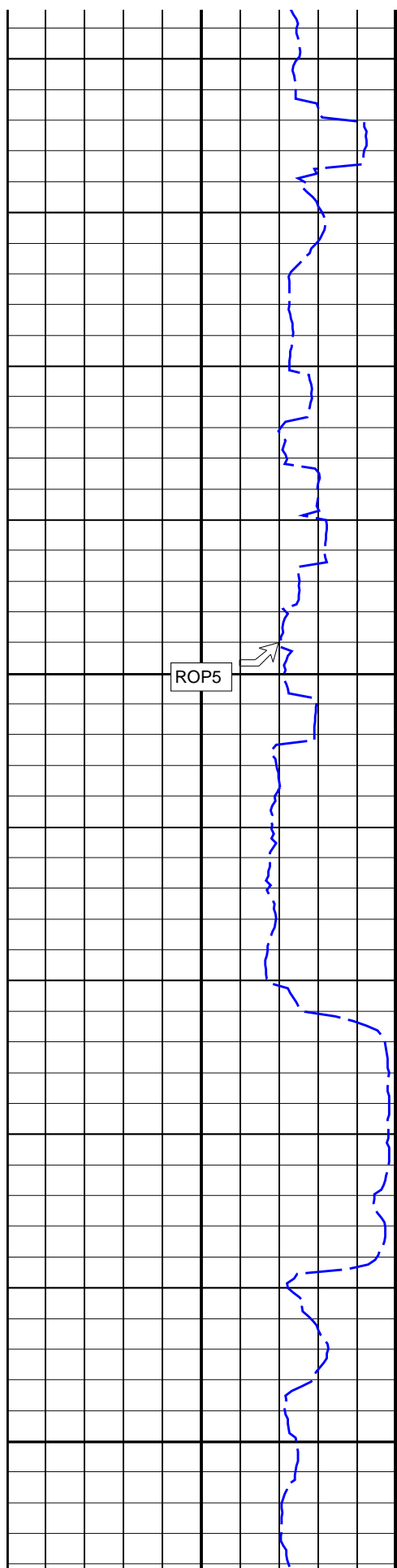


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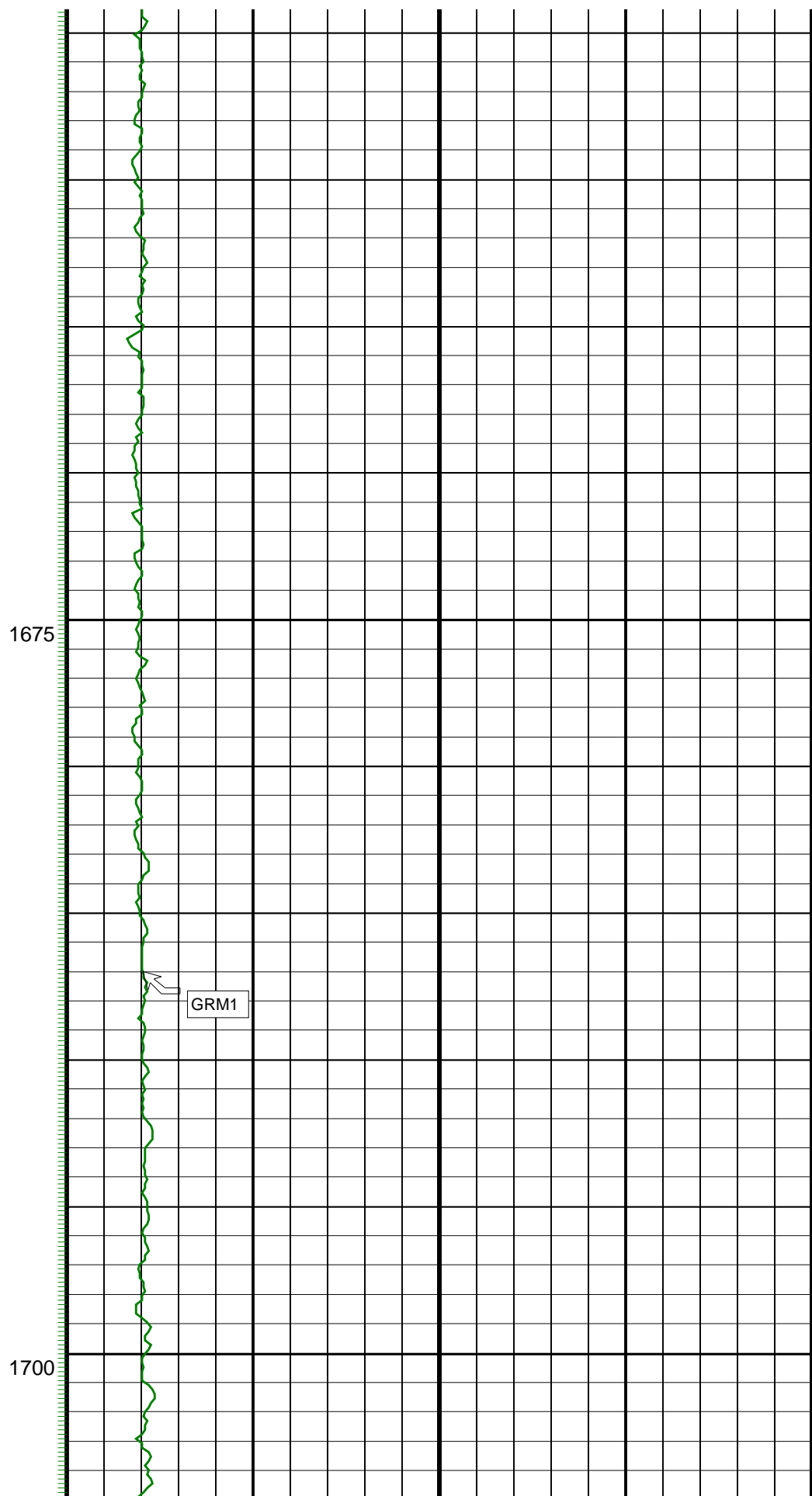
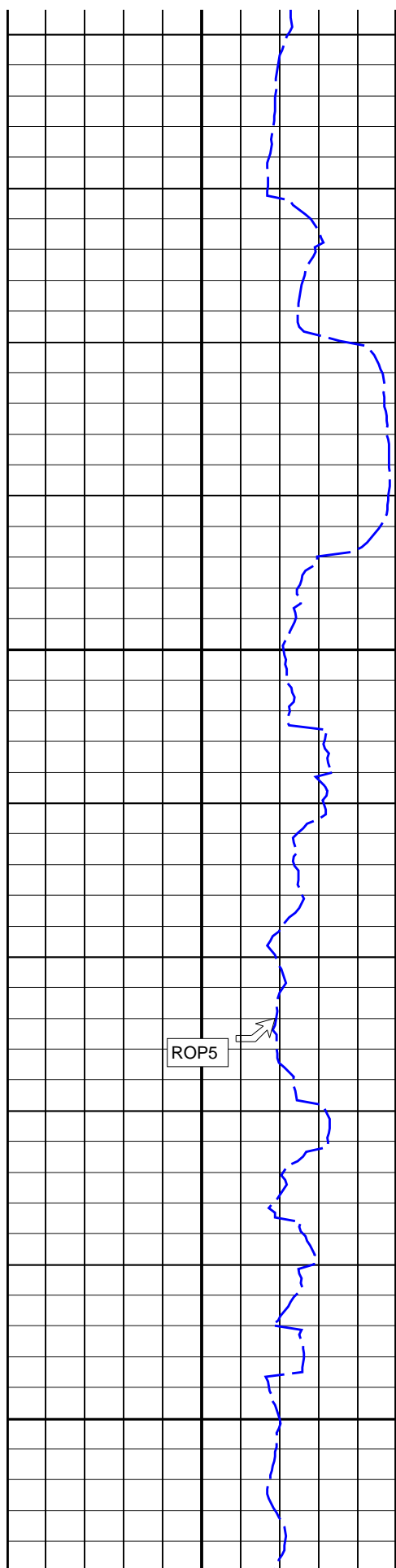
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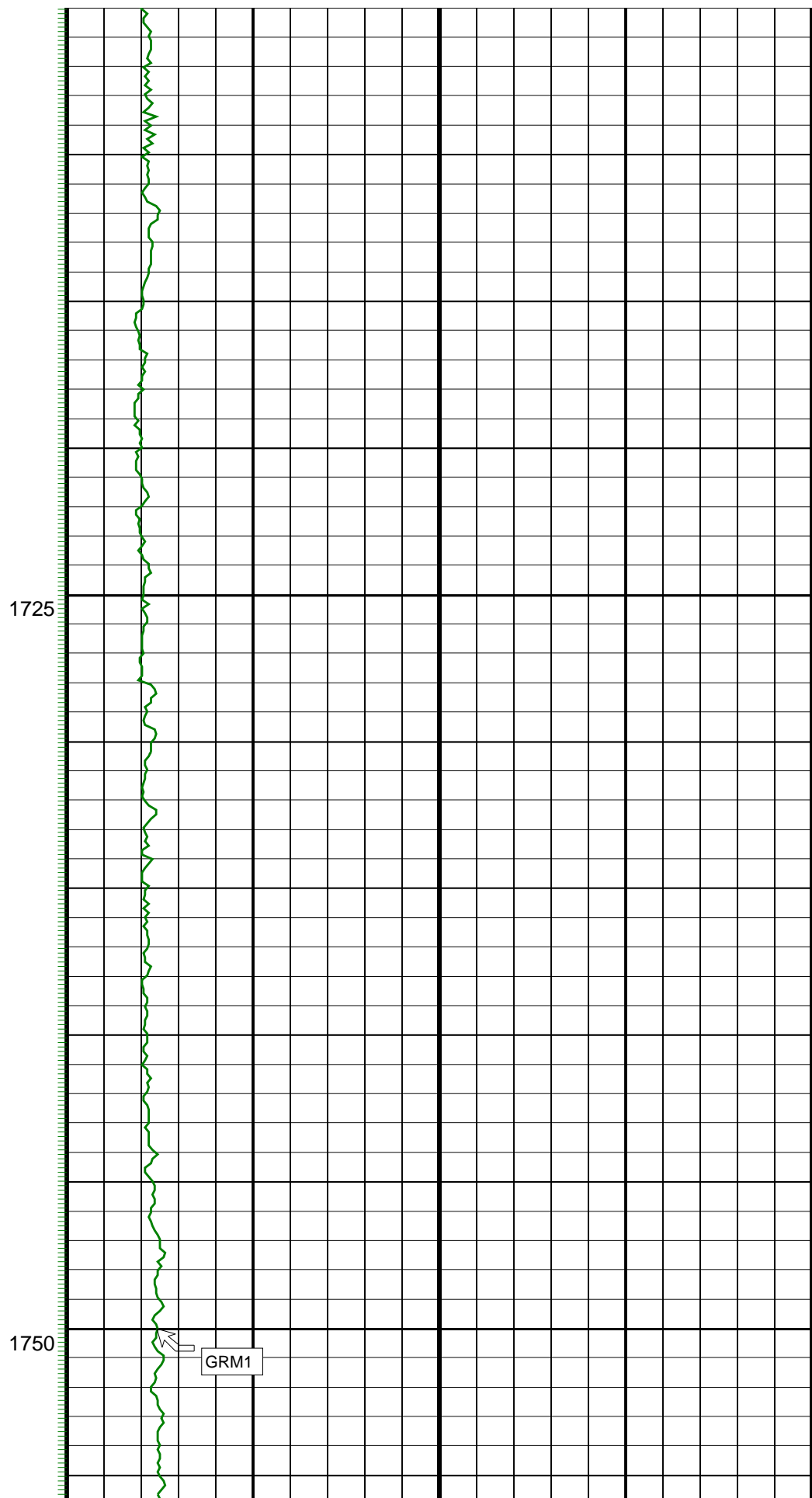
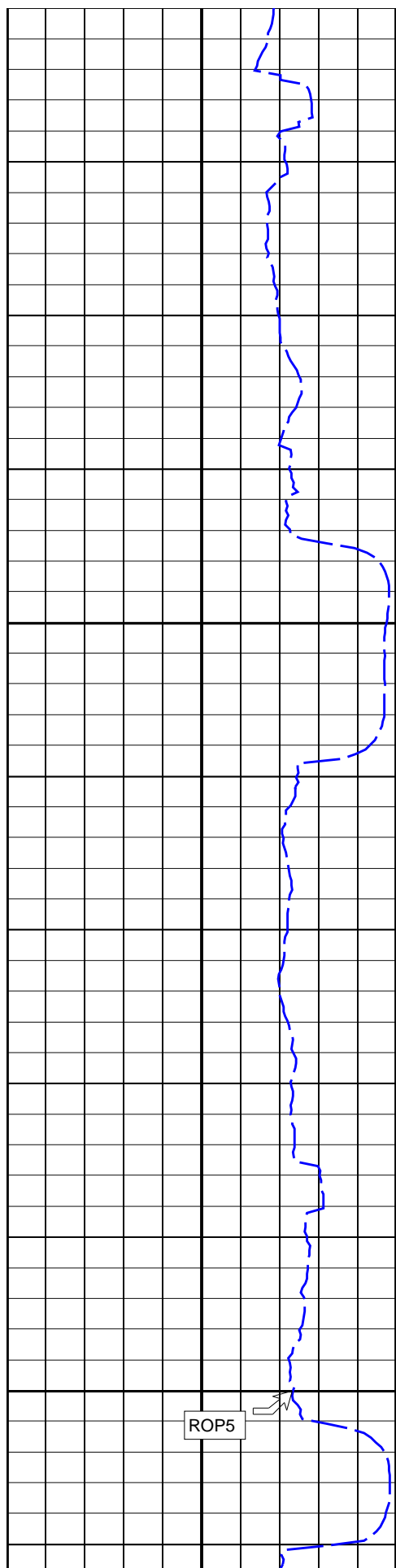


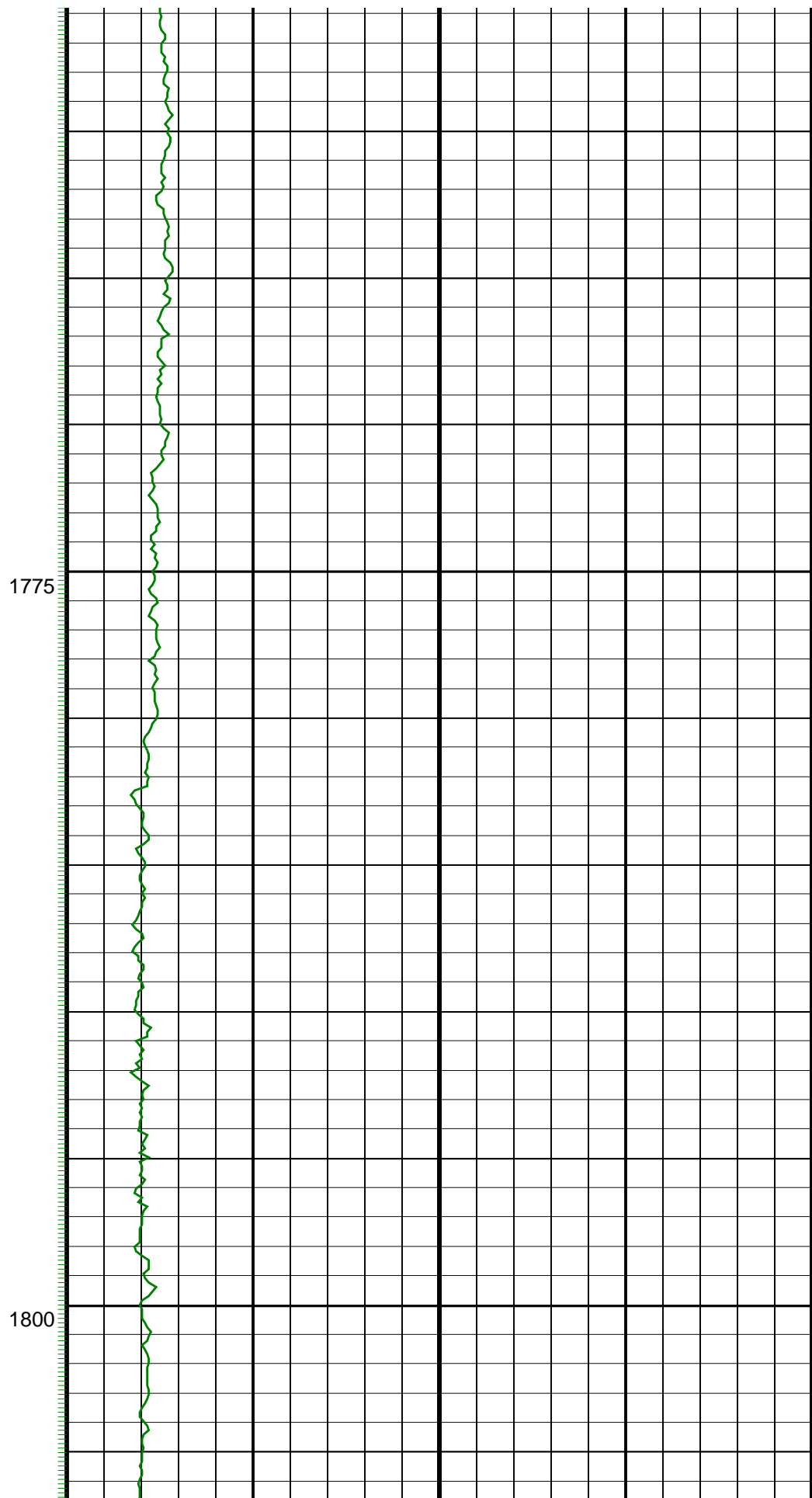
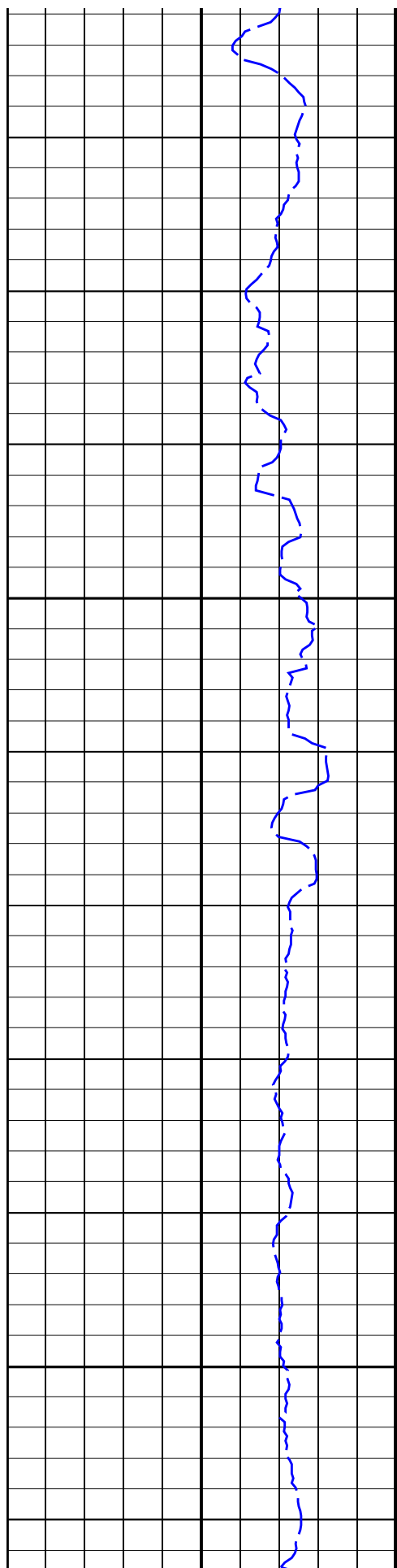




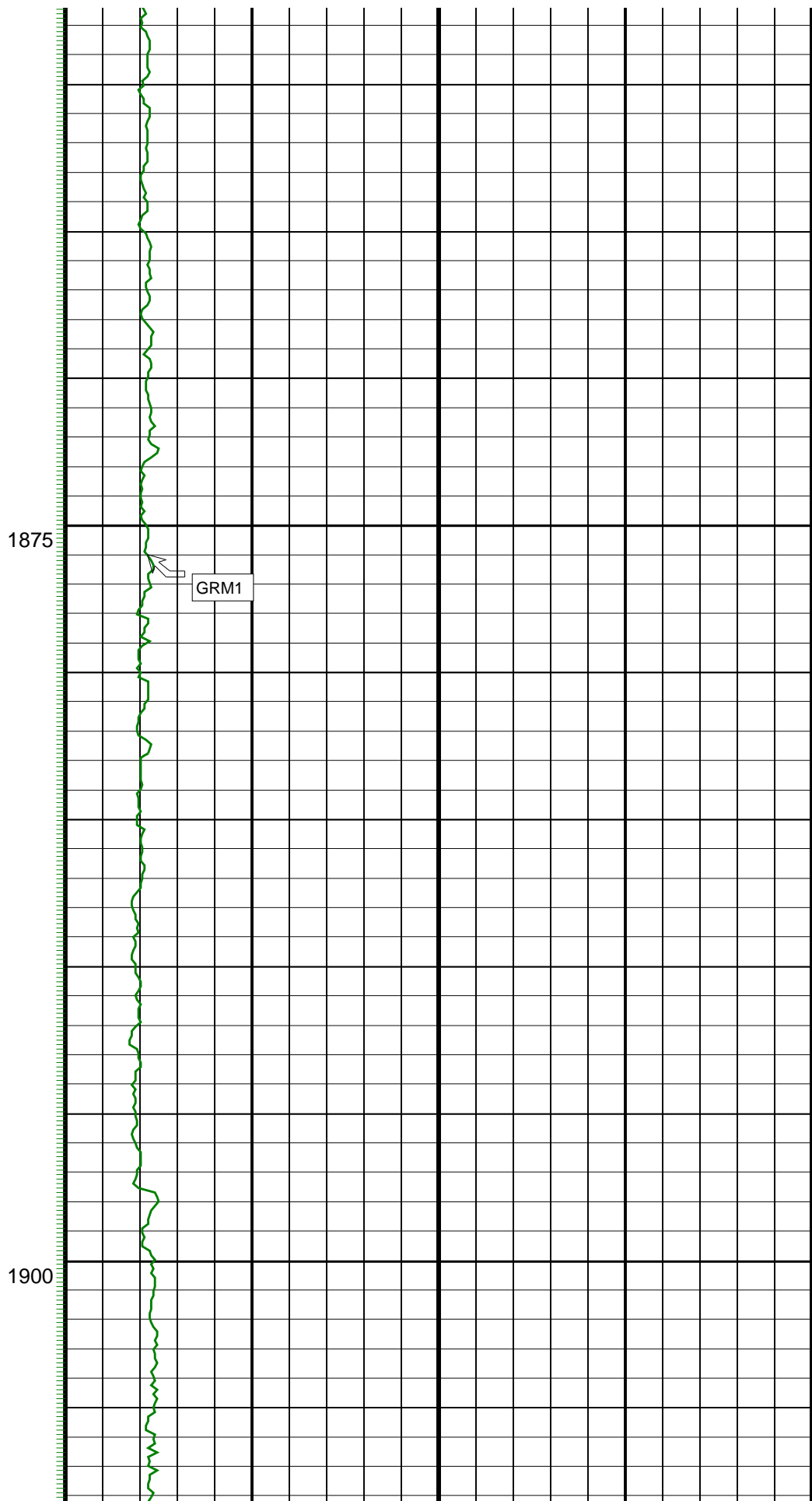
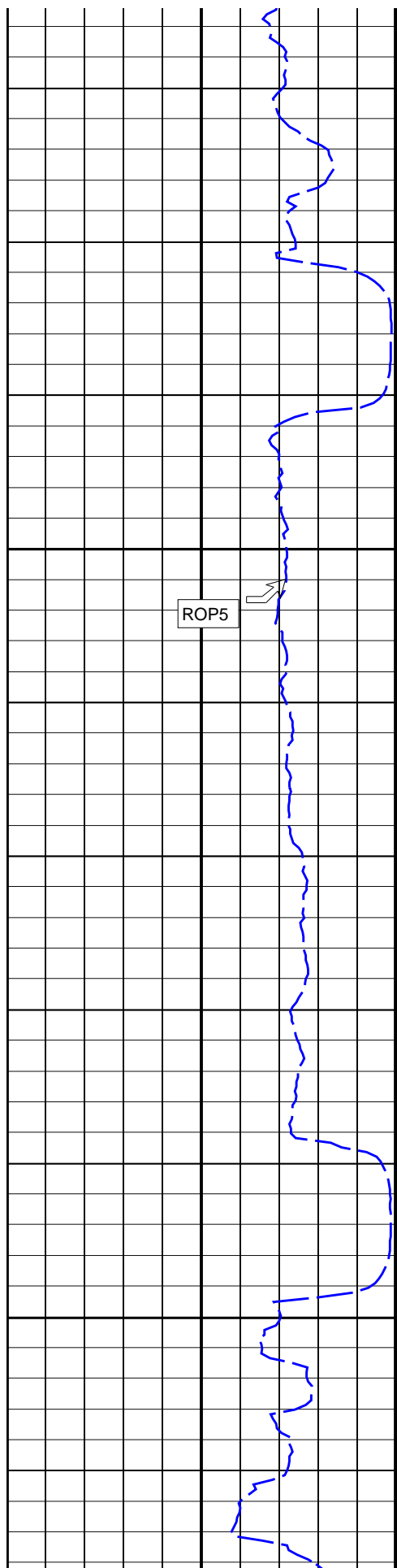




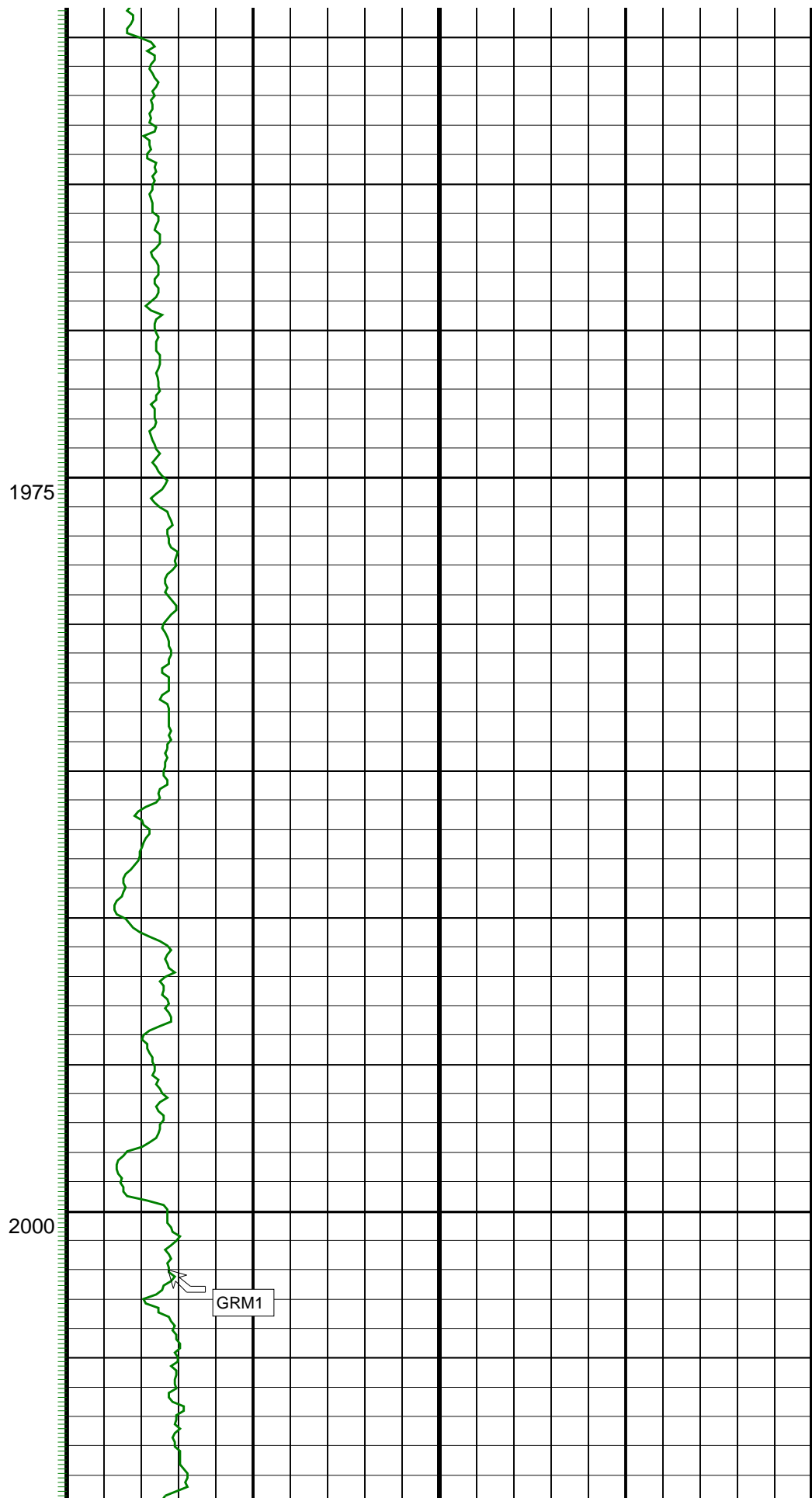
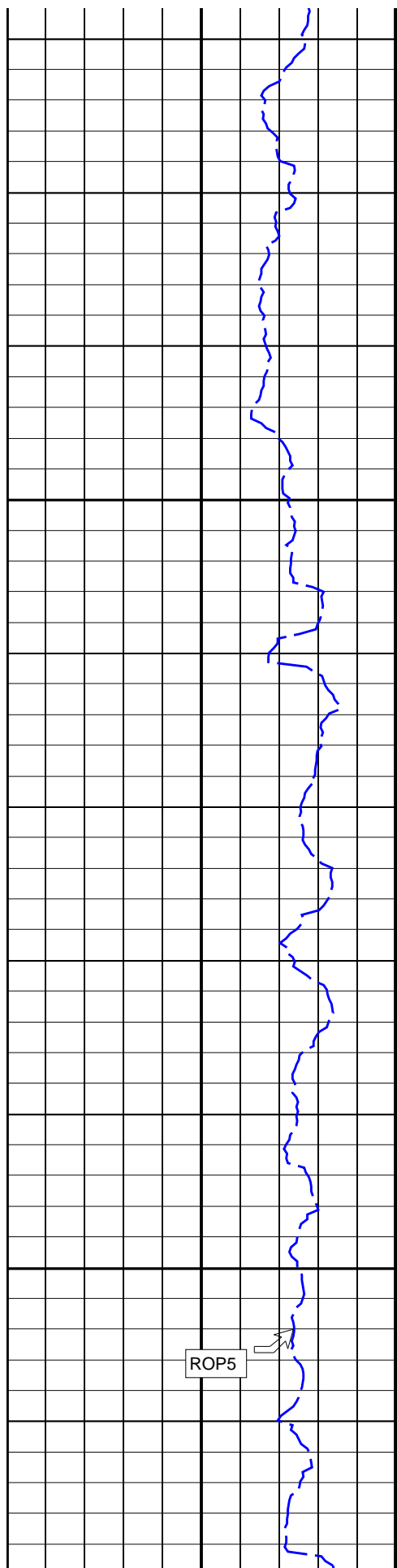


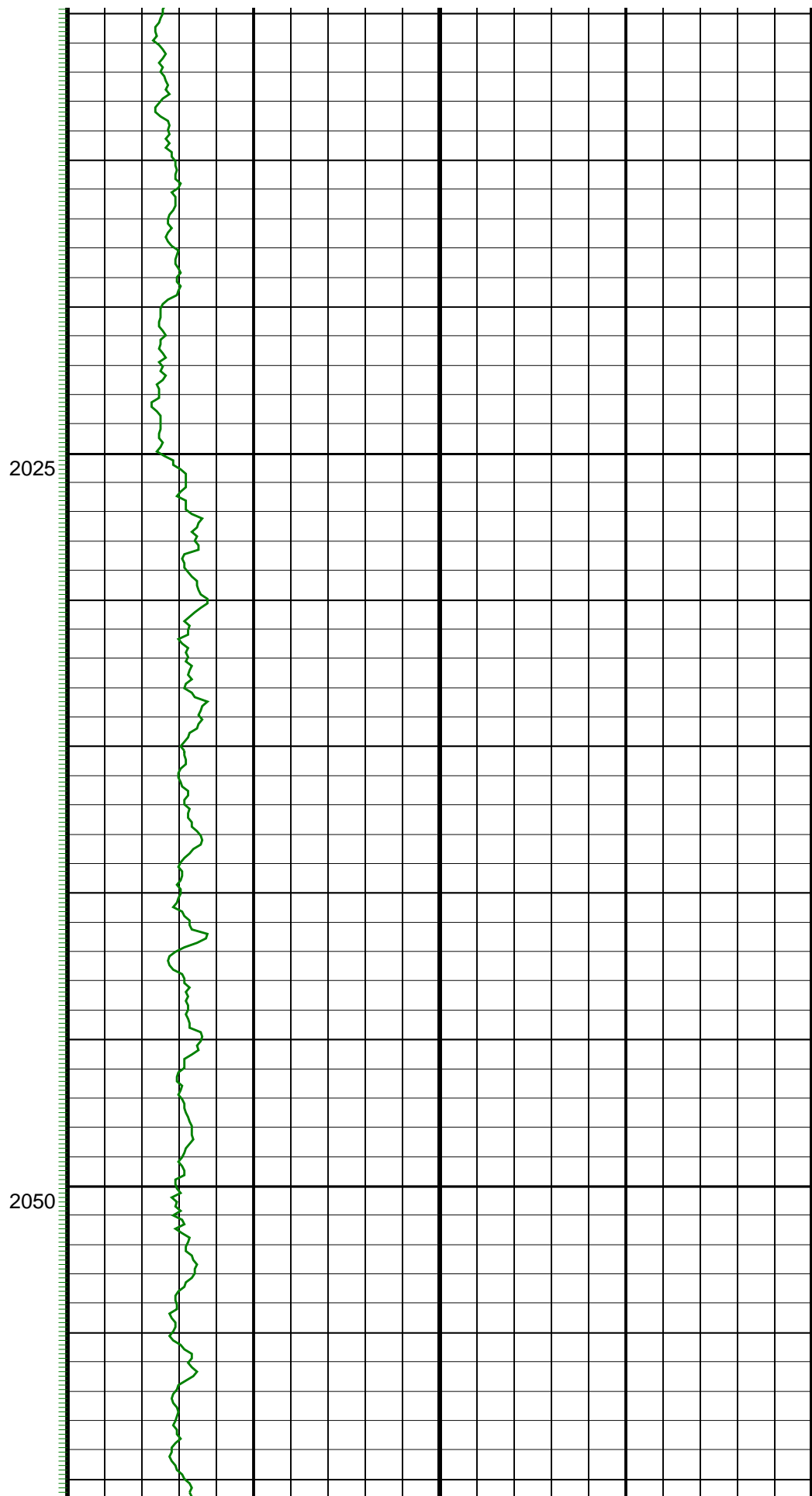
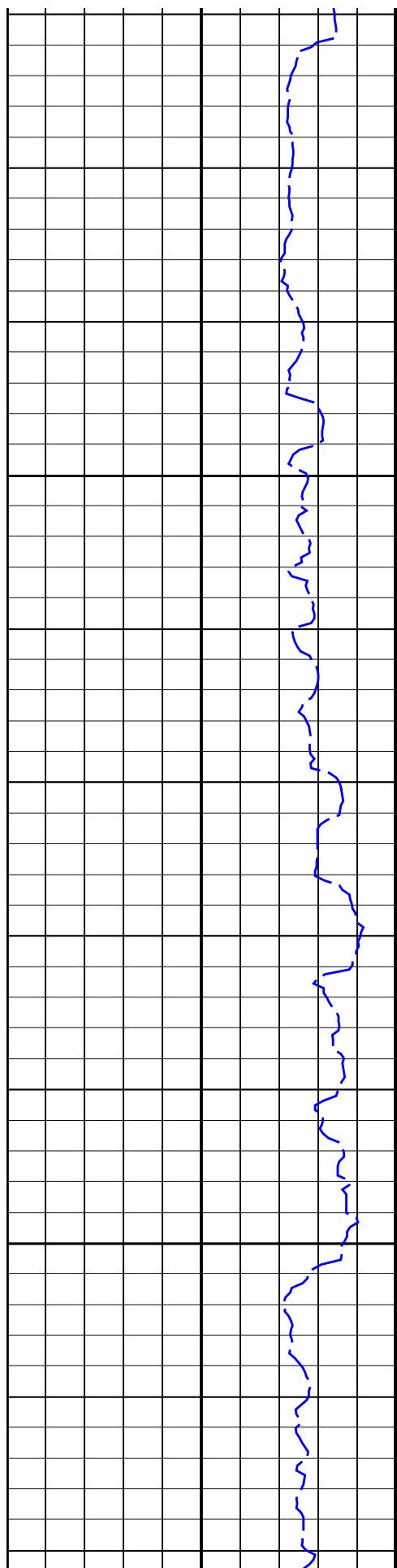




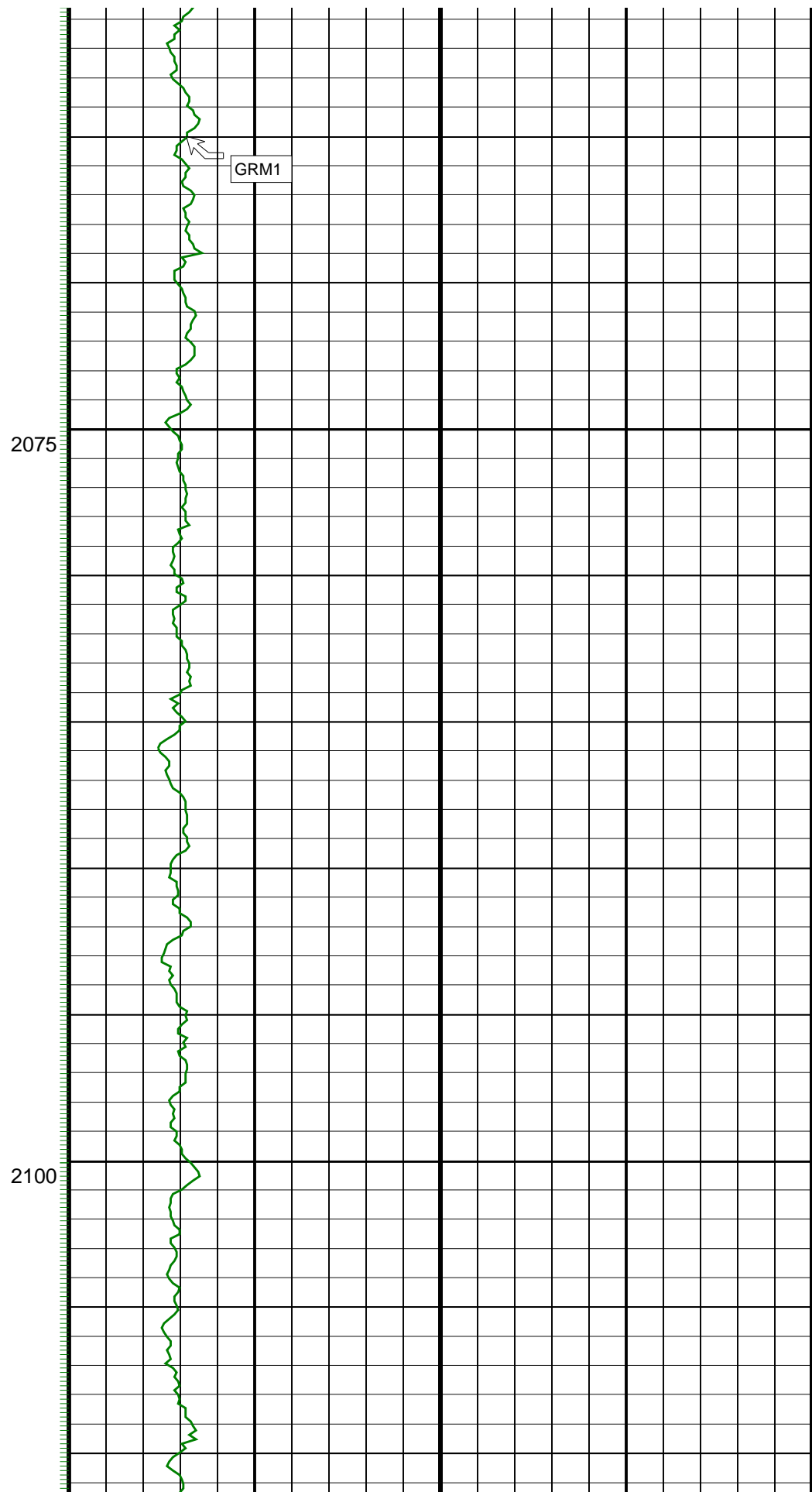
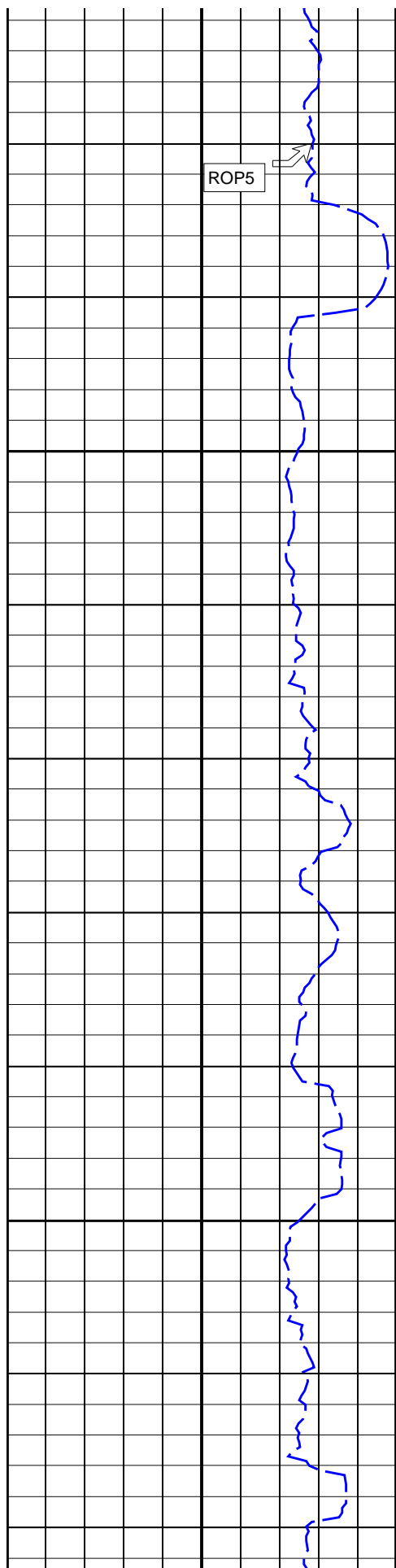


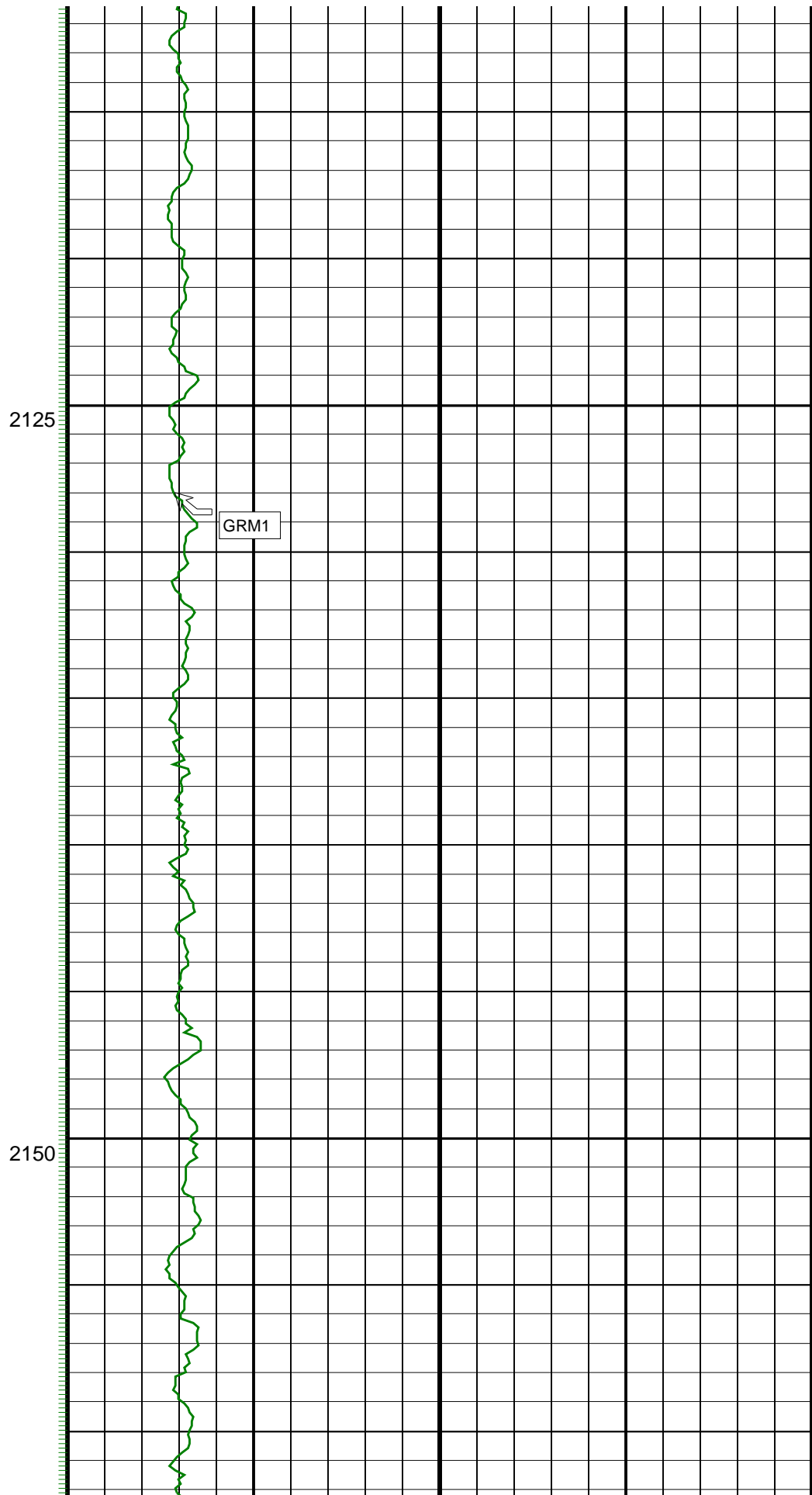
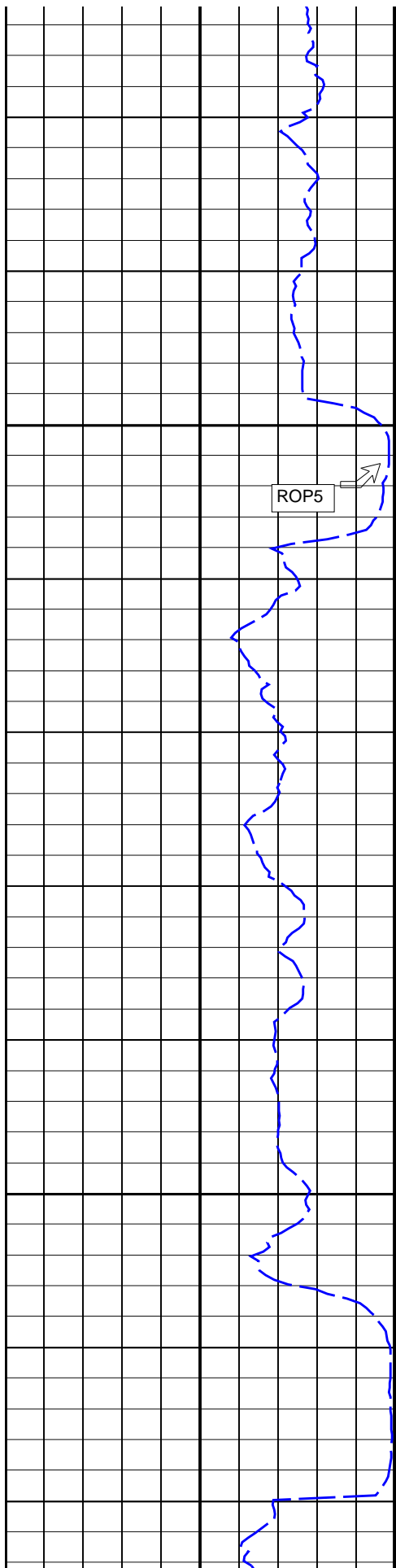




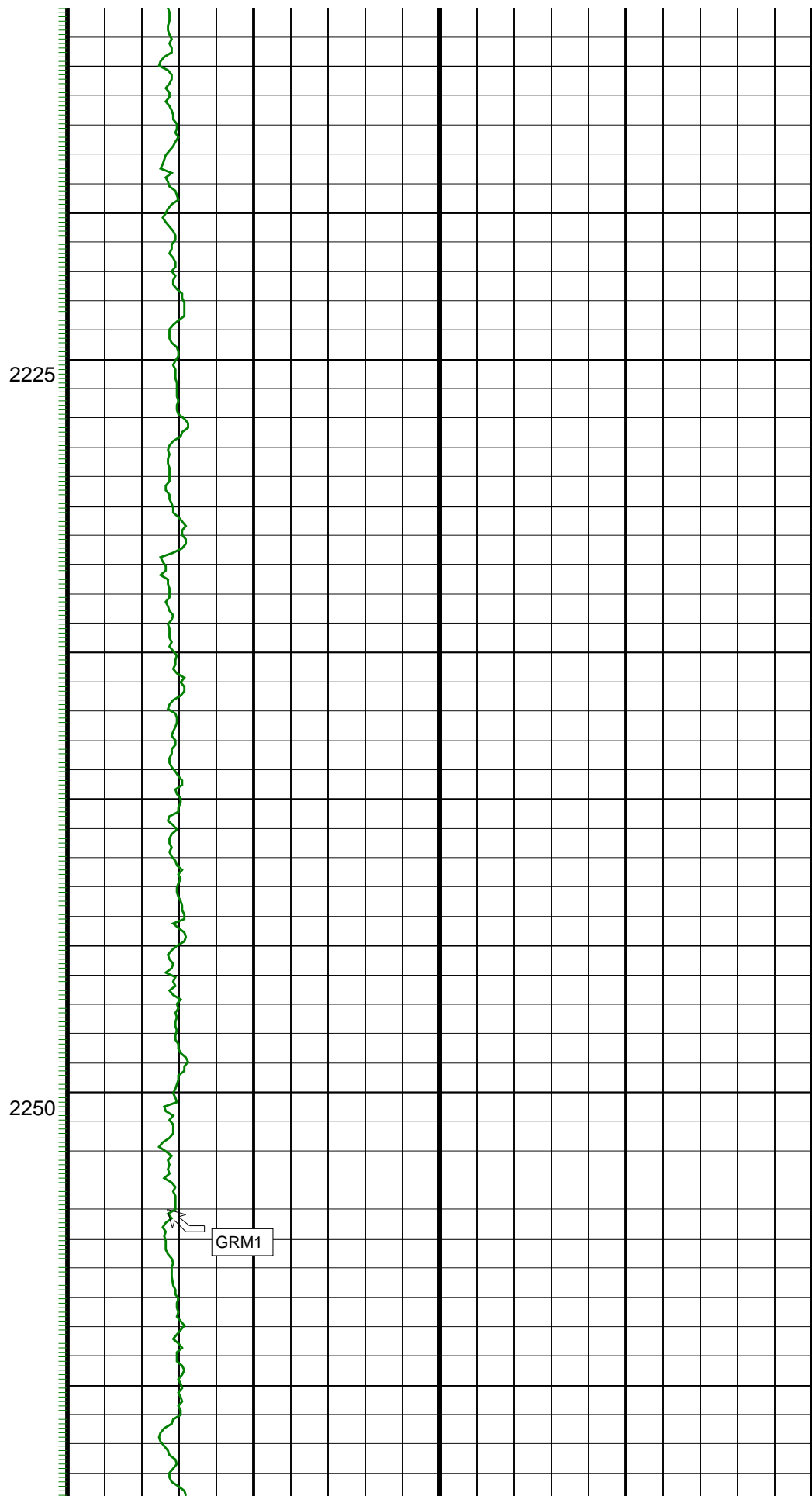
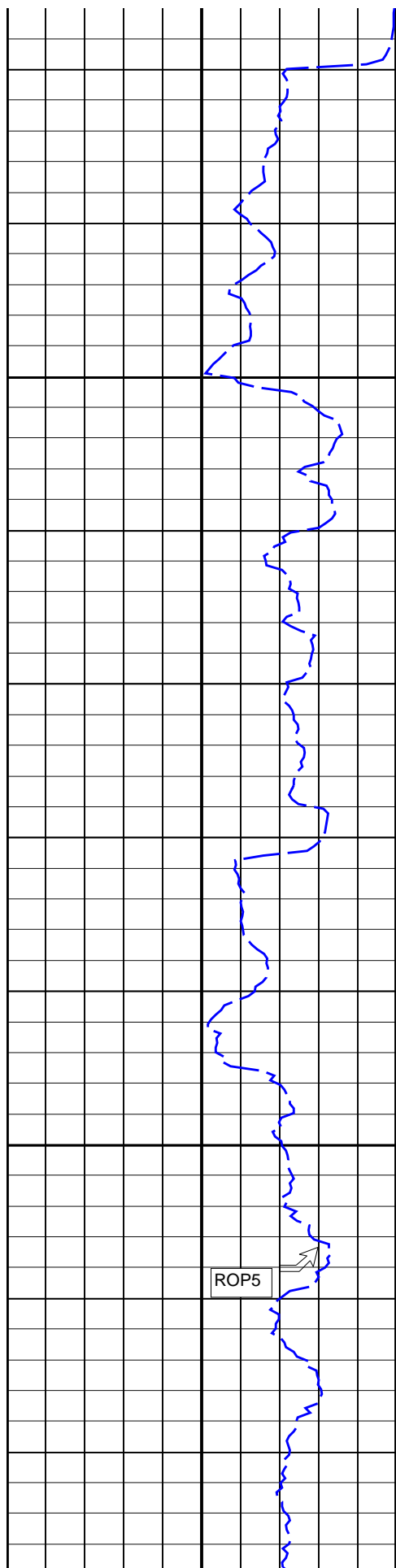


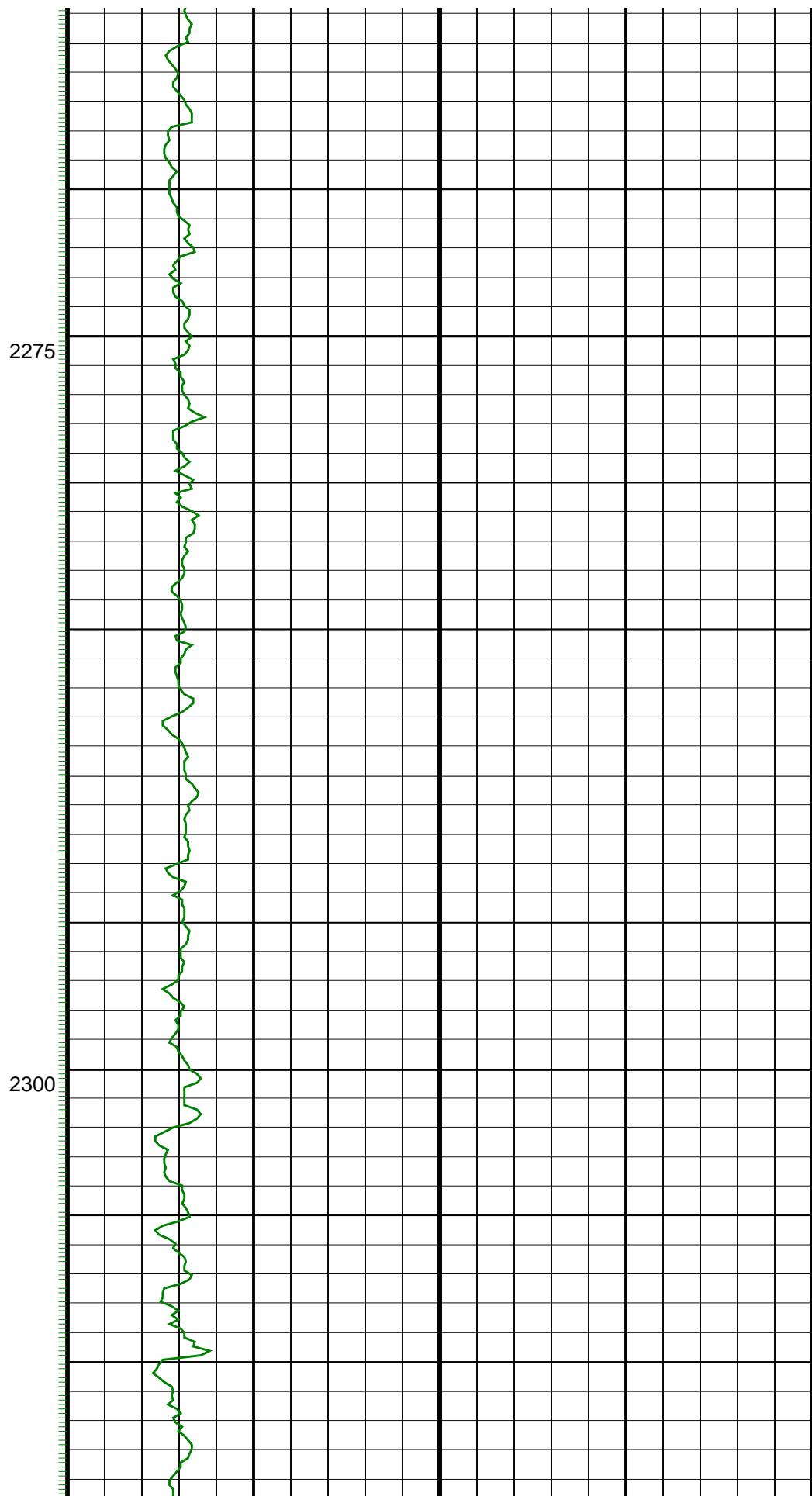
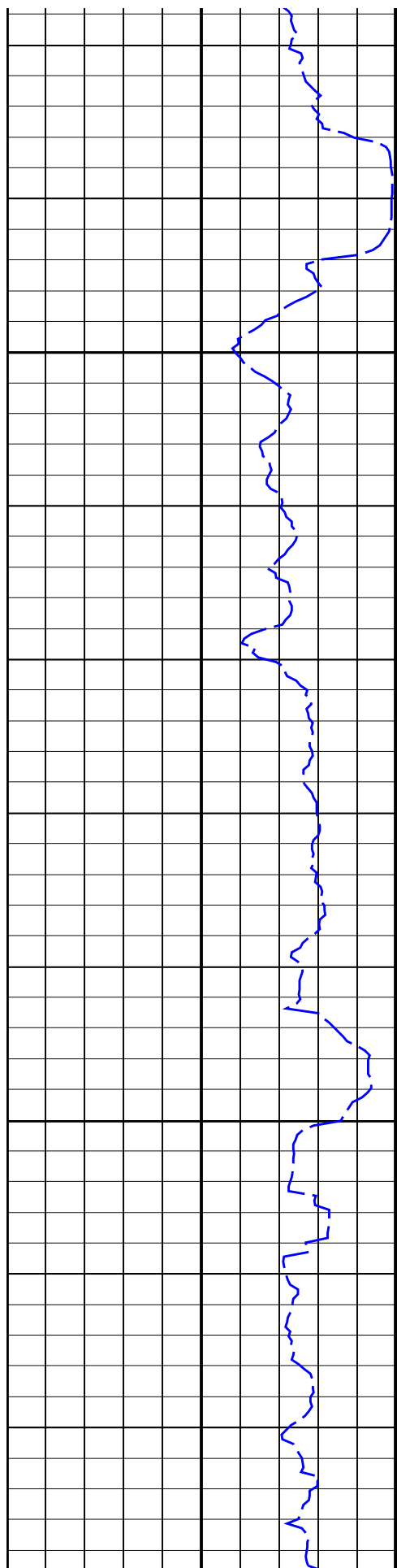




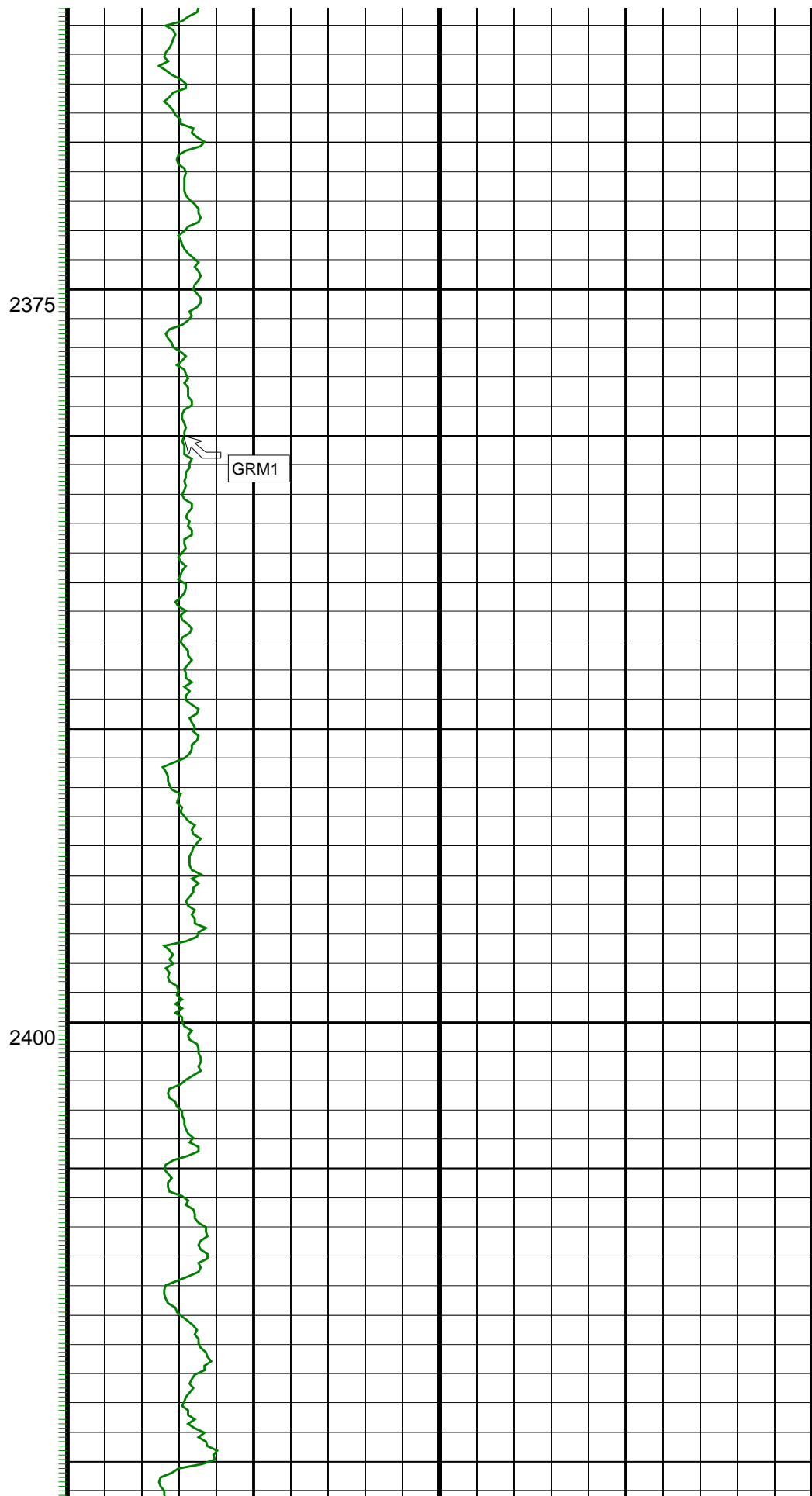
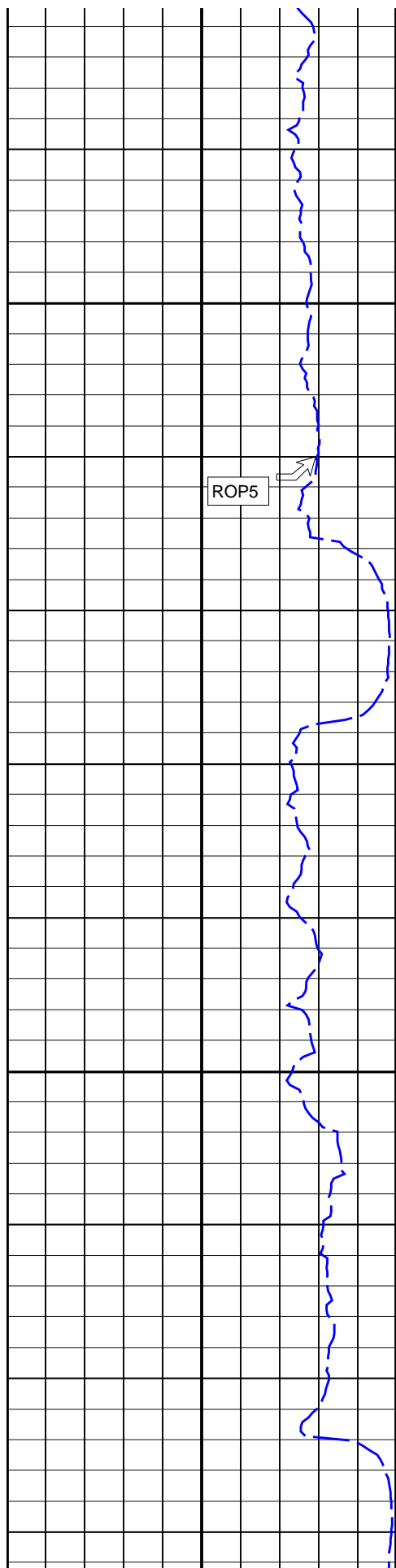


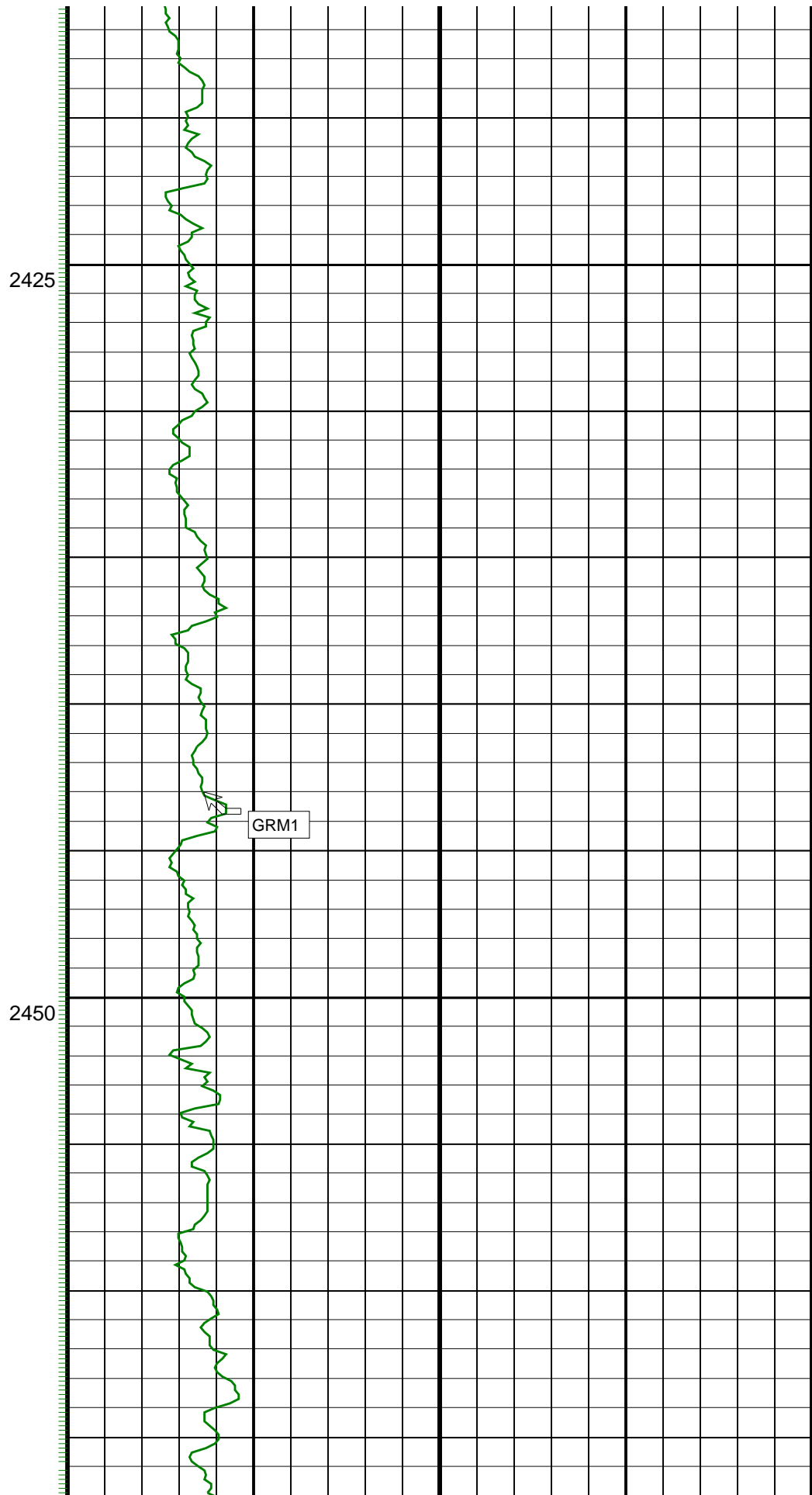
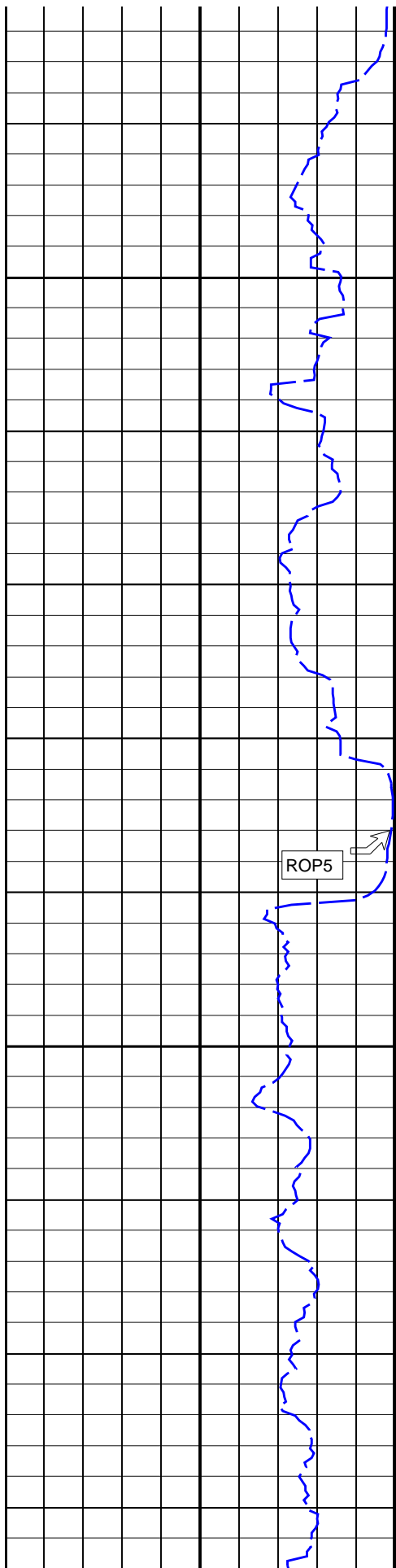




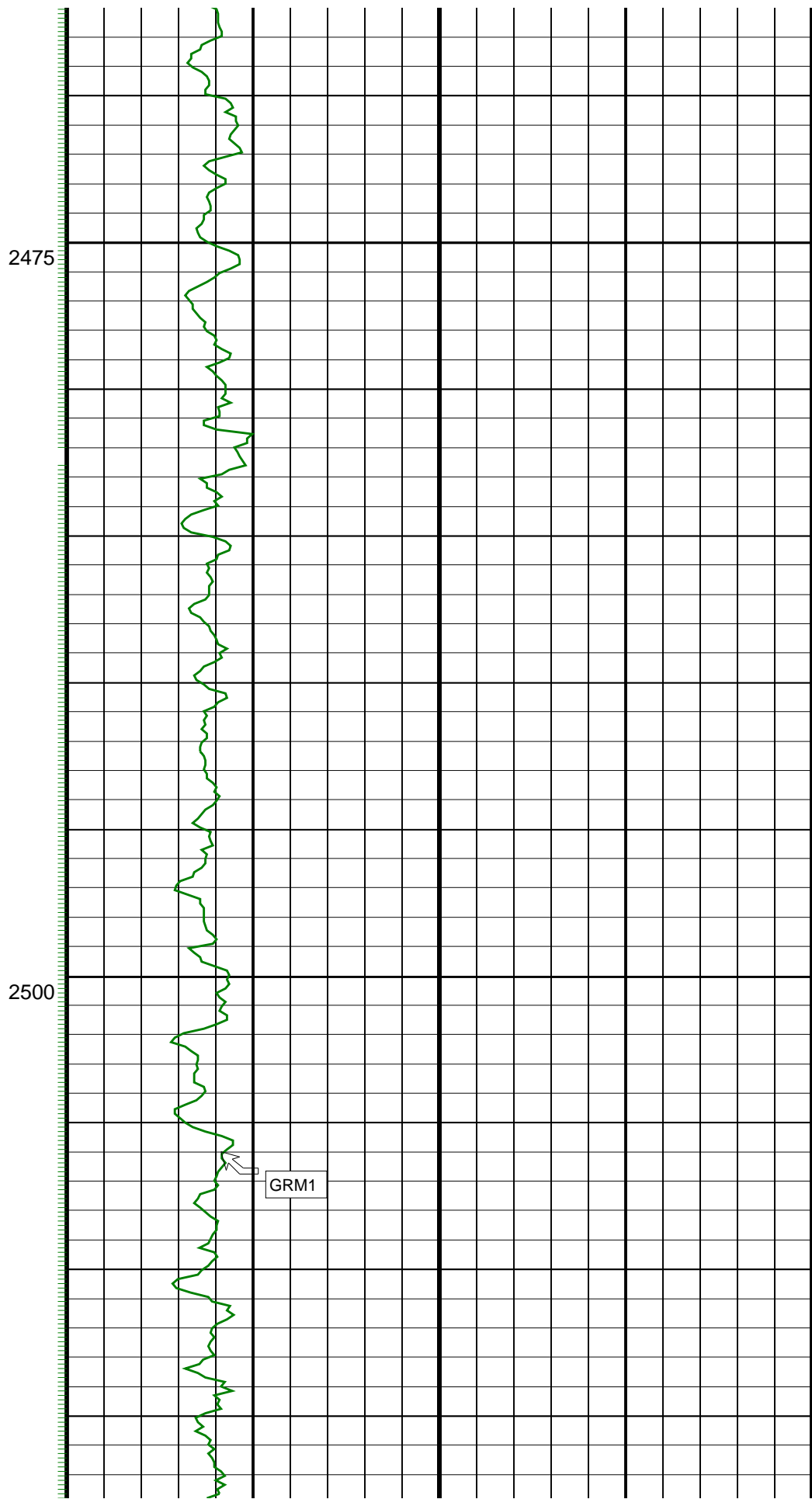
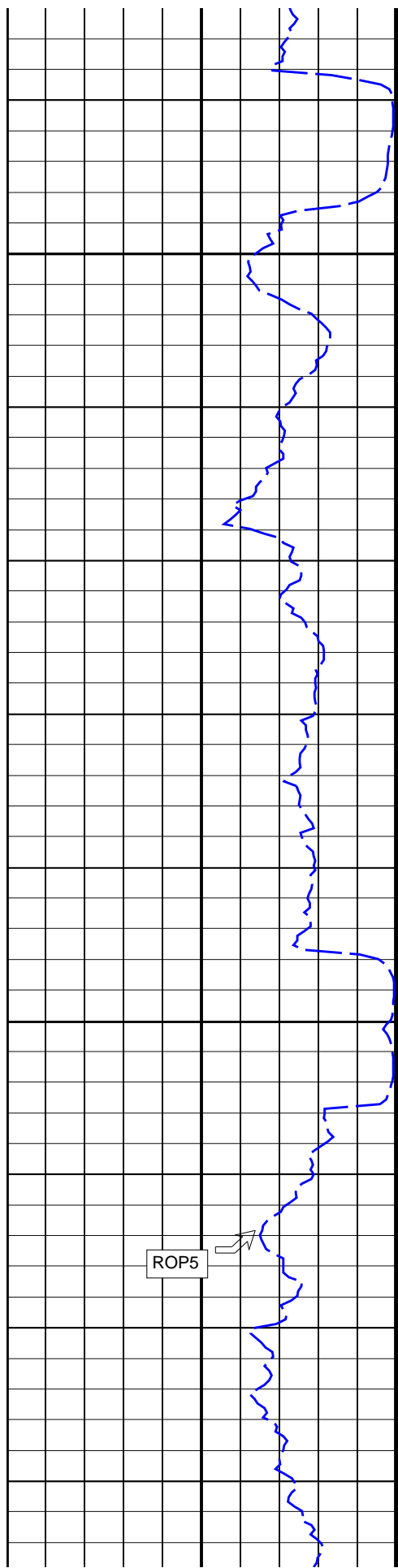




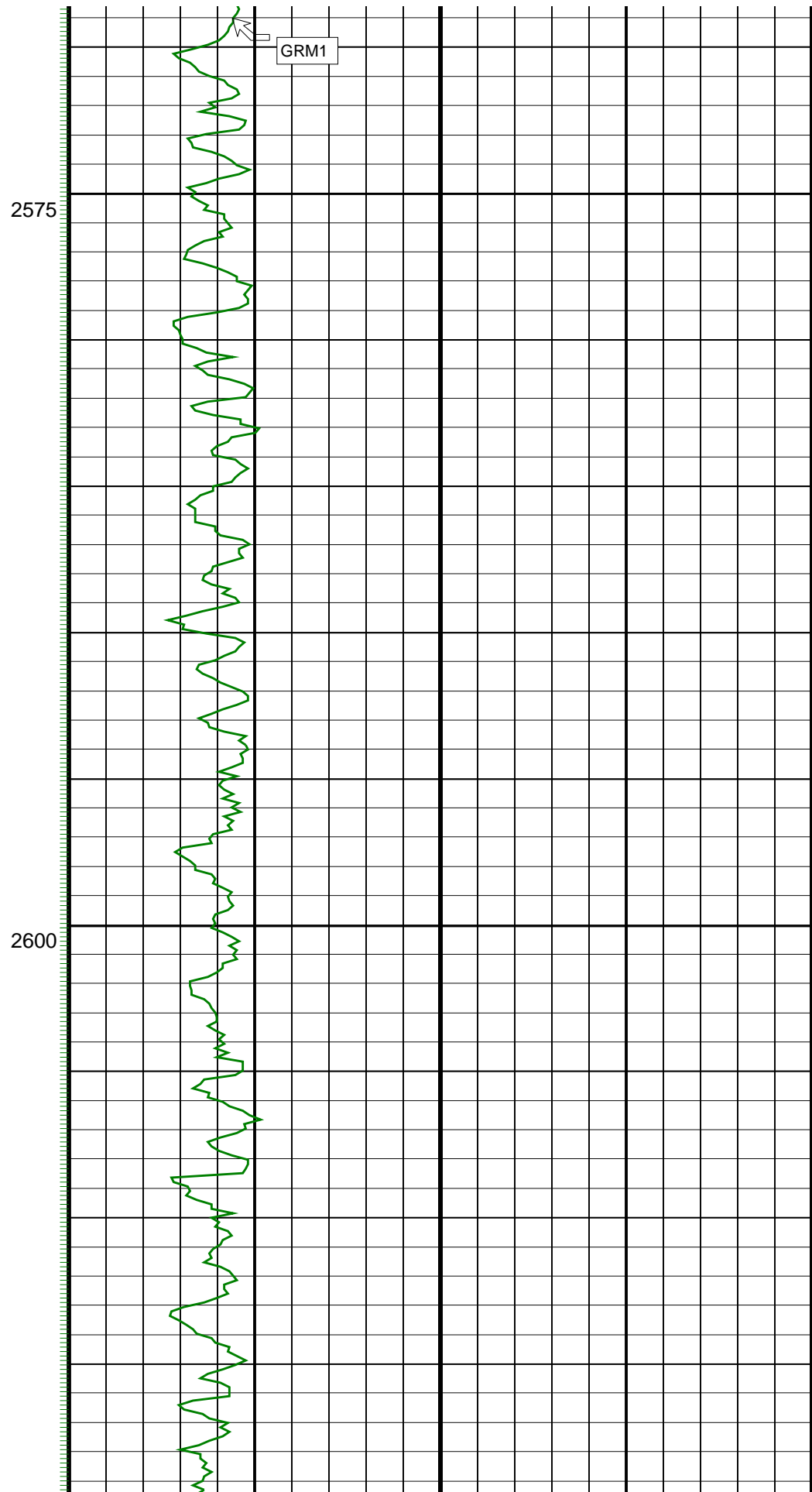
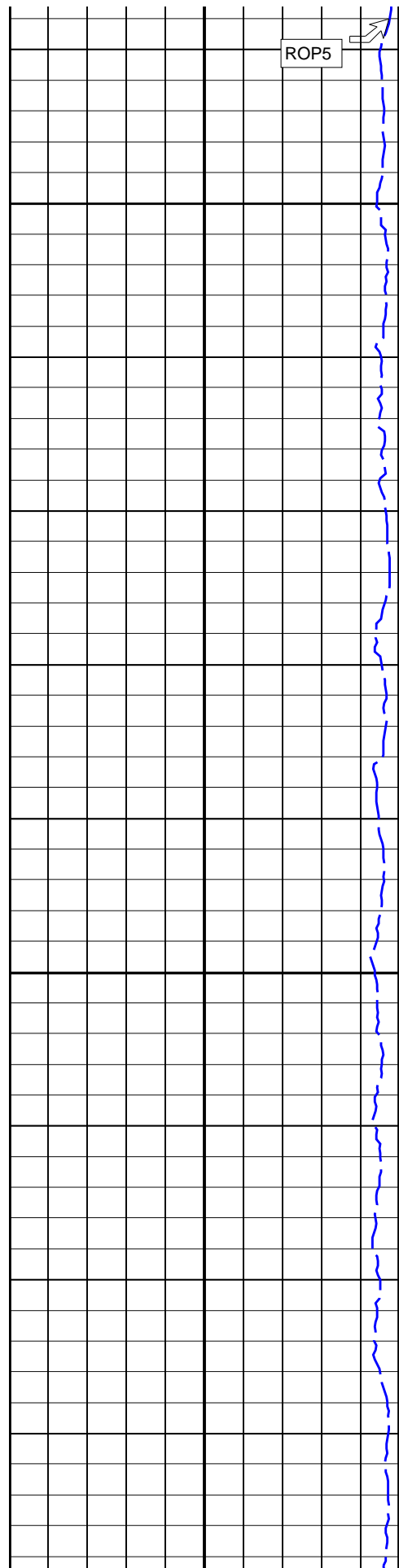


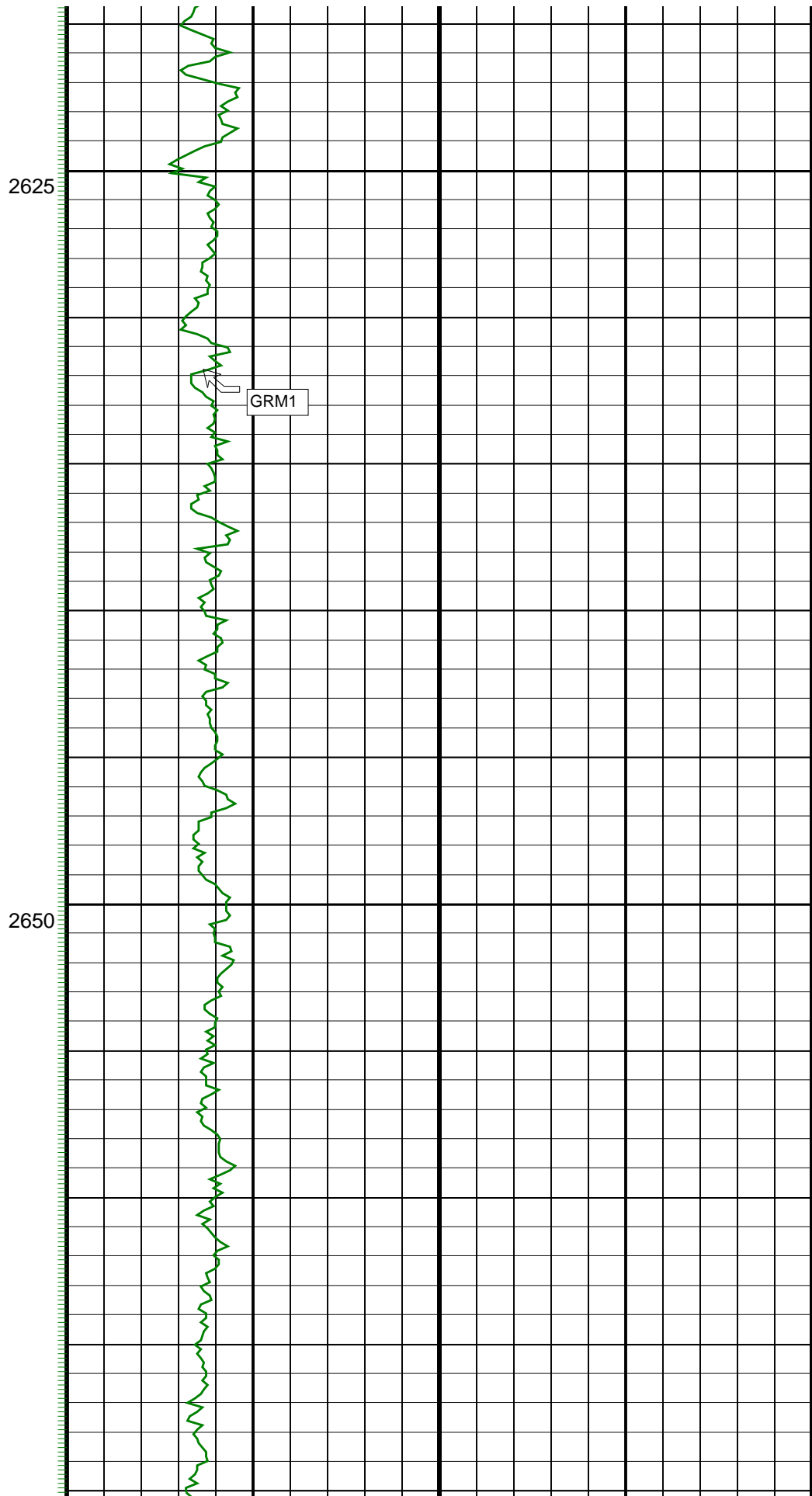
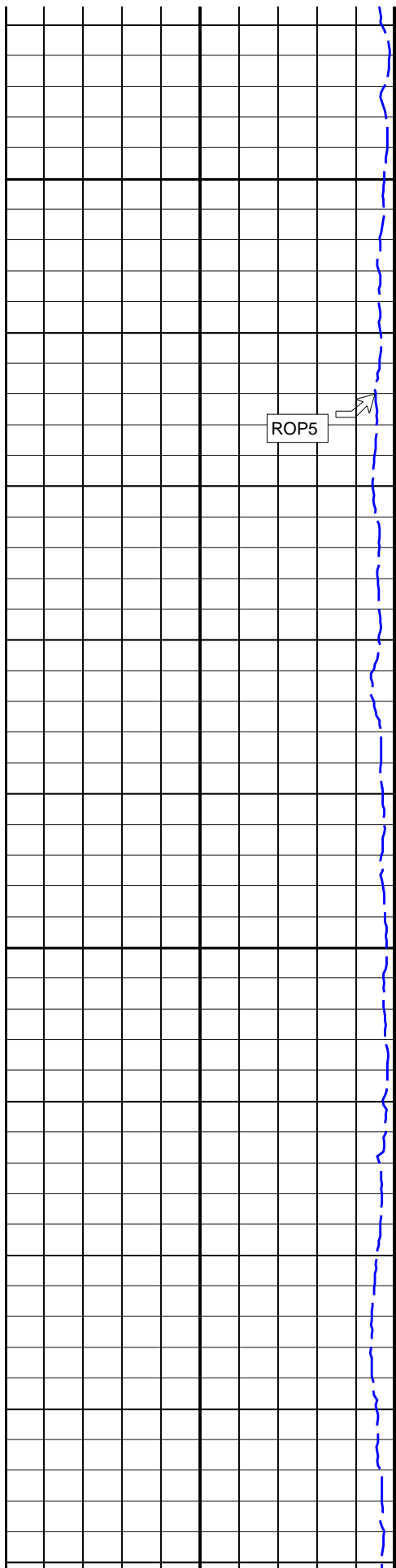


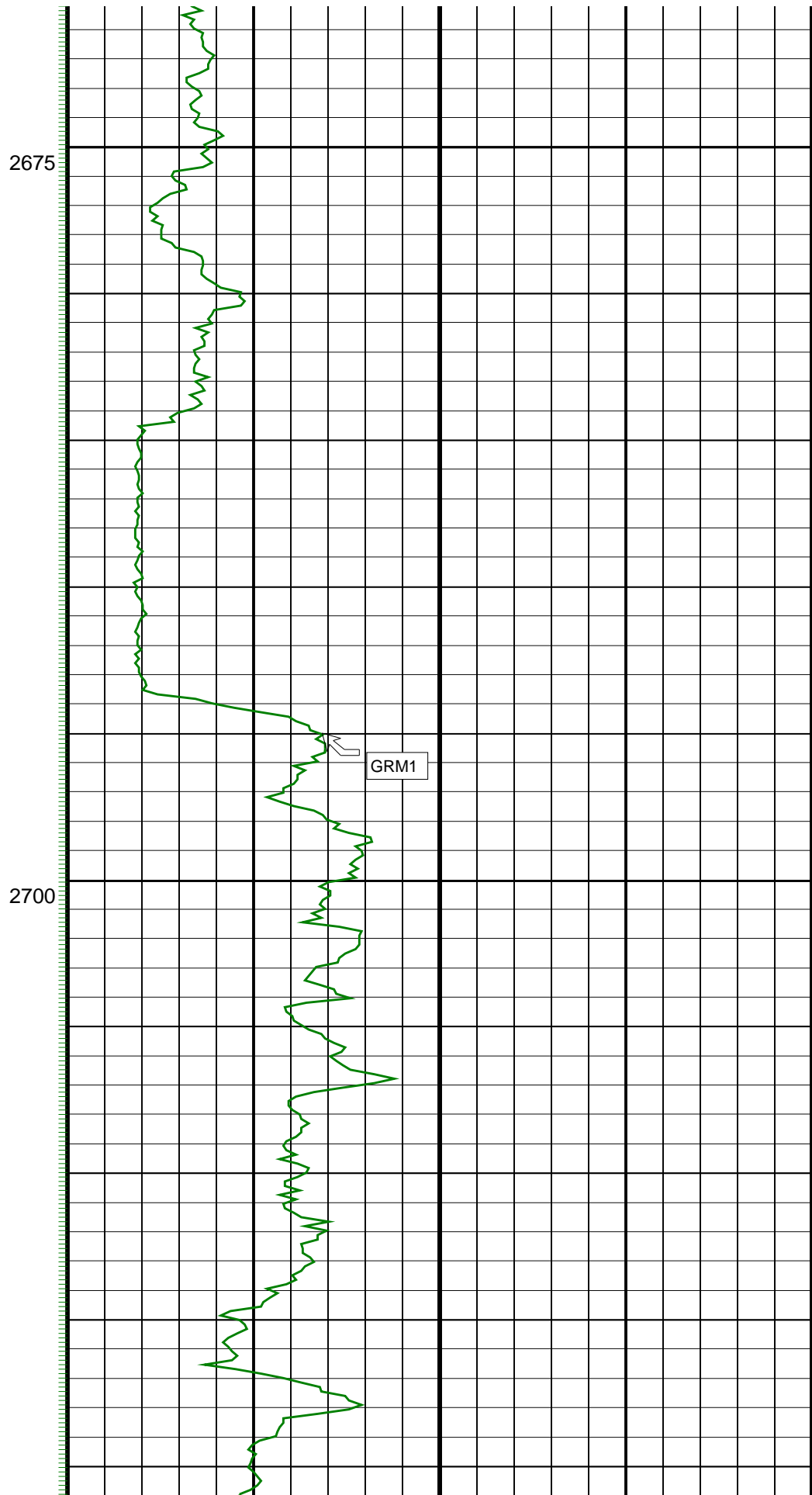
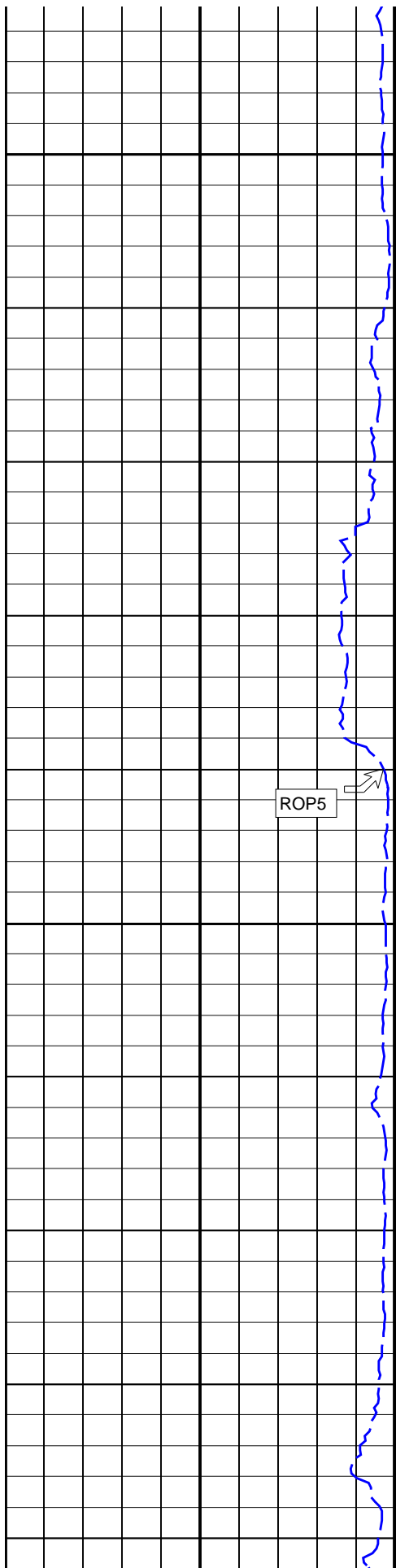


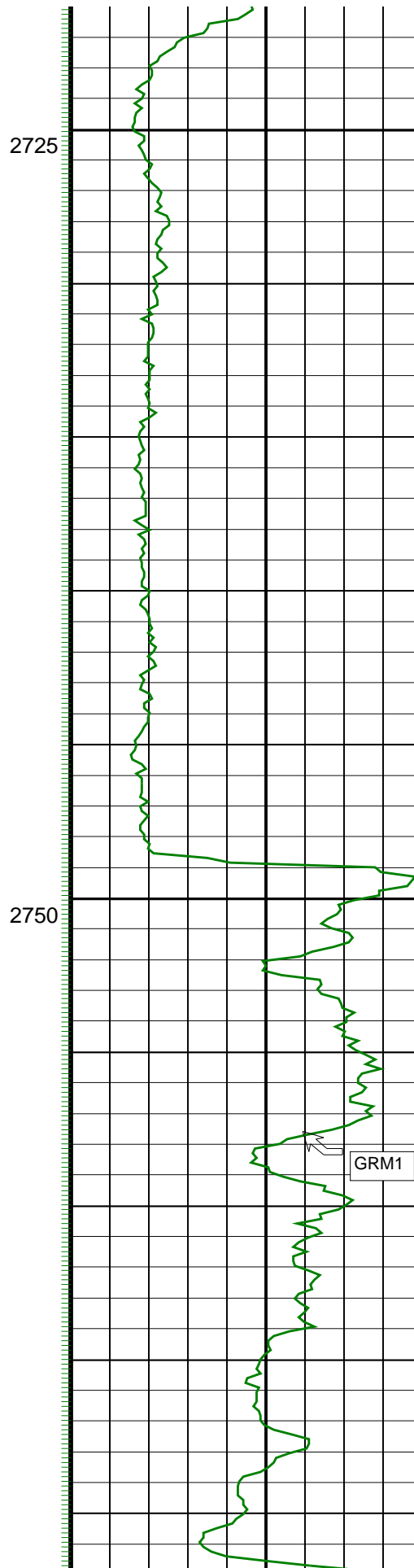
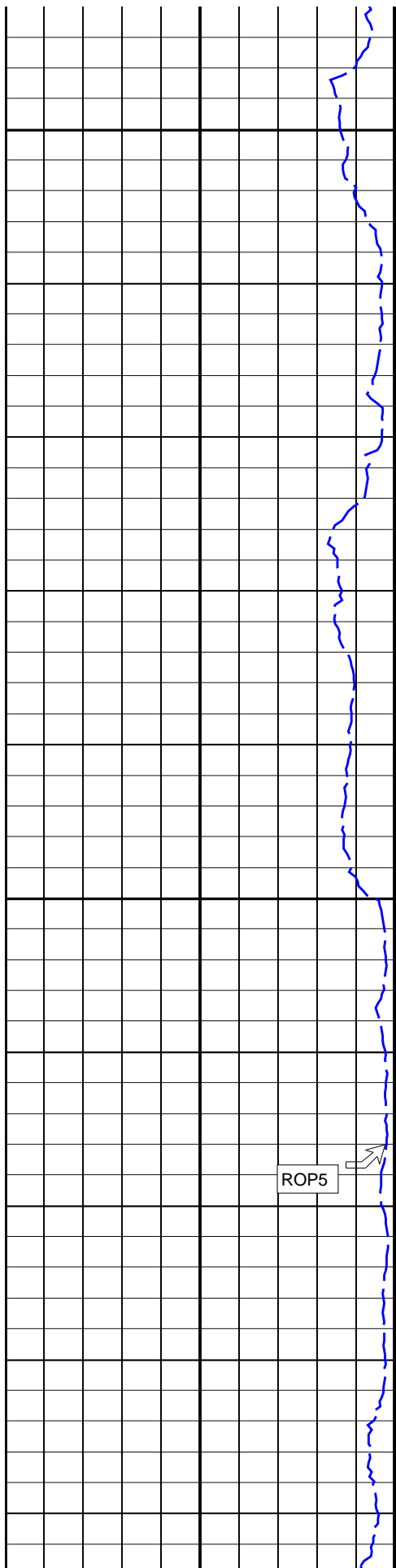


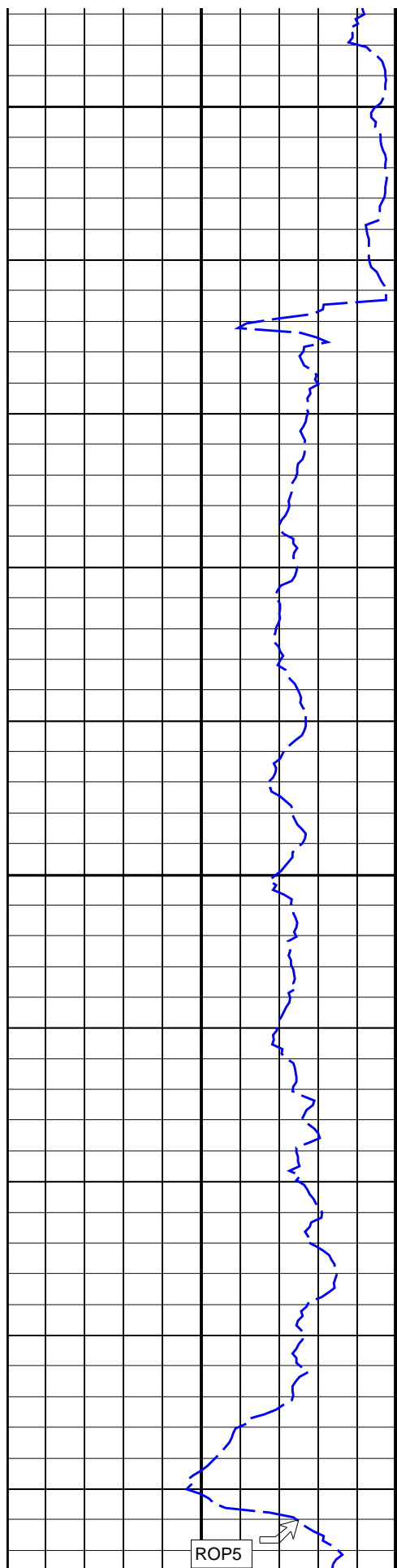




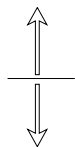






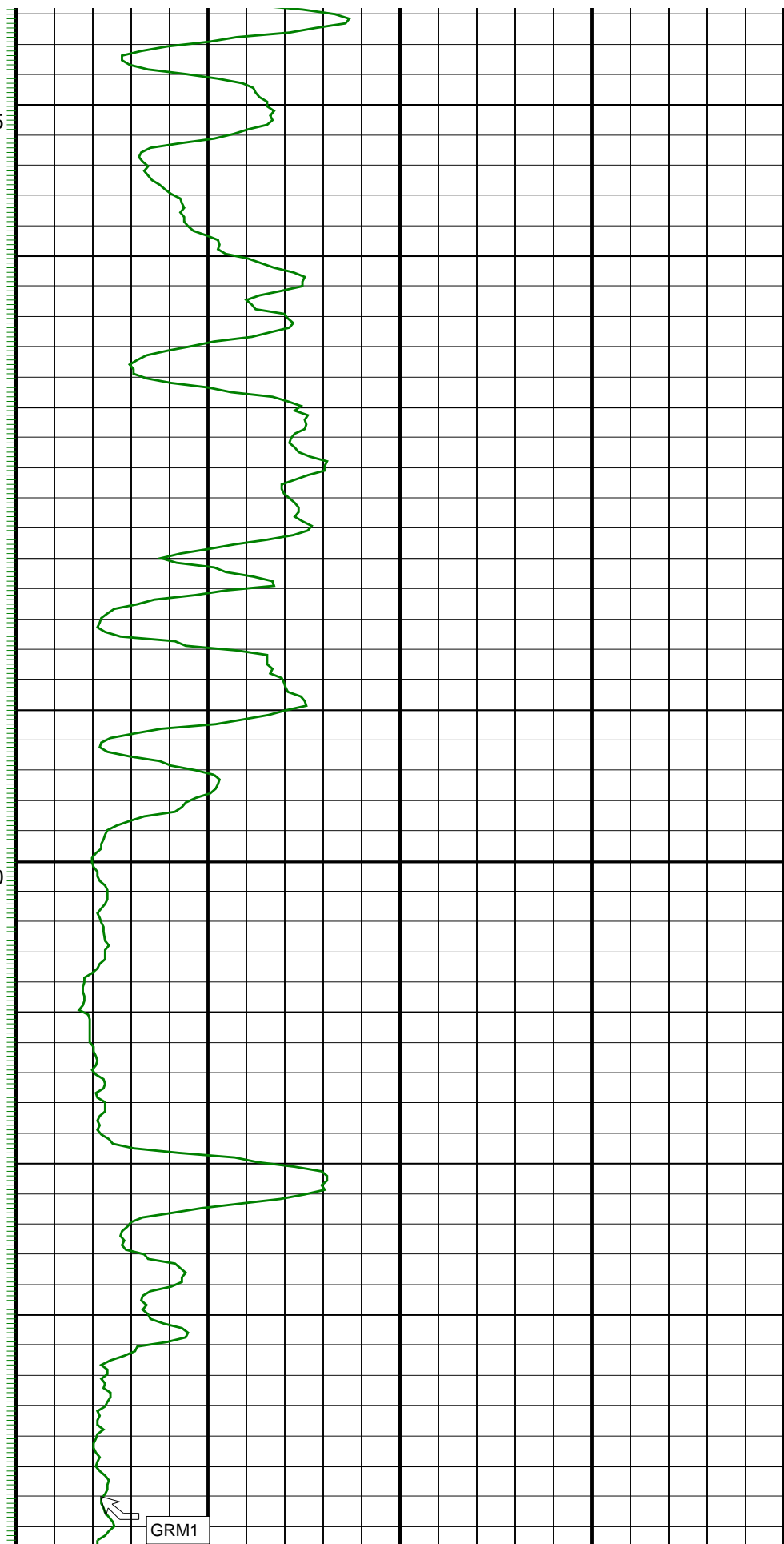


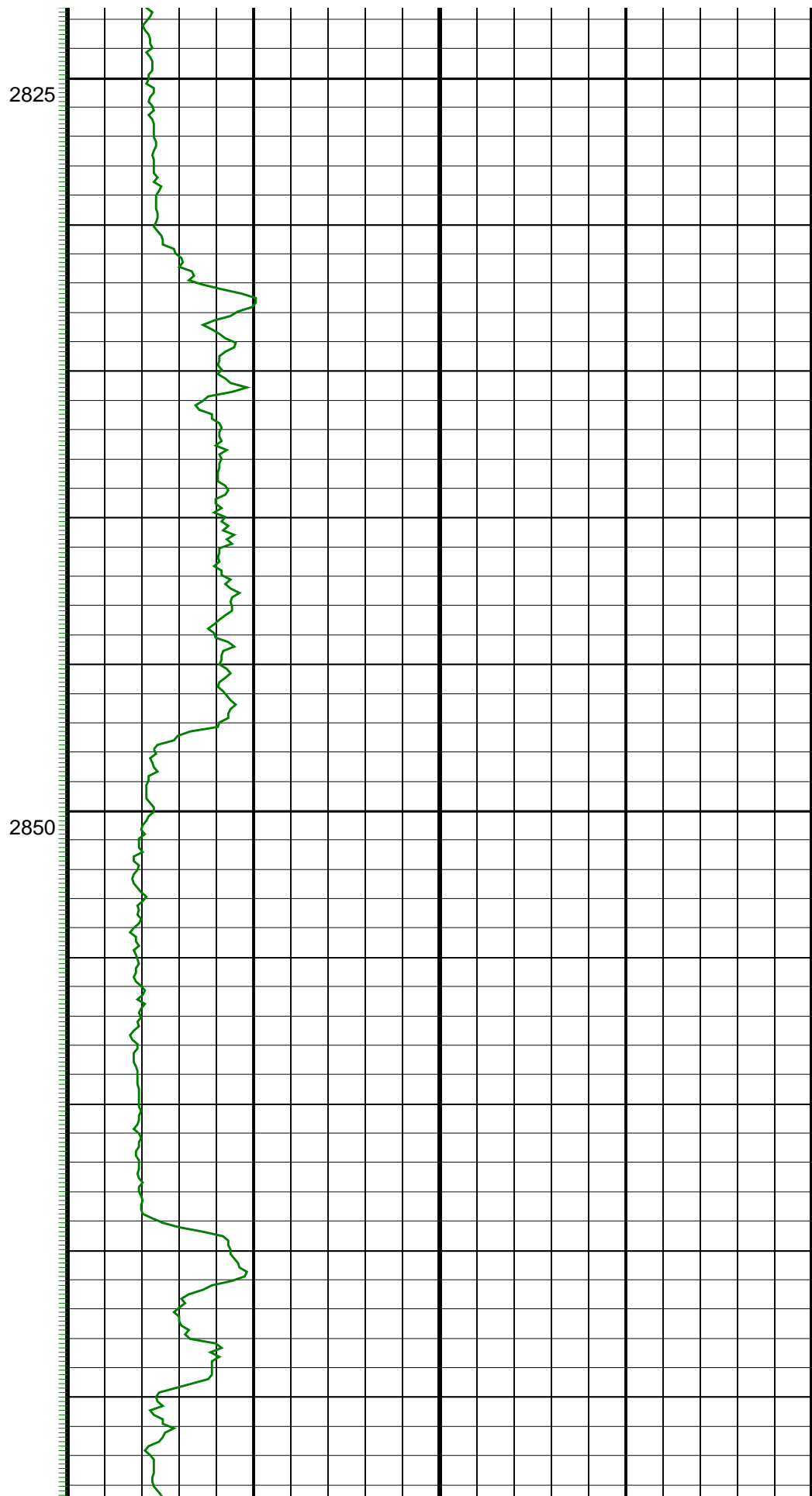
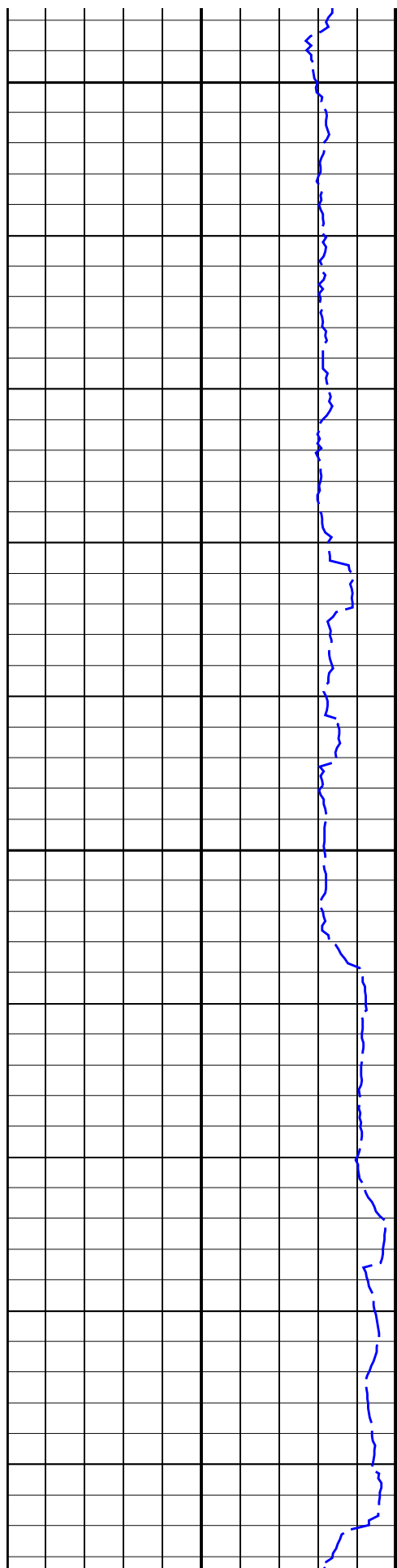
Run 2  
Run 3



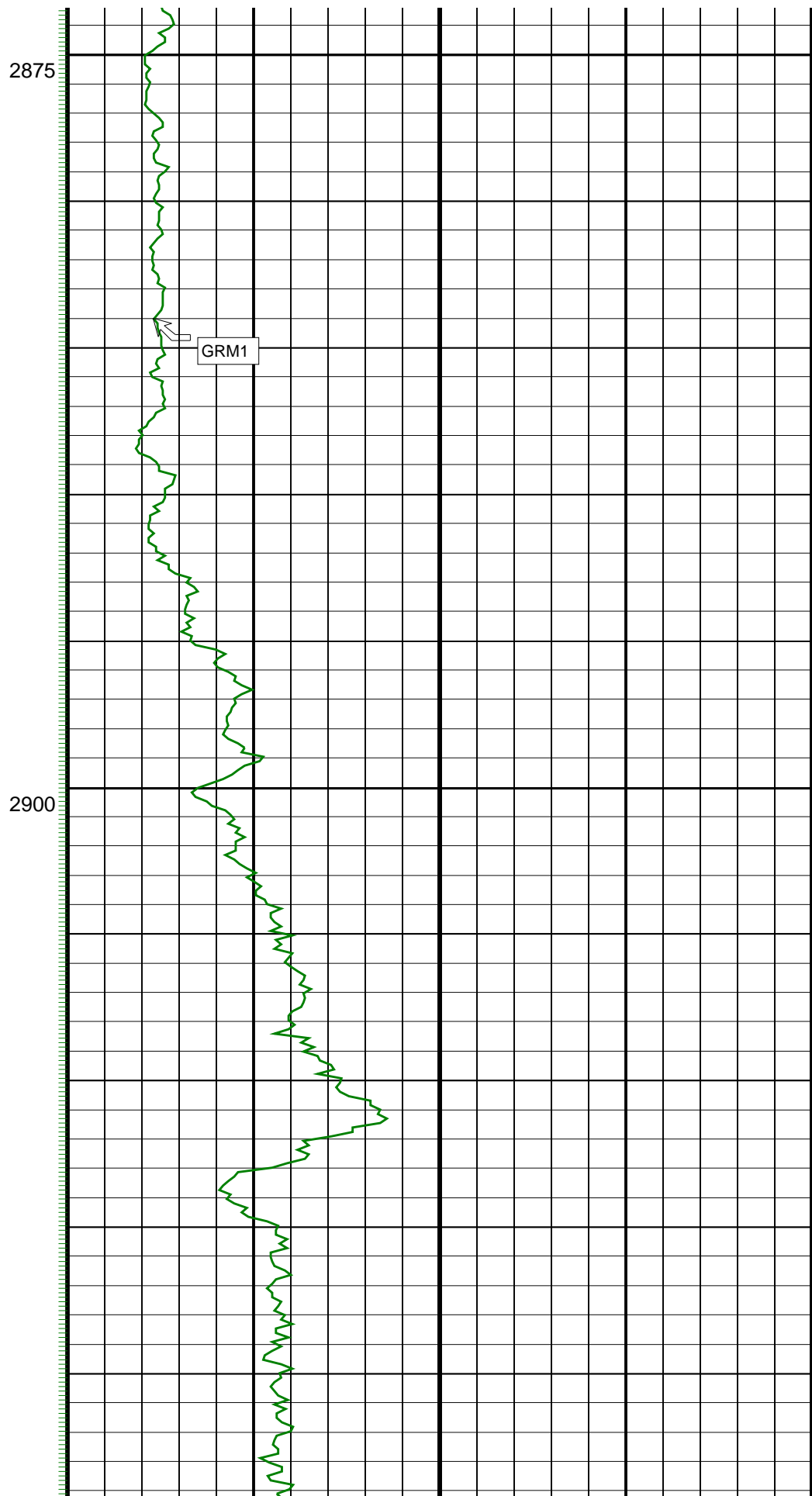
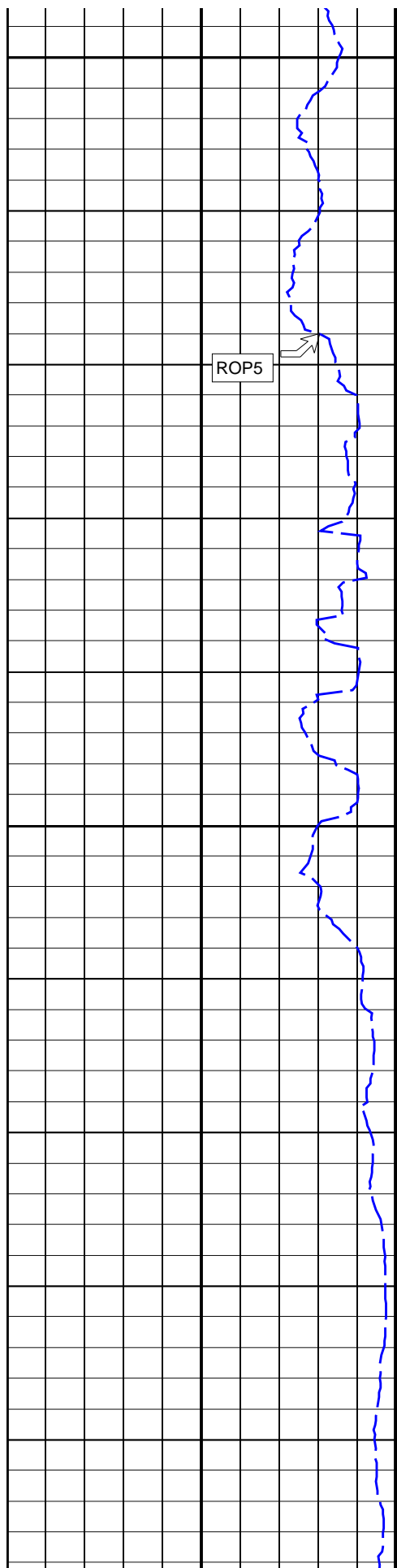
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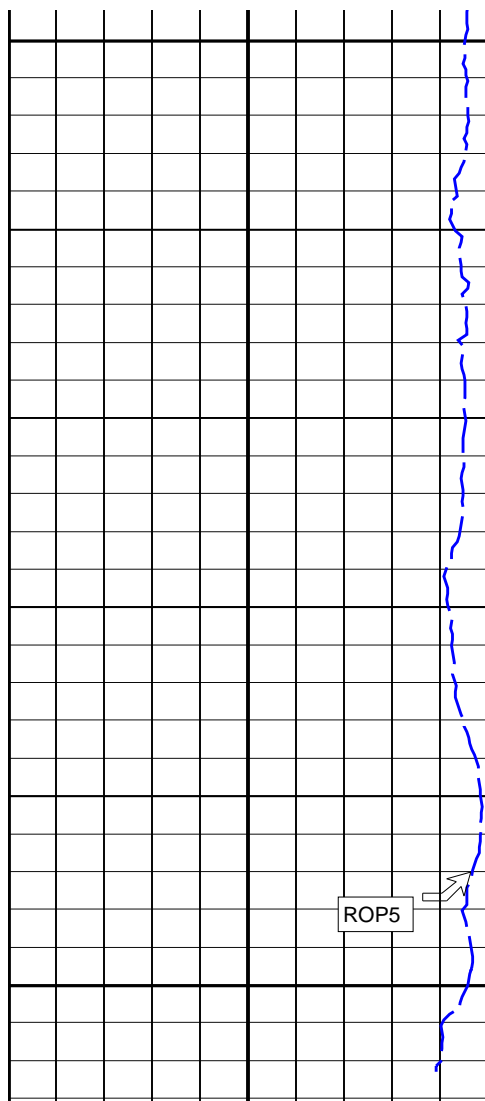
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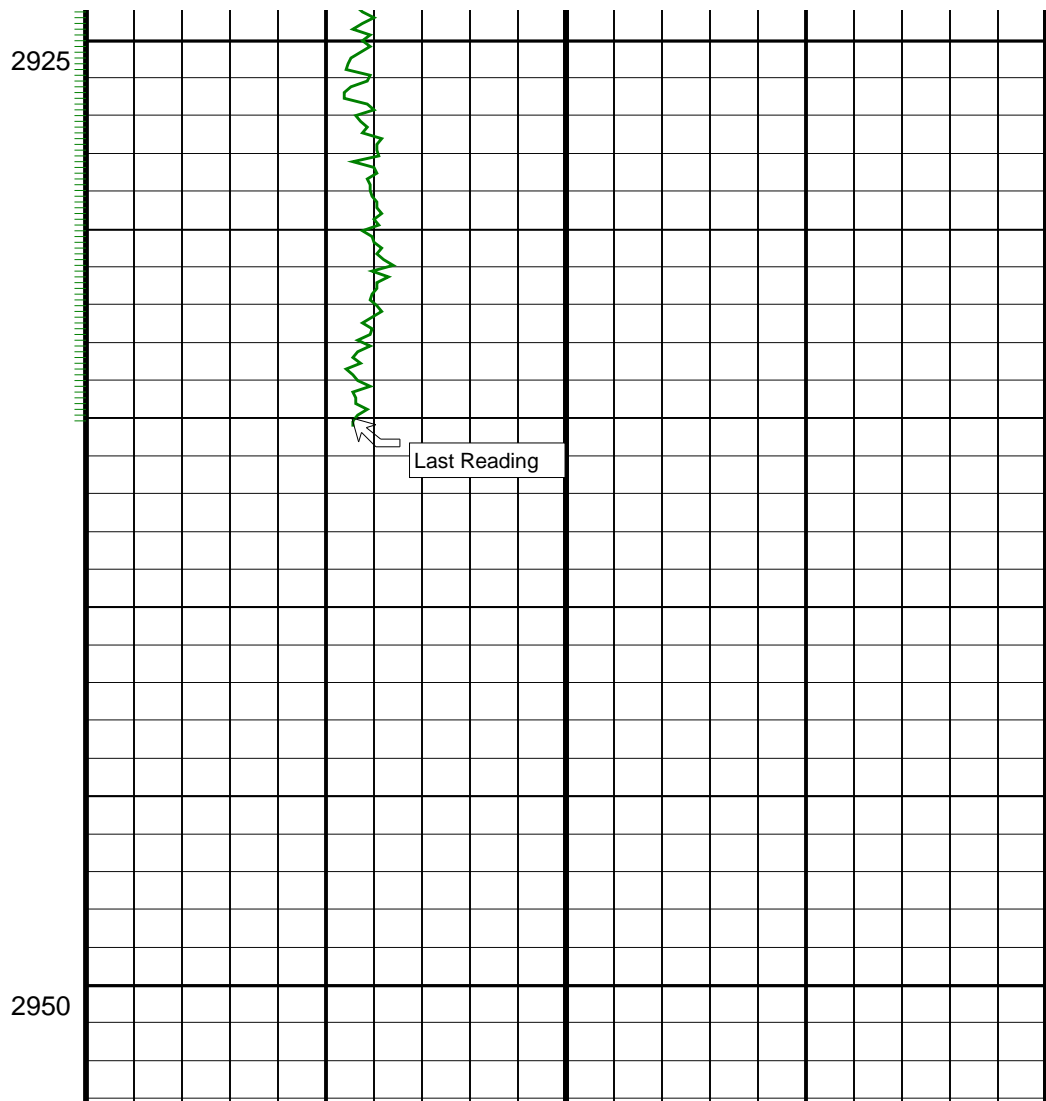








200 ROP\*5 (ROP5) (M/HR) 0



0 GR(TM) (GRM1) (GAPI) 400

### PIP SUMMARY

→ GR(TM) PIP

### SCHLUMBERGER

Survey report 30-Nov-2003 10:28:15 Page 1 of 4

Client.....: ESSO Australia Pty. Ltd.  
Field.....: Halibut GDA 94

Well.....: HLA A1A Spud date.....: 18-Nov-2003  
API number.....: Last survey date.....: 30-Nov-03  
Engineer.....: Kym Handley Total accepted surveys...: 84  
MD of first survey.....: 586.90 m  
RIG.....: ISDL 453 MD of last survey.....: 2952.00 m  
STATE.....: Victoria

----- Survey calculation methods -----  
Method for positions.....: Minimum curvature  
Method for DLS.....: Mason & Taylor  
----- Depth reference -----  
Permanent datum.....: Mean Sea Level  
Depth reference.....: Driller's Depth  
GL above permanent.....: -73.00 m  
KB above permanent.....: Top Drive  
DF above permanent.....: 29.45 m

----- Geomagnetic data -----  
Magnetic model.....: BGGM version 2002  
Magnetic date.....: 16-Nov-2003  
Magnetic field strength...: 1201.99 HCNT  
Magnetic dec (+E/W-).....: 13.21 degrees  
Magnetic dip.....: -68.86 degrees

----- MWD survey Reference Criteria -----  
Reference G.....: 1000.04 mGal  
Reference H.....: 1201.99 HCNT

Reference Dip.....: -68.86 degrees  
 ----- Vertical section origin----- Tolerance of G.....: (+/-) 2.50 mGal  
 Latitude (+N/S-).....: 0.00 m Tolerance of H.....: (+/-) 6.00 HCNT  
 Departure (+E/W-).....: 0.00 m Tolerance of Dip.....: (+/-) 0.45 degrees

----- Platform reference point----- Corrections-----  
 Latitude (+N/S-).....: -304.57 m Magnetic dec (+E/W-).....: 13.21 degrees  
 Departure (+E/W-).....: -304.57 m Grid convergence (+E/W-).....: -0.82 degrees  
 Total az corr (+E/W-).....: 14.03 degrees  
 Azimuth from rotary table to target: 4.09 degrees (Total az corr = magnetic dec - grid conv)  
 Survey Correction Type ....  
 I=Sag Corrected Inclination  
 M=Schlumberger Magnetic Correction  
 S=Shell Magnetic Correction  
 F=Failed Axis Correction  
 R=Magnetic Resonance Tool Correction  
 D=Dmag Magnetic Correction

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Displ Total (m)	At Azim (deg)	DLS (deg/10m)	Srvy Tool	Tool Corr
1	586.90	0.33	53.09	0.00	586.88	-4.99	-6.26	17.55	18.63	109.63	0.00	TIP	None
2	604.00	0.21	67.80	17.10	603.98	-4.95	-6.22	17.62	18.68	109.44	0.08	GYR	None
3	632.70	5.38	14.50	28.70	632.64	-3.60	-4.90	18.00	18.66	105.21	1.83	GYR	None
4	661.50	10.39	13.90	28.80	661.16	0.29	-1.06	18.97	19.00	93.21	1.74	GYR	None
5	698.72	15.90	15.49	37.22	697.39	8.60	7.11	21.14	22.30	71.40	1.48	MWD	None
6	727.37	18.13	12.34	28.65	724.78	16.86	15.25	23.14	27.71	56.61	0.84	MWD	None
7	756.00	18.95	0.80	28.63	751.93	25.91	24.25	24.15	34.23	44.88	1.31	MWD	None
8	784.51	19.90	2.30	28.51	778.82	35.39	33.73	24.41	41.64	35.90	0.38	MWD	None
9	813.31	22.44	4.68	28.80	805.68	45.78	44.11	25.06	50.73	29.60	0.93	MWD	None
10	842.05	26.09	5.41	28.74	831.87	57.59	55.87	26.10	61.67	25.04	1.27	MWD	None
11	870.97	30.30	3.92	28.92	857.36	71.25	69.49	27.20	74.62	21.38	1.48	MWD	None
12	900.08	31.07	3.20	29.11	882.39	86.10	84.31	28.12	88.88	18.45	0.29	MWD	None
13	928.94	30.81	2.99	28.86	907.14	100.94	99.13	28.92	103.26	16.27	0.10	MWD	None
14	957.41	32.72	2.86	28.47	931.35	115.92	114.10	29.69	117.90	14.59	0.67	MWD	None
15	986.17	34.80	4.76	28.76	955.26	131.90	130.04	30.76	133.63	13.31	0.81	MWD	None
16	1014.83	34.93	5.38	28.66	978.77	148.28	146.36	32.21	149.86	12.41	0.13	MWD	None
17	1043.18	34.24	4.73	28.35	1002.11	164.37	162.39	33.62	165.83	11.70	0.28	MWD	None
18	1071.97	33.75	4.05	28.79	1025.98	180.47	178.44	34.86	181.81	11.05	0.22	MWD	None
19	1100.47	33.24	3.80	28.50	1049.75	196.20	194.13	35.93	197.43	10.49	0.19	MWD	None
20	1129.24	32.96	3.55	28.77	1073.85	211.91	209.81	36.94	213.04	9.99	0.11	MWD	None
21	1157.85	33.70	3.83	28.61	1097.75	227.63	225.50	37.95	228.67	9.55	0.26	MWD	None
22	1186.49	33.19	3.18	28.64	1121.65	243.41	241.25	38.92	244.37	9.16	0.22	MWD	None
23	1215.46	34.28	3.05	28.97	1145.74	259.50	257.32	39.79	260.37	8.79	0.38	MWD	None
24	1244.42	33.79	2.75	28.96	1169.74	275.70	273.50	40.61	276.50	8.45	0.18	MWD	None
25	1273.35	32.89	2.40	28.93	1193.91	291.60	289.39	41.33	292.32	8.13	0.32	MWD	None
26	1301.93	33.51	3.84	28.58	1217.83	307.24	305.01	42.18	307.92	7.87	0.35	MWD	None
27	1330.72	33.78	4.63	28.79	1241.79	323.19	320.92	43.36	323.84	7.69	0.18	MWD	None
28	1359.40	33.67	4.68	28.68	1265.65	339.12	336.79	44.65	339.74	7.55	0.04	MWD	None
29	1388.04	34.85	5.24	28.64	1289.32	355.24	352.85	46.05	355.84	7.44	0.43	MWD	None
30	1416.40	34.07	5.21	28.36	1312.70	371.28	368.83	47.51	371.88	7.34	0.28	MWD	None

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Displ Total (m)	At Azim (deg)	DLS (deg/10m)	Srvy Tool	Tool Corr
31	1445.06	34.47	4.92	28.66	1336.39	387.42	384.91	48.93	388.01	7.25	0.15	MWD	None
32	1473.68	34.48	4.26	28.62	1359.98	403.62	401.06	50.23	404.19	7.14	0.13	MWD	None
33	1502.44	34.58	3.88	28.76	1383.67	419.92	417.32	51.39	420.47	7.02	0.08	MWD	None
34	1530.99	35.08	4.46	28.55	1407.11	436.22	433.58	52.57	436.76	6.91	0.21	MWD	None
35	1559.85	34.60	4.63	28.86	1430.79	452.71	450.01	53.88	453.23	6.83	0.17	MWD	None
36	1588.53	34.58	4.77	28.68	1454.40	468.99	466.24	55.21	469.50	6.75	0.03	MWD	None
37	1617.25	33.83	4.58	28.72	1478.16	485.14	482.33	56.53	485.63	6.68	0.26	MWD	None
38	1645.96	34.14	4.27	28.71	1501.96	501.18	498.33	57.77	501.67	6.61	0.12	MWD	None
39	1674.76	34.52	4.61	28.80	1525.75	517.43	514.53	59.02	517.90	6.54	0.15	MWD	None
40	1703.49	33.57	4.49	28.73	1549.55	533.51	530.56	60.30	533.98	6.48	0.33	MWD	None

41	1732.46	34.52	3.52	28.97	1573.56	549.73	546.74	61.43	550.18	6.41	0.38	MWD	None
42	1761.37	34.69	3.69	28.91	1597.35	566.15	563.12	62.46	566.58	6.33	0.07	MWD	None
43	1789.70	33.96	3.89	28.33	1620.75	582.12	579.06	63.52	582.54	6.26	0.26	MWD	None
44	1818.25	35.03	5.25	28.55	1644.28	598.29	595.18	64.81	598.70	6.21	0.46	MWD	None
45	1847.12	34.04	4.99	28.87	1668.06	614.65	611.48	66.27	615.06	6.19	0.35	MWD	None
46	1875.80	33.93	4.54	28.68	1691.84	630.68	627.46	67.60	631.09	6.15	0.10	MWD	None
47	1904.04	34.25	3.82	28.24	1715.23	646.51	643.24	68.76	646.91	6.10	0.18	MWD	None
48	1932.93	34.71	4.24	28.89	1739.04	662.86	659.56	69.91	663.25	6.05	0.18	MWD	None
49	1961.62	35.30	3.22	28.69	1762.54	679.32	675.98	70.98	679.70	5.99	0.29	MWD	None
50	1990.63	34.82	3.23	29.01	1786.29	695.98	692.62	71.91	696.34	5.93	0.17	MWD	None
51	2019.23	34.91	3.62	28.60	1809.75	712.33	708.94	72.89	712.68	5.87	0.08	MWD	None
52	2048.31	34.31	3.52	29.08	1833.69	728.85	725.42	73.92	729.18	5.82	0.21	MWD	None
53	2077.10	34.25	3.18	28.79	1857.48	745.06	741.61	74.87	745.38	5.76	0.07	MWD	None
54	2105.66	33.72	3.05	28.56	1881.16	761.02	757.55	75.73	761.33	5.71	0.19	MWD	None
55	2134.30	33.77	3.16	28.64	1904.97	776.93	773.44	76.60	777.22	5.66	0.03	MWD	None
56	2163.25	34.18	4.88	28.95	1928.98	793.11	789.57	77.73	793.39	5.62	0.36	MWD	None
57	2192.05	34.61	4.86	28.80	1952.75	809.38	805.78	79.11	809.66	5.61	0.15	MWD	None
58	2220.46	34.87	4.70	28.41	1976.09	825.56	821.92	80.46	825.85	5.59	0.10	MWD	None
59	2249.13	34.25	4.51	28.67	1999.70	841.83	838.13	81.77	842.11	5.57	0.22	MWD	None
60	2277.70	34.38	4.65	28.57	2023.30	857.93	854.18	83.05	858.21	5.55	0.05	MWD	None

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Displ Total (m)	At Azim (deg)	DLS (deg/10m)	Srvy tool type	Tool Corr
61	2306.02	33.94	4.54	28.32	2046.73	873.83	870.03	84.33	874.11	5.54	0.16	MWD	None
62	2335.12	34.45	4.71	29.10	2070.80	890.19	886.34	85.65	890.46	5.52	0.18	MWD	None
63	2364.29	33.94	4.90	29.17	2094.93	906.58	902.67	87.02	906.86	5.51	0.18	MWD	None
64	2393.28	34.32	3.70	28.99	2118.93	922.84	918.89	88.24	923.12	5.49	0.27	MWD	None
65	2421.92	35.27	4.07	28.64	2142.45	939.19	935.20	89.35	939.45	5.46	0.34	MWD	None
66	2450.28	35.91	4.12	28.36	2165.51	955.69	951.66	90.52	955.95	5.43	0.23	MWD	None
67	2479.07	36.30	4.30	28.79	2188.77	972.66	968.58	91.77	972.92	5.41	0.14	MWD	None
68	2507.28	36.48	4.80	28.21	2211.48	989.39	985.26	93.10	989.65	5.40	0.12	MWD	None
69	2535.06	38.21	5.40	27.78	2233.56	1006.24	1002.05	94.60	1006.50	5.39	0.64	MWD	None
70	2563.79	42.31	5.15	28.73	2255.48	1024.80	1020.53	96.30	1025.06	5.39	1.43	MWD	None
71	2592.58	46.33	4.80	28.79	2276.08	1044.91	1040.56	98.04	1045.17	5.38	1.40	MWD	None
72	2621.59	49.82	4.69	29.01	2295.46	1066.49	1062.07	99.83	1066.75	5.37	1.20	MWD	None
73	2649.97	53.11	4.61	28.38	2313.13	1088.68	1084.19	101.63	1088.95	5.36	1.16	MWD	None
74	2679.12	57.16	2.06	29.15	2329.80	1112.59	1108.06	103.01	1112.84	5.31	1.56	MWD	None
75	2707.94	58.64	1.15	28.82	2345.11	1136.98	1132.47	103.69	1137.20	5.23	0.58	MWD	None
76	2736.76	58.93	2.71	28.82	2360.05	1161.61	1157.10	104.52	1161.81	5.16	0.47	MWD	None
77	2765.34	59.19	2.70	28.58	2374.74	1186.11	1181.59	105.68	1186.30	5.11	0.09	MWD	None
78	2793.68	59.67	2.93	28.34	2389.16	1210.51	1205.96	106.87	1210.68	5.06	0.18	MWD	None
79	2822.22	60.83	2.67	28.54	2403.32	1235.28	1230.71	108.08	1235.44	5.02	0.41	MWD	None
80	2850.98	62.46	2.43	28.76	2416.98	1260.58	1255.99	109.21	1260.73	4.97	0.57	MWD	None
81	2879.95	63.96	2.62	28.97	2430.03	1286.43	1281.82	110.35	1286.57	4.92	0.52	MWD	None
82	2908.68	65.60	2.64	28.73	2442.27	1312.41	1307.79	111.54	1312.54	4.87	0.57	MWD	None
83	2933.99	66.14	2.47	25.31	2452.62	1335.50	1330.86	112.57	1335.62	4.83	0.22	MWD	None
84	2952.00	66.30	2.50	18.01	2459.88	1351.98	1347.33	113.29	1352.08	4.81	0.09	Projection to TD	

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Company: **ESSO Australia Pty. Ltd.**

Well: **HLA A1A**

Field: **Halibut GDA 94**

Rig: **ISDL 453**

State: **Victoria**

**Schlumberger**

**Gamma Ray Service**  
**1:200 Measured Depth**  
**Real Time Log**

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